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## UNITED STATES PATENT AND TRADEMARK OFFICE

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January 6, 1976

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# OFFICIAL GAZETTE of the
# UNITED STATES PATENT and TRADEMARK OFFICE

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# CONSOLIDATED LISTING OF RECENT OFFICIAL GAZETTE NOTICES RE PATENT AND TRADEMARK OFFICE PRACTICES AND PROCEDURES

## PATENT SECTION

*The following is a compilation of the more important notices and rules changes which have been published in the* OFFICIAL GAZETTE *from July 1, 1964, through December 31, 1975. These notices and rules changes are currently in effect except as otherwise noted, and are published as a part of our "Better Service to the Public" program.*

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## INFORMATION AND CORRESPONDENCE

(1) INFORMATION RE APPLICATION STATUS

In view of the relatively long pendency of patent applications at the present time, the final disposition of which may, in some cases, be of substantial importance to the public in general or, at least, to persons other than the applicants, it has been decided effective immediately to advise any person who makes written request for information as to the status of a United States application referred to by number in a foreign patent, which patent is identified in the request, whether the application is pending, abandoned or patented and, if patented, what the patent number is. The former practice of giving similar information with respect to an application referred to by number in a United States patent (Manual of Patent Examining Procedure, section 102) will be continued.

EDWARD J. BRENNER,
Dec. 11, 1964. *Commissioner of Patents.*

[809 O.G. 1293]

(2) STATUS OF APPLICATIONS REFERRED TO IN ALLOWED PATENT APPLICATIONS

Hereafter, examiners are authorized to indicate the abandonment status of applications referred to in patent applications ready for issue without a formal examiner's amendment.

In the situations where referred to applications are patented, present procedure permits the entry of "now Patent No. --------" and initialling in the margin by the examiner. Similarly, where the referred to applications are abandoned, the entry "and now abandoned" should be made and initialed in the margin by the examiner.

WILLIAM FELDMAN,
Aug. 21, 1974. *Deputy Assistant Commissioner for Patents.*

[926 O.G. 732]

(3) TELEPHONE NUMBERS ON OFFICE ACTIONS

Effective immediately, the full surname of the Examiner who prepares the Office action will, in all cases, be typed below the action on the left side. The Examiner's telephone number will be typed below his name. This number should be called if the case is to be discussed or an interview arranged.

The Notice of December 10, 1964, 810 O.G. 308, and Change Notice 2–15 are rescinded.

RICHARD A. WAHL,
Apr. 5, 1965. *Superintendent, Patent Examining Corps.*

[813 O.G. 1099]

(4) EXPEDITING PAPERS RELATING TO APPEALS

In order to expedite the handling and processing of all papers relating to appeals, it is essential that all such documents include the Group Number to which the application is assigned, as well as the Appeal Number and Serial Number.

EDWIN L. REYNOLDS,
May 8, 1965. *First Assistant Commissioner.*

[815 O.G. 417]

(5) TELEPHONE NUMBERS ON AMENDMENTS AND OTHER PAPERS

In view of the increased use of telephone interviews regarding matters which can be readily cleared up by a telephone call to applicant or his representative, it is again recommended that amendments and other papers, such as letters of transmittal, include the complete telephone number with area code and extension, preferably near the signature of the writer.

RICHARD A. WAHL,
Mar. 11, 1966. *Assistant Commissioner.*

[825 O.G. 1]

(6) ZIP CODE REMINDER

By Executive Memorandum of June 18, 1965, President Johnson directed all Federal Agencies to take the lead in adopting the ZIP Code system and instructed the Postmaster General to issue regulations governing the use of ZIP Codes by such agencies.

Pursuant to this directive, Section 137.26 has been added to the Postal Manual requiring compliance by Federal Agencies as follows:

1. Effective January 1, 1966, official mailings containing typed or handwritten addresses must include the ZIP Code.
2. Effective January 1, 1967, all Federal Agencies must use the ZIP Code in the addresses on *all* official mail and are required to presort quantity mailings by ZIP code.

TO THIS END, ALL FUTURE LETTERS, COUPONS, AND OTHER PAPERS BEARING THE SENDER'S ADDRESS WHICH ARE MAILED TO THE PATENT OFFICE MUST SHOW THE ZIP CODE DESIGNATION OF BOTH THE SENDER AND THE PATENT OFFICE.

The Patent Office ZIP Code is 20231. This designation should be used when writing to the Patent Office for any matter. In addition, the sender's own ZIP Code designation should be given. The benefits to be gained by the immediate use of ZIP Code are many: positive identification of areas; faster delivery of mail by reducing the number

of handlings from point of origin to destination; and easier identification of post office address.

C. A. KALK,
Mar. 22, 1966. *Director of Administration.*

[825 O.G. 428]

(7) HAND DELIVERY OF DUPLICATE COPY OF PAPERS BY ATTORNEY

The Notice appearing in 83[illegible] O.G. 1 is hereby superseded. The practice set out in the above notice is extended as follows:

In further implementation of the Notice in 829 O.G. 1755 concerning discontinuation of the practice of hand delivery by attorneys or others of officially date stamped papers, it is directed that prompt consideration and appropriate action be taken on the hand-delivered duplicate copy of such papers, which may include amendments, powers to inspect, requests for extension of time, etc.

The effect of such consideration and action should be communicated to applicant or his representative at the earliest practicable time to clarify the status of the case.

If requested, at the conclusion of an interview, it would be appropriate to indicate on the attorney's copy and the Office duplicate copy any agreement reached and to initial and date both copies.

Actual clerical entry of amendatory matter usually will require the presence in the file of the original paper; however, pending receipt of the original, examiner and clerical processing of the application should proceed, based on the duplicate copy, as far as practicable in the circumstances of each case.

RICHARD A. WAHL,
Dec. 21, 1966. *Assistant Commissioner.*

[834 O.G. 829]

(8) HAND DELIVERY OF PAPERS

The notices of November 10, 1969 (869 O.G. 345) and September 8, 1970 (879 O.G. 667), regarding "Hand Delivery of Papers," are superseded and the practice indicated below is hereby made effective.

Any paper which relates to a pending application may be personally delivered to an Examining Group. However, the Examining Group will accept the paper only if: (1) the paper is accompanied by some form of receipt which can be handed back to the person delivering the paper; and (2) the Examining Group being asked to receive the paper is responsible for acting on the paper.

The receipt may take the form of a duplicate copy of such paper or a card identifying the paper. The identifying data on the card should be so complete as to leave no uncertainty as to the paper filed. For example, the card should contain the applicant's name(s), Serial No., filing date and a description of the paper being filed. If more than one paper is being filed for the same application, the card should contain a description of each paper or item.

Under this procedure, the paper and receipt will be date stamped with the Group date stamp. The receipt will be handed back to the person hand delivering the paper. The paper will be correlated with the application and made an official paper in the file, thereby avoiding the necessity of processing and forwarding the paper to the Examining Group via the Mail Room.

The Examining Group will accept and date stamp a paper even though the paper is accompanied by a check or the paper contains an authorization to charge a Deposit Account. However, in such an instance, the paper will be hand carried by Group personnel to the Office of Finance for processing and then made an official paper in the file.

WILLIAM FELDMAN,
Jan. 29, 1974. *Deputy Assistant Commissioner for Patents.*

[919 O.G. 1070]

(9) ATTACHMENTS TO OFFICE ACTIONS

To expedite the preparation and mailing of certain Office actions, the following changes in practice are effective July 1, 1967:

Where references are furnished, applicant's copies of the Office action will be camera reproductions of the ribbon copy instead of the usual carbon copies. The list of reference citations, heretofore typed directly on the action, will be on a separate form, Notice of References Cited, PO–892, attached to applicant's copies of the action.

The manner of furnishing copies of the references remains unchanged.

About Aug. 1, 1967, the use of attachments to the Office action will be extended to include notification of informalities in the application and drawings. Where applicable, Notice of Informal Patent Drawings, PO–948, and Notice of Informal Patent Applications, PO–152 (rev.) will be attached to the first action.

The attachments will bear the same paper number and are to be considered as part of the action.

Replies to Office actions should include the 3-digit Art Unit number to expedite handling within the Office.

RICHARD A. WAHL,
June 29, 1967. *Assistant Commissioner.*

[840 O.G. 711]

APPENDIX A

(10) PUBLIC INFORMATION APPENDIX—PATENT OFFICE

A. *Purpose.*

The purpose of this Appendix is to describe, in general, the public information services of the Patent Office, to describe the places at which and the methods whereby the public may obtain information, make submissions or requests or obtain decisions, to inform the public as to the sources or availability of rules, regulations, procedures, forms, instructions, or other requirements of the Patent Office, which affect the public, and otherwise to comply with the requirements of Section 552 of Title 5, U.S.C. as amended by Public Law 90–23, June 5, 1967 (81 Stat. 54).

B. *Public Information Services.*

(1) The Patent Office provides the public with a wide range of information relating to the organization, structure, description, and functions of the Patent Office. This includes material published regularly on a weekly basis, such as the OFFICIAL GAZETTE, and copies of the patents and trademark registrations identified therein. General information concerning the procedures for obtaining patents or registering trademarks, and for utilizing the search rooms and Scientific Library of the Patent Office is readily available.

(2) Publications of the Patent Office are listed in the catalog of publications sold by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C., 20402. They are also listed in the Introduction of the "Rules of Practice of the United States Patent Office in Patent Cases," and in the pamphlet "General Information Concerning Patents." The Patent Office also publishes a circular "Patent Office Publications," which lists the available publications, and provides information as to price and source. These publications include:

a. Annual Index of Patents.
b. Decisions of the Commissioner of Patents.
c. Manual of Patent Classification, and Classification bulletins.
d. Patent Laws (pamphlet edition).
e. Directory of Registered Patent Attorneys and Agents Arranged by States and Cities.
f. Guide for Patent Draftsmen.

(3) The Patent Office has an Office of Information Services where the public may obtain a list of current publications and general information concerning the functions and services of the Patent Office. Information relating to patents may be obtained from the Patent Reference Branch of the Office of Patent Services, and information relating to trademarks may be obtained from the search room of the Trademark Examining Operation.

C. *Guide to Published Rules and Regulations.*

(1) Patent Office rules of procedure, descriptions of forms, substantive rules of general applicability, and statements of general policy are published in the Federal Register. Rules are currently codified in Title 37, Chapter I, Code of Federal Regulations, and are also available in pamphlet form entitled "Rules of Practice of the United States Patent Office in Patent Cases" and "Trademark Rules of Practice of the Patent Office with Forms and Statutes," each of which is for sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C., 20402.



(2) The Patent Office maintains also an administrative staff manual, entitled "Manual of Patent Examining Procedure," and an index thereto, for the general guidance of its staff and the public. The manual, with its index, as amended, changed, and supplemented from time to time, is available in the Patent Office (the Public Search Room and Library) for inspection and copying, and copies are for sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C., 20402.

D. *Submission of Requests and Applications.*

The established places at which and the methods whereby the public may make requests concerning Patent Office functions, operations, and procedures are listed in Sections B and C of this Appendix.

E. (*Reserved*).

F. *Inspection and Copying of Opinions and Orders.*

(1) Final opinions and orders in the adjudication of patent cases, statements of policy and interpretations, and other material required to be made available for public inspection and copying under 5 U.S.C. 552(a)(2) are made available for such purposes in the search room of the Patent Reference Branch in the Main Commerce Building, 14th Street between Pennsylvania Avenue and Constitution Avenue, NW., Washington, D.C., 20231, readily accessible from the entrance on E Street near 14th Street. Instructions concerning the use of this facility are contained in the introductory portion to the pamphlet edition of the Rules of Practice in Patent Cases, and the pamphlet "General Information Concerning Patents."

(2) Final opinions and orders in the adjudication of trademark cases, statements of policy and interpretations, and other material required to be made available for public inspection and copying under 5 U.S.C. 552(a)(2) are made available for such purposes in the search room of the Trademark Examining Operation * * * from 8:00 a.m. to 6:00 p.m. on workdays only. Instructions concerning trademark operations are contained in the pamphlet "General Information Concerning Trademarks."

G. *Inspection of Bureau Records.*

(1) Applications for patents are required by law to be kept in confidence by the Patent Office and no information concerning such applications may be divulged by the Patent Office without authority of the applicant or owner, unless necessary to carry out the provisions of any Act of Congress or in such special circumstances as may be determined by the Commissioner (35 U.S.C. 122).

(2) Special situations are recognized by the regulations (37 C.F.R. 1.11 and 1.14; Manual of Patent Examining Procedure, section 103), which prescribe the procedures to be followed in the opening of certain patent applications to inspection.

(3) Assignment records, digests, and indexes (37 C.F.R. 1.12) relating to patent applications are not available to the public.

(4) Pending trademark applications are not open to general inspection (37 C.F.R. 2.27).

(5) The procedures for requesting records not disclosed to the public as part of the regular informational activities of the Patent Office) or not included in the material described in Section F, supra, or whose disclosure is not provided for or precluded by the regulations cited in paragraphs (1), (2), (3) and (4) of this section, are prescribed in 37 C.F.R. 1.15.

EDWARD J. BRENNER,
Date: Sept. 12, 1967. *Commissioner of Patents.*

*Published in 32 F.R. 13830, Oct. 4, 1967*

[843 O.G. 1567]

(11) POST CARD RECEIPT REMINDER

Applicants and their attorneys or agents are reminded of the provision in Section 717.01(a) (now Section 503) of the Manual of Patent Examining Procedure relating to the use of post cards as "receipts" of papers filed in the Patent Office.

If a receipt for any paper filed in the Patent Office is desired, it may be had by enclosing with the paper a self-addressed post card identifying the paper. The Patent Office will stamp the receipt date on the card and place it in the outgoing mail.

The identifying data on the card should be so complete as to match the paper with the application or other document to which it is to be associated. For example, the document should be identified by the applicant's name(s), Serial No., filing date, appeal number, interference number, etc., and the paper should be identified by specifying the type thereof, viz, affidavit, amendment, appeal, application papers, brief, drawings, fees, motions, supplemental oath or declaration, petition, etc.

When papers for more than one document are filed under a single cover a return post card should be attached to the paper for *each* document for which a receipt is desired.

RICHARD A. WAHL,
Nov. 21, 1968. *Assistant Commissioner.*

[857 O.G. 667]

(12) OFFICE ACTION—FIRST PAGE FORM

The printed form POL–326 formerly used as the first page of the first Office action, 845 O.G. 1205, has been revised.

The new form is now being attached to all Office actions up to and including final rejections.

RICHARD A. WAHL,
Jan. 22, 1969. *Assistant Commissioner.*

[859 O.G. 677]

(13) OFFICIAL PATENT OFFICE MAILING ADDRESS REMAINS WASHINGTON, D.C.

The official mailing address for all communications sent to the Patent Office remains:

Commissioner of Patents
Washington, D.C. 20231

Any telegrams sent to the Patent Office must also bear the above identical address.

The physical location of the Patent Office is 2021 Jefferson Davis Highway, Arlington, Virginia. This address must not be used when addressing mail to the Patent Office.

No reference to Crystal Plaza, Virginia, should be made in the address of *any* communication intended for delivery to the Patent Office by the Post Office Department or Western Union.

Compliance with this instruction will help prevent any unnecessary delay in the delivery of mail, telegrams, etc.

C. A. KALK,
Feb. 20, 1969. *Director of Administration.*

[860 O.G. 662]

(14) ORDERS FOR COPIES OF FOREIGN PATENTS AND/OR PUBLISHED APPLICATIONS

Some foreign countries are not publishing their patents and/or applications in numerical order. Since the U.S. Patent Office will begin supplying orders for copies of these foreign documents from master microfilm reels made up on weekly or other periodic publishing sequences, effective immediately all orders must include the country, patent or application number, and the publication date (if known) of the ordered document. Reference should be made to Section 901.05(a) of the Manual of Patent Examining Procedure to assist in determining the publication date of the commonly encountered foreign patents and applications.

W. R. ARMSTRONG,
Aug. 21, 1969. *Director, Office of Patent Services.*

[866 O.G. 685]

(15) GROUP NUMBER SHOULD APPEAR ON COMMUNICATIONS RELATING TO PENDING APPLICATIONS

It is again requested that the Group number be typed on amendments and other communications relating to pending applications in order to expedite the handling of mail and to conserve manpower. The number of the Group should be placed on the right-hand side, opposite the Serial Number or name of applicant. In view of the vast amount of mail, con-

tinued careful attention to these details will do much toward avoiding delay in handling of mail.

C. A. KALK,
Nov. 6, 1969. *Director of Administration.*

[869 O.G. 345]

(16) TRANSMITTAL FORMS

As a convenience to attorneys and to standardize processing, forms have been developed for use in transmitting (1) new applications (PO–1082) and (2) amendments adding claims (PO–1083). These forms were approved by a Notice appearing in the Federal Register, November 26, 1969, and are designated 37 CFR 3.51 and 3.52 (869 OG 1033). Attorneys who desire to use these forms may obtain them without charge from the Correspondence and Mail Branch or the Receptionist in Building 3 in Crystal Plaza.

RICHARD A. WAHL,
Jan. 2, 1970. *Assistant Commissioner.*

[870 O.G. 1040]

(17) OFFICE ACTIONS

Effective December 1, 1970, applicants or their attorney or agent will be provided with one carbon copy of all Office actions, and the provision of additional or other reproductions of the ribbon copy will be discontinued.

Heretofore, the Office has provided one or two copies of the examiner's action, depending upon the nature of the action. The practice of furnishing more than one copy will be discontinued and, effective with the above change, the applicant will be furnished one copy of all examiner actions.

RICHARD A. WAHL,
Oct. 21, 1970. *Assistant Commissioner.*

[880 O.G. 740]

(18) IDENTIFICATION FOR APPLICATION CORRESPONDENCE

The Office is continuing to experience difficulty in matching incoming papers with the corresponding application files. This applies especially to responses to Office Actions, powers of attorney, changes of address, status letters, requests for extensions of time, and petitions.

A very necessary part of a complete identification of a pending application is the three-digit Group or Art Unit number, e.g., 110 or 111. Frequently, the Group Art Unit number is entirely omitted, or there are errors in this number. In the latter situation the error often occurs as a result of the case having been reassigned within the Office, and the communication is directed to an Examining Group other than that indicated in the most recent Office Action.

Where the Group Art Unit number is entirely omitted, the routine operations of the Application Branch must be interrupted solely for the purpose of determining the location of the application so that the communication can be properly routed. Under these circumstances the efficiency of the Application Branch is impaired and the incoming paper is delayed in reaching its proper destination. Where such papers are not essential to compliance with a statutory period or time limit for response, they may be returned for completion to identify the location of the files.

To assist the Office in expediting its business, it is requested that ALL papers relating to a pending application include the following information:

1. Serial number (checked for accuracy),
2. Group Art Unit number (copied from filing receipt or most recent Office Action),
3. Filing date,
4. Name of the Examiner who prepared the most recent Office Action.
5. Title of the invention.

To further reduce the burden on the Application Branch and the Examining Groups, it is also requested that the submission of additional or supplemental papers on a newly filed application be deferred until a filing receipt has been received. In the same vein, it would be appreciated if the filing of additional papers, relating to an allowed application were deferred until a notice of allowance (POL–85) was received.

If the above suggestions are adopted the processing of both new and allowed applications could proceed more efficiently and promptly through the Patent Office.

RICHARD A. WAHL,
Mar. 5, 1971. *Assistant Commissioner.*

[885 O.G. 2]

(19) IDENTIFICATION FOR APPLICATION CORRESPONDENCE

The Patent Office has been receiving an excessively large amount of application correspondence having incorrect identifying data, such as incorrect application serial numbers and incorrect Group Art Unit numbers. Attention is invited to the Notice of March 5, 1971 (885 O.G. 2), which sets forth the identifying data which should be included on all papers relating to a pending application. The failure to correctly identify the application to which a paper pertains delays or precludes the matching of the paper with the application, and may result in an inappropriate action being taken in the application, e.g., application being considered abandoned for failure to respond. Particular attention should be paid to the use of the correct application serial number and the correct Group Art Unit number (copied from the most recent Office action).

WILLIAM FELDMAN,
Oct. 2, 1973. *Deputy Assistant Commissioner for Patents.*

[915 O.G. 1164]

(20) NEW DECLARATION FORM

To facilitate electronic data input and to expedite processing of new patent applications, a new declaration form has been devised.

Single copies of the new form are available without charge for direct use or for reproduction purposes and may be picked up from the receptionist in Building No. 3 of the Patent Office at Crystal Plaza. Written requests for the form will be filled only if directed to the Commissioner of Patents, Office of Information Services, Washington, D.C., 20231. A stamped, self-addressed envelope must be enclosed.

RICHARD A. WAHL,
May 28, 1971. *Assistant Commissioner.*

[887 O.G. 1840]

(21) NEW SOLE-JOINT DECLARATION FORM

The sole declaration form, PO–1147, announced by the notice of May 28, 1971 (887 O.G. 1840) has been revised to permit its use in either sole or joint inventor applications. The revised form comprises two pages to provide space for the additional information. In most applications, only page 1 will be necessary, in which case only that page need be signed and submitted. Page 2 would be used only where insufficient space is available on page 1 to fully furnish the required information. If page 2 is used, page 1 need not be signed, and *all* signatures should appear on page 2.

Where appropriate, the present "sole" declaration form may be used.

Specific instructions appear on the form.

Single copies of the new form are available without charge for direct use or for reproduction purposes and may be picked up from the receptionist in Building No. 3 of the Patent Office at Crystal Plaza. Written requests for the form will be filled only if directed to the Commissioner of Patents, Office of Information Services, Washington, D.C., 20231. A stamped, self-addressed envelope must be enclosed.

RICHARD A. WAHL,
Apr. 17, 1972. *Assistant Commissioner.*

[898 O.G. 738]

(22) DECLARATION AND POWER OF ATTORNEY FORM PO–1147 (REVISED) (3–72)

**A revised Declaration and Power of Attorney Form, PO–1147 (Revised) (3–72), was recently issued and is supplied for use as a master copy for reproduction purposes. Experience with the revised form indicates that some confusion has been caused by the reference to "effective" filing date in item 600 of the form. The form is, therefore, being reprinted to delete the word "effective" from the descriptive language appearing in item 600. Persons who have copies of the old form may use the form by deleting the word "effective" before the form is reproduced. In this connection it is noted that the word "effective" appears three times in item 600, once on page 1 and twice on page 2.**

RICHARD A. WAHL,
Aug. 28, 1972. *Assistant Commissioner for Patent Examining.*

[902 O.G. 1172]

(23) DISTRIBUTION OF NEW DECLARATION FORM PO–1147 (REVISED)

In a recent issue of the OFFICIAL GAZETTE (898 O.G. 738) we announced the availability of a new Sole-Joint Declaration Form, PO–1147. The distribution was limited to single copies of the form. We are pleased to report that use of the form has resulted in increased efficiency in processing newly filed applications.

In order to encourage greater use of the form, we now can furnish larger quantities without charge. Accordingly, distribution will be made in single copies or in multiples of 10 forms. Since our supply is limited, only orders for reasonable quantities can be filled.

The forms may be obtained from the receptionist in the lobby of Building 3 at our Arlington, Va. location or by mail request. The latter should be addressed to:

Commissioner of Patents
Washington, D.C. 20231,
Attn: Form Distribution

ROBERT GOTTSCHALK,
Sept. 11, 1972. *Commissioner of Patents.*

[903 O.G. 368]

(24) REVISED DECLARATION FORM

A new declaration form has been printed which includes the language required by Rules 65 and 67 (37 CFR 1.65 and 1.67), as revised May 1, 1975, pertaining to inventors' certificates. To facilitate compliance with these rules and to expedite processing of new patent applications, copies of the above-noted form (PTO–1294) are being made available.

Single copies of the new form are available without charge for direct use or for reproduction purposes and may be picked up from the receptionist in Building 3 of the Patent and Trademark Office at Crystal Plaza. Written requests for the form will be filled only if directed to the Commissioner of Patents and Trademarks. Correspondence and Mail Division, Washington, D.C., 20231. A stamped, self-addressed envelope must be enclosed.

WILLIAM FELDMAN,
Aug. 19, 1975. *Acting Assistant Commissioner for Patents.*

[938 O.G. 946]

(25) PATENT APPLICATION BRANCH SERVICE

In order to expedite the processing of newly filed applications improve the efficiency of the Office, and assist in the effort to normally dispose of patent applications within 18 months of their filing date, cooperation from the patent community is solicited with respect to recent procedural modifications.

Prior to examination concerning patentability, patent applications are now examined for compliance with formal requirements, and actions are mailed requiring correction of stated informalities. Many inquiries have arisen concerning the effect of such actions. Since the actions concerning correction of informalities include the setting of a period for response, failure to respond within the period set results in abandonment of the application.

Inquiries directed to the Application Branch, either in person or by telephone, concerning patent applications should not be made during the morning hours between 8:30 and 10:30.



The letter of transmittal accompanying the filing of continuing applications, particularly streamlined continuations and Rule 147 divisionals, should include such additional information as the identification by serial number of the parent application, its status, and location in the Patent Office. The supplying of this information will permit the processing of these new applications more rapidly than at present.

When a new application is filed with a request to transfer drawings under Rule 88, the application papers should include drawing prints to enable the Application Branch to process the case before transfer of the formal drawings is effected.

RICHARD A. WAHL,
June 1, 1971. *Assistant Commissioner.*

[887 O.G. 1841]

(26) NEW PROCEDURES FOR PROCESSING ORDERS FOR CERTIFIED COPIES WHEN MATERIAL IS NOT AVAILABLE FOR PHOTOCOPYING

The previous practice of the Document Services Division in handling customer's requests for certified copies of material not yet processed in the Application Division has been to return the order to the customer requesting him to reorder 30 days after receipt of his Official Filing Receipt.

In order to improve this procedure, as of August 2, 1971, all requests for certified copies of material that has not been processed in the Application Division and has not been placed on microfiche are processed in the following manner.

1. Each order is given a control number.
2. The customer is notified as follows:
   a. He will receive an acknowledgment of the receipt of his order.
   b. He will be given the assigned control number for ease of reference in case an inquiry is necessary.
   c. He will be informed that his order will be held in the Document Services Division until the copy can be reproduced from microfiche. No definite time can be given.
3. An Advance Order File has been set up in the Service Unit of the Document Services Division and the microfiche is checked daily.

For further service to its customers, the Document Services Division will furnish the Serial Number and Filing Date of the latest application available on microfiche for publication in the OFFICIAL GAZETTE.

ROBERT J. RISH,
Aug. 2, 1971. *Acting Assistant Commissioner for Administration.*

[890 O.G.301]

(27) STATUS INQUIRIES

In an effort to sharply reduce the volume and need for status inquiries, the past policy that diligence must be established by making timely status requests in connection with petitions to revive is hereby discontinued.

When an application has been abandoned for an excessive period before the filing of a petition to revive, an appropriate terminal disclaimer may be required. It should also be recognized that a petition to revive must be accompanied by the proposed response unless it has been previously filed (Rule 137). Also, under Rule 113, "Response to a final rejection or action must include cancellation of, or appeal from the rejection of, each claim so rejected and, if any claim stands allowed, compliance with any requirement or objection as to form."

*New Applications*

Current examining procedures now provide for the routine mailing from the Examining Groups of Form POL–327 in *every* case of allowance of an application except where an Examiner's Amendment is promptly mailed. Thus, the separate mailing of a Form POL–327 or an Examiner's Amendment in addition to a formal Notice of Allowance (POL–85) in all allowed cases would seem to obviate the need for status inquiries even as a precautionary measure where the applicant may believe his new application may have been passed to issue on the first examination. However, as an exception, a

status inquiry would be appropriate where a Notice of Allowance is not received within three months from receipt of either a Form POL–327 or an Examiner's Amendment.

Current examining procedures also aim to minimize the spread in dates among the various examiner dockets of each Art Unit and Group with respect to actions on new applications. Accordingly, the dates of the "oldest new applications" appearing in the OFFICIAL GAZETTE are fairly reliable guides as to the expected time frames of when the Examiners reach the cases for action.

Therefore, it should be rarely necessary to query the status of a new application.

*Amended Applications*

Amended cases are expected to be taken up by the examiner and an action completed within two months of the amendment date. Accordingly, a status inquiry is not in order after response by the attorney until five or six months have elapsed with no response from the Patent Office. A post card receipt for responses to Office actions, adequately and specifically identifying the papers filed, will be considered *prima facie* proof of receipt of such papers. Where such proof indicates the timely filing of a response, the submission of a copy of the post card with a copy of the response will ordinarily obviate the need for a petition to revive. Proof of receipt of a timely response to a final action will obviate the need for a petition to revive only if the response was in compliance with Rule 113.

*In General*

It is expected that this new policy will result in sharply reducing the number of status inquiries and permit the time now spent on them to be used in increasing Patent Office efficiency in other more essential areas.

Such status inquiries as may be still necessary may be more expeditiously processed by the Patent Office if each inquiry includes the application Serial Number, filing date, name of the applicant, name of the Examiner who prepared the most recent Office action, and Group Art Unit (taken from the most recent Office communication) in addition to the last known status of the application, and is accompanied by a stamped return-addressed envelope. Telephone inquiries regarding the status of applications should be directed to the group clerical personnel and not to the examiners. Inasmuch as the official records and applications are located in the clerical section of the Examining Groups, the clerical personnel can readily provide status information without consulting the examiners.

Status replies will be made by the Patent Office clerical support force and will only indicate whether the application is awaiting action by the Examiner or the applicant's response to an Office action. In the latter instance the mailing date of the Office action will also be given.

The Notices of Dec. 5, 1969 (869 O.G. 1031) and Sept. 22, 1965 (819 O.G. 444) are hereby superseded.

RICHARD A. WAHL,
Nov. 24, 1971. *Assistant Commissioner of Patents.*

[893 O.G. 810]

(28) PATENTED FILES SERVICE

Delays have frequently been experienced in receiving files and other papers ordered from the Federal Records Center at Suitland, Md. To provide better service in this respect, the Patent Office has initiated its own pick up and delivery service to and from the storage facility. Customer orders are now normally filled within two days.

Orders for files may be placed at the Attorneys and Record Room Desk, Building 4, Room 1D01. There is no charge for this service.

ROBERT GOTTSCHALK,
Nov. 26, 1971. *Acting Commissioner of Patents.*

[893 O.G. 807]

(29) PUBLIC RECORDS CERTIFICATION DESK

The certification desk, located in Crystal Plaza in the Attorneys and Record Room, Building 4, Room 1D01, provides "on-the-spot" certifying service. This desk handles walk-in requests for certified copies of file wrappers, patented applications, patents, and selected papers from patented application files. The usual fee for this service ($1.00 per certification) may be applied at this location in the form of a paid cash order form, obtainable at the Cashier's Office adjacent the lobby of Building #2.

ROBERT GOTTSCHALK,
Nov. 26, 1971. *Acting Commissioner of Patents.*

[893 O.G. 810]

(30) CUSTOMER RELATIONS CENTER

A Customer Relations Center, located in Crystal Plaza adjacent to the Public Search Room, Building 4, Rooms A102 and A103, has been established to provide a central customer complaint and inquiry service. The Center is staffed with six highly experienced employees who process inquiries concerning copies of U.S. patent documents previously ordered but not received. This Center handles not only walk-in but telephonic, and written requests for assistance as well. In addition to improving customer relations, this service is intended to relieve the primary customer service areas (Patent Copy Sales, Document Services, and Reference Order Branch), and Patent Office officials, of interruptions and irregular demands on their time.

The telephone number for this service is (703) 557–2003.

ROBERT GOTTSCHALK,
Nov. 26, 1971. *Acting Commissioner of Patents.*

[893 O.G. 807]

(31) ACCESS TO PATENT APPLICATION AND INTERFERENCE FILES

In order to insure that access to patent application and interference files is given only to persons who are entitled thereto or who are specially authorized to have access under Rule 14 of the Rules of Practice in Patent Cases, and to insure also that the file record identifies any such specially authorized person who has been given access to a file, the following practice will be observed by all personnel of the Patent Office:

1. Access, as provided for in the Rules of Practice, will be given on *oral request* to any applicant, patentee, assignee, or attorney or agent of record in an application or patent only upon *proof of identity* or upon *recognition* based on personal acquaintance.
2. Where a power of attorney or authorization of agent was given to a registered firm prior to July 2, 1971, access will be given upon oral request as in paragraph 1 above to any registered member or employee of the firm who has signatory power for the firm.
3. Unregistered employees of attorneys or agents, public stenographers, and all other persons not within the provisions of paragraphs 1 and 2 above will be given access only upon presentation of a *written authorization for access* signed by a person specified in paragraph 1 above, which authorization will be entered as a part of the official file.

ROBERT GOTTSCHALK,
Nov. 24, 1971. *Acting Commissioner of Patents.*

[893 O.G. 810]

(32) PATENT OFFICE SERVICES
ADDENDUM TO OFFICIAL GAZETTE NOTICE OF AUG. 8, 1972 (901 O.G. 412)

We wish to call attention to a situation discovered during our study and analysis of the patent copy service. We found that there has been a lack of effective controls affecting orders for printed copies of patents placed by letter, including cash order, and deposit account order forms.

Effective controls for Patent Office coupon orders have been established.

We are now implementing a similar procedure for orders placed by letter, including cash order, and deposit account order forms. It is possible, however, that a few orders submitted in this way in the last few months have gone astray. Accordingly, if you placed such requests for patent copies



prior to July 15, 1972, and have not yet received those copies, we suggest that you submit, to the address given below, a follow-up communication which should identify the original request by date and include the Patent Numbers originally ordered.

Address inquiries to:

Director
Office of Public Services
U.S. Patent Office
Washington, D.C. 20231

ROBERT GOTTSCHALK,
Sept. 7, 1972. *Commissioner of Patents.*

[903 O.G. 368]

(33) PATENT OFFICE SERVICES

A notice concerning delays in furnishing Certified Copies was published Aug. 8, 1972 (901 O.G. 412). This notice announced the initiation of a special "Expedited Service" for obtaining copies of pending applications promptly. As indicated in the notice, this special service would be terminated upon restoration of our regular service to an acceptable level.

I am pleased to report that our regular service has been restored to an acceptable level and this special program is being terminated.

However, our efforts to improve our services in these areas will continue. We have made progress, but are not resting on that record. We recognize that there are still problems of accuracy and quality in the filling of orders. These are currently being examined in an effort to bring about necessary improvements.

Thank you for your cooperation and understanding during this difficult period.

ROBERT GOTTSCHALK,
May 30, 1973. *Commissioner of Patents.*

[911 O.G. 1130]

(34) CHANGE IN COPY CERTIFICATION PROCEDURES.

Pursuant to 28 USC 1744 the Patent Office provides "copies of letters patent or of any records, books, papers or drawings belonging to the Patent Office and relating to patents, authenticated under the seal of the Patent Office and certified by the Commissioner of Patents, or by another officer of the Patent Office authorized to do so by the Commissioner. . . ." In the interest of improved efficiency the Patent Office will, effective immediately, change its method of certifying copies of the recited materials. Thereafter, the certificate and the copy will be secured together by a staple in lieu of the ribbon currently employed. The new procedures will retain the use of the Patent Office seal and the certification by the Commissioner of Patents or other authorized officer in keeping with the requirements of the above statute.

RICHARD A. WAHL,
Sept. 20, 1972. *Acting Commissioner.*

[903 O.G. 368]

(35) PATENT OFFICE BUSINESS HOURS

This procedure is being published to bring to the attention of the public security provisions concerning the Patent Office premises and Patent Office files.

The public is reminded that the Patent Office working hours are 8:30 a.m. to 5:00 p.m. Monday through Friday, excluding legal holidays in the District of Columbia. Outside these hours, only Patent Office employees are authorized to be in areas of the Patent Office other than the Public Search Rooms. Of course, a member of the public engaged in a discussion of business with an Office employee may be invited by the employee to stay beyond Office hours to conclude the discussion.

The hours for the Public Search Room are 8:00 a.m. to 8:00 p.m., and the hours for the Trademark Search Room are 8:00 a.m. to 6:00 p.m. Monday through Friday, excluding legal holidays in the District of Columbia.

During working hours, all applicants, attorneys, and other members of the public should announce their presence to the Office personnel in the area of their visit. In the Examining Groups, visitors should inform the group receptionist of their presence before visiting other areas of the Group.

RENE D. TEGTMEYER,
Sept. 27, 1973. *Acting Commissioner of Patents.*

[915 O.G. 1164]

(36) EARLIER NOTIFICATION OF SERIAL NUMBERS

Various procedures are being revised in an effort to reduce pre-examination processing time for newly filed patent applications and to implement the new Patent Application Locator and Monitoring System. The first change which has been effected results in the assignment of serial numbers in the Correspondence and Mail Division immediately after mail has been opened.

With the implementation of this new procedure, it is no longer necessary to submit two self-addressed post cards when early notification of the serial number is desired. If a self-addressed post card is submitted with a patent application, that post card will be stamped with both the receipt date and serial number prior to returning it to the addressee.

The identifying data on the post card should include: (1) applicant's name(s); (2) title of invention; (3) number of pages of specification, claims, and sheets of drawing; (4) whether oath or declaration used; and (5) amount and manner of paying the fee.

A return post card should be attached to *each* patent application for which a receipt is desired.

This notice supersedes the notice of March 10, 1971 (884 O.G. 970).

WILLIAM I. MERKIN,
*Assistant Commissioner for Administration.*
August 9, 1972.

[902 O.G. 2]

(37) NOTICE TO APPLICANTS, ATTORNEYS AND AGENTS RE PRELIMINARY CLASSIFICATION OF PATENT APPLICATIONS

The Patent Office is initiating a program for expediting newly filed applications through pre-examination steps. This program requires your cooperation to attain the desired result—a reduction in processing time.

We are, therefore, asking you to include a preliminary classification on newly filed applications. The preliminary classification, preferably class and subclass designations, should be identified in the upper right-hand corner of the letter of transmittal accompanying the application papers, for example, "Proposed class 2, subclass 129."

This program is voluntary and the classification submitted will be accepted as advisory in nature. The final class and subclass assignment remains the responsibility of the Patent Office.

RICHARD A. WAHL,
Aug. 11, 1972. *Acting Commissioner of Patents.*

[902 O.G. 376]

(38) CLASSIFICATION OF U.S. PATENTS

The National Technical Information Service of the U.S. Department of Commerce has announced the availability of a new publication in microfilm format entitled "Classification of U.S. Patents" (Patent Office publication PAT 001.1–7306–M). This publication consists of a listing of all U.S. patents and related items in ascending numeric sequence together with the official U.S. classification of each patent, including both the original and all cross-reference classifications. It is offered for sale in the form of a 16mm negative reel microfilm in plain reels or reels packed in any of three types of cartridges.

The current edition lists all patents issued through June 30, 1973 and all reclassifications through December 1972 and includes "Additional Improvement" (AI), design patents (D), reissue design patents (RD), plant patents (PP), reissue patents (RE), patents issued prior to 1836 (X), reissue X

patents (RX), defensive publications (T) and patents. It can be purchased in (1) individual reels ($6.00) or cartridges (three types, all $8.00), (2) a complete set of 18 reels ($74.00) or cartridges ($110) or (3) a partial set of the last 7 reels (12–18) in reels ($30.00) or cartridges ($44.00). See the detailed price table which follows:

CLASSIFICATION OF U.S. PATENTS

(PAT 001.1-7306-M)
June 1973 Edition

| Reel No(s). | NTIS accession No. | Beginning patent number | Ending patent number | Price* |
|---|---|---|---|---|
| Complete set of 18. | COM-73-11470. | ---------- | ---------- | {P=$74.00 M,R,T=$110.00 |
| Partial set of last 7. | COM-73-11471. | 2,244,100 | 3,742,516 | {P=$30.00 M,R,T=$44.00 |
| Individual reels. | | ---------- | ---------- | {P=$6.00 M,R,T=$8.00 |
| 1 | COM-73-11472 | {AI2-AI318 D1-D227,517 PP1-PP119} | PP119 | |
| 2 | COM-73-11473 | {PP120-PP3,369 RD301-RD25,414 RE2-RE27,689 RX35-RX1,217M T628,881-T910,010 X1-X9741M I-192,199} | 192,199 | |
| 3 | COM-73-11474 | 192,200 | 420,199 | |
| 4 | COM-73-11475 | 420,200 | 648,199 | |
| 5 | COM-73-11476 | 648,200 | 876,199 | |
| 6 | COM-73-11477 | 876,200 | 1,104,199 | |
| 7 | COM-73-11478 | 1,104,200 | 1,332,199 | |
| 8 | COM-73-11479 | 1,332,200 | 1,560,199 | |
| 9 | COM-73-11480 | 1,560,200 | 1,788,199 | |
| 10 | COM-73-11481 | 1,788,200 | 2,016,099 | |
| 11 | COM-73-11482 | 2,016,100 | 2,244,099 | |
| 12 | COM-73-11483 | 2,244,100 | 2,472,099 | |
| 13 | COM-73-11484 | 2,472,100 | 2,700,099 | |
| 14 | COM-73-11485 | 2,700,100 | 2,927,999 | |
| 15 | COM-73-11486 | 2,928,000 | 3,155,199 | |
| 16 | COM-73-11487 | 3,155,200 | 3,375,699 | |
| 17 | COM-73-11488 | 3,375,700 | 3,597,399 | |
| 18 | COM-73-11489 | 3,597,400 | 3,742,516 | |

*Prices quoted depend on how film is supplied. The code letters represent the types of service available, as follows:
P=Plain reels in cardboard boxes.
M=Reels in 3M cartridges.
R=Reels in Recordak cartridges.
T=Reels in "Thread Easy" Magazines.
NOTE.—When ordering, the appropriate code letter should be appended to the NTIS accession number, e.g., COM-73-11470-M.

Since this microfilm publication will be updated periodically, customers will always be supplied the latest edition available at the time of the order. To order, customers should write to the National Technical Information Service, U.S. Department of Commerce, Springfield, Virginia 22151, citing the NTIS accession number and description of each item ordered. Payment may be by check or money order or charged to the customer's NTIS deposit account or American Express.

WILLIAM I. MERKIN,
Nov. 21, 1973. *Assistant Commissioner for Administration.*

[917 O.G. 808]

(39) AVAILABILITY OF U.S. PATENT CLASSIFICATION MICROFILM

The Patent Office announces the availability of its microfilm publication, "U.S. Patent Classification—Subclass Listing" (Patent Office Publication PAT-002.1-7312-M), which is offered for sale through the National Technical Information Service (NTIS).

This microfilm presents in sequence by the classes and subclasses of the official U.S. Classification, the patent numbers of the U.S. patents which are classified as "originals" and as "cross-references" in each of the subclasses. Within each subclass, the patent numbers are listed in numerical sequence. A symbol appears in conjunction with patent numbers to denote those patents which are cross-reference classified in a subclass.

All U.S. patents issued through December 1973 (patent number 3,781,913 and reissue patent number 27,855) are included in this publication. It supersedes the microfilm listing, "Cumulative Index to the Classification of Patents," dated February 1969.

The entire publication consists of 7 reels of 16mm negative microfilm which is priced at $30 in plain reels and at $44 in cartridges. A choice of 3M or Recordak cartridges or "Thread Easy" magazines is offered. Individual reels may be purchased at $6 in plain reel or $8 in cartridge form.

Orders must specify the NTIS accession number given below and, also, show, by the appropriate letter code,* the choice of the optional forms in which the buyer desires to receive the microfilm.

| Reel Number | Accession No. | Classes | |
|---|---|---|---|
| 1-7 | COM-74-10740-* | All | |
| 1 | COM-74-10741-* | 2-58 | |
| 2 | COM-74-10742-* | 59-106 | |
| 3 | COM-74-10743-* | 107-165 | |
| 4 | COM-74-10744-* | 166-220 | |
| 5 | COM-74-10745-* | 222-260 | (to subclass 501.15) |
| 6 | COM-74-10746-* | 260-317 | (remainder of 260) |
| 7 | COM-74-10746-* | 318-444 | |

*NOTE.—Insert the letter code representing choice of one of the following optional forms.
P=Plain reel ($30 for entire file; $6 per reel).
M=Reel in 3M cartridge ($44 for entire file; $8 per reel).
R=Reel in Recordak cartridge (same).
T=Reel in "Thread Easy" magazine (same).

Address orders to National Technical Information Service, U.S. Department of Commerce, Springfield, Va. 22151, enclosing payment in check or money order or authorization to charge the amount of the order to the buyer's NTIS deposit account or American Express card, giving the account number.

WILLIAM I. MERKIN,
May 17, 1974 *Assistant Commissioner for Administration.*

[923 O.G. 384]

(40) LISTING OF ERRATA IN THE PATENT OFFICIAL GAZETTE

Effective December 3, 1974, Errata for Classification sequence will be printed at the beginning of each of the major sections: Reissues, Plant Patents, Patents (including General and Mechanical, Chemical, Electrical), and Design Patents.

ROBERT J. RISH,
Oct. 25, 1974. *Acting Assistant Commissioner for Administration.*

[928 O.G. 886]

(41) AVAILABILITY OF U.S. PATENT RECLASSIFICATION MICROFILM

The Patent Office announces the availability of its new microfilm publication "Reclassification Transfer Records."

This official record lists all the Original and Cross-reference Patent classification changes which occur in a reclassification project. This publication begins with the December 1973, reclassification and will be available for all subsequent reclassification projects.

The film is available as separately listed Original and Cross-reference transaction records in three sequences, from old classification to new, in (1) new class/subclass order, (2) Patent number order and (3) old class/subclass order.



The entire publication for December 1973 (Reclassification Order #413) consists of 3 reels of 16mm negative microfilm. This set is available as follows:

| Form of Microfilm | Accession No. | Price |
|---|---|---|
| Plain 16 mm Film Reel | COM-74-11750-P | {$14.00 Domestic 22.00 Foreign |
| Recordak Cartridge | COM-74-11750-R | {20.00 Domestic 28.00 Foreign |
| 3M Cartridge | COM-74-11750-M | {20.00 Domestic 28.00 Foreign |
| Thread Easy | COM-74-11750-T | {20.00 Domestic 28.00 Foreign |

Also available at this time is the *March 1974* reclassification publication (Reclassification Order #414), of 2 reels of 16mm negative microfilm. This film is available as follows:

| Form of Microfilm | Accession No. | Price |
|---|---|---|
| Plain 16mm Film Reel | COM-74-11751-P | {$10.00 Domestic 15.00 Foreign |
| Recordak Cartridge | COM-74-11751-R | {14.00 Domestic 19.00 Foreign |
| 3M Cartridge | COM-74-11751-M | {14.00 Domestic 19.00 Foreign |
| Thread Easy | COM-74-11751-T | {14.00 Domestic 19.00 Foreign |

Orders must specify the NTIS accession number given above and the form in which the buyer desires to receive the microfilm (also given above). Address orders to:

National Technical Information Service
U.S. Department of Commerce
Springfield, Va. 22151

Enclose payment in check or money order or authorization to charge the amount of the order to the buyer's NTIS deposit account or American Express card, giving the account number.

ALFRED C. MARMOR,
Jan. 17, 1974. *Acting Administrator for Documentation.*

[931 O.G. 2]

(42) AVAILABILITY OF U.S. PATENT RECLASSIFICATION MICROFILM

The Patent and Trademark Office announces the availability of the microfilm publication "Reclassification Transfer Records" for Classification Order No. 415, of August 1974. This official record lists all the original and cross-reference patent classification changes which occurred in that reclassification.

The film provides original and cross-reference transaction records from old classification to new in all three of the following sequences:

1. New class/subclass order
2. Patent number order
3. Old class/subclass order

The publication for August 1974 consists of one reel of originals and one reel of cross-references on 16 mm negative microfilm. This set of two reels is available as follows:

| *Form of Microfilm* | *Accession No.* | *Price* |
|---|---|---|
| Plain 16mm Film Reel | COM-75-10160-P | {$ 8.00 Domestic 10.50 Foreign |
| Recordak Cartridge | COM-75-10160-R | {6.00 Domestic 8.50 Foreign |
| 3M Cartridge | COM-75-10160-M | {8.00 Domestic 10.50 Foreign |
| Thread Easy | COM-75-10160-T | {8.00 Domestic 10.50 Foreign |

Orders must specify the NTIS accession number given above and the form in which the buyer desires to receive the microfilm (also given above). Address orders to:

National Technical Information Service
U.S. Department of Commerce
Springfield, Va. 22151

Please enclose payment in check or money order or authorization to charge the amount of the order to the buyer's NTIS deposit account or American Express Card, giving the account number.

C. MARSHALL DANN,
Mar. 4, 1975. *Commissioner of Patents and Trademarks.*

[933 O.G. 2]

(43) AVAILABILITY OF U.S. PATENT RECLASSIFICATION MICROFILM

*(Patent and Trademark Office Publication PAT 031.1-7502-M)*

The Patent and Trademark Office announces the availability of the microfilm publication "Reclassification Transfer Records" for Reclassification Order Number 416, dated February 28, 1975.

This publication lists all the patent classification changes which were effected in that reclassification.

The microfilm provides original and cross-reference transaction records from old classification to new classification in all three of the following sequences:

1. New class/subclass order
2. Patent number order
3. Old class/subclass order

This publication can be used by purchasers to update patent collections which they maintain and listings of patent classification information.

This publication consists of four reels of 16mm negative microfilm and is available as follows:

| *Form Offered* | *NTIS Accession No.* | *Price* |
|---|---|---|
| Plain 16mm Film Reel | COM 75-11331-P | {$18.00 Domestic 28.00 Foreign |
| Recordak Cartridge | COM 75-11331-R | {26.00 Domestic 36.00 Foreign |
| 3M Cartridge | COM 75-11331-M | {26.00 Domestic 36.00 Foreign |
| Thread Easy Cartridge | COM 75-11331-T | {26.00 Domestic 36.00 Foreign |

Orders must specify the NTIS accession number given above including the letter which designates the form in which the purchaser desires to receive the microfilm. Address orders to:

National Technical Information Service
U.S. Department of Commerce
Springfield, Va. 22161

Enclose payment in check or money order or authorization to charge the amount of the order to the purchaser's NTIS deposit account or American Express Card, giving the account number.

ALFRED C. MARMOR,
Oct. 24, 1975. *Administrator for Documentation.*

[940 O.G. 1596]

(44) CHANGE OF ADDRESS

There recently has been an increased incidence in the number of applications suffering from disruptions in communications stemming from failure to notify the Patent and Trademark Office of a change of address on the part of applicant's representative (attorney or agent of record) in each application wherein he holds an active power of attorney. Applications have become abandoned as a result of an Office action being mailed to the old, uncorrected address and thereby failing to reach the representative at his new address sufficiently early to permit him to file a timely response. Accordingly, the requirement set out below is published as a reminder and is designed to ameliorate this problem.

Where an attorney or agent of record (or applicant, if he is prosecuting his application pro se) changes his correspondence address, he is responsible for promptly notifying the Patent and Trademark Office of his new correspondence address (including ZIP code number). A separate notification must be filed in *each application* for which he is intended to receive communications from the Office. The notification should also include his telephone number.

While the notification need take no particular form, it should be provided in a manner calling attention to the fact that a change of address is being made. Thus, the mere inclusion, in a paper being filed for another purpose, of an address different from the previously provided correspondence address, without mention of the fact that an address change is being made, would not ordinarily be recognized or deemed as instructions to change the address on the file record.

It is emphasized that the above-delineated responsibility is *additional* to the separate obligation (see 37 CFR 1.347) of a registered attorney or agent to notify the Attorney's Roster of any change of his address for entry on the register, which

must be done in a letter separate from any notice of change of address filed in individual applications. That obligation continues without change.

The degree of care exercised in adhering to the foregoing requirement for notification of change of address in each concerned application will be a factor for consideration in deciding petitions filed under 37 CFR 1.137 to revive applications which have become abandoned because of a failure to timely receive an Office action addressed to the old address. In such instances, the showing of the cause of unavoidable delay must include an adequate showing that a timely notification of the change of address was filed in the concerned application, in a manner resonably calculated to call attention to the fact that it was a change of address. If no such notification was made, or was made belatedly, the showing must include an adequate explanation of that failure or delay. A showing that notification was made on a paper filed in the Patent and Trademark Office listing *plural* applications as being affected will not be considered a proper notification.

WILLIAM FELDMAN,
*Deputy Assistant Commissioner for Patents.*

May 28, 1975.

[935 O.G. 1352]

(45) EXPRESS MAIL

The Patent and Trademark Office has made an arrangement with the U.S. Postal Service for the delivery of "Express Mail." This arrangement provides for the delivery of "Express Mail" to a Patent and Trademark Office employee in the Department of Commerce Building in Washington, D.C., thus guaranteeing delivery to us in the same manner as "Express Mail" is delivered to any other addressee in the city of Washington. "Express Mail" requires the recipient to indicate both the time and date of delivery. The date which our employee in the Department of Commerce Building receives the mail will be the Official Office Receipt Date.

The address which should be used for "Express Mail" is:

Commissioner of Patents and Trademarks
Washington, D.C. 20231.

WILLIAM I. MERKIN,
*Acting Assistant Commissioner for Administration.*

Feb. 11, 1975.

[932 O.G. 340]

(46) EXPRESS MAIL

This notice is in response to a number of inquiries received in the Patent and Trademark Office regarding the notice on Express Mail of February 11, 1975, published in the OFFICIAL GAZETTE of March 11 1975 (932 O.G. 340).

There are two types of Express Mail delivery offered by the U.S. Postal Service—"Post Office to Addressee" and "Post Office to Post Office." The only type of service which can be used for Express Mail directed to the Patent and Trademark Office is "Post Office to Addressee." This service provides for delivery to one of our employees in Room 1627, Department of Commerce Building, Washington, D.C., no later than 3:00 p.m. of the next workday following its deposit before 5:00 p.m. at any postal facility with an Express Mail window.

The only address that should be used for Express Mail sent to the Patent and Trademark Office is:

"Commissioner of Patents and Trademarks
Washington, D.C. 20231."

"Post Office to Post Office" Express Mail *does not* provide for delivery but instead is retained at the postal facility of the addressee for pickup. The Postal Service *does not* notify the addressee that this type of Express Mail has been received and is awaiting pickup. If not picked up, this mail is held for 15 days and then returned to the sender.

Therefore, since the Patent and Trademark Office does not have resources for picking up any mail, including Express Mail, the "Post Office to Post Office" Express Mail will not reach the Patent and Trademark Office.

WILLIAM I. MERKIN,
*Acting Assistant Commissioner for Administration.*

May 15, 1975.

[936 O.G. 1554]

(47) IMPROVEMENTS FOR THE PUBLIC SEARCH ROOM

The Patent and Trademark Office is making concerted efforts to improve conditions in the Public Search Room to better meet the needs of the users. The emphasis is being placed on actions which are practical and can be instituted immediately.

The most critical need is for additional equipment to house classified patent documents. Search file growth and reclassification projects continue to overcrowd existing filing equipment or relegate entire classes to inaccessible bulk storage. Previous efforts to procure additional storage equipment were frustrated by what appeared to be a lack of floor space, and no additional space was available.

A special task force was recently established to explore the problem with the objective of recommending a solution for immediate implementation. The task force report included a recommendation to avoid the inflexibility of the extremely high cost and excessive delivery time required for the large conventional custom-fabricated file units. Instead, the suggestion was made to purchase small, standard, inexpensive modular units that could be acquired rapidly. After a successful search for modular units that would meet our needs, a test purchase of forty (40) such units was made, and 150,000 patents, which had been stored in boxes, were made accessible for search.

User evaluation of the test purchase units was considered, and a further search for a superior type of standard modular unit identified equipment which, it is believed, will satisfy most of the needs and desires of the users.

As a result of acceptance of modular units, it was determined that by making use of space along walls and at the ends of file columns in the existing area allocated for patent search files and by minor rearrangement of some search desks, it will be possible to house an additional 375 of these smaller filing units. This should be sufficient to provide for search file expansion for the next four years. Moreover, the economic cost of these units will permit their acquisition from available funds.

Procurement of these units is now underway. Installation is expected to begin by November, with expansion of the search files into the new equipment scheduled for completion by June, 1976.

The placement of the new equipment is, of course, a matter of great interest to the users of the Public Search Room. As a result of careful maximization of the floor space available, it will be possible to locate all the new equipment within the present boundaries of the Public Search Room. Every effort has been made to insure a minimal impact on the Search Room from the users' standpoint.

A second item of major concern to users of the Public Search Room is the integrity of the search files. Patents are removed from the file for copying or for other purposes and are not always returned to their proper location. Efforts to improve file integrity, which have been implemented or are contemplated, include the following:

1. A voluntary cooperative program, suggested by users, has been adopted whereby a searcher, on request, is provided by the Office with subclass lists. The searcher in turn informs the Office of any patents missing from the search file. The Office then promptly replaces the missing copies and inserts the record of the integrity check in the appropriate bundle.
2. Measures are under consideration to exercise greater security over the exits from the Search Room to prevent removal of patents from the classified search file.
3. A centralized, coin-operated, copying facility for the entire Search Room, operated by Office employees, is contemplated to replace the present user-operated machines. Patents would be copied only if brought to the copying machines as part of the bundle in which they belong. This will permit immediate replacement of the individual patents and bundles in their proper location after copying.
4. Investigations are being conducted into various systems which would alert a searcher that a patent or patents are missing from a bundle.



In addition, other projects are underway to improve the general condition of the Public Search Room. Among these projects are the following:

1. A directory is being developed which will indicate the specific locations of all classes available in the search file.
2. A guide or fact sheet is planned for the new or "first time" user of the Public Search Room.
3. The relocation and improvement of the viewing equipment for the numeric microfilm files will be made shortly.
4. A refiling, expansion and rearrangement program for the search files which began in September, 1974 has already been completed for classes 2–165. This project has been temporarily suspended due to a lack of storage space, but it will be continued as the new storage equipment becomes available. It will further ultimately result in the bulk of the classes being physically arranged in numerical sequence. This program will also be completed by the end of June, 1976.
5. A program to inventory the reference materials in the Search Room, such as the Classification Manuals and the class definitions, will be instituted with a view toward insuring their accuracy and completeness.

The Patent and Trademark Office is earnestly striving to improve conditions in the Public Search Room. There are many things that can and will be done by the Office to this end. The cooperation of the public in properly utilizing the Search Room resources is also essential to their proper maintenance.

Any comments or suggestions you may have with regard to the Public Search Room would be appreciated and will be given careful consideration. Such comments or suggestions should be directed to the Commissioner of Patents and Trademarks, U.S. Patent and Trademark Office, Washington, D.C. 20231.

C. MARSHALL DANN,
*Commissioner of Patents and Trademarks.*

Aug. 29, 1975.

[938 O.G. 1994]

## RECORDS AND FILES

(48) ACCESSIBILITY OF ASSIGNMENT RECORDS

In view of a number of inquiries as to the manner in which Rule 1.12 of the Patent Office Rules of Practice, as amended August 23, 1965 (819 O.G. 443) is to be applied, the procedure which it is planned to follow in certain types of cases is set forth below.

1. Assignments relating to applications for registration of trademarks will be open to public inspection as heretofore.

2. The Office will not open certain parts only of an assignment document to public inspection. If such a document contains two or more items, any one of which, if alone, would be open to such inspection, then the entire document will be open. Thus, if an assignment covers either a trademark or a patent in addition to one or more patent applications, it will be available to the public ab initio; and if it covers a number of patent applications, it will be so available as soon as any one of them is patented. Assignments relating only to one or more pending applications for patent will not be open to public inspection.

3. If the application on which a patent was granted is a division or continuation of an earlier case, the assignment records of that case will be open to public inspection; similar situations involving continuation in part applications will be considered on their individual merits.

4. Assignment records relating to reissue applications will be open to public inspection.

EDWARD J. BRENNER,
*Commissioner.*

Dec. 15, 1965.

[822 O.G. 769]

(49) NOTIFICATION RE: CONFLICT IN ASSIGNMENT IN CERTAIN APPLICATIONS

Effective September 12, 1966, Assignment Branch will discontinue mailing notification in cases where there is a conflict in assignment between an original application and its divisional, continuation, substitute, or continuation-in-part application.

Assignments from original applications are applied without charge ONLY to divisional, continuation, or substitute applications where the date of the assignment is prior to the filing date of the later-filed application. (Continuation-in-part applications require separate assignments if they are to be issued to the assignee.)

Practitioners are reminded of the provisions of Rule 334. Unless an assignment is filed at or prior to the date of payment of the issue fee, the patent will normally be issued in the name of the inventor.

Section 306 of the Manual of Patent Examining Procedures will be amended appropriately.

W. R. ARMSTRONG,
*Director, Office of Patent Services.*

Concurred:
(signed) R. A. WAHL,
*Assistant Commissioner.*

[830 O.G. 442 (Sept. 12, 1966)]

(50) RECORDING OF INSTRUMENTS

Effective April 1, 1967, the Patent Office will accept and record legible certified copies of original assignments or other instruments.

The certified copy, if not in the English language, will not be recorded unless accompanied by a translation signed by the translator.

Certification shall be to the fact that the instrument submitted is a true copy of the original and shall be made by a notary public or, if in a foreign country, by a consular officer of the United States or an officer authorized to administer oaths and authenticated by a consular officer of the United States.

RICHARD A. WAHL,
*Assistant Commissioner.*

Mar. 3, 1967.

[836 O.G. 1111]

(51) PUBLIC SEARCH ROOM

Due to budget and personnel limitations which took effect on July 1, 1968, it has become necessary to adopt measures that are consistent with these limitations and that will permit continuance of Patent Office activities and facilities without curtailing their use to the public. Among these measures is the service of returning to the files those patent bundles used by the attorneys and the general public in the Public Search Room.

Beginning August 19, 1968, in order that free access to the stacks may be maintained, persons drawing patent bundles from the search files will be expected to return them to the file slots from which they were withdrawn.

This will enable the personnel in the Public Search Room to concentrate their time and efforts on the necessary updating and storage maintenance for improvement of the integrity of the search files.

RICHARD A. WAHL,
*Assistant Commissioner.*

Aug. 12, 1968.

[854 O.G. 287]

(52) REMINDER

*Furnishing Assignment Data at Time of Payment of Base Issue Fee*

Practitioners are once again reminded of Rule 334, revised November 1969, which requires that . . . "At the time of payment of the issue fee, a statement must be furnished indicating whether or not an assignment has been filed with the Patent Office. In the event an assignment has been filed, such statement must include the name of the assignee and indicate whether or not an acknowledgment of a recorded assignment has been received from the Patent Office."

The Issue Fee Transmittal Form POL 85b, revised December 1969 and May 1973, provides space (Item 2) for Assignment Data which should be completed to comply with the

Rule. Unless an assignee's name and address are identified in Item 2 of the Issue Fee Transmittal Form POL 85*b*, the patent will issue to the applicant. *Assignment Data printed on the patent will be based solely on information so supplied.*

A request for correction of error arising from incomplete or erroneous information furnished in Item 2 of POL 85*b* will not be granted as a matter of course and will be subject to adherence to all the requirements of Rule 323.

The recording of instruments in the Assignment Division is not affected by this Notice.

WILLIAM I. MERKIN,
Dec. 19, 1974. *Assistant Commissioner for Administration.*

[930 O.G. 984]

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(53) CERTIFIED COPIES OF APPLICATION AS ORIGINALLY FILED

The Patent Office has discontinued placing the assignments of record on the file wrapper of patent applications, except when a title report is requested or upon allowance of the case. Accordingly, the copies of applications prepared in response to requests for a certified copy of a patent application as filed, will no longer include an indication of assignments. Applicants desiring an indication of assignments of record should request separately certified copies of assignment documents.

ROBERT J. RISH,
*Acting Assistant Commissioner for Administration.*

[887 O.G. 1042 (6-22-71)]

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(54) NUMERICAL COLLECTION OF U.S. PATENTS IN MICROFORM FOR PUBLIC SEARCH ROOM

Effective immediately, the Patent Office will implement a program to make available for use, in the Public Search Room, a complete numerical collection of printed U.S. Patents on 16 mm negative microfilm.

The program will require approximately six months for completion. An adequate number of reader-printers will be installed. The present numerical paper collection (bound volumes) will be removed from the mezzanine area when microfilm for the same patent numbers is available.

RENE D. TEGTMEYER,
*Acting Commissioner of Patents.*

[915 O.G. 378 (10-9-73)]

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## FEES AND PAYMENT OF MONEY

(55) REVISION OF "DISCONTINUANCE OF DEPOSIT ACCOUNT SERVICE FOR SALE OF PATENT COPIES"

In view of the difficulties experienced by many of its customers, the Patent Office is revising the Notice appearing in the December 1, 1964, issue of the *Official Gazette of the U.S. Patent Office*. This Notice—Discontinuance of Deposit Account Service for Sale of Patent Copies—is revised to except certain types of patent copy orders.

The Patent Office will now accept lists of fifty (50) or more numbers arranged in numerical sequence to be charged to Deposit Accounts. Service charges, such as Special Handling and Air Mail postage for these orders, may also be charged to Deposit Accounts.

C. A. KALK,
July 15, 1965. *Director of Administration.*

[818 O.G. 1207]

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(56) FEES IN CONNECTION WITH AMENDMENTS TO PATENT APPLICATIONS

This notice supplements the Notice of September 10, 1965, 818 O.G. 1207, September 28, 1965, relating to the administration of the act of July 24, 1965, Public Law 89-83, increasing certain fees payable to the United States Patent Office.

That act provides for the payment of additional fees on presentation of certain claims during the prosecution of applications. This provision applies in the case of applications filed on or after October 25, 1965, the effective date of the act. In such cases, when any amendment is filed which presents additional claims over the total number covered by fees previously paid, it should be accompanied by any additional fees due.

As in the case of claims presented after an application is filed and before first action, described in the Notice of September 10, 1965, when independent claims are subsequently presented so that the number of uncanceled independent claims in the application as amended exceeds the number of such claims paid for, an additional fee of $10 is due for each such additional claim. Similarly, an additional fee of $2 is due for each claim added in excess of the number of uncanceled claims, independent or dependent, already paid for.

*Treatment of Amendments Unaccompanied by Fees Due*

Amendments filed during and after the prosecution of an application and not accompanied by the entire fee due upon such filing will be treated as follows:

If such an amendment is filed in reply to an Office action it will be regarded as not being fully responsive thereto and the practice set forth in section 714.03 of the Manual of Patent Examining Procedure will be followed, care being taken to avoid any abuse of this practice by attorneys as, for example, by habitual submission of such amendments without fees or with insufficient fees.

If an amendment which is not filed in response to an Office action is of such a nature as to require a fee and is not accompanied by the full fee required, it will not be entered and the applicant will be so advised.

*Amendment During Interference*

An amendment filed in connection with a motion to add counts to an interference (Rule 233) must be accompanied by the claim or claims to be added and with the appropriate fees, if any, which would be due if the amendments were to be entered. It may be that the amendments will never be entered. Only upon the granting of the motion is it necessary for the other party or parties to present the claims, but the fees must be paid whenever presented.

Claims which have been submitted in response to a suggestion by the Office for inclusion in an application must be accompanied by the fee due, if any.

*Amendment After Requirement for Restriction*

After a requirement for restriction or election of species, nonelected claims will be included in determining the fees due in connection with a subsequent amendment unless such claims are canceled.

*Refunds*

Money paid in excess or by mistake in connection with an amendment will be refunded in the usual manner.

Amendments affecting the claims cannot serve as the basis for granting any refund.

Money paid in connection with the filing of a proposed amendment will not be refunded by reason of the nonentry of the amendment.

EDWARD J. BRENNER,
Jan. 13, 1966. *Commissioner of Patents.*

[823 O.G. 814]

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(57) DEPOSIT ACCOUNTS—STATUTORY FEE CHARGES

Beginning on May 1, 1966, and until further notice, statutory fees, including filing fees for patent, design, and trademark applications, issue fees, appeal fees and opposition, cancellation and petition fees may be charged against the deposit accounts provided for by Rule 25(a) of the Rules of Practice in patent cases. During this period the prohibition of Rule 25(b) against such charges will be suspended.

In view of the facts that these fees are indispensable parts of the actions to which they relate and that the charging of a fee against an account which does not contain sufficient funds to cover it cannot be regarded as a payment of the fee, it is evident that the overdrawing of a deposit account may result in the loss of a vital date and may also impose a substantial burden on the Patent Office in making appropriate correction of its records. It is, therefore, necessary that effective steps be taken to avoid such overdrafts, as follows:

Checks of all accounts will be made periodically, and if any account is found to have been overdrawn, it will be immediately removed from the active accounts and no further drafts on it will be honored. Prompt payment of the outstanding balance will be required and the depositor or his attorney may be called on for an itemized statement identifying all statutory fees charged against the account during the period in question in order that it may be ascertained whether any previously granted date should be withdrawn.

It is emphasized that the success of the procedure outlined above depends upon the maintenance of a sufficient balance in deposit accounts at all times to meet any charges made against them. The Office must, therefore, strictly refuse to permit any depositor who has once overdrawn his account to maintain such an account in the future and in the event that any substantial number of overdrafts occurs it may be necessary to reestablish the prohibition of Rule 25(b) against charging statutory fees against deposit accounts.

Accordingly, effective May 1, 1966, the requirement of Rule 25(a) that an amount sufficient to cover all charges made against an account must always be on deposit will be strictly enforced, regardless of whether any fee is included in such charges and where this requirement is not complied with the account involved will be removed from the active accounts.

EDWARD J. BRENNER,
Feb. 23, 1966. *Commissioner.*

[824 O.G. 1200]

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(58) PRACTICE IN THE USE OF ACCOUNTS FOR PAYMENT OF STATUTORY FEES

In the OFFICIAL GAZETTES of March 15, 22, and 29, there appeared copies of an announcement by the Commissioner providing for a trial use of accounts established under Rule 25 for the payment of statutory fees. A number of questions have come up in connection with the use of accounts in the payment of these fees prescribed by Public Law 89-83 and, in the interest of uniform practice, publication of a statement is warranted.

A general direction by an applicant or attorney to charge to an account these fees as they arise in any application prosecuted by the applicant, the attorney, or the firm will not be effective for such a purpose. Authority to make charges will be limited to a particular application.

A separate direction to charge shall be filed for each fee. Each such direction to charge a fee shall be transmitted on a separate sheet of paper and, in the case of fees based on modification of claims shall include the best estimate of the fee due. Failure to include such an estimate provides the basis for a refusal to enter any amendment transmitted therewith, as an incomplete response. Where variable fees are involved inclusion of a direction to charge or credit a deficiency or overpayment would appear appropriate.

An issue fee will not be charged to an account until a notice of allowance has been forwarded and a reply to that notice received.

For the purposes of determining the fee due the Patent Office, a claim will be treated as dependent if it contains reference to one other claim in the application. A claim determined to be dependent by this test will be entered if the fee paid reflects this determination. This does not, however, prevent the rejection of such a claim as improper, if, in fact, it is not a dependent claim.

EDWARD J. BRENNER,
Apr. 12, 1966. *Commissioner of Patents.*

[825 O.G. 1183]

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(59) DEPENDENT CLAIMS

Although the notice published on October 5, 1965, in 819 O.G. 3, explained that for the purposes of the present fee bill, Public Law 89-83, approved July 24, 1965, the Patent Office will consider a proper dependent claim as being one which incorporates by reference a single preceding claim, whether independent or dependent, and includes all the limitations of the claim so incorporated, there appears to be still some uncertainty on this matter and it is therefore thought to be desirable to elaborate it.

Since the initial determination, for fee purposes, as to whether a claim is dependent must be made by persons other than examiners, it is necessary, at that time, to accept as dependent virtually every claim which refers to another claim, without determining whether there is actually a true dependent relationship. Such acceptance does not, however, preclude a subsequent holding by the examiner that a claim is not a proper dependent claim.

An essential characteristic of a proper dependent claim is that it shall include every limitation of the claim from which it depends (35 U.S.C. 112) or in other words that it shall not conceivably be infringed by anything which would not also infringe the basic claim. Thus, for example, if claim 1 recites the combination of elements *a*, *b*, *c* and *d*, a claim reciting the structure of claim 1 in which *d* was omitted or replaced by *e* would not be a proper dependent claim, even though it placed further limitations on the remaining elements or added still other elements.

The fact that a dependent claim which is otherwise proper might require a separate search or be separately classified from the claim on which it depends would not render it an improper dependent claim, although it might result in a requirement for restriction.

The fact that the independent and dependent claims are in different statutory classes does not, in itself, render the latter improper. Thus, if claim 1 recites a specific product a claim for the method of making the product of claim 1 in a particular manner would be a proper dependent claim since it could not be infringed without infringing claim 1. Similarly, if claim 1 recites a method of making a product, a claim for a product made by the method of claim 1 could be a proper dependent claim. On the other hand, if claim 1 recites a method of making a specified product, a claim to the product set forth in claim 1 would not be a proper dependent claim if the product might be made in other ways.

Any claim which is in dependent form but which is so worded that it does not, in fact, include every limitation of the claim on which it depends, will be required to be cancelled as not being a proper dependent claim; and cancellation of any further claim depending on such a dependent claim will be similarly required. The applicant may thereupon amend the claims to place them in proper dependent form, or may redraft them as independent claims upon payment of any necessary additional fee.

The basis for the difference in fees between independent and dependent claims is the fact that the examination of a dependent claim is normally a comparatively simple matter after the claim on which it depends has been examined. This relationship, however, obtains only when the independent claim represents a bona fide attempt to define the invention and to distinguish it from the known prior art. Accordingly, the presentation of a claim which on its face is obviously unpatentable or indefinite, as basis on which other claims are dependent, is not considered to be proper practice. One example of such a practice involves the use of a claim drawn to "all the features of novelty herein disclosed," with other claims, which actually recite the features thought to be novel, being dependent on the first. A similarly objectionable arrangement would involve the use, as a basic independent claim, of a claim merely reciting "a wheeled vehicle," "an amino acid" or "an internal combustion engine."

Such a practice as that just described involves not only an attempt to evade the fee provisions of Public Law 89-83, but also the presentation of a claim known by the attorney or agent presenting it to be unpatentable. Any registered patent attorney or agent who makes a practice of presenting claims of this character may be called on to explain his actions.

(signed) EDWARD J. BRENNER,
June 8, 1966. *Commissioner.*

[828 O.G. 1]

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(60) DEPOSIT ACCOUNTS

The practice instituted on May 1, 1966, pursuant to the notice of February 23, 1966 (824 O.G. 1200), whereby statutory fees may be charged against deposit accounts, and such accounts are closed if overdrawn, has resulted in certain difficulties for the Patent Office and deposit account holders. It has been decided therefore to modify that practice as indicated below.

As was pointed out in that notice, the charging of a fee against an overdrawn account cannot be considered as pay-

ment of the fee until a proper balance is restored or payment is made in some other way. Accordingly, deposit account holders who charge such fees must assume the risk of losing vital dates if they do not maintain a proper balance in their accounts at all times.

Apart from this, however, the overdrawing of an account places a burden on the Patent Office, particularly where a number of items are charged after the overdraft occurs, and it is appropriate that those who are responsible for causing such a condition should bear the cost of correcting it. In view of this fact, and of the hardship frequently caused if an account is permanently closed, the practice of closing deposit accounts merely because they are overdrawn will be discontinued, effective August 1, 1966. In lieu thereof an overdrawn account will be immediately suspended and no charges will be accepted against it until a proper balance is restored, together with a payment of ten dollars to cover the work done by the Patent Office incident to suspending and reinstating the account and dealing with charges which may have been made in the meantime. It is expected, however, that reasonable precautions will be taken in all cases to avoid overdrafts, and if an account is suspended repeatedly it will be necessary to close it.

Similarly, because of the burden placed on the Patent Office incident to the operation of deposit accounts, a charge of ten dollars will be made for opening each new account.

EDWARD J. BRENNER,
June 23, 1966. *Commissioner.*

[828 O.G. 377]

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(61) PRACTICE RE: FILING FEES

It is suggested that attorneys review the notices pertaining to filing fees under the new Fee Act of 1965 appearing at 818 O.G. 1207, September 28, 1965, and 823 O.G. 814, February 15, 1966.

The filing fee includes the basic $65 fee plus an additional fee corresponding to the number and type of claims presented. For filing fee purposes the Patent Office considers any claim that specifically refers back to another claim to be a dependent claim, regardless of statutory class.

It appears that some attorneys are submitting filing fees in excess of their computations, apparently to insure against loss of a filing date should their computations be in error. This is neither necessary nor desirable. The Application Branch has been authorized to accept all applications, otherwise acceptable, if the basic fee of $65 is submitted, and if the deficiency is no more than $25 of the required filing fee, and to require payment of the deficiency within a stated period upon notification of the deficiency. Practitioners are urged to discontinue submitting excessive fees, since processing such fees has proved costly to the Office, and since applicants are believed to be adequately protected against loss of filing date by the practice outlined above.

There appears to be an erroneous impression that a Rule 147 divisional case requires a filing fee based on the claims in the parent case. The 818 O.G. 1207 notice specifically states that an amendment filed with a Rule 147 case will be effective to reduce the number of claims upon which the fee is based.

RICHARD A. WAHL,
June 30, 1966. *Assistant Commissioner.*

[828 O.G. 1085]

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(62) ISSUE FEES

Effective March 31, 1969, the Patent Office will discontinue the practice of estimating the number of printed pages of specification in advance of printing.

Instead, a Minimum Issue Fee will be due three months from the date of the Notice of Allowance. This minimum fee, which consists of $100 plus $10 for the first page of printed specification plus $2 for each sheet of drawing, will be shown on the Notice of Allowance which has been revised to reflect the new practice.

After the patent is printed and the number of pages of specification is found to exceed the one already paid for, a Notice of Balance of Issue Fee Due will be attached to the Grant. Failure to pay this balance within THREE MONTHS FROM THE DATE OF THE PATENT will result in lapse of the patent.

Practitioners are urged to use the special fee transmittal forms provided with the Notice of Allowance and the Notice of Balance of Issue Fee Due.

The above fees will not be accepted from anyone other than the applicant, his assignee, attorney, or a party in interest as shown by the records of the Patent Office.

ATTENTION is also directed to the space designated on the Notice of Allowance Transmittal form PO–85a wherein the name of the assignee is required *if it is desired to have the patent issued to an assignee or assignees.*

RICHARD A. WAHL,
Jan. 31, 1969. *Assistant Commissioner.*

[860 O.G. 2]

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(63) CALCULATION OF ISSUE FEES

Effective October 1, 1974, the Patent Office in calculating the balance of issue fee due, after payment of the Base Issue Fee specified by the Notice of Allowance, shall charge at the rate of $10 a page, as provided in 35 USC 41, for each printed page of specification (including claims) for which payment has not theretofore been received. As the Base Issue Fee includes a $10 charge for one printed page of specification, a balance of fee will be due for each patent which consists of more than one printed page. A "page" consists of one side of a printed sheet containing any amount of specification (including claims). A notification of the Balance of Issue Fee Due will be mailed in each such case along with the original patent grant.

The notice of February 4, 1970 published in the OFFICIAL GAZETTE [872 O.G. 1] and reproduced in the current (*Jan. 1, 1974*) "Consolidated Listing of Recent Official Gazette Notices . . ." [Item 53] is rescinded as of close of business September 30, 1974.

WILLIAM I. MERKIN,
Aug. 1, 1974. *Assistant Commissioner for Administration.*

[925 O.G. 1084]

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(64) FEES IN CONNECTION WITH AMENDMENTS TO PATENT APPLICATIONS

An increasing number of amendments are being received with improper fees. Because of the problems occasioned thereby, it is suggested that attorneys review the notices pertaining to fees and the Office practice related thereto (823 O.G. 814, Feb. 15, 1966; 828 O.G. 1, July 5, 1966; 828 O.G. 1085, July 26, 1966). Attention is invited to the new form 3.52, Amendment transmittal letter, for additional guidance in computing fees (869 O.G. 1036, Dec. 23, 1969). This form may be obtained from the Receptionist in Building 3 of Crystal Plaza. The new loose-leaf rule book, which will soon be available, includes a sample form (No. 52) also. When submitting the new amendment transmittal letter please include the Art Unit and Examiner's name.

The above notices and new form may also be found as items 24, 25, 29 and 147 in the consolidated listing of notices in the OFFICIAL GAZETTE of Jan. 13, 1970.

RICHARD A. WAHL,
Mar. 13, 1970. *Assistant Commissioner.*

[873 O.G. 1]

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(65) EXAMINER AMENDMENTS—CHARGE AGAINST DEPOSIT ACCOUNTS

The Examiner's Amendment practice is hereby extended to include charges against deposit accounts under special conditions. Charges under this practice shall not exceed $50.00 for each patent application.

In order to expedite the issuance of a patent on an application otherwise ready for allowance, an Examiner's Amendment will be acceptable to make a charge against a deposit account provided prior approval is obtained from the attorney or agent. When such an Examiner's Amendment is prepared, the prior approval will be indicated by identification of the name of the authorizing party, the date and type (personal or telephone) of authorization, the purpose for which the charge is made (drawing correction, additional claims, etc.), and the deposit account number. Further identifying data, if deemed necessary and requested by the attorney, should also be included in the Examiner's Amendment.

RICHARD A. WAHL,
Mar. 17, 1970. *Acting Commissioner of Patents.*

[873 O.G. 667]

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(66) CHANGES IN CHARGES FOR COPIES

The Patent Office is announcing a change in the charges for copies of materials produced on coin-operated copiers located at Crystal Plaza. The charge will be 15¢ per page.

This change will be effective within the next 30 to 45 days due to the engineering changes necessary to accommodate the difference in number and value of coins.

The Patent Office will monitor this change for a period of six months to: (1) Evaluate effects on other services, equipment utilization, materials, and facilities; and, (2) Ensure that the new charge of 15¢ per page will enable the Patent Office to fully recover the cost of operating the copiers.

At the end of the period, the data obtained will be evaluated with a view to continuance or discontinuance of the reduced rate.

ROBERT GOTTSCHALK,
June 6, 1972. *Commissioner of Patents.*

[899 O.G. 1230]

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(67) TITLE 37—PATENTS, TRADEMARKS AND COPYRIGHTS

CHAPTER I—PATENT AND TRADEMARK OFFICE
DEPARTMENT OF COMMERCE

PART 1—RULES OF PRACTICE IN PATENT CASES
PART 2—RULES OF PRACTICE IN TRADEMARK CASES

*Revision of Administrative Fees*

On August 21, 1975, notice of proposed rulemaking was published in the Federal Register (40 FR 36573), regarding the proposal of the Patent and Trademark Office to amend Title 37 of the Code of Federal Regulations by amending §§ 1.21, 1.25, 1.165, and 2.6 dealing with administrative fees. Interested persons were given until October 15, 1975, to submit written comments and suggestions. Full and careful consideration was given to the single written comment received.

Amendment of §§ 1.21 and 2.6 is intended to (1) recover increases in material and labor costs for furnishing assignment information, drafting services and classification information, (2) eliminate established fees for drafting services not currently in demand, and (3) establish a new fee. Drafting services for which established fees are eliminated (§ 1.21 (l) and (m)) will be furnished, if requested, at fees based upon actual cost. The new fee is established to recover the cost of servicing deposit accounts. The amendment of §§ 1.25 and 1.165 brings these rules into conformity with the amendment of § 1.21.

In consideration of the comment received, and pursuant to the authority contained in Section 6 of the Act of July 1952, as amended (85 Stat. 364, 35 U.S.C. 6), Parts 1 and 2 of Title 37, Code of Federal Regulations, are hereby amended as set forth below.

1. In § 1.21, paragraphs (e), (j), (k), (l), (m), (q) and (u) are revised to read as follows:

§ 1.21. *Patent and miscellaneous fees and charges.*

* * * * * *

(e) For abstracts of title to each patent or application:

| | |
|---|---|
| For the search, one hour or less, and certificate | $5.00 |
| Each additional hour or fraction thereof | 2.50 |
| For each brief from the digest of assignments, of 200 words or less | 2.00 |
| Each additional 100 words or fraction thereof | .20 |

* * * * * *



(j) For making patent drawings, when facilities are available, the cost for making the same,

| | |
|---|---|
| Rate per hour | 12.00 |
| Minimum charge per sheet | 25.00 |

(k) For correcting patent drawings, the cost of making the correction,

| | |
|---|---|
| Rate per hour | 12.00 |
| Minimum charge | 3.00 |

(l) [deleted]
(m) [deleted]

* * * * * *

(q) List of U.S. Patents:

| | |
|---|---|
| All patents in a subclass, per sheet (containing 100 patent numbers or less) | 1.00 |
| Patents in a subclass, limited by date or patent number, per sheet (containing 50 patent numbers or less) | 1.00 |

* * * * * *

(u) Deposit account, service charge for each month when the balance at the end of the month is below $40 | 2.00

* * * * * *

2. In § 1.25, paragraph (a) is revised to read as follows:

§ 1.25. *Deposit accounts.*

(a) For the convenience of attorneys, agents, and the general public in ordering services offered by the Office, copies of records, etc., special deposit accounts may be established in the Patent and Trademark Office. A minimum deposit of $50.00 or more, depending on the activity of the individual account, is required. At the close of each month's business, a statement will be rendered. A remittance must be made promptly upon receipt of the statement to cover the value of items or services charged to the account and thus restore the account to its established normal deposit value. An amount sufficient to cover all services, copies, etc., requested must always be on deposit. A service charge will be assessed for each month that the balance at the end of the month is below $40.00.

* * * * * *

3. In § 1.165, paragraph (b) is revised to read as follows:

§ 1.165. *Drawings.*

* * * * * *

(b) The drawing may be in color and when color is a distinguishing characteristic of the new variety, the drawing must be in color. Two copies of color drawings must be submitted. Color drawings may be made either in permanent water color or oil, or in lieu thereof may be photographs made by color photography or properly colored on sensitized paper. Permanently mounted color photographs are acceptable. The paper in any case must correspond in size, weight and quality to the paper required for other drawings. See § 1.84. Non-permanently mounted copies will be correctly mounted at applicant's expense, § 1.21(v).

4. In § 2.6, paragraphs (a), (d) and (e) are revised and a new paragraph (f) is added to read as follows:

§ 2.6 *Trademark fees.*

* * * * * *

(a) For each printed copy of a registration with data entered of record as of date of mailing, relating to renewal, cancellation, publication under section 12(c), of the 1946 Trademark Act and affidavits or declarations under sections 8 and 15 of such act.

| | |
|---|---|
| Omitting title | 1.70 |
| Showing title | 3.70 |

* * * * * *

(d) For making drawings, when facilities are available, the cost of making the same,

| | |
|---|---|
| Rate per hour | 12.00 |
| Minimum charge per sheet | 10.00 |

(e) For correcting drawings, the cost of making the correction:

| | |
|---|---|
| Rate per hour (including a photoprint of the uncorrected drawing) | 12.00 |
| Minimum charge | 3.00 |

(f) For abstracts of title to each registration or application:

| | |
|---|---|
| For the search, one hour or less, and certificate | 5.00 |
| Each additional hour or fraction thereof | 2.50 |
| For each brief from the digest of assignments, of 200 words or less | 2.00 |
| Each additional 100 words or fraction thereof | .20 |

• • • • •

Effective Date: These revisions shall become effective February 2, 1976.

Dated: Dec. 4, 1975.

C. MARSHALL DANN,
*Commissioner of Patents and Trademarks.*

DAVID B. CHANG,
*Acting Assistant Secretary for Science and Technology.*

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(68) TITLE 37—PATENTS, TRADEMARKS AND COPYRIGHTS

CHAPTER I—PATENT AND TRADEMARK OFFICE, DEPARTMENT OF COMMERCE

PART 1—RULES OF PRACTICE IN PATENT CASES

*Late Payment of Issue Fee*

On March 25, 1975, notice of proposed rulemaking was published in the Federal Register (40 FR 13221) regarding the proposal by the Patent and Trademark Office to amend Title 37 of the Code of Federal Regulations by amending § 1.316 and by revising § 1.317 dealing with the late payment of issue fees. Interested persons were given until June 4, 1975 to submit written comments and suggestions. Full and careful consideration was given to all written comments received. Upon review of these comments it was recognized that § 1.155 dealing with the issue and term of design patents should also be amended.

The amendment to § 1.155 is to add a new paragraph (b) worded exactly the same as that proposed, and now being promulgated, for paragraph (b) of § 1.316. Since the wording of revised paragraph (b) of § 1.155 is exactly the same as that proposed for paragraph (b) of § 1.316, and the concept involved is exactly the same, further notice and public procedure relative to § 1.155 are found to be unnecessary under 5 U.S.C. 553(a)(3)(B) and (d)(3).

In consideration of the comments received and pursuant to the authority contained in Section 6 of the Act of July 19, 1952 as amended (85 Stat. 364; 35 U.S.C. 6), Part I of Title 37, Code of Federal Regulations is hereby amended as set forth below.

1. Section 1.155 is revised to read as follows:

§ 1.155 *Issue and term of design patents.*

(a) If, on examination, it shall appear that the applicant is entitled to a design patent under the law, a notice of allowance will be sent to him, his attorney, or his agent, calling for the payment of an issue fee in an appropriate amount dependent on the duration of the term desired by the applicant. If this issue fee is not paid within 3 months of the date of the notice of allowance, the application shall be regarded as abandoned.

(b) The Commissioner may accept the late payment of the fee specified in the notice of allowance later than three months after the mailing of the notice as though no abandonment had ever occurred if upon petition the delay in payment is shown to have been unavoidable. The petition to accept the delayed payment must be accompanied by the issue fee or portion thereof specified in the notice of allowance, unless it has been previously submitted, the fee for delayed payment, and a showing in the form of an oath or declaration as to the causes of the delay.

2. In section 1.316, paragraph (b) is revised to read as follows:

§ 1.316 *Application abandoned for failure to pay issue fee.*

• • • • •

(b) The Commissioner may accept the late payment of the fee specified in the notice of allowance later than three months after the mailing of the notice as though no abandonment had ever occurred if upon petition the delay in payment is shown to have been unavoidable. The petition to accept the delayed payment must be accompanied by the issue fee or portion thereof specified in the notice of allowance, unless it has been previously submitted, the fee for delayed payment, and a showing in the form of an oath or declaration as to the causes of the delay.

3. Section 1.317 is revised to read as follows:

§ 1.137 *Lapsed patents; delayed payment of balance of issue fee.*

(a) Any remaining balance of the issue fee is to be paid within three months from the date of notice thereof and, if not paid, the patent will lapse at the termination of the three month period.

(b) The Commissioner may accept the late payment of the balance of the issue fee after the three month period as though no lapse had ever occurred if upon petition the delay in payment is shown to have been unavoidable. The petition to accept the delayed payment must be accompanied by the remaining balance of the issue fee specified in the notice, unless it has been previously submitted, the fee for delayed payment, and a showing in the form of an oath or declaration as to the causes of the delay.

*Effective date.* This revision shall become effective November 1, 1975.

LUTRELLE F. PARKER,
*Acting Commissioner of Patents and Trademarks.*

BETSY ANCKER-JOHNSON,
*Assistant Secretary for Science and Technology.*

[FR Doc.75-25986; Filed 9-29-75; 8:45 am]

*40 FR 44813; Sept. 30, 1975*

[939 O.G. 1662]

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## POWERS OF ATTORNEY

(69) WITHDRAWAL OF ATTORNEY

Attorneys and agents are reminded that by notice published April 18, 1967, in 837 O.G. 667, requests for permission to withdraw as attorney or agent of record, pursuant to Rule 36, should be submitted in triplicate (original and two copies) and should indicate thereon the attorney or agent's present mailing address. The Group No. should also appear on all such requests.

JOSEPH F. NAKAMURA,
Sept. 27, 1973. *Acting Solicitor.*

[915 O.G. 1164]

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(70) RULE 34—APPEARANCE BEFORE BOARD OF APPEALS

Applicants and their attorneys are reminded that Rule 34 provides that *before* any attorney or agent will be allowed to "take action of *any kind* in any application or proceeding, a written power of attorney or authorization . . . must be filed in the particular application or proceeding." [Italics added.]

Henceforth this rule will be strictly enforced. This applies to attorneys appearing at oral hearings before the Board of Appeals.

EDWIN L. REYNOLDS,
July 26, 1967. *First Assistant Commissioner.*

[841 O.G. 669]

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(71) RECOGNITION OF ATTORNEYS AND AGENTS

In connection with the revised rules concerning recognition of attorneys and agents, published in the Federal Register July 2, 1971 (36 F.R. 12616), the Patent Office will operate under the following procedures.

The Patent Office will continue to give effect to powers of attorney and authorizations of agent naming firms filed, with respect to patent applications, before the effective date of the rules, July 2, 1971.

As stated in the revised rules, powers of attorney or authorizations of agent naming firms of attorneys or agents filed in patent applications after July 2, 1971 will not be recognized. However, the Patent Office will construe any such powers or authorizations filed prior to October 1, 1971, as a direction to consider the address of the firm as the correspondence address for the application.

The privilege afforded by revised Rule 34(a) of the Rules of Practice in Patent Cases as to recognition of registered attorneys and agents not of record will apply to all applications whether filed before or after the effective date. Attention is called to the requirement of Rule 34(a) that a paper filed by a registered patent attorney or agent in any application in which he is not of record should include both his signature and registration number.

Powers of attorney and authorizations of agent under Rule 34(b) naming one or more registered individuals may continue to be made.

As prior to the effective date of the revised rules, where a paper is hand delivered to the Office and that paper has been properly signed by a registered attorney or agent whether or not of record in the particular case involved, a duplicate copy may be appropriately marked by the Patent Office employee receiving the original and returned to the person delivering the paper. As an example, a duplicate copy of a request for an extension of time to make a response may be marked approved, initialed or signed, and returned to the delivering person.

WILLIAM E. SCHUYLER, Jr.,
Aug. 5, 1971. *Commissioner of Patents.*

[890 O.G. 2]

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(72) RECOGNITION OF FIRMS OF ATTORNEYS AND AGENTS

The notice of August 5, 1971, appearing in the OFFICIAL GAZETTE September 7, 1971 (890 O.G. 2) is revised as follows.

The originally announced period terminating October 1, 1971, relating to appointments of firms of attorneys or agents, filed in the Patent Office after July 2, 1971, is hereby extended. Accordingly, until further notice, any power of attorney or authorization of agent naming a firm, received in the Patent Office after July 2, 1971, will be construed as a direction to consider the firm name and address as the correspondence address of the application.

ROBERT GOTTSCHALK,
Sept. 27, 1971. *Acting Commissioner of Patents.*

[891 O.G. 886]

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## APPLICATION CONTENT

(73) DECLARATION IN LIEU OF OATH—RIBBONING OF PAPERS UNNECESSARY

Recent legislation, 35 U.S.C. 25, and Rule 68 based thereon permit applicants to make a written declaration in lieu of the customary oath or affirmation which accompanies a patent application.

Such a declaration, even if signed in a country foreign to the United States, need not be ribboned to the other papers.

The declaration, like the oath, is an integral part of the application and must be maintained together therewith. When a declaration is used, it is unnecessary to appear before any official in connection with the making of the declaration.

Further details are given in 29 F.R. 18502, Dec. 29, 1964, 811 O.G. 2.

RICHARD A. WAHL,
Mar. 2, 1965. *Superintendent, Patent Examining Corps.*

[813 O.G. 2]

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(74) GUIDELINES FOR DRAFTING A MODEL PATENT APPLICATION UNDER THE REVISED RULES

The following guidelines illustrate the preferred layout and content for patent applications. They have been prepared to supplement the amendments to the rules which are effective January 1, 1967. These guidelines are suggested for the applicant's use.

*Arrangement and Contents of the Specification*

The following order of arrangement is preferable in framing the specification and, except for the title of the invention, each of the lettered items should be preceded by the headings indicated.

(a) Title of the Invention.
(b) Abstract of the Disclosure.
(c) Cross-References to Related Applications (if any).
(d) Background of the Invention.
1. Field of the Invention.
2. Description of the Prior Art.
(e) Summary of the Invention.
(f) Brief Description of the Drawing.
(g) Description of the Preferred Embodiment(s).
(h) Claim(s).

(a) *Title of the Invention:* (See Rule 72(a).) The title of the invention should be placed at the top of the first page of the specification. It should be brief but technically accurate and descriptive.

(b) *Abstract of the Disclosure:* (See Rule 72(b), MPEP 608.01(a), and 831 O.G. 1328, October 25, 1966.)

(c) *Cross-References to Related Applications:* (See Rule 78 and MPEP 201.11.)

(d) *Background of the Invention:* The specification should set forth the Background of the Invention in two parts:

(1) Field of the Invention: A statement of the field of art to which the invention pertains. This statement may include a paraphrasing of the applicable U.S. patent classification definitions. The statement should be directed to the subject matter of the claimed invention.

(2) Description of the Prior Art: A paragraph(s) describing to the extent practical the state of the prior art known to the applicant, including references to specific prior art where appropriate. Where applicable, the problems involved in the prior art, which are solved by the applicant's invention, should be indicated.

(e) *Summary:* A brief summary or general statement of the invention as set forth in Rule 73. The summary is separate and distinct from the abstract and is directed toward the invention rather than the disclosure as a whole. The summary may point out the advantages of the invention or how it solves problems previously existent in the prior art (and preferably indicated in the Background of the Invention). In chemical cases it should point out in general terms the utility of the invention. If possible, the nature and gist of the invention or the inventive concept should be set forth. Objects of the invention should be treated briefly and only to the extent that they contribute to an understanding of the invention.

(f) *Brief Description of the Drawing:* A reference to and brief description of the drawing(s) as set forth in Rule 74.

(g) *Description of the Preferred Embodiment(s):* A description of the preferred embodiment(s) of the invention as required in Rule 71. The description should be as short and specific as is necessary to adequately and accurately describe the invention.

Where elements or groups of elements, compounds, and processes, which are conventional and generally widely known in the field to which the invention pertains, form a part of the invention described and their exact nature or type is not necessary for an understanding and use of the invention by a person skilled in the art, they should not be described in detail. However, where particularly complicated subject matter is involved or where the elements, compounds, or processes may not be commonly or widely known in the field, the specification should refer to another patent or readily available publication which adequately describes the subject matter.

(h) *Claim(s):* (See Rule 75.) A claim may be typed with the various elements subdivided in paragraph form. There may be plural indentations to further segregate subcombinations or related steps.

Reference characters corresponding to elements recited in the detailed description and the drawings may be used in conjunction with the recitation of the same element or group of elements in the claims. The reference characters, however, should be enclosed within parentheses so as to avoid confusion with other numbers or characters which may appear in the claims. The use of reference characters is to be considered as having no effect on the scope of the claims.

Claims should preferably be arranged in order of scope so that the first claim presented is the broadest. Where separate species are claimed, the claims of like species should be grouped together where possible and physically separated

by drawing a line between claims or groups of claims. (Both of these provisions may not be practical or possible where several species claims depend from the same generic claim.) Similarly, product and process claims should be separately grouped. Such arrangements are for the purpose of facilitating classification and examination.

The form of claim required in Rule 75(e) is particularly adapted for the description of improvement type inventions. It is to be considered a combination claim and should be drafted with this thought in mind.

In drafting claims in accordance with Rule 75(e), the preamble is to be considered to positively and clearly include all the elements or steps recited therein as a part of the claimed combination.

*Oath*

(See Rule 65.) Where one or more previously filed foreign applications are cited or mentioned in the oath, complete identifying data, including the application or serial number as well as the country and date of filing, should be provided.

EDWARD J. BRENNER,
*Commissioner of Patents.*

Date: Oct. 12, 1966.

[832 O.G. 5]

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(75) PLANT PATENT APPLICATIONS—FILING DATE

Applicants and their attorneys are reminded that an application for a patent for a plant must include two copies of the specification, Rule 163(b), and two copies of the drawing when in color, Rule 165(b).

Effective immediately, applications for plant patents which fail to include two copies of the specification and two copies of the drawing when in color will be accepted for filing only. The Application Branch will notify the applicant immediately of this deficiency and require the same to be rectified within one month. Failure to do so will result in loss of filing date.

RICHARD A. WAHL,
*Assistant Commissioner.*

Nov. 21, 1968.

[857 O.G. 668]

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(76) GUIDELINES FOR INCORPORATION BY REFERENCE IN PATENT APPLICATIONS

An application for a patent may incorporate essential material by reference to a United States patent, or an allowed U.S. application, subject to the conditions set out below. Essential material* is defined as that which is necessary (1) to support the claims, or (2) for adequate disclosure of the invention (35 U.S.C. 112). Material which is essential to the referencing application may not be incorporated by reference to patents issued by foreign countries or to non-patent publications. Essential material may not be incorporated by reference to a patent or application which itself incorporates essential material by reference.

The referencing application must include (1) an abstract, (2) a brief summary of the invention, (3) an identification of the referenced patent or application, (4) at least one view in the drawing in those applications admitting of a drawing, and (5) one or more claims. Where appropriate it would be advisable to direct particular attention to specific portions of the referenced patent or application.

If an application is filed with a complete disclosure, essential material may be cancelled by amendment and the *same* material substituted by reference to a patent or a pending and commonly owned allowed application in which the issue fee has been paid. The amendment must be accompanied by an affidavit executed by the applicant or his attorney or agent of record stating that the material cancelled from the application is the *same* material that has been incorporated by reference.

If an application incorporates essential material by reference to a U.S. patent or a pending and commonly owned allowed U.S. application for which the issue fee has been paid, applicant will be required prior to examination to furnish the Patent Office with a copy of the referenced material together with an affidavit executed by the applicant or his attorney or agent of record stating that the copy consists of the *same* material incorporated by reference in the referencing application.

If an application incorporates essential material by reference to a U.S. patent or a pending and commonly owned application other than one in issue with the fee paid, applicant will be required prior to examination to amend the disclosure of the referencing application to include the material incorporated by reference. The amendment must be accompanied by an affidavit executed by the applicant or his attorney or agent of record stating that the amendatory material consists of the *same* material incorporated by reference in the referencing application.

EDWARD J. BRENNER,
*Commissioner.*

Approved: Jan. 15, 1969.

JOHN F. KINCAID,
*Assistant Secretary for Science and Technology.*

*Published in 34 F.R. 883; Jan. 18, 1969*

[859 O.G. 346]

*Non-essential subject matter may be incorporated by reference to patents issued by the United States or foreign countries, prior filed commonly owned patent applications filed in the United States, and non-patent publications for purposes of indicating the background of the invention or illustrating the state of the art.

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(77) INCORPORATION BY REFERENCE—FILING DATE

In clarification of the Notice of December 30, 1968, appearing in the OFFICAL GAZETTE of February 11, 1969, the following amplification is made.

The filing date of any application wherein essential material is incorporated by reference to a foreign patent or to a publication will not be affected because of the presence of such reference. In such a case, as well as any other case which improperly incorporates essential material by reference, the applicant will be required to amend the disclosure to include the material incorporated by reference. The amendment must be accompanied by an affidavit executed by the applicant or his attorney or agent of record stating that the amendatory material consists of the *same* material incorporated by reference in the referencing application.

ERRATUM

Attention is directed to the error in the above-mentioned notice appearing at 859 O.G. 346. Please delete the phrase, "a U.S. patent or", which was erroneously printed in the second line of the last paragraph.

RICHARD A. WAHL,
*Assistant Commissioner.*

Mar. 7, 1969.

[A Notice covering this same subject, in slightly different form, has been published in 34 F.R. 5555, Mar. 22, 1969.]

[861 O.G. 680]

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(78) PHOTOCOPIES OF APPLICATIONS

Many of the patent application papers received by the Patent Office are copies of the original, ribbon copy. These are acceptable if, in the opinion of the Office, they are legible and permanent. Legibility includes ability to be photocopied and photomicrographed so that suitable reprints can be made. This requires a high contrast, with black lines and a white background. Gray lines and/or a gray background sharply reduce photo reproduction quality.

Applicants should make every effort to file patent applications in a form that is clear and reproducible. The Office may accept for filing date purposes papers of reduced quality but will require that acceptable copies be supplied for further processing.

Additionally, legibility of some application papers becomes impaired due to abrasion or aging of the printed material during examination and ordinary handling of the file. It may be necessary to require that clear, legible copies be furnished at later stages after filing, especially when preparing for issue.

RICHARD A. WAHL,
*Assistant Commissioner.*

Jan. 28, 1970.

[872 O.G. 341]



(79) DIVISIONAL APPLICATION PAPERS

In the interest of expediting the processing of newly filed divisional applications, filed as a result of a restriction requirement, applicants are requested to include the appropriate Patent Office classification on the papers submitted.

The appropriate classification for the divisional application may be found in the office communication of the parent case wherein the requirement was made. It is suggested that this classification designation be placed in the upper right hand corner of the letter of transmittal accompanying these divisional applications.

RICHARD A. WAHL,
*Assistant Commissioner of Patents.*

June 5, 1970.

[875 O.G. 702]

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(80) REDUCTION IN PATENT APPLICATION DISCLOSURE

Notice of proposed Guidelines for Preparation of Patent Application Disclosure was published in the Federal Register of January 14, 1969 (34 F.R. 524), and in the OFFICIAL GAZETTE of the Patent Office of February 4, 1969 (859 O.G. 1). Comments from the general public were invited.

After consideration of comments received, new guidelines are deemed unnecessary, even though the average length of specification seems to be increasing. Applicants and their attorneys are reminded that 35 U.S.C. 112 requires inventions to be described "in such full, clear, concise, and exact terms as to enable any person skilled in the art * * * to make and use the same * * *." To satisfy the "concise" requirement, lengthy and unnecessary descriptive detail should be avoided.

WILLIAM E. SCHUYLER, JR.,
*Commissioner of Patents.*

Approved: July 24, 1970.

MYRON TRIBUS,
*Assistant Secretary for Science and Technology.*

[F.R. Doc. 70-9862; Filed July 30, 1970; 8:45 a.m.]

*35 F.R. 12296, July 31, 1970*

[878 O.G. 1]

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(81) USE OF METRIC SYSTEM OF MEASUREMENTS IN PATENT APPLICATIONS

In order to minimize the necessity in the future for converting dimensions given in the English system of measurements to the metric system of measurements when using printed patents as research and prior art search documents, all patent applicants are strongly encouraged to use either (1) only metric (S.I) units, or (2) English units together with their metric system equivalents, when describing their inventions in the specifications of patent applications. This practice, however, is not being made mandatory at this time.

The initials S.I. stand for "Systeme International d'Unites," the French name for the International System of Units, a modernized metric system adopted in 1960 by the International General Conference of Weights and Measures based on precise unit measurements made possible by modern technology.

This request is made as part of the long-range program for conversion to metric units currently being conducted by the Federal Government.

Publications dealing with the metric system are available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 and the American National Standards Institute, 1430 Broadway, New York, N.Y. 10018.

C. MARSHALL DANN,
*Commissioner of Patents.*

July 1, 1974.

[924 O.G. 1104]

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## PRIORITY APPLICATIONS

(82) REISSUE APPLICATIONS—FOREIGN PRIORITY

A "claim" for the benefit of an earlier filing date in a foreign country under 35 U.S.C. 119 must be made in a reissue application even though such a claim was made in the application on which the original patent was granted. However, no additional certified copy of the foreign application is necessary. The procedure is similar to that for "Continuing Applications" in the last paragraph of MPEP 201.14(b).

The heading on printed copies will not be carried forward to the reissue from the original patent. Therefore, it is important that the file wrapper be endorsed under "Claims Foreign Priority."

RICHARD A. WAHL,
*Acting Superintendent Patent Examining Corps.*

[807 O.G. 579 (Oct. 20, 1964)]

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(83) FILING OF PRIORITY PAPERS

In view of the shortened periods for prosecution leading to allowances, it is recommended that priority papers be filed as early as possible. Although Rule 55 permits the filing of priority papers up to and including the date for payment of the final fee, it is advisable that such papers be filed promptly after filing the application. Frequently priority papers are found to be deficient in material respects such as, for example, the failure to include the correct certified copy and there is not sufficient time to remedy the deficiency. Occasionally a new oath may be necessary where the original oath omits the reference to the foreign filing date for which the benefit is claimed. The early filing of priority papers would thus be advantageous to applicants in that it would afford time to explain any inconsistencies that exist or to supply any additional documents that may be necessary.

It is also suggested that a pencil notation of the serial number of the corresponding U.S. application be placed on the priority papers.

RICHARD A. WAHL,
*Assistant Commissioner.*

Dec. 1, 1965.

[821 O.G. 1261]

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(84) PRIORITY PAPERS

Applicants, their attorneys, and agents are reminded of the suggestion found in Section 201.14(a) of the Manual of Patent Examining Procedure that a pencil notation of the Serial Number of the corresponding U.S. application be placed on priority papers filed under 35 USC 119. Such notation should be placed directly on the priority papers themselves even where a cover letter is attached bearing the U.S. application data. Experience indicates that cover letters and priority papers occasionally become separated, and without the suggested pencil notations on the priority papers, correlating them with the corresponding U.S. application becomes exceedingly difficult, frequently resulting in severe problems for both the Office and applicant. Adherence to the foregoing suggestion for making a pencil notation on the priority document of the U.S. application data will result in a substantial lessening of the problem.

WILLIAM FELDMAN,
*Deputy Assistant Commissioner.*

June 20, 1975.

[936 O.G. 786]

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(85) EFFECTIVE DATE OF UNITED STATES PATENT

In section 706.02, delete penultimate paragraph.

Rewrite section 715.01 to read:

The effective date of a United States Patent for use as a prior art reference is not affected by the foreign filing date to which the patentee may be entitled under 35 U.S.C. 119. *In re Hilmer,* 833 O.G. 13, 149 USPQ 480 (CCPA 1966); *Lilly et al.* v. *Brenner,* 153 USPQ 95 (C.A.D.C. 1967). The reference patent is effective as of the date the application for it was filed in the United States (35 U.S.C. 102(e) and 103). *Hazeltine Research, Inc. et al.* v. *Brenner,* 824 O.G. 8 (U.S. Supreme Court 1965).

RICHARD A. WAHL,
*Assistant Commissioner.*

Apr. 5, 1967.

[838 O.G. 1]

(86) PATENT HEADINGS

As a service to the public, beginning with the issue of January 16, 1968, the heading of the printed patent will include all identifying parent data of continuation-in-part applications as is now the practice in continuation, divisional, substitute, and reissue applications. It should be noted, however, that inclusion of this information in the heading does not necessarily indicate that the claims are entitled to the benefit of the earlier filing date.

The above practice will not change the procedure with regard to assignments as set forth in the first sentence of paragraph 2 of Section 306 of the M.P.E.P.

Dec. 18, 1967. RICHARD A. WAHL,
*Assistant Commissioner.*

[846 O.G. 337]

(87) CHAINS OF CONTINUING APPLICATIONS

In view of the decision of the Court of Customs and Patent Appeals in *In re Henriksen* (158 USPQ 224) the application of 35 U.S.C. 120 will no longer be limited to a chain of three successively filed continuing cases.

Accordingly, Change Notice 12–8 is rescinded.

Aug. 9, 1968. RICHARD A. WAHL,
*Assistant Commissioner of Patents.*

[854 O.G. 559]

(88) FOREIGN PRIORITY OF CONTINUING APPLICATION

If the Examiner is aware of the fact that the parent of a continuing application has fully complied with the requirements of 35 U.S.C. 119 and is therefore entitled to the benefit of the filing date of an earlier filed foreign application, he should direct it to the applicant's attention in an Office action, as in the following exemplary language:

"Applicant is reminded that in order to be entitled to priority based on papers filed in parent application Serial No. ---------- under 35 U.S.C. 119, a claim for such priority must be made in this application. In making such claim, applicant may simply call attention to the fact that a certified copy of the foreign application is in the parent application (M.P.E.P. 201.14(b))."

Aug. 30, 1968. RICHARD A. WAHL,
*Assistant Commissioner.*

[855 O.G. 1]

(89) THE PARIS CONVENTION FOR THE PROTECTION OF INDUSTRIAL PROPERTY

*The German Democratic Republic*

The Government of the United States of America considers the accession of the German Democratic Republic to the Paris Convention for the Protection of Industrial Property as revised at Stockholm on July 14, 1967 to be effective as of December 4, 1975.

Consequently, an application filed in the German Democratic Republic on or after December 4, 1975, may form the basis for claiming a right of priority in an application filed with the U.S. Patent and Trademark Office.

Oct. 7, 1975. C. MARSHALL DANN,
*Commissioner of Patents and Trademarks.*

[940 O.G. 2]

(90) GERMANY: NEW REQUIREMENT FOR SUBMISSION OF COPY OF ORIGINAL APPLICATION IN CONVENTION CASES

Under Section 27 of the German Patent Law which came into effect October 1, 1968, all applicants submitting a claim of priority in Germany under the Paris Union will be required to submit a copy of the application upon which the claim for priority is based. The U.S. Patent Office has been advised by the German Office that the copy need *not* be certified correct by the Office in which the application was originally filed.

Accordingly, for U.S. applicants, one method of complying with the new law would be to accompany the German filing with a copy of the prior U.S. applications as filed. This copy can be produced by the applicant himself.

If the applicant does not submit the copy at the time of filing, the German Office will issue, within two months after the German filing, a request to submit the copy. Failure to submit the required copy within two months after notification results in loss of the priority claim.

With respect to applications on file in Germany prior to October 1, 1968, the following applies:

Copies of the original application will not be required for those applications already on file if the serial number of the application on which the priority claim is based had been communicated to the German Patent Office prior to October 1, 1968.

With regard to applications on file prior to October 1, 1968, for which the U.S. serial number is communicated after October 1, 1968, the reques: for the copy of the U.S. application will be made together with the notice preceding the laying open to public inspection of the file of the German application.

Jan. 13, 1968. GERALD D. O'BRIEN,
*Assistant Commissioner.*

[859 O.G. 345]

(91) PARIS CONVENTION FOR THE PROTECTION OF INDUSTRIAL PROPERTY

*Entry Into Force of Articles 1–12*

The Director General of the World Intellectual Property Organization announced on May 25, 1973, the deposit by the United States of letters of ratification of Articles 1–12 of the Paris Convention for the Protection of Industrial Property of 1883, as revised at Stockholm on July 14, 1967, with the declaration of applicability to all territories and possessions of the United States, including the Commonwealth of Puerto Rico. By operation of the Convention, Articles 1–12 will enter into force with respect to the United States on August 25, 1973, three months after the date of the above notification by the Director.

To carry into effect provisions of the Stockholm Revision of the Paris Convention, the United States has enacted Public Law 92–358, July 28, 1972, which in Section (1) amends 35 U.S.C. 119 to accord under certain circumstances rights of priority to a U.S. patent application based on an earlier filed application for an inventor's certificate and in Section (2) amends 35 U.S.C. 102(d) to provide that under certain circumstances an inventor's certificate becomes a statutory bar to the grant of a U.S. patent.

By the terms of this statutory enactment, Section (1) will enter into force with respect to the United States on the date when Articles 1–12 of the Stockholm Revision of the Paris Convention of March 20, 1883 come into force with respect to the United States, which will be August 25, 1973. A Patent Office rule change implementing this section of the public law by the addition of a new paragraph (c) to § 1.55 (37 CFR 1.55(c)) has been adopted and has been published in the FEDERAL REGISTER, Vol. 38, No. 71, on April 13, 1973.

This statutory enactment also provides that Section (2) will take effect six months from the date when Articles 1–12 of the Stockholm Revision of the Paris Convention come into force with respect to the United States. Accordingly, this date will be February 25, 1974.

The full text of Public Law 92–358, dated July 28, 1972 together with the implementing Patent Office regulation, are reproduced below:

PUBLIC LAW 92–358, JULY 28, 1972

To carry into effect a provision of the Convention of Paris for the Protection of Industrial Property, as revised at Stockholm, Sweden, July 14, 1967.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section 119 of title 35 of the United States Code, entitled "Patents" is amended by adding at the end thereof the following paragraph:

"Applications for inventors' certificates filed in a foreign country in which applicants have a right to apply, at their discretion, either for a patent or for an inventor's certificate shall be treated in this country in the same manner and have the same effect for purpose of the right of priority under this section as applications for patents, subject to the same conditions and requirements of this section as apply to applications for patents, provided such applicants are entitled to the benefits of the Stockholm Revision of the Paris Convention at the time of such filing."

Sec. 2. Subsection 102(d) of title 35 of the United States Code is amended to read as follows:

"(d) the invention was first patented or caused to be patented; or was the subject of an inventor's certificate, by the applicant or his legal representatives or assigns in a foreign country prior to the date of the application for patent in this country on an application for patent or inventor's certificate filed more than twelve months before the filing of the application in the United States, or."

Sec. 3. (a) Section 1 of this Act shall take effect on the date when Articles 1–12 of the Paris Convention of March 20, 1883, for the Protection of Industrial Property, as revised at Stockholm, July 14, 1967, come into force with respect to the United States and shall apply only to applications thereafter filed in the United States.

(b) Section 2 of this Act shall take effect six months from the date when Articles 1–12 of the Paris Convention of March 20, 1883, for the Protection of Industrial Property, as revised at Stockholm, July 14, 1967, come into force with respect to the United States and shall apply to applications thereafter filed in the United States.

TITLE 37—PATENTS, TRADEMARKS AND COPYRIGHTS

CHAPTER 1—PATENT OFFICE, DEPARTMENT OF COMMERCE

PART 1—RULES OF PRACTICE IN PATENT CASES

§ 1.55 *Serial number and filing date of application.* • • •

(c) An applicant may under certain circumstances claim priority on the basis of an application for an inventor's certificate in a country granting both inventor's certificates and patents. When an applicant wishes to claim the right of priority as to a claim or claims of the application on the basis of an application for an inventor's certificate in such a country under 35 U.S.C. 119, last paragraph (as amended July 28, 1972), the applicant or his attorney or agent, when submitting a claim for such right as specified in paragraph (b) of this section, shall include an affidavit or declaration including a specific statement that, upon an investigation, he has satisfied himself that to the best of his knowledge the applicant, when filing his application for the inventor's certificate, had the option to file an application either for a patent or an inventor's certificate as to the subject matter of the identified claim or claims forming the basis for the claim of priority.

Dated: August 20, 1973.

RENE D. TEGTMEYER,
*Acting Commissioner of Patents.*

Approved: August 22, 1973.

BETSY ANCKER-JOHNSON,
*Assistant Secretary for Science and Technology.*

[FR Doc. 73–18260; Filed 8–28–73; 8:45 a.m.]

[914 O.G. 1156]

(92) SECTION 102(d), AS AMENDED, EFFECTIVE AS OF FEB. 25, 1974

Public Law 92–358, dated July 28, 1972, amended subsection 102(d) of Title 35 United States Code, to provide that a prior grant of an inventor's certificate, in addition to prior patenting of the invention in a foreign country, may give rise to a statutory bar. As amended, the subsection reads as follows:

"(d) the invention was first patented or caused to be patented, or was the subject of an inventor's certificate, by the applicant or his legal representatives or assigns in a foreign country prior to the date of the application for patent in this country on an application for patent or inventor's certificate filed more than twelve months before the filing of the application in the United States, or".

By the terms of the statute, the above amendment shall take effect six months from the date when Articles 1–12 of the Paris Convention of March 20, 1883, for the Protection of Industrial Property, as revised at Stockholm, July 14, 1967, come into force with respect to the United States and shall apply to applications filed thereafter in the United States. Since the treaty entered into force with respect to the U.S. on August 25, 1973, the above amendment became effective February 25, 1974.

March 5, 1974. C. MARSHALL DANN,
*Commissioner of Patents.*

[921 O.G. 2]

(93) TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

CHAPTER I—PATENT AND TRADEMARK OFFICE DEPARTMENT OF COMMERCE

PART 1—RULES OF PRACTICE IN PATENT CASES

*Listing of Certain Prior Applications*

On June 26, 1974, notice of proposed rule making regarding an amendment of §§ 1.65 and 1.67 of Title 37, Code of Federal Regulations, dealing with the listing of certain prior applications in the application oath or declaration was published in the Federal Register (39 FR 24375). Interested persons were given until September 30, 1974, by Notice published in the Federal Register on August 7, 1974 (39 FR 28439), to submit written comments and suggestions. Full and careful consideration was given to all written comments received. The proposed rule language has been slightly revised.

In consideration of the comments received, and pursuant to the authority contained in section 6 of the Act of July 19, 1952, as amended (85 Stat. 364; 35 U.S.C. 6), Part 1 of Title 37, Code of Federal Regulations, is hereby amended as follows:

1. In § 1.65, paragraph (a) is revised to read as follows:

§ 1.65 *Statement of applicant.*

(a)(1) The applicant, if the inventor, must state that he verily believes himself to be the original and first inventor or discoverer of the process, machine, manufacture, composition of matter, or improvement thereof, for which he solicits a patent; that he does not know and does not believe that the same was ever known or used in the United States before his invention or discovery thereof, and shall state of what country he is a citizen and where he resides and whether he is a sole or joint inventor of the invention claimed in his application. In every original application the applicant must distinctly state that to the best of his knowledge and belief the invention has not been in public use or on sale in the United States more than one year prior to his application or patented or described in any printed publication in any country before his invention or more than one year prior to his application, or patented or made the subject of an inventor's certificate in any foreign country prior to the date of his application on an application filed by himself or his legal representatives or assigns more than twelve months prior to his application in this country. He shall state whether or not any application for patent or inventor's certificate on the same invention has been filed in any foreign country, either by himself, or by his legal representatives or assigns. If any such application has been filed, the applicant shall name the country in which the earliest such application was filed, and shall give the day, month, and year of its filing; he shall also identify by country and by day, month, and year of filing, every such foreign application filed more than twelve months before the filing of the application in this country. (2) This statement (i) must be subscribed to by the applicant, and (ii) must either (a) be sworn to (or affirmed) as provided in § 1.66, or (b) include the personal declaration of the applicant as prescribed in § 1.68. See § 1.153 for design cases and § 1.162 for plant cases.

• • • • •

2. In § 1.67, paragraph (a) is revised to read as follows:

§ 1.67 *Supplemental oath or declaration for matter not originally claimed.*

(a) When an applicant presents a claim for matter originally shown or described but not substantially embraced in the statement of invention or claim originally presented, he

shall file a supplemental oath or declaration to the effect that the subject matter of the proposed amendment was part of his invention: that he does not know and does not believe that the same was ever known or used in the United States before his invention or discovery thereof, or patented or described in any printed publication in any country before his invention or discovery thereof, or more than one year before his application, or in public use or on sale in the United States for more than one year before the date of his application, that said invention has not been patented or made the subject of an inventor's certificate in any foreign country prior to the date of his application in this country on an application filed by himself or his legal representatives or assigns more than twelve months prior to his application in the United States, and has not been abandoned. Such supplemental oath or declaration should accompany and properly identify the proposed amendment, otherwise the proposed amendment may be refused consideration.

• • • • • •

*Effective date.* These amendments shall become effective on May 1, 1975, and shall apply to applications filed after that date.

C. MARSHALL DANN,
*Commissioner of Patents.*

Approved:
DAVID B. CHANG,
*Acting Assistant Secretary for Science and Technology.*

[FR Doc. 75-3736; Filed 2-10-75;8:45 am]

*Published in 40 F.R. 6339, Feb. 11, 1975*

[932 O.G. 340]

## DRAWINGS

(94) PHOTOPRINTS AS DRAWINGS—FILING DATE ONLY

Effective September 1, 1964 the Application Branch is authorized and directed to accept all applications in which photoprints have been submitted in lieu of formal drawings, and to forward them to the Examiner, who will notify the applicant immediately that the application has been accepted *for filing only*, and that to be entitled to examination, the applicant must file formal drawings complying with Rule 84 within 60 days, and pay the cost of comparing the photoprints with the formal drawings.

A comparison charge of $10.00 per hour, with a minimum charge of $10.00 per application is hereby established. This charge may be applied against deposit accounts and authorization to charge such accounts should be included when the formal drawings are filed. For those who have no deposit account acceptance of the formal drawings will be contingent upon payment of the comparison charge within the period set.

This notice supersedes the notice of April 24, 1964, published May 26, 1964, in 802 O.G. 871.

EDWARD J. BRENNER,
July 16, 1964. *Commissioner.*

[805 O.G. 3]

(95) NEW DRAWINGS PREPARED BY PATENT OFFICE

In Section 608.02(x) the paragraphs headed "New Drawings Prepared by Patent Office" are cancelled and the following substituted therefor:

> When new drawings have been required in pending applications and have been prepared by the Office draftsman, they are not sent to the applicant for his signature but a copy (print) is sent to him for his file. The name of the inventor(s) will be printed on the drawings by the Office draftsman.
>
> In the event that the application is in condition for allowance, the application will be sent to Issue immediately after the drawing is prepared.

RICHARD A. WAHL,
Jan. 6, 1966. *Assistant Commissioner.*

[823 O.G. 1]

(96) TRANSFER OF DRAWINGS

In view of the recent amendment of Rule 138 to permit the express abandonment of patent applications by the attorney, there is no longer any sufficient reason for delaying the formal abandonment of an application after all the drawings thereof have been transferred to another case. Accordingly, effective February 1, 1967, no request to transfer all the drawings from a pending application will be granted unless and until a formal abandonment of the application has been filed. In order to insure copendency, such an abandonment may be so worded as to become effective only after the transfer of the drawings has taken place.

EDWARD J. BRENNER,
Dec. 15, 1966. *Commissioner.*

[834 O.G. 431]

(97) GRAPHIC SYMBOLS FOR PATENT DRAWINGS

Rule 84(g) of the Rules of Practice in Patent Cases indicates that graphic drawing symbols and other labeled representations may be used for conventional elements where appropriate, subject to approval by the Office. Also, suitable legends may be used, or may be required, in proper cases.

The Rules of Practice pamphlet has, since the turn of the century, included a section entitled "Symbols for Draftsman" showing various symbols which may be used on patent application drawings. Although these symbols still reflect current practice they are somewhat limited in number and scope. A more complete set of symbols might be beneficial to both the Office and the public since it would foster uniformity of presentation, and more informative drawings. However, for the Office to develop and maintain a substantially complete listing of all graphic drawing symbols would be both difficult and time-consuming.

Therefore, since the American National Standards Institute Inc., 1430 Broadway, New York, N.Y., 10018, publishes a series of publications relating to graphic symbols under its Y32 and Z32 headings, the Office is calling the attention of patent applicants to these symbols for their consideration and use where appropriate in patent drawings. The below listed publications have been reviewed by the Office and the symbols therein are considered to be generally acceptable in patent drawings. Although the Office will not "approve" all of the listed symbols as a group because their use and clarity must be decided on a case-by-case basis, these publications may be used as guides when selecting graphic symbols. Overly specific symbols should be avoided. Symbols with unclear meanings should be labeled for clarification. As noted in Rule 84(g), the Office will retain final authority to approve the use of any particular symbol in any particular case.

The reviewed publications are the following:

| | |
|---|---|
| Y32.2–1970. Graphic Symbols for Electrical and Electronics Diagram | $11.50 |
| Y32.10–1967. Graphic Symbols for Fluid Power Diagrams | 3.00 |
| Y32.11–1961. Graphic Symbols for Process Flow Diagrams in the Petroleum and Chemical Industries | 2.00 |
| Y32.14–1962. Graphic Symbols for Logic Diagrams | 4.75 |
| Z32.2.3–1949 (R1953). Graphic Symbols for Pipe Fittings, Valves and Piping | 2.00 |
| Z32.2.4–1949 (R1953). Graphic Symbols for Heating, Ventilating and Air Conditioning | 2.00 |
| Z32.2.6–1950. Graphic Symbols for Heat-Power Apparatus | 2.00 |

No change in the Rules of Practice is considered necessary at this time.

The above list of publications will be included in the Manual of Patent Examining Procedure.

RICHARD A. WAHL,
May 19, 1972. *Assistant Commissioner.*

[899 O.G. 1230]

(98) LATE SUBMISSION OF FORMAL DRAWINGS

In those situations where an application is filed with informal drawings, applicants are requested to wait until they receive their "Notice of Informal Drawings" form, PO–1094, from the Group Art Unit before submitting the formal drawings and the comparison fee. The letter of transmittal accompanying the formal drawings should identify the Group Art Unit indicated on Form PO–1094. Also, each sheet of drawing should include the serial number and Group Art Unit in the upper right margin. In the past, some drawings have been misdirected because the Group Art Unit indicated on the filing receipt was used rather than that indicated on Form PO–1094.

WILLIAM FELDMAN,
June 28, 1973. *Acting Assistant Commissioner for Patents.*

[912 O.G. 1229]



(99) AVAILABILITY OF PATENT APPLICATION DRAWINGS FOR REPRODUCTION

Clients of private commercial reproduction services requesting patent application drawings to make drawing reproductions for U.S. and foreign filings have caused printing problems and delays in allowed applications in which the Base Issue Fee has been paid.

In order to prevent any delay in the printing and issuance of applications in which the Base Issue Fee has been paid, access to the drawings of patent applications which have been scheduled for printing will not be normally available. Delays in obtaining patent application drawings by commercial reproduction services, after the application has been scheduled for printing, can be avoided if requests for reproductions are made either before or promptly after receipt of the Notice of Allowance and prior to the payment of the Base Issue Fee.

WILLIAM I. MERKIN,
*Acting Assistant Commissioner for Administration.*
May 6, 1975.

[934 O.G. 1324]

## EXAMINATION OF APPLICATIONS

(100) INFORMAL APPLICATIONS OF FOREIGN APPLICANTS

This Notice is of special interest to attorneys and agents prosecuting applications on inventions originating abroad.

Many applications filed in this Office correspond in form and substance to the requirements (regulations) of countries foreign to the United States. Since they were not originally drafted to comply with our Rules of Practice, especially those based on 35 U.S.C. 112, the first examination cannot be the full and complete one contemplated under current examining procedures. This first examination is necessarily limited, under MPEP 702.01, to pointing out the informalities and citing the results of a search, the search being based upon the invention so far as it can be understood from the foreign type of claims, often coupled with a somewhat generalized disclosure. Since U.S. Patent Office policy is to accord equal treatment to *all* cases regardless of origin, current examining procedures as explained in the address reprinted in 803 O.G. 893, subject these applications to final determination on the second action. It is obviously to applicant's advantage to *file* the application with an adequate disclosure and with claims which conform to the U.S. Patent Office usages and requirements. This should be done whenever possible. If, however, due to the pressure of a Convention deadline or other reasons, this is not possible, applicants are urged to submit *promptly, preferably within three months after filing,* a preliminary amendment which corrects the obvious informalities. The informalities should be corrected to the extent that the disclosure is readily understood and the claims to be initially examined are in proper form, particularly as to dependency, and otherwise clearly define the invention. "New matter" must be excluded from these amendments since preliminary amendmenta do not enjoy original disclosure status, section 608.04(b), MPEP.

EDWARD J. BRENNER,
Mar. 4, 1965. *Commissioner of Patents.*

[812 O.G. 1295]

(101) TERMINAL DISCLAIMERS FILED IN APPLICATIONS

In view of the increasing number of terminal disclaimers being filed in pending applications under 35 U.S.C. 253, it is considered advisable to point out the practice to be followed in such cases.

Since the claims of pending applications are subject to cancellation, amendment or renumbering, a terminal disclaimer directed to a particular claim or claims will not be accepted; the disclaimer must be of a terminal portion of the term of the entire patent to be granted. The statute does not provide for conditional disclaimers and accordingly, a proposed disclaimer which is made contingent on the allowance of certain claims cannot be accepted. The disclaimer should identify the disclaimant and his interest in the application and should specify the date when the disclaimer is to become effective. An acceptable form for such a disclaimer is as follows:

To the Commissioner of Patents:

Your petitioner, John Doe, residing at _____ in the county of _____ and State of _____ represents that he is (here state exact interest of the disclaimant and, if he is an assignee, set out the liber and page or reel and frame where the assignment is recorded) of application No. _____, filed on the _____ day of _____ 19 -- for _____. Your petitioner hereby disclaims all that portion of the term of any patent to be issued on the said application subsequent to _____ 19--.

The disclaimer must be accompanied by the statutory fee.

EDWARD J. BRENNER,
Apr. 26, 1965. *Commissioner.*

[814 O.G. 359]

(102) "SPECIAL" EXAMINING PROCEDURES FOR CERTAIN NEW APPLICATIONS

The trial of "Special" Examining Procedure for Certain New Applications as announced in 812 O.G. 953 and later modified by 817 O.G. 423 indicates the desirability of making such procedure available on a standard operating basis. Accordingly, an additional category is being added to the list of situations in which an application may be advanced out of turn for examination, Rule 102 and M.P.E.P. 708.01 and 708.02. The M.P.E.P. will be rewritten to incorporate this practice.

Certain further modifications have been incorporated into the conditions and procedure; most importantly, the new case now may be a continuing or divisional application, the prohibition against an application having an earlier effective U.S. filing date has been removed. Original limits on filing date and on number in any Group have previously been deleted.

The full text of conditions and procedures now applicable appears below, and the notices in 812 O.G. 953 and 817 O.G. 423 are accordingly rendered obsolete.

REQUIREMENTS AND PROCEDURES TO EFFECT ACCELERATED EXAMINATION OF NEW APPLICATIONS

*Requirements Precedent to Grant of Special Status for Accelerated Examination*

A new application (one which has not received any examination by the examiner) may be granted special status provided that applicant (and this term includes applicant's attorney or agent) concurrently:

(a) Submits a written petition to make special.
(b) Agrees that the application will not include more than ten claims at any time. Should the pending application contain more than ten claims when the request for special status is filed, an amendment must be proposed at that time to reduce the number to not more than ten, which amendment will be entered only if the special status is granted. All of the claims presented for this special prosecution must obviously be directed to a single invention.
(c) Submits a statement that a pre-examination search was made, and specifying whether by the inventor, attorney, professional searchers, etc., and listing the field of search by class and subclass, publication, chemical abstracts, foreign patents, etc.

(d) Submits one copy each of the references deemed most closely related to the subject matter encompassed by the claims.

(e) Submits a detailed discussion of the references, which discussion points out, with the particularity required by Rule 111(b) and (c), how the claimed subject matter is distinguishable over the references. Where applicant indicates an intention of overcoming one of the references by affidavit under Rule 131, the affidavit must be submitted before the application is taken up for action, but in no event later than one month after request for special status.

In those instances where the request for this special status does not meet all the prerequisites set forth above, applicant will be notified and the defects in the request will be stated. The application will remain in the status of a new application awaiting action in its regular turn. In those instances where a request is defective in one or more respects, applicant will be given *one* opportunity to perfect the request. If perfected, the request will then be granted.

Once a request has been granted, prosecution will proceed according to the procedure set forth below; there is no provision for "withdrawal" from this special status.

*Special Examining Procedure*

1. The new application, having been granted special status as a result of compliance with the requirements set out in the section titled "Requirements Precedent to Grant of Special Status for Accelerated Examination," supra, will be taken up by the Examiner before all other categories of applications except those clearly in condition for allowance and these with set time limits, such as Examiner's Answers, Decisions on Motions, etc., and will be given a complete first action which will include *all* essential matters of merit as to all claims. The Examiner's search will be restricted to the *subject matter encompassed by the claims.* This first action will terminate with the setting of a three-month shortened period for response.

2. During the three-month period for response, applicant is encouraged to arrange for an interview with the Examiner in order to resolve, with finality, as many issues as possible. In order to afford the Examiner time for reflective consideration before the interview, applicant or his representative should cause to be placed in the hands of the Examiner at least one working day prior to the interview, a copy (clearly denoted as such) of the amendment that he proposes to file in response to the Examiner's action. Such a paper will not become a part of the file, but will form a basis for discussion at the interview.

3. Subsequent to the interview, or responsive to the Examiner's first action if no interview was had, applicant will file his "record" response. The response at this stage, to be proper, must be restricted to the rejections, objections, and requirements made. Any amendment which would require broadening the search field will be treated as not a proper response.

4. The examiner will within one month from the date of receipt of applicant's formal response, take up the application for final disposition. This disposition will constitute either a final action which terminates with the setting of a three-month period for response, or a notice of allowance. No further response will be made by the Examiner after a final action with the exceptions that (a) an Examiner's Answer may be prepared in response to an appeal brief, or (b) the application may be passed to issue.

5. A personal interview after final Office action will not be permitted unless requested by the Examiner. However, telephonic interviews will be permitted where appropriate for the purpose of correcting any minor matters which remain outstanding.

RICHARD A. WAHL,
Dec. 14, 1965. *Assistant Commissioner.*

[822 O.G. 2]

(103) SPECIAL EXAMINING PROCEDURE FOR CERTAIN NEW APPLICATIONS

The practice of granting special status to certain new applications as set forth in the Notice of December 14, 1965, 822 O.G. 2, is modified to the extent indicated below in the case where the Office determines that all of the claims presented are not obviously directed to a single invention.

Where the claims in a case are directed to more than one invention, an election without traverse will be a prerequisite to the grant of special status.

The election may be made by applicant at the time of filing the petition for special status. Should applicant fail to include an election with the original papers or petition and the Office determines that a requirement should be made, the established telephone restriction practice will be followed.

If otherwise proper, examination on the merits will proceed on claims drawn to the elected invention.

If applicant refuses to make an election without traverse, the application will not be further examined at that time. The petition will be denied on the ground that the claims are not directed to a single invention, and the application will await action in its regular turn.

Divisional applications directed to the non-elected inventions will *not* automatically be given special status based on papers filed with the petition in the parent case. Each such application must meet on its own all requirements for the new special status.

RICHARD A. WAHL,
Mar. 21, 1967. *Assistant Commissioner.*

[837 O.G. 667]

(104) SPECIAL EXAMINING PROCEDURE

The Special Examining Procedure whereby a new application may be granted special status and advanced for examination is hereby revised to remove the condition limiting the application to no more than ten claims. The petition for special status will be granted regardless of the number of claims pending in the application at any time provided all other remaining conditions of this program are met (see MPEP 708.02).

RICHARD A. WAHL,
June 12, 1968. *Assistant Commissioner.*

[852 O.G. 509]

(105) APPLICATIONS TO BE TAKEN UP SPECIAL

Hereafter the existence of the following facts will place the application concerned in the category of special cases, i.e., those to be advanced out of regular order for examination.

Once a case is taken up for action by an Examiner according to its effective filing date, it should be treated as special by any Examiner, Art Unit or Group to which it may subsequently be transferred. Exemplary situations include: (1) new cases transferred as the result of a telephone election, and (2) cases transferred as the result of a timely response to any official action.

RICHARD A. WAHL,
Feb. 29, 1968. *Assistant Commissioner.*

[850 O.G. 4]

(106) ENVIRONMENTAL QUALITY

In signing the National Environmental Policy Act on the first day of this decade, President Nixon declared, "The 1970's absolutely must be the years when America pays its debt to the past by reclaiming the purity of its air, its waters and our living environment." This landmark legislation declares that it is the continuing policy of the Federal Government to use all practicable means and measures to foster and promote the general welfare, create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans. The Act further directs that, to the fullest extent possible, the policies, regulations, and public laws of the United States shall be interpreted and administered in accordance with the policies set forth in this Act.

In accordance with the desires of the President and this mandate of the Congress, the Patent Office will accord "special" status to all patent applications for inventions which materially enhance the quality of the environment of mankind by contributing to the restoration or maintenance of the basic life-sustaining natural elements—air, water, and soil. In order that the Patent Office may implement this procedure, we request that all applicants desiring to participate in this program request that their applications be accorded "special" status. Such requests should be written, should identify the applications by serial number and filing date, and should be accompanied by affidavits or declarations under Rule 102 explaining how their inventions contribute to the restoration or maintenance of one of these life-sustaining elements.

WILLIAM E. SCHUYLER, JR.,
Jan. 29, 1970. *Commissioner of Patents.*

[871 O.G. 673]



(107) APPLICATIONS RELATED TO ENERGY

In his Message of April 18, 1973, to The Congress "Concerning Energy Resources," the President stated that "with 6 percent of the world's population, we consume almost a third of all the energy used in the world." The President noted that our energy demands "now outstrip our available supplies, and at our present rate of growth, our energy needs a dozen years from now will be nearly double what they were in 1970." The President's Message of April 18 called for the development of a more comprehensive, integrated national energy policy and announced specific steps to carry out the policy. On June 29, 1973, the President announced a series of additional actions to deal with the Nation's energy problem. Among those actions were major efforts in energy research and development and in energy conservation.

In order to enhance and further the goals and actions announced by the President, the Patent Office will, on request, accord "special" status to all patent applications for inventions which materially contribute to (1) the discovery or development of energy resources, and (2) the more efficient utilization and conservation of energy resources. Examples of inventions in category (1) would be those relating to further developments in fossil fuels (natural gas, coal, and petroleum), nuclear energy, solar energy, etc. Category (2) would include inventions relating to the reduction of energy consumption in combustion systems, industrial equipment, household appliances, etc. In order that the Patent Office may implement this procedure, we request that all applicants desiring to participate in this program request that their applications be accorded "special" status. Such requests should be written, should identify the application by serial number and filing date, and should be accompanied by affidavits or declarations under rule 102 by the applicant or his attorney or agent explaining how the invention materially contributes to category (1) or (2) set forth above.

Requests should be addressed to the Commissioner of Patents, Washington, D.C. 20231.

RENE D. TEGTMEYER,
Date: Oct. 26, 1973. *Acting Commissioner of Patents.*
Approved:
BETSY ANCKER-JOHNSON, Ph.D.,
*Assistant Secretary for Science and Technology.*

[916 O.G. 2]

(108) PROSECUTION OF PATENT APPLICATIONS AFTER FINAL ACTION

Experience over the past several months indicates the need to re-emphasize certain areas of examining procedure outlined In Assistant Commissioner Wahl's address to the Patent Examining Corps on September 24, 1965 (819 O.G. 893). Certain paragraphs or parts thereof are quoted below, with emphasis added.

"It is planned, accordingly, that prosecution before the examiner should be essentially concluded after applicant's first response and the examiner's reply thereto. *No amendments to claims, nor new claims, should be entered after final rejection, except in rare instances, unless it is readily apparent that these place the case in condition for allowance or materially reduce or simplify the issues for appeal. Also, no amendments should be entered which raise new issues or require further search.* However, if a response to a final rejection is received and it would clearly place the case in condition for allowance except for minor matters which could be cleared up over the telephone, the examiner should telephone applicant or his attorney or agent to try to promptly clear up such matters."

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*"In general, a very complete and thoroughly considered first response by applicant will be in order because it will determine the form and content of the claims, not only for the final consideration by the examiner, but also by the Board of Appeals if appeal be taken.* In this connection, attention is directed to suggestions set forth in notices in the OFFICIAL GAZETTE in recent years that applicant should include in his application at the time of filing, or after the first complete action, the most detailed claim that he would be willing to accept as well as the broadest claim to which he considers himself entitled."

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"A third change in procedure is that in all cases wherein the examiner decides that a requirement for restriction to one invention or for election of species must be made, a telephone call will be made to applicant or his representative advising him of the situation and requesting a prompt election by return telephone call if the decision cannot be made immediately. When the election is made by telephone, the examiner in his action will make of record the complete requirement and will state the date of the call, the name of the applicant or his representative who made the election, and the result of the election. Such restriction or election requirements will, of course, be subject to written requests for reconsideration (traverse) in accordance with Rule 143. If no reply is received to the examiner's telephoned requirement within a reasonable period, about three working days, he will proceed to make the requirement in a written action as heretofore."

In further implementation of these procedures, the following paragraphs add further details to take effect on the date of this notice and to apply to all Office actions taken or written, and to all communications received from applicant, on or after the effective date.

FINAL ACTION AND PRE-APPEAL

*The prosecution of an application before the examiner should ordinarily be concluded with the final action. However, one personal interview and one written response by applicant may be entertained after such final action if circumstances warrant.* Thus, only one request by applicant for a personal interview after final should be granted, but in exceptional circumstances, a second personal interview may be initiated by the *examiner* if in his judgment this would materially assist in placing the application in condition for *allowance.* Any amendment submitted under Rule 116(a) and Rule 116(b) *for purposes of appeal* should be presented in the first response after final action and will be considered as heretofore; if any amendments are submitted after the examiner's reply to such first response, they should be refused entry as not warranted at this stage of prosecution, even though such amendments allegedly present rejected claims in better condition for appeal. Similarly, no affidavit should be considered if presented later than with the first response after final unless a showing is made under Rule 116(b).

The practice will be continued of advising applicant by means of the recently introduced form letter (POL–303) as to the disposition of proposed amendments to the claims and as to the effect of any argument or affidavit submitted in the *first* response after final action.

If a response subsequent to the first response after final action is received before appeal and which *on its face* clearly places the application in condition for allowance, it should be entered and a notice of allowability (POL–255) promptly sent to applicant; if such subsequent response does not *on its face* place the application in condition for allowance, it should not be considered further (unless, in the examiner's judgment, there are only minor matters which could be readily cleared up in a telephone interview leading to a notice of allowance) and should be refused entry. A form letter (POL–309) will be used for notification that such subsequent responses do not place the application in condition for allowance.

Requests for extension of the shortened statutory period for reply after final action, under Rule 130(b), will be considered by the Primary Examiner and if granted will be for not more

than one month; petitions for further extensions will be decided by the Commissioner or his designees in this matter. It should be noted that, under Rule 181(f), the filing of a Rule 181 petition will not stay the period for reply to an Examiner's action which may be running against an application.

APPEAL AND POST-APPEAL

*The record on appeal should be essentially the record before the examiner at the time appeal is taken.* Thus, no amendments, except under Rule 193(b), presented after appeal has been taken should be entered *for purposes of appeal, and no exception should be made to this,* see Rule 116(c). Amendments, arguments, or affidavits filed concurrently with or of even date with appeal notice will be construed as filed after appeal for the purpose of this procedure, even though they may be the first response to the final action. In accordance with Rule 195, affidavits or exhibits submitted after the case has been appealed should be considered for entry *only if applicant makes the necessary showing* why they were not earlier presented; Rule 195 should be strictly construed in this regard. If after appeal has been taken, a paper is presented which *on its face* clearly places the application in condition for allowance, such paper should be entered and a notice of allowability (POL–255) promptly sent to applicant. If such paper does not *on its face* place the application in condition for allowance, it should not be considered further (unless in the examiner's judgment there are only minor matters which could be readily cleared up in a telephone interview leading to a notice of allowance) and proposed amendments therein should not be entered. Notification that such papers do not place the application in condition for allowance will be made by use of a form letter (POL–309).

In accordance with the above, the Brief should be directed to the claims and to the record of the case as they appeared upon filing the appeal, but it may, of course, withdraw from consideration on appeal any claims or issues as desired by appellant.

Upon timely filing of a Brief, it will be referred to the examiner for his consideration of its propriety as to the appeal issues and for preparation of an Examiner's Answer if the Brief is proper and the application is not allowable. The Examiner's Answer will normally be of the shortened type referring to and relying on the final action; it may withdraw rejection of claims or any objection or requirement as desired by the examiner. No new ground of rejection or objection should be incorporated in the Examiner's Answer *without express approval in each case by the Group Manager.*

RESTRICTION AND ELECTION

A basic policy of the streamlined examining program is that the second action on the merits should be made final. In those applications wherein a requirement for restriction or election is accompanied by the rejection of linking or generic claims, such action will be considered to be an action on the merits and the next action by the examiner should be made final. It may thus be to applicant's advantage to make a telephone election in such cases prior to the first action.

Requirements for restriction or election will continue to be governed by existing criteria. However, in stating a requirement for restriction hereafter there should be no citation of patents to show separate status or classification or utility. The separate inventions should as heretofore be identified by a grouping of the claims with a short description of the total extent of the invention claimed in each group, specifying the type or relationship of each group as by stating the group is drawn to process, or to subcombination, or to product, etc., and should indicate the classification or separate status of each group, as for example, by class and subclass.

The period for response to a requirement for restriction or election, where there is no rejection of claims, will hereafter be set at 30 days.

MANUAL OF PATENT EXAMINING PROCEDURE

Procedures currently set forth in the Manual of Patent Examining Procedure which may be in conflict with the above are superseded by those announced above. Change Notices and replacement pages will be issued in due course.

MANUAL OF CLERICAL PROCEDURE

This information will also be incorporated in the Manual of Clerical Procedure.

RICHARD A. WAHL.

[824 O.G. 4 (Mar. 1, 1966)]

(109) DOUBLE PATENTING

In view of the uncertain situation which has arisen as a result of recent decisions dealing with "double patenting" it is thought to be advisable to restate the practice which should be followed in this area, particularly as regards the effect of terminal disclaimers. The term "double patenting" is properly applicable only to cases involving two or more applications and/or patents of the same inventive entity and should not be applied to situations involving commonly owned cases of different inventive entities. Sole and joint inventors cannot constitute a single entity, nor do two or more sets of joint inventors constitute a single entity if any individual is included in either set who is not also included in the other.

If two or more cases are filed by a single inventive entity, and if the expiration dates of the patents, granted or to be granted, are the same, either because of a common issue date or by reason of the filing of one or more terminal disclaimers, two or more patents may properly be granted, if the claims do not overlap, even though the subject matter to which the claims of one case are directed may be obvious in view of the subject matter claimed in the other case. *In re Robeson,* 1964 C.D. 561, 141 USPQ 485; *In re Kaye,* 1964 C.D. 630, 141 USPQ 829. Claims overlap within the meaning of this statement if it is possible for them to be infringed by the same process, machine, manufacture, or composition of matter. Cross reading is not necessary to constitute such an overlap.

Overlapping claims should not be allowed in cases filed by the same inventive entity if they are directed to identical inventive concepts, or if the concept to which one set of claims is directed would be obvious in view of that to which the other set is directed. This is true regardless of the relative filing dates of the cases or the relative scope of the claims.

In situations involving cases filed by different inventive entities, regardless of ownership, Sections 102 and 103 of 35 U.S.C. preclude the granting of two or more patents when directed to identical inventive concepts or when one of the concepts would be obvious in view of the other. A terminal disclaimer can have no effect in this situation since the basis for refusing more than one patent is not connected with any extension of monopoly.

In view of 35 U.S.C. 135, it is necessary to determine priority of invention whenever two different inventive entities are claiming a single inventive concept, and this determination should ordinarily be made before any patent is issued. This is true regardless of ownership, and the provision of Rule 201(c) that interferences will not be declared or continued between commonly owned cases unless good cause is shown therefor does not mean that two patents are to be allowed in such cases, but that the common assignee should be called on to state which of the entities involved is prior to the other in date of invention.

Accordingly, the assignee of two or more cases of different inventive entities, containing conflicting claims, should be called on to maintain a line of demarcation between them. If such a line is not maintained then, when one of the cases is in condition for allowance, claims covering the conflicting subject matter should be suggested as provided in Rule 203, care being taken to insure that such claims cover all the conflicting matter and the assignee should be called on to state which entity is the prior inventor of that subject matter and to limit the claims of the other application accordingly. If the assignee does not comply with this requirement and presents the interfering claims in both cases, an interference should be declared, attention being directed to Rule 208 if there is a common attorney. If suggested claims are not presented within the time allowed, rejection should be made on the ground of disclaimer as indicated in Rule 203(b).

In the event that a common assignee, after taking out a patent on one of two or more applications, for the first time presents claims in a pending application which are not patentably distinct from claims of the patent, the claims of the application should be rejected on the ground that the assignee, by taking out the patent at a time when the application was not claiming the patented invention, is estopped to contend that the patentee is not the prior inventor.

If a patent is inadvertently issued on one of two commonly owned applications by different inventive entities which at the time when the patent issued were claiming inventions which are not patentably distinct, the assignee should be called on to make a determination of priority as in the case of pending applications and, if no election is made, an interference should be declared. An election of the applicant as the first inventor should not be accepted without a complete (not terminal) disclaimer of the conflicting claims in the patent.

EDWARD J. BRENNER,
Jan. 9, 1967. *Commissioner.*

[834 O.G. 1615]

(110) MODIFICATION OF NOTICE OF JANUARY 31, 1967

The practice set forth in the notice of January 31, 1967, entitled "Double Patenting" (834 O.G. 1615), is modified to the extent that when a single inventive entity is involved a terminal disclaimer will be accepted to avoid a double patenting rejection even if the claims overlap, if the claims which would otherwise be subject to such rejection could not have been allowed in the other application or patent, and if the terminal disclaimer further provides that the patent shall expire immediately if it ceases to be commonly owned with the other application or patent.

EDWARD J. BRENNER.
Feb. 14, 1968. *Commissioner.*

[848 O.G. 1]

(111) DOUBLE PATENTING AND TERMINAL DISCLAIMER

The practice concerning double patenting and the effect of a terminal disclaimer on such a rejection is set out below. The notices of January 9, 1967, and February 14, 1968, relating to this subject are hereby superseded except with reference to the practice described involving different inventive entities.

Claims should be rejected on double patenting only in cases involving two or more applications and/or patents of the same inventive entity and not in situations involving commonly owned cases of different inventive entities. Commonly owned cases of different inventive entities are to be treated in the manner set out in MPEP 804.03.

If two or more cases are filed by a single inventive entity, and if the expiration dates of the patents, granted or to be granted, are the same, either because of a common issue date or by reason of the filing of one or more terminal disclaimers, two or more patents may properly be granted provided the claims of the different cases are not drawn to the same invention (*In re Knohl,* 155 USPQ 586; *In re Griswold,* 150 USPQ 804).

Claims that differ from each other (aside from minor differences in language, punctuation, etc.), whether or not the difference is obvious, are not considered to be drawn to the same invention. In cases where the difference is obvious, terminal disclaimers are effective to overcome rejections on double patenting. However, such terminal disclaimers should include a provision that the patent shall expire immediately if it ceases to be commonly owned with the other application or patent.

Where there is no such difference, the inventions are the same and a terminal disclaimer is ineffective.

EDWARD J. BRENNER,
Feb. 18, 1969. *Commissioner.*

[860 O.G. 661]

(112) NON-FINAL SECOND ACTION REJECTION PRACTICE

Experience since September 1, 1966, indicates that the non-final second action rejection practice announced on a trial basis at 829 O.G. 1755 (M.P.E.P. Change Notice 10—1) has worked out satisfactorily for both the Office and the applicants. Effective immediately, that practice as restated below will be followed on a regular basis.

Second actions on the merits will not be made final where the examiner introduces a new ground of rejection not necessitated by amendment of the application by the applicant. Further, in carrying out this policy, a second action on the merits in any application will not be made final if it includes a rejection of any claim not amended by applicant where that rejection relies on newly cited art. Also, amendments complying with objections or requirements as to form are to be permitted after final action in accordance with Rule 116(a).

RICHARD A. WAHL,
Jan. 30, 1967. *Assistant Commissioner.*

[835 O.G. 715]

(113) NEW FIRST ACTION PROCEDURE

Effective January 2, 1968, a new practice involving the use of a revised form for the first page of the first Office Action will be instituted. The use of this new form will introduce some new practices and procedures and will terminate the "Interview Practice Preliminary to Notice Under 35 U.S.C. 132" announced August 1, 1967, at 841 O.G. 1.

The heading of the revised form containing the address and application identification will have a completely revised format to facilitate future pre-action addressing by automatic typewriter.

Under the new procedure, the Examiner will signify on the revised form certain information including the period set for response, any attachments, and, in a "summary of action," the position taken on all claims.

The new procedure will also allow the Examiner, in the exercise of his professional judgment, to indicate that a discussion with applicant's representative may result in agreements whereby the application may be placed in condition for allowance and that the Examiner will telephone the representative within about two weeks. Under this practice the applicant's representative can be adequately prepared to conduct such a discussion. Any resulting amendment may be made either by the applicant's attorney or agent or by the Examiner in an Examiner's Amendment. It should be recognized that when extensive amendments are necessary it would be preferable if they were filed by the attorney or agent of record, thereby reducing the professional and clerical workload in the Patent Office and also providing the file wrapper with a better record, including applicant's arguments for allowability as required by Rule 111.

RICHARD A. WAHL,
Dec. 11, 1967. *Assistant Commissioner.*

[845 O.G. 1205]

(114) CONTINUATIONS—RES JUDICATA REJECTIONS

Some confusion exists in the interpretation of the established Office policy regarding the use of *res judicata* rejections. To clarify the Manual on this point the following changes are made—

The second paragraph of MPEP 201.07 is rewritten to read:

At any time before the patenting or abandonment of or termination of proceedings on his earlier application, an applicant may have recourse to filing a continuation in order to introduce into the case a new set of claims and to establish a right to further examination by the primary Examiner.

The last two sentences of MPEP 201.11 are deleted. MPEP 706.03(w) is rewritten to read:

A prior adjudication against the inventor on the same or similar claims constitutes a proper ground of rejection as *res judicata.* See *Ex parte Budde,* 150 USPQ 469; 828 O.G. 409. The rejection should be used only when the earlier decision was a decision of the Board of Appeals or any of the reviewing courts, and when the time for further court review has expired and no such review has been sought, or, if filed, the review action is terminated. The timely filing of a second application copending with an earlier application does not preclude the use of *res judicata* as a ground of rejection for the second application claims.

When making a rejection on *res judicata,* action should ordinarily be made also on the basis of prior art.

RICHARD A. WAHL,
Mar. 18, 1968. *Assistant Commissioner.*

[849 O.G. 277]

(115) GUIDELINES FOR CONSIDERING DISCLOSURES OF UTILITY IN DRUG CASES

On December 5, 1967 the text of certain guidelines which the Patent Office proposed to adopt in the examination of applications for drugs, was published in the OFFICIAL GAZETTE (845 O.G. 1). A hearing was had on January 16, 1968, and all persons, who desired to, were invited to attend and to submit their views, objections, recommendations or suggestions. The following guidelines are being published after consideration of all the material and opinions, both written and oral, which were submitted in response to that invitation.

EDWARD J. BRENNER,
Mar. 19, 1968. *Commissioner of Patents.*

*General*

These guidelines are set down to provide uniform handling of applications disclosing drug or pharmaceutical utility. They are intended to guide patent examiners and patent applicants as to criteria for utility statements. They deal with fundamental questions and are subject to revision and amendment if future case law indicates this to be necessary.

The following two basic principles shall be followed in considering matters relating to the adequacy of disclosure of utility in drug cases:

(1) The same basic principles of patent law which apply in the field of chemical arts shall be applicable to drugs, and

(2) The Patent Office shall confine its examination of disclosure of utility to the application of patent law principles, recognizing that other agencies of the government have been assigned the responsibility of assuring conformance to the standards established by statute for the advertisement, use, sale or distribution of drugs.[1]

A drug is defined by 21 U.S.C. 321(g)

> The term "drug" means (A) articles recognized in the articles intended for use in the diagnosis, cure, mitigation, treatment, or prevention of disease in man or other animals; and (B) articles intended for use in the diagnosis, cure, mitigation, treatment, or prevention of disease in man or other animals; and (C) articles (other than food) intended to affect the structure or any function of the body of man or other animals; and (D) articles intended for use as a component of any articles specified in clause (A), (B), or (C); but does not include devices or their components, parts or accessories.

In addition, compositions adapted to be applied to or used by human beings, e.g., cosmetics, dentifrices, mouthwashes, etc., may be treated in the same manner as drugs subject to the conditions stated.

Any proof of a stated utility or safety required pursuant to these guidelines may be incorporated in the application as filed, or may be subsequently submitted by affidavit if and when required. The Patent Office, in reaching its own independent decisions on questions of utility and how to use under 35 U.S.C. 101 and 112, will continue to avail itself of assistance and information from the Secretary of Health, Education, and Welfare as authorized by 21 U.S.C. 372(b), when necessary.

In accordance with the basic principles set forth above, the following procedures shall be followed in examining patent applications in the drug field with regard to disclosures relating to utility.

*35 U.S.C. 101*

Utility must be definite and in currently available form,[2] not merely for further investigation or research but commercial availability is not necessary. Mere assertions such as "therapeutic agents,"[3] "for pharmaceutical purposes,"[4] "biological activity,"[5] "intermediates,"[6] and for making further unspecified preparations are regarded as insufficient.

If the asserted utility of a compound is believable on its face to persons skilled in the art in view of the contemporary knowledge in the art, then the burden is upon the examiner to give adequate support for rejections for lack of utility under this section.[7] On the other hand, incredible statements[8] or statements deemed unlikely to be correct by one skilled in the art[9] in view of the contemporary knowledge in the art will require adequate proof on the part of applicants for patents.

Proof of utility under this section may be established by clinical or *in vivo* or *in vitro* data, or combinations of these, which would be convincing to those skilled in the art.[10] More particularly, if the utility relied on is directed *solely* to the treatments of humans, evidence of utility, if required, must generally be clinical evidence.[11] Although animal tests may be adequate where the art would accept these as appropriately correlated with human utility.[12] If there is no assertion of human utility,[13] or if there is an assertion of animal utility,[14] operativeness for use on standard test animals is adequate for patent purposes.

Exceptions exist with respect to the general rule relating to the treatment of humans. For example, compositions whose properties are generally predictable from a knowledge of their components, such as laxatives, antacids and certain topical preparations, require little or no clinic proof.[15]

Although absolute safety is not necessary to meet the utility requirement under this section, a drug which is not sufficiently safe under the conditions of use for which it is said to be effective will not satisfy the utility requirement.[16] Proof of safety shall be required only in those cases where adequate reasons can be advanced by the examiner for believing that the drug is unsafe, and shall be accepted if it establishes a reasonable probability of safety.

*35 U.S.C. 112*

A mere statement of utility for pharmacological or chemotherapeutic purposes may raise a question of compliance with Section 112, particularly ". . . as to enable any person skilled in the art to which it pertains . . . to use the same." If the statement of utility contains within it a connotation of how to use, and/or the art recognizes that standard modes of administration are contemplated, Section 112 is satisfied.[17] If the use disclosed is of such nature that the art is unaware of successful treatments with chemically analogous compounds, a more complete statement of how to use must be supplied than if such analogy were not present.[18] It is not necessary to specify the dosage or method of use if it is obvious to one skilled in the art that such information could be obtained without undue experimentation.

With respect to the adequacy of disclosure that a claimed genus possesses an asserted utility representative examples together with a statement applicable to the genus as a whole will ordinarily be sufficient if it would be deemed likely by one skilled in the art, in view of contemporary knowledge in the art, that the claimed genus would possess the asserted utility.[19] Proof of utility will be required for other members of the claimed genus only in those cases where adequate reasons can be advanced by the examiner for believing that the genus as a whole does not possess the asserted utility. Conversely, a sufficient number of representative examples, if disclosed in the prior art will constitute a disclosure of the genus to which they belong.

In the case of mixtures including a drug as an ingredient, or mixtures which are drugs, or methods of treating a specific condition with a drug, whether old or new, a specific example should ordinarily be set forth, which should include the organism treated. In appropriate cases, such an example may be inferred from the disclosure taken as a whole and/or the knowledge in the art (e.g., gargle).

Where the claimed compounds are capable of several different utilities and one use is adequately described in accordance with these guidelines, additional utilities will be investigated for compliance with Sections 101 and 112 only if not believable on their face to those of ordinary skill in the art in view of the contemporary knowledge of the art. Failure to meet these standards may result in a requirement to cancel such additional utilities.[20]

[849 O.G. 567]

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(116) REJECTIONS NOT BASED ON PRIOR ART

The primary object of the examination of an application is to determine whether or not the claims define a patentable advance over the prior art. This consideration should not be relegated to a secondary position while undue emphasis is given to non-prior art or "technical" rejections. Effort in examining should be concentrated on truly essential matters, minimizing or eliminating effort on matters which may have played a part in the examination process in the past but which are not really critical. Where a major technical rejection is proper (e.g., lack of proper disclosure, undue breadth, utility, etc.) such rejection should be stated with a full development of the reasons rather than by a mere conclusion coupled with some stereotyped expression.

Generally speaking, the inclusion of (1) negative limitations and (2) alternative expressions, provided that the alternatively expressed elements are basically equivalents for the purpose of the invention, are permitted if no uncertainty or ambiguity with respect to the question of scope or breadth of the claim is presented.

The examiner has the responsibility to make sure the wording of the claims is sufficiently definite to *reasonably* determine the scope. It is applicant's responsibility to select proper wording of the claim, except to the extent that the selection of words makes the claims indefinite. Under no circumstances should a claim be rejected merely because the Examiner prefers a different choice of wording.

Rejections not based on prior art are explained in 706.03(a) to 706.03(y). IF THE ITALICIZED LANGUAGE IN THESE SECTIONS IS INCORPORATED IN THE REJECTION, THERE WILL BE LESS CHANCE OF A MISUNDERSTANDING AS TO THE GROUNDS OF REJECTION.

RICHARD A. WAHL,
July 23, 1968. *Assistant Commissioner.*

[853 O.G. 603]

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(117) REVISED DESIGN PATENT PRACTICE

The following changes are being instituted in order to clarify the distinction between the ornamental design for an article being claimed in a design patent and its environment. These changes are to be followed in the examination of all design applications as of the date of this notice. It is suggested that applicants initiate compliance with these changes in all pending design applications.

The ornamental design which is being claimed must be shown in solid lines in the drawing. Dotted lines for the purpose of indicating unimportant or immaterial features of the designed article are no longer permitted. There are no portions of a design which are immaterial or unimportant. In re *Blum*, 852 O.G. 1045; 153 USPQ 177.

The title of the article being claimed in a design patent must correspond to the name of the article shown in solid lines in the drawing.

RICHARD A. WAHL,
Feb. 26, 1969. *Assistant Commissioner.*

[860 O.G. 999]

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(118) "MERE FUNCTION OF MACHINE"—REJECTION

In view of the decision of the Court of Customs and Patent Appeals in *In re Tarczy-Hornoch* appearing at 158 USPQ 141, process or method claims will no longer be subject to a rejection by Patent Office examiners solely on the ground that they define the inherent function of a disclosed machine or apparatus. Accordingly, the subject matter of MPEP 706.03(r) is inapplicable and hereby cancelled.

RICHARD A. WAHL,
Feb. 10, 1969. *Assistant Commissioner.*

[861 O.G. 343]

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(119) FINAL REJECTION—FIRST ACTION PRACTICE

This notice revises M.P.E.P. section 706.07(b) and supersedes the notice of March 20, 1969, appearing at 861 O.G. 1011.

The claims of a new application may be finally rejected in the first Office action in those situations where (1) the new application is a continuing application of, or a substitute for, an earlier application, and (2) all claims of the new application (*a*) are drawn to the same invention claimed in the earlier application, and (*b*) would have been properly finally rejected on the grounds or art of record in the next Office action if they had been entered in the earlier application.

However, it would not be proper to make final a first Office action in a continuing or substitute application where that application contains material which was presented in the earlier application after final rejection or closing of prosecution but was denied entry for one of the following reasons:

(1) New issues were raised that required further consideration and/or search, or

(2) The issue of new matter was raised.

Further, it would not be proper to make final a first Office action in a continuation-in-part application where any claim includes subject matter not present in the earlier application.

A request for an interview prior to first action on a continuing or substitute application should ordinarily be granted.

WILLIAM FELDMAN,
Feb. 20, 1975. *Deputy Assistant Commissioner for Patents.*

[932 O.G. 760]

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(120) CLAIM INTERPRETATION

The notice of January 15, 1968, appearing in the OFFICIAL GAZETTE of February 13, 1968 (847 O.G. 331) and concerned with statements relating to the scope of the invention claimed in patent applications, is hereby rescinded.

RICHARD A. WAHL,
Sept. 12, 1969. *Assistant Commissioner.*

[867 O.G. 1]

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(121) EXAMINATION OF PATENT APPLICATIONS ON COMPUTER PROGRAMS

*Notice of Rescission of Guidelines*

Notice regarding the adoption by the Patent Office of guidelines for the examination of patent applications on computer

[1] *In re Krimmel*, 48 CCPA 1116, 292 F.2d 948, 130 USPQ 215; *In re Hartop et al.*, 50 CCPA 780, 311 F.2d 249, 135 USPQ 419.

[2] *Brenner* v. *Manson*, 383 U.S. 519, 148 USPQ 689.

[3] Cf. *In re Lorenz et al.* 49 CCPA 1227, 305 F.2d 875, 134 USPQ 312, cf. *Ex parte Brockmann et al.*, 127 USPQ 57.

[4] *In re Diedrich*, 50 CCPA 1355, 318 F.2d 946, 138 USPQ 128.

[5] *In re Kirk et al.*, 54 CCPA 1119, 153 USPQ 48; *Ex parte Lanham*, 135 USPQ 106.

[6] *In re Joly et al.*, 54 CCPA 1159, 153 USPQ 45; *In re Kirk et al.*, 54 CCPA 1119, 153 USPQ 48.

[7] *In re Gazave*, 54 CCPA 1524, 154 USPQ 92.

[8] *In re Citron*, 51 CCPA 852, 325 F.2d 248, 139 USPQ 516; *In re Oberweger*, 28 CCPA 749, 115 F.2d 826, 47 USPQ 455; *Ex parte Moore et al.*, 128 USPQ 8.

[9] *In re Ruskin*, 53 CCPA 872, 354 F.2d 395, 148 USPQ 221; *In re Pottier*, 54 CCPA 1293, 153 USPQ 407; *In re Novak et al.* 49 CCPA 1283, 306 F.2d 924, 134 USPQ 335. See also, *In re Irons*, 52 CCPA 938, 340 F.2d 974, 144 USPQ 351.

[10] *In re Irons*, 52 CCPA 938, 340 F.2d 924, 144 USPQ 351; *Ex parte Paschall*, 88 USPQ 131; *Ex parte Pennell et al.*, 99 USPQ 56; *Ex parte Ferguson*, 117 USPQ 229; *Ex parte Timmis*, 123 USPQ 581.

[11] *Ex parte Timmis*, 123 USPQ 581.

[12] *In re Hartop et al.*, 50 CCPA 780, 311 F.2d 249, 135 USPQ 419; *Ex parte Murphy*, 134 USPQ 134.

[13] Cf. *Blicke* v. *Treves*, 44 CCPA 753, 241 F.2d 718, 112 USPQ 472; *In re Krimmel*, 48 CCPA 1116, 292 F.2d 948, 130 USPQ 215; *In re Dodson*, 48 CCPA 1125, 292 F.2d 943, 130 USPQ 224; *In re Hitchings*, 52 CCPA 1141, 342 F. 2d 80, 144 USPQ 637.

[14] *In re Bergel et al.*, 48 CCPA 1102, 292 F.2d 955, 130 USPQ 206; *Ex parte Melvin*, 155 USPQ 47.

[15] *Ex parte Harrison et al.*, 129 USPQ 172; *Ex parte Lewin*, 140 USPQ 70.

[16] *In re Hartop et al.* 50 CCPA 780, 311 F.2d 249, 135 USPQ 419.

[17] Cf. *In re Johnson*, 48 CCPA 733, 282 F.2d 370, 127 USPQ 216; *In re Hitchings et al.*, 52 CCPA 1141, 342 F.2d 80, 144 USPQ 637.

[18] *In re Mourcu et al.*, 52 CCPA 1363, 345 F. 2d 595, 145 USPQ 452; *In re Schmidt et al.*, 54 CCPA 1577, 153 USPQ 640.

[19] *In re Oppenauer*, 31 CCPA 1248, 143 F.2d 974, 62 USPQ 297; *In re Cavallito et al.*, 48 CCPA 711, 282 F.2d 357, 127 USPQ 202; *In re Cavallito et al.*, 48 CCPA 720, 282 F.2d 363, 127 USPQ 206; *In re Schmidt*, 48 CCPA 1140, 293 F.2d 274, 130 USPQ 404; *In re Cavallito*, 49 CCPA 1335, 306 F.2d 505, 134 USPQ 370; *In re Surrey*, 54 CCPA 855, 370 F.2d 349, 151 USPQ 724; *In re Lund et al.*, 54 CCPA 1361, 153 USPQ 625.

[20] *Ex parte Lanham*, 121 USPQ 223; *Ex parte Moore et al.*, 128 USPQ 8; *In re Citron*, 51 CCPA 852 325 F.2d 248, 139 USPQ 516; *In re Gottlieb et al.*, 51 CCPA 1114, 328 F.2d 1016, 140 USPQ 665.

programs was published in the Federal Register of October 22, 1968 (33 F.R. 15600), and in the OFFICIAL GAZETTE of the Patent Office of October 22, 1968 (855 O.G. 829).

In view of the decision by the U.S. Court of Customs and Patent Appeals in "In re Prater et al.," 162 USPQ 541, 866 O.G. 1034 (1969), the adopted guidelines are hereby rescinded, effective immediately. For the time being, adoption of new guidelines for the examination of patent applications is being deferred pending further judicial interpretation of the law on a case-by-case basis.

Consideration of "In re Prater et al." has brought into question the advisability of issuing guidelines for the examination of patent applications on computer programs. Parties who desire to present their views, recommendations, or suggestions concerning such guidelines are invited to do so, by letter addressed to the Commissioner of Patents, Washington, D.C. 20231. Those parties who recommend the issuance of such guidelines are invited to submit comments concerning the proposed language of the guidelines.

WILLIAM E. SCHUYLER, JR.,
*Commissioner of Patents.*

Approved: October 3, 1969.
MYRON TRIBUS,
*Assistant Secretary for Science and Technology.*

[F.R. Doc. 6912194; Filed, Oct. 9, 1969, 8:48 a.m.]

*Published 34 F.R. 15724, October 10, 1969*

[868 O.G. 349]

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(122) CERTAIN CASES

*Reopening After Decision, Board of Appeals*

Effective with the date of this notice the Commissioner of Patents will, on a trial basis, entertain petitions under § 1.198 of Title 37, Code of Federal Regulations (Patent Office Rule 198), to reopen certain cases in which an applicant has sought review under 35 U.S.C. 141 or 145. This procedure is restricted to cases which have been decided by the Board of Appeals and which are amenable to settlement without the need for going forward with the court proceeding. Such petitions will ordinarily be granted only in the following categories of cases:

1. When the decision of the Board of Appeals asserts that the rejection of the claims is proper because the claims do not include a disclosed limitation or because they suffer from some other curable defect, and the decision reasonably is suggestive that claims including the limitation or devoid of the defect will be allowable;

2. When the decision of the Board of Appeals asserts that the rejection of the claims is proper because the record does not include evidence of a specified character, and is reasonably suggestive that if such evidence were presented, the appealed claims would be allowable, and it is demonstrated that such evidence presently exists and can be offered; or

3. When the decision of the Board of Appeals is based on a practice, rule, law, or judicial precedent which, since the Board's decision, has been rescinded, repealed, or overruled.

Any such petition must be accompanied by the proposed amendment, evidence, or argument said to justify allowance of the claims. The petition further must point out how the case falls within one of the preceding categories. Failure to do so or failure of the case to qualify as coming within one of the categories will usually constitute bases for denying the petition. In any event, no case will be reopened unless it is for the consideration of matters not already adjudicated, and sufficient cause has been shown.

Such petitions will not be ordinarily entertained after the filing of the Commissioner's brief in cases in which review has been sought under 35 U.S.C. 141, or after trial in a 35 U.S.C. 145 case.

In the case of an appeal under 35 U.S.C. 141, if the petition is granted, steps will be taken to request the court to remand the case to the Patent Office and if so remanded the proposed amendments, evidence, and arguments will be entered of record in the application file for consideration, and further action will be taken by the Board of Appeals in the first instance or by the Examiner as may be appropriate. In the case of civil action under 35 U.S.C. 145, steps will be taken for obtaining dismissal of the action without prejudice to consideration of the proposals.

WILLIAM E. SCHUYLER, JR.,
*Commissioner of Patents.*

Approved: Oct. 16, 1969.
MYRON TRIBUS,
*Assistant Secretary for Science and Technology.*

[F.R. Doc. 69-12674; Filed Oct. 22, 1969; 8:48 a.m.]

*Published in 34 F.R. 17210, Oct. 23, 1969*

[868 O.G. 1058]

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(123) PROSECUTION AND DELIVERY OF AMENDMENTS

*General*

Many of the difficulties encountered in the prosecution of patent applications after final rejection may be alleviated if each applicant includes, at the time of filing or no later than the first response, claims varying from the broadest to which he believes he is entitled to the most detailed that he is willing to accept.

*Prosecution After Final Rejection*

To expedite the resolution of cases under final rejection, an amendment filed at any time after final rejection but before an appeal brief is filed, may be entered upon or after filing of an appeal provided the total effect of the amendment is to (1) remove issues for appeal, and/or (2) adopt Examiner suggestions. Of course, if the amendment necessitates a new search, raises the issue of new matter, presents additional claims without cancelling a corresponding number of finally rejected claims, or otherwise introduces new issues, it will not be entered. Examiners will continue to respond to all non-entered amendments after final rejection, and will indicate the status of each claim of record or proposed, including the designation of claims that would be entered on the filing of an appeal if filed in a separate paper. It should be noted that an amendment placing a case in condition for allowance will be enterable by the Examiner at any stage prior to forwarding the answer on appeal. Except where an amendment merely cancels claims and/or adopts Examiner suggestions, removes issues for appeal, or in some other way requires only a cursory review by the Examiner, compliance with the requirement of a showing under Rule 116(b) will be expected of all amendments after final rejection.

In accordance with prior practice, in order to prevent abandonment, a timely filed amendment after final rejection that reaches the Examiner near the end or after the expiration of the period for response, may be entered in part if this can be done to make the case allowable (e.g., a second amendment after final rejection filed on the last day of the response period, where no appeal has been filed and the amendment cancels all rejected claims and proposes to add claims, at least one of which is unpatentable, entry would be approved to the extent of cancelling the rejected claims and entering only the patentable claims).

Only one attorney-initiated personal interview will be permitted after final rejection. However, the Examiner may initiate an interview anytime he believes it would expedite the prosecution of the application.

*Hand Delivery of Papers (See Item 8)*

For purposes of convenience in those cases where the attorney and the Examiner agree that a proposed amendment discussed during a *personal* interview would place the application in condition for allowance, the amendment may be left with the Examiner to become an official paper in the file without routing through the mail room, provided no additional fees are required. Where the case is under final rejection, if changes in the proposed amendment are necessary and these changes are not practical to be made by Examiner's Amendment, the attorney or a local associate will be permitted to hand deliver a corrected amendment to the Examiner, provided no additional fees are required and further that the amendment is submitted to the Examiner by the end of the next working day following the interview and within the period for response.

The Examiner who accepts these amendments will write "entry approved" in the left-hand margin of the first page of the amendment, date and initial the amendment, and then have it date stamped with the Group Stamp. For applications under final rejection acceptance of a hand delivered amendment will require the initials of a Primary Examiner.

The privilege of personal delivery of papers by attorneys to the Examining Groups is extended to requests for extensions of time in addition to amendments of the type referred to above.

RICHARD A. WAHL,
Nov. 10, 1969. *Assistant Commissioner.*

[869 O.G. 345]

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(124) PETITION TO REVIVE PRACTICE

Effective immediately, a decision on a petition to revive an abandoned application will be based solely on whether a satisfactory showing has been made that the delay was unavoidable (35 U.S.C. 133). A petition to revive will not be considered unless the petition fee and a proposed response to the last Office action have been received (Rule 137).

The granting of a petition to revive does not serve in any way as a determination that the proposed response to the Office action is completely responsive. Revived applications will be forwarded to the examiner to determine the completeness of the proposed response. Such applications must be taken up *Special*. If the examiner determines that the response is complete, he should promptly take the case up for action. If the proposed response is not a complete response to the last Office action, the examiner should write a letter to the applicant informing him of the specific defects in his response and set a one-month time limit for applicant to complete his response. If the applicant does not complete his response within the set one-month limit, the application is again abandoned.

RICHARD A. WAHL,
Dec. 11, 1969. *Assistant Commissioner.*

[869 O.G. 1362]

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(125) PETITION TO REVIVE PRACTICE—CLARIFICATION

In clarification of the notice of Dec. 11, 1969 (869 O.G. 1362), the practice set forth in the second paragraph thereof is limited to proposed "responses" *before* final rejection. While a response to a non-final action may be either an argument or an amendment under Rule 111, a response to a final action "must include cancellation of, or appeal from the rejection of, each claim so rejected" under Rule 113.

Accordingly, in any case where a final rejection had been made, the proposed response required for consideration of a petition to revive must be either an appeal or an amendment that cancels all the rejected claims or otherwise prima facie places the application in condition for allowance.

In those situations where abandonment occurred because of the failure to file an appeal brief, the proposed response, required for consideration of a petition to revive, must include a brief accompanied by the proper fee.

RICHARD A. WAHL,
Feb. 20, 1970. *Assistant Commissioner.*

[873 O.G. 1]

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(126) MAIL DELAYS AND PETITIONS TO REVIVE

Since applications that become abandoned unintentionally present burdens to both the Patent Office and the applicant or his representatives, a simplified procedure has been devised to alleviate these burdens when the abandonment results from a delay in the mails. This procedure provides for an automatic petition to revive or petition to accept the delayed payment of issue fee.

It is suggested that when a communication, complying with the circumstances enumerated below, is mailed to the Patent Office more than three calendar days prior to the due date, a conditional petition be attached to the communication. If the communication is received in the Patent Office after the due date and the application becomes abandoned, the conditional petition will become effective, subject to the following requirements. The petition must include (1) an authorization to charge a deposit account for any required fees, including the petition fee (35 U.S.C. 41(a) 7), and (2) an oath or declaration signed by the person mailing the communication and also signed by the applicant or his registered representative stating that the communication and petition were either placed in the United States mail as first class or air mail, or placed in the mail outside the United States as air mail. Since mail handled in this manner may reasonably be expected to reach the Patent Office within three days of posting, any mail delays beyond such time will be considered to constitute unavoidable delay and sufficient cause to grant a petition to revive (35 U.S.C. 133) or a petition to accept delayed payment of an issue fee (35 U.S.C. 151).

The circumstances under which this procedure may be used are those where the communication, if timely filed, (1) would be a proper and complete response to an action or request by the Patent Office, and (2) would stop a period for response from continuing to run. Accordingly, this procedure would be appropriate for:

1. A response to a non-final Office action.
2. A response to a final Office action in the form of an amendment that cancels all rejected claims or otherwise prima facie places the application in condition for allowance.
3. A notice of appeal and requisite fee.
4. An appeal brief, in triplicate, and requisite fee.
5. A base issue fee.
6. A balance of issue fee.

Examples of which this procedure would not be appropriate and will not apply include:

1. Application papers.
2. A response to a final Office action other than that indicated in categories 2 and 3, above.
3. Extensions of time.
4. Petitions for delayed payment of either the issue fee or balance of issue fee.
5. Amendments under Rule 312.
6. Priority documents.

Normal petition practices are not affected in those situations where this procedure is either not elected or appropriate.

A suggested format for the conditional petition is shown below:

Applicant(s) ---------- ☐ Petition to revive
Serial No. ---------- ☐ Petition to accept delayed payment of issue fee
Date Filed ----------
For ----------

I hereby certify that the attached communication is being deposited in

☐ the United States mail as first class or air mail
☐ the mail outside the United States as air mail

in an envelope addressed to: Commissioner of Patents, Washington, D.C. 20231, on ----------, which date is more than three (3) calendar days prior to the due date from ----------, by ----------.
(Location) (Name of Individual)

In the event that such communication is not timely filed in the United States Patent Office, it is requested that this paper be treated as a petition and that the:

☐ delay in prosecution be held unavoidable—35 U.S.C.133.
☐ delayed payment of the fee be accepted—35 U.S.C. 151.

The petition fee required by 35 U.S.C. 41(a) 7 is authorized to be charged to Deposit Account No. ---------- in the name of ----------.

The undersigned declare further that all statements made herein are true, based upon the best available information; and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that

**such willful false statements may jeopardize the validity of the application or any patent issuing thereon.**

**Date** _____ _____

**(Signature of applicant or signature and registration number of Registered Representative)**

**And**

**Date** _____ _____

**(Signature of person mailing, if other than the above)**

WILLIAM FELDMAN,
*Deputy Assistant Commissioner for Patents.*

April 13, 1973.

[910 O.G. 402]

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(127) CONDITIONAL PETITIONS

In view of the "Post Office to Addressee" express mail service offered by the U.S. Postal Service, the conditional petition practice, announced in the OFFICIAL GAZETTE [910 O.G. 402] and the M.P.E.P. [section 711.03(c)], is hereby extended to cover this type of service.

Where the addressee is the Patent and Trademark Office, this service provides for the delivery of mail to one of our employees in Room 1627, Department of Commerce Building, Washington, D.C. 20231, no later than 3:00 p.m. on the next workday following its deposit before 5:00 p.m. at any postal facility in the United States with an Express Mail window.

It is suggested that when a communication, complying with the circumstances enumerated below, is mailed to the Patent and Trademark Office by means of the "Post Office to Addressee" express mail service and the communication is deposited at a U.S. Postal Service Express Mail window by 5:00 p.m. on a day which is at least the day preceding the due date, a conditional petition be attached to the communication.

If the communication is received in the Patent and Trademark Office after the due date and the application becomes abandoned or the patent lapses, the conditional petition will become effective, subject to the following requirements. The petition must include (1) an authorization to charge a deposit account for any required fees, including the petition fee (35 U.S.C. 41(a) 7), and (2) an oath or declaration signed by the person mailing the communication and also signed by the applicant or his registered representative stating that the communication and petition were deposited at an Express Mail window no later than 5:00 p.m. on a day which is at least the day preceding the due date, and were requested to be mailed via the "Post Office to Addressee" Express Mail Service. Since mail handled in this manner may reasonably be expected to reach the Patent and Trademark Office no later than 3:00 p.m. of the next workday following its deposit before 5:00 p.m. at any postal facility in the United States with an Express Mail window, any mail delays beyond such time will be considered to constitute unavoidable delay to grant a petition to revive (35 U.S.C. 133) or a petition to accept delayed payment of an issue fee (35 U.S.C. 151).

The circumstances under which this procedure may be used are those where the communication, if timely filed, (1) would be a proper and complete response to an action or request by the Patent and Trademark Office, and (2) would stop a period for response from continuing to run. Accordingly, this procedure would be appropriate for:

1. A response to a non-final Office action.
2. A response to a final Office action in the form of an amendment that cancels all rejected claims or otherwise prima facie places the application in condition for allowance.
3. A notice of appeal and requisite fee.
4. An appeal brief, in triplicate, and requisite fee.
5. A base issue fee.
6. A balance of issue fee.

Categories 1–4 would include a conditional petition to revive. Categories 5 or 6 would include a conditional petition to accept the delayed payment of the issue fee.

Examples of which this procedure would not be appropriate include:

1. Application papers.
2. A response to a final Office action other than that indicated in categories 2 and 3, above.
3. Extensions of time.
4. Amendments under Rule 312.
5. Priority documents.

Normal petition practices are not affected in those situations where this procedure is either not elected or appropriate.

A suggested format for the conditional petition is shown below:

Applicant(s) _____ ☐ Petition to revive
Serial No. _____ ☐ Petition to accept delayed payment of issue fee.

Date Filed _____
Title _____

I hereby certify that the attached communication is being deposited at an Express Mail window in a U.S. Postal Service's facility and intended to be mailed using the U.S. Postal Service's "Post Office to Addressee" Express Mail service in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231, prior to 5:00 p.m. on _____, which date is at least the day preceding the due date, at _____, by

(Location)

_____
(Name of Individual)

In the event that such communication is not timely filed in the Patent and Trademark Office, it is requested that this paper be treated as a petition and that the:

☐ delay in prosecution be held unavoidable—35 U.S.C. 133.
☐ delayed payment of the fee be accepted—35 U.S.C. 151.

The petition fee required by 35 U.S.C. 41(a) 7 is authorized to be charged to Deposit Account No. _____ in the name of _____.

The undersigned declare further that all statements made herein are true, based upon the best available information; and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date _____ _____

(Signature of applicant or signature and registration number of Registered Representative)

And

Date _____ _____

(Signature of person mailing, if other than the above)

WILLIAM FELDMAN,
*Deputy Assistant Commissioner for Patents.*

June 26, 1975.

[936 O.G. 1555]

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(128) TIMELY PRESENTATION OF AFFIDAVITS OR DECLARATIONS UNDER RULES 131 AND 132

All affidavits or declarations under Rule 131 or 132 must be timely presented in order to be admitted.

Affidavits and declarations submitted prior to a final rejection will be considered timely.

An affidavit or declaration presented with a first response after final rejection for the purpose of overcoming a new ground of rejection or requirement made in the final rejection will be entered and considered without a showing under Rule 116(b).

No other affidavit or declaration, under Rule 131 or 132, presented after a final rejection, will be considered unless a satisfactory showing is made under Rule 116(b) or 195.

All admitted affidavits or declarations will be acknowledged and commented upon by the Examiner in his next succeeding action.

RICHARD A. WAHL,
*Assistant Commissioner of Patents.*

July 9, 1970.

[877 O.G. 243]

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(129) ABBREVIATED FIRST ACTIONS ON THE MERITS

Starting on or about February 1, 1971, and continuing for a trial period of up to twelve months, a newly developed form (PO–1142) will be used for first actions on the merits of patent applications involving claims subject to rejection and/or objection on statutory or other legal grounds.



The form is designed to furnish a clear, full, and complete first action including the reasons for rejection and/or objection together with such information and references as may be useful in judging the propriety of continuing the prosecution, all in accordance with the statute (35 U.S.C. 132); and it is intended to abridge the action with condensed language using essential words and phrases in abbreviated form, in order to expedite the prosecution and reduce the pendency time of applications awaiting examination. Where found necessary in exceptional cases, a regular action without the form will be used.

For abbreviation purposes, references referred to on the form will be designated by capital letters and identified on revised reference list PO–892, and their correlation as applied to the claims will be indicated by symbols illustrated and explained on the bottom of the form. Sections 100–103, and 112 of the patent statute are reproduced on the back of the form.

Summary sheet POL–326 will continue in use with all first actions, and has been revised to identify different parts of the sheet as "Part I" and "Part II." Form PO–1142 will be distinguished as "Part III," and if a second copy of the form is necessary and is used to complete the action it will be marked for distinction as "Part IIIa" (a regular typed page if annexed to an action with the form will be designated as "Part IV"). All parts of the action after Part I (Parts II, III, and IV) will each have numbered paragraphs starting with the numeral 1, and communications relating thereto may be properly identified by the number on the particular part (for example, paragraph 2 on Part III may be identified as paragraph III–2).

As noted, Form PO–1142 will be used only for first actions on the merits concerned with claims subject to rejection and/or objection on statutory or other legal grounds. It will not be used for any subsequent action nor a first action made final as in a continuing application.

Second actions on the merits will be final according to prevailing practice, and any reference referred to in these or subsequent actions will be identified by name or otherwise in conventional manner, not by capital letters as used on Form PO–1142. For this reason, use of conventional reference identification in response to all Office actions will be helpful.

Only one carbon copy of the action will be furnished in accordance with the Notice of October 21, 1970, entitled "Office Actions" and appearing in 880 O.G. 740.

All other Office policies, practices, and procedures remain in effect.

RICHARD A. WAHL,
*Assistant Commissioner.*

Jan. 5, 1971.

[883 O.G. 2]

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(130) ABBREVIATED FIRST ACTION PROGRAM

The Abbreviated First Action Program using Form PO–1142 announced in the OFFICIAL GAZETTE of February 2, 1971 (883 O.G. 2) has been reviewed in the light of comments received from examiners, attorneys, and other members of the public, pursuant to the notice of November 10, 1971 (893 O.G. 1). As a result of this review the program will be continued and the form modified to incorporate some of the suggested improvements. The space for the explanation of the rejection will be expanded. In addition, the instructions to the examiners will be supplemented to reinforce the original stress on the importance of legibility, clarity and completeness in setting forth the examiner's position, and desirability of including suggestions that would render the case allowable.

RICHARD A. WAHL,
*Assistant Commissioner.*

Mar. 17, 1972.

[897 O.G. 762]

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(131) AFTER FINAL REJECTION PRACTICE

[37 CFR Part 1]

*Notice of Proposed Rule Making*

**Notice is hereby given that pursuant to the authority contained in section 6 of the Act of July 19, 1952 (66 Stat. 793; 35 U.S.C. 6), the Patent Office proposes to amend Title 37 of the Code of Federal Regulations by revising §§ 1.116, 1.191, 1.192, and 1.193, and by adding § 1.130.**

All persons interested in presenting their views and objections and recommendations in connection with the proposed changes are invited to do so on or before March 23, 1971, on which day a hearing will be held at 2 p.m., e.s.t., in Room 8C06, Building 2, 2011 Jefferson Davis Highway, Arlington, Va. All persons wishing to be heard orally are requested to notify the Commissioner of Patents of their intended appearance. Any written comments or suggestions may be inspected by any person upon written request a reasonable time after the closing date for submitting comments.

The proposed changes, if adopted, will provide a basis for a revised procedure for treating amendments filed after a final rejection. A proposed additional section is added to incorporate the existing practice relative to affidavits.

The proposed procedure will provide that all timely filed first amendments after final rejection be entered as a matter of right, subject to the limitation that additional claims will not be entered beyond the number that would result in the total number of claims under prosecution equalling the number of claims finally rejected. Only those second and subsequent amendments which cancel claims will be entered as a matter of right. The entry and treatment of any other amendments filed at this stage will be entirely within the discretion of the examiner.

A distinction will be made between first amendments after final rejection filed within 2 months from the date of the final rejection and those filed after that period.

A first amendment after final rejection filed within 2 months of the final rejection will receive a full and complete advisory action as soon as possible after its receipt in the Patent Office. Under these circumstances, the revised procedure would permit the filing of an appeal within the period for response to the final rejection or within 1 month from the date of the advisory action, whichever is later. However, if an appeal had been filed before the mailing of the advisory action, the appeal brief would not be due until 2 months after the date of the advisory action.

Amendments filed later than 2 months after the date of the final rejection in nonappealed cases may be answered at the examiner's discretion, but no additional time will be allowed for appeal. However, if an appeal is filed in these cases, a full and complete advisory action will be rendered and the time for filing the brief will be extended to expire 2 months from the date of the advisory action.

After jurisdiction of an application transfers to the Board of Appeals, no amendments will be considered for entry except those restricted to cancellation of claims or copying claims for purposes of interference.

If new issues are presented in the claims as amended or presented after final rejection, they will be rejected in the advisory action on the ground of being drawn to new issues. These rejections will be reviewable by the Board of Appeals as "adverse decisions of examiners" (35 U.S.C. 7).

The current practice of normally making the second action on the merits final and setting of a 3-month period for response will continue. However, the practice of granting an automatic 1-month extension of time if an amendment is filed (notices of Aug. 7, 1967; 841 O.G. 1311 and of Sept. 26, 1968; 855 O.G. 1109) will be terminated, and extensions of time at this stage of the prosecution will not be encouraged. Further any extension of time granted after a final rejection will not affect the 2-month period and the privilege of an advisory action.

The present policy concerning consideration of affidavits, declarations, and exhibits will remain unchanged.

Holding of interviews after final rejection will be at the primary examiner's discretion.

This procedure will also allow the examiner to prepare examiner's answers which simply refer to the final rejection or the advisory action in most instances.

The sections, if amended as proposed, would read as follows:

**§ 1.116** ***Amendments after final action.***

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**(b) A first amendment presented after final rejection will be entered and considered, but the total number of claims under prosecution may not exceed the total number finally rejected. Entry of second and subsequent amendments after final rejection will normally be limited to only those which cancel claims.**

(c) A first amendment filed within 2 months after the date of the final rejection, or after appeal, will receive a full and complete advisory action. If not previously filed, an appeal may be filed in such cases within the period for response to the final rejection or within 1 month from the date of the advisory action, whichever is later. In those cases where an appeal was filed before the date of the advisory action, the appeal brief is due 2 months after the date of the advisory action.

(d) After jurisdiction of an appealed case passes to the Board of Appeals no amendments may normally be made (see § 1.191(d)). After decision on appeal, amendments can only be made as provided in § 1.198, or to carry into effect a recommendation under § 1.196.

(e) Amendments after final rejection shall not introduce new issues into the prosecution.

§ 1.130 *Affidavits, declarations, or exhibits after final rejection.*

Affidavits, declarations, or exhibits submitted with a first reply after final rejection for the purpose of overcoming a new ground of rejection or requirement made in the final rejection, shall be admitted and considered. No other affidavit, declaration, or exhibit presented after final rejection will be admitted and considered without a showing of good and sufficient reasons why they were not earlier presented.

§ 1.191 *Appeal to Board of Appeals.*

(a) Every applicant for a patent or for reissue of a patent, any of the claims of which have been twice rejected, or who has been given a final rejection (§ 1.113) may, upon the payment of the fee required by law, appeal from the decision of the primary examiner to the Board of Appeals within the time allowed for response. (See § 1.116(c),)

* * * * *

(d) The jurisdiction of an appealed case is retained by the primary examiner until the time for filing a reply to the examiner's answer (§ 1.193(b)) has expired, at which time the Board of Appeals will take jurisdiction of the same.

§ 1.192 *Appellant's brief.*

(a) The appellant shall, within 2 months from the date of the appeal, or within the time allowed for response to the action appealed from, or within the time allowed in an advisory action (§ 1.116(b)), whichever is later, file a brief, accompanied by the requisite fee. Said brief shall include all of the authorities and arguments on which he will rely to maintain his appeal, including a concise explanation of the invention which should refer to the drawing by reference characters, and a copy of the claims involved, at the same time indicating if he desires an oral hearing. Two extra copies of the brief are required if an oral hearing is requested. Upon a showing of sufficient cause the time for filing the brief may be extended to a date not later than 2 months after the original expiration date. Any longer or further extensions must be sought from the Commissioner. All requests for extensions must be filed prior to the expiration of the period sought to be extended.

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§ 1.193 *Examiner's answer.*

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(b) The appellant may file a reply brief directed only to such new points of argument as may be raised in the examiner's answer, within 1 month from the date of such answer. However, if the examiner's answer states a new ground of rejection appellant may file a reply thereto within 2 months from the date of such answer; such reply may include any amendment or material appropriate to the new ground.

WILLIAM E. SCHUYLER, Jr.,
*Commissioner of Patents.*

Approved: January 22, 1971.

RICHARD O. SIMPSON,
*Acting Assistant Secretary for Science and Technology.*

[FR Doc. 71-1167 Filed 1-27-71; 8:47 a.m.]

*Pub. in 36 F.R. 1356-57, Jan. 28, 1971*

[883 O.G. 880]

(Pending—No Final Action Taken)

(132) DEPOSIT OF MICROORGANISMS

Some inventions which are the subject of patent applications depend on the use of microorganisms which must be described in the specification in accordance with 35 U.S.C. 112. No problem exists when the microorganisms used are known and readily available to the public. When the invention depends on the use of a microorganism which is not so known and readily available, applicants must take additional steps to comply with the requirements of Section 112.

*In re Argoudelis et al.*, 168 USPQ 99 (CCPA, 1970), accepted a procedure for meeting the requirements of 35 U.S.C. 112. Accordingly, the Patent Office will accept the following as complying with the requirements of Section 112 for an adequate disclosure of the microorganism required to carry out the invention:

(1) The applicant, no later than the effective U.S. filing date of the application, has made a deposit of a culture of the microorganism in a depository affording permanence of the deposit and ready accessibility thereto by the public if a patent is granted, under conditions which assure (*a*) that access to the culture will be available during pendency of the patent application to one determined by the Commissioner to be entitled thereto under Rule 14 of the Rules of Practice in Patent Cases and 35 U.S.C. 122, and (*b*) that all restrictions on the availability to the public of the culture so deposited will be irrevocably removed upon the granting of the patent;

(2) Such deposit is referred to in the body of the specification as filed and is identified by deposit number, name and address of the depository, and the taxonomic description to the extent available is included in the specification; and

(3) The applicant or his assigns has provided assurance of permanent availability of the culture to the public through a depository meeting the requirements of (1). Such assurance may be in the form of an averment under oath or by declaration by the applicant to this effect.

A copy of the applicant's contract with the depository may be required by the Examiner to be made of record as evidence of making the culture available under the conditions stated above.

RICHARD A. WAHL,
*Assistant Commissioner.*

Apr. 29, 1971.

[886 O.G. 638]

(133) EVIDENCE OF PATENTABILITY OR PRIORITY

[37 CFR Part 1]

*Proposed Special Statement in Affidavit or Declaration When Relying Upon Facts, Data, Test Results or Other Evidence*

Notice is hereby given that, pursuant to the authority contained in section 6 of the Act of July 19, 1952 (66 Stat. 793; 35 U.S.C. 6) the Patent Office proposes to amend Title 37, Code of Federal Regulations, by adding a new § 1.69.

All persons are invited to present their views, objections, recommendations, or suggestions in connection with the proposed new section, to the Commissioner of Patents, Washington, D.C. 20231, on or before June 27, 1972, on which date a hearing will be held at 9 a.m. in Room 8C06, Building 2, Crystal Plaza, 2011 Jefferson Davis Highway, Arlington, Va. 22202. All persons wishing to be heard orally at the hearing are requested to notify the Commissioner of Patents of their intended appearance. Any written comments or suggestions may be inspected by any person upon written request a reasonable time after the closing date for submitting comments.

New § 1.69 seeks to guard against the omission from facts, data, test results, or other evidence presented in connection with patentability or priority of invention, of known evidence which is inconsistent with that presented or which would convey a different impression. The purpose is to insure presentation to the Patent Office of the evidence needed to make an informed decision on patentability or priority of invention. The section thus requires a verified statement that no such inconsistent evidence is known to the person making the statement, if such is the fact.



The text of the proposed new § 1.69 is as follows:

§ 1.69 *Special statement in affidavit or declaration when relying upon facts, data, test results, or other evidence.*

(a) An affidavit or declaration filed during the prosecution of an application presenting evidence urged as bearing on patentability or priority of invention will be considered only if the applicant or other person making the affidavit or declaration states therein that no evidence is known to him which is inconsistent with that relied on in the affidavit or declaration, or which would tend to give an impression different from that conveyed by the affidavit or declaration.

(b) If, during the prosecution, the applicant, to establish patentability, relies on representations as to facts, data, or test results set forth in the specification, such representations will be considered for that purpose only if applicant files an affidavit or declaration attesting as to the truth of the representations and asserting that no facts, data, or test results are known to him which are inconsistent with those set forth in the specification, or which would tend to give an impression different from that conveyed by the specification.

Dated: April 28, 1972.

ROBERT GOTTSCHALK,
*Commissioner of Patents.*

Approved: May 1, 1972.

JAMES H. WAKELIN, JR.,
*Assistant Secretary for Science and Technology.*

[F.R. Doc. 72-6925; Filed 5-5-72; 8:49 a.m.]

*Published in 37 F.R. 9225, May 6, 1972*

[899 O.G. 2]

(Pending—No Final Action Taken)

(134) STATUS OF RULE 69 PROPOSAL

This notice is in response to numerous inquiries received by the Patent Office relative to the status of the proposal, published at 37 F.R. 9225 on May 6, 1972 and at 899 O.G. 2 on June 6, 1972, to add a new section 1.69 to Title 37, Code of Federal Regulations.

All of the many written and oral comments received have been analyzed and are currently being studied. The analysis indicates that comments in favor of and against the principle of the rule were about evenly divided. Many comments expressed reservations concerning the language used. The "inconsistency" and "tend to give an impression" clauses drew the most criticism. The first clause was viewed as being too absolute, forcing the affiant or declarant to abdicate reasonable judgment concerning validity of seemingly inconsistent or maverick test results. The second clause was viewed as being too subjective or vague which would result in second guessing later. The additional burden on both applicants and examiners was also advanced as reason to change the proposed language.

In summary, the proposal is still under study with the view of developing a satisfactory way to accomplish the intent of the proposed rule.

S. WM. COCHRAN,
*Solicitor.*

Nov. 22, 1972.

[905 O.G. 448]

(135) STATEMENTS FILED UNDER ATOMIC ENERGY ACT AND NASA ACT

Attention is called to the provisions of section 152 of the Atomic Energy Act of 1954 (42 U.S.C. 2182) and section 305(c) of the National Aeronautics and Space Act of 1958 (42 U.S.C. 2457). These statutes provide that the title to inventions useful in the production or utilization of special nuclear material or atomic energy, made or conceived in the course of or under any contract, subcontract, or arrangement entered into with or for the benefit of the Atomic Energy Commission, and any invention made in the performance of any work under any contract of the National Aeronautics and Space Administration, shall be vested in the United States. They also provide that no patent may be granted for any invention useful in the production or utilization of special nuclear material or atomic energy, or which in the opinion of the Commissioner has significant utility in the conduct of aeronautical or space activities, unless the applicant files with his application or within 30 days after request therefor by the Commissioner, a statement under oath setting forth (*a*) the full facts in regard to the making or conception of the invention, and (*b*) the situation with regard to the contractual relationships involving the Commission or the Administration. Careful attention should be given the exact wording of the requirements of whichever of these sections is pertinent in order to assure that all of the requirements are met. Since the duty of requiring the statements is placed by law on the Commissioner of Patents, it is incumbent on the Commissioner to determine whether the statements are timely filed and sufficient in substance to comply. Since these laws do not provide for any extension of the 30 day period or for reviving an application which has become abandoned for failure to file a proper statement, it is important that such statements be timely filed and that they do so comply in order to avoid loss of valuable patent rights.

The "full facts" involved in the conception and making of an invention should include those which are unique to that invention. The use of form paragraphs or printed forms which set forth only broad generalized statements of fact is not ordinarily regarded as meeting the requirements of these statutes.

This office has construed the word "applicant" in both of these statutes to mean the inventor or joint inventors in person. Accordingly, in the ordinary situation, the statements must be signed by the inventor or joint inventors, if available. This construction is consistent with the fact that no other person could normally be more knowledgeable of the "full facts concerning the circumstances under which such invention was made," (42 U.S.C. 2457) or, "full facts surrounding the making or conception of the invention or discovery" (42 U.S.C. 2182).

In instances where an applicant does not have first-hand knowledge whether the invention involved work under any contract, subcontract, or arrangement with or for the benefit of the Atomic Energy Commission, or had any relationship to any work under any contract of the National Aeronautics and Space Administration, and includes in his statement information of this nature derived from others, his statement should identify the source of his information. Alternatively, the statement by the applicant could be accompanied by a supplemental declaration or oath, as to the contractual matters, by the assignee or other person, e.g., an employee thereof, who has the requisite knowledge.

Where an applicant is deceased or incompetent, or where it is shown to the satisfaction of this Office that he refuses to furnish a statement or cannot be reached after diligent efforts, declarations or statements under oath setting forth the information required by the statutes may be accepted from an officer or employee of the assignee who has sufficient knowledge of the facts. The offer of such substitute statements should be based on the actual unavailability of or refusal by the applicant, rather than mere inconvenience. Where it is shown that one of joint inventors is deceased or unavailable, a statement by all of the other joint inventor(s) may be accepted.

WILLIAM FELDMAN,
*Deputy Assistant Commissioner for Patents.*

Aug. 13, 1973.

[914 O.G. 2]

(136) PROTESTS TO THE GRANT OF A PATENT

[37 CFR Part 1]

*Notice of Proposed Rule Making*

Notice is hereby given that, pursuant to the authority contained in section 6 of the Act of July 19, 1952 (66 Stat. 793; 35 U.S.C. 6), as amended Oct. 5, 1971, Public Law 92-132, 85 Stat. 364, the Patent Office proposes to amend title 37 of the Code of Federal Regulations by revising §§ 1.11(b) and 1.291.

All persons are invited to present their views, objections, recommendations, or suggestions in connection with the proposed changes to the Commissioner of Patents, Washington, D.C., 20231, on or before Oct. 31, 1973, on which date a hearing will be held at 9:30 a.m. in Room 11C24, Building 3, 2021 Jefferson Davis Highway, Arlington, Va. All persons

wishing to be heard orally at the hearing are requested to notify the Commissioner of Patents of their intended appearance. Any written comments or suggestions may be inspected by any person, upon written request, a reasonable time after the closing date for submitting comments.

The underlying purpose of the proposed rule change is to assure that the best art and information relevant to the patentability of an application for patent are brought to the Patent Office's attention. Under present procedures, ex parte examination of patent applications is conducted as thoroughly and in as effective a manner as possible. However, it is noted that a significant number of patents involved in litigation are held invalid because prior art or other information having a bearing on patentability, which was not known to the examiner during the prosecution of the case, is brought to the court's attention.

The proposed rule change is designed to elicit this additional prior art or other information. An applicant would be given the opportunity to open his application to public inspection prior to issuance of a patent. The public would then have the opportunity to bring to the attention of the Office information which bears on the question of patentability of the pending patent application. Presumably, interested and affected members of the public may be aware of relevant prior art which the Office did not find, or might know of other information unavailable to the Office, bearing on the question of patentability. If in the opinion of the Commissioner, consideration of such new evidence would lead to a more complete appraisal of patentability, the Commissioner may reopen prosecution of the application.

It is believed that there are several benefits which this proposed procedure would bring about. First, applicants would benefit from a more meaningful presumption of validity where a patent is issued after appropriate consideration of evidence submitted by the public under this procedure. Second, potential competitors of the applicant would benefit from having the opportunity to call to the attention of the Office information that could either prevent a patent from issuing or lead to claims of more restricted scope. And by use of the proposed procedure such determinations would be helpful in avoiding the more expensive conventional procedure following the issue of the patent, of litigating the questions of validity and scope of such patent on the same grounds at a later date. Finally, the public would benefit from the resultant strengthening of the presumption of validity of patents granted on applications which underwent this procedure and the strengthening of the patent system for its intended purposes.

Paragraph (b) of § 1.11 is proposed to be amended to allow the Patent Office to open the file of a pending patent application to the public in accordance with a written authorization from the applicant as specified in the proposed § 1.291(b).

It is proposed to amend present § 1.291 by incorporating a new paragraph (a) which provides that protests filed by the public to the grant of a patent, including the identity of the protesting party, be made of record in the patent application concerned, if such application is identified by the protesting party. The proposed rule change would also afford the examiner an opportunity to ask the protesting party for submission of additional evidence bearing on the question of patentability. Any such evidence received would be forwarded to the applicant. Under § 1.291(a) the protesting party would not be permitted to inspect the application file.

In paragraphs (b), (c) and (d) of § 1.291, a new procedure is proposed whereby an applicant, whose application for patent has been indicated as being allowable by the examiner (Form PO–327), may within thirty days of such indication authorize the Office to open his application to public inspection. The application would be available for inspection for a period of three months from the time a notice to that effect appeared in the OFFICIAL GAZETTE. The notice would be in the form of a publication of data necessary to identify the application in question and would include a representative illustration of the invention, the most comprehensive claim, and a listing of references cited by the Patent Office. The applicant would be charged a fee of $25.00 to defray the printcost of this notice in the OFFICIAL GAZETTE.

On the basis of such notice, any person would be permitted access to the application in question and could obtain copies of any papers contained therein (see proposed amendment to § 1.11(b)).

If any person, after inspection of an application, is of the opinion that the relevant prior art of record is not complete, he can notify the Commissioner and the applicant in writing, of any grounds, including additional publications or patents, which he believes have a bearing on the patentability of any claim contained in such application, together with an explanation of the relevance of such publications or patents to the allowed claims. He would, in addition or alternatively, have the opportunity to comment on the manner in which the prior art of record was applied and raise any other matter which could affect the patentability of the claimed invention.

All evidence and comments received in this fashion, including the identity of the protesting party, would be made of record in the application after the time period for protest had elapsed. The protesting party would thereafter be privy to all further proceedings in the Patent Office insofar as they relate to the evidence he submitted. If, in the opinion of the Commissioner, such evidence constituted a prima facie showing of non-patentability of the subject matter as claimed, or unenforceability of a patent if granted, prosecution of the application would be reopened.

As a result of any reexamination of the application, the applicant would be permitted to present amended or new claims which would be subject to a determination of patentability by a primary examiner. The protesting party who made evidence of non-patentability available to the Patent Office would be informed of any action taken by the Office and given the opportunity to comment thereon.

In cases involving evidence of prior public use or sale of the invention, the procedure outlined in present § 1.292 would be utilized to provide the person presenting such evidence with an opportunity to be heard.

An adverse determination to the patentability of any claim may, of course, be appealed by the applicant to the Board of Appeals under § 1.191.

Applications considered under the above procedure and ultimately allowed after a decision by the Board of Appeals would not be reconsidered under this proposed procedure. If, after the three-month period from the date of publication, no evidence was received or if in the opinion of the Commissioner the evidence submitted does not bar the granting of a patent on grounds of patentability or enforceability, a notice of allowance (Form POL–85) would be transmitted in due course. This determination would be final and not subject to petition by the protesting party.

The text of the proposed amended sections is as follows:

§ 1.11 *Files open to the public.*

* * * * * *

(b) Applications in which the Office has accepted a request filed under § 1.139 or received an authorization under § 1.291 (b), are open to inspection by the general public, and copies may be furnished upon paying the fee therefor.

§ 1.291 *Protests to the grant of a patent.*

(a) The patent statutes do not provide for protests to the grant of a patent as a matter of right on the part of the public. Where protests to the grant of a patent are filed with the Office, and the protesting party identifies the application, the protest papers will be referred to the examiner having charge of the application. In such case, the protest papers, including the identity of the protesting party, will be placed in the application file and a copy will be forwarded to the applicant. The examiner may request submission of further evidence from the protesting party, and any further evidence adduced will be made of record and also forwarded to the applicant. However, the protesting party will not be permitted to inspect the application file unless the Office has received an authorization under paragraph (b) of this section or § 1.14 (a). Where the protesting party cannot identify the application, the protest will be acknowledged and referred to the examiner having charge of the subject matter involved for his information.

(b) Applications may be voluntarily opened to public inspection. Within thirty days from the mailing date of a notice of allowability from the examiner, an applicant may waive his right to have his pending application for patent kept in confidence (§ 1.14). Such waiver may be accomplished by filing in the Office a written authorization, signed by the applicant and assignee of record or by the attorney or agent of record, to open the complete application to inspection and protest by the general public to the granting thereof, together with a fee of $25.00.

(c) Upon receipt of an authorization under paragraph (b) of this section, the Office shall publish suitable notice of such fact in the OFFICIAL GAZETTE together with a representative illustration of the invention, the most comprehensive claim, and a listing of references cited by the Patent Office. At anytime up to three months thereafter, any person may protest the grant of a patent by filing with the Commissioner and serving the applicant with publications, patents or any other information which might have a bearing on the patentability of any claims contained in the patent application or on the enforceability of any patent issuing on said application; said protest must include a memorandum explaining the relevance of the submitted evidence. All protest papers filed, together with the identity of the real party in interest originating the protest shall be made of record in the application after the time period for protest has elapsed. Examination of the application shall be reopened if, in the opinion of the Commissioner, it appear that any claim thereof may not be patentable or any patent granted on said application would be unenforceable in view of such evidence. In the event that examination is reopened, the protesting party shall be apprised of all further proceedings in the Patent Office insofar as they relate to or are concerned with the evidence submitted by the protesting party, and accorded the opportunity to comment thereon. All further papers received from the protestor will be made of record. If the examination of the application is not reopened, the protesting party shall be so apprised. A decision by the Commissioner not to reopen an application for examination after the close of the protest period, shall be final and not subject to petition by the protesting party. In cases involving evidence of public use or sale of the invention more than one year before the filing of the application, the procedure outlined in § 1.292 shall be followed.

(d) The transmittal of a formal notice of allowance shall be held in abeyance until the patentability of the claimed invention has been determined in light of such evidence. If no protest to patentability is submitted to the Commissioner within the time specified, or if he determines that no further examination is necessary, a notice of allowance shall be transmitted to the applicant, his attorney or his agent in due course. A copy of said notice of allowance will also be forwarded to the protesting party.

ROBERT GOTTSCHALK,
*Commissioner of Patents.*

Date: May 15, 1973.

Approved:
DR. BETSY ANCKER-JOHNSON,
*Assistant Secretary for Science and Technology.*

(Pub. FR 1469, June 4, 1973)

[911 O.G. 760]

(Pending—No Final Action Taken)

## (137) QUALITY REVIEW PROGRAM FOR EXAMINED PATENT APPLICATIONS

A new Quality Review Program was instituted in the U.S. Patent Office on April 1, 1974.

The purpose of the program is to evaluate the quality of the product of the patent examining process and to assist in determining where substantive and procedural adjustments in the patent examination process are appropriate.

The program involves randomly selecting a sample of allowed applications from each of the Art Units in the Patent Examining Corps before the applications are forwarded to the Patent Issue Division for Mailing of the "Notice of Allowance." The quality review will be concerned with three major aspects of the patent examining process, namely:

(1) patentability of the allowed claims in view of the prior art of record or other reasons determined by the reviewer.
(2) compliance with current examining practices and procedures; and
(3) correctness of the field of search and the classification of each application.

The quality review program also provides for the research of some of the allowed applications in the sample.

If, during the quality review process, it is determined that one or more claims of a reviewed application are clearly unpatentable, the prosecution of the application will be reopened. Only those applications wherein the prosecution has been reopened will reflect in the record that a quality review has taken place.

C. MARSHALL DANN,
*Commissioner of Patents.*

Apr. 2, 1974.

[921 O.G. 1742]

## (138) CLAIMS COPIED FROM PATENTS

Applicants and their attorneys or agents are reminded of the requirement of Rule 205(b) (37 CFR 1.205(b)) of the Rules of Practice that "Where an applicant presents a claim copied or substantially copied from a patent, he must, at the time he presents the claim, identify the patent, give the number of the patented claim, and specifically apply the terms of the copied claim to his own disclosure, unless the claim is copied in response to a suggestion by the Office."

The requirement of Rule 205(b) (37 CFR 1.205(b)) applies to claims copied in an application at the time of filing as well as to claims copied in an amendment to a pending application. If an applicant, attorney, or agent presents a claim copied or substantially copied from a patent without complying with Rule 205(b) (37 CFR 1.205(b)) the examiner may be led into making an action different from what he would have made had he been in possession of all the facts. Therefore, failure to comply with Rule 205(b) (37 CFR 1.205(b)), when submitting a claim copied from a patent, may result in the issuance of an Order To Show Cause why the application should not be stricken from the files of the Patent Office. If a satisfactory answer is not filed within the period set in the Order it may be necessary to strike the application under Rule 56 (37 CFR 1.56).

This reminder is being published to emphasize to applicants and their attorneys or agents the importance of complying with the requirement of Rule 205(b) (37 CFR 1.205(b)) at the time the claim is copied.

WILLIAM FELDMAN,
*Acting Assistant Commissioner for Patents.*

Apr. 10, 1974.

[922 O.G. 442]

## (139) EXAMINATION OF PATENT APPLICATIONS HAVING AN ISSUE OF FRAUD

This notice deals with the general procedures established within the Patent Office for the handling, during ex parte examination, of applications in which, or in relation to which, some facts appear or representations are made raising an issue of fraud.

Such applications should be forwarded by the examiner to the Office of the Assistant Commissioner for Patents as soon as the facts or representations are discovered. The application will then be reviewed and a determination made as to whether immediate action on the issue of fraud is necessary or whether the consideration of such an issue should be delayed until after the normal ex parte examination by the examiner (if such examination has not previously taken place).

Where compelling reasons dictate immediate action, the application will not be returned to the examining group for normal ex parte examination until such action is complete. Otherwise, the application will be returned to the examining group. The examiner will complete the examination as to all matters except that any issues relating to possible fraud will not be considered or commented upon. When this examination is completed the application will be returned to the Office of the Assistant Commissioner for Patents. An investigation will then be undertaken to resolve the issues relating to the possible fraud. Such an investigation may include a requirement for additional information from applicant, or from the examiner, should it be necessary for the proper conduct of the investigation.

If the investigation reveals a prima facie case of fraud an Order to Show Cause why the application should not be stricken under Rule 56 of the Rules of Practice [37 CFR 1.56] will be issued.

If a prima facie case of fraud does not exist, or is adequately rebutted, a decision will be entered in the application file

stating that the Patent Office has found no evidence necessitating striking the application. The application will then be returned to the examining group or other appropriate Patent Office section for further action.

WILLIAM FELDMAN,
Jan. 2, 1975. *Acting Assistant Commissioner for Patents.*

[930 O.G. 1455]

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(140) CHANGE OF INVENTORS

Where a person is added or removed as an inventor during the prosecution of an application before the Patent Office, problems may occur upon claiming U.S. priority in a foreign filed case. One such problem results from the apparent conflict between the inventor(s) named in the foreign application and the inventor(s) shown on the priority papers obtained from the U.S. Patent Office. Another problem may occur where there is no conflict between the inventors in the foreign application as filed and the priority papers but a change of inventors has been made in the U.S. application and a similar change is to be made in the foreign application.

In order to overcome the possibility of these problems arising in the future, Examiners should acknowledge any addition of inventors made in accordance with the practice under Rule 45 including the following statement in the next communication to the applicant or his attorney:

"In view of the papers filed _____, it has been found that this application, as filed, through error and without any deceptive intention, failed to include _____ as an actual joint inventor and accordingly, this application has been corrected to include him in accordance with Rule 45."

A similar statement, appropriately modified, should be made in the case where an inventor is removed from those included in the application as filed.

RICHARD A. WAHL,
June 10, 1968. *Assistant Commissioner.*

[852 O.G. 509]

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(141) TRIAL VOLUNTARY PROTEST PROGRAM

After reviewing the comments received as a result of the Notice of Proposed Rule Making entitled, "Protests to the Grant of a Patent," dated May 15, 1973, published at 911 O.G. 760, the Patent Office has decided to institute a Trial Voluntary Protest Program limited to 2,000 applications.

The underlying purpose of protest proceedings is to assist the Patent Office by bringing the best prior art and information relevant to the patentability of a patent application to the examiner's attention. Occasionally patents are held invalid by the courts because of prior art or other information which was not available or known to the examiner. Protest proceedings are intended to elicit from the public such prior art or other information not cited by the examiner which bears upon the question of patentability.

Several benefits are expected to accrue from protest proceedings. First, patents would have a more meaningful presumption of validity because of appropriate consideration by the examiner of additional evidence submitted by the public. Second, potential competitors of the applicant would benefit from having the opportunity to call to the attention of the Patent Office information that could either prevent a patent from issuing or lead to claims of more restricted scope. Further, the protest proceedings may be helpful in minimizing the more expensive conventional procedure of litigating the question of validity at a later date. Finally, the public would benefit from the resultant strengthening of the presumption of validity of patents granted on applications which underwent protest proceedings and the strengthening of the patent system for its intended purposes.

Since legislation is pending in Congress which would make opposition or protest proceedings mandatory in all allowed applications, it appears appropriate and desirable to gain some experience at this time with a Trial Voluntary Protest Program. The Patent Office would welcome any comments, from those who elect to participate in the program, relative to their experience concerning the effectiveness, costs, etc.

Since the trial program is voluntary and limited to a selected number of applications, no rule changes are contemplated or considered necessary at this time.

APPLICATIONS INVOLVED

The 2,000 applications involved in the Trial Voluntary Protest Program will include 135 applications allowed in each of the 14 examining groups excluding Group 220, and 110 applications allowed in Group 220, after July 1, 1974. No other applications will be made part of the trial program. The applications in the trial will be limited to the 1970 filing date series and will exclude all reissue, plant, and design applications. Also, applications which have been involved in proceedings before the Board of Appeals, the Board of Patent Interferences, or the courts will be excluded from the trial program.

WAIVER OF CONFIDENTIALITY

A form letter will be sent to the applicant of each of the 2,000 applications involved in the trial. The letter will indicate that the application is one of the selected applications and will afford to applicant the opportunity to participate in the program by filing a voluntary waiver of confidentiality thereby making his application available for protest.

RESPONSE TO REQUEST FOR WAIVER OF CONFIDENTIALITY

The applicant will have two months after the mailing of the form letter concerning waiver of confidentiality to either (1) file the waiver of his right to keep the application confidential, signed by the applicant, assignee of record, or attorney or agent of record, or (2) indicate that he does not desire to participate in the trial program. A response from the applicant to the form letter will be requested. Such response is considered desirable to allow prompt processing of all 2,000 applications selected for the Trial Voluntary Protest Program. No extension of the two month period will be granted.

If the applicant declines to participate in the program, his application will be forwarded to the Patent Issue Division for mailing of the Notice of Allowance. In these situations no record of the correspondence will be made in the application file. Also, the Patent Office will not keep any records concerning the identity of the particular applications where the opportunity to participate in the program was declined.

If a proper waiver of the right to confidentiality is submitted within two months of the date of the form letter regarding voluntary waiver, the application will be placed in the Trial Voluntary Protest Program.

Following an affirmative response a notice, identifying the application will be published in the OFFICIAL GAZETTE similar to that used for patents. The notice will include necessary identifying information, including the examining group to which the application is assigned, an illustrative figure, a representative claim or claims, and a listing of references cited by the Patent Office.

On the date the notice is published in the OFFICIAL GAZETTE, the application file will also be made available for public inspection for the duration of the protest period in the examining group and the application will be available in printed form similar to a patent. The printed application will include all the figures and the specification, including claims. All printed applications will be classified and placed in the Patent Office search files. Copies of the printed applications will be available to the public at the prices set by statute for patent copies.

PERIOD FOR FILING PROTEST

Protesters will have a period of three months running from date of publication of the notice in the OFFICIAL GAZETTE in which to file their protest in the Patent Office. Each protest must be filed in duplicate, and include the grounds which the protester believes have a bearing on the patentability of any claim contained in the published application. If the grounds are based on prior art, the protest should include a copy of the prior art together with an explanation of the relevance of such prior art to the allowed claims. In addition or alternatively, the protester will have the opportunity to comment on the manner in which the prior art of record was applied and raise any other matter which may affect the patentability of the claimed invention. In cases where prima facie evidence is presented as to prior public use or sale of the invention, the public use proceedings set forth in Rule 292 will be used to provide the protester presenting such evidence with an opportunity to be heard. No extension of the three month period will be granted.



PROTESTER INVOLVEMENT

A protester may elect to either (1) have his identity kept secret and have no further participation in the proceedings or (2) be recognized in the application file and become involved in any future prosecution of the application.

In both instances the protester must initially identify himself and give his address; however, if he elects to forego future involvement, he may identify himself on a cover letter and request that the cover letter not be made of record. In such instances the cover letter will be destroyed upon completion of prosecution when the application is forwarded to either Patent Issue Division or the abandoned files.

CONSIDERATION OF PROTEST

The published allowed application files will be retained during the protest period in the examining groups. The examining groups will receive all protests filed, acknowledge receipt thereof, and make them of record in the application files. At the end of the period for filing protests, three months after publication in the OFFICIAL GAZETTE, those applications in which no protests have been filed will be forwarded to the Patent Issue Division for mailing of the Notice of Allowance, while those applications in which protests have been filed will be referred to the group director for decision as to whether prosecution should be reopened.

If the group director decides that the evidence submitted does not constitute a prima facie showing of non-patentability of any allowed claim, the application will be forwarded to the Patent Issue Division for mailing of the Notice of Allowance. The protesters who elected to participate in subsequent prosecution will be notified that the prosecution has not been reopened, and the applicant will be sent the duplicate copy of all protests. The group director's decision will be final and not subject to petition by any protester.

If the group director decides that the submitted evidence constitutes a prima facie showing of non-patentability of any allowed claim, prosecution of the application will be reopened and the application will be re-examined. The decision to reopen prosecution will be communicated to the applicant by means of an Office action, signed by a primary examiner, rejecting any claim believed unpatentable. The duplicate copy of all protests will be mailed to the applicant with the Office action. Protesters who elected to participate in later prosecution and submitted evidence on which the rejection is based will be identified in the Office action and will also receive copies of this and subsequent Office actions. Other protesters who elected to participate in later prosecution will be notified that prosecution has been reopened, but based on evidence and for reasons other than those submitted by them and that, consequently, no further correspondence will be directed to them. The applicant will normally be given a three month shortened statutory period to respond to the Office action.

RESPONSE TO SUBSEQUENT OFFICE ACTIONS BY THE APPLICANT

As a result of re-examination of the application, the applicant will be permitted to respond, such as by presenting amended or new claims which will be subject to further consideration by the primary examiner. In order to allow protesters, who submitted evidence on which a rejection in the Office action is based and who elected to participate in later prosecution, to comment upon further proceedings, applicant will be required to serve by mail upon each protester identified in the Office action, a copy of any response, including appeal brief, filed. Indication of such service will be a required component of a complete response. Applicant need only reply to the rejections and objections made in the Office action. There need be no specific response to any other points raised by the protesters.

COMMENT ON APPLICANT'S RESPONSE BY THE PROTESTER

Each protester served will be allowed one month, running from the date applicant's response or brief is received in the Patent Office, to file comments relating thereto. All communications from protesters must be in writing. Examiner interviews with the protesters will not be permitted. No extensions of the one month period will be granted.

CONCLUSION OF PROSECUTION

If, after further prosecution, the application is found to be allowable, all protesters still participating at that time will be notified thereof and the application will be forwarded to the Patent Issue Division. A decision of the primary examiner to allow an application will not be subject to petition by any protester.

C. MARSHALL DANN,
May 7, 1974. *Commissioner of Patents.*

[923 O.G. 2]

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(142) PUBLICATION OF APPLICATIONS UNDER TRIAL VOLUNTARY PROTEST PROGRAM

The January 28, 1975 issue of the Official Gazette will include publication of information identifying the 665 applications in which secrecy was waived under the Trial Voluntary Protest Program announced by the Notice of May 7, 1974, published at 923 O.G. 2 on June 4, 1974. The identifying information will include matter similar to that used in the Official Gazette for patents and will also list the references cited by the Patent Office and the number of the examining group in which the application was examined.

From January 28, 1975 to April 28, 1975 the application files of the applications listed in the Official Gazette will be made available for public inspection upon written request in the examining group identified.

Applications in which secrecy has been waived under the Trial Voluntary Protest Program will be published in printed form, similar to that of printed patents. Printed copies will be available on and after January 28, 1975 at the prices set by statute for patent copies. Orders for copies of the published applications must include the "B" prefix before the Serial Number to differentiate them from orders for patents.

Orders for copies of the January 28, 1975 Official Gazette may be placed with the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. The price is $6.60 per copy.

Any protests relating to the patentability of these published applications must be filed in writing in the Patent Office no later than April 28, 1975.

C. MARSHALL DANN,
Dec. 2, 1974 *Commissioner of Patents.*

[929 O.G. 1356]

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(143) PROCEDURES UNDER TRIAL VOLUNTARY PROTEST PROGRAM

The January 28, 1975 issue of the OFFICIAL GAZETTE includes publication of information identifying the 667 patent applications in which confidentiality has been waived under the Trial Voluntary Protest Program announced by the Notice of May 7, 1974, published at 923 O.G. 2 on June 4, 1974. This notice is somewhat more detailed than the earlier notice as to the procedures to be followed during the actual protest period and the consideration of protests.

*Official Gazette*

The patent applications which are subject to protest until April 28, 1975 are found in the January 28, 1975 issue under the title "Patent Applications Published Under Trial Voluntary Protest Program" arranged in the same three categories (General and Mechanical, Chemical, and Electrical) as used for patents. In each category, the applications are arranged in numerical class and subclass order. This OFFICIAL GAZETTE also includes two guides to assist location of a particular application. They are, an "Index of Applicants and Assignees of Published Applications" and a concordance between the published applications and the classification by class and subclass, entitled "Classification of Patent Applications."

*Printed Copies of Applications*

The public may order printed copies of the published applications at the price set by statute for patent copies by using the document number which is the Serial Number of the application with a letter "B" prefix (i.e., B 468,198). Each applicant who has permitted his application to be published under the Trial Voluntary Protest Program will be sent one copy of his application in printed form.

*Inspection of Files*

The Patent Office files of the published applications will be available for inspection by the public upon written request between January 28, 1975 and April 28, 1975 in the Examining Group Art Unit identified in the OFFICIAL GAZETTE and

on the printed application copy. Applications referred to in the published applications will also be available to the public or written request. Written requests may simply state, "The undersigned desires to inspect the file of published application B ------ in Group ------ on -------- at -------." Such (date) (time)
requests may be filed by mail or be presented to the receptionist in the respective Examining Group. In the event of concurrent requests for access to the same application, a time limit of two hours may be imposed. Such written requests for inspection will not be made of record in the applications.

Requests for copies of papers in the published application files should be filed in the appropriate Examining Group. The price for copies made by the Patent Office is thirty cents per page [37 C.F.R. 1.21 (b)].

*Filing of Protests*

Protests relating to the patentability of any of the published applications must be filed in writing in the Patent Office no later than April 28, 1975. No extension of the time will be granted. Each protest must be filed in duplicate (one copy will be forwarded to the applicant nad the other copy will be placed in the application file) and include the grounds which the protester believes have a bearing on the patentability of any claim contained in the published application. If the protest involves prior art not of record in the application, two copies of the alleged prior art, together with an explanation of the relevance of such prior art to the allowed claims, should be included. The protester may also comment on the prior art of record in the application and the manner in which it was applied.

In those published applications where prima facie evidence of prior public use or sale of the claimed invention is presented in accordance with 37 C.F.R. 1,292, public use proceedings will give the protester an opportunity to present evidence.

Should claims be copied by another applicant from a published application for interference purposes, the copier must also file a notice of such copying in the published application so that it will not be patented before conclusion of any interference proceedings.

*Protester*

A protester may elect to either (1) remain anonymous and have no further participation in the protest proceedings or (2) be recognized in the application file and become involved in any future prosecution of the application. In either instance the protester must initially identify himself and give his address, but if he desires to remain anonymous he may merely identify himself on a cover letter and request that the cover letter not be made of record. In such instances the cover letter will be kept in confidence by the Patent Office and destroyed upon completion of the prosecution. If a protester desires to withdraw from the protest proceedings, he may do so at any time.

*Acknowledgement of Protest*

The Examining Group will receive, retain and acknowledge receipt of all protests. After April 28, 1975, all protests will be made of record in the application file.

*Consideration of Protest*

A published application in which a protest has been filed will be reviewed to decide whether the evidence submitted by the protester is sufficient to warrant reopening of the prosecution in the application.

If a decision is made against reopening prosecution, the decision will be communicated in writing to the applicant and those protesters who elected to participate in prosecution. A copy of all protests filed in the application will be mailed to the applicant. The applicant may, but need not, file a paper presenting his views concerning the protests even though prosecution is not reopened.

If it is decided that the submitted evidence constitutes a prima facie showing of non-patentability of any allowed claim, prosecution of the application will be reopened and the application will be re-examined. The applicant will be informed of the decision to reopen prosecution by means of an Office Action signed by the primary examiner and approved by the Group Director. The Office Action will include a rejection of any claim believed unpatentable. A copy of all protests filed will also be mailed to the applicant with the Office Action. The Office Action will identify those protesters who elected to participate in prosecution and who submitted agruments on which the rejection in the Office Action is based. All such protesters identified in the Office Action will also receive a copy of that and any subsequent Office Actions from the Patent Office.

Other protesters who elected to participate in prosecution will be notified that prosecution has been reopened, but based on evidence and for reasons other than those submitted by them and that, consequently, no further correspondence will be directed to them.

*Response by Applicant*

The applicant may respond to the Office Action which reopened prosecution by argument and amendment. In order to permit protesters, who submitted evidence upon which a rejection is based, to participate in later prosecution, applicants will be required to serve by mail a copy of any response including appeal briefs on each protester identified in the Office Action. An indication of such service will be required in the reply to an Office Action in order for it to be considered a complete response.

The applicant need only reply to the rejections and objections made in the Office Action. There need be no specific response to any other points raised by the protesters.

*Protester's Comments on Applicant's Response*

Each protester who has been served will be allowed one month from the Patent Office date of receipt of applicant's response or brief, to file comments relating thereto. No extension of the one month period will be granted. All communications from protesters must be in writing. Examiner interviews with protesters are not permitted.

Any appeals to the Board of Appeals in protested applications will be taken up special.

*Conclusion of Prosecution*

If after further prosecution, the application is found to be allowable, all protesters still participating at that time will be notified thereof and the application will be forwarded to the Patent Issue Division. A decision of the primary examiner to allow an application will not be subject to petition by any protester.

*Patenting*

All patents resulting from applications published under the Trial Voluntary Protest Program will be printed in complete format. All such patents will include a notation that the disclosure has been previously published under the Trial Voluntary Protest Program.

C. MARSHALL DANN,
Jan. 6. 1975. *Commissioner of Patents and Trademarks.*

[930 O.G. 1454]

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(144) RESULTS OF TRIAL VOLUNTARY PROTEST PROGRAM

This notice summarizes the results of the first Trial Voluntary Protest Program. This program was announced in the Commissioner's Notice of May 7, 1974, which appeared in the OFFICIAL GAZETTE on June 4, 1974 at 923 O.G. 2.

Under the Program, a limited number of applicants were given an opportunity to waive confidentiality of their allowed applications in order to allow publication and public inspection thereof prior to issuance of a patent.

A request for a waiver of confidentiality was mailed in 2,000 applications. Two were returned undelivered by the Postal Service. Signed waivers of confidentiality were received for 667 applications within the two-month period for response to the request letter. At least one claim, and a drawing figure, if any, from each of the 667 applications was published in the OFFICIAL GAZETTE of January 28, 1975. That issue of the OFFICIAL GAZETTE also included a notice, at 930 O.G. 1454, which gave additional information relating to inspection of the published applications and the filing of protests.

The period for submitting protests was three months in length, ending on April 28, 1975. During this period 67 protests were filed in sixty applications.

The evidence against allowability of claims submitted in the sixty applications was considered by the appropriate examiners and group directors. The group directors determined that claims should be rejected and prosecution should be reopened in 37 applications. No prima facie showing of non-patentability was deemed made in the protests to 23 applications, and consequently, the prosecution was not reopened in these applications.



These statistics are shown, by examining group, in Table I.

TABLE I.—APPLICATIONS IN PROGRAM

| | Number of waivers requested | Number of waivers received | Total number protested | Number reopened | Number not reopened |
|---|---|---|---|---|---|
| Examining group: | | | | | |
| 110 | 135 | 65 | 11 | 9 | 2 |
| 120 | 135 | 68 | 6 | 6 | 0 |
| 140 | 134 | 54 | 9 | 3 | 6 |
| 160 | 135 | 54 | 4 | 3 | 1 |
| 170 | 135 | 44 | 4 | 0 | 4 |
| 210 | 135 | 44 | 2 | 0 | 2 |
| 220 | 109 | 39 | 3 | 2 | 1 |
| 230 | 135 | 52 | 2 | 1 | 1 |
| 240 | 136 | 32 | 4 | 1 | 3 |
| 250 | 135 | 49 | 4 | 4 | 0 |
| 310 | 135 | 35 | 1 | 1 | 0 |
| 320 | 135 | 38 | 4 | 2 | 2 |
| 330 | 135 | 22 | 0 | 0 | 0 |
| 340 | 134 | 39 | 3 | 2 | 1 |
| 350 | 135 | 32 | 3 | 3 | 0 |
| Totals | 1,998 | 667 | 60 | 37 | 23 |

The following data were tabulated about the 667 published patent applications:

1. 9 percent of the applications published were protested.
2. 120 requests for access to the published applications were made during the protest period.
3. Approximately 100 requests for copies of the file wrapper contents of the published applications were made during the protest period.
4. 7 percent of the published applications were divisional applications.
5. 8 percent of the published applications were continuation-in-part applications.
6. 5 percent of the published applications were continuations.

The following data show the origin and ownership of the published applications as compared to the patents issued in 1974.

| | Percent | |
|---|---|---|
| | Published applications | Patents issued in 1974 |
| 1. Assigned to corporations | 71 | 74 |
| 2. No assignment indicated | 24 | 24 |
| 3. Assigned to U.S. Government | 5 | 2 |
| 4. Foreign origin | 31 | 34 |

Statistics concerning the ownership, origin and type of application are shown by examining group in Table II.

*Protests Filed*

As indicated above, 67 protests were received in the sixty protested applications. Seven applications attracted two protests each. No application received more than two protests. The 37 applications in which prosecution has been reopened constitute 62 percent of the applications in which protests were received.

The following data in Table III were tabulated from questionnaires completed by the examiner in each protested application.

TABLE III.—PROTESTER INFORMATION

| | Reopened | | Not reopened | | Total | |
|---|---|---|---|---|---|---|
| Protester | Number of protests | Percent | Number of protests | Percent | Number of protests | Percent |
| Anonymous | 7 | 15.9 | 9 | 39.1 | 16 | 23.9 |
| Identified | 37 | 84.1 | 14 | 60.9 | 51 | 76.1 |
| Total | 44 | 100 | 23 | 100 | 67 | 100 |
| Percent of total | 65.7 | | 34.3 | | 100 | |

The protests in 90% of both the reopened and not reopened applications appeared to originate from corporations.

*Protest Content*

The issues or grounds for non-patentability raised in the 67 protests filed are tabulated in Table IV. The number shown indicates the number of protests which involved the indicated issue. It will be noted that some protests involved more than one issue.

TABLE IV.—ISSUES INVOLVED IN PROTESTS

| | Number of protests | | |
|---|---|---|---|
| | In applications— | | |
| Issue involved | Reopened | Not reopened | Total |
| 1. Prior art under 35 USC 102 | 23 | 4 | 27 |
| 2. Prior art under 35 USC 103 | 34 | 20 | 54 |
| 3. Prior public use or sale under 35 USC 102 (b) | 1 | 0 | 1 |
| 4. Prior invention under 35 USC 102(g) | 3 | 0 | 3 |
| 5. 35 USC 112, first paragraph | 7 | 1 | 8 |
| 6. 35 USC, second paragraph | 5 | 1 | 6 |
| 7. Misrepresentation or fraud | 1 | 1 | 2 |

Most of the protests filed included the citation of at least one prior art reference. A few protests were based upon prior art already of record in the applications. Others were based upon newly cited references, and some were based upon a combination of prior art already of record with newly cited references. The number of protesters relying upon prior art

TABLE II.—PUBLISHED APPLICATION DATA

| | Number published | Application ownership | | | Foreign origin | Type of application | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Assigned | Govt. | Unassigned | | Cont. | Cont.-in-part | Division | Substitute |
| Examining group: | | | | | | | | | |
| 110 | 65 | 53 | 2 | 10 | 15 | 2 | 9 | 3 | 0 |
| 120 | 68 | 47 | 1 | 20 | 32 | 5 | 9 | 13 | 0 |
| 140 | 54 | 38 | 2 | 14 | 12 | 3 | 6 | 6 | 0 |
| 160 | 54 | 38 | 1 | 15 | 18 | 2 | 6 | 9 | 0 |
| 170 | 44 | 28 | 1 | 15 | 5 | 3 | 5 | 2 | 0 |
| 210 | 44 | 34 | 1 | 9 | 16 | 3 | 1 | 2 | 0 |
| 220 | 39 | 16 | 16 | 7 | 13 | 3 | 2 | 2 | 1 |
| 230 | 52 | 43 | 0 | 9 | 19 | 1 | 4 | 1 | 0 |
| 240 | 32 | 21 | 2 | 9 | 11 | 0 | 0 | 1 | 0 |
| 250 | 49 | 35 | 2 | 12 | 24 | 8 | 1 | 2 | 0 |
| 310 | 35 | 26 | 1 | 8 | 13 | 0 | 0 | 1 | 0 |
| 320 | 38 | 30 | 0 | 8 | 12 | 0 | 3 | 2 | 0 |
| 330 | 22 | 16 | 0 | 6 | 6 | 1 | 2 | 0 | 0 |
| 340 | 39 | 27 | 0 | 12 | 7 | 0 | 5 | 0 | 0 |
| 350 | 32 | 22 | 1 | 9 | 5 | 2 | 2 | 2 | 0 |
| Corps | 667 | 474 | 30 | 163 | 208 | 33 | 55 | 46 | 1 |

of record and newly cited prior art and the type of references relied upon is shown in Table V.

TABLE V.—PRIOR ART CITED IN PROTESTS

| Type of prior art | Number of protests | | |
|---|---|---|---|
| | In applications— | | |
| | Reopened | Not reopened | Total |
| Prior art of record | 12 | 12 | 24 |
| Prior art newly cited | 39 | 23 | 62 |
| U.S. patents | 31 | 18 | 49 |
| Foreign patents | 17 | 6 | 23 |
| Non-patent literature | 20 | 8 | 28 |

The number of prior art citations, by type, submitted by the 44 protesters in the 37 applications which were reopened for prosecution is shown in Table VI.

TABLE VI.—PRIOR ART CITATIONS MADE IN APPLICATIONS REOPENED FOR PROSECUTION

| Type of prior art | Number of protests | × | Number of citations | = | Total |
|---|---|---|---|---|---|
| U.S. patents | 11 | | 1 | | 11 |
| | 10 | | 2 | | 20 |
| | 6 | | 3 | | 18 |
| | 1 | | 4 | | 4 |
| | 1 | | 7 | | 7 |
| | 1 | | 11 | | 11 |
| | 1 | | 12 | | 12 |
| | 31 | | Cited | | 83 |
| Foreign patents | 15 | | 1 | | 15 |
| | 1 | | 2 | | 2 |
| | 1 | | 3 | | 3 |
| | 17 | | Cited | | 20 |
| Non-patent literature | 10 | | 1 | | 10 |
| | 6 | | 2 | | 12 |
| | 4 | | 3 | | 12 |
| | 20 | | Cited | | 34 |

The number of prior art citations, by type, submitted by the 23 protesters in the 23 applications which were not reopened for prosecution is shown in Table VII.

TABLE VII.—PRIOR ART CITATIONS MADE IN APPLICATIONS NOT REOPENED FOR PROSECUTION

| Type of prior art | Number of protests | × | Number of citations | = | Total |
|---|---|---|---|---|---|
| U.S. patents | 9 | | 1 | | 9 |
| | 5 | | 2 | | 10 |
| | 1 | | 3 | | 3 |
| | 2 | | 4 | | 8 |
| | 1 | | 6 | | 6 |
| | 18 | | Cited | | 36 |
| Foreign patents | 5 | | 1 | | 5 |
| | 1 | | 2 | | 2 |
| | 6 | | Cited | | 7 |
| Non-patent literature | 4 | | 1 | | 4 |
| | 3 | | 2 | | 6 |
| | 1 | | 3 | | 3 |
| | 8 | | Cited | | 13 |

*Protested Applications*

The type of applications in which protests were filed is shown in Table VIII.

TABLE VIII.—TYPE OF APPLICATIONS IN WHICH PROTESTS WERE FILED

| Type | Reopened | | Not reopened | | Total | |
|---|---|---|---|---|---|---|
| | Number protested | Percent | Number protested | Percent | Number protested | Percent |
| Original | 33 | 89.2 | 19 | 82.6 | 52 | 86.7 |
| Continuation | 1 | 2.7 | 1 | 4.3 | 2 | 3.3 |
| Continuation-in-part | 2 | 5.4 | 2 | 8.7 | 4 | 6.7 |
| Divisional | 1 | 2.7 | 1 | 4.3 | 2 | 3.3 |

*Summary*

Only a few letters from the public were received which commented on the Trial Voluntary Protest Program. Most of these related to the problems of obtaining copies of the January 28, 1975 OFFICIAL GAZETTE.

Of the 667 published applications, two have been expressly abandoned by the applicant. Prosecution of one application has been reopened by the examiner on newly discovered prior art even though no protest was filed. Also, two applications are being held in the examining groups pending possible interferences. Otherwise, all non-protested and non-reopened applications have been forwarded to the Patent Issue Division for processing.

A Second Trial Voluntary Protest Program will commence in the next few weeks. The program announcement appears in the September 16, 1975 OFFICIAL GAZETTE.

Dated: Sept. 4, 1975.

C. MARSHALL DANN,
*Commissioner of Patents and Trademarks.*

[939 O.G. 2]

(145) SECOND TRIAL VOLUNTARY PROTEST PROGRAM

A Second Trial Voluntary Protest Program will be conducted during the coming months. It will be increased in scale and somewhat modified in procedure from the first such program. Announcement of and description of the rules for the first program appeared in 923 O.G. 2 on June 4, 1974.

As before, the objective is to gain experience in carrying out such a program and to determine the extent of interest by the public in participating and in supplying pertinent references. To the extent there is participation, the program should be beneficial by bringing new art to the attention of the Office, preventing inadvertent issuance of invalid patents, and increasing confidence in the strength of those patents which survive the protest proceedings.

The first Trial Voluntary Protest Program showed a considerable interest by applicants and the public in taking part in protest proceedings. A summary of the results will be published soon in this Gazette. The second Trial Voluntary Protest Program is designed to gain additional information as to public participation and also to follow more closely the procedures which would be required in a continuing, permanent protest program.

*Applications Involved*

In the second Trial Voluntary Protest Program, a Request to Participate and Waiver of Confidentiality form (PTOL–224 Temp.) will be sent to each applicant to whom a Notice of Allowance is mailed during a selected three week period, probably in October, 1975. The total number of requests mailed will be about 4,500. Applications for plant patents will be excluded from the program. The reason for this exclusion is the high cost of printing colored drawings and the relatively limited prior art available. No other applications will be excluded from the trial program, regardless of subject matter, type of application or earlier proceedings.

*Waiver of Confidentiality*

Two copies of the form letter requesting voluntary waiver of confidentiality (form PTOL–224 Temp.) will be mailed in the same envelope along with the Notice of Allowance. An additional copy of the form letter will be made of record in each application at the time of mailing. The applicant will have three months from the notice of allowance date in which to either (1) elect to participate in the Trial Voluntary Protest Program by filing a signed waiver of confidentiality, or (2) elect not to participate in the program by paying the issue fee. If he does neither, the application will become abandoned, as provided in 37 C.F.R. 1.316. The waiver of confidentiality is a part of form PTOL–224 Temp. This procedure will avoid any increase in pendency time for those applications in which an election is made not to participate in the program. An early filing of a waiver of confidentiality by the applicant will result in early publication of the application.

*Publication*

If the applicant decides not to participate in the protest program and payment of the issue fee is timely made, the patent will issue routinely without delay.

If the applicant elects to participate in the protest program and a signed waiver of confidentiality is filed in the Office within 3 months of the notice of allowance date, the Notice of Allowance will be vacated. In such a case the issue fee should not be filed, as it will not be accepted and applied if filed with a signed waiver of confidentiality. An additional



Notice of Allowance will be issued after the protest proceedings have been completed if only allowable claims remain in the application.

After a signed waiver has been filed, the application will be printed in the form of a patent and be available for sale as in the first Trial Voluntary Protest Program. At least one claim and a drawing figure, if any, will be printed in the OFFICIAL GAZETTE. These published applications will appear in about 6 to 9 issues of the OFFICIAL GAZETTE early in 1976. Advance notice will be given in the OFFICIAL GAZETTE of the dates on which applications will be published under this program.

*Inspection of Files*

The Patent and Trademark Office files of the published applications will be available for inspection by the public for a period of three months after publication. The application files will be retained in a single location in the Patent Issue Division during the protest period. This single location will be staffed with personnel to process papers directed to these files, supervise inspection of the files by the public, provide copies of file contents when ordered, and perform other related duties. A coin operated copying machine will also be available at this location.

*Filing of Protests*

Protests relating to the patentability of any published application must be filed in writing in the Patent and Trademark Office no later than three months after publication of the application. No extension of the three month protest period will be granted. Each protest must be filed in duplicate (one copy will be forwarded to the applicant and the other copy will be placed in the application file) and must indicate the grounds for protesting the allowance of any claim contained in the published application. If the protest involves prior art not of record in the application, two copies of the alleged prior art, together with an explanation of the relevance of such prior art to the allowed claims, should be included. The protester may also comment on the prior art record in the application and the manner in which it was applied.

In those applications where prima facie evidence of prior public use or sale the claimed invention is presented in accordance with 37 C.F.R. 1.292, public use proceedings will give the protester an opportunity to present evidence.

Should claims be copied from a published application for interference purposes, the applicant copying claims must also file a notice of such copying in the file of the published application to avoid the possibility of inadvertent issuance of the published application as a patent before conclusion of any interference proceedings.

For easy identification, all protests should be headed, "Protest Under Trial Voluntary Protest Program" and be addressed to:

Commissioner of Patents and Trademarks
Box TVPP
Washington, D.C. 20231

The protester should fully identify himself and include his mailing address so that communications may be addressed to him. In view of administrative problems encountered in the first Trial Voluntary Protest Program in protecting the confidentiality of the identity of protesters, no attempt will be made by the Office to maintain the confidentiality of any protester under the new program.

If no protests are received during the protest period, the application file will be rerouted for the mailing of a new Notice of Allowance. The file will not be returned to the examining group except for consideration of matters which normally require return of an allowed file.

If one or more protests are filed in an application, the application file and the protest(s) will be returned to the examing group for consideration.

*Consideration of Protest*

The examining group will acknowledge receipt of all protests. The authority for deciding whether or not the evidence submitted constitutes a prima facie showing of unpatentability of any allowed claim will reside with the Group Director. If the Group Director decides that no such showing has been made, the application will be forwarded to the Patent Issue Division for mailing of a new Notice of Allowance. Protesters will be notified in such cases that prosecution has not been reopened, and the applicant will be sent a duplicate copy of all protests. The decision of the Group Director will be final and will not be subject to petition by a protester.

If the Group Director decides that the submitted evidence constitutes a prima facie showing of unpatentability of any allowed claim, prosecution of the application will be reopened. The decision to reopen prosecution will be communicated to the applicant by means of an Office action, signed by a primary examiner, rejecting any claim considered unpatentable. The duplicate copy of each protest will be mailed to the applicant with the Office action. Protesters who submitted evidence on which the rejection is based will be identified in the Office action and will also receive copies of this and subsequent Office actions. Other protesters will be notified that prosecution has been reopened, but based on evidence and for reasons other than those submitted by them and that, consequently, no further correspondence will be directed to them. The applicant will normally be given a three month shortened statutory period to respond to the Office action.

*Response by the Applicant to Subsequent Office Actions*

During this period, the applicant may present amended or new claims which will be subject to further consideration by the primary examiner. In order to allow protesters who submitted evidence on which a rejection in the Office action is based to participate in later prosecution and to comment upon further proceedings, applicant will be required to serve by mail upon each protester identified in the Office action, a copy of any response filed, including any appeal brief. Indication of such service will be a required component of a complete response. Applicant need only reply to the rejections and objections made in the Office action. There need be no specific response to any other points raised by the protesters.

*Comment on Applicant's Response by the Protester*

Each protester served will be allowed one month, running from the date applicant's response or brief is received in the Patent and Trademark Office, to file comments relating thereto. All communications from protesters must be in writing. Examiner interviews with the protesters will not be permitted. No extensions of the one month period will be granted.

Any appeal by the applicant to the Board of Appeals in a protested application will be made special and will be taken up out of order.

*Conclusion of Prosecution*

If, after further prosecution, the application is found to be allowable, all protesters still participating at that time will be notified and the application will be forwarded to the Patent Issue Division for mailing of a new Notice of Allowance. A decision of the primary examiner to allow an application will not be subject to petition or appeal by any protester.

C. MARSHALL DANN,
*Commissioner of Patents and Trademarks.*

Sept. 16, 1975.

[938 O.G. 945]

(145.1) SECOND TRIAL VOLUNTARY PROTEST PROGRAM

*Publication of Applications*

Applications will be published under the Second Trial Voluntary Protest Program on the following dates:

January 13, 1976
January 20, 1976
January 27, 1976
February 3, 1976

Additional publication dates will be announced as they become known.

RICHARD J. SHAKMAN,
Dec. 1, 1975. *Assistant Commissioner for Administration.*

[941 O.G. 132]

(146) EXPRESS ABANDONMENTS

Experience over the past several months has indicated the need to clarify and re-emphasize existing practice regarding express abandonments submitted under 37 CFR 1.138.

Since 1966, when Rule 138 was revised, it is no longer required that the applicant and the assignee of record, if any,

sign an express abandonment. The revised rule indicates that a patent application may be expressly abandoned by an attorney or agent of record. Therefore, prior to signing a declaration of express abandonment of a patent application, it is imperative that the attorney or agent of record exercise every precaution in ascertaining that the abandonment of the application is in accordance with the desires and best interests of the applicant. Moreover, special care should be taken to insure that the appropriate application from a group of related applications is correctly identified in the letter of abandonment.

A declaration of abandonment signed by the applicant or his attorney or agent of record becomes effective when an appropriate official of the Office takes action in recognition of the declaration. When so recognized, the date of abandonment may be the date of recognition or a different date if so specified in the declaration itself. For example, where a continuing application is filed with a request to abandon the prior application as of the filing date accorded the continuing application, the date of the abandonment of the prior application will be in accordance with the request once it is recognized.

Action in recognition of an express abandonment may take the form of an acknowledgement by the examiner or the Patent Issue Division of the receipt of the express abandonment, indicating that it is in compliance with 37 CFR 1.138 (see Section 711.01 MPEP). Alternatively, recognition may be no more than the transfer of drawings to a new application pursuant to instructions which include a request to abandon the application containing the drawings to be transferred (see 37 CFR 1.60 and Section 608.02(1) MPEP).

It is suggested that divisional applications being submitted under 37 CFR 1.60 be reviewed before filing to ascertain whether the prior application should be abandoned. Recent experience reveals that some divisional applications are being filed under 37 CFR 1.60 with requests to transfer the drawings from, and abandon, the prior application. Following the recognition of the abandonment, the attorney or agent signing the request informs the Office that the request was made by mistake for any one of a number of reasons. Care should be exercised in situations such as these as the Office looks on express abandonments as acts of deliberation, intentionally performed.

Another common situation involves the submission of an express abandonment following the allowance of an application. The express abandonment may not be recognized unless it is actually received by appropriate officials in time to act before the date of issue. In those cases, once a patent number and issue date have been assigned to the application, it is considered too late to act on the express abandonment unless a petition under Rule 313(b) or Rule 183 is granted (see Section 711.01 of MPEP).

WILLIAM FELDMAN,
*Deputy Assistant Commissioner for Patents.*

Apr. 7, 1975.

[934 O.G. 2]

## AMENDMENTS

(147) AMENDMENTS—BASIS IN ORIGINAL DISCLOSURE MANUAL OF PATENT EXAMINING PROCEDURE

When an amendment is filed in response to an objection or rejection based on incomplete disclosure, a study of the entire application is often necessary to determine whether or not "new matter" is involved. In the interest of expeditious prosecution, Examiners are directed, whenever such an objection or rejection is made, to call attention to Rule 111(c). Applicant should specifically point out the support for any amendments made to the disclosure.

RICHARD A. WAHL,
*Assistant Commissioner.*

Aug. 13, 1965.

[818 O.G. 4]

(148) EXAMINER'S AMENDMENT PRACTICE

The present practice in making Examiner's Amendments when passing an application to issue is modified to permit the amendment or cancellation of claims where these have been authorized by applicant (or his representative) in a telephone or personal interview. The Examiner's Amendment should include a statement indicating that the changes were authorized, the date and type (personal or telephone) of interview, and with whom it was had.

The current policy prohibiting changes in the drawing and/or description of an application is maintained with the exceptions noted in MPEP Section 1302.04.

The new procedure resulted from an employee's suggestion.

RICHARD A. WAHL,
*Assistant Commissioner.*

May 11, 1966.

[827 O.G. 2]

(149) BRACKETS AND RULE 121—AMENDMENT OF CLAIMS

In view of the number of inquiries requesting an interpretation of the word "brackets" appearing in amended Rule 121 concerned with the amendment of claims, it is thought that clarification is desirable.

The term brackets [ ] as set forth in the amendment to Rule 121 and first announced in 843 O.G. 373 does not encompass and is to be distinguished from parentheses ( ). Therefore, any amendment using parentheses to indicate cancelled matter in a claim rewritten under Rule 121(b) may be held non-responsive in accordance with Rule 121(c).

RICHARD A. WAHL,
*Assistant Commissioner.*

Jan. 15, 1968.

[847 O.G. 331]

## INTERVIEWS

(150) INTERVIEW PRACTICE

To assist in early and equitable conclusion of examination of applications, the use of interviews in person or by telephone is encouraged, subject to the following guidelines.

Interviews with Examiners, whether in person or by telephone, shall be governed in general by the provisions of Rule 133. A request for an interview, whether made orally or in writing, before the first Office action is untimely and will not be acknowledged if written, or granted if oral; Rule 133(a).

If upon examination or re-examination, it is found that *minor* changes could be made to place the application in condition for allowance, the attorney or pro se inventor should be so notified by telephone. This practice should be followed whether or not there has been a specific request for interview or for such notification.

Where an interview is arranged, both the Examiner and the attorney should be familiar with the issues in the application before starting the conference. It is the responsibility of both parties to the interview to see that it is not extended beyond a reasonable time, usually not longer than thirty minutes. The Primary Examiner personally responsible for the final disposition of the application should be notified of the results of the interview at its conclusion.

Interviews in person or by telephone are to be encouraged after the first Office action on the merits. In addition to interviews initiated by applicant, the Examiner may initiate interviews where he believes it would be productive. This practice may result in the filing of a first response that will so effectively advance the prosecution to permit disposing of the case in a bare minimum number of actions. The telephone procedure set forth in part 4 of Optimum Examining Procedure Memorandum #3, 801 O.G. 267, *requiring* a call by the Examiner, if requested by applicant, before taking final action has been found not satisfactory and will no longer be followed.

An interview may be granted after final rejection; however, except in rare instances, only one such interview should be granted.

An interview should not be requested or approved, except in very unusual circumstances, after filing of a Brief on appeal or after an application has been passed to issue by the Primary Examiner.

Interviews are permissible any working day of the week except on overtime Saturdays.

RICHARD A. WAHL,
*Acting Superintendent,*
*Patent Examining Corps.*

Sept. 16, 1964.

[807 O.G. 307]



(151) TELEPHONE INTERVIEWS

Present Office policy places great emphasis on telephone interviews initiated by the Examiner. For this reason, it is no longer deemed necessary for an attorney to request a telephone interview as specified in the old Optimum Examining Procedure memos. Examiners are no longer required to note or acknowledge requests for telephone calls or state reasons why such proposed telephone interviews would not be considered effective to advance prosecution. However, it is still desirable for an attorney to call the Examiner if the attorney feels the call will be beneficial to advance prosecution of the case.

RICHARD A. WAHL.
*Assistant Commissioner.*

Oct. 11, 1967.

[846 O.G. 1022]

(152) RECORD OF INTERVIEWS IN PATENT APPLICATIONS

Applicants and their attorneys or agents are reminded that a complete written statement as to the substance of any interview with regard to an application must be made of record in the application, whether or not an agreement with the examiner was reached at the interview. The necessity to so complete the record of an application is emphasized by the requirements of Rules 2 and 133(b). Rule 2 provides in part that

> "All business with the Patent Office should be transacted in writing.
>
> • • • • • •
>
> "The action of the Patent Office will be based exclusively on the written record in the Office."

Obviously, the action of the Patent Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews. In addition to the requirement of Rule 2, Rule 133(b) is specific that

> "In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for response to Office actions as specified in Rules 111, 135."

Applicants and their attorneys or agents are responsible for compliance with the requirement for a complete written statement except in those situations in which it is agreed that the examiner will issue an Office action upon the application without further written response on behalf of applicant. In those situations, the examiner will make the substance of the interview of record in the Office action. The examiner may also complete the record of an interview if significant matters are inadvertently omitted from a written statement filed on behalf of applicant.

Noncompliance on behalf of applicant with the above noted requirement for a complete written statement when filing a response, will result in the applicant being given one month from the date of the notifying letter or the remainder of any period for response, whichever is longer, to complete the response and thereby avoid abandonment of the application (Rule 135(c)). Except for the paragraphs under the heading "EXAMINER TO CHECK FOR ACCURACY" the substance of this notice supersedes Section 713.04 of the Manual of Patent Examining Procedure.

WILLIAM FELDMAN,
*Deputy Assistant Commissioner for Patents.*

Aug. 9, 1974.

[926 O.G. 2]

## JOINDER

(153) PRACTICE RE MARKUSH-TYPE CLAIMS

This notice deals with Markush-type claims which include a plurality of alternatively usable substances or members. In most cases this recitation by enumeration is used because there is no appropriate or true generic language.

Where an application claims two or more independent and distinct inventions, the Commissioner, under the provisions of 35 U.S.C. 121, may require the application to be restricted to one of the inventions.

A Markush-type claim is directed to "independent and distinct inventions," if two or more of its members are so unrelated and diverse that a prior art reference anticipating the claim with respect to one of the members would not render the claim obvious under 35 U.S.C. 103 with respect to the other member(s).

If the claim is of that nature, the examiner is authorized to reject it as an improper Markush claim and for misjoinder under 35 U.S.C. 121 and to require the applicant to restrict the application to a single invention. In making such a requirement, the examiner will (1) clearly delineate the members or groups of members believed to constitute improperly joined inventions, and (2) state reasons fully explaining why they are independent and distinct. Applicant's response to such a requirement should be an election of a single adequately disclosed and supported invention, with or without restriction of the claim(s) to that invention. Of course, the response must not introduce new matter into the application. See 35 U.S.C. 132 and *In re Welstead*, 59 CCPA 1105, 463 F. 2d 1110, 174 USPQ 449 (1972). A refusal to elect a single invention will be treated as a non-responsive reply.

If the members of the Markush group are sufficiently few in number or so closely related that a search and examination of the entire claim can be made without serious burden, the examiner is encouraged to examine it on the merits, even though it is directed to independent and distinct inventions. In such a case, the examiner will not follow the procedure outlined in the preceding paragraph and will not require restriction.

Where the examiner has rejected the claim and required restriction and the applicant has responded without restricting the claim(s) to a single invention, the examiner shall, if the position is adhered to, again reject the claim and any other Markush claims not restricted to the elected invention. No further examination of these claims is required unless and until such rejection has been overcome. However, if the search of the single elected invention develops prior art which would render both the elected invention and the improper Markush claim(s) unpatentable, such prior art may be applied in rejections of both without a complete search of the subject matter of the improper Markush claim(s). Otherwise, only true generic claims and those restricted to the elected invention will be examined in the usual manner.

Review of the rejection will be by appeal to the Board of Appeals under 35 U.S.C. 134.

C. MARSHALL DANN,
*Commissioner of Patents.*

May 1, 1974.

[922 O.G. 1016]

(154) PRACTICE RE: TECHNICAL REJECTIONS

In the interest of reducing the number of technical rejections and expediting the prosecution of applications the following changes will be instituted effective June 1, 1965:

1. The inclusion of a negative limitation shall not, in itself, be considered a sufficient basis for objection to or rejection of a claim. However, if such a limitation renders the claim unduly broad or indefinite or otherwise results in a failure to point out the invention in the manner contemplated by 35 U.S.C. 112, an appropriate rejection should be made.

2. When materials recited in a claim are so related as to constitute a proper Markush group, they may be recited either in the conventional manner heretofore permitted, or alternatively. For example, if ". . . wherein R is a material selected from the group consisting of A, B, C and D" is a proper limitation then ". . . wherein R is A, B, C or D" shall also be considered proper.

3. The use of Markush claims of diminishing scope shall not, in itself, be considered a sufficient basis for objection to or rejection of claims. However, if such a practice renders the claims indefinite or if it results in undue multiplicity, an appropriate rejection shall be made. This change does not in any way affect the substantive law governing the treatment

of Markush claims. The foregoing practice with respect to Markush claims of diminishing scope will be effective on an experimental basis until December 1, 1965, and, if it proves satisfactory, will then be adopted permanently.

EDWARD J. BRENNER,
*Commissioner.*

Apr. 30, 1965.

[814 O.G. 715]

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(155) TELEPHONE PRACTICE IN RESTRICTION AND ELECTION OF SPECIES SITUATIONS

If an examiner determines that a requirement for restriction should be made in an application, he should formulate a draft of such restriction requirement including, if any, the grounds of rejection of linking or generic claims. Thereupon, he should telephone the attorney of record and ask if he will make an oral election, with or without traverse if desired, after the attorney has had time to consider the restriction requirement. The examiner should arrange for a second telephone call within a reasonable time, generally within three working days. If the attorney objects to making an oral election, or fails to respond, the usual restriction letter will be mailed, and this letter should NOT contain any reference to the unsuccessful telephone call.

When an oral election is made, the examiner will then proceed to incorporate into his letter a formal restriction requirement including the date of the election, the attorney's name, and a complete record of the telephone interview, followed by a complete action on the elected claims including linking or generic claims if present.

If on examination the examiner finds the elected claims to be allowable and no traverse was made, the letter should be written on POL–37 (Examiner's Amendment) and should include cancellation of the non-elected claims, a statement that the prosecution is closed and that a notice of allowance will be sent in due course. Correction of formal matters in the above-noted situation which cannot be handled by a telephone call and thus requires action by the applicant should be handled under the *Ex parte Quayle* practice, using POL–90; these would usually be drawing corrections or the like requiring payment of charges.

Should the elected claims be found allowable in the first action, and an oral traverse was noted, the examiner should include in his action a statement under Section 821.01, M.P.E.P., making the restriction final and giving applicant thirty days (Rule 136) to either cancel the non-elected claims or take other appropriate action. Failure to take action will be treated as an authorization to cancel the non-elected claims by an Examiner's Amendment and pass the case to issue. Prosecution of this application is otherwise closed.

In either situation (traverse or no traverse), caution should be exercised to determine if any of the allowed claims are linking or generic before cancelling the non-elected claims.

Where the respective inventions are located in different groups the requirement for restriction should be made only after consultation with and approval by all groups involved. If an oral election would cause the application to be examined in another group, the initiating group should transfer the application with a signed memorandum of the restriction requirement and a record of the interview. The receiving group will incorporate the substance of this memorandum in its official letter as indicated above. Differences as to restriction should be settled by the existing chain of command, e.g. Supervisory Primary Examiner or Manager.

This practice is limited to use by examiners who have at least negotiation authority. Other examiners must have the prior approval of their Supervisory Primary Examiner.

RICHARD A. WAHL,
*Assistant Commissioner.*

Jan. 27, 1966.

[824 O.G. 408]

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(156) RESTRICTION AND ELECTION PRACTICE

Effective April 1, the practice and procedure in cases involving a requirement for restriction or election is changed as indicated below.

Under the new practice, whenever a written or telephoned requirement is made in a case which includes claims considered by the Examiner to be generic or linking, it will not include any rejection of these claims. The Examiner should specify which claims are considered to be generic or linking.

Although no art will be cited where linking claims are present, a search should be made and art cited where generic claims are involved. In the latter situation the generic claims will not be rejected but merely indicated as not allowable in view of the cited art (Rule 146).

A 30-day shortened statutory period will be set for response to a written requirement. Such action will not be an "action on the merits" for the purpose of the second action final program. In either situation, with linking or generic claims, a response, to be complete, need only include a proper election.

The only exception to the above practice will be in the case where the Examiner gives a complete action on the merits of all the claims in addition to the requirement for restriction.

The use of the telephone to make an initial requirement will be continued and is encouraged.

RICHARD A. WAHL,
*Assistant Commissioner.*

Feb. 28, 1967.

[837 O.G. 668]

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(157) ELECTION OF SPECIES

Effective June 1, 1967, the following practice will be instituted on a trial basis for 6 months.

In cases involving Markush claims or generic claims of the formula type including such a number and diversity of members as to require an unduly extensive and burdensome search for the embodiments encompassed, the Examiner may require election of species without a search on the merits (Rule 105).

The election requirement may be made in the same manner as that described in the Change Notice 12–6 of Feb. 28, 1967, with a 30 day shortened statutory period which will not be an "action on the merits" for the purpose of second action final program. If a telephone requirement, made by the Examiner, is complied with the first written action will be a complete action on the merits and the usual 3 months shortened statutory period will be set.

As pointed out in Change Notice 12–6, the use of the telephone to make an initial requirement will be continued and is encouraged.

EDWARD J. BRENNER,
*Commissioner.*

May 4, 1967.

[838 O.G. 1223]

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(158) ELECTION OF SPECIES

The practice set forth in the Notice of May 4, 1967 (838 O.G. 1223) is made permanent and modified to permit a requirement for election of species in cases involving multiple species whether or not generic claims are present or searched prior to the election. Also, if no claims to species are presented but the generic claim is of the burdensome type referred to in the Notice, a requirement for election of species prior to search of the generic claims should be made.

As in the original Notice, if an election is made pursuant to a telephone requirement, the action should include a full and complete action on the elected species as well as on any generic claims that might be present. If generic claims are found allowable, no change in the practice currently in effect is contemplated.

RICHARD A. WAHL,
*Assistant Commissioner.*

Aug. 19, 1968.

[854 O.G. 287]

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(159) NON-ELECTED CLAIMS

In the interest of expediting the prosecution of pending applications, the following change in procedure is made. When preparing a final action in an application where there has been a traversal of a requirement for restriction or election of species, the Examiner should indicate in his action that a complete response must include cancellation of the non-elected claims or other appropriate action (Rule 144).

In the above situations where a response to the final action has otherwise placed the application in condition for allowance, the failure to take appropriate action with respect to the non-elected claims will be construed as authorization to cancel these claims by Examiner's Amendment and pass the case to issue after the expiration of the statutory period.

RICHARD A. WAHL,
*Assistant Commissioner.*

May 24, 1968.

[851 O.G. 893]

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(160) RESTRICTION BETWEEN INVENTIONS

Combination claims (other than genus claims linking species claims), whether allowable, allowed, or not, will no longer automatically be permitted to serve as a basis for joining claimed inventions which otherwise would be properly the subject of a restriction requirement. In other words, applicant will be required to elect one of the claimed inventions which are the subject of a proper restriction requirement. Combination claims, formerly considered linking claims should be grouped as a separate invention. Rejoinder of the divided inventions, should any combination claim be allowed, however, also will no longer automatically be permitted. The statutory criteria for distinctness will be satisfied if the subcombinations and/or combinations involved are shown to be separately classified, or to have acquired a separate status in the art, or to involve different fields of search.

RICHARD A. WAHL,
*Assistant Commissioner.*

June 20, 1968.

[852 O.G. 509]

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(161) RESTRICTION BETWEEN INVENTIONS

The practice set out in the notice of June 20, 1968 (852 O.G. 509) is hereby revised as follows.

Under the statute an application may properly be required to be restricted to one of two or more claimed inventions only if they are able to support separate patents and they are either independent or distinct.

If it is demonstrated that two or more claimed inventions have no disclosed relationship ("independent"), restriction should be required, and it is not necessary to further show that the claimed inventions are distinct. If it is demonstrated that two or more claimed inventions have a disclosed relationship ("dependent"), then a showing of distinctness is required to substantiate a restriction requirement.

Where inventions are neither independent nor distinct, one from the other, or they are not sufficiently different to support more than one patent, their joinder in a single application must be permitted.

Every requirement to restrict has two aspects, (1) the reasons (as distinguished from the mere statement of conclusion) why the inventions *as claimed* are either independent or distinct, and (2) the reasons for insisting upon restriction therebetween.

In order to support a requirement to restrict between combination and subcombination inventions, two-way distinctness must be demonstrated.

If it can be shown that a combination, as claimed (1) does not require the particulars of the subcombination as claimed for patentability, and (2) the subcombination can be shown to have utility either by itself or in other and different relations, the inventions are distinct. When these factors cannot be shown, such inventions are not distinct.

Two or more claimed subcombinations, disclosed as usable together in a single combination, and which can be shown to be separately usable, are usually distinct from each other.

In applications claiming inventions in different statutory categories only one-way distinctness is needed to support a restriction requirement. For example, in applications containing claims to both process and apparatus, distinctness may be shown if (1) the process as claimed can be practiced by hand or by another materially different apparatus, or (2) the apparatus as claimed can be used to practice another and materially different process.

As in the notice of May 1, 1974 concerning Markush-Type claims (922 O.G. 1016), if the search and examination of an entire application can be made without serious burden, the examiner is encouraged to examine it on the merits, even though it includes claims to distinct or independent inventions.

WILLIAM FELDMAN,
*Deputy Assistant Commissioner for Patents.*

Apr. 9, 1975.

[934 O.G. 450]

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(162) RESTRICTION PRACTICE

[37 CFR Part 1]

*Notice of Proposed Rule Making*

Notice is hereby given that, pursuant to the authority contained in section 6 of the Act of July 19, 1952 (66 Stat. 793; 35 U.S.C. 6), as amended October 5, 1971, Public Law 92–132, 85 Stat. 364, the Patent Office proposes to amend Title 37 of the Code of Federal Regulations by revising §§ 1.141, 1.142, 1.144, 1.145, and 1.146.

All persons are invited to present their views, objections, recommendations or suggestions in connection with the proposed changes to the Commissioner of Patents, Washington, D.C. 20231 on or before December 12, 1972, on which date a hearing will be held at 9:30 a.m. in Room 11 C 24, Building 3, 2021 Jefferson Davis Highway, Arlington, Va. All persons wishing to be heard orally at the hearing are requested to notify the Commissioner of Patents of their intended appearance. Any written comments or suggestions may be inspected by any person, upon written request, a reasonable time after the closing date for submitting comments.

The proposed changes have three main purposes, (1) to clarify when a requirement for restriction may properly be made by an examiner, (2) to remove the limitation of five species if there is an allowable generic claim in the case, and (3) to provide a basis in the rules for requiring restriction to a single invention when two or more patentably different inventions are claimed in a single Markush-type claim. See "Ex parte Markush," 1925 C.D. 126 (Comm'r. Pat. 1924).

The expression "patentably different" emphasizes the importance of requiring restriction between two or more inventions only where there are unobvious differences between those inventions and separate patents can properly be granted to each invention. Otherwise due to the double patenting prohibition of 35 U.S.C. 121, multiple patents would be granted on a single invention. The proposed changes make it clear that a requirement for restriction is proper only when two or more patentably different inventions are claimed in one application.

The practice under present §§ 1.141 and 1.146 of limiting an application to five species, even though a generic claim has been allowed, has caused some problems since 1953 when the present language of section 121 of the patent statute became effective. Section 121 prohibits the use of a patent as a reference in a subsequent divisional application filed as the result of a requirement for restriction in the application on which such a patent is based. Present §§ 1.141 and 1.146 indicate that an application may be limited to five species even though an allowable generic claim appears therein. If an application is so limited to five species, the other species can be specifically protected only if refiled in a divisional application. Such applications may be filed even though the species are not patentably different from each other. Since the first patent cannot be used as a reference against the second application, limiting the number of species in the first patent would result in a second patent issuing on species which are not patentably different from the species in the first patent. The proposed changes would avoid this problem by removing from the rules the language limiting the claims in one application to five species.

The Markush-type claim practice which allows enumeration in a claim of a plurality of alternatively usable substances or members, has been sanctioned to permit the inclusion of such members in a claim when a generic term covering them

is not available. Over the years, this form of claim has been used, for example, in claiming compounds having a large variety of substituent groups, and as a result, Markush-type claims are presented which are each directed to a plurality of independent and distinct inventions.

More than one invention is present in a Markush-type claim if the alternatively usable members of the Markush group are so unrelated and diverse that a prior art reference which shows one of the members and otherwise anticipates the claim could not ordinarily be used to reject under 35 U.S.C. 103 a claim reciting another of the members. In such circumstances, the claim is considered to be an improper Markush-type claim and not a generic claim. Such a claim imposes an undue burden on the Patent Office, particularly with respect to the search which would have to be made for proper examination.

The proposed changes expressly sanctioned the withdrawal of improper Markush-type claims. It should be noted that the "withdrawal" of such improper Markush-type claims would provide the applicant with the benefits of the double patenting prohibition of 35 U.S.C. 121. This benefit would not be available if such improper Markush-type claims were rejected.

The proposed changes will permit examiners to expedite prosecution and make more meaningful searches to determine whether the disclosed and claimed inventions are novel and patentable.

The text of the proposed revised rules is as follows:

§ 1.141 *Different inventions in one application.*

An application claiming two or more independent and distinct, patentably different inventions may be required to be restricted to one of the inventions. Inventions are patentably different when one is not obvious in view of the other, and they may properly appear in separate patents.

§ 1.142 *Requirement for restriction between inventions.*

(a) If two or more independent and distinct, patentably different inventions are claimed in a single application and the examiner deems that restriction is appropriate, he may require the applicant to elect for prosecution in the application a single invention, to which his claims shall be restricted. Such a requirement may be made at any time before final action in the case, at the discretion of the examiner.

(b) In an application containing a claim which enumerates alternatively usable substances or members which are so unrelated that the claim is, in fact, directed to independent and distinct, patentably different inventions, the examiner may require the applicant to elect the invention to which his claims shall be restricted. After election by applicant, such an improper claim by enumeration may be withdrawn by the examiner from further examination because more than one invention is being claimed (35 U.S.C. 121).

(c) Claims not restricted to the elected invention, if not canceled, are nevertheless withdrawn from further consideration by the examiner by the election, subject, however, to reinstatement in the event the requirement for restriction is withdrawn or overruled pursuant to a petition under § 1.144.

§ 1.144 *Petition from requirement for restriction.*

Within 2 months after the examiner's adverse reply to a request for reconsideration of a requirement for restriction, the applicant may petition the Commissioner to review the requirement. A petition will not be considered if reconsideration of the requirement was not requested. (See § 1.181.)

§ 1.145 *Subsequent presentation of claims for different invention.*

If, after an examiner's action on an application, the applicant presents a claim or claims therein directed to a patentably different invention, distinct from and independent of the invention previously claimed, the examiner may require the applicant to restrict the claims to the invention previously claimed if the amendment is entered, subject to reconsideration and review as provided in §§ 1.143 and 1.144.

§ 1.146 *Election of species.*

In an application containing a generic claim and claims directed to a plurality of independent and distinct, patentably different species embraced thereby, the examiner may require the applicant to elect that species of his invention to which his claims shall be restricted if no generic claim is finally held allowable. If a generic claim is later found allowable, the application may also contain claims to species in addition to the one elected, provided that such additional species claims are either written to be dependent from a generic claim (§ 1.75 (c)) or to otherwise include all the limitations of the generic claim.

RICHARD A. WAHL,
*Acting Commissioner of Patents.*

Approved: October 13, 1972.

RICHARD O. SIMPSON,
*Acting Assistant Secretary*
*for Science and Technology.*

[FR Doc. 72-17925 Filed 10-19-72; 8:47 am]

*Pub. in 37 F.R. 22625, Oct. 20, 1972*

[905 O.G. 254]

(Pending—No Final Action Taken)

## TIME FOR RESPONSE

(163) EXTENSION OF TIME

It is ordinarily desirable that notice of the action taken by the Patent Office on requests for extension of time be communicated to the persons making the requests as soon as is reasonably possible. In order to improve Patent Office service to patent and trademark applicants in this regard, the following procedure is being instituted effective immediately. If a request for extension of time is filed in duplicate and accompanied by a stamped return-addressed envelope, the Office will indicate the action taken on the duplicate and return it promptly in the envelope. Utilization of this procedure is optional on the part of applicant.

EDWARD J. BRENNER,
Aug. 3, 1966. *Commissioner of Patents.*

[829 O.G. 1307]

(164) EXTENSION OF TIME

Effective immediately, a new liberal policy for interpretation and application of Rule 136(b) will apply with respect to first requests for a one-month extension of time for reply to Office actions where a shortened statutory period for response has been set. Any request under Rule 136(h) for extension of time must state a reason in support thereof; under the above policy the application of the rule will entail only a limited evaluation of the stated reason.

This liberality will not apply to (1) any requests for more than a one-month extension, and (2) second and subsequent requests for extension of time.

In order to provide prompt notification of the action taken on extension requests, the request may be filed in duplicate, accompanied by a stamped return-addressed envelope (including a ZIP code), as announced in the OFFICIAL GAZETTE of, August 3, 1966, 829 O.G. 1307).

It is expected that requests for extension of time will continue to be made only when a need exists and will not become a standard operating procedure. Routine use of this practice may necessitate abandoning the new policy and a return to a less liberal interpretation of Rule 136(b).

RICHARD A. WAHL,
Jan. 26, 1967. *Assistant Commissioner.*

[835 O.G. 716]

(165) FINAL REJECTION—TIME FOR RESPONSE

Effective Sept. 1, 1967, the filing of a timely response to a final rejection having a shortened statutory period for response will operate to extend the period for appeal or filing of a continuing case an additional month, but in no case to exceed six months from the date of the final action.

An object of this practice is to obviate the necessity for appeal or filing a continuing case merely to gain time to consider the Examiner's position in reply to an amendment timely filed after final rejection.

Present practice relating to the treatment of amendments after final rejection will continue to apply and failure to file a response during the three-month period will, as heretofore, result in abandonment of the application. In any case where this one-month extension applies and an amendment is officially received during this additional month, the amendment will not be entered or responded to unless it *prima facie* places the application in condition for allowance (e.g. cancels all rejected claims, fully complies with all Examiner suggestions, requirements, etc.).

Also, during this additional month no applicant- or attorney-initiated interview will be permitted.

EDWARD J. BRENNER,
Aug. 7, 1967. *Commissioner.*

[841 O.G. 1411]

(166) FINAL REJECTION—TIME FOR RESPONSE

In clarification of the Notice of August 7, 1967, published in the OFFICIAL GAZETTE of August 29, 1967 (841 O.G. 1411), the filing of a timely response after a final rejection is construed as including a request for a one month extension of the shortened statutory period.

If the response is complete but fails to place the application in condition for allowance, the request will be granted. The entry of any further amendments filed during the additional month shall be restricted to those which *prima facie* place the application in condition for allowance.

RICHARD A. WAHL,
Sept. 26, 1968. *Assistant Commissioner.*

[855 O.G. 1109]

(167) OFFICE ACTIONS—TIMELY RESPONSE

**The Patent Office has been receiving an excessively large volume of petitions to revive based primarily on the late filing of amendments and other responses to official actions. Many of these petitions indicate that the late filing was due to unusual mail delays; however, the records generally show that the filing was only two or three days late.**

**In order to alleviate, for applicants and the Office, the problems and expenditures of time and effort occasioned by abandonments and petitions to revive, it is suggested that responses to official action be mailed to the Patent Office at least one, and preferably two, week(s) prior to the expiration of the period within which a response is required. This suggestion is made in the interest of improving efficiency, thereby providing better service to the public.**

WILLIAM FELDMAN,
Aug. 25, 1972. *Deputy Assistant Commissioner*
*for Patent Examining.*

[902 O.G. 1172]

## APPEALS

(168) APPEAL BRIEFS

It appears that many appeal briefs are being filed which omit reference to the drawing in describing the appellant's invention. As a reminder that the Board of Appeals is aided in its consideration if such a reference appears, attention is directed to the following language in the first sentence of Rule 192(a):

". . . including a concise explanation of the invention which should refer to the drawing by reference characters . . ."

EDWIN L. REYNOLDS,
Aug. 3, 1965. *First Assistant Commissioner.*

[817 O.G. 1241]

(169) APPEAL BRIEFS

While Rule 192(a) requires two extra copies of appeal briefs only if an oral hearing is requested, such copies are of substantial assistance to the Board when appeals are submitted on brief and it is desirable that they be supplied in such cases also. All claims reproduced in appeal briefs should be double spaced.

EDWIN L. REYNOLDS,
Jan. 24, 1966. *First Assistant Commissioner.*

[823 O.G. 411]



(170) PRACTICE RE: WITHDRAWAL OF FINAL REJECTION BY THE EXAMINER AFTER NOTICE OF APPEAL TO THE BOARD OF APPEALS

Where Notice of Appeal to the Board of Appeals has been filed and the Examiner withdraws the final rejection for allowance or further rejection, applicants are reminded that this results in automatic removal of the appeal from the records of the Board of Appeals in that application.

Accordingly, a proper response to a subsequent final rejection requires the filing of a new Notice of Appeal [without fee] and if this appeal is carried forward, the appropriate fee on filing a brief in support of the second appeal is required.

EDWIN L. REYNOLDS,
Mar. 29, 1967. *First Assistant Commissioner.*

[837 O.G. 667]

(171) RULE 192—FILING OF APPEAL BRIEF

Attention is directed to the fact that the seasonable filing of an appeal brief is determined by Rule 192, irrespective of whether the applicant or his attorney has received the appeal acknowledgment with its *reminder* of the brief's due date.

The above should be reflected in any docketing system for filing appeal briefs.

EDWIN L. REYNOLDS,
Aug. 4, 1967. *First Assistant Commissioner.*

[841 O.G. 1412]

(172) ORAL HEARINGS UNDER RULE 194

Effective September 1, 1968, for a trial period of six months, new procedures will be initiated which will permit Primary Examiners to present an oral argument before the Board of Appeals in appeals where the applicant has been granted an oral hearing.

After the attorney or agent representing the appellant has made his presentation, the Examiner will be allowed fifteen minutes to reply as well as to present a statement which clearly sets forth his position with respect to the issues and rejections of record. Appellant may utilize any allotted time not used in the initial presentation for rebuttal.

RICHARD A. WAHL,
July 26, 1968. *Assistant Commissioner.*
Concur:
EDWIN L. REYNOLDS,
*First Assistant Commissioner.*

[855 O.G. 827]

(173) APPEAL HEARINGS

The practice of permitting oral arguments by Primary Examiners in appeals, announced for a trial period in the OFFICIAL GAZETTE of Oct. 22, 1968 (855 O.G. 827), is hereby made permanent.

RICHARD A. WAHL,
Mar. 27, 1969. *Assistant Commissioner.*
Concur:
E. L. REYNOLDS,
*First Assistant Commissioner.*

[861 O.G. 1011]

(174) HEARINGS BEFORE THE BOARD OF APPEALS

In recent years the backlog of cases awaiting decision by the Board of Appeals has grown substantially. The average time elapsing between filing of the examiner's answer and final disposition is now roughly 17 months. Intensive effort by the Board and greater use of acting examiners-in-chief have been sucessful in raising the number of dispositions, but at the same time the number of appeals continues to grow. Thus in the first six months of 1974, the Board disposed of 1,193 appeals but received 1,915; in the last half of the year the Board disposed of 1,993 appeals but received 2,179.

In this connection it will be helpful if applicants and attorneys will dispense with oral hearings except where unusual circumstances are present which make a hearing important to the decision. Appeals submitted on brief receive just as careful consideration as those in which oral argument is presented, nor are any implications drawn as to the merits of the appeal from failure to request a hearing. It has been the Board's experience that in the ordinary case the hearing is not of great value in arriving at the ultimate decision.

Appellants are also encouraged to review cases where a hearing has already been requested, with a view to withdrawing the request if it is not necessary. It is particularly important that the Board be given timely notice whenever circumstances prevent the applicant or his representative from appearing at a scheduled hearing.

Rule 194 (37 CFR 1.194) limits oral argument to thirty minutes unless otherwise ordered by the Board. It has been the Board's experience, however, that effective arguments can be presented in less than thirty minutes in most cases. Effective immediately the Board will be informing appellants in the notices of hearing mailed to them that oral argument will be limited to *twenty minutes* unless otherwise ordered before the hearing begins.

The assistance of the public will be appreciated.

C. MARSHALL DANN,
*Commissioner of Patents and Trademarks.*

Date: Mar. 20, 1975.

[933 O.G. 1010]

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(175) ABANDONMENT OF APPLICATIONS BEFORE BOARD OF APPEALS

There have been recent instances of the Board of Appeals rendering a decision in an application which had already been refiled as a streamlined continuation.

To avoid recurrence of this situation, applicants should promptly inform the Clerk of the Board in writing as soon as they have positively decided to refile or to abandon an application containing an appeal awaiting a decision. Failure to exercise appropriate diligence in this matter may result in the Board's refusing an otherwise proper request to vacate their decision.

EDWIN L. REYNOLDS,
*First Assistant Commissioner.*

[857 O.G. 1005 (Dec. 24, 1968)]

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(176) REPLY BRIEFS

Applicants should clearly and specifically indicate in their reply briefs the new points of argument "raised in the examiner's answer" to which said reply briefs are directed. Rule 193(b) does not permit general rebuttal of each statement made in the examiner's answer; Consequently a reply brief which is not restricted to answering "new points" may be refused consideration in toto.

EDWIN L. REYNOLDS,
Apr. 15, 1969. *First Assistant Commissioner.*

[862 O.G. 343]

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(177) APPEALS—CONFIDENTIAL MEMORANDA

The practice of presenting confidential memoranda to the Board of Appeals is hereby terminated. All correspondence with the Board of Appeals, whether by the Examiner or the applicant will be on the record. No unpublished decisions which are unavailable to the general public by reason of 35 U.S.C. 122 will be cited by the Examiner or the applicant except that either the Examiner or the applicant has the right to cite an unpublished decision in an application having common ownership with the application on appeal.

WILLIAM E. SCHUYLER, JR.,
July 28, 1970. *Commissioner of Patents.*

[877 O.G. 733]

(178) APPEAL BRIEFS UNDER RULES 192 AND 193(b)

Appellants are reminded that their briefs in appealed cases must be responsive to every ground of rejection stated by the examiner, including new grounds stated in his answer.

Where an appellant fails to respond by way of brief or reply brief to any ground of rejection, and it appears that the failure is inadvertent, appellant shall be notified that he is allowed one month to correct the defect by filing a supplemental brief. Where this procedure has not been followed, the Board of Appeals should remand the application to the examiner for compliance. When the record clearly indicates intentional failure to respond by brief to any ground of rejection, for example, by failure to file a supplemental brief within the one-month period allowed for that purpose, the examiner should inform the Board of Appeals of this fact in his answer and merely specify the claims affected.

Where the failure to respond by brief appears to be intentional, the Board of Appeals may dismiss the appeal as to the claims involved. Oral argument at a hearing will not remedy such deficiency of a brief.

This notice supersedes the notices of May 4, 1966, 826 O.G. 1060, and of Oct. 20, 1966, 833 O.G. 1.

WILLIAM E. SCHUYLER, JR.,
Apr. 26, 1971. *Commissioner of Patents.*

[886 O.G. 424]

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(179) EXAMINER TESTIMONY

As stated in Section 1701 of the Manual of Patent Examining Procedure, patent examiners are forbidden to testify as patent experts or to express opinions, in testimony or otherwise, as to the invalidity of any issued patent. Patent examiners have, in connection with litigation involving patent validity, been called to testify on factual matters. In those cases, the practice has been to permit the examiner to testify only upon the issuance of a subpoena.

Henceforth, patent examiners will be permitted to testify on deposition in patent suits, without the need for a subpoena, provided the following conditions are satisfied:

1. The party proposing to take the testimony will state in writing, that the questions to be asked of the examiner will be phrased to comply with the permissible scope of inquiry as outlined in the protective orders contained in the Court opinions in *In re Mayewsky*, 162 USPQ 86, 89 and *Shaffer Tool Works* v. *Joy Manufacturing Co.*, 167 USPQ 170, 171: " . . . the scope of the oral depositions of the patent examiners is hereby limited to matters of fact and must not go into hypothetical or speculative areas or the bases, reasons, mental processes, analyses, or conclusions of the patent examiners in acting upon the patent applications maturing into the patent [in suit]." 167 USPQ 171.
2. That in addition to complying with the requirements of Rule 30 of the Federal Rules of Civil Procedure, the party taking the testimony will agree to give notice of the taking of the deposition of the patent examiner to the Solicitor, at least thirty days prior to the date on which the taking of the deposition is desired.
3. That the party taking the deposition arrange with the Solicitor to notice the deposition at a place convenient to the Patent Office.

If the party desiring to take the testimony of the examiner does not agree to the conditions enumerated, the Patent Office will not permit the examiner to be deposed without a subpoena and compliance with the precedure set forth in Section 7.02, Department of Commerce Administrative Order 205–12, June 29, 1967 as amended April 10, 1970. That section states:

> In any case where it is sought by subpoena, order or other compulsory process or other demand of a court or other authority (hereinafter referred to as a "demand") to require the production or disclosure of any record in the files of the Department of Commerce or other information acquired by an officer or employee of the Department as a part of the performance of his official duties or because of his official status, the matter shall be immediately referred for determination to the appropriate official described in subsection 4.01 of this order. If such official has discretion with respect to disclosure and he determines that it would be improper to comply with the demand, or if he has no discretion with respect to disclosure, the matter shall be promptly referred to the Secretary of Commerce for final determination. Unless and until the Secretary determines that the records or information should be produced, the officer or employee who appears in answer to the demand shall inform the court or other authority (*a*) that the section 7 of this order prohibits the officer or employee from producing or disclosing the records or other information demanded without the prior approval of the Secretary of Commerce, and (*b*) that the demand has been, or is being, as the case may be, referred for the prompt consideration of the Secretary. The officer or employee shall also provide the court or other authority with a copy of the regulations prescribed in this section 7 of this order, and shall respectfully request the court or other authority to stay the demand pending the receipt of instructions or directions from the Secretary of Commerce concerning the demand.

ROBERT GOTTSCHALK,
Mar. 13, 1972. *Commissioner of Patents.*

[897 O.G. 762]

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(180) SERVICE OF COURT PAPERS ON COMMISSIONER OF PATENTS

Those having occasion to serve on the Commissioner of Patents papers having to do with court proceedings are hereby reminded that proper service by mail may be effected only by mailing the papers to the Solicitor of the Patent Office as counsel for the Commissioner. Rule 5(b) of the Federal Rules of Civil Procedure provides in pertinent part:

> Whenever under these rules service is required or permitted to be made upon a party represented by an attorney the service shall be made upon the attorney unless service upon the party himself is ordered by the court. Service upon the attorney * * * shall be made by delivering a copy to him or by mailing it to him at his last known address * * *.

Rule 25(b) of the Federal Rules of Appellate Procedure similarly provides, "Service on a party represented by counsel shall be made on counsel." The clerk of the U.S. Court of Customs and Patent Appeals has stated that, inasmuch as the rules of the Court are not specific on the manner of service in patent cases, the procedure outlined herein has the Court's approval.

Accordingly, all service copies of papers filed in court proceedings in which the Commissioner of Patents is a party which are served by mail should be addressed:

"(Name of Solicitor), Solicitor
U.S. Patent Office
Washington, D.C. 20231."

S. WM. COCHRAN,
Apr. 28, 1972. *Solicitor.*

[898 O.G. 1500]

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## INTERFERENCES

(181) INTERFERENCE—DECLARATION

Effective July 1, 1964, no interference will be declared between pending applications, if there is a difference of more than three (3) months in the effective filing dates of the applications in the case of inventions of a simple character, or a difference of more than six (6) months in other cases, except in exceptional situations, as determined and approved by the Commissioner.

EDWARD J. BRENNER,
June 26, 1964. *Commissioner.*

[804 O.G. 297]

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(182) INTERFERENCE PRACTICE—AFFIDAVITS UNDER RULE 204(c)

There has been difficulty in a number of cases due to uncertainty on the part of applicants concerning the requirements of affidavits to be filed under Rule 204(c) to secure interference contests with patentees whose filing dates antedate their own by more than three months, and it is hoped that the following explanation will be helpful.

In preparing affidavits under this rule applicants should have in mind the provisions of Rule 228, and especially the following facts:

1. That after these affidavits are forwarded by the Primary Examiner for the declaration of an interference they will be examined by a Board of Patent Interferences.
2. If the affidavits fail to establish with adequate corroboration acts and circumstances which would prima facie entitle applicant to an award of priority relative to the effective filing date of the patentee, an order will be issued concurrently with the notice of interference, requiring applicant to show cause why summary judgment should not be rendered against him.
3. Additional affidavits in response to such order will not be considered unless justified by a showing under the provisions of Rule 228, and if the applicant responds the patentee will receive from the applicant a copy of the response (Rule 247) and from the Patent Office a copy of the original showing (Rule 228), and will be entitled to present his views with respect thereto.
4. It is the position of the Board of Patent Interferences that all affidavits submitted must describe acts which the affiants performed or observed or circumstances observed, such as structure used and results of use or test, except on a proper showing as provided in Rule 204(c). Statements of conclusion, for example, that the invention of the counts was reduced to practice, are generally considered to be not acceptable. It should also be kept in mind that documentary exhibits are not self-proving and require explanation by an affiant having direct knowledge of the matters involved. However, it is not necessary that the exact date of conception or reduction to practice be revealed in the affidavits or exhibits if the affidavits aver observation of the necessary acts and facts, including documentation when available, before the patentee's effective filing date. On the other hand, where reliance is placed upon diligence, the affidavits and documentation should be precise as to dates from a date just prior to patentee's effective filing date. The showing should relate to the essential factors in the determination of the question of priority of invention as set out in 35 U.S.C. 102(g).
5. The explanation required by Rule 204(c) should be in the nature of a brief or explanatory remarks accompanying an amendment, and should set forth the manner in which the requirements of the counts are satisfied and how the requirements for conception, reduction to practice or diligence are met.

GEORGE W. BOYS,
Apr. 21, 1966. *Chairman, Board of Patent Interferences.*

[826 O.G. 712]

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(183) DESIGNATION OF INTERFERENCE RECORD RELIED UPON

During the taking of testimony in an interference it is frequently not clear just what testimony is necessary to a party's case, since the contentions to be made by the opposing party are not known, and in the case of a junior party it is frequently not known whether or not the senior party will take testimony. Therefore counsel taking testimony will normally cover all matters which might possibly have an effect on his case. Then, in preparing his briefs it may become apparent that certain portions of his record have no real significance as to issues involved. A review of these portions by the Board of Patent Interferences is thus unnecessary.

Accordingly, in order to reduce the time required by the Board of Patent Interferences to study the record, and to more effectively and efficiently decide the issues involved, counsel relying on an evidentiary record in interference cases are requested to file a statement as to the portions of their record upon which they rely. Such statement should be included in the briefs of the respective parties.

EDWIN L. REYNOLDS,
*First Assistant Commissioner.*

[846 O.G. 679 (Jan. 16, 1968)]

(184) RULE 283

*Testimony taken in another interference or action*

A discovery proceeding under the control of a U.S. District Court, ancillary to an interference proceeding, is now considered to be an "action" within the meaning of Rule 283. Accordingly, "pretrial depositions" taken in a discovery proceeding in accordance with the Federal Rules of Civil Procedure and under court control may be used in the interference as to which the discovery proceeding is ancillary, subject to all other provisions of Rule 283.

RICHARD A. WAHL,
May 2, 1972. *Assistant Commissioner.*

[898 O.G. 1500]

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(185) INTERFERENCE RECORD

It has come to the attention of the Patent Office that some practitioners have misinterpreted Rule 253 as requiring that a set of copies of documentary exhibits be submitted as a part of each copy of the record (a total of four sets). To clarify the intent of the rule in this respect, it should be noted that paragraph (c) of Rule 253 requires only that each copy of the record contain the following:

The testimony presented by the party concerned;
A copy of the counts of the interference;
A copy of the preliminary statement of the party concerned; and
An index of exhibits.

Only one set of exhibits need be submitted.

GEORGE W. BOYS,
July 11, 1974. *Chairman, Board of Patent Interferences.*

[925 O.G. 1]

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(186) ACCESS TO INTERFERENCE FILES

[37 CFR Part 1]

*Notice of Proposed Rulemaking*

Notice is hereby given that, pursuant to authority contained in section 6 of the Act of July 19, 1952 (66 Stat. 793; 35 U.S.C. 6), as amended October 5, 1971 (85 Stat. 364), the Patent Office proposes to amend Title 37 of the Code of Federal Regulations by revising § 1.11(a).

Interested persons are invited to present their views, objections, recommendations, or suggestions in writing in connection with the proposed change to the Commissioner of Patents, Washington, D.C. 20231 on or before November 29, 1974. No oral hearings will be held. Written comments or suggestions will be available for examination by interested persons at Crystal Plaza Building 3, Room 11C17a, Arlington, Virginia.

The proposed revision of § 1.11(a) would change present practice by permitting earlier access to the file of an interference which involved a patent or an application on which a patent has issued. Under present practice, access is not permitted until judicial review of the decision of the Board of Patent Interferences has been exhausted. The proposed revision would allow access to the file after final decision of the Board of Patent Interferences if that decision is an award of priority as to all parties. Such earlier access could be of benefit to members of the public who need to know the basis for the issuance of the patent prior to final adjudication of the interference decision.

The text of the proposed revised rule is as follows:

§ 1.11 *Files open to the public.*

(a) After a patent has been issued, the specification, drawings, and all papers relating to the case in the file of the patent are open to inspection by the general public, and copies may be furnished upon paying the fee therefor. After an award of priority by the Board of Patent Interferences as to all parties, the file of any interference which involved a patent, or an application on which a patent has issued, is similarly open to public inspection and procurement of copies. See § 2.27 of this chapter for trademark files.

* * * * *

Dated: Aug. 30, 1974.

C. MARSHALL DANN,
*Commissioner of Patents.*

Approved: Sept. 9, 1974.

BETSY ANCKER-JOHNSON,
*Assistant Secretary for Science and Technology.*

[FR Doc. 74-21454; Filed 9-16-74; 8:45 am]

*Pub. in 39 F.R. 33376, Sept. 17, 1974*

[927 O.G. 779]

(Pending—No Final Action Taken)

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(187) INTERFERENCE PRACTICE

*Listing of Attorneys or Agents in Final Decisions*

A recent inquiry was made at the Board of Patent Interferences relating to the listing of attorneys' names in the heading of the final decisions of the Board of Patent Interferences.

Since this is a matter that may be of interest to those who prosecute interferences in the United States Patent and Trademark Office, the present practice of the Board of Patent Interferences is set forth below.

The heading of final decisions of the Board of Patent Interferences separately lists the names of all attorneys, agents or firms recognized as representing a party in the interference. Since firms have not been recognized by the Office since July 2, 1971, the listing of firm names is limited to firms of record in applications filed prior to July 2, 1971, and in unexecuted continuations or divisions thereof (Rule 60).

The names of the attorneys, agents or firms are taken from the interference file wrapper. The noted file wrapper lists the attorney or agent or firm of record in the applications or patent involved in the interference. Additionally, the name of any attorney presenting a party's oral argument at the final hearing is separately listed.

If a party desires to correct a firm name or exclude an attorney or agent previously of record from the above-noted decision, steps should be taken *promptly* to correct the files involved in the interference. This should be done by proceeding pursuant to the provisions of Rule 36, or by taking such other action as the party deems appropriate.

WALTER A. MODANCE,
May 6, 1975. *Chairman, Board of Patent Interferences.*

[935 O.G. 3]

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(188) INTERFERENCE PRACTICE

*Settlement Agreements*

Inquiries by attorneys have been made from time to time at the Board of Patent Interferences as to why the Commissioner does not give notice to the parties or their attorneys of record, a reasonable time prior to termination of an interference, of the requirement relative to the filing of settlement agreements, citing 35 USC 135(c), second paragraph.

Attention is called to the fact that notice is given in the second full paragraph of Form POL–76, the letter to the parties advising them of the declaration of the interference.

WALTER A. MODANCE,
Oct. 15, 1975. *Chairman, Board of Patent Interferences.*

[940 O.G. 570]

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(189) TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

CHAPTER I—PATENT AND TRADEMARK OFFICE, DEPARTMENT OF COMMERCE

PART 1—RULES OF PRACTICE IN PATENT CASES

*Interference Practice*

On August 22, 1974, notice of proposed rulemaking regarding the revision of §§ 1.125, 1.231(c), 1.247(c), 1.251(a), (b) and (c), 1.253 and 1.277(b) of Title 37, Code of Federal Regulations, dealing with testimony requirements in interferences, was published in the Federal Register (39 FR 30358). Interested persons were given until November 15, 1974 to submit written comments and suggestions. Full and careful consideration was given to all written comments received, in consequence of which the text of the original proposal has been modified in several instances.

In consideration of the comments received and pursuant to the authority contained in section 6 of the Act of July 19, 1952, as amended (85 Stat. 364; 35 U.S.C. 6), Part 1 of Title 37, Code of Federal Regulations, is hereby amended as follows:

1. Section 1.255 is revised to read as follows:

§ 1.225 *Failure of junior party to file statements or to overcome filing date of senior party.*

If a junior party to an interference fails to file a preliminary statement, or if his statement fails to overcome the effective filing date of the application of another party, judgment on the record will be entered against such junior party unless he has filed a proper motion under § 1.231, within the time set for such motions, seeking some action in the interference. If such motion has been timely filed but does not result in action in the interference which removes the basis for a judgment on the record, such judgment will be entered unless the motion related to a matter which may be reviewed at final hearing under § 1.258, and within 30 days of the decision denying his motion, or a later time set by the patent interference examiner, the junior party concerned requests that final hearing be set to review such matter. Also, such a junior party may within such 30 day period, or time set, request a final hearing to review such a matter raised by his opposition to a motion under § 1.231(a) (2), (3), (4), or (5) which was granted over his opposition. Such a junior party will not be permitted to take testimony except on granting of a motion accompanied by a showing of good cause, which should normally include names of proposed witnesses and affidavits or declarations by them giving their expected testimony.

2. In § 1.231, paragraph (c) is revised to read as follows:

§ 1.231 *Motions before the primary examiner.*

* * * * *

(c) A motion to amend under paragraph (a)(2) of this section or to substitute another application or declare an additional interference under paragraph (a)(3) of this section must be accompanied by an amendment adding claims corresponding to the proposed counts to the application concerned if such claims are not already in that application. The motion must also request the benefit of a prior application as provided for under paragraph (a)(4) of this section if the party concerned expects to be accorded such benefit.

* * * * *

3. In § 1.247, paragraph (c) is revised to read as follows:

§ 1.247 *Service of papers.*

* * * * *

(c) Certified transcripts of testimony under § 1.276 (but copies of the testimony must be served (§ 1.253(a))).

* * * * *

4. In § 1.251, paragraphs (a), (b) and (c) are revised to read as follows:

§ 1.251 *Assignment of times for discovery and taking testimony.*

(a) Subject to the exception provided in paragraph (c) of this section, a period for preparation for testimony will be set in which all parties should complete discovery and other preparatory activities, except for service by the senior party required by § 1.287(a)(1) which is governed by § 1.287(a)(2)(iii).

(b) Subject to the exception provided in paragraph (c) of this section, times will be assigned in which the junior party shall complete his testimony in chief, and in which the other party shall complete the testimony on his side, and a further time in which the junior party may take rebutting testimony, but he shall take no other testimony. If there be more than two parties to the interference, the times for taking testimony will be so arranged that each shall have an opportunity to prove his case against prior parties and to rebut their evidence, and also to meet the evidence of junior parties. If a senior party fails to file a preliminary statement, or expressly elects to rely solely on his effective filing date, he will be assigned only a time for taking rebuttal testimony, and no junior party will be assigned a time for taking rebuttal testimony unless another junior party senior to him is assigned a time for taking testimony in chief. But, subject to the conditions imposed upon junior parties by § 1.225, such senior party may be assigned a period for taking testimony concerning a matter raised by a motion under § 1.231.

(c) Times for preparation of testimony, for compliance with § 1.287(a) and for taking of testimony will ordinarily be assigned in notices sent to the parties after motions under § 1.231 have been disposed of or, if no such motions have been filed, after the close of the motion period (§ 1.231). Such times will not normally be assigned for a junior party who fails to file a preliminary statement or whose preliminary statement fails to overcome the effective filing date of the senior party. (See § 1.225.)

* * * * *

5. Section 1.253 is revised to read as follows:

§ 1.253 *Copies of the testimony.*

(a) In addition to the certified transcript of the testimony (§§ 1.275 to 1.278) or executed copies of affidavits or stipulated testimony or facts (§ 1.272), and the exhibits, three true copies of the testimony of each party must be filed for the use of the Office (a total of four copies), and one true copy must be served upon each of the opposing parties. Only one set of exhibits need be filed in the Office.

(b) These copies of the testimony may be submitted either in printed or in typewritten form.

(c) These copies, whether printed or typewritten, must include the testimony presented by the party filing the same, a copy of the counts of the interference, an index of the names of the witnesses, giving the pages where their examination and cross-examination begin, and an index of the exhibits, briefly describing their nature and giving the pages at which they are introduced and offered in evidence. The pages must be serially numbered throughout the entire record of testimony and the names of the witnesses must appear at the top of the pages over their testimony.

(d) The copies of the testimony for all parties must be filed and served on the opposing parties by the date specified in the order setting times for taking testimony or such extensions as may be granted.

(e) When the copies of the testimony are submitted in printed form, they shall be printed in 11-point type and adequately leaded; the paper must be opaque and unglazed; the size of the page shall be 7⅝ by 10¼ inches (19.4 by 26 cm.); the size of the printed matter shall be 4⅛ by 7⅛ inches (10.6 by 18.2 cm.); and they shall be bound to lie flat when opened. Twenty-five additional copies for the United States Court of Customs and Patent Appeals, should appeal be taken, may also be filed; if no such appeal be taken, the twenty-five copies will be returned to the party filing them.

(f) When the copies of the testimony are submitted in typewritten form, they must be clearly legible on opaque, unglazed, durable paper approximately 8½ by 11 inches (21.6 by 27.9 cm.) in size (letter size) and one of the three copies must be a ribbon copy, but need not be executed by the certifying officer. (The certified transcript may be a properly executed carbon copy. See § 1.277.) The typing shall be on one side of the paper, in not smaller than pica-type; and double-spaced with a margin of 1½ inches (3.8 cm.) on the left-hand side of the page. The sheets shall be bound at their left edges, in such manner to lie flat when opened, in a volume or volumes of convenient size (approximately 100 pages per volume is suggested) provided with covers. Documentary exhibits should not be included in bound volumes of testimony. Multigraphed or otherwise reproduced copies conforming to the standards specified will be accepted.

(g) The testimony of any party failing to supply copies thereof as specified may be refused consideration.

6. In § 1.277, paragraph (b) is revised to read as follows:

§ 1.277 *Form of deposition.*

* * * * *

(b) In order to have a ribbon copy of the testimony available as required by § 1.253(f), a carbon copy of the deposition may be executed by the witnesses and the officer and filed as required by § 1.276.

* * * * *

*Effective date.* These amendments shall become effective on May 1, 1975 and will apply to those interferences in which times for testimony are set on and after that date.

Dated: February 27, 1975.

C. MARSHALL DANN,
*Commissioner of Patents and Trademarks.*

Approved:
BETSY ANCKER-JOHNSON,
*Assistant Secretary for Science and Technology.*

[FR Doc.75-6782; Filed 3-13-75:8:45 am]

*Published in 40 F.R. 11873*

[933 O.G. 1500]

## CORRECTION OF ERRORS

(190) CERTIFICATES OF CORRECTION LISTING

Certificates of Correction are issued every Tuesday. Beginning on January 7, 1969, each issue of the OFFICIAL GAZETTE will numerically list all U.S. patents having Certificates of Correction issuing that Tuesday. The list will appear under the heading "Certificates of Correction Issued (date)."

RICHARD A. WAHL,
Nov. 22, 1968. *Assistant Commissioner.*

[857 O.G. 1005]

(191) TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

CHAPTER I—PATENT OFFICE, DEPARTMENT OF COMMERCE

PART 1—RULES OF PRACTICE IN PATENT CASES

*Issuance of Certificates of Correction*

On October 11, 1968, notice of proposed rulemaking regarding the amendment of §§ 1.322 and 1.323 of Title 37, Code of Federal Regulations, dealing with the issuance of certificates of correction, was published in the Federal Register (33 F.R. 15218). Interested persons were given 40 days in which to submit written comments, suggestions, or objections regarding the proposed amendments.

Full consideration having been given to all comments that were received in response to the public notice, the amendments originally proposed are hereby adopted without change and are set forth below.

As a result of these rule changes it will no longer be necessary for the patentee to forward his patent to the Patent Office when requesting the issuance of a certificate of correction. Upon receipt of an appropriate request, a certificate of correction will be issued and forwarded to the patentee, with an authorization permitting the patentee to physically attach same to the patent.

In connection with this change of procedure, arrangements have been made with Shepard's Citations to indicate under its listing of patents in its set entitled "Shepard's United States Citations, Patents and Trademarks" those patents for which certificates of correction have been issued. Beginning in April of this year the information will be published in that set's quarterly cumulative supplement and will appear in the bound volume thereof, when it is released.

*Effective date.* These amendments shall become effective upon publication in the Federal Register.

Dated: Mar. 18, 1969.

EDWARD J. BRENNER,
*Commissioner of Patents.*

Approved:
ALLEN V. ASTIN,
*Assistant Secretary for Science and Technology.*

* * * * *

[861 O.G. 680]

(192) NEW PROCEDURE FOR HANDLING CERTIFICATES OF CORRECTION

In compliance with amended Rules 322 and 323, and to expedite the issuance of certificates and reduce printing costs, practitioners are urged to submit the text of the certificate on a special form which could serve as the final copy for use in direct process reproduction (offset printing) of the certificate of correction. The *request* for issuance of the certificate (together with the fee where the error is due to applicant's mistake) should be in a separate letter accompanied by two copies of the form and a self-addressed envelope.

Where the recommended format is used and approved, one copy of said form, duly certified, will be returned to the patentee for attachment to his copy of the patent. This will eliminate the present necessity for returning the patent when requesting a certificate. The other copy of the form will be used for direct offset printing of copies of the certificate which, as heretofore, will be attached to every printed copy of the patent subsequently sold or distributed.

Copies of the form are obtainable for reproduction purposes from Correspondence and Mail Branch and from the receptionist in Bldg. 3, Crystal Plaza. Below is a sample form illustrating a variety of corrections and the suggested manner of setting out the format. Particular attention is directed to:

*a.* Identification of the exact point of error by reference to column and line number of the printed patent.
*b.* Conservation of space on the form by *typing* single space, beginning two lines down from the printed message.
*c.* Starting the correction to each separate column as a sentence, and using semi-colons to separate corrections within said column, where possible.
*d.* Two inch space left blank at bottom for signature of attesting officer.
*e.* Use of quotation marks to enclose the exact subject matter to be deleted or corrected; use of double hyphens (--) to enclose subject matter to be added, except for formulas.
*f.* Where a formula is involved, setting out only that portion thereof which is to be corrected.

Where the recommended format is not used or where the nature of the subject matter is such that it is more expedient to print by the direct image offset technique, e.g., entire sheet(s) of drawing or page(s) of specification omitted, multiple pages of corrections, intricate chemical formulas, etc., Issue and Gazette Branch will prepare the certificate as heretofore. Patentee will receive a copy for attachment to his copy of the patent.

RICHARD A. WAHL,
Apr. 1, 1969. *Assistant Commissioner.*

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 5,667,999 Dated April 1, 1969

James W. Worth

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

In the drawings, Sheet 3, Fig. 3, the reference numeral 225 should be applied to the plate element attached to the support member 207. Column 1, lines 45 to 49, the left-hand formula should appear as follows:



Column g, formula XXXV, that portion of the formula reading



should read



Formula XXXVII, that portion of the formula reading "-$CH_2CH$-" should read -- -$CH_2CH_2$- --. Column 2, line 68 and column 3, lines 3, 8 and 13. " the claim reference numeral "2", each occurrence, should read -- 1 --. Column 10, line 16, cancel beginning with "12. A sensor device" to and including "tive strips," in column 11, line 8, and insert the following claim:

12. A control circuit of the character set forth in claim 1 and for an automobile having a convertible top, and including; means for moving said top between raised and lowered retracted positions; and control means responsive to said sensor relay for energizing the top moving means for moving said top from retracted position to raised position.

[862 O.G. 2]



(193) CERTIFICATES OF CORRECTION

New procedures for handling Certificates of Correction have been implemented to further expedite their issuance. Particular attention is directed to the following which specifically affect the patentee's input.

*a.* The form, PO–1050, which is used as the camera copy for printing the Certificate of Correction when approved, has been revised as a 2-part carbon interleaf set. Both parts of form PO–1050 must accompany the request, since the second part will be placed in the application file for internal use.
*b.* The practice set forth in the Notice of April 1, 1969, (862 O.G. 2) is hereby modified to the extent that copies of the request will not be returned when approved; therefore, the requirement for a self-addressed stamped envelope is withdrawn.
*c.* A perforated space at the bottom of form PO–1050 has been provided for the patentee's current mailing address, and for ordering any desired additional copies of the printed Certificate. The fee for each additional copy ordered after March 1, 1975, is $.30 per page. The fee should accompany the request.
*d.* Copies of the blank revised form, PO–1050, are now available and may be obtained without charge from the Correspondence and Mail Division and from the receptionist in Bldg. 3 in Crystal Plaza.
*e.* Where only a part of a request can be approved, or where the Office discovers and includes additional corrections, the appropriate alterations are made on the PO–1050 by the Office. The patentee is notified of the changes on Notification of Approval-in-Part, form POL–404. The Certificate is issued approximately 6 weeks thereafter.

To avoid delay in the issuance of Certificates, practitioners are urged to follow the suggestions below, which in most cases should require no additional expenditure in time.

1. The revised PO–1050 should be used exclusively regardless of the length or complexity of the subject matter. Intricate chemical formulas or pages of specification or drawings may be reproduced and mounted on a blank copy of PO–1050. Failure to use the form has frequently delayed issuance since the text must be retyped by the Office onto the PO–1050.
2. Identify on the request, the exact page and line number where the errors occur in the application file. On the PO–1050, however, the column and line number in the printed patent should be used as at present.
3. Retain the patent grant as specified in the Notice of March 18, 1969, (861 O.G. 680). The Office is no longer attaching the Certificate of Correction to patentee's copy of the patent. If submitted, the patent will be returned to the patentee.

Requests for Certificates of Correction will not be approved as a mattter of course under 37 CFR 1.323 (Rule 323) where the error complained of resulted from the filing of priority papers or assignment documents AFTER PAYMENT OF THE BASE ISSUE FEE. Please see M.P.E.P., Section 201.14(a) and 307, respectively.

WILLIAM I. MERKIN,
*Acting Assistant Commissioner for Administration.*
Jan. 24, 1975.

[931 O.G. 978]

## ABSTRACTS

(194) EXAMINATION REQUIREMENTS AND PROCEDURE IN RELATION TO ABSTRACTS OF THE DISCLOSURE

The newly adopted amendment to Rule 72 which requires the submission of an *Abstract of the Disclosure* is being applied to patent applications which receive a first Office action of any kind from the Examiner on or after November 1, 1966; however, on cases filed before January 1, 1967, abstracts will not be required where the application is passed to issue on the first action.

The Examiner in the first office action on and after November 1, 1966, should require the submission of a brief abstract of the technical disclosure in the specification, the abstract to appear immediately after the title of the invention and preceding the disclosure in a separate paragraph under the heading "Abstract of the Disclosure." The following form paragraph may be used to make the requirement:

"An abstract is required, see new Rule 72(b)."

Responses to such actions should be treated under Rule 111(b) practice like any other formal matter.

Upon passing the case to issue, the Examiner should see that the abstract is an adequate and clear statement of the contents of the disclosure and generally in line with the guidelines in the following paragraphs; the abstract shall be changed by Examiner's Amendment in those instances where deemed necessary.

1. The purpose of the abstract is to provide a non-legal technical statement of the contents of the disclosure. The abstract should be an objective condensation (rather than a description) of the disclosure, in clear and concise language. Statements as to the relative merits or value, or speculative applications of the invention should be omitted.

2. The abstract should be especially designed to serve as a searching-scanning tool for the scientist, engineer or researcher in the particular art, and therefore should serve to indicate whether there is a need for consulting the full specification for details.

3. The abstract should be as brief as the subject permits. A single paragraph of 50–100 words should be sufficient.

4. Especially in the chemical field, the abstract should include a statement of the utility of the subject matter of the disclosure, particularly that which is related to the invention.

5. The abstract should be separate and independent of the "Summary of the Invention." One of the purposes of the abstract is to determine quickly the nature and gist of the technical disclosure.

RICHARD A. WAHL,
Oct. 7, 1966. *Assistant Commissioner.*

[831 O.G. 1328]

(195) CHANGE IN CONTENT OF THE PATENTS SECTION OF THE OFFICIAL GAZETTE

In keeping with the Patent Office program to encourage the use of patents in the scientific, engineering and business communities, as well as the patent profession, a change in the content of the patents section of the OFFICIAL GAZETTE is being made.

Beginning with the first issue of the OFFICIAL GAZETTE in January 1968, a copy of the abstract of each patent where an abstract is available will appear, in lieu of the claim. This change in content is being made in order that patent information may be better utilized by the patent public.

In addition to the regular issue of the OFFICIAL GAZETTE an extract of the patents section, i.e., the descriptive matter relating to patents only, will be made available. The subscription rate for the patents section extract only for the first six months period beginning with the first issue in January 1968, will be twenty-seven dollars ($27.00) and one dollar and twenty-five cents ($1.25) for a single copy. The extract will be mailed under the direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed. The title of the extract will be "Official Gazette—Patent Abstracts Section."

It is to be noted that the Government Printing Office has determined that the subscription rate for the regular issue of the OFFICIAL GAZETTE will be increased to sixty-seven dollars ($67.00) for the subscription year beginning January 1968, and the price of individual copies will be increased to one and a half dollars ($1.50). The increased rate is not related to the new program.

EDWARD J. BRENNER,
Sept. 25, 1967. *Commissioner of Patents.*

[843 O.G. 747]

(196) PARAGRAPH REQUIREMENTS FOR ABSTRACTS

In view of some difficulties experienced in determining the extent of the abstracts, the Patent Office is supplementing the Notice of October 7, 1966 (831 O.G. 1328).

An abstract should usually be limited to a single paragraph, under the heading, "Abstract of the Disclosure" as stated in Rule 72(b) and MPEP 608.01(b).

In unusual circumstances where the application disclosure does not lend itself to a single paragraph abstract, a plural paragraph abstract may be acceptable. An example of these rare situations would be an application having claims to different statutory classes, it being recognized that an abstract of the disclosure should be written to include the advancement in the art.

To avoid errors in printing where a plural paragraph abstract is deemed necessary and appropriate, the complete abstract must be set off by suitable headings to indicate where the abstract begins and ends. Appropriate headings useable between the abstract and the subsequent description are to be found in the "Guidelines for Drafting a Model Patent Application Under the Revised Rules" (832 O.G. 5; MPEP 608.01(a)).

RICHARD A. WAHL,
*Assistant Commissioner.*

Feb. 16, 1968.

[854 O.G. 287]

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(197) PATENT ABSTRACTS

The provision in Rule 72(b) of the Rules of Practice in Patent Cases, relating to inclusion of a "brief abstract of the technical disclosure" in applications for patent, has now been in effect for two and one-half years.

Instructions regarding abstract preparation were published at 831 O.G. 1328, October 25, 1966, and at about the same time a pamphlet entitled "Guidelines for the Preparation of Patent Abstracts" was published and made available to personnel concerned with the preparation and review of abstracts of the type noted.

Abstracts are becoming more and more significant in the field of mechanized and computerized prior art retrieval. It is therefore important that they reach the optimum quality level at the earliest possible date.

During the past year abstracts, in a random sample of approximately 1000 allowed applications, were audited or reviewed for purposes of determining degree of compliance with the aforenoted instructions and guidelines. Steady improvement in the quality of the abstracts was noted in the course of the review. The review clearly indicated, however, a need for further improvement as well as a need for certain modifications and revisions in the earlier published guidelines. There also appeared to be a need for reemphasis of portions of the guidelines.

Accordingly, a revised set of guidelines consonant with the needs suggested by the audit have been promulgated, and are set forth below for use in the preparation and review of patent abstracts.

GUIDELINES FOR THE PREPARATION OF PATENT ABSTRACTS

*Background*

The Rules of Practice in Patent Cases require that each application for patent include an Abstract of the Disclosure, Rule 72(b).

The content of a patent abstract should be such as to enable the reader thereof, regardless of his degree of familiarity with patent documents, to ascertain quickly the character of the subject matter covered by the technical disclosure and should include that which is new in the art to which the invention pertains.

The abstract is not intended nor designed for use in interpreting the scope or meaning of the claims, Rule 72(b).

*Content*

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains.

If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure.

If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement.

In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or a use thereof.

If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

Where applicable, the abstract should include the following: (1) if a machine or apparatus, its organization and operation; (2) if an article, its method of making; (3) if a chemical compound, its identity and use; (4) if a mixture, its ingredients; (5) if a process, the steps. Extensive mechanical and design details of apparatus should not be given.

With regard particularly to chemical patents, for compounds or compositions, the general nature of the compound or composition should be given as well as the use thereof, e.g., "The compounds are of the class of alkyl benzene sulfonyl ureas, useful as oral anti-diabetics." Exemplification of a species could be illustrative of members of the class. For processes, the type reaction, reagents and process conditions should be stated, generally illustrated by a single example unless variations are necessary.

*Language and Format*

The abstract should be in narrative form and generally limited to a single paragraph within the range of 50 to 250 words. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should sufficiently describe the disclosure to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "This disclosure concerns," "The disclosure defined by this invention," "This disclosure describes," etc.

*Responsibility*

Preparation of the abstract is the responsibility of the applicant. Background knowledge of the art and an appreciation of the applicant's contribution to the art are most important in the preparation of the abstract. The review of the abstract, for compliance with these guidelines, with any necessary editing and revision on allowance of the application is the responsibility of the examiner.

*Sample Abstracts*

A heart valve with an annular valve body defining an orifice and having a plurality of struts forming a pair of cages on opposite sides of the orifice. A spherical closure member is captively held within the cages and is moved by blood flow between open and closed positions in check valve fashion. A slight leak or backflow is provided in the closed position by making the orifice slightly larger than the closure member. Blood flow is maximized in the open position of the valve by providing an inwardly convex contour on the orifice-defining surfaces of the body. An annular rib is formed in a channel around the periphery of the valve body to anchor a suture ring used to secure the valve within a heart.

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A method for sealing, by application of heat, overlapping closure panels of a folding box made from paperboard having an extremely thin coating of moisture-proofing thermoplastic material on opposite surfaces. Heated air is directed at the surfaces to be bonded, the temperature of the air at the point of impact on the surfaces being above the char point of the board. The duration of application of heat is made so brief, by a corresponding high rate of advance of the boxes through the air stream, that the coating on the reverse side of the panels remains substantially non-tacky. The bond is formed immediately after heating within a period of time for any one surface point less than the total time of exposure to heated air of that point. Under such conditions the heat applied to soften the thermoplastic coating is dissipated after completion of the bond by absorption into the board acting as a heat sink without the need for cooling devices.

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Amides are produced by reacting an ester of a carboxylic acid with an amine, using as catalyst an alkoxide of an alkali metal. The ester is first heated to at least 75° C. under a pressure of no more than 500 mm. of mercury to remove moisture and acid gases which would prevent the reaction, and then converted to an amide without heating to initiate the reaction.

RICHARD A. WAHL,
*Assistant Commissioner.*

Apr. 23, 1969.

[862 O.G. 653]

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(198) DISCONTINUATION OF THE PUBLICATION "PATENT ABSTRACTS SECTION OF THE OFFICIAL GAZETTE"

Effective Mar. 31, 1970, the Patent Office will no longer print the publication "Patent Abstracts Section of the Official Gazette." Reasons for this decision are the desire to incur a saving in printing costs, the same information now appears in the OFFICIAL GAZETTE, and the number of subscribers no longer warrants a separate publication.

The Superintendent of Documents, U.S. Government Printing Office, will contact subscribers to the "Patent Abstracts" for appropriate action regarding their subscriptions.

CLARENCE A. KALK,
*Acting Assistant Commissioner for Administration.*

Feb. 9, 1970.

[872 O.G. 1]

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(199) CLAIMS VERSUS ABSTRACTS FOR PUBLICATION IN THE PATENT OFFICIAL GAZETTE

Abstracts have been required for all patent applications filed since January 1, 1967. Subsequent to the requirement for abstracts, the Office began substituting abstracts for patent claims in the OFFICIAL GAZETTE. At the present time, abstracts are used exclusively in the OFFICIAL GAZETTE to describe the inventions for which patents issue each week.

Over the last several months, the Office has become increasingly aware of the disparity of views which exist regarding the merits of the publication of claims or abstracts in the OFFICIAL GAZETTE. The utilization of abstracts in the OFFICIAL GAZETTE was initially based on a desire to make that publication more useful to the non-patent community. However, it now appears that a significant portion of the patent community, especially in the chemical area, would prefer the publication of claims in the OFFICIAL GAZETTE as more useful than the publication of abstracts.

To assist the Office in resolving this issue, it is requested that interested parties submit their comments in writing prior to January 1, 1973. Such comments should be addressed to the Commissioner of Patents, Washington, D.C., 20231.

ROBERT GOTTSCHALK,
*Commissioner of Patents.*

May 22, 1972.

[899 O.G. 820]

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(200) RETURN TO PRINTING OF CLAIMS IN PATENT OFFICIAL GAZETTE

In the notice of May 22, 1972 (899 O.G. 820) interested parties were requested to submit written comments as to whether claims or abstracts should be printed in the Patent OFFICIAL GAZETTE. In view of the comments received, the Patent Office has decided to return to the pre-1968 practice of printing the broadest claim or claims, as selected by the examiner, in the Patent OFFICIAL GAZETTE. The printing of claims will begin with the October 1, 1974 issue of the Patent OFFICIAL GAZETTE. Abstracts will continue to be printed on patents.

C. MARSHALL DANN,
*Commissioner of Patents.*

[924 O.G. 752 (July 23, 1974)]

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## REFERENCES

(201) CITATION OF PUBLICATIONS AND FOREIGN PATENTS

*Foreign Patents*

In accordance with Rule 107, for each foreign patent cited, there should be indicated the number of sheets of drawing and pages of specification and also the sheet number(s) and page number(s) specifically relied upon if less than the entire disclosure is used. Because it is essential to conserve space in the Examiner's file of applications and to minimize the cost to applicant under the automatic supply of references cited, whenever the total number of sheets and pages in any foreign patent exceeds ten, the Examiner should keep the total relied on as near to ten as possible. Applicants who desire a copy of the complete foreign patent or of the portion not "relied on" must order it, not through the automatic supply system, but in the usual manner.

*Publications*

Publications such as German allowed applications and Netherlands printed specifications should be similarly handled. With other publications such as books, periodicals and catalogues, the specific pages relied upon should be cited. If the copy relied upon is located only in the Group making the action (there is no call number), the additional information, "Copy in Group —" should be given.

RICHARD A. WAHL,
*Acting Superintendent, Patent Examining Corps.*

Jan. 4, 1965.

[811 O.G. 293]

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(202) AUTOMATIC FURNISHING FREE COPIES OF CITED REFERENCES

Commencing November 1, 1965, one complete set of references cited by Examiners in Office Actions will be automatically supplied without charge simultaneously with the mailing of the actions.

Additional copies of references desired must be properly identified and purchased from the regular Patent Office copy supply facilities.

This supersedes the notice, "Providing Copies of Cited References to Applicants" which was published in 809 O.G. 317 on December 8, 1964.

C. A. KALK,
*Director of Administration.*

Oct. 1, 1965.

[819 O.G. 1335]

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(203) CITATION OF REFERENCE AT TIME OF ALLOWANCE

Commencing March 15, 1966, references cited by examiners when passing an application to issue will no longer be supplied under the automatic plan. Copies of these references, if desired, must be purchased from the regular Patent Office copy supply facilities.

Except as above indicated references cited by examiners in Office actions will continue to be automatically supplied without charge simultaneously with the mailing of the actions.

This modifies the notice, "Automatic Furnishing Free Copies of Cited References," which was published in 820 O.G. 1 on November 2, 1965.

RICHARD A. WAHL,
*Assistant Commissioner of Patents.*

Feb. 24, 1966.

[824 O.G. 805]

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(204) ORDERS FOR REFERENCES CITED IN SHORTENED STATUTORY PERIOD ACTIONS

Effective immediately, the Patent Office will no longer supply copies of references cited on a "Special Handling" basis without the usual additional charge. This service was announced in the OFFICIAL GAZETTE on June 2, 1964.

The Patent Office has, since November 1, 1965, been furnishing one complete set of references cited by Examiners in Office Actions automatically, without charge, simultaneously with the mailing of the actions.

[825 O.G. 811 (Apr. 19, 1966)]

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(205) CITATION OF PRIOR ART BY APPLICANTS

The purpose of this notice is to set forth positive guidelines for applicants, their attorneys and agents who desire to

submit prior art for consideration by the Patent Office. Such citations of relevant art are welcomed and are encouraged. In order that they may be most effectively considered by the examiner, however, with as little disruption of the regular examination process as possible, it is requested that they be submitted in accordance with the following guidelines.

(1) Citations should be submitted within three months after the application filing date if possible. Any citation made after the first action on the merits (if this occurs more than three months after filing) should be accompanied by an explanation of why it was not earlier presented. This may take the form of a statement that it was made as soon as the art or other material was discovered, or as soon as its pertinency was appreciated, indicating the date of discovery of the cited material or its pertinency.

(2) Full text copies of the pertinent portions of all such prior art citations or other material relevant to patentability of the claimed invention should be supplied, whether the citation is made in a separate paper or in the specification of the application. This will be unnecessary in the case of pending or abandoned United States applications (e.g. Defensive Publications). In the case of publications, a copy of the title page, its copyright notice or other indication of a publication date, and copies of the entire pages which contain the text of the relevant material will be sufficient.

While patent copies are, of course, available in the Patent Office, failure of the applicant to include copies of the cited art means that the examiner must interrupt his examination until copies can be ordered and received. Since the person making the citation will have copies in hand, an overall saving in time and more expeditious examination will result if copies are supplied with the citation.

(3) If the reference is not in English, a translation of its pertinent portions should be included.

(4) Accompanying each citation should be an indication of its pertinency to the claimed subject matter, together with any reasons applicant may wish to point out why the claims are considered to be patentable over the cited material.

All citations of prior art or other material submitted in accordance with the above guidelines and submitted before all claims have been indicated as allowable will be fully considered by the examiner.

While the Patent Office will not knowingly ignore any prior art which might anticipate or suggest the claimed invention, no assurance can be given that cited art or other material not submitted in accordance with these guidelines will be considered by the examiner. Consequently, any patent issuing on the application in question would not be expected to be accorded the usual presumption of validity with respect to such cited art or material.

After the claims have been indicated as allowable by the examiner, e.g., by the mailing of an *Ex parte* Quayle action, a notice of allowability (POL–327), an examiner's amendment (POL–37), or a Notice of Allowance, any citations submitted will be placed in the file. Since prosecution has ended, however, such submissions will not ordinarily be considered by the examiner unless the citation is accompanied by :

(*a*) A proposed amendment cancelling or further restricting at least one independent claim and narrowing the scope of protection sought ;

(*b*) A timely affidavit under Rule 131 with respect to the material cited ; or

(*c*) A statement by the applicant or his attorney or agent that, in the judgment of the person making the statement, the prior art or other material cited raises a serious question as to the patentability of the claimed subject matter.

If the material is submitted after the base issue fee has been paid, it must also be accompanied by a petition under Rule 183 (37 CFR 1.183) requesting a waiver of Rule 312 (37 CFR 1.312). Such petition, if granted, would result in review of the art by the examiner and possible entry of the amendment.

Submitted citations will not in any way diminish the obligation of examiners to conduct independent prior art searches, or relieve examiners of citing pertinent prior art of which they may be aware, whether or not such art is cited by the applicant. Nothing in this notice is intended to relieve applicants of any responsibility they may have to cite known prior art to the Patent Office.

If the specification or a separate paper filed in the application contains citations relating to background material, applicant has the responsibility of determining whether or not such material is sufficiently relevant to the claimed invention that full compliance with these guidelines is necessary.

Prior art submitted by applicant in the manner provided herein will not be supplied with an Office action, but will be listed on the Form PO–892, "Notice of References Cited," along with other prior art relied upon by the examiner during the examination. Only that prior art listed by the examiner on Form PO–892, will be printed on the patent. However, the complete listing of applicant's citations will be in the application file and will be available for inspection by the public after issuance of the patent.

Citations of prior art may be placed of record in the patented file after the grant of the patent at the request of the patentee (see Section 100(d) of Title 35, United States Code, for definition of patentee). Any such submissions by the patentee will be placed in the patented file without comment by the Patent Office. Citations submitted to the Patent Office by third parties will not be placed in the record of a patented file unless the party submitting the art certifies that he has sent the owner of record copies of the cited art and of his letter transmitting it to the Patent Office.

*Prior Notices*

This notice supersedes the notices of :
December 10, 1963 (797 O.G. 733)
April 24, 1964 (802 O.G. 601)
June 22, 1964 (804 O.G. 1)
July 24, 1964 (805 O.G. 294)
April 13, 1967 (837 O.G. 1032)

WILLIAM FELDMAN,
Aug. 12, 1974. *Deputy Assistant Commissioner for Patents.*

[926 O.G. 2]

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(206) CITATION OF PRIOR ART BY APPLICANTS

This notice supplements the notice of August 12, 1974, published in the OFFICIAL GAZETTE of September 3, 1974 (926 O.G. 1), and is in response to some of the concerns expressed by members of the patent bar. That notice set forth guidelines the following of which would result in assurance by the Office that the examiner will fully consider the prior art or other material submitted by applicants, their attorneys and agents.

One of the guidelines stated, "If the reference is not in English, a translation of its pertinent portions should be included." In recognition of the high costs of translations, that guideline is hereby modified to accept an alternative to a translation. Accordingly, in lieu of a translation, it shall be sufficient, for purposes of the notice of August 12, 1974, if an equivalent English language patent or publication is provided and identified as an equivalent.

Also, where the applicant has submitted prior art in accordance with the guidelines in a prior application, reference to the prior application and the submission therein will be sufficient for the continuing application. Of course, any change in applicant's position regarding the cited art and its relevancy to the claimed subject matter should be indicated.

WILLIAM FELDMAN,
*Deputy Assistant Commissioner for Patents.*

May 19, 1975.

[935 O.G. 902]

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(207) REFERENCE CITATION IN CONTINUATION APPLICATIONS

Effective December 1, 1967, the Office will discontinue the practice of furnishing, automatically and without charge, copies of references cited in continuation applications if they had been previously cited in the parent application.

In the rare instance where no art is cited in a continuation application, all the references cited during the prosecution of the parent application will be listed at allowance for printing in the patent.



Other continuing applications, including continuation-in-part and divisional applications, are not affected by this change.

RICHARD A. WAHL,
Nov. 1, 1967. *Assistant Commissioner.*

[846 O.G. 1022]

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(208) PATENT CLASSIFICATION

As a service to the public, effective with the issue of December 10, 1968, all patents will contain at the end of the specification, after the "List of References," a list of all classes and subclasses in the U.S. Classification System into which the patent was cross-referenced at the time of issue. This listing will be headed "U.S. Cl.—X.R."

Beginning with the issue of January 7, 1969, all patents will also include International Patent Classifications in the heading and identified as " Int. Cl."

RICHARD A. WAHL,
Nov. 29, 1968. *Assistant Commissioner.*

[858 O.G. 1029]

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(209) CONCORDANCE : UNITED STATES PATENT CLASSIFICATION TO INTERNATIONAL PATENT CLASSIFICATION

A revised and updated edition of the "Concordance : United States Patent Classification to International Patent Classification" has been published and is available from the Superintendent of Documents, U.S. Government Printing Office, for $1.50. This second edition is a revision of the edition of April 1969, and contains about 3,000 changes, corrections and additions suggested by users of the book. It includes all new U.S. classes published up to and including November 1971.

W. W. BURNS, Jr.,
Apr. 12, 1972. *Administrator, Office of Search Systems and Documentation.*

[898 O.G. 368]

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(210) MACHINE SEARCH SERVICE

The Mechanized Search Service presently used by the Patent Office in making examiner searches in the field of Data Processing is offered for public use under the conditions and procedures prescribed herein.

This system is available as a punched card file for an initial fee of $40.00 each. The instruction manual "Search System Manual for the Field of Data Processing-ICIREPAT System DP" is included as part of the "package." A renewal fee of $35.00 per year entitles the subscriber to receive a set of cards for new issues.

This file which presently exists for mechanized searching consists of :

| Field | Class | Subclass | File content [1] |
|---|---|---|---|
| Data processing | 235 | 157 | 2,965 U.S. Patents. |
| | 340 | 172.5 | 622 Literature articles. |

[1] Approximate number of documents in the files as of June 30, 1971.

The scope and organization of this file is described in the publication "Search System Manual for the Field of Data Processing-ICIREPAT System DP."

A substantial portion of this publication is devoted to the technique of preparing the code sheet which is the means provided for expressing the search query for machine handling. Effective use of the mechanized search system and the achievement of competent results are dependent upon understanding and care in applying the coding information offered in this publication.

The Patent Office will accept requests for machine searches submitted on code sheets prepared in accordance with instructions contained in the aforedescribed publication. Requests received in any other form will not be accepted, as the Patent Office will not assume the responsibility for the formulation of a search query or the representation of a query in coded form. The Patent Office will, however, provide assistance to persons seeking aid in resolving specific questions which may arise in completing the code sheet prior to submitting the search request. The code sheet serves as the query form for searches on this system.

One or more Examiners have been designated to provide such assistance. A request for a conference on mechanized search questions in the field of Data Processing may be directed to the Supervisory Primary Examiner of Group Art Unit 237.

A search constitutes all of the machine and related operations required to retrieve from a data file, information contained therein which fulfills the search instructions represented on a code sheet. When several code sheets are required to cover the full search need, each code sheet will constitute a search. A search will be considered to be complete and proper even under circumstances in which proper operation of the system produces output representing documents which, while fulfilling the coded requirements, are determined by the user to lack pertinence or relevance in any or a sufficient degree ; or, conversely, fails to produce an output.

The cost per search, which includes a list of the document references retrieved, is $5.00. Copies of all U.S. patent and non-patent literature references will be supplied, if requested as part of the search service, for additional cost at established rates, chargeable to a deposit account maintained by the search purchaser with the Patent Office.

Code sheets for the machine search file may be obtained from the Patent Office. Address request to the Patent Office, Office of Search Systems and Documentation, Washington, D.C., 20231.

After any necessary consultation with the Examiner in preparing the search query, address search requests together with the completed code sheet and fee to the Commissioner of Patents, Washington, D.C., 20231. Attention should be directed to the Office of Search Systems and Documentation, Office of the Administrator.

[891 O.G. 886 (Oct. 19, 1971)]

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(211) MACHINE SEARCH SERVICE

The mechanized retrieval system formerly used by the Patent Office in making examiner searches in the field of steroids has been replaced by the ICIREPAT Shared System for this field (System ST). This new system is based upon the original U.S. Patent Office system, with certain additions and modifications. Following are the changes that have been or are being effected :

1. Two sub-systems have been created, one for steroid structures and the other for processes which produce steroid structures.
2. Patents relating to seco, nor, homo- and hetero steroids are within the scope of the new ICIREPAT system and are being added to the system.
3. The new system does not at this time include U.S. patents issued prior to 1965. It is anticipated that U.S. patents from 1961–1964 will be added. To date, no plans have been made for the indexing of non-patent literature.
4. Foreign patents relating to structures and processes within the scope of the sub-systems are being indexed by cooperating foreign patent offices.
5. The ICIREPAT structure sub-system includes substantially the same capabilities for searching compounds as the old system ; the card format, however, has been modified.
6. Both the manual and the code sheet have been revised to reflect these additions and modifications as well as a number of other minor changes. The manual is still under revision ; however, draft copies are available to users of the system.

The ICIREPAT System ST is offered for public use under the conditions and procedures prescribed herein.

This system is available as a punched card file for an initial fee of $40.00. The instruction manual is still under revision; however, as noted above, draft copies are provided with the card file. A renewal fee of $35.00 per year entitles the subscriber to receive cards for newly issuing patents as well as for older documents (i.e., those indicated in items 2, 3 and 4 above) as these cards become available.

This file which presently exists for mechanized searching consists of:

| Field | Class | Subclass | File content [1] |
|---|---|---|---|
| Steroid | 260 | 239.5+ | 1,937 U.S. Patents. |
| | | 397+ | 1,111 Foreign Patents. |

[1] Approximate number of documents in the files as of October 1, 1972.

A substantial portion of the instruction manual is devoted to the technique of preparing the code sheet which is the means provided for expressing the search query for machine handling. Effective use of the mechanized search system and the achievement of competent results are dependent upon understanding and care in applying the coding information offered in this publication.

The Patent Office will accept requests for machine searches submitted on code sheets prepared in accordance with instructions contained in the aforedescribed manual. Requests received in any other form will not be accepted, as the Patent Office will not assume the responsibility for the formulation of a search query or the representation of a query in coded form. The Patent Office will, however, provide assistance to persons seeking aid in resolving specific questions which may arise in completing the code sheet prior to submitting the search request. The code sheet serves as the query form for searches on this system.

One or more Examiners have been designated to provide such assistance. A request for a conference on mechanized search questions in the field of steroids may be directed to the Supervisory Primary Examiner of Group Art Unit 124.

A search constitutes all of the machine and related operations required to retrieve from a data file, information contained therein which fulfills the search instructions represented on a code sheet. When several code sheets are required to cover the full search need, each code sheet will constitute a search. A search will be considered to be complete and proper even under circumstances in which proper operation of the system produces output representing documents which, while fulfilling the coded requirements, are determined by the user to lack pertinence or relevance in any or a sufficient degree; or, conversely, fails to produce an output.

The cost per search, which includes a list of the document references retrieved, is $5.00. Copies of all U.S. and foreign patent references will be supplied, if requested as part of the search service, for additional cost at established rates, chargeable to a deposit account maintained by the search purchaser with the Patent Office.

Code sheets for the machine search file may be obtained from the Patent Office. Address requests to the Patent Office, Office of Patent Classification, Washington, D.C. 20231.

Requests for searches in the original Steroid system will still be accepted, since the revised ICIREPAT system at present includes among the U.S. patents only those which issued after January 1, 1965. The content of this original file, updating for which terminated with the issues of January 1972, is as follows:

5940 U.S. patents
111 Foreign patents
4179 Non-patent literature items

The instruction manual is entitled "Revised Steroid Search System Coding Manual," R & D Report No. 19. Copies of this manual and code sheets may also be obtained from the Office of Patent Classification, and searches may be submitted according to the same procedures and guidelines set forth above for the new ICIREPAT Steroid system.

EDWIN R. MACKERT,
*Acting Administrator,*
*Office of Patent Classification.*

[905 O.G. 70 (Dec. 5, 1972)]

## POSTAL SERVICE EMERGENCY

(212) EMERGENCY SITUATION IN THE U.S. POSTAL SERVICE

In view of the present emergency situation in U.S. postal service, the U.S. Patent Office is taking the following actions.

In regard to pending applications, the time for taking any action or paying any fee expiring during the period beginning March 16 and ending April 15, 1970, both dates inclusive, is hereby extended for ONE MONTH. However, no extension shall exceed a maximum period for response provided for in the Statutes.

U.S. Department of Commerce Field Offices have been designated, on an emergency basis, as receiving stations for the U.S. Patent Office. All papers should be enclosed in a sealed envelope and deposited in a Field Office. Such papers will be considered as received in the U.S. Patent Office on the day of deposit. The Field Office will date stamp each envelope so deposited, and applicants or their representatives should assure the legibility of the date stamp. Field Offices will place a corresponding date stamp on receipt cards provided by the depositor, which must completely identify the papers deposited.

Field Office deposits should, if possible, be limited to such papers wherein the Patent Statutes do not provide a remedy for failure to obtain a particular date. Examples of these types of papers are: checks in payment of issue fees, new application papers wherein priority dates or statutory bars may be involved, amendments where the six month statutory period for response is about to expire, etc.

The Field Office in New York designated to receive papers for the U.S. Patent Office is located at:

41st Floor, Federal Office Bldg.
26 Federal Plaza, Foley Square
New York, N.Y.

The designated Field Office in Hartford, Connnectient is located at:

Room 610–B, Federal Office Bldg.
450 Main St.
Hartford, Conn.

The addresses of Field Offices in other cities are listed in local directories and are available upon inquiry to the Commissioner of Patents.

RICHARD A. WAHL,
Mar. 19, 1970. *Acting Commissioner of Patents.*

[872 O.G. 1383]

(213) PATENT OFFICE—POSTAL SERVICE

In view of the return to normal operations of the United States postal service, the Notice of Mar. 19, 1970 (published in the OFFICIAL GAZETTE of Mar. 24, 1970, vol. 872, No. 4) is hereby revised.

After Apr. 15, 1970, the U.S. Department of Commerce Field Offices will no longer be designated as receiving stations for the U.S. Patent Office. Accordingly, after the abovenoted date, all letters or other papers relating to patent and trademark cases will be considered as received in the U.S. Patent Office only if they are filed in accordance with Rule 6 of the Rules of Practice in Patent Cases as amended Nov. 26, 1969.

All other provisions of the Notice of Mar. 19, 1970 and the Notice of Mar. 26, 1970, relating to Trademarks, remain in effect.

WILLIAM E. SCHUYLER, JR.
Mar. 27, 1970. *Commissioner of Patents.*

[873 O.G. 319]

(214) FILE HISTORY OF APPLICATIONS AFFECTED BY POSTAL EMERGENCY

As a result of the postal emergency, the time for taking any action or paying any fee in the U.S. Patent Office expiring between the dates of March 16, 1970 and April 15, 1970, both dates inclusive, was automatically extended for one month, provided it did not exceed a maximum period for response provided in the Statutes. (See O.G. of March 24, 1970 or March 31, 1970, 872 O.G. 1383 and April 7, 1970, 873 O.G. TM 2.)

Since this extension of time was automatic there will be nothing in the individual files to indicate that a paper filed during that period was, in fact, timely though it was received later than its apparent due date.

In order to provide a complete history in the affected files and to dispel any question as to abandonment in the record of a patented file, applicants or their attorneys are requested to file a paper explaining these circumstances. A separate paper should be filed in each case so affected (identified by Serial No., filing date, title and applicant's name) and may be merely a copy of the notice which authorized the one month extension or should specifically refer to and identify that notice.

RICHARD A. WAHL,
Apr. 27, 1970. *Assistant Commissioner of Patents.*

[874 O.G. 688]



(215) U.S. DEPARTMENT OF COMMERCE FIELD OFFICES TO SERVE AS RECEIVING STATIONS ONLY IN DECLARED EMERGENCIES

During the recent postal emergency, Field Offices of the U.S. Department of Commerce were designated as receiving stations for the U.S. Patent Office (according to the Notices of March 19, 1970, 872 O.G. 1383 and March 26, 1970, 873 O.G. TM 2). In view of the subsequent resumption of normal postal operations, that emergency arrangement was discontinued in accordance with the notice of March 27, 1970, 873 O.G. 319. After April 15, 1970, the normal practice with respect to the filing of all letters and other papers relating to patent and trademark matters in the U.S. Patent Office was resumed.

The Patent Office has received suggestions proposing that the Field Offices continue to serve as receiving stations for the U.S. Patent Office. These suggestions have received careful and sympathetic consideration. However, it has been concluded that any activities of the Field Offices in this connection must be restricted, in the future, to any emergency officially announced by the Patent Office as requiring such action.

RICHARD A. WAHL,
Apr. 27, 1970. *Acting Commissioner of Patents.*

[874 O.G. 688]

(216) PATENTS AND TRADEMARKS

*Relief in Cases Affected by the Postal Emergency of March 1970*

On June 30, 1971, President Nixon signed into law Public Law 92–34.

Public Law 92–34 requires claims for the benefit of an earlier filing date (Section 1.) and requests for such other relief as may be appropriate (Sec. 2.) to be filed in the Patent Office within 6 months after enactment, that is by December 30, 1971. Failure to file a statement within the noted period will result in loss of right to take advantage of the benefits of the law. Further explanation or evidence may be required at a subsequent time. Public Law 92–34 provides relief only for situations caused by the postal emergency which began on March 18, 1970, and ended on or about March 30, 1970, and for which there is no remedy under existing law.

The following explanation is designed to serve as a guide for persons desiring relief under the law.

The verified statement required to be filed under sections 1 and 2 of the law may be by any of the following:

(a) Applicant(s) for patent or trademark registration;
(b) Patentee(s) or trademark registrant;
(c) Owner(s) of record.

In cases involving plural inventors, statements made under (a) or (b) must be signed by all inventors.

The verified statement must specify the particular earlier date of receipt in the Patent Office to which the applicant, patentee or trademark registrant, or owner of record believes his application, fee or other paper would be entitled except for the delay caused by the postal emergency of March, 1970. The statement must be verified, that is, in the form of an oath or declaration. (37 CFR 1.68 (Patent Rule 68) and 2.20 (Trademark Rule 2.20).)

Evidence will not normally be required or considered by the Patent Office regarding a claimed filing date of March 18, 1970, or later, in applications actually filed before June 1, 1970. Claims for earlier filing dates in cases actually filed after June 1, 1970, or claiming a date prior to March 18, 1970, will be considered prima facie unreasonable unless an acceptable explanation of the basis for the claim is filed in the Patent Office with the claim or within 1 month or such longer time as may be prescribed by the Commissioner. Any claim not accepted by the Patent Office because it is obviously defective on its face or unreasonable may be subjected to further review by petition to the Commissioner.

The statement should adequately identify the involved application, patent, or trademark registration by including the name of the applicant, patentee or registrant, title of the invention or an identification of the mark, serial number, filing date, group art unit number and any other identifying data such as status of the case (e.g., awaiting first action, amendment, brief, etc.). Acceptable statements will be acknowledged, made of record and retained in the Patent Office files.

When practical, earlier filing dates accorded under this law, as well as the originally granted filing dates, will be identified on ensuing patents and trademark registrations. These dates will also be included in the OFFICIAL GAZETTE in connection with patents, trademark registrations and trademarks published for opposition. In other cases, such as applications in issue prior to filing of a claim, the patent or trademark registration number and claimed filing dates will be published in the OFFICIAL GAZETTE after December 30, 1971.

Patents issued with earlier filing dates afforded by this law will not be effective as prior art as of such earlier filing dates under subsection 102(e) of title 35 of the United States Code.

In a pending patent application in which a claim for an earlier filing date has been acknowledged under this law, applicants need not file a Rule 131 affidavit to overcome a reference having an effective filing date between the "earlier" and the actual filing date of the application. Intervening references of this type will be cited but not applied by the examiner. Although a statement claiming an earlier date is accepted by the Patent Office, the claimed earlier date may be called into question in subsequent inter partes proceeding in the Patent Office or in the courts. In these proceedings, the applicant or owner may be required to present further evidence establishing the filing date to which the application is entitled. In such cases a definite determination shall be made as to whether the applicant is entitled to the earlier date under the law.

In cases where a patent application or an application for registration or late renewal of a trademark is determined to have become abandoned for failure to meet a statutory time limit because of the postal emergency, the application will automatically be restored to pending status by the acceptance of the request, and prosecution or other processing of the application will be resumed. Similarly, if a trademark registration is determined to have been cancelled for failure to meet the statuory time limit within which to file the affidavit required under section 8 of the Trademark Act (15 U.S.C. 1058a) because of the said emergency, the order for cancellation will be rescinded.

As explained in the notice of January 26, 1971 (882 O.G. 1342), applicants who may be entitled to earlier filing dates should note that a change in their U.S. filing date might, in turn, alter the date of expiration of the 6- and 12-month periods for filing applications abroad under provisions of the Paris Convention for the Protection of Industrial Property.

WILLIAM E. SCHUYLER, JR.,
*Commissioner of Patents.*

Dated: July 14, 1971.

JAMES H. WAKELIN, JR.,
*Assistant Secretary for Science and Technology.*

[FR Doc. 71–10469; Filed 7–22–71; 8:52 a.m.]

*36 F.R. 13694; July 23, 1971*

[889 O.G. 1064]

(217) POSTAL SERVICE EMERGENCY CONTINGENCY PLAN

The U.S. Patent and Trademark Office is establishing the following contingency plan for filing any paper or paying any fee in the Office in the event of an emergency caused by any major interruption in the mail service in the United States. Upon determination by the Commissioner of Patents and Trademarks that such an emergency exists, a notice activating the plan will be issued by the Commissioner. The activating notice will be published in the Wall Street Journal and made available in a special recorded telephone message at area code 703, 557-3158. Also, certain publications, patent bar groups, and other organizations closely associated with the patent system, will be notified. Termination of the program will be similarly announced. Where the postal emergency is not nationwide, the Commissioner will designate the areas of the United States in which the procedures outlined below will be in effect.

U.S. Department of Commerce District Offices (formerly referred to as Department of Commerce Field Offices) will be designated on an emergency basis, as receiving stations for filing papers and paying fees in the U.S. Patent and Trademark Office.

Upon determination that an emergency exists, the following procedures may be followed: All papers and fees should be enclosed in a sealed envelope addressed to the Patent and Trademark Office and deposited in one of the District Offices. Such papers will be considered as received in the U.S. Patent and Trademark Office on the day of deposit. The District Office will date stamp each envelope and the accompanying receipt card which completely identifies the deposited papers. The receipt card will be returned to the depositor. Applicants or their representatives should assure the legibility of the date stamp.

District Office deposits should be limited to checks in payment of issue fees, new application papers wherein priority dates or statutory bars may be involved, amendments where the six month statutory period for response is about to expire, trademark oppositions, Section 8 affidavits, trademark renewals, and to other papers for which the patent and trademark statutes do not provide a remedy for failure to obtain a particular date.

Where papers originate from overseas, it is suggested that the papers be mailed to a registered agent in Canada, with a request that the papers be forwarded by courier to the nearest District Office in the United States.

In regard to pending applications, if the time for taking any action or paying any fee expires during the period that the Commissioner declares to be an emergency, the time will be extended until one month after the end of the emergency period, provided that such extension does not exceed the maximum period for response provided for in the statutes.

Since this extension of time will be automatic, there will be no record in the individual files to indicate that a response filed during the extended period is in fact timely. In order to provide a complete record, applicants or their representatives should file a paper referring to this notice in each case in which a response is filed during the extended period.

The addresses of the Department of Commerce District Offices, subject to subsequent changes, are as follows:

ALBUQUERQUE, N.M., 87101, Room 316, U.S. Courthouse (505) 766-2386.
ANCHORAGE, 99501, 632 Sixth Ave., Hill Bldg., Suite 412 (907) 265-4597.
ATLANTA, 30309, Suite 523, 1401 Peachtree St., NE. (404) 526-6000.
BALTIMORE, 21202, 415 U.S. Customhouse, Gay and Lombard Sts. (301) 962-3560.
BIRMINGHAM, ALA., 35205, Suite 200-201, 908 S. 20th St. (205) 325-3327.
BOSTON, 02116, 10th Floor, 441 Stuart St. (617) 223-2312.
BUFFALO, N.Y., 14202, Room 1312, Federal Bldg., 111 W. Huron St. (716) 842-3208.
CHARLESTON, W. VA., 25301, 3000 New Federal Office Bldg., 500 Quarrier St. (304) 343-6181, Ext. 375.
CHEYENNE, WYO., 82001, 6022 O'Mahoney Federal Center, 2120 Capitol Ave. (307) 778-2151.
CHICAGO, 60603, Room 1406, Mid-Continental Plaza Bldg., 55 E. Monroe St. (312) 353-4450.
CINCINNATI, 45202, 8028 Federal Office Bldg., 550 Main St. (513) 684-2944.
CLEVELAND, 44114, Room 600, 666 Euclid Ave. (216) 522-4750.
COLUMBIA, S.C., 29204, Forest Center, 2611 Forest Dr. (803) 765-5345.
DALLAS, 75202, Room 3E7, 1100 Commerce St. (214) 749-1515.
DENVER, 80202, Room 161, New Custom House, 19th and Stout Sts. (303) 837-3246.
DES MOINES, IOWA, 50309, 609 Federal Bldg., 210 Walnut St. (515) 284-4222.
DETROIT, 48226, 445 Federal Bldg. (313) 226-3650.
GREENSBORO, N.C., 27402, 203 Federal Bldg., W. Market St., P.O. Box 1950. (919) 275-9111, Ext. 345.
HARTFORD, CONN, 06103, Room 610-B, Federal Office Bldg., 450 Main St. (203) 244-3530.
HONOLULU, 96813, 286 Alexander Young Bldg., 1015 Bishop St. (808) 546-8694.
HOUSTON, 77002, 201 Fannin, 1017 Federal Office Bldg. (713) 226-4231.
INDIANAPOLIS, 46204, 355 Federal Office Bldg., 46 E. Ohio St. (317) 269-6214.
KANSAS CITY, MO., 64106, Room 1840, 601 E. 12th St. (816) 374-3142.
LOS ANGELES, 90024, 11201 Federal Bldg., 11000 Wilshire Blvd. (213) 824-7591.
MEMPHIS, 38103, Room 710, 147 Jefferson Ave. (901) 534-3213.
MIAMI, 33130, Rm. 821, City National Bank Bldg., 25 W. Flagler St. (305) 350-5267.
MILWAUKEE, 53203, Straus Bldg., 238 W. Wisconsin Ave. (414) 224-3473.
MINNEAPOLIS, 55401, 306 Federal Bldg., 110 S. Fourth St. (612) 725-2133.
NEW ORLEANS, 70130, Room 432, International Trade Mart, 2 Canal St. (504) 589-6546.
NEW YORK, 10007, 41st Floor, Federal Office Bldg., 26 Federal Plaza, Foley Sq. (212) 264-0634.
NEWARK, N.J., 07102, Gateway Bldg., (4th floor) (201) 645-6214.
PHILADELPHIA, 19106, 9448 Federal Bldg., 600 Arch St. (215) 597-2850.
PHOENIX, ARIZ., 85004, 508 Greater Arizona Savings Bldg., 112 N. Central Ave. (602) 261-3285.
PITTSBURGH, 15222, 431 Federal Bldg., 1000 Liberty Ave. (412) 644-2850.
PORTLAND, ORE., 97205, 921 SW. Washington St., Suite 521, Pittock Block. (503) 221-3001.
RENO, NEV., 89502, 202S Federal Bldg., 300 Booth St. (702) 784-5203.
RICHMOND, VA., 23240, 8010 Federal Bldg., 400 N. 8th St. (804) 782-2246.
ST. LOUIS, 63105, Chromalloy Bldg., 120 S. Central Ave. (314) 622-4243.
SALT LAKE CITY, 84111, 1201 Federal Bldg., 125 S. State St. (801) 524-5116.
SAN FRANCISCO, 94102, Federal Bldg., Box 36013, 450 Golden Gate Ave., (415) 556-5860.
SAN JUAN, P.R., 00902, Room 100, Post Office Bldg. (809) 723-4640.
SAVANNAH, 31402, 235 U.S. Courthouse and Post Office Bldg., 125-29 Bull St. (912) 232-4204.
SEATTLE, 98109, 706 Lake Union Bldg., 1700 Westlake Ave. North (206) 442-5615.

C. MARSHALL DANN,
*Commissioner of Patents and Trademarks.*
July 18, 1975.

[937 O.G. 386]

## MISCELLANEOUS

(218) JOINT UNITED STATES-REPUBLIC OF THE PHILIPPINES PROGRAM

I am pleased to announce the availability of an exchange program on examination results between the United States and the Republic of the Philippines. The program involves patent applications filed in the United States which are subsequently followed by corresponding applications filed in the Republic of the Philippines and patent applications filed in the Philippines subsequently followed by corresponding applications filed in the United States.

The program would operate as follows:

The applicant would file his application in the U.S. Patent Office which would process the application in the normal manner and examine the application in the usual time sequence.



If the applicant should later file a corresponding application in the Philippines Patent Office, he may elect to use the special filing procedure. Under this special filing procedure, applicant files his application in the Philippines accompanied by a notice of election to participate in the special procedure; which notice of election contains a certification that the description (excluding references to related applications), claims and drawings are identical to those of the corresponding application originally filed in the United States. The earlier filed application must be fully identified; and, in applications without a claim of priority, a certified copy of the earlier filed U.S. application must be submitted to the Philippines Patent Office. In addition, applicant must also agree that all amendments to his U.S. application will also be made with respect to his application filed in the Philippines.

In the U.S. Patent Office, applicant will regularly file two copies of each amendment, one copy must be marked "Copy for Philippines Patent Office." Upon termination of prosecution the U.S. Patent Office shall remove all copies so marked from the U.S. file and promptly forward the same to the Philippines Patent Office.

Election forms for participation in this special program must be signed in duplicate and simultaneously accompany the application to be filed in the Philippines.

Upon receipt of properly filed notice of election, the Philippines Patent Office would notify the U.S. Patent Office of the election by forwarding one copy of the election forms to the U.S. Patent Office. The Philippines Office would defer action on the Philippines application pending receipt of information as to the disposition of the application by the U.S. Patent Office. If no such information is received by the Philippines Office within a reasonable amount of time from the date of filing in the Philippines, the Philippines Office may, either on its own initiative, or applicant's request, inquire as to the status of the U.S. application and, if desired, proceed with its own independent examination.

Upon disposal of the application by the U.S. Patent Office, appropriate information will be sent to the Philippines Patent Office which will include all necessary identifying data, whether allowed or abandoned, notice of allowance, copies of documents cited during examination, a copy of the last office action and, when necessary, any earlier actions which may be included by reference in the last action. The Philippines Office would then make their own complete office action based upon the claims as amended with the U.S. Patent Office, performing whatever checks desired and search for copending interfering applications. Alternatively, the Philippines may request applicant to show cause why the results of the U.S. examination should not be accepted in the Philippines. All avenues of appeal would remain open to the applicant.

Where copending applications are cited and applied during examination in the U.S. Patent Office, full examination would not be forwarded to the Philippines Patent Office, and the fact that a U.S. copending application was cited would be noted as a matter of information, since such references would be inapplicable in the Philippines.

Where the application originates in the Philippines Patent Office and is subsequently filed in the U.S. Patent Office, a similar procedure as outlined above consonant with U.S. Law will be followed.

It is believed that this program will facilitate the handling of U.S. origin applications filed in the Republic of the Philippines resulting in a savings in time and expense of prosecution to U.S. applicants.

Election forms for participation in this special program are now available from The Foreign Exchange Section, Office of Patent Services.

GERALD D. O'BRIEN,
*Assistant Commissioner.*

[847 O.G. 331 (Feb. 13, 1968)]

(219) JOINT U.S.-SWEDISH SEARCH EXCHANGE

A program for the exchange of search results between the patent offices of Sweden and the United States was initiated in February 1969. The program which is now in full operation involves patent applications filed in one country which are subsequently followed by corresponding applications filed in the other.

The program operates as follows:

The applicant files an application in the U.S. Patent Office which then processes the application in the customary manner and in the usual time sequence.

If the applicant later files an application in Sweden claiming the priority of the U.S. application, the Patent Office of Sweden notifies the U.S. Patent Office of this filing by forwarding a request for a list of the references cited by the U.S. examiner in the first office action on the merits.

Where the application originates in Sweden and is subsequently filed in the U.S. Patent Office, a similar procedure is followed whereby the U.S. office requests and the Swedish office supplies a list of references cited by the Swedish examiner.

This program, which involves only the furnishing of listings of references cited, could improve the quality of the patents granted by each office.

WILLIAM E. SCHUYLER, JR.,
Aug. 26, 1969. *Commissioner of Patents.*

[866 O.G. 1031]

(220) DEFENSIVE PUBLICATION PROGRAM

The open season of the New Defensive Publication Program, originally announced in the OFFICIAL GAZETTE of May 7, 1968 (850 O.G. 1) as terminating November 1, 1968, is hereby extended. Accordingly, until January 1, 1969, this program will be open for any pending application awaiting first action by the Patent Office at the time of the request without regard to the filing date of that application.

As originally announced this program will continue to be open until further notice to any applicant having an application awaiting action by the Patent Office and who files a written request no later than eight (8) months after the earliest U.S. effective filing date of the designated application.

RICHARD A. WAHL,
Oct. 1, 1968. *Assistant Commissioner.*

[855 O.G. 1109]

(221) DEFENSIVE PUBLICATION PROGRAM

The notice of October 1, 1968 (855 O.G. 1109) which extended the open season of the New Defensive Publication Program until January 1, 1969, is hereby modified to further extend the open season indefinitely. Accordingly, until further notice any patent application which has not been given a first action may be entered in the Defensive Publication Program.

RICHARD A. WAHL,
Dec. 20, 1968 *Assistant Commissioner.*

[858 O.G. 687]

(222) DEFENSIVE PUBLICATION PROGRAM

1. To resolve certain inherent publication and reference problems, and to establish and treat Defensive Publication Applications (notices published in 33 F.R. 5623, April 11, 1968, and O.G. 1221, April 30, 1968) in the same manner as patents, the following changes are being made:

*a.* Publication is to be weekly beginning with 869 O.G. No. 3, December 16, 1969, and
*b.* Distinct numbers are to be assigned per example:

T 869 001
- T — Document category, T for Technical disclosure.
- 869 — O.G. volume number.
- 001 — Number series, 001-999 available monthly.

2. Defensive Publications will continue to be included in subclass lists and subscription orders. The new number will be used for all official reference and document copy requirements.

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RICHARD A. WAHL,
Nov. 21, 1969. *Assistant Commissioner.*

[869 O.G. 687]

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(223) ABANDONED APPLICATIONS REFERRED TO IN DEFENSIVE PUBLICATIONS

[37 CFR Part 1]

*Public Inspection*

Notice is hereby given that, pursuant to authority contained in section 6 of the Act of July 19, 1952 (66 Stat. 793 (35 U.S.C. 6), as amended October 5, 1971, Pub. L. 92–132, 85 Stat. 364, the Patent Office proposes to amend Title 37 of the Code of Federal Regulations by revising § 1.14(b).

All persons are invited to present in writing their views, objections, recommendations or suggestions in connection with the proposed amendment to the Commissioner of Patents, Washington, D.C. 20231 no later than June 30, 1974. Submissions made pursuant to this notice may be inspected by any person, upon written request, a reasonable time after the closing date for submitting comments.

The proposed amendment would open to public inspection those abandoned patent applications which are referred to in Defensive Publication applications opened to public inspection pursuant to §§ 1.11(b) and 1.139. The purpose of the proposal is to encourage greater use of the Defensive Publication Program provided under § 1.139.

The objective of the Defensive Publication Program is "to provide better service to the public by making available the technical disclosure of certain applications in which the owner may prefer to publish an abstract in lieu of obtaining an examination by the Patent Office" (notice published on April 11, 1968, in 33 FR 5623, and in 849 O.G. 1221 on April 30, 1968). To accomplish that objective, §§ 1.11(b) and 1.139 open the complete Defensive Publication application to inspection by the general public upon publication of the abstract. The proposed amendment would have the effect of placing a Defensive Publication application on the same footing as an issued patent, insofar as making technical disclosures available to the public is concerned, by opening to public inspection an abandoned patent application referred to in the Defensive Publication application as well as in an issued patent. Applicants would benefit from the assurance that the disclosure of an abandoned application, which is referred to in a Defensive Publication application, would be open to public inspection and need not be repeated in the Defensive Publication application.

The text of the proposed revised rule is as follows:

§ 1.14 *Patent applications preserved in secrecy.*

* * * * * *

(b) Except as provided in § 1.11(b) abandoned applications are likewise not open to public inspection, except that if an application referred to in a U.S. patent, or in an application which is open to inspection pursuant to § 1.139, is abandoned and is available, it may be inspected or copies obtained by any person on written request, without notice to the applicant. Abandoned applications may be destroyed after 20 years from their filing date, except those to which particular attention has been called and which have been marked for preservation. Abandoned applications will not be returned.

* * * * * *

Dated: May 20, 1974.

C. MARSHALL DANN,
*Commissioner of Patents.*

Approved: May 28, 1974.

BETSY ANCKER-JOHNSON,
*Assistant Secretary for Science and Technology.*

[FR Doc. 74-12726; Filed 6-3-74; 8:45 am]

*Published in 39 F.R. 19786*

[923 O.G. 1230]

(Pending—No Final Action Taken)

(224) PATENT PRINTING PRIORITY

In view of the backlog of allowed cases waiting to be printed, the applications placed in the weekly formulation of an issue set aside for printing will be selected according to the following priorities:

1. Allowed cases which were made special by the Commissioner (including those under the New Special Examining Procedure).
2. Allowed cases that are more than five years old.
3. Allowed reissue applications.
4. Allowed applications having an effective filing date earlier than that required for declaring an interference with a copending application claiming the same subject matter.
5. Allowed application of a party involved in a terminated interference.
6. Allowed applications in which the applicant has filed a request in the nature of a petition setting forth his reasons for advancing the printing date.
7. Allowed applications ready for printing and not covered by any of the six preceding categories. The selection of cases in the involved category will be by chronological sequence based on the date the issue fee was paid.

To ensure that any application falling within the scope of the categories outlined above and identified by numbers 1 to 5 receives special treatment the Examiners should staple on the file wrapper a tag entitled "Special in Issue and Gazette Branch." The special tag, PO–364, may be obtained from the Group Clerk. The Examiner shall print directly on the tag the recitation "In Issue and Gazette Branch" and the appropriate printing category outlined above. The application is then forwarded to Issue and Gazette Branch in accordance with existing procedures.

The personnel in Issue and Gazette Branch will then set the tagged cases aside and make a notation on all copies of the Notice of Allowance to be mailed that further processing of this application will be "special."

In cases falling in category No. 6, the request must be filed after the Notice of Allowance has been received and no later than the date the issue fee is paid. The request must be directed to the Head of the Issue and Gazette Branch.

RICHARD A. WAHL,
Nov. 29, 1968. *Assistant Commissioner.*

[857 O.G. 1327]

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(225) TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

CHAPTER I—PATENT OFFICE, DEPARTMENT OF COMMERCE

SUBCHAPTER A—GENERAL

SUBCHAPTER B—GOVERNMENT INVENTIONS JURISDICTION

EDITORIAL NOTE: Chapter I of Title 37 of the Code of Federal Regulations is changed by designating the existing text as Subchapter A—General, and inserting a new Subchapter B—Government Inventions Jurisdiction, containing former Parts 300, 301, and 302 which are transferred from Chapter III of this title and redesignated as follows:

Part
100 Administration of a uniform patent policy with respect to the domestic rights in inventions made by Government employees.
101 Acquisition and protection of foreign rights in inventions.
102 Licensing of foreign patents acquired by the Government.

Accordingly, all references to sections in former Parts 300, 301, or 302 shall be deemed to be to sections in Parts 100, 101, and 102. Thus, a reference to former § 300.1 shall be considered a reference to § 100.1.

CHAPTER III—GOVERNMENT INVENTIONS JURISDICTION, PATENT OFFICE, DEPARTMENT OF COMMERCE

TRANSFER OF REGULATIONS

The text of Chapter III of Title 37 of the Code of Federal Regulations is transferred to Chapter I of this title as Subchapter B—Government Inventions Jurisdiction. Former Parts 300, 301, and 302 are redesignated Parts 100, 101, and 102 respectively.

*Published in 34 F.R. 20383, Dec. 31, 1969*

[870 O.G. 1039]

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(226) DELAY IN ISSUANCE OF PATENTS

On June 9 and June 16, 1970, only reissue patents, design patents, and trademark registrations will be issued due to circumstances involving the printing of patent specifications.

Delays may occur in filling orders for newly issued patents.

WILLIAM E. SCHUYLER, JR.,
May 21, 1970. *Commissioner of Patents.*

[875 O.G. 327]

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(227) PATENT FRONT PAGE FORMAT

August 4, 1970 marks the inauguration of certain changes and innovations in the form and method of producing printed copies of patents. Nearly 100 patents in this issue were electrophotographically composed for printing as part of a comprehensive system for developing and utilizing a patent full-text library in computer processable form. Numbers of patents produced in this manner are scheduled to increase until *all* patents enter the machineable data base.

Patents produced by this new system are distinguishable in appearance from all others in the following respects:

(a) Front page

The first sheet of each patent presents an arrangement of the applicable bibliographic type of data elements which are itemized and discussed elsewhere; an abstract of the disclosure (or a claim when no abstract is available); and, a reduced reproduction of a representative drawing figure when the patent contains any drawings.

(b) Other changes

With identification of the patent appearing on the front page, the title of the invention and the name of the inventor will no longer be printed in the heading of drawings. The patent number, date of issuance, and sheet-of-sheets information will continue to be printed on the drawings.

All of the bibliographic type of data and the abstract which previously appeared on sheets containing text matter are removed from such pages and consolidated on the front page.

Data elements presented on the front page are accompanied by a number which appears in brackets.

The numbers are data element identifiers which have been adopted internationally for use on patents and published applications to facilitate the worldwide use of such documents as set forth below:

[11] Patent number
[21] Application number
[22] Filing date
[31] Application number (of a Convention priority application)
[32] Filing date (of Convention priority application)
[33] Country in which the Convention priority application was filed
[45] Date of Patent issue: followed by terminal disclaimer, if any
[51] International Patent Classification: basic classification in bold face type; other in light face
[52] U.S. Classification: Original class and subclass in bold face type; cross-references in light face
[54] Title of the invention: Followed by the number of claims and drawing figures
[56] References cited: List of prior art documents cited by the examiner, arranged in the following categories:
United States Patents
Foreign Patents or Applications
Other Publications
[60] Related U.S. Applications:
[62] Due to Division(s)
[63] Due to Continuation(s)
[64] Due to reissue(s)
[72] Name(s) of the Inventor(s)
[73] Assignee(s)
[*] Field of Search: Subclasses recorded on the file wrapper as searched by the examiner
[*] Primary Examiner: The person responsible for review of the patent allowance or who, in addition, examined and allowed the patent application
[*] Assistant Examiner: the person who examined and allowed the patent application, other than a primary examiner
[*] Attorney: the principal attorney of record at the time the allowed application was prepared for patent printing
[*] Abstract

Element numbers have not been assigned to the items denoted by the sign [*]

For earlier information respecting the front page format and date entries, reference is made to the notice published in the OFFICIAL GAZETTE of March 11, 1969 (860 O.G. 336–7).

WILLIAM E. SCHUYLER, JR.,
July 16, 1970. *Commissioner of Patents.*

[877 O.G. 1]

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(228) CHANGES IN PATENT FRONT PAGE

Changes in the front page format of patents inaugurated August 4, 1970 will become effective with the issue of patents on January 18, 1972. They relate mainly to the sequence and grouping of data items and to various features of typography. The revised format is illustrated in a specimen which appears below.

Data elements presented on the front page are accompanied by a number which appears in brackets. They are the "ICIREPAT Numbers for Identification of Data" (INID) which have been adopted internationally for use on patents and published applications to facilitate the use of such documents.

The definitions of INID numbers for data elements which appear in U.S. patents are set forth below:

[15] "Number of an examined patent, inventor's certificate or like granted or approved document."
[21] "Number as assigned to the application. . . ."
[22] "Date(s) of filing of application(s)."
[30] "Convention priority data."
The separate elements comprising such data—i.e., application number, filing date, and country—are not individually coded on U.C. patents. Only the generic INID number is used.
[45] "Date of publication by printing or similar process of a patent or like approved document."
[51] "International Patent Classification (preferably preceded by "Int. Cl.")."
[52] "Domestic or national classification."
[54] "Title of the invention."
[56] "List of prior art documents, if separate from the text of the document."
[57] "Abstract or claim."
[58] "Field of search."
[60] "Reference to other applications filed or documents issued in the same country, to which the document is legally related."
This generic INID number is used when the relationship of the patent to other applications is due both to [62] division and [63] continuation.

[62] "Reference to other applications filed or documents issued in the same country, to which the document is legally related: Relation due to division(s)."
[63] "Reference to other applications filed or documents issued in the same country, to which the document is legally related: Relation due to continuation(s)."
[72] "Name(s) of inventor(s) if known to be such."
[73] "Name of grantee(s) if other than applicant or inventor."

Dec. 21, 1971. R. J. RISH,
*Acting Assistant Commissioner for Administration.*

SPECIMEN

# United States Patent

**Clark et al.**

[15] **3,624,090**
[45] **Nov. 30, 1971**

## [54] PREPARATION OF PYRIDINE

[72] Inventors: **Duncan Clark**, Norton-on-Tees; **Percy Hayden**, Norton-on-Tees; **Alan Bell**, Runcorn; **John Edward Colchester**, Runcorn, all of England

[73] Assignee: **Imperial Chemical Industries Limited**, London, England

[22] Filed: **Apr. 7, 1969**

[21] Appl. No.: **817,251**

**Related U.S. Application Data**

[60] Continuation-in-part of Ser. No. 669,733, Sept. 22, 1967, abandoned, which is a division of Ser. No. 493,231, Oct. 5, 1965, abandoned.

[30] **Foreign Application Priority Data**

Apr. 7, 1965 Great Britain ..... 14,778/65

[52] **U.S. Cl.** ..... **260/83.7 R**, 252/431, 260/94.2 M
[51] **Int. Cl.** ..... **C08d 1/32**, C08f 1/56, C08f 15/04
[58] **Field of Search** ..... 260/94.2 M, 83.7, 665; 252/431, 431 P

[56] **References Cited**

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| 3,372,128 | 3/1968 | Maeda et al. | 260/604 |
| 3,177,257 | 4/1965 | Detling et al. | 260/604 |

**FOREIGN PATENTS OR APPLICATIONS**

| | | | |
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| 878,802 | 10/1961 | Great Britain | 260/530 U |
| 999,836 | 7/1965 | Great Britain | 260/530 U |
| 903,034 | 8/1962 | Great Britain | 260/533 |

**OTHER PUBLICATIONS**

Dandegaonker et al. Monatsh. Chem. Vol. 96, No. 2, pages 614–624 (1965) Q 1.M73
Jerchel et al. Liebig's Ann. Chem. Vol. 575, pages 162–173 (1952). QD1.L7
Rao et al. Chem Abst. Vol. 53, columns 18012–3 (1959) QD1.A51.

*Primary Examiner*—Henry R. Jiles
*Assistant Examiner*—Cecilia M. Shurko
*Attorney*—Cushman, Darby & Cushman

[57] **ABSTRACT**

There is provided a process for preparing pyridine wherein substituted or unsubstituted glutaraldehydes or precursors thereof are reacted in the liquid phase with ammonium ions in the presence of molecular oxygen and cupric ions and in a medium comprising an alkanoic acid. The alkanoic acid preferably has up to 6 carbon atoms in the alkyl group, such as acetic acid. The cupric ions may be supplied in the form of a salt such as cupric acetate. Conveniently, the reaction temperature is up to 150° C. and the partial pressure of oxygen is at least 0.5 atmospheres.

**10 Claims, No Drawings**

[894 O.G. 464]

(229)

## REVISED FORMAT FOR REISSUE PATENTS

As of July 1, 1975, reissue patents will be printed under the data base system and in the same general style and format presently in effect for invention patents. (See the Notice of July 16, 1970 published at 877 O.G. 1 for details of patent front page format.) However, for reissue patents the following modifications are necessary:

A. *Front Page*

- Use of the uppercase alpha code "E" with the INID Code [11] (for document number): This ICIREPAT alpha code, identifying the document as a reissue patent, is one of the "Standard Codes for Identification of Different Kinds of Patent Documents," which indicate levels of publication.
- Use of "REISSUED" preceding the date the patent was reissued.
- Addition of a new data element titled "Related U.S. Patent Documents" which is comprised of two categories of information:

1) "Reissue of:"—presenting data identifying the original patent being reissued. INID Code [64] is assigned thereto. (See Section 901.04 of the Manual of Patent Examining Procedure for a list with definitions of INID Codes (ICIREPAT numbers for identification of data).)
This information will appear on each reissue patent.

2) "U.S. Applications:"—presenting continuing application data which appears for invention patents under the data element "Related U.S. Application Data."
This information will appear when applicable.

B. *Drawings*

- Use of "REISSUED" instead of "PATENTED" at the top left of sheets of drawings.

C. *Specification*

- Presence of same preface paragraph formerly used for reissue patents to explain indicators (brackets and italics) of changes made by reissue.

The specimen which follows illustrates the front page for reissue patents under the revised format.

Approved: May 6, 1975.

WILLIAM I. MERKIN,
*Acting Assistant Commissioner for Administration.*



# United States Patent [19]

**Shook**

[11] **E Re. 12,345**
[45] **Reissued Nov. 30, 1972**

## [54] REAR SUSPENSION MECHANISM

[75] Inventor: **Howard E. Shook**, Xenia, Ohio

[73] Assignee: **Fox Equipment Company**, Xenia, Ohio

[22] Filed: **Dec. 24, 1971**

[21] Appl. No.: 999,999

**Related U.S. Patent Documents**

Reissue of:

[64] Patent No.: **3,999,999**
Issued: **Nov. 30, 1970**
Appl. No.: **999,999**
Filed: **Oct. 31, 1969**

[52] **U.S. Cl.** ..... **180/5 R**; 280/25
[51] **Int. Cl.²** ..... **B62E 27/02**; B62M 17/04
[58] **Field of Search** ..... 180/5 R, 3, 4, 6; 280/25.12; 244/108, 105

[56] **References Cited**

UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 3,999,999 | 12/1932 | Stalb | 244/108 |
| 3,999,999 | 12/1932 | Markey | 244/108 |
| 3,999,999 | 1/1941 | Smith | 280/12 R X |
| 3,999,999 | 2/1960 | Laporte | 180/5 R |

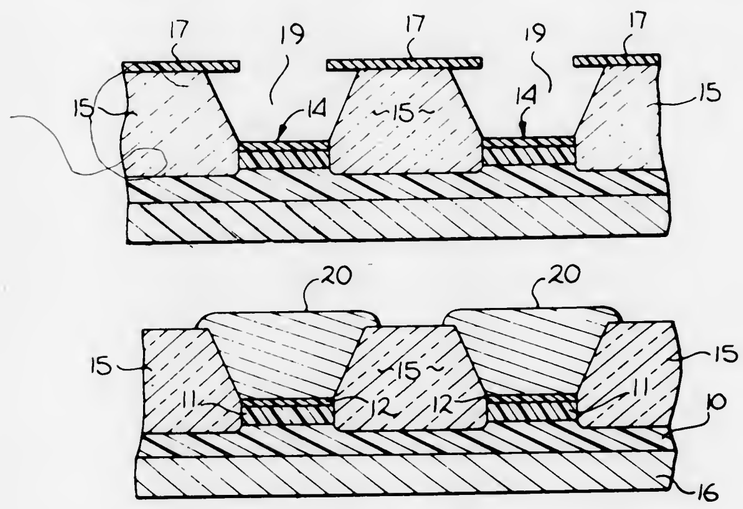
*Primary Examiner*—Richard J. Johnson
*Attorney, Agent, or Firm*—Jones & Jones

[57] **ABSTRACT**

A single shot firing mechanism adapted to be concealed in an elongated rod normally utilized for an entirely different purpose comprising, a tubular housing forming a section of the rod, a barrel portion removably secured to the forward end of said housing for holding a cartridge in position to be fired, a forwardly biased striker longitudinally disposed in said housing for firing contact with the cartridge, a cylindrical sear secured to the rear end of said striker, a locking rod disposed in said housing in simultaneous contact with the breech face of said barrel portion and the front face of said sear for retaining said striker in a cocked position, a firing ring surrounding the junction of said housing and said rod for rotatable and slidable movement thereon, and means for transferring the rotation of said firing ring to said sear to release said striker for movement into firing contact with the cartridge.

**21 Claims, 4 Drawing Figures**

SPECIMEN




[935 O.G. 6]

(230) PRINTING PRACTITIONER'S NAME ON PATENTS

On September 8, 1972 (903 O.G. 369), the Patent Office requested comments on a proposal regarding the printing of a firm name or the names of individual practitioners on the patent, as indicated by the applicant at the time the issue fee is paid. The comments received indicated strong support for the proposed procedure.

In view of these comments, the Patent Office has adopted the following revised procedure for printing a firm name, the names of up to three registered patent practitioners, or no practitioner's name on the patent.

The Notice of Allowance form, POL–85, has been redesigned in part to provide a space on POL–85*b*, the Base Issue Fee Transmittal form, for the person submitting the base issue fee to indicate, for printing, the names of up to three registered patent attorneys and agents or, alternatively, the name of a single firm which has as a member at least one registered patent attorney or agent. If the person submitting the base issue fee desires that no practitioner's name be printed on the patent, the space provided on the revised Base Issue Fee Transmittal form should be left blank. If no name is given, no name will be printed.

The adoption of this new procedure is intended to solve various problems encountered since the practice of recognizing firms was discontinued. While some slight additional effort on the part of the attorney or agent is thus involved if he desires to have a printed entry on the patent, the following advantages are provided by the new procedure: (1) it permits printing firm names on patents even though firms are no longer registered with or recognized by the Patent Office in new application; (2) it allows the names of those individuals who actually performed the work of preparing and prosecuting the application to appear on the printed patent; and (3) it grants an attorney or agent the option of not having his name appear on the printed patent.

The revised form POL–85 will be placed in use as soon as a supply of the form is received from the printer. Thereafter, the new practice, as indicated above, will be followed in patent printing as the Base Issue Fee Transmittal Portion of that form (POL–85*b*) is received.

RENE D. TEGTMEYER,
Aug. 3, 1973. *Acting Commissioner of Patents.*

[913 O.G. 1042]

(231) THE U.S. AND THE U.S.S.R. AGREE ON THE ADMINISTRATION OF INTELLECTUAL PROPERTY RIGHTS

The U.S.-U.S.S.R. Joint Commission on Scientific and Technical Cooperation, at its meeting in Moscow on November 28–29, 1973, reached an agreement on the guiding principles and terms of reference for the administration of intellectual property rights arising from joint *non-commercial* cooperative research and development activities under the Agreement on Cooperation in the Fields of Science and Technology of May 1972. A copy of the record of this meeting may be secured by writing to the Office of Legislation and International Affairs, U.S. Patent Office, Washington, D.C. 20231.

C. MARSHALL DANN,
Mar. 13, 1974. *Commissioner of Patents.*

[921 O.G. 432]

(232) TERMINATION OF THE "RULES OF PRACTICE IN PATENT CASES" BOOKLET

The Superintendent of Documents has informed the Patent Office that the basic rule book entitled "Rules of Practice in Patent Cases" is out of print and no longer available. Furthermore, Revision 3, dated July 1973, is the last revision covered by the current subscriptions. A booklet entitled "37 Code of Federal Regulations," published by the Office of the Federal Register, contains all patent rules and forms, as well as trademark rules and forms and copyright rules. Inasmuch as this publication is revised annually and is more economical to both the public and the Patent Office even if repurchased annually, the Patent Rules of Practice booklet will not be reprinted, thereby terminating this duplication of printing. Consequently, it is suggested that persons desiring a copy of the patent rules order a copy of "37 Code of Federal Regulations" from the Superintendent of Documents. The price for the most recent issue, dated July 1, 1973, is $1.75.

The Patent Office will supply all patent examiners and other appropriate employees with a copy of "37 Code of Federal Regulations" annually beginning with the July 1974 edition.

Since the inventory of the Trademark Rules of Practice booklet is in large supply, it will continue to be offered for sale by subscription from the Superintendent of Documents and updatings will continue to be published periodically.

C. MARSHALL DANN,
Mar. 18, 1974. *Commissioner of Patents.*

[921 O.G. 860]

(233) AVAILABILITY OF RULES OF PRACTICE

A new edition of "37 Code of Federal Regulations," revised to July 1, 1974 is now available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 for $1.75. The catalog number is GS 4.108: 37/9–74.

This booklet is published by the Office of the Federal Register and contains all patent rules and forms, trademark rules and forms as well as the copyright rules.

The looseleaf booklet entitled "Rules of Practice in Patent Cases" is no longer available. However, the looseleaf "Trademark Rules of Practice" booklet is still available for $3.50 ($1 additional for foreign mailing).

RENE D. TEGTMEYER,
Aug. 20, 1974. *Acting Commissioner of Patents.*

[926 O.G. 732]

(234) DISCLOSURE DOCUMENT PROGRAM

This notice consolidates and supersedes the notices of Mar. 26, 1969 (862 O.G. 1) and Aug. 11, 1970 (878 O.G. 1) relating to the Patent Office Disclosure Document Program.

Under this program the Patent Office accepts and preserves, for a period of two years, papers referred to as "Disclosure Documents." These papers may be used as evidence of the dates of conception of inventions.

THE PROGRAM

A paper disclosing an invention and signed by the inventor or inventors may be forwarded to the Patent Office by the inventor (or by any one of the inventors when there are joint inventors), by the owner of the invention, or by the attorney or agent of the inventor(s) or owner. It will be retained for two years and then be destroyed unless it is referred to in a separate letter in a related patent application within said two years.

A Disclosure Document is not a patent application and the date of its receipt in the Patent Office will not become the effective filing date of any patent application subsequently filed. However, like patent applications, these documents will be kept in confidence by the Patent Office. If patent protection is desired, a patent application should be filed as soon as possible.

This program does not diminish the value of conventional witnessed and notarized records as evidence of conception of an invention, but it should provide a more credible form of evidence than that provided by the popular practice of mailing a disclosure to oneself or another person by registered mail. The program is made available as a service to those persons desiring to use it.

CONTENT OF DISCLOSURE DOCUMENT

Although there are no restrictions as to content and claims are not necessary, the benefits afforded by a Disclosure Document will depend directly upon the adequacy of the disclosure. Therefore, it is strongly urged that the document contain a clear and complete explanation of the manner and process of making and using the invention in sufficient detail to enable a person having ordinary knowledge in the field of the invention to make and use the invention. When the nature of the invention permits, a drawing or sketch should be included. The use or utility of the invention should be described, especially in chemical inventions.

The Disclosure Document must be limited to written matter or drawings on paper or other thin, flexible material, such as linen or plastic drafting material, having dimensions or being folded to dimensions not to exceed 8½ by 13 inches. Photographs also are acceptable. Each page should be numbered. Text and drawings should be sufficiently dark to permit reproduction with commonly used office copying machines.

A $10 fee is charged for filing a Disclosure Document. Payment must accompany the Disclosure Document when it is submitted to the Patent Office.

In addition to the $10 fee, the Disclosure Document must be accompanied by a stamped, self-addressed envelope and a separate paper in duplicate, signed by the inventor, stating that he is the inventor and requesting that the material be received for processing under the Disclosure Document Program. The papers will be stamped by the Patent Office with an identifying number and date of receipt, and the duplicate request will be returned in the self-addressed envelope together with a warning notice indicating that the Disclosure Document may be relied upon only as evidence and that a patent application should be diligently filed if patent protection is desired. The inventor's request may take the following form:

*"The undersigned, being the inventor of the disclosed invention, requests that the enclosed papers be accepted under the Disclosure Document Program, and that they be preserved for a period of two years."*

RETENTION

The Disclosure Document will be preserved in the Patent Office for two years after its receipt and will then be destroyed unless it is referred to in a separate letter in a related patent application filed within the two-year period. The Disclosure Document must be referred to in the separate letter by title, number, and date of receipt. Acknowledgment of receipt of such letters will be made in the next official communication or in separate letter from the Patent Office. Unless it is desired to have the Patent Office retain the Disclosure Document beyond the two-year period, it is not required that it be referred to in a patent application.

WARNING AS TO LIMITATIONS

The two-year retention period should not be considered to be a "grace period" during which the inventor can wait to file his patent application without possible loss of benefits. It should be recognized that in establishing priority of invention an affidavit or testimony referring to a Disclosure Document must usually also establish diligence in completing the invention or in filing the patent application since the filing of the Disclosure Document.

Inventors are also reminded that any public use or sale in the United States, or publication of the invention anywhere in the world, more than one year prior to the filing of a patent application on that invention will prohibit the granting of a patent on that invention.

If the inventor is not familiar with what is considered to be "diligence in completing the invention" or "reduction to practice" under the patent law, or if he has other questions about patent matters, the Patent Office advises him to consult an attorney or agent registered to practice before the Patent Office. Patent attorneys and agents may be found in the telephone directories of most major cities. Also, many large cities have associations of patent attorneys which may be consulted.

RICHARD A. WAHL,
Jan. 4, 1971. *Assistant Commissioner of Patents.*

[883 O.G. 3]

(235) SUPPLEMENT TO THE MANUAL OF CLASSIFICATION

Over a span of years, Patent Examiners have created "unofficial" subclasses and digests to facilitate searches within the arts under their jurisdiction. A recent inventory of the unofficial U.S. patents in the Examiner search file (exclusive of designs) has enabled the issuance of a listing of unofficial subclasses and digests as a supplement to the Manual of Classification.

Current subscribers to the Manual of Classification shall receive the Supplement as soon as it becomes available (Sept.–Oct. '71), at a cost to be included in a forthcoming renewal fee. New subscriptions shall include the Supplement at a slightly higher cost.

It should be noted that the Supplement is intended only as an interim publication until such time as the Manual of Classification can be completely reprinted with the unofficial subclasses and digests shown in their proper relationship to respective official classes and subclasses. The reprinted Manual, in the described integrated format, shall be derived from computer stored data now in the process of being compiled and should be available by mid-1972.

WILLIAM R. NUGENT,
July 27, 1971. *Assistant Commissioner.*

[889 O.G. 1064]

(236) PRESIDENTIAL DOCUMENTS, TITLE 3—THE PRESIDENT

MEMORANDUM OF AUGUST 23, 1971

GOVERNMENT PATENT POLICY

*Memorandum for Heads of Executive Departments and Agencies*

THE WHITE HOUSE,
*Washington, August 23, 1971.*

On October 10, 1963, President Kennedy forwarded to the Heads of Executive Departments and Agencies a Memorandum and Statement of Government Patent Policy for their guidance in determining the disposition of rights to inventions made under Government-sponsored grants and contracts. On the basis of the knowledge and experience then available, this Statement first established Government-wide objectives and criteria, within existing legislative constraints, for the allocation of rights to inventions between the Government and its contractors.

It was recognized that actual experience under the Policy could indicate the need for revision or modification. Accordingly, a Patent Advisory Panel was established under the Federal Council for Science and Technology for the purpose of assisting the agencies in implementing the Policy, acquiring data on the agencies' operations under the Policy, and making recommendations regarding the utilization of Government-owned patents. In December 1965, the Federal Council established the Committee on Government Patent Policy to assess how this Policy was working in practice, and to acquire and analyze additional information that could contribute to the reaffirmation or modification of the Policy.

The efforts of both the Committee and the Panel have provided increased knowledge of the effects of Government patent policy on the public interest. More specifically, the studies and experience over the past 7 years have indicated that:

(a) A single presumption of ownership of patent rights to Government-sponsored inventions either in the Government or in its contractors is not a satisfactory basis for Government patent policy, and that a flexible, Government-wide policy best serves the public interest;

(b) The commercial utilization of Government-sponsored inventions, the participation of industry in Government research and development programs, and commercial competition can be influenced by the following factors: the mission of the contracting agency; the purpose and nature of the contract; the commercial applicability and market potential of the invention; the extent to which the invention is developed by the contracting agency; the promotional activities of the contracting agency; the commercial orientation of the contractor and the extent of his privately financed research in the related technology; and the size, nature and research orientation of the pertinent industry;

(c) In general, the above factors are reflected in the basic principles of the 1963 Presidential Policy Statement.

Based on the results of the studies and experience gained under the 1963 Policy Statement certain improvements in the Policy have been recommended which would provide (1) agency heads with additional authority to permit contractors to obtain greater rights to inventions where necessary to achieve utilization or where equitable circumstances would justify such allocation of rights, (2) additional guidance to the agencies in promoting the utilization of Government-sponsored inventions, (3) clarification of the rights of States and municipal governments in inventions in which the Federal Government acquires a license, and (4) a more definitive data base for evaluating the administration and effectiveness of the Policy and the feasibility and desirability of further refinement or modification of the Policy.

I have approved the above recommendations and have attached a revised Statement of Government Patent Policy for your guidance. As with the 1963 Policy Statement, the Federal

Council shall make a continuing effort to record, monitor and evaluate the effects of this Policy Statement. A Committee on Government Patent Policy, operating under the aegis of the Federal Council for Science and Technology, shall assist the Federal Council in these matters.

This memorandum and statement of policy shall be published in the Federal Register.

RICHARD NIXON.

## STATEMENT OF GOVERNMENT PATENT POLICY

### BASIC CONSIDERATIONS

A. The Government expends large sums for the conduct of research and development which results in a considerable number of inventions and discoveries.

B. The inventions in scientific and technological fields resulting from work performed under Government contracts constitute a valuable national resource.

C. The use and practice of these inventions and discoveries should stimulate inventors, meet the needs of the Government, recognize the equities of the contractor, and serve the public interest.

D. The public interest in a dynamic and efficient economy requires that efforts be made to encourage the expeditious development and civilian use of these inventions. Both the need for incentives to draw forth private initiatives to this end, and the need to promote healthy competition in industry must be weighed in the disposition of patent rights under Government contracts. Where exclusive rights are acquired by the contractor, he remains subject to the provisions of the antitrust laws.

E. The public interest is also served by sharing of benefits of Government-financed research and development with foreign countries to a degree consistent with our international programs and with the objectives of U.S. Foreign policy.

F. There is growing importance attaching to the acquisition of foreign patent rights in furtherance of the interests of U.S. industry and the Government.

G. The prudent administration of Government research and development calls for a Government-wide policy on the disposition of inventions made under Government contracts reflecting common principles and objectives, to the extent consistent with the missions of the respective agencies. The policy must recognize the need for flexibility to accommodate special situations.

### POLICY

SECTION 1. The following basic policy is established for all Government agencies with respect to inventions or discoveries made in the course of or under any contract of any Government agency, subject to specific statutes governing the disposition of patent rights of certain Government agencies.

(a) Where

(1) a principal purpose of the contract is to create, develop or improve products, processes, or methods which are intended for commercial use (or which are otherwise intended to be made available for use) by the general public at home or abroad, or which will be required for such use by governmental regulations; or

(2) a principal purpose of the contract is for exploration into fields which directly concern the public health, public safety, or public welfare; or

(3) the contract is in a field of science or technology in which there has been little significant experience outside of work funded by the Government, or where the Government has been the principal developer of the field, and the acquisition of exclusive rights at the time of contracting might confer on the contractor a preferred or dominant position; or

(4) the services of the contractor are

(i) for the operation of a Government-owned research or production facility; or

(ii) for coordinating and directing the work of others,

the Government shall normally acquire or reserve the right to acquire the principal or exclusive rights throughout the world in and to any inventions made in the course of or under the contract.

In exceptional circumstances the contractor may acquire greater rights than a nonexclusive license at the time of contracting where the head of the department or agency certifies that such action will best serve the public interest. Greater rights may also be acquired by the contractor after the invention has been identified where the head of the department or agency determines that the acquisition of such greater rights is consistent with the intent of this Section 1(a) and is either a necessary incentive to call forth private risk capital and expense to bring the invention to the point of practical application or that the Government's contribution to the invention is small compared to that of the contractor. Where an identified invention made in the course of or under the contract is not a primary object of the contract, greater rights may also be acquired by the contractor under the criteria of Section 1(c).

(b) In other situations, where the purpose of the contract is to build upon existing knowledge or technology, to develop information, products, processes, or methods for use by the Government, and the work called for by the contract is in a field of Technology in which the contractor has acquired technical competence (demonstrated by factors such as know-how, experience, and patent position) directly related to an area in which the contractor has an established nongovernmental commercial position, the contractor shall normally acquire the principal or exclusive rights throughout the world in and to any resulting inventions.

(c) Where the commercial interests of the contractor are not sufficiently established to be covered by the criteria specified in Section 1(b) above, the determination of rights shall be made by the agency after the invention has been identified, in a manner deemed most likely to serve the public interest as expressed in this policy statement, taking particularly into account the intentions of the contractor to bring the invention to the point of commercial application and the guidelines of Section 1(a) hereof, provided that the agency may prescribe by regulation special situations where the public interest in the availability of the inventions would best be served by permitting the contractor to acquire at the time of contracting greater rights than a nonexclusive license.

(d) In the situations specified in Sections 1(b) and 1(c), when two or more potential contractors are judged to have presented proposals of equivalent merit, willingness to grant the Government principal or exclusive rights in resulting inventions will be an additional factor in the evaluation of the proposals.

(e) Where the principal or exclusive rights in an invention remain in the contractor, he should agree to provide written reports at reasonable intervals, when requested by the Government, on the commercial use that is being made or is intended to be made of inventions made under Governmental contracts.

(f) Where the principal or exclusive rights in an invention remain in the contractor, unless the contractor, his licensee, or his assignee has taken effective steps within three years after a patent issues on the invention to bring the invention to the point of practical application or has made the invention available for licensing royalty-free or on terms that are reasonable in the circumstances, or can show cause why he should retain the principal or exclusive rights for a further period of time, the Government shall have the right to require the granting of a nonexclusive or exclusive license to a responsible applicant(s) on terms that are reasonable under the circumstances.

(g) Where the principal or exclusive rights to an invention are acquired by the contractor, the Government shall have the right to require the granting of a nonexclusive or exclusive license to a responsible applicant(s) on terms that are reasonable in the circumstances (i) to the extent that the invention is required for public use by governmental regulations, or (ii) as may be necessary to fulfill health or safety needs, or (iii) for other public purposes stipulated in the contract.

(h) Whenever the principal or exclusive rights in an invention remain in the contractor, the Government shall normally acquire, in addition to the rights set forth in Sections 1(e), 1(f), and 1(g),

(1) at least a nonexclusive, nontransferable, paid-up license to make, use, and sell the invention throughout the world by or on behalf of the Government of the United States (including any Government agency) and States and domestic municipal governments, unless the agency head determines that it would not be in the public interest to acquire the license for the States and domestic municipal governments; and

(2) the right to sublicense any foreign government pursuant to any existing or future treaty or agreement if the agency head determines it would be in the national interest to acquire this right; and

(3) the principal or exclusive rights to the invention in any country in which the contractor does not elect to secure a patent.



(i) Whenever the principal or exclusive rights in an invention are acquired by the Government, there may be reserved to the contractor a revocable or irrevocable nonexclusive royalty-free license for the practice of the invention throughout the world; an agency may reserve the right to revoke such license so that it might grant an exclusive license when it determines that some degree of exclusivity may be necessary to encourage further development and commercialization of the invention. Where the Government has a right to acquire the principal or exclusive rights to an invention and does not elect to secure a patent in a foreign country, the Government may permit the contractor to acquire such rights in any foreign country in which he elects to secure a patent, subject to the Government's rights set forth in Section 1(h).

SEC. 2. Under regulations prescribed by the Administrator of General Services, Government-owned patents shall be made available and the technological advances covered thereby brought into being in the shortest time possible through dedication or licensing, either exclusive or non-exclusive, and shall be listed in official Government publications or otherwise.

SEC. 3. The Federal Council for Science and Technology in consultation with the Department of Justice shall prepare at least annually a report concerning the effectiveness of this policy, including recommendations for revision or modification as necessary in light of the practices and determinations of the agencies in the disposition of patent rights under their contracts. The Federal Council for Science and Technology shall continue to

(a) develop by mutual consultation and coordination with the agencies common guidelines for the implementation of this policy, consistent with existing statutes, and to provide overall guidance as to disposition of inventions and patents in which the Government has any right or interest; and

(b) acquire data from the Government agencies on the disposition of patent rights to inventions resulting from federally financed research and development, and on the use and practice of such inventions to serve as bases for policy review and development; and

(c) make recommendations for advancing the use and exploitation of Government-owned domestic and foreign patents.

Each agency shall record the basis for its actions with respect to inventions and appropriate contracts under this statement.

SEC. 4. Definitions: As used in this policy statement, the stated terms in singular and plural are defined as follows for the purposes hereof:

(a) *Government agency*—includes any executive department, independent commission, board, office, agency, administration, authority, Government corporation, or other Government establishment of the executive branch of the Government of the United States of America.

(b) *States*—means the States of the United States, the District of Columbia, Puerto Rico, the Virgin Islands, American Samoa, Guam and the Trust Territory of the Pacific Islands.

(c) *Invention, or Invention or discovery*—includes any art, machine, manufacture, design, or composition of matter, or any new and useful improvement thereof, or any variety of plant, which is or may be patentable under the Patent Laws of the United States of America or any foreign country.

(d) *Contractor*—means any individual, partnership, public or private corporation, association, institution, or other entity which is a party to the contract.

(e) *Contract*—means any actual or proposed contract, agreement, grant, or other arrangement, or subcontract entered into with or for the benefit of the Government where a purpose of the contract is the conduct of experimental, developmental, or research work.

(f) *Made*—when used in relation to any invention or discovery means the conception or first actual reduction to practice of such invention in the course of or under the contract.

(g) *To the point of practical application*—means to manufacture in the case of a composition or product, to practice in the case of a process, or to operate in the case of a machine and under such conditions as to establish that the invention is being worked and that its benefits are reasonably accessible to the public.

[FR Doc. 71-12623; Filed 8-25-71; 10:41 a.m.]

*36 F.R. 16887-16892; Aug. 26, 1971*

[890 O.G. 1302]

## (237) NATIONAL BUREAU OF STANDARDS

### OFFICE OF ENERGY-RELATED INVENTIONS

*Notice of Establishment*

Notice is hereby given of the establishment of the Office of Energy-Related Inventions, Institute for Applied Technology, National Bureau of Standards, to carry out the responsibilities imposed by section 14 of the Federal Nonnuclear Energy Research and Development Act of 1974 (Public Law 93-577, dated December 31, 1974, 88 Stat. 1894). Set out below is a statement which furnishes the reasons for the establishment of that Office, the address to which communications may be sent, a description of its functions, and a set of procedures which are designed to assist persons in submitting energy-related inventions to the National Bureau of Standards for evaluation.

Regulations governing the evaluation of energy-related inventions are being developed. Upon their development the proposed regulations will be published in the Federal Register to allow a reasonable period for public review and comment. After appropriate review and consideration of the comments received, the regulations will be duly promulgated in the Federal Register.

### OFFICE OF ENERGY-RELATED INVENTIONS

1. *Purpose.* The Federal Nonnuclear Energy Research and Development Act of 1974 (Public Law 93-577), hereinafter referred to as the Act, establishes a comprehensive national program for research and development of all potentially beneficial energy sources and utilization technologies. The program is to be conducted by the Energy Research and Development Administration (ERDA).

Section 14 of the Act directs the National Bureau of Standards (NBS) to "give particular attention to the evaluation of all promissing energy-related inventions, particularly those submitted by individual inventors and small companies for the purpose of obtaining direct grants from the Administrator" of ERDA. The Office of Energy-Related Inventions (OERI) has been established in the National Bureau of Standards to carry out the duties required under this directive.

2. *Address.* The address of OERI, to which all inquiries and communications pertaining to NBS responsibilities under section 14 of the Act may be sent, is as follows:

Office of Energy-Related Inventions
National Bureau of Standards
Washington, D.C. 20234

3. *Functions.* The functions of OERI in carrying out its responsibilities shall be to:

3.1. Receive and process material and correspondence which describe energy-related inventions, hereinafter referred to as invention(s), and which request the evaluation thereof;

3.2 Conduct analyses to ascertain the technical and commercial feasibility of inventions submitted for evaluation;

3.3. Formulate recommendations to ERDA based on the analyses of submitted inventions;

3.4 Keep ERDA informed on the submission of inventions and results of evaluations;

3.5. Notify each submitter of an invention as to the results of the evaluation;

3.6. Conduct an information program to make the public aware of the invention evaluation service to be provided;

3.7. Correspond with inventors and members of the public as required;

3.8. Develop and promulgate regulations governing the evaluation of inventions; and

3.9 Perform such other functions as may be necessary to fulfill the responsibilities assigned to OERI.

4. *Procedures for submitting inventions for evaluation.* Each person desiring to submit an invention to NBS for evaluation pursuant to section 14 of the Act shall, in accordance with the procedures set forth below,

4.1 Obtain an Energy-Related Inventions Evaluation Request form (NBS-1019), hereinafter referred to as the Request form, by writing to the address set out in section 2 above. The form will provide:

(*a*) Detailed instructions for use in submitting an invention for evaluation;

(*b*) A description of the evaluation program and a statement of policy;

(c) A Memorandum of Understanding to be signed by the submitter as a prerequisite to accepting an invention for evaluation; and

(d) Space for submission of basic information on the invention and an outline of the complete disclosure information required.

4.2. Complete the Request form as instructed in section 3 of the form.

4.3. Prepare a detailed disclosure of the invention in an appropriate format, including the requirements specified in the Request form.

4.4. Mail the original Request form and a copy of the invention disclosure to the address set out in section 2 above. Receipt will be acknowledged by mail and, if all information is in order, the invention will be evaluated.

JOHN D. HOFFMAN,
June 3, 1975. *Acting Director.*

[FR Doc. 75-14840; Filed 6-5-75; 8:45 am]

[936 O.G. 786]

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(238) PUBLIC LAW 92-132

[92nd Congress, S. 1253]

*October 5, 1971*

AN ACT

85 Stat. 364

To amend section 6 of title 35, United States Code, "Patents," to authorize domestic and international studies and programs relating to patents and trademarks.

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That section 6 of title 35, United States Code, is amended to read as follows:

Patents, trademarks, International programs, U.S. participation. 66 Stat. 793.

"§ 6. *Duties of Commissioner*

"(a) The Commissioner, under the direction of the Secretary of Commerce, shall superintend or perform all duties required by law respecting the granting and issuing of patents and the registration of trademarks; shall have the authority to carry on studies and programs regarding domestic and international patent and trademark law; and shall have charge of property belonging to the Patent Office. He may, subject to the approval of the Secretary of Commerce, establish regulations, not inconsistent with law, for the conduct of proceedings in the Patent Office.

"(b) The Commissioner, under the direction of the Secretary of Commerce, may, in coordination with the Department of State, carry on programs and studies cooperatively with foreign patent offices and international intergovernmental organizations, or may authorize such programs and studies to be carried on, in connection with the performance of duties stated in subsection (a) of this section.

Transfer of funds.

"(c) The Commissioner, under the direction of the Secretary of Commerce, may, with the concurrence of the Secretary of State, transfer funds appropriated to the Patent Office, not to exceed $100,000 in any year, to the Department of State for the purpose of making special payments to international intergovernmental organizations for studies and programs for advancing international cooperation concerning patents, trademarks, and related matters. These special payments may be in addition to any other payments or contributions to the international organization and shall not be subject to any limitations imposed by law on the amounts of such other payments or contributions by the Government of the United States."

Approved October 5, 1971.

LEGISLATIVE HISTORY:

HOUSE REPORT No. 92-475 (Comm. on the Judiciary).
SENATE REPORT No. 92-71 (Comm. on the Judiciary).
CONGRESSIONAL RECORD, Vol. 117 (1971):
Apr. 22, considered and passed Senate.
Sept. 28, considered and passed House.

[892 O.G. 1600]

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(239) NUMBERS FOR WHICH NO PATENTS HAVE ISSUED

The Calendar Year 1970 Index of Patents will be available from the Superintendent of Documents, Government Printing Office in the very near future. Beginning with this year's Index, Part II "Subjects of Inventions" will list each patent number for which no patent was issued during the year. The 1970 Index will also include all the patent numbers for the years 1920 through 1969 for which no patents issued.

ROBERT J. RISH.
Dec. 13, 1971. *Acting Assistant Commissioner for Administration.*

[894 O.G. 4641]

(240) NOTICE TO OFFICIAL GAZETTE SUBSCRIBERS

It has come to the attention of the Patent Office that some suberibers to the OFFICIAL GAZETTE have not been receiving all of their copies of the patent and/or trademark sections of the OFFICIAL GAZETTE. Several of the incidents brought to our attention involved situations where subscribers had recently renewed their subscriptions.

This matter was brought to the attention of the Superintendent of Documents who advised us that subscribers to the OFFICIAL GAZETTE are notified approximately 3 months in advance that their subscriptions are about to expire. It was indicated that if these notices are promptly utilized to renew subscriptions, no difficulties will arise.



However, in order to facilitate the resolution of any problems which may arise concerning subscriptions to the OFFICIAL GAZETTE, an official liaison has been established between the Patent Office and the Superintendent of Documents. Under this arrangement, any person experiencing difficulties in obtaining copies of the OFFICIAL GAZETTE should contact Robert Rish, Director, Office of Public Services, U.S. Patent Office, Washington, D.C., 20231. All such inquiries will be given prompt attention.

ROBERT GOTTSCHALK,
Apr. 18, 1972. *Commissioner of Patents.*

[898 O.G. 738]

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(241) NEW SALES PRICES FOR OFFICIAL GAZETTE

The U.S. Government Printing Office recently announced changes in the sales prices for copies of the OFFICIAL GAZETTE of the U.S. Patent Office. The new scale is effective January 1, 1974.

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| OFFICIAL GAZETTE—Patents: | |
| Subscription price | $211.00 |
| Add for foreign mailing | 52.75 |
| Single copy price | 4.10 |
| OFFICIAL GAZETTE—Trademarks: | |
| Subscription price | $ 60.25 |
| Add for foreign mailing | 15.10 |
| Single copy price | 1.25 |

RENE D. TEGTMEYER,
Nov. 7, 1973. *Acting Commissioner of Patents.*

[916 O.G. 805]

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(242) NOTICE TO OFFICIAL GAZETTE SUBSCRIBERS

The Patent and Trademark Office announces a change in the point of contact for subscribers who have not been receiving all of their copies of the patent and/or trademark sections of the OFFICIAL GAZETTE.

The Superintendent of Documents advises that expiration notices are sent out approximately three months in advance of the expiration date. However, subscribers should not be dependent upon such notices. In the event that a notice is not received within two months of the expiration date, the subscriber should renew his subscription with the Superintendent of Documents and *attach a label* from the envelope in which he receives the gazette, together with a check covering the amount of the subscription.

In case of complete stoppage, please send a copy of your order or expiration notice, together with proof of payment (copy of cancelled check or processed order), to Mr. S. J. Bania, Director, Office of Publications (Room 2-5C26), Patent and Trademark Office, Washington, D.C. 20231, Attention: Shirley A. Hammel (Telephone 703/557-3794), or Lillie M. Harrison (Telephone 703/557-1985).

This notice is effective with the publication date and supersedes the notice published on this subject in 934 O.G. 886, dated April 25, 1975.

WILLIAM I. MERKIN,
*Acting Assistant Commissioner for Administration.*

Sept. 12, 1975.

[939 O.G. 3]

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(243) AN "OPEN LETTER" TO SUBSCRIBERS TO THE OFFICIAL GAZETTE OF THE UNITED STATES PATENT AND TRADEMARK OFFICE

Dear Subscriber:

The Patent and Trademark Office views the increase in the annual subscription rate for the OFFICIAL GAZETTE (Patents) from $211 to $342.20 and for the OFFICIAL GAZETTE (Trademarks) from $60.25 to $88.40, announced this past November, with the same deep concern as the many subscribers who have written to us about it.

In attempting to understand the basis for this substantial price increase, dramatic even for a period marked by inflationary spiral, we have conferred with the Public Printer of the United States and the Superintendent of Documents. Finding that publications are priced according to requirement of law that the cost of printing sales copies be recovered in the sale or subscription price, and that future price increases due to production costs and postal rate increases are in the offing, our mutual attention has been directed to steps which might be taken to reduce publication and distribution costs, or to bring the OFFICIAL GAZETTE to the public in new forms, but with the same information, at lower cost.

We have looked into possible economies in publication that might be realized through the following measures: change in size of the publication, so as to achieve a greater amount of printing for the press time involved; using a lower grade of paper, such as newsprint; changing the format of the GAZETTE, such as a three-column layout, instead of two columns; separating textual matter from drawing reproductions, placing the latter in a separate portion of the publication devoted exclusively to that matter; printing drawings in a separate companion volume to the volume containing textual matter; offering the GAZETTE in separate portions along broad subject lines based on its present subdivisions (General and Mechanical, Chemical, and Electrical), so that subscribers could obtain only that subject matter which might be of a particular interest, instead of having to purchase the entire issue; reverting to the publication of abstracts in view of the fact that the printing of claims increased the size of the GAZETTE by nearly 27% and, correspondingly, the cost of postage; together, these cost elements added to the subscription price increase. As a replacement for the GAZETTE for those desiring only the Official Notice Section, a pamphlet containing the pages, "Contents," "Official Notices" and "Patent Examining Filing Date of Oldest New Case" could be provided.

We have, also, explored the alternative publication form of microfiche and find that the entire GAZETTE, in its present format and content, could be offered for an annual subscription rate of $140. This new but widely used form of publication would reduce the annual cost of the OFFICIAL GAZETTE to an amount less than the former subscription rate; would offer space-saving convenience in storing copies for later reference; would reach you by first class mail, a fact that cannot be assured for the conventional publication in view of prospective further increases in postal rates, unless subscribers are willing to accept this element of greater cost. Microfiche distribution would not introduce any delay in availability of the OFFICIAL GAZETTE, as the film would be released for mailing simultaneously, on issue day, with printed copies; quite possibly the mailing time would be reduced because, being handled as first-class letter mail, the microfiche could be dispatched as air mail to more distant points. Subscribers whose organizations are already equipped with microfilm facilities could reproduce the microfiche for low cost additional dissemination within their organizations; subscribers who are not now so equipped, could find it profitable to explore the cost-saving aspects and other benefits offered by such equipment.

A number of the alternatives considered jointly by the Patent and Trademark Office and the U.S. Government Printing Office were found not to be feasible for one reason or another. For example, format and paper changes would entail major revisions in production methods and equipment which, for the expense and disruptions involved, afforded little basis of certain long-run benefit in lower subscription rates. Offering the OFFICIAL GAZETTE in separate sections (General and Mechanical, Chemical and Electrical), while reducing subscription costs to those who need only one or two sections, would raise Patent and Trademark Office costs an excessive amount. Some of the alternatives seem to be viable, but they need to be tested from the subscriber's point of view. Accordingly, there is presented, elsewhere in this issue of the OFFICIAL GAZETTE a survey form (PTO Temp. 218) which puts before the subscriber various choices to be made as measures for reducing the cost of obtaining information contained in weekly issues of the OFFICIAL GAZETTE.

The survey form, when completed by the subscriber to show his preferences, will be helpful to the Patent and Trademark Office in planning the actions it may take to serve its clientele and to assure that the OFFICIAL GAZETTES remain effective publications in disseminating information concerning newly issued patents and registered trademarks. Your cooperation and assistance in careful consideration of the alternatives offered, thoughtful election of choices, and expression of those choices on the survey form, will be helpful to the Patent and Trademark Office, as well as to your ultimate benefit.

WILLIAM I. MERKIN,
*Acting Assistant Commissioner for Administration.*

[935 O.G. 5 (June 3, 1975)]

(243.1) AN "OPEN LETTER" TO SUBSCRIBERS AND READERS OF THE OFFICIAL GAZETTE OF THE UNITED STATES PATENT AND TRADEMARK OFFICE

Dear Subscriber or Reader:

Presented in this Notice Section of the OFFICIAL GAZETTE is a tabulation of the results of the Cost-Survey cards sent in by subscribers and users of the O.G. The cards appeared at 935 O.G. 1 (June 3, 1975). The approximately 25% of subscribers who took time to inform us of their views and concerns have my sincere thanks.

Pursuant to the responses indicated therein the Patent and Trademark Office will retain the present practice of printing claims rather than abstracts in the O.G., and will not make available a "notices-only" leaflet. Effective immediately a fourth-class mail option is being made available by the U.S. Government Printing Office for all subscribers. This may be elected upon initial subscription or at the time of renewal. The cost is $250.00 per annum (first-class mail is $342.20). We are initiating a test on a microfiche edition of the O.G. Patents Section with a target for final evaluation and possible implementation by the spring of 1976.

C. MARSHALL DANN,
*Commissioner of Patents and Trademarks.*

| Category, percent of returns | No. surveys/ (No. readers) | Subscribe | | Microfiche Retain O.G. | | Favor abstracts | | | | Fourth class mail | | O.G. leaflet | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Mechanical | | Electrical | | Chemical | | Entire | | | |
| | | Yes | No | Copies | Would not | Would | Would not | Yes | No | Yes | No | Yes | No | Yes | No |
| Subscriber 14.9% | 211 (731) | 69 (184) | 132 (538) | 54 | 8 | 60 | 71 (367) | 63 (328) | 61 (138) | 60 (354) | 60 (165) | 191 (413) | 75 (247) | 150 (550) | 45 (110) |
| Partner, emp. law firm 16.0% | 227 (1,316) | 72 (406) | 146 (856) | 67 | 13 | 60 | 58 (365) | 56 (304) | 109 (671) | 53 (327) | 113 (667) | 80 (496) | 121 (694) | 171 (968) | 49 (300) |
| Employee Co 63.8% | 902 (4,762) | 285 (1,698) | 566 (2,917) | 216 | 67 | 215 | 240 (1,288) | 230 (1,202) | 280 (1,693) | 186 (1,101) | 337 (2,015) | 302 (1,899) | 373 (2,195) | 456 (3,206) | 205 (1,414) |
| Librarian 2.2% | 31 (516) | 14 (154) | 15 (340) | 5 | 2 | 10 | 8 (115) | 9 (75) | 5 (13) | 7 (17) | 9 (90) | 12 (275) | 11 (131) | 12 (106) | 13 (385) |
| User public library 0.1% | 1 (1) | 0 | 1 (1) | 0 | 0 | 0 | 0 | 0 | 3 (3) | 0 | 3 (3) | 1 (1) | 3 (3) | 4 (4) | 1 (1) |
| Unknown 0.4% | 5 (5) | 2 (2) | 2 (2) | 2 | 0 | 1 | 0 | 3 (3) | 0 | 3 (3) | 1 (1) | 3 (3) | 1 (1) | 4 (4) | 1 (1) |
| Government 2.7% | 38 (144) | 17 (55) | 19 (84) | 15 | 1 | 15 | 8 (26) | 18 (74) | 9 (28) | 16 (77) | 5 (13) | 21 (92) | 11 (27) | 19 (93) | 30 (108) |
| Subtotal 100% | 1,415 (7,475) | 460 (2,396) | 881 (4,748) | 359 | 91 | 361 | 391 (2,161) | 391 (2,143) | 525 (2,850) | 363 (1,931) | 311 (1,845) | 611 (3,063) | 644 (3,111) | 806 (3,830) | 348 (2,243) |
| Responses (No. green cards) | 17 (53) | 7 (23) | 10 (30) | 4 | 0 | 6 | 3 (10) | 3 (10) | 7 (25) | 3 (10) | 7 (25) | 9 (25) | 7 (27) | 9 (28) | 7 (23) |
| Total | 1,432 (7,528) | 467 (2,522) | 891 (4,778) | 363 | 91 | 367 | 394 (2,171) | 394 (2,153) | 532 (2,897) | 366 (2,041) | 318 (2,085) | 620 (3,188) | 651 (3,253) | 815 (3,858) | 355 (2,266) |

| Category, percent of returns | O.G. leaflet | | | | | |
|---|---|---|---|---|---|---|
| | Subscribe | | Replace O.G. | | | |
| | Yes | No | Yes | No | | |
| Subscriber 14.9% | 55 (149) | 141 (575) | 24 (43) | 152 (417) | | |
| Partner, emp. law firm 16.0% | 68 (338) | 138 (902) | 9 (10) | 171 (1,099) | | |
| Employee Co 63.8% | 132 (862) | 718 (3,765) | 22 (88) | 733 (3,999) | | |
| Librarian 2.2% | 2 (21) | 23 (488) | 1 (1) | 33 (152) | | |
| User public library 0.1% | 0 | 0 | 0 | 0 | | |
| Unknown 0.4% | 1 (1) | 2 (2) | 0 | 3 (3) | | |
| Government 2.7% | 11 (46) | 21 (100) | 5 (13) | 31 (117) | | |
| Subtotal 100% | 269 (1,418) | 1,049 (5,772) | 61 (178) | 1,126 (5,787) | | |
| Responses (No. green cards) | 8 (26) | 8 (26) | 1 (4) | 12 (34) | | |
| Total | 277 (1,444) | 1,057 (5,798) | 62 (182) | 1,138 (5,821) | | |

NOTES:
1. Surveys which were marked "subscriber" and another category were listed in the other category.
2. The percentage figure under each category is the ratio of the number of surveys in that category to the sub-total number of surveys returned.
3. The number of readers was considered "one" if no number was specified, or if "1005" or "1,005" was written. A range, e.g. "5 to 7," was recorded as its average value (7 in the example).
4. Twelve of the total yeses under "O.G. Leaflet-subscribe" and six of the yeses under "O.G. Leaflet-replace" were conditioned on having microfiche available.

[941 O.G. TM 260 (Dec. 30, 1975).]



(244) LEGAL JOURNALS

[37 CFR Parts 1, 2]

*Withdrawal of Proposed Rule Making Regarding Placing of Announcements*

Under date of May 11, 1972, 37 FR 9488 (FR Doc. 72-7160), notice of proposed rule making was given concerning a proposed revision of §§ 1.345(b) and 2.14(b) of Title 37 of the Code of Federal Regulations. The purpose of the proposed revision was to permit persons practicing before the Patent Office to place in legal journals announcements of their availability to act as consultants to or as associates of other lawyers in patent or trademark practice. After careful consideration of all of the comments received on the proposed revision, it has been determined that the proposed revision will not be made at this time and, accordingly, the notice of proposed rule making is canceled and withdrawn.

Dated: Jan. 29, 1973.

ROBERT GOTTSCHALK,
*Commissioner of Patents.*

Approved: Jan. 29, 1973.

RICHARD O. SIMPSON,
*Acting Assistant Secretary for Science and Technology.*

[FR Doc. 73-3097; Filed 2-15-73; 8:45 am]

*Published in 38 F.R. 32; Feb. 16, 1973*

[908 O.G. 784]

(245) SOLICITATION OF PUBLIC VIEWS CONCERNING CHANGES IN PATENT OFFICE PRACTICES AND PROCEDURES

In the effort to continually improve operations and to respond to changing circumstances, the procedures and practices of the Patent Office are revised from time to time. While comments are requested and public hearings held on proposed changes in the Rules of Practice, changes in other practices and procedures of the Office have generally been implemented on the basis of informal and more limited liaison with our constituents. This has, on occasion, given rise to inquiries as to the reasons for and wisdom of certain of these changes, as well as to criticisms and proposals for further changes.

While all changes in procedure must take into consideration the efficient operation of the Patent Office, we have determined that on a trial basis, we will, where appropriate, solicit views and comments of the patent community so that they might be taken into account in shaping the procedures of the Patent Office. The solicitation of such views will focus primarily on proposed changes in practices and procedures of the Office which have substantial impact on individuals dealing with the Patent Office. Our first such effort involves the question of whether claims or abstracts are more appropriate for publication in the OFFICIAL GAZETTE, and this is the subject of a separate notice in this issue.

Whether this practice of public participation is continued will depend in large part upon the public response to notices of this nature. In the past, public response to the solicitation of views has been rather limited and has principally been from those who were opposed to proposed changes in rules and practices. Accordingly, it is requested that interested parties submit their views irrespective of whether they agree or disagree with the proposal under consideration.

ROBERT GOTTSCHALK,
*Commissioner of Patents.*

May 22, 1972.

[899 O.G. 820]

(246) REDUCTION IN PATENTS GRANTED

The backlog of patent applications awaiting printing has been virtually eliminated. Effective with patents issuing on October 31, 1972, the weekly number of General and Mechanical, Electrical, and Chemical patents granted will be determined by the availability of applications in which the Base Issue Fee has been paid. Applicants who desire to obtain early patent grant dates are encouraged to remit payment of Base Issue Fees promptly.

WILLIAM I. MERKIN,
*Assistant Commissioner for Administration.*

Oct. 10, 1972.

[903 O.G. 1512]

(247) ICIREPAT NUMBERS FOR IDENTIFICATION OF BIBLIOGRAPHIC DATA ON THE FIRST PAGE OF PATENT AND LIKE DOCUMENTS

The Paris Union Committee for International Cooperation in Information Retrieval Among Patent Offices (ICIREPAT) has recently approved revisions in INID Codes (ICIREPAT Numbers for Identification of Data) which become effective for use by the countries which apply such codes to their documents on January 1, 1973. A complete list of the Codes, as revised, appears below.

Changes in INID Codes which particularly affect their application to U.S. patents consist of the provision of the new codes [75] and [76] that are intended primarily for use by countries in which the national laws require that the inventor and applicant are normally the same. Use of the code [72] which was heretofore applied to U.S. patents will be discontinued and, in lieu thereof, codes [75] and [76], as appropriate, will be used effective with the patent issue of January 2, 1973.

The purpose of INID Codes is to provide a means whereby the various data appearing on the first page of patent and like documents can be identified without knowledge of the language used and the laws applied. They are now used by a number of Patent Offices and have been applied to U.S. patents since Aug. 4, 1970. Some of the codes are not pertinent to the documents of a particular country and some which are may, in fact, not be used. Those codes which are not applicable to U.S. patents or not used are identified in the list below.

[10] *Document identification*
- [11] Number of the document
- [19] ICIREPAT country code, or other identification, of the country publishing the document

[20] *Domestic filing data*
- [21] Number(s) assigned to the application(s), e.g. "Numero d'enregistrement national," "Aktenzeichen"
- [22] Date(s) of filing application(s)
- [23] Other date(s) of filing, including exhibition filing date and date of filing complete specification following provisional specification [1]

[30] *Convention priority data* [2]
- [31] Number(s) assigned to priority application(s) [1]
- [32] Date(s) of filing of priority application(s) [1]
- [33] Country (countries) in which priority application(s) was (were) filed [1]

[40] *Date(s) of making available to the public*
- [41] Date of making available to the public by viewing, or copying on request, an unexamined document, on which no grant has taken place on or before the said date [1]
- [42] Date of making available to the public by viewing, or copying on request, an examined document, on which no grant has taken place on or before the said date [1]
- [43] Date of publication by printing or similar process of an unexamined document, on which no grant has taken place on or before the said date [1]
- [44] Date of publication by printing or similar process of an examined document, on which no grant has taken place on or before the said date [1]
- [45] Date of publication by printing or similar process of a document, on which grant has taken place on or before the said date
- [46] Date of publication by printing or similar process of the claim(s) only of a document [1]
- [47] Date of making available to the public by viewing, or copying on request, a document on which grant has taken place on or before the said date [1]

See footnotes at end of item.

[50] *Technical information*

- [51] International Patent Classification
- [52] Domestic or national classification
- [53] Universal Decimal Classification [1]
- [54] Title of the invention
- [55] Keywords [1]
- [56] List of prior art documents, if separate from descriptive text
- [57] Abstract or claim
- [58] Field of search

[60] *Reference(s) to other legally related domestic document(s)* [3]

- [61] Related by addition(s) [1]
- [62] Related by division(s)
- [63] Related by continuation(s)
- [64] Related by reissue(s)

[70] *Identification of parties concerned with the document*

- [71] Name(s) of applicant(s) [1]
- [72] Name(s) of inventor(s) if known to be such [1]
- [73] Name(s) of grantee(s)
- [74] Name(s) of attorney(s) or agent(s) [1]
- [75] Name(s) of inventor(s) who is(are) also applicant(s)
- [76] Name(s) of inventor(s) who is(are) also applicant(s) and grantee(s)

Codes [75] and [76] are intended primarily for use by countries in which the national laws require that the inventor and applicant are normally the same. In other cases [71] and [72] or [71], [72] and [73] should generally be used.

Approved:

WILLIAM I. MERKIN,
*Assistant Commissioner for Administration.*

Nov. 21, 1972.

Notes concerning the application of INID Codes to U.S. patents:

[1] This item is either not applicable to U.S patents or, if applicable, is either not coded or not assigned this code.

[2] The respective specific data elements within this category are not individually coded. They are printed in a particular format under the caption "Foreign Application Priority Data" which is identified by the INID Code [30].

[3] The specific data applicable to a particular patent is printed under the caption "Related U.S. Application Data." Where the relationship is due solely to division or to continuation and/or continuation-in-part, the data is identified by the appropriate specific INID Code, i.e., [62] or [63], respectively. Where the relationship is due to any combination of these two specific sub-categories, the data is identified by use of the generic INID Code [60].

[905 O.G. 684]

(248)

## GSA PATENT LICENSING REGULATIONS FOR GOVERNMENT-OWNED INVENTIONS

*The General Services Administration issued on January 29, 1973, regulations that will govern the granting of licenses, both exclusive and nonexclusive, under government-owned patents and patent applications. The regulations were promulgated pursuant to Section 2 of the August 23, 1971, Memorandum and Statement of Government Patent Policy issued by President Nixon, and will form new Subpart 101–4.1, Title 41, of the Code of Federal Regulations.*

*Each government agency is required by Section 101–4.104–1 of the regulations to cause lists of their inventions that are available for licensing to be published in the Federal Register, the Patent Office* OFFICIAL GAZETTE, *and at least one other publication. In response to this requirement, the* OFFICIAL GAZETTE *will republish all such lists published in the Federal Register. Copies of listed patents are available from the Commissioner of Patents, Washington, D.C., 20231, for 50¢ each. Copies of patent applications, however, must be ordered from the National Technical Information Service (NTIS), Springfield, Virginia 22152. Also available from NTIS are two publications that include all patents and patent applications of the National Aeronautics and Space Administration that are available for licensing. These publications include abstracts of inventions which are listed by field of technology. The publications are entitled "NASA Patent Abstracts Bibliography," dated January 1972 and July 1972, and are identified as NASA SP–7039, Section 1, and NASA SP–7039(01), Section 1. Section 2 of both documents, representing a continuous indexing system, is also available.*

*The GSA licensing regulations are republished below. Also republished are the various listings of government-owned patents and patent applications that have previously appeared in the Federal Register as available for licensing under these regulations. As additional listings are published in the Federal Register, they will be included in future issues of the* OFFICIAL GAZETTE.

WILLIAM I. MERKIN,
Apr. 2, 1973. *Assistant Commissioner for Administration.*

### Title 41—Public Contracts and Property Management

### CHAPTER 101—FEDERAL PROPERTY MANAGEMENT REGULATIONS

### SUBCHAPTER A—GENERAL

### PART 101–4—PATENTS

### Licensing of Government-Owned Inventions

This amendment of the Federal Property Management Regulations adds new Part 101–4, Patents, and new Subpart 101–4.1, Licensing of Government-Owned Inventions. The amendment sets forth regulations which implement the Presidential Statement of Government Patent Policy dated August 23, 1971. The statement specifically directs the General Services Administration to issue regulations which provide for the licensing and dedication of Government-owned inventions for the purpose of enhancing the utilization of such inventions. Development of the regulation was accomplished in cooperation with the Committee on Government Patent Policy, Federal Council for Science and Technology. Agency and industry comments were considered.

The table of contents for Subchapter A is amended to add new entries, as follows:

**Subpart 101–4.1 Licensing of Government-Owned Inventions**


Sec.
101–4.100 Scope of subpart.
101–4.101 Policy.
101–4.102 Definitions.
101–4.103 Types of licenses and conditions for licensing.
101–4.103–1 Government inventions available for licensing.
101–4.103–2 Nonexclusive license.
101–4.103–3 Limited exclusive license.
101–4.103–4 Additional licenses.
101–4.103–5 Royalties.
101–4.103–6 Reports.
101–4.104 Procedures.
101–4.104–1 Government agency publication requirements.
101–4.104–2 Contents of a nonexclusive license application.
101–4.104–3 Contents of an exclusive license application.
101–4.104–4 Published notices.
101–4.104–5 Modification or revocation.
101–4.104–6 Appeals.
101–4.105 Litigation.
101–4.106 Transfer of custody of Government inventions.


AUTHORITY: Sec. 205(c), 63 Stat. 390; 40 U.S.C. 486(c).

Part 101–4 is added as follows:

**§ 101–4.100 Scope of subpart.**

This subpart prescribes the terms, conditions, and procedures for the licensing of rights in domestic patents and patent applications vested in the United States of America, and for dedication of Government-owned inventions by a Government agency.

**§ 101–4.101 Policy.**

(a) A major premise of the Presidential Statement of Government Patent Policy, August 23, 1971 (36 FR 16887, August 26, 1971), is that Government-owned inventions normally will best serve the public interest when they are developed to the point of practical application and made available to the public in the shortest possible time. The granting of express nonexclusive or exclusive licenses for the practice of these inventions may assist in the accomplishment of the national objective to achieve a dynamic and efficient economy. However, it is recognized that there may be inventions as to which a Government agency deems dedication preferable to accomplish these objectives.

(b) The granting of nonexclusive licenses generally is preferable since the invention is thereby laid open to all interested parties and serves to promote competition in industry, if the invention is in fact promoted commercially. However, to obtain commercial utilization of the invention, it may be necessary to grant an exclusive license for a limited period of time as an incentive for the investment of risk capital to achieve practical application of an invention.

(c) Whenever the grant of an exclusive license is deemed appropriate, it shall be negotiated on terms and conditions most favorable to the public interest. In selecting an exclusive licensee, consideration shall be given to the capabilities of the prospective licensee to further the technical and market development of the invention, his plan to undertake the development, the projected impact on competition, and the benefit to the Government and the public. Consideration shall be given also assisting small business and minority business enterprises, as well as economically depressed, low income, and labor surplus areas, and whether each or any applicant is a U.S. citizen or corporation. Where there is more than one applicant for an exclusive license, that applicant shall be selected who is determined to be most capable of satisfying the criteria and achieving the goals set forth in this subpart.

(d) Subject to the following: (1) Specific statutes governing the utilization of patent rights of certain Government agencies, or (2) any existing or future treaty or agreement between the United States and any foreign government or intergovernmental organization, or (3) licenses under or other rights to invention made or conceived in the course of or under Government research and development contracts where such licenses or other rights to such inventions are granted to or provided for in the contract and acquired by the party contracting with the Government agency, no license shall be granted or implied in a Government-owned invention except as provided for in this subpart.

(e) No grant of a license under this subpart shall be construed to confer upon any licensee any immunity from the antitrust laws or from a charge of patent misuse, and the acquisition and use of rights pursuant to this subpart shall not be immunized from the operation of State or Federal law by reason of the source of the grant.

**§ 101–4.102 Definitions.**

(a) "Government invention" means an invention covered by a domestic patent or patent application that is vested in the United States and is designated by the Government agency having custody of the invention as appropriate for the grant of an express nonexclusive or exclusive license.

(b) "To the point of practical application" means to manufacture in the case of a composition or product, to practice in the case of a process, or to operate in the case of a machine under such conditions as to establish that the invention is being worked and that its benefits are reasonably accessible to the public.

(c) "Government agency" means any executive department, independent commission, board, office, agency, administration, authority, wholly owned corporation, or other independent establishment of the executive branch of the Government of the United States of America.

(d) "The head of the Government agency" means the head of the agency or his designee.

**§ 101–4.103 Types of licenses and conditions for licensing.**

**§ 101–4.103–1 Government inventions available for licensing.**

Government inventions normally will be made available for the granting of express nonexclusive or limited exclusive licenses to responsible applicants according to the factors and conditions set forth in §§ 101–4.103–2 and 101–4.103–3, subject to the applicable procedures of § 101–4.104.

**§ 101–4.103–2 Nonexclusive license.**

(a) *Availability of licenses.* Each Government invention normally shall be made available for the granting of nonexclusive revocable licenses, subject to the provisions of any other licenses, including those under § 101–4.103–4.

(b) *Terms of grant.* (1) The duration of the license shall be for a period as specified in the license agreement, provided that the licensee complies with all the terms of the license.

(2) The license shall require the licensee to bring the invention to the point of practical application within a period specified in the license, or such extended

period as may be agreed upon, and to continue to make the benefits of the invention reasonably accessible to the public.

(3) The license may be granted for all or less than all fields of use of the invention, and throughout the United States of America, its territories and possessions, the Commonwealth of Puerto Rico, and the District of Columbia, or in any lesser geographic portion thereof.

(4) After termination of a period specified in the license agreement, the Government agency may restrict the license to the fields of use and/or geographic areas in which the licensee has brought the invention to the point of practical application and continues to make the benefits of the invention reasonably accessible to the public.

(5) The license may extend to subsidiaries and affiliates of the licensee but shall be nonassignable without approval of the Government agency, except to the successor of that part of the licensee's business to which the invention pertains.

**§ 101–4.103–3 Limited exclusive license.**

(a) *Availability of license.* Each Government invention may be made available for the granting of a limited exclusive license provided that:

(1) The invention has been published as available for licensing pursuant to § 101–4.104–1 for a period of at least 6 months;

(2) The head of the Government agency has determined that (i) the invention may be brought to the point of practical application in certain fields of use and/or in certain geographical locations by exclusive licensing, (ii) the desired practical application has not been achieved under any nonexclusive license granted on the invention, and (iii) the desired practical application is not likely to be achieved expeditiously in the public interest under a nonexclusive license or as a result of further Government-funded research or development;

(3) The notice of the prospective licensee has been published, pursuant to § 101–4.104–4(a) for at least 60 days; and

(4) After termination of the period set forth in § 101–4.103–3(a)(3), the Government agency has determined that no applicant for a nonexclusive license has brought or will bring, within a reasonable period, the invention to the point of practical application as specified in the exclusive license, and that to grant the exclusive license would be in the public interest.

(b) *Selection of exclusive licensee.* An exclusive licensee shall be selected on bases consistent with the policy set forth in § 101–4.101 and in accordance with the procedures set forth in § 101–4.104.

(c) *Terms of grant.* (1) The license may be granted for all or less than all fields of use of the Government invention and throughout the United States of America, its territories and possessions, the Commonwealth of Puerto Rico, and the District of Columbia, or in any lesser geographic portion thereof.

(2) Subject to the rights reserved to the Government in §§ 101–4.103–3(c)(6) and 101–4.103–3(c)(7), the licensee shall be granted the exclusive right to practice the invention in accordance with the terms and conditions specified in the license.

(3) The duration of the license shall be negotiated but shall be for a period less than the terminal portion of the patent, the period remaining being sufficient to make the invention reasonably available for the grant of a nonexclusive license; and such period of exclusivity shall not exceed 5 years unless the head of the Government agency determines on the basis of a written submission supported by a factual showing that a longer period is reasonably necessary to permit the licensee to enter the market and recoup his reasonable costs in so doing.

(4) The license shall require the licensee to bring the invention to the point of practical application within a period specified in the license, or within a longer period as approved by the Government agency, and to continue to make the benefits of the invention reasonably accessible to the public.

(5) The license shall require the licensee to expend a specificed minimum amount of money and/or to take other specified actions, within a specified period of time after the effective date of the license, in an effort to bring the invention to the point of practical application.

(6) The license shall be subject to the irrevocable royalty-free right of the Government of the United States to practice and have practiced the invention by or on behalf of the Government of the United States and on behalf of any foreign government or intergovernmental organization pursuant to any existing or future treaty or agreement with the United States.

(7) The license shall reserve to the Government agency the right to require the licensee to grant sublicenses to responsible applicants on terms that are reasonable in the circumstances (i) to the extent that the invention is required for public use by Government regulations, or (ii) as may be necessary to fulfill health or safety needs, or (iii) for other public purposes stipulated in the license.

(8) The license may extend to subsidiaries and affiliates of the licensee but shall be nonassignable without approval of the Government agency, except to successors of that part of the licensee's business to which the invention pertains.

(9) An exclusive licensee may grant sublicenses under his license, subject to the approval of the Government agency. Each sublicense granted by an exclusive licensee shall make reference to the exclusive license, including the rights retained by the Government under the exclusive license, and a copy of such sublicense shall be furnished to the Government agency.

(10) The license may be subject to such other terms as may be in the public interest.

**§ 101–4.103–4 Additional licenses.**

Subject to any outstanding licenses, nothing in this subpart shall preclude a Government agency from granting additional nonexclusive or limited exclusive licenses for Government-owned inventions when the Government agency determines that to do so would provide for an equitable exchange of patent rights. The following exemplify circumstances wherein such licenses may be granted:

(a) Normally, royalties shall not be of an interference;

(b) In consideration of a release of a claim of infringement; or

(c) In exchange for or as part of the consideration for a license under adversely held patents.



**§ 101–4.103–5 Royalties.**

(a) Normally, royalties shall not be charged under nonexclusive licenses granted to U.S. citizens and U.S. corporations on Government inventions; however, the Government agency may require other considerations.

(b) An exclusive license on a Government invention may require the payment of royalties, and/or other considerations, when the licensing situation and the policy in § 101–4.101 considered together, indicate that it is in the public interest to do so.

**§ 101–4.103–6 Reports.**

A license shall require the licensee to submit periodic reports on his efforts to achieve practical application of the invention. The reports shall contain information within his knowledge, or which he may acquire under normal business practices, pertaining to the commercial use being made of the invention and other information which the Government agency may determine is pertinent to its licensing activities and is specified in the license.

**§ 101–4.104 Procedures.**

**§ 101–4.104–1 Government agency publication requirements.**

Each Government agency shall cause to be published in the FEDERAL REGISTER, the Official Gazette of the U.S. Patent Office, and at least one other publication that the Government agency deems would best serve the public interest, a list shall be revised periodically to incustody available for licensing under the conditions specified in § 101–4.103. The list shall be revised periodically to include directly, or by reference to a previously published list, all inventions currently available for licensing. Other publications on inventions available for licensing are encouraged and may include abstracts, when appropriate, as well as information on the design, construction, use, and potential market for the inventions.

**§ 101–4.104–2 Contents of a nonexclusive license application.**

An application for a nonexclusive license under a Government invention should be addressed to the head of the Government agency having custody of the invention, and shall include:

(a) Identification of invention for which license is desired, including the patent application serial number, or patent number, title and date, if known, and any other identification of invention;

(b) Name and address of the person, company, or organization applying for license and whether the applicant is a U.S. citizen or a U.S. corporation;

(c) Name and address of representative of applicant to whom correspondence should be sent;

(d) Nature and type of applicant's business;

(e) Source of information concerning the availability of a license on this invention;

(f) Purpose for which license is desired and a brief description of applicant's plan to achieve that purpose;

(g) A statement of the fields of use for which applicant intends to practice the invention; and

(h) A statement as to the geographic areas in which the applicant would practice the invention.

**§ 101–4.104–3 Contents of an exclusive license application.**

In addition to the information indicated in § 101–4.104–2, an application for an exclusive license shall include:

(a) Applicant's status, if any, in any one or more of the following categories: (1) Small business firm, (2) minority business enterprise, (3) location in a surplus labor area, (4) location in a low-income area, and (5) location in an economically depressed area;

(b) A statement of applicant's capability to undertake the development and marketing required to achieve the practical application of the invention;

(c) A statement describing the time, expenditure, and other acts which the applicant considers necessary to achieve practical application of the invention and the applicant's offer to invest that sum to perform such acts if the license is granted;

(d) A statement that contains the applicant's best knowledge of the extent to which the Government invention is being practiced by private industry and the Government; and

(e) Any other facts which the applicant believes are evidence that it is in the public interest for the Government agency to grant an exclusive license rather than a nonexclusive license and that such exclusive license should be granted to the applicant.

**§ 101–4.104–4 Published notices.**

(a) A notice that a prospective exclusive licensee has been selected shall be published in the FEDERAL REGISTER, and a copy of the notice shall be sent to the Attorney General. The notice shall include:

(1) Identification of the invention;

(2) Identification of the selected licensee;

(3) Duration and scope of the contemplated license; and

(4) A statement to the effect that the license will be granted unless:

(i) An application for a nonexclusive license, submitted by a responsible applicant pursuant to § 101–4.104–2, is received by the Government agency having custody of the invention within 60 days

from the publication of the notice in the FEDERAL REGISTER, and the Government agency determines in accordance with its prescribed procedures under which procedures the Government agency shall record and make available for public inspection all decisions made pursuant thereto and the basis therefor, that the applicant has established that he has already achieved or is likely to bring the invention to the point of practical application within a reasonable period under a nonexclusive license; or

(ii) The Government agency determines that a third party has presented evidence and argument which has established that it would not be in the public interest to grant the exclusive license.

(b) If an exclusive license has been granted pursuant to this Subpart 101–4.1, notice thereof shall be published in the FEDERAL REGISTER. Such notice shall include:

(1) Identification of the invention;

(2) Identification of the licensee; and

(3) Duration and scope of the license.

(c) If an exclusive license has been modified or revoked pursuant to § 101–4.104–5, notice thereof shall be published in the FEDERAL REGISTER. Such notice shall include:

(1) Identification of the invention;

(2) Identification of the licensee; and

(3) Effective date of the modification or revocation.

**§ 101–4.104–5 Modification or revocation.**

(a) Any license granted pursuant to this Subpart 101–4.1 may be modified or revoked by the Government agency granting the license if the licensee at any time defaults in making any report required by the license or commits any breach of any covenant or agreement therein contained.

(b) A license may also be revoked by the Government agency granting the license if the licensee willfully makes a false statement of a material fact or willfully omits a material fact in the license application or any report required in the license agreement.

(c) Before modifying or revoking any license granted pursuant to this subpart for any cause, the Government agency shall furnish the licensee and any sublicensee of record a written notice of intention to modify or revoke the license, and the licensee and any sublicensee shall be allowed 30 days after such notice to remedy any breach of any covenant or agreement as referred to in (a) of this section or to show cause why the license should not be modified or revoked.

**§ 101–4.104–6 Appeals.**

An applicant for a license, a licensee, or such other third party who has participated under § 101–4.104–4(a)(4)(ii) shall have the right to appeal, in accordance with procedures prescribed by the Government agency, any decision concerning the granting, denial, interpretation, modification, or revocation of a license.

**§ 101–4.105 Litigation.**

An exclusive licensee shall be granted the right to sue at his own expense any party who infringes the rights set forth in his license and covered by the licensed patent. The licensee may join the Government upon consent of the Attorney General as a party complainant in such suit but without expense to the Government, and the licensee shall pay costs and any final judgment or decree that may be rendered against the Government in such suit. The Government shall have an absolute right to intervene in any such suit at its own expense. The licensee shall be obligated to furnish promptly to the Government, upon request, copies of all pleadings and other papers filed in any such suit and of evidence adduced in proceedings relating to the licensed patent including, but not limited to, negotiations or settlement and agreements settling claims by a licensee based on the licensed patent, and all other books, documents, papers, and records pertaining to such suit. If as a result of any such litigation the patent shall be declared invalid, the licensee shall have the right to surrender his license and be relieved from any further obligation thereunder.

**§ 101–4.106 Transfer of custody of Government inventions.**

A Government agency having custody of a Government-owned invention may enter into an agreement to transfer its custody to another Government agency for purposes of administration, including the granting of licenses pursuant to this subpart.

*Effective date.* This subpart is effective May 7, 1973, but may be observed earlier. However, the head of a Government agency may exclude from the terms, conditions, and procedures set forth in this subpart any license that was in the process of being negotiated on the effective date.

Dated: January 29, 1973.

ARTHUR F. SAMPSON,
*Acting Administrator of General Services.*

[FR Doc.73–2119 Filed 2–2–73;8:45 am]

[909 O.G. 1171]

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(249) CHANGE IN LEGAL HOLIDAYS

Those doing business before the Patent Office are hereby reminded that by Public Law 90—363, 82 Stat. 250, effective January 1, 1971, Section 6103(a) of Title 5, United States Code, was amended to read as follows:

§ 6103. *Holidays*

(a) The following are legal public holidays:
New Year's Day, January 1.
Washington's Birthday, the third Monday in February.
Memorial Day, the last Monday in May.
Independence Day, July 4.
Labor Day, the first Monday in September.
Columbus Day, the second Monday in October.
Veterans Day, the fourth Monday in October.
Thanksgiving Day, the fourth Thursday in November.
Christmas Day, December 25.

Each of the holidays enumerated will constitute "a holiday within the District of Columbia," as referred to in Section 21, Title 35, United States Code.

WILLIAM E. SCHUYLER, JR.,
*Commissioner of Patents.*

Dec. 2, 1970.

[881 O.G. 1707]

EDITORIAL NOTE: Sec. 6103(c) states that January 20 of each fourth year after 1965, Inauguration Day, is also a legal public holiday.

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(250) PATENT AND TRADEMARK OFFICE

BOARD OF APPEALS

*Present Vacancies To Be Filled by Appointment Under the Classified Civil Service*

Notice is hereby given that, pursuant to the amendment of sections 3 and 7 of title 35, United States Code, by Public Law 93–601 (88 Stat. 1956), effective January 2, 1975, examiners-in-chief will no longer be appointed by the President, by and with the consent of the Senate, to serve on the Board of Appeals of the Patent and Trademark Office. In accordance with the provisions of section 7, as amended by Public Law 93–601, present (and future) vacancies on the Board of Appeals will be filled by appointment of examiners-in-chief under the classified civil service. These appointments will be made at a salary in the range from $34,607 to $36,000 per annum.

Persons interested in being considered for these vacancies are invited to submit their applications to the address given below, or on or before March 21, 1975. The duties, qualifications, and factors which will be considered in evaluating the candidates are described below.

*Duties*: Serves as a member of the Board of Appeals of the Patent and Trademark Office. As an Examiner-in-Chief, Participates in its appellate and administrative responsibilities and exercises independent judgment on all matters before him on appeal subject to administrative and policy direction of the Commissioner. Appeals filed in accordance with 35 U.S.C. 134 and Rules 191 through 198 of the Rules of Practice of the United States Patent and Trademark Office in Patent Cases involve complex legal and technical questions. The Board of Appeals has the sole power to hear and adjudicate appeals from decisions of the Primary Examiners as to patentability in applications for patents and for reissue of patents. Final decisions of the Board, if unfavorable to an applicant, may be appealed to the United States Court of Customs and Patent Appeals or civil action may be taken in accordance with 35 U.S.C. 145.

*Qualifications*: Candidates must possess (1) a minimum of five years of patent experience of which at least two years involved the exercise of independent judgment in a responsible position as typified by the exercise of full signatory authority as a Patent Examiner or by comparable experience in some other position inside or outside the Patent and Trademark Office; (2) a law degree or be a member in good standing of the bar in any state, D.C., Puerto Rico, or any territorial court under the constitution; (3) a high degree of demonstrated competence in chemistry, engineering, physics or other major scientific discipline; (4) ability to write clearly and logically; (5) comprehensive experience in patent prosecution, examination or administration which demonstrates a thorough knowledge and application of patent laws and rules of practice.

*Factors Which Will Be Considered in Evaluating the Candidates*: Candidates will be evaluated on the total range of their education, training and experience as well as supervisory appraisals of past performance and potential. *Note*: The qualifications of the proposed incumbent will have to be reviewed and approved by the Department of Commerce and by the U.S. Civil Service Commission before an appointment can be made effective.

Employees of the Department of Commerce may apply by submitting a completed Merit Promotion Interest Statement, Form CD 261, and a completed SF 171, Personal Qualifications Statement, if one is not already on file at the address given below. Persons who are not employees of the Department of Commerce should submit only a completed SF 171. Copies of Form SF 171 may be obtained at local post offices. The completed forms should be sent to:

U.S. Patent and Trademark Office
Office of Personnel
Building 2, Room 9C05
Crystal Plaza
Arlington, Virginia 22202

Questions concerning this notice should be directed to Ms. Margaret M. Mazza, Office of Personnel, Room 2-9C05, Telephone (703) 557–3631.

C. MARSHALL DANN,
*Commissioner of Patents and Trademarks.*

February, 1975.

[932 O.G. 4]

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(251) PATENT AND TRADEMARK CASES

[37 CFR Parts 1, 2, 4]

*Rules and Procedures*

Notice is hereby given that, pursuant to the authority contained in section 41 of the Act of July 5, 1946 (60 Stat. 440, 15 U.S.C. 1123) and section 6 of the Act of July 19, 1952 (66 Stat. 793, 35 U.S.C. 6), as amended October 5, 1971 (85 Stat. 364), the Patent and Trademark Office proposes to amend Title 37 of the Code of Federal Regulations by revising or amending §§ 1.12, 1.136, 1.197, 1.244, 1.256, 1.304, 2.18, 2.37, 2.75, 2.80, 2.85, 2.101, 2.102, 2.103, 2.105, 2.111, 2.112, 2.120, 2.123, 2.127, 2.129, 2.141, 2.144, 2.145, 2.162, 2.172, 2.183, 2.185, 2.187 and 4.2.

All persons are invited to present their written views, objections, recommendations, or suggestions in connection with the proposed changes to the Commissioner of Patents and Trademarks, Washington, D.C. 20231 on or before May 1, 1975. No oral hearing will be held. Written comments or suggestions will be available for examination by interested persons at Crystal Plaza Building 3, Room 11C17a, 2021 Jefferson Davis Highway, Arlington, Virginia.

*Assignment records open to public inspection.* The proposed revision of § 1.12 is intended to make clear the existing practice that assignment records relating to trademark applications and registrations are open to the public. The present wording, which is based on the amendment of § 1.12 on August 23, 1965 (819 O.G. 443), does not clearly distinguish between the procedure to be applied to patent records and to trademark records. In view of a number of inquiries as to the manner in which the amendment was to be applied, a notice was published in the OFFICIAL GAZETTE of January 18, 1966 (822 O.G. 769) stating that assignments relating to applications for registration of trademarks will be open to public inspection as heretofore. Since assignment records relating to trademark applications and registrations have always been open to the public, which practice continues at the present time, it is believed desirable to make the practice clear.

In the third sentence of the section, language is added to indicate that the requirement for written authority applies only to patent applications.

*Time less than six months.* It is proposed to revise paragraph (b) of section 1.136 to read "sufficient cause" rather than "good and sufficient cause." This revision is merely for consistency of language with other sections in this part and does not represent any change in practice.

*Reconsideration of decision.* It is proposed to revise paragraph (b) of § 1.197, paragraph (b) of section 1.256, paragraph (c) of §§ 2.129 and 2.144, to provide that the Board of Appeals, the Board of Patent Interferences, and the Trademark Trial and Appeal Board may, for sufficient cause, extend the time for filing a request for rehearing or reconsideration, or modification of a decision rendered by these Boards. Proposed revised paragraph (b) of § 1.256 and paragraph (c) of § 2.129 provide similar opportunity for extension of time for filing a reply to such a request in inter partes cases. The purpose of these revisions is to eliminate the necessity for waiver of a rule by the Commissioner in order for a party to obtain an extension of time.

In these sections, as well as in the related §§ 1.244(c), 2.127(b), 1.304 and 2.145(d), it is proposed to use the term "request" rather than "petition" in connection with rehearing or reconsideration, in order to avoid redundancy and in order to clearly distinguish such action from a petition to the Commissioner.

*Time for appeal or civil action.* Proposed revised § 1.304 and proposed revised paragraph (d) of § 2.145 clarify the portion of each which relates to the time for filing appeal or commencing civil action in cases where a request for rehearing or reconsideration, or modification of a decision, is filed. Present §§ 1.304 and 2.145(d) provide for an extension of time for appeal or civil action if a request for rehearing is filed within thirty days after a decision, but their language is subject to the interpretation that they deny any extension if the request for rehearing is filed more than thirty days after the date of a decision. It has been the practice of the Patent and Trademark Office, however, in those cases where the thirty days to file a request for rehearing has been enlarged by waiver of rule by the Commissioner under § 1.183 or § 2.148, to consider the waiver as also applying to the thirty day period specified in §§ 1.304 and 2.145(d). *Dresser Industries, Inc.* v. *Safety-Kleen Corporation*, 183 USPQ 180 (Comr. Pats. 1974).

In order to clarify the meaning of § 1.304 and paragraph (d) of § 2.145, it is proposed to revise these sections to eliminate all reference to a definite time for filing a request for rehearing, and to include instead reference to the provisions for filing request for rehearing which are made in §§ 1.197(b), 1.256(b), 2.129(c) and 2.144. Such sections are proposed to be revised to provide for extension of the basic time specified therein.

Proposed revised § 1.304 and paragraph (d) of § 2.145 also provide that the time for appeal or commencing civil action (whether it be the original sixty days, or the thirty days extension after decision on a request for rehearing) may be extended by the Commissioner upon a showing of sufficient cause.

Proposed revised § 1.304 is arranged in three subsections identified as (a), (b) and (c), and paragraph (d) of § 2.145 is arranged in three subsections identified as (1), (2) and (3). The purpose of separate subsections is to provide a means for easier reading and understanding of these sections in view of the fact that three different points are included in the sections. The proposed rearrangement does not affect practice.

*Elimination of reasons of appeal in trademark cases.* It is proposed to revise paragraphs, (a), (b) and (d) of § 2.145 to eliminate reference to the need to file the reasons of appeal in the Patent and Trademark Office when appealing a decision of the Trademark Trial and Appeal Board to the U.S. Court of Customs and Patent Appeals, consistent with the modification of section 21 of the trademark act made by Pub. L. 93-600, enacted January 2, 1975.

*Recognition for representation, powers of attorney, and correspondence with attorney.* It is proposed to revise §§ 2.18 and 4.2 to clarify the existing practice of the Patent and Trademark Office in relation to firms of attorneys and powers of attorney, and the handling of correspondence with attorneys and other recognized persons, in trademark cases.

Under present practice firms of attorneys are not recognized for practice before the Office in trademark cases. The persons identified in § 2.12 who may represent others before the Office are persons to whom individual responsibility may attach for actions taken and who must conform under § 2.13 to the Code of Professional Responsibility of the American Bar Association. Section 2.12(a) pertains to attorneys at law and does not provide for representation by a firm of attorneys as distinguished from individual attorneys. Further, reference to representation by a firm of attorneys was eliminated from § 2.15 by amendment effective July 2, 1971 (see 890 O.G. TM 60, September 14, 1971). If a firm name is given in the signature location on a paper filed by an attorney, nevertheless under § 2.15 an individual attorney must actually sign the paper.

It is not necessary under existing practice for an attorney at law filing a paper in connection with a trademark case to have a power of attorney from the party whom he represents. Normally, a letter of transmittal on an attorney's letterhead for a paper not required to be signed by the attorney, such as an application, or an attorney's signature on a paper during prosecution, or a personal appearance, is sufficient for an attorney to be recognized as a party's representative. If deemed necessary, further proof may be required under § 2.17 (a) of an attorney's authority to act for a party or an attorney's qualifications under § 2.12(a).

Although not needed, a written power of attorney is accepted if it is filed. Such power may be revoked, and if revoked, the Office will not thereafter recognize such attorney in that case unless he is again specifically appointed. Any written power of attorney which is filed should designate individuals and not firms of attorneys; a power of attorney which designates a firm rather than individuals is not considered to be a power but merely a direction that correspondence be addressed to that firm. (See 890 O.G. TM 60, September 14, 1971.)

It is proposed to eliminate from § 4.2 (power of attorney form) the requirement to identify bar membership, since further proof may be required under section 2.17(a) if there appears to be any reason to question either an attorney's authority to represent a party or an attorney's qualifications under § 2.12(a). It is further proposed to eliminate from § 4.2 present Note (8) which calls for the names of law firm members and their bar membership if a firm name is used, and to add a new Note (8) which indicates that individuals should be appointed and that naming a firm will serve only as a designation of address for correspondence.

Proposed revised § 2.18 is intended to clarify the practice relative to the address to which correspondence is sent by the Office when an attorney at law or other recognized person is acting on behalf of a party. When an attorney or other recognized person is representing a party, correspondence is sent to such attorney or other recognized person at the address specified when such person's representation is established. The Office will not undertake to correspond with more than one person at more than one address. Therefore if another attorney or recognized person files a paper, the paper will be accepted but correspondence will continue to be sent to the address of the attorney or representative as already established in the file until the Office receives written instruction by the attorney or other representative, or by the party being represented, to send correspondence to another address. A subsequently filed power of attorney or authorization of agent is regarded by the Office as a change of address for correspondence even though there is no revocation of the previous power or authorization, but in other situations a specific request is necessary, and language such as "Send correspondence to (giving address, or name and address)", is the most desirable means for changing the correspondence address. Other types of statements will be accepted by the Office if their intention is sufficiently clear to be reasonably interpreted as a request to change the address to which correspondence is to be sent. Neither the appointment of an associate attorney nor the filing of a paper by a different recognized representative has any effect on correspondence unless an instruction to change the correspondence address is included.

The Office does not send notice or acknowledgment of changes of address. Only a written revocation of a written power of attorney is acknowledged by the Office.

*Designation of domestic representative by person not domiciled in the United States.* In § 2.37 and paragraph (a)(4) of § 2.185, it is proposed to change the terms "appointment" and "resident agent" to "designation" and "domestic representative," respectively, to conform to the language of section 1(d) of the Trademark Act of 1946. This will not change present practice.

*Effective filing date for the Supplemental Register.* In § 2.75 it is proposed to add the word "effective" before "filing date" in order to make clear the existing practice that, when the filing date of an amendment to convert an application for registration on the Principal Register to an application for registration on the Supplemental Register becomes the filing date of the latter application, such date is considered to be the effective filing date of that application. This change in wording is in agreement with the language "effective filing date" used in § 2.83.

*Publication of marks placed in interference.* The proposed revision of § 2.80 restores a reference to publication of the mark in case of interference which was omitted inadvertently when § 2.80 was amended as of March 1, 1972 (896 O.G. TM 2). Although interference is not now declared except upon petition to the Commissioner (amendment of § 2.91 as of March 1, 1974 (896 O.G. TM 2)), the practice of publishing the mark when interference is declared was continued.

*Fee for petition to revive a multiple class application.* It is proposed to revise paragraph (c) of § 2.85 to delete reference to a petition to revive and thereby to make clear that only one fee is required for a petition to revive an abandoned application in which there is more than one class. Section 31 of the trademark act specifies a fee which shall be paid "on filing each petition for the revival of an abandoned application" without qualification as to the number of classes in the application, and therefore only one fee for each petition



is considered to be necessary. For the same reason, in connection with multiple class registrations, under existing practice a single fee is sufficient for issuance of a new certificate of registration following change of ownership of a mark (§ 2.171) or correction of a registrant's mistake (§ 2.175), for certificate of correction of registrant's mistake (§ 2.175), or for amendment or disclaimer after registration (§ 2.173).

*Fee required for each class being opposed, and insufficient fees for classes in application being opposed.* Proposed revised §§ 2.101, 2.102 and 2.103 make clear the existing requirement that when there is more than one class in an application (such as in a combined application), the required fee must be paid for each class when filing an opposition against such application.

These proposed revised sections also provide that when the fees which accompany an opposition are insufficient to cover all classes in the application being opposed, which may occur with a combined application, opposer should specify the classes in which opposition to registration of the mark is sought, so that the Office will not be required to select classes or make further inquiry in that respect and will be able to process the opposition promptly in the particular classes which opposer desires. This is in accord with present practice. See notice in the OFFICIAL GAZETTE of August 11, 1964 (805 O.G. TM 39).

*Joining persons in an opposition.* Proposed revised § 2.101 provides that two or more persons may be joined in an opposition, but that the required fee for each class in which each person seeks opposition must be paid for each person so joined. By this revision, existing practice is incorporated into this section. See notice in the OFFICIAL GAZETTE of August 11, 1964 (805 O.G. TM 39).

*Unverified opposition during extension of time.* It is proposed to further revise §§ 2.102 and 2.103 to permit an unverified opposition to be filed by an attorney or agent during an extension of time for opposition as well as within the original thirty days for opposition after publication of the mark. Present practice limits the filing of an unverified opposition to thirty days after publication. Nevertheless it has been found that some oppositions filed during extensions of time are unverified, and that when the defect is discovered, either there is insufficient time in the extended period to file a verified opposition or the period has expired. It seems desirable to eliminate a situation that has in some cases proven to be a difficulty for opposers. Since the main effort and cost of preparing and filing an opposition is expended even though the opposition is unverified, it is believed that in most instances opposers will file verified oppositions in extended opposition periods. Further, any unverified opposition must be confirmed by opposer by verification or declaration within thirty days after its filing. For both reasons it is believed that the proposed change in practice will not result in any undue delay in registration.

Proposed revised § 2.102 provides that an opposition filed within an extension of time to oppose must be accompanied by the required fee for each class, and states that the opposition should be verified or include a declaration in accordance with § 2.20. However, in case verification or declaration cannot be secured within the extension of time, proposed revised § 2.103 provides that an unverified opposition may be filed within an extension of time to oppose. Such unverified opposition must be confirmed by opposer by verification or declaration within thirty days after its filing.

*Extension of time to oppose.* It is proposed to further revise § 2.102 to make clear existing practice as to who may request an extension of time to oppose and who may file opposition during an extension of time. Request to extend the time for filing opposition must be made by a person who is eligible to oppose, that is, a person who believes that he would be damaged by the registration of the mark on the Principal Register. An attorney at law or other person recognized to represent a party may file a request for extension of time on behalf of a potential opposer. *La Maur, Inc.* v. *Andis Clipper Co.*, 181 USPQ 783 (Comr. Pats. 1974). The potential opposer must be identified in the request for extension because an extension of time is a personal privilege which is normally granted only to the person who has requested it. A problem has been, however, that complete information is sometimes not available at the time request for extension of time must be filed, so that there is a misidentification of the potential opposer, or, where there are parties in privity, for example related companies, one of the interested parties is named whereas later the other will be found to be the proper party to oppose. For this reason, it is considered desirable to permit opposition to be filed during an extension of time by a person whose name varies or is different from the name of the person to whom the extension was granted, provided the difference in names constitutes mere misidentification as a result of mistake and is not a difference in entity, or provided the persons designated are in privity, such as in the case of related companies under section 5 of the trademark act. This practice is in accord with the decision in *F. Jacobson & Sons, Inc.* v. *Excelled Sheepskin Co.*, 140 USPQ 281 (Comr. Pats. 1963). An analogous situation is found in *Universal Oil Products Co.* v. *Rexall Drug and Chemical Co.*, 174 USPQ 458 (CCPA 1972), where a parent company was permitted to oppose although the mark on which opposition was based was owned by the parent's subsidiary company.

When there is uncertainty between persons in privity as to which will ultimately be the proper opposer, it is desirable that the persons and their relationships be identified as clearly as possible in the request for extension of time.

*First thirty-day extension of time to oppose.* It is proposed to revise § 2.102 consistently with Pub. L. 93-600, effective January 2, 1975, which provides for a first thirty-day extension of the time for filing an opposition upon request without showing good cause.

*Transmittal of opposition.* It is proposed to revise § 2.105 to eliminate reference to transmittal of an opposition by the Examiner of Trademarks to the Trademark Trial and Appeal Board, in view of the fact that all activity connected with the processing of oppositions has been transferred from the Trademark Examining Operation to the Trademark Trial and Appeal Board.

It is further proposed to revise § 2.105 by changing the word "notice" throughout the section to the word "notification" and also by changing the word "Institution" in the heading of the section to the word "Notification". The purpose of these changes is to make clear the present practice of regarding the paper which is prepared in accordance with this section to be merely a notification to the parties of the existence of a proceeding which commenced at the time the opposition was filed.

*Fee required for each class for cancellation, and insufficient fees for classes in registration.* Proposed revised §§ 2.111 and 2.112 make clear the existing requirement that when there is more than one class in a registration, the required fee must be paid for each class when filing a petition to cancel the registration. A petition to cancel which is accompanied by fees insufficient to cover each class in the registration should specify the classes for which cancellation is sought, so that the Office will not be required to select classes or make further inquiry in that respect, and cancellation may be accomplished promptly in the classes desired. This is in accord with present practice.

*Order compelling discovery in inter partes cases.* Because of the increasing burden upon the Trademark Trial and Appeal Board as a result of the frequency and complexity of the motions being filed to compel discovery under rules adopted July 1, 1972 (898 O.G. TM 170, May 16, 1972), it is considered desirable that before seeking an order from the Board compelling discovery, the parties themselves be required to attempt to resolve the issues by mutual agreement. It is proposed to accomplish this by revising paragraph (c) of § 2.120 to require that a motion for an order compelling discovery be supported by an affidavit or a declaration in accordance with § 2.20 stating that the moving party or its attorney has conferred with the opposing party or its attorney in good faith in an effort to resolve by agreement the issues raised by the motion and that the parties have been unable to reach agreement with respect thereto, or specifying the parts of the issues, if any, which have been resolved. See *Angelica Corporation* v. *Collins & Aikman Corporation*, 183 USPQ 378 (TT&A Bd. 1974), and *Cool-Ray, Inc.* v. *Eye Care, Inc.*, 183 USPQ 618 (TT&A Bd. 1974).

*Requirements for depositions.* It is proposed to revise paragraph (g) of § 2.123 by adding a subsection numbered (3) thereto in order to restore to this section a designation of the existing requirements as to the form of depositions which was omitted inadvertently when paragraph (g) of this section was amended as of July 1, 1972 (898 O.G. TM 170, May 16, 1972).

*Comments on inter partes procedures in general.* In addition to the changes in inter partes procedures which are proposed herein, the Patent and Trademark Office is currently

making an overall review of the efficiency and effectiveness of all of the amended inter partes rules of procedure in trademark cases which became effective as of July 1, 1972 (898 O.G. TM 170, May 16, 1972). The Patent and Trademark Office would welcome comments on any present inter partes procedures separate from comments on the specific revisions proposed herein.

*Requests for reconsideration of decisions on motions.* Motion procedures before the Trademark Trial and Appeal Board under §§ 2.127 and 2.129 follow the Federal Rules of Civil Procedure, which results in a multiplicity of types of motions being available. Some of these could be finally dispositive of a case and appeal could be taken from them. It therefore seems desirable to distinguish in trademark cases between the procedures as to decisions on motions which are finally dispositive of a case and decisions on motions which are not finally dispositive. To accomplish this it is proposed to revise paragraph (b) of § 2.217 to limit the section to motions which are not finally dispositive of a case. Any request for rehearing of such motions must be filed within thirty days, as is the existing practice. It is proposed to revise paragraph (c) of § 2.219 to include a reference to decisions on motions which are finally dispositive of a case and thus to make it clear that a request for rehearing of any final decision (including those on motions) may be filed within thirty days and that such time may be extended for sufficient cause.

*Fee required for each class on appeal, and insufficient fees for classes in application on appeal.* Proposed revised § 2.141 makes clear the existing requirement that when there is more than one class in an application (such as in a combined application), the prescribed fee must be paid for each class when appealing to the Trademark Trial and Appeal Board.

The proposed revised section also provides that when the fees which accompany an appeal are insufficient to cover all classes in the application being appealed, which may occur with a combined application, applicant should specify the classes in which appeal is taken, so that the Office will not be required to select classes or make further inquiry in that respect and will be able to set up the appeal promptly in the particular classes which applicant desires. This is in accord with present practice.

*Requirements for affidavit or declaration under section 8 of the Act of 1946.* Proposed revised § 2.162 provides that an affidavit or declaration in accordance with § 2.20 containing either a statement of use or recitation of facts as to excusable nonuse must be filed before the expiration of the specified sixth year. However, if the evidence supporting the statement of use is not submitted or is found to be deficient, such supporting evidence may be filed thereafter, and may be considered even though filed after the expiration of the sixth year, and if the recitation of facts as to nonuse are found not to be sufficient, further evidence or explanation may be submitted and may be considered even though filed after the expiration of the sixth year. The statement of use or the recitation of facts as to excusable nonuse in the affidavit or declaration meets the statutory requirement of making a showing within the sixth year, although such statement or recitation is not necessarily conclusive and may be required to be supported by other evidence. *In re The Magnavox Company*, 177 USPQ 274 (Comr. Pats. 1973).

The phrase "specifying the nature of such use" is omitted from paragraph (c) of proposed revised § 2.162 because its meaning is unclear and it does not identify any requirement which is necessary for an affidavit or declaration under section 8 of the act.

The proposed revised section also makes it clear that where there is more than one class in a registration, a statement of use or a statement as to nonuse, and appropriate evidence in support thereof, is necessary with respect to each class in the registration, and that the required fee is necessary for each class in the registration. An affidavit or declaration under section 8 which is accompanied by fees insufficient to cover each class in the registration should specify the classes to which the affidavit or declaration pertains, so that the Office will not be required to select classes or make further inquiry in that respect and will be able to determine promptly the question of acceptance or refusal in relation to relevant classes.

*Surrender for cancellation.* Proposed revised § 2.172 makes clear the existing practice of regarding a request to delete one entire class, or more than one entire class but less than the total number of classes, from a registration in which there is more than one class, as a surrender of a registration as to the specified class or classes, and not as an amendment of a registration. Each class is treated in effect as a separate registration. On the other hand, deletion of less than all of the goods or services in a class constitutes amendment of a registration as to that class. No fee is required for surrender, whereas a fee is required for each class which is amended.

*Requirements of application for renewal.* It is proposed to revise paragraph (c) of § 2.183 to provide that when facts are recited in an application for renewal to show excusable nonuse and such facts are found to be deficient, additional evidence or explanation may be considered by the Examiner even though filed after the expiration of the initial six month period for applying has expired, or after the three month delay period in the case of a delayed application for renewal. The recitation in the application of facts to show excusable nonuse meets the statutory requirement of making a showing within the required time, although such statement or recitation is not necessarily conclusive and may be required to be supported by other evidence. *In re The Magnavox Company*, 177 USPQ 274 (Comr. Pats. 1973).

Section 2.183 as proposed to be revised also makes clear the existing practice that when there is more than one class in a registration, a declaration or verified statement of use and a specimen or facsimile, or a recitation of facts as to nonuse, are necessary with respect to each class in the registration, and that the required fee is necessary for each class in the registration when renewing the registration. An application for renewal which is accompanied by fees insufficient to cover each class should specify the classes with regard to which renewal is desired.

*Signature of translator for English translation.* The proposed revision of paragraph (a)(2) of § 2.185 is intended to make it clear that the signature necessary for an English translation of a foreign document is the signature of the translator of the document, and that the signature only is needed, not a verification or a declaration in accordance with section 2.20.

*Certificate of registration may issue to assignee.* Proposed revised § 2.187 sets forth more specifically the procedure for giving notice to the Patent and Trademark Office in time to permit issuance of a certificate of registration in a name other than the name of the original applicant. If an assignment document or a certificate of change of name is of record in the Assignment Division of the Patent and Trademark Office before the notice of publication of a mark is mailed, there is sufficient time for the necessary information to reach the application file before the application is prepared for issuance of the certificate of registration. Also, if at any time prior to the preparation of the application for issue, a paper is filed in an application stating that a document has been filed for recordation, the application can be flagged and held until the necessary information reaches the file from the Assignment Division.

If a certificate of registration is to be issued to an assignee, there must be in the application file an address for such assignee; if there is not, the inquiry necessary to obtain the address may delay the issuance of the certificate of registration.

*Change in name of Patent Office.* All of the sections proposed to be modified herein have been revised to reflect the change in the name of the Patent Office to the Patent and Trademark Office, and the change in title of the Commissioner of Patents to Commissioner of Patents and Trademarks, in accordance with Pub. L. 93-596, effective January 2, 1975.

The text of the proposed revised sections or paragraphs of sections is as follows:

§ 1.12 *Assignment records open to public inspection.*

The assignment records, relating to original or reissue patents, including digests and indexes, and assignment records relating to pending or abandoned trademark applications and to trademark registrations, are open to public inspection and copies of any instrument recorded may be obtained upon payment of the fee therefor. Assignment records, digests and indexes, relating to any pending or abandoned patent application are not available to the public. Copies of any such patent assignment records and information with respect thereto shall be obtainable only upon written authority of the applicant or his assignee or attorney or agent or upon a showing that the person seeking such information is a bona fide prospective or actual purchaser, mortgagee or licensee of such patent application, unless it shall be necessary to the proper conduct of business before the Office or as provided by these rules. An order for a copy of an assignment should give the identification of the record. If identified only by the name of the patentee and number of the patent, or in the case of a trademark registration by the name of the registrant and number of the registration, or by name of the applicant and serial number of the application, an extra charge will be made for the time consumed in making a search for such assignment.



§ 1.136 *Time less than six months.*

* * * * *

(b) The time for reply, when a time less than six months has been set, will be extended only for sufficient cause, and for a reasonable time specified. Any request for such extension must be filed on or before the day on which action by the applicant is due, but in no case will the mere filing of the request effect any extension. Only one extension may be granted by the primary examiner in his discretion; any further extension must be approved by the Commissioner. In no case can any extension carry the date on which response to an action is due beyond six months from the date of the action.

§ 1.197 *Action following decision.*

* * * * *

(b) Any request for rehearing or reconsideration, or modification of the decision, must be filed within thirty days from the date of the original decision, unless that decision is so modified as to become, in effect, a new decision, and the Board of Appeals so states. Such time may be extended upon a showing of sufficient cause.

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§ 1.244 *Motions; miscellaneous provisions.*

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(c) Any request for rehearing or reconsideration, or modification of the decision, must be filed within twenty days after the date of the decision, and any reply thereto shall be filed within twenty days from the date of service of the request.

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§ 1.256 *Final hearing.*

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(b) Any request for rehearing or reconsideration, or modification of the decision, must be filed within thirty days from the date of the original decision, unless that decision is so modified as to become, in effect, a new decision, and the Board of Patent Interferences so states. Any reply thereto shall be filed within fifteen days from the filing of the request. The times specified herein may be extended upon a showing of sufficient cause. (See § 1.304.)

§ 1.304 *Time for appeal or civil action.*

(a) The time for filing the notice and reasons of appeal to the U.S. Court of Customs and Patent Appeals (§ 1.302) or for commencing a civil action (§ 1.303) is sixty days from the date of the decision of the Board of Appeals or the Board of Patent Interferences. If a request for rehearing or reconsideration, or modification of the decision, is filed within the time, or within any extension of the time granted under §§ 1.256(b) or 1.197(b), the time for filing appeal or commencing civil action is extended to thirty days after action on the request. The sixty and thirty day periods referred to above may be extended by the Commissioner upon a showing of sufficient cause.

(b) The times specified herein are calendar days. If the last day of the time specified for appeal or commencing a civil action falls on a Saturday, Sunday or legal holiday, the time is extended to the next day which is neither a Saturday, Sunday nor a holiday.

(c) If a defeated party to an interference has taken an appeal to the U.S. Court of Customs and Patent Appeals and an adverse party has filed notice under 35 U.S.C. 141 that he elects to have all further proceedings conducted under 35 U.S.C. 146 (§ 1.303(c)), the time for filing a civil action thereafter is specified in 35 U.S.C. 141.

§ 2.18 *Correspondence held with attorney or agent.*

Correspondence will be sent to the applicant or a party to a proceeding at his address unless papers are transmitted by an attorney at law, or a written power of attorney or authorization of agent is filed, or the applicant or party designates in writing another address to which correspondence is to be sent, in which event correspondence will be sent to the attorney at law transmitting the papers, or to the attorney designated in the power of attorney or the agent designated in the authorization of agent, or to the address designated by the applicant or party for correspondence. Correspondence will continue to be sent to such address until the applicant or party, or the attorney or other recognized person representing the applicant or party, indicates in writing that correspondence is to be sent to another address. Double correspondence will not be undertaken by the Patent and Trademark Office, and if more than one attorney at law or other recognized person appears or signs a paper, the Office reply thereto will be sent to the address already established in the file until another correspondence address is specified by the applicant or party or by the attorney or other recognized person representing the applicant or party.

§ 2.37 *Authorization for representation; U.S. representative.*

The authorization of a qualified person to represent applicant (§ 2.17(b)) and the designation of a domestic representative (§ 2.24) may be included as a paragraph or paragraphs in the application.

§ 2.75 *Amendment to change application to different register.*

An application for registration on the Principal Register may be changed to an application for registration on the Supplemental Register and vice versa by amending the application to comply with the rules relating to the requirements for registration on the appropriate register, as the case may be. The original filing date may be considered for the purpose of proceedings in the Patent and Trademark Office provided the application as originally filed was sufficient for registration on the register to which amended. Otherwise, the filing date of the amendment will be considered the effective filing date of the application so amended.

§ 2.80 *Publication for opposition.*

If, on examination or reexamination of an application for registration on the Principal Register, it appears that the applicant is entitled to have his mark registered, the mark will be published in the OFFICIAL GAZETTE for opposition. The mark will also be published in the case of an application to be placed in interference or concurrent use proceedings, if otherwise registrable.

§ 2.85 *Classification schedules.*

* * * * *

(e) Where the amount of the fee received on filing an appeal in connection with an application or on filing an affidavit under section 8(a) or 8(b) or on an application for renewal or in connection with an opposition or petition for cancellation is sufficient for at least one class of goods or services but is less than the required amount because a multiple class application or registration is involved, the appeal or the affidavit or renewal application or opposition or petition for cancellation will not be refused on the ground that the amount of the fee was insufficient if the required additional amount of the fee is received in the Patent and Trademark Office within the time limit set forth in the notification of this defect by the Examiner.

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§ 2.101 *Time for filing opposition.*

Any person who believes that he would be damaged by the registration of a mark upon the Principal Register may, upon payment of the required fee for each class in the application, oppose the same by filing an opposition, which is verified or which includes a declaration in accordance with § 2.20, in the Patent and Trademark Office within thirty days after publication (§ 2.80) of the mark sought to be registered. An opposition accompanied by fees insufficient to cover each class in the application should specify the particular classes in which opposition is sought. Two or more persons may be joined in an opposition to the registration of a mark, but separate fees for each class in the application for each person so joined must be paid.

§ 2.102 *Extension of time.*

(a) A request to extend the time for filing opposition must be made by a person who believes that he would be damaged by the registration of the mark on the Principal Register, but an attorney at law or other person recognized to represent a party may file the request on behalf of a potential opposer. The potential opposer must be identified with rea-

sonable certainty in the request. Any opposition filed during an extension of time should be in the name of the person to whom the extension was granted, but an opposition may be accepted if the person to whom the extension was granted was misidentified through mistake, or an opposition filed in a different name may be accepted if the person filing the opposition is in privity with the person to whom the extension was granted.

(b) A request to extend the time for filing an opposition must be received in the Patent and Trademark Office before the expiration of thirty days from the date of publication, and should specify the period of extension desired. A first extension of time will be granted upon request if the extension is for not more than thirty days. Any other request for extension of time for filing an opposition should be accompanied by a showing of good cause, and in the event circumstances do not permit submission of such showing with the request, it should be furnished as promptly as possible and, in any event, within ten days after submission of such request.

(c) An opposition filed within an extended time must be accompanied by the required fee for each class, and should be verified or include a declaration in accordance with § 2.20, and if it is accompanied by fees insufficient to cover each class in the application should specify the particular classes in which opposition is sought.

§ 2.103 *Opposition filed by attorney or agent.*

An opposition which is unverified or not accompanied by a declaration in accordance with § 2.20 may, upon payment of the required fee for each class, be filed by a duly authorized attorney or agent. Such opposition and the required fee for each class must be filed in the Patent and Trademark Office within thirty days after publication (§ 2.80) of the mark sought to be registered or within an extension of the time for filing an opposition (§ 2.102) but the opposition will be null and void unless confirmed by the opposer either by verification or declaration in proper form filed within thirty days after such filing, or within such further time as may be fixed by the Commissioner upon request made before the expiration of the thirty days. An opposition accompanied by fees insufficient to cover each class should specify the particular classes in which opposition is sought.

§ 2.105 *Notification of opposition proceedings.*

A notification of an opposition which has been regularly filed shall be prepared, identifying the title and number of the proceeding and the application involved, and designating a time, not less than thirty days from the mailing date of such notification, within which answer must be filed. Copies of this notification shall be forwarded by the Trademark Trial and Appeal Board to the parties in care of their attorneys or agents, if they have attorneys or agents of record. The duplicate copy of the opposition and exhibits shall be forwarded with the notification to the applicant.

§ 2.111 *Time for filing petition for cancellation.*

(a) Any person who believes that he is or will be damaged by a registration may, upon payment of the required fee for each class in the registration, apply to the Commissioner to cancel said registration. Such petition may be made at any time in the case of registrations on the Supplemental Register or under the Act of 1920, or registrations under the act of 1881 or the act of 1905 which have not been published under section 12(c) of the act (§ 2.153), and in cases involving the grounds specified in section 14 (c), (d), and (e) of the act. In all other cases such petition must be made within five years from the date of registration of the mark under the act of 1946 or from the date of publication under section 12(c) of the act.

(b) A petition to cancel accompanied by insufficient fees to cover each class in the registration should specify the particular classes for which cancellation is sought.

§ 2.112 *Petition for cancellation.*

The petition to cancel, which must be verified, or include a declaration in accordance with § 2.20, must set forth a short and plain statement showing how the petitioner is or will be damaged by the registration, state the grounds for cancellation, and indicate the respondent party to whom notice shall be sent. A duplicate copy of the petition, including exhibits, shall be filed with the petition. Applications to cancel different registrations owned by the same party may be joined in one petition when appropriate, but the required fee for each class in each registration against which each application to cancel is filed must accompany the petition. A petition to cancel accompanied by insufficient fees to cover all classes should specify the particular classes for which cancellation is sought.

§ 2.120 *Discovery procedure.*

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(c) *Failure to make discovery: Sanctions.* (1) If any party fails or refuses to answer any proper question in taking discovery depositions or fails or refuses to answer any proper question propounded by interrogatories or fails or refuses to comply with a request to produce and permit the inspection and copying of designated things, the party seeking discovery may file a motion with the Trademark Trial and Appeal Board for an order compelling discovery. Such a motion must be supported by an affidavit or a declaration in accordance with § 2.20, stating that the moving party or its attorney has conferred with the opposing party or its attorney in an effort in good faith to resolve by agreement the issues raised by the motion and has been unable to reach agreement. If part of the issues raised by the motion have been resolved by agreement, the affidavit or declaration shall specify the issues so resolved and also specify the issues remaining unresolved.

(2) If a party or an officer, director, or managing agent of a party, or a person designated under Rule 30(b)(6) or 31(a) of the Federal Rules of Civil Procedure to testify on behalf of a party, fails to obey an order to provide or permit discovery, the Trademark Trial and Appeal Board may strike out all or any part of any pleading of that party, dismiss the action or proceeding, or deny any part thereof, enter judgment as by default against that party or take any such other action as may be deemed appropriate.

§ 2.123 *Trial testimony in inter partes cases.*

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(g) Form of deposition:

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(3) Each deposition must contain an index of the names of the witnesses, giving the pages where their examination and cross-examination begin, and an index of the exhibits, briefly describing their nature and giving the pages at which they are introduced and offered in evidence.

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§ 2.127 *Motions.*

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(b) Any request for rehearing or reconsideration, or modification of a decision on a motion which is not finally dispositive of the case, must be filed within thirty days from the date thereof. Any brief in opposition shall be filed with fifteen days after service of the request.

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§ 2.129 *Oral argument, and reconsideration.*

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(c) Any request for rehearing or reconsideration, or modification of a decision, including a decision on a motion which is finally dispositive of a case, must be filed within thirty days from the date thereof. Any brief in opposition shall be filed within fifteen days after service of the request. The times specified herein may be extended upon a showing of sufficient cause.

§ 2.141 *Ex parte appeals from the Examiner of Trademarks.*

Every applicant for the registration of a mark may, upon final refusal by the Examiner of Trademarks, appeal to the Trademark Trial and Appeal Board upon payment of the prescribed fee for each class in the application. An appeal accompanied by insufficient fees to cover each class in the application should specify the particular classes in which appeal is taken. A second refusal on the same grounds may be considered as final by the applicant for purpose of appeal.

§ 2.144 *Reconsideration of decision on ex parte appeal.*

Any request for rehearing or reconsideration, or modification of the decision, must be filed within thirty days from the date of the decision. Such time may be extended upon a showing of sufficient cause.

§ 2.145 *Appeal to court and civil action.*

(a) *Appeal to U.S. Court of Customs and Patent Appeals.* An applicant for registration, or any party to an interference, opposition or cancellation proceeding or any party to an application to register as a concurrent user, hereinafter referred



to as inter partes proceedings, who is dissatisfied with the decision of the Trademark Trial and Appeal Board and any registrant who has filed an affidavit or declaration under section 8 of the act or who has filed an application for renewal and is dissatisfied with the decision of the Commissioner (§§ 2.165, 2.184), may appeal to the U.S. Court of Customs and Patent Appeals. The appellant must take the following steps in such an appeal: (1) In the Patent and Trademark Office give written notice of appeal to the Commissioner (see paragraphs (b) and (d) of this section); (2) In the court, file a petition of appeal and a certified transcript of the record within a specified time after filing the notice of appeal, and pay the fee for appeal, as provided by the rules of the court. The transcript will be transmitted to the Court by the Patent and Trademark Office on order of and at the expense of the appellant. Such order should be filed with the notice of appeal, but in no case should it be filed later than 15 days thereafter.

(b) *Notice of appeal.* (1) When an appeal is taken to the U.S. Court of Customs and Patent Appeals, the appellant shall give notice thereof in writing to the Commissioner, which notice shall be filed in the Patent and Trademark Office within the time specified in paragraph (d) of this section. The notice shall specify the party or parties taking the appeal and shall designate the decision or part thereof appealed from.

(2) In inter partes proceedings, the notice must be served as provided in § 2.119.

* * * * *

(d) *Time for appeal or civil action.* (1) The time for filing the notice of appeal to the U.S. Court of Customs and Patent Appeals (paragraph (b) of this section), or for commencing a civil action (paragraph (c) of this section), is sixty days from the date of the decision of the Trademark Trial and Appeal Board or the Commissioner, as the case may be. If a request for rehearing or reconsideration, or modification of the decision, is filed within the time, or within any extension of the time granted under § 2.129(c) or § 2.144, the time for filing appeal or commencing civil action is extended to thirty days after action on the request. The sixty- and thirty-day periods referred to above may be extended by the Commissioner upon a showing of sufficient cause.

(2) The times specified herein are calendar days. If the last day of time specified for appeal, or commencing a civil action falls on a Saturday, Sunday, or legal holiday, the time is extended to the next day which is neither a Saturday, Sunday nor a holiday.

(3) If a party to an inter partes proceeding has taken an appeal to the U.S. Court of Customs and Patent Appeals and an adverse party has filed notice under section 21(a)(1) of the act that he elects to have all further proceedings conducted under section 21(b) of the act, the time for filing a civil action thereafter is specified in section 21(a)(1) of the act.

§ 2.162 *Requirements for affidavit or declaration during sixth year.*

The affidavit or declaration required by § 2.161 must:

(a) Be executed by the registrant after expiration of the five-year period following the date of registration or of publication under section 12(c) of the act;

(b) Be filed in the Patent and Trademark Office before the expiration of the sixth year following the date of registration or of publication under section 12(c) of the act;

(c) Identify the certificate of registration by the registration number and date of registration;

(d) Be accompanied by the required fee for each class in the registration. If accompanied by insufficient fees to cover each class, the particular classes to which the affidavit or declaration pertains should be specified;

(e) State that the registered mark is in use. The statement must be supported by evidence which shows that the mark is still in use, and normally such evidence consists of a specimen, a facsimile specimen, or a statement of facts concerning use. The supporting evidence should be submitted with the affidavit or declaration, but if it is not or if the evidence submitted is found to be deficient, the evidence, or further evidence, may be submitted and may be considered even though filed after the sixth year has expired;

(f) If the registered mark is not still in use, recite facts to show that nonuse is due to special circumstances which excuse such nonuse and is not due to any intention to abandon the mark. If the facts recited are found not to be sufficient, further evidence or explanation may be submitted and may be considered even though filed after the sixth year has expired; and

(g) Contain the statement of use or statement as to nonuse and appropriate evidence in support thereof, as required in paragraphs (e) and (f) of this section, for each class in the registration.

§ 2.172 *Surrender for cancellation.*

Upon application by the registrant, the Commissioner may permit any registration to be surrendered for cancellation. Application for such action must be signed by the registrant and must be accompanied by the original certificate of registration, if not lost or destroyed. When there is more than one class in a registration, a request to delete one entire class or more than one entire class but less than the total number of classes constitutes surrender of a registration or registrations as to the specified class or classes, and not amendment of a registration. Deletion of less than all of the goods or services in a single class constitutes amendment of registration as to that class.

§ 2.183 *Requirements of application for renewal.*

(a) The application for renewal must include a statement which is verified or which includes a declaration in accordance with § 2.20 by the registrant setting forth the goods or services recited in each class in the registration on or in connection with which the mark is still in use in commerce, specifying the nature of such commerce. This statement must be executed not more than six months before the expiration of the registration and be accompanied by:

(1) A specimen or facsimile for each class showing current use of the mark;

(2) The required fee for each class including an additional fee for each class in the case of a delayed application for renewal. If the application for renewal is accompanied by insufficient fees to cover each class, particular classes for which renewal is sought should be specified.

(b) The declaration or verified statement, specimen or facsimile and the fee for each class in the registration must be filed within the period prescribed for applying for renewal. If defective or insufficient, they cannot be completed after the period for applying for renewal has passed; if completed after the initial six month period has expired but before the expiration of the three month delay period, the application can be considered only as a delayed application for renewal.

(c) If the mark is not in use in commerce at the time of filing of the declaration or verified statement, facts must be recited to show that nonuse is due to special circumstances which excuse such nonuse and is not due to any intention to abandon the mark. There must be a recitation of facts as to nonuse for each class or it must be clear that the facts recited apply to each class. If the facts recited require amplification or explanation, further evidence may be submitted and may be considered even though filed after the period for applying for renewal has passed.

§ 2.185 *Requirements for assignments.*

(a) Assignments under section 10 of the act of registered marks, or marks for which an application for registration has been filed, will be recorded in the Patent and Trademark Office. Other instruments which may relate to such marks may be recorded in the discretion of the Commissioner. No assignment will be recorded, except as may be ordered by the Commissioner, unless it has been executed and unless:

* * * * *

(2) It is in the English language or, if not in the English language, accompanied by a translation signed by the translator.

* * * * *

(4) A designation of a domestic representative is made in case the assignee is not domiciled in the United States. The designation must be separate from the assignment and there must be a separate designation for each registration or application assigned in one instrument.

* * * * *

§ 2.187 *Certificate of registration may issue to assignee.*

The certificate of registration may be issued to the assignee of the applicant, or in a new name of applicant, provided an appropriate document is of record in the Assignment Division of the Patent and Trademark Office no later than the time notice of publication is mailed, or a statement that such document has been filed for recordation is in the application

file by the time the application is being prepared for issuance of the certificate of registration. The address of the assignee must be made of record in the application file.

§ 4.2 *Power of attorney accompanying application.*

Applicant hereby appoints _____ _____ _____ _____ (8) _____ (Address) to prosecute this application to register, to transact all business in the Patent and Trademark Office in connection therewith, and to receive the certificate of registration.

NOTE: (8) Individual attorneys at law should be appointed. If the name of a law firm is given, it will be regarded merely as a designation of address for correspondence.

Dated: Jan. 28, 1975.

C. MARSHALL DANN,
*Commissioner of Patents and Trademarks.*

Approved:

DAVID B. CHANG,
*Assistant Secretary for Science and Technology.*

[FR Doc. 74-3737; Filed 2-10-75; 8:45 am]

*Published in 40 F.R. 6361, Feb. 11, 1975*

[932 O.G. 340]

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(252) CHANGE IN NAME OF THE PATENT OFFICE

(Public Law 93-596)

On January 2, 1975, President Ford signed into law H.R. 7599, a bill changing the name of the Patent Office to the "Patent and Trademark Office" and the title of the Commissioner of Patents to the "Commissioner of Patents and Trademarks." This change reflects the dual role of the Patent Office in administering both the patent law (Title 35, United States Code) and the Trademark Act of 1946 (60 Stat 427, 15 U.S.C. 1051, et seq.)

In order to minimize the cost of implementing this law (P.L. 93-596) and because of the similarity of the old and new names, existing stationery, printed forms, publications, etc. will continue in use until such supplies are exhausted. During the interim, the terms "Patent Office" and "Commissioner of Patents," appearing on patent grants and other official documents issued or dated on and after January 2, 1795, shall be construed to mean "Patent and Trademark Office" and "Commissioner of Patents and Trademarks." This same interpretation shall apply to the use of these terms in the patent and trademark rules of practice, 37 CFR, Parts 1 and 2, until such time as the Code of Federal Regulations is revised and new rules of practice are published.

In addition, the public is encouraged to minimize its costs in complying with this new law by exhausting reasonable quantities of existing stationery and forms which contain printed reference to the Patent and Trademark Office as the the Patent office and the Commissioner of Patents and Trademarks as the Commissioner of Patents. In preparing other written matter for submission to the Patent and Trademark Office, the public should use the new deisgnations.

C. MARSHALL DANN,
*Commissioner of Patents and Trademarks.*

Approved: Jan. 27, 1975.

BETSY ANCKER-JOHNSON, PH.D.,
*Assistant Secretary for Science and Technology.*

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Public Law 93-596
93rd Congress, H. R. 7599
January 2, 1975

# An Act

88 STAT. 1949

**To amend the Trademark Act of 1946 and title 35 of the United States Code to change the name of the Patent Office to the "Patent and Trademark Office".**

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,*

Patent Office. Name change.

SECTION 1. The Trademark Act of 1946, 60 Stat. 427, as amended (15 U.S.C. sec. 1051 et seq. (1970)), and title 35 of the United States Code, entitled "Patents", are amended by striking out each time they appear "Patent Office" and "Commissioner of Patents" and inserting in lieu thereof "Patent and Trademark Office" and "Commissioner of Patents and Trademarks", respectively.

35 USC 1 et seq.

15 USC 1111.

SEC. 2. Section 29 of the Trademark Act of 1946 is further amended by striking out "Reg. U.S. Pat. Off." and inserting in lieu thereof "Reg. U.S. Pat. & Tm. Off."

35 USC 1 note.

SEC. 3. The terms "Patent Office" and "Commissioner of Patents" in all laws of the United States shall mean "Patent and Trademark Office" and "Commissioner of Patents and Trademarks", respectively.

Effective date. 15 USC 1111 note.

SEC. 4. This Act shall become effective upon enactment. However, any registrant may continue to give notice of his registration in accordance with section 29 of the Trademark Act of 1946 (60 Stat. 427), as amended Oct. 9, 1962 (76 Stat. 769), as an alternative to notice in accordance with section 29 of the Trademark Act as amended by section 2 of this Act, regardless of whether his mark was registered before or after the effective date of this Act.

Approved January 2, 1975.

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LEGISLATIVE HISTORY:

HOUSE REPORT No. 93-523 (Comm. on the Judiciary).
SENATE REPORT No. 93-1399 (Comm. on the Judiciary).
CONGRESSIONAL RECORD:
Vol. 119 (1973): Oct. 15, considered and passed House.
Vol. 120 (1974): Dec. 18, considered and passed Senate.



Public Law 93-600
93rd Congress, H. R. 8981
January 2, 1975

# An Act

88 STAT. 1955

**To amend the Trademark Act to extend the time for filing oppositions, to eliminate the requirement for filing reasons of appeal in the Patent Office, and to provide for awarding attorney fees.**

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,*

Trademarks. Extension for filing oppositions. 15 USC 1063.

SECTION 1. Section 13 of the Trademark Act of 1946 (60 Stat. 427), as amended, is amended by deleting the second sentence and substituting therefor: "Upon written request prior to the expiration of the thirty-day period, the time for filing opposition shall be extended for an additional thirty days, and further extensions of time for filing opposition may be granted by the Commissioner for good cause. The Commissioner shall notify the applicant of each extension of the time for filing opposition.".

15 USC 1071.

SEC. 2. Section 21 of the Trademark Act of 1946 (60 Stat. 427), as amended, is amended by deleting subsections (2), (3), and (4) from paragraph (a) and substituting therefor:

Notice of appeal.

"(2) Such an appeal to the United States Court of Customs and Patent Appeals shall be taken by filing a notice of appeal with the Commissioner, within sixty days after the date of the decision appealed from or such longer time after said date as the Commissioner appoints. The notice of such appeal shall specify the party or parties taking the appeal, shall designate the decision or part thereof appealed from, and shall state that the appeal is taken to said court.

Hearing, notice.

"(3) The court shall, before hearing such appeal, give notice of the time and place of the hearing to the Commissioner and the parties thereto. The Commissioner shall transmit to the court certified copies of all the necessary original papers and evidence in the case specified by the appellant and any additional papers and evidence specified by the appellee, and in an ex parte case the Commissioner shall furnish the court with a brief explaining the grounds of the decision of the Patent Office, touching all the points involved in the appeal.

"(4) The court shall decide such appeal on the evidence produced before the Patent Office. The court shall return to the Commissioner a certificate of its proceedings and decision, which shall be entered of record in the Patent Office and govern further proceedings in the case.".

Attorney fees. 15 USC 1117.

SEC. 3. Section 35 of the Trademark Act of 1946 (60 Stat. 427), as amended, is amended by adding the following sentence at the end thereof: "The court in exceptional cases may award reasonable attorney fees to the prevailing party.".

Effective date. 15 USC 1063 note.

SEC. 4. This Act shall become effective upon enactment, but shall not affect any suit, proceeding, or appeal then pending.

Approved January 2, 1975.

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LEGISLATIVE HISTORY:

HOUSE REPORT No. 93-524 (Comm. on the Judiciary).
SENATE REPORT No. 93-1400 (Comm. on the Judiciary).
CONGRESSIONAL RECORD:
Vol. 119 (1973): Oct. 15, considered and passed House.
Vol. 120 (1974): Dec. 18, considered and passed Senate.

Public Law 93-601
93rd Congress, H. R. 9199
January 2, 1975

# An Act

88 STAT. 1956

To amend title 35, United States Code, "Patents", and for other purposes.

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled*, That section 3, title 35, of the United States Code is amended to read as follows:

Patents.

**"§ 3. Officers and employees**

35 USC 3.

"(a) There shall be in the Patent Office a Commissioner of Patents, a Deputy Commissioner, two Assistant Commissioners, and not more than fifteen examiners-in-chief. The Deputy Commissioner, or, in the event of a vacancy in that office, the Assistant Commissioner senior in date of appointment shall fill the office of Commissioner during a vacancy in that office until the Commissioner is appointed and takes office. The Commissioner of Patents, the Deputy Commissioner, and the Assistant Commissioners shall be appointed by the President, by and with the advice and consent of the Senate. The Secretary of Commerce, upon the nomination of the Commissioner, in accordance with law, shall appoint all other officers and employees.

"(b) The Secretary of Commerce may vest in himself the functions of the Patent Office and its officers and employees specified in this title and may from time to time authorize their performance by any other officer or employee.

"(c) The Secretary of Commerce is authorized to fix the per annum rate of basic compensation of each examiner-in-chief in the Patent Office at not in excess of the maximum scheduled rate provided for positions in grade 17 of the General Schedule of the Classification Act of 1949, as amended."

5 USC 5332 note.

SEC. 2. The first paragraph of section 7 of title 35 of the United States Code is amended to read as follows:

Board of Appeals.

"The examiners-in-chief shall be persons of competent legal knowledge and scientific ability, who shall be appointed under the classified civil service. The Commissioner, the deputy commissioner, the assistant commissioners, and the examiners-in-chief shall constitute a Board of Appeals, which on written appeal of the applicant, shall review adverse decisions of examiners upon applications for patents. Each appeal shall be heard by at least three members of the Board of Appeals, the members hearing such appeal to be designated by the Commissioner. The Board of Appeals has sole power to grant rehearings."

Review.

SEC. 3. The last sentence of section 151 of title 35 of the United States Code is amended to read as follows: "If any payment required by this section is not timely made, but is submitted with the fee for delayed payment and the delay in payment is shown to have been unavoidable, it may be accepted by the Commissioner as though no abandonment or lapse had ever occurred.".

Delayed payment.

SEC. 4. (a) The Commissioner of Patents may, in accordance with Section 3 of this Act, accept late payment of issue fees, the payment of which was governed by the provisions of Public Law 89-93; *Provided:* the term of the patent for which late payment of such an issue fee is accepted shall expire earlier than the time specified in Section 154 of Title 35, United States Code, by a period equal to the delay between the time the application became abandoned or the patent lapsed for failure to pay the issue fee and the time the late payment is accepted after enactment of this Act; *Further Provided:* no patent with respect to which the payment of the issue fee was governed by the provisions of PL 89-83 and for which a late payment of the issue fee is accepted under the authority created by Section 3 of this Act, shall abridge or affect the right of any person or his successors in business who made, purchased or used anything covered by the patent, after the date of the application became abandoned or patent lapsed for failure to pay the issue fee but prior to the grant or restoration of the patent, to continue the use of or to sell to others to be used or sold, the specific thing so made, purchased, or used. A court before which such matter is in question may provide for the continued manufacture, use or sale of the thing made, purchased or used as specified, or for the manufacture, use or sale of which substantial preparation was made after the date the application became abandoned or patent lapsed for failure to pay the fee but prior to the grant or restoration of the patent, and it may also provide for the continued practice of any process covered by the patent, practiced, or for the practice of which substantial preparation was made, after the date the application became abandoned or patent lapsed for failure to pay the issue fee but prior to the grant or restoration of the patent, to the extent and under such terms as the court deems equitable for the protection of investments made or business commenced before the grant or restoration of the patent.

Issue fees, late payment.
35 USC 151 note.
35 USC 41.

Effective date.
35 USC 3 note.

(b) This Act shall be effective upon enactment. Examiners-in-chief in office on the date of enactment shall continue in office under and in accordance with their then existing appointments.

Approved January 2, 1975.

LEGISLATIVE HISTORY:

HOUSE REPORT No. 93-856 (Comm. on the Judiciary).
SENATE REPORT No. 93-1401 (Comm. on the Judiciary).
CONGRESSIONAL RECORD, Vol. 120 (1974):
Mar. 18, considered and passed House.
Dec. 18, considered and passed Senate.

[931 O.G. 491]



(253) TITLE 37—PATENTS, TRADEMARKS AND COPYRIGHTS

CHAPTER I—PATENT AND TRADEMARK OFFICE, DEPARTMENT OF COMMERCE

*Name Change*

Pursuant to authority contained in 35 U.S.C. 6, as amended (85 Stat. 364), Chapter I of Title 37 of the Code of Federal Regulations is amended as follows:

The heading of Chapter I is changed to read as set forth above.

Wherever the name "Patent Office," and the title "Commissioner of Patents," appear in Chapter I, they are changed to read, respectively, "Patent and Trademark Office" and "Commissioner of Patents and Trademarks."

Public law 93-596, 88 Stat. 1949, changed the name of the Patent Office to "Patent and Trademark Office," and the title of the Commissioner of Patents to "Commissioner of Patents and Trademarks."

It is the general policy of the Patent and Trademark Office to afford interested members of the public an opportunity to participate in the rulemaking process. However this amendment is entirely editorial in nature. Therefore, the public rulemaking procedure is waived and this amendment will become effective on February 4, 1975.

C. MARSHALL DANN,
*Commissioner of Patents.*

Approved:
BETSY ANCKER-JOHNSON,
*Assistant Secretary for Science and Technology.*

[FR Doc. 75-3135; Filed 2-3-75; 8:45 am]

*Published in 40 F.R. 5158, Feb. 4, 1975*

[932 O.G. 2 (Mar. 4, 1975)]

(254) OFFICE OF THE SECRETARY

[Dept. Organization Order 30-3A]

PATENT OFFICE

*Organization and Functions*

This order effective December 15, 1972, supersedes the material appearing at 27 FR 11469 of November 21, 1962.

SECTION 1. *Purpose.* This order delegates authority to the Commissioner of Patents and prescribes the functions of the Patent Office.

SEC. 2. *Status and line of authority.* .01 The Patent Office is hereby continued as a primary operating unit of the Department of Commerce. First established as an independent bureau under the direction of a Commissioner of Patents by the general revision of patent laws enacted by Congress July 4, 1836 (5 Stat. 117), it became a bureau of the Department of Commerce by Executive Order of April 1, 1925, in accordance with the authority contained in the act of February 14, 1903 (32 Stat. 830). When the patent laws were codified as Title 35, United States Code, effective January 1, 1953, the Patent Office was continued as an office in the Department of Commerce.

.02 The Commissioner of Patents (hereinafter called the Commissioner), who is appointed by the President by and with the advice and consent of the Senate shall be the head of the Patent Office. He shall be principally assisted by a Deputy Commissioner and four assistant commissioners, whose titles and status are specified below. The First Assistant Commissioner (Deputy Commissioner) and the first two assistant commissioners are provided for by 35 U.S.C. 3 and are appointed by the President by and with the advice and consent of the Senate.

a. The Deputy Commissioner (First Assistant Commissioner under 35 U.S.C. 3).

b. The Assistant Commissioner for Patents (an assistant commissioner under 35 U.S.C. 3).

c. The Assistant Commissioner for Trademarks (an assistant commissioner under 35 U.S.C. 3).

d. The Assistant Commissioner for Legal Affairs.

e. The Assistant Commissioner for Administration.

.03 The Deputy Commissioner or, in the event of a vacancy in that office, the assistant commissioner appointed under 35 U.S.C. 3 who is senior in date of appointment, shall act as Commissioner during a vacancy in that office until a Commissioner is appointed and takes office. In the absence of the Commissioner, the Deputy Commissioner shall act as Commissioner. If the Deputy Commissioner is likewise absent or that office is vacant, one of the assistant Commissioners appointed under 35 U.S.C. 3 or the Assistant Commissioner for Legal Affairs or the Solicitor of the Patent Office shall act as Commissioner in an order of precedence prescribed by the Commissioner.

.04 The Commissioner shall report and be responsible to the Assistant Secretary for Science and Technology.

SEC. 3. *Delegation of authority.* .01 Pursuant to the authority vested in the Secretary of Commerce by 35 U.S.C. 3 and Reorganization Plan No. 5 of 1950, the functions of the Patent Office and its officers specified in Title 35 of the United States Code, as amended, are hereby vested in the Secretary of Commerce and redelegated to the Commissioner of Patents.

.02 Pursuant to the authority vested in the Secretary of Commerce by law, the Commissioner of Patents is hereby delegated authority to perform the following functions vested in the Secretary of Commerce.

a. The functions in Title 15, Chapter 22 of the United States Code, which pertain to trademarks.

b. The functions in Executive Order 10096 of January 23, 1950, and the Executive Order 10930 of March 24, 1961, which pertain to inventions made by Government employees.

c. The functions in 42 U.S.C. 2181 and 2182, which pertain to inventions relating to atomic weapons, and in 42 U.S.C. 2457, which pertain to property rights in inventions made in performance of work under contract for the National Aeronautics and Space Administration.

d. Such functions under other authorities of the Secretary of Commerce as are applicable to performing the functions assigned in this order.

.03 Exercise of the functions delegated in paragraphs .01 and .02 of this section shall be subject to such policies or directions as may be prescribed by the Secretary of Commerce or the Assistant Secretary for Science and Technology.

.04 The Commissioner of Patents may, except as precluded by law or regulation, redelegate his authority to employees of the Patent Office subject to such conditions in the exercise of the delegated authority as he may prescribe.

SEC. 4. *Functions.* The Patent Office shall perform the following functions:

.01 Examine applications for patent to determine if they meet the requirements of law for the issuance of patents and, upon such determination, granting patents.

.02 Administer special laws and regulations as to secrecy of certain inventions, licenses for foreign filing, and those relating to atomic energy and space technology.

.03 Decide the ownership of patents and the rights to inventions made by Government employees, as provided by Executive Orders 10096 and 10930.

.04 Provide for the publication, storage, dissemination, and exchange of patents and related documentation.

.05 Maintain systems and facilites providing appropriate access to United States and foreign patents and other technical literature for use of the examiners and the public.

.06 Examine applications for the registration of trademarks to determine their entitlement to registration under the law; give public notice of trademarks allowed for registration and publish registered trademarks; maintain the principal and supplemental registers of trademark registrations, and provide for public access to such registers and related trademark records.

.07 Issue patents and certificates of trademark registration.

.08 Reissue defective patents and issue certificates of correction of patents and trademark registrations.

.09 Maintain records as to proprietary interests in patents and trademarks and applications therefor.

.10 Carry on or authorize studies and programs, separately or in coordination with other United States, foreign and international agencies, regarding domestic and international patent and trademark law.

.11 Perform other functions required, or which the Commissioner deems necessary and proper, in exercising the authority delegated herein.

Effective date: December 15, 1972.

GUY W. CHAMBERLIN, JR.,
*Acting Assistant Secretary*
*for Administration.*

[FR Doc. 73-320; Filed 1-5-73; 8:45 am]

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[Dept. Organization Order 30-3B]

PATENT OFFICE

*Organization and Functions*

This order effective December 15, 1972, supersedes the material appearing at 36 FR 9078 of May 19, 1971.

SECTION 1. *Purpose.* This order prescribes the organization and assignment of functions within the Patent Office. Department Organization Order 30-3A prescribes the scope of authority and functions.

SEC. 2. *Organization structure.* The principal organization structure and line of authority of the Patent Office shall be as depicted in the attached organization chart. A copy of the organization chart is attached to the original document on file in the Office of the Federal Register.

SEC. 3. *Office of the Commissioner.* The Commissioner determines the policies and directs the programs of the Patent Office and is responsible for the conduct of all activities of the Patent Office. He is principally assisted by Deputy Commissioner and four Assistant Commissioners who shall have the main duties as specified below:

a. The Deputy Commissioner (First Assistant Commissioner under 35 U.S.C. 3) shall assist the Commissioner in the direction of the Patent Office with immediate responsibility for the Office of Petitions and shall perform the duties of the Commissioner in the latter's absence.

b. The Assistant Commissioner for Patents (an assistant commissioner under 35 U.S.C. 3) shall provide administrative and policy direction for the patent examining and related operations which consist of the organizational elements enumerated in section 5 of this order. He is assisted by a Deputy Assistant Commissioner who shall, among other duties, have immediate responsibility for the patent examining groups and shall perform the duties of the Assistant Commissioner during the latter's absence.



c. The Assistant Commissioner for Trademarks (an assistant commissioner under 35 U.S.C. 3) shall provide administrative and policy direction to the trademark registration and related operations which consist of the organizational elements enumerated in section 6 of this order.

d. The Assistant Commissioner for Legal Affairs shall be the chief law officer of the Patent Office and as applicable shall provide administrative and policy direction to the organizational elements enumerated in section 7 of this order. Pursuant to Department Organization Order 10-6, he shall be subject to the overall authority of the Department's General Counsel with respect to legal and legislative matters involving the Patent Office, other than in connection with the issuance of patents or the registration of trademarks.

e. The Assistant Commissioner for Administration shall be the principal advisor to the Commissioner on the formulation and application of management policies and shall provide administrative, management, and operational support services to components of the Patent Office. In addition, he shall provide administrative and policy direction to a staff assigned to his office as well as to the organizational elements enumerated in section 8 of this order. He shall be assisted by a Deputy Assistant Commissioner who shall perform the duties of the Assistant Commissioner during the latter's absence.

SEC. 4. *Office reporting to the Commissioner.* .01 The Offices of Petitions shall receive, docket, maintain records, and take other appropriate action with respect to petitions to the Commissioner submitted under applicable law and regulations; assign petitions to appropriate officials for decision or recommend and prepare decisions for review and approval by the Deputy Commissioner; and recommend changes in office policy, practices, and procedures, where the need for such appears evident from the records of the office.

.02 The Office of Government Inventions and Patents shall administer Executive Order 10096, as amended by Executive Order 10930 and related regulations, including the rendering of final decisions on the ownership of patents and the rights to inventions made by Government employees, and advise the Commissioner on matters involving the Committee on Government Patent Policy (of the Federal Council for Science and Technology). It shall also conduct research, liaison, and coordinate functions needed to carry out Executive Order 10096 and to advise the Commissioner on Committee matters; provided executive secretariat support to the Committee; and assist in the development and formulation, to the extent appropriate, of a uniform Government-wide policy.

.03 The Office of Advanced Systems Development shall apply analytical basic research techniques to the development of new machine-assisted experimental search, retrieval, and display systems; to the exploration and application of advanced technology for the betterment of operating systems; and to increasing the effectiveness of technical information dissemination and accessing measures. This work is directed primarily to providing solutions to hitherto unresolved problems and to the development of experimental or test applications, for simulations of original techniques or operations. It shall assist in the installation, pilot use, and evaluation of experimental systems in operating environments.

.04 The Office of Information Services shall advise and represent the Commissioner on information matters; conduct programs fostering public understanding of the American patent system and the functions, services and administrative publications of the Patent Office; develop publication policies; provide direction and assistance in developing new and revised publications; and assure conformity with policies, regulations, and standards concerning publications and publication practices.

SEC. 5. *Offices reporting to the Assistant Commissioner for Patents.* .01 The Office of Patent Program Control shall develop procedures for and establish quality, quantity, and other performance standards relating to the conduct of the patent examination and classification functions; establish program activity targets and continually evaluate status against program objectives; provide training to examiners in patent practices and procedures; and monitor compliance with examination and classification standards and procedures.

.02 The Office of Patent Classification shall develop, implement, and maintain subject matter classification systems for patent search files of prior art; evaluate and adapt experimental or other search systems developed elsewhere; determine requirements for and initiate procurement of foreign patent and literature abstracting services for use by examiners; and provide technical specifications, guidance, advice, and assistance to the contracting officer in such procurements; coordinate the classification of U.S. and foreign patent documents and nonpatent literature; and participate in developing and fostering harmonization of the United States and the International Patent Classification systems.

.03 The Examining Groups shall examine applications for patents to ascertain if the applicants are entitled to patents under the law and grant patents to those so entitled. Each examining group shall perform this function for patent applications falling within the generic category assigned to it. The number of examining groups and the coverage of the generic categories shall be determined by the Commissioner.

SEC. 6. *Offices reporting to the Assistant Commissioner for Trademarks.* .01 The Office of Trademark Program Control shall develop guidelines governing trademark examining procedures; establish program activity targets and continually evaluate status against program objectives; and provide instruction in trademark practice and procedures and coordinate trademarks administrative support activities.

.02 The Trademark Trial and Appeal Board shall be responsible for hearing and deciding adversary proceedings involving interfering applications, oppositions to registration, cancellations, and concurrent use proceedings; and for hearing and deciding appeals from final refusals of the trademark examiners to allow the registration of trademarks.

.03 The Trademark Examining Operation shall be responsible for the classification of trademark applications into classes of goods and services, the examination and processing of these applications, and the registration of trademarks, service marks, and certification marks; and maintain the principal and supplemental registers of trademarks.

SEC. 7. *Offices reporting to the Assistant Commissioner for Legal Affairs.* .01 The Office of the Solicitor shall handle all litigation to which the Commissioner is a party and provide other legal services, including advice and assistance on legislative matters, and maintenance of the law library.

.02 The Examiners-in-chief sitting as a Board of Patent Appeals shall be responsible for hearing and deciding appeals from adverse decisions of examiners upon applications for patents.

.03 The Board of Patent Interferences shall conduct patent interference proceedings and make final determinations in the Patent Office as to priority of invention. The Board shall also hear and decide questions concerning property rights in inventions in the atomic energy and space fields brought before it under the provisions of sections 2182 and 2456 (d) and (e) of title 42, U.S.C.

.04 The Office of Legislation shall develop recommendations and advise policy and action concerning matters which may require changes in the patent and trademark laws; review and prepare analysis of bills or drafts of legislation concerning patent or trademark matters received for technical appraisal; prepare legislative proposals and, after appropriate clearance, draft legislation and supporting documentation for clearance with the Department's Office of the General Counsel and the Office of Management and Budget, for consideration by the Congress; and maintain liaison with patent and trademark bar associations, industry, and others concerned with proposed and pending legislation.

.05 The Office of International Affairs shall coordinate the development of policy and program recommendations or positions respecting international patent and trademark affairs, including all proposed new or modified agreements under the Paris Union, Patent Cooperation Treaty, or like treaties; maintain liaison in such matters with the Office of the Secretary, the Department of State, and concerned ele-

ments of the public; and participate in negotiating patent and trademark matters in establishing international agreements and in the implementation of programs affecting Patent Office commitments or responsibilities in these areas.

SEC. S. *Offices reporting to the Assistant Commissioner for Administration.* .01. Management Planning Organizations:

a. The Office of Budget shall formulate, interpret, and execute budgetary and fiscal policies; establish and maintain a comprehensive budget program collaborating with cost center officials in developing budget and fiscal plans; develop and present budget requests; allocate and maintain budgetary accountability of available funds; maintain external liaison in budgetary matters; and review and evaluate the fulfillment of budget-based program commitments.

b. The Office of Management and Organization shall plan and conduct studies designed to improve organization, methods, procedures, workflow, work measurement, managerial technicals, and resource utilization, or otherwise increase efficiency, effectiveness and economy of operations; develop and manage a system for the issuance of internal administrative orders and instructions; promote development of the Patent Office management improvement program and coordinate the collection, review and submission of reportable plans and accomplishments thereon; coordinate a program for the management and control of external reports; and make special studies as required.

c. The Office of Program Planning and Evaluation shall formulate plans for and coordinate the development of Patent Office-wide long and short range program objectives within the framework of budgetary constraints; define, project, and allocate the manpower and other resources required to achieve Patent Office-wide objectives; develop and monitor a management information system which prescribe code structures for and consolidates all administrative management systems into a single integrated data base to provide information designed to measure performance and achievement against planned objectives; and develop and issue a wide variety of timely internal analytical and interpretive reports to the managers of the Patent Office.

.02 Public service organizations:

a. The Office of Publications shall schedule and manage the processing and movement of allowed patent application files in procuring the creation of full patent text machine language data base and the composition and printing of weekly patent issues and related announcements in the OFFICIAL GAZETTE; provide requisition and scheduling services for trademark publications; monitor the quality or performance by contributing sources and maintain close liaison with U.S. Government Printing Office; and prepare and issue patent grants and periodic publications of patent indexes.

b. The Office of Patent and Trademark Services shall provide the materials and services offered directly to the public, many of which are provided on a fee basis. These shall include recording instruments that transfer property rights to patents and trademarks; furnishing copies of patents, trademark registrations, and office records to examiners, and others in the Office, as well as to the public; providing drafting services; and maintaining appropriate collections of pertinent technical and scientific information such as United States and foreign patents, periodicals, books, and other publications for use by the public. It shall also conduct an initial examination of patent applications for compliance with law and regulation as to form and certain matters of factual content; grant or deny a filing date based on such examination and forward to the Examining Groups those granted a filing date; acknowledge the acceptance or rejection of applications for examination; originate documentation of pending applications; initially assign accepted applications to units of the examining groups for examination; and maintain records on the status and location of all applications.

.03 Administrative service organizations:

a. The Office of Computer Services shall be responsible for providing data processing services to other elements of the Patent Office: This shall include the conduct of systems analysis and equipment evaluation studies directly related to the design and development of systems and programs for applications of computer techniques; preparation or procurement and testing of computer programs, and supplemental data processing services; operation of all general purpose ADP equipment including that which may be approved for use within another organization unit as an integral part of its operations; and maintenance of a comprehensive library of programs, including those developed or procured by other organization units.

b. The Office of Finance shall develop and maintain the financial accounting system of the Patent Office, perform accounting operations for the revenue, trust funds, and appropriation of the Patent Office, including maintenance of general accounts and related fiscal records, preparation of financial statements and reports, audit and certification of vouchers for payment, issuance of deposit account statements, initiation of action to collect amounts due the Patent Office, and administration of the payroll system and related employee accounts; and provide financial advice and opinions.

c. The Office of General Services shall plan and administer a broad Office-wide program of general services, including procurement control; property, space, and facilities management; communications, records, files, mail, and forms management; administrative printing; and clearance of all requirements involving contractual procurements, including liaison with the Department, in connection therewith.

d. The Office of Personnel shall administer activities relating to recruitment, placement, employee relations, equal employment opportunity programs for employees, training and career development, incentive awards, performance rating, position classification and wage administration, group management relations, and various employee benefit programs.

.04 The Office of Technology Assessment and Forecast shall continually assess the status of technological activities in all countries; compare inventive activity in the United States relative to other nations; and forecast developments on a world-wide basis.

Effective date: December 15, 1972.

GUY W. CHAMBERLIN, JR.,
*Acting Assistant Secretary for Administration.*

[FR Doc. 73-321; Filed 1-5-73; 8:45 am]

*Published in 38 F.R. 1068, Jan. 8, 1973*

[907 O.G. 2]

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(255) PATENT OFFICE

*Organization and Functions*

This order, effective August 1, 1973, amends the material appearing at 38 FR 1068 of January 8, 1973.

Department Organization Order 30-3B, dated December 15, 1972 is hereby amended as follows:

1. SEC. 7. *Offices reporting to the assistant commissioner for legal affairs.*

a. Paragraph .04 is amended to read:

.04 The *Office of Legislation and International Affairs* shall make studies and advise the Commissioner on policy and action concerning matters which may require legislation and on international patent and trademark matters; develop and direct the implementation of related programs; maintain liaison with the Office of the Secretary, the Department of State, and appropriate congressional committees; and conduct negotiations in technical patent and trademark matters in establishing or implementing international agreements.

b. Paragraph .05 is deleted.

2. The organization chart of December 15, 1972 is superseded by the organization chart attached to this amendment. Copy of the Organization Chart is attached to the original of this document on file in the Office of the Federal Register.

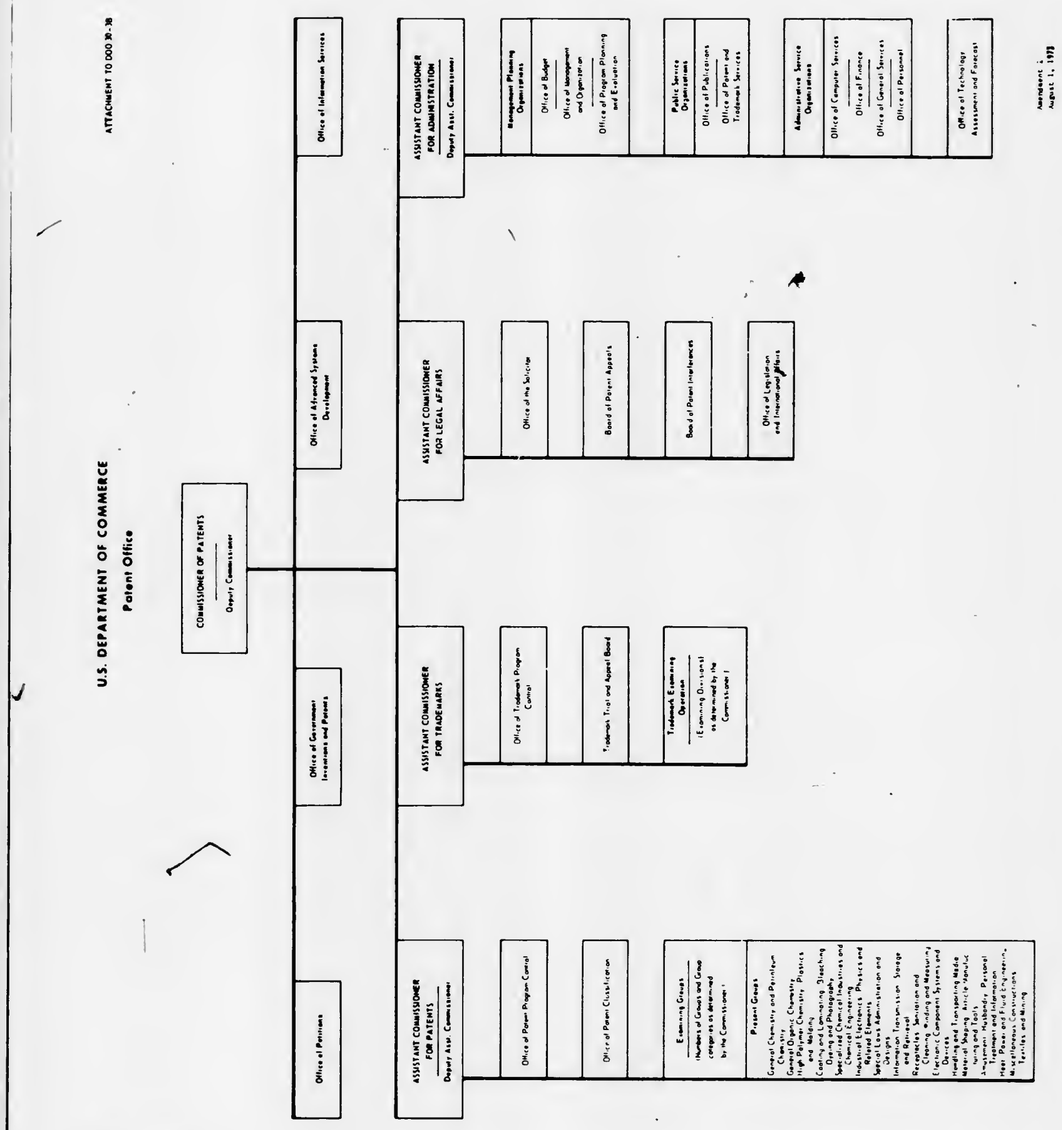
*Effective date:* August 1, 1973.

HENRY B. TURNER,
*Assistant Secretary for Administration.*

[FR Doc. 73-19292; Filed 9-11-73; 8:45 am]

[915 O.G. 378]





(256)

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# TRADEMARK SECTION

*The following is a compilation of the more important notices and rule changes concerning trademarks which have been published in the* OFFICIAL GAZETTE *from July 1, 1964 through December 31, 1975. Notices which have been rescinded or included in the trademark rules or the Trademark Manual of Examining Procedures are not included. There may be some notices issued prior to July 1, 1964, which have not been specifically rescinded and are still in effect; those are not reproduced here.*

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### (300) INTERVIEWS INVOLVING TRADEMARK APPLICATION

Interviews frequently result in a better understanding of the issues involved, shorten the prosecution and facilitate disposal of applications.

Interviews for discussion of registrability of the mark of a pending application will not be had before the first official Office action thereon and ordinarily not before filing the first response. Arrangements for an interview should be made in advance so that the Examiner may review the case and be familiar with the details involved.

Interviews on Friday will no longer be prohibited as a matter of policy but all interviews should be set at a time satisfactory to all parties concerned.

A memorandum summarizing the conclusions reached at the interview should be prepared by the Examiner and placed in the application file. The memorandum will be retained in the application file until the prosecution is completed. Such procedure will not, however, relieve the applicant of the responsibility of complying with the requirements of Trademark Rule 2.62.

HORACE B. FAY, JR.,
July 6, 1964. *Assistant Commissioner.*

This supersedes the notice of February 10, 1958, 728 O.G. (TM 1).

[804 O.G. TM 147 (July 28, 1964)]

### (301) CHANGE IN FORMAT FOR PUBLISHING TRADEMARKS FOR OPPOSITION

Section 30 of the Trademark Act of 1946 as amended by Public Law 772, 87th Congress, approved October 9, 1962, 76 Stat. 769, provides for the filing of a combined application for the registration of a trademark in more than one class.

The present practice of publishing the mark with pertinent data under each class in which registration is sought results in needless duplication.

Beginning with the issue of November 3, 1964, "Marks Published for Opposition" will be divided into two sections. In Section 1, all marks presented in combined applications for registration in more than one class will be published with only one reproduction of each mark.

The reproduction of the mark will be followed by the class numbers and titles, and under each class will appear the description of the goods in connection with which the trademark is used. If the date of first use applies to all classes, it will appear following the last class; otherwise, the dates of use will appear after each class.

Trademarks presented in applications for registration in a single class will be published, as in the past, in class order, in Section 2.

The same procedure will be followed in the notice of the issuance of registrations on the Supplemental Register.

EDWIN L. REYNOLDS,
Sept. 18, 1964. *First Assistant Commissioner.*

[807 O.G. TM 51 (Oct. 13, 1964)]

### (302) TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

CHAPTER I—PATENT OFFICE, DEPARTMENT OF COMMERCE

PART 2—RULES OF PRACTICE IN TRADEMARK CASES

*Allowance of Application*

The following amendment is made, to take effect on publication in the Federal Register. Notice and public procedure and deferment of the time of taking effect are deemed unnecessary in view of the nature of the amendment, which is procedural only.

The purpose of the change is to eliminate the procedural step of signing a trademark application file prior to allowance, which has been found to be burdensome and which is unnecessary since the allowance of the application, subject to possible inter partes proceedings, has already been approved by an Examiner having full signatory authority.

Section 2.82 is amended by striking out the clause "the Examiner will sign the application file to indicate allowance and," so that the section as amended will read as follows:

**§ 2.82 *Allowance of application.***

If no opposition is filed within the time permitted (§§ 2.101 and 2.102), or if filed and dismissed, and if no interference is declared, or concurrent use proceeding instituted, the application will be prepared for issuance of the certificate of registration as provided in § 2.151.

(Sec. 1, 66 Stat. 793, 35 U.S.C. 6; 60 Stat. 427, 15 U.S.C. 1057)

Dated: Mar. 23, 1966.

EDWARD J. BRENNER,
*Commissioner of Patents.*

Approved:
J. HERBERT HOLLOMAN,
*Assistant Secretary for Science and Technology.*

[F.R. Doc. 66-3785; Filed, Apr. 7, 1966; 8:45 a.m.]

*Published in 31 F.R. 5554; Apr. 8, 1966*

[826 O.G. TM 61 (May 10, 1966)]

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(303) PUBLICATION OF MATERIAL IN "NOTICES" SECTIONS OF PATENTS AND TRADEMARKS OFFICIAL GAZETTE

Effective Jan. 3, 1967, publication of material in the Patent and Trademark "Notices" sections of the OFFICIAL GAZETTE will occur only once.
Dec. 1, 1966.

[833 O.G. TM 108 (Dec. 20, 1966)]

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(304) POWERS OF ATTORNEY IN REGISTERED TRADEMARK FILES

On and after February 1, 1967, communications advising of changes in the powers of attorney for registered trademarks will be placed in the registration files, but will not be acknowledged by the Patent Office. The information will thus be available to those who inspect the files, but since these powers of attorney do not directly concern the Patent Office, acknowledgments are not believed to be necessary.

C. M. WENDT,
Jan. 30, 1967. *Director.*

[835 O.G. TM 95 (Feb. 21, 1967)]

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(305) CHARGES AGAINST DEPOSIT ACCOUNTS UNDER SPECIAL CONDITIONS

The practice as to deposit accounts is hereby extended to include charges against deposit accounts under special conditions. Charges under this practice shall not exceed $50 for each trademark application, registration or notice of opposition.

The Director and the Assistant to the Director of the Trademark Examining Operation are authorized to make a charge against a deposit account provided prior approval, as by telephone, is obtained from the applicant, registrant, attorney or agent. This practice is limited to ex parte appeals to the Trademark Trial and Appeal Board, notices of opposition, affidavits under the provisions of Section 8, and applications for renewal and may be exercised only in emergency situations, such as where a party is unable to file the fee within the statutory period.

When such a charge is made, prior approval will be indicated in the file by identification of the name of the authorizing party, the date and the type of authorization, the purpose for which the charge is made, and the deposit account number.

WILLIAM E. SCHUYLER, JR.,
*Commissioner of Patents.*

[879 O.G. TM 151 (Oct. 27, 1970)]

(306) SEPARATION OF THE PATENT AND TRADEMARK SECTIONS OF THE OFFICIAL GAZETTE

Effective February 2, 1971, the OFFICIAL GAZETTE will be separated into two parts to be known as the *Patent Official Gazette* and the *Trademark Official Gazette*. The subscription prices for these publications are as follows:

Patent Official Gazette:
$89.00 per year
22.25 additional for foreign mailing
2.00 per single copy
Trademark Official Gazette:
$17.00 per year
4.25 additional for foreign mailing
.40 per single copy

Also effective February 2, 1971, the OFFICIAL GAZETTE will no longer contain "Decisions in Patent and Trademark Cases." Decisions of the type heretofore found in the "Decisions in Patent and Trademark Cases" are published by non-Federal organizations such as, for example, the Bureau of National Affairs, Inc., 1231 25th St. NW., Washington, D.C. 20037, and West Publishing Co., 50 Kellogg Blvd., St. Paul, Minn. 55102.

Finally, the "Decisions Leaflet" of the OFFICIAL GAZETTE will no longer be supplied as a separate subscription item after January 26, 1971. According to present plans, however, both the PATENT OFFICIAL GAZETTE and the TRADEMARK OFFICIAL GAZETTE will have identical "Patent Office Notices" sections containing notices of the various types heretofore published in the Gazette decision leaflet and Trademark Section. Those notices of particular interest to Patent Office employees will be accumulated and published approximately every fourth week, and distributed separately to employees.

WILLIAM E. SCHUYLER, JR.,
Dec. 29, 1970. *Commissioner of Patents.*

[882 O.G. TM 33 (Jan. 12, 1971)]

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(307) PREFACE TO THE TRADEMARK O.G. NOTICES

In September 1970, a Public Advisory Committee for Trademark Affairs was established by the Secretary of Commerce. The Purpose of this Committee was to advise the Patent Office on ways to increase the efficiency and effectiveness of the administration of the Trademark Act. A report of this Advisory Committee has been received by the Commissioner of Patents. After reviewing the recommendations, although the review is not complete, it has been decided to make certain changes in trademark practice and procedure, and to propose changes in the rules of practice. Beginning with this issue of the OFFICIAL GAZETTE and in subsequent issues as needed, announcements will be published concerning changes in procedures and proposed amendments to the Trademark Rules of Practice.

* * * * *

WILLIAM E. SCHUYLER, JR.,
June 16, 1971. *Commissioner of Patents.*

*Published in 36 F.R. 13232; July 16, 1971*

[889 O.G. TM 2 (Aug. 3, 1971)]

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(308) REQUEST FOR EXTENSION OF TIME IN WHICH TO OPPOSE

The Patent Office is adopting a new procedure to be used when filing a request for an extension of time in which to oppose under Section 13 of the Trademark Act and Rule 2.102, Trademark Rules of Practice. All requests for extension of time should be submitted in triplicate. The Patent Office will stamp each copy of the request with the action taken and send a copy to the requester and the applicant. The third copy will be entered in the file.

The purpose of this new procedure is to expedite the handling of extensions of time by eliminating the preparation of a formal notice of the disposition of the request. Further, this procedure will provide the applicant with additional information concerning the potential opposition.

WILLIAM E. SCHUYLER, JR.,
June 16, 1971. *Commissioner of Patents.*

*Published in 36 F.R. 13232; July 16, 1971*

[889 O.G. TM 3 (Aug. 3, 1971)]

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(309) RECORDING OF DOCUMENTS AFFECTING TITLE

The Patent Office is liberalizing its policy concerning the recording of documents, other than assignments, which affect title to trademark registrations and applications. Under Rule 2.185 of the Trademark Rules of Practice, instruments affecting title to a trademark registration or application, and licenses of trademarks which are the subject of trademark registrations or applications, will be recorded even though the recording thereof may not serve as constructive notice under Section 10 of the Trademark Act of 1946, as amended (15 U.S.C. 1060).

WILLIAM E. SCHUYLER, JR.,
June 16, 1971. *Commissioner of Patents.*

*Published in 36 F.R. 13231; July 16, 1971*

[889 O.G. TM 2 (Aug. 3, 1971)]

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(310) TRADEMARK EXAMINING PROCEDURE FOR AMENDED APPLICATIONS; REPORTING OLDEST DATES OF AMENDED TRADEMARK APPLICATIONS

Effective immediately, the order in which amendments to trademark applications are examined is changed. Previously, Examiners have usually acted on amended cases in order of filing date of the application which the amendment concerned, i.e., amended cases with the oldest filing date were examined first. Under the new procedure, amended cases will normally be examined in the order in which the amendment or other response is received, i.e., amendments that are received first will normally be examined first.

Effective with this issue of the OFFICIAL GAZETTE (Trademark Section) in order to reflect more accurately the condition of division dockets, the column reporting the date of the oldest amended application in each division has been changed to indicate the date of receipt of the oldest filed amendment. Under this new method of reporting the oldest date of receipt of a filed amendment upon which no action has been taken by an Examiner will be indicated for each division of the Trademark Examining Operation.

RENE D. TEGTMEYER,
July 15, 1971. *Assistant Commissioner.*

[889 O.G. TM 6 (Aug. 3, 1971)]

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(311) TRADEMARKS—STATUS INQUIRIES

In order to expedite the handling of inquiries regarding the status of both new and amended applications, the Patent Office has adopted a new procedure. Henceforth, status inquiries should be filed in duplicate and should identify by title and date the last paper known by the applicant to have been filed to the case. Each inquiry should be accompanied by a self-addressed, stamped envelope. The original inquiry will be entered in the file and the duplicate will be marked with a response and returned to the applicant. The date when the next office action can be expected will not be given unless specifically requested.

Status letters have been used by applicants to establish diligence in support of a later petition to revive should the application become abandoned. Under current practice, attorneys have frequently submitted status letters as a matter of course for such purposes. This has proved burdensome both to attorneys and the Patent Office. Until further notice, in new applications, the applicant will be considered to have exercised diligence in connection with a petition to revive an application abandoned for failure to respond to the initial office action if inquiry as to the status of the application is received by the Patent Office within either one of the two following periods, whichever expires later:

*a.* Eighteen months from the filing date of the application, or

*b.* A reasonable period after the OFFICIAL GAZETTE (Trademarks) indicates that the filing date of the oldest new case awaiting action in the Division to which the application is assigned is more recent than the filing date of the application.

For amended cases, the applicant will be considered to have exercised diligence if inquiries as to the status of the application are received by the Patent Office within either one of the two following periods, whichever expires later:

*a.* Eighteen months after filing a response to the examiner's last received action, or

*b.* A reasonable period after the OFFICIAL GAZETTE (Trademarks) indicates that the date of the oldest amendment filed that is awaiting action in the Division to which the application is assigned is more recent than the date of filing the last amendment to the application.

It should be noted as an exception to the above that status inquiries are totally unnecessary during period(s) of time when an application is suspended pursuant to 37 CFR 2.67.

Applicants are urged not to file status inquires within the first year after filing due to the current backlog of new applications.

Dated: July 28, 1971.

ROBERT GOTTSCHALK,
*Acting Commissioner of Patents.*

Approved: July 30, 1971.
JAMES H. WAKELIN, JR.,
*Assistant Secretary for Science and Technology.*

[FR Doc. 71-11532; Filed 8-10-71; 8:48 am]

*Published in 36 F.R. 14771, Aug. 11, 1971*

[890 O.G. TM 5 (Sept. 7, 1971)]

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(312) TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

CHAPTER I—PATENT OFFICE, DEPARTMENT OF COMMERCE

PART 1—RULES OF PRACTICE IN PATENT CASES

PART 2—RULES OF PRACTICE IN TRADEMARK CASES

*Recognition of Attorneys and Agents, Standards of Conduct, and Patent Application Petitions*

These rules changes eliminate present provision for the recognition and registration of firms of attorneys and agents for practice in patent and trademark cases, and permit registered attorneys and agents to file papers in patent applications without the need for filing powers of attorney or authorizations. The changes further establish the Code of Professional Responsibility of the American Bar Association as the standard of conduct for those practicing before the Patent Office insofar as the Code is not inconsistent with Patent Office rules. Other changes eliminate the present requirement for a petition or other express request for a patent and liberalize requirements as to inventor names.

The changes relating to the discontinuance of the recognition and registration of firms are intended to obviate problems incident to such registration such as, for example, the lack of certainty as to the responsibility of individual attorneys and agents for actions taken by registered nonpartnership business entities, such as professional corporations, the problems associated with the rights to firm names and registration numbers upon dissolution or reorganization of firms, and the recognition as "firms" of groups of attorneys or agents, such as parts of corporation organizations, when the attorneys and agents are not in fact associated as partners. Acceptance of papers filed in patent applications by registered attorneys and agents upon a representation that the attorney or agent is authorized to act in a representative capacity is for the purpose of facilitating responses on behalf of applicants in patent applications, and, further, to obviate the need for filing powers of attorney or authorizations of agent in individual applications when there has been a change in composition of law firms or corporate patent staffs. Interviews with a registered attorney or agent not of record will, in view of 35 U.S.C. section 122, be conducted only on the

basis of information and files supplied by the attorney or agent.

Provision is made for an applicant to supply an address to receive correspondence from the Patent Office concerning his application, in addition to his residence address, so that the Patent Office may direct mail to any address of applicant's selection, such as a corporate patent department, a firm of attorneys or agents, or an individual attorney, agent, or other person. In connection with patent applications pending upon the effective date of the changes in which a firm is the only representative of record (and in connection with divisions and continuations thereof not requiring execution by the applicant), the address of the firm will be considered to be the correspondence address for the application. Powers of attorney and authorizations of agent in favor of registered individual attorneys and agents will, of course, continue to be recognized and accepted.

The amendments to §§ 1.344 and 2.13 are intended to provide a more definite and uniform standard of conduct for those engaged in practice before the Patent Office than do present rules. The Code of Professional Responsibility of the American Bar Association is incorporated by reference in the rule with a statement as to where copies thereof may be inspected or obtained. The rule specifies that the standards referred to are those set forth in the Code of Professional Responsibility as amended February 24, 1970, and the rule does not, therefore, refer to standards imposed by later amendments of the Code. Any standards in other Patent Office rules which are inconsistent with standards imposed by the Code (as, for example, the limitations in § 1.345(b) on the distribution of professional announcements and the duties imposed by § 1.205(b)) remain in force.

The elimination of the requirement for a petition requesting the grant of a patent and the relaxation of requirements as to the names of applicants are intended to simplify patent application procedures. Section 1.76 is being revoked as redundant in view of revisions in § 1.57.

Notice of proposed rule making regarding revocation of §§ 1.35 and 1.61 and revision of §§ 1.14, 1.21, 1.33, 1.34, 1.36, 1.51, 1.52, 1.57, 1.76, 1.341, 1.343, 1.344, 1.346, 1.347, 2.13, and 2.15 of Title 37, Code of Federal Regulations was published in the Federal Register of January 15, 1971 (36 F.R. 611). Interested persons were given an opportunity to participate in the rulemaking process through submission of comments in writing and at an oral hearing held on March 23, 1971. The rules are being adopted after full and careful consideration of all the material submitted. The departures from the published text reflect certain of the views expressed in the submitted material.

*Effective date.* This revision shall become effective on the date of its publication in the Federal Register (7–2–71).

In consideration of the comments received and pursuant to the authority contained in Section 6 of the Act of July 19, 1952 (66 Stat. 793; 35 U.S.C. 6), and Section 31 of that Act (66 Stat. 795; 35 U.S.C. 31), Title 37 of the Code of Federal Regulations is hereby amended as follows:

* * * * * *

18. Section 2.13 is revised to read as follows:

§ 2.13 *Professional conduct.*

Attorneys and other persons appearing before the Patent Office in trademark cases must conform to the standards of ethical and professional conduct set forth in the Code of Professional Responsibility of the American Bar Association as amended February 24, 1970, insofar as such code is not inconsistent with this part. A copy of the said code is available for inspection in the Office of the Solicitor, U.S. Patent Office, Room 11C04, Building 3, Crystal Plaza, 2021 Jefferson Davis Highway, Arlington, Va. Copies of the code are available upon request to the American Bar Center, 1155 East 60th Street, Chicago, Ill. 60637.

19. Section 2.15 is revised to read as follows:

§ 2.15 *Signature and certificate of attorney or agent.*

Every paper filed by an attorney at law or other person representing an applicant or party to a proceeding in the Patent Office must bear the signature of such attorney at law or other person except those papers which are required to be signed by the applicant or party. The signature of an attorney at law or such other person to a paper filed by him, or the filing of any paper by him, constitutes a certificate that the paper has been read; that its filing is authorized; that to the best of his knowledge, information, and belief there is good ground to support it; and that it is not interposed for delay.

WILLIAM E. SCHUYLER, JR.,
*Commissioner of Patents.*

Approved:

JAMES H. WAKELIN, JR.,
*Assistant Secretary for Science and Technology.*

[FR Doc. 71–9387; Filed 7–1–71; 8:49 am]

*Published in 36 F.R. 12616; July 2, 1971*

[890 O.G. TM 60 (Sept. 14, 1971)]

(313) STATUS INQUIRIES: AMENDMENT

The notice entitled Status Inquiries which appeared in the Federal Register of August 11, 1971 (36 F.R. 14771–14772), indicated that all status inquiries regarding trademark applications will be entered in the application files. That procedure will not, however, be followed in all cases, and the first paragraph of the notice has, accordingly, been amended to read as follows:

"In order to expedite the handling of inquiries regarding the status of both new and amended applications, the Patent Office has adopted a new procedure. Henceforth, status inquiries should be filed in duplicate and should identify by title and date the last paper known by the applicant to have been filed in the case. Each inquiry should be accompanied by a self-addressed, stamped envelope. Both the original inquiry and the duplicate will be marked with a response and the duplicate will be returned to the applicant. The original inquiry will be entered in the file only if the applicant has requested an estimated date for the next Office action; otherwise, the original inquiry will be placed in a separate file."

Dated: Sept. 14, 1971.

ROBERT GOTTSCHALK,
*Acting Commissioner of Patents.*

[FR Doc. 71–14129; Filed 9–23–71; 8:50 a.m.]

*Pub. in 36 F.R. 18961, Sept. 24, 1971*

[891 O.G. TM 142 (Oct. 26, 1971)]

(314) TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

CHAPTER I—PATENT OFFICE, DEPARTMENT OF COMMERCE

PART 2—RULES OF PRACTICE IN TRADEMARK CASES

*Access to Pending Applications*

A proposal was published at 36 F.R. 16194 to amend § 2.27 by deleting the requirement to show good cause in order to obtain access to a pending application file.

After consideration of all comments and suggestions submitted by interested persons, the amendment as proposed is hereby adopted, subject to the following changes:

1. The title of § 2.27 is changed by inserting the word "trademark" after the word "pending."

2. In paragraph (b) of § 2.27 the word "trademark" after the word "pending" is deleted.

Access to a pending application will be granted upon oral request at the office of the Director of the Trademark Examining Operation. The files will be ordered at 2 p.m. each day and will usually be available for inspection by 3 p.m. the same day. Files must be inspected in the presence of office personnel and papers may not be removed without authorization. Copies of the contents of files may be made only in the Trademark Search Room or by the Document Service Branch. Written requests for copies of the contents of application files may be addressed to the Document Service Branch; the cost is 30 cents per page.

The procedure for access to published and registered files and terminated inter partes proceedings will remain unchanged. Access to a published application is granted by request in the Trademark Docket Section. In order to obtain access to a registered file or terminated inter partes proceeding, an order must be placed in the Trademark Docket Section. These files are available either the same day or the morning of the following day.



*Effective date.* This amendment is effective on the date of its publication in the Federal Register (12–31–71).

ROBERT GOTTSCHALK,
Dec. 21, 1971. *Acting Commisioner of Patents.*

JAMES H. WAKELIN, JR.,
*Assistant Secretary for Science and Technology.*
December 22, 1971.

The text of the revised section is as follows:

§ 2.27 *Pending trademark application index; access to applications.*

(a) An index of pending applications including the name and address of the applicant, a reproduction or description of the mark, the goods or services with which the mark is used, the class number, the dates of use and the serial number and filing date of the application will be available for public inspection as soon as practicable after filing.

(b) Access to the file of a particular pending application will be permitted prior to publication under § 2.81 upon written request.

(c) Decisions of the Commissioner and the Trademark Trial and Appeal Board in applications and proceedings relating thereto are published or available for inspection or publication.

(d) After a mark has been registered, or published for opposition, the file of the application and all proceedings relating thereto are available for public inspection and copies of the papers may be furnished upon paying the fee therefor.

[F.R. Doc. 71–19801; Filed 12–30–71; 8:45 a.m.]

*Published in F.R. 24506, Dec. 31, 1971*

[895 O.G. TM 2 (Feb. 1, 1972)]

(315) INITIAL PROCESSING OF APPLICATIONS

On February 1, 1972, the operations of the Trademark Application Section of the Patent Office will be reorganized. The purpose of the reorganization is to provide the public and applicants with more current information concerning newly filed applications.

The prompt initial processing of trademark applications is necessary in order to fulfill one of the main Patent Office functions, that of producing a record, accessible to the public, of new trademark activity to facilitate the clearance of new marks for use, determine the registrability of proposed marks, and avoid conflicts with the rights of others. In order to maintain a record of marks applied for which reflects the most current information available to the Office concerning them, the early processing of drawings in order to have them placed in the search room is considered as a first priority. The processing of these drawings includes the assignment of serial numbers, initial classification, duplication of the drawing and the forwarding of copies of the drawing to the search room. Other functions which are necessary in the processing of applications, such as the processing and mailing of filing receipts, are secondary to the processing of drawings.

In past years, there have been delays in processing applications and forwarding application drawings to the search room. These delays have varied from several weeks to several months. In view of the importance, both to applicants and the public, of recording essential information concerning newly filed applications as quickly as possible, a reorganization of the workflow in the Application Section is being effected.

There is no change in the processing of applications through the mail room and finance branch to the Application Section. However, under the new plan, upon receipt in the Trademark Application Section, all applications will be stamped with a serial number, and the drawing of the mark will be reproduced immediately and placed in the search file. This processing will occur as soon as the application files reach the Application Section. Such procedures as determining whether or not an application will receive a filing date, preparation of the file jackets, and mailing of the filing receipt will take place at a later time.

Applicants who wish to be notified promptly of the date their papers were received in the office and their serial number, may send two self-addressed postcards with their application papers. The mail room will stamp both postcards with the date of receipt and return one to the applicant; the second postcard will be stamped with the serial number and forwarded to the applicant from the Application Section. The postcards should contain the applicant's name and the trademark which is the subject of the application. When more than one set of application papers are forwarded under one cover, postcards should be attached to each set of papers for which a receipt is desired.

Under the new system of processing application papers, your particular attention is directed to the following changes as compared to the present procedure.

1. Application drawings will be placed in the public search file prior to the mailing of the filing receipt.

2. By using the postcard system described above, applicants will be notified sooner of the date of receipt of their papers and the serial number of their application. Applicants are encouraged to use the postcard system.

3. Additional papers sent in by the applicant or attorney should be identified by serial number, thereby enabling the office to process these papers quickly.

4. When an application is accompanied by a petition to the Commissioner under § 2.146, the petition will not be considered until processing by the Application Section is complete.

*Effective date.* The procedure outlined in this notice will become effective February 1, 1972.

RICHARD A. WAHL.
Jan. 11, 1972. *Acting Commissioner of Patents.*

Approved:

JAMES H. WAKELIN, JR.,
*Assistant Secretary for Science and Technology.*

[FR Doc. 72–925; Filed 1–20–72; 8:48 am]

*Published in 37 FR 942; Jan. 21, 1972*

[895 O.G. TM 193 (Feb. 22, 1972)]

(316) IDENTIFICATION OF GOODS AND SERVICES IN TRADEMARK APPLICATIONS (NOTICE PORTION ONLY)

Effective immediately, the Alphabetical List of Goods and Services which appears in the volume entitled "International Classification of Goods and Services to Which Trade Marks Are Applied" (published by the World Intellectual Property Organization (WIPO)) is adopted as a general guideline for determining the degree of particularity of identification of goods and services required in trademark applications.

Terms which appear in the International Classification listing will generally be accepted as proper identifications of goods and services. The use in the listing of more specific identifications indented below the heading term does not necessarily preclude acceptability of that heading. For example, the International Classification lists, as Item A407, *Ammunition,* followed by specific types of ammunition, as Items A408 and A409 and A410. "Ammunition" will be accepted as an identification in accordance with *In re Dynamit Nobel AG,* 169 USPQ 499 (TTAB, 1971). However, if the more specific term is used whenever appropriate, prosecution of the application may be shortened since the possibility of a requirement of greater particularity (see below) is reduced.

Greater particularity than is set forth by the terms in the International Classification listing may not be required by the Examiner in the absence of a clear need therefor. Typical illustrations of clear need can be found in the following situations:

(1) The broad term includes items which are classified in more than one class. (For example, "artists' materials.")

(2) The broad term is too indefinite for proper examination. (For example, "metallic parts.")

(3)(*a*) The identification is inconsistent with the goods or services disclosed by the specimens.

(*b*) The ordinary meaning of the identification is at variance with the goods or services disclosed by the specimens or the record. (For example, "decalcomanias" are not adequately identified by the term "publications." See also *Ex parte Consulting Publishing Co.,* 115 USPQ 240.)

(4) Wording included in the mark requires limitation of the identification. (For example, "beer" may not be included in the identification where the mark is "Newark 'Olde Town' Ale" (*Ex parte Consumers Brewing Co.*, 55 USPQ 426).)

On the other hand, some situations do *not* constitute clear need, as illustrated by the following:

(1) The existence of a decision holding that a likelihood of confusion exists in relation to items which are narrowly identified does not in itself constitute a clear need to require amendment of a broad identification to the more specific items mentioned in the decision.

(2) If the identification is understood when read in association with the title of the class in which it is placed and is otherwise satisfactory, further qualifying amendment should not be required. (For example, "mufflers" in the clothing class would not require further modification to indicate that articles of clothing are intended; similarly the term "house organ" in the class for printed publications would not need further qualification.)

In a few instances, the terminology in the International Classification of Goods and Services is not in common usage in the United States. Where this occurs, the term more commonly used in this country should be selected.

RENE D. TEGTMEYER,
*Assistant Commissioner for Appeals, Legislation and Trademarks.*

Date: Jan. 13, 1972.

[895 O.G. TM 54 (Feb. 8, 1972)]

(317) TRADEMARK OFFICE ACTIONS

Effective Apr. 1, 1972, trademark applicants or their attorneys will be provided with only one carbon copy of any office action, and the mailing of an additional carbon copy will be discontinued.

This change is consistent with the current practice in the patent examining operations and should result in greater efficiency in the preparation and mailing of office actions.

ROBERT GOTTSCHALK,
*Commissioner of Patents.*

Feb. 7, 1972.

[895 O.G. TM 238 (Feb. 29, 1972)]

(318) PETITION TO MAKE TRADEMARK APPLICATIONS SPECIAL

The practice of expediting the prosecution of new trademark applications on request of the applicant (accelerated prosecution) was rescinded, effective Aug. 1, 1971 (36 F.R. 13231, July 16, 1971; 825 O.G. 2). This action was taken after a careful study of the practice, including a recommendation of the Public Advisory Committee for Trademark Affairs that the Patent Office terminate accelerated prosecution of trademark applications. The study considered both the effect of the procedure on the workload of the Trademark Operations and the broader interest of examining trademark applications in an order which is equitable to all applicants.

Since the termination of this practice, the Office has experienced some increase in the number of petitions requesting the Commissioner to invoke his supervisory authority pursuant to Rule 2.146 in order to advance the examination of applications out of their regular order. This was to be expected since applicants who might have been able to show special circumstances entitling them to advanced examination could previously achieve this special treatment without resorting to a petition. However, some of the petitions now being received are not considered sufficient to justify the extraordinary relief of invoking the supervisory authority of the Commissioner for the purpose of advancing the applications out of their regular order.

In particular, a number of such petitions have been based on the ground that the applicant is about to embark on an advertising campaign or to commit advertising or promotional expenditures in which the mark applied for is material. Such a ground is not considered to constitute appropriate circumstances justifying the advancement of the application out of its regular turn and the petitions based on such ground have been and will continue to be denied. The principal reason for the denial is that these circumstances are applicable to a substantial portion of the trademark applications filed in the Patent Office. The supervisory authority of the Commissioner should be exercised only where an extraordinary reason for such action has been disclosed. See *Anderson & Dyer* v. *Lowry*, 89 O.G. 1861, 1899 C.D. 230, and *Wilputte* v. *Van Ackeren*, 103 USPQ 235. Thus, the extraordinary remedy of invoking the supervisory authority of the Commissioner is not considered appropriate under these circumstances.

In the interest of equitable treatment of all applicants, the policy of the Office in granting such petitions will be restricted to those cases in which particular and very special circumstances exist, such as a demonstrable possibility of loss of substantial rights, rather than circumstances which would be equally applicable to a large number of other applicants for trademark registration.

ROBERT GOTTSCHALK,
*Commissioner of Patents.*

Date: Mar. 13, 1972.

[897 O.G. TM 2 (Apr. 4, 1972)]

(319) TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

CHAPTER I—PATENT OFFICE, DEPARTMENT OF COMMERCE

PART 2—RULES OF PRACTICE IN TRADEMARK CASES

*Trademark Inter Partes Procedure*

A proposal was published at 36 F.R. 18002 to revise, amend, redesignate, or revoke §§ 2.99, 2.104, 2.112, 2.117, 2.119, 2.120, 2.122–2.125, and 2.127–2.129 of the Rules of Practice in Trademark Cases. Pursuant to the notice, written comments have been received and a public hearing was held October 22, 1971. Full consideration has been given to all matter presented and changes in the text of the original proposal have been made in view thereof.

Amendments to the present text of the rules are described below. In cases where the amendment differs from that set forth in the notice of proposed rule making, that change is also described below.

Sections 2.104 and 2.112 are being revised by adopting langage from the Federal rules requiring a short and plain statement showing how the party would be damaged. The proposal required a statement "tending to show why" the party would be damaged.

Section 2.117 is being redesignated as § 2.116 and is being revised to clarify the applicability of the Federal Rules of Civil Procedure to Patent Office proceedings.

A new § 2.117 authorizing suspension of proceedings by the Trademark Trial and Appeal Board when the parties are engaged in civil litigation which may be dispositive of the case, has been added. The new rule gives the Board discretion in matters of suspension whereas the proposed rule required a mandatory suspension.

Section 2.119 is being amended by incorporating the substance of § 1.248 in a new paragraph.

Section 2.120 is being revised to adopt the Federal Rules of Civil Procedure insofar as they are applicable to Patent Office proceedings. The numbers of the applicable Federal rules are not listed since they are incorporated by reference in § 2.120. For example, § 2.120(a)(3) as adopted does not refer to Federal Rule 32 which governs use of discovery depositions.

Section 2.120(a) sets forth restrictions on deposition procedures, discovery of a foreign party and use of discovery depositions.

Existing § 2.120(b) is being deleted and the proposed paragraph is not being adopted. Rule 36 of the Federal Rules of Civil Procedure will govern requests for admissions. A new paragraph (b) governing use of admissions and answers to interrogatories is being adopted.

Existing § 2.120 paragraphs (c) through (e) are being deleted.

Section 2.120(f) is also deleted and proposed § 2.120(c) is not being adopted. Rule 33 of the Federal Rules of Civil Procedure will govern the interrogatory practice. It is believed that the Federal rule will provide uniformity in practice and a body of law which will serve as a guideline to both attorneys and the Board. Some comments were received, however, which expressed a preference for limited interrogatories. In view of such comments, the Office plans to evaluate on a continuing basis the effectiveness and utilization of Federal Rule 33. If instances arise in which Rule 33 does not appear to be fully satisfactory, it may be that consideration will be given to a more limited practice.



A new § 2.120(c) entitled "Failure to Make Discovery: Sanctions" has been added.

Section 2,122(b) is being revised to state that before a pleaded registration will be received in evidence, two copies of the registration showing its status and title or an order for such copies must accompany the opposition or petition to cancel.

Section 2.123(c) relating to printed publications and official records, is being redesignated as § 2.122(c) and revised to incorporate § 1.282 (Patent Rule 282).

A new § 2.122(d) is being added and incorporates the substance of § 1.283 (Patent Rule 283).

Section 2.123 has been completely revised to incorporate the provisions of §§ 1.273–1.281, 1.285, and 1.286 (Patent Rules 273–281, 285, and 286). Portions of the Patent Rules which are not applicable to trademark practice have been omitted and in some instances the Federal Rules of Civil Procedure apply. A few changes have been made in this section as originally proposed; they are as follows:

The title of § 2.123 is being amended by inserting the word "trial" before "testimony."

Proposed § 2.123(e)(5) is being revised to permit a witness to sign a deposition before any officer authorized to administer oaths.

Proposed § 2.123(f)(5) is being deleted and § 2.123(f)(6) is being redesignated as § 2.123(f)(5).

Section 2.124(b) is being amended to require testimony by written questions to be prepared with each answer preceded by its corresponding question.

Section 2.124a is being revoked. Testimony in foreign countries will be covered in § 2.124(d) which provides that such testimony will be taken by depositions upon written questions.

Reference numbers in § 2.125 have been changed and the reference to "the original transcript" in the second sentence of paragraph (a) is being changed to read "the certified transcript."

Section 2.127(a) provides that the Trademark Trial and Appeal Board may treat a motion as conceded when a party fails to file a brief in opposition to the motion. Sections 2.127 (b) and 2.129(c) are amended by adding a sentence requiring briefs in opposition to petitions for reconsideration to be filed within 15 days.

Section 2.128(b) includes certain changes with respect to the form required for briefs.

In consideration of the comments and pursuant to the authority contained in section 41 of the Act of July 5, 1946 (60 Stat. 440; 15 U.S.C. 1123) and section 6 of the Act of July 19, 1952 (66 Stat. 793, 35 U.S.C. 6), Part 2 of Chapter I of Title 37 of the Code of Federal Regulations is hereby amended as follows:

1. In § 2.99, a new paragraph (d) is added and reads as follows:

§ 2.99 *Application to register as concurrent user.*

* * * * *

(d) When concurrent registration is sought on the basis of a court determination of the rights of the parties to use the marks in commerce, the application shall be examined by the Examiner of Trademarks. If the applicant is entitled to registration subject only to the concurrent lawful use of a party to the court proceeding, the Examiner of Trademarks may publish or allow the application, provided the court decree specifies the rights of the parties.

2. Section 2.104 is revised to read as follows:

§ 2.104 *Contents of opposition.*

The opposition must set forth a short and plain statement showing how the opposer would be damaged by the registration of the opposed mark and state the grounds for opposition. A duplicate copy of the opposition including exhibits shall be filed.

3. Section 2.112 is revised to read as follows:

§ 2.112 *Petition for cancellation.*

The petition to cancel, which must be verified, or include a declaration in accordance with § 2.20, must set forth a short and plain statement showing how the petitioner is or will be damaged by the registration, state the grounds for cancellation, and indicate the respondent party to whom notice shall be sent. A duplicate copy of the petition, including exhibits, shall be filed with the petition. Applications to cancel different registrations owned by the same party may be joined in one petition when appropriate, but the fee for each application to cancel a registration must accompany the petition.

4. Section 2.117 is redesignated as § 2.116 and paragraph (a) is revised as amended, § 2.116 reads as follows:

§ 2.116 *Federal Rules of Civil Procedure.*

(a) Except as otherwise provided, and wherever applicable and appropriate, procedure and practice in inter partes proceedings shall be governed by the Federal Rules of Civil Procedure.

* * * * *

5. A new § 2.117 is added and reads as follows:

§ 2.117 *Suspension of proceedings.*

Whenever it shall come to the attention of the Trademark Trial and Appeal Board that parties to a pending case are engaged in a civil action which may be dispositive of the case, proceedings before the Board may be suspended until termination of the civil action.

6. Section 2.119 is amended as follows: Paragraph (a) is revised, paragraph (b) is redesignated as paragraph (c), and a new paragraph (b) is added. As amended, § 2.119 reads as follows:

§ 2.119 *Service of papers.*

(a) Every paper filed in the Patent Office in inter partes cases, including notice of appeal, must be served upon the other parties except the notice of interference (§ 2.93), the notice of opposition (§ 2.105), the petition for cancellation (§ 2.113), and the notice of a concurrent use proceeding (§ 2.99), which are mailed by the Patent Office. Proof of such service must be made before the paper will be considered by the Office. A statement signed by the attorney or agent, attached to or appearing on the original paper when filed, clearly stating the date and manner in which service was made will be accepted as prima facie proof of service.

(b) Service of papers must be on the attorney or agent of the party if there be such or on the party if there is no attorney or agent, and may be made in either of the following ways: (1) by delivering a copy of the paper to the person served; (2) by leaving a copy at the usual place of business of the person served, with someone in his employment; (3) when the person served has no usual place of business, by leaving a copy at his residence, with a member of his family over 14 years of age and of discretion; (4) transmission by first-class mail, which may also be certified or registered. Whenever it shall be satisfactorily shown to the Commissioner that none of the above modes of obtaining service or serving the paper is practicable, service may be by notice published in the OFFICIAL GAZETTE.

(c) When service is made by mail, the date of mailing will be considered the date of service. Whenever a party is required to take some action within a prescribed period after the service of a paper upon him by another party and the paper is served by mail, 5 days shall be added to the prescribed period.

7. Section 2.120 is revised to read as follows:

§ 2.120 *Discovery procedure.*

The provisions of the Federal Rules of Civil Procedure relating to discovery shall apply in inter partes trademark cases except as otherwise provided in this section. The Trademark Trial and Appeal Board will specify the closing date for the taking of discovery.

(a) *Depositions for discovery*—(1) *Procedure.* The deposition of a person shall be taken in the Federal judicial district where he resides or is regularly employed. The responsibility for securing the attendance of a propose deponent, other than a party or anyone who at the time set for the taking of the deposition was an officer, director, or managing agent of a party, or a person designated under Rule 30(b)(6) or 31(a) of the Federal Rules of Civil Procedure to testify on behalf of a party, rests wholly with the interested party. See 35 U.S.C. 24.

(2) *Discovery of foreign party.* The discovery deposition of a party or an officer, director, or managing agent of a

party, or a person designated under Rule 30(b)(6) or 31(a) of the Federal Rules of Procedure to testify on behalf of a party, domiciled in a foreign country may be taken in the manner prescribed by § 2.124.

(3) *Use of discovery depositions.* A discovery deposition shall not be considered as part of the record in the case unless the party offering the deposition, or any part thereof, files the same before the close of his testimony period (testimony-in-chief or rebuttal as appropriate) and also files a notice of reliance thereon. A discovery deposition should not be filed in the Patent Office in the absence of a notice of reliance. Objections, including any made during the examination, will be considered only if made or renewed at the hearing.

(b) *Use of admission or answer to interrogatory.* No admission or answer to an interrogatory shall be considered as part of the record in the case unless the party propounding the request for admission or interrogatory files, before the close of his testimony period (testimony-in-chief or rebuttal, as appropriate), a copy of the admission and the request therefor and/or a copy of the interrogatory and its answer and also files a notice of reliance thereon.

(c) *Failure to make discovery: Sanctions.* If any party fails or refuses to answer any proper question in taking discovery depositions or fails or refuses to answer any proper question propounded by interrogatories or fails or refuses to comply with a request to produce and permit the inspection and copying of designated things, the party seeking discovery may apply to the Trademark Trial and Appeal Board for an order compelling discovery. If a party or an officer, director, or managing agent of a party, or a person designated under Rule 30(b)(6) or 31(a) of the Federal Rules of Civil Procedure to testify on behalf of a party, fails to obey an order to provide or permit discovery, the Trademark Trial and Appeal Board may strike out all or any part of any pleading of that party, dismiss the action or proceeding, or deny any part thereof, enter judgment as by default against that party or take any such other action as may be deemed appropriate.

8. In § 2.122, paragraph (b) is revised and new paragraphs (c) and (d) are added. As amended, those paragraphs of § 2.122 read as follows:

§ 2.122 *Matters in evidence.*

* * * * *

(b) A registration of the opposer or petitioner pleaded in an opposition or petition to cancel will be received in evidence and made part of the record if two copies showing status and title of the printed registration or an order for such copies accompany the opposition or petition.

(c) Printed publications, such as books and periodicals, available to the general public in libraries or of general circulation, and official records, if competent evidence and pertinent to the issue, may be introduced in evidence by filing in the Patent Office a notice to that effect during the period for the taking of the testimony of the party (during the period for taking of testimony-in-chief if such matters are not in rebuttal), specifying the record or the printed publication, the page or pages to be used, indicating generally its relevance, and accompanied by the record or authenticated copy or the printed publication or a copy. When a copy of an official record of the Patent Office is filed, it need not be a certified copy. The notice and copy of the record or publication must be served on each of the other parties.

(d) Upon motion duly made and granted, testimony taken in another proceeding, or testimony taken in a suit between the same parties or those in interest, may be used in a proceeding, so far as relevant and material, subject, however, to the right of any contesting party to recall or demand the recall of witnesses whose testimony has been taken, and to take other testimony in rebuttal of the testimony.

§ 2.123 *Trial testimony in inter partes cases.*

(a) Manner of taking testimony: Testimony of witnesses in inter partes cases may be taken (1) by depositions upon oral examination as provided by this section, or (2) by depositions upon written questions in accordance with the requirements of this section and § 2.124.

(b) Stipulations: If the parties so stipulate in writing, depositions may be taken before any person authorized to administer oaths, at any place, upon any notice, and in any manner and when so taken may be used like other depositions. By agreement of the parties, the testimony of any witness or witnesses of any party, may be submitted in the form of an affidavit by such witness or witnesses. The parties may stipulate what a particular witness would testify to if called, or the facts in the case of any party may be stipulated.

(c) Notice of examination of witnesses: Before the depositions of witnesses shall be taken by a party, due notice in writing shall be given to the opposing party or parties, as provided in § 2.119(b), of the time when and place where the depositions will be taken, of the cause or matter in which they are to be used, and the name and address of each witness to be examined; if the name of a witness is not known, a general description sufficient to identify him or the particular class or group to which he belongs, together with a satisfactory explanation, may be given instead. Neither party shall take depositions in more than one place at the same time, nor so nearly at the same time that reasonable opportunity for travel from one place of examination to the other is not available.

(d) Persons before whom depositions may be taken: Depositions may be taken before persons designated by Rule 28 of the Federal Rules of Civil Procedure.

(e) Examination of witnesses:

(1) Each witness before testifying shall be duly sworn according to law by the officer before whom his deposition is to be taken.

(2) The deposition shall be taken in answer to questions, with the questions and answers recorded in their regular order by the officer, or by some other person (who shall be subject to the provisions of Rule 28 of the Federal Rules of Civil Procedure) in the presence of the officer except when his presence is waived on the record by agreement of the parties. The Testimony shall be taken stenographically and transcribed, unless the parties present agree otherwise. In the absence of all opposing parties and their attorneys or agents, depositions may be taken in longhand, typewriting, or stenographically.

(3) The opposing party shall have full opportunity to cross-examine the witnesses. If the opposing party shall attend the examination of witnesses not named in the notice, and shall either cross-examine such witnesses or fail to object to their examination, he shall be deemed to have waived his right to object to such examination for want of notice.

(4) All objections made at the time of the examination to the qualifications of the officer taking the deposition, or to the manner of taking it, or to the evidence presented, or to the conduct of any party, and any other objection to the proceedings, shall be noted by the officer upon the deposition. Evidence objected to shall be taken subject to the objections.

(5) When the deposition has been transcribed, the deposition shall be carefully read over by the witness or by the officer to him, and shall then be signed by the witness in the presence of any officer authorized to administer oaths unless the reading and the signature be waived on the record by agreement of all parties.

(f) Certification and filing by officer. The officer shall annex to the deposition his certificate showing:

(1) Due administration of the oath by the officer to the witness before the commencement of his deposition;

(2) The name of the person by whom the deposition was taken down, and whether, if not taken down by the officer, it was taken down in his presence;

(3) The presence or absence of the adverse party;

(4) The place, day, and hour of commencing and taking the deposition;

(5) The fact that the officer was not disqualified as specified in Rule 28 of the Federal Rules of Civil Procedure.

If any of the foregoing requirements are waived, the certificate shall so state. The officer shall sign the certificate and affix thereto his seal of office, if he has such a seal. Unless waived on the record by agreement, he shall then, without delay, securely seal in an envelope all the evidence, notices, and paper exhibits, inscribed upon the envelope a certificate giving the number and title of the case, the name of each witness, and the date of sealing, address the package, and forward the same to the Commissioner of Patents. If the weight or bulk of an exhibit shall exclude it from the envelope, it shall, unless waived on the record by agreement of all parties, be authenticated by the officer and transmitted in a separate package marked and addressed as provided in this section.

(g) Form of deposition:

(1) The pages of each deposition must be numbered consecutively, and the name of the witness plainly and conspicuously written at the top of each page. The deposition may be written on legal-size or letter-size paper, with a wide margin on the left hand side of the page, and with the writing on one side only of the sheet. The questions propounded to each witness must be consecutively numbered and each question must be followed by its answer.

(2) Exhibits must be numbered or lettered consecutively and each must be marked with the number and title of the case and the name of the party offering the exhibit. Entry and consideration may be refused to improperly marked exhibits.

(h) Depositions must be filed. All depositions which are taken must be duly filed in the Patent Office. On refusal to file, the Office at its discretion will not further hear or consider the contestant with whom the refusal lies; and the Office may, at its discretion, receive and consider a copy of the withheld deposition, attested by such evidence as is procurable.

(i) Inspection of depositions: After the depositions are filed in the Office, they may be inspected by any party to the case, but they cannot be withdrawn for the purpose of printing. They may be printed by someone specially designated by the Office for that purpose, under proper restrictions.

(j) Effect of errors and irregularities in depositions: Notice will not be taken of merely formal or technical objections which shall not appear to have wrought a substantial injury to the party raising them; and in the case of such injury it must be made to appear that, as soon as the party became aware of the ground of objection, he gave notice thereof. Rule 32(d)(1), (2), and (3)(a) and (b) of the Federal Rules of Civil Procedure shall apply to errors and irregularities in depositions.

(k) Objections to admissibility: Subject to the provisions of paragraph (j) of this section, objection may be made to receiving in evidence any deposition or part thereof, or any other evidence, for any reason which would require the exclusion of the evidence according to the established rules of evidence, which will be applied strictly by the Office.

(l) Evidence not considered: Evidence not obtained and filed in compliance with these sections will not be considered.

10. In § 2.124, paragraphs (a) and (b) are revised and a new paragraph (d) is added. As amended, § 2.124 reads as follows:

§ 2.124 *Testimony by depositions upon written questions.*

(a) A party may take the testimony of a witness by written questions to be propounded by an officer before whom depositions may be taken. See Rule 28 of the Federal Rules of Civil Procedure. The questions shall be served upon the other party within 10 days after the opening date set for taking the testimony of the party submitting the questions, together with a notice stating the name and address of the person who is to answer them and the name or descriptive title and address of the officer before whom the deposition is to be taken. Within 10 days thereafter, a party so served may serve cross questions upon the party proposing to take the deposition. Within 5 days thereafter, the latter may serve redirect questions upon a party who has served cross questions. Within 3 days after being served with redirect questions a party may serve recross questions upon the party proposing to take the depositions. Written objections to questions may be served on the party propounding the questions, and in response thereto substitute questions may be served, within 3 days.

(b) A copy of the notice and copies of all questions served shall be delivered by the party taking the testimony to the officer designated in the notice, who shall proceed to take the testimony of the witness in response to the questions and to prepare each answer immediately preceded by its corresponding question, then certify, and file the deposition, attaching thereto the copy of the notice and the questions received by him. Such depositions are subject to the same rulings for filing and serving copies as other depositions.

* * * * *

(d) Testimony in foreign countries shall be taken only by depositions upon written questions unless the parties stipulate otherwise in writing. Rule 28(b) of the Federal Rules of Civil Procedure shall apply to the taking of testimony in foreign countries.

§ 2.124a [*Revoked*]

11. Section 2.124a is revoked.

12. Section 2.125 is revised to read as follows:

§ 2.125 *Copies of testimony.*

(a) One copy of the transcript of testimony (taken in accordance with § 2.123(e) through (h) or § 2.124), together with copies of documentary exhibits, shall be served on each adverse party within 30 days after completion of the taking of such testimony. The certified transcript and exhibits and one copy of the transcript shall be filed in the Patent Office as promptly as possible.

(b) Each transcript and the copies thereof shall comply with § 2.123(g) as to arrangement, indexing and form.

13. In § 2.127, paragraphs (a) and (b) are revised. As amended, § 2.127 reads as follows:

§ 2.127 *Motions.*

(a) Motions shall be made in writing and shall contain a full statement of the grounds therefor. Any brief or memorandum in support of a motion shall accompany or be embodied in the motion. Briefs in opposition to a motion shall be filed within 15 days from the date of service of the motion unless another time is specified by the Trademark Trial and Appeal Board or the time is extended on request. Where a party fails to file a brief in opposition to a motion, the Trademark Trial and Appeal Board may treat the motion as conceded. Oral hearings will not be held on motions except on order of the Trademark Trial and Appeal Board.

(b) Any petition for reconsideration or modification of a decision, if it is not appealable, must be filed within 10 days after the decision or, if the decision is appealable, within the time specified in § 2.129(c). Any brief in opposition shall be filed within 15 days after service of the petition.

14. In § 2.128, paragraph (b) is revised. As amended, § 2.128 reads as follows:

§ 2.128 *Final hearings and briefs.*

(b) Briefs shall be submitted in typewritten or printed form, double spaced on letter or legal size paper. Without leave of the Trademark Trial and Appeal Board, no brief shall contain more than 50 pages of argument and, in case of the reply brief, the entire brief shall not exceed 25 pages. Each brief shall contain an alphabetical index of cases therein.

* * * * *

15. In § 2.129, paragraph (c) is revised. As amended, § 2.129 reads as follows:

§ 2.129 *Oral argument.*

* * * * *

(c) Any petition for rehearing, reconsideration, or modification of a decision must be filed within 30 days from the date thereof. Any brief in opposition shall be filed within 15 days after service of the petition.

*Effective date.* This revision shall be applicable to all proceedings instituted on or after July 1, 1972.

Date: April 5, 1972.

ROBERT GOTTSCHALK,
*Commissioner of Patents.*

Approved: April 11, 1972.

JAMES H. WAKELIN, JR.,
*Assistant Secretary for Science and Technology*

[FR Doc. 72-5830; Filed 4-17-72; 8:52 am]

*Published in 37 F.R. 7605; Apr. 18, 1972*

[898 O.G. TM 170 (May 16, 1972)]

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(320) BULKY SPECIMENS IN TRADEMARK AND SERVICE MARK APPLICATIONS

Many of the applications which are being received in the Trademark Application Section contain specimens which are too bulky to be placed inside the application file. The handling and storing of these bulky specimens is taking more time and space than can be justified. The trademark rules do not provide for filing bulky specimens, and applicants and attorneys are requested to adhere to the precise provisions of the rules.

Trademark Rule 2.56 requires that specimens be of a material suitable for being placed in a file, be capable of being arranged flat (preferably not more than one inch in thickness),

and not be larger than 8½ x 13 inches. If specimens of this character cannot be furnished, Trademark Rule 2.57 provides that facsimiles in the nature of photographs or similar reproductions be filed. Facsimiles must not be larger than 8½ x 13 inches and should clearly and legibly show the mark and all matter used in connection therewith.

In order to reduce the quantity of bulky specimens and to avoid the possibility of delay in examination due to bulky specimens, the following procedure has been adopted:

When specimens cannot be fitted into the file, the Trademark Application Section forwards the specimens to the Examiner separate from the file and attaches to the file two copies of a form which is a pre-examination memorandum pointing out that the bulky specimens are not acceptable and that proper specimens should be filed promptly. Upon receipt of the file and the forms, the Examiner mails one copy of the form to the applicant, or applicant's attorney if there be one, and places the other copy in the file. The Examiner will then destroy four of the bulky specimens, retaining one until proper specimens or facsimiles are received. Failure to furnish proper specimens as requested in the memorandum may delay the process of examination of the application.

ROBERT GOTTSCHALK,
*Commissioner of Patents.*

June 16, 1972.

[900 O.G. TM 176 (July 25, 1972)]

(321) TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

CHAPTER I—PATENT OFFICE, DEPARTMENT OF COMMERCE

PART 2—RULES OF PRACTICE IN TRADEMARK CASES

*Petition for Review of Interlocutory Decision*

The Commissioner of Patents is amending § 2.127(b) of the rules of practice to extend the time for filing a petition for reconsideration or modification of an interlocutory decision. The existing rule requires that such petition be filed within 10 days from the date of the decision. Recent experience has demonstrated that this time period is insufficient in view of the possibility of delays in communicating the decision to the concerned parties. Accordingly, the rule is amended to permit filing of a petition within 30 days from the date of the decision. Since this change imposes no burden on any person, notice and public procedures thereon are deemed unnecessary.

Therefore, pursuant to the authority contained in section 41 of the Act of July 5, 1946 (60 Stat. 440; 15 U.S.C. 1123) and section 6 of the Act of July 19, 1952 (66 Stat. 793; 35 U.S.C. 6), Part 2 of Chapter I of Title 37 of the Code of Federal Regulations is hereby amended as follows:

§ 2.127 *Motions.*

• • • • • •

(b) Any petition for reconsideration or modification of a decision must be filed within 30 days from the date thereof. Any brief in opposition shall be filed within 15 days after service of the petition.

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*Effective date.* This amendment shall be applicable to all decision dated on or after September 1, 1972.

ROBERT GOTTSCHALK,
*Commissioner of Patents.*

July 18, 1972.

Approved: July 21, 1972.

JAMES H. WAKELIN, Jr.,
*Assistant Secretary for Science and Technology.*

[FR Doc. 72-11883; Filed 7-28-72; 8:54 am]

*Published in 37 F.R. 15304; July 29, 1972*

[902 O.G. TM 2 (Sept. 5, 1972)]

(322) TRADEMARKS, TRADE NAMES, AND COPYRIGHTS

[19 CFR Part 133]

***Filing of Increased Number of Copies of Documents With Application To Record Trademark or Copyright***

Notice is hereby given that under the authority of R.S. 251, as amended (19 U.S.C. 66), and section 624, 46 Stat. 759 (19 U.S.C. 1624), it is proposed to amend §§ 133.3 and 133.33 of the Customs regulations to provide that the number of copies of documents required by the Bureau of Customs to be filed with an application to record a copyright or trademark is increased from 700 to 1,000.

Accordingly, it is proposed to amend paragraph (a) of § 133.3, and paragraph (a)(2) of § 133.33 to read as follows:

§ 133.3 *Documents and fee to accompany application.*

(a) *Documents.* The application shall be accompanied by:

(1) A status copy of the certificate of registration certified by the U.S. Patent Office showing title to be presently in the name of the applicant; and

(2) One thousand copies of this certificate, or of a U.S. Patent Office facsimile. The copies may be reproduced privately and shall be on paper approximately 8½ x 11 in size. If the certificate consists of two or more pages, the copies may be reproduced on both sides of the paper.

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§ 133.33 *Documents and fee to accompany application.*

(a) • • •

• • • • • •

(2) One thousand 8 x 10½ photographic or other likenesses reproduced on paper of any three-dimensional work, design, print, label, or other work not readily identifiable by title and author. An application shall be excepted from this requirement if it covers a work such as a book, magazine, periodical, or similar copyrighted matter readily identifiable by title and author. One thousand likenesses of a component part of a copyrighted work, together with the name or title, if any, by which the part so depicted is identifiable, may accompany an application covering an entire copyrighted work.

• • • • • •

Consideration will be given to relevant data, views, or arguments pertaining to the proposed amendment which are submitted to the Commissioner of Customs, Attention: Regulations Division, Washington, D.C. 20226, and received no later than March 19, 1973.

Written material or suggestions submitted will be available for public inspection in accordance with § 103.0(b) of the Customs regulations (19 CFR 103(b)), at the Regulations Division, Bureau of Customs, Washington, D.C., during regular business hours.

Approved: Feb. 8, 1973.

EDWARD L. MORGAN,
*Assistant Secretary of the Treasury.*

[SEAL]

EDWIN F. RAINS,
*Acting Commissioner of Customs.*

[FR Doc. 73-3039; Filed 2-14-73; 8:45 am]

*Published in 38 F.R. 4515-4516; Feb. 15, 1973*

[908 O.G. TM 136 (Mar. 20, 1973)]

(323) TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

CHAPTER I—PATENT OFFICE, DEPARTMENT OF COMMERCE

PART 2—RULES OF PRACTICE IN TRADEMARK CASES

*Abandonment of Application*

A proposal was published at 37 FR 18391 to revise § 2.68. Full consideration has been given to all comments received pursuant to this notice and changes in the text of the original proposal have been made in view thereof.

The revision of § 2.68 permits an attorney or other person representing the applicant to abandon or withdraw an application. Prior to this revision, the applicant was required to sign the statement of abandonment. The rule is further revised by the addition of a sentence which indicates that in a Patent Office proceeding, abandonment of the application does not affect any rights which the applicant may have in the mark. The word "withdrawal" which has been added to the rule is synonymous with the word "abandonment" in the context of this rule and may be used by those who prefer to do so.

*Effective date.* This revision shall become effective on March 27, 1973.



Part 2 of Chapter I of Title 37 of the Code of Federal Regulations is amended by revising § 2.68 to read as follows:

§ 2.68 *Express abandonment (withdrawal) of application.*

An application may be expressly abandoned by filing in the Patent Office a written statement of abandonment or withdrawal of the application signed by the applicant, or the attorney or other person representing the applicant. The fact that an application has been expressly abandoned shall not, in any proceeding in the Patent Office, affect any rights that the applicant may have in the mark which is the subject of the abandoned application.

Dated: Mar. 15, 1973.

ROBERT GOTTSCHALK,
*Commissioner of Patents.*

Approved:

RICHARD O. SIMPSON,
*Acting Assistant Secretary for Science and Technology.*

[FR Doc. 73-5768; Filed 3-26-73; 8:45 am]

*Published in 38 F.R. 7985; Mar. 27, 1973*

[909 O.G. TM 254 (Apr. 24, 1973)]

(324) TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

CHAPTER I—PATENT OFFICE, DEPARTMENT OF COMMERCE

PARTS 2 AND 6—RULES OF PRACTICE IN TRADEMARK CASES

*International Trademark Classification*

A proposal was published at 37 F.R. 6404 to revise § 6.1 of the Rules of Practice in Trademark Cases. The Patent Office proposed to establish the "International Classification of Goods and Services to Which Trademarks Are Applied" (the subject of the "Nice Agreement Concerning the International Classification of Goods and Services for the Purposes of the Registration of Marks" of 1957, as revised at Stockholm on July 14, 1967) as the primary classification of goods and services for registration of trademarks and service marks. Pursuant to the Notice, written comments have been received, and a public hearing was held on June 14, 1972. Full consideration has been given to all matter presented, and changes in the text of the original proposal have been made in view thereof. It has been determined that adoption of the international classification system is desirable.

The Patent Office has studied the international classification and, since Mar. 5, 1968, has indicated the appropriate international class in all publications and on all issued registrations and renewals as a subsidiary classification. Based on this experience and the comments received, it is now believed that adoption of the international schedule as the primary classification system is desirable. The international system is easier to administer because of fewer classes of goods and the availability of an alphabetical listing of goods and services.

The Nice Agreement provides for an International Committee of Experts whose objective is to keep the classification current. The classification of specific goods and services is set forth in the Alphabetical List entitled "International Classification of Goods and Services to Which Trademarks Are Applied" (published by the World Intellectual Property Organization). In addition, the International Trademark Classification List contains the names of the classes setting forth the basic contents of each class. The Alphabetical List also comprises explanatory notes which serve as guidelines for determining the appropriate international class for a specific product or service.

The alphabetical listing within the International Trademark Classification Manual is currently used by the Office as a guideline for determining the degree of particularity of identification of goods. See "Identification of Goods and Services in Trademark Applications," 36 F.R. 13232; July 16, 1971.

Applications for registrations filed on or after Sept. 1, 1973, and registrations issuing thereon, will be classified according to the international classification set forth in the new § 6.1. Accordingly, the international classification is adopted under Section 30 of the Trademark Act for all purposes under the statute and rules; and, therefore, will be the criterion for determining, inter alia, fees.

Applications for the registration of marks filed on or before Aug. 31, 1973, appeals or petitions to revive or oppositions filed in connection with said applications, and affidavits, renewals and petitions for cancellation filed in connection with registrations issuing thereon, will continue to be processed under the classification system existing at the time the mark was registered.

All applications which are published and registrations which are issued will carry both the appropriate international classification and existing U.S. classification number.

An insufficient fee, in connection with an appeal or opposition on any application or in connection with an affidavit or renewal filed in connection with any registration, will not render the same unacceptable, if the proper fee is submitted within a time limit set forth in a notification of the defect, providing the proper fee for at least one class has been originally submitted within the applicable time limit. This will be the case even if the full fee is not received within the sixth year in the case of an affidavit filed under Section 8 or before the end of the twentieth year, including the grace period, in the case of renewal applications, or within the six-month statutory response period in the case of an appeal, or within the thirty-day opposition period, or any extension thereof in the case of the filing of an opposition.

The existing classification system will continue to be used for searching registered and pending marks until all documents in the search file are organized on the basis of the international system of classification. Until this changeover is effected, the U.S. class designation will continue to be printed on all published applications and registrations issued under the existing or the international classification system to facilitate searching on the basis of the existing U.S. system of classification.

Until all applications filed on or before Aug. 31, 1973, have been disposed of, the trademark sections of the OFFICIAL GAZETTE, which are organized by class, will include two sections: one for applications published or registrations issued on the basis of applications filed on or before Aug. 31, 1973, organized by class according to the U.S. schedule of classes; the other section for applications published or registrations issued on the basis of applications filed on or after Sept. 1, 1973, organized by class according to the new international schedule.

Certification marks and collective membership marks will continue to be classified as set forth in redesignated §§ 6.3 and 6.4.

Efforts will be made to have the International Trademark Classification List printed by the Government Printing Office or otherwise assure the availability of the List from local sources. Notification will appear in the OFFICIAL GAZETTE when the List is available from local sources or the Government Printing Office.

The English edition of the "International Classification of Goods and Services to Which Trademarks Are Applied" can presently be ordered from:

Sales Branch, The Patent Office, Block C
Station Square House, St. Mary Cray
Orpington, Kent, England

Certain modifications and additions to the international trademark classification have been published as supplements and are also available from the British Office. In addition, and inasmuch as the World Intellectual Property Organization (WIPO) has issued the List in several languages, it is anticipated that an English version will be published by that organization.

We have been advised by the Patent Office of the United Kingdom that the only acceptable methods of payment for the International Trademark Classification List are by International Postal Money Order or by banker's draft payable in sterling and drawn on a bank in the United Kingdom. Orders for the international classification and for the supplements can be made by remittance in the following amount(s):

| | | |
|---|---|---|
| International Trademark Classification | | 50 pence |
| Nov. 15, 1967, supplement | | 5 pence |
| Mar. 18, 1970, supplement | | Free |
| Mar. 3, 1971, supplement | | 10 pence |
| Total cost (including postage by surface mail) | | 65 pence |
| Additional charge for postage by air mail | 1 pound | 55 pence |
| Total cost by airmail | 2 pounds | 20 pence |

*Effective Date.*—This revision shall become effective as of Sept. 1, 1973. In consideration of the comments and pursuant to the authority contained in section 6 of the Act of July 19, 1952 (66 Stat. 792, 35 U.S.C. 6), as amended Oct. 5, 1971 (85 Stat. 364), and in section 30 of the Trademark Act of 1946 as amended (Oct. 9, 1962, 76 Stat. 773, 15 U.S.C. 1112), Parts 2 and 6 of Chapter I of Title 37 of the Code of Federal Regulations are hereby amended as follows:

1. Section 2.85 is revised to read as follows:

§ 2.85. *Classification Schedules*

(a) Section 6.1 of Part 6 of this chapter specifies the system of classification for goods and services which applies for all statutory purposes to trademark application filed in the Patent Office on or after Sept. 1, 1973, and to registrations issued on the basis of such applications. It shall not apply to applications filed on or before Aug. 31, 1973, nor to registrations issued on the basis of such applications.

(b) With respect to applications filed on or before Aug. 31, 1973, and registrations issued thereon, including older registrations issued prior to that date, the classification system under which the registration was granted will govern for all statutory purposes, including, inter alia, the filing of petitions to revive, appeals, oppositions, petitions for cancellation, affidavits under Section 8 and Renewals, even though such petitions to revive, appeals, etc., are filed on or after Sept. 1, 1973.

(c) Section 6.2 of Part 6 of this chapter specifies the system of classification for goods and services which applies for all statutory purposes to all trademark applications filed in the Patent Office on or before Aug. 31, 1973, and to registrations issued on the basis of such applications, except when the registration may have been issued under a classification system prior to that set forth in § 6.2. Moreover, this classification will also be utilized for facilitating trademark searches until all pending and registered marks in the search file are organized on the basis of the international system of classification.

(d) Renewals filed on registrations issued under a prior classification system will be processed on the basis of that system.

(e) Where the amount of the fee received on filing an appeal or petition to revive in connection with an application or on filing an affidavit under § 8(a) or § 8(b) or on an application for renewal or in connection with an opposition or petition for cancellation is sufficient for at least one class of goods or services but is less than the required amount because a multiple class application or registration is involved, the appeal or petition to revive or the affidavit or renewal application or opposition or petition for cancellation will not be refused on the ground that the amount of the fee was insufficient if the required additional amount of the fee is received in the Patent Office within the time limit set forth in the notification of this defect by the Examiner.

(f) Sections 6.3 and 6.4 specify the system of classification which applies to certification marks and collective membership marks.

(g) Classification schedules shall not limit or extend the applicant's rights.

2. Sections 6.1, 6.2 and 6.3 are redesignated as §§ 6.2, 6.3 and 6.4, respectively.

3. A new § 6.1 is added and reads as follows:

§ 6.1. *International schedule of classes of goods and services*

Goods

1. Chemical products used in industry, science, photography, agriculture, horticulture, forestry; artificial and synthetic resins; plastics in the form of powders, liquids or pastes, for industrial use; manures (natural and artificial); fire extinguishing compositions; tempering substances and chemical preparations for soldering; chemical substances for preserving foodstuffs; tanning substances; adhesive substances used in industry.
2. Paints, varnishes, lacquers; preservatives against rust and against deterioriation of wood; colouring matters, dyestuffs; mordants; natural resins; metals in foil and powder form for painters and decorators.
3. Bleaching preparations and other substances for laundry use; cleaning, polishing, scouring and abrasive preparations; soaps; perfumery, essential oils, cosmetics, hair lotions; dentifrices.
4. Industrial oils and greases (other than oils and fats and essential oils); lubricants; dust laying and absorbing compositions; fuels (including motor spirit) and illuminants; candles, tapers, night lights and wicks.
5. Pharmaceutical, veterinary, and sanitary substances; infants' and invalids' foods; plasters, material for bandaging; material for stopping teeth, dental wax, disinfectants; preparations for killing weeds and destroying vermin.
6. Unwrought and partly wrought common metals and their alloys; anchors, anvils, bells, rolled and cast building materials; rails and other metallic materials for railway tracks; chains (except driving chains for vehicles); cables and wires (nonelectric); locksmiths' work; metallic pipes and tubes; safes and cash boxes; steel balls; horseshoes; nails and screws; other goods in nonprecious metal not included in other classes; ores.
7. Machines and machine tools; motors (except for land vehicles); machine couplings and belting (except for land vehicles); large size agricultural implements; incubators.
8. Hand tools and instruments; cutlery, forks, and spoons; side arms.
9. Scientific, nautical, surveying and electrical apparatus and instruments (including wireless), photographic, cinematographic, optical, weighing, measuring, signalling, checking (supervision), life-saving and teaching apparatus and instruments; coin or counterfreed apparatus; talking machines; cash registers; calculating machines, fire extinguishing apparatus.
10. Surgical, medical, dental and veterinary instruments and apparatus (including artificial limbs, eyes and teeth).
11. Installations for lighting, heating, steam generating, cooking, refrigerating, drying, ventilating, water supply and sanitary purposes.
12. Vehicles; apparatus for locomotion by land, air or water.
13. Firearms; ammunition and projectiles; explosive substances; fireworks.
14. Precious metals and their alloys and goods in precious metals or coated therewith (except cutlery, forks and spoons); jewellery, precious stones, horological and other chronometric instruments.
15. Musical instruments (other than talking machines and wireless apparatus).
16. Paper and paper articles, cardboard and cardboard articles; printed matter, newspapers and periodicals, books; bookbinding material; photographs; stationery, adhesive materials (stationery); artists' materials; paint brushes; typewriters and office requisites (other than furniture); instructional and teaching material (other than apparatus); playing cards; printers' type and clichés (stereotype).
17. Gutta percha, india rubber, balata and substitutes, articles made from these substances and not included in other classes; plastics in the form of sheets, blocks and rods, being for use in manufacture; materials for packing, stopping or insulating; asbestos, mica and their products; hose pipes (nonmetallic).
18. Leather and imitations of leather, and articles made from these materials and not included in other classes; skins, hides; trunks and travelling bags; umbrellas, parasols and walking sticks; whips, harness and saddlery.
19. Building materials, natural and artificial stone, cement, lime, mortar, plaster and gravel; pipes of earthenware or cement; roadmaking materials; asphalt, pitch and bitumen; portable buildings; stone monuments; chimney pots.
20. Furniture, mirrors, picture frames; articles (not included in other classes) of wood, cork, reeds, cane, wicker, horn bone, ivory, whalebone, shell, amber, mother-of-pearl, meerschaum, celluloid, substitutes for all these materials, or of plastics.
21. Small domestic utensils and containers (not of precious metals, or coated therewith); combs and sponges; brushes (other than paint brushes); brushmaking materials; instruments and material for cleaning purposes, steel wool; unworked or semi-worked glass (excluding glass used in building); glassware, porcelain and earthenware, not included in other classes.
22. Ropes, string, nets, tents, awnings, tarpaulins, sails, sacks; padding and stuffing materials (hair, kapok, feathers, seaweed, etc.); raw fibrous textile materials.
23. Yarns, threads.
24. Tissues (piece goods); bed and table covers; textile articles not included in other classes.
25. Clothing, including boots, shoes and slippers.
26. Lace and embroidery, ribands and braid; buttons, press buttons, hooks and eyes, pins and needles; artificial flowers.
27. Carpets, rugs, mats and matting; linoleums and other materials for covering existing floors; wall hangings (nontextile).
28. Games and playthings; gymnastic and sporting articles (except clothing); ornaments and decorations for Christmas trees.
29. Meat, fish, poultry and game; meat extracts; preserved, dried and cooked fruits and vegetables; jellies, jams; eggs, milk and other dairy products; edible oils and fats; preserves, pickles.
30. Coffee, tea, cocoa, sugar, rice, tapioca, sago, coffee substitutes; flour, and preparations made from cereals; bread, biscuits, cakes, pastry and confectionery, ices; honey, treacle; yeast, baking powder; salt, mustard, pepper, vinegar, sauces, spices; ice.
31. Agricultural, horticultural and forestry products and grains not included in other classes; living animals; fresh fruits and vegetables; seeds; live plants and flowers; foodstuffs for animals, malt.
32. Beer, ale and porter; mineral and aerated waters and other nonalcoholic drinks; syrups and other preparations for making beverages.
33. Wines, spirits and liqueurs.
34. Tobacco, raw or manufactured; smokers' articles; matches.

Services

35. Advertising and business.
36. Insurance and financial.
37. Construction and repair.
38. Communication.
39. Transportation and storage.
40. Material treatment.
41. Education and entertainment.
42. Miscellaneous.

Date: May 14, 1973.

ROBERT GOTTSCHALK,
*Commissioner of Patents.*

Approved:

BETSY ANCKER-JOHNSON,
*Assistant Secretary for Science and Technology.*

(Pub. in 38 F.R. 14681, June 4, 1973)

[911 O.G. TM 210 (June 26, 1973)]

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(325) TRADEMARK REGISTRATION TREATY

At the conclusion of the Vienna Diplomatic Conference on industrial property, the Trademark Registration Treaty was signed on June 12, 1973 for the United States. This Treaty is designed to simplify the procedures for obtaining international registration of trademarks for United States companies doing business abroad.

The Treaty was unanimously adopted at the final plenary session. In addition to the United States, the United Kingdom, the Federal Republic of Germany, Italy, Portugal, Hungary, San Marino and Monaco also signed. Some forty-six countries were represented at the Conference. In their closing statements most of the other delegations present indicated their hope to sign before the end of the year. The Treaty remains open for signature through December 31, 1973. The Treaty will enter into force six months after five States have deposited their instruments of ratification or accession.

The negotiations at Vienna represent the climax of the work of several committees of experts and working groups which have met at Geneva since 1970 with the assistance of the World Intellectual Property Organization (WIPO). The U.S. delegation to the Vienna Conference was composed of officials from the Department of State, the U.S. Patent Office and advisors from the private sector. Previous versions of the proposed Treaty were published on February 22, 1972; September 19, 1972; and February 20, 1973; in the OFFICIAL GAZETTE of the U.S. Patent Office. Published in this issue is the complete text of the Trademark Registration Treaty and its Regulations, as adopted by the Conference. For convenience, in addition to the text of the Articles and Regulations as adopted there is included a table of contents at the end of each section.

Additional copies of this material are available upon request to the Commissioner of Patents.

ROBERT GOTTSCHALK,
June 22, 1973 *Commissioner of Patents.*

[912 O.G. TM 205 (July 24, 1973)]

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(326) FORM PARAGRAPHS AND PRINTED FORMS IN TRADEMARK CASES

In September of 1971, the Trademark Examining Operation began utilizing form paragraphs for the purpose of accelerating the preparation and typing of first action Office letters and to increase the uniformity in the application of the Trademark Statute and the Rules by Trademark Examiners.

The form paragraphs presently total 136 and cover those objections and grounds for refusal which are commonly relied upon by Trademark Examiners in first Office actions. In some cases, the paragraphs contain blanks to be filled in by the Examiner. In addition, the Examiner may add additional sentences to the paragraphs.

The form paragraphs have been placed on magentic tapes mounted on automatic typewriters. Where the use of a form paragraph is appropriate, the Examiner identifies the paragraph to be typed by a preassigned number which is used by the typist to effect the automatic typing of the paragraph.

The Examiner may add any additional paragraphs to the letter which are not covered by an appropriate form paragraph, in which case the typist merely manually adds the paragraph to the letter.

The form paragraphs are amended from time to time to incorporate improvements in the wording as the need for such becomes apparent. Also, new paragraphs are added and old paragraphs eliminated, as experience dictates the need.

In addition, the Office has adopted a printed first action form with check-off boxes to indicate to the applicant the appropriate objection or ground of refusal in first Office actions. This form is used only where it can be used appropriately as a complete first Office action. It is not used in any case to supplement a first Office action incorporating paragraphs not encompassed by the form action. It has been found that the form action is appropriate for use in approximately 15–20% of the first actions going out of the Office.

The form first action is also designed for use as a notice of the publication of an application for opposition.

Copies of the text of the form paragraphs used with the automatic typewriters and copies of the first action form may be obtained by addressing a request for the same to the "Commissioner of Patents, Washington, D.C. 20231."

Date: June 29, 1973.

RENE D. TEGTMEYER,
*Assistant Commissioner for Trademarks.*

[912 O.G. TM 310 (July 31, 1973)]

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(327) TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

CHAPTER 1—PATENT OFFICE, DEPARTMENT OF COMMERCE

PART 2—RULES OF PRACTICE IN TRADEMARK CASES

*Lawful Use for Supplemental Register and Size of Facsimiles*

The Patent Office is revising §§ 2.47 and 2.57 of the trademark rules of practice. Section 2.47 is being revised to set

forth that the year's use which is the basis for registration on the Supplemental Register must be lawful use. Existing § 2.47 states that the year's use for the Supplemental Register must be "continuous use," whereas section 23 of the Trademark Act of 1946 specifies that such use must be "lawful use." The purpose of this revision is to conform the wording of § 2.47 to the wording of the statute. This revision does not effect any change in practice, as in applying the rule the term "continuous use" has been treated as having the same meaning as the term "lawful use" in the statute.

Section 2.57 is being revised to set forth that facsimile-specimens are not to exceed 8½ inches wide and 13 inches long. Existing § 2.57 states that facsimiles shall be not larger than specified for the drawing. That statement is now incorrect due to a recent amendment of the drawing length to 11 inches. The purpose of this revision is to correct the wording of §2.57, and to conform the wording of rule 2.57 to the wording of § 2.56 (Specimens) which has already been amended to specify that specimens are not to exceed 8½ inches wide and 13 inches long.

Since these revisions impose no burden on any person, notice and public procedures thereon are deemed unnecessary.

Therefore, pursuant to the authority contained in section 41 of the Act of July 5, 1946 (60 Stat. 440; 15 U.S.C. 1123), and section 6 of the Act of July 19, 1952 (66 Stat. 793; 35 U.S.C. 6, as amended October 5, 1971, 85 Stat. 364), Part 2 of Chapter I of Title 37 of the Code of Federal Regulations is hereby revised as follows:

1. Section 2.47 is revised to read as follows:

§ 2.47 *Supplemental register.*

In an application to register on the Supplemental Register, the application shall so indicate and shall specify that the mark has been in lawful use in commerce, specifying the nature of such commerce, by the applicant for the preceding year, if the application is based on such use. When an applicant requests registration without a full year's use of the mark, in accordance with the last paragraph of section 23 of the act, the showing required must be separate from the application.

(Sec. 23, 60 Stat. 435; 15 U.S.C. 1091)

2. Section 2.57 is revised to read as follows:

§ 2.57 *Facsimiles.*

When, due to the mode of applying or affixing the trademark to the goods, or to the manner of using the mark on the goods, or to the nature of the mark, specimens as above stated cannot be furnished, five copies of a suitable photograph or other acceptable reproduction, not to exceed 8½ inches wide and 13 inches long, and clearly and legibly showing the mark and all matter used in connection therewith, shall be furnished.

*Effective date.* These revisions shall become effective on July 16, 1973.

Dated: July 5, 1973.

RENE D. TEGTMEYER,
*Acting Commissioner of Patents.*

Approved:

BETSY ANCKER-JOHNSON,
*Assistant Secretary for Science and Technology.*

[FR Doc. 73-14453; Filed 7-13-73; 8:45 am]

*Published in 38 F.R. 18876; July 16, 1973*

[913 O.G. TM 2 (Aug. 7, 1973)]

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(328) CHANGES IN FORMAT FOR PUBLISHING TRADEMARKS FOR OPPOSITION

Because of the adoption of the International classification of goods and services by the United States as of September 1, 1973 (see OFFICIAL GAZETTE of June 26, 1973, 911 O.G. TM 210), it is necessary to change the arrangement in the OFFICIAL GAZETTE of the marks published for opposition.

Beginning with the issue of May 7, 1974, the section of the OFFICIAL GAZETTE entitled "Marks Published for Opposition" will be divided into four sections instead of the present two sections. (For the preceding change from one to two sections, see OFFICIAL GAZETTE of October 13, 1964, 807 O.G. TM 51.) Sections 1 and 2 will be according to international classification and will contain marks in applications filed on or after September 1, 1973, and Sections 3 and 4 will be according to prior United States classification and will contain marks in applications filed on or before August 31, 1973.

In Section 1, all marks presented in combined applications filed on or after September 1, 1973 for registration in more than one international class will be published with only one reproduction of each mark. The reproduction of the mark will be followed by the international class numbers, and under each class will appear the goods or services in connection with which the mark is used. If the date of first use applies to all classes, it will appear following the last class; otherwise, the dates of use will appear after each class.

In Section 2, all marks presented in applications filed on or after September 1, 1973 for registration in a single class will be published in international class order.

In Section 3, all marks presented in combined applications filed on or before August 31, 1973 for registration in more than one prior United States class will be published with only one reproduction of each mark. The reproduction of the mark will be followed by the prior United States class numbers and titles, and under each class will appear the goods or services in connection with which the mark is used. If the date of first use applies to all classes, it will appear following the last class; otherwise, the dates of use will appear after each class.

In section 4, all marks presented in applications filed on or before August 31, 1973 for registration in a single class will be published in the prior United States class order.

The following explanation will appear under the heading "Marks Published for Opposition":

> The following marks are published in compliance with section 12(a) of the Trademark Act of 1946. Applications for the registration of marks in more than one class have been filed as provided in section 30 of said act as amended by Public Law 772, 87th Congress, approved Oct. 9, 1962, 76 Stat. 769. Opposition under Section 13 may be filed within thirty days of the date of this publication. See Rules 2.101 to 2.105.
>
> A separate fee of twenty-five dollars for opposing each mark in each class must accompany the opposition.

Sections 1 through 4 will appear immediately after the above explanation, the sections being designated as follows:

Section 1. International classification—Application in more than one class
Section 2. International classification—Application in one class
Section 3. Prior United States classification—Application in more than one class
Section 4. Prior United States classification—Application in one class

The same procedure of dividing into four sections will be followed in the notice of the issuance of registrations on the Supplemental Register.

RENE D. TEGTMEYER,
Mar. 22, 1974. *Assistant Commissioner for Trademarks.*

[921 O.G. TM 122 (Apr. 16, 1974)]

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(329) WORDING IN VERIFICATION OR DECLARATION OF TRADEMARK APPLICATION

Applicants and attorneys are requested to use the following wording in the part of the verification or declaration of the trademark application which indicates the signer's belief that the mark applied for does not resemble another person's mark:

> —that no other person, firm, corporation, or association, to the best of his knowledge and belief, has the right to use such mark in commerce either in the identical form thereof or in such near resemblance thereto *as to be likely, when applied to the goods of such other person, to cause confusion, or cause mistake, or to deceive:*—



The wording emphasized conforms to the present language of both Sections 1(a)(1) and 2(d) of the Trademark Act of 1946.

Some applicants and attorneys, instead of using the wording emphasized above, are still using the now obsolete wording "as might be calculated to deceive" which was promulgated in the forms under the Trademark Act of 1905 and inadvertently continued by the Act of 1946 up to October 1962 in Section 1(a)(1) and in the forms connected with the Act. Section 1(a)(1) of the 1946 Act was amended by Act of October 9, 1962 (Public Law 772, 87th Congress, 76 Stat. 769) to conform it to the language of Section 2(d) of the 1946 Act, since the language of Section 2(d) reflects the thinking at the time the 1946 Act was written. The wording of the trademark forms for the 1946 Act has also been amended appropriately.

It is desirable that proper wording be used. However, since the differences in wording referred to above are considered to be differences of form rather than of substance, Examiners will not require new verifications or declarations. When the obsolete wording is observed and a letter is to be written for other reasons, Examiners will at that time call attention to the fact that the wording is obsolete and should be modified in applications in the future.

RENE D. TEGTMEYER,
Mar. 25, 1974. *Assistant Commissioner for Trademarks.*

[921 O.G. TM 186 (Apr. 23, 1974)]

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(330) MAIL DELAYS AND PETITIONS TO REVIVE (TRADEMARKS)

Since applications that become abandoned unintentionally present burdens to both the Patent Office and the applicant, a simplified procedure has been devised to alleviate these burdens when the abandonment results from a delay in the mails. This procedure (which is similar to the procedure adopted for patent applications at 910 O.G. 402 and 910 O.G. TM 76) provides for an automatic petition to revive.

When a trademark communication which falls within the circumstances enumerated below is mailed to the Patent Office more than three full days prior to the due date, a conditional petition may be attached to the communication. If the communication is received in the Patent Office after the due date and the application becomes abandoned, the conditional petition will become effective, subject to the following requirements. The petition must include (1) an authorization to charge a deposit account for any required fees, including the petition fee, and (2) an oath or declaration signed by the person mailing the communication and also signed by the applicant or his attorney stating that the communication and petition were either placed in the United States mail as first class or air mail or placed in the mail outside the United States as air mail. Since mail handled in this manner may reasonably be expected to reach the Patent Office by the due date, any mail delays beyond such time will be considered to constitute unavoidable delay and sufficient cause to grant a petition to revive (Section 12(b) of the Trademark Act of 1946).

The circumstances under which this procedure may be used are those where the communication, if timely filed, (1) would be a proper and complete response to an action or request by the Patent Office, and (2) would stop a period for response from continuing to run. Accordingly, this procedure would be appropriate for:

1. A response to a non-final Office action.
2. A response to a final Office action which places the application in condition for publication or issue.
3. A notice of appeal and requisite fee.
4. An appeal brief.

A suggested declaration form for the petition is shown below:

Applicant:
Serial No.: **Petition to Revive**
Date Filed:
Mark:

I hereby declare that the attached communication is being deposited in ( ) the United States mail as first class or air mail, or ( ) the mail outside the United States as air mail, in an envelope addressed to: Commissioner of Patents, Washington, D.C. 20231, on ----------, which date is more than three full days prior to the due date, at ----------, by ----------
(Location) (Name of individual)

In the event that such communication is not timely filed in the Patent Office, it is requested that this paper be treated as a petition to revive and that the delay in prosecution be held unavoidable.

The petition fee is authorized to be charged to Deposit Account No. ---------- in the name of ----------

The undersigned declares further that all statements made herein of his own knowledge are true, and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or document or any registration resulting therefrom.

Date: (Signature of applicant or applicant's attorney)

And

Date: (Signature of person mailing, if other than the above)

Normal petition practices are not affected in those situations where this procedure is either not elected or not appropriate, nor does this procedure bar the granting of a petition in different fact situations where justified.

RENE D. TEGTMEYER,
Mar. 21, 1974. *Assistant Commissioner for Trademarks.*

[921 O.G. TM 126 (Apr. 23, 1974)]

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(331) SIGNATURE TO AMENDMENT TO SUPPLEMENTAL REGISTER

Heretofore, in amending a trademark application from the Principal Register to the Supplemental Register and there had not been a full year of use prior to the date the application was filed, the statement in the amendment, to the effect that the mark had been in use for a year, was required to be signed by the applicant.

Effective with this notice, the amendment may hereafter be made by the attorney, and the signature of the applicant normally will not be required merely because some of the year of use necessary for registration on the Supplemental Register occurred after the application was originally filed on the Principal Register. If the Examiner has basis for believing that there is some reason for further inquiry or signature by applicant, the Examiner may of course take appropriate action.

The filing date which will be effective for an application so amended will be the date the amendment is filed, as the application when originally filed was not sufficient for registration on the Supplemental Register. Trademark Rule 2.75.

RENE D. TEGTMEYER,
Apr. 4, 1974. *Assistant Commissioner for Trademarks.*

[921 O.G. TM 250 (Apr. 30, 1974)]

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(332) TRADEMARK APPLICATIONS UNDER SECTION 44 WITHOUT SPECIMENS AND USE

A significant number of applications are being filed under Section 44 of the Trademark Act of 1946 without specimens and without a statement of use, on the basis of the decision in *John Lecroy & Son, Inc.* v. *Langis Foods Limited,* 177 USPQ 717 (TT&A Bd. 1973), so that it appears desirable to provide the public with information as to the manner in which the Patent Office is handling such applications. This procedure has

been incorporated into the Trademark Manual of Examining Procedure. However, since the Manual is not yet ready for distribution, this notice is being published at this time.

The memorandum which is being sent with the filing receipt to each applicant who falls within the above circumstances explains the procedure and reads as follows:

U.S. Department of Commerce

PATENT OFFICE

Trademark Application Filed Under Section 44 of the Act of 1946;

(No Allegation of Use and No Specimens)

MEMORANDUM TO ACCOMPANY FILING RECEIPT

The decision in *John Lecroy & Son, Inc.* v. *Langis Foods Limited*, 177 USPQ 717, rendered by the Trademark Trial and Appeal Board on May 7, 1973, appears to indicate that use and specimens should no longer be requisites for applications under Sections 44(d) and 44(e) of the Trademark Act. That decision has, however, been appealed to the United States District Court for the District of Columbia.

In view of the civil action filed in this case, use and specimens as requirements for such applications are not being eliminated. The Office is therefore assigning to the above-identified application a filing date which is conditional upon the ultimate decision in the above case of *Lecroy* v. *Langis*, and is mailing a filing receipt. However, this application will not be forwarded for examination until the decision in the case becomes final. A copy of the drawing will be placed in the search room with the following stamped thereon: "Withheld from Examination—Sec. 44."

The applicant has the following alternatives:

If applicant files specimens and a statement that the mark is in use (such statement being verified or in the form of a declaration under Rule 2.20), the application will be forwarded for examination with a filing date of the date of receipt of the specimens.

If a statement of use and specimens are not filed, the application will be withheld from examination until termination of the appeal of the above decision. If the decision is affirmed, the application will be forwarded for examination. If the decision is reversed, the application will become an informal application and the papers will be returned.

C. M. WENDT,
Mar. 22, 1974. *Director, Trademark Examining Operation.*

RENE D. TEGTMEYER,
Apr. 4, 1974. *Assistant Commissioner for Trademarks.*

[921 O.G. TM 250 (Apr. 30, 1974)]

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(333)

# TITLE 37

# Patents, Trademarks, and Copyrights

## CHAPTER I

## PATENT OFFICE, DEPARTMENT OF COMMERCE

## PART 1
## RULES OF PRACTICE IN PATENT CASES

## PART 2
## RULES OF PRACTICE IN TRADEMARK CASES

### Addition of Metric (S.I.) Equivalents

The Commissioner of Patents is revising §§ 1.84, 1.253, 2.31, 2.52, 2.56 and 2.57 of the rules of practice to set forth and encourage use of the metric system of measurements in papers submitted to the Patent Office. These changes provide dual dimensions in both the patent and trademark rules of practice.

Since the revision of these sections makes no change in practice, and merely adds an indication of the metric equivalents, procedure for public comment thereon is deemed unnecessary. Therefore, pursuant to the authority contained in section 6 of the Act of July 19, 1952 (66 Stat. 793; 35 U.S.C. 6), as amended October 5, 1971 (85 Stat. 364), and section 41 of the Act of July 5, 1946 (60 Stat. 440; 15 U.S.C. 1123), 37 CFR Parts 1 and 2 are hereby amended as follows:

3. Section 2.31 is revised to read as follows:

**§ 2.31 Application must be in English.**

The application must be in the English language and plainly written on but one side of the paper. It is deemed preferable that the application be on legal or letter-sized paper, typewritten double spaced, with at least a one and one-half inch (3.8 cm.) margin on the left-hand side and top of the page.



4. In § 2.52, paragraphs (c) and (d) are revised to read as follows:

**§ 2.52 Requirements for drawings.**

* * * * * * *

(c) *Size of paper and margins.* The size of the sheet on which a drawing is made must be 8 to 8½ inches (20.3 to 21.6 cm.) wide and 11 inches (27.9 cm.) long. One of the shorter sides of the sheet should be regarded as its top. When the figure is longer than the width of the sheet, the sheet should be turned on its side with the top at the right. The size of the mark must be such as to leave a margin of at least 1 inch (2.5 cm.) on the sides and bottom of the paper and at least 1 inch (2.5 cm.) between it and the heading.

(d) *Heading.* Across the top of the drawing, beginning one inch (2.5 cm.) from the top edge and not exceeding one-fourth of the sheet, there should be placed a heading, listing in separate lines, applicant's name, applicant's post office address, the dates of first use, and the goods or services recited in the application (or typical item of the goods or services if a number are recited in the application). This heading may be typewritten.

* * * * * * *

5. Section 2.56 is revised to read as follows:

**§ 2.56 Specimens.**

The application must include five specimens of the trademark as actually used on or in connection with the goods in commerce. The specimens shall be duplicates of the actually used labels, tags, or containers, or the displays associated therewith or portions thereof, when made of suitable flat material and of a size not to exceed 8½ inches (21.6 cm.) wide and 13 inches (33.0 cm.) long.

* * * * * * *

6. Section 2.57 is revised to read as follows:

**§ 2.57 Facsimiles.**

When, due to the mode of applying or affixing the trademark to the goods, or to the manner of using the mark on the goods, or to the nature of the mark, specimens as above stated cannot be furnished, five copies of a suitable photograph or other acceptable reproduction, not to exceed 8½ inches (21.6 cm.) wide and 13 inches (33.0 cm.) long, and clearly and legibly showing the mark and all matter used in connection therewith, shall be furnished.

*Effective date.* These amendments shall become effective May 6, 1974.

Dated: March 25, 1974.

C. MARSHALL DANN,
*Commissioner of Patents.*

Approved: March 25, 1974.

BETSY ANCKER-JOHNSON,
*Assistant Secretary for Science and Technology.*

[FR Doc.74-7796 Filed 4-3-74; 8:45 am]

[922 O.G. TM IX, X, XI, XII (May 14, 1974)]

(334) TRADEMARK REGISTRATION TREATY

*Trademark Act of 1946*

The text of the Trademark Registration Treaty (TRT), signed on June 12, 1973, was reproduced in the OFFICIAL GAZETTE of July 24, 1973 and three post-conference documents were published in the OFFICIAL GAZETTE of March 12, 1974. The questions of United States ratification and of the legislation which would be necessary for its implementation in the United States are now under study in the Patent Office. Interested persons and organizations have been requested to submit their views on these questions to the Patent Office prior to September 1, 1974.

Reproduced below is an outline of the changes in the Trademark Act of 1946 which might be required, or desirable, if the TRT is ratified and implemented. This outline is intended as a guideline to possible legislation designed to implement the requirements of the Treaty and to provide equivalent benefits to national applicants.

In regard to a few of the provisions, alternatives have been indicated. Where this is done, the order of their presentation herein does not necessarily indicate any order of preference.

This material, as well as that previously published, is made available in order to assist interested persons in their own studies of the question of ratification by the United States and implementing legislation rather than constituting a position of the Patent Office on these questions.

C. MARSHALL DANN,
*Commissioner of Patents.*

Apr. 29, 1974.

OUTLINE

*Introduction*

This paper is an outline of possible changes in the Trademark Act of 1946 (60 Stat. 427; 15 U.S.C. 1051 et seq.), as amended, which may be required or desirable if the Trademark Registration Treaty, signed by the United States and thirteen other countries as of December 31, 1973, is ratified and implemented.

The subject is dealt with in two parts. Part I outlines changes in the domestic trademark statute which would be applicable in the case of national applications to register marks in the United States Patent Office. Part II concerns additional provisions which would be necessary in order to assimilate the proposed Treaty to this national law.

For convenience, reference is made, following some of the sections, to the article of the Treaty which requires or gives rise to the change under consideration.

PART I—CHANGES IN THE TRADEMARK ACT OF 1946, AS AMENDED

A. *Requirements for Registration on the Principal Register*

1. As an alternative to actual use, a trademark, service mark, certification or collective mark, can be registered by a person based on a declared intention to use the mark in commerce. [Article 19(3), (4)]. Special use requirements are applicable to registrations secured on this basis. (See B below).
2. As an alternative to signing by the applicant, an application may be signed by a duly appointed representative. (Article 26). Present qualifications for representation before the Patent Office (attorney admitted to practice in a State or District of Columbia) continue to apply, however.
3. Verified statement of the claim to ownership is no longer required (Article 5).

B. *Special Requirements for Intent Applicants/Registrants*

1. (*a*) Applicant/registrant must commence use of the mark in commerce within three years of filing date and must declare such commencement of use during the fourth year, including the same details, etc., use dates, label specimens, etc.) as those declared by a use applicant at time of filing. [Article 19(3)].
   (*b*) Time period for filing the declaration may be shortened (three months from date of notice) on petition of interested person if the mark is involved in any proceeding under the Act on or after date of expiration of the three year use moratorium.
   *Alternative:* Shorter period for filing the declaration (e.g., 3½ years) and delete (*b*) above.
2. Consequence of failure to file an acceptable declaration within the prescribed time limit is cancellation of the registration or, if still pending, refusal of the application. Consequence of compliance as to part only of the goods and/or services is limitation of the registration or application to those goods and/or services. [Article 19(3)].
3. Time period for commencement of use may be extended beyond three years only upon showing of special circumstances which justify non-use.
4. Where later intent application(s) for same mark is (are) filed by the same or a related person prior to four (*Alternative*: five) years from the filing date of the earliest one, the period for commencement of use (three years) is counted from the filing date of earliest application. This provision means that a person cannot abuse the intent to use provisions by filing successive intent applications at or close to the expiration of successive three year periods, securing a new three year moratorium on use requirements with each new case. [Article 19(3)].

C. *Related Company Provision*

A minor change provides that intended use as well as use may inure to benefit of a related company. Thus, for example, an intent application by a parent company would be valid if the evidence supporting the intent concerned adoption of the mark by and related activities of a controlled subsidiary.

D. *Registration on the Principal Register*

1. If a registration based on an intent application is issued before the declaration of use is filed, the certificate of registration indicates this fact in lieu of the dates of use.
2. *Date of registration* is the same date as the filing date, which is defined as the date on which all basic elements of an application are received by the Patent Office. (See Trademark Rule 2.21.) Certificate also indicates the *date of issue*, defined as the date of the OFFICIAL GAZETTE in which notice of the issuance of the registration is published. [Article 11(2)].
3. A certificate of registration is prima facie evidence of the validity of the registration, the right of the registrant to exclude any other person from securing or maintaining a confusingly similar registration, and the exclusive right to use only for those goods or services in respect of which the mark is declared in the certificate of registration, or in a subsequently filed declaration of use, to be in use in commerce.

E. *Duration of Registration, Sixth Year Affidavit and Renewal*

1. Term of registration and of renewal is changed from twenty years to ten years, counted from the *date of registration*. [Article 17].
2. Sixth year affidavit of use remains applicable to all registrations, with its due date counted from *date of issue* of the registration (Change only in terminology).
   *Alternative*: Same, except that due date is counted from *date of registration*.
3. Sixth year affidavit must show use *in commerce*.
4. A renewal application need not be verified. (Article 17).
5. A late renewal application may be filed within six months (rather than three) after the date of expiration of the term. (Article 17).

F. *Assignment*

An application or registration based on intent is not assignable prior to filing the declaration of use. Exception: successor to the entire business of the original applicant.

*Alternative*: Assignments of registered or applied for marks without good will are valid.

G. *Examination Procedure and Oppositions*

1. Time for response to office actions is reduced from six months to three months. Purpose is to expedite completion of ex parte examination in maximum number of cases prior to cut-off. (See 3 below).
2. No mark may be refused ex parte for a reason *not* communicated to applicant prior to fifteen months from the filing date. This limitation is not applicable to a refusal determined by a decision of the TTAB or a court. [Article 12(2)].
3. Cut-off at twelve months from filing date for publication of the mark for opposition, whether or not the ex parte examination, including any appeal therefrom, has been completed. If an opposition is filed against a still pending case, full opposition proceedings are deferred until completion of the ex parte examination. If the opposed mark is eventually determined to be registrable, then full opposition proceedings are commenced, unless the opposer withdraws. [Article 12(2)].
   *Alternative*: Publish all marks promptly after filing and receive oppositions concurrently with the ex parte examination, deferring full opposition proceedings (as above), however, until completion of the ex parte examination.
4. Oppositions need not be verified and may be filed by a duly authorized attorney.
5. Time to oppose may not be extended to a date later than fifteen months, counted from the filing date. [Article 12(2)].

H. *Cancellation of Registrations*

1. A petition to cancel need not be verified and may be filed by a duly authorized attorney.
2. The time period for cancellation based on unrestricted grounds (i.e., 5 years) is counted from the *date of issue* of the registration (Change only in terminology).

I. *Incontestability*

The time period for incontestability is counted from the *date of issue* of the registration (Change only in terminology).

J. *Appeals*

Minor change provides for an appeal from a refusal to accept a declaration of use.

K. *Constructive Notice*

Constructive notice is applicable from *date of issue* of registration (Change only in terminology).

*Alternative*: Constructive notice applicable as of the date of first publication.

L. *The Supplemental Register*

1. Special Requirement of one year's use prior to filing date is deleted, making Supplemental Register registrations subject to the same use requirements, i.e., use or intention to use, as registrations on the Principal Register. [Article 19(3)].
2. Petition to cancel a Supplemental Register registration need not be verified and can be filed by a duly authorized attorney.
3. Non-use is a ground for cancellation only after expiration of three years from the filing date. [Article 19(3)].

M. *Infringement Remedies, Evidence and Priority*

1. Owner of a registration based on an intent application may not start any action for infringement until the declaration of use has been filed and accepted. Any remedies for infringement of registered marks based on intent are applicable only to period after commencement of continuing use. [Article 19(3)].
2. A certificate of registration is prima facie evidence of exclusive right to use only for those goods or services in respect of which the mark is declared in the certificate of registration, or in a subsequently filed declaration of use, to be in use in commerce. (Consistent wtih M 1 above).
3. In an action based on an incontestable registration, defense based on innocent adoption and continuous use (i.e., section 33(b)(5)) is subject to the condition that the defendant must be innocent of knowledge not only of prior use of the registrant, but, where applicable, of registration based upon a previously filed declaration of intention to use.
4. For the purpose of determining priority of rights in *any* proceeding under the Act, an application or registration based on intent to use is accorded the same effect *as if* the applicant or registrant had commenced use of the mark in commerce on the filing date. Except where priority is accorded in a Patent Office proceeding, or in an appeal therefrom, prior to three years from the filing date, a condition to the according of priority on this basis is filing and acceptance of the declaration of use. [Article 19(3)].

N. *International Convention Provisions*

1. The waiver of use requirements for an application based on registration of the mark in a country with which we have a treaty relationship is deleted. Since all applicants have the alternative of securing a registration based on an intention to use the mark in commerce, the waiver of use requirements is no longer necessary and such applications are subject to all requirements of the Act. Similarly, the first sentence of section 44(c) is deleted, being unnecessary in view of the general limitation on actions for infringement based on unused marks. (See M 1).
2. A minor change in section 44(d)(4) provides that a registration based on intent is not subject to the limitation of this subparagraph if the declaration of use has been accepted prior to issuance of the registration.

O. *Definitions*

1. The words "or intended to be used" are inserted in several of the definitions to take into account the new basis for registration.
2. Filing date, date of issue and date of registration are defined. (See D 2). Careful definition of "filing date" is important since it is the basis for determining the priority of intent applications. (See M 4).
3. The definition of abandonment is modified to the extent that non-use for two consecutive years is prima facie abandonment only if the two year period terminates on a date later than the date of expiration of three year use moratorium. Also, failure to commence use within the prescribed period, coupled with absence of any intention to commence use, constitutes abandonment. [Article 19(3)].

PART II—IMPLEMENTATION OF TRADEMARK REGISTRATION TREATY

A. *Definitions*

For purposes of the Act, an international application, international registration or later designation under the Trademark Registration Treaty (TRT) is defined to include only one which designates the United States; contains a declaration of intention to use the mark in commerce with or in the United States (or is accompanied by a declaration of actual use of the mark in such commerce); and is published and communicated to the Patent Office as required by the TRT. [Articles 10, 11, 19(4)].

B. *Effect in the United States of Proceedings Under the Treaty*

1. International applications, international registrations and later designations as defined above (See A), and the recordings related thereto, are accorded all of the effects, and their applicants or owners are entitled to all of the benefits, in the United States provided by the TRT, subject to all of the requirements of the TRT and, except as listed below, of the Trademark Act.
2. Exceptions to full application of the Trademark Act are:
   (*a*) The fee referred to in section 1 is waived. (*Note:* A fee equivalent to the U.S. application fee is paid to the International Bureau and the amounts of the fees collected on behalf of the United States are paid to the U.S. in lump sums.) [Article 19(1)].
   (*b*) The requirement to designate an agent for service in the application [i.e., present section 1(d)] is waived, provided that such person must be designated on or prior to date on which the owner replies to any communication by the examiner or otherwise institutes or defends any proceeding under the Act. Until such person has been designated, notices or process may be served upon the Commissioner. Consequence of failure to designate such person on or prior to the first to occur of the above events is cancellation of any effect of the international registration in the United States. [Article 19(7)].
   (*c*) A certificate of registration issued by the Patent Office based on an international registration shall also indicate the number and date of the international registration to which it relates.
   (*d*) The *filing date* under the Act of an international registration is the international registration date. The *date of issue* is the date on which registration effect in the United States of an international registration comes into existence pursuant to a notice to this effect published in the OFFICIAL GAZETTE, as in the case of publication of issuance of a national registration. [Article 11(1)(2)].

(*e*) The recording of a change in ownership, or in the name of the owner, of an international registration shall not be accorded any effect as the recording of an assignment unless, within three months from the date of publication of such recording under the TRT, instruments of assignment conforming to the requirements of the Trademark Act are recorded in the Patent Office. [Article 14(4)].

(*f*) Renewal of the effect of an international registration in the United States by the International Bureau is not subject to the requirements of section 9, provided that the registrant shall file in the Patent Office, prior to the expiration of six months counted from the starting date of the term of renewal, a declaration as to use of the mark in commerce. Consequences of failure to file an acceptable use declaration are the same as in the case of failure to file or filing of an unacceptable fourth year declaration of use (See Part I, B 2).

*Note:* The renewal fee is collected and distributed in the same way as the filing fee. (See (*a*) above.) [Article 17, 19(1), 19(3)].

C. *Authority of the Commissioner*

The Commissioner is authorized to accord and deny effects, communicate notifications, make attestations, decide petitions, determine the amount of and receive payments of fees, and perform all other acts as provided by the TRT, subject to the requirements thereof.

D. *Notifications*

The Commissioner is required to effect all required notifications promptly. Where the time limitation of the TRT is stated in terms of the date of receipt, the notification shall be transmitted to the International Bureau no later than 14 days from the due date via Registered Air Mail.

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*Final Note:* The above outline does not include final provisions concerning the effective date of certain changes. Generally, changes that might have an effect on existing rights would be effective only as to applications filed on or after the effective date of the amended Act.

[922 O.G. TM 1, 2, 3 (May 28, 1974)]

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(335) TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

CHAPTER I—PATENT OFFICE, DEPARTMENT OF COMMERCE

PART 2—RULES OF PRACTICE IN TRADEMARK CASES

PART 6—CLASSIFICATION OF GOODS AND SERVICES UNDER THE TRADEMARK ACT

*International Trademark Classification; Correction*

In FR Doc. 73-10996 appearing at page 14681 in the issue of Monday, June 4, 1973 (38 FR 14681), the language in the tenth line of the sixth paragraph of the preamble reading "mark as registered" should read "application was filed," and the language in the sixth line of revised § 2.85(b) reading "registration was granted" should read "application was filed."

Dated: April 26, 1974.

C. MARSHALL DANN,
*Commissioner of Patents.*

Approved: May 3, 1974.

BETSY ANCKER-JOHNSON,
*Assistant Secretary for Science and Technology.*

[FR Doc. 74-10822; Filed 5-9-74; 8:45 am]
*Published in 39 F.R. 16885, May 10, 1974*

[923 O.G. TM 144 (June 18, 1974)]

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(336) TRADEMARK MANUAL OF EXAMINING PROCEDURE NOW AVAILABLE

The Trademark Manual of Examining Procedure (designated in brief as TMEP) may be ordered on a subscription basis from the Superintendent of Documents at the following address:

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

The price of a subscription is $8.10, plus $2.05 for foreign mailing. Payment should accompany the order. (Orders should *not* be placed with the Patent Office.)

The purpose of the Trademark Manual of Examining Procedure is to provide an authoritative reference work on practices and procedures relative to prosecution of applications to register marks in the Patent Office. Revisions necessary to keep the Manual current will be made by issuance of sets of revision pages from time to time as part of the Manual subscription. Early information as to changes in the Manual will be given prior to issuance of revision pages by notices in the OFFICIAL GAZETTE or by change notices furnished to Manual subscribers.

The Trademark Directives which were issued as Series 1 (pre-Manual) pending publication of the Manual, have been incorporated in the Manual, and there will be no further Directives in that Series. (For announcements as to the pre-Manual Directives, see OFFICIAL GAZETTES of August 31, 1971, Vol. 889, No. 5, and April 4, 1972, Vol. 897, No. 1.)

RENE D. TEGTMEYER,
May 29, 1974. *Assistant Commissioner for Trademarks.*

[923 O.G. TM 204 (June 25, 1974)]

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(337) SHORT TITLES FOR INTERNATIONAL TRADEMARK CLASSES

The United States Patent Office will, effective immediately, associate the following word titles with the respective international trademark class numbers:

GOODS

1 Chemicals
2 Paints
3 Cosmetics and cleaning preparations
4 Lubricants and fuels
5 Pharmaceuticals
6 Metal goods
7 Machinery
8 Hand tools
9 Electrical and scientific apparatus
10 Medical apparatus
11 Environmental control apparatus
12 Vehicles
13 Firearms
14 Jewelry
15 Musical instruments
16 Paper goods and printed matter
17 Rubber goods
18 Leather goods
19 Non-metallic building materials
20 Furniture and articles not otherwise classified
21 Housewares and glass
22 Cordage and fibers
23 Yarns and threads
24 Fabrics
25 Clothing
26 Fancy goods
27 Floor coverings
28 Toys and sporting goods
29 Meats and processed foods
30 Staple foods
31 Natural agricultural products
32 Light beverages
33 Wines and spirits
34 Smokers' articles

SERVICES

35 Advertising and business
36 Insurance and financial
37 Construction and repair
38 Communication
39 Transportation and storage
40 Material treatment
41 Education and entertainment
42 Miscellaneous



These short titles are not an official part of the international classification. Their purpose is to provide a means by which the general content of numbered international classes can be quickly identified. Therefore the titles selected consist of short terms which generally correspond to the major content of each class but which are not intended to be more than merely suggestive of the content. Because of their nature these titles will not necessarily disclose the classification of specific items. The titles are not designed to be used for classification but only as information to assist in the identification of numbered classes. For determining classification of particular goods and services and for full disclosure of the contents of international classes, it is necessary to refer to the Alphabetical List of Goods and Services and to the names of international classes and the explanatory notes in the volume entitled "International Classification of Goods and Services to Which Trade Marks Are Applied," published by the World Intellectual Property Organization (WIPO). The full names of international classes appear also in Section 6.1 of the Trademark Rules of Practice.

The short titles are being printed in the OFFICIAL GAZETTE in association with the international class numbers under MARKS PUBLISHED FOR OPPOSITION, Sections 1 and 2, under TRADEMARK REGISTRATIONS ISSUED, PRINCIPAL REGISTER, Section 1, and under SUPPLEMENTAL REGISTER, Sections 1 and 2.

Adoption of the international classification by the United States as its system of classification was announced in the OFFICIAL GAZETTE of June 26, 1973 (911 O.G. TM 210).

Date: June 18, 1974.

RENE D. TEGTMEYER,
*Assistant Commissioner for Trademarks.*

[924 O.G. TM 155 (July 16, 1974)]

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(338) HAND DELIVERY OF TRADEMARK PAPERS

Trademark papers which are not accompanied by fees or by authorization to charge a deposit account, may be filed by hand in the Trademark Docket Section or in the Incoming Mail Section of the Mail and Correspondence Division. However, to avoid confusion concerning money matters, when papers which are accompanied by fees or by authorization to charge a deposit account are filed by hand, they should be delivered only to the window in the Incoming Mail Section of the Mail and Correspondence Division where personnel can immediately refer the money or the charge to the Cashier. Trademark Examiners should not be requested to receive papers for filing (either with or without fees) since there is no convenient procedure by which the Examiners can transmit such papers to proper locations.

If a receipt is desired from the Trademark Docket Section, it may take the form of a duplicate copy of the paper or of a card identifying the paper and the application. The receipt will be date-stamped at the same time as the paper and handed back to the person delivering the paper. If a receipt is desired from the Incoming Mail Section, a card should be used. The card will be date-stamped and handed back to the person delivering the paper.

When a card is used for receipt, it should contain sufficient information to identify the paper and the application clearly, such as applicant's name, the serial number and filing date of the application, the mark, and the title or a description of the paper being filed.

In the discretion of the Assistant Commissioner for Trademarks, or of the Director of the Trademark Examining Operation, or of the Trademark Trial and Appeal Board, papers appropriate for those Offices (such as petitions or briefs) may be filed by hand in such Offices.

The procedure set forth in the notice entitled "Hand-Delivery of Papers" in the OFFICIAL GAZETTE of February 26, 1974 (919 O.G. TM 180) pertains to papers for patent applications. The designation "Examining Group" used in that notice relates to the patent examining area of the Patent Office. (The equivalent designation in the trademark examining area is "Examining Division.")

RENE D. TEGTMEYER,
Aug. 21, 1974. *Assistant Commissioner for Trademarks.*

[926 O.G. TM 132 (Sept. 17, 1974)]

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(339) TRADEMARK REGISTRATION TREATY POST CONFERENCE INFORMATION

The text of the Trademark Registration Treaty (TRT), signed in 1973 for the United States and 13 other States, was reproduced in the OFFICIAL GAZETTE of July 24, 1973. The substance of post conference documents on the history of the treaty, a brief summary of its provisions and advantages, and explanatory notes on each of the articles, were reproduced in the OFFICIAL GAZETTE of March 12, 1974. In addition, an outline of the possible changes in the "Trademark Act of 1946, As Amended," which may be required or desirable if the Trademark Registration Treaty is ratified and implemented was published in the OFFICIAL GAZETTE of May 28, 1974.

The World Intellectual Property Organization (WIPO), which served as the Secretariat of the Vienna Diplomatic Conference at which the Trademark Registration Treaty was adopted, has now circulated an additional post conference document, consisting of explanatory notes on the regulations under the treaty. These notes are intended to facilitate the reading of the text of the regulations, providing, where a rule refers to certain articles of the treaty or to other rules of the regulations, brief information on those articles or other rules. This document is supplemental, and similar in format, to the one comprising notes on the articles which was published on March 12, 1974.

The Office will supply a photo copy of these explanatory notes on the TRT regulations (TRT/PCD/4, dated July 31, 1974) to any interested person who may request such copy.

C. MARSHALL DANN,
Dated: Sept 17, 1974. *Commissioner of Patents.*

[927 O.G. TM 124 (Oct. 15, 1974)]

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(340) REALIGNMENT OF PATENT OFFICE HANDLING OF OPPOSITION PAPERS

In order to increase efficiency in processing papers, all activities connected with the handling of oppositions have been transferred from the Trademark Examining Operation to the Trademark Trial and Appeal Board. As a result of the transfer, requests for extension of time to oppose and matters pertinent thereto are now received and processed by the staff of the Trademark Trial and Appeal Board rather than by the staff of the Office of the Director of the Trademark Examining Operation.

No substantial change in procedure in the handling of papers relative to oppositions and extensions of time is contemplated by this realignment of duties in the Patent Office. Reasonable requests for extensions of time to oppose will continue to be granted with liberality particularly if there is no protest by another party and if the parties are negotiating or otherwise exploring bases for settlement, and fees for both verified and unverified oppositions will continue to be required to be filed within the time prescribed for opposing.

RENE D. TEGTMEYER,
Nov. 14, 1974. *Assistant Commissioner for Trademarks.*

[929 O.G. TM 62 (Dec. 10, 1974)]

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(341) TRADEMARK SEMINAR IN OFFICE PRACTICE AND PROCEDURE

A Seminar in Office Practice and Procedures was established in 1973 as a training course for new trademark examiners. The course covers all phases of trademark law, office practice and procedure. The seminar deals with both substantive and procedural issues. Among the topics covered are types of marks, types of applications and registrations, ownership of marks, procedural and substantive examination of application, with emphasis on the statutory grounds for refusal to register, classification of goods and searching.

Members of the Seminar will prosecute a sample application through the various stages of Office procedures beginning with the initial examination and preparation of a first action, the final refusal to register based on statutory grounds, the writing of an examiner's statement on appeal, and concluding with an oral hearing before the Trademark Trial & Appeal Board.

Lectures are conducted by supervisory personnel, senior examiners, members of the Trademark Trial & Appeal Board and attorneys from outside the Patent Office.

The Seminar is given in the U.S. Patent Office, 2011 Jefferson Davis Highway, Crystal Plaza, Arlington, Va. The Seminar is conducted twice a year. The next course is scheduled for Feb. 3 to March 7, 1975. Classes meet from 9:00 A.M. to 11:30 A.M. Monday through Thursday.

While the course is intended for new trademark examiners, a limited number of applicants from government agencies and from outside the government will be accepted for training on a space available basis. The Seminar is normally limited to ten students. To be eligible for training, a candidate should possess a law degree, and be involved in trademark practice. The fee for attendance at this course is $400.00.

Additional information concerning this Seminar may be obtained from the Office of Trademark Program Control at the Patent Office. Inquiries should be addressed to the Commissioner of Patents, U.S. Patent Office, Washington, D.C. 20231, Attention: Office of Trademark Program Control, or by telephone at 703-557-3881.

RENE D. TEGTMEYER,
Jan. 3, 1975. *Assistant Commissioner for Trademarks.*

[930 O.G. TM 246 (Jan. 21, 1975)]

(342)

Public Law 93-600
93rd Congress, H. R. 8981
January 2, 1975

88 STAT. 1955

# An Act

**To amend the Trademark Act to extend the time for filing oppositions, to eliminate the requirement for filing reasons of appeal in the Patent Office, and to provide for awarding attorney fees.**

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,*

Trademarks, Extension for filing oppositions. 15 USC 1063.

SECTION 1. Section 13 of the Trademark Act of 1946 (60 Stat. 427), as amended, is amended by deleting the second sentence and substituting therefor: "Upon written request prior to the expiration of the thirty-day period, the time for filing opposition shall be extended for an additional thirty days, and further extensions of time for filing opposition may be granted by the Commissioner for good cause. The Commissioner shall notify the applicant of each extension of the time for filing opposition.".

15 USC 1071. Notice of appeal.

SEC. 2. Section 21 of the Trademark Act of 1946 (60 Stat. 427), as amended, is amended by deleting subsections (2). (3). and (4) from paragraph (a) and substituting therefor:

"(2) Such an appeal to the United States Court of Customs and Patent Appeals shall be taken by filing a notice of appeal with the Commissioner, within sixty days after the date of the decision appealed from or such longer time after said date as the Commissioner appoints. The notice of such appeal shall specify the party or parties taking the appeal, shall designate the decision or part thereof appealed from, and shall state that the appeal is taken to said court.

Hearing, notice.

"(3) The court shall, before hearing such appeal, give notice of the time and place of the hearing to the Commissioner and the parties thereto. The Commissioner shall transmit to the court certified copies of all the necessary original papers and evidence in the case specified by the appellant and any additional papers and evidence specified by the appellee, and in an ex parte case the Commissioner shall furnish the court with a brief explaining the grounds of the decision of the Patent Office, touching all the points involved in the appeal.

"(4) The court shall decide such appeal on the evidence produced before the Patent Office. The court shall return to the Commissioner a certificate of its proceedings and decision, which shall be entered of record in the Patent Office and govern further proceedings in the case.".

Attorney fees. 15 USC 1117.

SEC. 3. Section 35 of the Trademark Act of 1946 (60 Stat. 427), as amended, is amended by adding the following sentence at the end thereof: "The court in exceptional cases may award reasonable attorney fees to the prevailing party.".

Effective date. 15 USC 1063 note.

SEC. 4. This Act shall become effective upon enactment, but shall not affect any suit, proceeding, or appeal then pending.

Approved January 2, 1975.

LEGISLATIVE HISTORY:

HOUSE REPORT No. 93-524 (Comm. on the Judiciary).
SENATE REPORT No. 93-1400 (Comm. on the Judiciary).
CONGRESSIONAL RECORD:
Vol. 119 (1973): Oct. 15, considered and passed House.
Vol. 120 (1974): Dec. 18, considered and passed Senate.

[931 O.G. TM 58 (Feb. 11, 1975)]



(343)

# REPORT

OF THE

# UNITED STATES DELEGATION

TO THE

# VIENNA DIPLOMATIC CONFERENCE ON INDUSTRIAL PROPERTY, 1973

Vienna, Austria

May 17 to June 12, 1973

Submitted to the Secretary of State

DANIEL M. SEARBY,
Chairman of the Delegation.

Prepared by:

DAVID B. ALLEN, Office of Legislation and International Affairs, U.S. Patent Office
SYLVIA NILSEN, Deputy Assistant Legal Adviser for Treaty Affairs, Department of State
JAMES SHEEHAN, Office of Legislation and International Affairs, U.S. Patent Office
HARVEY J. WINTER, Director, Office of Business Practices, Department of State

### 1. TITLE, SITE AND DATE OF CONFERENCE

Vienna Diplomatic Conference on Industrial Property, 1973, Vienna, Austria, May 17 to June 12, 1973.

### 2. BRIEF BACKGROUND

The Vienna Diplomatic Conference on Industrial Property was held from May 17 to June 12, 1973, with the Government of Austria serving as the host. Within the framework of the Diplomatic Conference, there were three Conferences: (a) the Conference on the Trademark Registration Treaty; (b) the Conference on the Protection of Type Faces and their International Deposit; and (c) the Conference on the International Classification of the Figurative Elements of Marks.

(a) *Conference on the Trademark Registration Treaty*

One of the most important international trademark problems for American companies is the complexity and high cost of establishing and protecting trademarks in foreign markets under national laws and procedures. Separate actions in approximately 150 different jurisdictions (i.e., independent states, possessions, territories, etc.) are now required in order to extend protection of a mark throughout the world.

The Patent Office, with the support of the Bureau of International Commerce in the Commerce Department and the Department of State, engaged in an extensive study of the question of U.S. participation in an international trademark filing agreement beginning in 1965. Consideration was first given to the possibility of U.S. adherence to the existing Madrid Agreement for International Registration of Marks, which is a special arrangement under the basic Paris Industrial Property Convention to which the U.S. is a party. By 1968, it became clear that there was substantial opposition by certain private interests to U.S. adherence to the Madrid Agreement in its present form. During the period 1968–1970 consideration was given to revision of the Madrid Agreement with a view to bringing in not only the U.S. but other important nonmember countries such as the United Kingdom and Japan.

The effort to develop a new trademark registration agreement was initiated by a United States-sponsored resolution which was approved unanimously by the administrative organs of the Paris Convention in September 1970. It was undertaken within the broader framework of the Paris Convention, which has 80 member States, rather than the more restricted Madrid Agreement, which has only 21 member States. This effort was directed toward establishing a new treaty—the Trademark Registration Treaty (TRT).

A series of preparatory meetings were held at which drafts of the Treaty and Regulations were developed. These meetings included a Consultants Group in March 1971 and three Committees of Experts in October 1971, May 1972, and December 1972.

On the basis of these meetings, the World Intellectual Property Organization (WIPO), the Secretariat for both the Paris Industrial Property Convention and the Madrid Agreement, prepared various drafts of the TRT. Certain of these drafts were published by the U.S. Patent Office and circulated to all interested parties (e.g., American Bar Association, National Association of Manufacturers, U.S. Trademark Association) in the United States for comment. Patent Office personnel also held numerous meetings with interested groups to explain and discuss the TRT.

(b) *Conference on the Protection of Type Faces and their International Deposit*

There were a number of meetings on the question of creating a special international agreement for the protection of type faces during the 1960's. U.S. interest and participation in these earlier meetings was limited. About 1970 U.S. industry had become more concerned about the possibility of providing some form of protection for type faces. As a consequence, the U.S. did participate in the fifth session of the Committee of Experts in February 1971 and the sixth session of the Committee in March 1972.

Designing a new type face is an important corollary activity of manufacturers of typesetting machines. The design of a new type face is expensive. Therefore, U.S. industry and the various typographic associations are very much interested in design protection. New technological developments in phototypesetting equipment have made it imperative to have new type faces for these machines.

Under U.S. law, however, except for so-called exotic type faces, the present design patent protection is very limited and, from the viewpoint of private industry, inadequate. Further, the existing Copyright Office regulations are such that type faces are not subject to copyright.

The United States was invited by the Director General of the World Intellectual Property Organization to be represented at the Vienna Conference with respect to the negotiation of an Agreement for the Protection of Type Faces.

Because of the strong interest of the U.S. type face industry, the United States decided to participate in the negotiations but not to sign the Agreement.

(c) *Conference on the International Classification of the Figurative Elements of Marks*

The general purpose of this Agreement is to establish uniformity among countries with respect to the development and use of a classification system which could be applied to the design elements of trademarks.

The existing Nice Agreement, to which the United States is a party, has already established an international classification of goods and services for the purpose of registering trademarks and service marks.

A 1971 Committee of Experts discussed the question of the diplomatic instrument that might serve as a legal framework for the proposed Classification of Figurative Elements. Since opinion in the Committee was divided, the Committee of Experts finally concluded that it would be preferable to submit two alternative drafts to the Vienna Diplomatic Conference: a draft Protocol, an Additional Act, to be annexed to the Nice Agreement, and the draft of a separate Agreement.

### 3. AGENDA

Following is the agenda of the Conference:

1. Opening of the Vienna Conference by the Director General of WIPO.
2. Address by the Representative of the Republic of Austria.
3. Election of the President of the Vienna Conference.
4. Adoption of the Agenda.
5. Adoption of the Rules of Procedure.
6. Election of the Vice-Presidents of the Vienna Conference.
7. Election of the members of the Credentials Committee.
8. Consideration of the report of the Credentials Committee.
9. Consideration and adoption of the Final Act of the Vienna Conference.
10. Closing of the Vienna Conference by its President.



### 4. PARTICIPATION

(a) *Participating Countries*

| *Countries* | *Number of Representatives* |
|---|---|
| Algeria | (4) |
| Australia | (3) |
| Austria | (13) |
| Belgium | (7) |
| Brazil | (6) |
| Bulgaria | (6) |
| Cameroon | (1) |
| Canada | (7) |
| Congo | (1) |
| Cuba | (2) |
| Czechoslovakia | (4) |
| Denmark | (3) |
| Dominican Republic | (1) |
| Egypt | (2) |
| Finland | (4) |
| France | (8) |
| Gabon | (1) |
| German Democratic Republic | (5) |
| Germany (Federal Republic of) | (13) |
| Holy See (Vatican) | (2) |
| Hungary | (7) |
| Iran | (5) |
| Ireland | (1) |
| Israel | (1) |
| Italy | (17) |
| Ivory Coast | (2) |
| Japan | (7) |
| Lebanon | (1) |
| Luxembourg | (1) |
| Mexico | (3) |
| Monaco | (2) |
| Netherlands | (5) |
| Nigeria | (2) |
| Norway | (2) |
| Poland | (9) |
| Portugal | (5) |
| Romania | (2) |
| San Marino | (1) |
| Senegal | (2) |
| South Africa | (2) |
| Soviet Union | (8) |
| Spain | (5) |
| Sweden | (7) |
| Switzerland | (6) |
| Syrian Arab Republic | (1) |
| Tunisia | (1) |
| Turkey | (1) |
| United Kingdom | (8) |
| United Republic of Tanzania | (1) |
| United States of America | (17) |
| Uruguay | (2) |
| Yugoslavia | (4) |
| Zaire | (4) |

(b) *Observer Countries*

| *Countries* | *Number of Representatives* |
|---|---|
| Ecuador | (1) |
| Republic of Korea | (2) |
| Venezuela | (2) |

(c) *Intergovernmental Organizations*

| | |
|---|---|
| United Nations Industrial Development Organization (UNIDO) | (1) |
| African and Malagasy Industrial Property Office | (1) |
| Benelux Trademark Office (BENELUX) | (3) |
| International Institute for the Unification of Private Law | (1) |
| Council of Europe (CE) | (1) |
| Commission of the European Communities (CEC) | (2) |
| Council of Ministers of the European Communities (CMEC) | (2) |
| Council for Mutual Economic Assistance (CMEA) | (1) |

(d) *International Non-Governmental Organizations*

| | |
|---|---|
| American Bar Association (ABA) | (6) |
| International Association for the Protection of Industrial Property | (5) |
| International Literary and Artistic Association | (1) |
| Asian Patent Attorneys' Association (APAA) | (2) |
| American Patent Law Association (APLA) | (3) |
| International Typographic Association (ATYPI) | (3) |
| Bundesverband Der Deutschen Industrie E.V. (BDI) | (4) |
| Council of European Industrial Federations (CEIF) | (5) |
| Deutsche Vereinigung fur Gewerblichen Rechtsschutz und Urheberrecht (DVGR) | (1) |
| European Computer Manufacturers Association (ECMA) | (2) |
| European Federation of Agents of Industrial Property (FEMIPI) | (2) |
| International Federation of Patent Agents (FICPI) | (5) |
| International Chamber of Commerce (ICC) | (6) |
| The Institute of Trademark Agents (ITMA) | (1) |
| International League Against Unfair Competition (LICCD) | (2) |
| The New York Patent Law Association (NYPLA) | (1) |
| Pacific Industrial Property Association (PIPA) | (2) |
| Patent and Trademark Institute of Canada (PTIC) | (1) |
| Trademarks, Patents and Designs Federation (TPDF) | (3) |
| Union of European Patent Agents (UNEPA) | (6) |
| Union of Industries of the European Community | (3) |
| Union Des Fabricants (UNIFAB) | (2) |
| The United States Trademark Association (USTA) | (1) |

### 5. UNITED STATES DELEGATION

*Chairman*

Daniel M. Searby, Deputy Assistant Secretary for Commercial Affairs and Business Activities, Department of State

*Delegate, Deputy Head of the Delegation*

Robert Gottschalk, Commissioner of Patents, Department of Commerce

*Delegates*

Harvey J. Winter, Director, Office of Business Practices, Bureau of Economic and Business Affairs, Department of State

David B. Allen, Acting Director, Office of International Affairs, Patent Office, Department of Commerce

*Congressional Adviser*

The Honorable Robert W. Kastenmeier, Member, United States House of Representatives

*Advisers*

Patricia M. Davis, Office of International Affairs, Patent Office, Department of Commerce

Anthony R. DeSimone, Attorney, Rahway, New Jersey

Gabriel M. Frayne, Attorney, New York City, N.Y.

Sylvia E. Nilsen, Deputy Assistant Legal Adviser for Treaty Affairs, Department of State

Michael R. Parker, Plainview, New York
Beverly W. Pattishall, Attorney, Chicago, Illinois
William G. Reynolds, Attorney, Wilmington, Delaware
Francis C. Rosenberger, Staff, United States Senate, Committee on the Judiciary
William E. Schuyler, Jr., Attorney, Washington, D.C.
James J. Sheehan, Jr., Office of International Affairs, Patent Office, Department of Commerce
René D. Tegtmeyer, Assistant Commissioner of Patents, Patent Office, Department of Commerce

*Secretary of the Delegation*

Marilyn A. Vihel, Office of International Conferences, Bureau of International Organization Affairs, Department of State

6. ORGANIZATION OF THE CONFERENCE

VIENNA DIPLOMATIC CONFERENCE ON INDUSTRIAL PROPERTY

*Officers of the Conference*

*President*

M. F. Schoenherr (Austria)

*Vice-Presidents:*

F. W. Simons (Canada)
E. Tuxen (Denmark)
Y. Rizk (Egypt)
D. M. Searby (United States of America)
E. Tasnadi (Hungary)
P. Archi (Italy)
S. Sasaki (Japan)
H. J. Brillantes (Philippines)
J. P. Crespin (Senegal)
P. Braendli (Switzerland)
Y. Morozov (Soviet Union)

*Membership of the Credentials Committee*

Austria
Bulgaria
Belgium
Ivory Coast
Finland
Iran
Ireland
Mauritania
Monaco
Syria
Tanzania

DIPLOMATIC CONFERENCE ON THE TRADEMARK REGISTRATION TREATY

*Plenary*

*President*

D. Ekani (Congo)

*Vice Presidents:*

R. Gottschalk (United States of America)
G. Borggard (Sweden)
S. Sasaki (Japan)

*Members of the Main Committee*

*Chairman*

E. Armitage (United Kingdom)

*Vice Chairmen:*

A. Krieger (Germany, Federal Republic of)
M. A. Ozorio De Almeida (Brazil)
J. M. Rodriguez Padilla (Cuba)

*Membership of the Drafting Committee*

Germany, Federal Republic of
Austria
United States of America
France
Morocco
Norway
German Democratic Republic
United Kingdom
Soviet Union

DIPLOMATIC CONFERENCE ON THE PROTECTION OF TYPE FACES

*Plenary*

*President*

J. P. Palewski (France)

*Vice Presidents:*

J. P. Hoffmann (Luxembourg)
G. E. Larrea Richerand (Mexico)
J. Prosek (Czechoslovakia)

*Membership of the Main Committee*

*Chairman*

E. Ulmer (Germany, Federal Republic of)

*Vice Chairmen:*

E. Dudeschek (Austria)
E. Van Weel (Netherlands)
N. Jankovic (Yugoslavia)

*Membership of the Drafting Committee*

South Africa
Germany, Federal Republic of
France
Israel
Italy
Netherlands
Romania
United Kingdom
Switzerland

DIPLOMATIC CONFERENCE ON THE INTERNATIONAL CLASSIFICATION OF THE FIGURATIVE ELEMENTS OF MARKS

*Plenary*

*President*

J. Hemmerling (German Democratic Republic)

*Vice Presidents:*

F. W. Simons (Canada)
F. Gil Serantes (Spain)
Ali Samia (Lebanon)

*Membership of the Main Committee*

*Chairman*

T. Lorenz (Austria)

*Vice Chairmen:*

K. B. Petersson (Australia)
P. Matuszewski (Poland)
R. Serrao (Portugal)

*Membership of the Drafting Committee*

Algeria
Australia
France
Netherlands
Poland
German Democratic Republic
United Kingdom
Switzerland
Tunisia

7. WORK OF THE CONFERENCE

(a) *Diplomatic Conference on the Trademark Registration Treaty*

The principal work of the Conference on the Trademark Registration Treaty (TRT) was carried out by a Main Committee, four Working Groups and a Drafting Committee. In addition, several informal groups of countries were formed at various points during the Conference for the purpose of submitting joint proposals to the Main Committee.

This section of the report is presented in three parts, the first two of which deal with issues which were subject to substantial negotiation, i.e., the so-called "non-use moratorium" and the developing country provisions. The third part is a summary of the deliberations of the Main Committee in regard to each of the Articles of the Treaty.

PART ONE: THE NON-USE MORATORIUM

A. *Background*

One of the major differences between United States trademark law and that which is in effect, with one or two exceptions, throughout the world, concerns the use requirements for securing a trademark registration. In the United States, under present law, use is required as a condition precedent for the filing of an application for trademark registration and the fundamental basis of trademark rights is use rather than registration. While many other countries have substantive requirements for use in order to maintain rights in trademarks once they have been secured, in virtually all other countries use is not required as a condition for filing an application or for securing a registration.

This issue of trademark registration law became a key factor in the TRT negotiations from the first in a series of preparatory meetings held in February 1971. At that time it was proposed that the treaty contain a provision whereby use requirements could not be imposed by any member State for a certain period of years, counted from the filing date of an international application. Since such an application would have the effect of a national application in each member State, this proposal would require a change in United States trademark law, if the United States became a party to the treaty. The 1971 meeting could not agree on the length of the period of the moratorium, with some experts favoring three years and others (principally the European countries) favoring five years. It was understood, however, that, following the moratorium period, use requirements could be imposed as desired by each member State.

During the 1971 meeting, serious doubt was expressed among the United States private sector advisors and other representatives that any arrangement affording rights for relief in civil actions based upon unused registered marks could ever prove acceptable in the United States. The United States Delegation therefore proposed that the treaty provide that a State might require that infringement actions could only be based upon registrations as to which continuing use of the mark had commenced and that remedies thereunder might lie only for the period after such use (Art. 19(3)a). Although this proposal was at first resisted vigorously by most of the delegations, they eventually came to accept it as it appeared in the drafts for the subsequent conferences, and at the Vienna Conference it was generally unopposed.

This provision, which came to be known as the non-use moratorium, was written into the first draft of TRT in essentially the same form as it had been proposed, with the time period for the moratorium left as an undecided question (3 or 5 years) until May, 1972. At that time, during the second Committee of Experts on the TRT held in May, 1972, the three versus five year issue was extensively debated. The debate led to a compromise, proposed by the Netherlands, that the period of the moratorium be three years, subject to a proviso that an international applicant whose trademark had not been held to be entitled to registration in any member State by the expiration of the three year period would be granted an additional period of one year, counted from the date on which entitlement to registration was determined, during which use could not be required, subject to a maximum of five years, counted from the filing date, in all such cases.

This compromise was accepted by the United States and by all other countries, and the non-use moratorium provisions remained essentially in the form agreed to by the May 1972 Committee of Experts until the Vienna Conference.

B. *Position of the United States Preceding the Conference*

The non-use moratorium was subject to considerable debate and discussion in the United States prior to the convening of the Vienna Conference, particularly during the four to five months which immediately preceded the conference. The Patent Office actively sought the views of interested associations and individuals on this issue during the few months preceding the conference. A number of briefing meetings were held in the New York and Chicago areas in order to provide an opportunity for the expression of views on the question. Several patent law and bar associations in New York and Chicago submitted comments to the Patent Office expressing opposition to the Treaty and, in particular, to the changes in the United States law which would be required by the non-use moratorium. Most of the other associations declined to take a position for or against the Treaty, especially in view of the doubts and concerns expressed by their members concerning the impact of the non-use moratorium on the trademark law of the United States.

The areas of principal concern in the private sector in regard to the non-use moratorium were determined to be the following:

1. Under the treaty provisions as proposed, the United States would be required to proceed with the issuance of registrations prior to the commencement of use in commerce, a basic change in existing law;
2. The period of the moratorium was too long, longer, in fact, than the period for deferral of use requirements contained in intent-to-use legislative proposals which had been introduced by various groups in the Congress; and
3. The possibility that the period of the non-use moratorium might be prolonged beyond three years further intensified the above two concerns.

Based on the above, and as a result of discussions in a meeting of the United States Delegation held on May 8, 1973, the position of the United States on the non-use provisions was established as follows:

*First*, we would support the non-use moratorium (Article 18(3)(a) in the pre-conference draft) only if the delegations of the other major countries indicated their unwillingness to accept an amendment whereby the national registration effect of an international application could be deferred, by any State in which use was required as a condition to the securing of a national registration, until the commencement of actual use of the mark in that State.

*Second*, we would propose or support a proposal for deletion of the provision whereby the three year period could be extended (Article 18(3)(b) of the pre-conference draft).

It was also decided that informal discussion should be held with several key delegations prior to the commencement of the conference, and during its early sessions, on these questions, particularly concerning the feasibility of the alternate proposal for deferral of the registration effect.

C. *Negotiations at the Vienna Conference*

During a meeting of the U.S. Delegation held on May 16, 1973, the United States position on the non-use moratorium was fully discussed and the following strategy was decided upon:

1. Informal discussions concerning the viability of the deferral of registration effect proposal should be continued with certain key delegations.
2. Contact should be made with other delegations in order to secure support for deletion of Article 18(3)(b), i.e., the extension of the non-use period.

On the first of these issues, discussions were held with several delegations who indicated their informal agreement to such a modification of the non-use provisions. The U.K. delegate, who was also chairman of the Main Committee of the TRT Conference, urged, however, that the subject also be discussed informally with other European delegations.

On May 19, a meeting of the U.S. Delegation was held for the purpose of discussion of these same issues. Attendance at this meeting included the representatives of United States private associations at the Vienna Conference (American Bar Association, National Association of Manufacturers, New York Patent Law Association, American Patent Law Association and the United States Trademark Association). As a result of this meeting the strategy concerning the non-use provisions was modified as follows:

1. Further efforts to negotiate a modification, whereby the registration effect could be deferred pending the commencement of use, should be abandoned.
2. We should contact other delegations in order to solicit support for deletion of Article 18(3)(b).

The deliberations of the Main Committee on the non-use moratorium are summarized in part three of this section under the heading of Article 19, the number of the article in the final text which corresponds to Article 18 in the pre-conference draft. Essentially, the result was a modification of the non-use extension provision whereby the requirement to extend the non-use moratorium to cases which were pending at the expiration of three years would not apply to any State whose national law did not permit such extension. This, in effect, was tantamount to deletion of the extension provision for any State which desired to prohibit such an extension under its national law.

Further, as a result of concern expressed by the Federal Republic of Germany, the United States agreed to insert in the records of the Diplomatic Conference a "best efforts" declaration whereby the member States agreed to make all possible efforts to render final decisions as to the according of national registration effects to international registrations before the three year term for use requirements had expired.

## PART TWO: THE DEVELOPING COUNTRY PROVISIONS

A. *Background*

The inclusion of special provisions for the benefit of developing countries was not considered by any of the preparatory meetings for the Trademark Registration Treaty. At the Washington Conference on the Patent Cooperation Treaty (PCT) in 1970, the developing countries had negotiated a special exemption possibility and a technical assistance chapter into that treaty.

Prior to the TRT Conference, the general view was that provisions similar to those in PCT would not be suitable for a trademark treaty since the registration of marks is not subject to any special difficulties among the developing countries in respect of which technical assistance is required. Moreover, the issues concerning effective transfer of technology which were important in the background on the PCT provisions are only peripherally involved, if at all, in the matter of protection of trademark rights.

B. *The Initial Proposals*

A signal to the Conference that special provisions on behalf of developing countries would be proposed was provided by the delegate of Brazil in his opening statement in which the question was raised as to the proper role of trademarks in protecting consumers in developing countries. Brazil indicated that among the concerns of these countries were the proliferation of trademarks used by the same owner on the same product, the differences in quality of goods sold under trademarks from one country to another and the fact that trademarks were used by licensors of developed countries as a means of appropriating developing country markets, through the use of such techniques as tie-ins and other restrictive clauses in trademark licenses.

In conclusion, the Brazilian Delegation stated that the international trademark system primarily serves profit oriented enterprises in the developed countries and that, consequently, the TRT should provide some compensation for these benefits to the developing countries. He then referred generally to the possibility that developing countries be able to use the TRT for their own nationals while being exempted from the obligations of the treaty to accept foreign origin marks for a certain period of time.

Following up on this initial initiative, the delegations of Brazil, Gabon, Ivory Coast, Nigeria, Senegal and Tanzania jointly submitted a proposal on May 23 which provided for an optional mechanism for access to the treaty by the residents or nationals of developing countries, coupled with an exemption to such countries as to any obligations under the Treaty, namely that such developing countries could not be designated for protection in an international application by the nationals or residents of member States. The proposed term of the exemption was 25 years, subject to some conditions whereby the exemption would be terminated. On May 25, the delegation of Hungary submitted an alternative developing country proposal containing a 5 year exemption period, renewable for additional 5 year periods, but omitting voting rights of the developing countries in the Assembly of the Union during the period of the exemption.

These proposals were debated in the Main Committee on May 24 and May 25, following which the entire subject was referred to a Working Group consisting of nine developing and nine developed countries. From May 24 to June 1, several meetings were held of this Working Group. In addition, the U.S. Delegation met on an ad hoc basis with the developed countries on the Working Group roster to consider this subject separately. A similar meeting was held by the developing countries.

At the first Working Group meeting the United States presented a proposal providing for technical assistance commitments. However, the U.S. proposal received very little support. The U.S. Delegation questioned the exemption to developing countries and endeavored to introduce qualifications and conditions into the proposal. However, these interventions were opposed by the developing countries particularly Brazil, Nigeria and Senegal, as well as by certain of the developed countries.

The United States Delegation played a leading role in the development of a final report of the working group on this subject which was eventually accepted by the Conference. This final report was considered acceptable by the developing countries represented on the Working Group and the United States efforts on behalf of the developing countries in resolving the issues were commended by some of the developing country delegations, particularly Senegal.

C. *Final Results*

The end result of the negotiations in the Working Group was a comprehensive provision (Article 40 in the final text) consisting of the following elements:

1. Any developing country which is also a party to the Paris Convention can secure a special exemption status in TRT by filing a declaration before June 12, 1978, with the Director General of the International Bureau.
2. The special exemption enables residents and nationals of a declaring developing country to file international applications and own international registrations notwithstanding the fact that the State of their residence or nationality is not a party to the TRT.
3. The developing country must declare its intention to become a party to the treaty within two years from the date on which the special exemption expires.
4. The exemption expires either ten years from the date of signing the treaty or five years from the date of its entry into force, whichever event is the later to occur.
5. The special provision would cease to be effective if a declaring developing country ceased to be regarded as a developing country in accordance with United Nations criteria, or if it denounced the Paris Convention.
6. The initial period may be prolonged twice, for periods of five years each, subject to certain special conditions, namely: (a) if a simple majority of a Special Conference of Contracting States and declaring developing countries approves such prolongation; and (b) if the nationals or residents of the country applying for prolongation had filed, on the average, fewer than 200 international applications per year during the three consecutive years preceding the year in which the prolongation is approved.
7. A possible further prolongation of the exemption is provided for in respect of the least developed among the developed countries. This further prolongation would be limited to two further periods of five years each.

The above proposal was adopted by the Main Committee on June 8.

## PART THREE: SUMMARY OF DEBATE IN THE MAIN COMMITTEE

*Introduction*

The following is a summary of the debate held during meetings of the Main Committee of the Vienna Diplomatic Conference assigned to consider the Trademark Registration Treaty. Points in this summary are presented in numerical order of the articles and rules, referring to the numbers which were finally assigned prior to approval of the final documents. Since some changes were made in the numbering of articles and rules, the numbers below do not necessarily conform to the numbers in the pre-conference draft. It was considered more convenient for readers of this paper to be able to refer to the finally approved text* since that text is more readily available.

*Printed in "Official Gazette" of the Patent Office, July 24, 1973.



### ARTICLE 1

*Establishment of a Union*

This article was adopted without debate

### ARTICLE 2

*Abbreviated Expressions*

The only major point discussed under this article concerned the definition of "mark" in paragraph (v), the particular question being whether this term should include collective and certification marks. In the opening statements on this issue, the Federal Republic of Germany supported the inclusion of collective and certification marks in the Treaty, i.e., the term "mark" would be deemed to include such marks. This position was supported by France, Italy, Portugal, Spain, Austria, Hungary, USSR, Czechoslovakia and Bulgaria. Generally, the points in favor of their inclusion were that such marks are now accepted under the Madrid Agreement and that they are assuming an increased importance in international trade.

On the other hand, Norway opposed including such marks on the ground that to do so raises definition problems and that the legislation concerning registration of such marks varies considerably from country to country. Sweden and Finland supported the views expressed by Norway.

A few countries, namely the United Kingdom, Australia and Ireland, were generally neutral about the inclusion of such marks, but were concerned about two details. One related to the time limits for refusal of the national registration effect, i.e., the fifteen month period set forth in Article 12. The problem is that in some countries (U.K. is one) the registration of certification marks involves a two part procedure one of which (approval of the criteria established for the certification mark) is carried out by other bureaus of the government than, and not subject to control of, the national trademark office. It was also indicated that this part of the procedure frequently is subject to delays since the procedures may require the establishment of industry-wide standards. Accordingly, the time limits of Article 12 require adjustment to accommodate these special needs.

The other problem concerned the language of the draft, that it should more properly reflect the relationship of the Trademark Registration Treaty to Article 7 *bis* of the Paris Convention which requires countries to protect "collective marks," but is silent as to the term "certification marks." On this point a discussion followed as to whether the term "collective marks" in the Paris Convention is intended to include certification marks as a sub-group.

The Main Committee then voted on the principal issue, i.e., the proposal that certification and collective marks be included within the term "mark." This position was adopted by a vote of 19 in favor, 10 against and 8 abstentions. The United States abstained and did not participate in the debate.

Following the vote, it was decided that the concern about the adequacy of time limits should be deferred until discussion of Article 12 and that the drafting point raised by the United Kingdom should be referred to the drafting committee. In this regard, the U.S. Delegation pointed out that the drafting of this provision should take into account the fact that in the United States a "collective mark" is considerably different conceptually than that which is contemplated by the term "marque collective" in other countries, that such a mark corresponds more nearly to our certification mark, and that some effort should be made to avoid confusing the applicant in this regard.

Other than some minor drafting points, there was no further debate on this article and it was adopted.

ARTICLE 3

*International Register of Marks*

Other than a minor drafting point in regard to its title which was referred to the drafting committee, Article 3 was adopted without debate.

ARTICLE 4

*Right to File International Applications and to Own International Registrations*

The first issue under this article concerned paragraph (5) under which an association of natural persons or legal entities would be permitted to file international applications and to own international registrations, notwithstanding the fact that it is not a legal entity. The inclusion of this paragraph was important to the Federal Republic of Germany which led off the discussion by an explanation of the existence of such associations in Germany and the fact that they play an important role in commerce. The German position was supported by Switzerland, Austria, and Brazil.

On the other hand, the United Kingdom, South Africa, Japan, and Iran pointed out that in their countries the proper ownership of rights in marks is subject to the condition that the owner be a body which is capable of suing and being sued. In this regard, the United Kingdom and South Africa also explained that, for purposes of registration, this particular ownership question is not raised except to the extent that in such a case each of the individual natural persons or legal entities of which the association is comprised must be named in the application. The United Kingdom then proposed a revision of the paragraph by adding the phrase "without prejudice to requirements for granting national registrations." The United States supported the U.K. amendment and indicated that the paragraph was acceptable with that amendment.

The compromise proposal was further discussed, but was not acceptable to a number of countries including the Federal Republic of Germany. Austria proposed a different solution which would add to the provision that the members of the association could be required to be identified, according to the national law of any State.

With these two proposals in front of the body, a Working Group was established to resolve the issues, if possible. The members of the Working Group included the Federal Republic of Germany, Switzerland, Japan, United Kingdom, Austria, Iran, Brazil, Canada, and the USSR. The Working Group presented its report to the Main Committee on May 24, 1973. This report recommended, as a solution, the maintenance of paragraph (5) with some minor changes, coupled with the addition of a new paragraph (9) to Article 19 concerning national requirements. Under this new provision, the application of Article 4(4) would be without prejudice to the national law of the receiving countries, subject to a limitation on the right of a designated State to refuse or cancel the effects of the international registration on the ground that the applicant or owner is an association of the kind referred to in Article 4(5) if, within two months, the owner submits a list of names and addresses of the natural persons or legal entities which comprise the association, together with a declaration that its members are engaged in a joint enterprise.

The report of the Working Group was adopted without debate.

* * * *

A second issue in this article concerned paragraph (6) which, in its original form, permitted a country to require that its nationals and residents file a national application or secure a national registration in the home country as a prerequisite to the securing of an international registration. Retention of this provision was supported by Czechoslovakia, Hungary, USSR, Poland, Australia, France, Brazil, Egypt, Spain, and Tanzania.

The USSR, and some of the other Socialist countries, desired the paragraph in order to retain some control over its applicants' foreign filing activities. Article 27(8) of the Patent Cooperation Treaty was noted in this regard. Other countries, including France, supported the provision on the basis that since its only impact would be on nationals of the country which used the provision, other countries should not object to it as its retention would facilitate broader participation in the Treaty.

On the other hand, Belgium, Iran, and the Federal Republic of Germany opposed retention of the provision on the ground that it was contrary to the basic premise of the Treaty, that international registrations should be independent of registration in the country of origin and that its enforcement would create unnecessary complications.

Yugoslavia favored retention of the provision, but offered a compromise whereby the words "or is registered" would be deleted. With this amendment, a country could require its nationals to file a prior application, but could not require prior registration as a condition to securing an international registration. France indicated that, while it favored retention, it had no intention of using the provision and so would support the Yugoslavian compromise.

After a minor amendment of the language, the Yugoslavian amendment was adopted by a vote of 25 in favor, none opposed, and with 8 abstentions. Following this, the provision, as amended, was adopted by a vote of 25 to 1, with 11 abstentions. The United States abstained on both votes and did not participate in the debate.

ARTICLE 5

*The International Application*

Belgium raised a question about paragraph (1)(a)(iv), in particular, whether the language "permits classification in one class only" implied that the applicant was limited to only one class of goods or services. After a brief discussion indicating that it was not so intended, it was decided to leave this matter to the drafting committee.

Finland proposed to add to paragraph (1)(a)(ii) a requirement that the applicant identify his trade or business. The proposal was supported by Denmark and Sweden, but was opposed by the Netherlands and the Federal Republic of Germany (FRG). The Secretariat explained that such an indication was included in the Regulations as one of the optional contents. Since no other support for a mandatory indication of trade or business was indicated, the proposal was withdrawn. The United States indicated, belatedly, some interest in further studying the proposal of Finland, but was ruled out of order.

The question of retention of paragraph (3), providing for alternative filing through the intermediary of the national office, was then opened for debate. The Federal Republic of Germany favored the deletion of paragraph (3) indicating, however, that it would withdraw its proposal if other States believed strongly that their adherence depended upon its retention. The principal reason for the position in favor of deletion was the delay which is inherent in the paragraph between the time of filing and the time when the application would become available to the public in the international publication. Czechoslovakia, Japan, Australia, and the USSR then spoke in favor of the proposal, following which the FRG Delegation withdrew its objections.



Paragraph (3) was retained by a vote of 19 in favor, 0 opposed, and 8 abstentions. Other than for a drafting point, which was referred to the drafting committee, the United States did not participate in the debate and abstained in the voting.

ARTICLE 6

*Later Designation*

Paragraph (4) of Article 6 was deleted without debate. This paragraph was parallel to paragraph (6) of Article 4 concerning the capability of a country to condition the filing of an international application or owning of an international registration on the existence of national protection of the same mark. It was pointed out that with the amendment agreed upon in Article 4(6) which limited the effect of this provision to the prior filing of an application in the home country, the parallel paragraph in the article concerning later designations was not necessary since later designations cannot be made without there already being an international registration. Consequently, this paragraph was unnecessary.

Except for a few drafting points, Article 6 was otherwise approved.

ARTICLE 7

*International Registration or Declining of the International Application*

The United Kingdom pointed out a defect in paragraph (2) in that the International Bureau would be required to send out an invitation to the applicant to correct a defect, but where the defect concerned the absence of a mailing address, it would be impossible to do so. A minor drafting change in paragraph (2)(a) was proposed to correct this defect and this was adopted by a vote of 7 in favor, 1 against, and with 15 abstentions. The United States voted in favor of this change.

Bulgaria then proposed prolonging the period specified in paragraph (2)(a)(viii) from one month to two months. This proposal received the support of the USSR and France. The U.K., U.S. and Federal Republic of Germany supported retaining one month, pointing out that the additional delay would mean a further delay in the availability of the mark through its publication which is of interest to third parties conducting research for new marks. The question was put to a vote very quickly and the Bulgarian proposal adopted by a vote of 18 in favor, 13 opposed and with 5 abstentions. The United States voted in opposition to the Bulgarian proposal.

Except for a few points of inquiry which were satisfactorily answered, there was no other debate and Article 7 was adopted subject to the two changes referred to above.

During the final meeting of the Main Committee on June 8, Bulgaria raised the point that its proposal had concerned the time period in paragraph (1) of Article 7 as well as the one in paragraph (2). However, the report of the drafting committee had not made the change in Article 7(1). A discussion followed as to the previous action and there was a difference of opinion on the question. The Secretariat pointed out that this point would also involve paragraph (1) of Article 8 which was a parallel provision concerning the declining of later designation requests.

Since no resolution of this matter could be reached, the Secretariat proposed that the committee consider adopting 45 days, in lieu of two months, or one month, in both cases, i.e. Article 7(1) and (2)(a)(viii), and also in Article 8(1). This solution was supported by USSR, Australia, Japan and Bulgaria and, there being no objection, the change was adopted without a vote.

ARTICLE 8

*Recording or Declining of Later Designations*

Except as indicated above under Article 7, i.e. the time limit in paragraph (1), Article 8 was adopted without debate.

ARTICLE 9

*Avoiding the Effects of Declining*

Article 9 was adopted without debate.

ARTICLE 10

*Publication and Notification*

Article 10 was adopted without debate.

ARTICLE 11

*Effects of International Registration and of Recording of Later Designations*

The debate on this article (and on Articles 12 and 13) was deferred from Saturday, May 19 until Monday, May 21. The motion for deferral was made by the United States, seconded by Canada and Senegal and adopted by a vote of 8 in favor, 2 opposed and with 20 abstentions.

On May 21, Article 11 was submitted to full debate. Japan proposed that the "retroactivity" clause at the end of paragraph (2) be deleted, but the proposal died for lack of a second. Concerning the same paragraph, the New York Patent Law Association suggested that if the national law of any designated State required use as a condition to registration, that State should be permitted to defer the national registration effect until there was use of the mark by the owner or his licensee. The chair noted the statement, but indicated that it could not be treated as a formal proposal unless presented by one of the country delegations.

Except for a minor drafting change in paragraph (3) which was approved there was no further debate and Article 11 was adopted.

ARTICLE 12

*Refusal of the Effect Provided for in Article 11*

As indicated above, the debate on this article was also deferred from May 19 until May 21.

Subparagraph (iii) of paragraph (1) was deleted without debate on the basis of a previous decision.

The Netherlands proposed that the reference to Article 11 in Article 12(1) should be limited to the second paragraph of 11 since what is subject to refusal is the registration effect, i.e., 11(2), not the application effect. The FRG disagreed pointing out that an invalid application should not be left "hanging" and that this might be a relevant issue from the standpoint of the right of priority. This explanation was accepted and no change was made.

The United Kingdom then proposed that the time limit of paragraph (2) be altogether inapplicable in the case of certification marks, referring to its previous views expressed during the discussion of Article 2. The FRG opposed the concept of no time limit, but was open to suggestions as to a longer time limit for this special case.

The United States supported the United Kingdom's position and Ireland and Australia followed suit.

On the other hand, Austria, Netherlands, the German Democratic Republic, France, Spain, Switzerland and Canada favored the approach of the FRG that there should be some time limit even for certification marks. The U.K. then withdrew its previous proposal and proposed a time limit of 3 years for certification marks.

The FRG expressed the opinion that the time limit for refusal was integrally related to the time period of the

non-use moratorium, and that nothing definite on any of the Article 12 time periods should be settled until Article 19(3) was considered. The United States stated, as to the general refusal period, that it had serious concern whether 15 months would be adequate. The U.S. would propose 18 months, but accepted the position of the FRG to defer discussion until Article 18(3) was considered. Accordingly, the Chair deferred the time limits of Article 12(2)(a)(i).

On Article 12(2)(a)(ii), the United States raised a drafting point which was referred to the Drafting Committee. (The eventual solution is found in a new paragraph, i.e., 12(2)(c).)

On 12(2)(b), Poland proposed that the exception to the proviso of 12(a)(iii) should also be applicable where the final decision is that of a legal board of appeals which is independent of the examiners' decisions. Japan supported the Polish proposal, but suggested that the phrase "independent review authority" be used.

Cuba, Spain, the United States, Bulgaria, Hungary, Czechoslovakia, USSR, Rumania and Senegal also supported the Polish proposal. The United Kingdom indicated that the amendment was not needed for itself, but that it might be useful in the eventuality of an EEC Trademark Convention. Consequently, it supported the Polish proposal as amended by Japan. Netherlands agreed with the U.K.

On the other hand, the FRG opposed the exception altogether as not being in the interest of applicants and proposed the deletion of subparagraph (b). Switzerland agreed with the FRG.

On the basic question, i.e., whether there should be an exception in the case of a court decision, the proposal was adopted, 29 in favor, 3 opposed. The Poland/Japan proposal, adding "or other independent review authority" was then approved 31 to 1, with 5 abstentions.

The Netherlands proposed that the provision for publication in the Gazette of notices of possible refusal be deleted. After a short debate in which no strong feelings were expressed either way, this proposal was defeated, 5 to 7, with 17 abstentions.

On May 22, the time limits for refusing an international registration were related to the non-use moratorium period in the following way. Federal Republic of Germany pointed out that, with a lengthened period of refusal and a three-year non-use moratorium, the owner might be placed in a position whereby his decision to effect use of the mark would have to be made before the time when a decision as to its registrability was made final. For this reason also, paragraph (b) of Article 19(3) which provided for the extension of the non-use moratorium under such circumstances, was important to its industry. After the United States adopted a very strong position in favor of deleting paragraph (b) altogether, the Federal Republic of Germany reiterated its concerns about the relationship between the non-use moratorium and the time limit for refusal, indicating that it would be possible for a country to abort the purpose of the non-use moratorium by delaying the processing of an international registration of an unused mark until the period of permitted non-use had expired.

The United Kingdom reiterated its position that a longer time period for refusal be permitted in the case of certification marks.

Against this background, a Working Group was established to consider the time limits of Article 12 together with the period of the non-use moratorium, i.e., Article 19(3) (a) and (b). The Working Group consisted of the following countries: Brazil, Canada, France, Tanzania, German Democratic Republic, Federal Republic of Germany, USSR, United Kingdom, United States, and Norway.

After several meetings, the Working Group presented a report to the Main Committee on May 28 in which three alternative solutions were presented. Although most of the discussion concerned the period of the non-use moratorium and the positions stated as to the time limits of Article 12 were linked to the various positions on that issue, France, Belgium, Netherlands, Federal Republic of Germany, Denmark, Sweden, and others generally expressed support for 15 months as the time limit for refusal.

Australia and the United Kingdom said that it would have preferred 18 months, but was willing to accept 15 months in the spirit of compromise. The United States was willing to accept 15 months only if Article 19(3)(b) were deleted.

Concerning certification marks, most countries accepted the proposal of the Working Group that the time period for refusing such marks be 18 months rather than 15. After a further meeting of the Working Group, the finally accepted time periods, i.e., 15 months for refusal in all cases except certification marks in which case the period is 18 months, were adopted by the Main Committee in a package proposal including an amendment of Article 19(3)(b) on May 29 by a vote of 32 in favor, none opposed, and with 9 abstentions.

### ARTICLE 13

*Cancellation of the Effect Acquired Under Article 11(2)*

Except for a minor drafting point, this article was approved on May 21, discussion having been deferred from May 19.

### ARTICLE 14

*Change in the Ownership of the International Registration*

Austria asked to come back to paragraph (3) after Articles 11–13 were considered. The question was as to what date the recording of the change of ownership would take effect, but the specific wording of its proposal would depend upon the parallel situation as to the international registration itself.

The United States raised a question of interpretation as to paragraph (4)(a), i.e., whether refusal of the effect of a transfer could be based on the lack of accompanying goodwill even during the three year use moratorium of Article 19(3). The Secretariat indicated that there were no exceptions in paragraph (4)(a) to the full application of national law.

As to paragraph (6) of the pre-conference draft, the United Kingdom proposed that this paragraph be deleted and that changes of name be dealt with in a new article. Austria agreed that the concepts were different, but believed the subjects could be dealt with together or separately, whichever seemed preferable.

The United States supported the concept of a separate article and indicated that it had prepared a tentative text for consideration. The U.S. outlined the essentials of its proposal. The FRG agreed with the U.S. position. Tanzania also agreed, except as to one point regarding fees. After the Secretariat commented, the Chair suggested that the interested countries informally prepare a draft text for consideration on May 21 or 22.

Discussion of Article 14 was thus suspended as to paragraphs (3) and (6). Otherwise the article was adopted.

On May 21, Austria again presented its proposal (TRT/DC/10) regarding the effective date of entries in the international register concerning transfers. After a brief discussion, it was decided that the effective date should be the date of the recordal, not the date of publication of the recordal.



On May 23, following some informal meetings of several countries including the United Kingdom and the United States, it was decided to delete paragraph (6) of Article 14 in favor of a separate article covering changes of name. The new article is discussed below under the heading of Article 15.

### ARTICLE 15

*Change in the Name of the Owner of the International Registration*

Following the decision noted above, the United Kingdom explained document DC/16 in which a new Article 15 was proposed for changes in name. Norway raised the point that the article on changes of name should provide for a national fee such as the one contained in Article 14(4)(b), i.e., where a State requires the submission of additional evidence. The Secretariat explained that this would be dangerous, that the examination of evidence in the case of a change in name would not be complicated and that these costs could surely be made up by slight increases in other fees. With this explanation, Norway did not press its proposal and the new Article 15 was adopted.

### ARTICLE 16

*Limitation of the List of Goods and/or Services*

Article 16 was first discussed on May 19. The United States proposed adding the words "applicant or" before the word "owner" in paragraph (1), pointing out that there should be an opportunity for the applicant to submit a request for a limitation together with the filing of an international application, if, for example, the applicant had an obligation by contract or otherwise necessitating that any application in one of the designated countries be limited to certain goods and/or services. Under the U.S. proposal the rules would provide that a request for limitation of the list of goods and/or services could be one of the optional contents of the application. The Secretariat pointed out some practical problems with respect to the U.S. proposal.

Following a brief discussion, further debate was deferred until May 21. Australia and the Netherlands also requested deferral of Article 16 for other reasons.

Prior to the meeting on May 21, the United States was asked by the Secretariat to withdraw its proposed amendment of paragraph (1). It was pointed out that this change might complicate the international processing and that the applicant had alternative procedures available to him. Thus, an applicant could defer designating any country in which there was a need to have a special limitation of goods and then designate such State in a request for later designation. The later designation could contain a limitation and it could be filed very promptly, even before the international registration had been published, according to the provisions of Article 6(1). Obviously, he could also file a separate international application for such a State. The U.S. accordingly withdrew its proposal.

On May 23, Article 16 was again taken up to consider the Netherlands proposal. (Australia had since decided not to make any proposal.)

The Netherlands proposed that Article 6 be amended to take into account the possibility that a limitation of goods decision by a national office might be more liberal than the construction of the International Bureau under Article 16 and the pertinent regulations. After a brief discussion of its merits, the Netherlands was invited to prepare a specific proposal.

This was done (TRT/DC/25) and the proposal was debated again on May 25. Eventually, the Committee agreed to add a paragraph whereby the national office could accept a limitation in that State even if the International Bureau had correctly ruled that such limitation did not conform to the requirements of TRT. This was generally agreed to and, subject to some revision of language (TRT/DC/29), the amendment was adopted by a vote of 17 in favor, 5 opposed and with 10 abstentions. This amendment eventually became paragraph (5)(a) of Article 16.

### ARTICLE 17

*Term and Renewal of the International Registration*

The United States pointed out that there was no reference in paragraph (2)(b) of this article to Article 19(3)(d). Accordingly, the provision did not expressly reflect the possibility that a declaration of use might be required at the time of renewal. This was of particular interest to the United States in view of its present requirement that a registrant demonstrate use upon renewal of a registration.

The Secretariat indicated that Article 17 was definitely subject to Article 19(3)(d) as the comments to the pre-conference text pointed out. It was mentioned in this regard that the comments would be part of the "legislative history" of the Treaty once they were updated and this would be done in the same way that the comments on the Patent Cooperation Treaty were brought up to date after the Washington Diplomatic Conference.

Following this discussion, Article 17 was adopted.

### ARTICLE 18

*Fees*

As to paragraph (2), the question was raised by Japan and Tanzania whether a fee could be charged for a transfer of ownership. The Secretariat pointed out that Article 14(4)(b) already contained an exception to that effect. The United Kingdom then raised the question whether Article 18(2) would exclude various transfer taxes. The stamp tax imposed by Ireland was mentioned as an example. Japan explained that its earlier concern had been based on the existence of such a tax in Japan. The tax on transfers is similar to a tax on the transfer of real estate.

It was understood by the Committee that such taxes would be entirely outside the scope of the Treaty and that imposing them would not be contrary to Article 18.

A long debate was held on the limitation in paragraph (3) of the pre-conference document on the amount of the designation fees which could be charged by the designated States. In that document, the Treaty provided that the amount of the individual State fee could not exceed 75 percent of the total amount of any filing, class, examination, registration and publication fees which that State prescribed in connection with national applications. The "75 percent" was in brackets. Belgium, Luxembourg, Netherlands and the Federal Republic of Germany favored the 75 percent formula. On the other hand Sweden, Norway, Finland, Tanzania, Japan, Yugoslavia, Cuba, Denmark, Canada, Australia, and Egypt argued for 100 percent. Several of these countries indicated that the full recovery of national costs would be critical to their decision whether to ratify the treaty.

After a lengthy debate, the committee voted to delete the 75 percent figure, in effect approving 100 percent recovery, by a vote of 31 in favor, 5 opposed, and with 5 abstentions. The United States did not participate in the

debate, but supported the 100 percent fee recovery in the voting.

Following this result, the Federal Republic of Germany moved to adopt the 75 percent formula for renewals. After a brief debate this proposal was defeated by a vote of 3 in favor, 26 opposed and with 10 abstentions.

Subject to this change, Article 18 was adopted.

ARTICLE 19

*Certain National Requirements*

As to paragraph (1) concerning fees, Japan raised the question whether this provision would preclude collecting a fee for forwarding an application under the special intermediary filing provisions of Article 5(3). It was pointed out that such a fee would not be precluded and that a fee could be charged by a contracting State for the forwarding of an international application to the International Bureau.

* * * *

On paragraph (3), the Federal Republic of Germany requested consolidating discussion of paragraphs (a) and (b) inasmuch as (b) was part of a compromise, i.e., it was added as a condition to acceptance by the Federal Republic of Germany and other countries of three years, rather than five, in paragraph (a) at the May 1972 Committee of Experts. Considering the two paragraphs together, the Federal Republic of Germany supported the provisions as they were drafted.

The United States proposed that paragraph (3)(b) be deleted in its entirety, explaining that a flat three year term would be critical to its acceptance of the Treaty.

The Chairman then proposed a Working Group to consider this time period, together with the time limits for refusal in Article 12. Establishment of this Working Group was pursuant to an informal understanding between the Federal Republic of Germany and the United States, with the concurrence of the Chair.

The establishment of the Working Group was concurred in by a number of delegations. In the discussion the Netherlands, Belgium, France and Sweden spoke generally in favor of the Federal Republic of Germany position; Iran, Ireland, Australia, Canada and Brazil supported the U.S. position; and the Germany Democratic Republic, Cuba and the United Kingdom expressed neutrality, while favoring the Working Group to solve the issue. Most of the observer delegations supported the Federal Republic of Germany position, with the exception of the ABA which supported the U.S. view and the New York Patent Law Association which reiterated its earlier proposal, made during the discussion of Article 11, that the national registration effect should be deferred until the commencement of use of the mark.

The Working Group was established with the following countries: Brazil, Canada, France, Tanzania, German Democratic Republic, Federal Republic of Germany, USSR, United Kingdom, United States and Norway.

After several meetings, the Working Group came back to the Main Committee on May 28 with an interim report (TRT/DC/28) in which several alternatives were presented, as follows:

*First Alternative*—delete Article 19(3)(b).

*Second Alternative*—add a sentence to 19(3)(b) which would provide that paragraph (b) would not apply to any contracting State whose national law did not permit such an extension.

*Third Alternative*—add to Article 39 a provision whereby any State could, at the time of signing or at the time of deposit of its instruments of ratification or accession, make a reservation as to paragraph (b) in which event the paragraph would not apply in that State.

In addition to the three alternatives as to Article 19(3)(b), the Working Group report contained recommendations with respect to the time limits of Article 12. (See infra under the heading of Article 12).

Leaving aside the Article 12 questions, the opinions of the countries on the Report stated on May 28 were as follows:

France, Belgium and Netherlands did not support any of the solutions of the Working Group, but instead favored leaving paragraph (3)(b) in the Treaty as it was drafted.

The United States favored the first alternative and indicated that this position was *sine qua non* to United States ratification of TRT.

The United Kingdom, Rumania, and Japan favored the second alternative.

Denmark, Federal Republic of Germany and Austria favored the third alternative.

Norway would accept either the second or third alternative, and Australia said that either one of the first or second alternatives would be satisfactory.

During this discussion, most of the countries expressed the hope that some compromise be reached which was acceptable to the United States. Consequently, the matter was referred back to the Working Group for further consideration in light of the stated views. After two additional meetings, the Working Group presented a second report to the Main Committee (TRT/DC/31) which essentially recommended the second alternative together with some provisions to cover procedural aspects, i.e., notice to the International Bureau as to the applicable provisions of national law which would render paragraph (b) inapplicable. This compromise was acceptable to the United States.

France opened the debate, indicating that, while it had opposed this solution earlier, it was willing to change its opinion if other countries would also accept the compromise.

The Federal Republic of Germany opposed the report and pointed out that where use is required under paragraph (3)(a) it is desirable that processing be completed as quickly as possible so that the registration effect would accrue before use is required in as many cases as possible. In this regard, the question was raised whether it was understood that during the period of the non-use moratorium use would not be required for making or processing an opposition or for defending the mark in an opposition proceeding brought by a third party. If it was understood that all possible efforts would be made to these ends, then the Federal Republic of Germany would accept the compromise.

The United States, while stating its preference for deletion of paragraph (b), indicated its willingness to accept the compromise. In response to the Federal Republic of Germany, the United States pointed out that it did not now know what TRT might mean in regard to the number of oppositions in the United States. It was willing to make the assurance with respect to expediting ex parte processing, but could not make any assurances in regard to oppositions. However, it was understood that there would be no requirement of use imposed in order to maintain an opposition.

Following this intervention, the Chair pointed out that the verbatim statement of the U.S. delegate on this point could be included in the minutes of the conference in view of its importance in resolving the issue. On June 8, a revised statement (TRT/DC/36) was adopted for the conference records.



Belgium proposed that the final sentence of the proposed addition to sub-paragraph (b) be deleted from the proposal. However, upon receiving indications from the Congo and Spain to the effect that flexibility was desired by the Working Group as to future provisions of law, this proposal was withdrawn.

The report of the Working Group, adding the last two sentences of Article 19(3)(b), was then adopted by a vote of 32 in favor, none opposed, and with 9 abstentions.

* * * *

The United States then proposed deletion of paragraph (8), indicating that the concept of service might endanger the position of national registrants by subjecting them to the jurisdiction of foreign courts on issues remote to trademarks, such as product liability. While this might be solved by drafting changes, the United States did not believe the provision was necessary. Consequently, in view of the possible risks it would favor deletion. South Africa, USSR and Italy supported the U.S. position. On the other hand, the United Kingdom, Sweden, Canada, Federal Republic of Germany, Switzerland, and Austria favored retaining paragraph (8) subject to some amendments.

Following this discussion on May 23, a Working Group was established to consider what possible amendments might be made to satisfy the objections which had been raised. The Working Group consisted of the following countries: Austria, Canada, Federal Republic of Germany, USSR, Switzerland and the United States.

Following a meeting of the Working Group on May 24, a comprehensive amendment of paragraph (8) was proposed (TRT/DC/23) by which the method of service via the International Bureau would be limited to actions for cancellation of the international registration pursuant to Article 13. This report was accepted without debate, although the final text was subject to an additional amendment proposed on May 29, 1973 (TRT/DC/34) and to some minor drafting changes made during the course of the Drafting Committee sessions.

It should be noted here that Article 19 was also amended by the addition of a new paragraph (9). (See infra under the heading of Article 4.)

Subject to these changes, Article 19 was adopted.

ARTICLE 20

*Recordings Effected by National Offices*

The Netherlands proposed deletion of paragraph (3) which provides that a recording in a national office relative to an international registration would not be effective unless communicated to the International Bureau. However, Austria and the Federal Republic of Germany opposed its deletion, pointing out that it was very important to the maintenance of an international register which would be complete in all respects. After a brief discussion, the proposal to delete paragraph (3) was defeated by a vote of 9 in favor, 13 against, and with 11 abstentions. The United States abstained.

ARTICLE 21

*Preservation of Rights Acquired Through National Registration*

This article was adopted without debate.

ARTICLE 22

*Preservation of Rights Acquired Through International Registration Under the Madrid Agreement*

Except for a minor drafting amendment in paragraph (2), this article was adopted without debate.

ARTICLE 23

*Preservation of the Right to Use the Madrid Agreement*

This article was approved without debate.

ARTICLE 24

*National Registrations Based on International Registrations*

Except for a minor drafting point, this article was adopted without debate.

ARTICLE 25

*Regional Marks*

On request of the United States, discussion of this Article was postponed from May 23 to May 24. A proposed amendment of the language prepared by the European Common Market Office had been circulated (TRT/DC/18) and the United States indicated that it wished to propose some alternative language. This was done (TRT/DC/22) and on May 24 the U.S. language was agreed to by the Federal Republic of Germany, Belgium and other countries. The U.S. amendment conformed the text with a parallel provision of the Patent Cooperation Treaty relating to access to a regional treaty. Subject to some later minor drafing changes, Article 24 was adopted, subject to the U.S. amendment.

ARTICLE 26

*Representation Before the International Bureau*

This article was adopted without debate.

ARTICLE 27

*Conditions for an Effect of Priority Claim Contained in the International Applications or in the Request for the Recording of Later Designations*

This article was adopted without debate.

ARTICLE 28

*International Application as Possible Basis of Priority Claim*

This article was adopted without debate.

ARTICLE 29

*Delay in Meeting Time Limits*

Belgium proposed an amendment which would authorize the International Bureau to extend time limits or excuse delays on the basis of "force majeur." The United Kingdom, the United States, Australia and Canada expressed some reservations about the Belgium proposals, namely that it would be very difficult for the International Bureau to make the determination as to what constituted "force majeur." After this brief discussion, the Belgium proposal was defeated by a vote of 4 in favor, 10 opposed and with 16 abstentions. The United States voted in opposition to this proposal.

ARTICLE 30

*Correction of Errors of the International Bureau*

This article was adopted without debate.

ARTICLE 31

*Notification of Owner of International Registration*

This article was adopted without debate.

ARTICLE 32

*Assembly*

Although several suggestions of Romania were presented and discussed, no amendments were considered necessary and this article was adopted without any change.

ARTICLE 33

*International Bureau*

Romania expressed the opinion that the services the national offices shall render under paragraph (6) should be specified. Senegal agreed with this opinion but it was explained that this was a matter for the regulations which would be considered following approval of the articles.

ARTICLE 34

*Finances*

This article was adopted without debate.

ARTICLE 35

*Regulations*

The United States proposed that unanimity be required for the amendment of certain of the regulations or, at least, that unanimity should apply with respect to those countries whose interests would be affected by such change. Reference was made to the provisions of the regulations concerning declarations of use and of intent to use. Based on interventions by the Secretariat, Austria and the Federal Republic of Germany, a solution was found whereby any change in these provisions of the regulations would be subject to a vote of a majority of ⅔ of the votes cast, on the condition that no contracting State whose national law allows or requires the filing of such declarations shall vote against the amendment. This change was accepted by the Committee and the article was adopted without further debate.

ARTICLE 36

*Search Service*

This article was adopted without debate.

ARTICLE 37

Paragraph (4) of the pre-conference document consisted of a unique provision of Treaty Law which had been inserted within brackets for consideration by the conference at the request of the United Kingdom. France and the United States spoke in favor of deleting the paragraph. No other country spoke strongly in favor of its retention. Accordingly, the proposal to retain paragraph (4) was defeated by a vote of 1 in favor, 13 opposed and 7 abstentions. The United States voted against the proposal.

ARTICLE 38

*Amendment of Certain Provisions of the Treaty*

Discussion of this Article was postponed from May 24 to May 30, since it referred in part to the time limits of Articles 12 and 19 and the Secretariat expressed the opinion that the provisions concerning amendment of these time limits should not be discussed until agreement was reached on the time limits themselves.

On May 30, Article 38 was again taken up. The United States proposed an amendment whereby the time limits of Articles 12(2) and 19(3) could not be changed except by a revision conference (TRT/DC/33). This amendment was supported by France, Congo and the Federal Republic of Germany. The FRG proposed a minor amendment in paragraph 2(b) to provide for special voting requirements in the case of certain time limits fixed in Articles 7 and 8.

Subject to this amendment, the United States proposal was accepted and Article 38 was adopted without further debate.

ARTICLE 39

*Becoming a Party to the Treaty*

Except for a brief discussion of a Netherlands proposal for a special ratification procedure in the case of members of regional treaties, which proposal was withdrawn, the only issue concerned paragraph (4). The debate on this paragraph was postponed to May 30.

On May 30, Article 39 was again debated with particular reference to paragraph (4) concerning the applicability of Article 24 of the Paris Convention. This is the Article which makes provisions of that convention applicable to territories of the member States.

The United Kingdom, the Netherlands, France and the United States spoke in favor of retention of this paragraph largely because of the practical problems which would be involved if it was deleted and because the solution set forth in the Paris Convention is a compromise which has been applied in other agreements on intellectual property.

On the other hand, Congo, Czechoslovakia, German Democratic Republic, Hungary, USSR, Bulgaria, Romania, Algeria, United Arab Republic and Iran spoke in favor of deletion of this article on the basis of the United Nations declaration with respect to colonialism. Some of these countries proposed that a working group be established on this matter. Others saw no reason for a working group pointing out that the matter had been discussed for years by international experts without being able to arrive at any other solution.

Following this debate, the proposal that there be a working group on the subject was defeated by a vote of 9 in favor, 13 against, with 14 abstentions. Following this, the proposal to delete paragraph (4) was defeated by a roll call vote, with 11 in favor, 17 opposed, and 10 abstentions. The United States opposed deletion of this paragraph. Accordingly, Article 39 was adopted without any change or further debate.

ARTICLE 40

*Transitional Provisions*

This was a new article, the origin of which was in some of the opening statements, particularly that of Brazil, in which the special problems of developing countries were emphasized. Two specific proposals were presented to the main committee, one by Brazil, Gabon, Ivory Coast, Nigeria, Senegal and Tanzania (TRT/DC/19) and the other by Hungary (TRT/DC/27).

Both of these proposals provided for optional and temporary exceptions for developing countries to the obligations of the Treaty coupled with provisions whereby, during the period of the exception, the nationals of such countries could secure the benefits of the Treaty. The proposals varied in respect to the particular conditions which would be applied to the securing of this special advantage and the time period of the exception.

In the initial discussion of the subject on May 24 and 25, Brazil, Tunisia, Ivory Coast, Algeria, Senegal and other countries supported such an exception on the ground that the treaty was of primary benefit to developed countries, consequently the developing countries should be accorded some advantage initially in order to compensate for the fact that these countries would carry the burden of receiving and processing a much larger number of international marks than would be filed by their own nationals under the treaty.

On the other hand, while recognizing these problems, the United Kingdom, France, Federal Republic of Germany, United States, Japan and other countries pointed out that this particular agreement would establish a trademark filing arrangement which was not an appropriate context for the solution to economic problems of developing countries.

The Federal Republic of Germany, supported by Austria, proposed a working group to consider the developing country recommendations and a working group was established on May 25 consisting of the following countries: Brazil, Gabon, Ivory Coast, Nigeria, Senegal, Tanzania, Cuba, Algeria, Tunisia, France, Hungary, United States, United Kingdom, USSR, Federal Republic of Germany, Australia, Belgium and Japan. After several meetings of the working group (and of a sub-working group comprised of Brazil, Congo, Nigeria, Senegal, United Kingdom, United States, USSR and Japan) during which various proposals were extensively debated, proposed Article 50 was reported to the Main Committee on June 8 and adopted.



ARTICLE 41

*Entry Into Force of the Treaty*

Except for a question of interpretation which was referred to the Drafting Committee, this article was adopted without debate.

ARTICLE 42

*Reservations to the Treaty*

With the addition of an exception concerning reservations in the case of settlement of disputes, i.e. new Article 46, this article was adopted without debate.

ARTICLE 43

*Denunciation of the Treaty*

This article was adopted without debate.

ARTICLE 44

*Signature and Languages of the Treaty*

Romania proposed that a provision be added to paragraph (3) whereby official texts of the Treaty could be established in any other language than those specified upon the indication of its desire by any contracting State, which State would also be obliged to submit a draft. The Romanian proposal was supported by the USSR but opposed by the Federal Republic of Germany. The Secretariat also pointed out some financial and technical problems which might be involved. Following this discussion the Romanian proposal was defeated by a vote of 9 in favor, 15 opposed and with 9 abstentions.

ARTICLE 45

*Depositary Functions*

This article was adopted without debate.

ARTICLE 46

*Settlement of Disputes*

This is a new article, proposed by the Netherlands in TRT/DC/17 providing for jurisdiction of the International Court of Justice under certain conditions in the case of disputes arising in connection with the interpretation or application of the treaty, together with provisions whereby any State could reserve as to such jurisdiction at the time of its ratification or accession. The same proposal was also made with respect to the other two conventions being considered at the Vienna Diplomatic Conference and was the subject of a working group concerning all three proposed treaties. The working group recommended proposed Article 46 on the basis of the proposal of the Netherlands on May 20 and, after a brief debate, the Article was adopted without change.

ARTICLE 47

*Notification*

This article was adopted without debate.

(d) *Diplomatic Conference on the Protection of Type Faces*

The Diplomatic Conference on the Protection of Type Faces was held at Vienna, May 17 to June 12, 1973. At the end of the Conference there was opened for signature the Vienna Agreement for the Protection of Type Faces and their International Deposit, with annexed Regulations. A Protocol to the Agreement was also opened for signature.

The Agreement includes the following parts: Introductory Provisions (Establishment of a Union (Art. 1); Definitions (Art. 2)); Chapter I—National Protection (Arts. 3 to 11); Chapter II—International Deposit (Arts. 12 to 25); Chapter III—Administrative Provisions (Arts. 26 to 29); Chapter IV—Disputes (Art. 30); Chapter V—Revision and Amendment (Arts. 31 and 32); and Chapter VI—Final Provisions (Arts. 33 to 41).

The Conference had before it a draft agreement (CT/DC/1) and draft Regulations (CT/DC/2). The main subjects under discussion were the following: (1) the type of Union which should be established, involving also membership and organizational provisions, (2) the definition of type faces, (3) form of protection, and (4) United States requirement of copyright notice.

*Union*

During the course of discussion on this subject, attention focused mainly on whether a Special Union should be established under Article 19 of the Paris Convention for the Protection of Industrial Property and within the framework of the Paris Union or whether a separate Union should be established. Under the first alternative only States party to the Paris Industrial Property Convention or its revisions could become parties to the Agreement. It would not follow, however, that Contracting States would be obliged to protect type faces by means of their industrial property law. Article 3 of the draft expressly provided that protection could be afforded by means of copyright provisions. Under the second alternative, which was adopted and included in the Agreement, the Agreement would be open to any State member of either the International Union for the Protection of Industrial Property (i.e. Paris Convention) or the International Union for the Protection of Literary and Artistic Works (Berne Copyright Convention), or party to the Universal Copyright Convention or to the latter Convention as revised at Paris in 1971. Some consideration, but little support, was given to opening the agreement to other States.

In addition to changes in the membership provision, the decision to provide for establishment of a separate Union involved a change in the financial provision of the draft. The draft provided that each Contracting State would belong to the class it had chosen in the Paris Union and would pay its contribution on the basis of the number of units fixed for that class in the Union. The provision as adopted and as it appears in Article 28(4)(a) of the Agreement establishes separate classes and units and provides that, unless it has already done so, each Contracting State shall indicate concurrently with depositing its instrument of ratification or accession, the class to which it wishes to belong.

*Definition of Type Faces*

The discussion on this subject was focused on the last part of the definition as contained in item (i) of Article 2 of the draft, reading as follows:

> "For the purposes of this Agreement and the Regulations:
>
> (i) 'type faces' means sets of designs of:
>
> (a) . . .
>
> (b) . . .
>
> (c) . . .
>
> which are intended to provide means for composing texts by typographical, type-written or other graphic techniques;"

The Italian Delegation proposed (CT/DC/9) that the words "type-written and other graphic techniques" be removed from the articles of the draft agreement, and in particular from Articles 2 and 6 (Articles 2 and 8 of the signed Agreement). In its proposal it "expressed its perplexity at the approval of the articles of the draft Agreement concerning the extension of protection to typewriter type and to machine-readable characters." The main reasons for its proposal to delete the words indicated were set forth as follows:

> "(a) The characters used in typographical and offset machines and in phototypesetting systems cannot be used in office machines and data-processing equipment;
>
> "(b) In view of the fact that office-machine and computer technology develops very rapidly, protection of the kind envisaged would only delay the development of new technologies such as interpretation and the production of characters for use with data-processing systems. At worst the transmission of messages and the reproduction of texts could be seriously hampered."

While the Italian proposal as such received little support in the Main Committee and in the Working Group set up to consider the definition of type faces, efforts were made, and were successful, to arrive at a revised formulation which might be acceptable. The formulation which was reported out by the Working Group and which is contained in the Agreement reads:

> "which are intended to provide means for composing texts by any graphic technique. The term 'type faces' does not include type faces of a form dictated by purely technical requirements;"

This formulation had its origin in two sources. One was the suggestion of the Chairman of the Main Committee that the words "graphic techniques" be substituted for the words "typographic, typewritten or other graphic techniques." The other was a proposal by the Swiss Delegation (CT/DC/6) that Article 5 of the draft (Article 7 of the signed Agreement) include an additional paragraph as follows:

> "Contracting States may exclude from protection under this Agreement type faces of a design dictated by purely technical requirements."

Following, in part, is the explanation which accompanied the proposal:

> ". . . Contracting States should be allowed to exclude from protection type faces of a design dictated solely by technical requirements. Examples of this are certain machine-readable characters, the shape of which is determined exclusively by the fact that they must be able to be read by computers. It should be noted that the provision proposed does not prevent a system for the solution of a technical problem (for instance the machine-readability of a type face) by means of characters designed specifically for the purpose from being protected in another manner, for instance by patent."

The substance of the proposal, but in a mandatory form as proposed by the Delegation of the Federal Republic of Germany rather than a discretionary form, became the final sentence of item (i) of Article 2 of the Agreement.

Among the comments which were made in the Main Committee and in the Working Group in opposition to the Italian proposal and which resulted in the formulation finally accepted were: The Italian proposal seemed aimed at industrial production. If typewriter techniques were excluded; this would exclude future means for printing; the question is a philosophic one—whether or not you protect the creator; there is not any logic in distinguishing between those who design for one kind of industry as compared with those who design for another kind of industry; there is not a clear line in distinguishing computer, typewriter and typographic—increasingly we see the three mixed together.

*Form of Protection*

As a result of discussion in the Main Committee and Working Groups II and III, revised provisions were formulated and adopted as to the form of protection and the resulting obligations.

Article 3 of the Agreement provides that Contracting States undertake in accordance with the provisions of the Agreement, to ensure the protection of type faces, by establishing a special national deposit, or by adapting the deposit provided for in their national industrial design laws, or by their national copyright provisions. It is provided that these kinds of protection may be cumulative.

Article 34 of the Agreement provides that at the time of depositing its instrument of ratification or accession, each State shall declare whether it intends to ensure the protection of type faces by establishing a special national deposit, or by adapting the deposit provided for in its national industrial design laws, or by its national copyright provisions or by more than one of these kinds of protection. Any State intending to ensure protection by its national copyright provisions is required to declare at the same time whether it intends to assimilate creators of type faces who have their habitual residence or domicile in a Contracting State to creators of type faces who are nationals of that State.

The natural persons and legal entities which are protected are specified in Article 4. In Contracting States which declare under Article 34 that they intend to ensure protection by establishing a special national deposit or by adapting their national industrial design laws, the protection of the Agreement applies to natural persons who, or legal entities which, are residents or nationals of a Contracting State. In Contracting States which declare under Article 34 that they intend to ensure protection by their national copyright provisions, the protection of the Agreement applies to (i) creators of type faces who are nationals of one of the Contracting States and (ii) creators of type faces who are not nationals of one of the Contracting States but whose type faces are published for the first time in one of such States, it being further provided that any such Contracting State may assimilate creators of type faces who have their habitual residence or domicile in a Contracting State to creators of type faces who are nationals of that State.

Article 5 sets forth the obligation of each Contracting State to grant to all natural persons and legal entities entitled to claim the benefits of the Agreement national treatment according to the kind of protection which the Contracting State has declared under Article 34.

*United States Requirement of Copyright Notice*

Calling attention of the Conference to the requirement in the United States copyright law that published copies of copyrighted works bear a notice of copyright, the United States proposed an amendment (CT/DC/10) to the Agreement. It prefaced its proposed amendment with a further statement as follows:

> ". . . This requirement (requirement of copyright notice) has been in the United States law since 1802. Some sort of notice is, therefore, necessary to obtain protection in the United States. For example, under the Universal Copyright Convention, the requirement is met by a ©, the name of the copyright owner, and the year date of publication. In the recently negotiated Phonograms Convention, the copyright notice on sound recordings includes a special symbol Ⓟ. If the United States were contemplating the protection of type faces by means of copyright, there would have to be an additional condition of protection . . . to permit a Contracting State (i.e., the United States) to require a copyright notice."

The proposed amendment read as follows:

> "If, as a condition of protecting type faces, a Contracting State, under its domestic law, requires compliance with formalities, these shall be considered as fulfilled, with respect to type faces created by residents or nationals of other Contracting States, if all authorized sets of type faces distributed to members of the public bear a notice consisting of the symbol TF accompanied by the name of the owner entitled to protection and the year date of the first such publication placed in such a manner as to give reasonable notice of claim of protection."

After considerable discussion in the Main Committee and in Working Groups II and III, the Delegation was successful in having the provision included, with some modification, in Article 5(2) of the Agreement. In the absence of any support for, and in view of considerable opposition to, the symbol , the symbol © was substituted. The provision as included in the Agreement reads as follows:

> "If a Contracting State referred to in Article 4(2) requires, under its domestic law, compliance with formalities as a condition of protecting type faces, these should be considered as fulfilled, with respect to type faces whose creators are referred to in Article 4(2), if all the copies of the type faces published with the authority of the creator or other owner entitled to protection are accompanied by or, as the case may be, bear a notice consisting of the symbol © accompanied by the name of the owner entitled to protection and the year date of the first such publication placed in such a manner as to give reasonable notice of claim of protection.

*Other Provisions*

For the most part other provisions of the Agreement were formulated along the lines of those in the draft agreement. Certain of the differences which occur are noted as follows. The Preamble represents a reformulation proposed by the Soviet Delegation. *Article 8(2)(b)* is more liberal in the protection of originality than the draft. *Article 9* provides for a term of protection not less than fifteen years, rather than twenty-five years as provided in the draft (however, see below regarding the Protocol). *Article 12* on international deposit and recording includes an amendment proposed by the Polish Delegation which provides for deposit through the intermediary of the competent Office of a Contracting State. *Article 23* provides that the effect of the international deposit may be extended for terms of five years, rather than for terms of five or ten years as proposed in the draft. *Article 30* contains a provision on the settlement of disputes, which was added as a result of a proposal by the Netherlands Delegation. *Article 8(5)* was added and provides that Contracting States may take legislative measures to avoid abuses which might result from the exercise of the exclusive right provided under the Agreement where, apart from the protected type faces in question, no other type faces are available in order to achieve a particular purpose in the public interest. It is provided, however, that the legislative measures shall not prejudice the right of the owner to just remuneration for the use of his type faces. Nor shall the protection of type faces be subject to any forfeiture either by reason of failure to work or by reason of the importation of reproduction of the protected type faces.

*Regulations*

The Regulations which are annexed to the Agreement provide rules concerning various matters such as administrative requirements and details useful in the implementation of the Agreement. The Assembly may amend the regulations by two-thirds vote.

*Protocol*

A Protocol to the Agreement, proposed by the Delegations of France, the Netherlands and Switzerland (CT/DC/20) was adopted with modifications by the Conference and provides for a minimum term of protection of twenty-five years as among the States which become party to the Protocol.

(c) *Diplomatic Conference on the International Classification of the Figurative Elements of Marks*

The Conference concerned itself primarily with several questions on procedure for the proper administration of the proposed Agreement concerning the International Classification for Figurative Elements of Marks (trademarks).

The World Intellectual Property Organization (WIPO), as the Secretariat, had proposed two draft agreements for consideration of the Conference. One proposal would have established the proposed agreement as a Special Agreement under Article 19 of the Paris Convention for the Protection of Industrial Property as a Special Union. The second proposal by the Secretariat would have established the proposed agreement as an additional act to the Nice Agreement (an agreement for the classification of trademark goods and services).

The WIPO Secretariat argued that the Additional Act under the Nice Agreement would simplify administration of the proposed treaty since it would not require a separate Administrative Union to carry out the programs devolving under the Agreement. In addition, it was argued that the Agreement would only be open to members of the Nice Agreement and confer powers upon the Nice Union to administer the additional Classification for Figurative Elements. The basis of all arguments by the Secretariat was the reduction of costs of administration of the new Agreement by having it placed under an already existing Union for administration.

The delegations of the United States, United Kingdom, Federal German Republic, USSR and Spain presented strong opposition to the establishment of the Figurative Elements of Marks as an Additional Act to the Nice Agreement.

The U.S. position was presented to the effect that the proposal for the establishment of an Additional Act under the Nice Agreement has substantial merit in attempting to simplify procedures and reduce costs of administration; however, the establishment of an Additional Act raised serious legal problems. The proposal would in effect permit a small number of countries (5) to amend the Nice Agreement to which a relatively large number (30) of countries are a party. This would allow 5 member states to make decisions to which the other 30 member states could do nothing but agree. In essence a minority of member state would be determining operating policy, budget, and financial obligations for a substantial majority.

The Conference decided that the International Classification of Figurative Elements of Marks should be established as a separate agreement formed as a separate administrative Union in order to insure that membership could be open to any country desiring to do so and to allow all member States to have equal voice in all matters of administration, particularly those matters related to budget and finance.

Several additional proposals for amendment of the proposed Agreement were presented and subsequently defeated. These proposed amendments were to: (1) change the title of the Agreement to amend the words "Figurative Elements" to read "Design Elements" since the proposed classification contains more than "mere figures" and represents graphic, letters, figures and other pictorial elements; (2) a proposal to cancel article 4(1) and substitute the shorter language of the more clear text as contained in the Strasbourg Agreement.

Several other delegations offered substantive amendments to the proposed Agreement which were generally supported by the Conference in order to harmonize the language of the Agreement to conform to other existing agreements to avoid ambiguities because of inconsistency.

A provision on settlement of disputes was added on the basis of a proposal by the Netherlands Delegation.

The Conference adopted a formal Resolution submitted by the Main Committee to establish a provisional Committee of Experts under the World Intellectual Property Organization (WIPO) pending the entry into force of the Agreement. This Committee of Experts will include signatory states and those states which have acceded to the Agreement as well as Intergovernmental Organizations specialized in the field of trademarks (as observers). Member states of WIPO which are not signatories and have not acceded shall be admitted as observer members. The Committee shall reexamine the Classification for Figurative Elements established by WIPO and the Swiss Patent Office for the purpose of revision.

The Classification of Figurative Elements, a listing of categories, division and sections by which the figurative elements of marks are classified, was adopted by the Conference as the system of classification for figurative elements per se. This adoption is in effect the adoption of a system which will be constantly subject to revision over a period of time in order to update and improve the system.

The Special Union established shall be governed by an assembly wherein each country of the Union shall be represented by one delegate; intergovernmental organizations may be represented by observers; each delegation will pay its own travel expenses; the Assembly shall revise and maintain the Agreement; direct the International Bureau (WIPO) in matters related to revision conferences; determine and approve the budget and programs of the Union; decide on official texts in languages other than English and French; and establish such subcommittees as it sees fit.

Any member state of the Paris Convention for the Protection of Industrial Property may become a party to the Agreement at any time. The Agreement will enter into force three months after the fifth country deposits its instrument of ratification or accession.

### 8. FUTURE MEETINGS

#### (a) *Trademark Registration Treaty*

It was agreed that Interim Committees were to be established to undertake preparatory work prior to entry into force of the Trademark Registration Treaty. However, no dates for any such meetings were established at the Diplomatic Conference.

Eventually when the TRT comes into force the Treaty provides for an Assembly of the Contracting States which shall meet once every calendar year in ordinary session.

#### (b) *Agreement for the Protection of Type Faces and their International Deposit*

When the Type Faces Agreement comes into force, provision is made for an Assembly of the Contracting States which shall meet once in every third calendar year in ordinary session.

#### (c) *Agreement Establishing an International Classification of the Figurative Elements of Marks*

After this Agreement enters into force, provision is made for "an Assembly consisting of the countries of the Special Union." The Assembly shall meet once in every third calendar year in ordinary session.

### 9. CONCLUSIONS

#### (a) *Trademark Registration Treaty*

In order to become a party to the Trademark Registration Treaty, the United States is required to effect material changes in its trademark law, principally the granting of limited national registration effect to marks which are not in use during the available three year period when use is not required. There are differences of opinion in the private sector as to the desirability of these changes as well as others of lesser importance which the treaty requires.

#### (b) *Agreement for the Protection of Type Faces and Their International Deposit*

The United States would, if it became a party to the Type Faces Agreement, probably accord protection under its copyright law. Some amendment of the copyright law may be required for this purpose. However, a new Register of Copyrights was appointed in November 1973 and she is reviewing the question of protection of type faces. A new interpretation of the copyright law may justify domestic copyright protection and may facilitate U.S. acceptance of this Agreement.

#### (c) *Agreement Establishing the International Classification of the Figurative Elements of Marks*

The Agreement Establishing the International Classification of the Figurative Elements of Marks closely parallels both the Nice and Strasbourg Agreements and is generally acceptable to the United States. However, we do not contemplate becoming a party to the Figurative Elements Agreement at the present time. The existence of the Agreement presents no problem for the United States but permits an opportunity for us to do in-depth studies of the revisions of the Classification in order to determine our particular interest in the system.

[931 O.G. TM 6 (Feb. 11, 1975)]

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(344) CONFERENCE OF PARTIES IN TRADEMARK INTER PARTES PROCEEDINGS

Under the inter partes rules of procedure in trademark cases effective July 1, 1972 (898 O.G. TM 170, May 16, 1972), the interlocutory phases of trademark inter partes proceedings are becoming increasingly involved, and the experience of the Trademark Trial and Appeal Board has been that the difficulties in such proceedings can frequently be resolved more satisfactorily and quickly by conference in person than by correspondence or telephone. Therefore, effective immediately, the following practice is being adopted:

> Whenever it appears to the Trademark Trial and Appeal Board that questions or issues arising during the interlocutory phase of a trademark inter partes proceeding have become so complex that their resolution by correspondence or telephone is not practical and would be likely to be facilitated by conference in person of the parties and/or their attorneys with a member or members of the Trademark Trial and Appeal Board, the Board may at its discretion suggest that the parties and/or their attorneys, under circumstances which will not result in undue hardship for any party, meet with the Board at its offices in Crystal Plaza, Arlington, Virginia, to discuss the resolution of difficulties.

C. MARSHALL DANN,
Feb. 3, 1975. *Commissioner of Patents and Trademarks.*

[932 O.G. TM 2 (Mar. 4, 1975)]



(345) PATENT AND TRADEMARK CASES

[37 CFR Parts 1, 2, 4]

*Rules and Procedures*

Notice is hereby given that, pursuant to the authority contained in section 41 of the Act of July 5, 1946 (60 Stat. 440, 15 U.S.C. 1123) and section 6 of the Act of July 19, 1952 (66 Stat. 793, 35 U.S.C. 6), as amended October 5, 1971 (85 Stat. 364), the Patent and Trademark Office proposes to amend Title 37 of the Code of Federal Regulations by revising or amending §§ 1.12, 1.136, 1.197, 1.244, 1.256, 1.304, 2.18, 2.37, 2.75, 2.80, 2.85, 2.101, 2.102, 2.103, 2.105, 2.111, 2.112, 2.120, 2.123, 2.127, 2.129, 2.141, 2.144, 2.145, 2.162, 2.172, 2.183, 2.185, 2.187 and 4.2.

All persons are invited to present their written views, objections, recommendations, or suggestions in connection with the proposed changes to the Commissioner of Patents and Trademarks, Washington, D.C. 20231 on or before May 1, 1975. No oral hearing will be held. Written comments or suggestions will be available for examination by interested persons at Crystal Plaza Building 3, Room 11C17a, 2021 Jefferson Davis Highway, Arlington, Virginia.

*Assignment records open to public inspection.* The proposed revision of § 1.12 is intended to make clear the existing practice that assignment records relating to trademark applications and registrations are open to the public. The present wording, which is based on the amendment of § 1.12 on August 23, 1965 (819 O.G. 443), does not clearly distinguish between the procedure to be applied to patent records and to trademark records. In view of a number of inquiries as to the manner in which the amendment was to be applied, a notice was published in the OFFICIAL GAZETTE of January 18, 1966 (822 O.G. 769) stating that assignments relating to applications for registration of trademarks will be open to public inspection as heretofore. Since assignment records relating to trademark applicaions and registrations have always been open to the public, which practice continues at the present time, it is believed desirable to make the practice clear.

In the third sentence of the section, language is added to indicate that the requirement for written authority applies only to patent applications.

*Time less than six months.* It is proposed to revise paragraph (b) of section 1.136 to read "sufficient cause" rather than "good and sufficient cause." This revision is merely for consistency of language with other sections in this part and does not represent any change in practice.

*Reconsideration of decision.* It is proposed to revise paragraph (b) of § 1.197, paragraph (b) of section 1.256, paragraph (c) of §§ 2.129 and 2.144, to provide that the Board of Appeals, the Board of Patent Interferences, and the Trademark Trial and Appeal Board may, for sufficient cause, extend the time for filing a request for rehearing or reconsideration, or modification of a decision rendered by these Boards. Proposed revised paragraph (b) of § 1.256 and paragraph (c) of § 2.129 provide similar opportunity for extension of time for filing a reply to such a request in inter partes cases. The purpose of these revisions is to eliminate the necessity for waiver of a rule by the Comissioner in order for a party to obtain an extension of time.

In these sections, as well as in the related §§ 1.244(c), 2.127(b), 1.304 and 2.145(d), it is proposed to use the term "request" rather than "petition" in connection with rehearing or reconsideration, in order to avoid redundancy and in order to clearly distinguish such action from a petition to the Commissioner.

*Time for appeal or civil action.* Proposed revised § 1.304 and proposed revised paragraph (d) of § 2.145 clarify the portion of each which relates to the time for filing appeal or commencing civil action in cases where a request for rehearing or reconsideration, or modification of a decision, is filed. Present §§ 1.304 and 2.145(d) provide for an extension of time for appeal or civil action if a request for rehearing is filed within thirty days after a decision, but their language is subject to the interpretation that they deny any extension if the request for rehearing is filed more than thirty days after the date of a decision. It has been the practice of the Patent and Trademark Office, however, in those cases where the thirty days to file a request for rehearing has been enlarged by waiver of rule by the Commissioner under § 1.183 or § 2.148, to consider the waiver as also applying to the thirty day period specified in §§ 1.304 and 2.145(d). *Dresser Industries, Inc.* v. *Safety-Kleen Corporation,* 183 USPQ 180 (Comr. Pats. 1974).

In order to clarify the meaning of § 1.304 and paragraph (d) of § 2.145, it is proposed to revise these sections to eliminate all reference to a definite time for filing a request for rehearing, and to include instead reference to the provisions for filing request for rehearing which are made in §§ 1.197(b), 1.256(b), 2.129(c) and 2.144. Such sections are proposed to be revised to provide for extension of the basic time specified therein.

Proposed revised § 1.304 and paragraph (d) of § 2.145 also provide that the time for appeal or commencing civil action (whether it be the original sixty days, or the thirty days extension after decision on a request for rehearing) may be extended by the Commissioner upon a showing of sufficient cause.

Proposed revised § 1.304 is arranged in three subsections identified as (a), (b) and (c), and paragraph (d) of § 2.145 is arranged in three subsections identified as (1), (2) and (3). The purpose of separate subsections is to provide a means for easier reading and understanding of these sections in view of the fact that three different points are included in the sections. The proposed rearrangement does not affect practice.

*Elimination of reasons of appeal in trademark cases.* It is proposed to revise paragraphs, (a), (b) and (d) of § 2.145 to eliminate reference to the need to file the reasons of appeal in the Patent and Trademark Office when appealing a decision of the Trademark Trial and Appeal Board to the U.S. Court of Customs and Patent Appeals, consistent with the modification of section 21 of the trademark act made by Pub. L. 93–600, enacted January 2, 1975.

*Recognition for representation, powers of attorney, and correspondence with attorney.* It is proposed to revise §§ 2.18 and 4.2 to clarify the existing practice of the Patent and Trademark Office in relation to firms of attorneys and powers of attorney, and the handling of correspondence with attorneys and other recognized persons, in trademark cases.

Under present practice firms of attorneys are not recognized for practice before the Office in trademark cases. The persons identified in § 2.12 who may represent others before the Office are persons to whom individual responsibility may attach for actions taken and who must conform under § 2.13 to the Code of Professional Responsibility of the American Bar Association. Section 2.12(a) pertains to attorneys at law and does not provide for representation by a firm of attorneys as distinguished from individual attorneys. Further, reference to representation by a firm of attorneys was eliminated from § 2.15 by amendment effective July 2, 1971 (see 890 O.G. TM 60, September 14, 1971). If a firm name is given in the signature location on a paper filed by an attorney, nevertheless under § 2.15 an individual attorney must actually sign the paper.

It is not necessary under existing practice for an attorney at law filing a paper in connection with a trademark case to have a power of attorney from the party whom he represents. Normally, a letter of transmittal on an attorney's letterhead for a paper not required to be signed by the attorney, such as an application, or an attorney's signature on a paper during prosecution, or a personal appearance, is sufficient for an attorney to be recognized as a party's representative. If deemed necessary, further proof may be required under § 2.17 (a) of an attorney's authority to act for a party or an attorney's qualifications under § 2.12(a).

Although not needed, a written power of attorney is accepted if it is filed. Such power may be revoked, and if revoked, the Office will not thereafter recognize such attorney in that case unless he is again specifically appointed. Any written power of attorney which is filed should designate individuals and not firms of attorneys; a power of attorney which designates a firm rather than individuals is not considered to be a power but merely a direction that correspondence be addressed to that firm. (See 890 O.G. TM 60, September 14, 1971.)

It is proposed to eliminate from § 4.2 (power of attorney form) the requirement to identify bar membership, since further proof may be required under section 2.17(a) if there appears to be any reason to question either an attorney's authority to represent a party or an attorney's qualifications under § 2.12(a). It is further proposed to eliminate from § 4.2 present Note (8) which calls for the names of law firm membera and their bar membership if a firm name is used, and to add a new Note (8) which indicates that individuals

should be appointed and that naming a firm will serve only as a designation of address for correspondence.

Proposed revised § 2.18 is intended to clarify the practice relative to the address to which correspondence is sent by the Office when an attorney at law or other recognized person is acting on behalf of a party. When an attorney or other recognized person is representing a party, correspondence is sent to such attorney or other recognized person at the address specified when such person's representation is established. The Office will not undertake to correspond with more than one person at more than one address. Therefore if another attorney or recognized person files a paper, the paper will be accepted but correspondence will continue to be sent to the address of the attorney or representative as already established in the file until the Office receives written instruction by the attorney or other representative, or by the party being represented, to send correspondence to another address. A subsequently filed power of attorney or authorization of agent is regarded by the Office as a change of address for correspondence even though there is no revocation of the previous power or authorization, but in other situations a specific request is necessary, and language such as "Send correspondence to (giving address, or name and address)", is the most desirable means for changing the correspondence address. Other types of statements will be accepted by the Office if their intention is sufficiently clear to be reasonably interpreted as a request to change the address to which correspondence is to be sent. Neither the appointment of an associate attorney nor the filing of a paper by a different recognized representative has any effect on correspondence unless an instruction to change the correspondence address is included.

The Office does not send notice or acknowledgment of changes of address. Only a written revocation of a written power of attorney is acknowledged by the Office.

*Designation of domestic representative by person not domiciled in the United States.* In § 2.37 and paragraph (a)(4) of § 2.185, it is proposed to change the terms "appointment" and "resident agent" to "designation" and "domestic representative," respectively, to conform to the language of section 1(d) of the Trademark Act of 1946. This will not change present practice.

*Effective filing date for the Supplemental Register.* In § 2.75 it is proposed to add the word "effective" before "filing date" in order to make clear the existing practice that, when the filing date of an amendment to convert an application for registration on the Principal Register to an application for registration on the Supplement Register becomes the filing date of the latter application, such date is considered to be the effective filing data of that application. This change in wording is in agreement with the language "effective filing date" used in § 2.83.

*Publication of marks placed in interference.* The proposed revision of § 2.80 restores a reference to publication of the mark in case of interference which was omitted inadvertently when § 2.80 was amended as of March 1, 1972 (896 O.G. TM 2). Although interference is not now declared except upon petition to the Commissioner (amendment of § 2.91 as of March 1, 1974 (896 O.G. TM 2)), the practice of publishing the mark when interference is declared was continued.

*Fee for petition to revive a multiple class application.* It is proposed to revise paragraph (e) of § 2.85 to delete reference to a petition to revive and thereby to make clear that only one fee is required for a petition to revive an abandoned application in which there is more than one class. Section 31 of the trademark act specifies a fee which shall be paid "on filing each petition for the revival of an abandoned application" without qualification as to the number of classes in the application, and therefore only one fee for each petition is considered to be necessary. For the same reason, in connection with multiple class registrations, under existing practice a single fee is sufficient for issuance of a new certificate of registration following change of ownership of a mark (§ 2.171) or correction of a registrant's mistake (§ 2.175), for certificate of correction of registrant's mistake (§ 2.175), or for amendment or disclaimer after registration (§ 2.173).

*Fee required for each class being opposed, and insufficient fees for classes in application being opposed.* Proposed revised §§ 2.101, 2.102 and 2.103 make clear the existing requirement that when there is more than one class in an application (such as in a combined application), the required fee must be paid for each class when filing an opposition against such application.

These proposed revised sections also provide that when the fees which accompany an opposition are insufficient to cover all classes in the application being opposed, which may occur with a combined application, opposer should specify the classes in which opposition to registration of the mark is sought, so that the Office will not be required to select classes or make further inquiry in that respect and will be able to process the opposition promptly in the particular classes which opposer desires. This is in accord with present practice. See notice in the OFFICIAL GAZETTE of August 11, 1964 (805 O.G. TM 39).

*Joining persons in an opposition.* Proposed revised § 2.01 provides that two or more persons may be joined in an opposition, but that the required fee for each class in which each person seeks opposition must be paid for each person so joined. By this revision, existing practice is incorporated into this section. See notice in the OFFICIAL GAZETTE of August 11, 1964 (805 O.G. TM 39).

*Unverified opposition during extension of time.* It is proposed to further revise §§ 2.102 and 2.103 to permit an unverified opposition to be filed by an attorney or agent during an extension of time for opposition as well as within the original thirty days for opposition after publication of the mark. Present practice limits the filing of an unverified opposition to thirty days after publication. Nevertheless it has been found that some oppositions filed during extensions of time are unverified, and that when the defect is discovered, either there is insufficient time in the extended period to file a verified opposition or the period has expired. It seems desirable to eliminate a situation that has in some cases proven to be a difficulty for opposers. Since the main effort and cost of preparing and filing an opposition is expended even though the opposition is unverified, it is believed that in most instances opposers will file verified oppositions in extended opposition periods. Further, any unverified opposition must be confirmed by opposer by verification or declaration within thirty days after its filing. For both reasons it is believed that the proposed change in practice will not result in any undue delay in registration.

Proposed revised § 2.102 provides that an opposition filed within an extension of time to oppose must be accompanied by the required fee for each class, and states that the oppositions should be verified or include a declaration in accordance with § 2.20. However, in case verification or declaration cannot be secured within the extension of time, proposed revised § 2.103 provides that an unverified opposition may be filed within an extension of time to oppose. Such unverified opposition must be confirmed by opposer by verification or declaration within thirty days after its filing.

*Extension of time to oppose.* It is proposed to further revise § 2.102 to make clear existing practice as to who may request an extension of time to oppose and who may file opposition during an extension of time. Request to extend the time for filing opposition must be made by a person who is eligible to oppose, that is, a person who believes that he would be damaged by the registration of the mark on the Principal Register. An attorney at law or other person recognized to represent a party may file a request for extension of time on behalf of a potential opposer. *La Maur, Inc.* v. *Andis Clipper Co.*, 181 USPQ 783 (Comr. Pats. 1974). The potential opposer must be identified in the request for extension because an extension of time is a personal privilege which is normally granted only to the person who has requested it. A problem has been, however, that complete information is sometimes not available at the time request for extension of time must be filed, so that there is a misidentification of the potential opposer, or, where there are parties in privity, for example related companies, one of the interested parties is named whereas later the other will be found to be the proper party to oppose. For this reason, it is considered desirable to permit opposition to be filed during an extension of time by a person whose name varies or is different from the name of the person to whom the extension was granted, provided the difference in names constitutes mere misidentification as a result of mistake and is not a difference in entity, or provided the persons designated are in privity, such as in the case of related companies under section 5 of the trademark act. This practice is in accord with the decision in *F. Jacobson & Sons, Inc.* v. *Excelled Sheepskin Co.*, 140 USPQ 281 (Comr. Pats. 1963). An analogous situation is found in *Universal Oil Products Co.* v. *Rexall Drug and Chemical Co.*, 174 USPQ 458 (CCPA 1972), where a parent company was permitted to oppose although the mark on which



opposition was based was owned by the parent's subsidiary company.

When there is uncertainty between persons in privity as to which will ultimately be the proper opposer, it is desirable that the persons and their relationships be identified as clearly as possible in the request for extension of time.

*First thirty-day extension of time to opposed.* It is proposed to revise § 2.102 consistently with Pub. L. 93-600, effective January 2, 1975, which provides for a first thirty-day extension of the time for filing an opposition upon request without showing good cause.

*Transmittal of opposition.* It is proposed to revise § 2.105 to eliminate reference to transmittal of an opposition by the Examiner of Trademarks to the Trademark Trial and Appeal Board, in view of the fact that all activity connected with the processing of oppositions has been transferred from the Trademark Examining Operation to the Trademark Trial and Appeal Board.

It is further proposed to revise § 2.105 by changing the word "notice" throughout the section to the word "notification" and also by changing the word "Institution" in the heading of the section to the word "Notification". The purpose of these changes is to make clear the present practice of regarding the paper which is prepared in accordance with this section to be merely a notification to the parties of the existence of a proceeding which commenced at the time the opposition was filed.

*Fee required for each class for cancellation, and insufficient fees for classes in registration.* Proposed revised §§ 2.111 and 2.112 make clear the existing requirement that when there is more than one class in a registration, the required fee must be paid for each class when filing a petition to cancel the registration. A petition to cancel which is accompanied by fees insufficient to cover each class in the registration should specify the classes for which cancellation is sought, so that the Office will not be required to select classes or make further inquiry in that respect, and cancellation may be accomplished promptly in the classes desired. This is in accord with present practice.

*Order compelling discovery in inter partes cases.* Because of the increasing burden upon the Trademark Trial and Appeal Board as a result of the frequency and complexity of the motions being filed to compel discovery under rules adopted July 1, 1972 (898 O.G. TM 170, May 16, 1972), it is considered desirable that before seeking an order from the Board compelling discovery, the parties themselves be required to attempt to resolve the issues by mutual agreement. It is proposed to accomplish this by revising paragraph (c) of § 2.120 to require that a motion for an order compelling discovery be supported by an affidavit or a declaration in accordance with § 2.20 stating that the moving party or its attorney has conferred with the opposing party or its attorney in good faith in an effort to resolve by agreement the issues raised by the motion and that the parties have been unable to reach agreement with respect thereto, or specifying the parts of the issues, if any, which have been resolved. See *Angelica Corporation* v. *Collins & Aikman Corporation*, 183 USPQ 378 (TT&A Bd. 1974), and *Cool-Ray, Inc.* v. *Eye Care, Inc.*, 183 USPQ 618 (TT&A Bd. 1974).

*Requirements for depositions.* It is proposed to revise paragraph (g) of § 2.123 by adding a subsection numbered (3) thereto in order to restore to this section a designation of the existing requirements as to the form of depositions which was omitted inadvertently when paragraph (g) of this section was amended as of July 1, 1972 (898 O.G. TM 170, May 16, 1972).

*Comments on inter partes procedures in general.* In addition to the changes in inter partes procedures which are proposed herein, the Patent and Trademark Office is currently making an overall review of the efficiency and effectiveness of all of the amended inter partes rules of procedure in trademark cases which became effective as of July 1, 1972 (898 O.G. TM 170, May 16, 1972). The Patent and Trademark Office would welcome comments on any present inter partes procedures separate from comments on the specific revisions proposed herein.

*Requests for reconsideration of decisions on motions.* Motion procedures before the Trademark Trial and Appeal Board under §§ 2.127 and 2.129 follow the Federal Rules of Civil Procedure, which results in a multiplicity of types of motions being available. Some of these could be finally dispositive of a case and appeal could be taken from them. It therefore seems desirable to distinguish in trademark cases between the procedures as to decisions on motions which are finally dispositive of a case and decisions on motions which are not finally dispositive. To accomplish this it is proposed to revise paragraph (b) of § 2.217 to limit the section to motions which ar not finally dispositive of a case. Any request for rehearing of such motions must be filed within thirty days, as is the existing practice. It is proposed to revise paragraph (c) of § 2.219 to include a reference to decisions on motions which are finally dispositive of a case and thus to make it clear that a request for rehearing of any final decision (including those on motions) may be filed within thirty days and that such time may be extended for sufficient cause.

*Fee required for each class on appeal, and insufficient fees for classes in application on appeal.* Proposed revised § 2.141 makes clear the existing requirement that when there is more than one class in an application (such as in a combined application), the prescribed fee must be paid for each class when appealing to the Trademark Trial and Appeal Board.

The proposed revised section also provides that when the fees which accompany an appeal are insufficient to cover all classes in the application being appealed, which may occur with a combined application, applicant should specify the classes in which appeal is taken, so that the Office will not be required to select classes or make further inquiry in that respect and will be able to set up the appeal promptly in the particular classes which applicant desires. This is in accord with present practice.

*Requirements for affidavit or declaration under section 8 of the Act of 1946.* Proposed revised § 2.162 provides that an affidavit or declaration in accordance with § 2.20 containing either a statement of use or recitation of facts as to excusable nonuse must be filed before the expiration of the specified sixth year. However, if the evidence supporting the statement of use is not submitted or is found to be deficient, such supporting evidence may be filed thereafter, and may be considered even though filed after the expiration of the sixth year, and if the recitation of facts as to nonuse are found not to be sufficient, further evidence or explanation may be submitted and may be considered even though filed after the expiration of the sixth year. The statement of use or the recitation of facts as to excusable nonuse in the affidavit or declaration meets the statutory requirement of making a showing within the sixth year, although such statement or recitation is not necessarily conclusive and may be required to be supported by other evidence. *In re The Magnavox Company*, 177 USPQ 274 (Comr. Pats. 1973).

The phrase "specifying the nature of such use" is omitted from paragraph (c) of proposed revised § 2.162 because its meaning is unclear and it does not identify any requirement which is necessary for an affidavit or declaration under section 8 of the act.

The proposed revised section also makes it clear that where there is more than one class in a registration, a statement of use or a statement as to nonuse, and appropriate evidence in support thereof, is necessary with respect to each class in the registration, and that the required fee is necessary for each class in the registration. An affidavit or declaration under section 8 which is accompanied by fees insufficient to cover each class in the registration should specify the classes to which the affidavit or declaration pertains, so that the Office will not be required to select classes or make further inquiry in that respect and will be able to determine promptly the question of acceptance or refusal in relation to relevant classes.

*Surrender for cancellation.* Proposed revised § 2.172 makes clear the existing practice of regarding a request to delete one entire class, or more than one entire class but less than the total number of classes, from a registration in which there is more than one class, as a surrender of a registration as to the specified class or classes, and not as an amendment of a registration. Each class is treated in effect as a separate registration. On the other hand, deletion of less than all of the goods or services in a class constitutes amendment of a registration as to that class. No fee is required for surrender, whereas a fee is required for each class which is amended.

*Requirements of application for renewal.* It is proposed to revise paragraph (c) of § 2.183 to provide that when facts are recited in an application for renewal to show excusable nonuse and such facts are found to be deficient, additional evidence or explanation may be considered by the Examiner even though filed after the expiration of the initial six month period for applying has expired, or after the three month delay period in the class of a delayed application for renewal. The recitation in the application of facts to show excusable nonuse meets the statutory requirement of making a showing within the required time, although such statement or recitation is not necessarily conclusive and may be required to be supported by other evidence. *In re The Magnavox Company,* 177 USPQ 274 (Comr. Pats. 1973).

Section 2.183 as proposed to be revised also makes clear the existing practice that when there is more than one class in a registration, a declaration or verified statement of use and a specimen or facsimile, or a recitation of facts as to nonuse, are necessary with respect to each class in the registration, and that the required fee is necessary for each class in the registration when renewing the registration. An application for renewal which is accompanied by fees insufficient to cover each class should specify the classes with regard to which renewal is desired.

*Signature of translator for English translation.* The proposed revision of paragraph (a)(2) of § 2.185 is intended to make it clear that the signature necessary for an English translation of a foreign document is the signature of the translator of the document, and that the signature only is needed, not a verification or a declaration in accordance with section 2.20.

*Certificate of registration may issue to assignee.* Proposed revised § 2.187 sets forth more specifically the procedure for giving notice to the Patent and Trademark Office in time to permit issuance of a certificate of registration in a name other than the name of the original applicant. If an assignment document or a certificate of change of name is of record in the Assignment Division of the Patent and Trademark Office before the notice of publication of a mark is mailed, there is sufficient time for the necessary information to reach the application file before the application is prepared for issuance of the certificate of registration. Also, if at any time prior to the preparation of the application for issue, a paper is filed in an application stating that a document has been filed for recordation, the application can be flagged and held until the necessary information reaches the file from the Assignment Division.

If a certificate of registration is to be issued to an assignee, there must be in the application file an address for such assignee; if there is not, the inquiry necessary to obtain the address may delay the issuance of the certificate of registration.

*Change in name of Patent Office.* All of the sections proposed to be modified herein have been revised to reflect the change in the name of the Patent Office to the Patent and Trademark Office, and the change in title of the Commissioner of Patents to Commissioner of Patents and Trademarks, in accordance with Pub. L. 93-596, effective January 2, 1975.

The text of the proposed revised sections or paragraphs of sections is as follows:

§ 1.12 *Assignment records open to public inspection.*

The assignment records, relating to original or reissue patents, including digests and indexes, and assignment records relating to pending or abandoned trademark applications and to trademark registrations, are open to public inspection and copies of any instrument recorded may be obtained upon payment of the fee therefor. Assignment records, digests and indexes, relating to any pending or abandoned patent application are not available to the public. Copies of any such patent assignment records and information with respect thereto shall be obtainable only upon written authority of the applicant or his assignee or attorney or agent or upon a showing that the person seeking such information is a bona fide prospective or actual purchaser, mortgagee or licensee of such patent application, unless it shall be necessary to the proper conduct of business before the Office or as provided by these rules. An order for a copy of an assignment should give the identification of the record. If identified only by the name of the patentee and number of the patent, or in the case of a trademark registration by the name of the registrant and number of the registration, or by name of the applicant and serial number of the application, an extra charge will be made for the time consumed in making a search for such assignment.

§ 1.136 *Time less than six months.*

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(b) The time for reply, when a time less than six months has been set, will be extended only for sufficient cause, and for a reasonable time specified. Any request for such extension must be filed on or before the day on which action by the applicant is due, but in no case will the mere filing of the request effect any extension. Only one extension may be granted by the primary examiner in his discretion; any further extension must be approved by the Commissioner. In no case can any extension carry the date on which response to an action is due beyond six months from the date of the action.

§ 1.197 *Action following decision.*

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(b) Any request for rehearing or reconsideration, or modification of the decision, must be filed within thirty days from the date of the original decision, unless that decision is so modified as to become, in effect, a new decision, and the Board of Appeals so states. Such time may be extended upon a showing of sufficient cause.

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§ 1.244 *Motions; miscellaneous provisions.*

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(c) Any request for rehearing or reconsideration, or modification of the decision must be filed within twenty days after the date of the decision, and any reply thereto shall be filed within twenty days from the date of service of the request.

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§ 1.256 *Final hearing.*

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(b) Any request for rehearing or reconsideration, or modification of the decision, must be filed within thirty days from the date of the original decision, unless that decision is so modified as to become, in effect, a new decision, and the Board of Patent Interferences so states. Any reply thereto shall be filed within fifteen days from the filing of the request. The time specified herein may be extended upon a showing of sufficient cause. (See § 1.304.)

§ 1.304 *Time for appeal or civil action.*

(a) The time for filing the notice and reasons of appeal to the U.S. Court of Customs and Patent Appeals (§ 1.302) or for commencing a civil action (§ 1.303) is sixty days from the date of the decision of the Board of Appeals or the Board of Patent Interferences. If a request for rehearing or reconsideration, or modification of the decision, is filed within the time, or within any extension of the time granted under §§ 1.256(b) or 1.197(b), the time for filing appeal or commencing civil action is extended to thirty days after action on the request. The sixty and thirty day periods referred to above may be extended by the Commissioner upon a showing of sufficient cause.

(b) The times specified herein are calendar days. If the last day of the time specified for appeal or commencing a civil action falls on a Saturday, Sunday or legal holiday, the time is extended to the next day which is neither a Saturday, Sunday nor a holiday.

(c) If a defeated party to an interference has taken an appeal to the U.S. Court of Customs and Patent Appeals and an adverse party has filed notice under 35 U.S.C. 141 that he elects to have all further proceedings conducted under 35 U.S.C. 146 (§ 1.303(c)), the time for filing a civil action thereafter is specified in 35 U.S.C. 141.

§ 2.18 *Correspondence held with attorney or agent.*

Correspondence will be sent to the applicant or a party to a proceeding at his address unless papers are transmitted by an attorney at law, or a written power of attorney or authorization of agent is filed, or the applicant or party designates in writing another address to which correspondence is to be sent, in which event correspondence will be sent to the attorney at law transmitting the papers, or to the attorney designated in the power of attorney or the agent designated in the authorization of agent, or to the address designated by the applicant or party for correspondence. Correspondence will continue to be sent to such address until the applicant or party, or the attorney or other recognized person representing the applicant or party, indicates in writing that correspondence is to be sent to another address. Double correspondence will not be undertaken by the Patent and Trademark Office, and if more than one attorney at law or other recognized person appears or signs a paper, the Office reply thereto will be sent to the address already established in the file until another correspondence address is specified by the applicant or party or by the attorney or other recognized person representing the applicant or party.



§ 2.37 *Authorization for representation; U.S. representative.*

The authorization of a qualified person to represent applicant (§ 2.17(b)) and the designation of a domestic representative (§ 2.24) may be included as a paragraph or paragraphs in the application.

§ 2.75 *Amendment to change application to different register.*

An application for registration on the Principal Register may be changed to an application for registration on the Supplemental Register and vice versa by amending the application to comply with the rules relating to the requirements for registration on the appropriate register, as the case may be. The original filing date may be considered for the purpose of proceedings in the Patent and Trademark Office provided the application as originally filed was sufficient for registration on the register to which amended. Otherwise, the filing date of the amendment will be considered the effective filing date of the application so amended.

§ 2.80 *Publication for opposition.*

If, on examination or reexamination of an application for registration on the Principal Register, it appears that the applicant is entitled to have his mark registered, the mark will be published in the OFFICAL GAZETTE for opposition. The mark will also be published in the case of an application to be placed in interference or concurrent use proceedings, if otherwise registrable.

§ 2.85 *Classification schedules.*

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(e) Where the amount of the fee received on filing an appeal in connection with an application or on filing an affidavit under section 8(a) or 8(b) or on an application for renewal or in connection with an opposition or petition for cancellation is sufficient for at least one class of goods or services but is less than the required amount because a multiple class application or registration is involved, the appeal or the affidavit or renewal application or opposition or petition for cancellation will not be refused on the ground that the amount of the fee was insufficient if the required additional amount of the fee is received in the Patent and Trademark Office within the time limit set forth in the notification of this defect by the Examiner.

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§ 2.101 *Time for filing opposition.*

Any person who believes that he would be damaged by the registration of a mark upon the Principal Register may, upon payment of the required fee for each class in the application, oppose the same by filing an opposition, which is verified or which includes a declaration in accordance with § 2.20, in the Patent and Trademark Office within thirty days after publication (§ 2.80) of the mark sought to be registered. An opposition accompanied by fees insufficient to cover each class in the application should specify the particular classes in which opposition is sought. Two or more persons may be joined in an opposition to the registration of a mark, but separate fees for each class in the application for each person so joined must be paid.

§ 2.102 *Extension of time.*

(a) A request to extend the time for filing opposition must be made by a person who believes that he would be damaged by the registration of the mark on the Principal Register, but an attorney at law or other person recognized to represent a party may file the request on behalf of a potential opposer. The potential opposer must be identified with reasonable certainty in the request. Any opposition filed during an extension of time should be in the name of the person to whom the extension was granted, but an opposition may be accepted if the person to whom the extension was granted was misidentified through mistake, or an opposition filed in a different name may be accepted if the person filing the opposition is in privity with the person to whom the extension was granted.

(b) A request to extend the time for filing an opposition must be received in the Patent and Trademark Office before the expiration of thirty days from the date of publication, and should specify the period of extension desired. A first extension of time will be granted upon request if the extension is for not more than thirty days. Any other request for extension of time for filing an opposition should be accompanied by a showing of good cause, and in the event circumstances do not permit submission of such showing with the request, it should be furnished as promptly as possible and, in any event, within ten days after submission of such request.

(c) An opposition filed within an extended time must be accompanied by the required fee for each class, and should be verified or include a declaration in accordance with § 2.20, and if it is accompanied by fees insufficient to cover each class in the application should specify the particular classes in which opposition is sought.

§ 2.103 *Opposition filed by attorney or agent.*

An opposition which is unverified or not accompanied by a declaration in accordance with § 2.20 may, upon payment of the required fee for each class, be filed by a duly authorized attorney or agent. Such opposition and the required fee for each class must be filed in the Patent and Trademark Office within thirty days after publication (§ 2.80) of the mark sought to be registered or within an extension of the time for filing an opposition (§ 2.102) but the opposition will be null and void unless confirmed by the opposer either by verification or declaration in proper form filed within thirty days after such filing, or within such further time as may be fixed by the Commissioner upon request made before the expiration of the thirty days. An opposition accompanied by fees insufficient to cover each class should specify the particular classes in which opposition is sought.

§ 2.105 *Notification of opposition proceedings.*

A notification of an opposition which has been regularly filed shall be prepared, identifying the title and number of the proceeding and the appliation involved, and designating a time, not less than thirty days from the mailing date of such notification, within which answer must be filed. Copies of this notification shall be forwarded by the Trademark Trial and Appeal Board to the parties in care of their attorneys or agents, if they have attorneys or agents of record. The duplicate copy of the opposition and exhibits shall be forwarded with the notification to the applicant.

§ 2.111 *Time for filing petition for cancellation.*

(a) Any person who believes that he is or will be damaged by a registration may, upon payment of the required fee for each class in the registration, apply to the Commissioner to cancel said registration. Such petition may be made at any time in the case of registrations on the Supplemental Register or under the Act of 1920, or registrations under the Act of 1881 or the Act of 1905 which have not been published under section 12(c) of the act (§ 2.153), and in cases involving the grounds specified in section 14 (c), (d), and (e) of the act. In all other cases such petition must be made within five years from the date of registration of the mark under the Act of 1946 or from the date of publication under section 12(c) of the act.

(b) A petition to cancel accompanied by insufficient fees to cover each class in the registration should specify the particular classes for which cancellation is sought.

§ 2.112 *Petition for cancellation.*

The petition to cancel, which must be verified, or include a declaration in accordance with § 2.20, must set forth a short and plain statement showing how the petitioner is or will be damaged by the registration, state the grounds for cancella-

tion, and indicate the respondent party to whom notice shall be sent. A duplicate copy of the petition, including exhibits, shall be filed with the petition. Applications to cancel different registrations owned by the same party may be joined in one petition when appropriate, but the required fee for each class in each registration against which each application to cancel is filed must accompany the petition. A petition to cancel accompanied by insufficient fees to cover all classes should specify the particular classes for which cancellation is sought.

§ 2.120 *Discovery procedure.*

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(c) *Failure to make discovery: Sactions.* (1) If any party fails to refuses to answer any proper question in taking discovery depositions or fails or refuses to answer any proper question propounded by interrogatories or fails or refuses to comply with a request to produce and permit the inspection and copying of designated things, the party seeking discovery may file a motion with the Trademark Trial and Appeal Board for an order compelling discovery. Such a motion must be supported by an affidavit or a declaration in accordance with § 2.20, stating that the moving party or its attorney has conferred with the opposing party or its attorney in an effort in good faith to resolve by agreement the issues raised by the motion and has been unable to reach agreement. If part of the issues raised by the motion have been resolved by agreement, the affidavit or declaration shall specify the issues so resolved and also specify the issues remaining unresolved.

(2) If a party or an officer, director, or managing agent of a party, or a person designated under Rule 30(b)(6) or 31(a) of the Federal Rules of Civil Procedure to testify on behalf of a party, fails to obey an order to provide or permit discovery, the Trademark Trial and Appeal Board may strike out all or any part of any pleading of that party, dismiss the action or proceedings or deny any part thereof, enter judgment as by default against that party or take any such other action as may be deemed appropriate.

§ 2.123 *Trial testimony in inter partes cases.*

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(g) Form of deposition:

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(3) Each deposition must contain an index of the names of the witnesses, giving the pages where their examination and cross-examination begin, and an index of the exhibits, briefly describing their nature and giving the pages at which they are introduced and offered in evidence.

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§ 2.127 *Motions.*

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(b) Any request for rehearing or reconsideration, or modification of a decision on a motion which is not finally dispositive of the case, must be filed within thirty days from the date thereof. Any brief in opposition shall be filed within fifteen days after service of the request.

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§ 2.129 *Oral argument, and reconsideration.*

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(c) Any request for rehearing or reconsideration, or modification of a decision, including a decision on a motion which is finally dispositive of a case, must be filed within thirty days from the date thereof. Any brief in opposition shall be filed within fifteen days after service of the request. The times specified herein may be extended upon a showing of sufficient cause.

§ 2.141 *Ex parte appeals from the Examiner of Trademarks.*

Every applicant for the registration of a mark may, upon final refusal by the Examiner of Trademarks, appeal to the Trademark Trial and Appeal Board upon payment of the prescribed fee for each class in the application. An appeal accompanied by insufficient fees to cover each class in the application should specify the particular classes in which appeal is taken. A second refusal on the same grounds may be considered as final by the applicant for purpose of appeal.

§ 2.144 *Reconsideration of decision on ex parte appeal.*

Any request for rehearing or reconsideration, or modification of the decision, must be filed within thirty days from the date of the decision. Such time may be extended upon a showing of sufficient cause.

§ 2.145 *Appeal to court and civil action.*

(a) *Appeal to U.S. Court of Customs and Patent Appeals.* An applicant for registration, or any party to an interference, opposition or cancellation proceeding or any party to an application to register as a concurrent user, hereinafter referred to as inter partes proceedings, who is dissatisfied with the decision of the Trademark Trial and Appeal Board and any registrant who has filed an affidavit or declaration under section 8 of the act or who has filed an application for renewal and is dissatisfied with the decision of the Commissioner (§§ 2.165, 2.184), may appeal to the U.S. Court of Customs and Patent Appeals. The appellant must take the following steps in such an appeal: (1) In the Patent and Trademark Office give written notice of appeal to the Commissioner (see paragraphs (b) and (d) of this section); (2) In the court, file a petition of appeal and a certified transcript of the record within a specified time after filing the notice of appeal, and pay the fee for appeal, as provided by the rules of the court. The transcript will be transmitted to the Court by the Patent and Trademark Office on order of and at the expense of the appellant. Such order should be filed with the notice of appeal, but in no case should it be filed later than 15 days thereafter.

(b) *Notice of appeal.* (1) When an appeal is taken to the U.S. Court of Customs and Patent Appeals, the appellant shall give notice thereof in writing to the Commissioner, which notice shall be filed in the Patent and Trademark Office within the time specified in paragraph (d) of this section. The notice shall specify the party or parties taking the appeal and shall designate the decision or part thereof appealed from.

(2) In inter partes proceedings, the notice must be served as provided in § 2.119.

* * * * *

(d) *Time for appeal or civil action.* (1) The time for filing the notice of appeal to the U.S. Court of Customs and Patent Appeals (paragraph (b) of this section), or for commencing a civil action (paragraph (c) of this section), is sixty days from the date of the decision of the Trademark Trial and Appeal Board or the Commissioner, as the case may be. If a request for rehearing or reconsideration, or modification of the decision, is filed within the time, or within any extension of the time granted under § 2.129(c) or § 2.144, the time for filing appeal or commencing civil action is extended to thirty days after action on the request. The sixty- and thirty-day periods referred to above may be extended by the Commissioner upon a showing of sufficient cause.

(2) The times specified herein are calendar days. If the last day of time specified for appeal, or commencing a civil action falls on a Saturday, Sunday, or legal holiday, the time is extended to the next day which is neither a Saturday, Sunday nor a holiday.

(3) If a party to an inter partes proceeding has taken an appeal to the U.S. Court of Customs and Patent Appeals and an adverse party has filed notice under section 21(a)(1) of the act that he elects to have all further proceedings conducted under section 21(b) of the act, the time for filing a civil action thereafter is specified in section 21(a)(1) of the act.

§ 2.162 *Requirements for affidavit or declaration during sixth year.*

The affidavit or declaration required by § 2.161 must:

(a) Be executed by the registrant after expiration of the five-year period following the date of registration or of publication under section 12(c) of the act;

(b) Be filed in the Patent and Trademark Office before the expiration of the sixth year following the date of registration or of publication under section 12(c) of the act;

(c) Identify the certificate of registration by the registration number and date of registration;

(d) Be accompanied by the required fee for each class in the registration. If accompanied by insufficient fees to cover each class, the particular classes to which the affidavit or declaration pertains should be specified;

(e) State that the registered mark is in use. The statement must be supported by evidence which shows that the mark is still in use, and normally such evidence consists of a specimen, a facsimile specimen, or a statement of facts concerning use. The supporting evidence should be submitted with the affidavit or declaration, but if it is not or if the evidence submitted is found to be deficient, the evidence, or further evidence, may be submitted and may be considered even though filed after the sixth year has expired;

(f) If the registered mark is not still in use, recite facts to show that nonuse is due to special circumstances which excuse such nonuse and is not due to any intention to abandon the mark. If the facts recited are found not to be sufficient, further evidence or explanation may be submitted and may be considered even though filed after the sixth year has expired; and

(g) Contain the statement of use or statement as to nonuse and appropriate evidence in support thereof, as required in paragraphs (e) and (f) of this section, for each class in the registration.



§ 2.172 *Surrender for cancellation.*

Upon application by the registrant, the Commissioner may permit any registration to be surrendered for cancellation. Application for such action must be signed by the registrant and must be accompanied by the original certificate of registration, if not lost or destroyed. When there is more than one class in a registration, a request to delete one entire class or more than one entire class but less than the total number of classes constitutes surrender of a registration or registrations as to the specified class or classes, and not amendment of a registration. Deletion of less than all of the goods or services in a single class constitutes amendment of registration as to that class.

§ 2.183 *Requirements of application for renewal.*

(a) The application for renewal must include a statement which is verified or which includes a declaration in accordance with § 2.20 by the registrant setting forth the goods or services recited in each class in the registration on or in connection with which the mark is still in use in commerce, specifying the nature of such commerce. This statement must be executed not more than six months before the expiration of the registration and be accompanied by:

(1) A specimen or facsimile for each class showing current use of the mark;

(2) The required fee for each class including an additional fee for each class in the case of a delayed application for renewal. If the application for renewal is accompanied by insufficient fees to cover each class, particular classes for which renewal is sought should be specified.

(b) The declaration or verified statement, specimen or facsimile and the fee for each class in the registration must be filed within the period prescribed for applying for renewal. If defective or insufficient, they cannot be completed after the period for applying for renewal has passed; if completed after the initial six month period has expired but before the expiration of the three month delay period, the application can be considered only as a delayed application for renewal.

(c) If the mark is not in use in commerce at the time of filing of the declaration or verified statement, facts must be recited to show that nonuse is due to special circumstances which excuse such nonuse and is not due to any intention to abandon the mark. There must be a recitation of facts as to nonuse for each class or it must be clear that the facts recited apply to each class. If the facts recited require amplification or explanation, further evidence may be submitted and may be considered even though filed after the period for applying for renewal has passed.

§ 2.185 *Requirements for assignments.*

(a) Assignments under section 10 of the act of registered marks, or marks for which an application for registration has been filed, will be recorded in the Patent and Trademark Office. Other instruments which may relate to such marks may be recorded at the discretion of the Commissioner. No assignment will be recorded, except as may be ordered by the Commissioner, unless it has been executed and unless:

* * * * *

(2) It is in the English language or, if not in the English language, accompanied by a translation signed by the translator.

* * * * *

(4) A designation of a domestic representative is made in case the assignee is not domiciled in the United States. The designation must be separate from the assignment and there must be a separate designation for each registration or application assigned in one instrument.

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§ 2.187 *Certificate of registration may issue to assignee.*

The certificate of registration may be issued to the assignee of the applicant, or in a new name of applicant provided an appropriate document is of record in the Assignment Division of the Patent and Trademark Office no later than the time notice of publication is mailed, or a statement that such document has been filed for recordation is in the application file by the time the application is being prepared for issuance of the certificate of registration. The address of the assignee must be made of record in the application file.

§ 4.2 *Power of attorney accompanying application.*

Applicant hereby appoints ---------- (8) ---------- to prosecute this application to register, to transact all business in the Patent and Trademark Office in connection therewith, and to receive the certificate of registration.

(Address)

NOTE: (8) Individual attorneys at law should be appointed. If the name of a law firm is given, it will be regarded merely as a designation of address for correspondence.

Dated: Jan. 28, 1975.

C. MARSHALL DANN,
*Commissioner of Patents and Trademarks.*

Approved:

DAVID B. CHANG,
*Assistant Secretary for Science and Technology.*

[FR Doc. 74-3737; Filed 2-10-75; 8:45 am]

*Published in 40 F.R. 6361, Feb. 11, 1975*

[932 O.G. TM 84 (Mar. 11, 1975)]

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(346) TRADEMARK MANUAL OF EXAMINING PROCEDURE, 1ST ED.

CHANGE NOTICE

Series No. 1-1

Reference: TMEP 1304.16 March 27, 1975

*Identifications in Collective Membership Mark Applications*

The following subject matter is being added as a new subsection to TMEP 1304:

An identification of goods or services is not appropriate in connection with collective membership marks. Trademark Rule 4.8 is a suggested form for collective mark applications in general, but when this form is used for collective *membership* marks, the line "for (Common, usual or ordinary name of goods or services)" should be omitted. A statement (placed after the words "to indicate" in form 4.8) that the purpose of the mark is to indicate membership in an organization, or in an association, a club or the like, as the case may be, is sufficient as an identification in most situations.

Although for the purpose of citing references it is desirable to know something of the general character of the applicant organization (see TMEP section 1304.08(b)), this does not necessarily mean that the identification has to be more specific than indicated above, since the identification may be read along with other information which appears in the registration copy, such as information in the mark itself or in applicant's name. An organization can be understood by knowing the area of activity of its members (for example, they may sell lumber, or cosmetics, or food, or may deal in chemical products or household goods, or they may provide services as fashion designers or engineers or accountants); or, if goods or services are not directly involved, an organization can be understood by knowing the organization's type or purpose (such as a labor union, a service or social club, a political society, a trade association, a beneficial fraternal organization, or the like). The membership mark itself frequently gives this information by reason of having in the mark an indication either of the goods or services of the members

or of the character of the organization. If the mark is not sufficiently self-explanatory, applicant's name in association with the mark often provides adequate information.

If information would not appear in the registration copy in the search room in any of the above ways, the normal brief identification should be expanded to state broadly either the field of activity as related to goods or services, or the general type or purpose of the organization. Detailed descriptions of an organization's objectives or activities are not necessary.

Whether or not the normal brief identification is sufficient is within the discretion of the Examiner. If it is determined that the identification should include further information and the information is in the record, the identification may be amended by Examiner's amendment. See TMEP section 1111. If support for such an amendment is not perfectly clear, the Examiner should secure applicant's (or his attorney's) approval for the amendment, which may be done by telephone. See TMEP section 1111.01.

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CHANGE NOTICE

Series No. 1–2
(Follows Change 1–1)

Reference: TMEP 1304.08(b) March 27, 1975

*Refusal of Registration on a Reference Mark in Collective Membership Applications*

The following subject matter is being added as a new subsection to TMEP 1304.08:

There could be such a relntionship between uses of the same or similar mark as a membership mark and as a trademark or service mark that there might be a likelihood of confusion—for instance, when a mark is used by a manufacturer as a trademark for machinery and the same or substantially similar mark is used as a membership mark by members of a machinery manufacturers' trade association.

It should be possible with collective membership marks, as with other types of marks, to secure from the registration copies in the search room sufficient understanding of the use of marks to form an initial decision with regard to citing registered marks as references. (See section 4 of the trademark act.) The Examiner should therefore see that the registration copy will contain information about the collective membership organization which is adequate for this purpose. Such information does not necessarily have to be in the identification clause, however, as the identification may be read along with other information in the registration copy, but it should be in the identification if it will not be found elsewhere in the copy. See TMEP section 1304.16.

CHANGE NOTICE

Series No. 1–3
(Follows Change 1–2)

Reference: TMEP 804.02(a) March 27, 1975

*Identifications of Publications and Radio and Television Programs in Connection With Title-Marks*

The following subject matter is being added as a new subsection to TMEP 804.02:

In case of a mark applied as a title for a specific periodic publication such as a magazine, or as the title for a radio or television program series (see TMEP section 1301.09), it is desirable for the purpose of citing references (see TMEP section 1205) to be able to ascertain from the registration copy in the search room the general field or subject matter to which the publication or the program series is devoted, if there is one—for example, the identification might include reference to psychiatry, engineering, sanitation, and so on. On the other hand, if subject matter is not a significant aspect of the publication or the program series, the identification might then merely give an indication of the general character or type of the publication or program series—for example, by use of a term such as trade magazine, employee newspaper, situation-comedy program series, or the like. The identification of the goods or services is not the only source of the desired information, however. Marks which are titles frequently are self-explanatory. It is common for the wording selected as titles for magazines, for example, to state specifically or to suggest the subject, field of interest or general character of the magazine. This is also true to some extent in connection with radio and television programs. Also, other information which will appear in the registration copy may be considered. Registrant's name often contains wording which indicates the field or character of its business and when taken with the mark may provide sufficient information.

If the character of the publication or program can be adequately understood from the identification in association with other information which will appear in the registration copy, the Examiner should not require that a broad identification be amended to include further detail. Judgment must be exercised in each case, in view of the particular facts, in order to decide how detailed an identification should be, with the Examiner keeping in mind both the necessity of having adequate information and the desirability of eliminating unnecessary correspondence and surplusage.

RENE D. TEGTMEYER,

Mar. 27, 1975. *Assistant Commissioner for Trademarks.*

[930 O.G. TM 282 (Apr. 29, 1975)]

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(347)

# EXPANDED EXPLANATORY NOTES FOR INTERNATIONAL TRADEMARK CLASSIFICATION

*As a part of the international classification for trademarks and service marks, the World Intellectual Property Organization (commonly known as WIPO) has published an alphabetical list of goods and services with an indication of the classes into which the goods and services fall, and in association therewith has published explanatory notes to assist in classifying where it is thought that there is likely to be special difficulty in deciding upon the correct classification. The United States has prepared a set of expanded explanatory notes, to be used in association with the alphabetical list of goods and services prepared by WIPO, which includes essentially all the material in the explanatory notes published by WIPO but which also contains information on additional items. Because of the additional material in the United States notes, they are designated "expanded explanatory notes."*

*The expanded United States notes identify the international classes by number and by international name. The short titles which the United States has applied to the international class numbers are also included. (See 924 O.G. TM 155 (July 16, 1974).) Under each international class name is the heading "Including" followed by a group of illustrative items; then there is a second heading "Not including" followed by another group of items with indication of the classes in which these items fall. The items chosen are ones in areas where there may be confusion between related classes, and in particular are items which will serve to delineate to a greater extent the problem areas encountered in the examination of trademark and service mark applications in the United States under the international classification system. It is hoped that the expanded notes will provide more understanding of the basis of international classification in accordance with existing WIPO guidelines and will be helpful in determining the classification of goods and services which are not itemized in the international alphabetical list.*

*The United States expanded explanatory notes deal primarily with goods rather than services, inasmuch as the international and prior United States classes for services largely coincide as to their contents. The major areas in which the correlation of service classes is not exact are identified in the expanded United States notes.*

*The first version of the expanded explanatory notes was submitted by the United States to the Committee of Experts of WIPO at its meeting in Geneva, Switzerland, in September 1973, and the subject of expanded notes is still under consideration. The expanded explanatory notes published with this notice are the first revision of the expanded notes prepared by the United States, and the notes may be further revised from time to time as the need arises. The expanded notes are used by the examiners in the United States Patent and Trademark Office as a guide to classification, along with the alphabetical list of goods and services published by WIPO.*

RENE D. TEGTMEYER,

*Mar. 5, 1975.* *Assistant Commissioner for Trademarks.*



# EXPANDED EXPLANATORY NOTES RELATING TO THE INTERNATIONAL CLASSIFICATION OF GOODS AND SERVICES TO WHICH TRADEMARKS AND SERVICE MARKS ARE APPLIED
## (First Revision)

### GOODS

*General Criteria*

(*a*) Finished products are classified, in principle, according to their function or purpose, or the industry which produces them, or subsidiarily, according to the material of which they are made or the trade in which they are sold;

(*b*) Raw materials, unworked or semi-worked, are classified, in principle, according to the material of which they consist;

(*c*) Goods intended to form part of another product are, in principle, classified in the same class as that product only in cases where the same type of goods cannot normally be used for another purpose. In all other cases, criterion (*a*) applies;

(*d*) As regards kits, in particular, these are classified according to the main articles contained in them (for instance, a case containing essentially cosmetics is classified in class 3, although it might also contain a product which is not a cosmetic preparation).

### CLASS 1

(Chemicals)

*Name of International Class 1:* Chemical products used in industry, science and photography, agriculture, horticulture, forestry; artificial and synthetic resins; plastics in the form of powders, liquids or pastes, for industrial use; manures (natural and artificial); fire extinguishing compositions; tempering substances and chemical preparations for soldering; chemical substances for preserving foodstuffs; tanning substances; adhesive substances used in industry.

*Including:*

Detergents for use in industrial and manufacturing processes; chemical additives for other products; chemicals and chemical compositions not otherwise classified; sensitized photographic film (undeveloped); chemical test materials; and diagnostic agents for laboratory use.

*Not Including:*

Natural resins, chemical products for dyeing, wood preservatives and corrosion inhibitors in the nature of paints (Cl. 2);

Chemical rust removers (Cl. 3);

Chemical preparations used as textile lubricants (Cl. 4);

Pesticides, insecticides, insect repelling preparations, herbicides, bactericides and antiparasitic preparations, diagnostic agents being pharmaceuticals, chemical conductors for electro-cardiographs, nutritive substances for micro-organisms, being culture media, preparations for freshening the air, and adhesives for dentures (Cl. 5);

Adhesive preparations being stationery items (Cl. 16) [adhesive tape for medical or surgical use (Cl. 5)]; plastics in the form of non-textile sheets, plates, foils, blocks, rods, tubes, pipes, stampings, strips and shaped sections, being for use in manufacturing processes; dielectric compositions; chemical preparations for packing and stopping leaks; rubber and substitutes therefor; adhesive tape (not for medical or surgical use and not being stationery) (Cl. 17);

Natural sweetening materials (Cl. 30) [artificial (chemical) sweetening substances (Cl. 1)];

Mulches (Cl. 31).

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### CLASS 2

(Paints)

*Name of International Class 2:* Paints, varnishes, lacquers; preservatives against rust and against deterioration of wood; coloring matters, dyestuffs; mordants; natural resins; metals in foil and powder form for painters and decorators.

*Including:*

Artists' colors, preparations for coloring foodstuffs and beverages, preparations for thinning and thickening paints, filling agents for use in treating walls and the like surfaces prior to papering, painting and similar processes; anti-corrosive products (that is, preservatives against rust).

*Not Including:*

Anti-incrustation compositions for boilers, synthetic resins in the form of powders, liquids and pastes, waterproofing solutions and chemical preparations for use as coating compositions (not in the nature of paints), drying agents for industrial use, ceramic glazes (Cl. 1);

Protective coatings in the nature of polishes, dyestuffs for toilet use, such as coloring matters for the hair, coloring matters for laundry purposes and paint removing compositions (Cl. 3);

Wax for coating fruits (Cl. 4);

Paint brushes, paint rollers and artists' crayons (Cl. 16);

Insulating varnishes and insulating paints (Cl. 17);

Heavy coatings (not in the nature of paints) for surfacing roofs and roads, and refractory coating materials (Cl. 19).

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### CLASS 3

(Cosmetics and cleaning preparations)

*Name of International Class 3:* Bleaching preparations and other substances for laundry use; cleaning, polishing, scouring and abrasive preparations; soaps; perfumery, essential oils, cosmetics, hair lotions; dentifrices.

*Including:*

Soaps for industrial purposes, medicated soaps and rust removing compositions, pads impregnated with cosmetic material, antiperspirants; artificial eyelashes.

*Not Including:*

Degreasing agents and detergents for use in industrial and manufacturing processes, chemical products for cleaning chimneys, acid substances used in industry for cleaning purposes, bleaching materials and fabric softeners (not for laundry purposes), metallic soaps, and chemical preparations used in the manufacture of cosmetics (Cl. 1);

Sweeping compounds for absorbing oil from floors (Cl. 4);

Medicated skin creams, medicated toilet preparations, personal deodorants, detergents for medical use (Cl. 5);

Abrasive grinding wheels which constitute machine elements and abrasive sheets and discs designed to be affixed to machines (Cl. 7);

Abrasive hand tools (not power-operated) (Cl. 8);

Decalcomanias for application to the body for cosmetic purposes (Cl. 16);

Steel wool, polishing cloths (whether impregnated with polish or not), soap impregnated pads, non-electric devices and appliances for applying and removing make-up, powder compacts (not of precious metal) and eyebrow brushes (Cl. 21).

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### CLASS 4

(Lubricants and fuels)

*Name of International Class 4:* Industrial oils and greases (other than edible oils and edible fats and essential oils); lubricants; dust laying and absorbing compositions; fuels (including motor spirit) and illuminants; candles, tapers, night-lights and wicks.

*Including:*

Combustible materials such as firewood, fuel briquettes, gasoline, coal, inflammable oils, liquefied petroleum gasses, etc.; animal waxes, vegetable waxes and mineral waxes.

*Not Including:*

Chemical additives for fuels and lubricants, cutting fluids and brake fluids (not being oils), mold release agents for foundry use, producer gas, fuels for atomic piles, preservative oils for foodstuffs and pipe threading compositions (Cl. 1);

Oils used as a wood preservative (Cl. 2);

Essential oils, cleaning oils, wire drawing soap (Cl. 3);

Oils used for medicinal purposes, disinfectant oils (Cl. 5);

Ski wax (Cl. 28);

Food oils (not including preservative oils for foods) (Cl. 29).

## CLASS 5

(Pharmaceuticals)

*Name of International Class 5:* Pharmaceutical, veterinary and sanitary substances; infants' and invalids' foods; plasters, materials for bandaging; material for stopping teeth, dental wax; disinfectants, preparations for killing weeds and destroying vermin.

*Including:*

Medicated preparations to be used as additives for foods including vitamin, mineral and protein concentrate additives, dietetic foods for medical use; air freshening and purifying preparations; deodorants of all types including personal deodorants and deodorants used in manufacturing processes.

*Not Including:*

Diagnostic agents used in the laboratory (not being pharmaceuticals), drugs for industrial purposes, preservatives for pharmaceuticals, defoliants (Cl. 1);

Medicated soaps and medicated shampoos (not being pharmaceuticals), disinfectant soaps, anti-perspirants (Cl. 3);

Disinfectants for laying and absorbing dust (Cl. 4);

Elastic bandages and bandages for ankle joints, dental floss, surgical sponges, medical, surgical and dental instruments and apparatus and specialized utensils used therewith, apparatus and appliances used for therapeutic purposes (Cl. 10);

Preparations which are essentially foods for use as additives to foodstuffs for animals (Cl. 31);

Fruit juices fortified with vitamins, minerals or proteins (Cl. 32).

## CLASS 6

(Metal goods)

*Name of International Class 6:* Unwrought and partly wrought metals and their alloys; anchors, anvils, bells, rolled and cast building materials; rails and other metallic materials for railway tracks; chains (except driving chains for vehicles); cables and wires (non-electric); locksmiths' work; metallic pipes and tubes; safes and cash boxes; steel balls, horseshoes; nails and screws; other goods in non-precious metal not included in other classes; ores.

*Including:*

Signs (not being luminous or mechanical) and made of metal; building materials of metal and buildings, being fixed metal structures; metal swimming pools, being non-transportable; works of art of common metal (other than bronze).

*Not Including:*

Metal hardening compositions, metallic carbides in powder form for use in the manufacture of tools, rare and metal earths, electroplating solutions (Cl. 1);

Metal foil and powders for use by painters and decorators, metal preservative preparations (Cl. 2);

Valves made of metal and other metallic elements which constitute parts of machines (Cl. 7) [valves made of metal which are manually operated (Cl. 6); valves made of plastics, and not being parts of machines (Cl. 20)];

Fire escapes made of metal and electric locks (Cl. 9);

Metal fittings for water supply installations (Cl. 11);

Tires (metallic and non-metallic), metal spikes or studs for tires, hardware and driving chains for vehicles (Cl. 12);

Bronze ornaments, commemorative coins, and chains of precious metal (Cl. 14);

Metal plates for engravers, printing type and metallic numerals (Cl. 16);

Rubber hardware, plastic pipe including fittings made of plastic, and metal foil for insulation (Cl. 17);

Harness traces of metal and muzzles (metal) for dogs (Cl. 18);

Non-metallic building elements, portable buildings made of metal and metallic cement (Cl. 19);

Metallic furniture (not including furniture fittings of metal), plastic hardware including non-metallic locksmiths' work, curtain hooks, rings and rods (Cl. 20);

Glass hardware, small domestic containers made of metal, metal troughs for cattle, steel wool (Cl. 21);

Non-metallic ropes, cables, strapping and cordage (Cl. 22);

Metallic yarns (Cl. 23);

Metal tips for boots and shoes, and metal shapes for hats (Cl. 25);

Metallic thread for embroidery and zip fasteners (metal) for clothing (Cl. 26).

## CLASS 7

(Machinery)

*Name of International Class 7:* Machines and machine tools; motors (except for land vehicles); machine couplings and belting (except for land vehicles); large size agricultural implements; incubators.

*Including:*

Mixing machines for kitchen use, kitchen machines for milling (electric), washing and drying machines for dishes or laundry as well as machines in the nature of bulldozers, cranes or belt conveyors; electric cutlery (not including electric shavers) such as electric knives, electric can openers and scissors; poultry incubators.

*Not Including:*

Presensitized plates for offset printing (Cl. 1);

Non-power operated hand tools, cutlery including cutlery of precious metals, razors of every type including electric razors, and appliances for sharpening tools (such appliances not being machines) (Cl. 8);

Machines for measuring, weighing, testing and signalling, photographic machines, teaching machines, coin-operated machines, calculating machines, dictating machines, photographic copying machines, machines for recording and reproducing, machines for polishing and cleaning floors (for domestic use), and mechanical advertising signs with alternative displays (Cl. 9);

Apparatus, machines and instruments for medical and surgical use including incubators for babies (Cl. 10);

Installations for heating, cooking, refrigerating and ventilating, hair drying appliances (not being machines) and scrubbers (radial flow and not being machines) for use in cleaning gases (Cl. 11);

Fork-lift trucks, tractors, concrete mixing vehicles, ski lifts, and transmission couplings, belting and motors for land vehicles (Cl. 12);

Pencil sharpening machines (including electric), copying machines (mechanical and chemical, but not photographic), typewriters and similar machines in the nature of office requisites (Cl. 16);

Machine packings, fluid seals (packings), clutch linings and sleeves of rubber for protecting machine components (Cl. 17);

Non-electric carpet sweepers for domestic use (Cl. 21);

Amusement machines (not included in other classes), automatic machines for handling bowling pins and marking machines for lawn tennis (Cl. 28).



## CLASS 8

(Hand tools)

*Name of International Class 8:* Hand tools and instruments; cutlery, forks and spoons; side arms.

*Including:*

Cutlery of precious metals, as well as razors of every type including electric razors, and manicure implements.

*Not Including:*

Hand vises (Cl. 6);

Electric cutlery such as electric knives, electric can openers, electric scissors, etc., power-actuated hand tools such as electric hand drills, knives which constitute parts of machines and sprayers being hand operated implements (Cl. 7);

Electrically heated hand tools such as soldering irons and electric curlers for waving the hair (Cl. 9);

Surgical cutlery and spoons for administering medicine (Cl. 10);

Hand pumps for vehicle tires, being fittings for vehicles (Cl. 12);

Devices (being stationery) for cutting tape or similar materials, hand tools in the nature of cutlery for office use, paint brushes and paint rollers (Cl. 16);

Small hand utensils in the nature of houseware items (not being cutlery) such as corkscrews, stirrers, whisks, mixers and mashers (none being machines) (Cl. 21);

Hand tools in the nature of cigar cutters (Cl. 34).

## CLASS 9

(Electrical and scientific apparatus)

*Name of International Class 9:* Scientific, nautical, surveying and electrical apparatus and instruments (including wireless), photographic, cinematographic, optical, weighing, measuring, signalling, checking (supervision), life-saving and teaching apparatus and instruments; coin or counter-freed apparatus; talking machines; cash registers; calculating machines; fire-extinguishing apparatus.

*Including:*

Electrothermic tools and apparatus such as electric hand soldering irons, electric hair waving tools, electric flat irons, electrical devices such as electrically heated cushions and clothing, electric foot warmers, electric cigar lighters; electromechanical apparatus for the household used for cleaning such as electric vacuum cleaners and floor polishers [electric vacuum cleaners for industrial use (Cl. 7)]; solenoid valves and automatically operated fluid flow control valves (not being parts of machines) and X-ray apparatus for industrial use; computer programs recorded on magnetic tapes or discs or on punched cards (not including printed instruction manuals); special cases for apparatus and instruments classified in Int. Cl. 9; time recording and time registering apparatus (not being clocks or watches); photographic, electrostatic and thermic copying machines; dictating machines; tape recorders and tape therefor; photographic transparencies and slides.

*Not Including:*

Sensitized Photographic film (undeveloped) (Cl. 1);

Electric motors, generators, alternators and spark plugs for explosion engines, apparatus and instruments actuated by electrical means such as grinders and blenders for foodstuffs, electrical coffee mills and vacuum cleaners for industrial use (Cl. 7);

Electric razors and hair clippers (Cl. 8);

Electrically heated blankets, ophthalmoscopes, blood pressure apparatus and X-ray apparatus for medical use (Cl. 10);

Electrical apparatus for heating, cooking, ventilating or lighting (not included in other classes) including lighting apparatus for photographic purposes (other than flash lamps), laboratory burners and germicidal lamps for purifying the air (Cl. 11);

Electric starters and anti-theft alarms for motor cars (Cl. 12);

Safety fuses for explosive purposes (Cl. 13);

Clocks and watches and other chronometric instruments, control clocks (Cl. 14);

Drawing instruments, teaching materials other than machines, architects' models, electrical pencil sharpening machines, photographic prints, printed manuals for computer programs, charts for use with recording instruments, terrestrial globes, and typewriters (Cl. 16);

Electric insulators such as porcelain insulators, insulating tape and insulating varnish (Cl. 17);

Stands for calculating machines and draftsman's stands (being articles of drawing office furniture) and such stands combined with drawing instruments (Cl. 20);

Electric toothbrushes, egg timers (sand glasses) and measuring cups for use in the kitchen (Cl. 21);

Non-electric cigar lighters (Cl. 34).

## CLASS 10

(Medical apparatus)

*Name of International Class 10:* Surgical, medical, dental and veterinary instruments and apparatus (including artificial limbs, eyes and teeth).

*Including:*

Elastic bandages and bandages for ankle joints, sutures, dental floss, surgical sponges and rubber articles for hygienic purposes; specialized furniture used by doctors and dentists such as dental chairs and examination tables; and wheeled stretchers.

*Not Including:*

Bandages except elastic bandages and bandages for ankle joints, dressings (materials for), medicated bandages, pharmaceutical cotton, dental cements and first aid kits (Cl. 5);

Clinical thermometers, respirators and diagnostic computers (Cl. 9);

Electric furnaces for dental purposes and operating room lights (Cl. 11);

Invalids' chairs (wheeled) (Cl. 12);

Electrocardiographic paper (Cl. 16);

Hospital beds (Cl. 20);

Hot water bottles and hospital utensils such as cups, saucers, etc. (Cl. 21);

Hospital sheets (textiles) (Cl. 24);

Body building apparatus (Cl. 28) [apparatus for physical exercise being especially designed for medical or surgical use (Cl. 10)].

## CLASS 11

(Environmental control apparatus)

*Name of International Class 11:* Installations for lighting, heating, steam generating, cooking, refrigerating, drying, ventilating, water supply and sanitary purposes.

*Including:*

Parts and fittings for installations or apparatus classified in Cl. 11; plumbing fixtures and fittings; air conditioners; portable hair dryers and air purifying appliances (not being machines).

*Not Including:*

Water conditioning chemicals, heat transfer fluids, ionic exchange resins and filtering materials, being raw or partly prepared vegetable and mineral substances (Cl. 1);

Elbows of sheet metal for hot air distributions (Cl. 6);

Heat exchangers and filters, being parts of machines; washing machines and drying machines for dishes and laundry, hair drying machines (not including small appliances for drying the hair), machines for purifying air, pumps for heating systems and flame-cutting machines for metal (Cl. 7);

Electric kettles, electric fittings, experimental furnaces, crucibles, automatic machines for dispensing hot or cold drinks (coin-freed), dust removing apparatus (electric), signalling apparatus employing lights, flash lamps for photographic purposes and electric traffic signs (Cl. 9);

Ultra-violet, infra-red lamps for medical purposes (Cl. 10);
Filtering paper (Cl. 16);
Refrigerator gaskets (Cl. 17);
Portable ventilating booths used for paint spraying (Cl. 19) [if made of metal and not movable (Cl. 6)];
Mirrors with an electric light, household fire irons and screens (Cl. 20);
Non-electric cooking utensils in the nature of hollow-ware, candle holders and nozzles for sprinkler hoses (Cl. 21);
Textile cloth used for filtering purposes (Cl. 24);
Smokers' lamps (Cl. 34).

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CLASS 12

(Vehicles)

*Name of International Class 12:* Vehicles; apparatus for locomotion by land, air or water.

*Including:*

Vehicle seat covers (shaped or fitted); parts and fittings for vehicles not otherwise classified; tire repair outfits and tire repair materials (not being adhesive cement or india rubber solutions); motor transmission couplings and belting for land vehicles; invalids' chairs (wheeled).

*Not Including:*

Metal (non-precious) license plates for vehicles (Cl. 6);
Generators, alternators, carburetors, spark plugs and ignition apparatus (being parts of internal combustion engines), water pumps for vehicles (including land vehicles); engines, transmission couplings, belting and brake linings for vehicles (not including land vehicles) (Cl. 7);
Hand tool kits for working on vehicles (Cl. 8);
Radios, aerials for vehicles, batteries, tape players, thermostats, voltage regulators and apparatus for controlling the speed of vehicles, fire-fighting vehicles and electric cigarette lighters for vehicles (Cl. 9);
Wheeled stretchers (Cl. 10);
Air conditioners, heaters and lights for vehicles (Cl. 11);
Motorized weapons and airborne vehicles such as missiles and rockets (Cl. 13);
Rubber engine mounts and connecting hose for radiators of vehicles (Cl. 17);
Glass for vehicle windshields (Cl. 21);
Sails for ships (Cl. 22);
Vehicle floor mats (Cl. 27);
Training bicycles (stationary) (Cl. 28).

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CLASS 13

(Firearms)

*Name of International Class 13:* Firearms; ammunition and projectiles; explosive substances; fireworks.

*Including:*

All pyrotechnical products [with the exception of matches (Cl. 34)].

*Not Including:*

Chemical preparations used in self-defense (Cl. 1);
Firearm lubricants (Cl. 4);
Rocket motors (not for land vehicles) (Cl. 7);
Explosive guns for driving rivets (Cl. 8) [explosive cartridges therefor (Cl. 13)];
Telescopic sights for guns, electrical controls for the firing systems of missiles and satellites (Cl. 9);
Rocket motors for land vehicles, gun racks and game boxes being adapted for attachment to land vehicles (Cl. 12);
Gun racks (Cl. 20);
Cleaning cloths (impregnated or not) for guns (Cl. 21);
Non-explosive guns, being sporting articles for fishing; children's pistols and paper caps therefor (Cl. 28).

CLASS 14

(Jewelry)

*Name of International Class 14:* Precious metals and their alloys and goods in precious metals or coated therewith (except cutlery, forks and spoons); jewelry, precious stones, horological and other chronometric instruments.

*Including:*

Imitation jewelry and special cases and containers for watches and clocks; houseware containers made or coated with precious metals; earrings of precious metal; works of art of bronze or precious metal; and control clocks.

*Not Including:*

Electroplating solutions including gold-plating solutions (Cl. 1);
Precious metal foils or powders used by painters and decorators (Cl. 2);
Precious metal alloys for use by dentists (Cl. 5);
Cutlery which is made or coated with precious metals (Cl. 8);
Time recording and time registering apparatus and control apparatus and instruments (not being clocks or watches) (Cl. 9);
Clothing accessories of non-precious metals such as brooches and cuff links and earrings of non-precious metal or other material (Cl. 26).

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CLASS 15

(Musical instruments)

*Name of International Class 15:* Musical instruments (other than talking machines and wireless apparatus).

*Including:*

Mechanical pianos and their accessories, musical boxes and strings for musical instruments.

*Not Including:*

Tape recorders and magnetic tape (blank and pre-recorded), amplifiers for musical instruments, electric door chimes, coin-operated musical instruments and metronomes, cleaning devices for gramophone records (Cl. 9);
Music paper and sheet music (Cl. 16);
Music cases and music bags (Cl. 18);
Music stands, piano stools and benches and music cabinets (Cl. 20);
Musical toys (Cl. 28).

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CLASS 16

(Paper goods and printed matter)

*Name of International Class 16:* Paper and paper articles, cardboard and cardboard articles; printed matter, newspapers and periodicals, books; book-binding material; photographs; stationery, adhesive materials (stationery); artists' materials; paint brushes; typewriters and office requisites (other than furniture); instructional and teaching material (other than apparatus); playing cards; printers' type and cliches (stereotype).

*Including:*

Plastic film for wrapping purposes, printed instruction manuals for computer programs, photographic prints (snapshots), paper tablecloths, mechanical and chemical copying machines, and household aquariums.

*Not Including:*

Chemical preparations used in the manufacture of paper, sensitized photographic papers (undeveloped), chemical test papers, blueprint paper and paper pulp (Cl. 1);
Printing inks, artists' materials in the nature of colors Cl. 2);
Abrasive papers and polishing papers (not for dental use) (Cl. 3);
Insecticide papers and medicated papers (Cl. 5);
Aluminum foil for wrapping, staples (not being atationery) (Cl. 6);



Printing plates, pumps for aquariums (Cl. 7);
Paper spoons and knives, palette knives for artists (Cl. 8);
Photographic, electrophotographic, electrostatic and thermic copying machines, dictating machines, apparatus for teaching, punched card office machines, letter scales, adding machines and typewriters adapted for use with data recording apparatus, motion picture films (developed) and photographic transparencies and slides (Cl. 9);
Paper jewelry (Cl. 14);
Insulating paper and sealing strips of paper for windows (Cl. 17);
Building papers and outdoor aquariums (Cl. 19);
Holders for newspapers and draftsman's stands (Cl. 20);
Paper tissues impregnated with a detergent for cleaning dishes, small domestic containers made of paper such as paper cups, paper plates, paper bowls, etc. (Cl. 21);
Twine made of paper (Cl. 22);
Paper bed covers, labels of textile materials and printers' blankets of textile materials (Cl. 24);
Paper clothing (Cl. 25);
Wallpaper (Cl. 27);
Cigarette paper (Cl. 34).

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CLASS 17

(Rubber goods)

*Name of International Class 17:* Gutta percha, indiarubber, balata and substitutes, articles made from these substances and not included in other classes; plastics in the form of sheets, blocks and rods, being for use in manufacture; materials for packing, stopping or insulating; asbestos, mica and their products; hose pipes (non-metallic).

*Including:*

Plastics in the form of sheets, plates, foils, blocks, filaments, rods, tubes, pipes, stampings, strips and shaped sections, all for use in manufactures; adhesive tape, not for surgical or medical use, and not being stationery; non-metallic seals in the nature of packings for machines; chemical preparations for packing, stopping or insulating (for example, chemical preparations for stopping radiator leaks in vehicles); and electrical, heat and sound insulating materials.

*Not Including:*

Artificial and synthetic resins in the form of powders, granules, pastes or liquids, rubber solutions (Cl. 1);
Asbestos paints and synthetic rubber coatings in the nature of paints (Cl. 2);
Metallic hose, metallic pipe, wall plugs made of metal and metal gaskets and shims (Cl. 6);
Machine belts made of balata or rubber and blades made of rubber (being parts of snowploughs) (Cl. 7);
Bludgeons made of rubber (Cl. 8);
Asbestos clothing for protection against accidents and fire, insulated electric wire (Cl. 9);
Nozzles made of rubber or plastic for attachment to water faucets (Cl. 11);
Rubber tires and tubes for vehicles and rubber material for retreading pneumatic tires (Cl. 12);
Packing paper, rubber type, plastic film for wrapping purposes and sealing preparations in the nature of paint (Cl. 16);
Rigid plastic sheeting and panels (including insulated building panels) and asbestos cement products for use in building (Cl. 19);
Plastic closures and sleeping bags (Cl. 20);
Packings made of glass or ceramic materials (Cl. 21);
Stuffing and packing materials such as packing string and fibers for packing, gaskets for ships, plastics in the form of artificial textile fibers and plastic bags or sacks (Cl. 22);
Rubber heels (Cl. 25);
Tapes for venetian blinds (Cl. 26);
Decorative plastic sheets for covering walls (Cl. 27).

CLASS 18

(Leather goods)

*Name of International Class 18:* Leather and imitations of leather, and articles made from these materials and not included in other classes; skins, hides; trunks and travelling bags; umbrellas, parasols and walking sticks; whips, harness and saddlery.

*Not Including:*

Leather dressings in the nature of chemical preparations (Cl. 1);
Coloring substances used on leather (Cl. 2);
Oils and greases used in treating leather such as fat-liquoring agents (Cl. 4);
Insecticidal collars for animals (Cl. 5);
Horseshoes made of metal and spurs (Cl. 6);
Paper resembling leather, bookmarkers and book covers made of leather, and luggage tags (being stationery items) (Cl. 16);
Horseshoes made of rubber (Cl. 17);
Dog kennels of wood and hand-bag mirrors (Cl. 20);
Polishing leathers, chamois skins for cleaning, brushes for animals and pet feeding bowls (Cl. 21);
Toys for domestic pets (Cl. 28).

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CLASS 19

(Non-metallic building materials)

*Name of International Class 19:* Building materials, natural and artificial stone, cement, lime, mortar, plaster and gravel; pipes of earthenware or cement; road-making materials; asphalt, pitch and bitumen; portable buildings; stone monuments; chimney pots.

*Including:*

Portable buildings irrespective of the material from which they are made; works of art of stone, concrete or marble; and building glass, for example, window glass, safety glass and glass tiles.

*Not Including:*

Drilling muds, chemical additives for drilling muds, cements and similar substances (Cl. 1);
Roof coatings in the nature of paint (Cl. 2) [roof coatings not in the nature of paint and being bituminous coating materials (Cl. 19)];
Metal buildings (not portable), swimming pools of metal, monuments and flagpoles made of metal, metallic products for building purposes such as beams, girders and hardware of metal (Cl. 6);
Drilling rigs (including floating) (Cl. 7);
Refractory furnace linings (Cl. 11);
Sealing and caulking compounds, mastics for joints, concrete expansion joint material, insulating materials and weather-stripping (Cl. 17);
Ceramic shapes (rods, tubes, blocks, etc.) for further fabrication in industry; glass hardware (door knobs, drawer pulls, etc.) (Cl. 21);
Floor tiles or wall tiles of linoleum, plastic or similar materials for application to existing floors and walls (Cl. 27);
Transportable swimming pools (Cl. 28);
Undressed timber (Cl. 31).

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CLASS 20

(Furniture and articles not otherwise classified)

*Name of International Class 20:* Furniture, mirrors, picture frames; articles (not included in other classes) of wood, cork, reeds, cane, wicker, horn, bone, ivory, whalebone, shell, amber, mother-of-pearl, meerschaum, celluloid, substitutes for all of these materials, or of plastics.

*Including:*

Articles made of plastics or wood and not included in other classes; furniture irrespective of the material used in the manufacture thereof [furniture fittings of metal (Cl. 6)]; works of art of wood, wax, plaster or plastic; mattresses, pillows and sleeping bags.

*Not Including:*

Furniture fittings of metal including casters and springs, outdoor blinds made wholly or principally of metal, ladders and tool chests made of metal (Cl. 6);

Plastic cutlery (knives, forks and spoons) and household pokers (Cl. 8);

Photographic racks, cabinets for loudspeakers and special furniture for laboratories such as stands especially designed therefor and optical mirrors (Cl. 9);

Specialized furniture used by doctors and dentists, such as dental chairs and examination tables (Cl. 10);

Mirrors for vehicles and children's safety seats which are especially adapted for vehicles, and invalids' chairs (wheeled) (Cl. 12);

Bookends and plastic film for wrapping (Cl. 16);

Walking-stick seats and umbrella furniture (Cl. 18);

Plastic decorations for purposes of construction (Cl. 19);

Cabinets (not being furniture) for holding and dispensing face towels and hand towels, spice cabinets (not being furniture), bath racks and plate racks, chopping boards of wood for kitchen use (Cl. 21);

Hammocks, wadding or stuffing for padding upholstery, and plastic sacks or bags (Cl. 22);

Covers (loose) for furniture (Cl. 24).

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CLASS 21

(Housewares and glass)

*Name of International Class 21:* Small domestic utensils and containers (not of precious metal or coated therewith); combs and sponges; brushes (other than paint brushes); brush-making materials; instruments and materials for cleaning purposes; steelwool; unworked or semi-worked glass (excluding glass used in building); glassware, porcelain and earthenware, not included in other classes.

*Including:*

Ceramics in the form of rods, tubes, wafers, cylinders, studs and plates, all for use in manufactures; electric brushes, not being parts of machines, for example, electric toothbrushes and electric clothes brushes; dispensers (box-like devices not of precious metal) for containing and dispensing paper napkins, tissues, etc.; works of art of porcelain, terra cotta or glass.

*Not Including:*

Soaps (Cl. 3);

Table bells, aluminum foil for use in cooking (Cl. 6);

Power-operated machines, such as grinders and blenders for foods, and washing and drying machines for both domestic and industrial use (Cl. 7);

Goods properly described as hand tools such as can openers (not including electric), bottle openers, flatware (knives, forks and spoons) even though coated with precious metals, razors and manicure implements (Cl. 8);

Electric floor polishing machines and electric vacuum cleaners for domestic use, bathroom scales and electrically heated combs (Cl. 9);

Containers in the nature of trays and adapted for medical, surgical or dental purposes (Cl. 10);

Electric cooking utensils (except electric kettles), electrical apparatus for space heating and ventilating, plumbing fixtures of vitreous china (Cl. 11);

Brushes used in cleaning guns (Cl. 13);

Small domestic containers made or coated with precious metals (Cl. 14);

Graining combs, paint brushes, paint rollers and trays therefor (Cl. 16);

Glass insulators (Cl. 17);

Safety glass, window glass, glass for building purposes including insulating glass (double glazing) (Cl. 19);

Mirrors, including mirrors which are electrically lighted, curtain rods, pins, rings, poles and rollers, clothesline pegs (clothespins), and plastic closures for containers (Cl. 20);

Clotheslines and plastic covers for domestic appliances (Cl. 22);

Tablecloths of textile or plastic materials (Cl. 24);

Table mats and bath mats (Cl. 27).

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CLASS 22

(Cordage and fibers)

*Name of International Class 22:* Ropes, string, nets, tents, awnings, tarpaulins, sails, sacks; padding and stuffing materials (hair, kapok, feathers, seaweed, etc.); raw fibrous textile materials.

*Including:*

Plastic rope and strapping; fibers and filaments (natural or artificial) for use in the textile industry; and bags not included in other classes.

*Not Including:*

Chemical preservatives for ropes, nets and similar goods (Cl. 1);

Wire rope or cable, metal awnings, fibers and filaments of common metals, and slings made of metal (Cl. 6);

Rope transport installations, non-skid covers for tires and car seat covers (Cl. 12);

Strings for musical instruments (Cl. 15);

Paper sacks or bags (Cl. 16);

Padding or stuffing in the nature of rubber or plastics and fiber insulating materials (Cl. 17);

Bags in the nature of luggage (Cl. 18);

Sleeping bags (Cl. 20);

Glass fibers for reinforcing plastics; animal bristles (Cl. 21);

Rags (Cl. 24);

Hair nets (Cl. 26);

Nets for use in games (Cl. 28).

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CLASS 23

(Yarns and threads)

*Name of International Class 23:* Yarns, threads.

*Not Including:*

Compositions for preserving yarns and threads (Cl. 1);

Metal thread for tying purposes (Cl. 6);

Gold and silver thread (Cl. 14);

Rubber and asbestos thread and yarn (Cl. 17);

Glass threads used for non-textile purposes (Cl. 21);

Thread or binding string used in reaping and binding machines (Cl. 22).

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CLASS 24

(Fabrics)

*Name of International Class 24:* Tissues (piece goods); bed and table covers; textile articles not included in other classes.

*Including:*

Textile materials for covering walls; curtains.

*Not Including:*

Blueprint cloth (Cl. 1);

Fabric covers (shaped) for use on the rollers of paper processing machines (Cl. 7);

Electric blankets (Cl. 10);

Vehicle seat covers (shaped coverings of textiles, leather or plastics) (Cl. 12);

Fabrics for bookbinding, paper handkerchiefs and paper towels (Cl. 16);



Fabrics used for insulating purposes; plastics in sheet form and coated with fabrics, the plastics predominating (Cl. 17);

Coated fabrics which simulate the appearance of leather, blankets for animals (Cl. 18);

Raw textile fibers, brattice cloth, packing cloth, and sailcloth for making into nautical sails (Cl. 22);

Curtain fittings of all materials (rods, hooks, rings, and the like) (Cl. 20);

Fabric insertions, being parts of clothing (Cl. 25);

Ribbons of textile or artificial materials (Cl. 26);

Carpeting and rugs, textile door mats, oil-cloth, non-textile materials for covering walls (including wallpaper), and imitation turf (Cl. 27).

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CLASS 25

(Clothing)

*Name of International Class 25:* Clothing, including boots, shoes and slippers.

*Including:*

Athletic shoes of all types, and paper clothing.

*Not Including:*

Clothing for protection against accidents and fire, special clothing such as crash helmets, divers' suits, safety gloves for industrial use and electrically heated clothing such as battery-heated socks (Cl. 9);

Boots and shoes especially adapted for medical purposes, surgical gloves, gloves for X-ray operators and therapeutic hosiery (Cl. 10);

Paper patterns for making clothes, and paper handkerchiefs Cl. 16);

Animal clothing (Cl. 18);

Garment linings and textile handkerchiefs (Cl. 24);

Wigs, hair supports and hair nets, garment hangers and ornaments for hats (Cl. 26);

Gloves especially designed for use in games (Cl. 28) [golf gloves (Cl. 25)].

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CLASS 26

(Fancy goods)

*Name of International Class 26:* Lace and embroidery, ribands and braid; buttons, press buttons, hooks and eyes, pins and needles; artificial flowers.

*Including:*

Wigs and hair bands, and slide fasteners (zippers).

*Not Including:*

False eyelashes and fingernails, preparations used in the conditioning and styling of wigs (Cl. 3);

Threaders (Cl. 8);

Dressmaker's measures (Cl. 9);

Needles of precious metal and imitation jewelry (Cl. 14);

Etching needles and dress making patterns (Cl. 16);

Leather laces (Cl. 18);

Millinery stands and wigmaker's blocks (Cl. 20);

Hair brushes and combs (Cl. 21);

Ribbon bows for wear (Cl. 25);

Dried flowers and plants for decorative purposes (Cl. 31).

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CLASS 27

(Floor coverings)

*Name of International Class 27:* Carpets, rugs, mats and matting; linoleums and other materials for covering existing floors; wall hangings (non-textile).

*Including:*

Floor tiles or wall tiles of linoleum, plastics or similar materials for application to existing floors and walls, wallpaper, vehicle floor mats and carpet seaming tape.

*Not Including:*

Floor mats of metal and tiles of metal (Cl. 6);

Asbestos stove mats, self-adhesive plastic foils (not being decorative wall coverings) (Cl. 17);

Removable mats for sinks and drain boards (Cl. 20);

Textile wall hangings (Cl. 24).

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CLASS 28

(Toys and sporting goods)

*Name of International Class 28:* Games and playthings; gymnastics and sporting articles (except clothing); ornaments and decorations for Christmas trees.

*Including:*

Toys for domestic pets; artificial Christmas trees; coin-operated billiard tables and sporting articles not included in other classes; equipment for playing games; children's pistols and paper caps therefor.

*Not Including:*

Hunting knives and harpoons (Cl. 8);

Electrical scoreboards, electric ice fishing alarms, underwater breathing gear, sports reckoners and goggles, swimming belts and jackets, water depth meters and coin-operated amusement machines not including coin-operated billiard tables (Cl. 9);

Exercising apparatus especially designed and promoted for therapeutic purposes (Cl. 10);

Electrical Christmas tree lights (Cl. 11);

Ski carriers designed for use on automobiles, ski lifts, motorized golf carts and motorized surf boards, children's bicycles and tricycles (not being toys) (Cl. 12);

Sporting rifles and guns, not including telescopic sights therefor (Cl. 13);

Hunting horns and instruments used in toy symphonics (Cl. 15);

Ordinary playing cards and boxes of paints for children (Cl. 16);

Leather skate straps (Cl. 18);

Sleeping bags (Cl. 20);

Billiard table brushes (Cl. 21);

Fishing nets, ropes for mountain climbing and camping tents (Cl. 22);

Hunting clothes, golf gloves and athletic shoes (Cl. 25);

Gymnasium or exercise mats (Cl. 27);

Confectionery used for decorating Christmas trees (Cl. 30).

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CLASS 29

(Meats and processed foods)

*Name of International Class 29:* Meat, fish, poultry and game; meat extracts; preserved, dried and cooked fruits and vegetables; jellies, jams; eggs, milk and other dairy products; edible oils and fats; preserves, pickles.

*Including:*

Beverages with a milk base; edible (shelled) nuts and edible seeds; live shellfish (edible).

*Not Including:*

Food preservatives and preparations for tenderizing meat for industrial use (Cl. 1);

Food colors (Cl. 2);

Non-edible fish oils, oil preparations for application to cooking utensils to form durable non-stick coatings (Cl. 4);

Sausage skins or casings (Cl. 18);

Preparations for making meat tender (for domestic use), relishes, meat pies and chocolate covered nuts (Cl. 30);

Fresh fruits and vegetables, raw cereals, animal foodstuffs and live animals (Cl. 31);

Fruit juices and beverages with a fruit juice base (Cl. 32).

CLASS 30

(Staple foods)

*Name of International Class 30:* Coffee, tea, cocoa, sugar, rice, tapioca, sago, coffee substitutes; flour, and preparations made from cereals; bread, biscuits, cakes, pastry and confectionery, ices; honey, treacle; yeast, baking-powder; salt, mustard; pepper, vinegar, sauces, spices; ice.

*Including:*

Beverages with chocolate, cocoa or coffee base, including chocolate milk; natural sweetening substances; food flavors, not being essential oils; coffee substitutes; rice (raw or prepared); and sherbet in the nature of ice milk.

*Not Including:*

Food preservatives, raw salt, artificial sweetening substances and chewing gum bubble base (Cl. 1);

Food colors (Cl. 2);

Flavors, being essential oils (Cl. 3);

Medicated teas and candies, dietetic foods (Cl. 5);

Salad dressings (Cl. 29);

Raw cereals (except rice), fresh olives and animal foodstuffs (Cl. 31).

CLASS 31

(Natural agricultural products)

*Name of International Class 31:* Agricultural, horticultural and forestry products and grains not included in other classes; living animals; fresh fruits and vegetables; seeds; live plants and flowers; foodstuffs for animals, malt.

*Including:*

Dried flowers and plants; mulches (straw, moss, compost).

*Not Including:*

Food preservatives, flower potting soils, soil conditioners, manure (natural and artificial), humus, tanning bark and fillers for tree cavities (Cl. 1);

Food colors (Cl. 2);

Cosmetics for animals (Cl. 3);

Medicated foodstuffs for animals, culture microorganisms and leeches, medicated additives for animal foodstuffs such as vitamins, minerals and proteins; repellents for animals (Cl. 5);

Unworked peltry (Cl. 18);

Dressed timber (Cl. 19);

Artificial flowers and plants (Cl. 26);

Artificial Christmas trees (Cl. 28);

Edible nuts (shelled) and edible seeds, preserved fruits and vegetables, live shell fish (edible) (Cl. 29);

Rice (Cl. 30).

CLASS 32

(Light beverages)

*Name of International Class 32:* Beer, ale, porter; mineral and aerated waters and other non-alcoholic drinks; syrups and other preparations for making beverages.

*Including:*

Beverages low in alcohol and beverages with a fruit juice base; fruit juices and non-alcoholic mixes for making cocktails.

*Not Including:*

Clarifying and preserving compositions for beer (Cl. 1);

Colors used in beverages (Cl. 2);

Medicated beverages including medicated wines, juices for dietetic purposes, low calorie beverages for medicinal purposes and fortified beverages for infants and invalids (Cl. 5);

Vegetable juices for cooking and beverages with a milk base (Cl. 29);

Beverages with a chocolate, cocoa or coffee base, and sherbet in the nature of ice milk (Cl. 30);

Distilled beverages; cider including sweet cider (Cl. 33).

CLASS 33

(Wines and spirits)

*Name of International Class 33:* Wines, spirits and liqueurs.

*Not Including:*

Preparations for clarifying and fermenting wine (Cl. 1);

Colorings for alcoholic liqueurs (Cl. 2);

Medicated spirits and medicated wines (Cl. 5);

Wine vinegar and candy filled with liqueurs (Cl. 30);

Non-alcoholic beverages and beverages low in alcohol (Cl. 32).

CLASS 34

(Smokers' articles)

*Name of International Class 34:* Tobacco, raw or manufactured; smokers' articles; matches.

*Not Including:*

Chemical preparations used in the manufacture of tobacco (Cl. 1);

Medicated cigarettes and tobacco substitutes such as smoking herbs for medicinal purposes (Cl. 5) [not for medicinal purposes (Cl. 34)];

Electric cigar lighters (Cl. 9);

Smokers' articles such as cigarette cases, tobacco boxes, ash trays, etc. which are made or coated with precious metals (Cl. 14).

SERVICES

The international and prior United States classes for services largely coincide as to their contents. The major areas in which the correlation of service classes is not exact are identified in the following notes.

CLASS 35

*Name of International Class 35:* Advertising and business.

*Including:*

Real estate brokerage, that is, sale of real estate.

*Not Including:*

Brokerage of bonds or other securities for the sale of real estate; real estate management, appraisal and leasing (Cl. 36);

Retail store services (Cl. 42).

CLASS 36

*Name of International Class 36:* Insurance and financial.

*Including:*

Brokerage of bonds or other securities for the sale of real estate; real estate management, appraisal and leasing; stock brokerage.

*Not Including:*

Selling of real estate by agents and brokers therefor (Cl. 35).

CLASS 42

*Name of International Class 42:* Miscellaneous.

*Including:*

Retail store services; computer services, such as computer programming, time-sharing of computers, engineering of computer hardware; rental, generally (if not otherwise classified), such as rental of hospital equipment.

*Not Including:*

Services which are merely performed by means of computers are classified accordingly to the service performed and not on the basis of use of computers, for example, computerized accounting services (Cl. 35);

Services of renting specific goods are classified where the goods which are rented would be most likely to be in use, for example, the rental of construction equipment (Cl. 37), the rental of vehicles (Cl. 39), the rental of radio and television sets (Cl. 41).

NOTES:

(1) This first revision of the Expanded Explanatory Notes appeared in the OFFICIAL GAZETTE of Apr. 29, 1975 (933 O.G. TM 285).

(2) The terms in parentheses immediately under the class numbers are the short titles which the United States has applied to the international class numbers. See 924 O.G. TM 155 (July 16, 1974).

(3) For information relating to ordering the English edition of the "International Classification of Goods and Services To Which Trademarks Are Applied," see 911 O.G. TM 210 (June 26, 1973). However, prices are subject to change. As of March 1975 the price of the international classification and 5 supplements was 3 pounds 55 pence.

[933 O.G. TM 285 (Apr. 29, 1975)]

(348) PUBLIC ADVISORY COMMITTEE FOR TRADEMARK AFFAIRS

*Open Meeting*

In accordance with section 10(a)(2) of the Federal Advisory Committee Act (Pub. L. 92-463), announcement is made of the following committee meeting.

The Public Advisory Committee for Trademark Affairs will meet from 9:30 a.m. to 5 p.m. on June 4, 1975 and from 9 a.m. to 5. p.m. on June 5, 1975 in the Monroe Room of the Key Bridge Marriott Hotel, 1401 Lee Highway, Arlington, Va. 22207.

The Committee was established in 1970 to advise the Patent and Trademark Office on steps which can be taken in order to increase the efficiency and effectiveness of the administration of the Trademark Act and to provide a continuous source of knowledge from the private sector to the government in the field.

The agenda for the meeting is:

(1) A review of the Trademark Manual of Examining Procedure and a discussion of changes which may be desirable in the procedures and practices set forth therein. (Various sections of the Manual have been assigned Committee members for review before the meeting.)

(2) A discussion of the revisions of the forms for filing trademark applications and the feasibility of adopting forms for filing amendments to applications.

(3) Review of general status of the Trademark operation.

The meeting will be open to public observation; approximately 15 seats will be available for the public on a first come first served basis. If time permits, oral comments by the public of 3 minutes on each topic within the above agenda items will be allowed. Any comments or suggestions relating to the agenda items should be submitted in writing before May 21. Further, comments and suggestions will be accepted after the meeting on any of the matters discussed.

Copies of the minutes will be available upon request 60 days after the meeting.

Inquiries may be addressed to the Committee Control Officer, Patricia M. Davis, Office of Trademark Program Control, Room 11C17 Crystal Plaza Building 3, Telephone: 703-557-3881.

Dated: April 8, 1975.

C. MARSHALL DANN,
*Commissioner of Patents and Trademarks.*

Dated: April 11, 1975.

Approved:
BETSY ANCKER-JOHNSON,
*Assistant Secretary for Science and Technology.*

[FR Doc. 75-10183; Filed 4-17-75; 8:45 am]

40 F.R. 17302

[934 O.G. TM 81 (May 13, 1975)]



(349)

## INTERNATIONAL INDUSTRIAL PROPERTY PROTECTION DEVELOPMENTS REPORTS ON CONFERENCES ATTENDED BY OFFICIALS OF U.S. PATENT AND TRADEMARK OFFICE

*Representatives of the U.S. Patent and Trademark Office are frequent participants at international intergovernmental meetings where matters relating to industrial property protection are discussed. These include meetings on patent and trademark classification, mechanized information retrieval, assistance programs for developing countries, and periodic conferences pursuant to international treaties to which we are a party.*

*When the results of these deliberations have been of particular significance, for example, texts of new treaties such as the Patent Cooperation Treaty and the Trademark Registration Treaty, they have been made available to readers of the* OFFICIAL GAZETTE *by publication of the relevant documents.*

*To keep readers current on relevant international activities as they occur, even in their evolving state, more frequent status reports seem desirable.*

*We have in the past solicited views from the private sector on important issues by way of circular letters and questionnaires addressed to heads of organizations, industrial groups and patent law associations. We plan to continue using this method of communication.*

*In order that the entire readership of the* OFFICIAL GAZETTE *be kept advised, however, we intend to publish from time to time summary reports of the more significant international meetings that we attend. The first such report follows.*

*I am hopeful that this series will be helpful. Please do not hesitate to give us your views on the matters presented or your suggestions on how to improve the presentation of this series.*

C. MARSHALL DANN,
*Commissioner of Patents and Trademarks.*

## REPORT ON THE MEETING OF THE AD HOC GROUP OF GOVERNMENTAL EXPERTS ON THE REVISION OF THE PARIS CONVENTION, FEBRUARY 11 TO 17, 1975

This Ad Hoc Group of Governmental Experts was convened pursuant to a resolution of the Coordination Committee of WIPO adopted in September 1974, as follows:

> "The Director General will create and convene an Ad Hoc Group of Governmental Experts coming from states both members and non-members of the Paris Union to study all aspects to the question of revising the Paris Convention including, inter alia, additional provisions of special benefit to the developing countries."

The meeting was well attended; almost fifty countries were represented. Also represented were five intergovernmental organizations and nine international nongovernmental organizations.

The developing countries expressed concern that the systems of patents protection as currently practiced were hampering rather than facilitating the transfer of technology to them. Algeria, Cuba and the Ivory Coast were principal spokesmen. They pointed out that developing countries hold a very small percentage share of the total pool of patents and voiced the view that in too many instances enterprises of developed market economy countries were protecting their exports through the use of patents, to the detriment of industrialization objectives of developing countries.

Accordingly, their major attention was focussed on ways to avoid the utilization of patents in a manner considered by them "abusive" to interests of developing countries. In this regard, they identified a few areas which they thought possibly susceptible to correction by amendment of the Paris Convention.

A change in the national treatment clause of article 2 of the Parts Convention was suggested, based on the contention that the equality principle leads to unequal benefits. Support was expressed for "preferential treatment" for their nationals "without reciprocity." Developing countries urged that compulsory licensing be made available for use by developing countries at an earlier date than is now permitted under the Paris Convention. It was also suggested that a greater transfer of know-how associated with patented technology was needed to accomplish domestic working. Additionally, suggestions were made to exclude certain technological subject matter from the scope of coverage of patent grants and to reduce in certain instances the term of the patent grant.

The Socialist countries, with the Soviet Union as their chief spokesman, expressed a favorable disposition to a "modernization" of the Paris Convention which supported the aspirations of developing countries. They asserted the desirability of incorporating into the Paris Convention provisions for giving greater recognition to inventors' certificates, the principal incentive to inventors in Socialist countries. Another theme repeated by these countries was the desirability of extending industrial property protection provisions of the Convention to include scientific discoveries.

The developed market economy countries also expressed support for promoting the transfer of technology to the developing countries, but pointed out that careful analysis is needed to determine the best ways to accomplish this. In their view, the Paris Convention has been very successful since its inception in promoting international trade in industrial property and the Convention may well be sufficiently flexible to permit tackling the problems experienced by developing countries without amendment. In any event, the practical problems which are being experienced should be identified with greater precision and clarity so that the approaches developed would be suitable to meet the realities of the current situation.

Several developed market economy countries pointed out the practical reality that the technology which developing countries need is owned privately in industrialized countries. Therefore, the transfer of that technology can only be achieved when the owners of that technology are encouraged to transfer it to the recipient country in a commercial arrangement on mutually acceptable terms based on a comfortable working relationship between the parties.

Attention was also called to the fact that there are several alternative ways of assisting developing countries within the framework of the World Intellectual Property Organization. In particular, mention was made of the preparation of a new Model Law on Inventions, the technical assistance and technical information programs under Chapter 4 of the Patent Cooperation Treaty, and the activities of the Permanent Program for the Acquisition by Developing Countries of Technology Related to Industrial Property. It was also pointed out that some of the desires of the developing countries could be achieved by changes in their national laws, without change in the Paris Convention.

The group of experts after a full discussion adopted the following recommendation:

> *"The Ad Hoc Group of Governmental Experts on the Revision of the Paris Convention for the Protection of Industrial Property,* convened in accordance with the decisions taken at the September 1974 sessions of the Coordination Committee of the World Intellectual Property Organization (WIPO) and the Executive Committee of the Paris Union for the Protection of Industrial Property,
>
> *"Meeting* at Geneva from February 11 to 17, 1975,
>
> *"Noting* the interest that developing countries have manifested in the revision of the Paris Convention,
>
> "1. *Agrees* that, at this stage of the work, the folowing questions be considered:
>
> (i) National Treatment
> (ii) Independence of Patents
> (iii) to (v) Non-Working and Delays in Working of the Patented Invention; Compulsory Licenses; Licenses of Right
> (vi) Preferential Treatment Without Reciprocity
> (vii) Technical Assistance
> (viii) Types of Protection other than Patents (Inventors' Certificates, etc.)
> (ix) Marks; Industrial Designs; Appellations of Origin
> (x) Reservations
> (xi) Deletion of Article 24
> (xii) Scope of Protection of Process Patents
> (xiii) Right of Priority
> (xiv) Unanimity Rule
>
> "2. *Recommends:*
>
> (*a*) that the Director General, taking into account the need to respect the basic principles of the Paris Convention and to take into consideration the concerns of the developing countries, prepare a study containing an analysis of the issue and outlining possible alternative solutions in respect of the said points and any connected questions,
>
> (*b*) that the report containing the said study be communicated to the Governments of all countries members of the United Nations system of organizations for their comments,
>
> (*c*) that, as a continuation of the work towards the revision of the Paris Convention, the Ad Hoc Group of Governmental Experts be convened, as soon as possible, in a second session,
>
> (*d*) that the competent organs of WIPO and the Paris Union and all other interested organizations, in particular the United Nations Conference on Trade and Development (UNCTAD) and the United Nations Industrial Development Organization (UNIDO), be informed of the results of the first (present) session of the Ad Hoc Group of Governmental Experts,
>
> (*e*) that other United Nations bodies, particularly the United Nations Conference on Trade and Development and the United Nations Industrial Development Organization, interested in the transfer of technology be consulted as to the contribution they could make to the further work of the Ad Hoc Group of Governmental Experts."

The issues forming the basis of the fourteen questions, thirteen of substantive law and one of procedure mentioned in paragraph 1 of the resolution, were developed to some degree by the members of the Committee of Experts as follows:

> "A. *Questions of Substantive Law*
>
> *"Question No. 1: National Treatment.* It was generally understood that the principle of national treatment should remain unaffected in the relations between developed countries,* this term covering both market economy and Socialist countries which are not developing countries. The question here is rather whether, in the relations of developing countries to developed countries, national treatment should not, on certain points—yet to be identified—suffer exceptions totally or within certain limits also to be defined. The total exception to national treatment on certain points may require the definition of minimum standards of protection to be respected in any case. Whether such derogations from national treatment would apply also in the relations between developing countries would also have to be considered.
>
> "The examples of possible cases where certain derogations from the national treatment principle were mentioned concerned smaller fees for nationals than foreigners, the requirements of working the patented invention on the territory of the developing country and the duration of the patent.

*The Delegation of Canada reserved its position as to this conclusion, and generally as to the possibilities of enlarging any proposed amendments which were appropriate for both developed and developing countries, so as to make them of universal application. The Director General indicated that amendments of benefit to all members States could be so enlarged.



> "Moreover, the question should be examined whether, in a case where an invention was made by a resident of the country or where an invention was worked in the country, national treatment should not apply unconditionally, irrespective of the nationality of the patentee of other person working the invention.
>
> *"Question No. 2: Independence of Patents.* The question here is whether the principle of full independence embodied in Article 4*bis* of the Paris Convention should be maintained, or whether exceptions to it should be allowed, particularly where the foreign applicant in the developing country claims priority of an earlier foreign application on which no patent was issued because of lack of patentability or where the patent so granted was later invalidated for that reason. Furthermore, the question should be studied how decisions taken in respect of an invention in any foreign country could be made available to the national office of any developing country in which an application for that invention had been filed.
>
> *"Questions Nos. 3 to 5: Non-Working and Delays in Working of the Patented Invention; Compulsory Licenses; Licenses of Right.* The questions here are whether any developing country should not be permitted to impose requirements for working the patented invention which are more stringent for foreigners than nationals, whether the time limits in Article 5A of the Paris Convention should not be shortened, whether licenses of right—whose concept still required precise defintion—should not be allowed by the Paris Convention and whether it should not be specified that importation did not satisfy the requirement of working in the country.
>
> *"Question No. 6: Preferential Treatment Without Reciprocity.* The question here is whether in certain respects nationals of developing countries should not receive more favorable treatment in developed countries than nationals of the developed countries. One example was mentioned, that is, the fees to be paid: whether the amount of the fees charged for the application for, and maintenance of, a patent in a developed country should not be less than the fees to be paid by the nationals of countries which are not developing countries.
>
> *"Question No. 7: Technical Assistance.* The question here is whether the Paris Convention should not contain provisions—similar, for example, to those contained in the Patent Cooperation Treaty—concerning technical assistance to developing countries. It was noted that under Article 7 of the Convention Establishing the World Intellectual Property Organization the institutional framework for such technical assistance existed but that budgetary considerations might militate in favor of including provisions on technical assistance also in the Paris Convention. It was suggested that Article 19 could be made use of in order to establish special unions devoted to technical assistance.
>
> *"Question No. 8: Types of Protection Other than Patents (Inventors' Certificates, etc.).* The most important question here is whether inventors' certificates should not, as far as their legal nature so permits, be treated in the Paris Convention on an equal footing with patents and, consequently, expressly referred to in Article 1 and all other relevant provisions of that Convention. It was mentioned in this connection that the free choice, for foreigners on the same terms as for nationals, between patents and inventors' certificates would have to be consequently generalized. A further question here is whether inventors' certificates granted for industrial designs rather than technical inventions should also be expressly mentioned. Finally, the question of the inclusion in the text of the Paris Convention of references to special types of patents should be examined.
>
> *"Question No. 9: Marks; Industrial Designs; Appellations of Origin.* Examples mentioned of questions to be considered here were: whether a more precise definition of the time limit mentioned in Article 5C(1) of the Paris Convention was not required in order to ensure early enforcement of any use requirements; whether the prohibition of the use of geographical designations as trademarks should not be established or, to the extent that it existed, reinforced; whether the protection of appellations of origin should not be reinforced and, in cases of conflict between an appellation of origin and a trademark, the former should not prevail; whether the protection against false indications of source and unfair competition in general should not be strengthened to allow for swifter action against abuses; whether the obligation to protect any well-known mark (*marque notoirement connue*) was always compatible with the interests of developing countries in which similar national marks were registered before the registration of the well-known mark; whether the possibility of providing for compulsory licenses for trademarks and industrial designs, in certain well-defined cases, should not be provided for; whether Article 6 of the Paris Convention concerning the indepedence of trademarks need not be revised; finally, whether the possibility of pronouncing the lapse of industrial designs, in certain well-defined cases, should not be provided for.
>
> *"Question 10: Reservations.* The question here is whether any exception from the obligations of the Paris Convention allowed for developing countries should not be exercisable by way of a reservation to the relevant provision of that Convention. This could allow of a more flexible system, tailor-made for the needs of the country making reservations.
>
> *"Question No. 11: Deletion of Article 24.* The question here is whether Article 24 of the Paris Convention has not become anachronistic and should not be deleted.
>
> *"Question No. 12: Scope of Protection of Process Patents.* The question here is whether developing countries should not be exempted from the rule embodied in Article 5*quater* of the Paris Convention according to which the patentee has, with regard to imported products, all the rights which the process patent grants to him with respect to products manufactured in the country.
>
> *"Question No. 13: Right of Priority.* All aspects of Article 4 of the Paris Convention should be examined, including the question whether the duration of the right of priority should not be longer for applicants who are nationals of developing countries when they apply for patents in developed countries.
>
> "B. *Question of Procedure*
>
> *"Question No. 14: Unanimity Rule.* The question here is to weigh the relative advantages and disadvantages of amending the Paris Convention by unanimity or a qualified majority."

These narrative synopses will form the basis for the study which the Director General will undertake as specified in paragraph 2(*a*) of the resolution. Following completion of the Director General's study, the report he prepares will be circulated to all member countries of the UN system of organizations for their comments and following receipt of these a second meeting of the Ad Hoc Group of Governmental Experts Concerning the Revision of the Paris Convention will be called. This may take place in the Spring of 1976.

[935 O.G. TM 71 (June 10, 1975)]

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## (350) TRADEMARK REGISTRATION TREATY POST CONFERENCE INFORMATION

The text of the Trademark Registration Treaty (TRT), signed in 1973 for the United States and thirteen other States, was reproduced in the OFFICIAL GAZETTE of July 24, 1973. Other documents and materials concerning the treaty were published in the OFFICIAL GAZETTES of March 12, 1974, May 28, 1974, and October 14, 1974.

The World Intellectual Property Organization (WIPO) has now circulated an additional post conference document, which contains a catchword index to the articles and rules of the Trademark Registration Treaty.

In the belief that this index is not of such general interest as those which were previously published, and in lieu of its publication herein, the Office will supply a photocopy of the

catchword index (TRT/PDC/7, dated April 25, 1975) to any interested person who may request such copy.

C. MARSHALL DANN,
*Commissioner of Patents and Trademarks.*

Dated: May 23, 1975.

[935 O.G. TM 152 (June 17, 1975)]

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(351) MAIL DELAYS AND CONDITIONAL PETITIONS TO REVIVE (TRADEMARKS)

In view of the "Post Office to Addressee" express mail service offered by the U.S. Postal Service, the conditional petition practice as to trademarks, announced in the OFFICIAL GAZETTE (921 O.G. TM 126), is hereby extended to cover this type of service.

Where the addressee is the Patent and Trademark Office, this service provides for the delivery of mail to one of our employees in Room 1627, Department of Commerce Building, Washington, D.C. 20231, no later than 3:00 p.m. on the next workday following its deposit before 5:00 p.m. at any postal facility in the United States with an Express Mail window.

It is suggested that when a communication, complying with the circumstances enumerated below, is mailed to the Patent and Trademark Office by means of the "Post Office to Addressee" express mail service and the communication is deposited at a U.S. Postal Service-Express Mail window by 5:00 p.m. on a day which is at least the day preceding the due date, a conditional petition be attached to the communication.

If the communication is received in the Patent and Trademark Office after the due date and the application becomes abandoned, the conditional petition will become effective, subject to the following requirements. The petition must include (1) an authorization to charge a deposit account for any required fees, including the petition fee, and (2) an oath or declaration signed by the person mailing the communication and also signed by the applicant or his attorney stating that the communication and petition were deposited at an Express Mail window no later than 5:00 p.m. on a day which is at least the day preceding the due date, and were requested to be mailed via the "Post Office to Addressee" Express Mail Service. Since mail handled in this manner may reasonably be expected to reach the Patent and Trademark Office no later than 3:00 p.m. of the next workday following its deposit at an Express Mail window, any mail delays beyond such time will be considered to constitute unavoidable delay to grant a petition to revive (Section 12(b) of the Trademark Act of 1946).

The circumstances under which this procedure may be used are those where the communication, if timely filed, (1) would be a proper and complete response to an action or request by the Patent and Trademark Office, and (2) would stop a period for response from continuing to run. Accordingly, this procedure would be appropriate for:

1. A response to a non-final Office action.
2. A response to a final Office action which places application in condition for publication or issue.
3. A notice of appeal and requisite fee.
4. An appeal brief.

Normal petition practices are not affected in those situations where this procedure is either not elected or not appropriate, nor does this procedure bar the granting of a petition in different fact situations where justified.

A suggested declaration form for the conditional petition is shown below:

Applicant:
Serial No.: Petition to Revive
Date Filed:
Mark:

I hereby declare that the attached communication is being deposited at an Express Mail window in a U.S. Postal Service's facility and intended to be mailed using the U.S. Postal Service's "Post Office to Addressee" Express Mail service in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231, prior to 5:00 p.m. on _____, which date is at least the day preceding the due date, at _____, by
(Location)
_____.
(Name of Individual)

In the event that such communication is not timely filed in the Patent and Trademark Office, it is requested that this paper be treated as a petition and that the delay in prosecution be held unavoidable.

The petition fee is authorized to be charged to Deposit Account No. _____ in the name of _____.

The undersigned declares further that all statements made herein are true, based upon the best available information; and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any registration resulting therefrom.

Date _____ _____
(Signature of applicant or applicant's attorney)
And
Date _____ _____
(Signature of person mailing, if other than the above)

June 24, 1975.

BERNARD A. MEANY,
*Assistant Commissioner for Trademarks.*

[936 O.G. TM 288 (July 29, 1975)]

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(352) REVISION OF FORM PARAGRAPHS AND OF FIRST ACTION FORMS FOR TRADEMARK APPLICATIONS

The Patent and Trademark Office has concluded its first review and revision of those form paragraphs used in trademark application actions (see 912 O.G. T.M. 310 for further information on the use of these paragraphs). The revision includes new paragraphs on points not previously covered as well as changes to existing paragraphs for clarification and simplification. Additionally, the Trademark Manual of Examining Procedure has been referenced where appropriate.

The revision was implemented in April 1975. A copy of the paragraphs may be obtained by addressing the Commissioner of Patents & Trademarks, Washington, D.C., 20231, Attention: Office of the Director of the Trademark Examining Operation.

The Office has also reviewed and revised the format of the one-page first action letter which contains check-off boxes for refusals, informalities, and notice of publication. Use of the revised letter will begin about September 1975 upon exhaustion of supplies of the previous form.

BERNARD A. MEANY,
Sept. 5, 1975. *Assistant Commissioner for Trademarks.*

[939 O.G. TM 104 (Oct. 14, 1975)]

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(353) TITLE 37—PATENTS, TRADEMARKS AND COPYRIGHTS

CHAPTER I—PATENT AND TRADEMARK OFFICE DEPARTMENT OF COMMERCE

PART 1—RULES OF PRACTICE IN PATENT CASES
PART 2—RULES OF PRACTICE IN TRADEMARK CASES

*Revision of Administrative Fees*

On August 21, 1975, notice of proposed rulemaking was published in the FEDERAL REGISTER (40 FR 36573), regarding the proposal of the Patent and Trademark Office to amend Title 37 of the Code of Federal Regulations by amending §§ 1.21, 1.25, 1.165, and 2.6 dealing with administrative fees. Interested persons were given until October 15, 1975, to submit written comments and suggestions. Full and careful consideration was given to the single written comment received.

Amendment of §§ 1.21 and 2.6 is intended to (1) recover increases in material and labor costs for furnishing assignment information, drafting services and classification information, (2) eliminate established fees for drafting services not currently in demand, and (3) establish a new fee. Drafting services for which established fees are eliminated (§ 1.21 (l) and (m)) will be furnished, if requested, at fees based upon actual cost. The new fee is established to recover the cost of servicing deposit accounts. The amendment of §§ 1.25 and 1.165 brings these rules into conformity with the amendment of § 1.21.

In consideration of the comment received, and pursuant to the authority contained in Section 6 of the Act of July 1952, as amended (85 Stat. 364, 35 U.S.C. 6), Parts 1 and 2 of Title 37, Code of Federal Regulations, are hereby amended as set forth below.

* * * * * *

4. In § 2.6, paragraphs (a), (d) and (e) are revised and a new paragraph (f) is added to read as follows:

§ 2.6 *Trademark fees.*

* * * * * *

(a) For each printed copy of a registration with data entered of record as of date of mailing, relating to renewal, cancellation, publication under section 12 (c), of the 1946 Trademark Act and affidavits or declarations under sections 8 and 15 of such act.

| | |
|---|---|
| Omitting title | 1.70 |
| Showing title | 3.70 |

* * * * * *

(d) For making drawings, when facilities are available, the cost of making the same,

| | |
|---|---|
| Rate per hour | 12.00 |
| Minimum charge per sheet | 10.00 |

(e) for correcting drawings, the cost of making the correction:

| | |
|---|---|
| Rate per hour (including a photoprint of the uncorrected drawing) | 12.00 |
| Minimum charge | 3.00 |

(f) for abstracts of title to each registration or application:

| | |
|---|---|
| For the search, one hour or less, and certificate | 5.00 |
| Each additional hour or fraction thereof | 2.50 |
| For each brief from the digest of assignments, of 200 words or less | 2.00 |
| Each additional 100 words or fraction thereof | .20 |

* * * * * *

Effective Date: These revisions shall become effective February 2, 1976.

Dated: Dec. 4, 1975

C. MARSHALL DANN,
*Commissioner of Patents and Trademarks.*

DAVID B. CHANG,
*Acting Assistant Secretary for Science and Technology.*

[Vol. 942 TM 177 (Jan. 6, 1976)]



# PATENT NOTICES ALSO PERTINENT TO TRADEMARKS
## (Repeated Here for Convenience)

(5) TELEPHONE NUMBERS ON AMENDMENTS AND OTHER PAPERS

In view of the increased use of telephone interviews regarding matter which can be readily cleared up by a telephone call to applicant or his representative, it is again recommended that amendments and other papers, such as letters of transmittal, include the complete telephone number with area code and extension, preferably near the signature of the writer.

RICHARD A. WAHL,
Mar. 11, 1966. *Assistant Commissioner.*

[825 O.G. 1]

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(6) ZIP CODE REMINDER

By Executive Memorandum of June 18, 1965, President Johnson directed all Federal Agencies to take the lead in adopting the ZIP Code system and instructed the Postmaster General to issue regulations governing the use of ZIP Codes by such agencies.

Pursuant to this directive, Section 137.26 has been added to the Postal Manual requiring compliance by Federal Agencies as follows:

1. Effective January 1, 1966, official mailings containing typed or handwritten addresses must include the ZIP Code.
2. Effective January 1, 1967, all Federal Agencies must use the ZIP Code in the addresses on *all* official mail and are required to presort quantity mailings by ZIP code.

TO THIS END, ALL FUTURE LETTERS, COUPONS, AND OTHER PAPERS BEARING THE SENDERS'S ADDRESS WHICH ARE MAILED TO THE PATENT OFFICE MUST SHOW THE ZIP CODE DESIGNATION OF BOTH THE SENDER AND THE PATENT OFFICE.

The Patent Office ZIP Code is 20231. This designation should be used when writing to the Patent Office for any matter. In addition, the sender's own ZIP Code designation should be given. The benefits to be gained by the immediate use of ZIP Code are many: positive identification of areas; faster delivery of mail by reducing the number of handlings from point of origin to destination; and easier identification of post office address.

C. A. KALK,
Mar. 22, 1966. *Director of Administration.*

[825 O.G. 428]

(13) OFFICIAL PATENT OFFICE MAILING ADDRESS REMAINS WASHINGTON, D.C.

The official mailing address for all communications sent to the Patent Office remains:

Commissioner of Patents
Washington, D.C. 20231

Any telegrams sent to the Patent Office must also bear the above identical address.

The physical location of the Patent Office is 2021 Jefferson Davis Highway, Arlington, Virginia. This address must not be used when addressing mail to the Patent Office.

No reference to Crystal Plaza, Virginia, should be made in the address of *any* communication intended for delivery to the Patent Office by the Post Office Department or Western Union.

Compliance with this instruction will help prevent any unnecessary delay in the delivery of mail, telegrams, etc.

C. A. KALK,
Feb. 20, 1969. *Director of Administration.*

[860 O.G. 662]

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(26) NEW PROCEDURES FOR PROCESSING ORDERS FOR CERTIFIED COPIES WHEN MATERIAL IS NOT AVAILABLE FOR PHOTOCOPYING

The previous practice of the Document Services Division in handling customer's requests for certified copies of material not yet processed in the Application Division has been to return the order to the customer requesting him to reorder 30 days after receipt of his Official Filing Receipt.

In order to improve this procedure, as of August 2, 1971, all requests for certified copies of material that has not been processed in the Application Division and has not been placed on microfiche are processed in the following manner.

1. Each order is given a control number.
2. The customer is notified as follows:
   a. He will receive an acknowledgment of the receipt of his order.
   b. He will be given the assigned control number for ease of reference in case an inquiry is necessary.
   c. He will be informed that his order will be held in the Document Services Division until the copy can be reproduced from microfiche. No definite time can be given.

3. An Advance Order File has been set up in the Service Unit of the Document Services Division and the microfiche is checked daily.

For further service to its customers, the Document Services Division will furnish the Serial Number and Filing Date of the latest application available on microfiche for publication in the OFFICIAL GAZETTE.

ROBERT J. RISH,
*Acting Assistant Commissioner for Administration.*

Aug. 2, 1971.

[890 O.G. 301]

(29) PUBLIC RECORDS CERTIFICATION DESK

The certification desk, located in Crystal Plaza in the Attorneys and Record Room, Building 4, Room 1D01, provides "on-the-spot" certifying service. This desk handles walk-in requests for certified copies of file wrappers, patented applications, patents and selected papers from patented application files. The usual fee for this service (1.00 per certification) may be applied at this location in the form of a paid cash order form, obtainable at the Cashier's Office adjacent the lobby of building #2.

ROBERT GOTTSCHALK,
*Acting Commissioner of Patents.*

Nov. 26, 1971.

[893 O.G. 810]

(30) CUSTOMER RELATIONS CENTER

A Customer Relations Center, located in Crystal Plaza adjacent to the Public Search Room, Building 4, Rooms A102 and A103, has been established to provide a central customer complaint and inquiry service. The Center is staffed with six highly experienced employees who process inquiries concerning copies of U.S. patent documents previously ordered but not received. This Center handles not only walk-in but telephonic, and written requests for assistance as well. In addition to improving customer relations, this service is intended to relieve the primary customer service areas (Patent Copy Sales, Document Services, and Reference Order Branch), and Patent Office officials, or interruptions and irregular demands on their time.

The telephone number for this service is (703) 557–2003.

ROBERT GOTTSCHALK,
*Acting Commissioner of Patents.*

Nov. 26, 1971.

[893 O.G. 807]

(33) PATENT OFFICE SERVICES

A notice concerning delays in furnishing Certified Copies was published Aug. 8, 1972 (901 O.G. 412). This notice announced the initiation of a special "Expedited Service" for obtaining copies of pending applications promptly. As indicated in the notice, this special service would be terminated upon restoration of our regular service to an acceptable level.

I am pleased to report that our regular service has been restored to an acceptable level and this special program is being terminated.

However, our efforts to improve our services in these areas will continue. We have made progress, but are not resting on that record. We recognize that there are still problems of accuracy and quality in the filing of orders. These are currently being examined in an effort to bring about necessary improvements.

Thank you for your cooperation and understanding during this difficult period.

ROBERT GOTTSCHALK,
*Commissioner of Patents.*

May 30, 1973.

[911 O.G. 1130]

(35) PATENT OFFICE BUSINESS HOURS

This procedure is being published to bring to the attention of the public security provisions concerning the Patent Office premises and Patent Office files.

The public is reminded that the Patent Office working hours are 8:30 a.m. to 5:00 p.m. Monday through Friday, excluding legal holiday in the District of Columbia. Outside these hours, only Patent Office employees are authorized to be in areas of the Patent Office other than the Public Search Rooms. Of course, a member of the public engaged in a discussion of business with an Office employee may be invited by the employee to stay beyond Office hours to conclude the discussion.

The hours for the Public Search Room are 8:00 a.m. to 8:00 p.m., and the hours for the Trademark Search Room are 8:00 a.m. to 6:00 p.m. Monday through Friday, excluding legal holidays in the District of Columbia.

During working hours, all applicants, attorneys, and other members of the public should announce their presence to the Office personnel in the area of their visit. In the Examining Groups, visitors should inform the group receptionist of their presence before visiting other areas of the Group.

RENE D. TEGTMEYER,
*Acting Commissioner of Patents.*

Sept. 27, 1973.

[915 O.G. 1164]

(44) CHANGE OF ADDRESS

There recently has been an increased incidence in the number of applications suffering from disruptions in communications stemming from failure to notify the Patent and Trademark Office of a change of address on the part of applicant's representative (attorney or agent of record) in each application wherein he holds an active power of attorney. Applications have become abandoned as a result of an Office action being mailed to the old, uncorrected address and thereby failing to reach the representative at his new address sufficiently early to permit him to file a timely response. Accordingly, the requirement set out below is published as a reminder and is designed to ameliorate this problem.

Where an attorney or agent of record (or applicant, if he is prosecuting his application pro se) changes his correspondence address, he is responsible for promptly notifying the Patent and Trademark Office of his new correspondence address (including ZIP code number). A separate notification must be field in *each application* for which he is intended to receive communications from the Office. The notification should also include his telephone number.

While the notification need take no particular form, it should be provided in a manner calling attention to the fact that a change of address is being made. Thus, the mere inclusion, in a paper being filed for another purpose, of an address different from the previously provided correspondence address, without mention of the fact that an address change is being made, would not ordinarily be recognized or deemed as instructions to change the address on the file record.

It is emphasized that the above-delineated responsibility is *additional* to the separate obligation (see 37 CFR 1.347) of a registered attorney or agent to notify the Attorney's Roster of any change of his address for entry on the register, which must be done in a letter separate from any notice of change of address filed in individual applications. That obligation continues without change.

The degree of care exercised in adhering to the foregoing requirement for notification of change of address in each concerned application will be a factor for consideration in deciding petitions filed under 37 CFR 1.137 to revive applications which have become abandoned because of a failure to timely receive an Office action addressed to the old address. In such instances, the showing of the cause of unavoidable delay must include an adequate showing that a timely notification of the change of address was filed in the concerned application, in a manner reasonably calculated to call attention to the fact that it was a change of address. If no such notification was made, or was made belatedly, the showing must include an adequate explanation of that failure or delay. A showing that notification was made on a paper filed in the Patent and Trademark Office listing *plural* applications as being affected will not be considered a proper notification.

WILLIAM FELDMAN,
*Deputy Assistant Commissioner for Patents.*

May 28, 1975.

[935 O.G. 1352]



(45) EXPRESS MAIL

The Patent and Trademark Office has made an arrangement with the U.S. Postal Service for the delivery of "Express Mail." This arrangement provides for the delivery of "Express Mail" to a Patent and Trademark Office employee in the Department of Commerce Building in Washington, D.C., thus guaranteeing delivery to us in the same manner as "Express Mail" is delivered to any other addressee in the city of Washington. "Express Mail" requires the recipient to indicate both the time and date of delivery. The date which our employee in the Department of Commerce Building receives the mail will be the Official Office Receipt Date.

The address which should be used for "Express Mail" is:

Commissioner of Patents and Trademarks
Washington, D.C. 20231.

WILLIAM I. MERKIN,
*Acting Assistant Commissioner for Administration.*

Feb. 11, 1975.

[932 O.G. 340]

(46) EXPRESS MAIL

This notice is in response to a number of inquiries received in the Patent and Trademark Office regarding the notice on Express Mail of February 11, 1975, published in the OFFICIAL GAZETTE of March 11, 1975 (932 O.G. 340).

There are two types of Express Mail delivery offered by the U.S. Postal Service—"Post Office to Addressee" and "Post Office to Post Office." The only type of service which can be used for Express Mail directed to the Patent and Trademark Office is "Post Office to Addressee." This service provides for delivery to one of our employees in Room 1627, Department of Commerce Building, Washington, D.C., no later than 3:00 p.m. of the next workday following its deposit before 5:00 p.m. at any postal facility with an Express Mail window.

The only address that should be used for Express Mail sent to the Patent and Trademark Office is:

"Commissioner of Patents and Trademarks
Washington, D.C. 20231."

"Post Office to Post Office" Express Mail *does not* provide for delivery but instead is retained at the postal facility of the addressee for pickup. The Postal Service *does not* notify the addressee that this type of Express Mail has been received and is awaiting pickup. If not picked up, this mail is held for 15 days and then returned to the sender.

Therefore, since the Patent and Trademark Office does not have resources for picking up any mail, including Express Mail, the "Post Office to Post Office" Express Mail will not reach the Patent and Trademark Office.

WILLIAM I. MERKIN,
*Acting Assistant Commissioner for Administration.*

May 15, 1975.

[936 O.G. 1554]

(48) ACCESSIBILITY OF ASSIGNMENT RECORDS

In view of a number of inquiries as to the manner in which Rule 1.12 of the Patent Office Rules of Practice, as amended August 23, 1965 (819 O.G. 443) is to be applied, the procedure which it is planned to follow in certain types of cases is set forth below.

1. Assignments relating to applications for registration of trademarks will be open to public inspection as heretofore.

2. The Office will not open certain parts only of an assignment document to public inspection. If such a document contains two or more items, any one of which, if alone, would be open to such inspection, then the entire document will be open. Thus, if an assignment covers either a trademark or a patent in addition to one or more patent applications, it will be available to the public ab initio; and if it covers a number of patent applications, it will be so available as soon as any one of them is patented. Assignments relating only to one or more pending applications for patent will not be open to public inspection.

3. If the application on which a patent was granted is a division or continuation of an earlier case, the assignment records of that case will be open to public inspection; similar situations involving continuation in part applications will be considered on their individual merits.

4. Assignment records relating to reissue applications will be open to public inspection.

EDWARD J. BRENNER,
*Commissioner.*

Dec. 15, 1965.

[822 O.G. 769]

(55) REVISION OF "DISCONTINUANCE OF DEPOSIT ACCOUNT SERVICE FOR SALE OF PATENT COPIES"

In view of the difficulties experienced by many of its customers, the Patent Office is revising the Notice appearing in the December 1, 1964, issue of the *Official Gazette of the U.S. Patent Office*. This Notice—Discontinuance of Deposit Account Service for Sale of Patent Copies—is revised to except certain types of patent copy orders.

The Patent Office will now accept lists of fifty (50) or more numbers arranged in numerical sequence to be charged to Deposit Accounts. Service charges, such as Special Handling and Air Mail postage for these orders, may also be charged to Deposit Accounts.

C. A. KALK,
*Director of Administration.*

July 15, 1965.

[818 O.G. 1207]

(57) DEPOSIT ACCOUNTS—STATUTORY FEE CHARGES

Beginning on May 1, 1966, and until further notice, statutory fees, including filing fees for patent, design, and trademark applications, issue fees, appeal fees and oppositon, cancellation and petition fees may be charged against the deposit accounts provided for by Rule 25(a) of the Rules of Practice in patent cases. During this period the prohibition of Rule 25(b) against such charges will be suspended.

In view of the facts that these fees are indispensable parts of the actions to which they relate and that the charging of a fee against an account which does not contain sufficient funds to cover it cannot be regarded as a payment of the fee, it is evident that the overdrawing of a deposit account may result in the loss of a vital date and may also impose a substantial burden on the Patent Office in making appropriate correction of its records. It is, therefore, necessary that effective steps be taken to avoid such overdrafts, as follows:

Checks of all accounts will be made periodically, and if any account is found to have been overdrawn, it will be immediately removed from the active accounts and no further drafts on it will be honored. Prompt payment of the outstanding balance will be required and the depositor or his attorney may be called on for an itemized statement identifying all statutory fees charged against the account during the period in question in order that it may be ascertained whether any previously granted date should be withdrawn.

It is emphasized that the success of the procedure outlined above depends upon the maintenance of a sufficient balance in deposit accounts at all times to meet any charges made against them. The Office must, therefore, strictly refuse to permit any depositor who has once ovedrawn his account to maintain such an account in the future and in the event that any substantial number of overdrafts occurs it may be necessary to reestablish the prohibition of Rule 25(b) against charging statutory fees against deposit accounts.

Accordingly, effective May 1, 1966, the requirement of Rule 25(a) that an amount sufficient to cover all charges made against an account must always be on deposit will be strictly enforced, regardless of whether any fee is included in such charges and where this requirement is not complied with the account involved will be removed from the active accounts.

EDWARD J. BRENNER,
*Commissioner.*

Feb. 23, 1966.

[824 O.G. 1200]

(58) PRACTICE IN THE USE OF ACCOUNTS FOR PAYMENT OF STATUTORY FEES

In the OFFICIAL GAZETTES of March 15, 22, and 29, there appeared copies of an announcement by the Commissioner providing for a trial use of accounts established under Rule 25 for the payment of statutory fees. A number of questions

have come up in connection with the use of accounts in the payment of these fees prescribed by Public Law 89–83 and, in the interest of uniform practice, publication of a statement is warranted.

A general direction by an applicant or attorney to charge to an account these fees as they arise in any application prosecuted by the applicant, the attorney, or the firm will not be effective for such a purpose. Authority to make charges will be limited to a particular application.

A separate direction to charge shall be filed for each fee. Each such direction to charge a fee shall be transmitted on a separate sheet of paper and, in the case of fees based on modification of claims shall include the best estimate of the fee due. Failure to include such an estimate provides the basis for a refusal to enter any amendment transmitted therewith, as an incomplete response. Where variable fees are involved inclusion of a direction to charge or credit a deficiency or overpayment would appear appropriate.

An issue fee will be charged to an account until a notice of allowance has been forwarded and a reply to that notice received.

For the purposes of determining the fee due the Patent Office, a claim will be treated as dependent if it contains reference to one other claim in the application. A claim determined to be dependent by this test will be entered if the fee paid reflects this determination. This does not, however, prevent the rejection of such a claim as improper, if, in fact, it is not a dependent claim.

EDWARD J. BRENNER,
Apr. 12, 1966. *Commissioner of Patents.*

[825 O.G. 1183]

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(60) DEPOSIT ACCOUNTS

The practice instituted on May 1, 1966, pursuant to the notice of February 23, 1966 (824 O.G. 1200), whereby statutory fees may be charged against deposit accounts, and such accounts are closed if overdrawn, has resulted in certain difficulties for the Patent Office and deposit account holders. It has been decided therefore to modify that practice as indicated below.

As was pointed out in that notice, the charging of a fee against an overdrawn account cannot be considered as payment of the fee until a proper balance is restored or payment is made in some other way. Accordingly, deposit account holders who charge such fees must assume the risk of losing vital dates if they do not maintain a proper balance in their accounts at all times.

Apart from this, however, the overdrawing of an account places a burden on the Patent Office, particularly where a number of items are charged after the overdraft occurs, and it is appropriate that those who are responsible for causing such a condition should bear the cost of correcting it. In view of this fact, and of the hardship frequently caused if an account is permanently closed, the practice of closing deposit accounts merely because they are overdrawn will be discontinued, effective August 1, 1966. In lieu thereof an overdrawn account will be immediately suspended and no charges will be accepted against it until a proper balance is restored, together with a payment of ten dollars to cover the work done by the Patent Office incident to suspending and reinstating the account and dealing with charges which may have been made in the meantime. It is expected, however, that reasonable precautions will be taken in all cases to avoid overdrafts, and if an account is suspended repeatedly it will be necessary to close it.

Similarly, because of the burden placed on the Patent Office incident to the operation of deposit accounts, a charge of ten dollars will be made for opening each new account.

EDWARD J. BRENNER,
June 23, 1966. *Commissioner.*

[828 O.G. 377]

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(69) WITHDRAWAL OF ATTORNEY

Attorneys and agents are reminded that by notice published April 18, 1967, in 837 O.G. 667, requests for permission to withdraw as attorney or agent of record, pursuant to Rule 36, should be submitted in triplicate (original and two copies) and should indicate thereon the attorney or agent's present mailing address. The Group No. should also appear on all such requests.

JOSEPH F. NAKAMURA,
Sept. 27, 1973. *Acting Solicitor.*

[915 O.G. 1164]

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(212) EMERGENCY SITUATION IN THE U.S. POSTAL SERVICE

In view of the present emergency situation in U.S. postal service, the U.S. Patent Office is taking the following actions.

In regard to pending applications, the time for taking any action or paying any fee expiring during the period beginning March 16, and ending April 15, 1970, both dates inclusive, is hereby extended for ONE MONTH. However, no extension shall exceed a maximum period for response provided for in the Statutes.

U.S. Department of Commerce Field Office have been designated, on an emergency basis, as receiving stations for the U.S. Patent Office. All papers should be enclosed in a sealed envelope and deposited in a Field Office. Such papers will be considered as received in the U.S. Patent Office on the day of deposit. The Field Office will date stamp each envelope so deposited, and applicants or their representatives should assure the legibility of the date stamp. Field Offices will place a corresponding date stamp on receipt cards provided by the depositor, which must completely identify the papers deposited.

Field Office deposits should, if possible, be limited to such papers wherein the Patent Statutes do not provide a remedy for failure to obtain a particular date. Examples of these types of papers are: checks in payment of issue fees, new application papers wherein priority dates or statutory bars may be involved, amendments where the six month statutory period for response is about to expire, etc.

The Field Office in New York designated to receive papers for the U.S. Patent Office is located at:

41st Floor, Federal Office Bldg.
26 Federal Plaza, Foley Square
New York, N.Y.

The designated Field Office in Hartford, Connecticut is located at:

Room 610–B Federal Office Bldg.
450 Main St.
Hartford, Conn.

The addresses of Field Offices in other cities are listed in local directories and are available upon inquiry to the Commissioner of Patents.

RICHARD A. WAHL,
Mar. 19, 1970. *Acting Commissioner of Patents.*

[872 O.G. 1383]

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(213) PATENT OFFICE—POSTAL SERVICE

In view of the return to normal operations of the United States postal service, the Notice of Mar. 19, 1970 (published in the OFFICIAL GAZETTE of Mar. 24, 1970, vol. 872, No. 4) is hereby revised.

After Apr. 15, 1970, the U.S. Department of Commerce Field Offices will no longer be designated as receiving stations for the U.S. Patent Office. Accordingly, after the abovenoted date, all letters or other papers relating to patent and trademark cases will be considered as received in the U.S. Patent Office only if they are filed in accordance with Rule 6 of the Rules of Practice in Patent Cases as amended Nov. 26, 1969.

All other provisions of the Notice of Mar. 19, 1970 and the Notice of Mar. 26, 1970, relating to Trademarks, remain in effect.

WILLIAM E. SCHUYLER, JR.,
Mar. 27, 1970. *Commissioner of Patents.*

[873 O.G. 319]

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(214) FILE HISTORY OF APPLICATIONS AFFECTED BY POSTAL EMERGENCY

As a result of the postal emergency, the time for taking any action or paying any fee in the U.S. Patent Office expiring between the dates of March 16, 1970 and April 15, 1970, both dates inclusive, was automatically extended for one month, provided it did not exceed a maximum period for response provided in the Statutes. (See O.G. of March 24, 1970 or March 31, 1970, 872 O.G. 1383 and April 7, 1970, 873 O.G. TM 2.)

Since this extension of time was automatic there will be nothing in the individual files to indicate that a paper filed during that period was, in fact, timely though it was received later than its apparent due date.

In order to provide a complete history in the affected files and to dispel any question as to abandonment in the record of a patented file, applicants or their attorneys are requested to file a paper explaining these circumstances. A separate paper should be filed in each case so affected (identified by Serial No., filing date, title and applicant's name) and may be merely a copy of the notice which authorized the one-month extension or should specifically refer to and identify that notice.

RICHARD A. WAHL,
Apr. 27, 1970. *Assistant Commissioner of Patents.*

[874 O.G. 688]

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(215) U.S. DEPARTMENT OF COMMERCE FIELD OFFICES TO SERVE AS RECEIVING STATIONS ONLY IN DECLARED EMERGENCIES

During the recent postal emergency, Field Offices of the U.S. Department of Commerce were designated as receiving stations for the U.S. Patent Office (according to the Notices of March 19, 1970, 872 O.G. 1383 and March 26, 1970, 873 O.G. TM 2). In view of the subsequent resumption of normal postal operations, that emergency arrangement was discontinued in accordance with the notice of March 27, 1970, 873 O.G. 319. After April 15, 1970, the normal practice with respect to the filing of all letters and other papers relating to patent and trademark matters in the U.S. Patent Office was resumed.

The Patent Office has received suggestions proposing that the Field Office continue to serve as receiving stations for the U.S. Patent Office. These suggestions have received careful and sympathetic consideration. However, it has been concluded that any activities of the Field Offices in this connection must be restricted in the future, to any emergency officially announced by the Patent Office as requiring such action.

RICHARD A. WAHL,
Apr. 27, 1970. *Acting Commissioner of Patents.*

[874 O.G. 688]

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(216) PATENTS AND TRADEMARKS

*Relief in Cases Affected by the Postal Emergency of March 1970*

On June 30, 1971, President Nixon signed into law Public Law 92–34.

Public Law 92–34 requires claims for the benefit of an earlier filing date (Section 1.) and requests for such other relief as may be appropriate (Sec. 2.) to be filed in the Patent Office within 6 months after enactment, that is by December 30, 1971. Failure to file a statement within the noted period will result in loss of right to take advantage of the benefits of the law. Further explanation or evidence may be required at a subsequent time. Public Law 92–34 provides relief only for situations caused by the postal emergency which began on March 18, 1970, and ended on or about March 30, 1970, and for which there is no remedy under existing law.

The following explanation is designed to serve as a guide for persons desiring relief under the law.

The verified statement required to be filed under sections 1 and 2 of the law may be by any of the following:

(a) Applicant(s) for patent or trademark registration;
(b) Patentee(s) or trademark registrant;
(c) Owner(s) of record.

In cases involving plural inventors, statements made under (a) or (b) must be signed by all inventors.



The verified statement must specify the particular earlier date of receipt in the Patent Office to which the applicant, patentee or trademark registrants, or owner of record believes his application, fee or other paper would be entitled except for the delay caused by the postal emergency of March, 1970. The statement must be verified, that is, in the form of an oath or declaration. (37 CFR 1.68 (Patent Rule 68) and 2.20 (Trademark Rule 2.20).)

Evidence will not normally be required or considered by the Patent Office regarding a claimed filing date of March 18, 1970, or later, in applications actually filed before June 1, 1970. Claims for earlier filing dates in cases actually filed after June 1, 1970, or claiming a date prior to March 18, 1970, will be considered prima facie unreasonable unless an acceptable explanation of the basis for the claim is filed in the Patent Office with the claim or within 1 month or such longer time as may be prescribed by the Commissioner. Any claim not accepted by the Patent Office because it is obviously defective on its face or unreasonable may be subjected to further review by petition to the Commissioner.

The statement should adequately identify the involved application, patent, or trademark registration by including the name of the applicant, patentee or registrant, title of the invention or an identification of the mark, serial number, filing date, group art unit number and any other identifying data such as status of the case (e.g., awaiting first action, amendment, brief, etc.). Acceptable statements will be acknowledged, made of record and retained in the Patent Office files.

When practical, earlier filing dates accorded under this law, as well as the originally granted filing dates, will be identified on ensuing patents and trademark registrations. These dates will also be included in the OFFICIAL GAZETTE in connection with patents, trademark registrations and trademarks published for opposition. In other cases, such as applications in issue prior to filing of a claim, the patent or trademark registration number and claimed filing dates will be published in the OFFICIAL GAZETTE after December 30, 1971.

Patents issued with earlier filing dates afforded by this law will not be effective as prior art as of such earlier filing dates under subsection 102(e) of title 35 of the United States Code.

In a pending patent application in which a claim for an earlier filing date has been acknowledged under this law, applicants need not file a Rule 131 affidavit to overcome a reference having an effective filing date between the "earlier" and the actual filing date of the application. Intervening references of this type will be cited but not applied by the examiner. Although a statement claiming an earlier date is accepted by the Patent Office, the claimed earlier date may be called into question in subsequent inter partes proceeding in the Patent Office or in the courts. In these proceedings, the applicant or owner may be required to present further evidence establishing the filing date to which the application is entitled. In such cases a definite determination shall be made as to whether the applicant is entitled to the earlier date under the law.

In cases where a patent application or an application for registration or late renewal of a trademark is determined to have become abandoned for failure to meet a statutory time limit because of the postal emergency, the application will automatically be restored to pending status by the acceptance of the request, and prosecution or other processing of the application will be resumed. Similarly, if a trademark registration is determined to have been cancelled for failure to meet the statutory time limit within which to file the affidavit required under section 8 of the Trademark Act (15 U.S.C. 1058a) because of the said emergency, the order for cancellation will be rescinded.

As explained in the notice of January 26, 1971 (882 O.G. 1342), applicants who may be entitled to earlier filing dates should note that a change in their U.S. filing date might, in turn, alter the date of expiration of the 6- and 12-month periods for filing applications abroad under provisions of the Paris Convention for the Protection of Industrial Property.

WILLIAM E. SCHUYLER, JR.,
*Commissioner of Patents.*

Dated: July 14, 1971.

JAMES H. WAKELIN, JR.,
*Assistant Secretary for Science and Technology.*

[FR Doc. 71–10469; Filed 7–22–71; 8:52 a.m.]

*36 F.R. 13694; July 23, 1971*

[889 O.G. 1064]

(217)

## POSTAL SERVICE EMERGENCY CONTINGENCY PLAN

The U.S. Patent and Trademark Office is establishing the following contingency plan for filing any paper or paying any fee in the Office in the event of an emergency caused by any major interruption in the mail service in the United States. Upon determination by the Commissioner of Patents and Trademarks that such an emergency exists, a notice activating the plan will be issued by the Commissioner. The activating notice will be published in the Wall Street Journal and made available in a special recorded telephone message at area code 703, 557–3158. Also, certain publications, patent bar groups, and other organizations closely associated with the patent system, will be notified. Termination of the program will be similarly announced. Where the postal emergency is not nationwide, the Commissioner will designate the areas of the United States in which the procedures outlined below will be in effect.

U.S. Department of Commerce District Offices (formerly referred to as Department of Commerce Field Offices) will be designated on an emergency basis, as receiving stations for filing papers and paying fees in the U.S. Patent and Trademark Office.

Upon determination that an emergency exists, the following procedures may be followed: All papers and fees should be enclosed in a sealed envelope addressed to the Patent and Trademark Office and deposited in one of the District Offices. Such papers will be considered as received in the U.S. Patent and Trademark Office on the day of deposit. The District Office will date stamp each envelope and the accompanying receipt card which completely identifies the deposited papers. The receipt card will be returned to the depositor. Applicants or their representatives should assure the legibility of the date stamp.

District Office deposits should be limited to checks in payment of issue fees, new application papers wherein priority dates or statutory bars may be involved, amendments where the six month statutory period for response is about to expire, trademark oppositions, Section 8 affidavits, trademark renewals, and to other papers for which the patent and trademark statutes do not provide a remedy for failure to obtain a particular date.

Where papers originate from overseas, it is suggested that the papers be mailed to a registered agent in Canada, with a request that the papers be forwarded by courier to the nearest District Office in the United States.

In regard to pending applications, if the time for taking any action or paying any fee expires during the period that the Commissioner declares to be an emergency, the time will be extended until one month after the end of the emergency period, provided that such extension does not exceed the maximum period for response provided for in the statutes.

Since this extension of time will be automatic, there will be no record in the individual files to indicate that a response filed during the extended period is in fact timely. In order to provide a complete record, applicants or their representatives should file a paper referring to this notice in each case in which a response is filed during the extended period.

The addresses of the Department of Commerce District Offices subject to subsequent changes, are as follows:

ALBUQUERQUE, N.M., 87101, Room 316, U.S. Courthouse (505) 766–2386.
ANCHORAGE, 99501, 632 Sixth Ave., Hill Bldg., Suite 412 (907) 265–4597.
ATLANTA, 30309, Suite 523, 1401 Peachtree St., NE. (404) 526–6000.
BALTIMORE, 21202, 415 U.S. Customhouse, Gay and Lombard Sts. (301) 962–3560.
BIRMINGHAM, ALA., 35205, Suite 200–201, 908 S. 20th St. (205) 325–3327.
BOSTON, 02116, 10th Floor, 441 Stuart St. (617) 223–2312.
BUFFALO, N.Y. 14202, Room 1312, Federal Bldg., 111 W. Huron St. (716) 842–3208.
CHARLESTON, W. VA., 25301, 3000 New Federal Office Bldg., 500 Quarrier St. (304) 343–6181, Ext. 375.
CHEYENNE, WYO., 82001, 6022 O'Mahoney Federal Center, 2120 Capitol Ave. (307) 778–2151.
CHICAGO, 60603, Room 1406, Mid-Continental Plaza Bldg., 55 E. Monroe St. (312) 353–4450.
CINCINNATI, 45202, 8028 Federal Office Bldg., 550 Main St. (513) 684–2944.
CLEVELAND, 44114, Room 600, 666 Euclid Ave. (216) 522–4750.
COLUMBIA, S.C., 29204, Forest Center, 2611 Forest Dr. (803) 765–5345.
DALLAS, 75202, Room 3E7, 1100 Commerce St. (214) 749–1515.
DENVER, 80202, Room 161, New Custom House, 19th and Stout Sts. (303) 837–3246.
DES MOINES, IOWA, 50309, 609 Federal Bldg., 210 Walnut St. (515) 284–4222.
DETROIT, 48226, 445 Federal Bldg. (313) 226–3650.
GREENSBORO, N.C., 27402, 203 Federal Bldg., W. Market St. P.O. Box 1950. (919) 275–9111, Ext. 345.
HARTFORD, CONN., 06103, Room 610–B, Federal Office Bldg., 450 Main St. (203) 244–3530.
HONOLULU, 96813, 286 Alexander Young Bldg., 1015 Bishop St. (808) 546–8694.
HOUSTON, 77002, 201 Fannin, 1017 Federal Office Bldg. (713) 226–4231.
INDIANAPOLIS, 46204, 355 Federal Office Bldg., 46 E. Ohio St. (317) 269–6214.
KANSAS CITY, MO., 64106, Room 1840, 601 E. 12th St. (816) 374–3142.
LOS ANGELES, 90024, 11201 Federal Bldg., 11000 Wilshire Blvd. (213) 824–7591.
MEMPHIS, 38103, Room 710, 147 Jefferson Ave. (901) 534–3213.
MIAMI, 33130, Rm. 821, City National Bank Bldg., 25 W. Flagler St. (305) 350–5267.
MILWAUKEE, 53203, Straus Bldg., 238 W. Wisconsin Ave. (414) 224–3473.
MINNEAPOLIS, 55401, 306 Federal Bldg., 110 S. Fourth St. (612) 725–2133.
NEW ORLEANS, 70130, Room 432, International Trade Mart, 2 Canal St. (504) 589–6546.
NEW YORK, 10007, 41st Floor, Federal Office Bldg., 26 Federal Plaza, Foley Sq. (212) 264–0634.
NEWARK, N.J., 07102, Gateway Bldg., (4th Floor) (201) 645–6214.
PHILADELPHIA, 19106, 9448 Federal Bldg., 600 Arch St. (215) 597–2850.
PHOENIX, ARIZ., 85004, 508 Greater Arizona Savings Bldg., 112 N. Central Ave. (602) 261–3285.
PITTSBURGH, 15222, 431 Federal Bldg., 1000 Liberty Ave. (412) 644–2850.
PORTLAND, ORE., 97205, 921 SW. Washington St., Suite 521, Pittock Block. (503) 221–3001.
RENO, NEV., 89502, 2028 Federal Bldg., 300 Booth St. (702) 784–5203.
RICHMOND, VA., 23240, 8010 Federal Bldg., 400 N. 8th St. (804) 782–2246.
ST. LOUIS, 63105, Chromalloy Bldg., 120 S. Central Ave. (314) 622–4243.
SALT LAKE CITY, 84111, 1201 Federal Bldg., 125 S. State St. (801) 524–5116.
SAN FRANCISCO, 94102, Federal Bldg., Box 36013, 450 Golden Gate Ave. (415) 556–5860.
SAN JUAN, P.R., 00902, Room 100, Post Office Bldg. (809) 723–4640.
SAVANNAH, 31402, 235 U.S. Courthouse and Post Office Bldg., 125–29 Bull St. (912) 232–4204.
SEATTLE, 98109, 706 Lake Union Bldg., 1700 Westlake Ave., North (206) 442–5615.

C. MARSHALL DANN,
*Commissioner of Patents and Trademarks.*

July 18, 1975.

[937 O.G. 386]



(232) TERMINATION OF THE "RULES OF PRACTICE IN PATENT CASES" BOOKLET

The Superintendent of Documents has informed the Patent Office that the basic rule book entitled "Rules of Practice in Patent Cases" is out of print and no longer available. Furthermore, Revision 3, dated July 1973, is the last revision covered by the current subscriptions. A booklet entitled "37 Code of Federal Regulations," published by the Office of the Federal Register, contains all patent rules and forms, as well as trademark rules and forms and copyright rules. Inasmuch as this publication is revised annually and is more economical to both the public and the Patent Office even if repurchased annually, the Patent Rules of Practice booket will not be reprinted, thereby terminating this duplication of printing. Consequently, it is suggested that persons desiring a copy of the patent rules order a copy of "37 Code of Federal Regulations" from the Superintendent of Documents. The price for the most recent issue, dated July 1, 1973, is $1.75.

The Patent Office will supply all patent examiners and other appropriate employees with a copy of "37 Code of Federal Regulations" annually beginning with the July 1974 edition.

Since the inventory of the Trademark Rules of Practice booklet is in large supply, it will continue to be offered for sale by subscription from the Superintendent of Documents and updatings will continue to be published periodically.

C. MARSHALL DANN,
Mar. 18, 1974. *Commissioner of Patents.*

[921 O.G. 860]

(233) AVAILABILITY OF RULES OF PRACTICE

A new edition of "37 Code of Federal Regulations," revised to July 1, 1974 is now available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 for $1.75. The catalog number is GS 4.108: 37/9–74.

This booklet is published by the Office of the Federal Register and contains all patent rules and forms, trademark rules and forms as well as the copyright rules.

The looseleaf booket entitled "Rules of Practice in Patent Cases" is no longer available. However, the looseleaf "Trademark Rules of Practice" booklet is still available for $3.50 ($1 additional for foreign mailing).

RENE D. TEGTMEYER,
Aug. 20, 1974. *Acting Commissioner of Patents.*

[926 O.G. 732]

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(238) PUBLIC LAW 92–132

[92nd Congress, S. 1253]

*October 5, 1971*

AN ACT

85 Stat. 364

To amend section 6 of title 35, United States Code, "Patents," to authorize domestic and international studies and programs relating to patents and trademarks.

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That section 6 of title 35, United States Code, is amended to read as follows:

Patents, trademarks. International programs, U.S. participation. 66 Stat. 793.

"§ 6. *Duties of Commissioner*

"(a) The Commissioner, under the direction of the Secretary of Commerce, shall superintend or perform all duties required by law respecting the granting and issuing of patents and the registration of trademarks; shall have the authority to carry on studies and programs regarding domestic and international patent and trademark law; and shall have charge of property belonging to the Patent Office. He may, subject to the approval of the Secretary of Commerce, establish regulations, not inconsistent with law, for the conduct of proceedings in the Patent Office.

"(b) The Commissioner, under the direction of the Secretary of Commerce, may, in coordination with the Department of State, carry on programs and studies cooperatively with foreign patent offices and international intergovernmental organizations, or may authorize such programs and studies to be carried on, in connection with the performance of duties stated in subsection (a) of this section.

Transfer of funds.

"(c) The Commissioner, under the direction of the Secretary of Commerce, may, with the concurrence of the Secretary of State, transfer funds appropriated to the Patent Office, not to exceed $100,000 in any year, to the Department of State for the purpose of making special payments to international intergovernmental organizations for studies and programs for advancing international cooperation concerning patents, trademarks, and related matters. These special payments may be in addition to any other payments or contributions to the international organization and shall not be subject to any limitations imposed by law on the amounts of such other payments or contributions by the Government of the United States."

Approved October 5, 1971.

LEGISLATIVE HISTORY:

HOUSE REPORT No. 92–475 (Comm. on the Judiciary).
SENATE REPORT No. 92–71 (Comm. on the Judiciary).
CONGRESSIONAL RECORD, Vol. 117 (1971):
Apr. 22, considered and passed Senate.
Sept. 28, considered and passed House.

[892 O.G. 1600]

(242) NOTICE TO OFFICIAL GAZETTE SUBSCRIBERS

The Patent and Trademark Office announce a change in the point of contact for subscribers who have not been receiving all of their copies of the patent and/or trademark sections of the OFFICIAL GAZETTE.

The Superintendent of Documents advises that expiration notices are sent out approximately three months in advance of the expiration date. However, subscribers should not be dependent upon such notices. In the event that a notice is not received within two months of the expiration date, the subscriber should renew his subscription with the Superintendent of Documents and *attach a label* from the envelope in which he receives the gazette, together with a check covering the amount of the subscription.

In case of complete stoppage, please send a copy of your order or expiration notice, together with proof of payment (copy of cancelled check or processed order), to Mr. S. J. Bania, Director, Office of Publications (Room 2-5C26), Patent and Trademark Office, Washington, D.C. 20231. Attention: Shirley A. Hammel (Telephone 703/557-3794), or Lillie M. Harrison (Telephone 703/557-1985).

This notice is effective with the publication date and supersedes the notice published on this subject in 934 O.G. 886, dated April 25, 1975.

WILLIAM I. MERKIN,
*Acting Assistant Commissioner for Administration.*

Sept. 12, 1975.

[939 O.G. 3]

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(244) LEGAL JOURNALS

[37 CFR Parts 1, 2]

*Withdrawal of Proposed Rule Making Regarding Placing of Announcements*

Under date of May 11, 1972, 37 FR 9488 (FR Doc. 72-7160), notice of proposed rule making was given concerning a proposed revision of §§ 1.345(b) and 2.14(b) of Title 37 of the Code of Federal Regulations. The purpose of the proposed revision was to permit persons practicing before the Patent Office to place in legal journals announcements of their availability to act as consultants to or as associates of other lawyers in patent or trademark practice. After careful consideration of all of the comments received on the proposed revision, it has been determined that the proposed revision will not be made at this time and, accordingly, the notice of proposed rule making is canceled and withdrawn.

Dated: Jan. 29, 1973.

ROBERT GOTTSCHALK,
*Commissioner of Patents.*

Approved: Jan. 29, 1973.

RICHARD O. SIMPSON,
*Acting Assistant Secretary for Science and Technology.*

[FR Doc. 73-3097; Filed 2-15-73; 8:45 a.m.]

*Published in 38 F.R. 32; Feb. 16, 1973*

[908 O.G. 784]

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(249) CHANGE IN LEGAL HOLIDAYS

Those doing business before the Patent Office are hereby reminded that by Public Law 90-363, 82 Stat. 250, effective January 1, 1971, Section 6103(a) of Title 5, United States Code, was amended to read as follows:

§ 6103. *Holidays*

(a) The following are legal public holidays:
New Year's Day, January 1.
Washington's Birthday, the third Monday in February.
Memorial Day, the last Monday in May.
Independence Day, July 4.
Labor Day, the first Monday in September.
Columbus Day, the second Monday in October.
Veterans Day, the fourth Monday in October.
Thanksgiving Day, the fourth Thursday in November.
Christmas Day, December 25.

Each of the holidays enumerated will constitute "a holiday within the District of Columbia," as referred to in Section 21, Title 35, United States Code.

WILLIAM E. SCHUYLER, JR.,
Dec. 2, 1970. *Commissioner of Patents.*

[881 O.G. 1707]

EDITORIAL NOTE: Sec. 6103(c) states that January 20 of each fourth year after 1965, Inauguration Day, is also a legal public holiday.

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(252) CHANGE IN NAME OF THE PATENT OFFICE

(Public Law 93-596)

On January 2, 1975, President Ford signed into law H.R. 7599, a bill changing the name of the Patent Office to the "Patent and Trademark Office" and the title of the Commissioner of Patents to the "Commissioner of Patents and Trademarks." This change reflects the dual role of the Patent Office in administering both the patent law (Title 35, United States Code) and the Trademark Act of 1946 (60 Stat. 427, 15 U.S.C. 1051, et seq.).

In order to minimize the cost of implementing this law (P.L. 93-596) and because of the similarity of the old and new names, existing stationery, printed forms, publications, etc. will continue in use until such supplies are exhausted. During the interim, the terms "Patent Office" and "Commissioner of Patents," appearing on patent grants and other official documents issued or dated on and after January 2, 1975, shall be construed to mean "Patent and Trademark Office" and "Commissioner of Patents and Trademarks." This same interpretation shall apply to the use of these terms in the patent and trademark rules of practice, 37 CFR, Parts 1 and 2, until such time as the Code of Federal Regulations is revised and new rules of practice are published.

In addition, the public is encouraged to minimize its costs in complying with this new law by exhausting reasonable quantities of existing stationery and forms which contain printed reference to the Patent and Trademark Office, as the Patent Office and the Commissioner of Patents and Trademarks as the Commissioner of Patents. In preparing other written matter for submission to the Patent and Trademark Office, the public should use the new designations.

C. MARSHALL DANN,
*Commissioner of Patents and Trademarks.*

Approved: Jan. 27, 1975.

BETSY ANCKER-JOHNSON, PH.D.,
*Assistant Secretary for Science and Technology.*



Public Law 93-596
93rd Congress, H. R. 7599
January 2, 1975

# An Act

88 STAT. 1949

To amend the Trademark Act of 1946 and title 35 of the United States Code to change the name of the Patent Office to the "Patent and Trademark Office".

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,*

Patent Office. Name change.

SECTION 1. The Trademark Act of 1946, 60 Stat. 427, as amended (15 U.S.C. sec. 1051 et seq. (1970)), and title 35 of the United States Code, entitled "Patents", are amended by striking out each time they appear "Patent Office" and "Commissioner of Patents" and inserting in lieu thereof "Patent and Trademark Office" and "Commissioner of Patents and Trademarks", respectively.

35 USC 1 et seq.

SEC. 2. Section 29 of the Trademark Act of 1946 is further amended by striking out "Reg. U.S. Pat. Off." and inserting in lieu thereof "Reg. U.S. Pat. & Tm. Off."

15 USC 1111.

SEC. 3. The terms "Patent Office" and "Commissioner of Patents" in all laws of the United States shall mean "Patent and Trademark Office" and "Commissioner of Patents and Trademarks", respectively.

35 USC 1 note.

SEC. 4. This Act shall become effective upon enactment. However, any registrant may continue to give notice of his registration in accordance with section 29 of the Trademark Act of 1946 (60 Stat. 427), as amended Oct. 9, 1962 (76 Stat. 769), as an alternative to notice in accordance with section 29 of the Trademark Act as amended by section 2 of this Act, regardless of whether his mark was registered before or after the effective date of this Act.

Effective date. 15 USC 1111 note.

Approved January 2, 1975.

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LEGISLATIVE HISTORY:

HOUSE REPORT No. 93-523 (Comm. on the Judiciary).
SENATE REPORT No. 93-1399 (Comm. on the Judiciary).
CONGRESSIONAL RECORD:
Vol. 119 (1973): Oct. 15, considered and passed House.
Vol. 120 (1974): Dec. 18, considered and passed Senate.

[931 O.G. 491]

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(253) TITLE 37—PATENTS, TRADEMARKS AND COPYRIGHTS

CHAPTER I—PATENT AND TRADEMARK OFFICE, DEPARTMENT OF COMMERCE

*Name Change*

Pursuant to authority contained in 35 U.S.C. 6, as amended (85 Stat. 364), Chapter I of Title 37 of the Code of Federal Regulations is amended as follows:

The heading of Chapter I is changed to read as set forth above.

Wherever the name "Patent Office," and the title "Commissioner of Patents," appear in Chapter I, they are changed to read, respectively, "Patent and Trademark Office" and "Commissioner of Patents and Trademarks."

Public Law 93-596, 88 Stat. 1949, changed the name of the Patent Office to "Patent and Trademark Office," and the title of the Commissioner of Patents to "Commissioner of Patents and Trademarks."

It is the general policy of the Patent and Trademark Office to afford interested members of the public an opportunity to participate in the rulemaking process. However, this amendment is entirely editorial in nature. Therefore, the public rulemaking procedure is waived and this amendment will become effective on February 4, 1975.

C. MARSHALL DANN,
*Commissioner of Patents.*

Approved:

BETSY ANCKER-JOHNSON,
*Assistant Secretary for Science and Technology.*

[FR Doc. 75-3135; Filed 2-3-75; 8:45 a.m.]

*Published in 40 F.R. 5158, Feb. 4, 1975*

[932 O.G. 2 (Mar. 4, 1975)]

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(254) OFFICE OF THE SECRETARY

[Dept. Organization Order 30-3A]

PATENT OFFICE

*Organization and Functions*

This order effective December 15, 1972, supersedes the material appearing at 27 FR 11469 of November 21, 1962.

SECTION 1. *Purpose.* This order delegates authority to the Commissioner of Patents and prescribes the functions of the Patent Office.

SEC. 2. *Status and line of authority.* .01 The Patent Office is hereby continued as a primary operating unit of the Department of Commerce. First established as an independent bureau under the direction of a Commissioner of Patents by the general revision of patent laws enacted by Congress July 4, 1836 (5 Stat. 117), it became a bureau of the Department of Commerce by Executive Order of April 1, 1925, in accordance with the authority contained in the act of February 14, 1903 (32 Stat. 830). When the patent laws were codified as Title 35, United States Code, effective January 1, 1953, the Patent Office was continued as an office in the Department of Commerce.

.02 The Commissioner of Patents (hereinafter called the Commissioner), who is appointed by the President by and with the advice and consent of the Senate shall be the head of the Patent Office. He shall be principally assisted by a Deputy Commissioner and four assistant commissioners, whose titles and status are specified below. The First Assistant Commissioner (Deputy Commissioner) and the first two assistant commissioners are provided for by 35 U.S.C. 3 and are appointed by the President by and with the advice and consent of the Senate.

a. The Deputy Commissioner (First Assistant Commissioner under 35 U.S.C. 3).

b. The Assistant Commissioner for Patents (an assistant commissioner under 35 U.S.C. 3).

c. The Assistant Commissioner for Trademarks (an assistant commissioner under 35 U.S.C. 3).

d. The Assistant Commissioner for Legal Affairs.

e. The Assistant Commissioner for Administration.

.03 The Deputy Commissioner or, in the event of a vacancy in that office, the assistant commissioner appointed under 35 U.S.C. 3 who is senior in date of appointment, shall act as Commissioner during a vacancy in that office until a Commissioner is appointed and takes office. In the absence of the Commissioner, the Deputy Commissioner shall act as Commissioner. If the Deputy Commissioner is likewise absent or that office is vacant, one of the assistant commissioners appointed under 35 U.S.C. 3 or the Assistant Commissioner for Legal Affairs or the Solicitor of the Patent Office shall act as Commissioner in an order of precedence prescribed by the Commissioner.

.04 The Commissioner shall report and be responsible to the Assistant Secretary for Science and Technology.

SEC. 3. *Delegation of authority.* .01 Pursuant to the authority vested in the Secretary of Commerce by 35 U.S.C. 3 and Reorganization Plan No. 5 of 1950, the functions of the Patent Office and its officers specified in Title 35 of the United States Code, as amended, are hereby vested in the Secretary of Commerce and redelegated to the Commissioner of Patents.

.02 Pursuant to the authority vested in the Secretary of Commerce by law, the Commissioner of Patents is hereby delegated authority to perform the following functions vested in the Secretary of Commerce.

a. The functions in Title 15, Chapter 22 of the United States Code, which pertain to trademarks.

b. The functions in Executive Order 10096 of January 23, 1950, and the Executive Order 10930 of March 24, 1961, which pertain to inventions made by Government employees.

c. The functions in 42 U.S.C. 2181 and 2182, which pertain to inventions relating to atomic weapons, and in 42 U.S.C. 2457, which pertain to property rights in inventions made in performance of work under contract for the National Aeronautics and Space Administration.

d. Such functions under other authorities of the Secretary of Commerce as are applicable to performing the functions assigned in this order.

.03 Exercise of the functions delegated in paragraphs .01 and .02 of this section shall be subject to such policies or directions as may be prescribed by the Secretary of Commerce or the Assistant Secretary for Science and Technology.

.04 The Commissioner of Patents may, except as precluded by law or regulation, redelegate his authority to employees of the Patent Office subject to such conditions in the exercise of the delegated authority as he may prescribe.

SEC. 4. *Functions.* The Patent Office shall perform the following functions:

.01 Examine applications for patent to determine if they meet the requirements of law for the issuance of patents and, upon such determination, granting patents.

.02 Administer special laws and regulations as to secrecy of certain inventions, licenses for foreign filing, and those relating to atomic energy and space technology.

.03 Decide the ownership of patents and the rights to inventions made by Government employees, as provided by Executive Orders 10096 and 10930.

.04 Provide for the publication, storage, dissemination, and exchange of patents and related documentation.

.05 Maintain systems and facilities providing appropriate access to United States and foreign patents and other technical literature for use of the examiners and the public.

.06 Examine applications for the registration of trademarks to determine their entitlement to registration under the law; give public notice of trademarks allowed for registration and publish registered trademarks; maintain the principal and supplemental registers of trademark registrations, and provide for public access to such registers and related trademark records.

.07 Issue patents and certificates of trademark registration.

.08 Reissue defective patents and issue certificates of correction of patents and trademark registrations.

.09 Maintain records as to proprietary interests in patents and trademarks and applications therefor.

.10 Carry on or authorize studies and programs, separately or in coordination with other United States, foreign and international agencies, regarding domestic and international patent and trademark law.

.11 Perform other functions required, or which the Commissioner deems necessary and proper, in exercising the authority delegated herein.

Effective date: December 15, 1972.

GUY W. CHAMBERLIN, JR.,
*Acting Assistant Secretary*
*for Administration.*

[FR Doc. 73-320; Filed 1-5-73; 8:45 a.m.]

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[Dept. Organization Order 30-3B]

PATENT OFFICE

*Organization and Functions*

This order effective December 15, 1972, supersedes the material appearing at 36 FR 9078 of May 19, 1971.

SECTION 1. *Purpose.* This order prescribes the organization and assignment of functions within the Patent Office. Department Organization Order 30-3A prescribes the scope of authority and functions.

SEC. 2. *Organization structure.* The principal organization structure and line of authority of the Patent Office shall be as depicted in the attached organization chart. A copy of the organization chart is attached to the original document on file in the Office of the Federal Register.

SEC. 3. *Office of the Commissioner.* The Commissioner determines the policies and directs the programs of the Patent Office and is responsible for the conduct of all activities of the Patent Office. He is principally assisted by Deputy Commissioner and four Assistant Commissioners who shall have the main duties as specified below:

a. The Deputy Commissioner (First Assistant Commissioner under 35 U.S.C. 3) shall assist the Commissioner in the direction of the Patent Office with immediate responsibility for the Office of Petitions and shall perform the duties of the Commissioner in the latter's absence.

b. The Assistant Commissioner for Patents (an assistant commissioner under 35 U.S.C. 3) shall provide administrative and policy direction for the patent examining and related operations which consist of the organizational elements enumerated in section 5 of this order. He is assisted by a Deputy Assistant Commissioner who shall, among other duties, have immediate responsibility for the patent examining groups and shall perform the duties of the Assistant Commissioner during the latter's absence.

c. The Assistant Commissioner for Trademarks (an assistant commissioner under 35 U.S.C. 3) shall provide administrative and policy direction to the trademark registration and related operations which consist of the organizational element enumerated in section 6 of this order.

d. The Assistant Commissioner for Legal Affairs shall be the chief law officer of the Patent Office and as applicable shall provide administrative and policy direction to the organizational elements enumerated in section 7 of this order. Pursuant to Department Organization Order 10-6, he shall be subject to the overall authority of the Department's General Counsel with respect to legal and legislative matters involving the Patent Office, other than in connection with the issuance of patents or the registration of trademarks.

e. The Assistant Commissioner for Administration shall be the principal advisor to the Commissioner on the formulation and application of management policies and shall provide administrative, management, and operational support services to components of the Patent Office. In addition, he shall provide administrative and policy direction to a staff assigned to his office as well as to the organizational elements enumerated in section 8 of this order. He shall be assisted by a Deputy Assistant Commissioner who shall perform the duties of the Assistant Commissioner during the latter's absence.

SEC. 4. *Office reporting to the Commissioner.* .01 The Offices of Petitions shall receive, docket, maintain records, and take other appropriate action with respect to petitions to the Commissioner submitted under applicable law and regulations; assign petitions to appropriate officials for decision or recommend and prepare decisions for review and approval by the Deputy Commissioner; and recommend changes in office policy, practices, and procedures, where the need for such appears evident from the records of the office.

.02 The Office of Government Inventions and Patents shall administer Executive Order 10096, as amended by Executive Order 10930 and related regulations, including the rendering of final decisions on the ownership of patents and the rights to inventions made by Government employees, and advise the Commissioner on matters involving the Committee on Government Patent Policy (of the Federal Council for Science and Technology). It shall also conduct research, liaison, and coordinate functions needed to carry out Executive Order 10096 and to advise the Commissioner on Committee matters; provided executive secretariat support to the Committee; and assist in the development and formulation, to the extent appropriate, of a uniform Government-wide policy.

.03 The Office of Advanced Systems Development shall apply analytical basic research techniques to the development of new machine-assisted experimental search, retrieval, and display system; to the exploration and application of advanced technology for the betterment of operating systems; and to increasing the effectiveness of technical information dissemination and accessing measures. This work is directed primarily to providing solutions to hitherto unresolved problems and to the development of experimental or test applications, for simulations of original techniques or operations. It shall assist in the installation, pilot use, and evaluation of experimental systems in operating environments.

.04 The Office of Information Services shall advise and represent the Commissioner on information matters; conduct programs fostering public understanding of the American patent system and the functions, service and administrative publications of the Patent Office; develop publication policies; provide direction and assistance in developing new and revised publications; and assure conformity with policies, regulations, and standards concerning publications and publication practices.

SEC. 5. *Offices reporting to the Assistant Commissioner for Patents.* .01 The Office of Patent Program Control shall develop procedures for and establish quality, quantity, and other performance standards relating to the conduct of the patent examination and classification functions; establish program activity targets and continually evaluate status against program objectives; provide training to examiners in patent practices and procedures; and monitor compliance with examination and classification standards and procedures.

.02 The Office of Patent Classification shall develop, implement, and maintain subject matter classification systems for patent search files of prior art; evaluate and adapt experimental or other search systems developed elsewhere; determine requirements for and initiate procurement of foreign patent and literature abstracting services for use by examiners; and provide technical specifications, guidance advice, and assistance to the contracting officer in such procurements; coordinate the classification of U.S. and foreign patent documents and nonpatent literature; and participate in developing and fostering harmonization of the United States and the International Patent Classification systems.

.03 The Examining Groups shall examine applications for patents to ascertain if the applicants are entitled to patents under the law and grant patents to those so entitled. Each examining group shall perform this function for patent applications falling within the generic category assigned to it. The number of examining groups and the coverage of the generic categories shall be determined by the Commissioner.

SEC. 6. *Offices reporting to the Assistant Commissioner for Trademarks.* .01 The Office of Trademark Program Control shall develop guidelines governing trademark examining procedures; establish program activity targets and continually evaluate status against program objectives; and provide instruction in trademark practice and procedures and coordinate trademarks administrative support activities.

.02 The Trademark Trial and Appeal Board shall be responsible for hearing and deciding adversary proceedings involving interfering applications, oppositions to registration, cancellations, and concurrent use proceedings; and for hearing and deciding appeals from final refusals of the trademark examiners to allow the registration of trademarks.

.03 The Trademark Examining Operation shall be responsible for the classification of trademark applications into classes of goods and services, the examination and processing of these applications, and the registration of trademarks, service marks, and certification marks; and maintain the principal and supplemental registers of trademarks.

SEC. 7. *Offices reporting to the Assistant Commissioner for Legal Affairs.* .01 The Office of the Solicitor shall handle all litigation to which the Commissioner is a party and provide other legal services, including advice and assistance on legislative matters, and maintenance of the law library.

.02 The Examiners-in-chief sitting as a Board of Patent Appeals shall be responsible for hearing and deciding appeals from adverse decisions of examiners upon applications for patents.

.03 The Board of Patent interferences shall conduct patent interference proceedings and make final determinations in the Patent Office as to priority of invention. The Board shall also hear and decide questions concerning property rights in inventions in the atomic energy and space fields brought before it under the provisions of sections 2182 and 2456 (d) and (e) of title 42, U.S.C.

.04 The Office of Legislation shall develop recommendations and advise policy and action concerning matters which may require changes in the patent and trademark laws; review and prepare analysis of bills or drafts of legislation concerning patent or trademark matters received for technical appraisal; prepare legislative proposals and, after appropriate clearance, draft legislation and supporting documentation for clearance with the Department's Office of the General Counsel and the Office of Management and Budget, for consideration by the Congress; and maintain liaison with patent and trademark bar associations, industry, and others concerned with proposed and pending legislation.

.05 The Office of International Affairs shall coordinate the development of policy and program recommendations or positions respecting international patent and trademark affairs, including all proposed new or modified agreements under the Paris Union, Patent Cooperation Treaty, or like

treaties; maintain liaison in such matters with the Office of the Secretary, the Department of State, and concerned elements of the public; and participate in negotiating patent and trademark matters in establishing international agreements and in the implementation of programs affecting Patent Office commitments or responsibilities in these areas.

SEC. 8. *Offices reporting to the Assistant Commissioner for Administration.* .01 Management Planning Organizations:

a. The Office of Budget shall formulate, interpret, and execute budgetary and fiscal policies; establish and maintain a comprehensive budget program collaborating with cost center officials in developing budget and fiscal plans; develop and present budget requests; allocate and maintain budgetary accountability of available funds; maintain external liaison in budgetary matters; and review and evaluate the fulfillment of budget-based program commitments.

b. The Office of Management and Organization shall plan and conduct studies designed to improve organization, methods, procedures, workflow, work measurement, managerial technicals, and resource utilization, or otherwise increase efficiency, effectiveness and economy of operations; develop and manage a system for the issuance of internal administrative orders and instructions; promote development of the Patent Office management improvement program and coordinate the collection, review and submission of reportable plans and accomplishments thereon; coordinate a program for the management and control of external reports; and make special studies as required.

c. The Office of Program Planning and Evaluation shall formulate plans for and coordinate the development of Patent Office-wide long and short range program objectives within the framework of budgetary constraints; define, project, and allocate the manpower and other resources required to achieve Patent Office-wide objectives; develop and monitor a management information system which prescribe code structures for and consolidates all administrative management systems into a single integrated data base to provide information designed to measure performance and achievement against planned objectives; and develop and issue a wide variety of timely internal analytical and interpretive reports to the managers of the Patent Office.

.02 Public service organizations:

a. The Office of Publications shall schedule and manage the processing and movement of allowed patent application files in procuring the creation of full patent text machine language data base and the composition and printing of weekly patent issues and related announcements in the OFFICIAL GAZETTE; provide requisition and scheduling services for trademark publications; monitor the quality or performance by contributing sources and maintain close liaison with U.S. Government Printing Office; and prepare and issue patent grants and periodic publications of patent indexes.

b. The Office of Patent and Trademark Services shall provide the materials and services offered directly to the public, many of which are provided on a fee basis. These shall include recording instruments that transfer property rights to patents and trademarks; furnishing copies of patents, trademark registrations, and office records to examiners, and others in the Office, as well as to the public; providing drafting services; and maintaining appropriate collections of pertinent technical and scientific information such as United States and foreign patents, periodicals, books, and other publications for use by the public. It shall also conduct an initial examination of patent applications for compliance with law and regulation as to form and certain matters of factual content; grant or deny a filing date based on such examination and forward to the Examining Groups those granted a filing date; acknowledge the acceptance or rejection of applications for examination; originate documentation of pending applications; initially assign accepted applications to units of the examining groups for examination; and maintain records on the status and location of all applications.

.03 Administrative service organizations:

a. The Office of Computer Services shall be responsible for providing data processing services to other elements of the Patent Office: This shall include the conduct of systems analysis and equipment evaluation studies directly related to the design and development of systems and programs for applications of computer techniques; preparation or procurement and testing of computer programs, and supplemental data processing services; operation of all general purpose ADP equipment including that which may be approved for use within another organization unit as an integral part of its operations; and maintenance of a comprehensive library of programs, including those developed or procured by other organization units.

b. The Office of Finance shall develop and maintain the financial accounting system of the Patent Office, perform accounting operations for the revenue, trust funds, and appropriation of the Patent Office, including maintenance of general accounts and related fiscal records, preparation of financial statements and reports, audit and certification of vouchers for payment issuance of deposit account statements, initiation of action to collect amounts due the Patent Office, and administration of the payroll system and related employee accounts; and provide financial advice and opinions.

c. The Office of General Services shall plan and administer a broad Office-wide program of general services, including procurement control; property, space, and facilities management; communications, records, files, mail, and forms management; administrative printing; and clearance of all requirements involving contractual procurements, including liaison with the Department, in connection therewith.

d. The Office of Personnel shall administer activities relating to recruitment, placement, employee relations, equal employment opportunity programs for employees, training and career development, incentive awards, performance rating, position classification and wage administration, group-management relations, and various employee benefit programs.

.04 The Office of Technology Assessment and Forecast shall continually assess the status of technological activities in all countries; compare inventive activity in the United States relative to other nations; and forecast developments on a world-wide basis.

Effective date: December 15, 1972.

GUY W. CHAMBERLIN, JR.,
*Acting Assistant Secretary for Administration.*

[FR Doc. 73-321; Filed 1-5-73; 8:45 a.m.]

*Published in 38 F.R. 1068, Jan. 8, 1973*

[907 O.G. 2]

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(255) PATENT OFFICE

*Organization and Functions*

This order, effective August 1, 1973, amends the material appearing at 38 FR 1068 of January 8, 1973.

Department Organization Order 30-3B, dated December 15, 1972 is hereby amended as follows:

1. SEC. 7. *Offices reporting to the Assistant Commissioner for Legal Affairs.*

a. Paragraph .04 is amended to read:

.04 The *Office of Legislation and International Affairs* shall make studies and advise the Commissioner on policy and action concerning matters which may require legislation and on international patent and trademark matters; develop and direct the implementation of related programs; maintain liaison with the Office of the Secretary, the Department of State, and appropriate congressional committees; and conduct negotiations in technical patent and trademark matters in establishing or implementing international agreements.

b. Paragraph .05 is deleted.

2. The organization chart of December 15, 1972 is superseded by the organization chart attached to this amendment. Copy of the Organization Chart is attached to the original of this document on file in the Office of the Federal Register.

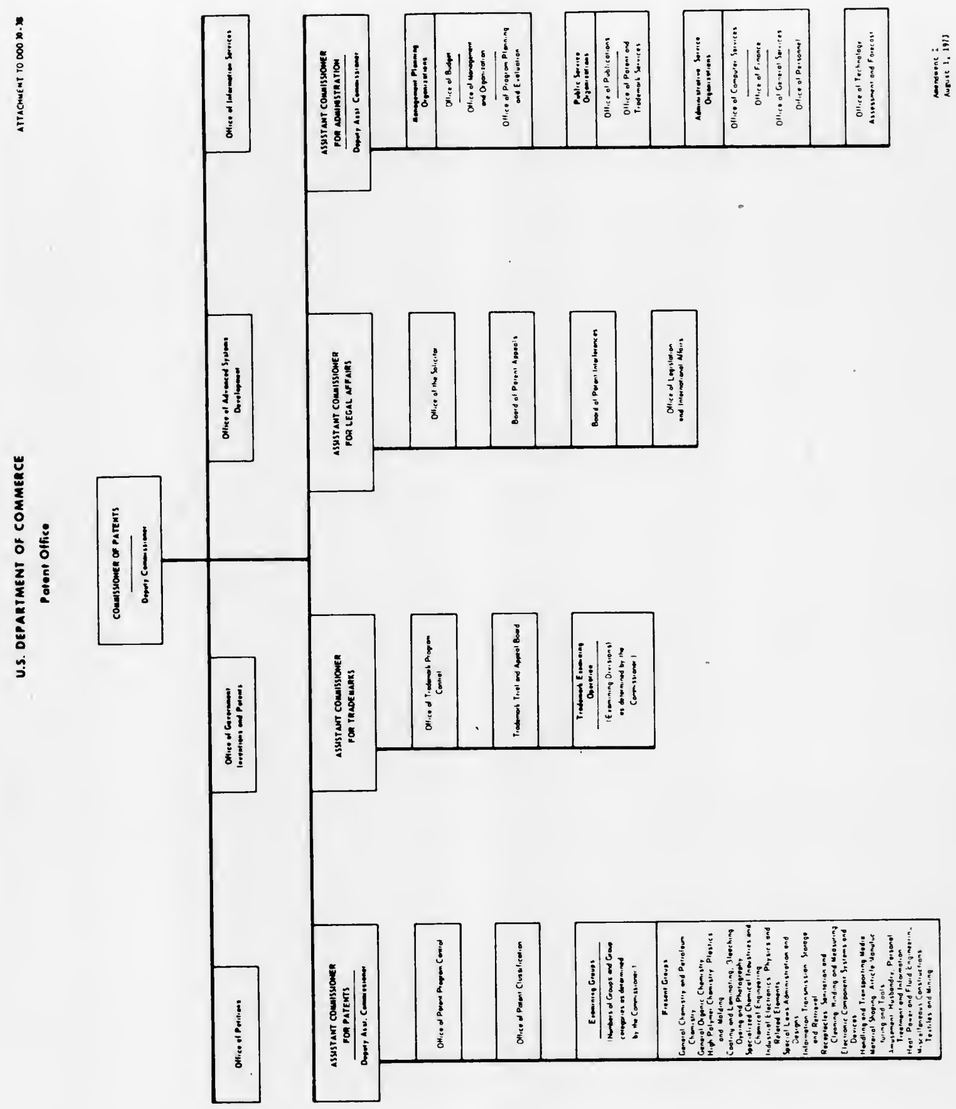
*Effective date:* August 1, 1973.

HENRY B. TURNER,
*Assistant Secretary for Administration.*

[FR Doc. 73-19292; Filed 9-11-73; 8:45 a.m.]

[915 O.G. 378]





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## U.S. PATENT AND TRADEMARK OFFICE
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Div. IV, Supervisor, Milton E. Abramson ------ 9550
Div. V, Supervisor, Lenore D. Lady ---------- 5380
Manual of Trademark Examining Procedure
Editor, Katharine I. Hancock ---------- 5380
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# PATENT AND TRADEMARK OFFICE NOTICES

## TITLE 37—PATENTS, TRADEMARKS AND COPYRIGHTS

### Chapter I—Patent and Trademark Office, Department of Commerce

PART 1—RULES OF PRACTICE IN PATENT CASES

PART 2—RULES OF PRACTICE IN TRADEMARK CASES

*Revision of Administrative Fees*

On August 21, 1975, notice of proposed rulemaking was published in the Federal Register (40 FR 36573), regarding the proposal of the Patent and Trademark Office to amend Title 37 of the Code of Federal Regulations by amending §§ 1.21, 1.25, 1.165, and 2.6 dealing with administrative fees. Interested persons were given until October 15, 1975, to submit written comments and suggestions. Full and careful consideration was given to the single written comment received.

Amendment of §§ 1.21 and 2.6 is intended to (1) recover increases in material and labor costs for furnishing assignment information, drafting services and classification information, (2) eliminate established fees for drafting services not currently in demand, and (3) establish a new fee. Drafting services for which established fees are eliminated (§ 1.21 (l) and (m)) will be furnished, if requested, at fees based upon actual cost. The new fee is established to recover the cost of servicing deposit accounts. The amendment of §§ 1.25 and 1.165 brings these rules into conformity with the amendment of § 1.21.

In consideration of the comment received, and pursuant to the authority contained in section 6 of the Act of July 1952, as amended (85 Stat. 364, 35 U.S.C. 6), Parts 1 and 2 of Title 37, Code of Federal Regulations, are hereby amended as set forth below.

1. In § 1.21, paragraphs (e), (j), (k), (q) and (u) are revised and paragraphs (l) and (m) are deleted as follows:

§ 1.21 *Patent and miscellaneous fees and charges.*

* * * * *

(e) For abstracts of title to each patent or application:

For the search, 1 hour or less, and certificate---------- $5.00
Each additional hour or fraction thereof---------- 2.50
For each brief from the digest of assignments, of 200 words or less---------- 2.00
Each additional 100 words or fraction thereof---------- .20

* * * * *

(j) For making patent drawings, when facilities are available, the cost for making the same,

Rate per hour---------- $12.00
Minimum charge per sheet---------- 25.00

(k) For correcting patent drawings, the cost of making the correction,

Rate per hour---------- $12.00
Minimum charge---------- 3.00

(l) [Deleted]

(m) [Deleted]

* * * * *

(q) List of U.S. Patents:

All patents in a subclass, per sheet (containing 100 patent numbers or less)---------- $1.00
Patents in a subclass, limited by date or patent number, per sheet (containing 50 patent numbers or less)---- 1.00

* * * * *

(u) Deposit account:

Service charge for each month when the balance at the end of the month is below $40---------- $2.00

* * * * *

2. In § 1.25, paragraph (a) is revised to read as follows:

§ 1.25 *Deposit accounts.*

(a) For the convenience of attorneys, agents, and the general public in ordering services offered by the Office, copies of records, etc., special deposit accounts may be established in the Patent and Trademark Office. A minimum deposit of $50.00 or more, depending on the activity of the individual account, is required. At the close of each month's business, a statement will be rendered. A remittance must be made promptly upon receipt of the statement to cover the value of items or services charged to the account and thus restore the account to its established normal deposit value. An account sufficient to cover all services, copies, etc., requested must always be on deposit. A service charge will be assessed for each month that the balance at the end of the month is below $40.00.

* * * * *

3. In § 1.165, paragraph (b) is revised to read as follows:

§ 1.165 *Drawings.*

* * * * *

(b) The drawing may be in color and when color is a distinguishing characteristic of the new variety, the drawing must be in color. Two copies of color drawings must be submitted. Color drawings may be made either in permanent water color or oil, or in lieu thereof may be photographs made by color photography or properly colored on sensitized paper. Permanently mounted color photographs are acceptable. The paper in any case must correspond in size, weight and quality to the paper required for other drawings. See § 1.84. Nonpermanently mounted copies will be correctly mounted at applicant's expense, § 1.21(v).

4. In § 2.6, paragraphs (a), (d) and (e) are revised and a new paragraph (f) is added to read as follows:

§ 2.6 *Trademark fees.*

* * * * *

(a) For each printed copy of a registration with data entered of record as of date of mailing, relating to renewal, cancellation, publication under section 12(c), of the 1946 Trademark Act and affidavits or declarations under sections 8 and 15 of such act.

Omitting title---------- $1.70
Showing title---------- 3.70

* * * * *

(d) For making drawings, when facilities are available, the cost of making the same,

Rate per hour---------- $12.00
Minimum charge per sheet---------- 10.00

(e) For correcting drawings, the cost of making the correction:

Rate per hour (including a photoprint of the uncorrected drawing)---------- $12.00
Minimum charge---------- 3.00

(f) For abstracts of title to each registration or application:

For the search, one hour or less, and certificate---------- $5.00
Each additional hour or fraction thereof---------- 2.50
For each brief from the digest of assignments, of 200 words or less---------- 2.00
Each additional 100 words or fraction thereof---------- .20

*Effective date.* These revisions shall become effective February 2, 1975.

Dated: Dec. 4, 1975.

C. MARSHALL DANN,
*Commissioner of Patents and Trademarks.*

DAVID B. CHANG,
*Acting Assistant Secretary for Science and Technology*

[FR Doc.75-33088; Filed 12-8-75; 8:45 am]
(*40 F.R. 57358, Dec. 9, 1975*)

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### Patent Cooperation Treaty: Implementing Legislation and Ratification

Public Law 94-131, as reprinted below, implements the Patent Cooperation Treaty (see Official Gazette, Volume 876, page 341; July 14, 1970) which was signed by the United

States and 34 other countries in 1970. After enactment of the implementing legislation on November 14, 1975, the United States ratified the Treaty on November 26, 1975, thereby becoming the first country with major patent activity to do so. In accordance with the provisions of Article 63 of the Treaty, it enters into force three months after eight countries have adhered to it, four of which must have certain defined major patent activity.

Up to the time of United States ratification eight countries with only minor patent activity had adhered to the Treaty. Ratification by the United States, therefore, represents a significant step in the direction of bringing the Treaty into force. Other countries with major patent activity, and especially European countries, have been awaiting United States ratification before adhering themselves. Consequently, it is hoped that United States commitment to the Treaty has been demonstrated and will encourage adherence by other countries with major patent activity, thereby bringing into force a Treaty which would offer many advantages and benefits to patent applicants and patent offices alike. Because of the necessary action of other countries in bringing the Treaty into force, no exact date can be given at this time. It is presently estimated, however, that at least the necessary number of countries would be reached in Fiscal Year 1977.

C. MARSHALL DANN,
*Commissioner of Patents and Trademarks.*
Date: *December 11, 1975.*

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Public Law 94-131
94th Congress, S. 24
November 14, 1975

# An Act

To carry into effect certain provisions of the Patent Cooperation Treaty, and for other purposes.

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That title 35, United States Code, entitled "Patents", be amended by adding at the end thereof a new part IV to read as follows:

Patent Cooperation Treaty.

## "PART IV.—PATENT COOPERATION TREATY

## "Chapter 35.—DEFINITIONS

"Sec.
"351. Definitions.

35 USC 351.

**"§ 351. Definitions**

"When used in this part unless the context otherwise indicates—

"(a) The term 'treaty' means the Patent Cooperation Treaty done at Washington, on June 19, 1970, excluding chapter II thereof.

"(b) The term 'Regulations', when capitalized, means the Regulations under the treaty excluding part C thereof, done at Washington on the same date as the treaty. The term 'regulations', when not capitalized, means the regulations established by the Commissioner under this title.

"(c) The term 'international application' means an application filed under the treaty.

"(d) The term 'international application originating in the United States' means an international application filed in the Patent Office when it is acting as a Receiving Office under the treaty, irrespective of whether or not the United States has been designated in that international application.

"(e) The term 'international application designating the United States' means an international application specifying the United States as a country in which a patent is sought, regardless where such international application is filed.

"(f) The term 'Receiving Office' means a national patent office or intergovernmental organization which receives and processes international applications as prescribed by the treaty and the Regulations.

"(g) The term 'International Searching Authority' means a national patent office or intergovernmental organization as appointed under the treaty which processes international applications as prescribed by the treaty and the Regulations.

"(h) The term 'International Bureau' means the international intergovernmental organization which is recognized as the coordinating body under the treaty and the Regulations.

"(i) Terms and expressions not defined in this part are to be taken in the sense indicated by the treaty and the Regulations.





## "Chapter 36.—INTERNATIONAL STAGE

"Sec.
"361. Receiving Office.
"362. International Searching Authority.
"363. International application designating the United States: Effect.
"364. International stage: Procedure.
"365. Right of priority; benefit of the filing date of a prior application.
"366. Withdrawn international application.
"367. Actions of other authorities: Review.
"368. Secrecy of certain inventions; filing international applications in foreign countries.

35 USC 361.

**"§ 361. Receiving Office**

"(a) The Patent Office shall act as a Receiving Office for international applications filed by nationals or residents of the United States. In accordance with any agreement made between the United States and another country, the Patent Office may also act as a Receiving Office for international applications filed by residents or nationals of such country who are entitled to file international applications.

"(b) The Patent Office shall perform all acts connected with the discharge of duties required of a Receiving Office, including the collection of international fees and their transmittal to the International Bureau.

"(c) International applications filed in the Patent Office shall be in the English language.

"(d) The basic fee portion of the international fee, and the transmittal and search fees prescribed under section 376(a) of this part, shall be paid on filing of an international application. Payment of designation fees may be made on filing and shall be made not later than one year from the priority date of the international application.

Post, p. 690.

35 USC 362.

**"§ 362. International Searching Authority**

"The Patent Office may act as an International Searching Authority with respect to international applications in accordance with the terms and conditions of an agreement which may be concluded with the International Bureau.

35 USC 363.

**"§ 363. International application designating the United States: Effect**

"An international application designating the United States shall have the effect, from its international filing date under article 11 of the treaty, of a national application for patent regularly filed in the Patent Office except as otherwise provided in section 102(e) of this title.

Post, p. 691.

35 USC 364.

**"§ 364. International stage: Procedure**

"(a) International applications shall be processed by the Patent Office when acting as a Receiving Office or International Searching Authority, or both, in accordance with the applicable provisions of the treaty, the Regulations, and this title.

"(b) An applicant's failure to act within prescribed time limits in connection with requirements pertaining to a pending international application may be excused upon a showing satisfactory to the Commissioner of unavoidable delay, to the extent not precluded by the treaty and the Regulations, and provided the conditions imposed by the treaty and the Regulations regarding the excuse of such failure to act are complied with.

35 USC 365.

**"§ 365. Right of priority; benefit of the filing date of a prior application**

"(a) In accordance with the conditions and requirements of section

35 USC 119.

119 of this title, a national application shall be entitled to the right of

priority based on a prior filed international application which designated at least one country other than the United States.

"(b) In accordance with the conditions and requirement of the first paragraph of section 119 of this title and the treaty and the Regulations, an international application designating the United States shall be entitled to the right of priority based on a prior foreign application, or a prior international application designating at least one country other than the United States. 35 USC 119.

"(c) In accordance with the conditions and requirements of section 120 of this title, an international application designating the United States shall be entitled to the benefit of the filing date of a prior national application or a prior international application designating the United States, and a national application shall be entitled to the benefit of the filing date of a prior international application designating the United States. If any claim for the benefit of an earlier filing date is based on a prior international application which designated but did not originate in the United States, the Commissioner may require the filing in the Patent Office of a certified copy of such application together with a translation thereof into the English language, if it was filed in another language. Post, p. 692.

**"§ 366. Withdrawn international application** 35 USC 366.

"Subject to section 367 of this part, if an international application designating the United States is withdrawn or considered withdrawn, either generally or as to the United States, under the conditions of the treaty and the Regulations, before the applicant has complied with the applicable requirements prescribed by section 371(c) of this part, the designation of the United States shall have no effect and shall be considered as not having been made. However, such international application may serve as the basis for a claim of priority under section 365 (a) and (b) of this part, if it designated a country other than the United States. Infra.

**"§ 367. Actions of other authorities: Review** 35 USC 367.

"(a) Where a Receiving Office other than the Patent Office has refused to accord an international filing date to an international application designating the United States or where it has held such application to be withdrawn either generally or as to the United States, the applicant may request review of the matter by the Commissioner, on compliance with the requirements of and within the time limits specified by the treaty and the Regulations. Such review may result in a determination that such application be considered as pending in the national stage.

"(b) The review under subsection (a) of this section, subject to the same requirements and conditions, may also be requested in those instances where an international application designating the United States is considered withdrawn due to a finding by the International Bureau under article 12(3) of the treaty.

**"§ 368. Secrecy of certain inventions; filing international applications in foreign countries** 35 USC 368.

"(a) International applications filed in the Patent Office shall be subject to the provisions of chapter 17 of this title. 35 USC 181 et seq.

"(b) In accordance with article 27(8) of the treaty, the filing of an international application in a country other than the United States on the invention made in this country shall be considered to constitute the filing of an application in a foreign country within the meaning of chapter 17 of this title, whether or not the United States is designated in that international application.





"(c) If a license to file in a foreign country is refused or if an international application is ordered to be kept secret and a permit refused, the Patent Office when acting as a Receiving Office or International Searching Authority, or both, may not disclose the contents of such application to anyone not authorized to receive such disclosure.

## "Chapter 37.—NATIONAL STAGE

"Sec.
"371. National stage: Commencement.
"372. National stage: Requirements and procedure.
"373. Improper applicant.
"374. Publication of international application: Effect.
"375. Patent issued on international application: Effect.
"376. Fees.

35 USC 371. **"§ 371. National stage: Commencement**

"(a) Receipt from the International Bureau of copies of international applications with amendments to the claims, if any, and international search reports is required in the case of all international applications designating the United States, except those filed in the Patent Office.

"(b) Subject to subsection (f) of this section, the national stage shall commence with the expiration of the applicable time limit under article 22 (1) or (2) of the treaty, at which time the applicant shall have complied with the applicable requirements specified in subsection (c) of this section.

"(c) The applicant shall file in the Patent Office—

"(1) the national fee prescribed under section 376(a)(4) of this part;

"(2) a copy of the international application, unless not required under subsection (a) of this section or already received from the International Bureau, and a verified translation into the English language of the international application, if it was filed in another language;

"(3) amendments, if any, to the claims in the international application, made under article 19 of the treaty, unless such amendments have been communicated to the Patent Office by the International Bureau, and a translation into the English language if such amendments were made in another language;

"(4) an oath or declaration of the inventor (or other person authorized under chapter 11 of this title) complying with the requirements of section 115 of this title and with regulations prescribed for oaths or declarations of applicants. 35 USC 111 et seq. 35 USC 115.

"(d) Failure to comply with any of the requirements of subsection (c) of this section, within the time limit provided by article 22 (1) or (2) of the treaty shall result in abandonment of the international application.

"(e) After an international application has entered the national stage, no patent may be granted or refused thereon before the expiration of the applicable time limit under article 28 of the treaty, except with the express consent of the applicant. The applicant may present amendments to the specification, claims, and drawings of the application after the national stage has commenced.

"(f) At the express request of the applicant, the national stage of processing may be commenced at any time at which the application is in order for such purpose and the applicable requirements of subsection (c) of this section have been complied with.

35 USC 372. **"§ 372. National stage: Requirements and procedure**

"(a) All questions of substance and, within the scope of the requirements of the treaty and Regulations, procedure in an international application designating the United States shall be determined as in the case of national applications regularly filed in the Patent Office.

"(b) In case of international applications designating but not originating in, the United States—

"(1) the Commissioner may cause to be reexamined questions relating to form and contents of the application in accordance with the requirements of the treaty and the Regulations;

"(2) the Commissioner may cause the question of unity of invention to be reexamined under section 121 of this title, within the scope of the requirements of the treaty and the Regulations. 35 USC 121.

"(c) Any claim not searched in the international stage in view of a holding, found to be justified by the Commissioner upon review, that the international application did not comply with the requirement for unity of invention under the treaty and the Regulations, shall be considered canceled, unless payment of a special fee is made by the applicant. Such special fee shall be paid with respect to each claim not searched in the international stage and shall be submitted not later than one month after a notice was sent to the applicant informing him that the said holding was deemed to be justified. The payment of the special fee shall not prevent the Commissioner from requiring that the international application be restricted to one of the inventions claimed therein under section 121 of this title, and within the scope of the requirements of the treaty and the Regulations.

35 USC 373. **"§ 373. Improper applicant**

"An international application designating the United States, shall not be accepted by the Patent Office for the national stage if it was filed by anyone not qualified under chapter 11 of this title to be an applicant for the purpose of filing a national application in the United States. Such international applications shall not serve as the basis for the benefit of an earlier filing date under section 120 of this title in a subsequently filed application, but may serve as the basis for a claim of the right of priority under section 119 of this title, if the United States was not the sole country designated in such international application. 35 USC 111 et seq. Post, p. 692. 35 USC 119.

35 USC 374. **"§ 374. Publication of international application: Effect**

"The publication under the treaty of an international application shall confer no rights and shall have no effect under this title other than that of a printed publication.

35 USC 375. **"§ 375. Patent issued on international application: Effect**

"(a) A patent may be issued by the Commissioner based on an international application designating the United States, in accordance with the provisions of this title. Subject to section 102(e) of this title, such patent shall have the force and effect of a patent issued on a national application filed under the provisions of chapter 11 of this title. Post, p. 691.

"(b) Where due to an incorrect translation the scope of a patent granted on an international application designating the United States, which was not originally filed in the English language, exceeds the scope of the international application in its original language, a court of competent jurisdiction may retroactively limit the scope of the patent, by declaring it unenforceable to the extent that it exceeds the scope of the international application in its original language.





35 USC 376. **"§ 376. Fees**

"(a) The required payment of the international fee, which amount is specified in the Regulations, shall be paid in United States currency. The Patent Office may also charge the following fees:

"(1) A transmittal fee (see section 361(d));

"(2) A search fee (see section 361(d));

"(3) A supplemental search fee (to be paid when required);

"(4) A national fee (see section 371(c));

"(5) A special fee (to be paid when required; see section 372(c));

"(6) Such other fees as established by the Commissioner.

"(b) The amounts of fees specified in subsection (a) of this section, except the international fee, shall be prescribed by the Commissioner. He may refund any sum paid by mistake or in excess of the fees so specified, or if required under the treaty and the Regulations. The Commissioner may also refund any part of the search fee, where he determines such refund to be warranted.".

SEC. 2. Section 6 of title 35, United States Code, is amended by adding a paragraph (d) to read as follows:

35 USC 6. **"§ 6. Duties of Commissioner**

* * * * * * *

"(d) The Commissioner, under the direction of the Secretary of Commerce, may, with the concurrence of the Secretary of State, allocate funds appropriated to the Patent Office, to the Department of State for the purpose of payment of the share on the part of the United States to the working capital fund established under the Patent Cooperation Treaty. Contributions to cover the share on the part of the United States of any operating deficits of the International Bureau under the Patent Cooperation Treaty shall be included in the annual budget of the Patent Office and may be transferred by the Commissioner, under the direction of the Secretary of Commerce, to the Department of State for the purpose of making payments thereof to the International Bureau.".

SEC. 3. Item 1 of section 41(a) of title 35, United States Code, is amended to read as follows:

35 USC 41. **"§ 41. Patent fees**

"(a) The Commissioner shall charge the following fees:

"1. On filing each application for an original patent, except in design cases, $65; in addition on filing or on presentation at any other time, $10 for each claim in independent form which is in excess of one, and $2, for each claim (whether independent or dependent) which is in excess of ten. For the purpose of computing fees, a multiple dependent claim as referred to in section 112 of this title or any claim depending therefrom shall be considered as separate dependent claims in accordance with the number of claims to which reference is made. Errors in payment of the additional fees may be rectified in accordance with regulations of the Commissioner.". Post, p. 691.

SEC. 4. Section 42 of title 35, United States Code, is amended to read as follows:

35 USC 42. **"§ 42. Payment of patent fees; return of excess amounts**

"All patent fees shall be paid to the Commissioner who, except as provided in sections 361(b) and 376(b) of this title, shall deposit the same in the Treasury of the United States in such manner as the Secretary of the Treasury directs, and the Commissioner may refund any sum paid by mistake or in excess of the fee required by law.". Ante, p. 686, Supra.

SEC. 5. Paragraph (e) of section 102 of title 35, United States Code, is amended to read as follows:

**"§ 102. Conditions for patentability; novelty and loss of right to patent** 35 USC 102.

* * * * * * *

"(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent, or".

SEC. 6. The first sentence of section 104 of title 35, United State Code, is amended to read as follows:

**"§ 104. Invention made abroad** 35 USC 104.

"In proceedings in the Patent Office and in the courts, an applicant for a patent, or a patentee, may not establish a date of invention by reference to knowledge or use thereof, or other activity with respect thereto, in a foreign country, except as provided in sections 119 and 365 of this title.". 35 USC 119, 365.

SEC. 7. The second sentence of the second paragraph of section 112 of title 35, United States Code, is amended to read as follows: Ante, p. 686.

**"§ 112. Specification** 35 USC 112.

* * * * * * *

"A claim may be written in independent or, if the nature of the case admits, in dependent or multiple dependent form.

"Subject to the following paragraph, a claim in dependent form shall contain a reference to a claim previously set forth and then specify a further limitation of the subject matter claimed. A claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers.

"A claim in multiple dependent form shall contain a reference, in the alternative only, to more than one claim previously set forth and then specify a further limitation of the subject matter claimed. A multiple dependent claim shall not serve as a basis for any other multiple dependent claim. A multiple dependent claim shall be construed to incorporate by reference all the limitations of the particular claim in relation to which it is being considered.".

SEC. 8. Section 113 of title 35, United States Code, is amended to read as follows:

**"§ 113. Drawings** 35 USC 113.

"The applicant shall furnish a drawing where necessary for the understanding of the subject matter sought to be patented. When the nature of such subject matter admits of illustration by a drawing and the applicant has not furnished such a drawing, the Commissioner may require its submission within a time period of not less than two months from the sending of a notice thereof. Drawings submitted after the filing date of the application may not be used (i) to overcome any insufficiency of the specification due to lack of an enabling disclosure or otherwise inadequate disclosure therein, or (ii) to supplement the original disclosure thereof for the purpose of interpretation of the scope of any claim.".

SEC. 9. Section 120 of title 35, United States Code, is amended to read as follows:





35 USC 120. **"§ 120. Benefit of earlier filing date in the United States**

"An application for patent for an invention disclosed in the manner provided by the first paragraph of section 112 of this title in an application previously filed in the United States, or as provided by section 363 of this title, by the same inventor shall have the same effect, as to such invention, as though filed on the date of the prior application, if filed before the patenting or abandonment of or termination of proceedings on the first application or on an application similarly entitled to the benefit of the filing date of the first application and if it contains or is amended to contain a specific reference to the earlier filed application.".

35 USC 112. Ante, p. 686.

SEC. 10. The first paragraph of section 282 of title 35, United States Code, is amended to read as follows:

35 USC 282. **"§ 282. Presumption of validity; defenses**

"A patent shall be presumed valid. Each claim of a patent (whether in independent, dependent, or multiple dependent form) shall be presumed valid independently of the validity of other claims; dependent or multiple dependent claims shall be presumed valid even though dependent upon an invalid claim. The burden of establishing invalidity of a patent or any claim thereof shall rest on the party asserting such invalidity.".

Effective dates. 35 USC 351 note.

SEC. 11. (a) Section 1 of this Act shall come into force on the same day as the entry into force of the Patent Cooperation Treaty with respect to the United States. It shall apply to international and national applications filed on and after this effective date, even though entitled to the benefit of an earlier filing date, and to patents issued on such applications.

(b) Sections 2 to 10 of this Act shall take effect on the same day as section 1 of this Act and shall apply to all applications for patent actually filed in the United States on and after this effective date, as well as to international applications where applicable.

(c) Applications for patent on file in the Patent Office on the effective date of this Act, and patents issued on such applications, shall be governed by the provisions of title 35, United States Code, in effect immediately prior to the effective date of this Act.

Approved November 14, 1975.

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LEGISLATIVE HISTORY:

HOUSE REPORT No. 94-592 (Comm. on the Judiciary).
SENATE REPORT No. 94-215 (Comm. on the Judiciary).
CONGRESSIONAL RECORD, Vol. 121 (1975):
June 21, considered and passed Senate.
Nov. 3, considered and passed House.

### Assignee Names

Effective April 1, 1976, only the first appearing name of an assignee will be printed on the patent where multiple names for the *same* party are identified on the Base Issue Fee Transmittal form, POL–85b. Such multiple names may occur when both a legal name and an "also known as" or "doing business as" name is also included. This printing practice will not, however, affect the existing practice of recording assignments with the Office in the Assignment Division. The assignee entry on form POL–85b should still be completed to indicate the assignment data as recorded in the Office. For example, the assignment filed in the Office and therefore the POL-85b assignee entry might read "Smith Company doing business as (d.b.a.) Jones Company." The assignee entry on the printed patent will read "Smith Company."

For purposes of compiling and publishing the 1976 Annual Index of Patentees, this change will be retroactive to patents issuing on January 6, 1976.

Dec. 17, 1975. RICHARD J. SHAKMAN,
*Assistant Commissioner for Administration.*

### Board of Appeals Decisions Rendered in the Month of November 1975

| | |
|---|---|
| Examiner affirmed | 198 |
| Examiner affirmed in part | 40 |
| Examiner reversed | 96 |
| Total | 334 |

### Breeders' Rights in the Republic of South Africa

The Governments of the United States and the Republic of South Africa have reached an agreement, under which United States breeders of certain asexually reproduced plant varieties are entitled to breeders' rights in the Republic of South Africa. The South African Plant Breeders' Rights Act of 1964 (Section 23A(1)) authorizes the Minister of Agriculture to grant breeders' rights to foreign nationals if that national's government grants similar rights for the same variety to South African nationals. It has now been agreed between our governments that the United States plant patent laws (35 U.S.C. §§ 161–164) satisfy this requirement. United States nationals may now obtain breeders' rights for the following varieties (identified by common name):

| | | |
|---|---|---|
| Rose | Almond | Quince |
| Macadamia | Pecan | Kiwifruit |
| Pineapple | Pawpaw | Litchi |
| Mango | Banana | Granadilla |
| Guava | Apple | Pear |
| Sweet cherry | Sour cherry | Plum |
| Japanese plum | Apricot | Peach |
| Avocado | Citrus | Grape |
| Strawberry | Narcissus | Freesias |
| Carnation | Chrysanthemum | Coffee |
| Gladiolus | Poinsettia | Geranium |
| Potato | Tea | (Pelargonium) |

This agreement became effective on October 24, 1975, and was announced in the *Government Gazette* of the Republic of South Africa on that date (Announcement No. 2021). United States nationals will be required to appoint a resident agent to represent them in proceedings before the South African Department of Agricultural Technical Services. Additional information about this matter may be obtained from the Office of Legislation and International Affairs of the Patent and Trademark Office.

Date: Dec. 16, 1975. C. MARSHALL DANN,
*Commissioner of Patents and Trademarks.*

### Closing of Patent and Trademark Office on Friday, December 26, 1975

In view of the provisions of Executive Order 11891, issued December 15, 1975, for excusing employees of all Executive departments, independent establishments and other governmental agencies from duty on Friday, December 26, 1975, and for consideration of that day as falling within the scope of Executive Order No. 11582 and 5 U.S.C. 5546 and 6103(b), Friday, December 26, 1975, constitutes "a holiday within the District of Columbia" under the provisions of 35 U.S.C. 21. Any action due in the Patent and Trademark Office on December 26, 1975, is to be considered timely if taken on December 29, 1975.

C. MARSHALL DANN,
*Commissioner of Patents and Trademarks.*
Dec. 16, 1975.

# PATENT NOTICES

### Certificates of Correction for the Week of Jan. 6, 1976

| | | | |
|---|---|---|---|
| Re. 28,533 | 3,873,311 | 3,897,409 | 3,907,526 |
| Re. 28,543 | 3,873,636 | 3,897,594 | 3,907,559 |
| D. 233,376 | 3,874,897 | 3,898,140 | 3,907,678 |
| 3,660,452 | 3,877,046 | 3,898,316 | 3,907,704 |
| 3,739,880 | 3,877,307 | 3,898,402 | 3,907,996 |
| 3,748,391 | 3,878,783 | 3,898,415 | 3,908,112 |
| 3,758,560 | 3,879,298 | 3,898,535 | 3,908,113 |
| 3,769,087 | 3,880,410 | 3,899,226 | 3,908,233 |
| 3,770,109 | 3,880,887 | 3,899,263 | 3,908,605 |
| 3,796,043 | 3,882,003 | 3,899,933 | 3,908,630 |
| 3,801,913 | 3,882,142 | 3,900,428 | 3,909,066 |
| 3,801,934 | 3,882,148 | 3,900,792 | 3,909,098 |
| 3,816,457 | 3,882,255 | 3,901,204 | 3,909,230 |
| 3,817,874 | 3,882,925 | 3,901,298 | 3,909,273 |
| 3,818,095 | 3,883,184 | 3,901,474 | 3,909,275 |
| 3,819,393 | 3,885,779 | 3,901,769 | 3,909,339 |
| 3,820,293 | 3,887,163 | 3,901,828 | 3,909,399 |
| 3,821,191 | 3,887,569 | 3,901,925 | 3,909,474 |
| 3,823,213 | 3,887,858 | 3,902,347 | 3,909,541 |
| 3,825,511 | 3,889,004 | 3,902,453 | 3,909,695 |
| 3,836,647 | 3,890,149 | 3,902,842 | 3,909,734 |
| 3,838,075 | 3,890,882 | 3,902,976 | 3,909,818 |
| 3,839,641 | 3,890,958 | 3,903,180 | 3,909,822 |
| 3,841,927 | 3,891,413 | 3,903,201 | 3,909,863 |
| 3,843,577 | 3,891,616 | 3,903,245 | 3,909,995 |
| 3,844,297 | 3,891,627 | 3,903,340 | 3,910,043 |
| 3,846,719 | 3,891,798 | 3,903,862 | 3,910,187 |
| 3,847,108 | 3,891,870 | 3,903,941 | 3,910,483 |
| 3,847,878 | 3,891,917 | 3,904,333 | 3,910,713 |
| 3,850,890 | 3,892,265 | 3,904,408 | 3,910,787 |
| 3,852,083 | 3,892,726 | 3,904,413 | 3,910,830 |
| 3,855,608 | 3,892,878 | 3,904,422 | 3,910,929 |
| 3,855,744 | 3,893,610 | 3,904,453 | 3,911,075 |
| 3,856,918 | 3,893,840 | 3,904,963 | 3,911,146 |
| 3,859,337 | 3,893,984 | 3,905,114 | 3,911,448 |
| 3,859,353 | 3,894,002 | 3,905,366 | 3,911,627 |
| 3,859,603 | 3,894,279 | 3,905,392 | 3,911,715 |
| 3,859,959 | 3,894,561 | 3,905,825 | 3,911,717 |
| 3,859,967 | 3,894,789 | 3,905,922 | 3,911,749 |
| 3,860,175 | 3,894,927 | 3,906,060 | 3,912,299 |
| 3,860,458 | 3,894,947 | 3,906,090 | 3,912,431 |
| 3,860,777 | 3,895,067 | 3,906,615 | 3,912,600 |
| 3,862,079 | 3,895,151 | 3,906,667 | 3,912,622 |
| 3,865,806 | 3,895,212 | 3,906,679 | 3,912,853 |
| 3,866,738 | 3,895,288 | 3,906,696 | 3,912,898 |
| 3,868,576 | 3,895,870 | 3,906,982 | 3,913,745 |
| 3,869,495 | 3,896,184 | 3,907,040 | 3,913,760 |
| 3,869,878 | 3,896,312 | 3,907,108 | 3,914,319 |
| 3,871,839 | 3,896,376 | 3,907,262 | 3,914,381 |
| 3,873,297 | 3,897,387 | 3,907,324 | 3,914,658 |

## PATENT EXAMINING CORPS

**RENE D. TEGTMEYER, Assistant Commissioner**
**WILLIAM FELDMAN, Deputy Assistant Commissioner**

### CONDITION OF PATENT APPLICATIONS AS OF DECEMBER 6, 1975

| PATENT EXAMINING GROUPS | Actual Filing Date of Oldest New Case Awaiting Action |
|---|---|
| **CHEMICAL EXAMINING GROUPS** | |
| GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices. | 3-19-75 |
| GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides. | 12-13-74 |
| HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes. | 1-13-75 |
| COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography. | 1-6-75 |
| SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes. | 1-21-75 |
| **ELECTRICAL EXAMINING GROUPS** | |
| INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales. | 12-23-74 |
| SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material. | 1-2-75 |
| INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts. | 2-18-75 |
| RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating. | 5-23-75 |
| ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring. | 12-17-74 |
| DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts. | 7-18-74 |
| **MECHANICAL EXAMINING GROUPS** | |
| HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment. | 3-3-75 |
| MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks. | 2-26-75 |
| AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination. | 2-21-75 |
| HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication. | 2-4-75 |
| GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines. | 5-12-75 |

**Expiration of patents:** The patents within the range of numbers indicated below expire during December 1975, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,862,205 to 2,866,972 inclusive
Plant Patents..... Numbers 1,775 to 1,791 inclusive



# DEFENSIVE PUBLICATIONS

## PUBLISHED JANUARY 6, 1976

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

### T942,001

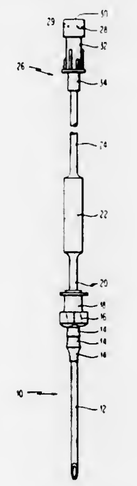
### INTRAVENOUS CATHETER ATTACHMENT DEVICE HAVING A REMOVABLE, RESEALABLE INJECTION ELEMENT

**Winifred T. Tuttle, 61 Duracher Terrace, Poughkeepsie, N.Y. 12603**

**Continuation of abandoned application Ser. No. 342,198, Mar. 16, 1973. This application May 29, 1975, Ser. No. 581,814**

**Int. Cl. A61m** *5/00*
**U.S. Cl. 128—214 R**

**1 Sheet Drawing. 9 Pages Specification**



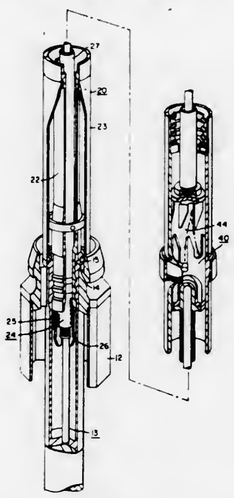
This is an intravenous catheter attachment device for connection to an intravenous catheter which is injected into the vein of a person. The intravenous catheter attachment device is cooperatively and quickly attached to an intravenous catheter in order to provide a complete unit to be left on the arm, leg or other portion of a person's body ready for instant injection of medication into the vein of the person. For example, people suffering from coronary thrombosis or emboli require intermittent injection of heparin which is a fast acting anti-coagulant. Thus, a vein of the person requiring the medication must be accessible at all times for the purpose of permitting the heparin to be injected therein when needed. The disclosed intravenous catheter attachment device utilizes an injection resealable latex rubber member **28** which is connected via, preferably, a plastic tube **24** to a plastic element **20** which in turn is removably engaged into the **Luer-Lok end of**, preferably, a Teflon catheter **12** which catheter is in the vein of the patient.

### T942,002

### CONTROL ROD FOR A NUCLEAR REACTOR

**Walter G. Roman, 1316 Varner Road 15227, and Harry G. Sutton, Jr., 1313 Folkstone Drive 15243, both of Pittsburgh, Pa.**

**Filed Feb. 19, 1974, Ser. No. 443,885**
**Int. Cl. G21c** *7/08*
**U.S. Cl. 176—36 R**
**5 Sheets Drawing. 21 Pages Specification**



A control rod assembly for a nuclear reactor is disclosed having a remotely disengageable coupling between the control rod and the control rod drive shaft. The coupling is actuated by first lowering then raising the drive shaft. The described motion causes axial repositioning of a pin in a grooved rotatable cylinder, each being attached to different parts of the drive shaft which are axially movable relative to each other. In one embodiment, the relative axial motion of the parts of the drive shaft is used either to couple or to uncouple the connection by forcing resilent members attached to the drive shaft into or out of shouldered engagement, respectively, with an indentation formed in the control rod.

### T942,003

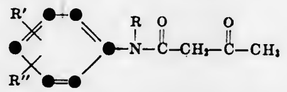
### FREE RADICAL PROMOTER FOR CURING POLYMERIC COMPOSITIONS

**James L. Suggs, Rte. 12, Greeneville, Tenn. 37743, and William W. Blount, Jr., 1129 Oakleaf Drive, Rte. 12, Kingsport, Tenn. 37663**

**Filed Mar. 4, 1974, Ser. No. 447,598**
**Int. Cl. C08f** *1/76, 21/02*
**U.S. Cl. 260—864**
**No Drawing. 9 Pages Specification**

Free radical copromoters for use in curing resin compositions comprising an unsaturated polyester and an ethylenically unsaturated copolymerizable monomer are

disclosed for use with conventional initiators and conventional copromoters. The free radical copromoters comprise acetoacetarylides of the formula



wherein R is H or $CH_3$, R' is $CH_3$, Cl, $OCH_3$ or H, and R'' is $CH_3$ or H. The acetoacetarylides accelerate the curing of such resin compositions when used as copromoters with conventional cure systems comprised of promoters such as metal salts and peroxides.

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**T942,004**

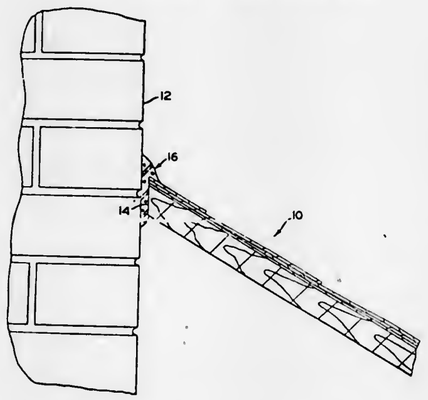
## SEALANT AND ADHESIVE

**Joseph R. Laman, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio**

**Continuation of abandoned application Ser. No. 367,050, June 4, 1973. This application Apr. 18, 1974, Ser. No. 462,147**

**Int. Cl. C08l** *91/06, 95/00*
**U.S. Cl. 260—28.5 AS**

**1 Sheet Drawing. 8 Pages Specification**




A coating composition containing particles of tire scrap or other scrap rubber in an asphaltic vehicle or a vehicle with a base of a sulfonated petroleum is used in roof valleys, downspouts, eaves, the bottom portions of utility poles, on chimneys and subterranean foundations, flashings at the base of chimneys, etc. and between the elements of a chimney, underground conduit or other structure.

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**T942,005**

## INSULATED GATE FIELD EFFECT TRANSISTOR

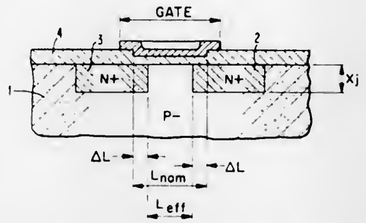
**Alan Platt, Lagrangeville, N.Y., and Edward Terner, Shelburne, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.**

**Continuation of abandoned application Ser. No. 124,888, Mar. 16, 1971. This application Aug. 19, 1974, Ser. No. 498,490**

**Int. Cl. H01l** *29/78, 29/167*
**U.S. Cl. 357—23**

**1 Sheet Drawing. 12 Pages Specification**

A silicon N-channel insulated gate field effect transistor having shallow arsenic-doped source and drain regions is disclosed. The arsenic dopant introduces fewer defects than phosphorus dopant, in high concentrations. Source and drain depth may be 5 to 30 microinches (0.127 to 0.762 micron), channel length may be 0.1 to 0.3 mil (2.54 to 7.62 microns). The source and drain regions




may have a sheet resistivity of between 5 and 15 ohms per square.

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**T942,006**

## GRANULAR AMMONIUM PHOSPHATE SULFATE USING COMMON PIPE-CROSS-TYPE REACTOR

**Frank P. Achorn, 2315 Sherrod Ave., and Josiah S. Lewis, Jr., 153 S. Sequoia, both of Florence, Ala. 35630**

**Filed Sept. 16, 1974, Ser. No. 506,225**

**Int. Cl. C01b** *13/16, 25/26*
**U.S. Cl. 423—310**

**3 Sheets Drawing. 18 Pages Specification**

A process for the production of fertilizers wherein separate streams of phosphoric acid and sulfuric acid are reacted simultaneously with hot concentrated aqua ammonia. The hot aqua ammonia is prepared by reacting anhydrous ammonia with small quantities of water in a common pipe reactor with the resulting mixture being subsequently mixed downstream of said common pipe with said separate streams of acid being introduced through a pipe cross. The resulting reaction occurs in the pipe cross and an extension of the pipe reactor beyond the cross. Overall length of the pipe-cross reactor is about 7 feet and is water jacketed for cooling of the stainless steel to minimize corrosion. The resulting slurry from the pipe cross extension is distributed on a rolling bed of material in a rotary drum granulator, together with additional ammonia and phosphoric acid as desired. Dry potash may be added to the bed as well as recycled, screened product from the process. The process is easy to operate, utilizes uncomplicated and inexpensive equipment, eliminates entirely the need for a preneutralization step and attendant equipment, and produces monoammonium phosphate as well as ammonium phosphate sulfate.

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**T942,007**

## REMOVAL OF CARBONACEOUS MATTER FROM AMMONIUM POLYPHOSPHATE LIQUIDS

**John M. Stinson, 1525 Ridge Drive, Sheffield, Ala. 35660; Horace C. Mann, Jr., 1942 Holiday Drive, Florence, Ala. 35630; and Dale H. Johnson, 223 S. Cornell Ave., Villa Park, Ill. 60181**

**Filed Nov. 7, 1974, Ser. No. 521,752**

**Int. Cl. C01b** *15/16, 25/16, 25/26*
**U.S. Cl. 423—305**

**8 Sheets Drawing. 28 Pages Specification**

Particulate carbonaceous matter in ammonium polyphosphate liquid made from impure wet-process phosphoric acid produced from uncalcined phosphate rock is removed either batchwise or continuously by intimately mixing the liquid with a centrifugal pump or a high-shear mixed with a combination of selected water-insoluble organic flocculating agents consisting of a combination of primary amines and quaternary ammonium chlorides and then transferring the mixture to a separation vessel where



the particulate carbonaceous matter rapidly floats to the surface. Black ammonium polyphosphate liquids ranging in grade from 8–27–0 to 11–37–0 and containing from about 50 to 90 percent polyphosphate were successfully clarified. From about 80 to 95 percent of the input black liquid was withdrawn from the bottom of the separation vessel as clarified liquid that contains essentially no particulate carbonaceous matter or flocculant. The particulate carbonaceous matter, essentially all of the flocculant, and the remainder of the input ammonium polyphosphate liquid are withdrawn from the top of the separation vessel and processed into fluid or solid fertilizers.

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**T942,008**

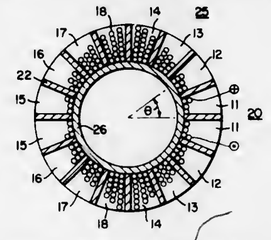
## SUPERCONDUCTIVE WINDING FOR DYNAMOELECTRIC MACHINE

**Walter J. Carr, Jr., Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**Filed Jan. 2, 1975, Ser. No. 538,063**

**Int. Cl. H02k** *9/00*
**U.S. Cl. 310—40**

**2 Sheets Drawing. 12 Pages Specification**




A superconductive winding is provided for the rotor of a dynamoelectric machine. The winding comprises a plurality of series connected, multi-turn superconductive coils which are angularly disposed about the rotor thereby defining two magnetic poles of opposite polarity. The conductor packing density is generally proportional to the trigonometric sine of the angular displacement as measured from the geometric center of one magnetic pole toward the geometric center of the opposite magnetic pole. The magnetic field produced within the sinusoidally distributed winding is substantially uniform as compared with the field produced by a conventional winding having a uniform packing density. The current density can be increased above the maximum value allowable for the conventional winding, thereby providing a net increase in the useful external field obtained from a given amount of superconductive material.

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**T942,009**

## PHOTOGRAPHIC FILMS

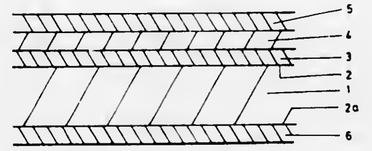
**David Roderick Mann, Colchester, Geoffrey Pickles Irvin, Brantham, near Manningtree, and Richard Silverwood, Wivenhoe, England, assignors to Imperial Chemical Industries Limited, London, England**

**Filed Feb. 7, 1975, Ser. No. 548,219**
**Claims priority, application Great Britain, Feb. 21, 1974, 7,872/74**

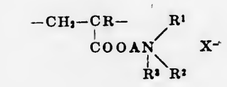
**Int. Cl. G03c** *1/82*
**U.S. Cl. 96—87 R**

**1 Sheet Drawing. 17 Pages Specification**

Back coated anti-static photographic films are disclosed comprising a self-supporting synthetic plastics film base having superimposed on one side a radiation-sensitive layer and an anti-static material applied to the other side




of the film base, the anti-static material comprising a quaternary ammonium copolymer containing repeating units of the formula:



wherein R represents hydrogen or methyl; $R^1$ represents methyl or ethyl; $R^2$ and $R^3$ each independently represent methyl or ethyl, or $R^2$ and $R^3$ taken together represent $—CH_2CH_2OCH_2CH_2—$ or $—(CH_2)_n—$ where $n$ represents 4, 5 or 6; A represents an alkylene or substituted alkylene group; and $X^-$ represents a chloride or acetate ion, and copolymeric units derived from styrene, 2-ethylhexyl acrylate, methyl methacrylate, methyl acrylate, ethyl acrylate, butyl acrylate, ethylhexyl acrylate, acrylonitrile, vinyl toluene, vinyl acetate, β-ethoxyethyl methacrylate, β-hydroxyethyl methacrylate, ethylene glycol dimethacrylate, acrylamide, diacetone acrylamide, ethylene, propylene or divenyl benzene, the copolymer having an average molecular weight in the range 5,000 to 2,000,000. Illustrated are copolymers of trimethyl-β-methacryloyloxyethyl ammonium chloride with styrene; ethyldimethyl methacryloxyethyl ammonium bromide with methyl methacrylate; and ethyldimethyl methacryloyloxyethyl ammonium acetate with styrene. The film base may comprise an oriented polyester film, such as polyethylene terephthalate.

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**T942,010**

## NOVEL CURES FOR BLOCKED POLYSULFIDE POLYMERS

**Julian R. Panek, Newtown, Pa., and Michael J. Kohut, Trenton, N.J., assignors to Thiokol Chemical Corporation, Bristol, Pa.**

**Continuation of application Ser. No. 403,576, Oct. 4, 1973, which is a continuation of application Ser. No. 255,349, May 22, 1972, both now abandoned. This application Feb. 12, 1975, Ser. No. 549,256**

**Int. Cl. B05d** *3/10*
**U.S. Cl. 427—340**

**No Drawing. 17 Pages Specification**

A process for providing a curing system for aldehyde and ketone blocked polysulfide polymers is disclosed wherein ammonium compounds and substituted amines are used to cure the blocked polysulfide polymers after impregnation of leather by the blocked polysulfide polymer.

# REISSUES

## JANUARY 6, 1976

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

### Re. 28,671
### HYDROPHONE DAMPER ASSEMBLY

**James W. Widenhofer, Jackson, Mich., assignor to Sparton Corporation, Jackson, Mich.**

**Original No. 3,701,175, dated Oct. 31, 1972, Ser. No. 151,269, June 9, 1971. Application for reissue Aug. 26, 1974, Ser. No. 500,649**

**Int. Cl.[2] B63B** *21/52, 51/02*

**U.S. Cl. 9—8 R** **18 Claims**




*13. A hydrophone damper comprising, in combination, an envelope of flexible material, a check valve defined in said envelope directly communicating with the environment surrounding said envelope, said check valve permitting water to directly enter the envelope whereby said envelope confines the water therein and preventing said water from leaving said envelope, and attachment means associated with said envelope for attaching hydrophone structure thereto.*

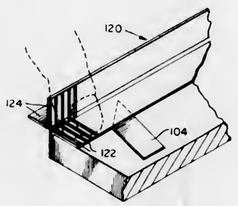
### Re. 28,672
### PLIABLE TAPE STRUCTURE

**Alfred W. Wakeman, Madison Road, Durham, Conn. 06422**

**Original No. 3,751,760, dated Aug. 14, 1973, Ser. No. 159,796, July 6, 1971. Application for reissue Feb. 6, 1975, Ser. No. 547,573**

**Int. Cl.[2] E05D** *7/00*

**U.S. Cl. 16—150** **25 Claims**




1. A flexible tape for joining mating edges of adjacent members,

said tape having an X-like configuration in cross section and providing a longitudinally continuous structure adapted to extend along and be secured to the edges of the members to be joined so that the axis of said X-like configuration coincides generally with the juncture formed by the members to be joined, said tape comprising

carrier strip means comprising pliable, longitudinally continuous, marginal web portions at the extremities of the legs of the X; and

flexible, spaced, connector means running crosswise of and [ being secured ] *bonded* to and interconnecting pairs of web portions, at least some of said connector means intersecting and crossing other connector means to form said X-like configuration [ . ], *said flexible connector means in crossing between said web portions being free to shift relative to each other within the limits defined by their points of connection to the respective longitudinal web portions.*

### Re. 28,673
### METHOD OF PRESERVING PERISHABLE PRODUCTS

**Joseph J. Esty, San Diego, Calif., assignor to U. C. San Diego Foundation, La Jolla, Calif.**

**Original No. 3,715,860, dated Feb. 13, 1973, Ser. No. 165,398, July 23, 1971. Continuation of Ser. No. 58,266, July 27, 1970, abandoned, which is a division of Ser. No. 645,968, June 14, 1967, Pat. No. 3,521,806. Application for reissue Feb. 7, 1975, Ser. No. 547,965**

**Int. Cl.[2] B65B** *31/04*

**U.S. Cl. 53—22 B** **2 Claims**

1. Those steps in the method of preserving a perishable product in a container [ formed of impermeable material ] having a product opening, an inlet tube for conveying a purging fluid to the container, and an outlet tube for withdrawing air from the container, the steps in the method comprising:

(A) inserting the product into the container through the product opening;

(B) thereafter permanently sealing the product opening;

(C) thereafter purging the interior of the container by forcing an inert fluid into the container through said inlet tube and forcing air from the container through said outlet tube;

(D) placing the container in a carton having more stability than the container;

(E) extending the tubes to the exterior of the carton;

(F) thereafter, and while the container is still pressurized with inert fluid, permanently sealing the tubes closed.

### Re. 28,674
### CATAMENIAL DEVICE

**Linda S. Guyette, 35 Summer St., Rutland, Vt. 05701**

**Original No. 3,732,866, dated May 15, 1973, Ser. No. 116,531, Feb. 18, 1971. Application for reissue Oct. 12, 1973, Ser. No. 405,766**

**Int. Cl. A61f** *13/20*

**U.S. Cl. 128—285** **17 Claims**




1. A rolled cylindrical tampon *having means for conducting body fluid to the interior thereof, said tampon* comprising a first sheet of absorbent material, *and* a second sheet of [ non-absorbtive ] *relatively non-absorbent wick-like* synthetic woven material superimposed on one face of said first sheet and extending beyond at least one edge of said first sheet, *said first and second sheets being rolled into a cylinder having its outer cylindrical surface formed by a portion of said first sheet and having the non-extending portion of said second sheet disposed entirely within said outer surface,* [ whereby ] *so that* upon rolling said [ sheet ] *sheets* into a cylinder said second sheet [ will act as ] *forms* a spiral wick to the interior of said cylinder.





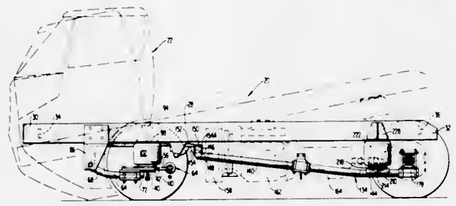
### Re. 28,675
### REMOVABLE VEHICLE CHASSIS SUB-FRAME WITH ENGINE

**Dean Hobbensiefken, Rte. 1, Box 241, Lyons, Oreg. 97358**

**Original No. 3,732,942, dated May 15, 1973, Ser. No. 98,625, Dec. 16, 1970. Application for reissue July 25, 1974, Ser. No. 491,922**

**Int. Cl. B60k** *5/00*

**U.S. Cl. 180—11** **10 Claims**



*9. In a motor vehicle:*

*a frame having side frame elements and cross elements connecting the side elements;*

*a cab mounted to the frame;*

*a fifth wheel mounted to the frame rearwardly of the cab for connection to a trailer that overhangs the frame rearwardly of the cab;*

*a front axle having steerable ground wheels thereon;*

*yieldable front suspension means for the front axle disposed between the front axle and the side elements;*

*a rear axle assembly, having ground wheels thereon and having a differential assembly;*

*hitch means located between the front and rear axles;*

*a power unit comprising a power unit sub-frame including side rods extending rearwardly of the hitch means below the side elements, the side rods having forward ends and rearward distal ends, and the rear axle assembly being secured to the distal ends of the side rods;*

*the side rods being releasably connected by the hitch means with the side frame elements;*

*rear suspension means disposed between the side rods and the side elements proximate to the rear axle assembly;*

*means securing the rear suspension means to the side rods and the side elements including releasable securing means securing the rear suspension means to at least one of the side rods and the side elements;*

*engine mounting means extending between the side rods between the hitch means and the rear axle assembly; and an engine assembly, including an engine, secured to the engine mounting means and located between the hitch means and the rear axle assembly.*

# PATENTS

## GRANTED JANUARY 6, 1976

### ERRATA

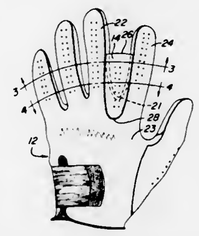
| For CLASS | See PATENT NO. |
|---|---|
| 222–083 | 3,930,286 |
| 116–002 | 3,930,459 |
| 226–091 | 3,930,487 |
| 204–039 | 3,930,575 |
| 173–163 | 3,930,776 |
| 264–045.3 | 3,931,098 |
| 310–009.4 | 3,931,388 |
| 426–579 | 3,931,423 |
| 426–250 | 3,931,433 |
| 426–295 | 3,931,434 |
| 427–043 | 3,931,435 |
| 427–096 | 3,931,436 |
| 427–246 | 3,931,437 |
| 307–235 R | 3,931,538 |
| 333–018 | 3,931,604 |

# PATENTS

GRANTED JANUARY 6, 1976

## GENERAL AND MECHANICAL

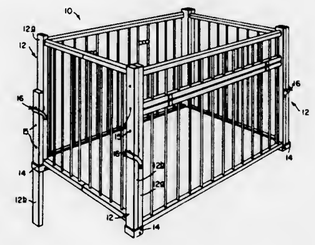
**3,930,271**
**GOLF GLOVE**
**He Chung Kahng, Glenview, Ill., assignor to Hi-Kahng Trading Co., Chicago, Ill.**
**Filed Dec. 16, 1974, Ser. No. 532,875**
**Int. Cl.² A41D *19/00***
**U.S. Cl. 2—161 A** **4 Claims**



1. A golf glove comprising at least an index finger receptacle, a middle finger receptacle and a back surface extending from said receptacles in the direction of the wrist, and further comprising another finger receptacle disposed adjacent said index finger receptacle and said middle finger receptacle and overlapping a portion of said back section.

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**3,930,272**
**CRIB LEG LOCK**
**Robert J. Boudreau, Bedford, Pa., assignor to Hedstrom Co., Bedford, Pa.**
**Filed Sept. 10, 1974, Ser. No. 501,533**
**Int. Cl.² A47D *7/01***
**U.S. Cl. 5—11** **3 Claims**



1. In combination with a height adjustable crib or the like of the type having a corner post and an extensible leg slidably connected to the corner post and having a series of holes along its length, a lock comprising

A. a rigid bracket extending around the extensible leg and having sides lying flush against opposite sides of the corner post;

B. means for pivotally connecting the bracket sides to the corner post so that the bracket can be swung toward and away from the leg;

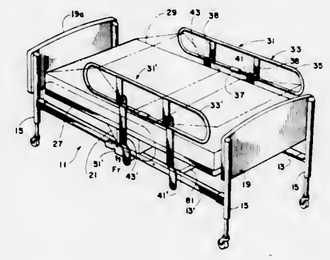
C. a rigid nose projecting from the bracket and extending toward the leg, said nose being arranged to engage in one of the leg holes when the bracket is swung against the leg so as to lock the leg at a selected position of lengthwise adjustment relative to the corner post, and

D. means mounted on the corner post and cooperating with the bracket for removably retaining the bracket with its nose in said hole said retaining means comprising

1. a latch pivotally connected to the corner post adjacent to the bracket, and a slot formed in a side of the bracket, the sides of the slot being engaged by the latch when the bracket is positioned with its nose in said hole.

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**3,930,273**
**BED SAFETY SIDE RAIL ARRANGEMENT**
**Robert C. Stern, St. Louis, Mo., assignor to Affiliated Hospital Products, Inc., St. Louis, Mo.**
**Continuation of Ser. No. 393,191, Aug. 30, 1973, which is a continuation of Ser. No. 177,390, Sept. 2, 1971, abandoned.**
**This application Jan. 10, 1975, Ser. No. 540,240**
**Int. Cl.² A47D *7/02*; A47C *21/00***
**U.S. Cl. 5—331** **24 Claims**



1. A bed arrangement comprising

a bed frame,

a side rail assembly for said bed frame, said side rail assembly comprising

a pair of separately detachable side rails each with spaced risers pivotally secured thereto, and one riser having a releasable pivot-prevention lock thereon,

said risers being removably pivotally mounted on said bed frame,

and a pair of nonpermanent and detachable cross members extending transversely across said bed frame and releasably engageable in pivotal interconnecting relation each with respective opposite pairs of said side rails risers,

said side rail risers each having pivot pins thereon,

and said cross members each having end openings for receiving said pivot pins,

said cross members being relatively pivotally engaged at their end openings with said riser pivot pins, and being supported in suspended relation between and by said pivot pins,

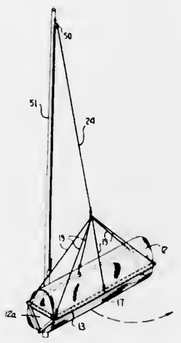
said bed frame including spaced generally parallel longitudinal side frame members with spaced holes effectively formed thereon,

said cross members extending between said side frame members and having their said end openings in effective alignment with respective opposite pairs of said holes,

said riser pivot pins extending through said holes and into said cross member end openings,

and releasable securing means releasably securing said pins within said side frame member holes.

3,930,274
**ASSEMBLY FOR USE IN RECREATIONAL ACTIVITIES**
Harold A. Syfritt, 2221 Vista Drive, Manhattan Beach, Calif. 90266
Division of Ser. No. 229,096, Feb. 18, 1972, Pat. No. 3,846,858. This application Oct. 11, 1974, Ser. No. 513,981
Int. Cl.² B63B 7/08
U.S. Cl. 9—2 A 7 Claims

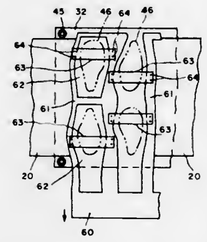


1. An assembly for use in recreational activities comprising:
a. a collapsible, elongated container having a longitudinal axis and opposite end surfaces transverse to the longitudinal axis,
b. said container having a structure effective to receive both liquid and gas mediums therein and including valve means for introducing and exhausting both liquid and gas mediums,
c. an elongated frame structure having a plurality of parallel linear support members wherein each support member is laterally spaced with respect to any other lateral support member and a separate end frame portion connected at each end of said support members to form an open structural configuration for receiving the collapsible container, and
d. fastening means for attaching the elongated container to the frame structure with said longitudinal axis disposed substantially parallel to the linear support members and each said end surface being crossed by an adjacent end frame portion to support the container within the frame structure during use,
e. the container being attached to the frame structure with one of said linear support members extending longitudinally along one side of the container with the side opposing said one side of the container being free of a support member whereby the assembly may be used as a pontoon when the container is inflated with a gas fluid medium and is employable in other uses when the container is not inflated or holds a liquid fluid medium.

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3,930,275
**METHOD OF FABRICATING A SLIPPER**
Richard Ballin, 46 Johnson Ave., Englewood Cliffs, N.J. 07631
Filed Mar. 31, 1975, Ser. No. 563,999
Int. Cl.² A43D 9/00
U.S. Cl. 12—142 S 9 Claims

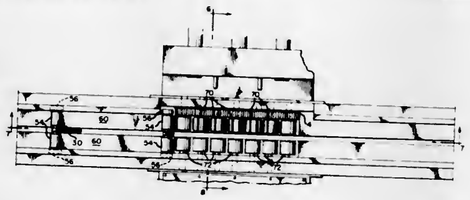
1. A method of manufacturing slippers each having a flat sole member and an arc-shaped vamp disposed over the sole member to retain the slipper on the foot of a user, comprising the steps:
a. providing a continuous sole web of sufficient lateral extent to enable plural sole members to be made therefrom,
b. locating plural vamp sections over the sole web at predetermined locations,
c. attaching the plural vamps in their final arc-shape to the sole web at the predetermined locations,
d. positioning the sole web with preattached vamps under a sealing and cutting die, and



e. heat-sealing the preattached vamps at opposite sealing zones to the sole web by the sealing die and substantially simultaneously die-cutting entire slippers with heat-sealed vamps from the sole web.

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3,930,276
**WHEEL SPINNING AND VEHICLE CONVEYING APPARATUS FOR AUTOMATIC WHEEL WASHERS**
Russell A. Van Brakel, Harshaw, Wis., assignor to Haverberg Auto Laundry Equipment Co., Chicago, Ill.
Filed Aug. 7, 1972, Ser. No. 278,258
Int. Cl.² B60S 3/04
U.S. Cl. 15—53 B 12 Claims



1. In a vehicle wheel washing device for wheels of a given minimum tread width, a frame, opposed projecting sets of parallel horizontal rollers journal-mounted in said frame and having their projecting ends spaced apart to define a slot between said sets for the travel of a wheel pushing arm on an endless conveyor, said slot being narrower than said minimum tread width, drive means in the frame for rotating the rollers in one of said sets in a common direction, guide means in the frame beneath said sets of rollers for guiding the endless conveyor.

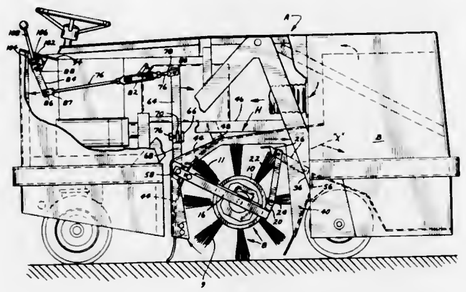
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3,930,277
**MOBILE FLOOR SWEEPER**
Richard F. Wulff, Long Lake, Minn., assignor to Advance Machine Company, Spring Park, Minn.
Filed Aug. 21, 1974, Ser. No. 499,143
Int. Cl.² E01F 1/04
U.S. Cl. 15—83 7 Claims

1. In a floor sweeper having a rotatable cylindrical brush mounted on a mobile chassis, a receiver for receiving debris delivered from said brush, means for raising and lowering said brush, a plate adjacent said brush for the direction of debris, the improvement in said plate said improvement including
a. plate means carried by said sweeper and adjacent said brush, and
b. means for moving said plate means relative to said brush as said brush is moved relative to said chassis whereby the plate means maintains the same position relative to the brush,
said means for moving said plate means including link



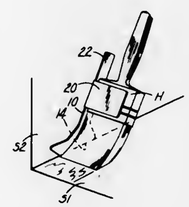
means connected to said plate means and said means for raising and lowering said brush whereby the plate means



automatically moves relative to the brush when the brush is raised and lowered.

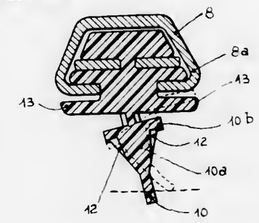
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3,930,278
**PAINTBRUSH AND GUARD ATTACHMENT FOR EDGING**
Richard A. Nasca, 350 Bank St., Painesville, Ohio 44047
Filed Apr. 10, 1974, Ser. No. 459,696
Int. Cl.² A46B 17/00; B44D 3/22
U.S. Cl. 15—166 5 Claims



1. A device in combination with a paintbrush having a flat handle with an enlarged bristle engaging portion to assist in forming straight uniform edges at the interface of intersecting surfaces and allow application of paint to the intended surface while preventing unintended smearing of paint on the other surface said device comprising,
a flat sheet of material having an elongated central portion with an enlarged coplanar foot portion depending from one end thereof,
said foot portion having a straight bottom edge disposed at an acute angle with respect to the longitudinal axis of said central portion,
and a pair of bendable positionable resilient tab members extending transversely from the opposite sides of said central portion at a location spaced from said foot portion and spaced from the opposite end of the central portion, said tab members being bendable to a parallel configuration normal to the central portion to engage opposite sides of the enlarged bristle engaging portion of the handle and maintain the central portion and foot disposed along the edge of the bristles to act as an edge guide and a shield against unintended smearing while maintaining both faces of the bristles unobstructed, and with the extension of the central portion acting as an extension arm to pivot the foot out of contact with the bristles to allow for dipping into paint.

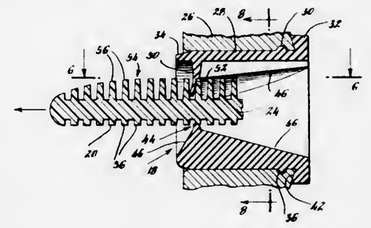
3,930,279
**RUBBER WINDSHIELD WIPER BLADES HAVING INCREASED FLEXIBILITY AT CLAMPING POINTS**
Dario Arman, via Venario, 13/15, 10040 Druento (Turin), Italy
Filed July 1, 1974, Ser. No. 484,521
Claims priority, application Italy, July 31, 1973, 69308/73
Int. Cl.² B60S 1/38
U.S. Cl. 15—250.36 2 Claims



1. A resilient blade for use in a windshield wiper assembly, said assembly including a rocker arm carrying spaced apart clamps for gripping the blade at longitudinally spaced points on the blade, said blade comprising:
a. a back portion adapted to be accommodated within the clamps,
b. an edge portion adapted to contact a windshield,
c. a narrow intermediate portion between said back and edge portions defining a hinge along which said edge portion can pivot with respect to said back portion,
d. a portion of generally triangular cross-sectional shape between said edge portion and said intermediate portion which thickens from said edge portion toward said intermediate portion, and
e. cavities in said triangular portion only at points laterally aligned with the points at which the clamps grip said back portion, said triangular portion being of full thickness in the longitudinal regions between said cavities.

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3,930,280
**BOTTLE INSERT FOR PRODUCT CONTAINER**
Martin M. Vasas, Fairfield, Conn., assignor to The Bridgeport Metal Goods Manufacturing Company, Bridgeport, Conn.
Filed June 27, 1974, Ser. No. 483,694
Int. Cl.² A47L 13/56; A45D 44/18
U.S. Cl. 15—257.05 15 Claims



1. An insert for sealing between a reservoir assembly and an applicator of a product container and for wiping over the applicator therein, said insert being fabricated of elastic material and comprising:
a tubular having a longitudinal axis;
a wiping diaphragm disposed across said tubular frame between the longitudinal ends thereof, said diaphragm having an aperture disposed therethrough concentrically about said longitudinal axis; and
a sealing rim disposed on the external periphery of said tubular frame and at one longitudinal end thereof, said

sealing rim having a flat end wall disposed in a radial plane and facing away from said insert and a tapered inner wall disposed longitudinally inwardly of said end wall, whereby said rim is of varying thickness along said longitudinal axis, said varying thickness being of increasing magnitude in a radial direction away from said longitudinal axis, said sealing rim being compressible across said varying thickness within the product container and being distorted therein radially away from said longitudinal axis.

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**3,930,281**

## FLOOR CLEANING MACHINE

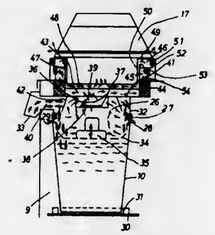
**Rene Principe, Wil, and Karl Kaser, Glattbrugg, both of Switzerland, assignors to A. Sutter AG, Munchwilen, Switzerland**

**Filed July 16, 1974, Ser. No. 488,981**

**Claims priority, application Switzerland, July 25, 1973, 10858/73**

**Int. Cl.² A47L 7/00**

**U.S. Cl. 15—320** **15 Claims**



1. A floor cleaning machine constructed as a carriage equipped with a guide pole, at least one motor-driven cleaning tool for wet cleaning the floor and rotating about a substantially vertical axis, a regulatable quantity of fresh water admixed with a cleaning agent being delivered per unit of time from a fresh water supply to the region of the cleaning tool, the cleaning tool processing the delivered fresh water admixed with the cleaning agent at the floor and the resultant soiled water being sucked-up from the floor and collected in a separate soiled water container, the improvement comprising: a machine housing, a suction blower mounted on said housing, a fresh water container formed by part of the machine housing, the soiled water container comprising a loose portable container which is enclosed in the floor cleaning machine when it assumes a working position within the floor cleaning machine, a suction compartment having an air entrance aperture, the soiled water container being connected via a seal with said suction compartment, said seal comprising a marginal edge formed on said soiled water container, the edge of said suction compartment aperture, and a detachable intermediate element engaging both said suction chamber aperture edge and said marginal edge, an automatically-operating level limiting device for preventing the soiled water container from over filling, a downwardly inclined collar extending within said suction chamber, the incoming air and soiled water sucked-up from the floor by said suction blower being directed against said inclined collar, the soiled water flowing downwardly on the surface of said collar and into the said soiled water container, and a plurality of flow direction changing members mounted above said suction compartment for changing the direction of travel of the air and entrained water particles therein to thereby prevent said entrained water particles from entering said suction blower.

6. The floor cleaning machine as defined in claim 1, wherein the machine housing includes a compartment in which there is accommodated the soiled water container when it assumes its work position, a cover for selectively closing and exposing said machine housing compartment, means for mounting said cover to be pivotable towards the outside of said housing about a substantially horizontal axis, said pivotable cover in its pivoted-out position forming a platform which is located at least approximately at the height of the floor of the machine housing compartment, the soiled water container being removable from the machine housing compartment via the said platform and again being introducable into the machine housing compartment through the agency of said platform.

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**3,930,282**

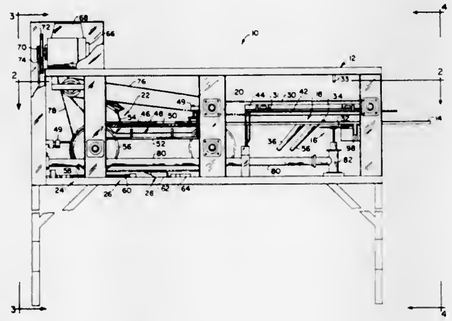
## MACHINE FOR PROCESSING THE BACKS OF POULTRY

**Eugene G. Martin, and Dale M. Risser, both of Ephrata, Pa., assignors to Victor F. Weaver, Inc., New Holland, Pa.**

**Filed Sept. 19, 1974, Ser. No. 507,437**

**Int. Cl.² A22C 21/00**

**U.S. Cl. 17—11** **8 Claims**



1. A machine for processing the back carcass members of poultry and comprising a frame structure to support processing stations within said machine for removing the tails and skin from the backs of a progressive series of poultry back carcass members while making a single pass through said machine comprising in combination, a feed rail member upon which unprocessed poultry back carcass members are tandemly positioned by manual means with the tail foremost and the uppermost interior of the cavity section of said carcass members slidably positioned upon said rail member, conveyor means engageable with the upper surfaces of said carcass members to move the same along said rail member to a transport station, an inverting endless flexible conveyor and rail section supported by said frame, a pair of circular sprockets supporting said conveyor for movement of a span thereof substantially horizontally and parallel to said rail section, means to transfer said back carcass members to said rail section from said feed rail member, a tail flipping means at a flipping station intermediately of the ends of said rail section and engageable with the tail uppermost on each carcass and operable to mechanically force said tail from an essentially horizontal position to a substantially upstanding erected position, means to invert said carcass members while supported and moved by said conveyor to bring the erected tails of said carcass members into depending position relative to said carcass, a set of coarse oppositely and inwardly rotating helical gear members positioned and operable to engage said tails and mechanically macerate and snatch the same from said back carcass members, a set of less coarse oppositely and inwardly rotating helical gear members operable to engage the skin on said back carcass member and mechanically macerate and remove the same from said carcass member, and means to discharge said carcass members from said machine.



**3,930,283**

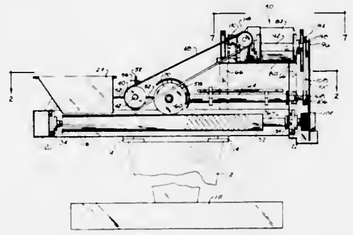
## MACHINE FOR REMOVING SKIN FROM PIECES OF POULTRY

**Eugene G. Martin, Ephrata, Pa., assignor to Victor F. Weaver, Inc., New Holland, Pa.**

**Continuation-in-part of Ser. No. 394,924, Sept. 6, 1973, abandoned. This application Oct. 15, 1974, Ser. No. 514,758**

**Int. Cl.² A22C 21/00**

**U.S. Cl. 17—11** **15 Claims**



1. A poultry processing machine having inlet means adjacent one end and an outlet end adjacent the other end and adapted to remove the skin from parts and pieces of poultry, said machine comprising in combination, a pair of substantially horizontal rolls having spiral configurations thereon extending in opposite directions and positioned adjacent each other in non-contacting relationship and the upper surfaces of said rolls forming a conveying channel to receive adjacent the inlet end of the machine parts and pieces of poultry having skin thereon which is to be removed, means to drive said rolls in opposite rotary directions and operable to move said parts and pieces of poultry along said rolls in a single direction toward the exit end of the machine, and means operable to position said parts and pieces of poultry upon said rolls for engagement of the skin thereon by said spiral configurations on said rolls to effect separation and removal of said skin from said parts and pieces while the same move toward the discharge end of said machine, the peripheries of said configurations being spaced from each other adjacent the inlet end of the machine a distance less than the width of said parts and pieces of poultry to be engaged thereby and at the discharge end being substantially in rolling contact with each other, the space between the configurations on said rolls decreasing substantially uniformly between the inlet and discharge ends of the machine and said space permitting the skin separated from said parts and pieces to pass therethrough in intact condition and the parts and pieces from which the skin has been removed being moved to the discharge end of said machine by said spiral configurations.

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**3,930,284**

## HIDE PULLING METHOD AND APPARATUS

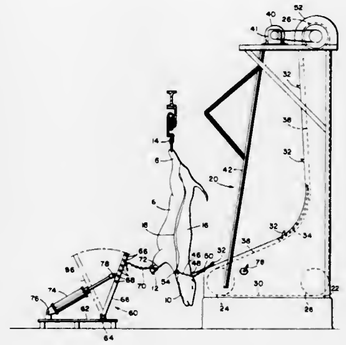
**Frank M. Cook, San Francisco, Calif., assignor to The Cincinnati Butchers' Supply Company, Cincinnati, Ohio**

**Filed Nov. 7, 1972, Ser. No. 304,386**

**Int. Cl.² A22B 5/16**

**U.S. Cl. 17—50** **7 Claims**

1. The method of removing the hide from a meat carcass including a head having the hide slitted lengthwise along the belly, the hide being partially detached from the carcass to provide side flaps disposed along opposite sides of the carcass, including flap portions resulting from peeling the hide from the forelegs, said method comprising the steps of: suspending the carcass from the hind legs with the unskinned head and the skinned forelegs lowermost; gripping the side flaps at opposite sides of the carcass near the forelegs, and forcibly pulling the



hide over and off the head while restraining the forelegs against movement in the direction of the hide pulling force.

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**3,930,285**

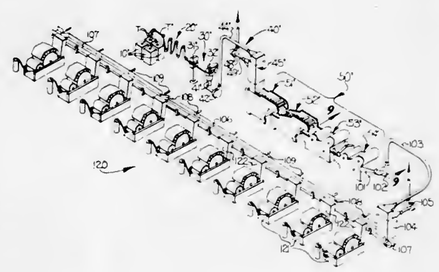
## APPARATUS AND METHOD FOR FORMING STAPLE FIBERS AND FEEDING THE SAME TO A PICKER

**William D. Wornall, Linville, N.C., assignor to Alfred Proctor Aldrich, Jr., Atlanta, Ga.; Aldrich Machine Works, Greenwood and Lummus Industries, Inc., Columbus, both of, S.C.**

**Filed Oct. 24, 1973, Ser. No. 409,054**

**Int. Cl.² D01G 1/04, 9/16**

**U.S. Cl. 19—.56** **21 Claims**



1. Apparatus for processing preformed continuous filament tow positioned in a container comprising a tow cutter for receiving the continuous filament tow from the container and for severing the same into fibrous material of predetermined staple length, and means positioned ahead of said tow cutter for guiding the preformed continuous filament tow from the container to said tow cutter and for aiding in the removal of any folds or entanglements present in the tow upon its removal from the container, a picker having a hopper for receiving the fibrous material from said tow cutter and also having evening means for obtaining a substantially uniform weight of delivery of the fibrous material processed therethrough, means operatively connected to said tow cutter and to the hopper of said picker for feeding the fibrous material from said tow cutter to said picker, and wherein said hopper is provided with means for stopping operation of said tow cutter in response to a predetermined high level of fibrous material being present in said hopper to thereby avoid overfilling said hopper.

### 3,930,286
### FLEXIBLE CONTAINER HAVING VALVE WITH PUNCTURING PLUNGER

Inez Madeleine McGowen, San Rafael, Calif., assignor to United Vintners, Inc., San Francisco, Calif.

Filed Dec. 9, 1974, Ser. No. 530,877
Int. Cl.² B67B 7/26, 7/28
U.S. Cl. 222—83 3 Claims

1. A beverage container-dispenser comprising:
a. a flexible bag having a sealable opening for filling the bag,
b. a valve attached to a wall of the bag, said valve having an operating member capable of movement to a closing position in which it closes the valve and which also during such closing movement serves to puncture the bag, said operating member being also movable to a dispensing position wherein it opens the valve to allow dispensing of beverage from the bag,
c. a support structure having opposed side walls joined at the top and diverging from top to bottom and having a flat bottom joining the lower edges of the side walls and acting as a base to support the structure and bag in upright display and dispensing position and
d. said valve projecting through a wall of the support structure.

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### 3,930,287
### ADJUSTABLE STRAP

Frederick G. J. Grisé; Walter C. Lovell, both of Mountain Road, Wilbraham, Mass. 01067; Ray E. Heck, Pleasant St., Brookfield, Mass. 01585, and Kalman Prescott, Sturbridge, Mass. 01566

Filed Nov. 21, 1974, Ser. No. 525,821
Int. Cl.² B65D 63/00
U.S. Cl. 24—16 PB 6 Claims

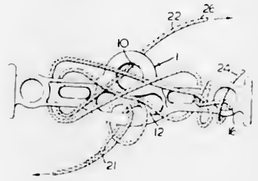


1. An adjustable strap comprising a pair of elongated elastomeric strips,
interengaging means on said strips at corresponding ends providing for longitudinal adjustment of said strips relative to each other and preventing separation of the strips in a direction normal to the lengths of the strips,
elongated series of slanting teeth on each strip, said teeth being complementary to each other and slanting in opposite directions for engagement thereof preventing separation of the strips in a longitudinal direction, the teeth being located on the strips extending inwardly from the ends thereof that have the interengaging means,
the means holding the strips from separation in a direction normal thereto being manually removable to allow adjustment and separation of said strips,
wherein the slanting teeth of one strip extend outwardly from a side surface thereof, the other strip including a longitudinal recess, the slanting teeth of the second strip being located in the bottom of said recess, the projecting slanting teeth being engageable with the teeth in the recess when the two strips are in flat contacting relation.

### 3,930,288
### TOGGLE FOR USE WITH ROPE

Allan Black, and Ralph Somerville, both of Vancouver, Canada, assignors to Poli-Twine Corporation Limited, Saskatoon, Canada

Filed June 18, 1974, Ser. No. 480,377
Claims priority, application Canada, Feb. 6, 1974, 191866
Int. Cl.³ F16G 11/14
U.S. Cl. 24—129 R 8 Claims



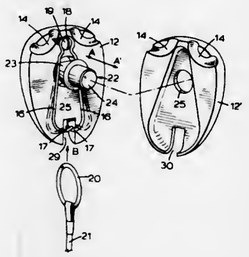
1. A toggle for use in association with rope or twine for the handling of bundled articles or logs, said toggle comprising an elongate body member, said body member being substantially symmetrical about a transverse line of symmetry through the centre thereof, said body member having a first substantially circular hole disposed symmetrically about said line of symmetry and a second hole elongated in shape, also disposed symmetrically about said line of symmetry, the body member further including a pair of outer holes disposed adjacent the ends of the body the ends of said body being terminated by a T-shaped portion.

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### 3,930,289
### COUPLING DEVICE

John W. Singular, 566 Paisley Road, Guelph, Ontario, Canada

Filed Oct. 15, 1974, Ser. No. 515,051
Int. Cl.² A44B 17/00, 19/00
U.S. Cl. 24—201 S 5 Claims



1. A coupling device comprising a housing to which a first member is connectible, opposed resilient closure members mounted in the housing with adjacent end portions of said closure members being urged by the inherent resiliency of the closure members towards a closed condition in which a second member is connectible thereto, and an actuating member mounted on the housing and movable between a first position in which the actuating member permits said adjacent end portions of the closure members to attain said closed condition under the influence of said inherent resiliency of the closure members, and a second position in which the actuating member extends between and is in contact with the closure members to maintain said adjacent end portions thereof in an open condition against the influence of said inherent resiliency of the closure members, the actuating member having opposed cam faces for urging the closure members against said inherent resiliency of the closure members from said closed condition to said open condition of said adjacent end portions of the closure members on said movement of the actuating member from said first position to said second position thereof.

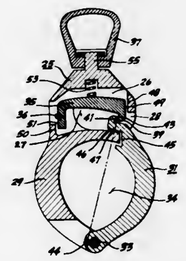


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### 3,930,290
### SNAP-SHACKLE

Theodore F. Mangels, 163 Flower St., Costa Mesa, Calif. 92627

Filed Nov. 22, 1974, Ser. No. 526,325
Int. Cl.² F16G 15/08; B64D 17/38; A44B 13/00
U.S. Cl. 24—241 SB 5 Claims

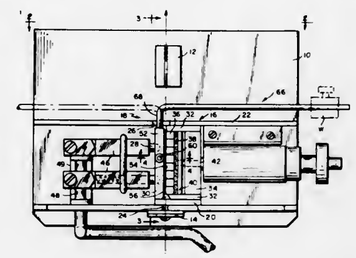


1. A snap-shackle for interconnecting the rigging components of sailing craft comprising:
a body member having a curved projection extending therefrom, said body member having an aperture therethrough, an interior cavity which is peripheral to and opens into said aperture and a passage which extends between said interior cavity and the outer surface of said body;
a trigger latch having one end thereof pivotally attached to said body within said cavity and the other end thereof positioned within said passage, the central portion of said trigger latch extending across a portion of said aperture and being exposed therein, said trigger latch being adapted to be pivoted by inserting an object into said aperture and engaging said central portion of said trigger latch, said other end of said trigger latch having a rounded surface with a notch therein;
a curved rotatable arm having one end thereof rotatably joined to the outermost extremity of said curved projection, the other end of said curved rotatable arm having a rounded surface with a notch therein, said rounded surface of said other end being adapted to enter said passage and engage and slide along said rounded surface of said trigger latch until said notch of said trigger latch engages said notch of said curved rotatable arm whereby said curved rotatable arm is locked in a fixed position by said trigger latch to form an opening between said curved rotatable arm and said body member, said opening being adapted to receive and couple to rigging components of sailing craft, said trigger latch being pivoted by inserting an object in said aperture to disengage said trigger latch from said rotatable arm and to release said rigging components coupled in said opening; and
coupling means attached to said body and oppositely disposed from the juncture of said curved projection and said curved rotatable arm for receiving and coupling to rigging components of sailing craft.

### 3,930,291
### COMBINATION TENSION AND SLUB CATCHING DEVICE

Samuel L. Abbott, Wilton, N.H., assignor to Abbott Machine Co., Inc., Wilton, N.H.

Filed May 6, 1974, Ser. No. 466,982
Int. Cl.² D02J 1/14, 7/00
U.S. Cl. 28—64 4 Claims



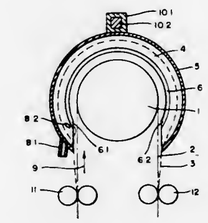
1. Slub catching and tension for processing yarn comprising means for unwinding yarn from a control apparatus package and rewinding it to form a package and means for guiding a portion of the yarn as it travels from one package to the other comprising blocks supported at opposite sides of the path of yarn travel, means yieldably supported by the block at one side, providing a surface extending lengthwise of the path of yarn travel, an eccentric mounted on the block at the other side, an elongate bar mounted on the eccentric for pivotal movement about an axis parallel to the surface of said means at said one side and for adjustment relative thereto to adjust the width of the yarn passage, a lever mounted at the upper end of the bar and extending laterally therefrom relative to said pivot axis for biasing the bar on said axis and means mounting the lever for movement to either side of said axis.

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### 3,930,292
### DEVICES FOR THREADING FILAMENTS ON ROLLERS

Heinz Schippers, and Erich Lenk, both of Remscheid, Germany, assignors to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Wuppertal, Germany

Filed Feb. 3, 1975, Ser. No. 546,600
Claims priority, application Germany, Feb. 8, 1974, 2405990; July 6, 1974, 2432435
Int. Cl.² D02J 1/22
U.S. Cl. 28—71.3 20 Claims



1. In a filament processing apparatus, the combination of a rotatable roller or a series of at least two rotatable rollers for conveying a filament or filaments looped at least partially around the respective roller surfaces, and a tubular roller-threading device embodying a tube through which a filament may be conveyed by a fluid stream flowing in said tube, having at least a curvate portion adjacent said roller(s) and extending over an angle extending substantially approximate to the angle of looping of the filament(s) on the roller(s), said curvate

portion lying in a plane substantially perpendicular to the axis of its continguous roller, and said curvate portion having a longitudinal slot through which a fluid-conveyed filament may be drawn out of said tube when the filament is placed in tension.

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**3,930,293**

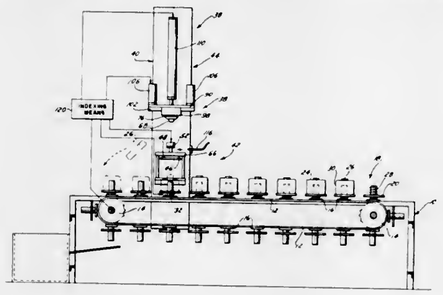
## METHOD OF REPLACING THE TRANSFER CORES OF YARN PACKAGES WITH RESILIENT REPLACEMENT CORES

**Herbert A. Girard, 1025 Woodland Drive, Gastonia, N.C. 28052**

**Division of Ser. No. 276,318, July 31, 1972, Pat. No. 3,833,974, which is a continuation-in-part of Ser. No. 105,920, Jan. 12, 1971, Pat. No. 3,681,007. This application June 27, 1974, Ser. No. 483,814The portion of the term of this patent subsequent to Aug. 1, 1989, has been disclaimed.**

**Int. Cl.² D01H** *9/00*

**U.S. Cl. 28—72 R** **10 Claims**



**1.** A method for transferring a package of yarn supported by a rigid imperforate transfer core to a foraminous, resilient dye core of predetermined diameter comprising, in sequence, the steps of:

a. compressing the resilient core to reduce its size;
b. inserting the resilient core into the transfer core;
c. anchoring the resilient core against axial displacement; and
d. axially removing the transfer core relative to both the package of yarn and the resilient core.

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**3,930,294**

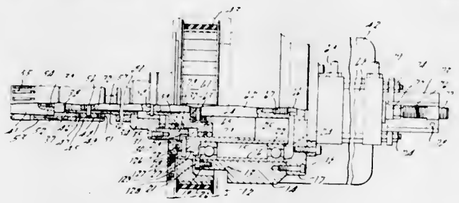
## CYLINDRICAL SURFACE FINISHING DEVICE

**Stuart E. Kalen, Sterling Heights, Mich., assignor to Cogsdill Tool Products, Inc., Farmington, Mich.**

**Filed Jan. 24, 1975, Ser. No. 543,970**

**Int. Cl.² B24B** *39/00*

**U.S. Cl. 29—90 R** **10 Claims**



**1.** In a burnishing tool, a support, a housing on said support, a spindle, bearing means supporting said spindle within said housing for rotation, drive means for rotating said spindle, a burnishing head on the forward end of said spindle having a mandrel and a slotted cage with truncated rollers within the slots, a cylinder, a piston in said cylinder for relatively moving said mandrel and cage to move the rollers into engagement with the surface of a workpiece for applying a predetermined pressure irrespective of variations of diameter of the workpiece, and means for retracting the rollers from engagement with the workpiece.

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**3,930,295**

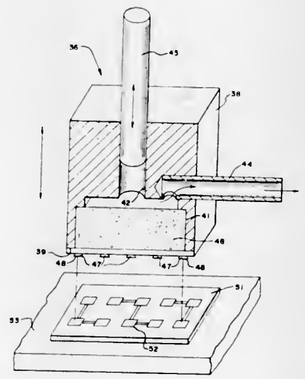
## TOOL FOR FABRICATING DIODE ARRAY

**Ralph E. Rose, San Jose, Calif., assignor to Signetics Corporation, Sunnyvale and Watkins Johnson, Palo Alto, both of, Calif.**

**Filed Mar. 4, 1974, Ser. No. 447,981**

**Int. Cl.² B23P** *19/04*

**U.S. Cl. 29—203 P** **4 Claims**



**1.** In an alignment tool for positioning discrete diodes of the type having diode bond pads so they can be bonded into an array, a semiconductor body having substantially parallel top and bottom planar surfaces, said top surface of the body having a plurality of spaced top recesses formed therein having walls forming alignment surfaces extending from the top surface into the body, wherein said alignment surfaces and said diode body in combination mutually co-act to position said diodes, said recesses being adapted to receive the diode body and having a predefined depth so that the diode bond pads protrude above the top surface of the body, said bottom surface of the body having a plurality of spaced bottom recesses formed therein underlying the top recesses and having walls extending from the bottom surface into the body and intersecting the walls of the top recesses.

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**3,930,296**

## METHOD AND MACHINE FOR LOADING AND ASSEMBLING FILM CARTRIDGES

**James E. Hoover, Binghamton, N.Y., assignor to GAF Corporation, New York, N.Y.**

**Filed July 26, 1974, Ser. No. 491,994**

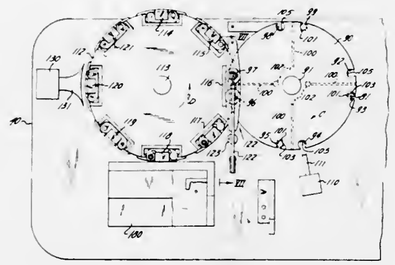
**Int. Cl.² B21D** *39/03*

**U.S. Cl. 29—430** **41 Claims**

**1.** A method of assembling and loading a film cartridge having a bottom portion and a cover for assembly therewith together with a take-up spool and scroll formed of unattached film interleaved with backing paper comprising the steps of:

supplying a web of sensitized film and a web of backing paper in overlying relation to a scrolling station;
severing said webs of film and paper to desired finite lengths;
winding said film and backing paper into a scroll in which the ends of said film and paper are unattached to each other;
attaching a free end of scrolled paper to a take-up spool;
inserting said scroll and take-up spool simultaneously into a scroll chamber and spool chamber of said bottom portion by movement of said scroll and spool axially thereinto;





assembling said bottom portion with said cover to form the cartridge assembly enclosing said spool and scroll within said chambers; and
sealing said cover to said bottom portion in a light tight manner.

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**3,930,297**

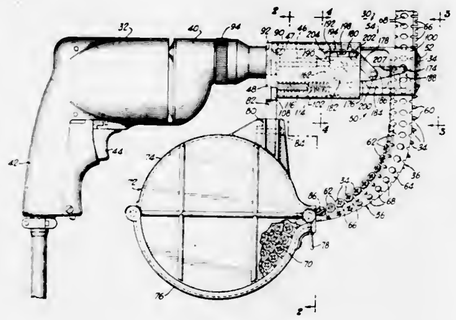
## FASTENER FEED APPARATUS AND METHOD

**Frank R. Potucek, Des Plaines, and Allen R. Obergfell, Park Ridge, both of Ill., assignors to Duo-Fast Corporation, Franklin Park, Ill.**

**Filed Nov. 5, 1973, Ser. No. 412,684**

**Int. Cl.² B25B** *23/04*; **B65D** *85/24*; **B21D** *39/03*

**U.S. Cl. 29—431** **23 Claims**



**1.** In combination with a power screwdriver having a main housing portion and a handle defining an included angle in a plane and having a rotatable bit generally in line with the main housing portion; a fastener feed apparatus comprising:

a strip of fasteners including a coil, each fastener being arranged generally perpendicular to the principal axis of the adjacent segment of the strip;
a magazine enclosing said coil with the coil lying generally in the plane of said angle and within said included angle; a feed mechanism mounted on said main housing portion and including means for sequentially presenting individual fasteners of the strip to a drive position in line with said bit; and
a segment of said strip extending along a curved path between said magazine and said feed mechanism being twisted through a substantial angle.

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**3,930,298**

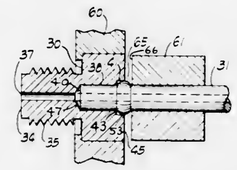
## METHOD OF FORMING A TUBE FITTING ASSEMBLY

**Ralph G. Ridenour, Mansfield, Ohio, assignor to Universal Refrigeration, Inc., Mansfield, Ohio**

**Continuation of Ser. No. 425,561, Dec. 17, 1973, abandoned. This application Mar. 3, 1975, Ser. No. 554,971**

**Int. Cl.² B21D** *39/00*; **B23P** *11/02*

**U.S. Cl. 29—523** **8 Claims**



**1.** A method of forming an assembly of a tubing and a fitting wherein the fitting has a first orifice through a portion of the fitting and a second orifice through a portion of the first orifice with one of the orifices defining an inside surface of the fitting at the end thereof, the fitting having an outside surface surrounding the second orifice comprising, the steps of:

holding the fitting;
holding the tubing;
inserting the tubing into the first orifice of the fitting;
abutting an end of the tubing against the inside surface of the fitting;
relatively moving the held tubing axially toward the held fitting to radially expand the tubing wall into engagement with one of the orifices and to radially expand the tubing wall to extend outwardly from the fitting in proximity to the outside surface of the fitting;
and forcing the tubing extended outwardly from the fitting to engage the outside surface of the fitting surrounding the second orifice.

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**3,930,299**

## METHODS OF AND/OR APPARATUS FOR JOINING TIMBER MEMBERS

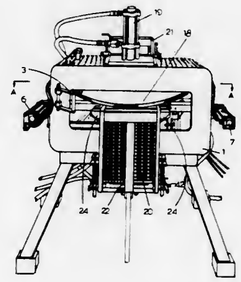
**Lee Charles Farrington, and Edgar Edward Dagley, both of Auckland, New Zealand, assignors to Automated Building Components, Inc., Auckland, New Zealand**

**Filed Nov. 16, 1973, Ser. No. 416,675**

**Claims priority, application New Zealand, Nov. 16, 1972, 169020**

**Int. Cl.² B25C** *7/00*

**U.S. Cl. 29—526** **5 Claims**



**1.** A method of joining timber members comprising the steps of temporarily placing a pair of spiked timber connector plates and holding the connector plates on a pair of spaced, substantially parallel platens, moving a plurality of timber members to desired positions between the platens for joining, rotating the

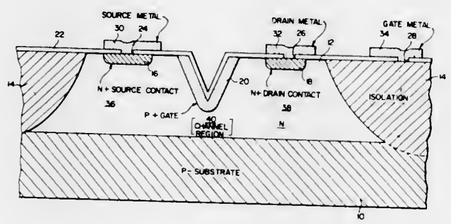
platens to a position where the connector plates are located to span the required joint between the timber members either before or after moving said timber members, pressing said platens towards each other so that the spikes of said connector plates are embedded in opposite faces of said timber members to join together, and retracting said platens leaving said connector plates embedded in said timber members.

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### 3,930,300
### JUNCTION FIELD EFFECT TRANSISTOR

**Hugh Crawford Nicolay, Melbourne, Fla., assignor to Harris Corporation, Cleveland, Ohio**

**Filed Apr. 4, 1973, Ser. No. 347,681**
**Int. Cl.² B01J** *17/00*; **H01L** *29/00*
**U.S. Cl. 29—571** **8 Claims**



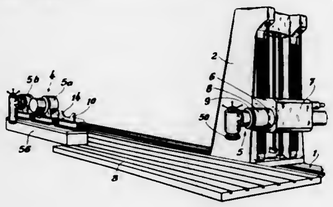

1. A process for fabricating a junction field effect transistor which comprises:
   a. forming a planar surface layer having a [100] crystal orientation of one conductivity type on a substrate of opposite conductivity type, said substrate constituting a first gate;
   b. forming a V-shaped moat concave to said planar surface layer by etching said [100] planar surface, layer and
   c. forming a V-shaped second gate in said planar surface layer contouring said moat of said opposite conductivity type for dividing said planar surface layer into a planar source and a planar drain region connected below said second gate by a channel region.

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### 3,930,301
### HEAVY MACHINE TOOL AND DEVICE FOR DEPOSITING AND PLACING A TOOL HEAD IN READINESS FOR USE

**Hans O. Wagner, Buttgen-Vorst, Germany, assignor to Schiess Aktiengesellschaft, Dusseldorf-Oberkassel, Germany**

**Filed Mar. 19, 1973, Ser. No. 342,697**
**Claims priority, application Germany, Mar. 17, 1972, 2212875**
**Int. Cl.² B23Q** *3/157*
**U.S. Cl. 29—568** **15 Claims**



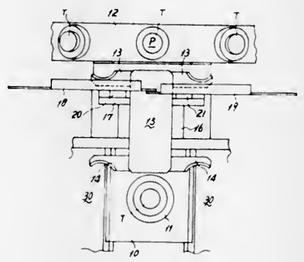
1. A heavy machine tool, especially boring and milling machine, which is adapted to selectively receive one of a plurality of tool heads having machining tool means mounted thereon, said machine tool including: a stand horizontally movable along a bed, a headstock vertically displaceably mounted on said stand, a supporting sleeve slidable in said headstock, a rotary boring spindle drive means having an axis of rotation arranged in said supporting sleeve, a pull rod operable chucking device arranged in said supporting sleeve for respectively driving and chucking a heavy tool head therein, said tool head comprising a housing adapted to be supported by said supporting sleeve and containing tool drive elements engageable with said spindle drive means, the outer peripheral surface of said housing being provided intermediate its ends with a circumferential circular groove located all around in a plane substantially perpendicular to the axis of rotation of said boring spindle, at least one device for the deposit of a tool head in readiness for use, said last mentioned device including a vertically standing holding plate means having an upper edge corresponding in contour to the said circular arc-shaped annular groove of said tool head and having a thickness corresponding to the width of said groove, said plate being adapted to receive and support said tool head by means of said groove, said device being located within the range of movement of the respective stand and tool head whereby the slide by movement with respect to said plate may deposit a tool head directly on said plate or engage a tool head while it is supported by said plate.

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### 3,930,302
### MACHINE TOOL WITH GUARD COVER APPARATUS

**Yoshiki Ochiai, Okazabi; Akira Tsubol, Hekinan, and Yoji Kamiya, Anjo, all of Japan, assignors to Toyoda Machine Works, Ltd., Japan**

**Filed Jan. 8, 1975, Ser. No. 539,513**
**Claims priority, application Japan, Feb. 26, 1974, 49-22989**
**Int. Cl.² B23Q** *3/157, 11/08*
**U.S. Cl. 29—568** **3 Claims**



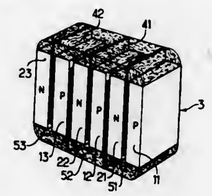
1. A machine tool comprising:
   a tool storage magazine for storing a plurality of radially arranged tools in a horizontal plane and provided with a tool change position;
   a spindle for receiving a tool from said magazine to perform a machining operation;
   a tool change arm for changing respective tools between the tool change position on said magazine and said spindle;
   a pair of guard covers arranged between said tool change position and said spindle and capable of being pivoted in a horizontal plane; and drive means operatively connected with one end of each of said guard covers for normally maintaining said guard covers closed to receive a tool which may accidentally fall from said magazine and for opening said guard covers to permit a tool change operation between said tool change position and said spindle.



### 3,930,303
### METHOD FOR MANUFACTURING COMPACT THERMOELECTRIC MODULES

**Michel Alais, and Andre Stahl, both of Orsay, France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France**

**Filed Jan. 24, 1975, Ser. No. 543,742**
**Claims priority, application France, Feb. 15, 1974, 74.05258**
**Int. Cl.² B01J** *17/00*
**U.S. Cl. 29—573** **1 Claim**



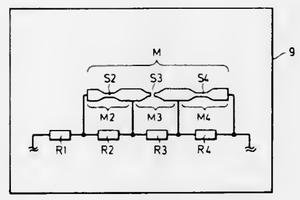

1. In a method for manufacturing thermoelectric modules including: the steps of stacking very thin plates of P type and very thin plates of N type alternately, and connecting each plate of one type to the neighboring plates which are of the other type by connection bridges arranged on the edge of said plates, the improvement comprising the steps of:
   taking a block of P type and a block of N type, these blocks having a parallelepipedical shape and the same dimensions;
   cutting up these blocks parallel to one of their faces into plates of P type and into plates of N type;
   forming a stack by assembling alternately the same number of plates of P type and of N type while inserting between the adjacent faces, insulating sheets which are very thin and have the same dimensions as the plates with the said sheets being arranged so as to be alternately recessed with respect to the plates on one face of the stack and to extend slightly beyond the other face; and
   immersing in brazing material the two opposite faces of the stack beyond which the insulating sheets extend.

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### 3,930,304
### METHOD AND APPARATUS FOR SELECTIVE BURNOUT TRIMMING OF INTEGRATED CIRCUIT UNITS

**Helmut Keller, and Hartmut Seller, both of Reutlingen, Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany**

**Filed Nov. 15, 1973, Ser. No. 416,216**
**Claims priority, application Germany, Nov. 18, 1972, 2256688**
**Int. Cl.² B01J** *17/00*
**U.S. Cl. 29—574** **14 Claims**



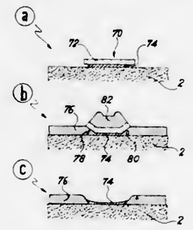

1. A method of burning out a selected conductive connection of an integrated circuit unit having a metallic connection pattern, comprising the step of:
   applying a plurality of individual pulses of electrical energy in rapid succession to a selected portion of said metallic connection pattern constituting a selected conductive connection to be burned out, in such a way as to deliver to said selected connection amounts of energy per unit of time that increase with time until said connection is burned out.

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### 3,930,305
### METHOD FOR MANUFACTURING INTEGRATED CIRCUITS

**Jacques Lacour, Grenoble; Michel Montier, Meylan, and Jean-Pierre Suat, Echirolles, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France**

**Filed June 8, 1973, Ser. No. 368,460**
**Claims priority, application France, June 15, 1972, 72.21657**
**Int. Cl.² B01J** *17/00*
**U.S. Cl. 29—577** **2 Claims**




1. A method for manufacturing integrated circuits, said method comprising the steps of:
   providing a first set of electrically conductive areas on each of those portions of an integrated circuit substrate having doped zones on which electrical contacts are to be made, providing a selective insulating layer by gaseous deposition, so that the upper portions of said conductive areas be flush with the surface of said selective insulating layer, and
   providing thereabove a second set of conductive areas adapted to constitute connections between said upper portions,
   wherein said selective insulating layer is obtained by depositing, on the upper faces of the conductive areas of said first set, a material capable of preventing said insulating layer from adhering to the conductive portions, wherein said conductive areas are made of molybdenum and said selective insulating layer is obtained by submitting said substrate to a gaseous stream containing silane ($SiH_4$) oxygen and hydrochloric gas with sublimation of a small part of the molybdenum preventing formation of silica on the molybdenum areas.

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### 3,930,306
### PROCESS FOR ATTACHING A LEAD MEMBER TO A SEMICONDUCTOR DEVICE

**Monroe B. Goldberg, Huntington Station, and William B. Voorhis, Levittown, both of N.Y., assignors to General Instrument Corporation, Clifton, N.J.**

**Filed Apr. 24, 1974, Ser. No. 463,678**
**Int. Cl.² B01J** *17/00*
**U.S. Cl. 29—588** **27 Claims**

1. A process for attaching a lead member to a semiconductor device comprising the steps of
   A. providing a lead member formed substantially of a thermally and electrically conductive metal and terminating at one end in a joining surface; and a semiconductor device comprising a semiconductor body and a contact member formed of a refractory metal extending outwardly from said body and terminating in a joining surface of said refractory metal spaced from said body;

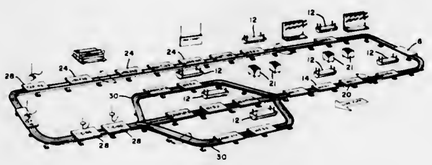
B. placing said joining surfaces of said members in contact with a brazing alloy comprising on a weight basis about 80–89 percent copper, about 5–15 percent silver, and about 4–6 percent phosphorus;



C. heating the brazing alloy at least to its wetting point for a period of time sufficient to melt the brazing alloy; and D. allowing the molten brazing alloy to cool and solidify in contact with said joining surfaces of said members, thereby to join said contact member and said lead member into a unitary structure.

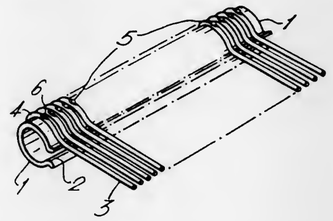
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**3,930,307**
**ASSEMBLY OF WIRING HARNESS**
**Jerome W. Schotthoefer, New Baltimore, and Donald J. Lewis, Troy, both of Mich., assignors to Allied Chemical Corporation, New York, N.Y.**
**Filed July 1, 1974, Ser. No. 484,530**
**Int. Cl.² H01R 43/00**
**U.S. Cl. 29—628** **13 Claims**



1. A method for assembly of components comprising:
collecting the components to be assembled on one of the plurality of non-synchronous independently moving pallets;
moving each pallet from one work station to another work station along an assembly line independently of other pallets;
assembling the components on the pallets at work stations along the assembly line;
electrically testing the partially assembled components at intermediate stages of assembly prior to completion of assembly; and
passing the partially assembled components on the pallets to the next stage of assembly only when the testing has been completed and the components have been shown to be correctly assembled.

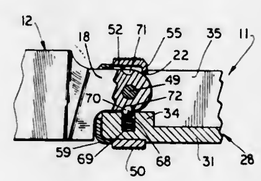
**3,930,308**
**SUBSTRATE CONNECTORS**
**Geoffrey Hector James Munro, Guernsey, Channel Islands, assignor to AMP Incorporated, Harrisburg, Pa.**
**Division of Ser. No. 364,851, May 29, 1973, Pat. No. 3,851,297. This application Sept. 3, 1974, Ser. No. 502,996**
**Int. Cl.² H01R 9/00**
**U.S. Cl. 29—630 R** **4 Claims**



1. A method of manufacturing an electrical connector comprising the steps of providing an elongate spring body having a generally uniform cross-section which is resiliently deformable transversely of the body length, locating a former body beside the spring body whereby the former body extends longitudinally of and projects laterally from the spring body, winding a single layer coil of conductor wire around the spring body and the former body to extend longitudinally in closely spaced turns, bonding the turns to the spring body, cutting the coil longitudinally at turn portions around the former body and spaced from the spring body to separate adjacent turns thereby defining discrete conductive paths disposed in insulating spaced relationship around the spring body and integral lead conductors extending from the turns on the spring body to the cut portion on the former body, and removing the former body from the spring body.

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**3,930,309**
**RING LOCK KNIFE**
**Walter W. Collins, 273 E. Paces Ferry Road, Atlanta, Ga. 30305**
**Filed May 30, 1974, Ser. No. 474,389**
**Int. Cl.² B26B 1/04**
**U.S. Cl. 30—161** **7 Claims**



1. A knife comprising a handle defining a blade slot extending along its length and through an end portion thereof, a pivot pin aperture extending through the slotted end portion of said handle, a blade including an apertured tang, said apertured tang positioned in the blade slot of said handle with its aperture in alignment with said pivot pin aperture, a pivot pin extending through the aperture of said tang and the pivot pin aperture of said handle, said pivot pin being movable along its length and rotatable about its longitudinal axis in the pivot pin aperture of said handle, a slotted ring lock rotatably mounted on and extending about the slotted end of said handle over the ends of said pivot pin, whereby the ring lock confines the pivot pin in the handle and the blade is pivotable about the pivot pin between a closed position where an edge portion thereof is located in the slot of the handle and an open position where it is coextensive with the handle.

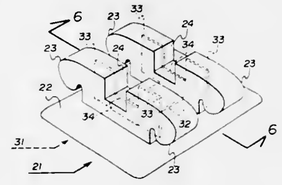


**3,930,310**
**STABLE POWER RING TOOL**
**Ermanno Santilli, Via Virgilio Ramperti 19, Rome, Italy**
**Continuation of Ser. No. 166,783, July 28, 1971, abandoned. This application Feb. 27, 1974, Ser. No. 446,499**
**Claims priority, application Italy, Dec. 11, 1970, 55319/70**
**Int. Cl.² B27B 5/14**
**U.S. Cl. 30—389** **12 Claims**

1. In a manual annular ring tool power saw having a housing for supporting the annular ring tool and a power unit mounted on the housing, an improved ring tool stablization means comprising:
a two-piece ring tool housing interconnected by a pivot means for permitting the two pieces of said housing to pivot toward and away from each other and preload means for urging said two pieces toward each other;
an annular ring tool detachably retained in said housing;
a power unit mounted on one piece of said housing, said power unit having a drive shaft terminated in a drive roller thereon adapted to engage one side of the ring tool to rotate the ring tool about its virtual axis, said drive roller being located relative to said pivot such that workpiece resistance forces produce a torque about said pivot for moving said housing pieces toward each other; and
a ring tool support means mounted on said other housing piece adapted to engage the opposite side of the ring tool, said support means in combination with the drive roller forming the driving pressure applied by the drive roller to the ring tool, said support means being responsive to increases and decreases in workpiece resistance forces for causing said housing pieces to pivot toward and away from each other for increasing and decreasing the driving pressure of the drive roller on the ring tool.

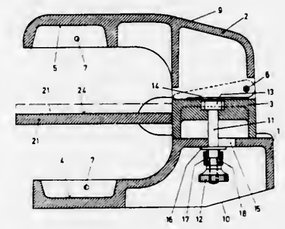
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**3,930,311**
**REINFORCED ORTHODONTIC BRACKET**
**Lawrence F. Andrews, 2025 Chatsworth Blvd., San Diego, Calif. 92107**
**Filed Dec. 20, 1973, Ser. No. 426,487**
**Int. Cl.² A61C 7/00**
**U.S. Cl. 32—14 A** **1 Claim**



1. An orthodontic bracket comprising a non-metallic bracket having a front face and a back side and tie wings;
said back side being adapted to be directly secured to the front face of a tooth by means of an adhesive; and
said front side having a groove recessed therein for the reception of an arch wire;
and the improvement which comprises:
a stiffening core embedded in the material of said bracket, said stiffening core being constructed of a more rigid metallic material than said non-metallic bracket and being embedded in said non-metallic bracket so that at least one edge of said core is exposed and is not covered by non-metallic bracket material and defines at least one portion of the surface of said arch wire groove.

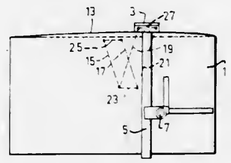
**3,930,312**
**DENTAL ARTICULATOR**
**Hans Daub, Gustav-von-Mevissen-Str. 72, 59 Siegen, Germany**
**Filed Jan. 17, 1974, Ser. No. 434,205**
**Claims priority, application Germany, Jan. 17, 1973, 2302086**
**Int. Cl.² A61C 11/00**
**U.S. Cl. 32—32** **2 Claims**



1. A dental articulator for properly positioning upper and lower artificial dentures relative to each other and relative to an intermediate occlusal plane which is the bite plane when artificial dentures are mounted on the articulator, comprising an upper bracket and a lower bracket for the detachable securement thereto of said upper and lower dentures, respectively, a support on which said upper bracket is pivotally mounted for swinging movement about an axis parallel to said occlusal plane, means adjustably interconnecting said support and said lower bracket for movement of said support and said lower bracket relative to each other in a direction perpendicular to said axis and parallel to said occlusal plane, a plate carried by and extending forwardly from said support and disposed between said upper and lower bracket, said plate having one surface thereof confronting one of said brackets and disposed in said occlusal plane, and means mounting said plate so that when said plate is disposed in one position on said articulator the upper surface of said plate lies in said occlusal plane and when said plate is inverted and disposed in an inverted position in said articulator the undersurface of said plate is disposed in said occlusal plane whereby said occlusal plane may be established relative to an upper set of artificial dentures in said one position of said plate and said occlusal plane may be established relative to a lower set of artificial dentures in said inverted position of said plate.

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**3,930,313**
**DRAWING APPARATUS**
**Lucien Emile Sautereau, 16, Avenue Montaigne, 75008 Paris, France**
**Filed Aug. 19, 1974, Ser. No. 498,870**
**Claims priority, application France, Sept. 14, 1973, 73.33174; July 3, 1974, 74.23188**
**Int. Cl.² B43L 13/02**
**U.S. Cl. 33—79 R** **8 Claims**



1. Drawing apparatus in combination with a drawing board having upper and lower longitudinal edges, left and right lateral edges, and front and rear surfaces, said drawing apparatus comprising a carriage including runner means for travel-

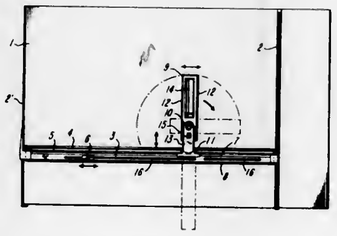
ing on the upper edge of the drawing board, a rail secured to said carriage and extending over said front face of the drawing board parallel to the lateral edges of the drawing board with the runner means on said upper edge, a drafting head with means movably mounting the same on said rail, and a linkage assembly constituted by two interconnected articulated parallelogram linkages, one of said parallelogram linkages having a short arm with means attaching the short arm to the rear surface of the drawing board, the other of the parallelogram linkages having a short arm with means attaching the same to said carriage, each said parallelogram linkage having a second short arm, the second arms of the two linkages being constituted by a common member.

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**3,930,314**
**DRAFTING MACHINE**

**Andrzej Tomasz Iwanicki, Ostrandsvagen 72, S-122 43 Enskede, Sweden**

**Filed Sept. 24, 1973, Ser. No. 399,978**
**Int. Cl.² B43L *13/02***
**U.S. Cl. 33—80** **6 Claims**



1. A drafting machine comprising in combination a main ruler, guiding rails adapted for being stationarily mounted and engaging the ends of said main ruler for guiding same on a drawing board in parallelism with itself, an auxiliary instrument slidably guided on said main ruler in the longitudinal direction thereof, a detachable working edge interchangeable in shape on said main ruler having graduations thereon, an endless graduated band carried by said main ruler in parallel to said working edge, said auxiliary instrument having a first part guided in a groove on said main ruler and a second part, means for pivotally mounting said second part on said first part for pivotal movement from a locked position about a first longitudinal axis parallel to said drawing board and about a second axis perpendicular to said drawing board so that said second part can be pivoted about its longitudinal axis and then rotated to a position on the other side of the main ruler, either for drawing purposes or to expose the entire length of said working edge, a third part of said auxiliary instrument being rotatable on said second part in a plane parallel to the drawing board over which said main ruler is moveable.

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**3,930,315**
**APPARATUS FOR SIZING A DOOR TO FIT A SELECTED DOORWAY**

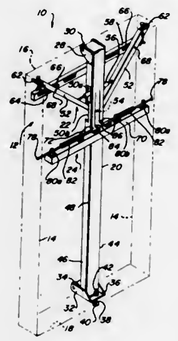
**John L. Baskett, 720 Cottonwood, Fort Collins, Colo. 80521**

**Filed July 8, 1974, Ser. No. 486,443**
**Int. Cl.² E04F *21/00*; B43L *13/02***
**U.S. Cl. 33—194** **11 Claims**

1. Apparatus for sizing a door to fit a selected doorway having a frame with side door jambs and a head door jamb comprising in combination:

a single support member adapted to extend vertically approximately along the center line of a doorway,

information receiving material on said support member extending substantially the entire height of the doorway, tracing means including a pair of follower arms operably connected to said support member for vertical movement therealong substantially the entire height of said doorway, said follower arms being biased away laterally in opposite directions from the support member so as to operatively engage the side door jambs, recording means on said tracing means operably connected to each follower arm for conjoint vertical movement therewith, such that vertical movement of said follower arms will trace the contour of said doorway end conjoint movement of said recording means will continuously record said contour on said information receiving material so that said recorded information can be used to cut the sides of a door to fit the doorway opening.

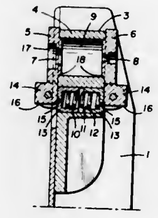


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**3,930,316**
**SIGHTING MEANS OF A FIREARM**

**Paul E. Tellie, St. Etienne, France, assignor to Etat Francais, France**

**Filed May 17, 1974, Ser. No. 470,838**
**Claims priority, application France, June 1, 1973, 73.19960**
**Int. Cl.² F41G *1/08, 11/00***
**U.S. Cl. 33—233** **10 Claims**



1. A firearm comprising a rear sight having a peephole device and a front sight, said peephole device comprising a hollow tube and two peepholes, the two ends of said hollow tube being closed by said peepholes, each of said peepholes having a central circular orifice therein, the orifice on the peephole on the rear side being of a larger diameter than the orifice on the peephole on the front sight side, at least one of the two peepholes is removable, at least one of the two peepholes is pivotally mounted with respect to said peephole device, and an elastic means for selectively holding said pivotally mounted peephole in either a tube-closing or a tube-opening position.

7. A firearm comprising a rear sight having a peephole device and a front sight, said peephole device comprising a hollow tube and four peephole members, each end of said hollow tube being respectively closed by two aligned separate peephole members of said four peephole members, each of said peephole members having a central circular orifice therein, the orifice on one of the peephole members on the rear side being of a larger diameter than the orifice on one of the peephole members on the front sight side.

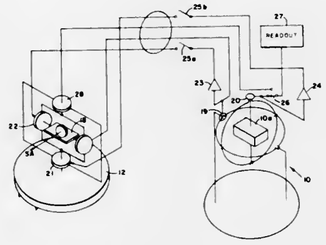


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**3,930,317**
**ELECTRONIC AZIMUTH TRANSFER METHOD AND SYSTEM**

**James V. Johnston, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.**

**Filed May 10, 1974, Ser. No. 468,724**
**Int. Cl.² G01C *19/02***
**U.S. Cl. 33—318** **3 Claims**



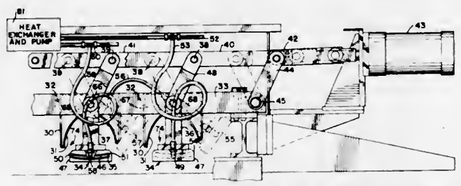
1. An electronic azimuth transfer device for equipment, including an inertial navigator having means providing horizontal and vertical reference outputs; a remote head including a housing, a directional gyro in said housing, means connecting said reference outputs to said remote head, means in said housing connected to said means connecting and to said directional gyro for aligning said directional gyro in accordance with said reference output; means in said housing for determining and providing remote head outputs indicative of the alignment of said directional gyro with respect to said housing; means for displaying; and means for selectively connecting either said reference outputs or said remote head outputs to said means for displaying.

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**3,930,318**
**ULTRAVIOLET CURING MACHINE**

**Ronald B. Stelter, Country Club Hills; Raymond Kulka, Chicago, and Paul J. Kmetty, Bartlett, all of Ill., assignors to Continental Can Company, Inc., New York, N.Y.**

**Filed Apr. 23, 1973, Ser. No. 353,855**
**Int. Cl.² F26B *3/28***
**U.S. Cl. 34—4** **10 Claims**



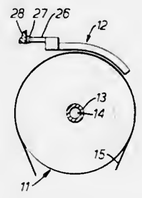
1. A curing machine for ultraviolet setting of printing on metal sheets comprising a housing defining curing and setting chamber, conveyor means for transporting sheets in sequence through said chamber a plurality of ultraviolet radiation assemblies within said chamber side-by-side spaced relation transversely of said conveyor means and opposing said conveyor means for emanating ultraviolet radiation along a predetermined path onto metal sheets carried by said conveyor, and shutter means associated with each assembly for selectively blocking at least a portion of ultraviolet radiation from being directed towards said conveyor, said shutter means including a shutter, and mounting means mounting said shutter for swinging movement between a blocking position between the respective assembly and said conveyor and an inoperative position along the respective assembly, each shutter having a passageway extending from one end of said shutter to the other for the passage of a cooling fluid for said shutter, and means for directing a cooling fluid through said passageway.

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**3,930,319**
**DRYING APPARATUS**

**John Douglas Coleman, Surrey Hills, Australia, assignor to Commonwealth Scientific and Industrial Research Organization, Campbell, Australia**

**Filed Dec. 4, 1974, Ser. No. 529,583. Claims priority, application Australia, Dec. 10, 1973 5935/73; Aug. 23, 1974, 8645/74**
**Int. Cl.² F26B *13/08***
**U.S. Cl. 34—122** **17 Claims**



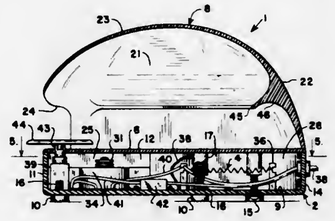
1. Apparatus for drying a travelling web, comprising a web support structure having a surface on which to support a travelling web and a hot air delivery structure mounted adjacent the web support structure to direct hot air against the supported web, wherein at least part of the hot air delivery structure is movable transversely of said surface and the hot air delivery structure is formed to direct air against the supported web so as to produce a surface effect which holds that structure away from engagement with the web.

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**3,930,320**
**NAIL POLISH DRYER**

**Burnis Marie Henderson, 5214 17th, Lubbock, Tex. 79408**

**Filed Dec. 2, 1974, Ser. No. 528,873**
**Int. Cl.² F26B *25/00***
**U.S. Cl. 34—202** **6 Claims**



1. A nail polish dryer comprising:

a. a base having a forward portion and a rearward portion and walls therein defining an air passage therethrough, said base having a top wall and a plurality of spaced apertures in said top wall adjacent side and rear peripheral portions thereof defining an exit for the air passage;

b. an air blower within said forward portion of the base for moving air through the exit of the air passage;

c. a heater within the rear portion of said base for heating the air moving through the exit of the air passage;

d. a hood having a wall mounted on said base at the sides and rear thereof and extending therefrom in covering relation with said base and the exit for the air passage, said hood wall having an opening at the forward portion

of a heighth and width for entrance of at least one hand of a user, said hood wall at the sides and rear being positioned in close proximity with said apertures in said top wall;

e. an air directing member on sides and rear of the hood wall above the apertures in said top wall and extending inwardly therefrom to adjacent nails of fingers of a hand in drying position, said air directing member being continuous with a concave lower surface to direct heated air onto polish on nails of a hand of a user positioned within said hood; and

f. a control switch mounted in said base and having an actuator extending above a forward portion of said top wall of said base and operative to energize said air blower and said heater in response to engagement by the hands of a user.

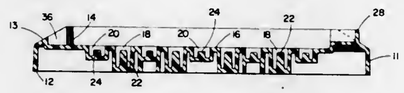
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**3,930,321**

## QUESTION AND ANSWER GAME

**Adolph E. Goldfarb, 4614 Monarca Drive, Tarzana, Calif. 91356, and Erwin Benkoe, 17965 Medley Drive, Encino, Calif. 91316**

**Filed Feb. 10, 1975, Ser. No. 548,831**
**Int. Cl.² G09B *3/06*; A63F *3/00***
**U.S. Cl. 35—9 R** **11 Claims**



1. A toy playing game of educational and entertainment value comprising:

a. a playing board,

b. said playing board having a plurality of apertures formed therein,

c. certain of said apertures having a first type of pin projecting therein,

d. the remaining apertures having a second type of pin projecting therein,

e. a substrate disposable over said playing board and having a plurality of substrate apertures and each of which is alignable with some of the apertures in the playing board,

f. indicia on one portion of said substrate requiring selection of one or more of the apertures on said substrate to conform to the indicia,

g. a probe provided with said game board and capable of being inserted through the apertures in said substrate and into the associated and aligned apertures in said game board, and

h. mechanically shiftable means operatively located within said probe shiftable only upon engagement with said second type of pin to provide visual indication of selection of a proper aperture on said substrate when said probe is inserted into an aperture on said substrate corresponding with an aperture in said game board having said second type of pin projecting therein.

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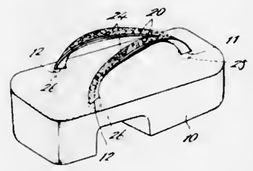
**3,930,322**

## CLOG

**Ichitaro Endo, 1-62 Taikodori, Nakamura-ku; Kenichi Tamano, 2-11 Takeda-cho, Mizuho-ku, and Tadashi Sato, 1-62 Taikodori, Nakamura-ku, all of Nagoya, Aichi, Japan**

**Filed Apr. 14, 1975, Ser. No. 568,146**
**Int. Cl.² A43B *3/12***
**U.S. Cl. 36—11.5** **1 Claim**

1. In a clog comprising a body provided adjacent to one end with a first pair of holes positioned on the opposite sides of the longitudinal axis of said body in proximity to the latter and adjacent to the other end with a second pair of holes positioned on the opposite sides of said longitudinal axis at an angle thereto in proximity to the opposite side edges of said body; and a pair of synthetic resin thongs with the opposite ends of each of said thongs passing through each one of said first and second pairs of holes, respectively, characterized by that each of said synthetic resin thongs has a wider middle section of substantially uniform width and the narrower opposite ends of uniform width passing through each one of said first and second pairs of holes, respectively and the adjacent ends of said pair of thongs passing through said first pair of holes are fused together on the under surface of said clog body



to form a lump having a bluk larger than the dimensions of the associated holes while the ends of said pair of thongs passing through said second pair of holes are fused individually on the under surface of said clog body to form separate lumps larger than the associated holes, said pair of thongs each having a smoothly varying ecliptical configuration in cross-section and a stream-lined configuration in side elevation with the center of said middle section having a maximum thickness from where the thickness reduces smoothly toward the opposite ends of the associated thong.

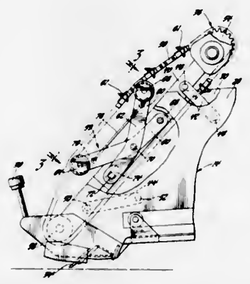
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**3,930,323**

## CHAIN TENSIONING MECHANISM FOR SCRAPER ELEVATOR DEVICE

**Frank C. Marold, Willowick, and James J. Cinadr, Parma, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.**

**Filed Nov. 29, 1974, Ser. No. 527,956**
**Int. Cl.² B06P *1/36*; B65G *23/44***
**U.S. Cl. 37—8** **2 Claims**



1. In combination with a self-loading scraper having a tractor connected by a pull yoke to a trailing scraper bowl, said scraper bowl having an open end defined by a pair of laterally spaced side walls and a transverse cutting blade extending between the side walls, an elevator device located between and carried by the side walls of said scraper bowl, said elevator device comprising a frame, a drive sprocket wheel rotatably supported at the upper end of said frame, an idler sprocket wheel rotatably supported at the lower end of said frame, an endless chain having a plurality of transverse flight members connected thereto and being entrained about said drive sprocket wheel and idler sprocket wheel, a mechanism carried by said frame for tensioning said chain and having a pair of guide rollers engaging said endless chain, said mechanism being located between said drive sprocket and idler sprocket wheel and including a pair of arms pivotally interconnected in a scissors fashion, each of said arms having an inner end adjacent said frame and an outer end adjacent said chain, said pair of guide rollers being rotatably supported by the outer ends of said pair of arms, means pivotally connecting the inner end of one of said pair of arms to said frame, means supporting the inner end of the other of said pair of arms on said frame for sliding movement, and adjusting means extending between and interconnecting said arms for moving said guide rollers towards each other so as to increase the tension of said chain.



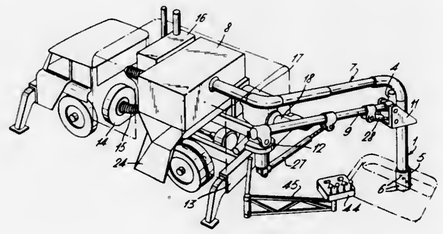
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**3,930,324**

## MECHANICAL EXCAVATING MACHINES INCLUDING ROTARY CUTTER AND SUCTION TUBE

**David Douglas Wightman, Whitley Bay; Edward Anthony Ward, Leighton Buzzard, and Timothy John Eastham Miller, Shipley, all of England, assignors to British Gas Corporation, London, England**

**Filed May 6, 1974, Ser. No. 467,481**
**Int. Cl.² E02F *3/88***
**U.S. Cl. 37—189** **10 Claims**



1. A mechanical excavating machine comprising a rotary cutting tool which is capable of cutting through compacted soil, hard core and like materials, a suction tube having an inlet opening adjacent to the cutting tool, a suction device for applying suction to the tube remote from the inlet opening to cause material cut away by the cutting tool to be sucked inwards through the inlet opening, and a driving mechanism for rotating the tool, the cutting tool and part at least of the suction tube being carried on a mounting which is adapted for movement in horizontal and vertical directions, the inlet opening of the suction tube being nonrotatable, the rotary cutter being mounted for rotation about said inlet opening, and the axes of the cutter and suction tube being coincident and vertical, said cutter being provided with a sensor means for providing a signal for signifying the approach of the cutter to a buried metallic object, said sensor means comprising an electro-magnetic metal detector which includes at least three coils mounted on said cutter, at least one of which said coils is an exciter coil and at least one of which said coils is a receiver coil, means for supplying alternating current to said exciter coil and a detector for detecting any change in the net signal induced in the receiver coil.

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**3,930,325**

## STEAM IRON SOLEPLATE CONSTRUCTION

**Robert L. Schaeffer, Brockport, N.Y., and Kaj Toft, Upland, Calif., assignors to General Electric Company, Bridgeport, Conn.**

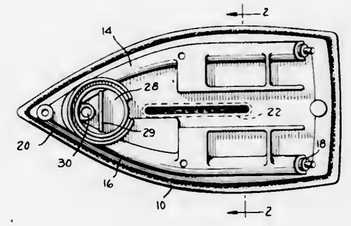
**Filed July 24, 1974, Ser. No. 491,463**
**Int. Cl.² D06F *75/06*, *75/18***
**U.S. Cl. 38—77.83** **8 Claims**

1. A steam iron soleplate, steam generator, and distributor subassembly comprising,

a relatively thin soleplate,

a cover-plate spaced from and supported on said soleplate by spaced rib means defining steam distributing passage means therebetween,

the cover-plate being integrally attached to the soleplate by a continuous weld between the ribs and soleplate,



steam generating means in the coverplate connected to said steam passage, and

heat generating means forming part of said coverplate,

whereby heat transfer is from said generating means to the soleplate through said ribs and weld primarily by conduction therethrough.

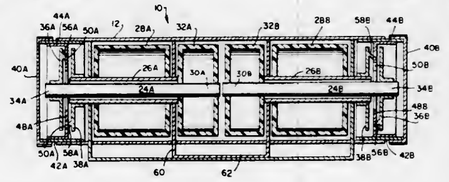
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**3,930,326**

## DESK CALENDAR

**Anthony G. Rosa, 216 Post Ave., Lyndhurst, N.J. 07071**

**Filed June 14, 1974, Ser. No. 479,375**
**Int. Cl.² G09D *3/06***
**U.S. Cl. 40—114** **3 Claims**



1. A desk calendar comprising:

a. a frame means;

b. a shaft supporting means disposed within said frame means;

c. a first shaft rotatably supported by said supporting means;

d. a first sleeve in operable communication with said first shaft;

e. a first drum fixed to said first sleeve and bearing discrete day of the week indicia on its periphery;

f. a second drum in operable communication with said first shaft and bearing discrete integers in seriatim on its periphery;

g. a second shaft rotatably supported by said shaft supporting means, in axial alignment with said first shaft;

h. a second sleeve in operable communication with said second shaft;

i. a third drum fixed to said second shaft and bearing discrete integers in seriatim on its periphery;

j. a fourth drum in operable communication with said second sleeve and bearing discrete month of the year indicia on its periphery;

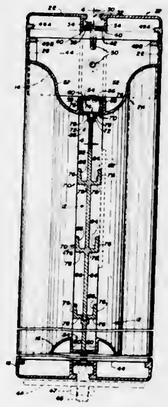
k. a plurality of windows in said frame means for denoting the day, date, and month each of said drums being in alignment with a separate one of said plurality of windows;

l. a pair of dialing members attached to said frame means and limited to rotational movement therein, one of said dialing members in communication with said first shaft and the other of said dialing members in communication with said second shaft for independently operating said first and second shafts, respectively; and

m. a pair of actuating means limited to rotational motion, one of said actuating means in communication with said first shaft to permit the rotation of said first drum when said dialing member is rotated in one direction with said second drum remaining stationary and causing the rotation of said second drum when said dialing member is rotated in the opposite direction with said first drum remaining stationary, said other actuating means in communication with said second shaft to permit the rotation of said third drum when said dialing member is rotated in one direction with said fourth drum remaining stationary and causing the rotation of said fourth drum when said dialing member is rotated in the opposite direction with said third drum remaining stationary.

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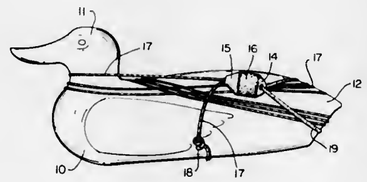
**3,930,327**
**SIGNBOARD ASSEMBLY**
**Stanley Friedman, Lancaster, Pa., assignor to Banner Board Company, Lancaster, Pa.**
**Filed Nov. 7, 1974, Ser. No. 521,733**
**Int. Cl.² G09F** *7/08*
**U.S. Cl. 40—125 R** **6 Claims**



1. A signboard assembly comprising in combination:
a rectangular frame including top, bottom, and a pair of end frame members, each of said frame members including an inner portion provided with a first channel of relatively large width and a second channel disposed in the first channel, the second channel having a relatively small width; and
a plurality of juxtapositioned free floating horizontally extending signboard members confined within and supported by said rectangular frame, without mechanical locking means each of said signboard members including a principal vertically extending structure having opposed parallel vertical sidewalls;
groove forming means which define a vertically extending mounting groove having independant generally parallel sidewalls approximately in line with said opposed parallel vertical sidewalls; and
a plurality of equally vertically spaced apart mounting rib means;
the upper edge of said signboard member including an upper one of said plurality of vertically spaced apart mounting rib means and said groove forming means; and
said plurality of spaced apart mounting rib means including L-shaped members having a vertical leg and a lower horizontal leg, the end of the horizontal leg remote from the vertical leg of said upper one of said plurality of vertically spaced apart mounting rib means being integral with an upper portion of the groove forming means, and the end of each horizontal leg remote from the associated vertical leg of the plurality of vertically spaced apart mounting rib means disposed below said upper one of the vertically spaced apart mounting rib means being integral with a side of the principal extending structure;
the upper edge of the uppermost signboard member being received within the first channel of the top frame member for free floating movement, the lower end of the principal vertically extending structure of the lowermost signboard member being received within the second channel of the bottom frame member for free floating movement, and a lower adjacent signboard member receiving the lower end of the principal vertically extending structure of the upper adjacent signboard member within its groove forming means for free floating movement.

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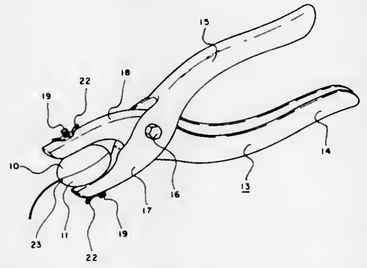
**3,930,328**
**ANCHOR AND ADJUSTABLE TIE-LINE FOR FLOATABLE DECOYS**
**Eugene W. Knuth, Land O'Lakes, Wis. 54540**
**Filed July 16, 1973, Ser. No. 379,830**
**Int. Cl.² A01M** *31/06*
**U.S. Cl. 43—3** **4 Claims**



1. A floatable decoy and anchor therefor, the combination comprising:
a weight;
a tie-line having one loop disposed over said weight;
an elastic band tautly overlying said weight and said tie-line loop;
said tie-line having two ends, both ends of which extend outwardly from said band;
the first end of said tie-line terminating in a knot; and
the second end of said tie-line being attached to said decoy.

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**3,930,329**
**BAIT MOLDING DEVICE**
**John B. Burkhardt, 429 Woodbine Ave., Westville, N.J. 08093**
**Filed Aug. 22, 1974, Ser. No. 499,631**
**Int. Cl.² A01K** *97/00*
**U.S. Cl. 43—4** **4 Claims**

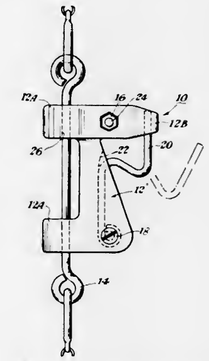


1. A bait molding device for forming and securing moldable bait material such as bread dough about a fishhook comprising:
a hollow mold formed of two cup shaped mold sections, each having complementary thin mold engaging edges;
means for supporting the mold sections for movement between open and closed positions; and
a groove in one of the mold engaging edges adapted to accommodate a fishing line whereby the mold sections may be forcibly closed upon a fishhook surrounded by moldable bait material placed between the mold sections to compress and secure the bait upon the hook.



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**3,930,330**
**OUTRIGGER FISHING LINE RELEASE CLIP**
**Albert David Black, P. O. Box 3172, Marathon Shores, Fla. 33052**
**Filed Jan. 31, 1975, Ser. No. 546,100**
**Int. Cl.² A01K** *97/12*
**U.S. Cl. 43—17** **2 Claims**

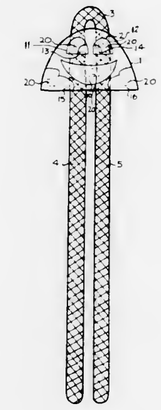


1. A fishing line release clip which is attachable to an outrigger line comprising:
a body portion, said body having a channel longitudinally disposed adjacent one side edge with the center of gravity of said body being disposed away from the axial line of said channel, said body including on the opposite side edge a bifurcated pair of arms and a lateral side groove, said bifurcated arms and groove lying in the same plane being the plane of the body itself;
an outrigger attaching wire connected through said body channel;
a fishing line releasing arm pivotally connected at one end within said lateral groove portion of said body with the opposite end being removeably engageable between said bifurcated arms; and
tensioning means coupled between said bifurcated arms for providing adjustable tension force between said arms.

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**3,930,331**
**TOY FOR KNOT TYING**
**Janet A. Simeone, 7067 Devon Way, Berkeley, Calif. 94705**
**Filed Feb. 14, 1974, Ser. No. 442,417**
**Int. Cl.² A63H** *33/00*
**U.S. Cl. 46—1 R** **8 Claims**

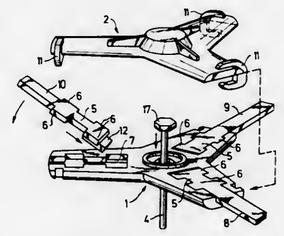
1. An educational doll toy for encouraging practice in knot-tying, comprising:
a long open loop of highly flexible material, held together in the general form of a thick rope, said loop having a bend in the middle so as to provide legs of substantially equal lengths, and
a soft cushion body through which the legs of said rope loop pass and to which said rope loop legs are fastened in such a way that the closed end of the loop forms a short handle of the same material as the legs and integral therewith and the greater part of the legs of the loop dangle from the edge of the cushion body opposite to the edge from which the handle protrudes, the dangling portion of the length being of sufficient length, and being sufficiently limp, for the tying of a full bow knot therewith;



said cushion body having a countour composed of a substantially straight portion from which the loop legs dangle and an arcuate portion from the middle part of which the handle-forming closed loop end protrudes, which contour provides said body with a roughly half-moon cushion shape.

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**3,930,332**
**AIRFOIL ROTOR FOR A TOY HELICOPTER**
**Uwe C. Seefluth, Klingberg, Germany, assignor to Markes & Co. KG., Germany**
**Filed Feb. 19, 1974, Ser. No. 439,083**
**Claims priority, application Germany, Feb. 2, 1973, 2305855**
**Int. Cl.² A63H** *27/12*
**U.S. Cl. 46—75** **11 Claims**

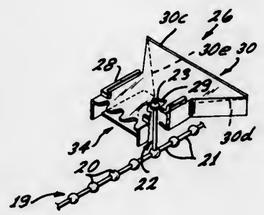


11. A rotating wing assembly for free flying toy helicopters comprising:
a blade having a shaped rear portion,
upper and lower rotor hubs,
said lower rotor hub being adapted to receive the shaped rear portion of said blade,
said upper rotor hub having connecting members adapted to releasably engage said lower rotor hub when said upper rotor hub is placed in contact with said lower rotor hub and rotated with respect to said lower rotor hub about the axis thereof so as to lock said upper and lower rotor hubs together and said blades within said assembly.

## 3,930,333
## COUPLING MEMBER FOR A TOY VEHICLE DRIVE SYSTEM

Nicholas De Anda, Redondo Beach, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Dec. 12, 1974, Ser. No. 531,949
Int. Cl.² A63H 11/10
U.S. Cl. 46—202 7 Claims




1. In combination with a toy vehicle, a device for coupling said toy vehicle to an external drive system comprising:

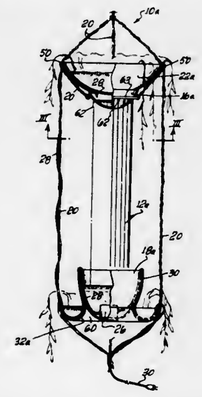
coupling means attached to said toy vehicle, said coupling means having an exaggerated triangularly-shaped portion for retaining a part of said external drive system to facilitate driving of said toy vehicle upon actuation of said external drive system, said exaggerated triangularly-shaped portion being located on the underside of said coupling means and comprising:

1. a side wall located in proximity of the front end of said coupling means, said side wall having a raised portion, a front section, and a rear curve section;
2. a rear side curved wall; and
3. a slot located between said rear curve section and said rear side curved wall, the width of said slot being defined by the respective locations of said rear curve section and said rear side curved wall.

## 3,930,334
## HANGING APPARATUS FOR FALLS AND HANGING PLANT

Ervin F. Johnston, 7406 Stoneview Court, San Diego, Calif. 92119

Filed May 20, 1974, Ser. No. 471,661
Int. Cl.² A01G 9/02; A47G 7/02; B05B 17/08; F21P 7/00
U.S. Cl. 47—35 14 Claims

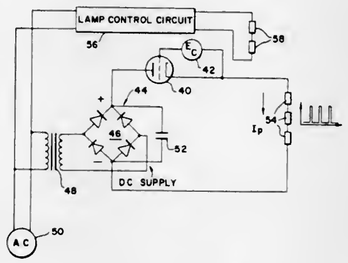



1. A hanging waterfall and plant apparatus comprising: a pair of water receptacles; flexible means supporting and hanging the water receptacles in respective top and bottom positions with the top water receptacle hanging substantially directly above the bottom water receptacle; the top water receptacle having a plurality of openings therein for releasing water vertically downward in a free fall into the bottom water receptacle, the bottom water receptacle correspondingly shaped to the free fall of the water to provide an area for catching free falling water from the top water receptacle so as to enable a multiple waterfall effect; and flexible support means of the hanging apparatus located clear of the space where the water will fall so that the water will fall freely from the top water receptacle to the bottom water receptacle; at least one plant receptacle which is capable of supporting a hanging type plant; said flexible means also supporting and hanging the plant receptacle centrally above and superjacent with respect to the top water receptacle; the plant receptacle having an outermost lateral periphery which is larger than the outermost lateral periphery of the top water receptacle so that a hanging plant can extend over said periphery of the plant receptacle and drape in space which is outward from the periphery of the top water receptacle; and fluid transfer means for fluid communication between said bottom and top water receptacles only, including pump means; the plant receptacle not in fluid communication with said water receptacles, whereby upon pumping water from the bottom water receptacle to the top water receptacle a waterfall and a hanging plant can be displayed in combination without interfering with one another.

## 3,930,335
## PLANT GROWTH SYSTEM

Don F. Widmayer, Bethesda, Md., assignor to Controlled Environment Systems, Inc., Rockville, Md.

Continuation of Ser. No. 346,903, April 2, 1973, abandoned.
This application Sept. 18, 1974, Ser. No. 507,152
Int. Cl.² A01G 7/00
U.S. Cl. 47—58 1 Claim



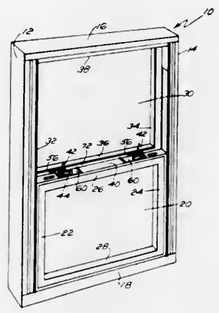

1. A method of growing higher order plant life under controlled conditions comprising using an active electronic source to pulse on and off first and second groups of lamps each comprising a plurality of gas discharge lamps operating in the arc discharge region, so as to provide the plant life being grown with controlled bursts of radiant energy within the spectral ranges required for photosynthesis, said first group of lamps being driven so as to produce a spectral energy distribution only in the blue energy band of the photosynthetic absorption curve for the plant life being grown and said second group of lamps being driven so as to provide a spectral energy distribution only in the red energy band of the photosynthetic absorption curve for the plant life being grown, said method further comprising controlling the duration of the blue energy band and red energy band pulses and the time delay between said pulses so that separation of the effects of the said pulses on the photosynthetic process of the plant life being grown is provided, at least one pulse of one band being interspersed with pulses of the other band.



## 3,930,336
## WINDOW CONSTRUCTION

Nicola Ruggieri, Jr., 44 Rhode Island St., Cranston, R.I. 02920

Filed Oct. 15, 1974, Ser. No. 515,099
Int. Cl.² E05D 15/22
U.S. Cl. 49—161 1 Claim



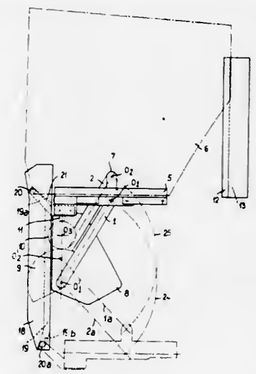

1. A window construction comprising upper and lower sashes slidably mounted in a surrounding jamb, each sash comprising a pair of spaced side stiles and upper and lower stiles extending therebetween, said lower sasy being pivotally mounted for tilting movement to an open position, latch means mounted on the top surface of the upper stile of said lower sash, and bail-like retaining means mounted on the lower stile of said upper sash, means pivotally mounting said latch means for movement between a first inoperative position and a second position wherein said latch means interengage said retaining means to lock said sashes against vertical sliding movement, and means for limiting the tilting movement of said lower sash, said limiting means comprising a strap member having one end pivotally mounted on the top surface of the upper stile of said lower sash by the same aforesaid means that pivotally mount said latch means thereon, whereby said strap member may be selectively pivotally moved between an inoperative position wherein it extends longitudinally along said upper stile, to an operative position wherein it extends perpendicularly from said upper stile, said strap member being of flexible metallic construction and having a hook-like extremity adapted to releasably interengage with said bail-like retaining member when the strap is in its operative position to limit tilting movement of said lower sash, and means on said upper stile for limiting pivoting movement of said strap member to a position approximately perpendicular to said upper stile whereby to facilitate and expedite alignment of said strap member with said retaining means.

## 3,930,337
## WINDOW REGULATORS FOR MOTOR VEHICLES

Marcel Quesnel; Bernard Julou, both of Billancourt, France, assignors to Regie Nationale des Usines Renault, Billancourt; Automobiles Peugeot, Paris, both of France

Continuation of Ser. No. 411,441, Oct. 31, 1973. This application Mar. 13, 1975, Ser. No. 558,133
Claims priority, application France, Nov. 17, 1972, 72.40915
Int. Cl.² E05F 11/52
U.S. Cl. 49—227 5 Claims

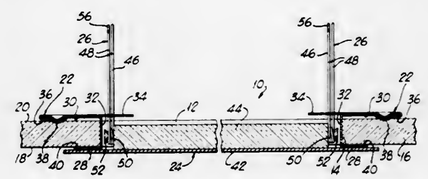
1. In a window regulator or winder for motor vehicles, of the type comprising a curved window, a glass-supporting bottom channel, a pair of movable parallel links incorporated in a parallel motion system and having one end pivotally fixed to said glass-supporting bottom channel, a front run channel and a rear run channel in which said window is movable by means of a pinion-crank and gear mechanism, the front run channel being rigid with a guide rail having a radius of curvature in a vertical plane matching that of said window and having upper and lower end portions inclined to the vertical with unequal angles, the upper end portion being inclined upwards and the lower end portion being inclined downwards, said end portions being interconnected by a curved portion having said radius of curvature in said vertical plane, said rail reproducing the combined longitudinal and transverse movements of said glass-supporting bottom channel, and a rolling member carried by said glass-supporting bottom channel engaging said guide rail rigid with said front run channel, one of said links having one end pivoted to a fixed point of said glass-supporting bottom channel and the other end pivoted to a pivot pin of a fixed plate supporting the control mechanism, the other link being rigid with a rotary member operatively connected to the control mechanism and pivoted on one side through a rolling member to the glass-supporting bottom channel and on the other side to a pin rigid with said plate.



## 3,930,338
## ACCESS DOOR

Ronald A. Rood, Schaumburg, Ill., assignor to Arelco, Incorporated, Bridgeview, Ill.

Filed Feb. 4, 1974, Ser. No. 439,430
Int. Cl.² E05C 21/02; E04F 19/08
U.S. Cl. 49—465 7 Claims




1. A removable access door assembly for covering an opening in a wall panel, said access door assembly comprising in combination:

a first member mounted on a first side of said opening and a second member mounted on a second side of said opening, said second side being opposite said first side, and said members not being connected;

each member including flange means for securing said member to the wall panel surface;

a cover plate mounting means supported on each of said members;

a cover plate dimensioned larger than said opening and adapted completely to overlie said opening and said flange means of said members; and

a pair of cover plate fastening means extending from the inner surface of said cover plate and engageable with said

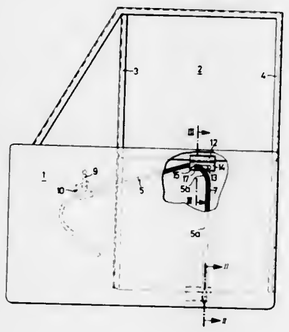
mounting means for interconnecting said door member and said members.

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**3,930,339**
**WINDOW REGULATOR, ESPECIALLY FOR AUTOMOBILES, WITH A THREADED CABLE MOVING IN A GUIDE**

**Horst Jander, Heusenstamm, Germany, assignor to Rockwell-Golde, GmbH, Frankfurt, Germany**

**Filed June 20, 1974, Ser. No. 481,395**
**Claims priority, application Germany, June 29, 1973, 7324139**
**Int. Cl.² E05F** *11/48*
**U.S. Cl. 49—352** **4 Claims**



**1.** In a window regulator, especially for automobiles, in which the window is connected to a drive by a cable capable of moving axially in a tubular guide, a portion of which guide extends parallel to the window path and in an arc adjoining thereto, whereby the path of a catch secured to the cable and serving for connecting to the window is not restricted to the section of the tubular guide which is oriented parallel to the window path, but extends at least partially over the region of the arc, and wherein the connection between the catch and the window comprises a bracket having a slide-guide extending transversely to the window path, the improvement including a slide-block slidably and non-rotatably disposed in the slide-guide, a cylindrical passage through the slide-block, a cylindrical bolt disposed in the passage, the bolt being fixedly and non-rotationally secured to the catch, and the bolt having an annular shoulder for limiting axial displacement between the slide-block and bolt.

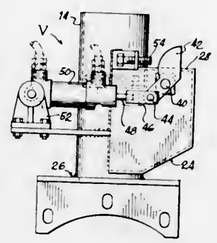
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**3,930,340**
**SHOT CONTROL VALVES**

**Alsan Williams, 37 Briarlands Avenue, Sale, Cheshire, England**

**Filed Aug. 12, 1974, Ser. No. 496,382**
**Claims priority, application United Kingdom, Dec. 14, 1973, 58140/73**
**Int. Cl.² B24C** *7/00*
**U.S. Cl. 51—12** **5 Claims**

**1.** In an abrasive blasting machine in which a magnetically attractable abrasive material is fed from a supply to a blasting member through a feed passage, a valve member mounted in cooperation with the feed passage for movement between closed position across the feed passage and open position out of the path of the feed passage, said valve member comprising a plate formed of magnetized material having a cross-section generally corresponding to the cross-section of the feed passage but having a cross-sectional area less than that of the feed passage to provide a spaced relation about the valve member when in closed position, but which becomes filled to close the passage by abrasive material which is attracted to the valve



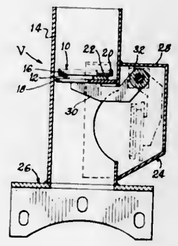


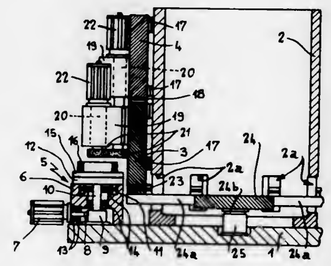
plate to close the passage, and means for movement of the valve member between open and closed positions.

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**3,930,341**
**UNIVERSAL VERTICAL GRINDING MACHINE**

**Marcel Neuman, 8 Avenue des Peupliers, Embourg, Belgium**

**Filed Feb. 1, 1974, Ser. No. 438,770**
**Int. Cl.² B24B** *5/06, 17/00*
**U.S. Cl. 51—89** **13 Claims**



**1.** Universal vertical truing apparatus, comprising, in combination:

a horizontal base supporting at least one workpiece carrier device;

a vertical column centered on the base;

at least one collar rotatably mounted with reference to the column and provided with at least one head comprising a grinder-carrier spindle supporting a grinder adjacent the workpiece carrier device;

means for effecting axial sliding of the collar along the column in a reciprocating manner;

means separate from the means for effecting for rotating the collar about the column; and

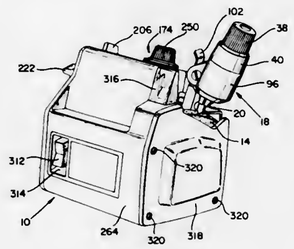
means for controlling the movements of the collar.



**3,930,342**
**SHARPENER FOR TWIST DRILLS**

**Robert Gordon Moores, Jr., Cockeysville, and Richard Eugene Walton, II, Baltimore, both of Md., assignors to The Black and Decker Manufacturing Company, Towson, Md.**

**Filed Apr. 1, 1974, Ser. No. 456,946**
**Int. Cl.² B24B** *3/28*
**U.S. Cl. 51—94 R** **30 Claims**



**1.** An apparatus for grinding twist drills or the like comprising:

a rotary abrasive member;

means to fixedly hold the twist drill or the like with a leading end of the twist drill in contact with the surface of the rotary abrasive member; and

means to guide the holding means for spiral motion about an axis generally parallel to said surface of the rotary abrasive member;

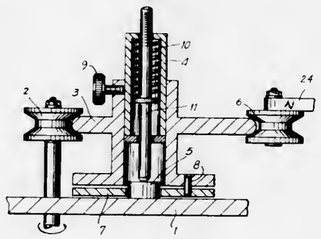
said spiral motion including oscillation about and straight line reciprocation along said axis.

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**3,930,343**
**DEVICE FOR MOUNTING SPECIMENS**

**Detlef Welsch, Rathenow-Ost, and Horst Waschull, Rathenow, both of Germany, assignors to VEB Rathenower Optische Werke, Rathenow, Germany**

**Filed Mar. 4, 1974, Ser. No. 447,684**
**Int. Cl.² B24B** *37/04*
**U.S. Cl. 51—131** **7 Claims**



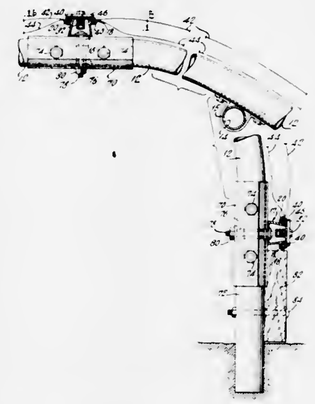
**1.** A device for mounting specimens for the purpose of lapping, grinding and polishing metallographic specimens for microscopic analyses, comprising: a housing; a rotatable polishing wheel therein; a driving roller disposed centrally with respect to said wheel; at least one specimen holder disposed above said wheel, for receiving specimens therein to be ground and polished by a surface of said wheel; at least one supporting roller, associated with said housing, for said specimen holder; said driving roller and said supporting roller having wedge grooves therein, engaged by a peripheral edge portion of said specimen holder at spaced-apart locations; said wedge grooves and said edge portions constituting members of a frictional drive, for rotating said specimen holder; and at least one adjustable pressing member in the latter for exerting pressure on the associated specimen, and also for maintaining proper contact between said members of the frictional drive; wherein said at least one pressing member includes a slidable portion, means for immobilizing said slidable portion in various operative positions, a pressing bolt within said slidable portion in contact with the specimen, for exerting pressure thereon, and means for biasing said bolt toward the specimen, and also the associated specimen holder toward said wedge grooves of the respective rollers, by the intermediary of said pressing member.

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**3,930,344**
**PLASTIC COVERED BUILDING STRUCTURES**

**Charles C. Gahler, West Long Branch, N.J., assignor to X. S. Smith, Inc., Red Bank, N.J.**

**Continuation of Ser. No. 212,069, Dec. 27, 1971, Pat. No. 3,791,076. This application Dec. 26, 1973, Ser. No. 428,603. The portion of the term of this patent subsequent to Feb. 12, 1991, has been disclaimed.**
**Int. Cl.² E04B** *1/315*
**U.S. Cl. 52—2** **8 Claims**



**1.** A plastic covered building structure comprising a plurality of rafter members positioned in spaced apart relationship, a rail secured to said rafter members and extending the length of the building structure, said rail having outer, inner and side surfaces, two concave portions integral with and oppositively disposed on either side of said rail, two clamping rods, each of said rods received in one of said concave portions and extending the length thereof, means provided and operative at any point along the length of said rail for clamping said rods into said concave portions, two superimposed plastic sheets secured along one of their margins between one of the concave portions of the rail and the complementary rod, means for securing the opposite margins of the superimposed plastic sheets to each other and to the structure, the central portion of said superimposed plastic sheets being inflated to thereby space them apart.

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**3,930,345**
**MOBILE HOME RESILIENT FROST HEAVE COMPENSATORS**

**Richard H. Kurzenberger, 217 Sing Sing Road, Horseheads, N.Y. 14845**

**Filed Jan. 31, 1975, Ser. No. 545,983**
**Int. Cl.² B61D** *45/00*; **E02D** *27/50*; **F16F** *1/44, 3/08*
**U.S. Cl. 52—23** **4 Claims**

**1.** A frost heave compensator for mobile homes and the like generally employing longitudinally spaced tiedowns disposed transversely across the top thereof and extending vertically

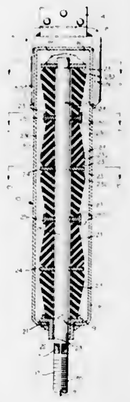
downwardly on opposite sides thereof, said frost heave compensator comprising:

a. a tubular vertically disposed outer shell closed at its upper end and centrally apertured at its lower end whereby to freely accommodate a tension rod through said lower end,

b. a transverse inverted U-shaped bracket secured to the upper end portion of said outer shell whereby to admit of securement of the upper end of a frost heave compensator to the lower end of a conventional tiedown,

c. the upper end of said tension rod having a combined circular guide and stop washer of a diameter somewhat less than the inner diameter of said tubular shell securely fixed on the upper end of said tension rod,

d. a plurality of longitudinally oppositely ended resilient compressible frusto-conical compression elements telescoped freely on said tension rod with suitable washers



disposed between adjacent ends thereof, and with the inner periphery of each said compression elements disposed in spaced relationship with respect to the outer periphery of said tension rod, and with the outer periphery of each said compression element disposed in spaced relationship with respect to the inner periphery of the tubular outer shell,

e. the lower end of the said outer shell being provided with a combined central sleeve and annular seat positioned centrally in the lower end of the tubular shell, the inner periphery of said combined central sleeve and annular seat being such as to permit free telescoping of the tension rod therethrough, and

f. the lower end of the said tension rod being threaded and of sufficient length to be adjustably secured by a suitable conventional connector means to the upper end of a conventional ground anchor.

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**3,930,346**

**SWIMMING POOL**

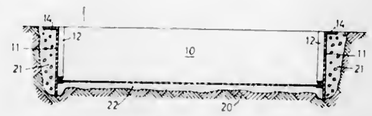
**Stanley Richard Blakeway, Brisbane, Australia, assignor to Eunice Joesphine Blakeway, Stafford, Australia**

**Continuation-in-part of Ser. No. 369,152, June 12, 1973. This application Oct. 17, 1974, Ser. No. 515,679**

**Int. Cl.² E04H** *3/16*

**U.S. Cl. 52—169** **7 Claims**

**1.** An in-ground swimming pool including a pair of rigid substantially planar end members; an inner and an outer arcuate flange projecting from each said end member and defining a channel between them having the shape of the bottom and sides of the pool; a sheet of flexible springy material capable of transportation in rolled form, each lateral edge of said sheet being engaged in one said channel, said edge having a clearance from said end member, thereby to form the sides and bottom of the pool; and a resilient sealing gasket inserted in highly compressed condition between each lateral edge of said



sheet and the adjacent inner flange, said gasket being the sole sealing means between said edge and the channel.

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**3,930,347**

**STRUCTURAL UNIT BODY HAVING A PIPE INCORPORATED THEREIN**

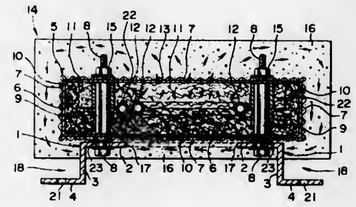
**Naomitsu Megumi, Funabashi, Japan, assignor to Naomitsu Megumi and Tokyo Plywood Kabushiki Kaisha, both of Tokyo, Japan**

**Filed Nov. 30, 1973, Ser. No. 420,399**

**Claims priority, application Japan, Dec. 7, 1972, 47-122690; Mar. 20, 1973, 48-32280**

**Int. Cl.² E04B** *5/48, 1/76;* **E04C** *1/39*

**U.S. Cl. 52—221** **7 Claims**



**1.** A structural unit body comprising a frame having an inner flange and an outer flange, said frame including a frame plate from which said outer flange extends outwardly and from which said inner flange extends inwardly, said frame having an opening circumscribed by said inner flange, a stuffing box, a noncombustible material in said stuffing box, means securing said stuffing box to said inner flange to thereby close said opening in said frame, cement mortar disposed on at least portions of said stuffing box and said frame, and heat transfer conduit means disposed within said stuffing box for conducting a heat transfer fluid therein, whereby said heat transfer conduit means effects a heat transfer relationship with the ambient air about said stuffing box to provide for heating or cooling of a building or the like which is constructed with said structural unit bodies.

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**3,930,348**

**REINFORCED CONCRETE CONSTRUCTION**

**Harry H. Wise, Belle Mead, N.J., assignor to Johns-Manville Corporation, Denver, Colo.**

**Continuation-in-part of Ser. No. 2,924, Jan. 14, 1970, Pat. No. 3,763,613. This application Sept. 10, 1973, Ser. No. 395,778**

**Int. Cl.² E04B** *5/52*

**U.S. Cl. 52—600** **2 Claims**

**1.** A concrete panel suitable for incorporation into a composite concrete two-way slab system, which comprises:

a generally planar relatively thin sub-slab having a generally flat upper surface;

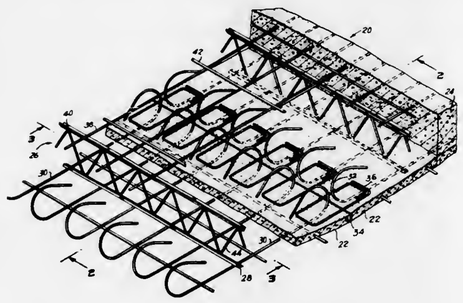
a series of reinforcing bars embedded within said sub-slab and extending transversely substantially entirely thereacross and in a generally parallel alignment with each other;



each of said bars having two end portions and an intermediate portion therebetween;

the intermediate portion of each of said bars being wholly embedded in said sub-slab and lying generally parallel and adjacent to said lower surface;

each of said end portions being bent upward in a continuous curve through an angle of at least 180° with the center point of the bend being above the upper surface of said



sub-slab and the lower portion of said continuous curve being embedded in said sub-slab;

the length of the free portion of each of said end portions being equal to at least six times the diameter of the bar; and

the height of said bend being sufficient to provide a confined bearing load to concrete filled within the bend in a composite system lower than the allowable confined bearing load of the concrete fill.

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**3,930,349**

**BRACED GIRDER OF TRIANGULAR SECTION**

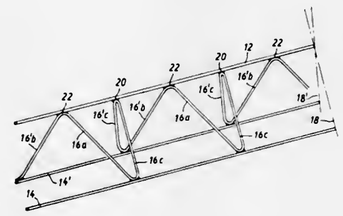
**Hartmut Wellershaus, Wassenach, Germany, assignor to Rheinische Filigranbau GmbH & Co. KG, Nickenich, Germany**

**Filed June 11, 1974, Ser. No. 478,229**

**Claims priority, application Germany, June 13, 1973, 2330079; Oct. 3, 1973, 7335804[U]**

**Int. Cl.² E04C** *5/06*

**U.S. Cl. 52—655** **4 Claims**



**1.** A braced girder for steel-reinforced concrete construction having a triangular cross section between a top chord and two relatively spaced bottom chords, the top chord being connected to both bottom chords by one continuous lacing forming a repeating pattern of braces which are at least roughly perpendicular to the top chord and of diagonal braces, wherein two braces in the continuous lacing which are perpendicular to the top chord follow each other consecutively.

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**3,930,350**

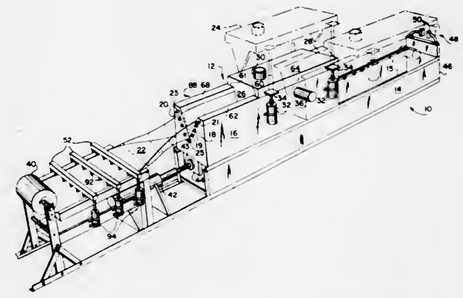
**PACKAGING ASSEMBLY AND PROCESS**

**Philip L. Reid, Duncan, S.C., assignor to W. R. Grace & Co., Duncan, S.C.**

**Filed Nov. 29, 1974, Ser. No. 528,291**

**Int. Cl.² B65B** *31/02*

**U.S. Cl. 53—22 A** **29 Claims**



**14.** A process for forming a vacuum package which comprises

a. forming a web into trough-shaped configuration,

b. inserting a product into the formed web,

c. registering members to provide a substantially air-tight chamber with the product-containing portion of the web within the chamber, with portions of the web spaced longitudinally from the product sealingly engaged between the members, with at least a portion of one longitudinal margin of the web disposed within the chamber and substantially free of restraint against transverse movement into contact with an opposite portion of the web,

d. maintaining at least a portion of the web in trough-shaped configuration within the chamber;

e. vacuumizing to reduce the pressure interiorly of the chamber about the product;

f. while the chamber pressure is reduced, moving spaced apart transversely opposed portions of the web into interfacial engagement outwardly of the product, said transversely opposed web portions including at least a portion of said web margin;

g. sealing interengaged portions of the web to form a vacuum package containing the product; and

h. moving the members apart to open the chamber to permit recovery of the package.

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**3,930,351**

**METHOD AND APPARATUS FOR TRANSFERRING YARN PACKAGES DOFFED FROM A TEXTILE MACHINE TO A CONTAINER**

**Shozo Ueda, and Toshinori Taniguchi, both of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho and Daiwa Boseki Kabushiki Kaisha, Osaka, both of, Japan**

**Filed July 24, 1974, Ser. No. 491,301**

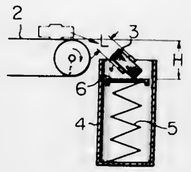
**Claims priority, application Japan, Aug. 1, 1973, 48-90902**

**Int. Cl.² B65B** *5/10*

**U.S. Cl. 53—35** **6 Claims**

**1.** A method for transferring yarn packages doffed from a textile machine provided with a conveyer belt disposed along a longitudinal direction thereof to a container, comprising the steps of carrying the yarn packages doffed from said textile machine along a path having a horizontal component of direction to an end of the conveyer, and then ejecting the yarn packages from the end of the conveyer at a velocity sufficient to cause the yarn package to fall along a parabolic path due to the horizontal momentum imparted to the packages by the

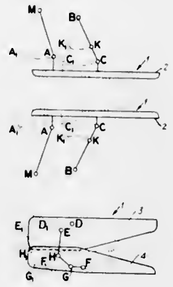
conveyer, on to a receiving surface, and maintaining the receiving surface at a substantially constant vertical distance




from the upper surface of said conveyer, said distance being from one to two times the width L of a yarn package.

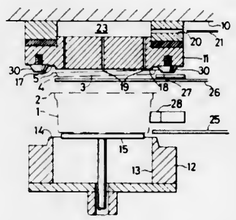
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**3,930,352**
**PACKAGING MACHINE**
**Roy W. Carnes, Richmond, Va., assignor to AMF Incorporated, White Plains, N.Y.**
**Filed Apr. 22, 1974, Ser. No. 462,896**
**Claims priority, application United Kingdom, July 25, 1973, 35342/73**
**Int. Cl.² B65B** *5/00, 43/26, 57/04*
**U.S. Cl. 53—189** **2 Claims**




1. A packaging apparatus for successively receiving and packing a supply of material, such as baked goods, into individual bags taken from a stack of bags dispensed from a bag supply means, including: conveyor means for conveying said material into a packaging station; means for causing each of said bags to become partially opened; engaging means for entering and engaging each of said bags for receiving said material to be packaged; advancing means for advancing said material into the interior of said bags for sealing; means sensing the successive utilization of bags from said stack for replenishing bags being used; support means for holding said bags to be dispensed, as required; restraining means disposed in proximity with respect to said bags, for holding said bags in horizontal alignment with respect to said supply of material being inserted therein; drive means for positioning said support means to allow for the withdrawal of said bags from said stack; cam means for advancing said support means into horizontal alignment with product flow after a product inserted bag has been removed from said stack; and means for advancing a fresh stack of packaging material into said packaging station as the last of said bags is utilized.

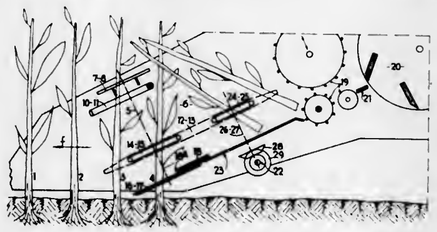
**3,930,353**
**APPARATUS FOR CLOSING AND SEALING CONTAINERS WITH A LID**
**Hans Beckers, Rheydt, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany**
**Filed Apr. 30, 1974, Ser. No. 465,497**
**Claims priority, application Germany, May 7, 1973, 2322977**
**Int. Cl.² B65B** *7/28*
**U.S. Cl. 53—306** **9 Claims**




1. In an apparatus for closing and sealing filled containers with lids which apparatus includes a sealing die having suction means for producing at least a partial vacuum within the sealing die and an underside surface against which a lid is temporarily held by the suction and finally joined to a container under the influence of heat and pressure, means for positioning an individual lid beneath the sealing die adjacent the underside surface and into the effective range of the suction thereby producing a displacement of the lid toward the underside surface, the improvement comprising a plurality of protuberances mounted to the underside surface of the sealing die for jointly, stationarily positioning a lid on said underside surface prior to sealing and during the displacement of the lid toward the underside surface due to the suction, each of said protuberances having an oblique surface, and each oblique surface having a point lying nearest a sealing surface defining an area of said underside surface, which area is substantially equal to that of a lid, whereby edges of a lid may contact the oblique surfaces and become correctly positioned on a respective container and become fused therewith.

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**3,930,354**
**HARVESTING DEVICE IN PARTICULAR FOR AN ENSILAGING MACHINE**
**Antoine Borderie, Argenteuil, France, assignor to Societe Rivierre-Casalis, Fleury Les Aubrais, France**
**Filed Feb. 26, 1974, Ser. No. 446,109**
**Claims priority, application France, Mar. 2, 1973, 73.7307548**
**Int. Cl.² A01D** *45/02*
**U.S. Cl. 56—94** **22 Claims**




1. In a harvesting device, particularly for use with a corn ensilaging machine, said device including a treating apparatus; at least one gatherer device formed by a pair of spaced dividers providing therebetween a passageway; a cutting mechanism for severing planted stalks in said passageway; and a pair of advancing devices, one in each of said dividers, for transferring severed stalks to said treating apparatus; the improvement wherein:

each said advancing device comprising a first rear shaft and a second front shaft, said front shaft being forwardly and upwardly inclined relative to the direction of movement of said harvesting device, the front shafts of said pair of advancing devices being parallel, a sprocket wheel mounted on each said front and rear shaft, and an endless chain extending around the sprocket wheels on said front and rear shafts;

said cutting mechanism comprising a pair of rotary cutters, one each fixed to the lower end of one of said front shafts, said pair of rotary cutters being contained in the same plane and being rotatable in opposite directions;

said improvement further comprising:

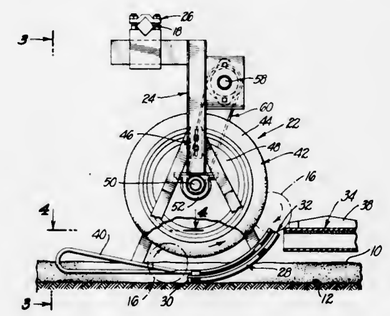
a pair of rotary members, one each fixed to the upper end of one of said front shafts, said pair of rotary members cooperating to form means for seizing stalks before said stalks are severed by said rotary cutters and directing said stalks into said passageway; and

a pair of stop elements, one each positioned adjacent one of said rotary members, said pair of stop elements cooperating to form means for retaining the upper part of each stalk after the passage thereof through said rotary members and preventing the stalk from falling forwardly of said harvesting device.



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**3,930,355**
**MELON HARVESTER**
**Herbert C. Bonham, 391 S. Sixth St., Blythe, Calif. 92225**
**Filed Nov. 4, 1974, Ser. No. 520,787**
**Int. Cl.² A01D** *51/00*
**U.S. Cl. 56—327 R** **6 Claims**




1. In an apparatus for picking up melons lying on the ground, the combination of:

a. a frame;

b. wheeled means for supporting said frame;

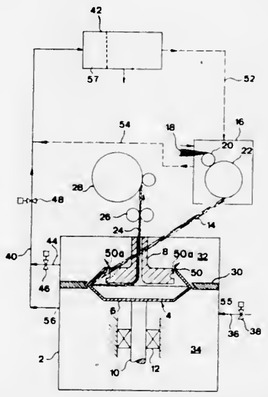
c. an upwardly and rearwardly sloping ramp carried by said frame and up which melons are adapted to be rolled, the front end of said ramp being substantially at ground level;

d. means for rolling the melons up said ramp, comprising laterally spaced, coaxial tires mounted on said frame above said ramp for rotation about a transverse horizontal axis, the lowermost portions of said tires being spaced above said ramp and being above ground level and being engageable with the melons on the ground;

e. drive means on said frame for driving said tires in a direction to cause them to roll the melons toward the front end of and up said ramp; and

f. melon receiving means at the rear end of said ramp.

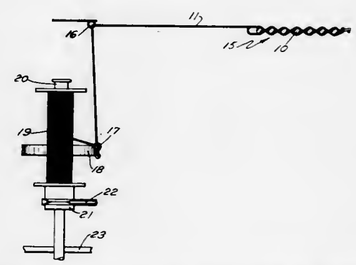
**3,930,356**
**METHOD AND APPARATUS FOR INFLUENCING THE AMBIENT CONDITIONS DURING OPEN-END SPINNING**
**Ernst Nagel, Oensingen, Switzerland, assignor to Luwa AG, Zurich, Switzerland**
**Filed Dec. 3, 1971, Ser. No. 204,430**
**Claims priority, application Switzerland, Dec. 8, 1970, 18245/70**
**Int. Cl.² D01H** *1/12, 13/28*
**U.S. Cl. 57—58.95** **12 Claims**




1. A method for influencing the ambient conditions prevailing at the spinning location during open-end spinning, comprising the steps of delivering fibers by means of a conveying air stream to a spinning rotor, spinning the fibers into a yarn at such rotor, cooling the rotor by simultaneously delivering to the spinning rotor a flowing cooling air stream which is separate from the conveying air stream for the fibers, and providing separate and independent flow paths at least at the region of the rotor for the conveying air stream and cooling air stream respectively, in order to control the climatic conditions at which spinning of the fibers occurs, to thereby minimize rupture of the spun yarn.

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**3,930,357**
**RECOVERY OF FILLING YARNS IN A FABRIC WOVEN ON A DOUBLE PICK NEEDLE LOOM**
**Kirkland H. Gibson, North Kingstown, R.I., assignor to H. G. P. Corporation, Johnston, R.I.**
**Filed Jan. 16, 1975, Ser. No. 541,528**
**Int. Cl.² D04B** *19/00*; **D02G** *3/00*
**U.S. Cl. 57—156** **5 Claims**

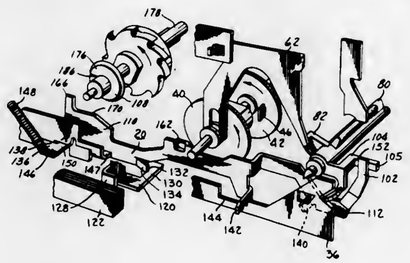



1. The method of removing and packaging the filling yarn from a fabric woven on a double pick needle loom and said filling having a change of flow rate as drawn from the fabric comprising, taking up the filling yarn on a bobbin, rotating the bobbin, interposing between the fabric and the bobbin takeup,

a ring and traveler through which traveler the yarn extends to the bobbin, guiding the yarn to the traveler and traversing the yarn on the bobbin whereby the traveler serves as a compensator for the change in flow rate of the filling yarn as drawn from the fabric.

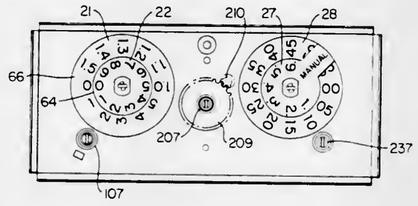
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**3,930,358**
**ALARM CLOCK TIMER**
**Robert L. Boyles, Wayland, Mass., assignor to General Electric Company, Bridgeport, Conn.**
**Division of Ser. No. 388,770, Aug. 16, 1973, Pat. No. 3,882,668. This application June 21, 1974, Ser. No. 481,636**
**Int. Cl.² G04C** *21/16*
**U.S. Cl. 58—20** **5 Claims**



1. An alarm clock mechanism comprising:
a. a timing mechanism;
b. a supporting structure;
c. an audible alarm vibrator mounted on said supporting structure for operation by said timing mechanism;
d. a switch mounted on said supporting structure for operation by said timing mechanism;
e. an alarm vibrator control lever mounted on said supporting structure and movable into engagement with said audible alarm vibrator for shutting off the alarm;
f. a switch control lever mounted on said supporting structure;
g. a manually operable selector cam mounted on said supporting structure and movable into engagement with said alarm vibrator control lever and said switch control lever for selectively controlling operation of said audible alarm vibrator and said switch, said selector cam including an integrally formed longitudinally variable cam surface movable into engagement with said switch control lever for moving said switch control lever for holding the switch in an open position and said selector cam including a second integrally formed radially variable cam surface movable into engagement with said alarm vibrator control lever for holding the audible alarm vibrator in an off position, said selector cam being movable to any one of a plurality of positions for controlling the operation of said audible alarm vibrator and said switch, said selector cam member being movable into one position wherein its integrally formed cam surfaces for controlling operation of the alarm vibrator control lever and the switch control lever holds both of these levers in an off position to prevent actuation of the audible alarm vibrator and to hold the switch control lever in an off position to prevent actuation of the switch, said selector cam being rotatable to another position wherein its integrally formed cam surface which is movable into engagement with the switch control lever is removed from the switch control lever to enable the switch to be automatically operated by the timing mechanism at an alarm time but wherein the integrally formed cam which is movable into engagement with the alarm control lever is retained in engagement with the alarm control lever for preventing automatic operation of the alarm vibrator by the timing mechanism at the alarm time.

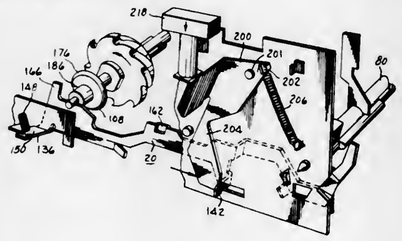
**3,930,359**
**DIGITAL COOKING TIMER MEANS HAVING CONCENTRIC TIME INDICATOR DISC AND MANUAL READOUT INDICATOR**
**Paul T. Flumm, Oakville, and Vernon B. Harris, Waterbury, both of Conn., assignors to Robertshaw Controls Company, Richmond, Va.**
**Filed Aug. 20, 1973, Ser. No. 390,118**
**Int. Cl.² G04F** *3/04*; **H01H** *43/04*
**U.S. Cl. 58—21.14** **3 Claims**



1. In a range timer having a cooking hours timer means for providing an automatic cooking operation of a cooking apparatus for a time period selected by setting setting means of said timer means at a selected period of cooking time of said timer means, the improvement wherein said cooking hours timer means has digital reading means for indicating the set period of time thereof, said reading means comprising two concentrically disposed different sized discs having time indicating indicia on the outer peripheries thereof, the smaller of said discs having said time indicating indicia thereof providing hours and the larger of said discs having said time indicating indicia providing minutes, said range timer having a window for exposing adjacent parts of said outer peripheries of said discs whereby the exposed indicia at said window provides said selected period of cooking time, one of said discs having a part thereof indicating a "manual" setting of said timer means, said part that indicates said "manual" setting being viewable at said window when said timer means is set in said "manual" position thereof.

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**3,930,360**
**ALARM CLOCK TIMER**
**Robert L. Boyles, Wayland, Mass., assignor to General Electric Company, Bridgeport, Conn.**
**Division of Ser. No. 388,770, Aug. 16, 1973, Pat. No. 3,882,668. This application June 21, 1974, Ser. No. 481,834**
**Int. Cl.² G04B** *13/00*
**U.S. Cl. 58—21.155** **4 Claims**



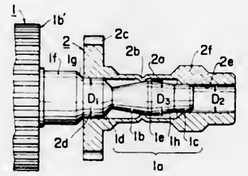
1. A repeat alarm clock mechanism comprising:
a. a timing mechanism;
b. a supporting structure;
c. an alarm vibrator member for sounding an alarm connected to said supporting structure;
d. a vibrator shutoff lever having an alarm on position out of engagement with said vibrator member and an alarm off position in engagement with said vibrator member;



e. a pivot tab integrally formed with said vibrator shutoff lever for mounting said vibrator shutoff lever for pivotal and longitudinal movement on said supporting structure;
f. spring means connected to said vibrator shutoff lever for urging said lever to an alarm on position;
g. a latch integrally formed on said vibrator shutoff lever for holding the vibrator shutoff lever in the alarm off position;
h. means driven by the timing mechanism in selective engagement with a portion of the vibrator shutoff lever for moving the lever to disengage said latch to permit the vibrator shutoff lever to move longitudinally under the force of said spring means to permit the alarm to sound; and
i. a repeat alarm lever mounted on said supporting structure, said repeat alarm lever being manually movable into engagement with said pivot tab for moving the vibrator shutoff lever against the force of said spring means to reset said latch to thereby hold the alarm shutoff lever in the alarm off position for a predetermined short time interval.

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**3,930,361**
**SLIP WHEEL STRUCTURE OF A WATCH MOVEMENT**
**Mituo Saito, Tokyo; Goro Ishikawa, Higashiyamato, and Hidetaka Tutiya, Akishima, all of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan**
**Filed Oct. 15, 1974, Ser. No. 515,068**
**Claims priority, application Japan, Oct. 16, 1973, 48-120200**[U]; Mar. 4, 1974, 49-25374[U]
**Int. Cl.² G04B** *27/00*, *13/02*
**U.S. Cl. 58—85.5** **2 Claims**

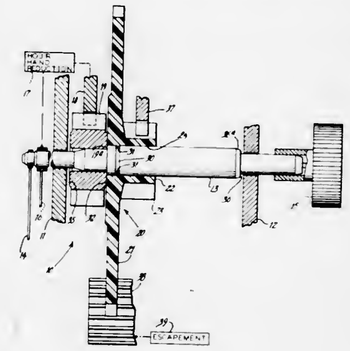


1. A timepiece provided with a slip arrangement, comprising an arbor formed with a tapered portion, a pinion, a tubular portion having an elastic bore portion and integral with the pinion and at least an inwardly projecting projection on said tubular portion, said arbor being inserted into said tubular portion, said tapered portion and said projection being in resilient engagement with each other, so that said arbor and said tubular portion are thereby maintained in frictionally rotatable relationship with each other, the elastic bore portion of said tubular portion having a diameter larger than the largest diameter measured at a forward part of the arbor from said tapered portion, said inward projection being positioned within the area of said elastic bore portion.

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**3,930,362**
**MEANS FOR DEVELOPING FRICTION IN CLOCK SETTING SHAFT**
**Edward F. Cielaszyk, Oglesby, Ill., assignor to General Time Corporation, Mesa, Ariz.**
**Filed Mar. 12, 1975, Ser. No. 557,474**
**Int. Cl.² G04B** *27/00*; **F16D** *7/02*
**U.S. Cl. 58—85.5** **9 Claims**

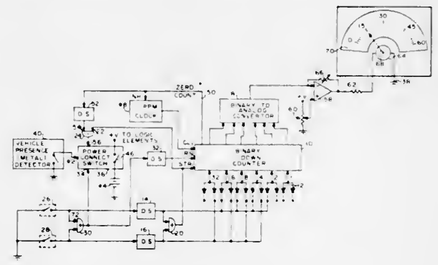
1. In a clock having minute and hour hands with interposed gear reduction, the combination comprising a timed driving train having a centerwheel and source of driving torque, a minute hand shaft telescoped through the centerwheel, said centerwheel being formed of molded plastic and having a hub providing an extensive cylindrical inner surface in contact with the shaft, the diameter of the inner surface, prior to telescoping, being slightly less than the diameter of the shaft so that friction torque is developed between the shaft and the wheel for normal driving of the shaft but with the shaft being forcibly rotatable to overcome the friction torque for setting



of the hands, the shaft having an annular groove extending over a minor portion of the length of the hub and into which the plastic relaxes and flows after the centerwheel is located in a desired axial position thereby to maintain the centerwheel in such axial position.

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**3,930,363**
**PARKING METER**
**Burrell R. Rubenstein, Huntsville, Ala., assignor to Burrell R. Rubenstein, Kansas City, Mo.**
**Filed July 19, 1974, Ser. No. 490,221**
**Int. Cl.² G04C** *1/30*; **G08G** *1/14*
**U.S. Cl. 58—142** **5 Claims**



1. A parking meter comprising:
counting means comprising;
an electrical down counter,
first input means responsive to a selected input for initially setting said down counter to a selected count, and second input means for providing clock input signals to said down counter, whereby with each signal said down counter is counted down a selected count;
coin-operated switching means including at least one coin switch and means responsive to the receipt of a particular coin for operating said switch and providing a selected count input to said first input means of said down counter;
vehicle detection means responsive to the detection of the presence of a vehicle for applying a circuit operating bias to at least said counting means;
clock means for providing electrical pulses at a selected time rate to said second input means; and

readout means responsive to the output of said down counter for visually indicating an output state of said down counter.

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**3,930,364**

## BRACELET PRIMARILY FOR A WATCH

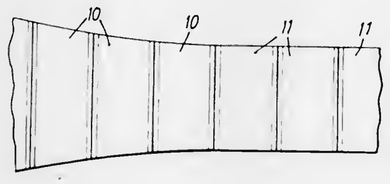
**Kwong Wong, Kowloon, Hong Kong, assignor to Universal Manufacturing Co., Ltd., Hong Kong, Hong Kong**

**Filed July 22, 1974, Ser. No. 490,706**

**Claims priority, application United Kingdom, June 27, 1974, 28673/74**

**Int. Cl.² F16G *15/14***

**U.S. Cl. 59—80** **12 Claims**




1. A bracelet link having at each end thereof a pair of aligned sockets for receiving hinge projections which sockets face opposite side edges of the link, slots opening to the sockets of one pair at the side thereof, a release member pivotally mounted on said link, which release member is movable into a first position in which portions of the member close off said slots and into a second position in which said portions are disposed away from the slots.

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**3,930,365**

## FUEL CONTROL SYSTEM FOR GAS TURBINE ENGINE

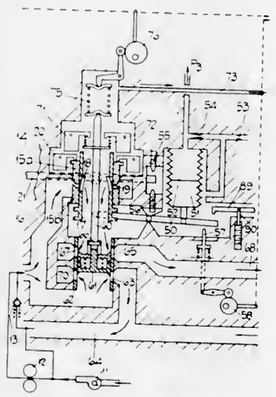
**Trevor Stanley Smith, Sutton Coldfield, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England**

**Filed July 18, 1974, Ser. No. 489,742**

**Claims priority, application United Kingdom, July 18, 1974, 34135/74**

**Int. Cl.² F02C *7/26***

**U.S. Cl. 60—39.14** **4 Claims**



1. A fuel control system for a gas turbine engine, comprising a variable metering arrangement including a flow control element which is movable in response to engine operating parameters to control fuel flow to the engine, a stop co-acting with said control element to limit movement thereof in a direction to reduce fuel flow, said stop being movable between first and second limiting positions, and a manually operable selector device for moving said stop to said first position for normal running of the engine and to said second position for engine starting, said second position corresponding to a smaller minimum flow through said metering arrangement than said first position.

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**3,930,366**

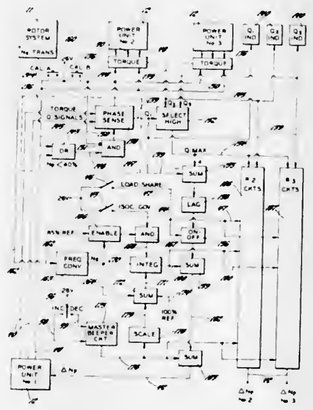
## HELICOPTER POWER PLANT CONTROL

**Robert E. Nelson, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.**

**Filed July 17, 1974, Ser. No. 489,263**

**Int. Cl.² F02C *9/08***

**U.S. Cl. 60—39.15** **10 Claims**



1. A control system for a power plant including a plural number of gas turbine engines connected to drive a common variable load comprising, in combination,

main power control means including a condition control settable by an operator providing a power output level command signal, a load control providing a power output required signal, a fuel control for each engine operative to control fuel flow to the respective engine, and means generating a weighted sum of the said signals effective to vary concurrently the power setting of the fuel controls; load sharing means including means responsive to a condition indicative of the power output of each engine generating an engine power signal, comparing means effective to determine the maximum one of the said power signals, means operative to determine a power error signal for each engine representing the difference between the maximum power signal and the power signal of the said engine, power trim means coupled to each fuel control effective to modify the power setting of the fuel control, and means responsive to the power error signal of each engine coupled to the power trim means of the respective engine so as to increase the power output of each engine other than that generating the maximum power signal to eliminate the power error signal;

and governing means including means providing a load speed command signal, means responsive to load speed, means operative to provide a load speed error signal, and means responsive to the load speed error signal coupled to the power trim means of all engines so as to reset all the fuel controls in the direction to eliminate the load speed error signal.



**3,930,367**

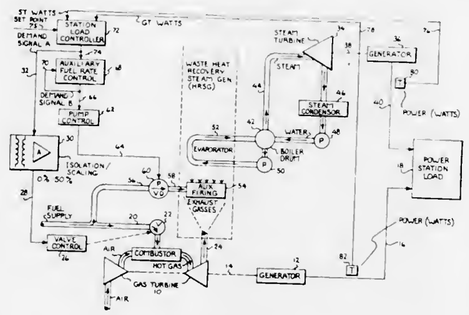
## FLUID FLOW CONTROL SYSTEM

**Robert E. Gasparoli, Roanoke, Va., assignor to General Electric Company, Salem, Va.**

**Filed Oct. 23, 1974, Ser. No. 517,259**

**Int. Cl.² F01K *23/10***

**U.S. Cl. 60—39.18 B** **14 Claims**




1. Apparatus for controlling the rate of fuel flow for auxiliary firing of a steam turbine power generating system comprising:

a. auxiliary firing means for receiving combustible fuel at a metered rate for heating a steam boiler of said turbine;

b. means for metering the rate of fuel flow to said auxiliary firing means in response to a metering signal provided thereto;

c. load control means for receiving power signals representative of the amount of power being provided to said load, said load control means including means for providing a variable set point signal indicative of the amount of power to be provided to said load and generating an output demand signal representative of the difference between said power and set point signals and further being indicative of a desired rate of fuel flow;

d. comparison means responsive to said demand signal and to said metering signal to provide an output signal when a difference exists therebetween;

e. control signal generating means for generating said metering signal and for varying the value thereof in response to said comparison means output signal, said control signal generating means further responsive to a rate of change signal supplied thereto to control the rate at which said metering signal changes; and

f. means for providing said rate of change signal to said control signal generating means.

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**3,930,368**

## COMBUSTION LINER AIR VALVE

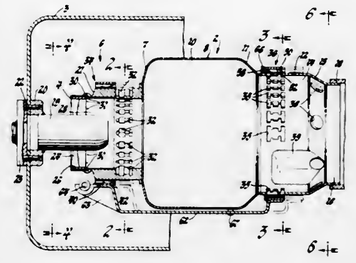
**Robert D. Anderson, and Daniel W. Hyden, both of Indianapolis, Ind., assignors to General Motors Corporation, Detroit, Mich.**

**Filed Dec. 12, 1974, Ser. No. 531,875**

**Int. Cl.² F02C *9/14***

**U.S. Cl. 60—39.23** **5 Claims**

1. Means for controlling flow of hot gas comprising, in combination, a substantially cylindrical body defined by a wall with ports through the wall adapted for flow of hot gas from one surface of the wall through the ports to the other surface of the wall and slide valve means movable relative to the body to vary the area of the said ports, wherein the improvement comprises slide valve means including a movable actuating ring extending around the body overlying the surface which is upstream in the direction of flow through the ports; a circumferential row of part-cylindrical valve plates disposed between the actuating ring and the body configured to slide on the surface of the body to throttle the said ports variably; means coupling the valve plates to the actuating ring for concurrent movement; and spring means mounted between the actuating ring and the valve plates reacting against the ring and the plates to press the plates against the body.



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**3,930,369**

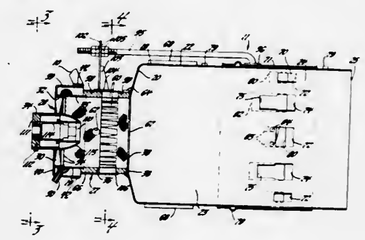
## LEAN PRECHAMBER OUTFLOW COMBUSTOR WITH TWO SETS OF PRIMARY AIR ENTRANCES

**Albert J. Verdouw, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.**

**Filed Feb. 4, 1974, Ser. No. 439,646**

**Int. Cl.² F02C *7/22*; F02G *3/00***

**U.S. Cl. 60—39.65** **2 Claims**

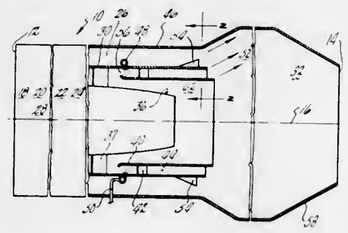


1. A combustion apparatus adapted for use in a gas turbine engine characterized by substantially complete combustion of liquid hydrocarbon fuel and by a low output of nitrogen oxides, the apparatus comprising a combustion liner having a discharge outlet for combustion products at the downstream end of the liner; the liner having an upstream end and liner wall means extending from the upstream end to the downstream end, the wall means enclosing, in sequence from the upstream end to the downstream end, a prechamber for providing a homogeneous mixture of vaporized fuel and air, a reaction zone for combustion of the fuel flowing from the prechamber in the air flowing from the prechamber, and a dilution zone for mixing the combustion products from the reaction zone with additional air; the prechamber being of significantly smaller cross-sectional area than the reaction zone and being joined to the reaction zone by an abruptly diverging wall portion; the prechamber including first air entrance means defined by swirler means at its upstream end effective to direct combustion air with a substantial circumferential velocity component downstream over the inner surface of the prechamber wall means so as to scour the wall means, liquid fuel introduction means downstream of the swirler means disposed to lay a film of liquid fuel on the said inner surface for evaporation by and mixture with the said combustion air, and second air entrance means defined by a circumferential ring of ports through the prechamber wall near the downstream end of the prechamber adapted to introduce air flowing radially inward to mix with and dilute the fuel-air mixture prior to combustion; the reaction zone having an imperforate wall and providing turbulent recirculating flow of

burning fuel-air mixture and combustion products resulting from the swirl of the entering mixture and the abrupt divergence of the wall means; and the dilution zone including dilution air entrance means located so as to admit air for mixture with recirculating gas in the reaction zone and for dilution of the combustion products flowing from the reaction zone to the discharge outlet.

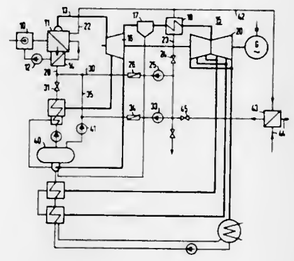
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**3,930,370**
**TURBOFAN ENGINE WITH AUGMENTED COMBUSTION CHAMBER USING VORBIX PRINCIPLE**
**Stanley J. Markowski, and Richard S. Reilly, both of East Hartford, Conn., assignors to United Technologies Corporation, Hartford, Conn.**
**Filed June 11, 1974, Ser. No. 478,403**
**Int. Cl.² F02K** *3/04, 3/08*
**U.S. Cl. 60—261** **29 Claims**



1. A mixed flow turbofan engine having an inlet and an outlet and having:
A. a core engine enveloped within an engine case having an inlet and an outlet and being of circular cross section and concentric about the engine axis and mounted to define a first passage through which core engine exhaust gases are passed,
B. a fan section enveloped within a fan case having an inlet and an outlet and being of circular cross section and which envelops and is concentric with said engine case to define a first annular passage therebetween through which fan air is passed and which extends downstream of the engine case to define an augmentation burner therewithin,
C. a pilot zone case having an inlet and an outlet and being of circular cross section and concentric about the engine axis and supported within the engine case with its inlet located at an axial station upstream of the engine case outlet so that the fan case, the engine case and the pilot zone case cooperate to define an annular pilot combustion zone between the fan and pilot cases and downstream of the engine case, and which pilot zone case defines a second annular passage with the engine case in the form of an annular pilot zone having an open upstream end to receive therein exhaust gases from the core engine,
D. means to introduce fuel into said pilot zone for mixing therein with the exhaust gases of the core engine and for discharge therefrom at the engine case outlet for mixing and combustion with the fan air, and
E. a plurality of vortex generators positioned within the first annular passage and located circumferentially thereabout to cause the fan air to be discharged from said first annular passage and into the pilot combustion zone as a plurality of vortices to thereby accelerate mixing and combustion with said fuel from said pilot combustion chamber.

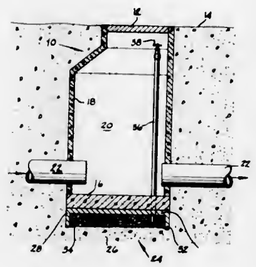
**3,930,371**
**NUCLEAR POWER PLANT**
**Hans-Peter Schabert, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany**
**Filed Sept. 6, 1973, Ser. No. 394,870**
**Claims priority, application Germany, Sept. 11, 1972, 2244549**
**Int. Cl. F01k** *7/22*
**U.S. Cl. 60—644** **7 Claims**



1. A nuclear power plant including a steam generator supplied via an input inlet connecting with a source of feed water under pressure, with feed water which in the generator is heated by reactor coolant until it boils to steam, and a steam engine having a low pressure stage supplied with said steam and exhausting the steam through a reheater to a low pressure stage; wherein the improvement comprises means for conducting said feed water from within said generator to and through said reheater.

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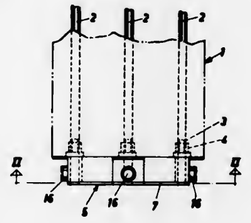
**3,930,372**
**METHOD AND ARRANGEMENT FOR CONTROLLING THE POSITION OF AN UNDERGROUND MANHOLE ASSEMBLY**
**Stanley William Norman, Seattle, Wash., assignor to Johns-Manville Corporation, Denver, Colo.**
**Filed Nov. 28, 1973, Ser. No. 419,742**
**Int. Cl.² E02D** *29/12, 27/00*
**U.S. Cl. 61—46** **15 Claims**



1. In an underground manhole assembly including an underground base, a lid readily accessible from ground level and underground wall means which together cooperate to define a manhole, the improvement comprising:
a. an arrangement at least partially positioned between the base of said manhole assembly and soil beneath said base, said arrangement including air under pressure between said base and said soil.



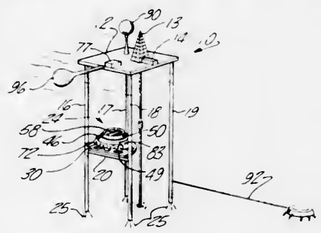
**3,930,373**
**REINFORCED CONCRETE PILE AND A METHOD OF MANUFACTURING SUCH A PILE**
**Lorentz Wahman, Goteborg, Sweden, assignor to Roy Asserback, Marbella, Spain**
**Division of Ser. No. 471,899, May 21, 1974. This application Mar. 3, 1975, Ser. No. 554,704**
**Claims priority, application Sweden, May 21, 1973, 7307092**
**Int. Cl.² E02D** *5/30*; **E04B** *1/48*
**U.S. Cl. 61—56** **1 Claim**



1. A method of manufacturing reinforced concrete piles, each pile at least at one of its ends being provided with a collar, in which
longitudinally running reinforcing bars are cut to exact lengths and are threaded at least at one of their ends,
a collar provided with threaded bores corresponding in number to the desired number of axial reinforcing bars and having a bigger diameter than said bars is fitted to at least one end of the bars,
an externally threaded connector having an internally threaded bore is fitted in each bore in the collar to attach the reinforcing bars thereto, and
the reinforcing unit thus produced is placed in a mould which thereafter is filled with concrete.

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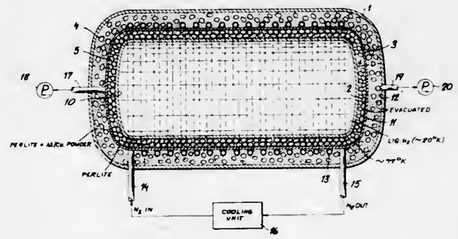
**3,930,374**
**DYNAMIC BALLAST AND STABILIZATION SYSTEM**
**Charles W. Hoppe, 24482 Glen Orchard, Farmington Hills, Mich. 48024**
**Filed Mar. 6, 1975, Ser. No. 556,003**
**Int. Cl.² E02D** *21/00*; **E02B** *17/00*
**U.S. Cl. 61—46.5** **8 Claims**



1. A dynamic ballast and stabilization system for use in combination with a platform structure anchored at an offshore location in a body of water, the structure being normally subjected to lateral and upward displacement under the influence of periodically occurring wave forces, said structure including an equipment holding deck, a rigid framework having the upper ends supportably connected to the equipment holding deck with the lower ends thereof fixedly embedded in the floor of said body of water, said system being carried by said framework below the surface of the body of water and comprising:
a support member carried by said framework;
an impellor rotatably carried by said support member, said impellor driving water upwardly to generate a counteracting force on said support member;
means carried by said support member movable independently of said impellor for controlling direction at which said water is driven; and
power generating means carried by said support member and driven by said water, the power generating means being utilized to aid in driving said impellor.

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**3,930,375**
**STORAGE VESSEL FOR LIQUEFIED GAS**
**Albert Hofmann, Grunwald, Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Germany**
**Filed Nov. 26, 1973, Ser. No. 418,853**
**Claims priority, application Germany, Nov. 27, 1972, 2257984**
**Int. Cl.² F17C** *1/00*
**U.S. Cl. 62—45** **3 Claims**



1. A storage vessel for a liquid adapted to be maintained normally at a temperature below about 30°K, said vessel comprising:
an inner shell defining a chamber receiving said liquid;
a radiation shield specedly surrounding said inner shell and defining an inner compartment therewith;
an outer shell spacedly surrounding said radiation shield and defining an outer compartment with said radiation shield;
a mass consisting of pulverulent insulating material free from metal particles filling said inner compartment;
a mixture of pulverulent insulating material and metal powder filling said outer compartment, the proportion of metal powder in said mixture being substantially 15 to 30 percent by weight, said insulating material being perlite and said metal powder being aluminum or copper;
means for cooling said radiation shield and including tubes lying in said outer compartment and extending along and in heat-exchanging relationship with said radiation shield, and means for passing a deep-cooled fluid through said tubes, the distance between said outer shell and said radiation shield and the distance between said radiation shield and said inner shell being in a ratio of about 2:1;
means for evacuating said inner compartment; and
means for exacuating said outer compartment.

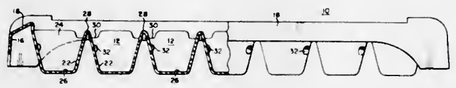
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**3,930,376**
**ICE CUBE TRAY**
**Anton J. Schwartz, Worthington, Ohio, assignor to Westinghouse Corporation, Cleveland, Ohio**
**Filed Jan. 23, 1975, Ser. No. 543,291**
**Int. Cl.² F25C** *1/24, 5/18*
**U.S. Cl. 62—320** **4 Claims**

1. A unitarily molded flexible plastic ice cube tray comprising a generally rectangular member having a peripheral framing flange encircling a plurality of pockets for receiving water to be formed into individual ice cubes when frozen, each of said pockets having a generally cubical configuration with

upwardly outwardly diverging side walls and wherein the improvement comprises:

means projecting inwardly from opposite areas of said side walls for establishing areas of stress concentration in said ice cube when said tray is deformed to release the ice



cubes from said pockets, said projections thereby causing a splintering and cracking of said ice cube to the extent that the cube is prevented from reseating itself within the tray in the as-molded relationship whereby manually gripping each individual cube for removal from said pocket is facilitated.

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**3,930,377**

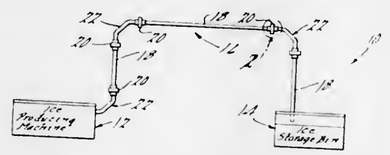
**ICE TRANSPORT SYSTEM**

**Robert P. Utter, Albert Lea, Minn., assignor to King-Seeley Thermos Co., Ann Arbor, Mich.**

**Filed Sept. 17, 1973, Ser. No. 398,538**

**Int. Cl.² F25C 5/18**

**U.S. Cl. 62—344** **1 Claim**



1. In combination in an ice making machine,

means for producing a quantity of ice,

an ice storage container located remote from said ice producing means, and

a conduit system for communicating ice from said ice producing means to said storage container,

said conduit system comprising at least one conduit structure and at least one coupling assembly for operatively connecting one end of said structure to an associated conduit element,

said coupling assembly comprising first and second parts each having a portion of predetermined axial length adapted for engagement with said structure,

said conduit structure being of a one-piece uniform cross-section construction and including an intermediate section and first and second opposite end sections which are of a relatively linear configuration,

said first and second end sections being defined by first and second imaginary axis arranged at right angles to one another and said intermediate section being defined by a third imaginary axis arranged at a 45° angle to both said first and second axis,

said conduit structure further including first and second relatively arcuate sections interposed one between said first end section and said intermediate section and the other between said intermediate section and said second end section, whereby said conduit structure can be used in an unsevered condition to provide a 90° change in direction for ice being communicated therethrough and can be severed within said intermediate section thereof to provide two separate conduit parts each having a non-linear intermediate section and relatively linear opposed end sections and each adapted to provide a 45° change in direction for ice being communicated therethrough,

each of said arcuate sections being spaced axially from the terminal ends of said structure a distance at least equal to said predetermined length and being spaced from each other a distance at least as great as twice said predetermined length,

said coupling assembly including a collar member adapted to be sleeved over the outer periphery of one of said end sections, said collar member having an axial bore adapted to telescopically receive said end section therewithin, with the axial length of said bore not being greater than the length of said end section.

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**3,930,378**

**AXIALLY-DISPLACEABLE AND ANGULARLY-MOVABLE UNIVERSAL COUPLING**

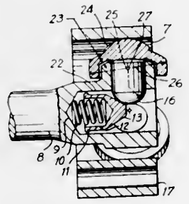
**Leopold F. Schmid, Leharstrasse 8, 7000 Stuttgart 1, Germany**

**Filed Sept. 5, 1974, Ser. No. 503,360**

**Claims priority, application Germany, Nov. 8, 1973, 2355766**

**Int. Cl.² F16D 3/02**

**U.S. Cl. 64—8** **11 Claims**



1. An axially displaceable and angularly movable, evenly-running universal coupling comprising, in combination, an inner coupling member with a radial bore; three rolling elements equi-angularly distributed and connected rotatably and radially movable to said inner coupling member for transmitting torque; an outer coupling member having straight-lined grooves parallel to the axis of said outer coupling member, said rolling elements protruding into said grooves; spring means for applying a radial force pushing said rolling elements outward to displace said rolling elements during an angular movement for even-running of said universal coupling, said rolling elements having a cylindrical pin rotatable and radially movable in said radial bore, said spring means applying a force on the inner end of said cylindrical pin for pushing said rolling elements radially outward.

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**3,930,379**

**COMPENSATING AND EQUALIZING COUPLING FOR TRANSMISSION OF LARGE TORQUES, SUCH AS BETWEEN THE GEAR AND THE PROPELLOR OF A SHIP**

**Heinz M. Hiersig, Dusseldorf-Oberkassel, and Wilhelm Köster, Datteln, both of Germany, assignors to Mannesmann-Meer Aktiengesellschaft, Monchen-Gladbach, Germany**

**Filed May 8, 1974, Ser. No. 467,955**

**Claims priority, application Germany, May 17, 1973, 2325543**

**Int. Cl.² F16D 3/17**

**U.S. Cl. 64—11 R** **14 Claims**

1. Compensating and equalizing coupling for transmission of large torques, such as between a ship's drive transmission gear and a propellor shaft, comprising:

a hollow shaft;

means (a) including

i. a first, cylindrical structure having larger diameter than the shaft and receiving one end of the shaft in axially overlapping relation;

ii. a second, cylindrical structure having smaller diamater than the shaft and being received by the shaft at the one end in axially overlapping relation;

iii. means for interconnecting the first and second structures independently from the hollow shaft and connecting the interconnected structures to serve as primary input part of the coupling; and

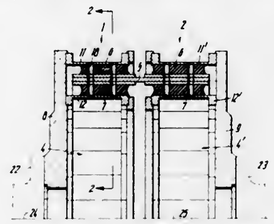
iv. a first plurality of resilient elements interposed radially between and connected to the shaft and said first and second structures to provide for radially extending resilient interconnection between the shaft and said structures; and

means (b) including:

i. a third cylindrical structure having larger diameter than the shaft and receiving the other end of the shaft in axially overlapping relation, but axially spaced apart from the first structure;

ii. a fourth cylindrical structure having smaller diameter than the hollow shaft and being received by the shaft at





the other end in axially overlapping relation, but axially spaced apart from the first structure;

iii. means for interconnecting the third and fourth structures and connecting these interconnected structures to serve as secondary, output part of the coupling; and

iv. a second plurality of resilient elements interposed radially between and connected to the shaft and said third and fourth structures to provide for radially extending resilient interconnection between the shaft and said third and fourth structures;

so that said hollow shaft floats between the elements of the first to fourth pluralities and remains disconnected from said gear and said shaft except through the means (a) and the means (b) which in turn are interconnected only by said hollow shaft.

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**3,930,380**

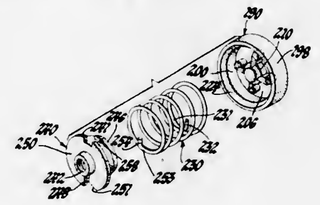
**ICE DISPENSER CONTAINER COUPLING**

**Thomas H. Fogt, West Carrollton, Ohio, assignor to General Motors Corporation, Detroit, Mich.**

**Filed Aug. 19, 1974, Ser. No. 498,755**

**Int. Cl.² F12D 3/52**

**U.S. Cl. 64—15 C** **4 Claims**



1. A flexible coupling unit for readily coupling and decoupling the driven shaft of an appliance, removably located on a support structure, and a motor driving shaft mounted on said support structure comprising, a driving tubular sleeve closed at one end by a base providing inner and outer faces, means for fixedly attaching said sleeve outer face on the end of said driving shaft, a disc fixed on the end of said appliance driven shaft in axially spaced opposed relation to said tubular sleeve inner face, an open helical coiled wire spring having one end fixed on said disc, said coiled spring having its end turns formed square with the longitudinal axis of said spring, said spring free end being telescoped within said tubular sleeve and compressed such that said free end turn is seated flush with said sleeve inner face upon said appliance being moved into its operative position on said structure, means for retaining the appliance in its operative position on said structure, said sleeve inner face having a plurality of axially extending, radially arranged driving lugs fixed thereon; said coil spring free end turn terminating in an inwardly directed radial tang, and said radial tang being located so as to engage one of the plurality of driving lugs in hook-like fashion upon rotation of said driving shaft in a first direction, whereby said helical coiled spring tends to tighten in said first direction causing said disk and driven shaft to be rotated in said first direction and operate said appliance.

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**3,930,381**

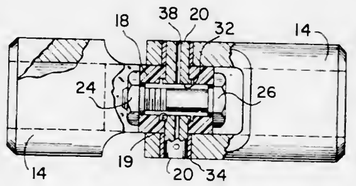
**UNIVERSAL JOINT**

**John T. Hall, Torrington, and Alexander R. Alves, Watertown, both of Conn., assignors to Alves Precision Engineered Products, Inc., Watertown, Conn.**

**Filed Jan. 24, 1974, Ser. No. 436,144**

**Int. Cl.² F16D 3/26**

**U.S. Cl. 64—17 R** **6 Claims**



1. In a universal joint for effecting rotational coupling between a pair of shafts, said joint comprising a pair of yoke members each having a hub portion for connection to the end of a shaft and a pair of opposed arms integral with and extending axially from said hub, said yoke members being positioned with their paired arms telescoped into axially overlapped but circumferentially spaced relation, means pivotally interconnecting the arms of said yoke members including a coupling block interposed between said arms and having parallel axially opposite end faces and quadrantially oriented lateral faces between said end faces, said block being split along the bisecting plane parallel to said end faces and retaining means for releasably holding said block together, and a stub shaft disposed centrally of each lateral face of said block and projecting outwardly therefrom in said bisecting plane; the improvement which comprises means for fixedly securing said stub shafts in said block against escape outwardly thereof, each of said yoke arms having an aperture and a sleeve bearing removably retained in said aperture, said projecting stud shafts being pivotally received in said sleeve bearings in free rotation therein.

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**3,930,382**

**TORQUE LIMITING COUPLING**

**Karlheinz Timtner, Homburg, Germany, assignor to Ringspann Albrecht Maurer KG, Bad Homburg vor der Hobe, Germany**

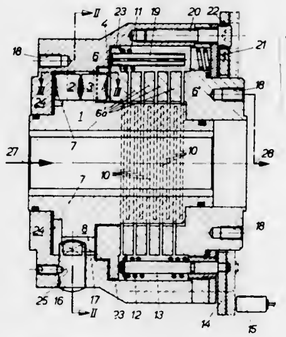
**Filed Dec. 19, 1973, Ser. No. 426,086. Claims priority, application Austria, Dec. 29, 1972, 11174/72.**

**Int. Cl.² F16D 7/06**

**U.S. Cl. 64—29** **10 Claims**

1. A safety coupling which provides positive torque transfer and which disengages above a disengagement torque comprising first (1) and second (6) coupling halves which are engaged to restrict axial movement, said first coupling half having a

disc shaped flange (8) defining at least three radial recesses (9), at least a pair of cylindrical rollers (2, 3) within the recesses in the first coupling half (1) such that they move with the first coupling half and are free to roll on axes generally radial to the coupling axis, said second coupling half (6) comprising first and second stop faces (5, 7) arranged on opposite sides of the disc shaped flange (8) of the first coupling half, said first stop face defining recesses (4) for receiving part of an adja-



cent roller and said second stop face (7) being planar and adjacent one of said remaining rollers, means integral with said first stop face for biasing it toward the second stop face, said biasing means being axially compressible and peripherally rigid, whereby said biasing means urges rollers held by said radial recesses (9) into the said stop face recesses (4) for transmitting torque between the coupling halves (1, 6) and permitting disengagement of the coupling halves by axial movement of the axially movable stop face.

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**3,930,383**

## CIRCULAR KNITTING MACHINE

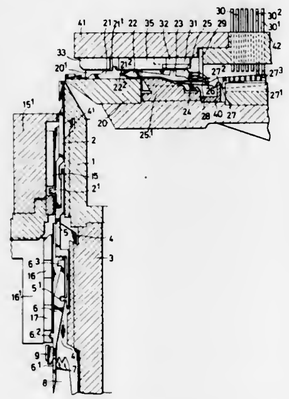
**Otto Nuber, Rottenburg a.N., Germany, assignor to Firma Fouquet-Werk Frauz & Planck, Rottenburg a.N., Germany**

**Filed Aug. 30, 1972, Ser. No. 284,875**

**Claims priority, application Germany, Aug. 30, 1971, 2143285**

**Int. Cl.² D04B** *9/06, 9/36, 15/68*

**U.S. Cl. 66—25** **13 Claims**



1. Circular knitting machine having a needle bed (1);
needles (2, 21) located in the needle bed;
guide slots (4) guiding the needles for sliding movement in the needle bed;
a camming system (15, 16, 17; 34, 35, 36) having a first cam race to control protection of needles to a first projection position and a miss cam race to control needles to remain in miss position;
movable needle jacks (6, 22) slidable in said needle guide slots and being additionally pivotable about axes transverse to the sliding direction in the guide slots, the needle jacks being in engagement with the needles and the camming system, and having butts ($2^1$, $6^2$, $6^3$; 23) selectively engageable in the first cam race or in the miss cam race, the needle jacks associated with at least one of the cylinder or dial needles being located in the guide slots for rocking movement essentially in a plane of the guide slots;
jack control means (10, 32, 27, 30) controlling pivoting, rocking movement of the needle jacks to control selective engagement with a selected cam track;
means (7) locking the needle jacks in selected, rocked position as controlled by said jack control means,
an second cam race formed in the camming system to control projection of the needles to a second projected position;
the locking means (7) having three selected locked positions for placement of the movable needle jacks in a selected one of said three pivoted positions, the butts being engageable with the additional cam race upon locking of the pivotable needle jacks to the second rocked, or pivoted position under command of said jack control means;
and wherein the locking means securing the needle jacks in selected position comprises
a projecting end ($6^1$, 24) formed on the needle jack, said end being laterally, resiliently deflectable;
at least three groves formed in the machine adjacent said projecting end and located to be resiliently, selectively engaged by said projecting end to locate the same and permit longitudinal sliding movement of the jack while securing the jack against transverse shift while rocking.

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**3,930,384**

## COMPOUND NEEDLE FOR CIRCULAR KNITTING MACHINE

**Alfred Schindele, Harthausen, Germany, assignor to C. Terrot Sohne, Stuttgart, Germany**

**Filed Apr. 23, 1974, Ser. No. 463,666**

**Claims priority, application Germany, Apr. 25, 1973, 2320789**

**Int. Cl.² D04B** *15/78*

**U.S. Cl. 66—50 R** **4 Claims**

1. In a pattern-controlled Jacquard-type circular knitting machine, a knitting arrangement including first and second cooperable cam tracks, a compound needle including a hook portion vertically movable between an uppermost and a lowermost position and a latch cooperable with the hook portion and normally situated in a first position, the latch having a first butt engageable in the first cam track, means for effecting engagement of the hook portion and the latch when the hook portion is raised through a predetermined vertical distance from its lowermost position so that further upward movement of the hook portion is accompanied by an upward movement of the latch from its first position, and a jack member articulated to the hook member and responsive to the pattern control means of the circular knitting machine for selectively operating the hook member, the jack member having a second butt in contact with the second cam track for effecting a prescribed movement of the first butt of the latch in the first cam track, the second cam track having ascending and descending cam surfaces, the first cam track having a first upper abutment surface coextensive with a portion of the descending



cam surface of the second cam track for effecting a lowering of the latch into its first position.

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**3,930,385**

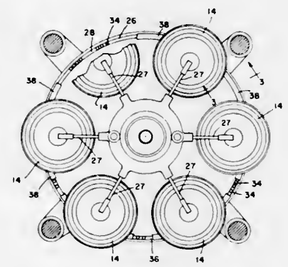
## SELF BALANCING TABLE

**John C. Greczin, 7312 School Lane, Philadelphia, Pa. 19126**

**Filed Jan. 20, 1975, Ser. No. 542,544**

**Int. Cl.² D04B** *27/10*

**U.S. Cl. 66—125 R** **11 Claims**



1. A self-balancing table in a circular knitting machine of the type including a rotating bobbin mounting table, the combination of
A. groove means provided in the table to form a path adapted to retain movable weight means therewithin,
1. said groove means being circular in planar configuration;
B. weight means movable within the groove means to dynamically balance the table,
1. said weight means including a plurality of similarly configured weights; and
C. cover means overfitting the groove means to retain the weight means within the groove means when the bobbin mounting table is rotated.



**3,930,386**

## PLATING FEEDERS

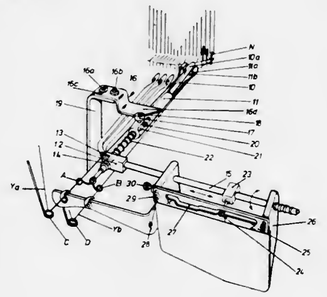
**Frederick Keel, Narborough, England, assignor to The Bentley Engineering Company, Limited, England**

**Filed Sept. 18, 1973, Ser. No. 398,393**

**Claims priority, application United Kingdom, Sept. 23, 1972, 44097/72**

**Int. Cl.² D04B** *15/60, 9/34*

**U.S. Cl. 66—134** **17 Claims**



1. Plating feeder comprising: a mounting shank for securing the plating feeder during use to a circular knitting machine; a first feeder part in the form of an elongate body, a first mouth defined at the extremity of the first feeder part for feeding a first yarn, and means rigidly securing the first feeder part to the mounting shank; and a second feeder part having a portion encircling a portion of said first feeder part and slidable lengthwise with respect to said elongate body, a second mouth defined at the extremity of the second feeder part for feeding a second yarn, and means mounting the second feeder part for movement with respect to the mounting shank to enable the first and second mouths to be held separated from one another during plating or brought into close proximity to one another during cutting and trapping or initial feeding of the yarns.

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**3,930,387**

## KNITTED FABRIC WITH A LAID IN METAL CHAIN

**Koji Imamura, Tokyo, Japan, assignor to Tokyo Sun Co., Ltd. and The Kanon Co., Inc., both of Tokyo, Japan**

**Filed Oct. 15, 1973, Ser. No. 406,341**

**Claims priority, application Japan, Oct. 17, 1972, 47-119997**

**Int. Cl.² D04B** *7/14;* **A41D** *1/04*

**U.S. Cl. 66—190** **3 Claims**

1. A knitted fabric comprising courses formed of a plurality of loops, some of said courses including alternatively arranged front and back loops, and at least one metal chain which extends along the course and is interlaid between said front and back loops, said alternatively arranged front and back loops constituting rib stitches and the other loops constituting plain stitches, the two loops of the rib stitches that are disposed at the junction between the rib stitches and the plain stitches being linked to a loop of the plain stitches on the adjacent course.

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**3,930,388**

## LOCKING APPARATUS FOR A GASOLINE FILLER PIPE

**Paul E. Barras, 20203 Cohasset St. Apt. 8, Canoga Park, Calif. 91306**

**Continuation-in-part of Ser. No. 461,903, April 18, 1974, abandoned. This application Aug. 19, 1974, Ser. No. 498,361**

**Int. Cl.² B65D** *55/14, 43/16*

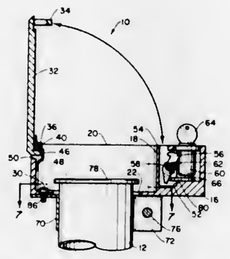
**U.S. Cl. 70—159** **20 Claims**

1. A locking apparatus comprising:

a housing having an internal chamber, a first opening and a second opening formed within said housing providing access into said chamber;

a cover mounted by hinge means to said housing and movable between a closed position and an open position, said cover capable of closing said first opening when said cover is in said closed position, said open position providing access into said chamber, a latching catch attached to said cover;

a split band adapted to surround a gas filler pipe, said band being adjustable to different diameters, said band including tightening means;



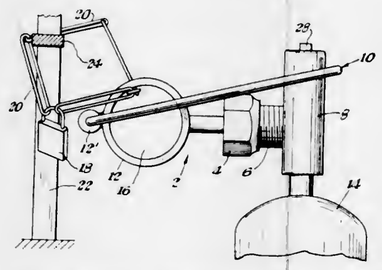
a connecting flange attached to said band, said connecting flange attachable by fastening means to said housing about said second opening;

a latching pawl pivotally mounted within said housing and movable between a latch position and an unlatch position, first biasing means attached to said latching pawl exerting a continuous bias tending to locate said pawl in said latched position, with said pawl in said latched position said pawl connects with said latching catch; and

a key actuated lock mounted within said housing, said lock including structure capable of moving said pawl to said unlatched position.

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**3,930,389**
**LOCK AND SUPPORT DEVICE FOR FUEL TANK**
**Robert Bulkus, 1430 NE. 55th St., Fort Lauderdale, Fla. 33308**
**Filed Feb. 24, 1975, Ser. No. 552,259**
**Int. Cl.² B65D *55/14*; E05B *73/00***
**U.S. Cl. 70—164** **6 Claims**



1. A lock and support device for a fuel tank means that includes a fuel tank with a generally fixed valve having an outlet comprising:

a capping and securing means connectable to the outlet,

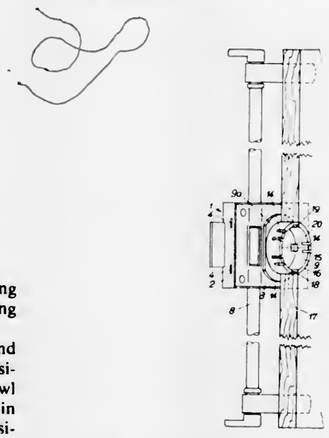
a lock connecting means attached to said capping and securing means,

a moveable bar connected to said lock connecting means for movement between a first position engaging the fuel tank means to lock said capping and securing means on the outlet and a second position allowing movement of said capping and securing means to disengage said lock and support device from the outlet,

said lock connecting means includes a securing portion that may be utilized to secure said bar in said first position.

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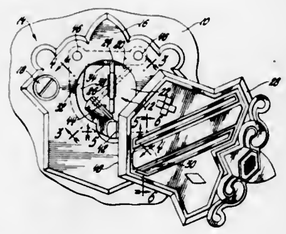
**3,930,390**
**ESPAGNOLETTE LOCK**
**Ernst Keller, 6 Querstrasse, 8805 Richterswil, Switzerland**
**Filed Aug. 28, 1974, Ser. No. 501,286**
**Claims priority, application Switzerland, Aug. 30, 1973, 12463/73**
**Int. Cl.² E05B *9/08***
**U.S. Cl. 70—224** **7 Claims**



1. Espagnolette lock for the latching of doors and the like, comprising a lock box; a lock box cover; an actuating nut rotatably supported on the wall of said lock box and in said lock box cover, said actuating nut including a rectangular through-aperture for receiving a rectangular arbor, and a slot formed in one side of said nut for receiving the key bit of a cipher key; and a sleeve adapted to be mounted in a circular aperture formed in the door, said sleeve including guide grooves and projections for receiving and securing of varied actuating elements for said lock and guide and cover sleeves associated therewith.

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**3,930,391**
**LOCK CYLINDER COVER WITH KEY ENGAGEMENT RELEASE**
**Hans J. Borlinghaus, Clarkston, Mich., assignor to General Motors Corporation, Detroit, Mich.**
**Filed Mar. 17, 1975, Ser. No. 558,847**
**Int. Cl.² E05B *17/18***
**U.S. Cl. 70—455** **3 Claims**



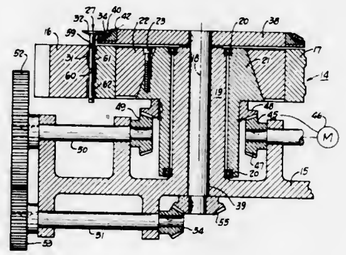
1. For use with a vehicle body trunk lid including a lock cylinder mounted thereon with an outwardly facing key open-



ing for receiving a key to permit rotation thereof through an unlocking operation of said lock cylinder, a cover arrangement comprising an escutcheon secured to said trunk lid and having a central opening formed therein axially aligned with said lock cylinder, a cover member pivotally mounted on said escutcheon for movement between a closed position covering said opening and an open position permitting access through said opening to said key opening, resilient means operatively connected between said cover member and said escutcheon for urging said cover member toward said closed position, and a spring detent secured to the underside of said escutcheon and including a resilient arm having a stopping surface and an adjacent camming surface formed thereon and extending outwardly through said opening in said escutcheon, said stopping surface serving to normally abut against an edge of said cover member to retain said cover member in said open position, and said camming surface adapted to being deflected toward said lock cylinder by said key upon rotation thereof through said unlocking operation to, thereby, withdraw said stopping surface from said cover member, permitting said resilient means to move said cover member back to its closed position upon removal of said key from said lock cylinder.

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**3,930,392**
**STRAIGHTENING MACHINE**
**Ronald J. Matej, Parma, Ohio, assignor to Prutton Corporation, Cleveland, Ohio**
**Filed Mar. 21, 1975, Ser. No. 569,889**
**Int. Cl.² B21D *3/02***
**U.S. Cl. 72—92** **18 Claims**



1. A straightening machine for a flanged stem workpiece, comprising in combination:

a base,

an arcuate first die fixed on said base,

a rotary second die journalled on said base on a first axis, feed means to feed workpieces to an entrance end of said first die for rotary passage of the stems of such workpieces between said first and second dies in accordance with rotation of said second die,

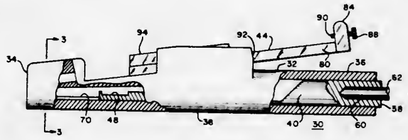
the flange of the workpiece being larger than the stem thereof to have a contact portion of the flange continually overlapping said rotary second die to lie nominally in a first path of a circular arc on a radius from said first axis, a straightening member journalled for rotation on said base,

a straightening roller connected for orbiting movement in accordance with rotation of said straightening member and with a contact area on the periphery of said roller,

and movement means including rotation of said straightening member to establish movement of said roller contact area in a second path intersecting said first path during rotary passage of such workpiece stem between said dies to engage said flange and bend said workpiece cyclically with the amount of bending increasing and then decreasing thereafter toward the exit end of said first die to effect a straightening of such flange.

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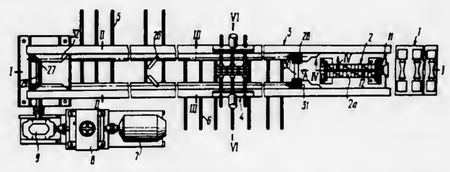
**3,930,393**
**DIE ASSEMBLY**
**Daniel Eppler, Old Bridge, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.**
**Filed Mar. 13, 1975, Ser. No. 558,166**
**Int. Cl.² H01R *5/10***
**U.S. Cl. 72—133** **16 Claims**



1. A die assembly for joining articles comprising: an elongate housing having a first end and second end; a first die member slidable in said housing along a first axis towards and away from said housing first end; a second die member slidable in said housing along a second axis towards and away from said housing first end; said second axis being selectively disposed at an oblique angle to said first axis and intersecting said first axis generally adjacent said first end of said housing; said first die member having a nest portion for receiving a terminal therein for movement towards said first end of said housing; said second die member having a forming portion generally facing said first die member nest portion and arranged to selectively progressively approach said first die member nest portion upon movement of said first and said second die members towards said housing first end, wherein upon the insertion of a deformable terminal within said first die member nest portion and the movement of said first and said second die members towards said housing first end, said second die member forming portion is caused to progressively approach said first die member nest portion and progressively wedgingly deform such terminal about such articles located therewithin.

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**3,930,394**
**MILL FOR PLUGGING TUBES AND TAKING THEM OFF PLUG**
**Pavel Ivanovich Orro, ulitsa Kirova, 8, kv. 25; Nikolai Grigorievich Kovalevsky, Oktyabrskaya ploschad, 5, kv. 6; Alexandr Ivanovich Lobanov, ulitsa Komsomolskaya, 10, kv. 18; Andrei Mikhailovich Arkhangelsky, Vysokovoltnaya ulitsa, 28, kv. 16; Valentin Anatolievich Makarov, ulitsa Poligonnaya, 22, kv. 32; Jury Georgievich Goreslavets, ulitsa Dnepropetrovskaya, 3, kv. 89, all of Dnepropetrovsk; Nikolai Konstantinovich Erokhov, ulitsa Bogomoltsa, 10, Nikopol; Georgy Iosifovich Khaustov, ulitsa Mironova, 23, kv. 11, Nikopol; Ivan Mikhailovich Obukh-Shvets, ulitsa Shevchenko 209, kv. 11, Nikopol, and Alexandr Davydovich Vereschagin, ulitsa Baikalskaya, 11, kv. 103, Dnepropetrovsk, all of U.S.S.R.**
**Continuation of Ser. No. 359,888, May 14, 1973, abandoned.**
**This application July 22, 1974, Ser. No. 490,865**
**Int. Cl.² B21B *17/10***
**U.S. Cl. 72—209** **3 Claims**



1. A mill for plugging tubes and taking them off a plug after drawing, said mill comprising: a roll table onto which a tube with a plug is delivered from a drawing mill; a plug head for

plugging the tubes placed over the plug to provide a clearance between the tube and plug for extracting the plug from the tube, the plug head being formed as a plurality of stands disposed one after another, in which stands bearings are utilized as plugging members, the plug head being installed downstream of said roll table, as viewed in the direction of movement of the tube being plugged, and wherein the tube is delivered from said roll table; a conveying device being disposed downstream of said plug head as viewed in the direction of movement of the tube being plugged, said pulling device comprising two frames arranged parallel to each other and fitted with guides along which two endless conveying chains are transferred by a pair of drive sprocket wheels, said chains carrying articulated clamps for gripping one end of the plug to draw the tube with the plug through said plug head and to extract the plug from the tube on completion of the plugging operation, said conveying device being provided with elements for moving said clamps apart before they have gripped the tube and when the tube is released from said clamps; and apparatus for separating the tubes from the plug set up on said pulling device in its rear portion adjacent to said plug head and comprising power cylinders secured on said pulling device at an acute angle to a plane passing through said guides of said pulling device so that the cylinders do not interfere with the guides located in said plane and with the pulling chains moving along the guides; said power cylinders having rods which carry jaws fastened to them and adapted for gripping and holding the tube being plugged in place to enable the extraction of the plug from the tube with the help of said clamps.

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**3,930,395**

## ROLLING MILL

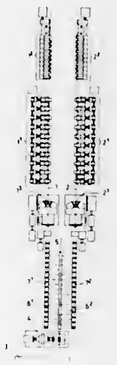
**Erich Bretschneider, Meerbusch; Hermann Leitner, Langenfeld, and Friedhlem Böhmer, Neuss, all of Germany, assignors to Schloemann-Siemag Aktiengesellschaft, Dusseldorf, Germany**

**Filed Apr. 14, 1975, Ser. No. 567,606**

**Claims priority, application Germany, Apr. 17, 1974, 2418454**

**Int. Cl.² B21B** *1/18, 41/08*

**U.S. Cl. 72—228** **4 Claims**



**1.** Rolling mill for high capacity and for producing large bundle weights, having a furnace followed by a roughing line and a separate intermediate and finish rolling line for each line of product,

characterized by the fact that the roughing line consists of a shaping stand (**4**) located next to the furnace, a free outlet, permitting outlet roll runout (**5**) of the rolled stock from the shaping stand (**4**), with a distribution device ($6^1$, $6^2$) designed as transverse transport and arranged thereafter a planetary diagonal rolling mill ($1^3$ and $2^3$) for each roll line (**1, 2**).

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**3,930,396**

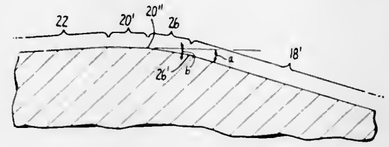
## DIE SYSTEM FOR CAN BODY PRESS

**Everly Martinez, Union City, Calif., assignor to Reynolds Metals Company, Richmond, Va.**

**Filed Sept. 30, 1974, Ser. No. 510,386**

**Int. Cl.² B21D** *22/20*

**U.S. Cl. 72—347** **13 Claims**




**1.** A press for ironing the side wall of a metal can body, comprising a punch, an ironing ring, means supporting the ironing ring to iron a side wall of a can body carried by the punch as it moves in one direction relative to the ironing ring, means to move the punch relative to the ironing ring, and means to direct cooling and lubricating liquid toward the position where the can body side wall is initially ironed in the ring, said ironing ring having a conical lead-in surface where the can body first enters the ironing ring, a cylindrical land surface adapted to iron and thereby thin and lengthen the can body side wall, and an intermediate conical surface therebetween, the semicone angle of said intermediate conical surface being between 20 and 80 percent of the semicone angle of the conical lead-in surface.

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**3,930,397**

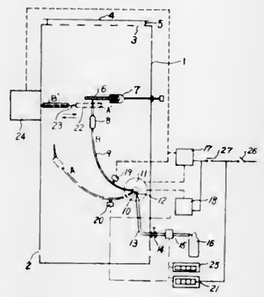
## COMBUSTION TESTING APPARATUS

**Shigeru Suga, Yoyogi 5-20-2, Shibuya-ku, Tokyo, Japan**

**Filed Aug. 28, 1974, Ser. No. 501,454**

**Int. Cl.² G01N** *25/00*

**U.S. Cl. 73—15 R** **3 Claims**



**1.** A device for testing combustion properties of a testpiece, said device comprising:

a test chamber having an air inlet port and an exhaust port therein;

a test piece support positioned to support a test piece within said test chamber;

a burner means movable between a first position adjacent said test piece within said test chamber and a second position remote from said test piece within said test chamber;

a lateral tube coupled to said burner means;

a gas bomb;

means coupling said lateral tube to said gas bomb for selectively supplying gas to said lateral tube;

a flame timer for controlling the time during which a test piece is exposed to flame from the burner means during a cycle;



a down-time timer for controlling the time during which the flame is removed from the test piece during a cycle;

a burner moving means operatively controlled by said flame timer and said down-time timer and coupled to said lateral tube for moving said lateral tube and said burner means between said first and second positions at predetermined intervals determined by the time settings of said flame timer and said down-time timer;

a first microswitch positioned to contact said burner means when said burner means is in said first position;

a second microswitch positioned to contact said burner means when said burner means is in said second position;

a counter means coupled to said coupling means and said second microswitch for halting gas flow upon detection of predetermined number of contacts between said second microswitch and said burner means;

a residual flame timer coupled to and operable by said counter means for providing an indication of time lapse beginning with said halting of said gas flow;

a heat shield; and

means operatively positioned for moving said heat shield between a position intermediate said test piece and said first position of said burner means and a position remote therefrom, said moving means being coupled to said heat shield and to said first microswitch,

whereby said test piece is shielded from flame until said burner means is adjacent thereto, said test piece being subjected to a predetermined number of periodic exposures to flame, the length of the periodic exposures and the hiatus therebetween being precisely controlled.

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**3,930,398**

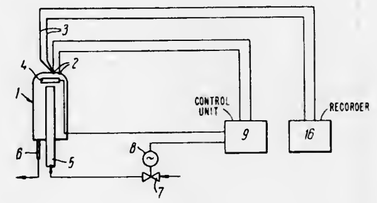
## DEVICE FOR CONTINUOUS TEMPERATURE MEASUREMENT OF DEW POINT OF FLUE GASES

**Tatyana Abramovna Levina, ul. Snaiperskaya 10, korpus I, kv. 69; Mikhail Borisovich Serkh, ul. Moskvina 5, kv. 46, both of Moscow, and Ivan Georgievich Guzynin, Oktyabrsky prospekt 403, korpus 8, kv. 63, Ljubertsy Moskovskaya oblast, all of U.S.S.R.**

**Filed July 17, 1972, Ser. No. 272,624**

**Int. Cl.² G01N** *25/02, 25/68*

**U.S. Cl. 73—17 A** **1 Claim**




**1.** A device for continuous temperature measurement of the dew point of flue gases comprising in combination, a dew point temperature transmitter having a condensation surface; means for heating said transmitter, said heating means being located under said condensation surface; means for cooling said transmitter and applied to said condensation surface; s sensitive unit of said transmitter located on said condensation surface thereof; electrodes of said sensitive unit; a thermoelectric element of said sensitive unit; a unit for controlling the temperature of said condensation surface and comprising a heating regulator connected electrically to said electrodes and said heating means, and a cooling regulator connected electrically to said electrodes and said cooling means, a signal from said electrodes carrying information about the formation of a condensate film of flue gas on said condensation surface being applied simultaneously to said heating and cooling regulators, a signal from the output of said heating regulator being directly proportional to the thickness of the condensate film, and a signal from the output of said cooling regulator being inversely proportional to the thickness of said condensate film; and a register electrically connected to said thermo-electric element and adapted to register the condensate surface temperature that is maintained equal to the dew point temperature by said heating and cooling regulators simultaneously.

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**3,930,399**

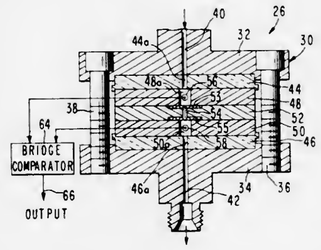
## VISCOSITY DETECTION APPARATUS AND METHOD

**Miner N. Munk, Walnut Creek, Calif., assignor to Varian Associates, Palo Alto, Calif.**

**Filed July 22, 1974, Ser. No. 490,534**

**Int. Cl.² G01N** *11/00*

**U.S. Cl. 73—55** **17 Claims**




**14.** A method for measuring the viscosity of effluent from the column of a liquid chromatograph utilizing known properties of said effluent and known operating parameters of said chromatograph, said method comprising the steps of:

a. forcing the effluent through an elongated flow path having an entrance and exit;

b. sensing the temperature of the effluent entering said flow path;

c. sensing the temperature of the effluent exiting from the flow path;

d. comparing the sensed entrance and exit temperatures, and

e. deriving an indication of the viscosity of said effluent from the comparison of said sensed entrance and exit temperatures and from said known properties of said effluent and said known operating parameters of said chromatograph.

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**3,930,400**

## SELF-OPERATING MACHINE FOR DRY TEST OF HOLLOW BODIES OF THE HEAT EXCHANGER TYPE AND THE LIKE

**Alain Edouard Plegat, Asnieres, France, assignor to Societe Anonyme des Usines Chausson, Asnieres, France**

**Filed Apr. 24, 1974, Ser. No. 463,759**

**Claims priority, application France, May 11, 1973, 73.17206**

**Int. Cl.² G01M** *3/04*

**U.S. Cl. 73—45.2** **24 Claims**

**1.** A machine for detecting leaks in hollow bodies, by testing each hollow body by comparison with an identical reference hollow body, hollow bodies of different kinds being tested simultaneously and each hollow body having at least two apertures, comprising:

a plurality of units, each having a support and carrier means for a reference hollow body and for the hollow body to be tested;

a first set of caps for closing all apertures but one of each of the hollow bodies whereby one aperture remains free for each of the hollow bodies;

a further first set of caps for connecting said free apertures of each of said reference hollow bodies to a common distributing test compressed gaseous fluid supply;

a further second set of caps associated with said carrier means for connecting said free aperture of each of said hollow bodies to be tested and carried by said carrier means to said common distributing test compressed gas fluid supply;

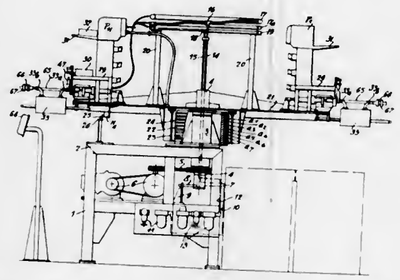
a differential manometer having two inputs each respectively connected to one of said further first and further second sets of caps;

a rotatable table supporting said plurality of units, said units being positioned in spaced relationship along the periphery of said rotatable table;

arcuate controlling means operatively coupled with said table;

means for rotating said table at a substantially constant speed;

means engaging said arcuate controlling means for simultaneously coupling said reference hollow bodies and hollow bodies to be tested with said compressed test gas fluid



supply and for then simultaneously isolating said reference hollow bodies and hollow bodies to be tested from said test compressed gas fluid supply and simultaneously coupling said reference hollow bodies and hollow bodies to be tested respectively to the two inputs of said differential manometer;

means operatively coupled to said differential manometer for reading said differential manometer and operated from said differential manometer in response to a leak detected thereby, said reading means operating said carrier means for releasing thereof thus causing dropping of said tested hollow body in which a leak is detected in a first position; and

operating means angularly spaced with respect to said means for reading said differential manometer for releasing said carrier means carrying tested hollow bodies which are determined to be leak-proof so as to drop said latter leak-proof hollow bodies in a second position.

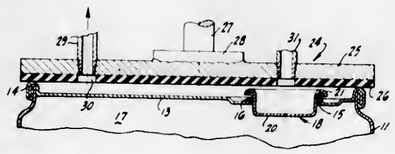
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**3,930,401**

**CONTAINER AND LEAK-TESTING SYSTEM THEREFOR**

**Harry H. Filler, 3713 Mount Diable Blvd., Lafayette, Calif. 94549**

**Filed Apr. 30, 1973, Ser. No. 355,908**
**Int. Cl.² G01M *3/02***
**U.S. Cl. 73—49.2** **13 Claims**



1. In a method of testing opening-equipped containers for leakage during the relatively long time period intermediate fabrication of such container by the manufacturer therefor and filling the same by the user with the product intended therefor, comprising the steps of: establishing a pressure differential between the interior and exterior of such container; seating a closure member against such container, in covering relation with the opening thereof to sealingly relate the closure member and container using such pressure differential to maintain the sealing relationship therebetween, such that the closure member engages only the container; and thereafter testing the tightness of the closure member against the container as an index of any loss of such pressure differential.

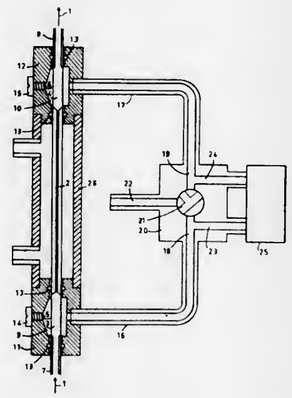
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**3,930,402**

**VISCOSIMETER**

**Dirk Adrianus Detmar, Rijswijk Zh; Jan Van der Sluis, Delft; Izak Johannes Stoik, Delft, and Marius Hendrik Johan Zuidweg, Delft, all of Netherlands, assignors to Gist-Brocades N.V., Delft, Netherlands**

**Filed Feb. 27, 1974, Ser. No. 446,261**
**Claims priority, application Netherlands, Mar. 2, 1973, 7302934**
**Int. Cl.² G01N *11/04***
**U.S. Cl. 73—55** **9 Claims**



1. A viscosimeter for testing liquids comprising: a flow system for liquid to be tested, having a capillary; zones for determining the pressure of the liquid to be tested located before and after the capillary, said zones for determining the pressure of the liquid to be tested being surrounded by tubes of a thin-walled material adapted to transfer the pressure of the liquid within the tubes to pressure transduction liquids outside each of the tubes; a pressure difference recording means having two chambers, each of said pressure transduction liquids being in contact with one of said two pressure chambers of said pressure difference recording means in such a manner that the pressure of the liquid to be tested at both sides of the capillary are transferred to said pressure chambers.

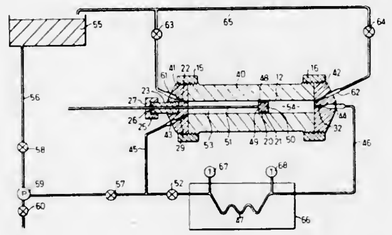


**3,930,403**

**PISTON ASSEMBLY**

**William Telford Cross, Cuddington; Stephen Alexander Gaydon, Saltburn by the Sea; Andrew Gilchrist, and Ernest Raymond Ellis, both of Welwyn Garden City, all of England, assignors to Imperial Chemical Industries Limited, London, England**

**Filed July 23, 1974, Ser. No. 491,137**
**Claims priority, application United Kingdom, Aug. 8, 1973, 37588/73**
**Int. Cl.² G01N *11/04***
**U.S. Cl. 73—55** **3 Claims**



1. A high pressure viscometer comprising: a transfer compressor for transmitting pressure from one fluid to another, said transfer compressor including a cylinder, a piston slidable within the cylinder, a space within the cylinder at each end of the piston, means for admitting fluid to each of the spaces, a tell-tale rod mounted on one end of the piston passing slidably and sealingly through an end of the cylinder, one end of the piston presenting a different area to the fluid in contact with it from the area presented by the other end of the piston to the fluid in contact with said other end, whereby the pressure exerted on the fluid at one end of the piston may be different from the pressure existing in the fluid at the other end of the piston; and a capillary tube having opposite ends connected to the spaces at the ends of the cylinder whereby a pressure difference generated between opposite ends of the piston by the application of pressure to the fluid contained in the end spaces of the cylinder causes the fluid to flow through the capillary at a rate which may be determined by the movement of the tell-tale rod.

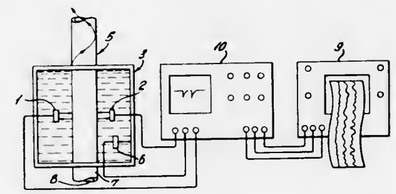
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**3,930,404**

**INSIDE DIAMETER, OUTSIDE DIAMETER AND WALL TUBE GAGE**

**Joseph Ryden, Jr., Richland, Wash., assignor to Exxon Nuclear Company Inc., Bellevue, Wash.**

**Filed June 21, 1973, Ser. No. 372,202**
**Int. Cl.² G01N *29/00*; G01B *17/02***
**U.S. Cl. 73—67.8 R** **20 Claims**



1. An ultrasonic system for simultaneously determining the inside and outside diameters and wall thickness of tubular objects, comprising in combination, first means containing a couplant medium capable of transferring ultrasonic energy for use in obtaining data for the measurement of said inside and outside diameters and wall thickness of said tubular objects disposed in said couplant medium in said first means, transducer means fixedly mounted externally of said tubular objects in said first means and immersed in said couplant medium for producing ultrasonic energy upon activation thereof, said transducer means comprising first and second transducers mounted diametrically opposite each other relative to said tubular objects in said first means for obtaining data for use in measuring said inside and outside diameters and wall thickness, electronic circuit means operably connected to said first and second transducers for producing electronic signals corresponding to the energy reflected back to and received by said transducers respectively from the tubular objects and processing said signals to provide output signals representative of the inside diameter, outside diameter and wall thickness of the tubular object being measured, and reference transducer means fixedly mounted externally of said tubular objects in said first means relative to a fixed surface and immersed in said couplant medium, said reference transducer means operably connected to said electronic circuit means for being activated simultaneously with said first and second transducers for producing a reference signal, and said electronic circuit means processing said reference signal with said electronic signals so as to automatically compensate said system for temperature variations in said couplant medium

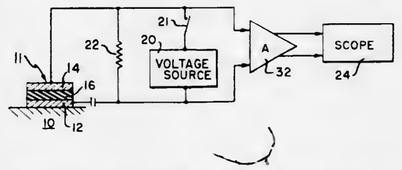
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**3,930,405**

**METHOD AND MEANS FOR MEASURING ACOUSTIC EMISSIONS**

**Claus J. Renken, Jr., Holts Summit, Mo., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.**

**Filed Sept. 17, 1974, Ser. No. 506,819**
**Int. Cl.² G01D *7/00*; G01N *9/18***
**U.S. Cl. 73—71.4** **2 Claims**



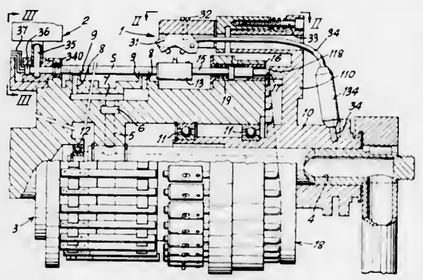

1. A device for monitoring acoustic emissions from an object, comprising:

a capacitive transducer having two electrodes and a thin dielectric of mica between 2 and 5 mils thick disposed therebetween, one of said electrodes being mechanically coupled to the object, a pulsed voltage source coupled to and capable of charging said capacitive transducer to an initial voltage $V_i$ between said electrodes such that the E field impressed upon said dielectric is at least 0.5 volt/mil, a load coupled across said capacitive transducer for discharging said capacitive transducer to a voltage less than $V_i$, said source being responsive to the voltage between said electrodes being 0.2 $V_i$ to recharge said capacitive transducer to $V_i$, with said capacitive transducer discharging across said load the rate of change in the voltage across said load being proportional to the normally exponential rate of discharge of said capacitive transducer, an AGC amplifier coupled to said load, and being responsive to the voltage across said load to develop an output signal being the amplification of the voltage across said load with a magnitude of amplification inversely proportional to the value of the voltage across said load, and monitoring means coupled to said AGC amplifier and responsive to the output voltage thereof to detect modulations in said output signal from that which said output signal would be due to said normally exponential rate of change of the voltage across said load, the time constant of said AGC amplifier being shorter than the time constant of said normally exponential rate of discharge and longer than the time constant of said modulations, said modula-

tions indicating the presence of acoustic emissions from the object.

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**3,930,406**
**CIGARETTE ENDS FIRMNESS DETECTOR**
**Giovanni Pezzi, Bologna, Italy, assignor to AMF Incorporated, White Plains, N.Y.**
**Filed Sept. 5, 1974, Ser. No. 503,236**
**Claims priority, application Italy, Sept. 26, 1974, 12845/74**
**Int. Cl.² G01N** *3/40*
**U.S. Cl. 73—78** **9 Claims**



1. A device for detecting the degree of firmness of cigarette ends, comprising
a rotating pneumatic drum sequentially moving cigarettes laterally one after another to a position to be tested,
yieldable feeler means sensitive to the degree of firmness of cigarette ends and having positionable means indicating the degree of firmness of a cigarette being tested,
circular cam means engaging one end of said feeler means and urging the other end of said feeler means against the end of a cigarette positioned to be tested, and
transducer means disposed adjacent a cigarette being tested and operatively associated with said feeler means for selectively providing a signal representing the position of said positionable means indicating the degree of firmness of the end of a cigarette being tested,
said drum being provided with a plurality of axially aligned pairs of cradles disposed in an equally spaced series adjacent one end of the drum,
said feeler means being a plurality of axially movable feelers supported by said drum each being axially aligned with a different axially aligned pair of cradles, and
said cam means being provided with a fixed circular cam face having an arcuate portion disposed closer to the adjacent end of said drum than the remainder of said cam face urging a feeler into contact with the end of a cigarette supported by an axially aligned pair of cradles when the cigarette is in a position to be tested.

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**3,930,407**
**WATER-WASHABLE INSPECTION PENETRANT EMPLOYING MINERAL SOLVENT AND A FATTY ACID SOLUBILITY PROMOTER**
**James R. Alburger, 5007 Hillard Ave., La Canada, Calif. 91011**
**Filed Jan. 7, 1974, Ser. No. 431,236**
**Int. Cl.² G01N** *19/08, 31/22, 31/00;* **C09K** *11/00, 3/00*
**U.S. Cl. 73—104** **4 Claims**

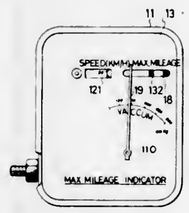
1. In a water-washable inspection penetrant process in which a water-dispersible dyed liquid penetrant is applied to test parts, surface penetrant is removed by washing said test parts with water, and said parts are inspected for residual entrapments of penetrant liquid in surface flaws, the improvement wherein said water-washable penetrant consists essentially of the following formulation, stated in weight percentages:

| | |
|---|---|
| Mineral solvent | 98% to 75% |
| Fatty acid | 2% to 25% |

said penetrant vehicle having dissolved therein an indicator dye to a concentration within the range of from about 0.2% up to about 30%.

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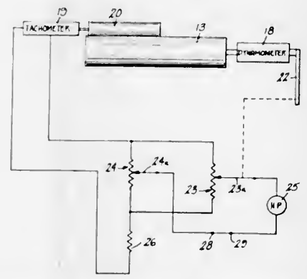
**3,930,408**
**MAXIMUM MILEAGE INDICATOR FOR VEHICLE**
**Masahiro Kadota, Susono, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan**
**Filed Apr. 1, 1975, Ser. No. 563,969**
**Claims priority, application Japan, May 30, 1974, 49-60260; Oct. 12, 1974, 49-117447; May 30, 1974, 49-61341**
**Int. Cl.² G01F** *9/00*
**U.S. Cl. 73—114** **10 Claims**




1. A maximum mileage indicator comprising a pressure sensing mechanism responsive to the vacuum in an intake manifold to drive an indicator means;
a rotatable means having at least one maximum mileage curve printed thereon with the vacuum scale taken in the radial direction and the vehicle speed scale in the circumferential direction;
a speed sensing mechanism responsive to the vehicle speed to rotate said rotatable means by an angle proportional to the vehicle speed; and
said indicator means so arranged as to move substantially along the radial line of said rotatable means.

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**3,930,409**
**HORSEPOWER COMPUTING NETWORK FOR CHASSIS DYNAMOMETERS**
**Robert F. Ostrander, Orange, and James W. Houck, Brookfield, both of Conn., assignors to Ostradyne, Inc., Milford, Conn.**
**Filed Jan. 28, 1974, Ser. No. 437,381**
**Int. Cl.² G01L** *5/13*
**U.S. Cl. 73—117** **12 Claims**



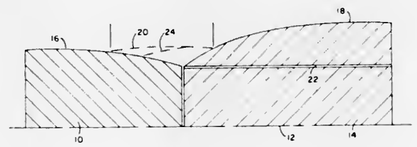

1. In combination with a vehicle dynamometer for measuring the horsepower at the drive wheels thereof where the vehicle includes an engine, drive train to the drive wheels thereof and fuel for the engine, where the indicated horsepower of the engine may be affected by the rolling resistance



of the vehicle and one or more of temperature, barometric pressure and vehicle fuel specific gravity, the dynamometer includes means for deriving a signal proportional to drive wheel speed and torque as the vehicle is powered on the dynamometer to give a signal indicative of drive wheel horsepower, and circuit means including an indicating device responsive to said signal for indicating horsepower; the improvement comprising first and second resistance means in circuit with said indicating device, the first of said resistance means calibrated in terms of vehicle rolling resistance, the second of said resistance means calibrated in terms of one of barometric pressure, vehicle fuel specific gravity and ambient temperature, each of said resistances being variable independent of the other whereby the indicated horsepower signal may be selectively modified in accordance with vehicle rolling resistance and one of temperature, barometric pressure and fuel specific gravity.

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**3,930,410**
**WIND TUNNEL MODEL ENGINE PLUME SIMULATOR WITH INTERNAL MASS FLOW**
**Richard K. Ellison, Macomb County, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.**
**Filed Feb. 28, 1975, Ser. No. 554,335**
**Int. Cl.² G01M** *9/00*
**U.S. Cl. 73—147** **1 Claim**

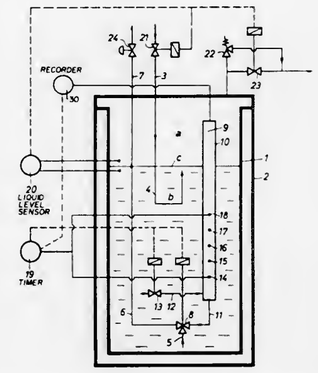


1. For use in a wind tunnel test program a solid body missile structure having a missile outer configuration,
a solid body engine plume simulator fixed to the rear of said solid body missile, said engine plume simulator having an outer configuration similar to a rocket engine plume,
an annular air passageway in said engine plume simulator surrounding the longitudinal axis of said missile and said plume simulator providing communication between the zone of juncture between said solid body missile structure and said solid body engine plume simulator and the rear of said solid body engine plume simulator.

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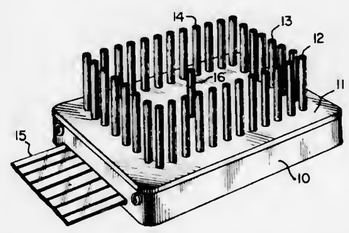
**3,930,411**
**FLUID MEASURING DEVICE**
**Christoph Beeker, Starnberg; Wolfgang Melzer, Weilheim; Rudiger Romer, Munich, and Gerhard Schieferstein, Baierbrunn, all of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Germany**
**Continuation of Ser. No. 341,469, May 15, 1973, abandoned.**
**This application Aug. 1, 1974, Ser. No. 493,838**
**Claims priority, application Germany, Mar. 17, 1972, 2213193**
**Int. Cl.² G01F** *3/38*
**U.S. Cl. 73—223** **10 Claims**

1. An apparatus for measuring the quantity of flow of a low-boiling fluid from fluid storage means, said storage means comprising a stored fluid, fluid discharge conduit means, and fluid inlet conduit means; a capacitor at least partially immersed within said stored fluid and comprising an inner chamber at least partially filled with said fluid, drain valve means communicating with said chamber and said discharge conduit means, refilling valve means communicating with said chamber and said stored fluid, and recording means for registering the capacitance of said capacitor.




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**3,930,412**
**ELECTRICALLY SCANNED PRESSURE TRANSDUCER CONFIGURATIONS**
**Joseph R. Mallon, Alpine; Anthony D. Kurtz, Englewood, and John C. Kicks, Wyckoff, all of N.J., assignors to Kulite Semiconductor Products, Inc., Ridgefield, N.J.**
**Filed Jan. 3, 1975, Ser. No. 538,351**
**Int. Cl.² G01L** *9/06*
**U.S. Cl. 73—398 AR** **10 Claims**



1. A multiple pressure port transducer apparatus, comprising:
a. a hollow housing including mounted therein, a plurality of pressure transducers, each of said transducers including a silicon diaphragm having at least one pressure sensitive piezoresistor element diffused thereon and located within a central region, said diaphragm mounted on an annular glass member with the aperture of said member defining an active deflection area for said diaphragm, said plurality of transducers being encased within said hollow of said housing and located relatively about the periphery thereof, said housing including a top surface having a plurality of tubular cylindrical pressure ports coupled to said apertures in said surface, each one of which being aligned with one selected one of said transducers, in said housing, whereby each transducer is associated with one tubular pressure port, a slot in said housing for accommodating a plurality of leads and means for coupling selected ones of said leads to selected ones of said transducers, whereby each transducer has at least one lead associated therewith for monitoring any change in said pressure sensitive element caused by a force applied to any one of said ports and therefore to said aligned diaphragms, and

means coupled to said selected leads for selectively scanning said transducers to monitor each separate one.

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**3,930,413**

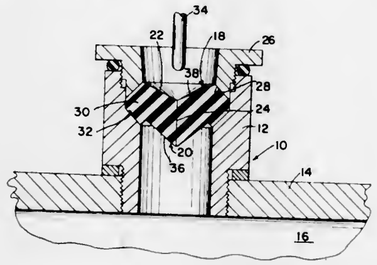
## QUICK RELEASE GAUGE FITTING

**Richard P. Laird, and William M. Sills, both of Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.**

**Continuation-in-part of Ser. No. 312,820, Dec. 7, 1972, abandoned. This application Aug. 27, 1973, Ser. No. 391,859**

**Int. Cl.² G01N *1/10***

**U.S. Cl. 73—421 B** **3 Claims**




1. Apparatus for allowing introduction of a testing probe into a closed fluid system, meanwhile maintaining such system in its closed condition, comprising: a tubular member communicating with the fluid within the system; a resilient member disposed within the tubular member and having one side exposed to the fluid within the system and the other side exposed to outside the system, said resilient member defining a passage from said one side to said other side thereof; means for holding the resilient member within the tubular member in continuous substantially sealing relation therewith; means for compressing said resilient member to close said passage and hold said passage closed to maintain the system in a closed state; said probe means being introducible from the other side of the resilient member into and through said passage in sealing engagement with the resilient member, opening said passage thereby, and into the fluid system, the removal of the probe means allowing said passage to close, whereby the system is continuously maintained in a closed condition, wherein the means for holding the resilient member and tubular member in continuous substantially sealing relation therewith comprise a clamp member threadably associated with the tubular member and defining an annular surface positioned to bear on the resilient member on said other side thereof about the edge thereof, and an annular step defined by the tubular member and positioned to bear on the resilient member on said one side thereof about the edge thereof, wherein the means for compressing said resilient member to close said passage and hold said passage closed comprise said annular surface defined by the clamp member and said annular step portion defined by the tubular member, angled together outwardly of the resilient member and positioned about portions of the resilient member to compress the resilient member inwardly to close said passage and to hold said passage closed.

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**3,930,414**

## METHOD AND APPARATUS FOR OBTAINING A REPRESENTATIVE SAMPLE OF FLUID FLOWING THROUGH A CONDUIT

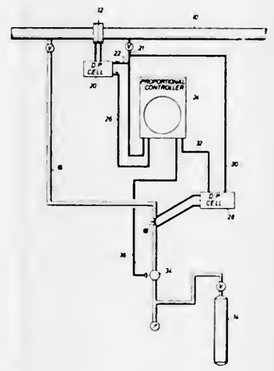
**Jolly T. Russell, Liberal, Kans., assignor to Panhandle Eastern Pipe Line Co., Houston, Tex.**

**Filed Oct. 2, 1973, Ser. No. 402,846**

**Int. Cl.² G01N *1/14***

**U.S. Cl. 73—422 R** **4 Claims**

1. A method of obtaining a representative sample of fluid flowing through a pipeline comprising the steps of connecting a sample bottle to the pipeline through a flow restriction through which fluid can flow from the pipeline into the sample bottle, measuring the pressure drop across a restriction in the pipeline, measuring the pressure drop across a flow restriction through which the fluid flows to the sample bottle and maintaining the pressure drop across the flow restriction through which the fluid flows to the sample bottle a proportional amount of the pressure drop across the flow restriction in the pipeline to cause the fluid to flow into the sample bottle at a rate proportional to the rate of flow of fluid in the pipeline.




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**3,930,415**

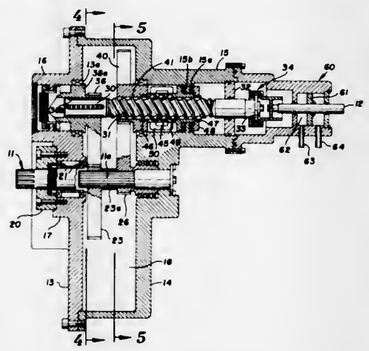
## MOTION CONVERTER

**Eugene Hoganson, 16517 Canterbury Drive, Minnetonka, Minn. 55343**

**Filed Jan. 16, 1975, Ser. No. 541,529**

**Int. Cl.² F16H *27/04***

**U.S. Cl. 74—84** **12 Claims**




1. A motion converting device including:
a. a housing defining a gear receiving cavity therein;
b. a first shaft member arranged for rotation and extending into said cavity;
c. a first pair of gear members arranged on said first shaft within said cavity for rotation with said first shaft, said gear member being arranged for rotation on said shaft;
d. at least one second shaft extending into said cavity and being arranged for rotation therein;
e. a second pair of gear members arranged on said second shaft within said cavity for rotation with said second shaft, said gear members being arranged for engaging said first pair of gear members;



f. said second shaft having a splined driving section and being longitudinally shiftable with respect to one of said second pair of gear members; and,
g. said second shaft having a threaded section and the other of said second pair of gear members threadably arranged thereon.

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**3,930,416**

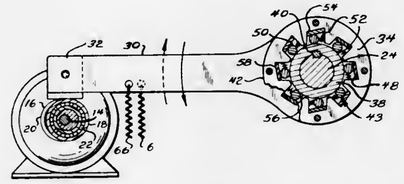
## LAMINATED DRIVE ARMS FOR SPEED REDUCER

**Arvid Dahlstrom, Chicago, Ill., assignor to Dahltron Corporation, Oak Brook, Ill.**

**Filed Sept. 16, 1974, Ser. No. 506,538**

**Int. Cl.² F16H *27/10***

**U.S. Cl. 74—125.5** **13 Claims**




1. A speed reducer mechanism for drivably connecting a rotating power shaft to a driven shaft comprising:
motion inducing means coupled to said power shaft;
at least one arm means having a pair of opposed planar side surfaces and a pair of opposed edge surfaces disposed therebetween;
said at least one arm means including a first end section engaging said motion inducing means at one of said edges and a second end section adapted to be operatively coupled to the driven shaft;
at least one separator element being removably positioned adjacent one of said sides of said second end section;
said separator element having two opposed flat faces one of which is in contiguous contact with one of said sides;
said at least one separator element and arm means having corresponding transversely extending aperture means; and
clutch means carried in said aperture means lying in confronting relationship to each other and in concentric relationship to the longitudinal axis of said driven shaft.

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**3,930,417**

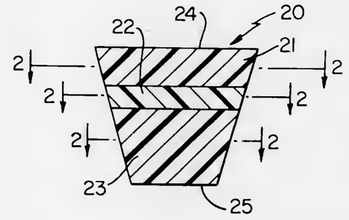
## ENDLESS POWER TRANSMISSION BELT STRUCTURE AND METHOD OF MAKING SAME

**David G. Ballou, Ozark, Mo., assignor to Dayco Corporation, Dayton, Ohio**

**Filed July 30, 1974, Ser. No. 492,948**

**Int. Cl.² F16G *1/00, 1/26***

**U.S. Cl. 74—231 P** **11 Claims**




1. An endless power transmission belt structure made of a plurality of thermoplastic elastomeric layers, each of said layers having properties which are different from properties of an adjoining layer with each layer being particularly suited to the location and arrangement thereof in said structure, said layers having heat fused interfaces which provide the sole means bonding said layers together as a unitary structure.

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**3,930,418**

## POWER TRANSMISSION BELT, REINFORCEMENT AND PROCESS

**Roger W. Dutton, Milliken, Colo., assignor to The Gates Rubber Company, Denver, Colo.**

**Filed Jan. 13, 1975, Ser. No. 540,787**

**Int. Cl.² F16G *5/00*; B29H *7/22***

**U.S. Cl. 74—234** **5 Claims**




1. In a power transmission belt of the type having a spirally wound tensile member interpositioned between layers of a heat curable, predominately polymeric body, the improvement comprising:
at least one cord bundle of twisted staple fibers having a negative coefficient of expansion, a plurality of which are adhesively bonded to portions of each other, a plurality of portions of the fibers between the adhesively bonded portions arranged to generally unslackened positions, and wherein the cord bundle defines the tensile member.

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**3,930,419**

## CASING FOR SHAFTS AND CABLES

**Morton Kramer, Pittsfield, Mass., assignor to General Electric Company, Pittsfield, Mass.**

**Filed July 10, 1973, Ser. No. 377,926**

**Int. Cl.² F16C *1/10***

**U.S. Cl. 74—501 P** **9 Claims**




1. A casing for shafts and cables, said casing comprising a kink-resistant flexible tubular member having over at least a portion of its length a plurality of convolutions provided with axially-spaced internal circumferential supports capable of slidably supporting a shaft or cable at spaced intervals along the length thereof, thereby permitting bending and longitudinal compression and extension without substantial reduction in the internal diameter of said supports, said casing being made from a high molecular weight engineering thermoplastic.

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**3,930,420**

## STEERING WHEEL ASSEMBLY

**Ryouhei Kizu, Toyota; Masahiro Harada, Ichinomiya, and Teruo Kobayasi, Inuyama, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Toyoda Gosei Co., Ltd., both of, Japan**

**Filed Oct. 4, 1974, Ser. No. 511,930**

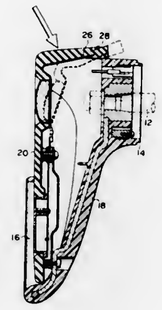
**Claims priority, application Japan, Oct. 8, 1973, 48-112276**

**Int. Cl.² B62D *1/04***

**U.S. Cl. 74—552** **10 Claims**

1. A steering wheel construction, comprising in combination:

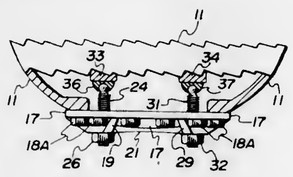
a hub mounted at one end of a steering shaft;
a rim;
a plural number of spokes connecting said hub to said rim; and



cover means having a base layer and a coated surface layer of a resilient material and mounted over said spokes;
said cover means being provided with a bent portion having a free end disposed in the proximity of an outer edge portion of said hub.

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**3,930,421**
**DIFFERENTIAL HOUSING COVER**
**John J. Geis, Jr., 5630 Limerick St., San Diego, Calif. 92117**
**Filed Jan. 16, 1975, Ser. No. 541,643**
**Int. Cl.² F16H** *57/02*
**U.S. Cl. 74—607** **4 Claims**

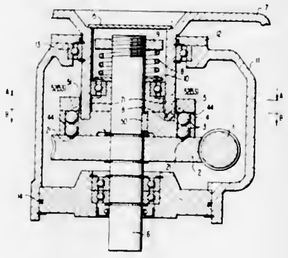


1. A differential housing cover comprising:
a cover member;
first and second threaded bores in said cover member;
first and second compression bolts threadably engaged with said first and second threaded bores, respectively, said first and second threaded bores and said first and second compression bolts having a spatial geometry for placing first and second terminations of said compression bolts in abutment with conventional carrier caps in a standard differential transmission system when said cover member is coupled thereto.

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**3,930,422**
**POWER TRANSMISSION APPARATUS**
**Yoshihiro Morimatsu, Kawasaki, Japan, assignor to Fuji Electric Company Ltd., Kawasaki, Japan**
**Filed July 24, 1974, Ser. No. 491,573**
**Claims priority, application Japan, July 25, 1973, 48-83830; Apr. 3, 1974, 49-37649; June 10, 1974, 49-65827; June 10, 1974, 49-65828**
**Int. Cl.² F16D** *7/06*
**U.S. Cl. 74—625** **2 Claims**

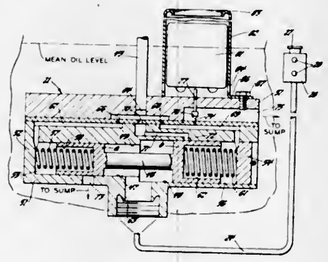
1. In a power transmission apparatus having both manual and power inputs, means for selecting between the inputs comprising a first worm gear rotatably mounted in an outer housing coupled to a power source; a second worm gear engaging said first worm gear and rotatably mounted about an output shaft, said second worm gear having a plurality of conical intentations therein; a holder slidingly engaging the upper side of said second worm gear and fixedly attached to the output shaft, said holder having at least one cylindrical aperture and a plurality of recesses therein; a disc mounted on said output shaft so as to be rotatably and axially movable with respect thereto, said disc having a plurality of conical indentations and recesses therein; spring means biasing said disc into



engagement with said holder; a plurality of balls slidingly retained in each of said apertures in said holder, the sum of the diameter of the balls being greater than the thickness of said holder; a handle rotatably mounted in said outer housing above the disc said handle having projections on its lower portion so as to pass through the recesses in the disc and to be inserted into the recesses in said holder intermediate the sides thereof.

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**3,930,423**
**CONSTANT OIL LEVEL CONTROL FOR TRANSMISSION SUMP**
**James T. Craig, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.**
**Filed Nov. 29, 1974, Ser. No. 528,473**
**Int. Cl.² F16H** *47/00*; **E03B** *5/06*; **E03C** *1/00*; **F16K** *31/18*
**U.S. Cl. 74—732** **6 Claims**

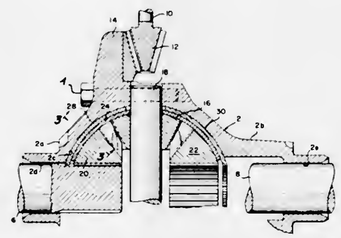



1. In a transmission; a transmission housing having a sump; an input; and output; drive means in said housing receiving fluid under pressure during operation providing a drive between said input and output; a suction intake centrally located in the bottom of said sump; source means including a pump connected to said intake and delivering a regulated pressure to said drive means; a fluid reservoir elevated above said sump; level control valve means having a bore and level valve element means in the bore mounted for movement from a central closed position in one direction to a fill position and in the opposite direction to a dump position; a fill and dump passage connecting said reservoir to said bore; a fill passage connecting said bore to said sump for full gravity flow filling; supply passage means having a flow passage connecting said source means to said large bore portion for dumping control means for said level valve means, having a chamber and low flow restricted passage means connected to said chamber, control passage means having a low flow control restriction connecting said chamber to said sump and a relay valve element movable for closing said control passage means at said restriction by a very low force and biased to open position by fluid pressure in said large chamber and level sensor means operative in high fluid level condition to cause opening of said relay valve element to reduce pressure in said chamber and said control means to move said level valve element to said dump position connecting said supply passage to said fill and empty passage and closing said fill passage to pump fluid from said sump and supply passage to said reservoir and in a low fluid level condition to move said relay valve element to closed position to close said control passage means so pressure in said chamber moves said level valve element to fill position closing said supply passage and connecting said fill and empty passage to said fill passage to fill said sump from said reservoir.
2. The invention defined in claim 1 and said level sensor means being a miniature float operative to control said very low force relay valve element.
3. The invention defined in claim 1 and said level sensor being a solenoid operative to control said very low force relay valve element and thermistor means operative to control said solenoid.



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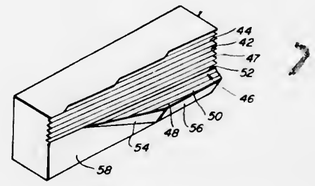
**3,930,424**
**MULTI-SHELL LIMITED SLIP DIFFERENTIAL**
**Albert F. Myers, Sr., Warren, Mich., assignor to Aspro, Inc., Westport, Conn.**
**Filed Oct. 29, 1974, Ser. No. 518,880**
**Int. Cl.² F16H** *1/44*
**U.S. Cl. 74—711** **8 Claims**



1. A limited slip differential for driving a pair of axially aligned driven shafts by a driving shaft, including
a. a casing containing a chamber having a spherical wall surface, said casing also including a pair of aligned bores communicating with said chamber for receiving the driven shafts, respectively;
b. ring gear means adapted to be driven by the driving shaft for rotating said casing about the axis of said aligned bores;
c. differential gearing means for connecting said casing with the driven shafts, respectively, said differential gearing means including
1. at least two planetary pinion gears;
2. a pair of pinion shaft means rotatably connecting said pinion gears with said casing, respectively; and
3. a pair of side gears adapted for non-rotatable connection with said driven shafts, respectively, said side and planetary pinion gears having back surfaces which are formed as sectors of a sphere, said back surfaces being concentrically spaced from the spherical wall surface of said casing chamber, respectively, said planetary pinion and side gears having enmeshing teeth of a configuration to effect separation of said gears upon the application of torque to the differential casing; and
d. at least two concentric layers of pairs of generally semi-spherical shells mounted in the space between the back surfaces of said side and planetary pinion gears and said chamber wall surface, the open ends of the shells of each layer facing each other and the shells of adjacent layers being orthogonally arranged, the shells of a first layer being rotatably mounted on the pinion shaft means associated with said pinion gears, respectively, and the shells of the other layer being adapted for non-rotatable connection with the driven shafts, respectively, whereby upon the application of torque to said casing, said side and planetary pinion gears are displaced apart to compress the shells between said back surfaces of said side and planetary pinion gears and said spherical casing wall surface, thereby to apply friction torque bias to the driven shafts via said side and planetary pinion gears.

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**3,930,425**
**METHOD FOR MANUFACTURING CONTOURED THREAD ROLLING DIES**
**Roger W. Orlomoski, Holden, Mass., assignor to Litton Industrial Products, Inc., Holden, Mass.**
**Division of Ser. No. 430,800, Jan. 4, 1974, Pat. No. 3,896,653.**
**This application Jan. 6, 1975, Ser. No. 538,890**
**Int. Cl.² B21K** *5/20*
**U.S. Cl. 76—107 R** **6 Claims**



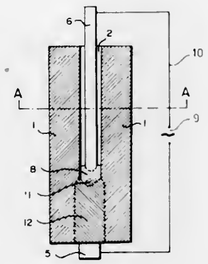
1. The method of manufacturing a die for rolling a threaded fastener having a tapered end portion, said die having a working face defined by a first and a second generally planar surface, said first and second planar surfaces intersecting along a line disposed at an included angle with respect to the direction of movement when the die is used substantially equal to the helix angle of the screw to be formed with such die which comprises: angle of the screw to be formed with such die which comprises:
holding the die, and
traversing a single tool having multiple ridges thereon relative to the face of the die with the line of contact between the tool and the die being disposed with respect to the direction of movement when the die is used at an angle equal to ninety degrees minus the helix angle of the screw to be rolled with the die to simultaneously cut a plurality of parallel thread forming ridges in said first and second planar surfaces.

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**3,930,426**
**METHOD OF MAKING A SAW BLADE**
**Bo Erik Gunnar Berggren, and Nils Torsten Strandberg, both of Soderfors, Sweden, assignors to Stora Kopparbergs Bergslags Aktiebolag, Falun, Sweden**
**Division of Ser. No. 351,820, April 17, 1973, abandoned. This application Mar. 5, 1975, Ser. No. 555,561**
**Claims priority, application Sweden, Apr. 20, 1972, 5152/72; Sept. 26, 1972, 12394/72**
**Int. Cl.² B23D** *63/00*
**U.S. Cl. 76—112** **11 Claims**

1. A method of making a saw blade consisting essentially of a steel tooth strip joined to a steel back strip, the quality of the steel of the tooth strip being different from that of the back strip, comprising maintaining two plates of back strip steel in spaced parallel relation to one another, supplying molten

tooth strip steel to the space between said plates for solidification thereof to form a billet consisting of three parallel layers, working said billet to form a composite strip having the desired thickness of the saw blade, said composite strip consist-



ing of two edge portions of back strip steel and a central portion of tooth strip steel, dividing said composite strip along the middle of the central portion, and cutting saw teeth in the tooth strip steel edge thus formed.

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**3,930,427**

## APPARATUS FOR SCREWING AND UNSCREWING THE BOTTOMS OF WATCH CASINGS

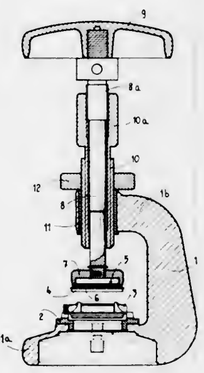
**Rene Addor, Geneva, Switzerland, assignor to Montres Rolex S.A., Geneva, Switzerland**

**Filed Sept. 23, 1974, Ser. No. 508,559**

**Claims priority, application Switzerland, Sept. 27, 1973, 13832/73**

**Int. Cl.² G04D** *1/10*

**U.S. Cl. 81—6** **2 Claims**



1. In apparatus for tightening and untightening screw-type bottoms of watch casings wherein the threads by which the bottom is attached to its casing have a predetermined pitch, said apparatus including a stand for supporting a watch casing and a spindle rotatable about an axis, together with a tool on said spindle for rotating the bottom of said watch casing, the improvement comprising in combination therewith,

screw-thread means for mounting said spindle on said stand for axial movement relative thereto, the threads of said screw-thread means having the same pitch as the threads of the watch-case bottom to be rotated, such that during tightening or untightening of said bottom said tool is displaced axially by an amount equal to the axial displacement of the watch-case bottom whereby said tool follows said bottom.

**3,930,428**

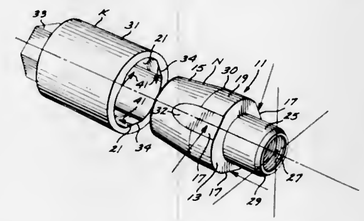
## THEFT RESISTANT COMBINATION LUG NUT APPARATUS

**Arthur Duane Hale, 74 Eastfield, Rolling Hills, Calif. 90274**

**Continuation of Ser. No. 338,345, March 5, 1973, abandoned. This application Jan. 27, 1975, Ser. No. 544,310**

**Int. Cl.² B25B** *13/06*; **F16B** *37/00*

**U.S. Cl. 81—121 R** **6 Claims**



1. A theft resistant combination lug nut apparatus for receipt on a threaded lug projecting coaxially through an oversize wheel bore and cooperating therewith to form an annulus and comprising:

a nut including an internally threaded cylindrical sleeve projecting coaxially into said annulus, said nut projecting axially from said annulus to form an increased-in-diameter axially projecting cylindrical bearing ring, said ring being formed with a radially projecting annular shoulder facing axially toward said sleeve, said nut projecting axially outwardly beyond said ring to form a conically shaped axially elongated centering dome having its peripheral surface tapering axially outwardly and radially inwardly from said ring;

a plurality of diametrically unopposed radially outwardly facing chordal index facets extending axially along the periphery of said ring parallel to the axis thereof and spaced about said bearing ring to form at locations opposite all said respective facets rounded slip surfaces;

a key device formed with an open ended shell defining a cylindrical socket for closely overfitting said slip surfaces of said ring and formed on its interior with a plurality of key surfaces for complementally mating with said index facets on said ring; and

wrench-receiving means on said key device whereby said nut may be telescoped loosely onto said centering dome to align said key device axially with said bearing ring and said key device rotated while centered on said dome to register said key surfaces with the complemental index facets on said ring and said key device then slipped axially onto said ring for positive engagement between said key device and ring and a wrench engaged on said wrench-receiving means and rotated to tighten said nut.

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**3,930,429**

## DIGITAL MUSIC SYNTHESIZER

**Jeremy R. Hill, Norfolk, Mass., assignor to ARP Instruments, Inc., Newton, Mass.**

**Continuation of Ser. No. 368,367, June 8, 1973, abandoned. This application Apr. 26, 1974, Ser. No. 464,527**

**Int. Cl.² G10H** *1/00*

**U.S. Cl. 84—1.01** **16 Claims**

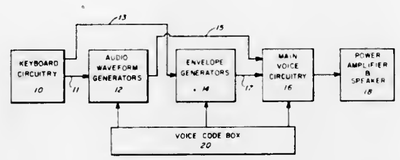
1. An electronic musical system having a keyboard and comprising:

means coupled to said keyboard and responsive to operation of at least one key of said keyboard for providing a signal of frequency corresponding to the key played,

means responsive to the playing of at least one key for providing a control signal,

an analog signal generator including resistance-capacitance time-constant elements for controlling the shape of an audio waveform and responsive to said frequency signal and said control signal for generating said waveform,






and digital code storage means coupled to both said frequency signal providing means and said control signal providing means for controlling their signals.

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**3,930,430**

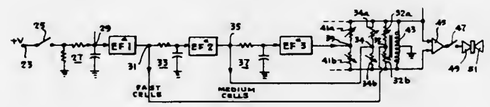
## PHOTO-ELECTRIC ORGAN WITH CHIFF

**Edward M. Jones, Cincinnati, Ohio, and William C. Wayne, Jr., South Fort Mitchell, Ky., assignors to D. H. Baldwin Company, Cincinnati, Ohio**

**Continuation-in-part of Ser. No. 368,608, June 11, 1973. This application Apr. 17, 1974, Ser. No. 461,694**

**Int. Cl. G10h** *1/02, 3/06*

**U.S. Cl. 84—1.24** **12 Claims**




1. In an electronic musical instrument, a source of direct-current potential, a first keying circuit, a key switch connected between the source and the first keying circuit, a first tone signal source corresponding to the chiff component of a desired tone, a second keying circuit connected between the first keying circuit and the first tone signal source, a second tone signal source corresponding to the main component of a desired tone and a third keying circuit connected between the first keying circuit and the second tone signal source.

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**3,930,431**

## MECHANISM FOR OPERATING A BASS DRUM

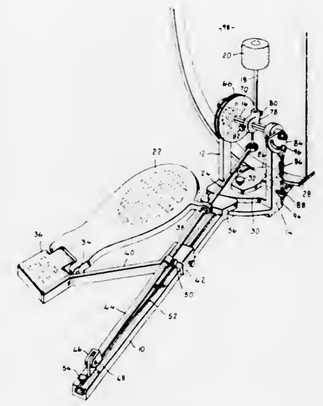
**Peter C. Magadini, 3611 E. Pierson St., Phoenix, Ariz. 85018**

**Filed Nov. 5, 1974, Ser. No. 520,971**

**Int. Cl.² G10D** *13/00*

**U.S. Cl. 84—422** **7 Claims**

1. In a mechanism for operating a bass drum comprising a base, a vertical support affixed to the forward edge of the base, said vertical support comprising a flat plate, two vertical posts at opposite ends of said plate and a shaft connecting said posts at their upper ends, said flat plate adapted to be clamped to a rim of a bass drum; a beater ball affixed to the upper end of a beater rod, said beater rod affixed to said shaft, a foot pedal, a connector means connecting said foot pedal to said support and adjustably connecting said foot pedal to said base, the improvement comprising said vertical support containing a flat plate having a convex-shaped outer rim to which the leading edge of said base is adjustably affixed so that the position of the base and therefore said foot pedal with respect



to said bass drum may be arcuately adjusted by adjusting the point of affixation of said base on said rim of said plate.

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**3,930,432**

## FASTENING ASSEMBLY

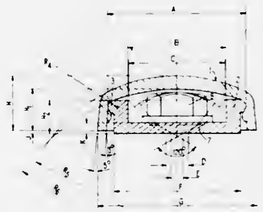
**David Peter William Puchy, 24 Threlfall St., Eastwood 2122, New South Wales, Australia**

**Filed July 20, 1973, Ser. No. 380,959**

**Claims priority, application Australia, July 21, 1972, 9789**

**Int. Cl.² A47G** *03/00*

**U.S. Cl. 85—53** **4 Claims**



1. In a fastening assembly comprising an apertured locking element engageable by an extraneous fastening member passed therethrough, such as a screw, bolt and the like, for attachment of said locking element to a sub-stratum; a cap element larger than said locking element for superposition on the latter least one of said elements being formed of resilent material; and cooperative interengaging means provided respectively on outer and inner portions of said locking and said cap elements to facilitate detachable snap engagement between said elements with an interference fit, said cooperative means including on said locking element an annular ring-shaped flange, the improvement comprising: said ring-shaped flange having a convexly-curved circumferential surface in the plane of the longitudinal central axis of said fastening assembly, said cap element being hollow and having a concave portion in which the radius of curvature is greater than the radius of curvature of the convexly-curved circumferential surface of said ring-shaped flange in the plane of said longitudinal axis so as to form an interior cavity having a major

diameter, with the space within the interior surface portion of said concave portion having a minor diameter less than that of the outside diameter of said ring-shaped flange of the locking element, the convexly-curved annular surface of said flange having a maximum diameter greater than said major diameter so as to provide said interference fit, said flange portion annularly engaging said cap element within said cavity but being displaced from said minor diameter thereof so as to provide an annular sealing line extending between said ring-shaped flange and said interior cavity at said major diameter through radial forces being produced by said interference fit; and said cap element having an annular depending skirt portion encompassing said locking element in spaced relationship therewith, said skirt portion being of a length so as to allow a gap between the bottom thereof and the sub-stratum when said cap element is superposed on said locking element.

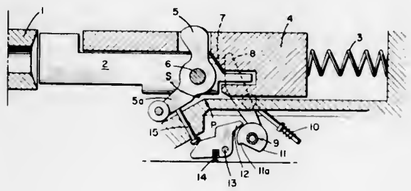
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**3,930,433**

## AUTOMATIC FIREARMS WITH BOLT ASSISTED BY AN ADDITIONAL MASS

**Jean-Claude Marie Minaire, Saint-Priest-en-Jarez, France, assignor to Etat Francais, France**

**Filed May 17, 1974, Ser. No. 470,841**
**Claims priority, application France, June 1, 1973, 73.19956**
**Int. Cl.² F41D 5/02**
**U.S. Cl. 89—169** **3 Claims**



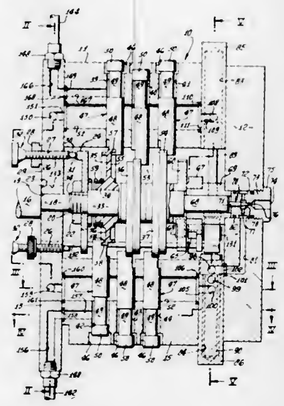
1. An automatic firearm comprising:
a bolt which recoils upon each shot against the action of return means,
an amplifying lever pivotally mounted on said bolt, said lever having a resting surface adapted to come into contact with a fixed stop surface at the start of the recoil stroke of the bolt,
an additional mass connected to said bolt by said amplifying lever,
a firing pin slidably mounted in said bolt,
a pivoting striking hammer the retraction stroke of which is controlled by the recoil of the bolt and the striking stroke of which is controlled by elastic return means,
means for retaining said striking hammer in retracted position when in an active position, said retaining means being urged towards the active position by an elastic return device and being held in a position of rest, at least during the end of the closing stroke of the bolt, by said amplifying lever as long as said amplifying lever maintains the connection between the bolt and the additional mass, the breaking and said amplifying lever, causing said anplifying lever to float at an angle, permits said retaining means to come, under the action of the elastic return device, into the active position for retaining the striking hammer in retracted position, thus automatically assuring an interruption of firing.

**3,930,434**

## HYDRAULIC CONTROLLER

**Edwin J. Hunter, Rancho Sante Fe, Calif., assignor to The Toro Company, San Marcos, Calif.**

**Filed Oct. 30, 1973, Ser. No. 411,155**
**Int. Cl.² F15B 21/02**
**U.S. Cl. 91—36** **24 Claims**



1. A hydraulic controller for controlling the operation of a plurality of hydraulically operated devices in a predetermined sequence of individually adjustable timed intervals of operation for each device, said controller being supplied from a source of hydraulic fluid under a substantially constant pressure and comprising:
distributor means for distributing the flow of hydraulic fluid from said source individually to said operated devices in a predetermined manner in response to operation of said distributor means through a sequence of individual positions of adjustment thereof;
hydraulically operated drive means for operating said distributor means through the sequence of positions, said drive means being operable in an indexing mode to index said distributor means between positions of adjustment and in a timing mode between indexing modes to maintain said distributor means in a dwell at individual positions of adjustment;
means for supplying hydraulic fluid from said sources to said drive means; and
means for independently adjustably controlling the time of operation of said drive means in its timing mode for each individual position of adjustment of said distributor means relative to another position of adjustment of said distributor means, whereby each of said operated devices may be individually operated for an individually adjustable timed interval of operation.

15. A hydraulic controller for controlling the operation of a plurality of hydraulically operated devices comprising:
fluid distributor means having a plurality of dwell positions for distributing hydraulic fluid from a source thereof to each of a plurality of said operated devices in a predetermined sequence corresponding to a sequence of positions of dwell of said distributor means;
hydraulically operated drive means for operating said distributor means through its sequence of positions to operate said devices in corresponding sequence;
means for supplying hydraulic fluid from said source to said drive means for operating said drive means in an indexing mode wherein said distributor means is indexed between its positions; and
means for providing a selected dwell of said distributor means at each of said individual positions independently of each other including means for modifying the flow of said fluid for said drive means between said indexing modes whereby an associated controlled device is operated for the period of said dwell.

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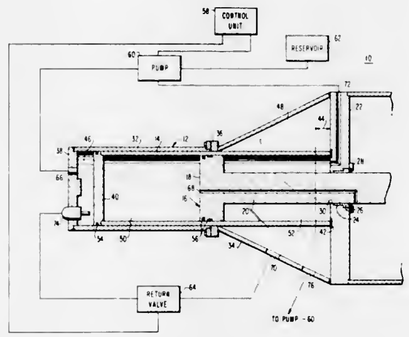


**3,930,435**

## HYDRAULICALLY POWERED ACTUATOR

**William C. Cooley, 5400 Pooks Hill Road, Bethesda, Md. 20014, and Franklin L. Beck, 3840 39th St., N.W., Washington, D.C. 20016**

**Filed May 25, 1973, Ser. No. 363,878**
**Int. Cl.² F01B 15/02; F15B 21/02**
**U.S. Cl. 91—39** **9 Claims**



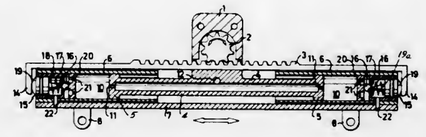

1. A hydraulically powered actuator for producing a reciprocating output, comprising in combination:
a a housing member including an upper and lower portion with a head plate extending transversely across an open extremity of said upper portion and an end plate extending transversely across an open extremity of said lower portion;
b a cylinder displaceably mounted within said housing member, said cylinder being open ended at one extremity and closed by a transverse end plate at the other extremity;
c a piston assembly slidably mounted through said housing member for reciprocal movement within said cylinder, said piston assembly including a piston and a piston rod, said piston rod being slidably mounted through the end plate of said housing member to extend outwardly therefrom to thereby serve as the reciprocating output;
d first means effecting movement of said cylinder in a first direction relative to said housing member and said piston assembly;
e second means effecting movement of said piston assembly in a second direction relative to said cylinder and said housing member;
f third means effecting movement of said cylinder and said piston assembly relative to each other and to said housing member so that said cylinder moves in the second direction and said piston assembly moves in the first direction; and
g control means for sequentially controlling the respective operation of said first, second and third means for effecting the reciprocating output, wherein said cylinder end plate, said head plate and said upper portion define a first working chamber, and said housing member end plate, said lower portion and said cylinder define a fluid working chamber.

**3,930,436**

## SERVO DEVICE PARTICULARLY FOR STEERING GEARS

**Gunnar Hedenberg, Trollhattan, Sweden, assignor to Volvo Flygmotor Aktiebolag, Trollhatton, Sweden**

**Filed Dec. 5, 1973, Ser. No. 422,113**
**Int. Cl.² F01B 15/02; F15B 9/10**
**U.S. Cl. 91—49** **7 Claims**



1. A servo device, comprising:
first and second cylinders connected for movement in essentially fixed relation to each other by a support body; first and second pistons connected to each other and located within said cylinders, said pistons and cylinders defining first and second working chambers;
first means for pressurizing said working chambers with high pressure fluid;
second and third means respectively connected to each working chamber and normally closed for preventing flow of said high pressure fluid from each said working chamber;
fourth means for transmitting force to said support body to translate said cylinders relative to said pistons;
fifth means connected to said second and third means, for selectively opening said second or said third means to permit said high pressure fluid to exhaust from one of said first or said second working chambers when the force transmitted by said fourth means exceeds a predetermined value to produce pressure differential between said two cylinders which adds to the force transmitted by said fourth means to said support body; and
first and second damping members mounted respectively for axial movement in each of said hydraulic cylinders, each of said damping members having a restricted venting port therethrough for controlling depressurization of its respective working chamber.

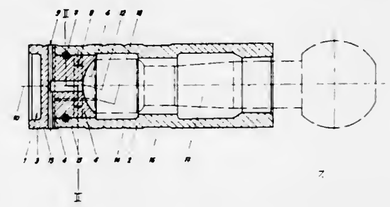
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**3,930,437**

## PISTON STRUCTURE, PARTICULARLY FOR HYDRAULIC MACHINES

**Karl Güntert, Oensingen, Switzerland, assignor to Von Roll AG, Gerlafingen, Switzerland**

**Filed Mar. 8, 1974, Ser. No. 449,286**
**Claims priority, application Switzerland, Mar. 20, 1973, 4054/70**
**Int. Cl.² F16J 1/08, 1/22**
**U.S. Cl. 92—160** **6 Claims**



1. Hydraulic piston construction comprising
a piston head (1) having
a face end portion (3) which has a diameter fitting in the cylinder in which the piston is to operate;

an inner end portion (5) of reduced diameter, the junction of said portions forming an abutment shoulder (4), the inner end face of said inner portion (5) being formed as a bearing cup (6);

a piston sleeve (2) having an inner surface closely fitting around the outer surface of the inner end portion (5), seating against said abutment shoulder (4) and having an outer diameter equal to that of the face end portion (3) of the piston head (1) fitting in the cylinder in which the piston is to operate, the piston sleeve being internally hollow and surrounding the inner end portion (5) of reduced diameter of the piston head a plurality of transversely extending grooves formed in the outer surface of said inner end portion, a plurality of transversely extending grooves formed in the inner surface of said piston sleeve with each groove extending at, at least one end thereof, to the outer surface of said sleeve, said grooves of said inner end portion and said piston sleeve being aligned with one another;

and solid connecting pins (7, 8) engaged in said aligned grooves and extending transversely to the axis (10) of the piston connecting the piston head (1) to the piston sleeve, the pins being located such that the axes thereof are tangential to the circumference of the inner end portion (5) of the piston head.

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**3,930,438**

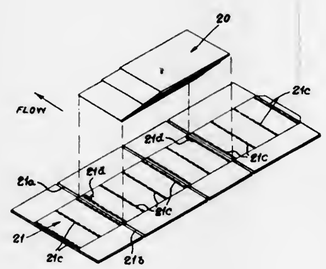
## METHOD FOR COMBINING PARTITION AND BOX BLANK AND FOR MAKING A DOUBLE WALL THICKNESS BOX

**Howard T. Hackman; Ray Brown, both of Savannah, Ga.; William H. Friend, Martinsville, N.J.; Stuart L. Natof, Lovettsville, Va.; Eugene A. Reiter, Louisville, Ky., and David W. Rudman, Wysox, Pa., assignors to Union Camp Corporation, Wayne, N.J.**

**Filed May 8, 1974, Ser. No. 468,161. The portion of the term of this patent subsequent to June 4, 1991, has been disclaimed.**

**Int. Cl.² B31B** *11/02*

**U.S. Cl. 93—37 R** **2 Claims**




1. A method for combining a divided partition having end portions for adhesive engagement with inner opposite wall surfaces of a box blank, the blank having a plurality of panels and adapted to be folded into a tube comprising:

feeding a partition onto a continuously rotating turning drum;

gripping said partition by gripping means on the said drum to hold said partition in a predetermined position during rotation of the drum;

feeding a box blank onto a movable blank conveyor;

holding the box blank on the conveyor in a predetermined transverse position;

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**3,930,439**

## DEVICE FOR WRAPPING SHEETS AROUND FOOD

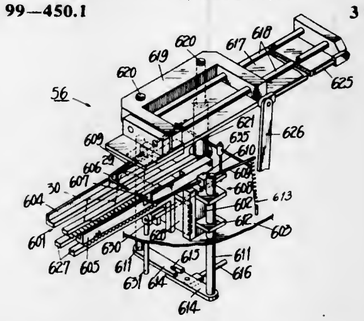
**Nobuyoshi Ohkawa, Amagasaki, Japan, assignor to Daieigiken, Inc., Amagasaki, Japan**

**Filed Mar. 12, 1974, Ser. No. 450,493**

**Claims priority, application Japan, Mar. 12, 1973, 47-29195**

**Int. Cl.² 53** *221*; **A21C** *11/00*

**U.S. Cl. 99—450.1** **3 Claims**




1. A device for wrapping dough sheets around a mixture of minced vegetables, meat and the like, to make rolled food, comprising: a stationary comb-shaped first cradle having the shape of a shallow dish and a concavity therein for receiving the dough sheets having the mixture thereon, and at least one cut-out therein; a slide plate movable substantially parallel with said first cradle; means for performing a reciprocating movement of said slide plate in two perpendicular planes, one being substantially parallel to that of said first cradle; at least one lateral pressing bar, partly above said first cradle, and movable about an arcshaped path, for holding down the sheets to the surface of said first cradle; an auxiliary cradle underneath said first cradle, movable at least partly into said cut-out, and having a serrated upper engaging surface; and at least one belt, secured with one end to said first cradle and with the other to said slide plate.

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**3,930,440**

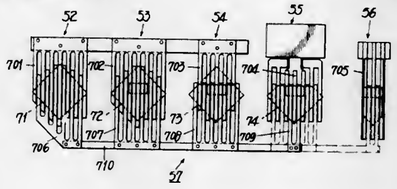
## DEVICE FOR CONVEYING ROLLED FOOD

**Nobuyoshi Ohkawa, Amagasaki, Japan, assignor to Daieigiken, Inc., Amagasaki, Japan**

**Filed Mar. 12, 1974, Ser. No. 450,490**

**Int. Cl.² A21C** *9/06*, *11/00*

**U.S. Cl. 99—450.6** **5 Claims**




1. A device for conveying rolled food, such as consisting of a mixture of minced vegetables, meat and the like, wrapped in a sheet of dough, prepared by at least two of consecutively disposed mechanisms, performing one of the plural steps of cutting up continuous dough sheets into predetermined sizes, supplying the mixture to the cut dough sheets, doubling the filled dough sheets, bending the filled and doubled dough sheets, and wrapping the latter around the mixture, the device comprising: at least two stationary cradles, each associated with one of the mechanisms; at least two movable cradles; said cradles being all uniformly spaced apart and comb-shaped, with respectively interleaved teeth that clear each other at all times during the movements of said movable cradles; means for reciprocating said movable cradles vertically with respect to said fixed cradles, up and to a level above them in a first phase, and down again to a level below them in a third phase, the latter movement with respect to a subsequent one of said fixed cradles; means for reciprocating said movable cradles longitudinally with respect to at least two subsequent ones of said fixed cradles, in one direction above them in a second phase, and in the opposite direction below them in a fourth phase; and a control mechanism for cyclically correlating the movements of said movable cradles with those of the mechanisms.



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**3,930,441**

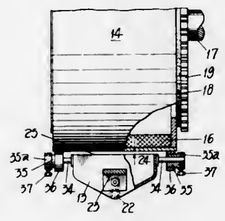
## DEVICE FOR PROCESSING DOUGH

**Nobuyoshi Ohkawa, Amagasaki, Japan, assignor to Daieigiken, Inc., Amagasaki, Japan**

**Filed Mar. 12, 1974, Ser. No. 450,491**

**Int. Cl.² A21C** *9/06*, *11/00*

**U.S. Cl. 99—450.6** **3 Claims**




1. A device for processing dough, for the preparation of rolled food consisting of a mixture of minced vegetables, meat and the like, wrapped in a sheet of dough of predetermined size, the device comprising a heated, rotatable drum having a substantially smooth outer circular surface; a flat nozzle adjacent said drum surface, to which dough is supplied and which deposits the dough through an outlet orifice of said nozzle onto said drum surface during the rotation of said drum, which orifice defines a controllable clearance with the periphery of said drum surface; a releasing plate having a stripping edge for removing individual sheets of dough as they are formed on said drum; and means for intermittently reciprocating said nozzle in at least one direction, selectively substantially parallel with said periphery of the drum surface, and toward and away therefrom.

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**3,930,442**

## MACHINE FOR THE TYING OF PACKAGES OR THE LIKE

**Hans Hugo Büttner, Mettmann, Germany, assignor to Firma Buttner Kommanditgesellschaft Maschinenfabrik, Grulten, Germany**

**Filed June 7, 1973, Ser. No. 367,813**

**Claims priority, application Germany, July 5, 1972, 2232894; Jan. 15, 1973, 2301792**

**Int. Cl.² B65B** *13/10*

**U.S. Cl. 100—18** **7 Claims**

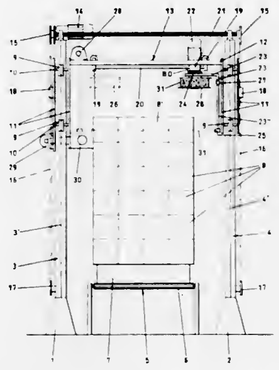
1. A machine for tying packages comprising:

means defining a feed path for a package;

rails extending transversely to said feed path and extending over its width;

a carriage displaceable on said rails across said feed path;

a tying arm mounted on said carriage for placing an elongated tying element around said package by forming a bulge in said element freely stretching transversely to said feed path for engagement by the package upon the feeding thereof along said path, said arm thereafter displacing said element around the remainder of the package; and



a fastening device for tying said element after it has been passed around said package by said arm.

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**3,930,443**

## METHOD FOR APPLICATION OF DATA TO A WORKPIECE AND APPARATUS FOR THE PERFORMANCE OF SUCH METHOD

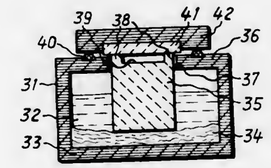
**Erhard Konersmann, Glattbrugg, Switzerland, assignor to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG, Zurich, Switzerland**

**Filed Oct. 26, 1973, Ser. No. 410,048**

**Claims priority, application Switzerland, Nov. 3, 1972, 16021/72**

**Int. Cl.² C23F** *1/00*; **B44B** *5/00*; **B41J** *3/00*

**U.S. Cl. 101—18** **2 Claims**

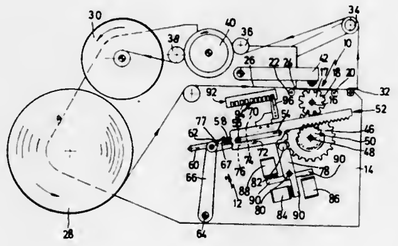



1. Apparatus for etching data on the metallic surfaces of a workpiece comprising, a housing, printing wheels having printing type secured thereon and mounted within said housing, an etching agent container disposed adjacent to said housing for containing an etching liquid, an absorbent block extending partially into the etching liquid through an opening in said container, said absorbent block having a surface extending out of the etching liquid, a wetting block mounted between said housing and said container for movement into first and second positions, said wetting block having a contact surface, a first portion of which engages the surface of said absorbent block extending out of the etching liquid when said wetting block is moved into said first position and a second portion of which engages said printing type when said wetting block is moved into said second position, the size of said absorbent block surface which engages the first portion of the contact surface of said wetting block being chosen so as to prevent excessive wetting of the wetting block with said etching liquid.

## 3,930,444
## PRINTING DEVICE FOR IMPRINTING SELECTED CHARACTERS ON A MOVABLE RECORD MEDIUM

**Dieter Belge, Schwenningen, Germany, assignor to Carl Valentin GmbH, Schloss Burgberg, Germany**

**Filed Feb. 28, 1974, Ser. No. 446,771**
**Claims priority, application Germany, Apr. 25, 1973, 2320791**
**Int. Cl.² B41J *1/08***
**U.S. Cl. 101—110** **5 Claims**



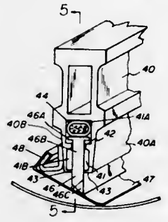
1. In a printing apparatus of the type including a plurality of rotatable type wheels (**18**), typesetting means (**52, 50, 46**) for rotating each of said type wheels, a cyclically-operable common drive means (**58**), resilient coupling means (**67**) releasably connecting said typesetting means with said common drive means, and locking means (**78**) for locking said type wheels in desired printing positions, thereby to decouple the typesetting means associated with the locked type wheels from said common drive means, thereby allowing the common drive means to complete its cycle, the improvement wherein
a. said typesetting means includes a plurality of parallel longitudinally displaceable racks (**52**) associated with said type wheels, respectively;
b. wherein said drive means comprises a pick-up rod (**58**) arranged normal to said racks adjacent and spaced from one end thereof, said pick-up rod being alternately laterally displaceable in a direction longitudinally of said rod toward and away from said rack; and
c. further wherein said resilient coupling means comprises spring members (**67**) connected at one end with said racks, respectively, said spring members having at their other ends projection means (**68**) for extending in coupling engagement behind said rod, said other ends of said spring members being laterally deflectable for decoupling an associated rack from said rod when said locking means is actuated.

## 3,930,445
## SQUEEGEE ASSEMBLY FOR USE ON A SCREEN PRINTING MACHINE

**David Jaffa, Fairlawn, N.J., assignor to Precision Screen Machines, Inc., Hawthorne, N.J.**

**Filed Mar. 14, 1974, Ser. No. 451,054**
**Int. Cl.² B41F *15/42, 15/46***
**U.S. Cl. 101—120** **3 Claims**

1. A squeegee assembly for use on a screen printing machine comprising
means for holding a squeegee,
a squeegee blade supported on said squeegee holding means,
means for maintaining a hydraulic pressure on said squeegee blade,
means for adjusting the hydraulic pressure created on said squeegee blade,
said means for maintaining hydraulic pressure including a flexible tube sealed at one end,
a supply of liquid contained within said tube,
a reversibly positionable contour bar interposed between said squeegee blade and said tube,
said contour bar having an inclined bottom surface terminating in a sharp bearing edge for engaging the free end of said squeegee blade, and

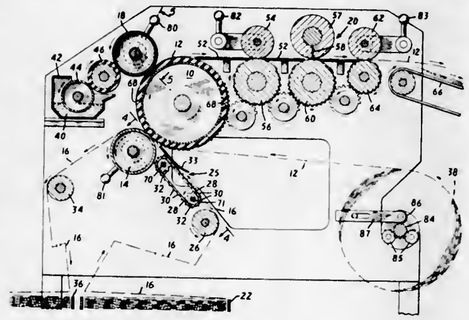


said contour bar having a plurality of spaced apart slots formed therein,
said slots opening toward the bearing edge of said contour bar so as to equalize the pressure applied through said contour bar on said squeegee blade,
whereby the flaccidity of said squeegee blade can be adjusted by an end-for-end reversing of said contour bar.

## 3,930,446
## DUPLICATOR WITH WEB MASTER

**Robert J. Crissy, West Caldwell, N.J., assignor to Edmund W. Nulton, Elizabeth, N.J., a part interest**

**Filed Aug. 23, 1974, Ser. No. 500,046**
**Int. Cl.² B41L *9/00***
**U.S. Cl. 101—132** **9 Claims**



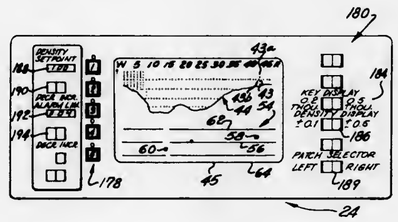
1. An apparatus for producing individual sheets containing variable information from a master web and repeat information comprising a common impression cylinder for carrying a copy web through at least two printing impressions, a printing cylinder for printing the repeat information on the copy web while the latter is carried on the common impression cylinder, means for separating the copy web at spaced lengths into individual sheets containing printed information from the master web and repeat printed information, positive feed means for feeding the master web toward the copy web while the latter is carried on said common impression cylinder and for feeding the master web at a speed slightly faster than the copy web on said common impression cylinder, a pressure roll for pressing the master web against the copy web while the latter is in contact with the common impression cylinder to transfer information from the master web to the copy web without relative movement between the webs, thereby developing slack in the master web between the pressure roll and the positive feed means, and means automatically relieving the pressure between the common impression cylinder and the pressure roll after each impression to remove the slack developed in the master web.



## 3,930,447
## DUAL PURPOSE DISPLAY FOR PRINTING PRESSES

**James E. Murray, University Heights, Ohio, assignor to Harris Corporation, Cleveland, Ohio**

**Filed July 22, 1974, Ser. No. 490,271**
**Int. Cl.² B41F *31/04***
**U.S. Cl. 101—365** **7 Claims**



1. Display apparatus for a printing press having a plurality of ink rate control devices distributed laterally across the press and having equipment for producing indicating signals having values in accordance with the settings of respectively associated said ink control devices and having at least one ink density measurement system for making a measurement of printed ink density as established by at least some of said devices comprising display means including means responsive to said indicating signals for displaying visual representations as to the values of respectively associated said signals in a linear array of visual displays of the settings in the order in which the ink control devices are laterally distributed across the press, reference means operable for setting an ink density reference level, comparator means responsive to said ink density measurement and said ink density reference level for producing a density deviation signal in accordance with the difference between them, and said display means including means for displaying a visual representation of said deviation signal in geometrical alignment with and for visual association with those ones of said array of displays of ink control device settings by which said ink density is established.

## 3,930,448
## ROCKET-DEPLOYED BALLOON FOR POSITION MARKER

**William H. Barber, Brandywine, Md.; Werner F. Beckert, Las Vegas, Nev., and Ottmar H. Dengel, Front Royal, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Continuation-in-part of Ser. No. 265,931, June 23, 1972, abandoned. This application Aug. 7, 1974, Ser. No. 495,479**
**Int. Cl.² F42B *13/42***
**U.S. Cl. 102—34.1** **13 Claims**

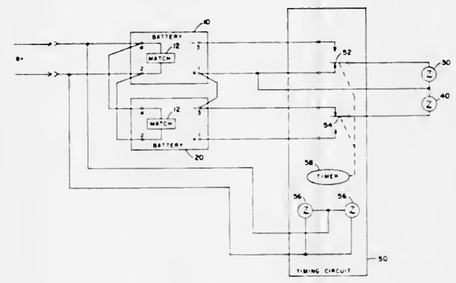


1. A portable, rocket-deployed, tethered position marker system comprising:
an inflatable marker assembly including an inflatable balloon, and a source of gas for inflating said balloon;
a rocket for launching said marker assembly to a predetermined altitude;
a separable casing attached to said rocket for containing said marker assembly;
a portable, hand-held launch tube for containing and for launching said rocket and said attached casing; and
a tether line stored within said casing for attaching said balloon to said launch tube,
whereupon actuation said rocket is launched from said launch tube, said tether line is removed from said casing, said casing separates from said rocket at a predetermined altitude, and said balloon is permitted to be inflated and to remain tethered to said launch tube.

## 3,930,449
## TIME DELAY INITIATOR

**Reuben J. Buchele, Lynn Haven, Fla., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.**

**Filed May 6, 1974, Ser. No. 467,768**
**Int. Cl.² F42C *11/00***
**U.S. Cl. 102—70.2 R** **5 Claims**



1. A time delay initiator comprising: a timing circuit having a trigger input, plural power inputs, and plural outputs for coupling to load circuitry; said timing circuit comprises a spring wound timer having a rotatable shaft and disposed for activation by said trigger input, and plural switches coupled between said power inputs and outputs for coupling power therebetween, said switches being disposed adjacent the shaft of said timer for activation during shaft rotation; a first thermal battery having an input and having an output coupled to a first of said plural power inputs; and means coupled to said battery input for activating said battery.

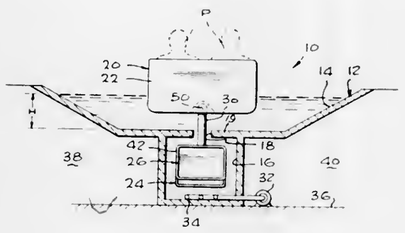
## 3,930,450
## BOAT RIDE FOR AMUSEMENT PARK

**Robert W. Symons, Canoga Park, Calif., assignor to Sid & Marty Krofft Productions, Inc., North Hollywood, Calif.**

**Filed June 3, 1974, Ser. No. 475,406**
**Int. Cl.² A63G *3/00*; B63H *19/04*; B65G *53/30*; E02B *5/06***
**U.S. Cl. 104—73** **16 Claims**

1. A vehicle system comprising:
walls forming a vehicle pathway including an elongated channel with a wall thereof which has an open slot narrower than the channel and extending along the top of the channel;
a vehicle having a body lying above said slot, at least one support member coupled to said body and extending through said slot into said channel, and paddle means lying in said channel and attached to said support for

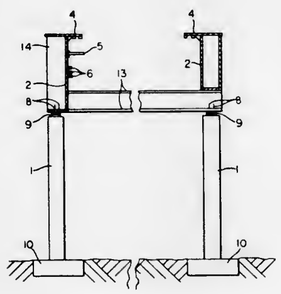
receiving forces from water moving along the channel; and



means positioned along said channel for pumping and directing the flow of the water along the channel.

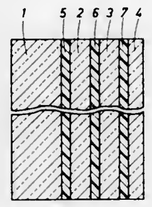
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**3,930,451**
**ROADWAY FOR HIGH PERFORMANCE RAPID TRANSIT RAILWAYS**
**Werner Huebner, Roehrmoos; Michael Simon, Munich-Obermenzing, and Peter Wagner, Mainz, all of Germany, assignors to Michael Simon, Munich-Obermenzing, Germany**
**Filed Aug. 9, 1973, Ser. No. 387,149**
**Claims priority, application Germany, Aug. 12, 1972, 2239656**
**Int. Cl.² B61B *13/08***
**U.S. Cl. 104—123** **14 Claims**



1. In a railroad track for a high performance rapid transit railway employing overhang and underhang suspension vehicles of the type comprising a support structure including supporting means and guide devices, whereby said support structure is either formed as a solid girder, or as a framework or truss work, the improvement wherein the support structure further comprises two longitudinally extending main girders arranged opposite each other, and at least one reaction rail rigidly mounted with respect to said main girders and positioned for receiving an electro-magnetic effect, said reaction rail being mounted to constitute a supporting element of the supporting structure, wherein said two main girders have open cross sections, and wherein said supporting means comprise supporting columns as well as cross struts interconnecting said main girders and arranged adjacent the bottoms of the main girders in the area of said supporting columns.

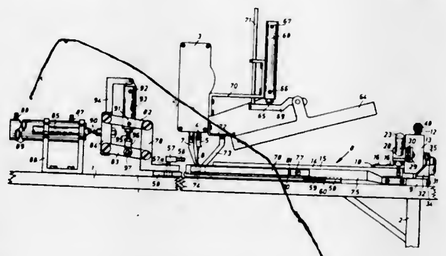
**3,930,452**
**IMPACT RESISTANT PANELS**
**Robert Van Laethem, Loverval; Pol Baudin, Ransart, and Marcel De Boel, Chatelineau, all of Belgium, assignors to Glaverbel-Mecaniver S.A., Watermael-Boitsfort, Belgium**
**Filed Sept. 19, 1973, Ser. No. 398,783**
**Claims priority, application Luxemburg, Sept. 29, 1972, 66196**
**Int. Cl.² F41H *5/04***
**U.S. Cl. 109—80** **18 Claims**



1. In an impact resistant panel composed of a group of at least three sheets of vitreous material bonded together via intervening layers of plastic material, the improvement wherein said group of vitreous sheets comprises a set of consecutive vitreous sheets of at least three different thicknesses which are arranged in order of thickness, and at least the first sheet of said set, taken in the direction from the highest sheet thickness end of said set, is tempered, and at least two of said intervening layers of plastic material are of respectively different thicknesses and are arranged so that the thinner of said layers is nearer to said first sheet than is any other one of said layers.

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**3,930,453**
**MEANS FOR PRODUCING PIPING OPENINGS IN BLANKS OF GARMENTS**
**Peter Hintzen, Krickenbach, and Erich Willenbacher, Karlsruhe, both of Germany, assignors to Pfaff Industriemaschinen GmbH, Kaiserslautern (Pfalz), Germany**
**Filed May 22, 1974, Ser. No. 472,220**
**Claims priority, application Germany, May 29, 1973, 2327255**
**Int. Cl.² D05B *3/10***
**U.S. Cl. 112—68** **11 Claims**



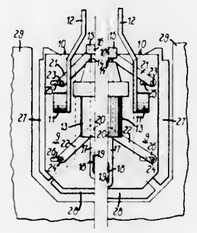
1. Arrangement for producing piped openings in cut blanks of garments, comprising a displaceable supporting plate and a folding device including a folding slide for piping strips defined by movable folding tools and a working blank clamp displaceable relative to the needles of a double needle sewing machine having a separating cutter working centrally between the needles and adapted to be lowered upon the cut blank, two folding and clamping rails defining a folding shaft between them supported for vertical movement and pivotally supported at their upper ends for rocking movement toward and away from one another and relative to said folding slide for clamping a piping strip disposed around said folding slide,



means for raising and lowering said folding and clamping rails together by an adjustable distance relative to a cut blank in said folding shaft whereby outwardly directed bulges of the tightened parts of the piping strip are formed on both sides of said folding slide.

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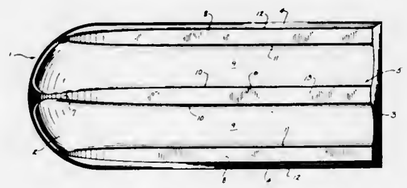
**3,930,454**
**SMALL CLOTH VISE FOR A SEWING MACHINE**
**Silvano Perlino, Pavia, Italy, assignor to Necchi, Societa per Azioni, Pavia, Italy**
**Filed July 25, 1974, Ser. No. 491,697**
**Claims priority, application Italy, July 26, 1973, 42907/73**
**Int. Cl.² D05B *21/00***
**U.S. Cl. 112—121.12** **1 Claim**



1. A device for holding the folded edge of a pocket against a garment during the sewing of two parallel seams along each of the folded edges of the pocket comprising a bottom plate for supporting the garment, a pivotable top assembly for pressing the pocket material on the garment during the sewing operation, said assembly consisting of a pivotal central plate taking the shape of the pocket and having slots therein, two movable side plates and a movable bottom plate positioned below the central plate and attached thereto, through said slots, said movable plates being capable of movement beyond and within the edges of the central plate, and means to move said movable plates, said means comprising a pneumatic motor positioned on said central plate, a movable platelet positioned above said central plate and attached to said bottom plate through one of said slots and to said motor, and pivotal levers each attached at one end to said platelet and at the other end to said side plates whereby said movable plates are moved inwardly toward said central plate after sewing the first seam and before securing the parallel second seam.

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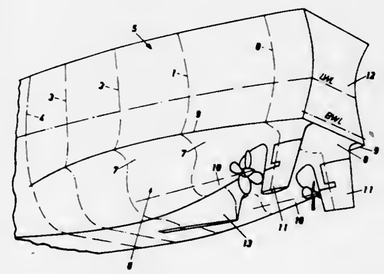
**3,930,455**
**BOAT HULL CONSTRUCTION**
**Harry Bremer, P.O. Box 488, Elkhart Lake, Wis. 53020**
**Filed Sept. 19, 1974, Ser. No. 507,260**
**Int. Cl.² B63B *1/20***
**U.S. Cl. 114—56** **6 Claims**



1. A modified deep V boat hull construction, comprising a bottom having a central surface extending longitudinally from the stern toward the bow, said central surface being generally flat in a cross sectional direction, said bottom having longitudinally extending side surfaces spaced laterally on either side of said central surface, said side surfaces being generally flat in a cross sectional direction, at any cross sectional plane through the hull the line of intersection of each of said side surfaces and said plane being horizontal and the line of intersection of said central surface and said plane being horizontal and at a lower level than said first named lines of intersection, and said hull having longitudinally extending upwardly arched curved channels connecting said central surface with each side surface, said channels having a substantially uniform lateral width from the stern of the hull toward the bow.

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**3,930,456**
**SHIP'S AFTERBODY, ESPECIALLY FOR A FULL-FORM SHIP FITTED WITH MORE THAN ONE PROPELLER**
**Lennart Ludvigsson, Laxgatan 7, Vastra Frolunda, Sweden (421 79)**
**Filed Oct. 1, 1973, Ser. No. 402,013**
**Int. Cl.² B63B *1/08***
**U.S. Cl. 114—57** **3 Claims**



1. In a full form ship including a hull having sides, an after body, a middle part, and a transom stern, at least two propellers at the stern, a boss for each propeller and a rudder, a horizontal bottom portion of the middle part being inclined upwardly and extending to a level corresponding to propeller clearance providing a substantially horizontal hull surface above the rudder and propellers, the hull surface at the stern having a width greater than the distance between the bosses for the propellers, said after body having an underwater part, the underwater part being divided into an upper full body portion and a lower narrow body portion, and a transition portion between the upper full body portion and the lower narrow body portion comprising substantially horizontal hull surfaces which successively change over into the sides of the middle part.

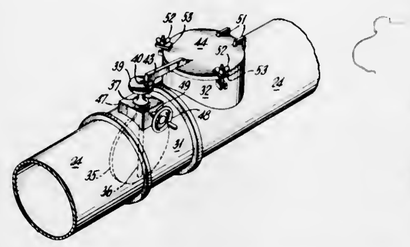
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**3,930,457**
**CONDUIT-MOUNTED VALVE-VENT INTERLOCK ESPECIALLY FOR TANK SHIPS**
**Wendell W. Dedman, Darien, Conn.; Heinz F. Weyer, Waseenaar Zh, Netherlands, and Duncan D. Wimperis, Tarrytown, N.Y., assignors to Texaco Inc., New York, N.Y.**
**Filed Sept. 23, 1974, Ser. No. 508,309**
**Int. Cl.² B63B *25/08*; B63J *2/08***
**U.S. Cl. 114—74 R** **12 Claims**

1. In combination with a tank ship having a common conduit for supplying an inert gas to a plurality of tanks, each of said tanks having a branch conduit from said common conduit, and each of said branch conduits having valve means for isolating that tank from said common conduit, the combination comprising

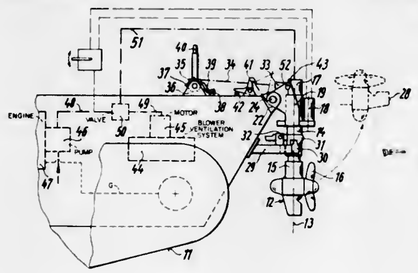
a hatch on said branch conduit located between the tank

and said valve means, and
interlock means cooperating with said valve means and said hatch for maintaining said hatch open unless said valve means is fully open.



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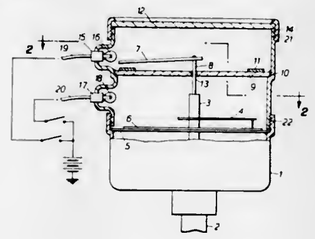
**3,930,458**
**PROPELLER SUPPORT FOR AMPHIBIOUS VEHICLE**
**Franz Krautkremer, Spay (Rhine), Germany, assignor to Schottel-Werft Josef Becker KG, Spay (Rhine), Germany**
**Filed Oct. 4, 1972, Ser. No. 294,799**
**Claims priority, application Germany, Nov. 17, 1971, 7143323**
**Int. Cl.² B63H** *5/12*
**U.S. Cl. 115—1 R** **12 Claims**



1. In an amphibious vehicle having an engine and drivable ground engaging and supporting means and first drive means connected between said engine and said ground engaging and supporting means for effecting a driving movement of said ground engaging and supporting means and, consequently, of said vehicle relative to the ground and drivable propeller means and second drive means therefor for effecting a movement of said vehicle through the water, the improvement comprising wherein said drivable propeller means comprises an upper support means pivotally secured to said vehicle for movement about a substantially horizontal axis and lower support means mounted on said upper support means for movement 360° about a substantially vertical axis thereby defining a steering axis, said lower support means having a propeller rotatably secured thereto for rotation about a substantially horizontal axis, said second drive means including a fluid driven drive motor mounted on said upper support means and coupling means for drivingly coupling the output of said fluid driven drive motor to said propeller, a second drive motor mounted on said upper support means for effecting a selective rotation of said lower support means about said substantially vertical axis through 360° relative to said upper support means, third drive means for driving said upper support means for movement about said substantially horizontal axis to effect a movement of said steering axis between positions of vertical alignment and a raised position, and selective control means comprising blower means for venting the interior of said vehicle and fluid driven drive means therefor, a fluid pump driven by said engine and supplying fluid to said fluid driven drive means and two position valve means for directing fluid from said fluid pump either to said fluid driven drive means or to said fluid driven drive motor.

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**3,930,459**
**INDICATOR INSTRUMENT ASSEMBLIES**
**John Harry Howard Barrow, Studham, England, assignor to General Motors Corporation, Detroit, Mich.**
**Filed Oct. 26, 1973, Ser. No. 410,270**
**Claims priority, application United Kingdom, Nov. 16, 1972, 52889/72**
**Int. Cl.² G01P** *1/08*
**U.S. Cl. 116—2** **4 Claims**



1. A combined speedometer and tachograph instrument assembly for indicating a plurality of conditions, comprising: a generally cup-shaped housing with a light opening at one end formed by a surrounding rim portion of the housing; a translucent plate supported by said housing at a peripheral edge portion and in a plane substantially normal to the line of sight through said opening by an external observer; a first set of indicia for at least one condition, including speed, to be indicated; means including said translucent plate supporting said first set of indicia in a plane parallel to said translucent plate and to one side of said translucent plate nearest said housing rim portion; another plate supported at its peripheral edge by said housing in a plane substantially parallel to the plane of said translucent plate and located to the side of said translucent plate furthest from said housing rim; a second set of indicia for indicating a condition, such as maximum speed supported by said other plate; said light opening in the housing providing a substantially unobstructed view from an external position of said first set of indicia by the illumination thereof by natural light striking said first indicia; a first light source located in said housing between said housing rim and said translucent plate characterized by the emission of light toward said one side of said translucent plate at an acute angle with respect to the plane of said translucent plate; a second light source located in said housing at a location permitting light to strike said second set of indicia and also said other side of said translucent plate; a speedometer spindle extending through an opening in said translucent plate and rotatable therein; speed-indicating means attached to said speedometer spindle for movement generally parallel to the plane of said translucent plate and with respect to said first indicia to indicate speed; a tachograph indicator member located on the other side of said translucent plate and movable relative to said second set of indicia to indicate the other of said conditions; a speedometer and tachograph drive cable extending through said housing and adapted to be connected to a drive mechanism of a motor vehicle, the speed and other conditions of which are to be indicated, by movement of said speedometer spindle and needle and said tachograph indicator member in response to changes in said condition, whereby the light from said first light source and natural illumination passing through the light opening permits viewing of the speedometer indicia by the reflection of said light from said first set of indicia and the light from said second light source permits viewing of said tachograph indicator indicia by the transmission of light through said translucent plate in a direction extending from said other side to said one side.



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**3,930,460**
**WATER SKI TOW ROPE**
**Thomas J. Beck, 11908 W. Ohio Ave., Milwaukee, Wis. 53227**
**Filed Oct. 29, 1974, Ser. No. 518,492**
**Int. Cl.² B63B** *21/56*
**U.S. Cl. 115—6.1** **8 Claims**

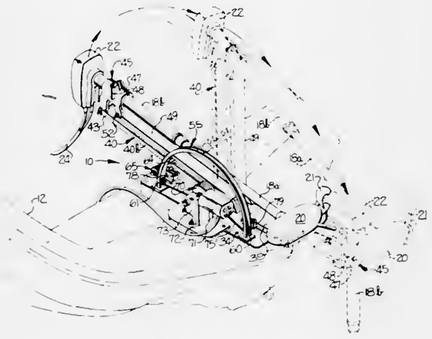


1. In a water ski tow rope having a handle that is gripped by the skier and at least one tow line attached to the handle and extending therefrom for securement to the boat which is towing the skier, said tow line being formed of a braided material that is one continuous braided tubular wall having a central hollow core and one end of the tow line is passed into the hollow core of the braided two line to form a loop on the end of the tow line for attachment to said handle; an elastic sleeve gripping said line directly adjacent to said handle and extending therefrom a distance along said rope to protect the skiers hands from chafing and means overlapping said sleeve and said line to secure said elastic sleeve to said line against displacement by water pressures developed during skiing.

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**3,930,461**
**APPARATUS FOR PIVOTALLY MOUNTING AN OUTBOARD FISHING MOTOR**
**John O. Brock; Marmion Dean Davis, and James Robert Wray, all of Shelby, N.C., assignors to Interstate Industries, Inc., Shelby, N.C.**
**Filed Mar. 27, 1975, Ser. No. 562,596**
**Int. Cl.² B63H** *21/26*
**U.S. Cl. 115—41 R** **10 Claims**

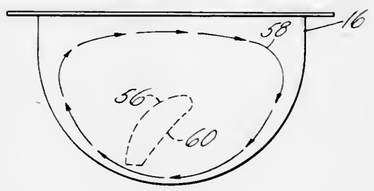
1. An apparatus for pivotally mounting an outboard motor, such as a shaft-mounted submersible electric motor, on a fishing boat or the like and such that the motor may be selectively pivoted between a vertically disposed operative position in the water and a horizontally disposed raised position removed from the water, said apparatus comprising,
a mounting frame adapted to be fixedly attached to a boat so as to extend in a generally horizontal direction,
a bracket having one end thereof pivotally connected to said frame for rotation about a pivotal horizontal axis, and a remote free end, said bracket being pivotable between a forward position wherein said bracket horizontally overlies said outer end of said frame and a retracted position, and said bracket being of a length such that said remote free end extends beyond said outer end of said frame when said bracket is positioned in said forward position,
means carried at said remote free end of said bracket for attaching the shaft of an outboard motor thereto,
an arcuately curved guide member fixedly carried by said frame immediately adjacent said bracket and defining a segment of a circle having its center located along said pivotal horizontal axis, said segment having an arcuate length which at least corresponds to the arc defined by the pivotal movement of said bracket between said forward and retracted positions,



a follower fixedly carried by said bracket intermediate the ends thereof and being positioned to contact said guide member during the pivotal movement of said bracket, and
power means for selectively translating said follower in either direction along said guide member to thereby pivot said bracket between said forward position and said retracted position.

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**3,930,462**
**SLURRY DIP TANK**
**Edward G. Day, Rocky Hill, Conn., assignor to United Technologies Corporation, Hartford, Conn.**
**Filed May 8, 1975, Ser. No. 575,754**
**Int. Cl.² B05C** *3/04*
**U.S. Cl. 118—5** **11 Claims**



1. A tank assembly for maintaining a slurry used in the formation of a shell mold over a pattern comprising:
a tank;
a removable, resilient liner which conforms to the general internal contour of the tank and fits into the tank;
pump means which extend into the tank for circulating slurry contained by the liner; and
said liner including a wing type airfoil member extending across the liner, at an intermediate vertical position thereof and spaced from the bottom, whereby to enhance said circulation.

**3,930,463**

## VAPOR DEPOSITION APPARATUS INCLUDING A THREE-COMPARTMENT EVAPORATOR

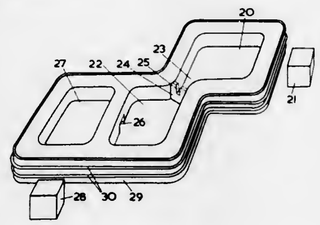
**Robert Lewis Bickerdike, Alton; Garyth Hughes, and William Norman Mair, both of Farnham, all of England, assignors to The Secretary of State for Defense in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England**

**Filed July 11, 1973, Ser. No. 378,129**

**Claims priority, application United Kingdom, July 14, 1972, 33073/72**

**Int. Cl.² C23C** *13/12*

**U.S. Cl. 118—49.1** **5 Claims**




1. An apparatus for evaporating metal and depositing the evaporated metal on a surface which comprises a housing enclosing a container for molten metal and a space above the container, means for evacuating the said space, said container being divided into three compartments which are laterally associated in series, a first said compartment associated with heating means for melting metal and a second said compartment for mixing molten metal and a third said compartment associated with means for heating metal to evaporate it, a constricted opening in the common wall between said first and second compartments for flow of molten metal from the first compartment to the second compartment which is adapted to minimize back flow from the second to the first compartment, and an opening limited to the base of the common wall between said second and third compartments whereby flow of metal from the second compartment to the third compartment occurs only under the surface of molten metal in the third compartment, and a substrate means for condensing evaporated metal disposed above the third compartment in said space.

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**3,930,464**

## APPARATUS FOR APPLYING A COATING COMPOSITION ONTO A WEB

**Hans Ivar Wallstén, Saffle, Sweden, assignor to AB Inventing, Sweden**

**Continuation of Ser. No. 220,897, Jan. 26, 1972, abandoned. This application Feb. 13, 1974, Ser. No. 442,104**

**Claims priority, application Sweden, Jan. 27, 1971, 981/71; Oct. 20, 1971, 13320/71**

**Int. Cl.² B05C** *5/02*, *11/04*

**U.S. Cl. 118—122** **15 Claims**

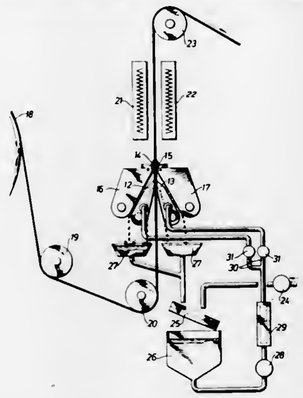
1. Apparatus for applying a coating composition to a paper web comprising:

means for guiding the web to move in an upward direction through the coating apparatus which includes:

a first pair of rigid, elongated, upwardly converging opposed members positioned on opposite sides of the upwardly moving web, and each having stationary contact surfaces;

means connected to said first pair of members for adjusting the coating contact surfaces of each of said first pair of members in adjustably spaced fashion, said first members converging upwardly and inwardly from said adjusting means towards said web whereby their contact surfaces form predetermined gaps each being defined by the surfaces of said web and the adjacent contact surfaces of said members, said gaps, once adjusted, being maintained in substantially constant alignment throughout a coating operation;

coating dispensing means positioned adjacent to said gaps and being spaced from the web for continuously directing a quantity of the coating composition in liquid form toward the surfaces of said web as the web moves upwardly and before the web leaves the gap region between the contact surfaces of said first members;




the width of said gaps being selected to uniformly spread an excess amount of the coating composition upon the surface of the web, said members cooperating with the coating composition, as the web passes between said members, to substantially reduce lateral movement of and thereby stabilize the web during the smoothing operation; and

upwardly converging flexible means positioned adjacent and above said opposed members and forming a nip engaging the opposite surfaces of the web for removing the excess coating composition from said web and uniformly regulating the final thickness of the coating.

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**3,930,465**

## APPARATUS FOR APPLYING A FILM OF LIQUID TO A WEB OF MATERIAL

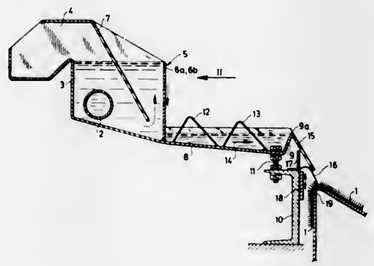
**Manfred Schulerer, Michelstadt, Germany, assignor to Bruckner Apparatebau GmbH, Postfach, Germany**

**Filed Jan. 16, 1975, Ser. No. 541,498**

**Claims priority, application Germany, Jan. 30, 1974, 7403152[U]**

**Int. Cl.² B05C** *5/00*

**U.S. Cl. 118—325** **9 Claims**




1. Apparatus for applying a thin liquid film to a continuously moving web of large width, comprising a liquid supply chamber in the form of a slightly inclined shallow container which is adapted to be fed with a liquid at its higher end and is defined at its lower end by a damming wall over which the liquid is discharged, a plurality of barrier means for calming the liquid, disposed in the shallow container in the path of liquid flowing from the higher end to the lower end, and a flexible foil of thin, resilient metal which is adjustably clamped along one edge and has its opposite edge arranged to receive liquid flowing over said damming wall and to discharge a film of the liquid onto the moving web.

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**3,930,466**

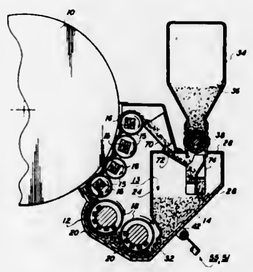
## SEGMENTED GATE DEVELOPER FLOW CONTROLLER

**Raymond W. Stover, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.**

**Filed Apr. 29, 1974, Ser. No. 464,865**

**Int. Cl.² G03G** *15/08*

**U.S. Cl. 118—637** **5 Claims**




1. In a development system: a surface capable of having a developable image thereon; a developer sump; said sump having ferromagnetic developer therein; magnetic means for presenting said developer to said surface; a developer outlet at the lowermost portion of said sump; said developer flowing through said outlet to said means for presenting said developer to said surface; magnetic gate means comprising at least two gates, each having a permanent magnet; means for selectively moving each said magnetic gate independently of each other into a closed position adjacent said outlet to block the flow of developer through a portion of said outlet corresponding to the gate thereadjacent and for selectively moving each said magnetic gate independently of each other away from said outlet to an open position to allow flow of developer through said portion of said outlet corresponding to a respective said gate.

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**3,930,467**

## POULTRY COOP

**Edward J. Fier, Jr., Mundelein, Ill., assignor to Norwesco, Inc., St. Paul, Minn.**

**Filed Mar. 18, 1974, Ser. No. 451,933**

**Int. Cl.² A01K** *31/18*

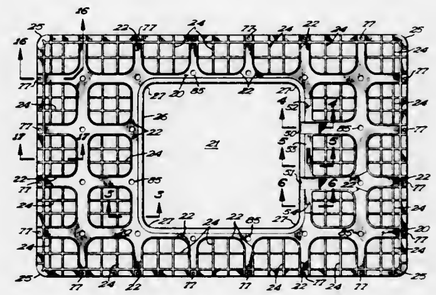
**U.S. Cl. 119—19** **3 Claims**

1. A stackable poultry coop which comprises:

complimentary upper and lower sections having an upper and lower wall, respectively, and marginal side walls extending generally at right angles from the periphery of each of said upper and lower walls and terminating at means for attaching their termini to each other, said upper wall having a central opening;

a plurality of reinforcing flanges extending upwardly from said upper wall, each of said flanges being spaced from the others of said flanges and forming a closed figure with itself or the edges of said upper wall with said flange formed closed figures generally surrounding said central opening thereby distributing the force imposed on said upper wall during stacking, said flange formed closed figures having open centers and lattice means within said open centers for preventing poultry egress while providing ventilation and cleaning access with at least some of the flanges, including some of the flanges forming closed figures with the edge of said upper wall, having reduced height portions adjacent said edge;

a plurality of rib means extending downwardly from said lower wall, each of said rib means being spaced from the others of said rib means and forming a closed figure with itself or the edges of said lower wall for nesting engagement with a flange formed closed figure of said upper wall when in stacking relation thereto, said lower wall being formed of a flexible material of generally uniform cross-section having a plurality of grid forming apertures and said rib means closed figures being positioned around the periphery of said lower wall to allow at least its central portion to flex;



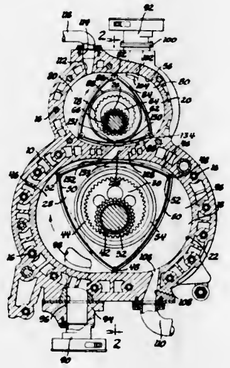
being provided with exhaust port means, a polygonal rotor disposed in the rotor housing with apices sealingly contacting with the inner peripheral wall of the rotor housing so as to define working chambers which are variable in volume as the rotor rotates to effect intake, compression, combustion, expansion and exhaust strokes of the engine, and exhaust gas cleaning means for introducing secondary air into the working chamber which is in the exhaust stroke, characterized by the fact that said exhaust gas cleaning means comprises: a cutout portion provided on the trochoidal inner peripheral wall of the rotor housing extending from said exhaust port means in the direction substantially opposite to the direction of rotation of said rotor and directly communicating the exhaust port means with the working chamber during the final part of the expansion stroke when the apex seal at the leading edge of the working chamber during the final stage of the expansion stroke intersects said cutout portion and before said apex seal is aligned with the leading edge of said exhaust port means to expose said exhaust port to said working chamber, and a secondary air supply passage for introducing secondary air into said working chamber having a secondary air discharge port defined by the intersection of said supply passage and said cutout portion so that a portion of the gas in the working chamber which is in the final stage of the expansion stroke can flow directly into said exhaust port means through said cutout portion and past said secondary air discharge port from said working chamber to prevent any material from adhering to said discharge port and to create a suction pressure at that port for facilitating the supply of secondary air to said working chamber in the vicinity of said exhaust port.

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### 3,930,469
### CARBURETED PRECHAMBER ROTARY COMBUSTION ENGINE

**Rodney J. Tabaczynski, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.**

**Filed June 19, 1974, Ser. No. 480,624**
**Int. Cl.² F02B** *53/04*
**U.S. Cl. 123—8.13** **3 Claims**



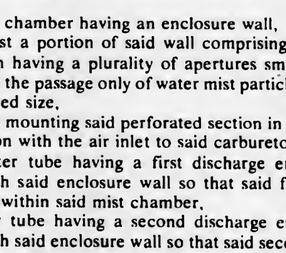
**1.** A rotary combustion engine comprising a main chamber section and a prechamber section, each said section having a rotatably supported rotor with a plurality of chambers thereabout that expand and contract while moving with said rotor as said rotor rotates, each said section also having an intake port that opens to the chambers in this section as they expand during an intake phase, each said section also having an exhaust port that opens to the chambers in this section as they contract during an exhaust phase, the chambers in said prechamber section being substantially smaller than the chambers in said main chamber section, means drivingly connecting said rotors so that the chambers in said sections are phased in pairs that simultaneously expand and contract, a gas transfer port that connects the phased pairs of the chambers in said sections only as they contract and then expand in a compression phase and a power phase respectively, lean air-fuel supply means for supplying a lean air-fuel mixture to the intake port of said main chamber section, rich air-fuel supply means for supplying a rich air-fuel mixture to the intake port of said prechamber section, and spark ignition means in said prechamber section for first igniting the rich air-fuel mixture in the chambers in said prechamber section whereby ignition originates in the chambers in said prechamber section and there is effected a pressure differential causing hot combustion gases in the chambers in said prechamber section to flow through said gas transfer port and ignite the lean air-fuel mixture in the associated chambers in said main chamber section.

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### 3,930,470
### VAPOR INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINE

**Beverly Douglas, 425 Sunnyside Drive, Nashville, Tenn. 37205**

**Filed Jan. 30, 1974, Ser. No. 438,024**
**Int. Cl.² F02D** *19/00*
**U.S. Cl. 123—25 A** **5 Claims**



**1.** A vapor injection system in combination with an internal combustion engine having a carburetor and an air inlet to the carburetor having a flow axis toward the carburetor, comprising:

a. a mist chamber having an enclosure wall,

b. at least a portion of said wall comprising a perforated section having a plurality of apertures small enough to permit the passage only of water mist particles of a predetermined size,

c. means mounting said perforated section in fluid communication with the air inlet to said carburetor,

d. a water tube having a first discharge end projecting through said enclosure wall so that said first discharge end is within said mist chamber,

e. an air tube having a second discharge end projecting through said enclosure wall so that said second discharge end is within said mist chamber,

f. said second discharge end being proximate to said first discharge end and positioned to force a stream of air to intercept at an acute angle a stream of water discharged from said first discharge end in the same general direction as said air stream,

g. means for supplying water under pressure through said water tube,

h. means for supplying compressed air through said air tube with sufficient pressure to atomize the intercepted stream of water from said first discharge end and to force said atomized water particles in a path at a substantial angle to the flow axis of said carburetor air inlet,

i. a baffle member,

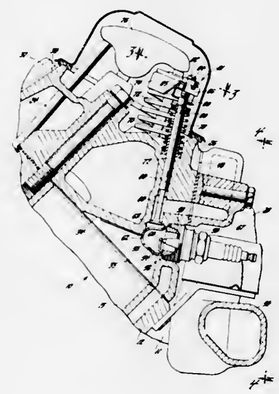
j. means mounting said baffle member within said mist chamber opposing said first discharge end at an angle to, and in, the path of said atomized water particles to further atomize said water particles and to deflect said water particles at an angle to said path, through said perforated section and into said carburetor air inlet.



### 3,930,471
### INTERNAL COMBUSTION ENGINE

**Henry J. Leonard; Boris J. Mitchell, both of Birmingham, and Charles H. Turner, Pleasant Ridge, all of Mich., assignors to General Motors Corporation, Detroit, Mich.**

**Filed Jan. 17, 1974, Ser. No. 434,060**
**Int. Cl.² F02B** *19/10, 19/16*
**U.S. Cl. 123—32 SP** **7 Claims**

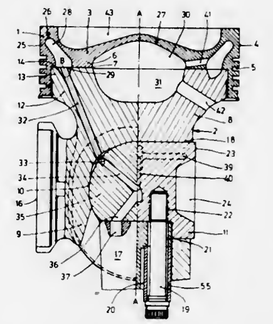


**1.** An internal combustion engine of the type having a cylinder block with a bank of cylinders spaced longitudinally of the engine, a cylinder head mounted on said block and closing the ends of said cylinders, pistons reciprocably disposed in said cylinders and connected with a rotatable crank, the cylinders, pistons and head together defining enclosed expansible working and combustion chambers, a plurality of intake ports in said cylinder head connecting with each of said combustion chambers and with an intake manifold mounted on one side of said head, a plurality of exhaust ports in said cylinder head connecting with each of said combustion chambers and with an exhaust manifold mounted on a side of said cylinder head opposite from said one side, spark plug receiving means opening to said combustion chambers through said opposite side adjacent said exhaust manifold, spark plugs in said-plug receiving openings and having inwardly protruding electrodes, wall means in said combustion chambers and defining small ignition chambers on one side of and connecting with each combustion chamber, said wall means enclosing the spark plug electrodes of their respective combustion chambers, main intake passages extending through said intake manifold and cylinder head intake ports to said combustion chambers, exhaust passages extending from said combustion chambers through said exhaust ports and said exhaust manifold, auxiliary intake passages joined to and extending along said intake manifold, through said cylinder head, along said exhaust manifold and back into said cylinder head to said ignition chambers, said auxiliary intake passages extending in heat exchange relation with one of said cylinder head exhaust ports and exhaust passages in said exhaust manifold, carburetor means on said intake manifold and having separate individually throttled throats connecting with said main and auxiliary intake passages, respectively, and engine driven valve mechanism including a main intake valve, an auxiliary intake valve and an exhaust valve for each combustion chamber, said valves respectively controlling the admission of air-fuel mixtures to the combustion and ignition chambers from the main and auxiliary intake passages and the exhaust of burned gases from the combustion chamber through the exhaust passages.

### 3,930,472
### COMPOSITE OIL-COOLED PISTON FOR AN INTERNAL COMBUSTION ENGINE

**Gernot Athenstaedt, Hausen, Germany, assignor to M.A.N., Augsburg, Germany**

**Filed Sept. 11, 1974, Ser. No. 505,051**
**Claims priority, application Germany, Sept. 28, 1973, 2348870**
**Int. Cl.² F01P** *3/06*
**U.S. Cl. 123—41.38** **15 Claims**



**1.** A composite oil-cooled piston for an internal combustion engine, comprising:

a piston head (**1**) having a piston face and a piston skirt with seating means for piston rings, said piston head having an annular support ridge (**6**) on its underside separated from said piston skirt by an annular cooling cavity (**29**) and surrounding a central cooling cavity (**27**);

a piston carrier body (**8**) having an upper part (**12**) of approximately hollow cone shape having an upper surface (**7**) on which said annular ridge (**6**) of said piston head is directly supported, the hollow center of said upper part forming said central cooling cavity (**27**) with said piston head, said carrier body (**8**) further having a lower part (**9**) having a wrist pin bearing (**10**) therein including a load bearing surface (**18**) and providing coolant recesses (**33,38**), said carrier body having coolant channels respectively connecting said recesses with said annular cavity, and

a piston wrist pin (**11,56**) in said bearing and a piston rod (**17**) fastened to said wrist pin on a surface opposite the load surface (**18**) of said bearing (**10**), said piston rod having an interior coolant supply channel (**37**) and said wrist pin (**11,56**) having channels therein (**34,36**) with axes in a plane (**35**) passing through the piston axis (A—A), said channels all being oblique to said axis at angles between 30° and 60°, and providing coolant paths from said supply channel in said piston rod to said recesses.

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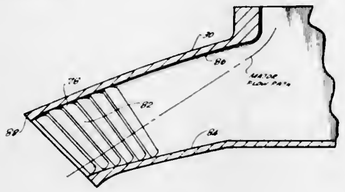
### 3,930,473
### MANIFOLD FOR INTERNAL COMBUSTION ENGINES HAVING STEPS IN THE WALLS OF THE MANIFOLD RUNNERS

**James D. McFarland, Jr., Chatsworth, Calif., assignor to Edelbrock Equipment Company, El Segundo, Calif.**

**Filed Apr. 15, 1974, Ser. No. 460,695**
**Int. Cl.² F02B** *75/18*
**U.S. Cl. 123—52 M** **27 Claims**

**21.** An improvement in a single plane, independent runner intake manifold for idstributing a fuel and air mixture from a source thereof to the cylinders of a V-**8** four-cycle, reciprocating, internal combustio engine having its cylinders arrayed in two parallel banks of four cylinders each, the manifold having a lingitudinal axis midway between the banks of cylinders, a central plenum for receiving the mixture, and an independent

runner for each of the cylinders extending longitudinally and laterally to the inlet port of its associated cylinder from the plenum, each runner curving towards the lateral direction it takes and having a generally quadrilateral cross section for mixture flow, and each runner having an outside and an inside wall as viewed longitudinally from the plenum, the improvement comprising:



a plurality of serially spaced steps in each of the runners beginning near the exit thereof into the inlet port and extending towards the plenum a predetermined distance, the steps being in zones where mixture stream velocity is relatively low with respect to mixture stream velocity elsewhere in the same velocity profile, on a curved wall of the runner and in lines-of-sight from the exit.

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### 3,930,474
### IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINES

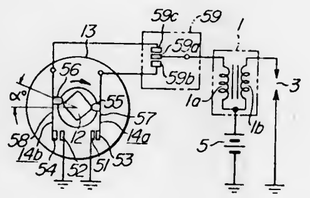
**Noriaki Kawai, Okazaki; Hisaji Okamoto, Aichi; Yosiaki Takeda, Nagoya; Fukuzi Sano, Kariya; Akio Kakiuchi, Nagoya; Masami Manabe, Kariya; Takashi Nomura, Kariya, and Sigeya Abe, Kariya, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota and Nippondenso Kabushiki Kaisha, Kariya, both of, Japan**

**Continuation of Ser. No. 116,343, Feb. 18, 1971. This application Aug. 9, 1973, Ser. No. 386,874**

**Claims priority, application Japan, Feb. 27, 1970, 45-17189; Mar. 30, 1970, 45-30471; Apr. 9, 1970, 45-34366; Apr. 9, 1970, 45-34367**

**Int. Cl.² F02P** *5/04*

**U.S. Cl. 123—117 A** **2 Claims**



1. An improved ignition system for use in a spark-ignition type internal combustion engine having at least one spark plug to advance the spark at a selected engine temperature corresponding to a coolant temperature less than about 40°C and to retard the spark above that temperature including

an ignition coil having a primary winding and a secondary winding connectable in circuit with said spark plug,

a power source connected in circuit with said primary winding for supplying power to said primary winding, and

breaker means connected in series with the circuit including said primary winding and said power source to interrupt power supplied from said power source to said primary winding so as to induce a high voltage in said secondary winding, wherein the improvement comprises,

first and second current interrupting means connected in parallel with each other and each connected in series circuit with said primary winding and said power source, said first current interrupting means being positioned in advance of said second current interrupting means by a selected rotational angle for interrupting power supplied to said primary winding from said power source,

a temperature detecting element for detecting engine temperature having an effect on engine torque efficiency to produce respective output signals below and above said selected level of said engine temperature, and

spark timing change means connected between said temperature detecting element and said breaker means for changing spark timing to selected discrete levels to interrupt power supplied from said power source to said primary winding in response to the output of said temperature detecting element,

said spark timing change means including switch means for switching on said first current interrupting means in response to said below output signal from said temperature detecting element for advancing said spark timing from a normal pre-TDC level to a selected discrete level that is more advanced by about 5° to 15° when the engine temperature is lower than said selected engine temperature for improving the power of said engine by generally optimizing engine shaft torque regardless of engine load and increasing the stability at idling and during acceleration and running speeds of said engine at temperatures thereof below said selected engine temperature,

said switch means being operative in response to the said above temperature output signal to switch off said first current interrupting means and to make said second current interrupting means operative for retarding said spark timing to said normal level when said engine temperature is above said selected temperature,

said switch means having a single pole and two contacts for double throw-action, said single pole being connected directly to said primary winding and said two contacts being respectively connected to said first and second current interrupting means.

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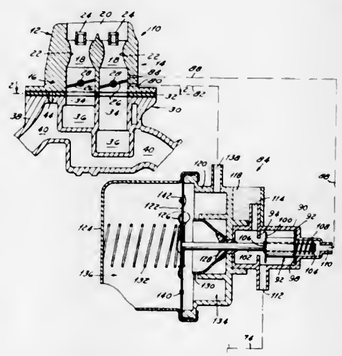
### 3,930,475
### ENGINE EXHAUST GAS RECIRCULATING CONTROL

**John A. Lewis, Detroit, and John R. Marshall, Novi, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.**

**Filed Aug. 24, 1973, Ser. No. 391,411**

**Int. Cl. F02m** *25/06*

**U.S. Cl. 123—119 A** **10 Claims**



1. An exhaust gas recirculating system for an internal combustion engine, having a throttle valve controlling flow through a carburetor induction passage, comprising, a duct connecting the exhaust gases to the engine intake manifold, a second valve normally closing the duct to prevent recirculation and movable to an open position by a signal vacuum connected thereto, and control means responsive to changes in engine manifold vacuum action on the control means to communicate a signal force to the second valve that varies from an ambient essentially atmospheric pressure level at closed throttle positions to manifold vacuum levels at wide open throttle positions.

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### 3,930,476
### INTERNAL COMBUSTION ENGINE SYSTEM

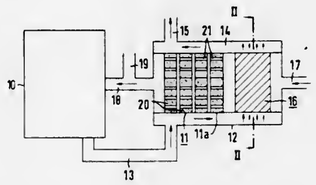
**Christian Koch, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany**

**Filed Mar. 22, 1973, Ser. No. 344,042**

**Claims priority, application Germany, Apr. 4, 1972, 2216177**

**Int. Cl.² F02M** *31/00, 7/00*

**U.S. Cl. 123—119 E** **5 Claims**



1. An internal combustion engine system including an internal combustion engine having a single muffler used for reducing engine noise through which the engine's exhaust passes and a reformer having an intake end fed by vaporized liquid hydrocarbon fuel mixed with an oxygen-containing gas and an output end from which the reformer's gas output is fed to the engine intake wherein the improvement comprises the reformer positioned inside the muffler and wherein the inside of said muffler is divided into an upper and lower chamber and further including a heat exchanger of the plate type having a plurality of transverse passages connecting said lower and upper chambers forming heat input flow passages and having a plurality of longitudinal heat output flow passages, means for conducting said exhaust into one of said upper and lower chambers and out of the other of said chambers after it flows through said heat input flow passages and means for conducting at least the oxygen containing gas from outside the muffler through said heat output flow passages to the reformer intake end while separated from the exhaust in the muffler, whereby said plurality of transverse heat input flow passages through which said exhaust flows will act to both transfer large amounts of heat and at the same time provide for good exhaust noise attenuation.

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### 3,930,477
### ELECTRIC HEATING MEANS FOR FUEL VAPORIZATION IN INTERNAL COMBUSTION ENGINES

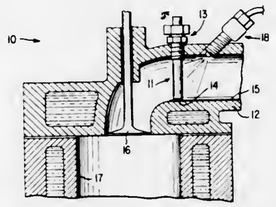
**Wilmer C. Jordan, 3915 W. Wrightwood Ave., Chicago, Ill. 60647**

**Division of Ser. No. 171,110, Aug. 12, 1971, Pat. No. 3,760,780. This application Aug. 24, 1973, Ser. No. 391,230**

**Int. Cl.² F02M** *31/00*

**U.S. Cl. 123—122 F** **4 Claims**

1. In apparatus for improving the performance of an internal combustion engine operable under certain normal ranges of load, speed and ambient temperature conditions, said engine including a plurality of cylinders, flow path means for flow of air into said cylinders, an intake valve for each cylinder for flow from said flow path means thereinto, fuel injection means positioned in spaced relation to each intake valve for injecting fuel into said flow path means to mix with the air flowing through the associated intake valve into an associated cylinder, and throttle valve means for controlling the flow of air into said flow path means, said engine having characteristics such that an optimum amount of radiant heat applied to enhance vaporization of fuel within said flow path means between said fuel injector means and said intake valves is effective to cause said engine to develop maximum average torque and acceleration while operating within said normal ranges of load, speed and ambient temperature conditions and with said throttle valve means fully open, average torque and acceleration being reduced in proportion to a reduction in the amount of radiant heat below said optimum amount and being also reduced in proportion to an increase in the amount of radiant heat above said optimum amount, electric heating means for each cylinder, means arranging said electrical heating means for installation in said flow path means between said fuel injection means and the associated intake valve, and electrical connection means arranged for continuously supplying an optimum amount of electrical power to all of said heating means at all times during operation of said engine, said optimum amount of electrical power being predetermined in accordance with said characteristics of said engine and being effective to cause radiation of said optimum amount of radiant heat from said heating means into the air-fuel mixture in said flow path means.



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### 3,930,478
### SYSTEM FOR THE DETOXICATION OF EXHAUST GASES

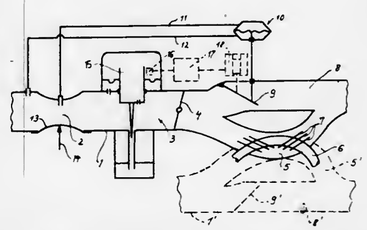
**Johannes Brettshneider, Ludwigsburg-Pflugfelden, and Heinrich Knapp, Leonberg-Silberberg, both of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany**

**No Drawing. Filed Sept. 12, 1973, Ser. No. 396,410**

**Claims priority, application Germany, Sept. 15, 1972, 2245491**

**Int. Cl.² F02M** *31/00*

**U.S. Cl. 123—122 H** **10 Claims**



1. In an exhaust gas-detoxicating system for an externally ignited internal combustion engine having at least one air intake suction tube in which a fuel/air mixture is produced by metering into said suction tube fuel from a fuel metering device, and wherein the fuel/air mixture, before its entry into a cylinder of said engine, can be deviated through a heated-up bypass of at least one such suction tube by means of a flap valve being disposed in said suction tube and being controllable in dependence on characteristic engine data,

the improvement comprising, in combination measuring means for detecting the amount of air flowing through said suction tube and a pneumatic-mechanical converter for controlling said flap valve in dependence on the detected air amount and independently of engine load, wherein said measuring means comprise a Venturi con-

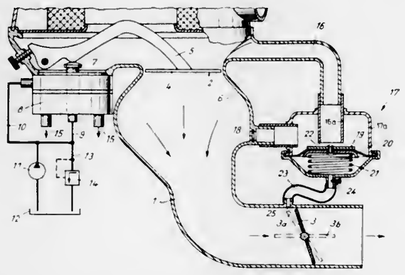
striction provided in said suction tube, and means for actuating said pneumatic-mechanical converter in dependence on the pressure difference between the air pressure in the narrowest cross-sectional area of said Venturi constriction and the air pressure upstream of said measuring means, and wherein said pneumatic-mechanical converter is connected directly to the flap valve.

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**3,930,479**
**FUEL METERING DEVICE FOR EXTERNALLY IGNITED INTERNAL COMBUSTION ENGINES WITH COMPRESSION OF THE AIR-FUEL MIXTURE**

**Gerhard Stumpp, Stuttgart, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany**

**Filed Aug. 31, 1973, Ser. No. 393,508**
**Claims priority, application Germany, Sept. 7, 1972, 2243925**
**Int. Cl.² F02M** *39/00*
**U.S. Cl. 123—139 AW** **10 Claims**



**1.** In a fuel metering device for an externally ignited internal combustion engine with compression of the air-fuel mixture, which system comprises a suction tube for the intake of air in which an air-measuring device and a randomly adjustable throttle valve having a flap are arranged in sequence, and in which an essentially proportionate amount of fuel is metered into the amount of air flowing therethrough and wherein the proportionality of the fuel amount is adjustable by means of controlling a bypass circumventing the air-measuring device in dependence on engine data,

the improvement conprising:

a. a valve arranged in said bypass, and controllable by the pressure prevailing in said suction tube in the vicinity of said throttle valve, said valve including a pneumatically actuated valve means mounted for controlling said valve in said bypass; and

b. conduit means connecting said pneumatically actuated valve means with said suction tube, said conduit means having an orifice located upstream of said throttle valve, taken in the direction of air flow through said suction tube, and also upstream of the part of the flap of said throttle valve moving against the flow of air during the release of the air supply, yet still in the immediate vicinity of said flap part.

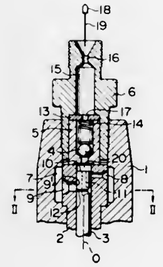
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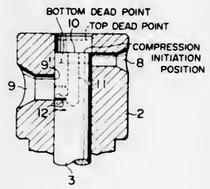
**3,930,480**
**FUEL-INJECTION PUMP FOR AN INTERNAL COMBUSTION ENGINE**

**Tadashi Yamada, Sulta, and Toshio Banba, Takatsuki, both of Japan, assignors to Yanmar Diesel Engine Co., Ltd., Osaka, Japan**

**Filed May 2, 1974, Ser. No. 466,341**
**Int. Cl.² F02M** *39/00*
**U.S. Cl. 123—139 BD** **6 Claims**

**1.** A fuel-injection pump for an internal combustion engine, said pump comprising a barrel member defining a cylindrical bore and formed with a suction port and an outlet port at the periphery of said port, a plunger fitted in the cylindrical bore to reciprocate axially therein and having one end disposed within the bore and bounding a fuel compression chamber which is also bounded by the periphery of the bore, and a discharge valve controlling egress of fuel from said fuel compression chamber, the plunger being formed with a narrow metering slit disposed substantially at right angles to the central axis of the plunger and with a passageway which maintains communication between said slit and said fuel compression chamber, the plunger being rotatable within said bore about said central axis to bring said metering slit and said outlet port into overlapping relationship and to vary the proportion of, and the position within, the reciprocating movement range of the plunger in the bore for which the metering slit and the outlet port remain in overlapping relationship.






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**3,930,481**
**FUEL INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINES**

**Konrad Eckert, Stuttgart, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany**

**Filed Sept. 12, 1973, Ser. No. 396,525**
**Claims priority, application Germany, Sept. 22, 1972, 2246547**
**Int. Cl.² F02M** *39/00*
**U.S. Cl. 123—139 AW** **20 Claims**

**1.** A fuel metering and injection system for regulating fuel flow so as to maintain a desired fuel-air mixture in an internal combustion engine, the system comprising, in combination:

a. an air intake suction tube of the internal combustion engine;

b. electro-mechanical means for measuring the quantity of air passing through said air intake suction tube;

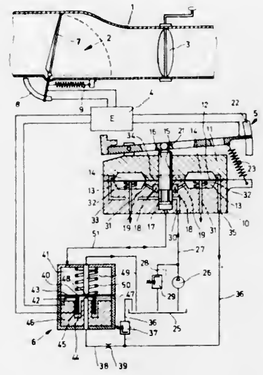
c. pressure control means, responsive to the output from said electro-mechanical means for measuring, for generating a variable pressure head;

d. means for establishing a given force;

e. fuel distribution means in fluid communication with said control means and including at least one fuel metering



valve having a movable member which can be actuated, against a restoring force provided by said means for es-



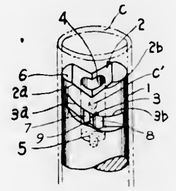
tablishing the given force, by the fluid pressure head; whereby the fuel quantity is metered.

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**3,930,482**
**FUEL INJECTION PISTON AND METHOD OF ITS MANUFACTURE**

**Tetsuji Akashi, Obu, and Takuji Isomura, Toyota, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan**

**Filed Dec. 5, 1973, Ser. No. 421,827**
**Claims priority, application Japan, Dec. 6, 1972, 47-122936**
**Int. Cl.² F02F** *3/28*
**U.S. Cl. 123—139 AR** **11 Claims**



**1.** In a fuel injection piston of a fuel injection pump for use in internal combustion engines, the piston being axially reciprocated, as well as rotated within a pump cylinder, with the pump cylinder being formed with a fuel supply opening therein, and said piston being formed with an upper end surface and with relieved portions defining an upper control edge determining initiation of fuel injection and a lower control edge determining termination of fuel injection as the edges move past said fuel supply opening, and with rotation of said piston determining the relative timing of movement of the control edges past said opening the improvement wherein:

i. the piston is further formed with fluid communication means between said relieved portions;

ii. the upper end surface of said piston is provided with a notch which forms at the intersection of the notch with the circumferential surface of the piston at least two upper control edge sections serving at least as a part of said upper control edge;

iii. said two control edge sections have relatively different inclinations with respect to the lower control edge, and

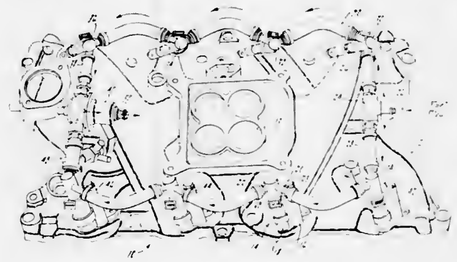
iv. one of said edge sections extends downwardly at an inclination from the upper end surface of the piston, and the other of said edge sections extends upwardly from the bottom of said one edge section in a direction opposite the direction of inclination of said one edge section and towards the upper end surface of the piston.

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**3,930,483**
**APPARATUS FOR SUPPLYING FUEL TO A FUEL-INJECTED ENGINE**

**Charles M. Blisko, Southfield; Ronald T. Denton, Birmingham, and Kazimieras Kizlauskas, Southfield, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.**

**Filed June 24, 1974, Ser. No. 482,720**
**Int. Cl.² F02M** *55/00*
**U.S. Cl. 123—139 AW** **1 Claim**



**1.** An improved apparatus for supplying fuel to a combustion engine having an intake manifold and a plurality of fuel injectors, said fuel injectors being elongated in shape and having first and second opposite ends on a common axis, said first end being located in an opening in said intake manifold and having a discharge port through which fuel may be discharged into said intake manifold, and said second end having an inlet conduit for receiving fuel to be discharged from said discharge port, wherein the improvement comprises: a separate clamp for each of said fuel injectors, each of said clamps retaining one of said fuel injectors on said intake manifold and supplying fuel to such fuel injector, each of said clamps further having an opening in which said second end of said fuel injector is positioned and having inlet and outlet passages in communication with said inlet conduit in said second end of said fuel injector, said clamp being secured to said intake manifold; a pressure regulator for regulating the pressure of fuel supplied to said apparatus, and a plurality of pieces of flexible conduit interconnecting said pressure regulator and said inlet and outlet passages of said clamps.

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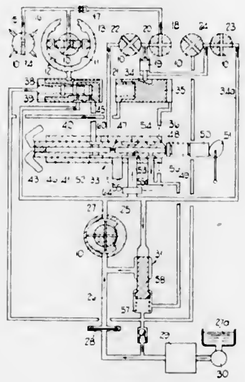
**3,930,484**
**LIQUID FUEL PUMPING APPARATUS**

**Robert Thomas John Skinner, High Wycombe, England, assignor to C.A.V. Limited, Birmingham, England**

**Filed July 22, 1974, Ser. No. 490,899**
**Claims priority, application United Kingdom, July 28, 1973, 36055/73**
**Int. Cl.² F02M** *39/00*
**U.S. Cl. 123—139 AM** **15 Claims**

**1.** A liquid fuel injection pumping apparatus for supplying fuel to internal combustion engines, and of the kind comprising an injection pump driven in timed relationship with an associated engine, a bore, a shuttle slidable in the bore, first valve means through which one end of the bore can be placed in communication with the injection pump during the filling strokes thereof, and means whereby at other times it can be placed in communication with a source of fuel under pressure, an adjustable throttle member for determining the amount of fuel which can flow to said one end of the bore, thereby to vary the amount of fuel which is displaced to the injection pump during a filling stroke thereof, means for effecting movement of the shuttle towards said one end of the bore thereby to displace fuel to the injection pump, said means comprising a second valve means operable to place the other

end of the bore in communication with a further source of fuel under pressure to effect movement of the shuttle towards said one end of the bore during the filling periods of the injection

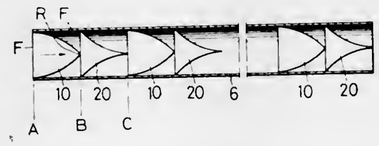


pump, and with a drain to permit the shuttle to move away from said one end of the bore, the pressure of the further source being higher than that of the first mentioned source.

## 3,930,485
## APPARATUS FOR MIXING FUEL AND AIR FOR AN INTERNAL COMBUSTION

**Toshiaki Konomi, Susono, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan**

**Filed Dec. 5, 1973, Ser. No. 421,807**
**Claims priority, application Japan, July 24, 1973, 48-83472**
**Int. Cl.² F02M *29/04*, *29/14***
**U.S. Cl. 123—141** **3 Claims**




1. In combination with a multi-cylinder internal combustion engine of the type having a carburetor, a suction pipe connected at one end to said carburetor, and an intake manifold, apparatus for supplying a homogeneous mixture of fuel and air into said intake manifold, said apparatus comprising:
- a tubular housing, one end of said tubular housing being connected to the other end of said suction pipe and the other end of said tubular housing being connected to said intake manifold;
- a plurality of first twisted blades positioned within said tubular housing along the length thereof; and
- a plurality of second twisted blades positioned within said tubular housing along the length thereof in an alternating, closely adjacent relationship to said first blades;
- each of said first and second blades being formed from a generally rectangular plate of a predetermined length, and having a front edge and a rear edge the length of each of which is substantially equal to the inner diameter of said tubular housing, and having a pair of curved side edges secured to the inner surface of said tubular housing in close contact therewith;
- the rear edge of each of said first blades being twisted at substantially a right angle to the front edge thereof in such a manner that the ratio of a distance between said front edge and an intermediate portion along the length of said plate as measured in front elevation to the angle of twist at said distance as measured in top plan is substantially constant throughout the length of said plate; and
- the rear edge of each of said second blades being twisted at substantially a right angle to the front edge thereof in such a manner that the relation between the breadth of said second blade as measured in front elevation at a distance between said front edge and an intermediate portion along said length of said plate and the angle of twist as measured in top plan at said distance may be expressed by the following formula:

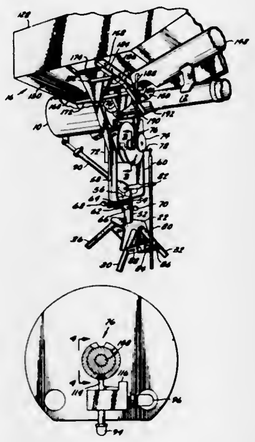
$$b = 2r(1 + \cos\theta)$$

in which $b$ represents said breadth, $\theta$ represents the angle of twist and ranges between 90° and 180°, and $r$ represents one half the length of said front edge.

## 3,930,486
## CONVERTIBLE BASEBALL AND TENNIS PRACTICE MACHINE

**Edward W. Kahelin, 812 Fifth St., Manhattan Beach, Calif. 90266**

**Continuation-in-part of Ser. No. 293,020, Sept. 28, 1972, Pat. No. 3,838,676. This application June 17, 1974, Ser. No. 479,747**
**Int. Cl.² F41F *1/04***
**U.S. Cl. 124—11 R** **6 Claims**



1. A compressed air ball projecting machine having an ejection barrel to receive and eject balls, an air supply tank for subjecting a ball in said barrel to compressed air to eject said ball from said barrel,
- moving means for moving said barrel through lateral oscillations as balls of one type are cyclically ejected from said barrel to vary the direction of ejection of said balls,
- an air line through which compressed air is pumped into said air supply tank,
- valve means in said air line to regulate the flow of air therethrough,
- said valve means having an actuating lever the position of which determines the passage and non-passage of air through said valve means,
- a pair of notched discs engageable with said actuating lever, a timing motor for rotating said notched discs past said actuating lever to change the position thereof in accordance with the rotational position of the notches on said discs,
- said lever having an end with a thickness approximately equal to the thickness of said pair of discs whereby said actuating lever is moved only upon axial alignment of notched portions of both discs moving past said actuating lever,
- said discs being further selectively rotatable relative to each other to vary the axial alignment of said notched portions.

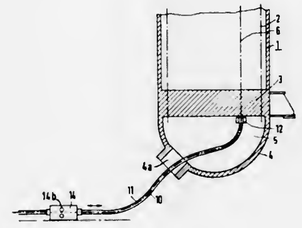
4. A compressed air ball projecting machine having an ejection barrel to receive and eject balls, an air supply tank for subjecting a ball in said barrel to compressed air to eject said ball from said barrel,
- moving means for moving said barrel through lateral oscillations as balls of one type are cyclically ejected from said barrel to vary the direction of ejection of said balls,
- said moving means comprising a rotating disc,
- an acutator rod pivotally mounted on said disc at a pivot point spaced from the center thereof for circular movement of said rod,
- a pair of fingers having said rod positioned therebetween for vertical movement, and
- an eye bolt positioned between said disc and said fingers and having said rod extending therethrough,
- said machine being pivotally mounted and having said eye bolt connected thereto whereby rotation of said disc causes lateral movement of said eye bolt and thus oscillation of said machine.



## 3,930,487
## HEAT EXCHANGER TUBE TOOL

**Georg Gugel, Kalchreuth, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany**

**Filed Dec. 20, 1973, Ser. No. 426,479**
**Claims priority, application Germany, Dec. 22, 1972, 2263148**
**Int. Cl.² B65H *23/32***
**U.S. Cl. 226—91** **7 Claims**

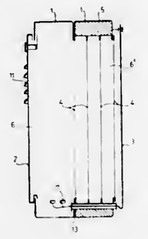


1. A tool for inserting a device into a pressurized-water reactor steam-generator heat-exchanger tube having an end opening into a chamber having an access opening offset from alignment with said tube's end, said tool comprising a flexible guide tube removably inserted through said access opening and bending to said heat-exchanger tube's end and having an inner end provided with means releasably connecting it with the heat-exchanger tube's end and the guide tube having an outer end, said guide tube having a length such that said outer end remains outside of said chamber, said guide tube having substantially the same inside diameter as said heat-exchanger tube's inside diameter, a flexible transport hose sliding inside of said guide tube for transporting said device and having a length substantially longer than the length of said guide tube and an outside diameter substantially smaller than the latter's inside diameter, and a plurality of anti-friction rolling elements fixed to said transport hose at interspaced positions therealong for bearing on the inside of this guide tube.

## 3,930,488
## HEATING PANEL FOR USE IN EXPLOSION-PRONE FURNACES

**János Wallis, Budapest, Hungary, and Horst Hammecke, Darmstadt-Eberstadt, Germany, assignors to Licencia Talalmanyokat Ertekesito Vallalat, Budapest, Hungary and Eltra KG Leicht und Trambauer, Pfungstadt, Germany**

**Filed Oct. 24, 1974, Ser. No. 517,604**
**Claims priority, application Hungary, Nov. 2, 1973, LI 248**
**Int. Cl.² F24C *3/04***
**U.S. Cl. 126—92 B** **5 Claims**

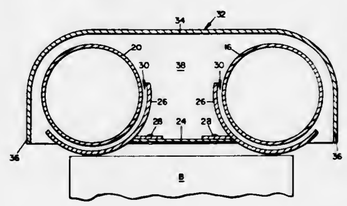


1. A heating panel, particularly for explosion-prone furnaces, comprising a frame of substantially rectangular shape, at least one heating element secured to the frame on the inner side thereof, means to supply power to said heating element, and at least one rectangular sheet of aluminum foil having edges and extending across and surrounded edgewise by the frame on the outer side of the heating element, whereby said foil blows out under the effect of substantial overpressure, said foil having a shiny reflective surface on its side adjacent said heating element there being a plurality of said foils in parallel spaced apart relationship in said frame.

## 3,930,489
## HEATING SYSTEM

**Fred A. Anable, 18 Flynt Ave., Monson, Mass. 01057**

**Continuation-in-part of Ser. No. 457,550, April 3, 1974, abandoned. This application Mar. 5, 1975, Ser. No. 555,386**
**Int. Cl.² F24H *3/00***
**U.S. Cl. 126—99 R** **2 Claims**



1. In a heating system located in a furnace room and including a furnace and an air blower for delivering air to the furnace via an inlet stack and heating pipes for the delivery of heated air from the furnace to the areas to be heated, the improvement in means for utilizing the heat passing through from the furnace to the chimney by preheating furnace room air wiped therepast preliminary to passage thereof through the air blower and inlet stack to the furnace comprising:
- an elongated horizontally disposed waste stack of generally rectangular plan for the through flow of exhaust gases from the furnace to the chimney and including,
- a first end portion connected at its inboard end to the furnace and having an outboard end and a first side portion connected at its inboard end to the outboard end of the first end portion and having an outboard end and a second end portion connected at its inboard end to the outboard end of the first side portion and having an out-

board end and a second side portion connected at its inboard end to the outboard end of the second end portion and having an outboard end connected to the chimney,

a first pair of arcuate deflectors disposed in close spaced relationship and circumadjacent the oppositely facing sections of the spaced first and second side portions of the waste stack and defining primary curvilinear air passages therebetween,

a horizontally disposed baffle connecting between the arcuate deflectors of the first pair thereof,

an opened bottom hood including a horizontally disposed top wall section and spaced opposite end and side wall sections depending therefrom in curving relationship therewith,

the respective top and end and side wall sections of the hood being disposed in uniform spaced relationship and in close proximity to the adjacent portions of the waste stack and defining secondary curvilinear air passages therebetween,

with air from the furnace room being captured and circulated first within the secondary air passages and second within the primary air passages for wiping relationship relative to the side and end portions of the waste stack.

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**3,930,490**

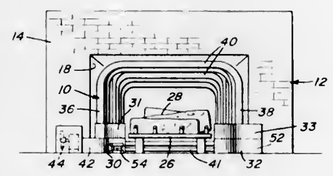
**FIREPLACE HEATER**

**Carl O. Lassy, 376 South St., and William A. Lassy, 73 Grove Ave., both of Bristol, Conn. 06010**

**Filed Mar. 25, 1974, Ser. No. 454,743**

**Int. Cl.² F24B** *7/00*

**U.S. Cl. 126—121** **8 Claims**




1. A heater for installation in a fireplace comprising cold air duct means adapted to be oriented adjacent one lower corner of the fireplace, hot air duct means adapted to be oriented adjacent the other lower corner of the fireplace and adapted to extend from front to rear of the fireplace, a plurality of heat exchange tubes interconnecting the cold air duct means and the hot air duct means and extending upwardly and transversely and adapted to be disposed in overlying relation to a fire in the fireplace so that heat from the fire and the products of combustion of the fire will pass over and around the heat exchange tubes for heating air passing therethrough from the cold air duct means to the hot air duct means, and means moving air through the heater from the cold air duct means, through the heat exchange tubes to the hot air duct means for discharge of hot air therefrom, said cold air duct means including twin ducts disposed in superimposed relation with communicating apertures at the rear thereof for guiding cold air rearwardly in the bottom duct, up through the apertures into the top duct, said heat exchange tubes being connected to the top duct for discharge of coldest air from the cold air duct means into the heat exchange tubes that are the hottest, thereby increasing the heat exchange efficiency of the heat exchange tubes.

**3,930,491**

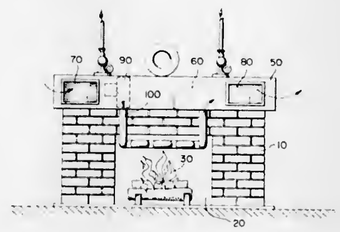
**COMBINATION FIREPLACE AND SPACE HEATER**

**Robert B. Miller, Stamford, Conn., assignor to Raymond Lee Organization Inc., New York, N.Y., a part interest**

**Filed Jan. 6, 1975, Ser. No. 538,515**

**Int. Cl.² F24B** *7/00*

**U.S. Cl. 126—121** **2 Claims**




1. A combination fireplace and space heater comprising:

a fireplace having a top disposed elongated horizontal hollow mantel, a hearth disposed below and to the rear of said mantel, said hearth having an open front with closed bottom, closed sides and top, and a chimney communicating with the hearth and rising upwards from the top, said mantel having a front disposed vertical air intake port at one end and a front disposed vertical air exhaust port at the other end;

an air intake fan disposed in the mantel to block off the interior of the mantel into one section communicating with the air intake port and a second section communicating with the air exhaust port, said fan drawing air inward through the intake port and discharging air;

a thermally conductive hollow pipe secured at one end to said fan and receiving said discharged air, said pipe extending rearwardly from the fan and downwardly from the mantel into the hearth, then looping backwardly and forwardly in a horizontal plane below the top of the hearth, then rising upwardly and forwardly into the second section of the mantel to convey the discharged air via the opposite open end of the pipe into the second section and out of the exhaust port, said air being heated while in the pipe when a fire burns in the hearth.

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**3,930,492**

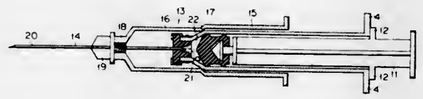
**AIR-NONCONTACT TYPE BLOOD SAMPLING ASSEMBLY**

**Norio Hatsuno, and Tooru Sekiguchi, both of Tokyo, Japan, assignors to Jintan Terumo Company, Ltd., Tokyo, Japan**

**Filed Aug. 21, 1974, Ser. No. 499,219**

**Int. Cl.² A61B** *5/14*; **A61M** *5/315*

**U.S. Cl. 128—2 F** **5 Claims**




1. An air-noncontact type blood sampling assembly for collecting arterial blood directly from an arterial blood vessel through a needle without entrainment of ambient air which comprises in combination:

A. a sampling container for containing arterial blood including:

a. a tubular body having forward and rearward open ends and having a small circumferential rib adjacent the forward end,

b. a needle-pierceable elastomeric stopper hermetically inserted into and sealing the forward end opening section of said tubular body, the partial circumferences of the stopper and the forward end section of said tubular body including said rib being covered with a sealing member hermetically sealing the stopper to said tubular body,

c. a columnar gasket disposed within said tubular body and having means for slidable, air tight movement in said tubular body due to arterial blood pressure, wherein said means includes a first circumferential projection near its forward end and a second circumferential projection spaced apart therefrom, the outer diameter of the two projections being slightly larger than the inner diameter of said tubular body thereby the gasket may slidably air-tightly move in said tubular body due to arterial blood pressure, the forward end plane of the gasket in its most forward position within the tubular body, the inner wall of said tubular body and rear end plane of said stopper defining a space having a capacity equivalent to a predetermined amount of blood anticoagulant,

d. blood anticoagulant in an amount slightly larger than said predetermined amount contained in said tubular body between said stopper and said gasket; and

e. a plunger fixedly secured to said gasket;

B. a cylindrical transparent holder having an open rear end and a restricted forward end comprising a threaded hole, embracing said sampling container, the inner diameter of said holder being slightly larger than the outer diameter of said tubular body of said sampling container, and;

C. a needle having a forward end portion and a rearward end portion integrally joined by an intermediate portion, piercing ends on said forward and rearward portions, a hub on said intermediate portion, said hub being screwed into said threaded hole in said holder, said rearward portion being of such length that at least the blade plane of the piercing end of said rearward portion will protrude from the rear end of said stopper when the sampling container is moved to its most forward position within said holder.

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**3,930,493**

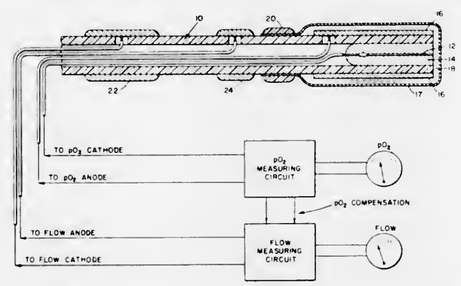
**INTRAVASCULAR LIQUID VELOCITY SENSING METHOD USING A POLAROGRAPHIC ELECTRODE**

**Donald E. Williamson, Miami, Fla., assignor to Cordis Corporation, Miami, Fla.**

**Continuation of Ser. No. 435,638, Jan. 23, 1974, abandoned, which is a continuation of Ser. No. 228,918, Feb. 24, 1972, abandoned. This application Oct. 7, 1974, Ser. No. 512,477**

**Int. Cl.² A61B** *5/02*

**U.S. Cl. 128—2.05 F** **1 Claim**




1. The method of measuring the flow rate of an intravascular aqueous liquid containing dissolved oxygen comprising contacting said liquid with a polarographic cathode having a surface area greater than 8 square millimeters and with a reference anode, applying between said cathode and said anode a fixed, predetermined d.c. voltage corresponding to the characteristic plateau current of said liquid, said voltage being in the order of 0.4–0.9 volts and, while maintaining said predetermined voltage, measuring the current passing between said anode and said cathode, said current being variable as a function of the rate of flow of said liquid over a substantial range due to the substantial electrode area available to produce depletion in the adjacent volume of said liquid.

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**3,930,494**

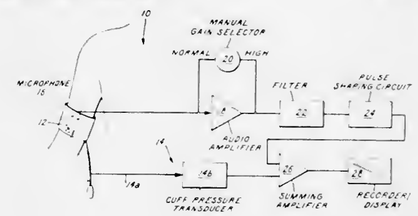
**METHOD AND APPARATUS FOR THE INDIRECT MEASUREMENT OF BLOOD PRESSURE**

**Alan H. Maurer, Philadelphia; John J. Swana, Audubon, and Richard F. Vanderpool, Spring City, all of Pa., assignors to General Electric Company, New York, N.Y.**

**Filed Sept. 20, 1971, Ser. No. 181,772**

**Int. Cl.² A61B** *5/02*

**U.S. Cl. 128—2.05 A** **9 Claims**




1. In a process for automatically measuring the blood pressure of a person comprised of inflating a blood pressure cuff to a pressure above the point in which the radial pulse disappears; releasing the pressure at a substantially linear rate of from 2–3 mm Hg/sec.; sensing the pressure exerted by the cuff and converting this to a first electrical signal; and sensing the Korotkoff sounds and converting this to an amplified second electrical signal, wherein the improvement comprises:

filtering the second signal to provide a passband with a low frequency cutoff of no less than 45 Hz with a sharp cutoff slope and a high frequency cutoff of no less than 100 Hz with a gradual slope; and

indicating said first and second signals.

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**3,930,495**

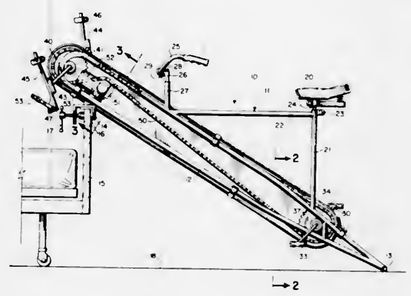
**INVALID EXERCISING DEVICE**

**Michael Marino, Jr., 1428 Chickasaw St., Metairie, La. 70005**

**Filed Aug. 15, 1974, Ser. No. 497,539**

**Int. Cl.² A61H** *1/02*

**U.S. Cl. 128—25 R** **4 Claims**




1. A paraplegic exercising device comprising:

a. frame means having hub portions at both of its ends adapted to receive rotating sprocket means;

b. first sprocket means rotatably mounted in one of the hub portions of said frame means;

c. second sprocket means rotatably mounted in the opposite hub portion of said frame means and adapted to receive

the feet of a paraplegic to be administered physical therapy;

d. sprocket connecting means operably connecting said first and second sprocket means together whereby rotation of one sprocket causes the other sprocket to rotate; and

e. clamping means operably attached to the end of said frame means provided with said second sprocket means adapted for connection to the feet of a paraplegic to receive physical therapy, said clamping means being further defined in that it is adapted to fit and rest upon the edge of a bed in which the paraplegic is positioned in alignment with said second sprocket means.

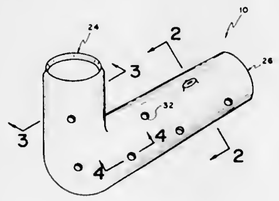
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**3,930,496**

## CAST FOR BROKEN LIMBS AND METHOD

**Delamar J. Gibbons, P.O. Box 404, Blanding, Utah 84511**

**Filed Nov. 13, 1974, Ser. No. 520,520**
**Int. Cl.² A61F *5/04***
**U.S. Cl. 128—90** **9 Claims**



1. A cast for injured limbs comprising:

spaced generally concentric elongated sleeves, the axis of which is parallel to the limb of the patient upon which it is to be used, of pliant impervious resinous material defining a hollow space between the sleeves;

porous reinforcing material disposed within said space and comprising the only substance between the sleeves, said reinforcing material carrying a resin activating substance; at least one resin ingress port in the outer sleeve whereby inactive resin is injected into said space and caused to be activated and polymerized by intermingling the inactive resin with said activating substance to ultimately form a resilient shape-retaining cast the exterior of which comprises said sleeve and the interior of which consists of polymerized resin and said reinforcing material.

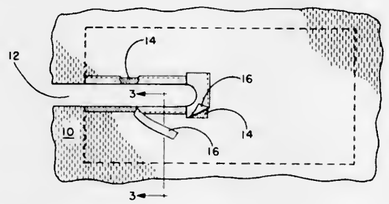
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**3,930,497**

## SURGICAL DRAPE AND SYSTEM INCORPORATING IT

**Kay E. Krebs, and Marion T. Arps, both of Neenah, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.**

**Filed Dec. 5, 1974, Ser. No. 529,633**
**Int. Cl.² A61F *13/00***
**U.S. Cl. 128—132 D** **10 Claims**



1. Surgical drape comprising

a. a base sheet formed of liquid repellent nonwoven fabric material, said base sheet having a top surface and a bottom surface for contacting a patient and having a generally U-shaped fenestration along a portion thereof to form tails;

b. a continuous layer of normally tacky pressure-sensitive adhesive on the bottom of said base sheet adjacent the closed end of said U-shaped fenestration; and extending adjacent the fenestration sides at least half way to the opened end of said fenestration;

c. releasable cover means protecting said adhesive adjacent the sides of said fenestration; and

d. separate releasable cover means protecting said adhesive at the closed end of said fenestration,

said drape being folded so that said separate releasable cover means protecting the adhesive at the closed of said fenestration is exposed.

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**3,930,498**

## ANTI-ADHERENT MEDICAL DRESSINGS AND THE LIKE

**Andre Monnet, Lyon, and Maurice Cessiecq, Vernaison, both of France, assignors to Products Chimiques Ugine Kuhlmann, Paris, France**

**Filed Mar. 13, 1973, Ser. No. 340,667**
**Claims priority, application France, Mar. 14, 1972, 72.08787**
**Int. Cl.² A61B *19/00*; A61L *15/00***
**U.S. Cl. 128—149** **5 Claims**



1. Anti-adherent materials for coming into contact with the epidermis such as sheets, surgical dressings, various kinds of bandages and the like which comprise a homopolymer or copolymer of tetrafluoroethylene containing at least about 50% tetrafluoroethylene deposited upon a support material which is resistant to the fritting temperature of the homopolymer or copolymer, said anti-adherent materials containing from about 25 to 90% homopolymer or copolymer and from 10 to 75% support material and possessing regularly disposed perforations comprising about 0.1 to 10% of the surface.

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**3,930,499**

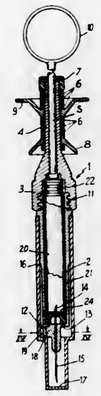
## HYPODERMIC SYRINGE WITH PARTS DISPOSABLE AFTER USE

**Henri Rimbaud, Paris, France, assignor to Laboratoire S P A D, Quetingny-les-Dijon, France**

**Division of Ser. No. 308,844, Nov. 22, 1972, Pat. No. 3,878,846. This application May 31, 1974, Ser. No. 475,146**
**Int. Cl.² A61M *5/00***
**U.S. Cl. 128—218 DA** **6 Claims**

1. A syringe comprising a syringe body delivered sterile ready for use to be discarded after a single usage, said syringe body having one extremity with connection means thereat for attachment to a syringe head, a needle mounted at the opposite extremity of said body, said needle extending partially into the interior of the body and partially externally thereof, said syringe body being delivered in combination with a cartridge of injectible fluid frictionally held in said body and including at one extremity thereof a closure non-slidably fitted in said cartridge and placed in facing relation with the part of the needle extending into the interior of the body, said cartridge including, at the other extremity thereof, a piston which is slidable in the cartridge, a removable case mounted on the body and covering a portion thereof and the externally extending portion of the needle while leaving said connection means exposed, means coupling said case and body for common rotation, and a detachable support mounted on the case and covering the rest of said body, said support being separable from the case and thus disengaged from the connection means.





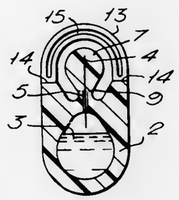
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**3,930,500**

## PHARMACEUTICAL SINGLE-DOSE CONTAINER FOR THE EYE

**Klaus Möhrke; Heinrich Eggert; Helmut Franz, all of Biberach an der Riss, and Dieter Jarsen, Laupheim, all of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany**

**Filed Mar. 28, 1973, Ser. No. 345,745**
**Claims priority, application Germany, Mar. 29, 1972, 2215215; Dec. 18, 1972, 2261913; Sept. 13, 1972, 7233642[U]; Dec. 18, 1972, 7246257[U]**
**Int. Cl.² A61M *7/00***
**U.S. Cl. 128—233** **3 Claims**



1. A pharmaceutical single-dose container adapted for applying the contents thereof to an eye, said container having been formed by placing two foils face-to-face, positioning an elongate flexible closure member there between, and joining and sealing together the edges of said foils by a seam to form a container wall, said seam serving to secure and seal said closure member in the container wall, said closure member extending through the wall of the container and sealed therein with part of said closure member extending outwardly of the container, said part being engageable by hand to permit the closure member to be pulled out of the container wall to provide a discharge opening through which the contents of the container can be discharged, said seam being widened to seal said outwardly extending part of said closure member therein, said foils being each provided with looped portions extending from one side of said closure member to the opposite side, the looped portions being bendable to positions in which they define a supporting frame for positioning around an eye.

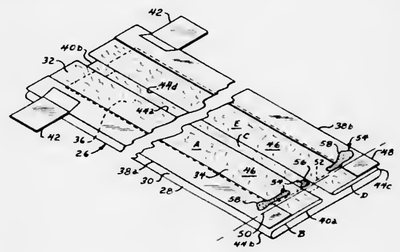
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**3,930,501**

## DISPOSABLE DIAPER WITH END FLAP MEANS AND METHOD

**Charles H. Schaar, Lake Zurich, Ill., assignor to Colgate-Palmolive Company, New York, N.Y.**

**Filed May 23, 1974, Ser. No. 472,531**
**Int. Cl.² A61F *13/16***
**U.S. Cl. 128—287** **45 Claims**



1. A disposable diaper, comprising: an absorbent pad, a fluid impervious backing sheet defining a back surface of the diaper, a front surface, a plurality of longitudinally extending folds defining a box-pleat configuration of the diaper, a pleated end flap of the box-pleat diaper adjacent one end of the diaper, said pleated flap being folded over the front surface of the diaper, and means for retaining at least a portion of the flap against the underlying front surface of the box-pleat diaper.

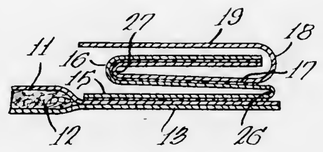
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**3,930,502**

## DISPOSABLE DIAPER WITH A TAPE CLOSURE SYSTEM HAVING A DOUBLE-FOLDED TAB

**Ludwig Tritsch, Wilmette, Ill., assignor to Johnson & Johnson, New Brunswick, N.J.**

**Filed Nov. 20, 1974, Ser. No. 525,424**
**Int. Cl.² A61F *13/16***
**U.S. Cl. 128—287** **3 Claims**

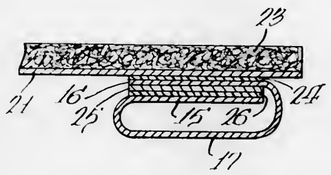


1. In combination with a disposable diaper having an inside surface for direction toward an infant when the diaper is worn by that infant and an outside surface for direction away from said infant and provided with a moisture-retaining layer and a moisture-impervious backing sheet, an improved adhesive tab having a fixed end secured to said backing sheet on said outside surface of the diaper and at a marginal location thereof, and a means for providing a shielding and gripping portion including a free end longer than the fixed end and provided with a tacky surface facing in the same direction as said inside surface, and a cover strip provided with a release coating on one surface thereof, releasably attached to, and covering said tacky surface from its outer end toward said marginal location;

said cover strip extending free of and longitudinally beyond said tacky surface to provide a grip tab means; said free end together with said cover strip forming a creasable laminate; and

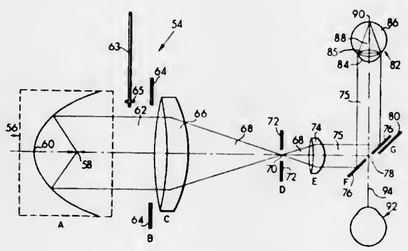
said laminate being folded back over said fixed end and being further folded over on itself.

**3,930,503**
**DISPOSABLE DIAPER WITH TAB FASTENER MEANS HAVING AN INTEGRAL RELEASE SURFACE**
**Ludwig Tritsch, Wilmette, Ill., assignor to Johnson & Johnson, New Brunswick, N.J.**
**Filed Nov. 20, 1974, Ser. No. 525,603**
**Int. Cl.² A41B *13/02*; A61F *13/16*; A43C *11/00***
**U.S. Cl. 128—287** **5 Claims**



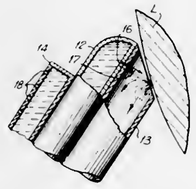
1. In combination with a disposable diaper of substantially quadrilateral configuration, having an inside surface for direction toward an infant when the diaper is worn by that infant and an outside surface for direction away from said infant and including a thin, flexible backing sheet of substantially moisture-impermeable material and a moisture retaining layer having a pad of absorbent material superposed on said backing sheet and attached thereto, a fastening tab means of substantially uniform width and comprising a pair of terminal portions and a flexible central segment connecting the terminal portions; one of said terminal portions being attached to said backing sheet and having an outwardly-facing release surface, the other free terminal portion bearing a layer of pressure-sensitive adhesive for attachment to the outside surface of the diaper when the diaper is applied to the infant and being adapted for removable attachment to said release surface by means of the adhesive layer thereon, and said central segment being longer than said free terminal portion and forming a finger-receiving loop when said free terminal portion is removably attached to said release surface; said release surface on the attached terminal portion and said adhesive layer on the free terminal portion being situated on opposite sides of said fastening tab means.

**3,930,504**
**PORTABLE LIGHT COAGULATOR**
**Hughes de Laforcade, Manchester, Mass., assignor to Clinitex, Inc., Danvers, Mass.**
**Continuation-in-part of Ser. No. 426,668, Dec. 12, 1973, abandoned, which is a continuation of Ser. No. 177,949, Sept. 7, 1971, abandoned. This application Dec. 21, 1973, Ser. No. 427,084**
**Int. Cl.² A61B *17/36*; G02B *3/00***
**U.S. Cl. 128—303.1** **11 Claims**



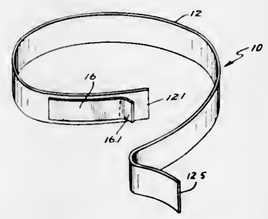
1. A light coagulator comprising in combination an arc-lamp parallel light beam source, a first lens for focusing at least a portion of the light into a beam of light converging toward a focal point and then diverging, an adjustable aperture diaphragm situated at said focal point for permitting adjustment of the size of the image field in the desired target area, a second lens situated in the path of the diverging light beam for directing said diverging beam into a parallel light beam and a rotatable mirror positioned in the path of said parallel beam, for reflecting said beam to a target area, said mirror having an aperture therethrough for observation of the target area wherein said light source is a lamp backed by a rotationally symetric concave reflector which directs the light forward in a parallel beam toward said first lens, and wherein an aperture diaphragm is positioned between said light source and said first lens to control the size of the light passing through siad first and second lenses.

**3,930,505**
**SURGICAL APPARATUS FOR REMOVAL OF TISSUE**
**Mark Wallach, New York, N.Y., assignor to Hydro Pulse Corporation, New York, N.Y.**
**Continuation-in-part of Ser. No. 481,952, June 24, 1974, abandoned, which is a continuation-in-part of Ser. No. 285,002, Aug. 30, 1972, Pat. No. 3,818,913. This application Dec. 2, 1974, Ser. No. 528,810**
**Int. Cl.² A61B *17/32*; A61M *1/00***
**U.S. Cl. 128—305** **24 Claims**



1. An apparatus for disintegrating and removing animal tissue from a preselected enclosed area comprising a hand manipulatable first tube having a distally disposed outlet port, a liquid pulsating pump having an inlet and an outlet, a source of liquid connected to said pump inlet, means including a flexible conduit connecting said first tube to said pump outlet, a suction conduit including an outlet port disposed proximate said first tube outlet port, a source of suction, and means including a flexible conduit connecting said suction conduit to said source of suction, said pump providing a stream of pulsating liquid through said first tube outlet port at a frequency between ¼ to 333 pulses per second, at a pressure about atmospheric pressure of about 15 to about 3,500 p.s.i. and having a velocity of between 50 and 500 feet per second.

**3,930,506**
**DISPOSABLE PHLEBOTOMIST'S TOURNIQUET**
**Thomas F. Overend, 4379 Dart Ave., Minneapolis, Minn. 55424**
**Filed June 3, 1974, Ser. No. 475,452**
**Int. Cl.² A61B *17/12***
**U.S. Cl. 128—327** **7 Claims**

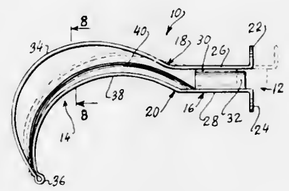


1. A disposable phlebotomist's tourniquet, comprising a single, flat, solid elastic band 8–20 inches in length, a non-stretchable, pressure-sensitive adhesive strip bonded to only



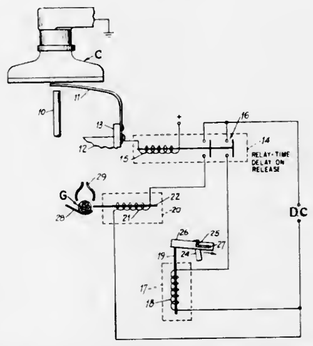
one flat surface of the band adjacent but spaced from one end of the latter and having a pressure-sensitive adhesive surface, the adhesive strip including a non-extensible strip of sheeting therein to impart non-stretchability to the adhesive strip, the non-extensible strip and the surface of the band to which the strip is bonded coacting to resist deformation of the adhesive strip when the band is stretched, a removable protective liner covering the pressure-sensitive adhesive surface and having a peel strength to the adhesive strip less than the peel strength of the strip to the band, the liner having at one end a projecting tab to facilitate easy removal of the liner from the adhesive strip.

**3,930,507**
**ADJUSTABLE ORAL AIRWAY**
**Robert A. Berman, 501 Cedar Hill Road, Far Rockaway, N.Y. 11691**
**Filed Feb. 18, 1975, Ser. No. 550,201**
**Int. Cl.² A61M *29/00*, *16/00***
**U.S. Cl. 128—345** **4 Claims**



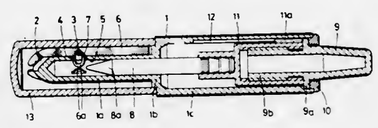
1. An adjustable oral airway comprising:
a. a narrow, elongated superior section and a narrow, elongated inferior section, said superior and inferior sections being attached to each other at one end and being adapted for relative linear motion at their opposite end,
b. said superior section and said inferior section each being provided with a mouthpiece section, a leaf section, and a sliding section between said mouthpiece section and said leaf section.

**3,930,508**
**WRAPPER ABSENCE DETECTING AND CONTROL DEVICE FOR CIGAR MACHINES**
**Frank Hollenton, Richmond, Va., assignor to AMF Incorporated, White Plains, N.Y.**
**Filed Apr. 24, 1974, Ser. No. 463,922**
**Int. Cl.² A24C *1/28***
**U.S. Cl. 131—21 R** **6 Claims**



1. In a cigar machine having a roller nest, a rotatable carrier for delivering a tobacco strip to the roller nest, a paster and means for delivering formed tobacco members to the roller nest, a control for preventing particular operations of the machine while permitting the machine to continue to run, comprising
a source of pressure fluid,
first means operatively associated with said carrier and responsive to fluid pressure from said source for detecting the absence of a tobacco strip from the carrier immediately prior to the operation of the paster and
second means for preventing operation of the paster and for preventing the delivery means from delivering a formed tobacco member to the roller nest only when the absence of a tobacco strip from the carrier has been detected by said first means.

**3,930,509**
**SMOKERS PIPE REAMER**
**Karl Zysset, Lyss, Switzerland, assignor to K. Zysset & Co. AG, Lyss, Switzerland**
**Filed Apr. 9, 1975, Ser. No. 566,209**
**Claims priority, application Switzerland, Apr. 10, 1974, 5017/74**
**Int. Cl.² A24F *9/10***
**U.S. Cl. 131—246** **2 Claims**

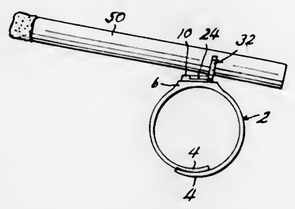


1. A smokers's pipe reamer comprising a hollow body having a front portion with means providing an interior space and a rear portion with a rearward end, means providing three radial grooves having parallel axes and bearing disposed within said front portion and spaced at regular angular intervals, three blades, each guided in a respective groove means and having means providing a bearing opening, three blade bearing parts secured to said body and each passing through a middle portion of the length of a said groove means and through a said bearing opening means, and a mechanism accommodated in said body for the bearing adjustment of said blades, wherein each said blade comprises a U-shaped appendage projecting into said interior space means, said mechanism comprises a part which is longitudinally displaceable within said interior space means and which includes a conical surface, each said bearing opening means takes the form of an elongated hole partially delimited by a said appendage and disposed substanially at right angles to the longitudinal axis of said body, and said conical surface being adapted to act upon said appendages.

**3,930,510**
**CIGARETTE HOLDER RING**
**Paul R. Johnston, 110 E. 23rd Ave., North Kansas City, Mo. 64116**
**Filed Oct. 15, 1974, Ser. No. 514,582**
**Int. Cl.² A24F *13/22***
**U.S. Cl. 131—258** **3 Claims**

1. A cigarette holder finger ring comprising:
a. ring-shaped band portion adapted to encircle the finger of a wearer,
b. a crown member attached to said band portion by means permitting rotation of said crown member relative to said band portion about an axis generally radial to said band portion, and having a generally planar outer surface generally parallel to the axis of said band, and
c. a clip of generally planar shape pivotally connected to said crown member for movement between a folded position in which its plane is generally parallel to the axis of said band and it lies against the outer surface of said

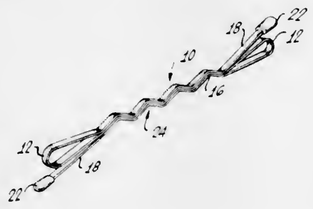
crown member, and an extended position in which its plane extends outwardly from said crown member, said




clip being adapted to receive and hold a cigarette therein when in its extended position.

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**3,930,511**
**DUAL HAIR PIN**
**Joe L. Roney, 19108 Celtic, Northridge, Calif. 91324**
**Filed Oct. 17, 1974, Ser. No. 515,447**
**Int. Cl.² A45D** *8/02*
**U.S. Cl. 132—50 R** **1 Claim**

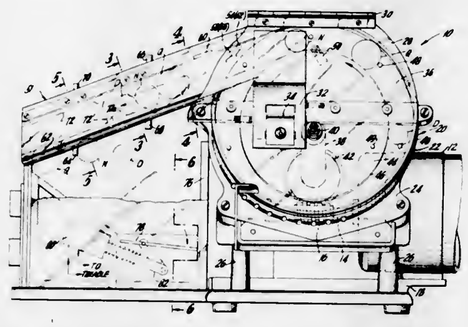



1. A hair pin comprising:
a continuous band of resilient material folded back upon itself on opposite sides to form a loop at each end of said pin, each loop having a crimped outer leg which extends the length of said pin to form a flared tine which terminates adjacent the other loop, said loops further having a common crimped inner leg extending substantially the length of said pin intermediate said loops, which is in crimped compact mating relationship with the outer legs for substantially its entire length between said loops to provide a pair of oppositely disposed crimped pincers.

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**3,930,512**
**COIN SORTING AND COUNTING APPARATUS**
**Jack H. Woodland, 2108 Maple St., Wantagh, N.Y. 11793**
**Filed Jan. 21, 1975, Ser. No. 542,746**
**Int. Cl.² G07D** *3/00*
**U.S. Cl. 133—3 D** **10 Claims**

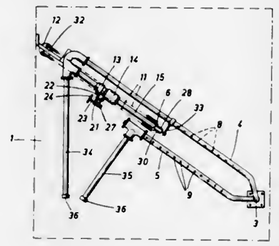
1. A coin sorting and counting apparatus for a toll booth or the like, said apparatus comprising:
a. a housing including hopper means for receiving a plurality of coins of different denominations;
b. rotatable conveyor means in said housing for moving the coins along an arcuate path and in a single line;
c. means for driving said conveyor means;
d. an elongated track assembly for successively receiving the coins from said conveyor means and further including means for selectively discharging the coins at different locations depending upon the denomination of the coin;
e. sensing means comprising a plurality of pairs of photoelectric cells and associated lamps, there being one of said pairs of cells and lamps for each coin denomination, said pairs of sensing means being spaced along the length of said track assembly for detecting the denomination of the coins prior to the discharge thereof;
f. means responsive to said sensing means for generating a plurality of signals proportional to the denomination of each sensed coin and for totaling the said signals;
g. said first two pairs of sensing means being positioned such that a signal will be generated only when said first two of said pairs of sensing means simultaneously detect the passage of a half-dollar therepast in said track assembly



and another signal will be generated indicating the presence of a quarter in said track assembly only when second one of said pairs of sensing means detects the passage of a quarter therepast; and
h. means responsive to said total of said generated signals for indicating that the amount of the coins deposited is either correct or incorrect.

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**3,930,513**
**SPRAY-CLEANING APPARATUS**
**Pius Buchegger, and Pius Johann Buchegger, both of Altengutrathstrasse 200, Hallein, Austria**
**Filed Oct. 9, 1973, Ser. No. 404,426**
**Claims priority, application Austria, Oct. 10, 1972, 8697/72; Mar. 14, 1973, 2230/73; June 14, 1973, 5256/73; June 14, 1973, 5257/73**
**Int. Cl.² B08B** *3/02*
**U.S. Cl. 134—172** **5 Claims**



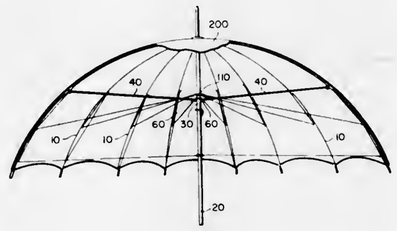

3. Apparatus for cleaning surfaces of articles by means of a liquid sprayed on said surfaces which comprises:
a. a support for an article to be cleaned;
b. a nozzle system;
c. means for supplying cleaning liquid to said nozzle system, said nozzle system including:
1. an elongated upright tube disposed laterally of said support and upwardly extending beyond said support,
2. an upper, horizontally extending, elongated tube upwardly spaced from said support,
3. a lower horizontally extending, elongated tube downwardly spaced from said support, and
4. an additional elongated tube,
i. said upright, upper, and lower tubes each carrying a longitudinal row of nozzles directed toward said support and defining a cleaning zone receiving said support,



ii. said additional tube carrying nozzles arranged in two opposite longitudinal rows, and having a free longitudinal end in said zone,
iii. said additional tube depending toward said support and being centered relative thereto,
iv. said additional tube being pivoted about a horizontal axis;
d. locking means for locking said additional tubes in each of several angular positions relative to said axis, the nozzles of one of said two rows being directed away from said support in one of said angular positions; and
e. nozzle closing means closing the nozzles of said one row when said additional tube is in said one angular position.

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**3,930,514**
**WIND RESISTANT UMBRELLA**
**Dean T. S. Wu, New York, N.Y., assignor to Raymond Lee Organization Inc., New York, N.Y., a part interest**
**Filed Apr. 28, 1975, Ser. No. 572,161**
**Int. Cl.² A45B** *25/22*
**U.S. Cl. 135—27** **4 Claims**

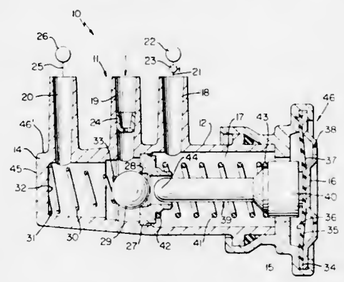



1. A wind resistant umbrella frame, comprising:
a frame having a plurality of like downwardly extending ribs located circumaxially around an elongated center pole and a collar slidably up and down on the pole, the collar being connected to each rib by an elongated strut that is pivotally connected at one end to the collar and pivotally connected at the other end to the rib, and flexible covering secured to the top of the pole and to the outside of the ribs;
a like plurality of first hooks, each first hook being secured to a corresponding rib adjacent the bottom thereof;
a like plurality of second hooks, each second hook being secured at the pivotal connection point of the corresponding rib and its associated strut;
a like plurality of third hooks, each third hook being secured to the corresponding rib between the corresponding first hook and the corresponding second hook; and
a like plurality of flexible cables, each cable being secured at one end to one of said associated first hooks, and being looped over one of said corresponding second and third hooks, and being secured to the center pole at a point above the maximum position of upward travel of the collar.

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**3,930,515**
**PNEUMATIC CONTROL SYSTEM AND VALVE CONSTRUCTION THEREFOR OR THE LIKE**
**Billy Edward Kennedy, Maryville, and Boyd Paul Sliger, Concord, both of Tenn., assignors to Robertshaw Controls Company, Richmond, Va.**
**Filed July 22, 1974, Ser. No. 490,590**
**Int. Cl.² F16K** *31/365*
**U.S. Cl. 137—102** **18 Claims**

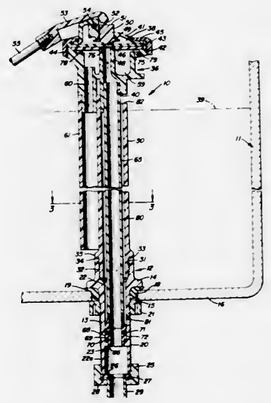
1. A pneumatic control system comprising a source of vacuum that is sub-atmospheric, a vacuum operated device, and a valve construction for interconnecting said source of vacuum to said device when in one operating condition thereof and for interconnecting the atmosphere to said device when in another operating condition thereof, said valve construction having a housing means provided with a chamber therein and with three spaced port means leading to said chamber, one of said port means being interconnected to said source of vacuum, another of said port means being interconnected to said device, the remaining port means being interconnected to the atmosphere, said housing having a valve seat separating said one port means from said other port means and said remaining port means, said housing having a movable valve member for controlling said valve seat, said valve member



closing said valve seat when said valve construction is in said other condition thereof and said valve member opening said valve seat when said valve construction is in said one condition thereof, said valve construction having a vacuum operated actuator for moving said valve member, said actuator being controlled by said source of vacuum through said one port means of said housing, said remaining port means having a restrictor means therein between said chamber of said housing and said atmosphere to bleed atmosphere therethrough at a rate slower than the evacuation rate of said source so that said source can operate said device when all of said ports are interconnected together.

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**3,930,516**
**BALLCOCK ASSEMBLY**
**Vaughn D. Flinner, Big Prairie, and Dana D. Zody, Perrysville, both of Ohio, assignors to Mansfield Sanitary Inc., Perrysville, Ohio**
**Filed Dec. 5, 1974, Ser. No. 529,733**
**Int. Cl.² F16K** *24/00*
**U.S. Cl. 137—215** **7 Claims**



1. In combination with a fluid reservoir tank having a base wall and a desired fluid level, a ballcock assembly, said ball-

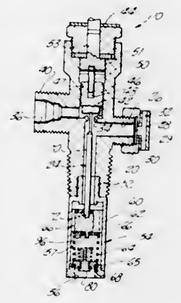
cock assembly comprising; a mounting shank extending through said base wall, means sealingly to secure said shank to said base wall, said mounting shank having an annular locating flange below the tank base wall, a sheath secured to said mounting shank and extending upwardly through said reservoir tank, a body portion secured to said sheath upwardly of said desried fluid level, a valve having an intake and an exhaust, said exhaust communicating with the interior of said reservoir tank, an inlet tube connected to the intake of said valve and extending downwardly through said sheath and at least partially through said mounting shank, said inlet tube having a pilot to be insertably received within the inner diameter of said annular locating flange, said inlet tube having a rim portion axially upward of said pilot that closely fits within said mounting shank, said rim portion having means for sealing the connection between said inlet tube and said mounting shank, said inlet tube being positioned with respect to said sheath and said mounting shank to define a passageway that circumscribes said inlet tube, and a first aperture located below said means sealingly to secure said shank to said base wall by which said passageway communicates with atmosphere.

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**3,930,517**
**SAFETY VALVE**

**Jerome W. Gagala, 2796 Patrick Henry Drive, Apt. 618, Pontiac, Mich. 48057**

**Continuation-in-part of Ser. No. 478,252, June 11, 1974, abandoned. This application Aug. 2, 1974, Ser. No. 494,174**
**Int. Cl.² F17C** *13/04*
**U.S. Cl. 137—329.4** **2 Claims**



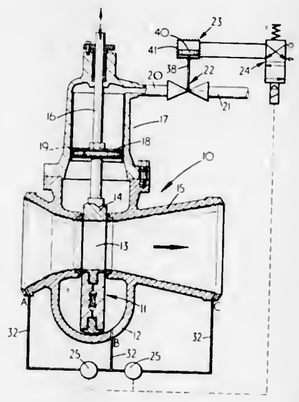
1. A combination safety and service valve for closing and opening a high pressure tank, said combination safety and service valve comprising:
- a body having an outlet port and a sealing portion engaging and closing said tank opening, said body having a flow passage extending through said tank sealing portion for communicating the interior of said pressure tank through a valve inlet with said outlet port;
- a valve seat formed in said flow passage between said sealing portion and said outlet port;
- a first valve member removably engagable with said valve seat to close communication between said tank interior and said outlet port;
- means for actuating said first valve member;
- a second valve seat formed in said flow passage between said sealing portion and said tank interior;
- a second valve member engagable with said second seat to close communication beyond said second seat;
- biasing means urging said second valve member into engagement with said second valve seat;
- means connecting said first valve member to said second valve member to maintain said second valve member open during normal operation of said first valve member and responsive to displacement of said first valve member from normal valving positions to permit seating of said second valve member;
- first valve means operable to close communication between said tank interior and said valve outlet port when the pressure of the fluid within said tank interior falls below a predetermined minimum value; and
- second valve means carried by said first valve means and operable to open communication between said valve inlet and said tank interior when said first valve means is closed and fluid under pressure is directed into said safety and service valve for pressurizing said tank interior.

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**3,930,518**
**VALVES**

**John Alfred Fuller, and Edwin Smith, both of Huddersfield, England, assignors to Hopkinsons, Ltd., Huddersfield, England**

**Filed May 8, 1974, Ser. No. 468,057**
**Claims priority, application United Kingdom, Apr. 4, 1974, 14954/74**
**Int. Cl.² F16K** *31/36*
**U.S. Cl. 137—487** **7 Claims**



1. A control valve for regulating the flow of compressible and non-compressible fluids in a fluid system and comprising: a control valve body having in spatial relationship a fluid inlet and a fluid outlet; a movable control valve gate member between the inlet and outlet for controlling fluid flow through the control valve body; differential pressure switch means connected to spaced tappings in the control valve body for detecting abnormal fluid flow conditions therein; and means initiated by the differential pressure switch means for closing the movable gate member when abnormal fluid flow conditions prevail in said fluid system, the means including a piston-and-cylinder assembly provided with a vent to atmosphere and operatively connected to the valve gate member and adapted to be maintained in a balanced, position when the valve gate member is open by the fluid of the system under normal fluid flow conditions, a normally-closed venting valve operatively connected to said piston-and-cylinder assembly for controlling venting of said cylinder, a pneumatic supply source, a pneumatic actuator connected to said pneumatic supply source and said venting valve for operating the latter, and an electrically-operated valve disposed between the pneumatic actuator and the pneumatic supply source and operatively connected to the differential pressure switch means to effect venting of the piston-and-cylinder assembly when abnormal fluid conditions prevail via the pneumatic actuator and venting valve to create fluid imbalance in the assembly and resulting control valve closure.

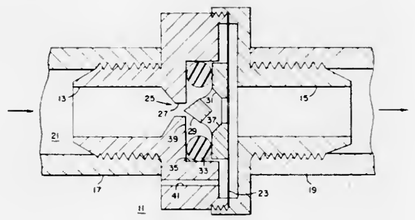


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**3,930,519**
**PRESSURE REGULATOR**

**Joe L. Byrd, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.**

**Filed Feb. 13, 1975, Ser. No. 549,611**
**Int. Cl.² F16K** *31/12*
**U.S. Cl. 137—505.25** **2 Claims**



1. A regulator for control of fluid flow between upstream and downstream sections of a conduit comprising:
- a circular diaphragm with an axial valve stem secured thereto including a passage for flow of fluid therethrough, a pair of tubular members disposed for respective engagement with said sections and for mutual engagement to conduct the flow between the sections and to secure said diaphragm therebetween in fluid tight engagement, an axial valve seat disposed on said upstream member and said upstream member including a cylindrical cavity; and an O-ring circumferentially constrained in said cavity for initial compression by said stem to provide a fluid tight seal and bias said stem from said seat;
- said diaphragm being disposed to flex for additional compression of said O-ring and engagement of said stem with said seat to discontinue flow through said axial passage responsive to a predetermined value of fluid pressure in said downstream section.

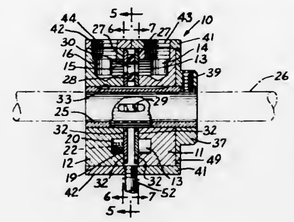
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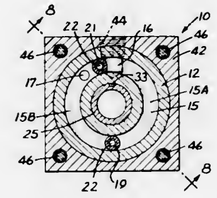
**3,930,520**
**CONTROL VALVE**

**Eugene Whitaker, 3378 N. Avondale Ave., Chicago, Ill. 60618**

**Filed June 27, 1974, Ser. No. 483,563**
**Int. Cl.² F16K** *11/00*
**U.S. Cl. 137—625.21** **25 Claims**

1. A control valve for controlling fluid to and from a motor or the like from a rotary shaft comprising a pair of longitudinally spaced apart stationary valve members facing each other and having aligned central holes therethrough receiving the rotary shaft and aligned facing annular channels, one of said stationary valve members having a motor passage communicating with the annular channel therein for connection to the motor, the other of said stationary valve members having a source passage communicating with the annular channel therein for connection to a source of fluid and a vent passage angularly spaced from the source passage and communicating with the annular channel therein for connection to atmosphere, a pair of plugs removably secured in the annular channel of said other stationary valve member isolating said source passage and said vent passage from each other and providing a arcuate source channel and an arcuate vent channel, a rotatable valve disc between the pair of stationary valve members and engaging the facing surfaces thereof and having a central hole therethrough receiving the rotary shaft and an eccentrically located port therethrough communicating the aligned facing annular channels in the stationary valve members, and means connecting the valve disc to the rotary shaft for rotation thereby for alternately communicating the annular channel and the motor passage in said one stationary valve member with the arcuate source channel and source passage





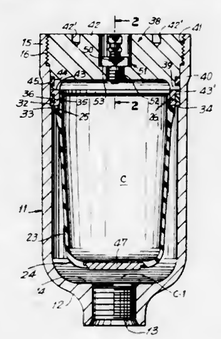
and with the arcuate vent channel and vent passage in said other stationary valve member.

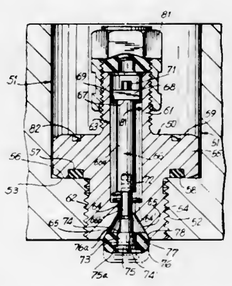
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**3,930,521**
**GAS CHARGING VALVE FOR ACCUMULATOR**

**Abduz Zahid, Los Angeles, Calif., assignor to Greer Hydraulics, Inc., Los Angeles, Calif.**

**Filed Sept. 5, 1974, Ser. No. 503,397**
**Int. Cl.² F16L** *55/04*
**U.S. Cl. 138—31** **6 Claims**



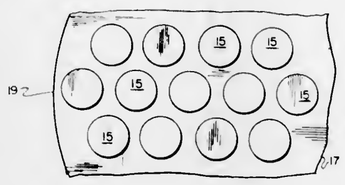


1. A pressure vessel comprising a container of rigid material having two ports, both axially aligned with said container, one of said ports defining a gas port and the other a liquid port, a partition intervening between said ports to define a variable volume gas chamber and a variable volume liquid chamber in communication with said gas port and liquid port, respectively, means to close said liquid port, means to charge said gas chamber with gas under pressure, said charging means comprising a valve assembly mounted in the gas port, said valve assembly comprising a bore having an inner end defining a valve seat, a valve stem slidably mounted in said bore, said stem being of dimensions such as to provide clearance for gas flow through said bore, said stem having an inner end, a valve disc of deformable resilient material mounted on said inner end of said stem, resilient means reacting against said stem to urge the latter outwardly to retain the outer surface of said valve disc against said seat in a first seating position, and

means rigid with said stem adapted to abut against said valve seat when said valve disc is moved outwardly to a second seating position as a result of gas pressure in said gas chamber, to limit the outward movement of said valve disc.

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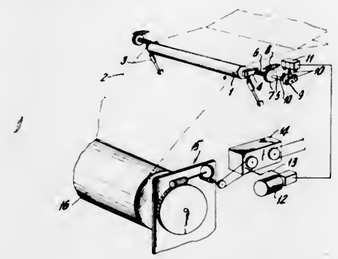
**3,930,522**
**STRUCTURAL CERAMIC ARTICLE AND METHOD OF MAKING SAME**
**Charles Lamar Turner, Delran, N.J., assignor to General Refractories Company, Philadelphia, Pa.**
**Filed May 2, 1973, Ser. No. 356,363**
**Int. Cl.² B01J** *8/06*; **F16L** *9/16*
**U.S. Cl. 138—111** **4 Claims**



**1.** A ceramic article comprising:
a fired monolithic cordierite article having a plurality of parallel circular ducts separated by webs, said ducts extending across the article to provide for fluid flow through the article, a majority of said parallel circular ducts being surrounded by six other circular ducts with the axes of the six surrounding ducts being spaced an approximately equal distance from the axis of the circular duct they surround, the number of said ducts per square inch of article surface in a plane transverse of the parallel axes of said ducts being at least 100, said article having a transverse compressive strength of at least about 5% of its longitudinal compressive strength.

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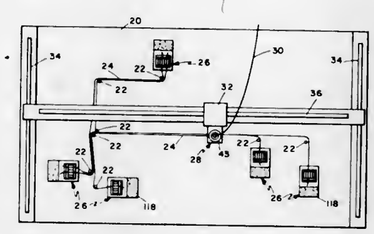
**3,930,523**
**CONTROL MECHANISM FOR AUTOMATICALLY OPERATED WARP BEAMS WITH AUTOMATIC SETTING**
**D. Francisco Mariasca Garcia, Gerona 34, Barcelona 10, Spain**
**Filed Nov. 26, 1973, Ser. No. 418,937**
**Claims priority, application Spain, Nov. 29, 1972, 409.085; Dec. 6, 1972, 409.344**
**Int. Cl.² D03D** *49/06*
**U.S. Cl. 139—108** **9 Claims**



**1.** Control mechanism for automatically regulating warp beams with automatic zero setting, comprising means for checking variations in warp tension, a warp beam, means for controllably operating said warp beam, said means for controllably operating said warp beam comprising driving means for controlling said warp beam and means connected to said means for checking variations in warp tension for controlling said driving means, an automatic zero setting device comprising a transmission connected to said driving means, a variator operatively connected to said transmission, and sensing means contacting said warp beam for sensing the diameter thereof, and a reducing assembly connected to said variator for driving said warp beam.

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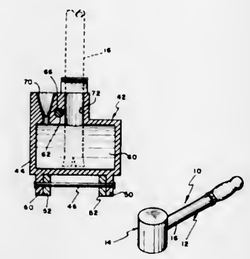
**3,930,524**
**HARNESS MAKING APPARATUS**
**John W. Tarbox, 12936 Caminito de las Olas, Del Mar, Calif. 92014**
**Filed Oct. 17, 1974, Ser. No. 515,481**
**Int. Cl.² B21F** *27/00*
**U.S. Cl. 140—93 R** **12 Claims**



**1.** A harness making assembly comprising:
a strand dispensing head having a base and a guide member rotatably mounted on the base;
a strand feed means mounted on said guide member and defining a strand passageway having a strand outlet disposed eccentrically of the rotational axis of said guide member;
means of supplying a strand to said guide member;
means for translating said dispensing head sequentially to a plurality of spaced stations;
a plurality of strand retaining elements supported at a plurality of said stations; and
said strand retaining elements each comprise a block of resilient material having at least one strand receiving slot therethrough structured to permit the passage therethrough of said feed means and grip a strand projecting from said outlet.

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**3,930,525**
**SOFT NOSE HAMMER AND MANUFACTURE THEREOF**
**Alva E. Stoneburner, 124 Postoak Road, Wichita, Kans. 67206**
**Filed Feb. 3, 1975, Ser. No. 546,807**
**Int. Cl.² B25D** *1/00*
**U.S. Cl. 145—36** **7 Claims**

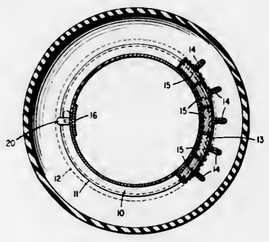


**1.** The method of making a hammer comprising the steps of providing a plurality of lengthwise slits in one end of a tubular member, splaying the slitted end of the tubular member by forcing a tapered tool into said slitted end of the member, removing the tool, providing a mold establishing the boundaries of a hammer head configuration, pouring a molten hammer head material into the mole while holding the tubular member with the splayed end lowermost and within the mold in spaced relation to the boundaries of the latter in an arrangement such that the poured material surrounds the splayed end of the tubular member and rises within the latter above the slits therein, said material having a lower melting point than that of the tubular member, and removing the mold from the tubular member and the hammer head material after the latter has cooled sufficiently to harden.



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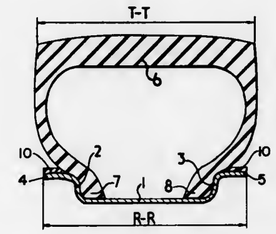
**3,930,526**
**PNEUMATIC TIRE AND WHEEL ASSEMBLIES**
**Reginald Harold Edwards, Sutton Coldfield, England, assignor to Dunlop Limited, London, England**
**Filed Dec. 14, 1972, Ser. No. 314,987**
**Claims priority, application United Kingdom, Dec. 22, 1971, 59776/71**
**Int. Cl.² B60C** *5/00*
**U.S. Cl. 152—330 L** **21 Claims**



**1.** A wheel comprising a well-base rim having positioned in said well at least one container for lubricating material provided with means for releasing the lubricating material, the container being located within an arc of the circumference of the wheel no greater than one third of the total circumference, the remainder of the well being sufficient to allow an associated tire to be fitted with said at least one container in position within the well and at least one tire bead retaining member for maintaining an associated tire bead in position against the flange of the wheel rim.

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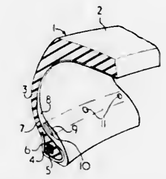
**3,930,527**
**TIRE AND WHEEL ASSEMBLY**
**Tom French, Sutton Coldfield, England, assignor to Dunlop Holdings Limited, London, England**
**Continuation of Ser. No. 150,628, June 7, 1971, abandoned. This application Sept. 20, 1973, Ser. No. 399,249**
**Claims priority, application United Kingdom, June 20, 1970, 30029/70**
**Int. Cl.² B60B** *21/02, 21/10, 25/20*; **B60C** *5/00*
**U.S. Cl. 152—330 RF** **8 Claims**




**1.** A wheel for a single chamber pneumatic tire capable of being run in a deflated condition comprising a wheel rim having a pair of spaced apart seats for receiving the tire beads and a pair of annular flanges for preventing axial outward movement of the tire beads when the tire is inflated, each flange having a circumferentially extending substantially axially outwardly projecting portion defining a surface against which the sidewall of a tire can be supported when the tire is run deflated, each axially outwardly projecting portion having on its sidewall supporting surface a coating of a low friction material.

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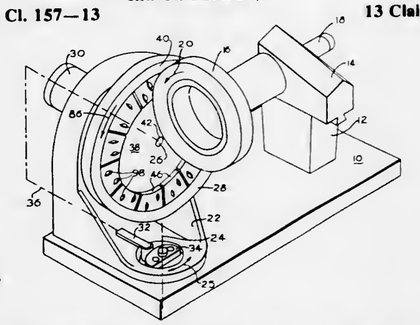
**3,930,528**
**PNEUMATIC TIRE HAVING LUBRICANT CONTAINING POCKET INTEGRALLY FORMED THEREIN**
**Wilfred Henry Harrington, Solihull, England, assignor to Dunlop Limited, London, England**
**Filed May 14, 1973, Ser. No. 360,073**
**Claims priority, application United Kingdom, May 23, 1972, 24123/72**
**Int. Cl.² B60C** *17/00, 9/02*
**U.S. Cl. 152—330 L** **29 Claims**



**1.** A pneumatic tire comprising a carcass, a tread portion, two sidewall portions each terminating in a bead region, and at least one of said sidewall portions comprising two transversely spaced layers of material which define therebetween at least one pocket integrally entirely within the tire structure, a lubricant composition in said pocket, the pocket being positioned in the tire in the region of a portion of the interior surface of the tire which contacts a second portion of the interior surface of the tire upon substantial underinflation or deflation of the tire during use thereof on a wheel such that the lubricant composition in said pocket is releasable therefrom onto the interior surface of the tire.

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**3,930,529**
**METHOD AND APPARATUS FOR REMOVING TREAD FROM TIRES**
**William E. Fawcett, Latrobe; William D. Armbrust, Greensburg, and Robert S. Gulibon, Mount Pleasant, all of Pa., assignors to Kennametal Inc., Latrobe, Pa.**
**Filed May 9, 1974, Ser. No. 468,403**
**Int. Cl. B29h** *21/01*
**U.S. Cl. 157—13** **13 Claims**



**1.** Cutting means for a machine for removing a tread from a tire in which the machine comprises a tool spindle rotatable in a predetermined direction on a first axis and a work spindle defining a second axis on which a tire is rotatable with the tread opposed to an annular region of a tool disc on said tool spindle, said axes being relatively pivotal about a third axis to

present a lateral range of the tire tread to the tool disc, said cutting means comprising; a tool disc on said tool spindle, an axial flange at the periphery of said tool disc, blocks detachably mounted and arranged in end to end relation radially inside said flange and forming an annular region on said disc, pocket means distributed circumferentially in said annular region of the disc, and circular cutting inserts of hard wear resistant material detachably and indexably mounted in said pocket means in predetermined axial and radial positions relative to the tool disc, each insert having a peripheral portion protruding axially and angularly from the tool disc for cutting engagement with a tire on said work spindle, each insert having the diameter thereof which is parallel to the plane of said tool disc extending substantially radially of the disc and each insert being inclined in the direction of rotation of said disc to provide an effective positive radial rake angle of not less than about 20°.

**9.** A method of removing tread material from a pneumatic tire preparatory to recapping thereof which comprises; rotating the tire on the axis thereof, arranging sharp edged cutting inserts on an annular surface in annularly and radially differing spaced relation and arranging said surface such that said inserts are at a positive radial rake angle of at least about 20° relative to the tire tread when adjacent thereto, moving the inserts relative to the tire while maintaining said rake angle, and feeding the tire and cutting inserts toward each other to cause each insert to take a discrete chip which is relatively narrow but of substantial length from the tread of the tire each time the respective insert moves past the tread of the tire.

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**3,930,530**

## CLAMPING DEVICE

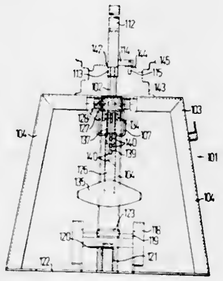
**John Fairburn Askam, Sutton Coldfield, England, assignor to Dunlop Limited, London, England**

**Filed May 30, 1974, Ser. No. 474,582**

**Claims priority, application United Kingdom, June 13, 1973, 28160/73; Dec. 11, 1973, 57304/73**

**Int. Cl.² B60C** *25/06*

**U.S. Cl. 157—1.24** **11 Claims**



**1.** A clamping device for a workpiece having a hole extending therethrough comprising a base, a post of non-circular cross-section non-rotatably secured to the base and extending outwardly therefrom, the workpiece being capable of being supported against the base with the post extending through the hole of the workpiece, a securing member having an internal cross-sectional shape corresponding sufficiently to the non-circular cross-section of the post to enable the securing member to be non-rotatably positioned on the post, the securing member having a projection extending outwardly therefrom for abutment with an edge of the workpiece inwardly of the workpiece periphery and extending radially from the post, said internal cross-section and post having friction engaging surfaces therebetween whereby on application of a force tending to rotate the workpiece about the post the abutment of the projection with the edge and the non-rotational engagement of the securing member with the post prevents rotation and axial movement of the workpiece away from the base along the post without any separate locking means between the securing member and the post.

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**3,930,531**

## METHOD FOR MANUFACTURING INGOTS OF HIGH-MELTING FERROALLOYS AND METAL ALLOYS WITH GOOD FORMING PROPERTIES

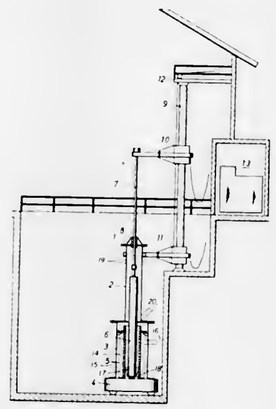
**Josef Frehser; Christian Kubisch, both of Kapfenberg, and Karl Swoboda, Vienna, all of Austria, assignors to Vereinigte Edelstahlwerke Aktiengesellschaft, Vienna, Austria**

**Filed May 28, 1974, Ser. No. 474,101**

**Claims priority, application Austria, May 30, 1973, 4740/73**

**Int. Cl.² B22D** *27/02*

**U.S. Cl. 164—52** **11 Claims**



**1.** A method of manufacturing ingots of high-melting ferroalloys and metal alloys having favorable formability and a fine grain solidification texture comprising: melting at least one consumable electrode in a slag bath in an ingot mold; cooling the ingot mold wall with a liquid metal; providing a gas inert to the slag under a pressure of at least 20 atmospheres above the slag; and adjusting the cooling of the ingot mold in the area of the immersed electrode to retain the liquid condition of the slag, and in the area of the ingot mold wall to retain the solid condition of the slag, both conditions being retained during the melting phase to obtain an area of solid slag between the ingot mold wall and liquid slag area of a dimension of between 1/100 and 1/10 of the ingot mold diameter.

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**3,930,532**

## CONTINUOUS CENTRIFUGAL TUBE CASTING APPARATUS WITH DRY MOLD AND GAS PRESSURE DIFFERENTIAL

**George R. Leghorn, 1423 Washington Ave., Apt. 1, Santa Monica, Calif. 90403**

**Division of Ser. No. 769,017, Oct. 21, 1968, Pat. No. 3,605,859, which is a continuation-in-part of Ser. No. 538,506, Feb. 11, 1966, Pat. No. 3,445,922. This application Sept. 15, 1971, Ser. No. 180,927**

**Int. Cl.² B22D** *13/02*

**U.S. Cl. 164—273 R** **8 Claims**

**1.** Apparatus for continuous centrifugal casting of tube, comprising:

a generally tubular mold having an inlet end portion and an outlet end portion;

an exit orifice in said outlet end portion;

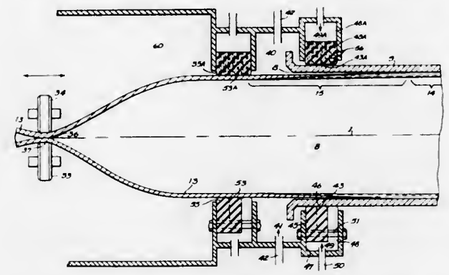
means for rotating said mold about is axis;



means for introducing molten casting material into said inlet end portion;

means for controlling the rate of exit of the cast tube from said exit orifice; and

pressure means for maintaining a differential gas pressure lower in the interior of said tube than exterior thereto,



said pressure means acting to decrease the expansion of said tube by rotational centrifugal forces and permits normal thermal shrinkage to decrease its diameter to facilitate its exit from said exit orifice.

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**3,930,533**

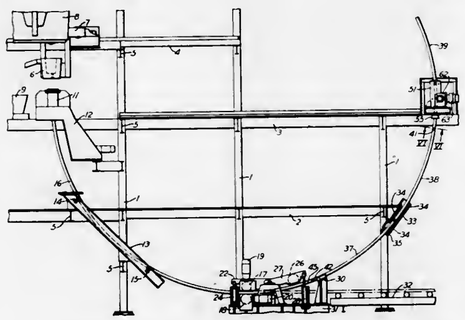
## CONTINUOUS CASTING APPARATUS WITH FLEXIBLE STARTING BAR WHICH IS GEAR-RACK SUPPORTED IN STORAGE POSITION

**Joseph Rokop, Pittsburgh, and Geoffrey W. Hughes, Mc Murray, both of Pa., assignors to Rokop Corporation, Pittsburgh, Pa.**

**Filed Feb. 27, 1975, Ser. No. 553,459**

**Int. Cl.² B22D** *11/08*

**U.S. Cl. 164—274** **10 Claims**



**1.** Continuous casting apparatus, comprising a flow-through casting mold, an elongated strand-starting member curved lengthwise in a vertical plane and having one end formed for temporarily plugging the bottom of the mold while molten metal therein adheres to said member, said member being provided with a row of rack teeth extending along one side from its opposite end, a storage housing spaced laterally from the mold and having a substantially vertical passage therethrough for said member, a pair of reversible driven pinch rolls located about half way between the mold and storage housing and at a lower level in a position to grip the lower end portion of said starting member while its upper end is plugging the mold, said rolls being rotatable in a direction to withdraw the starting member and an attached metal strand from the mold and feed said member up into said housing passage, a vertical gear projecting into one side of said housing for engagement by said rack teeth, an overrunning clutch operatively connected with the gear and permitting it to free wheel in one direction as said rack teeth move upwardly across the gear until the lower end of the metal strand has passed said pinch rolls, driving means for controlling rotation of the clutch in the opposite direction by the starting member when said member is disconnected from the strand, the driving means including means for preventing rotation of the clutch in said opposite direction by said gear while the driving means is not operating, and means for bending the lower end of the strand down to separate it from the starting member and straighten the portion of the strand between said member and rolls while said member is supported by said gear, said clutch being rotatable by said driving means at a controlled speed in said opposite direction to allow the lower end of the stored starting member to return by gravity to said pinch rolls after the strand has left said rolls, whereupon the starting member can be fed by the pinch rolls back up to the mold.

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**3,930,534**

## MOLD FOR CONTINUOUS CASTING OF SLAB INGOTS

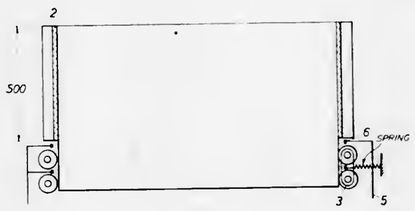
**Klaus Wünnenberg, Duisburg, and Gerd Vogt, Meerbusch, both of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Germany**

**Filed Feb. 11, 1974, Ser. No. 441,203**

**Claims priority, application Germany, Feb. 14, 1973, 2307719**

**Int. Cl.² B22D** *11/06, 11/124*

**U.S. Cl. 164—283** **3 Claims**




**1.** In a mold for continuous casting of slab ingots and having wide and narrow sides accordingly, the wide sides extending lower than the narrow sides to establish two gaps below the bottom lines of the narrow sides, the improvement comprising:

at least one roll respectively in each of said gaps, directly underneath the bottom edge of the respective narrow side and being journalled for engagement with and exertion of controlled pressure upon narrow ingot sides as emerging from the mold.

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**3,930,535**

## APPARATUS FOR THE PREPARATION AND DISPENSING OF SOFT ICE-CREAM

**Waldemar Menzel, Kulmbach, Germany, assignor to Ireks Arkady GmbH, Kulmbach, Germany**

**Filed Mar. 14, 1974, Ser. No. 451,277**

**Claims priority, application Germany, Mar. 20, 1973, 2313715**

**Int. Cl.² F25B** *29/00*

**U.S. Cl. 165—27** **8 Claims**

**1.** An apparatus for the preparation and dispensing of portions of soft ice cream comprising:

a storage tank;

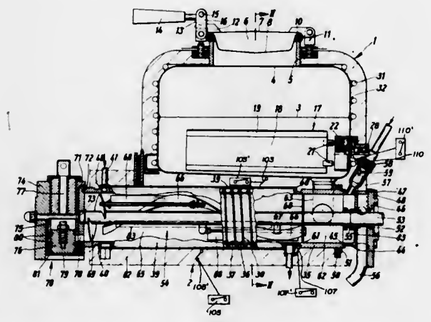
a freezing cylinder disposed below said storage tank;

an agitator located in the interior of said freezing cylinder;

a replenishing duct connecting said storage tank to said freezing cylinder; and

a heating means in said freezing cylinder and connected to said storage tank for heating said freezing cylinder and said storage tank, said heating means including a first thermostat means for preventing the exceeding of a temperature lying above the evaporation temperature of the contents of said freezing cylinder, said first thermostat

means including a first temperature sensor fitted on said freezing cylinder, said heating means further including a second thermostat means for switching said heating means off when a temperature is reached sufficient for the pasteurization of the contents of said storage tank,



said second thermostat means including a second temperature sensor fitted on said storage tank;

wherein said heating device causes the contents of said freezing cylinder to be partially evaporated and the steam flowing therefrom into said storage tank heats the contents of said tank to a sterilization temperature.

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**3,930,536**

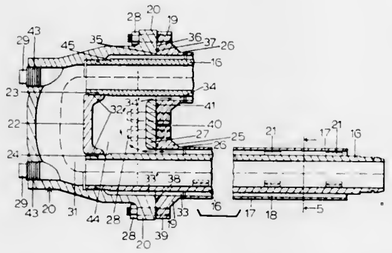
## HEAT EXCHANGER

**Harold Cherry, and George E. Strudgeon, both of Erie, Pa., assignors to Zurn Industries, Inc., Erie, Pa.**

**Continuation of Ser. No. 286,332, Sept. 5, 1972, abandoned. This application May 16, 1974, Ser. No. 470,545**

**Int. Cl. F28f** *9/26*

**U.S. Cl. 165—143** **1 Claim**



1. A heat exchanger for heating sludge comprising a plurality of stacked parallel heat exchange elements,

each said heat exchange element comprising an outer tube and an inner tube,

return bends connecting each said inner tube in fluid flow relation with the inner tube of an adjacent said element and connecting each said outer tube in fluid flow relation with a said outer tube of said adjacent element,

each said outer tube providing a flow path for hot liquid to an outer tube of a said adjacent element,

each said return bend comprising a hollow body having a first flat external and surface and a second generally flat external and surface disposed generally parallel to each other,

an internal partition in said hollow body generally parallel to said flat and surfaces and dividing said hollow body into a first chamber and a second chamber,

two first holes formed in said first end surface of said body and two spaced second holes in said second end surface of said body,

two spaced bores in said partition,

each said spaced bore being disposed in alignment with a said hole in said first end and a said hole in said second end surface,

each said inner tube having a peripherial surface adjacent an end slidably received in a said bore in said partition and having sealing means between said ends of said inner tubes and the inside of said bore,

a flanged member having a flat surface resting on said first end surface of said body and sealing means between said flat surface of said body and said flat surface of said flanged member,

two spaced openings in said flanged member align with said first holes in said first end surface of said return bend,

each said outer tube being fixed to said flanged member and forming a continuation of a flow path through said flanged member, through said second openings in said first end of said body and through said second chamber to another said outer tube and first bolt means clamping said flanged member to said return bend,

each of said bodies being adapted to be removed from said flanged member and from said outer tubes and said inner tubes by removing said bolt means from said flanged member and sliding said inner tubes out of said spaced bores in said partition and from said holes in said first end of said body,

and threaded plug means in said openings in said second ends of said body whereby access to said inner tubes may be obtained by removing said plugs,

said second openings being substantially smaller than said inner tubes,

said second end of said body having an inner end surface curved about a relatively large radius and providing a contoured path for sludge flowing through said inner tubes from said inner tube to another said inner tube and defining an end of said first chamber providing a relatively low head loss and sludge flowing from one said inner tube to another,

said first chamber having a relatively large cross sectional area as compared to the cross sectional area of said inner tubes whereby plugging of said chamber by said sludge is inhibited.

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**3,930,537**

## HEAT EXCHANGER

**Walter Wolowodiuk, New Providence, N.J., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.**

**Filed May 6, 1974, Ser. No. 467,168**

**Int. Cl. F28f** *9/02*

**U.S. Cl. 165—158** **6 Claims**

1. A heat exchanger comprising: a shell;

an upper tube sheet within said shell;

a lower sheet within said shell;

plate means below said lower tube sheet, said plate means joining with said lower tube sheet to define a chamber below said lower tube sheet;

a plurality of straight heat exchange tubes extending between said first tube sheet and said second tube sheet;

a shroud within said shell and surrounding said heat exchange tubes;

an intake in said shell for flowing a first heat exchange fluid down through said shroud, between said tube sheets and over said heat exchange tubes;

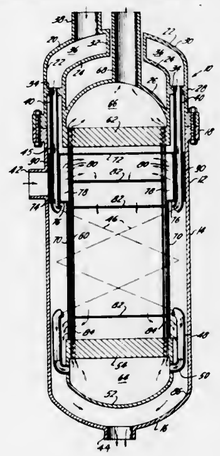
an exhaust in said shell for allowing said first heat exchange fluid to leave said shell;

an inlet in said shell for admitting a second heat exchange fluid into said shell;



an outlet in said shell for permitting said second heat exchange fluid to leave said heat exchanger;

a supply pipe connected between said inlet and said chamber, said supply pipe extending generally longitudinally, and laterally of said heat exchange tubes, said supply pipe having a helical portion encircling said shroud;



whereby differences in thermal expansion between said supply pipe and said heat exchange tubes will not result in structural failure because said helical portion will flex to accommodate the difference in thermal expansion.

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**3,930,538**

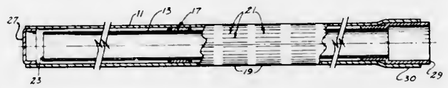
## WELLPOINT WITH ADJUSTABLE VALVE

**Walter W. Brennan; Charles R. Myers, and Paul E. Perry, all of Jacksonville, Fla., assignors to Griffin Wellpoint Corporation, New York, N.Y.**

**Filed Nov. 5, 1974, Ser. No. 521,029**

**Int. Cl.² E03B** *3/18*; **E21B** *43/02*

**U.S. Cl. 166—205** **6 Claims**



1. A wellpoint comprising:

pipe means for the intake of liquid from the well and connection to vacuum producing means;

screen means spaced apart from and surrounding said pipe means for admitting and maintaining a liquid supply for said pipe means; and

slidably adjustable valve means located between said pipe means and said screen means for adjusting the amount of surface area of said screen pipe subjected to said vacuum.

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**3,930,539**

## METHOD OF OBTAINING INCREASED PRODUCTION IN WELLS

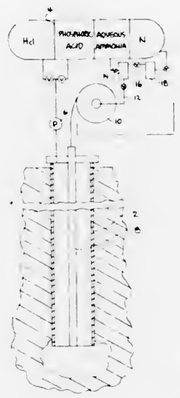
**Arvel C. Curtis, 10318 Rosser Road, Dallas, Tex. 75221**

**Filed May 8, 1975, Ser. No. 575,826**

**Int. Cl.² E21B** *43/26*, *43/27*

**U.S. Cl. 166—300** **3 Claims**

1. A process of treating oil or gas wells to increase the productivity thereof which comprises introducing into the bottom of the well a mixture of two acids which alone do not react vigorously with each other at normal temperatures and pressures and pumping into the bottom of the well an accelerator which produces in conjunction with the mixture of acids a violent exothermic reaction, thereby producing an expansion force and disintegrating the formation to form large cavities and passages therein.



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**3,930,540**

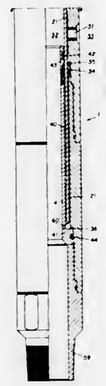
## WELLBORE CIRCULATING VALVE

**John C. Holden, and Gary Q. Wray, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.**

**Division of Ser. No. 288,187, Sept. 11, 1972, Pat. No. 3,850,250. This application Oct. 10, 1974, Ser. No. 513,928. The portion of the term of this patent subsequent to Nov. 26, 1991, has been disclaimed.**

**Int. Cl.² E21B** *33/00*

**U.S. Cl. 166—315** **4 Claims**



1. In a well testing apparatus to be used in conjunction with a testing tool string having open interior means including flow passage means operable to communicate will well formation fluid under the control of valve means for opening and closing said flow passage means in response to changes in pressure of fluid in a well annulus surrounding said apparatus, the improvement comprising:

normally closed, well annulus pressure change responsive, circulating valve means adapted to communicate a por-

tion of said open interior means of said string with said well annulus; and

opening means responsive to at least a predetermined minimum number of said pressure changes for opening said circulating valve means to enable fluid to be removed from said open interior means of said testing tool string by circulation of fluid between said well annulus and said open interior;

said opening means being operable to prevent said opening of said circulating valve means until after said predetermined minimum number of said pressure changes has occurred; and

said circulating valve means, prior to said opening thereof, being operable to prevent fluid communication between fluid in said well annulus and fluid in said open interior means of said tool string, through said opening means.

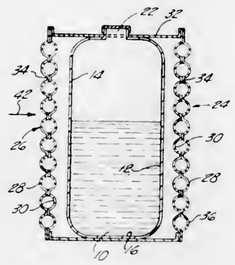
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**3,930,541**

## FLAME PREVENTION SYSTEM FOR FUEL TANK FIRES

**Donald W. Bowman, Bowling Green, Ohio; Robert C. Doetsch, Roseville, Mich.; Francis S. Lemmer, Detroit, Mich., and Edward C. Zobel, Brighton, Mich., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.**

**Filed Oct. 22, 1974, Ser. No. 516,939**
**Int. Cl.² A62C** *13/40*
**U.S. Cl. 169—62** **2 Claims**



1. In a military vehicle, equipped with a rectangular fuel tank having two generally parallel major walls: the improvement comprising means to suppress fuel fires initiated as a result of fuel tank rupture by armor-piercing projectiles; said fire suppressing means comprising two hollow panels located in near adjacency to the major walls of the fuel tank in the path that an enemy projectile would take during transverse passage through the tank walls, and pressurized suppressant within the panels for automatic discharge to the ambient atmosphere through openings formed in the panel by the projectile.

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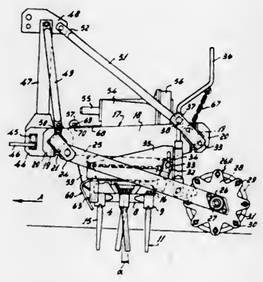
**3,930,542**

## ROTARY HARROWS

**Ary van der Lely, 10, Weverskade, and Cornelis Johannes Gerardus Bom, 36, Esdoornlaan, both of Maasland, Netherlands**

**Division of Ser. No. 283,338, Aug. 24, 1972, Pat. No. 3,821,989. This application June 5, 1974, Ser. No. 476,550**
**Claims priority, application Netherlands, Aug. 31, 1971, 7111947**
**Int. Cl.² A01B** *33/06, 33/16*
**U.S. Cl. 172—59** **7 Claims**

1. A cultivator having an elongated frame and a plurality of rotatable soil working members mounted side-by-side in a transverse row, said soil working members being rotatable about upwardly extending shafts and comprising substantially horizontally extending supports having downwardly extending tines, driving means being in driving engagement with said shafts to rotate said members during operation, screening means pivotably connected to said cultivator and extending horizontally along the front of said frame relative to the direction of travel, a lower portion of said screening means being normally located directly in front of the connections of said tines to their corresponding supports, an upper portion of said screening means being pivotally connected to said elongated



frame and displaceable about an axis located above said elongated frame, spring means being connected to bias said screening means to an operative protective position, whereby the front of said frame and the connections of said tines with their corresponding supports are protected from debris encountered during operation of the cultivator.

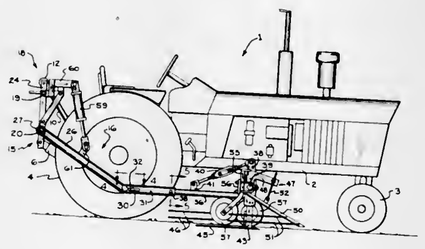
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**3,930,543**

## TRACTOR ATTACHMENT

**Richard G. Maurer, 6520 W. Freeland Road, Freeland, Mich. 48623**

**Filed Mar. 22, 1974, Ser. No. 453,991**
**Int. Cl. A01b** *51/00, 59/044*
**U.S. Cl. 172—273** **10 Claims**



1. A tractor attachment adapted for removable connection to hitch apparatus at the rear end of a tractor, said attachment comprising frame means adapted to extend transversely of a tractor; a pair of elongate, spaced apart, parallel arms having forward and rearward ends, each of said arms being hinged between its ends; releasable locking means for selectively enabling and disabling hinging movement of said arms; means rotatably coupling said arms at their rearward ends to said frame means and adjacent opposite ends thereof whereby said arms extend in the same direction from said frame means and are rotatable relative to said frame means in a substantially vertical plane; implement support means for each of said arms; means mounting said support means on the forward ends of the associated arms and transversely thereof; attaching means carried by said frame means between its ends for removably mounting said frame means on the hitch apparatus of a tractor; and operating means connecting each of said arms to said frame means for swinging said arms vertically independently of the hitch apparatus.

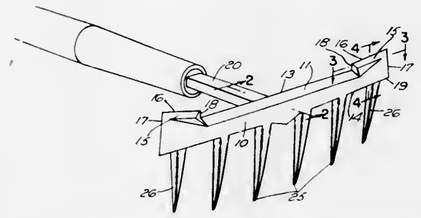


**3,930,544**

## GARDEN IMPLEMENT

**Lloyd Foster, Sr., Chopmist Hill Road, Box 61, Chepachet, R.I. 02814**

**Filed May 28, 1974, Ser. No. 473,418**
**Int. Cl.² A01B** *1/10, 1/12*; **A01D** *7/06, 7/10*
**U.S. Cl. 172—375** **2 Claims**



1. A garden implement comprising: a rigid elongated body of generally rectangular cross section, the shorter sides thereof providing a pair of opposed upper and lower edges, and a tang connection (**20**) to a handle extending away from a longer side of said body, tapered tines (**25**) extending in a common plane from the lower edge of said backbone body at horizontally spaced locations from each other along the length of said body, said body beveled to a cutting edge (**14**) in the spaces separating said tines, the horizontal opposite upper edge of said backbone body beveled to a cutting edge (**13**), tines (**26**) adjacent each end of the body located in a plane offset to the rear of the tines (**25**) toward the tang and slanted inward with the tapered tip of each tine (**26**) directed toward the other tines, the ends of said body terminating in wing portions (**16**), (**18**) rising above and from the upper horizontal cutting edge (**13**) near each end of said body and outer end portions (**17**) and (**19**), each wing comprising upper sharp edge (**16**), an inner inclined sharp edge (**18**) connecting edge (**16**) and edge (**13**) of the body, and an outer end portion having a sharp edge (**17**) and lower sharp edge (**19**).

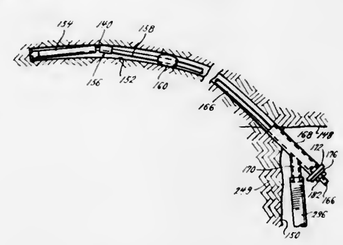
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**3,930,545**

## TILTABLE COUPLING

**Howard V. Sears, Flat River, Mo., assignor to St. Joe Minerals Corporation, New York, N.Y.**

**Continuation-in-part of Ser. No. 219,813, Jan. 21, 1972, Pat. No. 3,817,336, which is a continuation-in-part of Ser. No. 25,885, April 6, 1970, abandoned, which is a division of Ser. No. 685,671, Nov. 24, 1967, Pat. No. 3,571,937. This application Nov. 29, 1973, Ser. No. 419,924**
**Int. Cl.² E21B** *47/02*
**U.S. Cl. 175—45** **24 Claims**



1. A tiltable coupling, which can connect a down-hole drill to a section of drill rod string for said down-hole drill, which comprises means adjacent one end of said coupling that is selectively engageable with one side of a hole in which said tiltable coupling is disposed, further means adjacent the opposite end of said coupling that is selectively engageable with an angularly-displaced side of said hole, the first said means being at one side of said tiltable coupling and said further means being at an angularly-displaced side of said tiltable coupling, said first said means and said further means coacting, whenever said first said means is in engagement with said one side of said hole and said further means is in engagement with said angularly-displaced side of said hole, to force the axis of said down-hole drill to be inclined to the axis of the section of said hole in which said tiltable coupling is disposed to cause said down-hole drill to drill a curved section of said hole, said first said means being selectively disposable out of engagement with all sides of said hole while said further means also is disposable out of engagement with all sides of said hole to permit said axis of said down-hole drill to be essentially parallel to said axis of said section of said hole in which said tiltable coupling is disposed, and thereby enable said down-hole drill to drill an undeflected section of said hole, at least one of said means being movable into engagement with the adjacent side of said hole by fluid under pressure, said drill rod string and said tiltable coupling supplying fluid to said down-hole drill to actuate said down-hole drill, and a fluid-supplying means which selectively supplies said fluid under pressure to said tiltable coupling to selectively cause said one of said means to move into engagement with said adjacent side of said hole, and said fluid-supplying means isolating said fluid under pressure from said fluid in said drill rod string until after said fluid under pressure has issued from said fluid-supplying means.

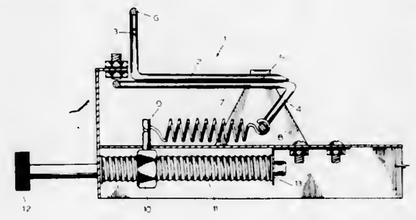
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**3,930,546**

## WEIGHT GRADING APPARATUS

**Kevin John Fourneau, 711 Ballantyne St., Hastings, New Zealand**

**Filed Oct. 30, 1974, Ser. No. 519,275**
**Int. Cl.² G01G** *23/14, 23/26*
**U.S. Cl. 177—168** **4 Claims**



1. A weight grading apparatus including a scale assembly comprising: a fulcrum; a scale beam supported upon said fulcrum for pivotal movement about the fulcrum axis; a first point on said scale beam on one side of said fulcrum arranged to sense the weight of an article being graded; a biasing spring having one end connected to a second point on said scale beam on the opposite side of said fulcrum to exert a force tending to counteract the force exerted by the weight of said article being graded, the other end of said spring being connected to an adjustment head; said adjustment head being movable along an adjustment shaft, said adjustment shaft extending in a direction parallel to and at least along a substantial part of the axis of said spring.

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**3,930,547**

## SNOW VEHICLE SUSPENSION SYSTEM

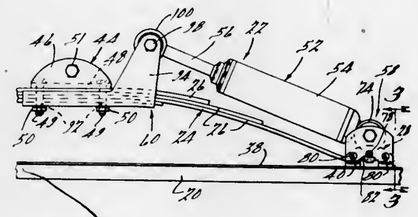
**Burke A. West, Monroe, Mich., assignor to Monroe Auto Equipment Company, Monroe, Mich.**

**Filed Sept. 10, 1970, Ser. No. 71,088**
**Int. Cl.² B62M** *27/00*
**U.S. Cl. 180—5 R** **6 Claims**

1. In an adaptor kit for mounting a telescopic, direct acting shock absorber having attachment bushings at the opposite ends thereof to the suspension system of a snow vehicle including at least one ski-like element and a leaf spring secured

at one portion thereof to the ski by a mounting clevis and secured to another portion thereof by a mounting saddle to the steering system of the vehicle,

a first adaptor bracket assembly comprising a pair of plate-like members connecting one of said attachment bushings of the shock absorber at a position adjacent said mounting clevis,



a second adaptor bracket assembly for connecting the other of said attachment bushings of the shock absorber at a position adjacent said mounting saddle, and

first fastening means securing one end of said shock absorber to said mounting clevis and second fastening means securing said first adaptor bracket to said mounting clevis.

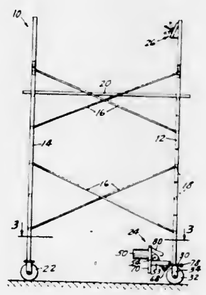
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**3,930,548**

**MOTORIZED SCAFFOLD ATTACHMENT**

**Richard J. Wallraff, 1883 Alta Vista Drive, Roseville, Minn. 55113**

**Filed Feb. 3, 1975, Ser. No. 546,521**
**Int. Cl. B60p** *3/14*
**U.S. Cl. 180—6.5** **11 Claims**



1. A self-propelling attachment for light duty platform supporting scaffold towers of the type generally used for overhead finishing work in the installation of wiring and lighting fixtures, duct work ceilings and ceiling finishing operations and the like, which towers have supporting caster wheels detachably mounted on the feet thereof so they may be rolled from place to place, said attachment comprising at least two propulsion units and operating means interconnected therewith for independent operation of said units, each propulsion unit comprising a base including means thereon for detachably attaching said base to the foot of a tower in place of the normal caster wheel, wheel mounting means depending downwardly from said base and having a propulsion wheel freely rotatably mounted thereon, a motor, and drive means operatively interconnecting said motor and said propulsion wheel, means attaching said motor and drive means to said base, said drive means including a drive wheel frictionally engaging said propulsion wheel, said means attaching said motor and drive means to said base including means causing effective disengagement of said drive wheel from said propulsion wheel upon engagement of the propulsion wheel with an obstacle in its path.

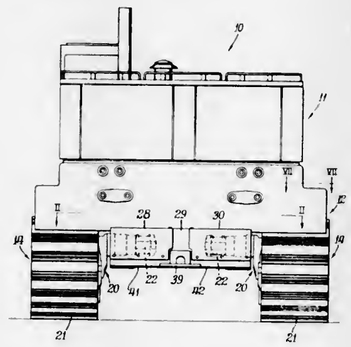
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**3,930,549**

**PROTECTIVE GUARD ASSEMBLY FOR TRACK DRIVE MOTORS**

**Bobby D. Griffith, Aurora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.**

**Filed Nov. 15, 1974, Ser. No. 524,075**
**Int. Cl.² B62D** *55/00*
**U.S. Cl. 180—9.48** **18 Claims**



1. A track-type vehicle disposed for movement along a longitudinal axis thereof comprising

a main frame,

a pair of laterally spaced and parallel track assemblies, each comprising a sub-frame and an endless track entrained therearound, mounted on said main frame and separated laterally at a predetermined maximum gauge width,

adjustment means operatively connected between said main frame and at least one of said sub-frames for permitting selective narrowing of said maximum gauge width to a minimum gauge width,

laterally spaced drive motors each mounted on a respective sub-frame and operatively connected to a respective one of said tracks, and

a guard assembly detachably mounted on said main frame to at least substantially enclose said motors when said track assemblies are positioned at each of their maximum and minimum gauge widths said guard assembly comprising a plurality of upper cover members overlying said motors and a horizontally disposed lower plate underlying said drive motors and secured to said upper cover members.

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**3,930,550**

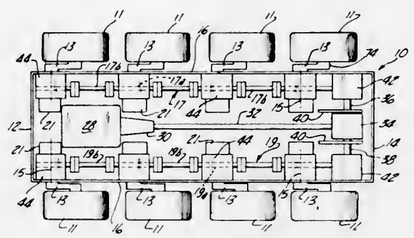
**VEHICLE DRIVE AND SUSPENSION**

**Harold T. Rose, Sterling Heights, and Clarence D. Gilreath, Inkster, both of Mich., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.**

**Filed Aug. 15, 1974, Ser. No. 497,772**
**Int. Cl.² B60K** *17/22*
**U.S. Cl. 180—24.08** **9 Claims**

1. In a wheeled vehicle having a hull; hull suspension means comprising a road wheel support arm connected to the hull on a swing axis; elastic force-absorption means centered on the swing axis inboard from the road wheel support arm; a torque rod interconnecting the road arm and the force-absorption means; said torque rod extending along the aforementioned swing axis so that it transmits road wheel forces to the force-absorption means; a rotary drive shaft disposed within the hull on an axis that intersects and crosses the aforementioned swing axis; and transmission means operatively interconnecting the drive shaft and road wheel; said torque rod having a clearance opening therethrough; said drive shaft extending





through the clearance opening without interferring with rotational movement of the torque rod around the swing axis.

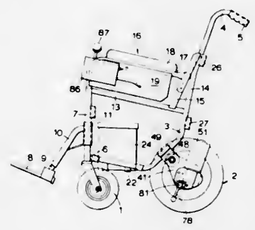
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**3,930,551**

**ELECTRIC DRIVE FOR WHEEL CHAIRS**

**Harold Cragg, 35 Wilmington Road, Quinton, Birmingham, 32, England**

**Filed June 10, 1974, Ser. No. 477,989**
**Claims priority, application United Kingdom, June 9, 1973, 27553/73**
**Int. Cl.² B60K** *1/00*
**U.S. Cl. 180—65 R** **16 Claims**



1. Electric driving means for a wheelchair comprising a wheel plate, an electric motor mounted on said wheel plate and operable by a battery through control means, drive transmitting means on said wheel plate coupled to the electric motor and including an output shaft carrying a driven pinion, a rotatable wheel supported on said wheel plate and carrying a fixed pinion, mounting means for mounting said wheel plate on a frame member of the wheelchair, and a gear carrier mounted for pivotal movement relative to said fixed and driven pinions between a first extreme position, a neutral position, and a second extreme position, the gear carrier including first idler gear means for transmitting drive from the driven pinion to the fixed pinion when the gear carrier is in said first extreme position and second idler gear means having a drive transmission ratio different to that of said first idler gear means for transmitting drive from the driven pinion to the fixed pinion when the gear carrier is in said second extreme position.

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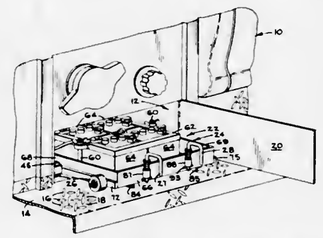
**3,930,552**

**MOTOR VEHICLE BATTERY HOLDER**

**Calvin S. Kunkle, and Hugh A. Little, both of Tipton, Ind., assignors to FMC Corporation, San Jose, Calif.**

**Filed Oct. 30, 1974, Ser. No. 519,395**
**Int. Cl.² B60R** *18/02*
**U.S. Cl. 180—68.5** **12 Claims**

1. In a motor vehicle having a battery storage compartment and a support surface located adjacent the compartment, an improved battery holder comprising a mounting base in said compartment, a battery cell support tray mounted on wheels for rolling between a position on the base where battery cells are housed and a position on the support surface where battery cells are serviced and inspected, and means for locking the tray in the position on the base to prevent undesired movement of the tray, said tray having a front panel and a bottom panel, said tray locking means including a vertical sleeve fixed to the front panel, a handle slidably fitted axially within the sleeve and pivotally supported therein for rotation through a horizontal angle, said handle having a grip portion extending outward horizontally above the sleeve and a lock portion



projecting downward vertically below the sleeve, a pin extending horizontally from the lock portion of the handle in a vertical plane perpendicular to the grip portion, a keeper mounted on the base for receiving and retaining the lock portion of the handle, said pin extending under the bottom panel of the tray when the grip portion of the handle extends adjacent the tray and thereby preventing the lock portion of the handle from being elevated out of the keeper without rotating the handle to a position where the grip portion extends outwardly from the tray.

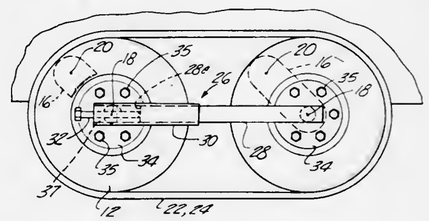
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**3,930,553**

**TRACK TENSION CONTROL**

**John F. Kopera, Troy, Mich.; William E. Lawson, Stillwater, Minn., and James P. Carr, Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.**

**Filed Nov. 22, 1974, Ser. No. 526,195**
**Int. Cl.² B62M** *27/02*
**U.S. Cl. 180—9.28** **7 Claims**

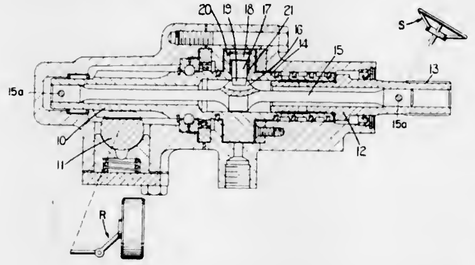


1. In a vehicle comprising a hull; at least two road wheels located at each side of the hull; a suspension arm for each road wheel; each suspension arm being independently swingably connected to the hull for movement about an individual swing axis; each road wheel being rotatably connected to the associated suspension arm for movement around an axis remote from the aforementioned swing axis; each wheel axis being spaced approximately the same distance from the associated swing axis; and an endless track encircling two adjacent wheels at each side of the hull to convert the vehicle to the tracked mode: the improvement comprising a rigid connector means extending between the wheels in each track-wheel unit, each connector means being compressively positioned between the associated wheels to keep said wheels operatively engaged with the encircling track; each connector means being effective to maintain the wheel axes spacing substan-

tially equal to the swing axes spacing, whereby the suspension arms in each track-wheel unit move in the fashion of a parallel bar linkage when the vehicle is in the tracked mode.

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**3,930,554**
**POWER-ASSISTED STEERING GEAR**
**Benjamin Ward, Droitwich, England, assignor to Borman & Sons Limited, Birmingham, England**
**Filed Sept. 10, 1973, Ser. No. 395,640**
**Claims priority, application United Kingdom, Sept. 8, 1972, 41764/72**
**Int. Cl.² B62D** *5/08*
**U.S. Cl. 180—79.2 R** **4 Claims**

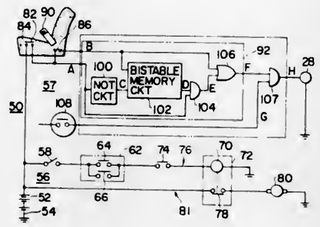


1. A power assisted steering gear for a road vehicle having steerable wheels and a driver rotatable shaft, including a pressure operated device, valve means controlling said pressure operated device comprising two relatively angularly movable valve members, a torsion bar having opposite ends, means connecting said two valve members to respective opposite ends of said torsion bar, means operably connecting one of such valve members to the driver rotatable shaft, means operably connecting the other of said valve members to the steerable wheels, said torsion bar offering resistance to relative movement of the valve members, said torsion bar having a recess therein intermediate the opposite ends thereof, and a plunger having an inner end, means mounting said plunger on one of said valve members to be normal to the torsion bar and being movable by pressurized fluid, the pressure of which is dependent upon road speed of the vehicle, in a radially inward direction to bring the inner end of the plunger into engagement with the recess in the torsion bar for increasing the stiffness of the torsion bar with increasing road speed of the vehicle.

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**3,930,555**
**TRANSMISSION SHIFTING CONTROL SYSTEM**
**Tetsuya Iijima, Tokyo, Japan, assignor to Nissan Motor Company Limited, Yokoahama, Japan**
**Filed Dec. 23, 1974, Ser. No. 535,683**
**Claims priority, application Japan, Dec. 24, 1973, 48-143580**
**Int. Cl.² B60R** *21/10*
**U.S. Cl. 180—82 A** **8 Claims**

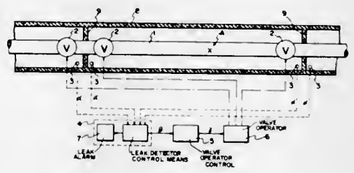
1. A transmission shifting control system for a motor vehicle, comprising electrically operated means movable between a first position to connect two sections of a shift linkage of a transmission of the vehicle to allow shifting of said transmission and a second position to disconnect said two sections of said shift linkage from each other to inhibit shifting of said transmission, first sensing means sensing that the driver sits down on his seat of the vehicle to produce a first output signal and sensing that the driver is absent from his seat to produce a second output signal, second sensing means sensing that the driver fails to carry out a precautionary procedure for his safety and protection when said first sensing means produces said first output signal to produce an output signal, and an electric control circuit connect to said first and second sensing means and to said electric operated means and responsive to said output signal of said second sensing means to produce an



output signal to move said electrically operated means from said first position into said second position to inhibit shifting of said transmission.

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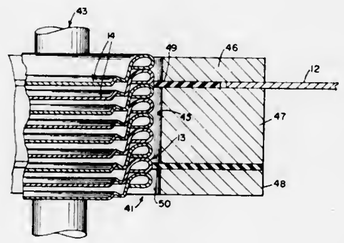
**3,930,556**
**METHOD OF DETECTING LEAK OF FLUID FROM A LONG PIPELINE**
**Takazo Kusuda, Ibaraki, and Nilchi Nishiwaki, Tokyo, both of Japan, assignors to Osaka Gas Kabushiki Kaisha, Osaka, Japan**
**Division of Ser. No. 247,474, April 25, 1972, Pat. No. 3,814,207. This application June 5, 1973, Ser. No. 367,337**
**Claims priority, application Japan, Apr. 26, 1971, 46-27810; Dec. 8, 1971, 46-99737**
**Int. Cl.² G01V** *1/00*
**U.S. Cl. 181—.5** **16 Claims**



1. A method of detecting a leak of fluid from a pipe of a long pipeline for transporting fluid comprising, in combination:
a. forming a long hollow space defined at least on its one side in cross section by a wall of said pipe for the transport of fluid, said hollow space extending longitudinally along said pipe;
b. providing a plurality of stationary first means for intercepting sonic walve propagated within said hollow space, individual ones of said first means being in longitudinally spaced apart relationship to each other along said pipe over a long distance, any two of said individual ones of said first means which are adjacent to one another being capable of separate interception of a sonic wave inside of said pipe caused by a leak which may occur between them;
c. providing second means for detecting signals from said plurality of first means indicating the interception of a sonic wave by said first means;
d. causing at least any two of said first means which are adjacent to one another to intercept a sonic wave propagated within said hollow space;
e. causing said second means to detect the signals from said plurality of first means indicating that a sonic wave caused by a leak has been intercepted by at least said two adjacent ones of said first means; and
f. analyzing the relative relation between the signals;
whereby the presence and position of a fluid leak from the pipe is detected.

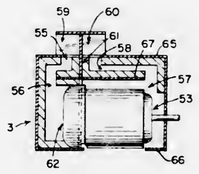


**3,930,557**
**NOISE REDUCTION KIT FOR CAN CLOSING MACHINE**
**Albert C. Schnell, Hickory Hills; Craig W. Arends, Chicago Ridge, and Dean N. Zwikel, Chicago, all of Ill., assignors to Continental Can Company, Inc., New York, N.Y.**
**Division of Ser. No. 398,263, Sept. 17, 1973, Pat. No. 3,851,725. This application Nov. 6, 1974, Ser. No. 521,268**
**Int. Cl. E04b** *1/99*
**U.S. Cl. 181—33 K** **3 Claims**



1. A soundproof enclosure having at least one noise trap and vibration eliminator tunnel for feeding can end units or similar disc-shaped objects into the interior of the enclosure and also incorporating a noise seal between the tunnel and the enclosure wall comprising:
a first rigid annular support ring mounted on an enclosure for said end units and having an opening in said ring such that said end units pass freely through a center hole of said ring;
a first flexible and resilient annular ring seal mounted underneath said first rigid ring and having an outer size the same as said first rigid ring and an inner size slightly smaller than said first rigid ring and equal or smaller in size to said end units such that said first flexible ring seal imposes a retarding sliding frictional force on the periphery of each end unit that passes through said ring seal and at the same time creates an airtight seal about the periphery of the end unit as said end unit travels past said first flexible ring seal;
a second rigid annular ring having the same inner and outer size as said first rigid ring and mounted on and under said enclosure and forming with said first rigid annular support and said enclosure an annular hollow for said first flexible annular ring seal between the bottom surface of said first rigid ring and the top surface of said second rigid ring and acting as a spacer for a second flexible and resilient annular ring seal which is mounted on the bottom surface of said second rigid ring, said second rigid annular ring having a thickness equal to about several thicknesses of the end unit plus one-half thickness whereby when an end unit is in engagement with said first ring seal two or more said end units lie within the thickness of said second rigid ring and said second flexible ring seal is not in engagement with said periphery of said end unit lying on top of said end units in said length of said second rigid ring;
a second flexible and resilient annular ring seal mounted on the bottom of said second rigid annular ring; and
a third rigid annular ring having the same inner and outer size as said first and second rigid rings and mounted on a conveyor frame and sandwiching said second ring seal between the bottom surface of said second rigid ring and the top surface of said third rigid ring whereby said can end units are prevented from bouncing and noise from within said enclosure does not leak out.

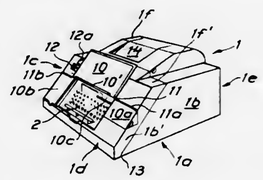
**3,930,558**
**NOISE REDUCTION KIT FOR CAN CLOSING MACHINE**
**Albert C. Schnell, Hickory Hills; Craig W. Arends, Chicago Ridge, and Dean N. Zwikel, Chicago, all of Ill., assignors to Continental Can Company, Inc., New York, N.Y.**
**Division of Ser. No. 398,263, Sept. 17, 1973, Pat. No. 3,851,725. This application Nov. 6, 1974, Ser. No. 521,269**
**Int. Cl.² F02F** *7/00*; **F01N** *1/00*
**U.S. Cl. 181—33 K** **1 Claim**



1. A noise enclosure for a self-cooling motor having a self-cooling fan for circulating cooling air along its longitudinal axis comprising: side and end walls, said motor being mounted within the enclosure so that the longitudinal axis of the motor generally parallels the side walls, a first partition in the enclosure extending generally perpendicular to the longitudinal axis of the motor and snugly surrounding the motor to coact with the motor and side walls for separating air coming to said motor from warmer air leaving the motor, an air intake opening on one side of the partition and an air discharge opening on the other side of the partition, said openings being directly adjacent the opposite sides of the partition, a second partition in the enclosure extending generally parallel to the longitudinal axis of the motor and perpendicular to said first partition, said second partition coacting with the side and end walls and said first partition to define on the side facing the motor first and second chambers and on the opposite side and between the ends thereof and the end walls passageway means communicating between the openings and the chambers, means on the exterior of the enclosure coacting with the openings to direct air flow from the discharge opening in a direction directly opposite to the air flow entering the air intake opening, and sound absorbing material on the inner surfaces of the side and end walls and on the sides of said partitions.

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**3,930,559**
**SOUND INSULATING HOODS FOR NOISE EMITTING APPARATUS**
**Berndt Ebbe Frick, Tyreso, Sweden**
**Continuation of Ser. No. 416,425, Nov. 16, 1973, abandoned. This application Feb. 26, 1975, Ser. No. 552,968**
**Claims priority, application Sweden, Nov. 17, 1972, 15036/72**
**Int. Cl.² E04B** *1/82*
**U.S. Cl. 181—33 K** **5 Claims**



1. A sound-insulating hood for snugly housing a key-operated noise-emitting apparatus such as a teleprinter and the like, said hood comprising:
a. a fixed bottom portion;
b. a pair of oppositely-disposed side walls and a back wall extending from said bottom portion;

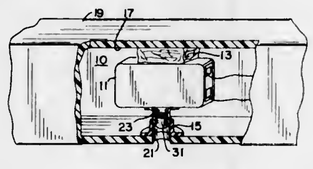
c. a front wall hinged to said bottom portion and being movable between a closed position against the front edges of said side walls and a lowered position exposing said teleprinter and the like;
d. a top cover hinged to said back wall and being movable between a closed position overlying said side walls and a raised position to permit access to the interior of said hood from above;
e. a plate member supporting said apparatus slidably engaging said bottom portion to permit withdrawal thereof from the hood to make it available for service when said front wall in its lowered position;
f. said top cover having means for carrying a roll of fresh paper for receiving teletype messages and a roll of fresh paper for sending teletype messages, said rolls being raised to an elevated position together with said top cover to make them easily available for service and inspection;
g. said front wall and said top cover extending towards each other in such a manner that the front wall in its lowered position and the top cover in its raised position exposes said teleprinter and the like.

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**3,930,560**
**DAMPING ELEMENT**

**Elmer V. Carlson, Prospect Heights, and August F. Mostardo, Jr., Norridge, both of Ill., assignors to Industrial Research Products, Inc., Elk Grove Village, Ill.**

**Filed July 15, 1974, Ser. No. 488,300**
**Int. Cl.² H04R 1/28; G10K 13/00; H04R 7/00**
**U.S. Cl. 181—160** **1 Claim**




1. An acoustic cup-like plug for positioning in an acoustical port; said plug being of a resilient material of fiber mesh or screen, the sides of the cup-like plug being fused to obtain a cylindrical wall, said wall being substantially acoustically impervious for cooperating with the sides of the associated port to form an acoustical seal therebetween, the screen end of said cup-like plug positioned substantially parallel to the plane of the port opening for providing a maximum area for the passage of sound while effecting a selected acoustical resistance, the fibers in the end of the plug being fused in discrete sections for selectively determining the acoustical resistance provided by the screen end of said cup to sound passing therethrough, and the plug being readily restorable to its initial shape if distorted whereby the member may be conveniently handled, shipped and cleaned.

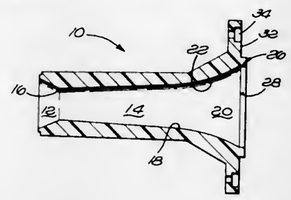
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**3,930,561**
**LOW DISTORTION PYRAMIDAL DISPERSION SPEAKER**

**Arnold I. Klayman, Huntington Beach, Calif., assignor to Monitron Industries, Inc., Santa Ana, Calif.**

**Filed June 7, 1974, Ser. No. 477,383**
**Int. Cl.² G10K 11/00**
**U.S. Cl. 181—192** **6 Claims**

1. A loudspeaker horn adapted to be driven by a speaker driver assembly, said horn comprising:
a conical section having a small cone end compatible with said speaker driver assembly, said conical section flaring outwardly to provide substantially distortion-free coupling of the driver to the horn;
an exponential section secured to the large cone end, said exponential section flaring exponentially outward to form a horn mouth, said horn mouth having a square cross-section;
a raised diffraction lip secured around the periphery of said horn mouth; and



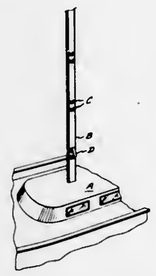

means preventing any substantial vibration of the horn at the expected frequencies.

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**3,930,562**
**REMOVABLE STEP CLIMBING ASSEMBLY**

**Michael W. Zorn, 555 Harbor Drive, Redondo Beach, Calif. 90277**

**Filed Dec. 9, 1974, Ser. No. 530,979**
**Int. Cl.² E06C 1/36**
**U.S. Cl. 182—92** **6 Claims**



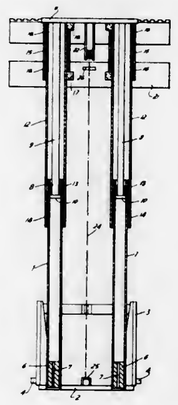

1. In combination with an upwardly extending, substantially vertical member of sufficient strength to support a person thereon, a step climbing assembly, said assembly including:
a. a plurality of longitudinally spaced pairs of brackets that are alternately situated as on opposite sides of said member, with the brackets in each of said pairs longitudinally spaced from one another, and the two brackets in each of said pairs defining two coaxially aligned, longitudinally extending confined spaces;
b. first means for rigidly securing said brackets to said elongate member; and
c. a pair of step defining units, with each of said units including two longitudinally spaced coaxially aligned first and second flanges that extend in the same direction and may be removably inserted in said confined spaces of two of said pairs of brackets on opposite sides of said member that are adjacently disposed to support the feet of said person climbing said member, with said step defining units as said person climbs up or down said member being sequentially disengaged one by one from said pair of brackets and caused to removably engage the next unengaged pair of said brackets in the direction in which said person is climbing to support said person on said member, with each of said step defining units having an elongate rigid metallic strap that has first and second end portions, with the part of said strap intermediate said first and second end portions being bent to define a shoe supporting section and an angular section, with said first and second flanges being defined by said first and second end portions that are bent relative to the free ends of said first receiving section and said angular section.



**3,930,563**
**LIFT VEHICLE**

**Theodor Abels, Aschaffenburg-Nilkheim, Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Germany**

**Filed June 29, 1973, Ser. No. 375,008**
**Claims priority, application Germany, July 6, 1972, 2233281**
**Int. Cl.² B66F 9/20**
**U.S. Cl. 187—9 E** **8 Claims**



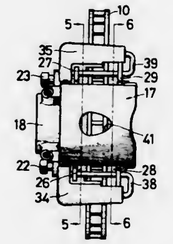
1. A load-lifting assembly for a fork lift truck or the like, comprising:
a support;
a pair of transversely spaced upright first column members rigidly mounted on said support;
a movable mast section comprising at least one pair of second column members telescopingly engaged with and in sliding contact with the exterior of said first column members and vertically shiftable relatively thereto;
a load-engaging carriage vertically shiftable on said section and displaceable relatively to said second column members; and
a flexible elongated element connected to said carriage for controlling the displacement thereof, said second column members substantially peripherally surrounding said first column members and being slideably guided thereon, each of said first column members forming directly part of a hydraulic cylinder arrangement for raising said section and chargeable with hydraulic fluid under pressure, said movable mast section comprising a respective plunger piston receivable in each cylinder formed by the respective first column member, said plunger pistons depending from said section and being formed at their lower ends with respective guide shoulders engageable with an inner wall of the respective first column members, said cylinders being sealed with respect to said plunger piston only at the upper ends of each cylinder whereby the first column members are the sole support and structure between the lowermost portion of the movable mast section and the said support.

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**3,930,564**
**DISC BRAKES FOR VEHICLES**

**Toyoaki Kobayashi, Toyohashi, and Yoshinori Mori, Toyoda, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan**

**Continuation of Ser. No. 143,031, May 13, 1971, abandoned. This application Apr. 11, 1973, Ser. No. 350,190**
**Claims priority, application Japan, May 15, 1970, 45-047517[U]; May 15, 1970, 45-047518[U]**
**Int. Cl.² F16D 65/02**
**U.S. Cl. 188—73.3** **5 Claims**

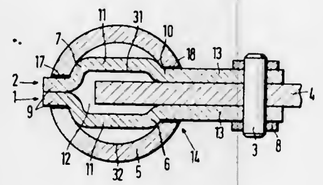



1. A disc brake comprising: in combination:
a rotatable disc;
a rigid stationary member comprising a pair of torque taking arms extending above and across the periphery of said rotatable disc and forming an opening therebetween, the extended portions of the torque taking arms being entirely disposed outside of the periphery of said rotatable disc, and the inner portions of the torque taking arms having protuberances disposed inside the periphry of said rotatable disc;
a cylinder housing located on one side of said disc;
piston means slidably fitted in said cylinder housing;
a pair of backing plates having friction pads fixed thereto and disposed on opposite sides of said disc;
one of said backing plates and friction pads located on one side of said disc slidably engaging the protuberances of the inner portion of said pair of torque taking arms at opposite sides thereof, whereby the brake torque on said friction pad is absorbed by said torque taking arms only inside the periphery of said disc during braking;
the other of said backing plates and friction pad being located on the other side of said disc, over which side the said extended portions of said torque taking arms are disposed;
the said other backing plate having at its opposite sides integrally projecting edges slidably engaging inside surfaces of the extended portions of said torque taking arms, whereby the brake torque on the friction pad fixed to said other backing plate, during braking, is directly absorbed by said torque taking arms only outside the periphery of said rotatable disc;
a reaction transfer member fixed to said cylinder housing and extended over and across the periphery of said disc for bringing the said other friction pad into frictional engagement with said disc upon brake application and;
a pair of parallel pins for guiding and supporting said backing plates and friction pads, both ends of said pins being fixed to the torque taking arms.

## 3,930,565
## COLUMN OF ADJUSTABLE HEIGHT

**Hans Scheben, Koblenz-Rubenach, and Herbert Freitag, Koblenz-Metternich, both of Germany, assignors to Stabilus GmbH, Koblenz, Germany**

**Continuation-in-part of Ser. No. 343,400, March 21, 1973, abandoned. This application Feb. 13, 1975, Ser. No. 549,833**
**Claims priority, application Germany, Mar. 23, 1972, 2214170**
**Int. Cl.² F16F 9/32**
**U.S. Cl. 188—300** **15 Claims**



1. A column of adjustable length comprising, in combination:
   a. two column members elongated in the direction of a common axis and movable relative to each other in said direction in telescoping engagement,
      1. one of said members being tubular, an inner axial wall of said one member defining an axial bore,
      2. said one member being formed with an axially closed radial opening communicating with said bore;
   b. a control element mounted on said one member in said bore for axial movement between a locking position in which relative axial movement of said members is substantially prevented, and a releasing position in which said members are free to move relative to each other;
   c. an elongated bracket having a first longitudinal portion abuttingly engaging said one member in said opening and thereby preventing movement of said bracket in an axial direction, and a second longitudinal portion abuttingly engaging said inner axial wall and thereby preventing longitudinal movement of said bracket in a direction radial relative to said axis;
   d. an operating member having respective terminal parts in said bore and outside said bore and passing through said opening; and
   e. securing means securing said operating member to said bracket for axial movement of the terminal part of said operating member in said bore in abutting engagement with said control element, whereby said control element is moved between said positions thereof by movement of said operating member.

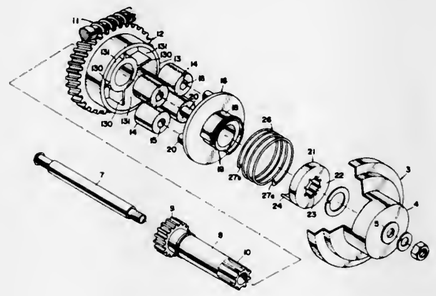
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## 3,930,566
## DEVICE FOR DRIVING A POWER WINDOW

**Takeo Matsushima, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan**

**Filed Mar. 27, 1974, Ser. No. 455,360**
**Claims priority, application Japan, July 4, 1973, 48-79365[U]**
**Int. Cl.² B60L 1/00**
**U.S. Cl. 192—8 C** **4 Claims**

1. A device for driving a power window comprising:
   a motor,
   a gear housing which is fixed to a stator of said motor having an open side,
   a casing having a drum shaped portion for covering said open side of said gear housing;
   a fixed shaft penetrating through a central portion of said gear housing and said casing for securing said casing to said gear housing and
   a rotary shaft rotatably fitted on an outer periphery of said fixed shaft and which has splines at one end and an output pinion at the other end;
   a worm gear driven by said motor which extends into said gear housing;
   a worm wheel rotatably fitted on the outer periphery of said rotary shaft near the output pinion end thereof and which meshes with said worm;
   said worm wheel having a first cylinder portion at an inner side wall along the periphery of said rotary shaft and a second cylinder portion spaced radially away from said first cylinder portion, the space between said first and second cylinder portions being divided into a plurality of small compartments by partition plates;
   buffer members which are closely fitted in said small compartments, each of which has an inserting hole and which are made of an elastic material,
   a core which is held in close contact with said first cylinder portion and which is rotatably fitted on said outer periphery of said rotary shaft;
   pins provided at one side wall of said core and which are snugly inserted in said inserting holes of said buffer members;
   a third cylinder portion which is provided at the other side wall of said core along the periphery of said rotary shaft; a cut-away portion which is formed in a part of said third cylinder portion;



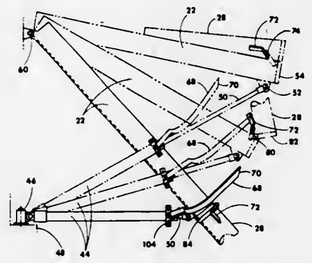
   a coil spring which is loosely fitted on the outer periphery of said third cylinder portion and having bent portions at the ends thereof for retaining said end parts in said cut-away portion;
   an output piece fitted in said spline of said rotary shaft adjacent said third cylinder portion; and
   a dog which is formed at a peripheral edge end of one side wall of said output piece in a manner to be slightly less wide than said cut-away portion;
   said output piece being coupled to said core by insertion of said dog between both the ends of said coiled spring in said cut-away portion, an inner peripheral surface of said drum portion and an outer peripheral surface of said coiled spring being normally held in frictional contact,
   rotational motion of said worm wheel being conveyed to said core via said buffer members and causing frictional engagement of said coiled spring with said inner peripheral surface of said drum portion to inhibit rotation by expansion of the diameter of said coil spring for one direction of rotation, and causing a decrease in the diameter of said coiled spring for the other direction of rotation for allowing rotation of said core, rotation of said core causing engagement of said core with said dog at said cut away section and causing rotation of said output piece and the output pinion gear of said rotary shaft.



## 3,930,567
## CHUTE FOR FRONT END DISCHARGE CONCRETE MIXERS

**Robert L. Sims, Salt Lake City, Utah, assignor to Travel Batcher Corporation, Salt Lake City, Utah**

**Filed Sept. 30, 1974, Ser. No. 510,302**
**Int. Cl.² B65G 11/12, 11/14**
**U.S. Cl. 193—10** **4 Claims**



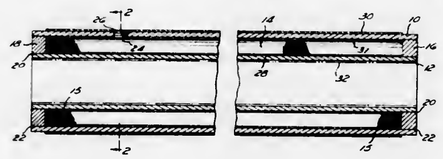
1. In a self propelled front end discharge concrete mixer unit having a bowl adapted for discharging concrete at the forward end of the unit, a movable chute including a pivot mounting between said movable chute and said mixer unit, a first power cylinder adapted for swinging the movable chute about its pivot at the forward end of the concrete mixer unit, said chute having two complementary sections consisting of a mounted section and an extendable section, and a hinged connection therebetween whereby said extension section is movable from a retracted doubled over position relatively to said mounted section to a second position wherein the extension section forms an elongated continuation of the mounted section, a fluid motor actuator including a cam, a cam follower forming a part of said extendable section and operatively engagable by said cam which biases the cam follower and extendable section about said hinged connection to displace said section from its retracted position to its extended position, locking means for defining the fully extended position of said extendable section wherein said first and second sections form complementary extensions of each other, and spring means biasing said cam to a position whereby said cam is disengagable with said cam follower when the retracted section of said chute is swung downwardly with the mounted chute section and providing for retractile movement of said cam as the extension chute is swung from extended to retracted position.

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## 3,930,568
## BAR STOCK SILENCER TUBE

**Cyril D. Levey, South Euclid, Ohio, assignor to BTI Company, Cleveland, Ohio**

**Continuation-in-part of Ser. No. 364,727, May 29, 1973, abandoned. This application Aug. 29, 1974, Ser. No. 501,637**
**Int. Cl.² B23B 25/00; B65G 11/16**
**U.S. Cl. 193—38** **2 Claims**



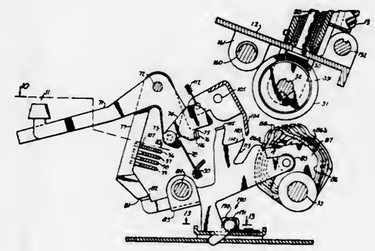
1. A sound attenuating bar stock feed tube comprising in combination an elongated inner tube, the inner tube including on its exterior a covering of non-metallic sound-absorbing material, a concentrically disposed elongated outer tube having an internal diameter greater than the external diameter of the inner tube to thereby define with the inner tube an annular space, closure means for said annular space at each end, a layer of lead shot in said annular space, said lead layer having a thickness of between approximately 0.090 to 0.120 inches, said layer of lead shot being formed of a particle size in the range of approximately 0.030 to 0.050 inch whereby it forms a loose layer of between 2 and 3 courses of particles.

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## 3,930,569
## POWER DRIVEN TYPEWRITER WITH FLEXIBLE TYPE HEAD

**Robert E. Boyden, Temple City, Calif., assignor to Thomas O'Reilly, Santa Barbara, Calif.**

**Division of Ser. No. 69,542, Sept. 4, 1970, Pat. No. 3,780,845. This application Dec. 21, 1973, Ser. No. 427,231. The portion of the term of this patent subsequent to Dec. 25, 1990, has been disclaimed.**
**Int. Cl.² B41J 23/04, 1/54, 25/24**
**U.S. Cl. 197—16** **19 Claims**

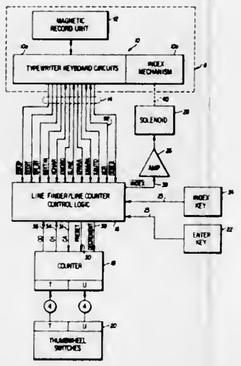


1. A typewriter comprising:
   a. a rotatable drive member;
   b. a type drum mounted on said drive member for movement therewith, said drum having a plurality of type characters on the outer surface thereof, each of said type characters being movable relative to the remainder of said drum member;
   c. selectively operable character selecting elements;
   d. means controlled by said selecting elements for effecting alignment of the type character corresponding to the particular selecting element operated with a predetermined printing position;
   e. print control means for causing each of said type characters to move from a normal position spaced from said printing position to accurately arrive at said printing position and to consistently apply a predetermined pressure on a record medium, said print control means including
      i. a printing impression member;
      ii. means responsive to operation of each of said selecting elements for causing said impression member to move a predetermined distance along a predetermined path to effect imprint of the type character corresponding to the selecting element operated at said printing position against a record medium, said distance and path being the same for all of said selecting elements, and
      iii. impression control means restricting movement of said drum toward said printing position, the extent of said restricted movement being a function of the location of the selected type character on said drum, to ensure that each of said type characters applies equal pressure on said record medium.

## 3,930,570
## AUTOMATIC LINE FINDER AND LINE COUNTER

Steven J. Fletcher, Norristown, Pa., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Jan. 28, 1974, Ser. No. 436,918
Int. Cl.² B41J 5/30
U.S. Cl. 197—19 14 Claims



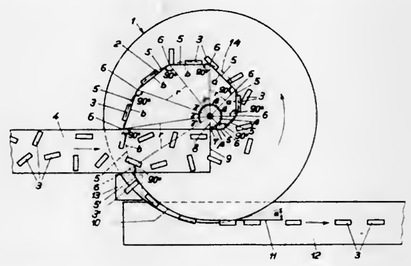

1. In an automatic typewriter system having a typewriter with a continuous forms indexing means and a playback-/record means for recording typed data or playing back recorded data, said system being selectively operable in a plurality of modes including an automatic playback mode in which recorded data is played back and typed one character at a time, said system also producing mode signals and carrier return signals, the improvement comprising:
switch means settable to represent a line count;
counter means;
means for transferring said line count from said switch means to said counter means;
first circuit means responsive to each said carrier return signal for decrementing the line count in said counter means;
means for producing an index signal;
second circuit means responsive to said index signal, said counter means, and said mode signals for generating a find signal;
third circuit means responsive to a fine signal for generating first and second sequences of pulses;
means responsive to said first sequence pulses for advancing the continous forms indexing means of said typewriter; and,
means for applying said second sequence of pulses to said counter means to decrement the line count therein.

## 3,930,571
## APPARATUS FOR ALIGNING ELONGATED ARTICLES

Lars H. Svensson, Winterthur, and Pierre Luginbuhl, Neuhausen am Rheinfall, both of Switzerland, assignors to SIG Schweizerische Industrie Gesellschaft, Neuhausen am Rheinfall, Switzerland

Filed Aug. 29, 1974, Ser. No. 502,234
Claims priority, application Switzerland, Sept. 6, 1973, 12838/73
Int. Cl.² B65G 47/00
U.S. Cl. 198—25 6 Claims

1. In apparatus for aligning randomly arriving elongate articles and including a substantially horizontally disposed turntable mounted for rotation, at least one stationary spiral guide rail disposed above the turntable and lying generally along a spiral path which extends, in the direction of turntable rotation, from a point in the vicinity of the turntable axis to the turntable periphery, means for delivering randomly ordered articles to the turntable in a region near the starting point of the spiral and spaced radially outwardly from such starting point, and means, adjacent the periphery of the turntable in the region where such articles are pushed off of the turntable by the guide rail, for conveying aligned articles away from the turntable, the improvement wherein said guide rail is formed

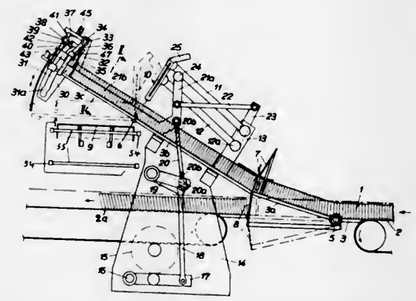


to be constituted by a plurality of sections which succeed one another along the spiral path, with each section being at a greater distance from the turntable axis of rotation than its immediately preceding section, said sections being oriented relative to one another in such a manner as to present a sharp change in direction between adjacent sections, and said guide rail is disposed for causing articles on the turntable to engage only the surface thereof which is directed away from the axis of turntable rotation.

## 3,930,572
## APPARATUS FOR SEPARATING A SERIES OF OBJECTS

Rene Fluck, and Franz Ruegg, both of Neuhausen am Rheinfall, Switzerland, assignors to SIG Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

Filed July 29, 1974, Ser. No. 492,921
Claims priority, application Switzerland, July 27, 1973, 11008/73
Int. Cl.² B65G 47/26
U.S. Cl. 198—34 7 Claims



1. In apparatus for conveying a continuous series of flat items along a path while in an upright position and in contact with one another and for dividing the series of items into successive separate groups at the end portion of the conveying path by insertion of a separator member between the last item of the group being separated and the next succeeding item of the series, the improvement wherein said apparatus comprises: first conveying path means defining the end portion of said conveying path and having an effective length corresponding to the length of each group to be separated; second conveying path means disposed adjacent said first conveying path means and defining the portion of said conveying path

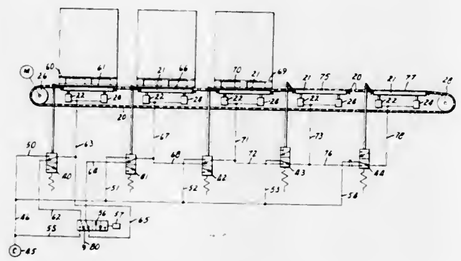


immediately upstream of said end portion, said second conveying path means being fixed in position; means supporting said first conveying path means for pivotal movement about an axis transverse to the direction in which items are conveyed along said conveying path, the axis being at least approximately in the plane of insertion movement of the separator member; and wherein said separator member comprises: first separator means constituting a retaining member for the item next succeeding the last item of the group being separated and arranged for movement only in a direction perpendicular to the portion of said conveying path defined by said second conveying path means; and second separator means arranged for movement in a direction perpendicular to the portion of said conveying path defined by said first conveying path means and arranged to pivot together with said first conveying path means.

## 3,930,573
## ACCUMULATING CONVEYOR AND CONTROL MEANS

Ronald E. Wyman, North St. Paul, Minn., assignor to Wyard Industries, Inc., Forest Lake, Minn.

Continuation of Ser. No. 455,993, March 29, 1974, abandoned. This application Dec. 18, 1974, Ser. No. 533,514
Int. Cl.² B65G 43/08
U.S. Cl. 198—37 11 Claims



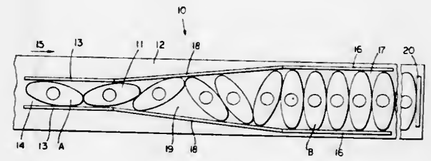
1. An accumulating conveyor comprising
support members defining a conveyor stretch along which material may be moved, said conveyor stretch having a load end and a discharge end,
drive means for moving material along said support members,
operator means positioned along said conveyor stretch for positioning said drive means in position to engage said material including operator means at the discharge end of said conveyor,
control means for said operator means for positioning said operator means in an operative position to drive said material along said conveyor until material is positioned over said operator means at said discharge end of said conveyor and for moving said operator means successively to an inoperative position as material is moved thereover stopping material and filling the conveyor from the discharge end toward the load end.

## 3,930,574
## APPARATUS FOR ORIENTING AND ACCUMULATING CONTAINERS

Kazushige Iwata, and Minoru Hosoya, both of Tokyo, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 350,172, April 11, 1973, abandoned. This application Oct. 22, 1974, Ser. No. 516,888
Claims priority, application Japan, Apr. 13, 1972, 47-43766
Int. Cl.² B65G 47/24
U.S. Cl. 198—246 6 Claims

1. An apparatus for transporting, orienting and accumulating articles having at least a portion of oval cross-section defined by substantially perpendicular short and long diameters, said apparatus comprising:
conveyor means including an elongated movable conveying member traveling in a selected direction and having an upwardly facing support surface for supporting said articles thereon;
first guide means for confining therebetween the oval portion of said articles, said first guide means including a first pair of spaced side guide members disposed adjacent said support surface and defining therebetween a transporting zone, said first pair of side guide members being spaced apart by a distance which is smaller than the long diameter of said articles so as to confine therebetween the oval portion of said articles and to facilitate the movement of said articles through said transporting zone by said conveying member, said articles when in said transporting zone being disposed with the short diameters thereof substantially transverse to said selected direction;
second guide means for confining therebetween the oval portion of said articles, said second guide means including a second pair of spaced side guide members disposed adjacent said support surface and defining an accumulation zone therebetween, said second pair of guide members being spaced downstream a substantial distance from said first pair of side guide members, said second pair of side guide members being spaced apart by a distance which is substantially equal to or slightly greater than the long diameter of said articles to permit alignment of said articles in the direction of the short diameters thereof;



restricting means coacting with said articles within said accumulation zone for causing said articles within said accumulation zone to accumulate within a row extending in said selected direction, the individual articles in said row being maintained in contact with one another and being oriented so that the long diameter thereof is substantially perpendicular to said selected direction; and
third guide means extending between the first and second pairs of side guide members and coacting with the oval portion of said articles for permitting the individual articles to be turned as they are being supplied from said transporting zone to said accumulation zone so that their long diameters are disposed substantially perpendicular to said selected direction when said articles reach said accumulation zone;
said third guide means including a third pair of spaced elongated side guide members disposed adjacent said conveying member and extending between said first and second pairs of side guide members, the side guide members defining said third pair being inclined relative to one another and defining an elongated orienting passage therebetween which diverges in said selected direction, said third guide means permitting the articles to be turned as they pass therethrough only when the articles in the accumulation zone are oriented with their long diameters substantially perpendicular to said selected direction and are disposed within a row which extends back into said orienting passage.

3,930,575

## METHOD FOR A SURFACE TREATMENT OF AN IRON, FERROUS ALLOY OR CEMENTED CARBIDE ARTICLE

Noboru Komatsu, Toyoake; Tohru Arai, and Yoshihiko Sugimoto, both of Nagoya, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Japan

Filed Nov. 2, 1973, Ser. No. 412,246

Claims priority, application Japan, Nov. 6, 1972, 47-111030; Nov. 6, 1972, 47-111033; June 26, 1973, 48-071276; June 26, 1973, 48-071277

Int. Cl.² C25D 3/66

U.S. Cl. 204—39 9 Claims



(X 400)

1. A method for forming a hard coating comprising the carbide of a IV-*b* group element of the Periodic Table on the surface of a cemented carbide article containing at least 0.05% by weight of carbon, comprising the steps of

preparing a molten bath composed of molten boron oxide and a substance containing a IV-*b* group element in a vessel,

immersing the article in the molten bath,

connecting the article as a cathode and applying an electric current to said cathode with a current density within the range of 0.01 to 15 A/cm² in order to form a hard layer comprising the carbide of the IV-*b* group element on the surface of said article, and

removing said article from said molten bath.

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3,930,576

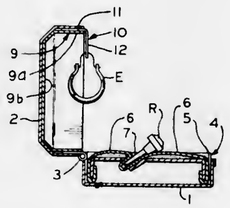
## COMBINED PACKAGING AND DISPLAY BOX

Paul B. Stephens, 1234 S. Wabash Ave., Chicago, Ill. 60605

Continuation of Ser. No. 304,723, Nov. 8, 1972, abandoned. This application Sept. 5, 1974, Ser. No. 503,477

Int. Cl.² B65D 25/02

U.S. Cl. 206—45.11 8 Claims




1. A jewelry display and packaging box comprising:

a bottom member adapted to rest in a horizontal position on a horizontal supporting surface, a display panel carried by said bottom member and having a face positioned to be exposed upwardly when said bottom member is in a horizontal position;

said bottom member having a front edge and a rear edge;

a cover member for the bottom member and having a top wall and peripheral wall depending from the top wall and defining therewith an open face unobstructed concavity which, in the closed position of the cover member, is open toward said face of the panel;

said peripheral wall including a front wall, and a rear wall positioned to lie at the front and rear edges, respectively, of said bottom member in the closed position of the cover member and side walls extending from the front wall to the rear wall;

said front, rear, and side walls having free edges, respectively, which, in said closed position of the cover member, engage said bottom member;

a hinge member connecting the cover member to the bottom member at the rear of the members so that the cover member can be swung about the hinge axis in a direction upwardly and rearwardly relative to the bottom member, in said horizontal position of the bottom member, to an open position in which the cover member is generally upright and the open face of the concavity thereof is exposed forwardly of the bottom member;

characterized in that:

an article support is carried by the cover and has a jewelry holding portion to which articles of jewelry can be detachably connected, and which portion, in said upright open position of the cover member, with the bottom member horizontal, swingably depends from a location which is at least close to said free edge of the front wall, downwardly toward the face of the panel, is spaced forwardly from said top wall, and is spaced laterally from said side peripheral walls of the cover member and of which portion the lower end is spaced upwardly away from said face of the panel, and is substantially directly beneath the free edge of said front peripheral wall in said upright position of the cover member, so that an article of jewelry can be connected to the holding portion and suspended therefrom so as to be swingable both toward and away from said top wall in spaced relation to said top wall and to said panel face in said upright open position of the cover member; and

said support is arranged to be confined in the concavity between said top wall and said face of the panel in the closed position of the cover member.

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3,930,577

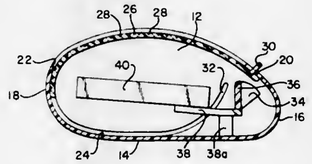
## DISPLAY CONTAINER

Leonard R. Kortick, 88 Waldron Ave., Cranston, R.I. 02907

Continuation-in-part of Ser. No. 133,852, April 14, 1971, abandoned. This application Sept. 30, 1974, Ser. No. 510,407

Int. Cl.² B65D 79/00, 43/20

U.S. Cl. 206—45.13 7 Claims




1. A display container comprising a rigid plastic housing having spaced parallel elongated oval sides and a wall portion extending along the bottom perimeter of said sides, the front end of said wall portion extending around the front of said oval sides and partially along the top, the rear end of said wall portion extending upwardly at the rear of said oval sides, the space between the front and rear ends of said wall portion forming the container top opening, opposed grooves extending around the inside of said sides adjacent the perimeter, a plastic cover slidable in said grooves and having transverse grooves forming thin web portions to impart flexibility to said cover, said cover being slidable rearwardly to open said container and being slidable forwardly to close said container, and an article display means pivotally mounted in said container, said pivotal mounting being between said side walls adjacent



the front end of said container, the inner ends of said grooves curving forwardly and upwardly adjacent and rearwardly of the pivotal mounting of said display means, said cover being of such length that the rear end of said cover will engage said display means adjacent said pivotal mounting only after said cover has been slid rearwardly to open position with the front edge of said cover spaced forwardly from the rear edge of said wall portion, whereby final movement of the front edge of said cover rearwardly toward the rear edge of said wall portion will cause the rear end of said cover to pivot said display means into raised position.

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3,930,578

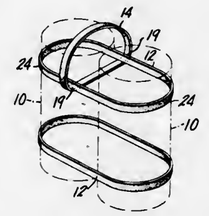
## CONTAINER PACKAGE

Richard J. Stein, 147 Brite Ave., Scarsdale, N.Y. 10583

Filed Apr. 22, 1974, Ser. No. 462,921

Int. Cl.² B65D 85/62, 75/56, 71/02

U.S. Cl. 206—150 22 Claims




1. A container package comprising at least one packaging band that encloses a plurality of containers arranged in at least one row, said packaging band incompletely enclosing the periphery of each individual container while completely enclosing the said at least one row of containers, said packaging band having portions at opposite sides thereof which are not in physical contact with said containers, and at least one carrying band of flexible materials operatively associated with said at least one packaging band at the said opposite portions thereof to lift and draw said opposite portions of the packaging band inwardly and to draw the containers together when said at least one carrying band is lifted to lift the enclosed plurality of containers as a package.

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3,930,579

## MULTIPACK MEANS FOR PACKAGING A PLURALITY OF CATHODE RAY TUBES

Joseph M. Kurtz, Ottawa, Ohio, assignor to GTE Sylvania Incorporated, Stamford, Conn.

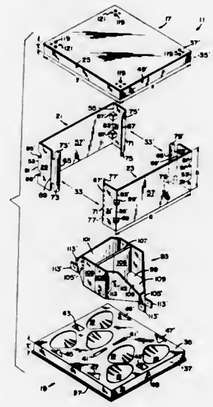
Filed Apr. 16, 1975, Ser. No. 568,519

Int. Cl.² B65D 85/42, 65/00, 85/30

U.S. Cl. 206—419 6 Claims

1. An improvement in multipack container for accommodating a plurality of cathode ray tubes wherein the tubes and related internal supportive and protective structural members are oriented between two spaced-apart and inversely superposed tray members of substantially rigid material conjunctively serving as top and bottom closure members of the multipack container, each of the tray-like closure members evidences a structural thickness defined by spatially related interior and exterior parallel planes bounded by four walls thereabout, a plurality of configurated cavities are formed in each of the tray structures internally of the interior plane to accommodate the placement and retention of a portion of the contourial surface of the respective tubes, the exterior plane of each closure member has a related peripheral ledge portion outstanding from the walls therearound, said improvement providing structural rigidity and flame retardant properties to said multipack comprising:

two substantially U-shaped peripherally edge-positioned areal support members having major and minor dimensionings located in opposed orientation between the ledges of said top and bottom closure members, whereof said minor dimensioning equals the distance between said ledges, said closure members being fabricated of flame retardant material, each of said edge support members being formed of a substantially rigid-board material symmetrically folded in a predetermined vertical manner along score lines parallel to said minor dimensioning to provide a square-cornered structure of substantially U-shaping defining an areal central portion with two extremital wing portions projecting thereform, said central portion having a major dimension coinciding with the longitudinal dimensions of the two superposed walls of said top and bottom closure members, said projecting wings being seated on and contiguously extended along the ledges of opposed walls of each closure member for



a distance less than one-half the longitudinal dimension therealong, the forward section of each wing portion being folded inwardly to provide four reinforcing edge folds oriented vertically between the superposed closure members, said folds of the opposed forward sections being separated from one another to effect a window opening therebetween on both sides of said multipack structure, said internal supportive and protective structural means being predeterminately spaced from said peripheral support members; and

a tight covering of plastic material contiguously encompassing the assembled multipack means including the tubes and the internal members positioned therein, said ambient covering effecting a beneficially utilized and reinforced multipack structure thereby providing improved structural rigidity and enhanced protection for the flame retardative integration and contents as a whole.

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3,930,580

## STERILIZABLE, PEELABLE POUCH OR TRAY ASSEMBLY

Seymour Bazell, Skokie, and Edward M. Goldberg, Glencoe, both of Ill., assignors to Medical Products Corporation, Skokie, Ill.

Filed Oct. 19, 1973, Ser. No. 407,890

Int. Cl.² A61B 19/02

U.S. Cl. 206—439 11 Claims

1. A sterilizable, peelable, medical and surgical equipment-containing assembly which comprises:

a bottom member;

a plastic face sheet superimposed over the bottom member;

a continuous plastic strip folded over and sealed to the exterior surfaces of the bottom member and the plastic sheet on at least a portion of the perimetric edges of said sheet and said member to define a readily separable

interconnection between the sheets separable solely at the juncture of the bottom member and the plastic face sheet, said strip having the properties of strength under tension and partability under shear;

means for initiating peeling of said face sheet from said bottom member solely at said juncture, positioned diagonally to the juncture of the top sheet and the bottom member; and



means for sealing the remaining perimeter of the sheets, said plastic sheet comprising a plastic that is resistant to transmission of liquid water, wherein the plastic sheet is separated from the first member by peeling said sheet from said member.

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**3,930,581**

**SHEET FEEDING MECHANISMS**

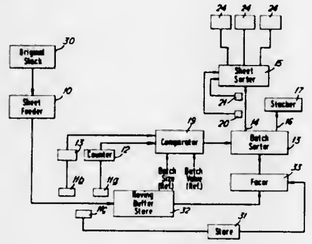
**Colin Gray, Watford, England, assignor to Crosfield Business Machines Limited, Watford, England**

**Filed Jan. 21, 1975, Ser. No. 542,829**

**Claims priority, application United Kingdom, Jan. 23, 1974, 3184/74**

**Int. Cl.² G06F** *7/38*

**U.S. Cl. 209—73** **9 Claims**



1. A sheet feeding mechanism in which the sheets in a batch of sheets are to be sorted into different output stackers, comprising means for advancing the sheets along a given path, a buffer store for receiving and temporarily holding a batch of sheets fed along the path while a predetermined batch value is verified, a batch verifier responsive to the passage of each sheet along the path for comparing a measured batch value with a reference value to derive an error signal, means for extracting the sheets one by one from the store, and a sheet sorting mechanism for sorting the sheets extracted from the store into different output stackers, the sorting mechanism including means responsive to the output of the verifier for segregating the sheets of a batch extracted from the store whenever the error exceeds a predetermined value.

**3,930,582**

**SYSTEM FOR TESTING PAPER MONEY AND THE LIKE**

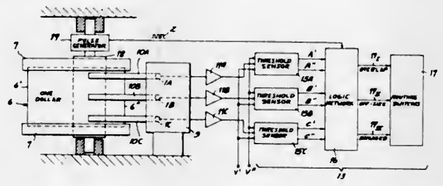
**Fritz Gartner, and Erich Berger, both of Vienna, Austria, assignors to Oesterreichische National Bank, Vienna, Austria**

**Filed May 17, 1974, Ser. No. 470,965**

**Claims priority, application Austria, May 18, 1973, 4387/73**

**Int. Cl.² B07B** *1/15*

**U.S. Cl. 209—88** **24 Claims**



1. A method of testing specimens of sheet material against a standard, comprising the steps of successively measuring the thickness of a test specimen at a multiplicity of closely spaced locations along at least one scanning line between opposite edges thereof, comparing the measured thickness with a reference value at each of said locations, correlating the results of comparison to establish a pattern of distribution of positive and negative deviations of said measured thickness from said reference value along said scanning line, and classifying the test specimen according to the distribution pattern thus obtained.

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**3,930,583**

**BALANCING SYSTEM FOR HIGH CAPACITY CRANES**

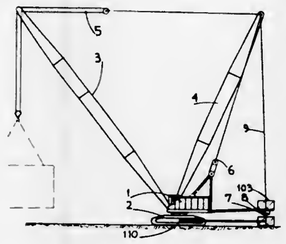
**Maurice Jouffray, Bron, France, assignor to Creusot-Loire, Paris, France**

**Continuation-in-part of Ser. No. 384,175, July 31, 1972, abandoned. This application Sept. 23, 1974, Ser. No. 508,203**

**Claims priority, application France, Aug. 9, 1972, 72.28714**

**Int. Cl.² B66C** *23/72*

**U.S. Cl. 212—49** **8 Claims**



1. A high-capacity crane comprising a support structure, a chassis mounted on ground engaging drive means and mounting said support structure for rotation about a vertical axis relative to said chassis, a jib and a counter jib pivotally mounted on said support structure, a hoisting cable connected to said jib for hoisting a load, an I-beam in the form of an arc of a circle spaced from and centered on the axis of rotation of said rotatable structure and positioned to be on the opposite side of said axis from said jib, an upper surface for said I-beam, means for releasably anchoring said beam to the ground, an anchoring device mounted for movement along said beam, carriage means for preventing vertical upward movement of said anchoring device relative to said beam as said anchoring device moves along said beam, at least one arm pivotally connected between said chassis and said beam, an arm pivotally connected between said anchoring device and said support structure, a retaining cable connecting the upper end of said counter jib to said device, said device moving along said beam according to the angular orientation of said rotatable structure, a variable length pulley system connected between said jib and said counter jib to adjust the inclination of said jib, a pulley system to adjust said counter jib connected between the upper end of said counter jib and said support structure, said pulley systems and said cable positioning said jib whereby said device exerts pressure beneath said upper surface before loading said jib, whereby when said releasable anchoring means is released from the ground the jib, counter jib, retaining cable and hoisting cable cooperate to lift the beam from the ground for transfer to other locations.



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**3,930,584**

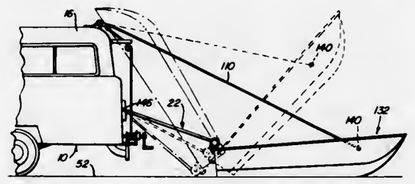
**BOAT LOADING DEVICE FOR HIGH TOP VEHICLES**

**Howard Davis, and Euphemia M. Davis, both of R.F.D. No. 3, Plainfield, Ill. 60544**

**Filed Apr. 5, 1974, Ser. No. 458,448**

**Int. Cl.² B60R** *9/04*

**U.S. Cl. 214—450** **8 Claims**



1. In combination with a vehicle including a high top, a boat loading device comprising an elongated support arm, means pivotally supporting one end of said support arm from an elevated portion of one marginal portion of said vehicle for swinging movement of said arm about a horizontal axis generally paralleling said marginal portion between a lowered position with the other end of said arm inclined downwardly and outwardly for contact with the surface upon which said vehicle rests and a raised position with said other end of said arm swung upwardly to a position generally horizontally aligned with said top, said elevated portion of said vehicle being disposed at a height equal to at least one-half the effective length of said support arm, said other end of said support arm including mounting means adapted for pivotal connection to an upper portion of the transom of a boat.

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**3,930,585**

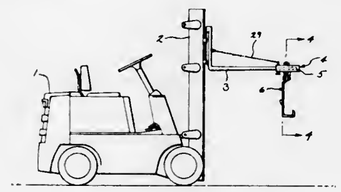
**COIL LIFTING APPARATUS AND METHOD**

**Jack M. Lynch, 8360 S. 13 St., Oak Creek, Wis. 53154**

**Filed May 20, 1974, Ser. No. 471,227**

**Int. Cl.² B66F** *9/18*

**U.S. Cl. 214—620** **5 Claims**



1. Coil lifting apparatus adapted for use with a fork lift truck having a pair of spaced forks extending from a tilting mast and adapted to lift a coil of the type comprising an elongate strip of material rolled into a coil having a central core, said coil lifting apparatus comprising, in combination:

a housing having a top wall, an end wall, and a pair of spaced channels each depending from the top wall and adapted to receive a fork of the truck for attachment of the housing to the forks, the end wall being arranged to abut ends of the forks in the channels;

pivot means attached to the housing; and

a rigid hook attached to the pivot means to pivot in a vertical plane perpendicular to the mast of the fork lift truck to about a horizontal position, said hook being adapted to receive and lift a coil and to limit twisting movement of a coil carried on the hook to about 15°–20° when the mast of the fork lift truck is tilted.

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**3,930,586**

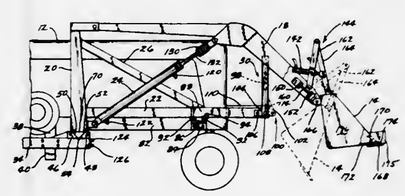
**IMPLEMENT DEVICE AND METHOD OF MOUNTING SAME ON TRACTOR**

**Eldon M. Frank, Rte. 1, Lake View, Iowa 51450**

**Division of Ser. No. 260,465, June 7, 1972, Pat. No. 3,863,786. This application July 16, 1973, Ser. No. 379,752**

**Int. Cl.² E02F** *3/42*

**U.S. Cl. 214—778** **1 Claim**



1. In combination, a tractor and implement comprising,

an implement having a boom having oppositely disposed side frame members pivotally connected to the opposite sides of said tractor,

a power means for selectively pivoting said boom relative to said tractor,

a working tool on the outer end of said boom,

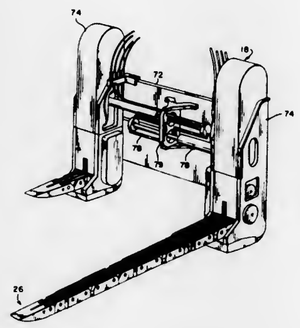
a power means for pivoting said working tool on and relative to said boom, said power means including an upstanding A-frame having a pair of straight legs pivoted to each other at adjacent ends with the opposite end of one leg pivoted to the boom and the opposite end of the other leg pivoted to said tool at a point remote from the pivotal axis of said tool on said boom, and a selectively extendable hydraulic cylinder connected between the legs of said A-frame at their substantial midpoints along their length for opening and closing said legs thereby pivoting said tool on said boom with said hydraulic cylinder moving in an arcuate path about said pivotal axis of said one leg connected to said boom thereby accelerating the pivoting action of said tool relative to said boom, said cylinder having a barrel and a piston rod with said barrel at its inner end and said piston rod at its outer end being connected to said A-frame legs,

said working tool being a bucket having a bottom wall, an upstanding rear end wall and a top wall along the top edge of said rear end wall, and said boom being pivotally connected to said rear end wall of said bucket and said other leg of said A-frame being connected to said top wall,

a bridging assembly interconnecting the forward ends of said boom side frame members,

said bridging assembly including a cross element having outer ends extending angularly rearwardly into engagement with said side frame members of said boom thereby positioning the cross frame element more forwardly than its outer ends to provide clearance for the front end of said tractor and strengthening said boom, and said one leg of said A-frame is connected to said cross frame element between its outer ends.

**3,930,587**
**RETRACTABLE CHAIN LIFTING DEVICE**
George N. Bliss, P.O. Box 1, Renton, Wash. 98055
Filed Apr. 12, 1973, Ser. No. 350,360
Int. Cl.² B65G 47/00
U.S. Cl. 214—730 4 Claims

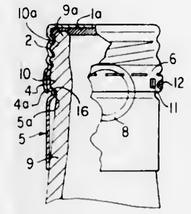


1. A retractable forklift device comprising frame means, means for moving said frame means for carrying objects to different locations, retractable fork means on said frame means and means for extending and retracting said fork means, said fork means including collapsible links extendible outwardly in a substantially horizontal plane and being self-supporting and proportionately sharing the weight of the object when extended, said links each having an upper object-supporting surface slidable beneath an object for supporting the object, said links including a plurality of longitudinally aligned standard links having sides and opposite ends, the opposite ends of the longitudinally aligned standard links having peripheral surfaces, with such peripheral surfaces of adjacent standard links abutting one another, and a plurality of longitudinally aligned stabilizing links transversely adjacent said standard links, said stabilizing links having sides and opposite ends, the opposite ends of the longitudinally aligned stabilizing links having peripheral surfaces, with such peripheral surfaces of adjacent stabilizing links abutting one another, folding pins joining said transversely adjacent stabilizing and standard links, said stabilizing links overlapping the ends of said standard links and having outwardly opening recesses adjoining said peripheral end surfaces of said stabilizing link opposite ends, and stabilizing pins having opposite end portions mounted in transversely aligned standard links and having central portions abutting the recesses of said longitudinally adjacent stabilizing links for holding the standard and stabilizing links flat when said standard and stabilizing links are extended.

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**3,930,588**
**BOTTLE CAP**
Henri Coursaut, Mercurey, France, assignor to Le Bouchage Mecanique, Paris, France
Filed Feb. 11, 1974, Ser. No. 441,149
Claims priority, application France, Feb. 13, 1973, 73.04964
Int. Cl.² B65D 41/34
U.S. Cl. 215—230 7 Claims

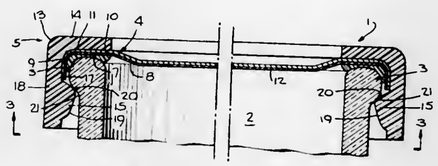
1. A cap for a bottle having a thread-bearing annulus, said cap comprising a cap member and a skirt member, the cap member having a crown and a skirt integrally connected to the crown, said skirt further having a substantially circular row of perforations formed therein, said row defining as a removable ring the portion of the skirt below said row, said skirt further having therein a slit extending over part of the height of said ring, said skirt member being of cylindrical shape and extending at one end in telescoping relation inside of and being



affixed to said ring, the opposite end of the skirt member extending below said ring.

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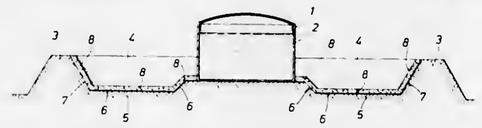
**3,930,589**
**PRY-OFF CLOSURE CAP**
Carl E. Koontz, Thornville, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio
Continuation of Ser. No. 394,967, Sept. 7, 1973, abandoned. This application Apr. 14, 1975, Ser. No. 567,483
Int. Cl.² B65D 53/00
U.S. Cl. 215—352 7 Claims



1. An improved composite closure cap for sealing a container having a radially outwardly projecting cap engaging bead at its rim comprising the combination of:
- a molded plastic ring having an annular cover portion and a downwardly dependent skirt portion both of said portions being relatively rectangular in cross-section;
- said cover portion and said skirt portion being coupled together by a corner portion;
- inwardly projecting container engaging means on the said skirt portion for engaging the container bead having a generally horizontal container bead engaging portion at its top and a guide portion therebelow forming an acute angle with the vertical;
- said cover portion, said corner portion, said skirt portion and said container engaging means cooperating to form an inwardly facing channel;
- a circular metal cap cover positioned within said plastic ring having an outer depending skirt received within said channel having its lower edge positioned above said bead engaging portion of said container engaging means and having an outer annular top portion in engagement with the underside of the cover portion of said plastic ring;
- the lower corner of said skirt comprising a generally rectangular portion in cross-section positioned to be spaced from the container; and
- a sealing gasket on the underside of said metal cap cover for engaging the container rim.



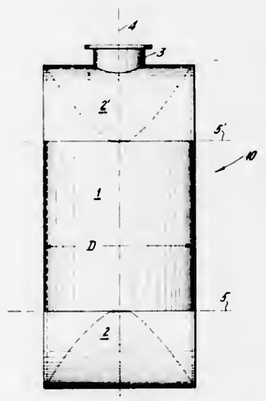
**3,930,590**
**STORAGE INSTALLATION FOR LIQUEFIED GAS**
Harold K. Ebbrell, Chester, England, assignor to Shell Oil Company, Houston, Tex.
Filed Nov. 7, 1974, Ser. No. 521,806
Claims priority, application United Kingdom, Dec. 4, 1973, 56175/73
Int. Cl.² F65D 25/18
U.S. Cl. 220—9 LG 3 Claims



1. In an installation for the storage of liquefied gas, comprising a tank surrounded by collecting means selected from the group consisting of a wall and a dam which together with the enclosed ground forms a collecting space around the tank the improvement comprising that the surface of the ground of the collecting space and said collecting means comprises a layer of heat-insulating material consisting of lightweight concrete material having a density in the range from about 32 kg per cubic meters to 1840 kg per cubic meter.

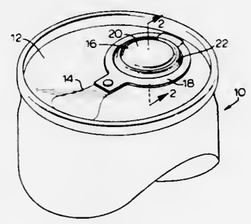
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**3,930,591**
**CONTAINER CONSTRUCTION**
Manfred Hawerkamp, Troisdorf, Germany, assignor to Troisdorfer Bau-und Kunstoff Gesellschaft mit beschränkter Haftung, Germany
Filed Apr. 5, 1973, Ser. No. 348,019
Claims priority, application Germany, Apr. 22, 1972, 2219870
Int. Cl.² B65D 7/04, 7/38
U.S. Cl. 220—66 6 Claims



1. A container comprising a cylindrical container shell having end edges with diametrically opposed straight edge portions and intermediate curved vaulted portions between said opposed straight edge portions, and a closing end portion at each end of semi-cylindrical shape each having end edge faces on each end terminating in a common plane and defining respective end support surfaces and having guide edges centrally joined to said shell straight edge portions and continuing outwardly to each side of said shell and each having an interior curved undersurface joined to said shell vaulted portions and closing respective ends of said shell and each having a longitudinal axis extending perpendicular to the longitudinal axis of said shell.

**3,930,592**
**BEER CAN STRUCTURE**
Daniel Dilanni, Toronto, Canada, assignor to Carling O'Keefe Limited, Toronto, Canada
Filed Dec. 23, 1974, Ser. No. 535,693
Claims priority, application United Kingdom, Jan. 7, 1974, 00718/74
Int. Cl.² B65D 41/32
U.S. Cl. 220—270 5 Claims



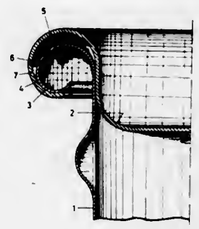
1. A sealed can structure including a cylindrical wall member, end wall members located substantially at each end of said cylindrical wall member and sealing said can, a potable liquid located within the can structure and intended in its potable condition to exert at least a predetermined gaseous pressure of about 12 psi internally of said can, a tab formed integral with but separable from one of said end wall members, a pull ring having a substantially circular opening and joined to said tab for separating said tab from said one end wall member and gaining access to the contents of said can, and integrally-formed indicator means in said one end wall member, said indicator means being substantially disc-like and being located at least partially within the circular opening in said pull ring, said indicator means being constructed to assume one position relative to the remainder of said end wall member when said internal pressure exceeds said predetermined pressure of about 12 psi and to assume a second position relative to the remainder of said one end wall when said internal gaseous pressure is below said predetermined pressure of about 12 psi through opening of said can or through leakage of gas pressure from an unopened can, said second position being usually and tactilely different from said first position, whereby external examination of said can in the immediate vicinity of the tab and pull-ring for said can reveals whether or not said internal pressure has fallen below said predetermined value of about 12 psi and hence whether or not pressure leakage has occurred.

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**3,930,593**
**CONTAINER (OR VESSEL) WITH A COVER**
Christian Ragettli, Gockhausen, Switzerland, assignor to Koninklijke Emballage Industrie van Leer B.V., Amstelveen, Netherlands
Filed July 17, 1973, Ser. No. 380,052
Claims priority, application Netherlands, July 21, 1972, 10164/72
Int. Cl.² B65D 17/00
U.S. Cl. 220—276 2 Claims

1. A container having a cover, said container having a rim and a first curled edge at said rim, a portion of said first curled edge having its biggest diameter in a plane perpendicular to the center line of the container, said cover having a second curled edge gripping around said first curled edge, said second

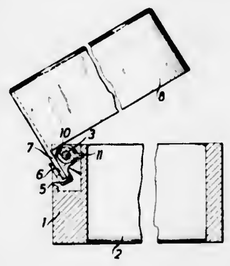
curled edge including a circumferential cutting line which flows up and down with peaks at a region of or above said



portion of said first curl having the biggest diameter and with valleys underneath said portion.

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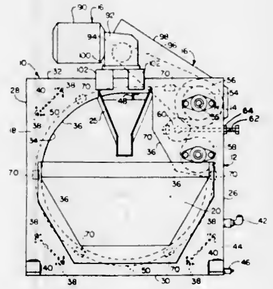
**3,930,594**
**PIVOT HINGE FOR AN APPARATUS COVER HOOD**
**Manfred Jungmann, St. Georgen, Germany, assignor to Dual Gebruder Steidinger, St. Georgen, Schwarzwald, Germany**
**Filed Apr. 29, 1975, Ser. No. 572,907**
**Claims priority, application Germany, May 13, 1974, 2423007**
**Int. Cl.² B65D 41/08**
**U.S. Cl. 220—335** **4 Claims**



1. In an apparatus housing comprising a bottom part and a cover hood, the improvement comprising
- a pivotal connection means between said bottom part and said cover hood for opening and closing, respectively, said cover hood by pivoting the latter about an axis extending parallel to a side of said bottom part, said means comprising
- at least one sleeve disposed concentrically to said pivot axis and axially displaceably, yet non-rotatably arranged relative to said bottom part on the latter,
- said at least one sleeve having a face side forming a curved course,
- a cam pivotally mounted about said pivot axis adjacent to said face side of said at least one sleeve, said cam being connected with said cover hood for joint rotation therewith,
- a compression spring operatively disposed pressing said axially displaceable sleeve with said curved course against said cam, and
- said curved course having an inclination relative to a radial plane through said at least one sleeve, said inclination and said compression spring being sized such that within a predetermined rotation range of said cam about said axis corresponding substantially to an opening movement of said cover hood, there is produced relative to said axis a rotational moment on said cam by said curved course of said sleeve pressing against said cam, which moment corresponds in every position within said rotation range substantially to a rotational moment produced by the gravity force on said cover hood, yet in an opposite rotational sense.

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**3,930,595**
**ARTICLE FEEDING DEVICE**
**Joseph J. Formanski, Whitmore Lake, Mich., assignor to Michigan Automation Company, Inc., Detroit, Mich.**
**Filed Jan. 20, 1975, Ser. No. 542,305**
**Int. Cl.² B65G 59/04**
**U.S. Cl. 221—212** **15 Claims**

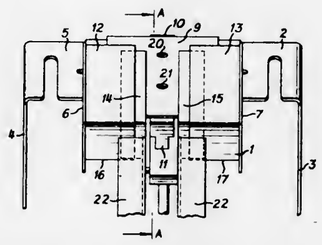


1. In article feeding apparatus for translating magnetizable parts charged into said apparatus, the improvement comprising in combination
- a housing having upper, lower and lateral wall members defining a partially enclosed chamber to receive said parts and hold them in a mass for unitary or plural translation therefrom,
- at least one said lateral wall member having an opening therethrough to admit said parts to said chamber and to pass said parts therefrom,
- a non-magnetic face plate for sliding translation of said parts thereon, disposed between two opposed facing lateral wall members and comprising a lower parts support surface portion and an upper parts translation surface portion having a segment thereof disposed in vertically spaced apart overlying relationship to said lower support portion,
- said upper translation surface portion segment having a parts stop member disposed adjacent thereto to limit further translation movement of said parts on and to cause said parts to fall by gravity from said segment adjacent said stop member,
- an endless magnetic-type parts translation mechanism in said housing,
- and power drive means operatively connected with said mechanism,
- said translation mechanism comprising
- endless drive means operatively actuated by said power drive means along a course in said housing, magnet means carried by said endless drive means in said course adjacent at least a segment of said lower support portion and adjacent said upper translation portion to and beyond said stop member,
- whereby said magnet means effectively removes one or a few at a time of said parts from said mass at an upper edge or border thereof and magnetically translates said part(s) therefrom on said translation surface portion to said stop member for release and discharge therefrom upon continued movement of said magnet means along said course beyond their sphere of magnetic influence on said parts.



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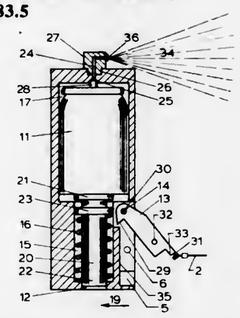
**3,930,596**
**COMPONENTS FEEDING DEVICES**
**Walter Alan Russell, Fareham, England, assignor to Elite Engineering Limited, Gosport, England**
**Filed May 13, 1974, Ser. No. 469,282**
**Claims priority, application United Kingdom, May 11, 1973, 22622/73**
**Int. Cl.² B65H 31/20**
**U.S. Cl. 221—242** **2 Claims**



1. A vibratory hopper for supplying elongate components one by one to a work station via parallel guide channels mounted on a U-shaped support member comprising a pair of upstanding limbs for mounting said member on a stationary frame member, and an interconnecting bight portion, said hopper having spaced wall members adapted to move over said bight portion to accommodate different length components in the hopper, a strip member clamped on the bight portion and having a portion at its ends bent over rear and front edges of the bight portion, a pair of non-vibratory guide members disposed opposite said portion bent over the front edge of the bight member, said bent over portions extending normal to the spaced wall members and the portion of the strip member bent over the front edge of the bight portion being maintained a predetermined distance from the front edge of the bight portion and from a pair of non-vibratory spaced guide members.

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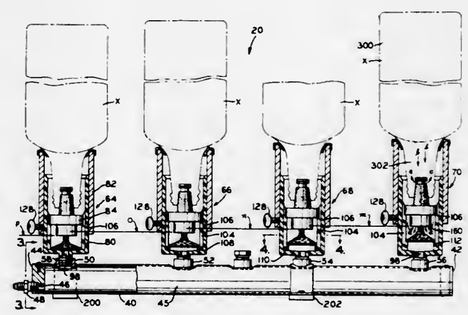
**3,930,597**
**CHEMICAL DISPENSING ANTI-BURGLARY DEVICE**
**Charles Robert Fegley, 1606 Frush Valley Road, Laureldale, Pa. 19605**
**Filed Mar. 20, 1974, Ser. No. 452,820. The portion of the term of this patent subsequent to Apr. 23, 1991, has been disclaimed.**
**Int. Cl.² B67B 7/28**
**U.S. Cl. 222—83.5** **17 Claims**



1. A chemical dispensing anti-burglary device for use with a pressurized container, the device comprising: a body member; means for slideably supporting said pressurized container in said body member; a fluid passageway extending through said body member having an open entry section; means for causing the discharge of fluid from said pressurized container into said open entry section of said fluid passageway; a spring biased firing member supported in said body member and arranged to discharge fluid from said pressurized container upon movement of said slidably supported pressurized container when said firing member is released; means for releasably retaining said firing member in a cocked position; said retaining means including a trigger element; said trigger element being mounted for movement between an actuation position and a release position; said trigger element when in said actuation position being in engagement with surface of said firing member to retain said firing member in said cocked position; and said trigger element in said release position allowing said firing member to activate said discharging means through movement of said pressurized container.

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**3,930,598**
**LIQUID DISPENSING APPARATUS**
**William E. Slagle, Canfield, Ohio, assignor to Bildon Company, North Lima, Ohio**
**Filed Mar. 28, 1974, Ser. No. 455,627**
**Int. Cl.² B67D 5/56**
**U.S. Cl. 222—129.4** **25 Claims**

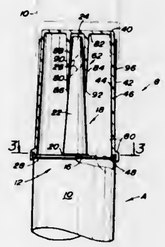


1. A liquid dispensing apparatus adapted to regulate liquid flow from a plurality of liquid containers which each have a liquid outlet therein, said apparatus comprising: a closed manifold having a liquid chamber for receiving liquid from said plurality of containers, a manifold liquid outlet communicating with said chamber and a plurality of container receiver means individually disposed along the manifold in fluid communication with said chamber, said receivers being dimensioned to receive and support said containers in a manner whereby all the liquid therein may be selectively emptied therefrom by gravity, said receiver means including means for locating said containers in said receiver means such as to provide a barometric pressure liquid outlet port for each of said plurality of containers, each of said outlet ports being open to atmosphere intermediate said manifold and the respective container and being disposed at a different vertical level than the liquid outlet ports of the remainder of said plurality, all the liquid outlet ports of said plurality being at least submerged in said liquid when said plurality of containers are in position on said receiver means so as to prevent liquid flow therefrom, the highest vertically disposed liquid outlet port for said containers having liquid therein being temporarily removed from submersion as a selected portion of liquid is removed from said manifold through said manifold outlet, whereby air may flow into said highest liquid outlet port for allowing liquid to flow therefrom until the original liquid level is reestablished to prevent further liquid flow.

## 3,930,599
## CAP FOR CAULKING CARTRIDGE

**Don R. Brothers, Canfield, and Stephen E. Toth, Brooklyn Heights, both of Ohio, assignors to Century Industries Corporation, New Waterford, Ohio**

**Continuation-in-part of Ser. No. 418,600, Nov. 23, 1973, abandoned. This application Feb. 14, 1975, Ser. No. 549,811**
**Int. Cl.² B65D *41/18***
**U.S. Cl. 222—143** **10 Claims**



1. The combination of an elongated dispensing caulking cartridge and protective cap therefor, said combination comprising:

an elongated tubular cartridge having at least one stationary closed end with a coaxial dispensing spout protruding outwardly therefrom, said spout generally converging from said closed end toward an outermost end, said cartridge further having means forming a bead disposed peripherally around said closed end for receiving and releasably retaining said cap on said cartridge;

a movable piston disposed within the cartridge remote from the closed end,

the protective cap comprising a generally cup shaped member having a top wall and a continuous side wall including inner and outer peripheral surfaces depending therefrom, the outermost edge of said side wall defining an open bottom end dimensioned to be axially received over said one end of said cartridge; an elongated dispensing spout receiver protruding from said top wall and substantially transverse thereto toward said open end, said receiver being dimensioned so as to receive an axial portion of said spout with a segment of said axial portion being closely embraced by said receiver; and means disposed at said open bottom for releasably retaining said cap generally coaxially disposed over said one end with said portion of said spout disposed in said spout receiver, said receiver and said spout being coaxially aligned when the cap is coaxially aligned with said one end,

said retaining means comprising a resilient bead receiver extending peripherially around at least portions of said side wall adjacent said open end dimensioned to closely receive said bead means,

said bead receiver comprising a generally U-shaped cross-section having a first lip substantially coplanar with said inner peripheral surface, a bead receiver top wall extending generally transversely outward of said outer peripheral surface and a second lip extending downwardly beyond said first lip generally parallel thereto, said second lip including a resiliently deformable locking bead dimensioned to be closely received over said bead means with said locking bead received on the side of said U-shaped cross-section spaced remote from said closed end,

means for releasing said retaining means from a retaining condition on said cartridge,

said dispensing spout having a generally circular cross-section, said dispensing spout receiver having a generally circular cross-sectional dimension to receive an axial portion of said spout from said outermost end and closely embrace at least a segment of said axial portion spaced from said outermost end,

at least the inner peripheral surface of said spout receiver tapering outwardly from said top wall over substantially the entire length thereof the outer peripheral surface of said spout receiver tapering inwardly from said top wall over substantially the entire length thereof, the taper of said inner peripheral surface being greater than the taper of said outer peripheral surface,

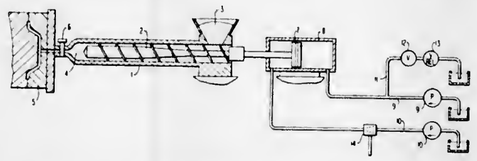
said top wall being dimensioned such that a portion of said cap from said top wall toward its open end is receivable in the other end of another cartridge identical to said cartridge in an end to end axial relationship, and

means on said cap for limiting the amount of insertion of said cap into said another cartridge without the cap top wall contacting the piston in said another cartridge.

## 3,930,600
## INJECTION MOLDING DEVICE WITH BACK PRESSURE CONTROL OF SCREW MOVEMENT

**Victor Thomas Gardner, Staniforth Road, Sheffield S9 4LS, England**

**Filed May 22, 1973, Ser. No. 362,772**
**Claims priority, application United Kingdom, May 30, 1972, 25245/72**
**Int. Cl.² B29F *1/06***
**U.S. Cl. 222—334** **4 Claims**



1. In injection molding apparatus of the type in which increments of plasticized material are intermittently supplied to mold means from a barrel provided with a screw operating on a cycle that includes (a) a shot preparation portion during which the screw is rotated to feed the material to be molded toward a front end of the barrel with the screw being allowed to move rearwardly in the barrel until enough material is accumulated in the front end portion of the barrel to fill a mold cavity and (b) an injection portion during which communication is established between the front end of the barrel and the mold cavity and the screw is thrusted forwardly in the barrel to inject the material from the front end portion of the barrel into the mold cavity, the combination comprising

a fluid cylinder having front and rear ends;

piston means operatively connected with said screw for reciprocation therewith and including a head movable forwardly and rearwardly in said cylinder; and

means operatively connected to both the front and rear ends of said cylinder for supplying fluid under predetermined pressure both to the front end and to the rear end of said cylinder throughout said shot preparation portion of said cycle to provide opposing forces on opposite sides of said head of such magnitude that a net force difference resists rearward movement of said head and of the screw connected therewith.

## 3,930,601
## SHEET MATERIAL PIN FEED TRACTOR MECHANISM

**Yoshihisa Masuda, Komaki, Japan, assignor to Centronics Data Computer Corporation, Hudson, N.H.**

**Filed Nov. 22, 1974, Ser. No. 526,372**
**Int. Cl.² G03B *1/30***
**U.S. Cl. 226—74** **23 Claims**

1. A tractor mechanism for advancing sheet material that has spaced apertures therealong; said mechanism comprising:

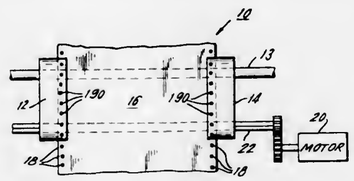
a. a supporting frame;



b. a drive sprocket having a plurality of grooves along the periphery thereof; a drive shaft on which said sprocket is mounted and which rotates said sprocket; said shaft being supported on said frame, thereby supporting said sprocket with respect to said frame;

c. a stationary, substantially U-shaped idler means; means on said frame supporting said idler means; the peripheral surface of said idler means and said sprocket defining an oval-shaped guide path;

d. closed loop belt means entrained around said sprocket periphery and said idler means peripheral edge and being




supported by and guided for motion around said sprocket and said idler means; said belt means spaced teeth;

e. a plurality of pin feed assemblies secured to and arrayed along each tooth of said belt means and having pin tabs that project to one side of said belt means, each pin tab having an upwardly extending feed pin for engaging the perforations in the sheet material;

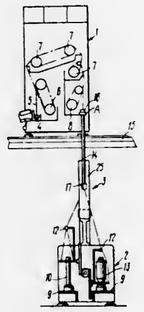
f. each of said assemblies having sprocket engaging elements on the tooth side of said belt selectively receivable by the sprocket grooves along said sprocket periphery, for rotating said belt and pin feed assemblies.

## 3,930,602
## APPARATUS FOR TRANSFERRING THREADS FROM THE SPINNING AND FINISHING PART OF A MACHINE FOR CONTINUOUS PRODUCTION OF ARTIFICIAL THREADS TO THE TAKE-UP AND WINDING ARRANGEMENT THEREOF

**Alexandr Kupriyanovich Vorobiev, ulitsa Ushinskogo, 39, korpus 1, kv. 24; Vladimir Anatolievich Goldin, Moskovsky prospekt, 195, kv. 157; Adolf Sergeevich Severin, Lesnoi prospekt, 37, korpus 5, kv. 525; Ljudmila Sergeevna Scherbakova, prospekt Kosmonavtov, 27, korpus 2, kv. 104, all of Leningrad; Nikolai Alexandrovich Orlov, prospekt Vernadskogo, 9/10, kv. 105, Moscow; Vsevolod Grigorievich Novitsky, Mosfilmovskaya ulitsa, 25, kv. 41, Moscow; Oleg Vladimirovich Tryaskin, ulitsa Stalevarov, 8/22, korpus 4, kv. 455, Moscow; Dmitry Pavlovich Olenin, Sumskoi proezd, 12, korpus 2, kv. 570, Moscow; Valery Iosifovich Nesvizhsky, prospekt Mira, 129, kv. 27, Moscow; Evsei Moiseevich Moglievsky, Kutuzovsky prospekt, 17, kv. 9, Moscow; Igor Petrovich Baksheev, proezd Shokalskogo, 53, kv. 140, Moscow; Georgy Georgievich Finger, ulitsa Matveevskaya, 4, korpus 2, kv. 21, Moscow; Ivan Gavrilovich Shimko, ulitsa Kominterna, 13/4, kv. 24, Moscow, and Gleb Alexandrovich Golubev, prospekt M.Toreza, 9, kv. 116, Leningrad, all of U.S.S.R.**

**Filed Oct. 4, 1974, Ser. No. 512,329**
**Int. Cl.² B65H *17/32***
**U.S. Cl. 226—91** **7 Claims**

1. An apparatus for transferring threads from the spinning-and-finishing part of a machine for continuous production of artificial threads to the take-up and winding arrangement thereof, comprising: a plurality of thread guiding tubes each having the inlet end thereof situated adjacent to said spinning and finishing part and having the outlet end thereof situated adjacent to said take-up and winding arrangement; a plurality of thread guides mounted on said ends of said tubes and adapted to center individual threads along the axes of respective tubes; an ejector means mounted on said inlet end of each said tube and adapted to feed respective threads into said tube by directing a stream of air toward said outlet end thereof; each of said thread guides mounted on said outlet ends of said tubes including a cup-shaped member having a bottom and a side wall; an aperture made in the center of said bottom of each said cup-shaped member; a port made in said side wall

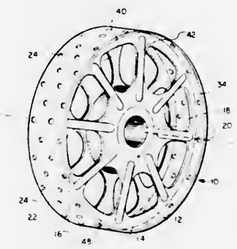


of each said cup-shaped member, having a size greater than that of said aperture and communicating therewith; a screen means mounted adjacent to said cup-shaped member of each said tube in opposition to said port thereof and adapted to separate the adjacent ones of said threads and to slow down the jet of air issuing from said tube together with a respective thread, as the latter is being fed through said tube.

## 3,930,603
## LOW INERTIA CAPSTAN

**Frederic F. Grant, Bellflower, Calif., assignor to Ampex Corporation, Redwood City, Calif.**

**Filed Nov. 2, 1973, Ser. No. 412,280**
**Int. Cl.² B65H *17/20***
**U.S. Cl. 226—190** **22 Claims**



1. A low inertia capstan for use in a digital magnetic tape transport comprising:

a generally cylindrical hub rotatable about a central axis thereof;

a pair of at least partially conical web elements mounted on opposite sides of the hub for rotation therewith, said web elements being circumferentially rigid to maintain a rim rotationally fixed relative to the hub and having thin walls which may be substantially flexed without permanent deformation; and

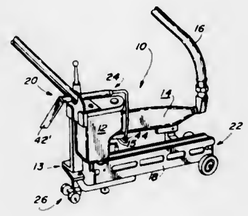
a hollow, generally cylindrical rim mounted on the pair of partially conical web elements.

**3,930,604**

## WALKING STICK AND STAPLE FASTENING TOOL

**Roy S. Pitkin, Jr., 2735 NE. 18th Ave., Portland, Oreg. 97212, and Timothy A. Pitkin, 53 SE. 74th Ave., Portland, Oreg. 97215**

**Filed June 3, 1974, Ser. No. 475,666**
**Int. Cl.² B25C** *5/10*
**U.S. Cl. 227—8** **3 Claims**



1. In a stapler tool for use on roofing decks of the class described, a frame, a tool handle on said frame, a staple driver head mounted on said frame, a handle connected to said head adjacent to the top thereof and extending in a direction opposed to the staple driver, a staple magazine connected to said head adjacent the base thereof, a trigger pivotally connected to the under side of the handle adjacent to the head thereof, and a deck contact trip assembly mounted on said head said trigger and said deck contact trip assembly being simultaneously actuatable to operaate said staple driver head, said deck contact trip assembly comprising a trip lever and a trip guide, a contact trip lever arm slidingly engaging said trip guide for movement in the vertical direction thereon and extending downwardly and outwardly from engagement therewith, deck contacting means mounted on said contact trip lever arm extending downward therefrom substantially in line with the staple driver; a heel end pivot means mounted on the magazine on the end thereof opposed to the head of the frame, a walking stick means removably mounted on the upper portion of the head of the frame extending upwardly and outwardly therefrom, and an operator actuated trigger actuating means mounted on the walking stick assembly adjacent to the top of the head, whereby the operator may actuate the trigger and by shifting the terminal free end of the walking stick trip the contact trip assembly to drive a staple.

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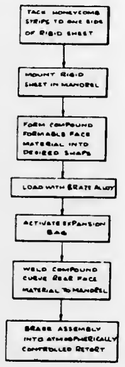
**3,930,605**

## METHOD OF FABRICATING A CONFORMABLE SANDWICH STRUCTURE

**Peter S. Merrill, San Diego, and Richard S. Mueller, Lakeside, both of Calif., assignors to International Harvester Company, San Diego, Calif.**

**Filed Aug. 6, 1973, Ser. No. 386,141**
**Int. Cl.² B23K** *31/02*
**U.S. Cl. 228—190** **3 Claims**

1. A method of fabricating a sandwich structure comprising the steps of:
forming a rigid sheet to the desired configuration;
securing a core to one face of said rigid sheet;
placing said rigid sheet with said core secured thereto in abutment to a mandrel;
forming a compliant sheet to the desired configuration;
placing said formed compliant sheet in complementary juxtaposition to said core;
securing said compliant sheet to said mandrel to form a hermetic chamber;
creating a vacuum between said core and said compliant




sheet, whereby said sheet is caused to abut said core; and securing said compliant sheet to said core.

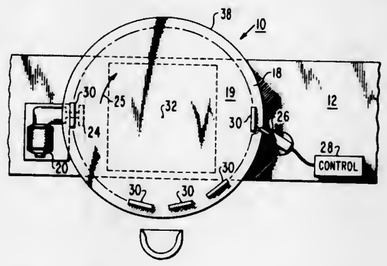
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**3,930,606**

## METHOD AND APPARATUS FOR SECURING WIRES TO CONNECTOR TERMINALS

**George Franklyn Dewdney, Huntington Beach, Calif., assignor to RCA Corporation, New York, N.Y.**

**Filed May 20, 1974, Ser. No. 471,782**
**Int. Cl.² B23K** *1/12*; **H01R** *5/04*
**U.S. Cl. 228—232** **7 Claims**




1. A method of soldering a wire to a terminal comprising: positioning each of a plurality of terminals at a given position, releaseably securing a separate, different wire to each of said terminals,
disposing a heat shrinkable tube and solder ring about each said wire at said terminals, and
directing a stream of hot gaseous fluid at said given position at a gradually increasing temperature and pressure for melting said solder and shrinking said tube.

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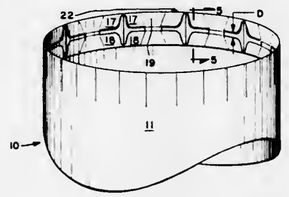
**3,930,607**

## CONTAINER AND BLANKS THEREFOR

**Ernest L. Smith, Kansas City, Mo., assignor to Phillips Petroleum Company, Bartlesville, Okla.**

**Filed Jan. 20, 1975, Ser. No. 542,287**
**Int. Cl.² B65D** *5/12*, *13/04*
**U.S. Cl. 229—5.5** **34 Claims**

1. A container comprising:
a tubular body having a first end and a second end;
a first closure engaging means associated with said first end of said tubular body, said first closure engaging means comprising a plurality of closure engaging panels connected by a first hinged line of attachment to, and folded inwardly from, said first end of said body; each said closure engaging panel comprising:
1. a bonding strip located along the side of said engaging panel opposite said first hinged line of attachment to said first end of said body, said bonding strip adhered to the inside surface of said body;
2. at least one closure supporting panel group, each said supporting panel group comprising two inner supporting panels attached to said bonding strip along a second hinged line of attachment; and




3. a plurality of spacing panels positioned so that each end of each said supporting panel group is adjacent a spacing panel;
first closure means adapted to be operably engaged to said first closure engaging means;
a second closure engaging means associated with said second end of said tubular body; and
second closure means adapted to be operably engaged to said second closure engaging means.

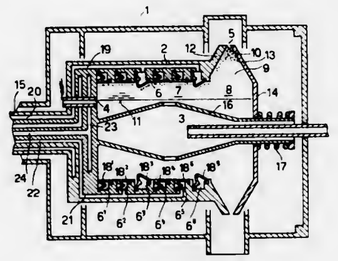
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**3,930,608**

## CENTRIFUGE

**Martin Baram, Delft, Netherlands, assignor to Escher Wyss Limited, Zurich, Switzerland**

**Filed Sept. 10, 1973, Ser. No. 396,056**
**Claims priority, application Denmark, Sept. 11, 1972, 4469/72**
**Int. Cl. B04b** *1/12*
**U.S. Cl. 233—3** **6 Claims**




1. A centrifuge comprising a solid-walled drum having an inlet for a mixture of liquid and solids which is to be centrifuged, and overflow for the clarified liquid, and an outlet for the solids; and pushing means for controlling movement of the solids in the drum towards said outlet, and characterized in that the drum is subdivided into two zones, the pushing means being located in the first zone and arranged to move solids through this zone and into the second zone, and the second zone having a deposition channel for solids which is located outside the region of the pushing means and has said outlet for solids located at its bottom.

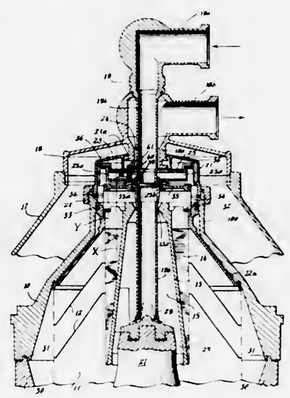


**3,930,609**

## CENTRIFUGE PREVENTING AIR ADMISSION DURING SLUDGE DISCHARGE

**Kurt Nelson, Wappingers Falls, N.Y., assignor to The De Laval Separator Company, Poughkeepsie, N.Y.**

**Filed Aug. 5, 1974, Ser. No. 494,961**
**Int. Cl.² B04B** *1/14*
**U.S. Cl. 233—20 A** **7 Claims**



1. A sludge centrifuge comprising a centrifugal bowl rotatable about an axis and forming a separating chamber having an inlet for a mixture of liquid and solids, the bowl also forming a paring chamber communicating with the separating chamber for receiving therefrom a liquid separated as a relatively light component from said mixture, the separating chamber having an outer sludge space for receiving solids separated from said mixture as a relatively heavy sludge component, means for alternately opening and closing the outer periphery of the bowl to discharge sludge intermittently from said sludge space, a stationary paring disk in the paring chamber for discharging separated liquid from the bowl while its said outer periphery is closed to maintain a normal liquid level in the bowl, said liquid level moving radially outward from the bowl axis in response to opening of the bowl's outer periphery, the paring chamber having an air passage at its radially inner portion for discharging air from the bowl to atmosphere while the liquid is at said normal level, a dam rotating with the bowl and located therein to limit said outward movement of the liquid level in the paring chamber, thereby maintaining a minimum liquid level in the paring chamber during said sludge discharge, and means in the paring chamber operable at said minimum liquid level to prevent air from being sucked into the bowl through said air passage during said sludge discharge.

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**3,930,610**

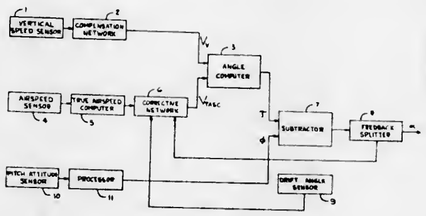
## METHOD AND APPARATUS FOR OBTAINING ACCURATELY THE ANGLE OF ATTACK OF AN AIRCRAFT

**Jean-Guy Hache, 453 Charlevoix, Apt. 5, Longueuil, Quebec, Canada**

**Filed June 3, 1974, Ser. No. 475,863**
**Int. Cl.² G06G** *7/78*
**U.S. Cl. 235—150.2** **3 Claims**

1. A system for generating a signal representative of the angle of attack of an aircraft using vertical speed, air speed and pitch attitude data, said system comprising means for generating a pitch attitude signal proportional to aircraft pitch attitude, a processor for receiving said pitch attitude signal and for developing therefrom an output signal the magnitude and sense of which vary as a function of the aircraft chord line

angle, means for generating a relative wind angle signal, comparison means for receiving and differentially combining said relative wind angle signal and the output signal from said processor so as to produce a signal whose magnitude and sense are respectively definitive of the extent and direction of the aircraft angle of attack, said means for generating a relative wind angle signal including an airspeed sensor for producing an airspeed signal, a corrective network connected to the output of said airspeed sensor for correcting said airspeed signal so as to provide a true airspeed signal, drift angle sensor means for generating a drift angle signal, means for connecting said drift angle signal to said corrective network and feedback means for connecting the output of said comparison means to said corrective network.



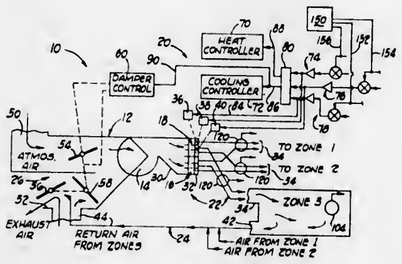

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**3,930,611**

**AIR CONDITIONING CONTROL SYSTEM AND METHOD**

**Merlin E. Demaray, Columbus, Ohio, assignor to Ranco Incorporated, Columbus, Ohio**

**Filed July 18, 1974, Ser. No. 490,420**
**Int. Cl.² G05D** *23/24*; **F24F** *11/08*
**U.S. Cl. 236—1 B** **1 Claim**




1. In a system for governing air temperatures in zones of a multiple zone structure including circulating means for directing a forced flow of zone heating medium toward the zones, heating means for heating the medium flowing toward the zones, control means for governing operation of said heating means in response to an electrical input condition signal having a value which varies according to a reference value, said control means comprising a plurality of input signal producing circuit means each associated with a respective zone, a plurality of zone air temperature sensors each associated with a respective input signal producing circuit means and each producing an electrical zone air temperature signal which varies relative to a reference value in response to sensed changes in air temperature in the associated zone, a plurality of supply medium temperature sensors each associated with a respective input signal producing circuit means and each producing an electrical supply medium temperature signal which varies relative to a reference value in response to sensed changes in supply medium temperature flowing to the associated zone, said input signal producing circuit means individually responding to said zone air temperature signal and said supply medium temperature signal to produce an input condition signal, analyzer circuitry for selecting an input condition signal having an extreme value and transmitting said selected input condition signal to said control means, and, zone set back means including temperature set back signal source circuitry for producing a predetermined temperature set back signal and connecting means for connecting said set back signal source circuitry to each of said input signal producing circuit means so that said set back signal effectively replaces the supply medium temperature signal from the supply medium temperature sensors of each input signal producing circuit means connected to said set back signal source circuitry and the input condition signal value produced by any input signal producing circuit means connected to said set back signal source circuitry and selected by said analyzer circuitry is unaffected by the sensed temperature of heating medium supplied to that zone.

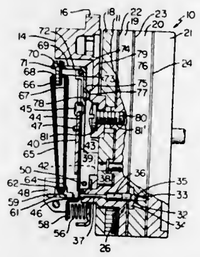
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**3,930,612**

**HUMIDITY CONTROL SYSTEM AND HUMIDITY RESPONSIVE CONTROL DEVICE THEREFOR**

**Harold G. Brakebill, and Jay L. Lewis, both of Concord, Tenn., assignors to Robertshaw Controls Company, Richmond, Va.**

**Filed Aug. 21, 1974, Ser. No. 499,315**
**Int. Cl.² G05D** *22/00*
**U.S. Cl. 236—44 R** **16 Claims**



1. A fluid pressure transmitter comprising frame means, valve seat means carried by said frame means, a flapper spring lever pivotally carried by said frame means in a cantilevered manner and having a free end means for controlling said valve seat means whereby the position of said end means relative to said valve seat means determines the degree of fluid flow through said valve seat means, said flapper spring lever having a normal bias to tend to move said end means thereof to one of its pivoted positions relative to said valve seat means, an actuating lever pivotally carried by said frame means, a condition responsive means operatively interconnected to said actuating lever to pivot said lever in relation to the condition sensed thereby, and a compression spring disposed between and engaging said actuating lever and said end means of said flapper lever to control movement of said end means relative to said valve seat means in relation to pivoting movement of said actuating lever by said condition responsive means.

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**3,930,613**

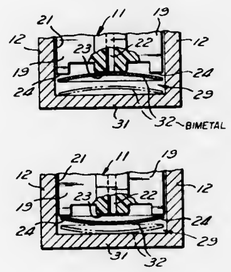
**CHECK VALVE HAVING TEMPERATURE RESPONSE**

**Donald E. Place, Mansfield, Ohio, assignor to Therm-O-Disc Incorporated, Mansfield, Ohio**

**Filed Oct. 18, 1974, Ser. No. 515,834**
**Int. Cl.² G05D** *23/10*
**U.S. Cl. 236—48 R** **16 Claims**

1. A thermally responsive check valve comprising a body assembly providing a chamber open for flow of fluid therethrough and a port open to said chamber through a valve seat, a bimetallic snap disc in said chamber movable with snap action between first and second positions upon reaching predetermined operating temperatures, said disc in said first position operating as a check valve and being movable into and out of engagement with said valve seat to allow flow only from said port to said chamber, said disc in said second position terminating said check valve operation and rendering said valve in the same condition with respect to flow in both directions through said valve seat.

14. A thermally responsive check valve comprising a body assembly defining a valve chamber and providing first and second ports open to said chamber with a circular valve seat around said first port, a bimetal snap disc in said chamber movable with snap action between first and second positions of stability upon reaching predetermined operating temperatures, said disc in said first position of stability providing check valve operation by engaging said seat and preventing flow from said chamber into said first port when the pressure in said chamber exceeds the pressure in said first port and being unseated and allowing flow from said first port to said chamber when the pressure in said first port exceeds the pressure in said chamber, movement of said disc to said second position terminating said check valve operation.



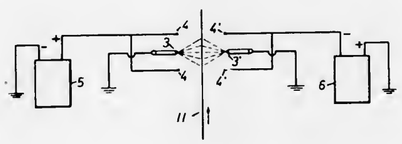

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**3,930,614**

**DEVICE FOR SPRAYING A TRAVELING PAPER WEB OR THE LIKE**

**Bernhard Krenkel, Heidenheim, Germany, assignor to J. M. Voith GmbH, Heidenheim, Germany**

**Filed Sept. 9, 1974, Ser. No. 504,140**
**Claims priority, application Germany, Sept. 14, 1973, 2346371**
**Int. Cl.² B05B** *5/00*; **F23D** *11/28*
**U.S. Cl. 239—15** **3 Claims**



1. Device for spraying a traveling paper web or the like with a liquid under the influence of an electrostatic high voltage comprising spray nozzle means for spraying the liquid through a given space and onto the web, high voltage source means, electrode means connected to said high voltage source means and energizable thereby to ionize the space through which the liquid is sprayed, and means for grounding the web and said spray nozzle means, said spray nozzle means and said electrodes each being disposed on both sides of a path through which the web travels and each being located opposite one another.



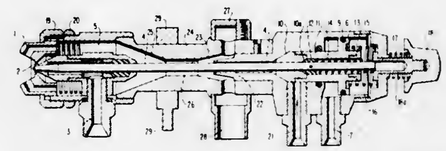
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**3,930,615**

**SPRAY GUN WITH LOW PRESSURE AIR**

**Irmgard Farnsteiner, Residence Auteuil, Bd du Tenao, Monte Carlo, Monaco**

**Filed Jan. 28, 1975, Ser. No. 544,750**
**Claims priority, application France, Feb. 1, 1974, 74.04744**
**Int. Cl.² F23D** *11/16, 13/40, 15/00*
**U.S. Cl. 239—419.5** **4 Claims**



1. In a spray gun comprising a gun body, a liquid outlet from the gun body for liquid to be atomized, means to supply liquid to said outlet, a stem reciprocable in the body to open and close the outlet, means to reciprocate the stem in the body, means to supply compressed air to the body to atomize the liquid emerging from said outlet; the improvement comprising a venturi throat in said body through which said compressed air passes, means to induct atmospheric air into said venturi thereby to reduce the pressure of the air that emerges from said venturi, valve means for the inlet of said compressed air, said valve means comprising an annular member surrounding said stem and reciprocable lengthwise with said stem to open and close said inlet for said compressed air, said valve means comprising an annular piston reciprocable in said body and surrounding said stem, and means to supply compressed air to said piston to reciprocate said piston to open and close said compressed air inlet and said liquid outlet.

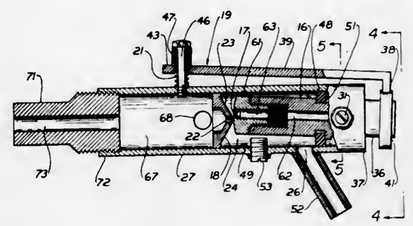
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**3,930,616**

**WATER BLAST APPARATUS**

**Frank N. Winter, 1450 Wainwright, San Leandro, Calif. 94577**

**Filed Oct. 7, 1974, Ser. No. 512,419**
**Int. Cl.² B05B** *7/02, 1/08, 1/30*; **A62C** *23/06*
**U.S. Cl. 239—525** **13 Claims**

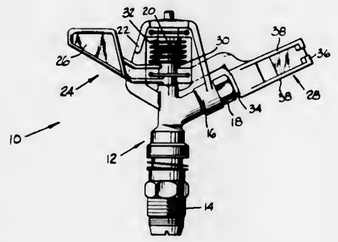


1. A water blast apparatus comprising:
a nozzle adapted for connection to a source of fluid under pressure and having a port for discharging a jet of said fluid;
a wall mounted in spaced relation to said port and providing a fluid diversion passageway therebetween;
said wall and nozzle being mounted for relative displacement into and out of wall intersecting relation to said jet while maintaining said spaced relation, said wall in said jet intersecting relation diverting the fluid in said jet into said passageway, said passageway being formed and dimensioned to provide substantially unimpeded flow of fluid from said port in said wall jet intersecting relation; and
manually engageable means connected to said wall and nozzle for effecting said relative displacement.

## 3,930,617
## IMPACT SPRINKLER

**Charles William Dunmire, Fresno, Calif., assignor to Johns-Manville Corporation, Denver, Colo.**

**Filed Nov. 25, 1974, Ser. No. 526,766**
**Int. Cl.² B05B 3/04, 3/16; F16C 33/20**
**U.S. Cl. 239—230** **6 Claims**



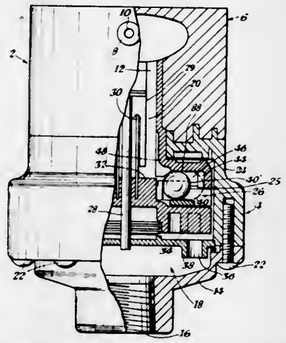
1. An impact-type sprinkler, comprising:
a. a main body including
i. a nozzle, and
ii. a cylindrical water deflector support pin positioned above and to one side of said nozzle;
b. a plastic water deflector including a water deflecting segment, said deflector being mounted for pivotal movement about said support pin such that said water deflecting segment moves into and out of a jet of water issuing from said nozzle as said deflector pivots about said pin; and
c. said water deflecting segment including
i. a first substantially flat water deflecting surface extending away from said nozzle for receiving water issuing from said jet and deflecting said water further away from said nozzle, said surface including opposite ends, one end of which is further from said nozzle than the other end and opposite sides extending between said opposite ends,
ii. opposite side walls extending the length of said water deflecting segment and respectively extending out from said opposite sides of said first surface for defining the lateral extent of said first surface, and
111. a pair of second water deflecting surfaces extending out from and joining said further end of said first surface for receiving and deflecting some but not all of the water deflected from said first surface, said second surfaces extending towards each other from said opposite side walls and facing back towards the end of said first surface closer to said nozzle but being spaced from another so as to define a slot therebetween, said slot being approximately centrally located between the side walls so that the water which is deflected from said first surface approximately centrally between said side walls passes through said slot without being deflected by said second surfaces.

## 3,930,618
## BALANCED SPRINKLER IMPACT DRIVE

**George Lockwood, 2125 NE. 27th Drive, Wilton Manors, Fla.**

**Filed Mar. 19, 1975, Ser. No. 559,839**
**Int. Cl.² B05B 3/04**
**U.S. Cl. 239—230** **14 Claims**

1. A sprinkler relatively free of radial vibrations comprising:
a sprinkler body,
a sprinkler head, movably connected to said body, and
a sprinkler drive system,
said sprinkler body including a fluid inlet for receiving fluid supplied to said inlet and a fluid outlet connected to said inlet,
said sprinkler head including a fluid inlet connected to said sprinkler body fluid outlet, and a fluid outlet connected to said sprinkler head inlet for distributing the fluid from the sprinkler,
said drive system positioned in respect to the sprinkler to move said sprinkler head relative to said sprinkler body said drive system including a plurality of driven surface means and impact drive means,

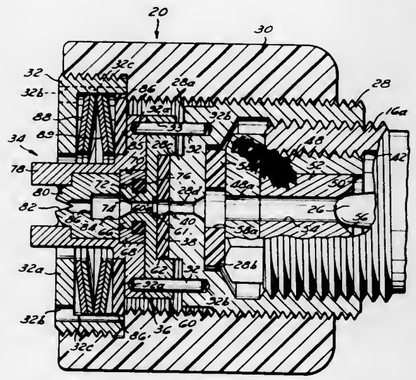


said impact drive means including at least two independent striker means for intermittently contacting said driven surface means to rotate said sprinkler head, and
a fluid control means positioned in respect to the sprinkler to provide a fluid driving force for rotating said impact drive means.

## 3,930,619
## ADJUSTABLE ORIFICE SPRAY GUN

**Gustave S. Levey, and Edward Moser, both of Houston, Tex., assignors to Gustave S. Levey, Houston, Tex.**

**Filed Nov. 18, 1974, Ser. No. 524,416**
**Int. Cl.² B05B 7/02, 1/30, 1/00**
**U.S. Cl. 239—526** **12 Claims**



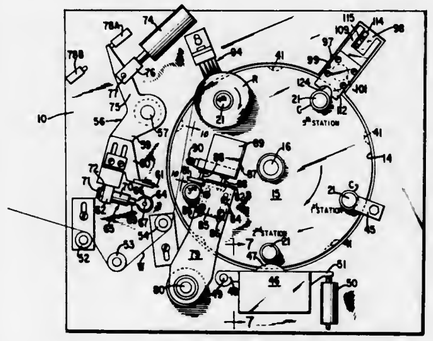
1. An airless paint spray gun comprising a body portion having a conduit adapted to be connected at its inlet end to a source of liquid paint under pressure and adapted to have a spray tip having an elongated spray opening connected to the discharge end thereof, pre-orifice means adjacent the discharge end of said conduit including an elastomeric disc having a central aperture forming an axially extending pre-orifice opening adjustable in cross-sectional area, said pre-orifice means including relatively movable rigid wall means engaging and confining the opposite sides of said disc radially outward from the central aperture thereof, said relatively movable wall means having axial openings aligned with and of substantially no greater diameter than said central aperture, and manually operable means associated with said pre-orifice means operable to move said relatively movable wall means toward each other to elastically deform said disc and to reduce the diameter of said pre-orifice opening to a diameter less than those of said axial openings.



## 3,930,620
## TURRET REWINDER

**Charles M. Taitel, Parsippany, N.J., assignor to Compensating Tension Controls Inc., Orange, N.J.**

**Filed Apr. 18, 1974, Ser. No. 461,935**
**Int. Cl.² B65H 19/20**
**U.S. Cl. 242—56 A** **14 Claims**



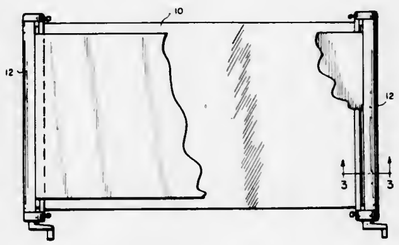
1. Web rewinding apparatus comprising in combination a frame, a turret mounted for rotation with respect to said frame, a plurality of spindles carried by the turret for receiving web roll cores, said spindles being equally spaced around the edge of the turret, at least four equally spaced stations on said frame adjacent the periphery of said turret, the first station being for placement of web roll cores on the spindles, means for rotating the spindles, means for rotating said turret in steps to sequentially position each of said spindles at each of said stations, means at said second station for applying glue on the cores, means for feeding web from a supply to the core at the fourth station, and means at said third station for cutting the web extending to the fourth station and applying the end of the web extending from said supply to the core at the third station, said means for rotating said spindles including a plurality of rotary elements carried by said turret, each operatively connected to one of said spindles, a double-faced endless drive member, means for driving said endless drive member including two frame mounted rotary elements positioned at widely spaced points about the periphery of said turret, one face of said endless drive member being in driving contact with said two frame mounted rotary elements and the opposite surface being in contact with said spindle rotary elements positioned between said frame mounted rotary elements.

## 3,930,621
## PAPER HOLDING ATTACHMENT FOR DRAFTING BOARDS

**Russell J. Wood, Bailey Road, Lanesboro, Mass. 01237**

**Filed June 24, 1974, Ser. No. 482,081**
**Int. Cl.² B65H 17/02**
**U.S. Cl. 242—67.1 D** **10 Claims**

1. A paper holding attachment for use with drafting boards, comprising an elongate hollow housing defining an interior paper holding chamber whose interior wall is cylindrically concave for receiving a roll of drafting paper, said housing having an opening lengthwise thereof through which the paper may be slipped into or out of the chamber, means for supporting the housing at an edge of the drafting board below the surface with the opening parallel to said edge and substantially at the level of the surface of the board, said means providing an upwardly inclined apron over which the paper from the opening travels to the plane of the board, a rotor mounted in the chamber in concentrical relation thereto for rotation about said axis upon which the paper is adapted to be wound, spring members comprising coils mounted interiorly of the chamber from the concave wall, said spring members extending along arcuate paths of descreasing radius of curvature into

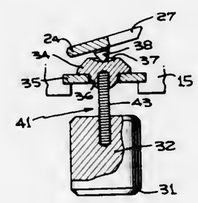


engagement with the rotor and said chamber being provided with axially spaced openings in its wall through which the spring members can be withdrawn to positions such that only their distal ends are engaged with the inner side of the wall.

## 3,930,622
## ENERGY STORING SAFETY BELT RETRACTOR

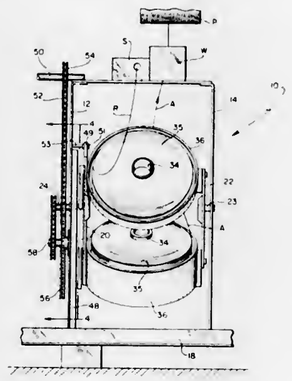
**Akira Tanaka, Northridge, and Avraham Ziv, Sepulveda, both of Calif., assignors to American Safety Equipment Corporation, Encino, Calif.**

**Filed June 13, 1974, Ser. No. 478,841**
**Int. Cl.² B65H 75/48**
**U.S. Cl. 242—107.4** **20 Claims**



1. A positively locking mechanism for a seat belt retractor, which locks the retractor against further protractive movement of the belt when the vehicle upon which the retractor is mounted undergoes a change in inertia during a crash or other sudden deceleration, including a ratchet wheel with teeth thereon and a lock bar which engages the ratchet wheel on being actuated by the locking mechanism to prevent rotation of the ratchet wheel, said mechanism comprising:
a. vehicle inertia responsive means on said retractor for sensing changes in the inertia of the vehicles; and
b. energy storing means in force transmitting relationship between said vehicle inertia responsive means and said lock bar for receiving and storing energy imparted thereto by movement of the vehicle inertia responsive means and for urging said lock bar toward locking engagement with said ratchet wheel through a pawl bounce condition when said lock bar initially bounces off a tooth of said ratchet wheel before attaining a locking engagement with said wheel.

**3,930,623**
**PACKAGE SUPPLY DEVICE**
**Richard I. Walden, Warwick, R.I., assignor to Leesona Corporation, Warwick, R.I.**
**Filed Dec. 23, 1974, Ser. No. 536,019**
**Int. Cl.² B65H 49/02; D03J 5/08; D02H 1/00**
**U.S. Cl. 242—131** **7 Claims**

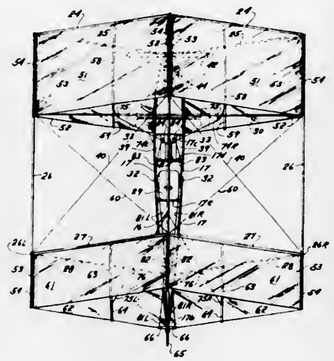


1. An automatic package supply device for presenting a fresh package of yarn for winding to an automatic winding machine having means for rotating a delivery package to wind yarn thereon, an unwinding station, a reserve station and means for uniting yarn from said reserve station to yarn on said delivery package upon a signal created by the absence of an active unwinding yarn end at said unwinding station comprising;
a pair of side supporting members,
an endless cam track mounted on one of said supporting members,
a pair of parallel vertically orientated carrier plates supported by said supporting members for rotation about a horizontal axis,
a pair of package supporting members mounted in opposed relation on
said carrier plates for independent swingable movement therebetween,
each of said members having a cam follower fixedly mounted therewith on one side thereof,
each of said cam followers having a cam in turn engaged with said cam track,
each of said members adapted to receive a yarn package wherein a first member supports a package having yarn in an active unwinding position and the second member supports a package having yarn in a reserve position and,
means for rotating said carrier plates a fixed arc upon said signal whereupon said pair of members move in different cam controlled attitudes to present said first member to a reserve position and said second member to an active position.

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**3,930,624**
**AIRCRAFT**
**Richard R. Thompson, 732 S. Matlack St., West Chester, Pa. 19380**
**Filed July 9, 1973, Ser. No. 377,469**
**Int. Cl.² B64C 1/00**
**U.S. Cl. 244—13** **20 Claims**

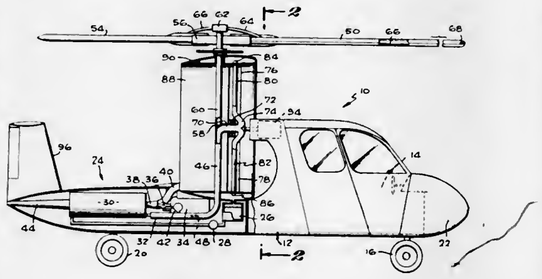
1. An aircraft having a major longitudinal strength structure generally centralized in the vertical midplane,
shallow V-shaped wing structures, viewed from above, secured to said strength structure, one at the top and one at the bottom of said strength structure, said wing structure comprising paired upper and lower panels, and



control linkages being positioned and connected to act as stays between said paired upper and lower wing panels.

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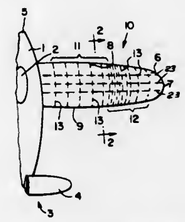
**3,930,625**
**STEAM-POWERED AIRCRAFT**
**Alexander Krivka, P.O. Box 251, Woodland Hills, Calif. 91364**
**Continuation-in-part of Ser. No. 399,984, Sept. 24, 1973, abandoned, which is a continuation of Ser. No. 295,179, Oct. 5, 1972, abandoned. This application Sept. 3, 1974, Ser. No. 502,271**
**Int. Cl.² B64C 27/08, 27/16**
**U.S. Cl. 244—17.21** **20 Claims**



1. A vehicle comprising:
a fuselage, steam-generating means on said fuselage for generating steam under pressure on said fuselage;
a forwardly-directable propeller comprised of a plurality of propeller blades rotatably mounted on said fuselage, a substantially circumferentially-directed jet positioned substantially on the tip of one of said propeller blades, a pipe connected between said steam-generating means and said propeller tip jet for delivering steam under pressure to said propeller tip jet to cause rotation of said propeller;
a shroud positioned around the path of said propeller tip jet, said shroud having an annular space therein, and said propeller tip jet extending into said annular space so that steam discharged from said propeller tip jet is discharged into the annular space in said shroud so that steam is condensed within said shroud.



**3,930,626**
**AIRPLANE WING CAMBER CONTROL**
**Thomas L. Croswell, Jr., 1703 Hunts End Court, Vienna, Va. 22180**
**Division of Ser. No. 390,399, Aug. 22, 1973, Pat. No. 3,885,758, which is a continuation-in-part of Ser. No. 201,417, Nov. 23, 1971, abandoned. This application Sept. 25, 1974, Ser. No. 509,119**
**Int. Cl.² B64C 3/44**
**U.S. Cl. 244—44** **9 Claims**



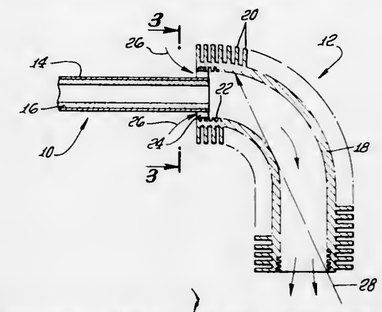
1. A fluid flow affecting generally planar member having opposed fluid flow surfaces on opposite sides of a geometric central plane, defining generally a leading edge and a trailing edge with respect to the relative flow direction; structural means maintaining said member in a particular geometric shape with a relatively fixed curvature for said central geometric plane; said structural means at least in part being constructured of an electrostrictive material having an orientation such that with a voltage application, the electrostrictive material will change in shape to correspondingly change the shape of said structural means and thereby correspondingly warp the member and change the curvature of its geometric central plane; and electrical drive means for selectively impressing a voltage upon said electrostrictive material.

7. A method for controlling the curvature of a fluid flow control member having a leading edge generally transverse to the fluid flow, a trailing edge generally transverse to the fluid flow, opposed surfaces over which the fluid flows, which surfaces are on opposite sides of a geometric central plane having a predetermined normal curvature, and structural means on opposite sides of said plane to maintain said control member in the predetermined curvature of said geometric central plane, comprising the steps of: orienting electrostrictive material as an integral part of the structural means so that with a voltage applied to the electrostrictive material, it will change in length to correspondingly change the effective length of the structural means and warp the control member as defined by a change in curvature of the geometric central plane; and selectively applying a voltage to the electrostrictive material in an amount and of a characteristic to provide a desired curvature of the control member.

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**3,930,627**
**RADIATION SHIELDING AND GAS DIFFUSION APPARATUS**
**Robert C. Miller, Encino, Calif., assignor to Summa Corporation, Culver City, Calif.**
**Continuation-in-part of Ser. No. 403,167, Oct. 3, 1973, abandoned. This application Jan. 29, 1975, Ser. No. 545,094**
**Int. Cl.² B64C 1/40**
**U.S. Cl. 244—121** **80 Claims**

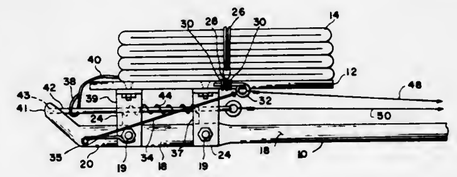
1. A device for shielding a heated surface from infrared detection through an opening adjacent the heated surface comprising:
a gas conducting member adapted to receive heated gases from the opening;
said member being formed of a material which has a high heat conductivity;
said member having an interior surface and an exterior surface separated by a wall, an inlet for receipt of heated gases and an outlet for discharge of heated gases;
said member having a configuration which blocks said inlet from line-of-sight view through said outlet;
said interior surface having a configuration which shields a portion of said interior surface against contact with heated gases passing through said member, and
means to promote heat transfer through said wall from said interior surface to said exterior surface,



whereby heat transfer from the heated gases to said interior surface is reduced by the lack of contact between the heated gases and said shielded portions of the interior surface while heat received by the member at said interior surface is rapidly removed from the member by said second means to maintain said member at a relatively low temperature with respect to the temperature of said heated gases.

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**3,930,628**
**DEPOLY/RELEASE SYSTEM**
**David B. Robelen, Newport News, Va., assignor to The United States of America as represented by the National Aeronautics and Space Administration, Office of General Counsel-Code GP, Washington, D.C.**
**Filed Nov. 27, 1974, Ser. No. 527,727**
**Int. Cl.² B64D 25/00**
**U.S. Cl. 244—139** **8 Claims**

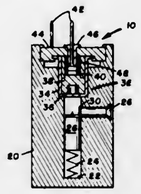


1. Apparatus for arresting uncontrollable motions of a model aircraft comprising in combination:
a model aircraft;
a parachute having shrouds connected to one end of a riser; said riser having a closed loop at the other end thereof; a platform firmly attached to said model aircraft for supporting said parachute during normal aircraft flight; and parachute being releasably held in a suitably folded position on said platform by an elastic band having one end thereof securely fastened to said platform and having a metal loop at the other end thereof; said metal loop being releasably fastened to said platform by a release pin; a frame means for firmly attaching said platform to said aircraft; said frame means having a plunger slidably mounted thereon; said plunger being inserted through said loop of said riser for holding said parachute after said parachute has been deployed; a deploy means for releasing said release pin in response to a deploy signal thereby deploying said parachute; and jettison means for slidably moving said plunger in response to a jettison signal thereby jettisoning said parachute.

### 3,930,629
### OVERHEATED JOURNAL BEARING DERAILMENT PREVENTION SYSTEM

John H. Armstrong, Silver Spring, and Frank C. Kluge, Takoma Park, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 7, 1974, Ser. No. 495,478
Int. Cl.² B61K 9/04
U.S. Cl. 246—169 A 21 Claims

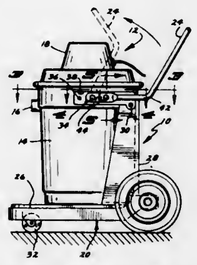


1. In combination with a train car a thermal sensor and actuator system for monitoring bearing temperature and actuating the train brake system at a predetermined temperature comprising:
- a thermal sensor positioned approximate the train journal bearings to release an impact member at a predetermined temperature;
- signal producing means cooperating with said thermal sensor to produce an output signal; and
- electroexplosive means responsive to said output signal to vent the brake lines on said train car to stop said train car.

### 3,930,630
### VACUUM CLEANER SUPPORT APPARATUS

Richard F. Wulff, Long Lake, Minn., assignor to Advance Machine Company, Spring Park, Minn.

Filed Aug. 5, 1974, Ser. No. 494,520
Int. Cl.² B62B 3/08
U.S. Cl. 248—129 10 Claims

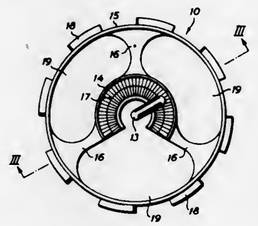


1. Apparatus for tilting the collecting chamber of a vacuum cleaner comprising in combination:
- a. a chassis;
- b. first means for allowing movement of the chassis over a floor surface;
- c. second means for pivotally mounting the collecting chamber to the chassis about a pivot point;
- d. a handle having a gripping portion;
- e. third means for pivotally interconnecting the handle to the second means; and
- f. fourth means for locking the handle relative to said second means in a first push position and a second tilt position, the first push position allowing the application of a force to the gripping portion of the handle to be transferred to the chassis to cause movement of the chassis over the floor surface, and the second tilt position being rotated from the first push position to allow the application of a force to the gripping portion to pivot the second means about the pivot point to therefore tilt the collecting chamber to allow emptying the contents therefrom.

### 3,930,631
### MOUNTING DEVICE PARTICULARLY FOR CEILING OR WALL FITTINGS

Sven Laarm, Husarvagen 1c, S-230 50 Bjarred, Sweden

Filed Nov. 4, 1974, Ser. No. 520,316
Int. Cl.² F21S 1/02, 1/06; F16M 13/00
U.S. Cl. 248—343 7 Claims

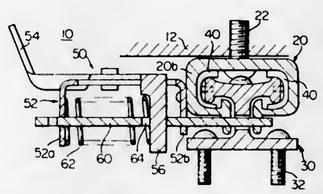


1. A mounting device for a ceiling or wall fitting, comprising a first member adapted to engage attachment means disposed in a mounting surface, and a second member having means to engage complementary attachment portions of said first member for bringing said first and second members into positive engagement with each other, said first member being formed with a groove which follows a helical path around said attachment means so that rotation of said first member is one sense about said attachment means brings said attachment means gradually into firm engagement with said first member to urge said first member against said mounting surface.

### 3,930,632
### ADJUSTABLE SEAT ASSEMBLY

Masahiko Shigeta, Isehara; Gonshiro Miyoshi, Hiratsuka; Hisakazu Murakami, Fujisawa, and Shoji Ogata, Ohta, all of Japan, assignors to Nissan Motor Company Limited, Yokohama and Ichikoh Industries Limited, Tokyo, both of, Japan

Filed Dec. 26, 1973, Ser. No. 427,901
Claims priority, application Japan, Dec. 27, 1972, 47-148046
Int. Cl.² F16M 13/00
U.S. Cl. 248—429 6 Claims



1. An adjustable seat assembly of a vehicle comprising a seat cushion; a frame mounting the seat cushion thereon; a pair of box-section upper guide rails each having a top panel secured to the frame of the seat cushion, a base panel through which an opening is formed throughout the length of the upper rail, two side panels interconnecting the top and base panels and two upper rail vertical flanges integrally on and at right angle to the respective edges of the opening of said base panel, forming therewith a generally T-shaped configuration; a pair of I-beam lower guide rails each having a top flange portion, with spaced apart edges on which the upper guide rail is slidably supported, a bottom flange portion secured to the floor of the vehicle, a web interconnecting the top and bottom flange portions and two lower rail vertical flanges integrally on and at right angle to the respective edges of said top flange portion, and forming therewith a generally T-shaped configuration, said lower rail vertical flange being embraced by an interior wall formed by a portion of the top panel, side panel, base panel and vertical flange of the upper guide rail, said interior wall being configured to correspond to the lower rail vertical flange, said upper guide rail being assembled with said lower guide rail, such that said assembly thereby provides an arrangement whereby, upon application of force tending to separate the upper rail from the lower rail of the assembly in any direction, the upper rail vertical flange and the lower rail vertical flange engage one another to prevent such separation; and means for restraining the longitudinal movement of said upper guide rail relative to the lower guide rail including a locking bar laterally passable through the upper rail vertical flanges and the lower rail web.



### 3,930,633
### FORMWORK AND CONNECTING MEANS FOR FORMING ANNULAR STRUCTURES

Johann Wolf, Scharnstein, Austria, assignor to FA. Johann Wolf Gesellschaft m.b.H. KG., Scharnstein, Austria

Filed Feb. 21, 1974, Ser. No. 444,389
Claims priority, application Austria, Mar. 15, 1973, 2314/73
Int. Cl.² E04G 11/04
U.S. Cl. 249—1 13 Claims

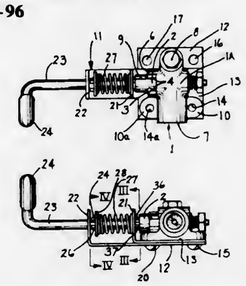


1. Formwork for use in making a round tank, which comprises
- a plurality of formwork elements each of which is curved according to an arc of a circle and which are assembled to form an inner formwork wall and an outer formwork wall,
- each of said formwork elements having two vertical edges provided with angled portions which form engaging faces, which engage engaging faces of horizontally adjacent formwork elements of the same formwork wall,
- said angled portions of said formwork elements of said outer formwork wall extending outwardly,
- said angled portions of said formwork elements of said inner formwork wall extending inwardly,
- said formwork elements forming said outer formwork wall being provided with lugs formed with circumferentially extending slots, the slots of adjacent formwork elements overlying each other,
- tightening wedges inserted in said slots to hold said adjacent formwork elements together,
- said lugs extending beyond and bearing against the outer edges of said angled portions,
- and angle section members secured to said two vertical edges of each of said formwork elements and having first flanges extending in the circumferential direction and engaging the inside of said angled portions, and second flanges,
- said second flanges of said angle section members of the outer formwork wall extending outwardly and
- said second flanges of said angle section members of the inner formwork wall extending inwardly,
- said lugs being secured to said angle section members of the outer formwork wall.

### 3,930,634
### SAFETY CONTROL FOR VALVE

Stanley M. Loveless, Oshtemo Township, Kalamazoo County, Mich., assignor to General Gas Light Company, Kalamazoo, Mich.

Filed June 20, 1974, Ser. No. 481,108
Int. Cl.² F16K 35/02
U.S. Cl. 251—96 3 Claims



1. In combination, a valve assembly including a valve housing having a projecting valve stem rotatably supported thereon, the valve housing also having a mounting surface thereon, and a manually-actuated operator coacting with said valve stem for controlling the rotational movement of said valve stem between first and second positions, comprising the improvement wherein said operator includes:
- an elongated rod positioned coaxially with said valve stem and having noncircular means at its inner end adjacent said stem effective upon axial movement of said rod for interengaging with said stem for effecting rotational movement of said stem upon rotational movement of said rod;
- first and second L-shaped support members fixedly mounted on said valve housing and slidably supporting said rod thereon, said first and second support members respectively including first and second support plates disposed directly adjacent one another and overlying said mounting surface;
- said first and second support members respectively including first and second flanges extending substantially transverse to the respective support plates, said first flange being disposed adjacent said stem, said second flange being substantially parallel to but spaced outwardly from said first flange, and said elongated rod being slidably supported on and extending through said first and second flanges;
- handle means disposed outwardly from said second flange and fixedly connected to the outer end of said rod;
- resilient means disposed between said first and second flanges and encircling said rod for constantly urging said rod outwardly away from said valve stem into a retracted position wherein the inner end of said rod is disengaged from said valve stem; and
- locking means coacting between said rod and said first flange for preventing rotation of said rod when said valve stem is in said first position and said rod is in its retracted position, said locking means including an opening in said first flange and a projection fixed to said rod and positionable within said opening for preventing rotation of said rod when it is in said retracted position, said projection being removed from said opening and engaged with said valve stem when said rod is moved inwardly toward said valve stem whereby said rod can be rotatably displaced for moving said valve stem from said first position to said second position, said first flange preventing said rod from being returned outwardly into its retracted position when said rod is being rotatably moved between said first and second positions;
- whereby said rod may be pushed inwardly against the resilient means by an operator into engagement with said valve stem for rotation thereof but will, in response to

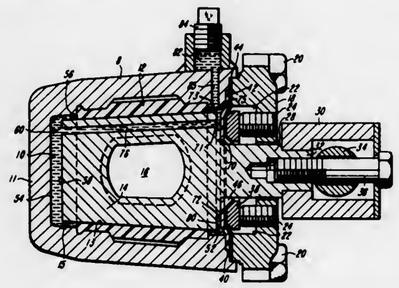
said resilient means when said valve stem is in said first position, disengage itself from said valve stem so that said projection enters into said opening for holding said rod nonrotatable with respect to said first flange.

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**3,930,635**
**LEAK-PROOF ROTARY, PLUG-TYPE FLUID CONTROL VALVE**

**Russell G. Smith, Cincinnati, Ohio, assignor to Xomox Corporation, Cincinnati, Ohio**

**Filed July 26, 1974, Ser. No. 492,034**
**Int. Cl.² F16K** *5/16, 41/12*
**U.S. Cl. 251—214** **6 Claims**

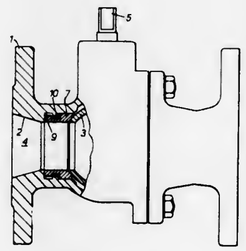


I. A rotary, plug-type fluid-control valve comprising, in combination, a body member having an open upper portion and a closed lower portion, a valving member and a sealing member, wherein each of said members include flow passages, means mounting the valving member for rotational movement relative to the body and sealing members to place the flow passages of the valving member in and out of communication with the flow passages of said body and sealing members; said sealing member interposed between the peripheral face of the valving member and body member; a chamber defined by the lower end of the sealing member, the lower end of the valving member and the lower portion of said body member; the upper end of said valving member terminating in a centrally disposed, outwardly projecting actuator stem; an annular seat circumscribing the upper end of said valving member adjacent said actuator stem; a flexible, fluid-impervious diaphragm having a central opening therein accommodating the actuator stem, said diaphragm spanning the upper end of the valving member and terminating in an outer marginal portion which overlies the upper portion of the body member; means securing the marginal portion of the diaphragm relative to the body member; means positioning those portions of the diaphragm between its outer marginal edge and the actuator stem of the valving member against outward axial movement relative to said valving member; an annular recess circumscribing the peripheral-adjacent portion of the upper end of the valving member; wherein a second chamber is defined by the upper end of the sealing member, the annular recess in the valving member the upper portion of the body member and the undersurface of the diaphragm; a passageway establishing continuous open communication between said first-mentioned and second chambers; fluid media in and filling each of said chambers and the passageway therebetween; wherein the fluid media in the first-mentioned chamber impinges against the lower end of the valving member for uging said valving member toward the diaphragm for disposing the annular seat which circumscribes the upper end of the valving member in contacting, leak-proof engagement with said diaphragm; and wherein the fluid media in the second chamber impinges against the diaphragm intermediate the said annular seat and the locus of securement of the marginal portion of the diaphragm to the body member, to resist flow of valve controlled fluid past said annular seat and along the actuator stem of the valving member.

**3,930,636**
**BALL VALVES**

**David Edward Pugh, Much Cowarne, England, assignor to Saunders Valve Company Limited, Wales**

**Filed Nov. 11, 1974, Ser. No. 522,540**
**Claims priority, application United Kingdom, Dec. 20, 1973, 59201/73**
**Int. Cl.² F16K** *5/06*
**U.S. Cl. 251—315** **8 Claims**



I. A ball valve comprising:
a. a valve housing have a bore therethrough;
b. a ball rotatably mounted in the bore, the ball having a flow passage therethrough and being rotatable to open and close the valve;
c. a recess in the wall of the bore, said recess having an axially extending surface portion; and
d. a seating ring located in the recess, the seating ring being in engagement with the ball on one side thereof and having a radially outward facing surface, the axially extending surface portion of the recess and the radially outwardly facing surface of the seating ring being provided with correspondingly threaded portions so arranged that when the seating ring is in position in the recess the threaded portion of the ring has passed through and lies wholly to one side of the threaded portion of the recess, and the recess and seating ring being so dimensioned that, in this position of the ring, there is radial clearance between the threaded portion of the ring and the recess.

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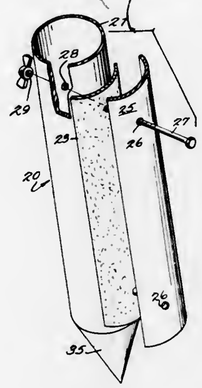
**3,930,637**
**FENCE AND FENCE POST ASSEMBLY**

**Delbert A. Davis, Kernersville, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.**

**Filed Apr. 12, 1974, Ser. No. 460,522**
**Int. Cl.² B21F** *27/00*
**U.S. Cl. 256—32** **22 Claims**

1. A fence post assembly comprising a post adapted to be installed in the ground, a section of double-faced pressure sensitive tape for affixing to at least a portion of said post for holding fabric fencing thereto, and holding means for securing fencing to said tape against said post, whereby fencing can be easily aligned with said post and securely attached thereto without wearing at the points of engagement with said holding means.



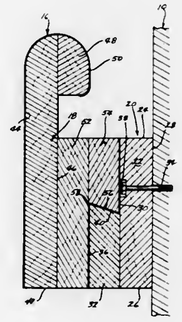


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**3,930,638**
**HAND RAIL**

**Cleon L. Ehlinger, Peosta, and Theodore D. Kipper, Dubuque, both of Iowa, assignors to Vanguard Countertops, Inc., Dubuque, Iowa**

**Filed Sept. 9, 1974, Ser. No. 504,272**
**Int. Cl.² B21F** *27/00*
**U.S. Cl. 256—39** **7 Claims**



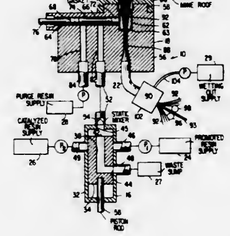
I. A hand rail for attachment to a vertically disposed planar support wall, said hand rail comprising:
an elongated support means adapted to be secured to the support wall and having a top portion, a bottom portion and an outer end portion spaced from the support member,
an elongated rail member secured to the outer end portion of said support means and having an inwardly extending upper end portion spaced above the upper end of said support means,
said support means comprising first and second elongated flat members joined together and having upper surfaces which combine to form an elongated upwardly presented surface extending along substantially the entire length of said rail member to prevent a person's hand from being caught between said support wall and said rail member; securing means for operatively securing said first member to said support wall;
said first member having in cross section two vertical surfaces interconnected by an upwardly presented beveled surface extending downwardly and towards said support wall;
said second member carrying said rail member and having in cross section two vertical surfaces interconnected by a downwardly presented beveled surface extending upwardly and away from said support wall,
said vertical and beveled surfaces of said first and second members being matingly joined whereby said mating beveled surfaces support said second member on said first member and urge said second member towards said support wall;
all of said vertical and beveled surfaces extending along the length of said rail so as to provide continuous support thereof and so as to close the space between said rail and said support wall; and
an adhesive joining said mated surfaces of said first and second members.

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**3,930,639**
**PUMPABLE ROCKBOLT METHOD**

**Meyer Steinberg, Huntington Station; Bernard Manowitz, Brightwaters, and Charles H. Waide, Center Moriches, all of N.Y., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.**

**Division of Ser. No. 312,393, Dec. 5, 1972, Pat. No. 3,861,755.**
**This application Sept. 27, 1974, Ser. No. 509,998**
**Int. Cl.² B01F** *15/02*
**U.S. Cl. 259—4** **4 Claims**



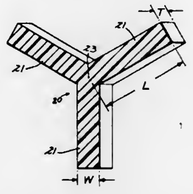
1. Apparatus for providing a rockbolt in an upwardly extending bore hole in a rock face, comprising:
a. first supply means for a pumpable stable first composition which is the first of a two component ambient temperature curable resin system;
b. second supply means for a pumpable stable second composition which is the second of the two component ambient temperature curable resin system;
c. mixing means for receiving the first and second compositions for forming an intimate mixture thereof;
d. means for simultaneously pumping the components from said first and second supply means in preselected proportion to said mixing means; and
e. bolting head assembly means for receiving said mixture from said mixing means and communicating with the inlet of said bore hole to deliver said mixture into said hole, said assembly means having a well for communicating with said hole during delivery of said mixture into said hole and during polymerization of said mixture, said well having means to prevent adherence of the polymerized mixture to said assembly means, thereby permitting removal of said assembly means from said rock face.

**3,930,640**

## METHOD OF PREPARING MOLDABLE PLASTIC AND ADDITIVE AGENTS

**Jack W. Kuehn, Wayzata, Minn., assignor to Tote Bulk Handling, Inc., Wayzata, Minn.**

**Division of Ser. No. 353,468, April 23, 1973. This application Dec. 19, 1974, Ser. No. 534,441**
**Int. Cl.² B29B *1/04***
**U.S. Cl. 259—185** **6 Claims**



1. The method of preparing a mixture of moldable plastic and an additive amount of additive material to be dispersed throughout the moldable plastic, which mixture is intended for subsequent use in a plastic molding process, which method includes the steps of:

a. obtaining small, additive-poor pellets comprising a first moldable plastic composition, said pellets having a first shape;

b. obtaining small, additive concentrate pellets comprising a second moldable plastic composition, said second moldable plastic composition being rich in an additive material, at least as compared to said first moldable plastic composition, said pellets having a second shape which is readily classifiably different from said first shape; and

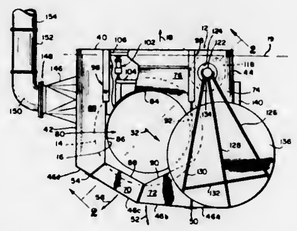
c. intentionally mixing plastic pellets of said first shape with a minor amount of pellets of said second shape, for purposes of obtaining a mixture which can be subsequently separated such that said additive-poor pellets are separated from said additive-concentrate pellets, the amount of pellets of said second shape being sufficient to impart a desired additive characteristic to the mixture of pellets, when the pellets have been fused and molded.

**3,930,641**

## FURNACE HOOD STRUCTURE

**Robert C. Overmyer, and Billy M. Brumett, both of Indianapolis, Ind., assignors to Hawley Manufacturing Corporation, Indianapolis, Ind.**

**Filed Sept. 12, 1974, Ser. No. 505,235**
**Int. Cl.² C21C *5/38***
**U.S. Cl. 266—16** **5 Claims**



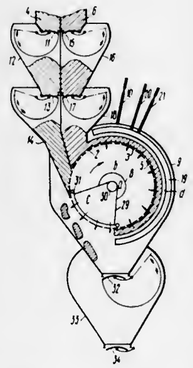
1. In a combination of a furnace which is provided with an upwardly opening mouth, a lid for said mouth and means supporting said lid to swing about a substantially vertical axis outside the boundary of said mouth between a position in registry with said mouth and a position laterally removed from such registry, a hood associated with said furnace and enclosing said mouth, said hood having a ceiling disposed above the uppermost position of said lid and said ceiling being formed with a port registering with said furnace mouth, and a cover for said port, the improvement in which said means for supporting said lid includes a generally vertically upwardly extending post upon which said lid is mounted, said post defining said axis, and said cover being mounted upon said post for upward movement as said post is projected axially upwardly and for swinging movement about said axis with said post and said lid, said cover being supported by said post when said post is projected axially upwardly.

**3,930,642**

## DRUM-TYPE MACHINE FOR AGGLOMERATION OF ORES AND CONCENTRATES UNDER PRESSURE

**Evgeny Felixovich Vegman, Bryanskaya ulitsa, 28/36, kv. 171; Boris Nikolaevich Zherebin, Teply Stan, mikroraion 3, korpus 32, kv. 116; Sergei Evgenievich Lazutkin, Flotskaya ulitsa, 13, korpus 5, kv. 792; Nikolai Fomich Pashkov, 11 Parkovaya ulitsa, 52, korpus 2, kv. 13; Anatoly Nikolaevich Pyrikov, ulitsa Vinokurova, 9, korpus 1, kv. 25; Anatoly Nikolaevich Pokhvisnev, Valovaya ulitsa 42/44, kv. 31; Julian Semenovich Jusfin, Profsojuznaya ulitsa, 87, korpus 3, kv. 119, all of Moscow; Anatoly Vasilievich Zherdev, ulitsa Zhdanova, 9, Kommunarsk Voroshilovgradskoi oblasti; Valentin Vasilievich Korobov, ulitsa Popova, 55, kv. 77, Kommunarsk Voroshilovgradskoi oblasti; Vitaly Ivanovich Krivonosov, ulitsa Zhukovskogo, 82, Kommunarsk Voroshilovgradskoi oblasti, and Ivan Mitrofanovich Mischenko, prospekt Lenina, 12, kv. 30, Kommunarsk Voroshilovgradskoi oblasti, all of U.S.S.R.**

**Filed Dec. 30, 1974, Ser. No. 537,672**
**Claims priority, application U.S.S.R., Jan. 3, 1974, 1984387**
**Int. Cl.² F27B *21/06***
**U.S. Cl. 266—21** **1 Claim**



1. A drum-type maching for agglomeration of ores and concentrates under pressure comprising: a drum mounted for rotation; a sintering grate on the peripheral surface of said drum; a tightly sealed casing communicating with a compressed air source, said drum being mounted within said casing; hollow journals mounting said drum and also serving for removing exhaust gases; hoppers with seal valves communicating with the top portion of said casing, said hoppers serving for loading said sintering grate with a bed and charge and defining the loading zone of said drum; a hearth for ignition and sintering of the charge into finished agglomerate mounted within said casing coaxially with said drum and defining the zone of ignition and sintering of the charge; means for discharging finished agglomerate from said sintering grate, said means being disposed between said loading zone and said zone of ignition and sintering, said means defining the unloading zone of said drum; a hopper with seal valves communicating with the bottom portion of said casing and serving for discharging finished agglomerate; said means for discharging finished agglomerate from the sintering grate comprising a box-shaped housing having the form of a sector in the cross-section, said housing being stationary mounted within said drum coaxially therewith and open on the side facing said sintering grate; fixed air conduits disposed coaxially within said hollow journals and serving for supplying into the box of said housing compressed air under a pressure substantially exceeding the pressure in said casing around the drum, whereby finished agglomerate, which is fed during the rotation of said drum into the unloading zone, is discharged from the sintering grate under its own weight and under the action of compressed air supplied from beneath said grate through the box of said housing.

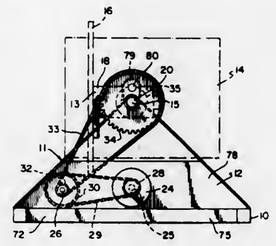


**3,930,643**

## ROLL-OVER FIXTURE

**Stanley H. Moore, Coquitlam, Canada, assignor to Wescan Mining Trucks & Equipment Ltd., Vancouver, Canada**

**Filed July 16, 1974, Ser. No. 488,949**
**Claims priority, application Canada, Apr. 24, 1974, 198013**
**Int. Cl.² B23Q *1/04*; B25B *1/22***
**U.S. Cl. 269—58** **20 Claims**



1. A workholder comprising a primary supporting structure; workholding means mounted for rotation in said structure about a fixed axis of rotation; a control system comprising sensing means sensitive to out of balance forces within said workholder, said forces being caused by the rotation of a workpiece when held by said workholding means and horizontal movement of the center of gravity of said workpiece relative to said axis of rotation, said sensing means providing an output signal indicative of said forces, and adjusting means responsive to said output signal to effect positional adjustment of said workholding means on said structure relative to said axis of rotation, said positional adjustment tending to decrease and remove said out of balance forces.

**3,930,644**

## PRINTED CIRCUIT BOARD CARRIER

**Eugene V. Albert, Jr., Overland Park, Kans., assignor to Q Corporation, Overland Park, Kans.**

**Filed Dec. 26, 1974, Ser. No. 536,451**
**Int. Cl.² B25B *5/02, 5/14***
**U.S. Cl. 269—118** **12 Claims**

5. A printed circuit board carrier comprising:

a. support means including a frame having longitudinally spaced conveyor engaging portions;

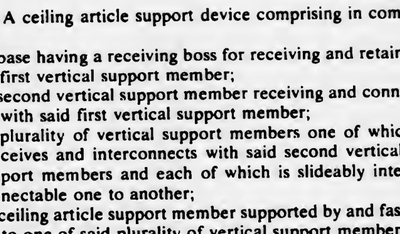
b. laterally spaced carrier side members adjustably mounted in said frame of said support means;

c. means on each of said carrier side members for receiving and supporting a respective side edge portion of a printed circuit board,

d. longitudinally spaced carrier end members adjustably mounted on said frame of said support means;

e. means on each of said carrier end members for receiving and supporting a respective end edge portion of the printed circuit board;

f. said frame of said support means including an elongated center beam member;



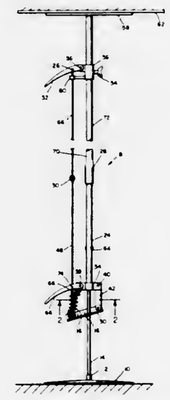
g. said carrier end members being mounted on said center beam member of said frame and movable longitudinally therealong to be in engagement with the respective end edge portion of the printed circuit board.

**3,930,645**

## CEILING ARTICLE SUPPORT DEVICE

**Raymond Anderson, 1513 S. Dwight Ave., Compton, Calif. 90220**

**Filed Nov. 11, 1974, Ser. No. 522,698**
**Int. Cl.² B25J *3/00***
**U.S. Cl. 269—289** **5 Claims**



1. A ceiling article support device comprising in combination:

a base having a receiving boss for receiving and retaining a first vertical support member;

a second vertical support member receiving and connected with said first vertical support member;

a plurality of vertical support members one of which receives and interconnects with said second vertical support members and each of which is slideably interconnectable one to another;

a ceiling article support member supported by and fastened to one of said plurality of vertical support members;

an adjusting flange plate connected to said second vertical support member and having a hole providing friction-maintained relative vertical position of said first vertical support member with respect to said second vertical support member;

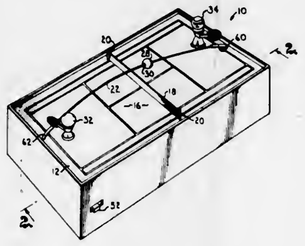
an adjusting mechanism including a first adjusting handle attached to the vertical support member that has the ceiling article support member attached thereto;

a second adjusting handle pivotally attached to said second vertical support member;

a first adjusting rod member interconnected between said first adjusting handle and said adjusting flange plate;
a second rod member interconnected between said second adjusting handle and said flange plate;
a tension spring coaxially mounted around said second rod member between said second adjusting handle and said adjusting flange plate, so as to bias said adjusting flange plate against said first vertical support member, thereby maintaining adjustable frictional contact of the flange plate against the first vertical support member.

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**3,930,646**
**TENNIS NOVELTY**
**Marshall A. Widman, 443 W. 104th St., Apt. B, Kansas City, Mo. 64114**
**Filed Dec. 11, 1974, Ser. No. 531,537**
**Int. Cl.² A63G *31/00*; A63F *7/06***
**U.S. Cl. 272—1 R** **7 Claims**

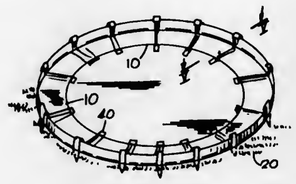


1. Game novelty apparatus comprising:
structure provided with a miniature playing surface having means thereon which causes the surface to simulate the court or field on which a game is played;
a miniature net secured to said structure and extending across said surface thereabove;
a pair of hitting elements on said surface simulating players of said game, one on each side of said net;
a wire-like member secured at each end to said structure and extending above said surface over said net to simulate the path of a projectile used to play said game;
a component slidable on said member and representing said projectile;
means mounting each element for movement in a direction causing the component to be struck by the element and propelled along the member away from a position of the component on the member adjacent the element; and
drive means coupled with said elements for automatically alternately actuating the latter to cause the component to be propelled back and forth over the net, whereby to simulate the action in said game.

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**3,930,647**
**SKATING RINK ASSEMBLED FROM A KIT**
**Ray Berlemont, Alvinston, Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest**
**Filed Oct. 3, 1974, Ser. No. 511,669**
**Int. Cl.² A63C *19/10***
**U.S. Cl. 272—3** **4 Claims**

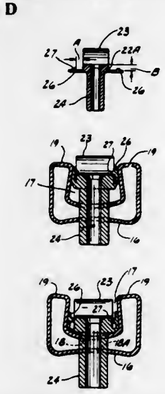
1. A skating rink assembled from a kit and comprising:
an annular floor disposable on the ground and having its outer edge bent vertically upward to form a circular wall, said floor including a plurality of like flexible plastic sheets taking on the shapes of rectangles disposed side by side to form an annulus and a like plurality of elongated rectangular plastic straps, each strap overlying the boundary between two adjoining ones of said sheets;
a circumferential vertical ring surrounding the floor and



abutting the outside of said circular wall; and
fasteners for securing the ring and wall to the ground.

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**3,930,648**
**GAME RACKET AND STRINGING MEANS THEREFOR**
**Thomas E. Brown, Chesterfield, Mo., assignor to A-T-O Inc., Willoughby, Ohio**
**Filed Sept. 26, 1974, Ser. No. 509,688**
**Int. Cl.² A63B *51/00***
**U.S. Cl. 273—73 D** **2 Claims**



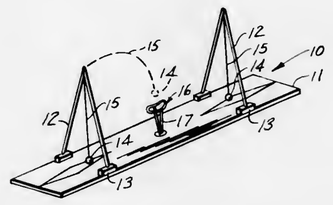
1. A racket comprising a metal frame head, said head having an external peripheral dove tail shaped groove and holes for passage of strings extending from the base of the groove to the inside of the head, the groove having a relatively narrow entrance at the outside of the head tapering to a relatively wider section inward of the entrance adjacent said base, said groove having imperforate side walls, and a stringer strip received in the groove, said strip having a body which, throughout the length of the strip, is narrower than said entrance of the groove for being inserted in the groove through said entrance without any substantial lateral compression of said body, said strip having tubular string guides projecting from the inside surface of the body thereof and extending through the holes in the head, said strip further having a plurality of tabs spaced at intervals along its length projecting laterally outwardly from opposite sides of said body adjacent the inside surface of said body, said tabs being thin relative to the height of said body and flexible so as to be foldable upwardly on the sides of said body upon insertion of said strip in said groove through said entrance, each of said tabs having thickened projections formed on the outside upper surfaces of said tabs, said projections being elongated in the lengthwise direction of said strip and being spaced laterally from the sides of said body slightly less than the height of said body sides above the upper surfaces of said tabs, said projections being so formed that when the tabs are folded upwardly said projections will overlie said top of the strip thereby allowing the width dimensions of said strip to conform to said entrance width of said groove, and upon complete insertion of said strip in said groove said projections will abut the sides of said body



and a substantial portion of said side walls of said groove below the entrance of said groove to establish a width dimension greater than said entrance width to retain said strip in said groove.

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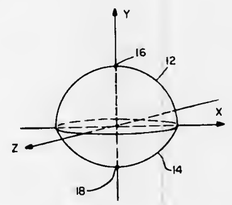
**3,930,649**
**TETHERED BALL AND ELLIPTICAL TARGET**
**Harold E. Yackel, Jr., 140 Macobeth St., Rochester, N.Y. 14609**
**Filed May 13, 1974, Ser. No. 469,508**
**Int. Cl.² A63B *71/02***
**U.S. Cl. 273—101** **1 Claim**



1. A cradle ball device, comprising a rectangular flat base, a pair of spaced apart and inverted V-frames secured upon said base, a string and ball carried by each said frame, and a ball rest and support member carried by said base, leg portions of said frames being secured within block members, said block members being fixedly secured to a longitudinal edge of said base, each said ball being secured fixedly to one end of each said string, the opposite ends of said strings being fixedly secured and depending from apexes of said frames, each said ball when vertically depending on the said string being spaced just above said base for freedom of swing, said ball rest being centrally positioned between said frames and being elliptical in configuration with a long axis thereof being alined to intercept said strings of said frames when said balls depend vertically, each said ball rest when viewed from a side being downwardly arcuate at its center and opposite extending ends thereof being upwardly turned, the ball rest being secured upon said support member by being mounted upon leg portions thereof which converge downwardly toward an apex mounted upon a center of said base, said ball rest providing a rest means for both said balls.

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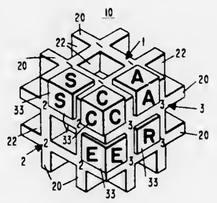
**3,930,650**
**THROWING DEVICE**
**William Watson, Wolfeboro, N.H., assignor to Molded Foam Industries, Inc., Franklin, N.H.**
**Filed Dec. 23, 1974, Ser. No. 535,722**
**Int. Cl.² A63B *65/00***
**U.S. Cl. 273—106 R** **13 Claims**



1. A throwing device composed of a resilient foam material and having an outer surface comprised of a major and minor sub-surface, each of said sub-surfaces being symmetrical about a common axis of symmetry and being convex relative to a plane which is perpendicular to said common axis and between said sub-surfaces, said major and minor sub-surfaces each having an extremal point along said common axis, said major sub-surface extremal point being farther from said plane than said minor sub-surface extremal point, and wherein said major sub-surface is a segment of a substantially spherical surface

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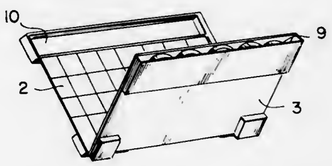
**3,930,651**
**THREE DIMENSIONAL WORD GAME**
**James Eads Rader, R.F.D. 1, Plainfield, Vt. 05667**
**Filed Aug. 5, 1974, Ser. No. 494,984**
**Int. Cl.² A63F *3/00***
**U.S. Cl. 273—135 D** **5 Claims**



1. Word game apparatus comprising, in combination:
a three-dimensional cube including means located on each of the six faces thereof forming at least 26 defined locations for receiving letter pieces, 26 cubical letter pieces each of which has a unique letter of the English alphabet associated therewith and inscribed on each of the six faces thereof, said letter pieces interacting with said cube such that said letter pieces may be placed at said defined locations on said three-dimensional cube, and words may be spelled out by tracing a path through consecutively adjacent letter pieces on said three-dimensional cube.

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**3,930,652**
**PORTABLE LAWN PLAYING CHECKER APPARATUS**
**Leo Lapolice, Trois Rivieres, Canada, assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest**
**Filed Sept. 12, 1974, Ser. No. 505,345**
**Int. Cl.² A63F *3/02***
**U.S. Cl. 273—136 K** **8 Claims**



1. A portable lawn playing checker apparatus comprised of:
a. a rectangular base board having a first face and a second face whose length is about 5 feet 5 inches and whose width is about 4 feet 2 inches;
b. a plurality of rectangles inscribed upon the first face;
c. a plurality of movable rings which can fit within the rectangles;
d. a first holding means and a second holding means attached to the first face of the rectangular base board on opposite ends of the base board for holding the plurality of movable rings when a game is being played;
e. a first storage means and a second storage means attached to the second face of the rectangular base board on opposite ends of the base board and juxtaposed below the first holding means and the second holding means, for

storing the plurality of movable rings when the portable lawn playing checker apparatus is being stored;

f. a foldong means between the first storage means and the second storage means for folding the rectangular baseboard in half for storage and

g. a means for moving the movable rings from rectangle to rectangle.

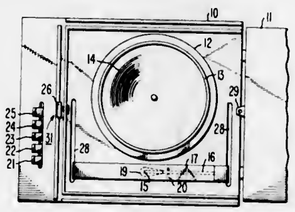
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**3,930,653**

## LID LATCH MECHANISM FOR A DISC RECORD PLAYER

**Larry Dean Huff, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.**

**Filed Jan. 30, 1975, Ser. No. 545,407**
**Int. Cl.² G11B *1/00***
**U.S. Cl. 274—1 R** **3 Claims**



1. In a playback system for recovering prerecorded signals by a signal pickup from a disc record rotatably mounted on a turntable, the playback system including a lid pivoted on a base for movement between a closed position and an open position, and a signal pickup carriage reciprocably mounted on the base for travel between a standby mode and a playback mode, a lid latch mechanism comprising:

1. a lid release button mounted on the base;

2. lid latch means selectively responsive to operation of the release button for releasably securing the lid, wherein the latch means comprises:

a. a leaf spring secured to the base at one end thereof; and

b. a detent mounted on the remote end of the leaf spring for movement between (A) a protruding condition subject to engagement with the lid when closed; and (B) a retracted condition releasing the lid if closed;

3. a plunger reciprocably mounted in the base for cooperation with the release button;

4. a slide movably mounted in the base adjacent the leaf spring for movement between (a) a position interposed, and (b) a position not interposed, between the plunger one end and the leaf spring; wherein the plunger, responsive to operation of the release button, moves the detent to the retracted condition, via the slide and the leaf spring, when the slide is in the interposed position; and wherein when the slide is not interposed the release button is ineffective to actuate the detent;

5. means intercoupling the slide to the signal pickup carriage, wherein the intercoupling means are effective to move the slide to the interposed position and to the not-interposed position when the carriage is, respectively, in the standby mode and the playback mode.

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**3,930,654**

## SOUND TRACK UNIT FOR AUDIO-VISUAL APPARATUS

**Jiri M. Nessel, Palo Alto, Calif., assignor to Victor Richards, San Francisco, Calif.**

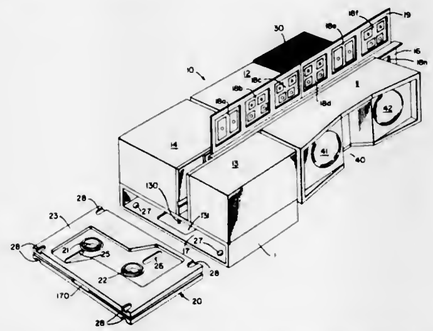
**Filed Dec. 5, 1973, Ser. No. 421,986**
**Int. Cl.² G11B *25/04***
**U.S. Cl. 274—42 R** **6 Claims**

1. A sound track unit for audio apparatus comprising:

a. two centrally apertured circular disc-like members having sound recordings inscribed on the flat surfaces thereof;

b. a hollow housing enclosing both of said two disc-like members;

c. means mounting said disc-like members within said housing for rotation about their respective axes, said axes of said disc-like members being parallel to and spaced from each other with said disc-like members overlapping each other in planes spaced axially thereof, said mounting means including thrust bearings preventing movement of said disc-like members along said axes thereof while permitting rotation of said disc-like members in their respective planes as well as limited movement of said axes thereof toward and away from each other; and



d. means for rotating said disc-like members including a pair of hollow cylindrical drive members each extending through the central aperture of a different one of said two disc-like members and mechanically connected thereto in coaxial alignment therewith, the internal surface of each of said hollow cylindrical drive members defining a pair of truncated right circular cones having their truncated apexes joined and their bases at opposite ends of said drive members, and four apertures through said housing each of said apertures surrounding a different end of a different one of said pair of hollow cylindrical drive members throughout said limited movement of said axes of said disc-like members toward and away from each other.

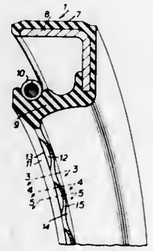
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**3,930,655**

## SEALS FOR USE BETWEEN TWO RELATIVELY-ROTATING SURFACES

**Alan Gregory Fern, Cheltenham, England, assignor to Dowty Seals Limited, England**

**Division of Ser. No. 164,474, July 20, 1971, which is a continuation of Ser. No. 831,177, June 6, 1969. This application Apr. 29, 1974, Ser. No. 465,278**
**Claims priority, application United Kingdom, Oct. 31, 1968, 51569/68; 4138/69**
**Int. Cl.² F16J *15/54***
**U.S. Cl. 277—134** **5 Claims**



1. A seal for retaining liquid between two relatively rotatable members of which one member carries the seal and the other member has a cylindrical surface engaged by the seal, comprising a sealing ring having a static sealing portion carried by said one member and spaced from the said surface of the said other member, a flexible flange extending from the static sealing portion, generally in the direction in which the said surface of said other member extends and towards the liquid to be sealed, to an outer end portion of the sealing ring, two mutually-inclined surfaces on said outer end portion defining a circular sealing lip, and a plurality of circumferentiallyspaced projections raised on that inclined surface which is the closer of the two inclined surfaces to the static sealing portion and which is remote from the liquid, each projection having a surface which is generated by movement, about the central axis of the ring, of a line which, when the seal is carried by the first said member and is in its free state prior to assembly of the said other member, is substantially parallel to the operative direction of the said surface of said other member and which, at one position, is contiguous with the sealing lip and which, on opposite sides of said one position, recedes from the sealing lip in a direction toward said static sealing portion so that when said seal is in said free state said surface of said projection lies entirely at the same radial distance as the sealing lip or on the same side of said sealing lip as said static sealing portion, said surface of said projection having a substantial width at said one position, the sealing lip and the portion of the said surface of each projection which is contiguous with the sealing lip engaging the said surface of the said other member with an interference fit, whereby upon assembly of the sealing ring between said members, the flange is deflected from its free state, about the static sealing portion, the part of the surface of each projection in the vicinity of that part which is contiguous with the lip consequently engaging the said surface of the said other member over an area having opposite sides which extend away from the sealing lip and which diverge away from each other and with a pressure which increases as the distance from the sealing lip in a direction at right angles to the plane of the sealing lip increases.



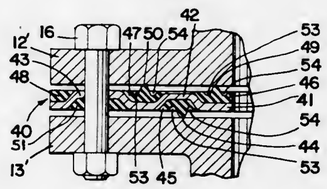
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**3,930,656**

## SEALED JOINT AND GASKET THEREFOR

**Jerry G. Jelinek, La Habra, Calif., assignor to Parker-Hannifin Corporation, Cleveland, Ohio**

**Filed Feb. 22, 1974, Ser. No. 444,907**
**Int. Cl.² B65D *53/00*; F16L *19/02***
**U.S. Cl. 277—180** **15 Claims**



1. A gasket comprising a thin plate of rigid material having an opening therethrough and having radially spaced first and second edges and upper and lower faces, a generally U shaped corrugation in said plate between said edges and forming a recess in one face and a raised rib on the other face, said corrugation extending continuously about said opening, a sheet of elastomeric material on said other face on each side of said rib and having exposed flat faces, said sheet on one side of said raised rib having a bead projecting above said flat face thereon to a height above said other face greater than the height of said raised rib from said other face and an elastomeric sealing element in said recess and projecting therefrom.

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**3,930,657**

## DEVICE FOR SEALING BETWEEN PREFERABLY MOVABLE PARTS

**Assar Natanael Svensson, Ersmark, and Sture Valter Persson, Skelleftea, both of Sweden, assignors to Skega Aktiebolag; Ersmark, Sweden**

**Filed July 31, 1973, Ser. No. 384,350**
**Claims priority, application Sweden, Aug. 7, 1972, 10246/72**
**Int. Cl.² F16J *15/24***
**U.S. Cl. 277—188 A** **3 Claims**



1. A device for producing a seal between movable and/or stationary parts which are subjected to high fluid pressures, said device comprising a sealing ring in the form of an O-ring, a pair of separate spaced support rings disposed on opposite sides of said sealing ring respectively in coaxial relation thereto, each said support ring consisting of a thermoplastic polymer material having a hardness greater than that of the material of the sealing ring, said support rings being formed with concavely curved contact surfaces respectively disposed towards and conforming to opposite sides of said sealing ring and each loosely engaging one side of said sealing ring, each said support ring having a second contact surface disposed essentially parallel to a radial plane through the device, and a pair of spaced guide rings coaxial with said sealing and support rings, each said guide ring being disposed outside of an associated one of said support rings relative to said sealing ring and consisting of a polymer material having a hardness greater than that of the thermoplastic polymer of the said associated support ring, each of said guide rings having a pair of side surfaces which are essentially plane-parallel to one another and to said radial plane, one of said side surfaces substantially fully engaging said second contact surface of said associated support ring and having essentially the same radial extension as said second contact surface, and each said guide ring also having a peripherally arranged sliding surface extending essentially perpendicular to both of its said side surfaces and having a larger axial extension than that of said associated support ring, said sealing ring, support rings, and guide rings being arranged adjacent to one another in axially and radially mutually displaceable relation to one another and without interconnection therebetween.

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**3,930,658**

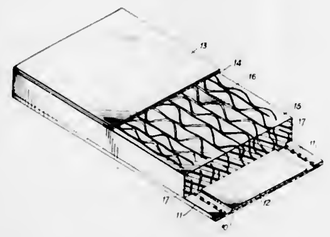
## PLASTIC SKI AND METHOD OF MAKING THE SAME

**John G. Howe, and William L. Schmidt, both of Boulder, Colo., assignors to AMF Incorporated, White Plains, N.Y.**

**Filed Oct. 29, 1973, Ser. No. 410,825**
**Int. Cl.² A63C *5/12***
**U.S. Cl. 280—11.13 L** **3 Claims**

1. In an aluminum and plastic sandwich ski structure, a bottom subassembly, a core, and a top subassembly sandwiched together, said bottom subassembly comprising a bottom plastic running surface member, steel edges adhered to opposite side edges of said bottom running surface member and a first aluminum strip adhered to the top surface of said bottom running surface member, said top subassembly comprising an outer plastic surface and an underlying second aluminum strip adhered thereto, said core comprising a rigid

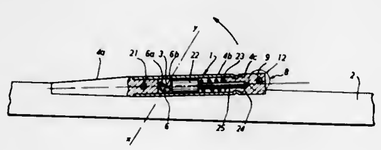
plastic foam material member adhered to and formed in situ between said top and bottom subassemblies, and frangible strip means of porous material embedded in said in situ formed core, said frangible strip means bearing against said top and bottom subassemblies to space the same from each other to the selected thickness of said core, wherein said first



aluminum strip has a width less than the distance between the innermost portions of said steel edges so as to be spaced therefrom and without direct connection therewith whereby said ski structure is adapted to have its physical characteristics varied by making small variations in the width of said first aluminum strip.

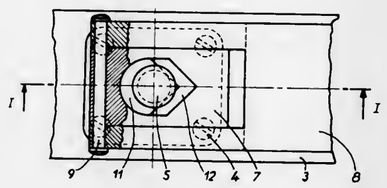
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**3,930,659**
**SKI BRAKE**
**Georges Pierre Joseph Salomon, Annecy, France, assignor to S.A. Francois Salomon & Fils, Annecy, France**
**Filed June 25, 1974, Ser. No. 482,883**
**Claims priority, application France, June 29, 1973, 73.24091; Apr. 2, 1974, 74.11638**
**Int. Cl.² A63C 7/10**
**U.S. Cl. 280—11.13 B** **14 Claims**



**1.** A ski brake withdrawable by placing a ski boot in position on a ski, comprising:
at least one brake arm providing a spike fitted laterally to a ski and pivoting relative to the ski about a generally transverse axis;
resilient means for moving said arm towards an operative braking position in which it projects beneath the base of the ski;
a pedal mounted on the brake arm, extending above the upper surface of the ski and disposed to be pushed onto this surface by a ski boot placed in position on the ski, thereby retracting the arm into an inoperative rest position in relation to the ski;
a sleeve in which said resilient means is lodged with one end thereof supported by one end of the sleeve;
piston means slidably located in said sleeve; and
a cam located in said sleeve at its other end;
said piston means being permanently thrust against said cam by said resilient means, and said cam being disposed about said transverse axis of said brake arm and having a profile such that the pressure exerted by said piston means on the cam by the action of said resilient means functions through a couple acting on said brake arm and causing said brake arm to pivot into said operative braking position when said ski boot leaves said pedal.

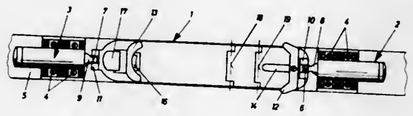
**3,930,660**
**SKI BINDING**
**Jean-Paul Fréchin, Chamonix, France, assignor to Mitchell S.A., France**
**Filed Feb. 12, 1974, Ser. No. 441,759**
**Claims priority, application France, Feb. 16, 1973, 73.05594**
**Int. Cl.² A63C 9/081**
**U.S. Cl. 280—11.35 K** **9 Claims**



**1.** A ski binding, comprising;
an elongate soleplate extending from a first end to a second end;
an intermediate plate hingedly connected to the soleplate adjacent said first end about a transverse axis and having means defining an opening in said intermediate plate, said intermediate plate having a free end and an upper face;
a pin attachable perpendicular to a ski, said pin having an enlarged head which can pass through said opening in the intermediate plate;
means defining cooperating relatively inclined surfaces on the underside of said head of the pin and on said upper face of said intermediate plate in a part of said opening adjacent said free end; and
spring operated means for releasably locking said second end of the soleplate to the ski subject to release of the soleplate by pivoting about said transverse axis and about said perpendicular pin, said spring operated means being attachable to the ski at a distance from said pin;
whereby in use said spring operated means urges said soleplate and said intermediate plate in a direction towards said pin to inter- engage said cooperating surfaces and thereby releasably to lock said sole- plate to the ski, subject to movement of said first end of the sole- plate relative to the ski to free said soleplate by coaction of said cooperating surfaces against the action of said spring-operated means.

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**3,930,661**
**SAFETY SKI-BINDING**
**Hannes Marker, Hauptstrabe 51-53, 81 Garmisch-Fartenkirchen, Germany**
**Filed Jan. 9, 1975, Ser. No. 539,805**
**Claims priority, application Germany, Jan. 15, 1974, 2401808**
**Int. Cl.² A63C 9/08**
**U.S. Cl. 280—11.35 K** **4 Claims**



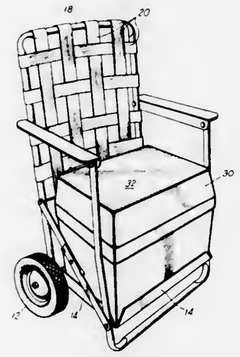
**1.** A safety ski-binding comprising an elongated sole plate adapted to be fitted on a ski to support a ski boot, front and rear sole depressors provided on the sole plate for retaining the boot thereon except when it is to be intentionally released, and mounting means for the sole plate effective to release the latter from the ski in a vertical and/or horizontal direction on



the occurrence of overload, wherein the sole plate is provided with at least one transverse horizontal pivotal axis which is disposed in the region supporting the ball of the hoot and about which the sole plate can bend only in the upward direction.

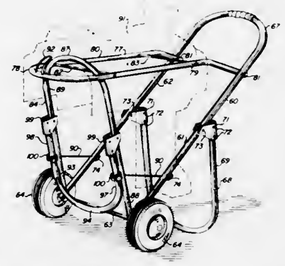
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**3,930,662**
**CHAIR AND HAND TRUCK COMBINATION**
**Thomas D. Manner, 1491 Bells Ferry Road, Marietta, Ga. 30060**
**Filed Mar. 13, 1974, Ser. No. 450,570**
**Int. Cl.² B62B 1/20**
**U.S. Cl. 280—36 C** **6 Claims**



**1.** A portable chair and ice chest combination comprising:
a. a flat rigidd rectangular platform for normally being disposed adjacent to the ground in a horizontal position above the ground;
b. spaced wheels mounted for rotation about a transverse axis, said wheels being respectively mounted on said platform adjacent the rear corners thereof, said wheels being adapted to engage the ground for supporting the rear portion of said platform and for permitting said platform to be pivoted about said axis from its normal horizontal position to an upwardly extending position;
c. a back pivotally mounted to said rear portion of said platform for remaining upright as said platform is pivoted to its outwardly, horizontal extending position;
d. means connected between said back and said platform for holding said back in its upright position when said platform is in its normal horizontal position;
e. a rigid ice chest removeably carried by said platform, said ice chest having a horizontally disposed upper surface on which a person may sit in a normal position;
f. a pair of spaced opposed arms pivotally mounted by their rear end portions respectively to intermediate portions of said back, said arms normally extending forwardly of said back and parallel to each other and being pivotable to upwardly extending positions adjacent to the upper portion of said back; and
g. rigid front leg means pivotally connected to said platform forwardly of said wheels and pivotally connected to said arms forwardly of said back, said rigid means being respectively disposed outwardly of the sides of said chest when said chest is carried on said platform for arresting lateral movement of said chest on said platform and for providing support for said arms.

**3,930,663**
**COLLAPSIBLE CARRIER FOR EQUESTRIAN SADDLE**
**Robert D. Scripter, 6212 E. Mescal, Scottsdale, Ariz. 85254**
**Continuation-in-part of Ser. No. 476,900, June 6, 1974, abandoned. This application Dec. 11, 1974, Ser. No. 531,622**
**Int. Cl.² B62B 1/20**
**U.S. Cl. 280—36 C** **2 Claims**



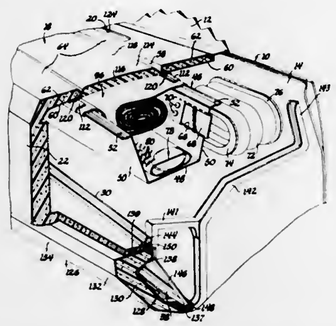
**1.** A collapsible wheeled carrier for transporting an equestrian saddle, said carrier comprising:
a. a main frame member extending upwardly rearward from the lower end thereof toward the upper end thereof and having
i. a pair of spaced ground wheels pivotally carried by the lower end of said main frame for supporting said carrier above the ground, and
ii. a handle at the upper end of said main frame for manual manipulation of said carrier;
b. ground support means pivotally secured at the upper end thereof to said main frame intermediate the upper and lower ends thereof,
said ground support being selectively movable from a collapsed position against said main frame to a downwardly rearward position for cooperating with said ground wheels to support said carrier in an upright position;
c. an elongate saddle bearer, sized and shaped to receive an equestrian saddle thereon, pivotally secured at one end thereof to said main frame intermediate the upper and lower ends thereof, said saddle bearer being pivotally movable from a collapsed position against said main frame to a substantially horizontal load-bearing position; and
d. a strut extending between said main frame at the lower end thereof and said saddle bearer at the upper end thereof for supporting said saddle bearer in said load-bearing position and being alternately collapsible against said main frame member.

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**3,930,664**
**OCCUPANT RESTRAINT SYSTEM**
**Ben C. Parr, Orchard, and Carl M. Savage, Jr., Milford, both of Mich., assignors to General Motors Corporation, Detroit, Mich.**
**Filed May 19, 1972, Ser. No. 255,025**
**Int. Cl.² B60R 21/02**
**U.S. Cl. 280—150 AB** **3 Claims**

**1.** The combination comprising, a vehicle having a windshield, an instrument panel including an upper portion having an elongated opening therein extending generally transversely of the vehicle adjacent the windshield, an elongated manifold within the instrument panel having a base wall and an opposite open upper side generally coextensive with the opening of the upper portion of the instrument panel, an elongated oval-shape diffuser located in the manifold adjacent the base wall, spaced means securing the diffuser to the base wall of the manifold, an inflatable occupant restraint cushion including an occupant engageable portion and an umbilical portion generally coextensive with the opening, means mounting the

umbilical portion on the vehicle inwardly of the opening of the instrument panel in communication with the diffuser, the cushion being normally folded and stored within the manifold intermediate the diffuser and the manifold opening, releasable cover means covering the manifold opening and continuing the upper portion of the instrument panel thereover, means communicating the diffuser with a source of pressure fluid upon the occurrence of a predetermined event to inflate the cushion and deploy the cushion from the manifold through the



manifold and instrument panel openings, the diffuser expanding from an oval shape toward circular shape upon receipt thereby of pressure fluid, the spaced securing means blocking sinuous deformation of the diffuser upon expansion thereof, the cover means being moved out of the instrument panel opening by the cushion when the cushion deploys, and means communicating the cushion with ambient atmosphere when the pressure within the cushion exceeds a predetermined level.

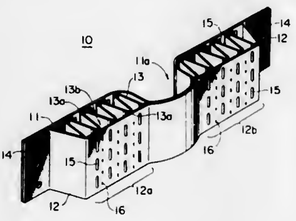
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**3,930,665**

## ENERGY ABSORBINC PANEL STRUCTURE

**Kazuo Ikawa, Yokohama, Japan, assignor to Nissan Motor Company Limited, Yokohama, Japan**

**Filed July 29, 1974, Ser. No. 492,836**
**Claims priority, application Japan, Aug. 24, 1973, 48-99229**
**Int. Cl.² B60R *21/08***
**U.S. Cl. 280—150 B** **8 Claims**



1. Restraining means for restraining forward movement of a vehicle occupant arising from a sudden deceleration of the vehicle, comprising a first sheet of metal secured to a structural member of the passenger compartment of said vehicle, a second sheet of metal secured at the opposite ends thereof in spaced relationship to said first sheet of metal forming an impact receiving surface, and a third sheet of metal folded into a meandering shape and supported by the inner sides of said first and second sheets with the folded portions connected with said inner sides, said second sheet having rows of apertures, each row being arranged between the adjacent folded portions, whereby upon receipt of an impact force said second sheet is fractured along said rows so that part of the kinetic energy of said vehicle occupant is absorbed and said third sheet is flexured subsequently to absorb the remainder of said kinetic energy.

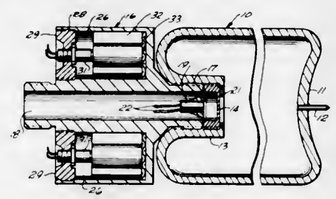
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**3,930,666**

## HYBRID GAS SYSTEM FOR AUTOMOBILE PASSENGER RESTRAINT SYSTEM

**Robert W. Lynch, Fountain Valley, Calif., and Vincent O. Catanzarite, Las Vegas, Nev., assignors to Specialty Products Development Corporation, Oak Creek, Wis.**

**Filed May 1, 1974, Ser. No. 465,838**
**Int. Cl.² B60R *21/08***
**U.S. Cl. 280—150 AB** **6 Claims**



1. A hybrid gas supply system for inflating an automobile passenger restraint bag comprising:
- a cylindrical high pressure gas storage reservoir;
- an axial gas flow orifice in one end of the gas reservoir;
- a frangible diaphragm sealing the gas flow orifice;
- a pyrotechnic gas generator external to the gas reservoir;
- an axial gas flow passage in the gas generator;
- connection means for interconnecting the gas generator and the gas reservoir with the axial passage coaxial with the gas flow orifice and isolated from the high pressure gas by the infrangible diaphragm; and
- an explosive detonator in the axial gas flow passage external to the gas storage reservoir and adjacent the frangible diaphragm for bursting the diaphragm upon receipt of an electrical signal; and wherein
- the gas storage reservoir includes an inverted neck extending from an end towards the interior of the reservoir, the frangible diaphragm being within the inverted neck, and wherein the connection means includes a female connector moiety within the inverted neck and a male connector moiety on the gas generator.

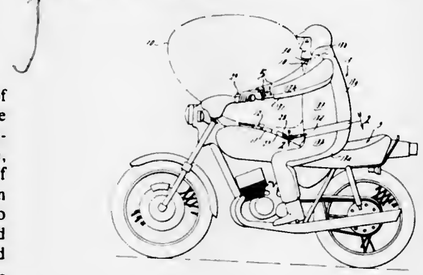
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**3,930,667**

## INFLATABLE GARMENT FOR CRASH PROTECTION

**Andrew J. Osuchowski, 19396 Sherwood Ave., Detroit, Mich. 48234, and Robert S. Lulenski, 29334 Campbell Drive, Warren, Mich. 48093**

**Filed Feb. 14, 1975, Ser. No. 550,153**
**Int. Cl.² B60R *21/00***
**U.S. Cl. 280—150 AB** **10 Claims**



1. In a crash protection device for a rider who jumps or is thrown from a vehicle having a source of pressurized gas actuatable to release said gas in anticipation of predetermined deceleration of the vehicle, an inflatable garment adapted to be worn by the rider, hose means for connecting at one end with said source of gas, connecting means carried by said garment for releasably connecting the other end of said hose means with said garment to inflate the latter upon release of said gas from said source and being releasable from said other end by the pull of the garment thereon when the rider wearing said suit falls from the motorcycle, and one-way valve means cooperable with said connecting means to enable inflation of said garment by the gas from said source and to prevent escape of said gas from said garment via said connecting means.



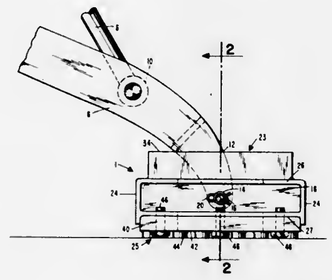
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**3,930,668**

## STABILIZER FOOT FOR BACKHOES AND THE LIKE

**Kenneth W. Schuermann, and Fred H. Kohman, both of Perry, Okla., assignors to The Charles Machine Works, Inc., Perry, Okla.**

**Filed Aug. 23, 1974, Ser. No. 500,188**
**Int. Cl.² B60S *9/02***
**U.S. Cl. 280—150.5** **5 Claims**



1. A foot for the ground engaging end of a stabilizing support arm as employed with earth working construction equipment such as a backhoe comprising:
- a pad having a plurality of ground engaging faces, each such face forming one side of said pad and each face having a different ground engaging configuration to accommodate different terrain conditions;
- removable attaching means for connecting said pad to the stabilizing support arm in a selected one of a plurality of different orientations where in each of said orientations only one ground engaging face of said pad is retained to be engageable with the ground surface, said removable attaching means including a removable pin means forming an axis to pivotally connect said pad to the stabilizing support arm and permit limited pivoting of said pad relative to the support arm for said pad to align itself with the ground surface it engages and thereby afford optimal ground contact between the surface of the pad and the engaged ground surface;
- means on said pad limiting the degree of pivoting of the pad relative to the stabilizing support arm such that in each orientation of said pad only one of said plurality of ground engaging faces is retained in oriented position to engage the ground surface; and
- said pin means having retaining means thereon to restrict removal of said pin, removal of said pin being required to detach said pad from the stabilizing support arm and enable orientation of said pad to a different selected orientation position whereat said pin means is reinserted and another of said ground engaging faces is pivotally retained to align with the ground surface it engages.

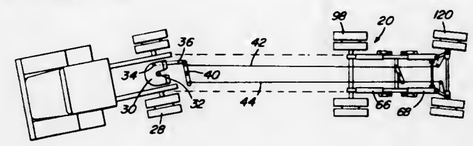
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**3,930,669**

## STEERABLE TRAILER SUSPENSION SYSTEM

**Melvin M. Kollander, Cedar Crest, N. Mex.; Norman A. Kollander, Stillwater, Minn.; James B. Wade, and Anthony Parisi, both of Albuquerque, N. Mex., assignors to East Sandia Industrial Group, Cedar Crest, N. Mex.**

**Filed Nov. 12, 1974, Ser. No. 523,139**
**Int. Cl.² B62D *13/02***
**U.S. Cl. 280—426** **24 Claims**



1. A steerable trailer suspension system comprising a tandem axle assembly including a pair of longitudinally extending supporting beams, front resiliently supported rocker assemblies on the beams supporting forward wheel assemblies, rear resiliently supported rocker assemblies on the beams supporting rear wheel assemblies, spindle assemblies on one pair of rocker assemblies supporting the wheel assemblies therefrom for swinging movement about substantially vertical axes spaced forwardly of the rotational axes of the wheel assemblies supported from the spindle assemblies, and steering control means connected to the spindle assemblies for controlling the orientation of the steerable wheel assemblies.

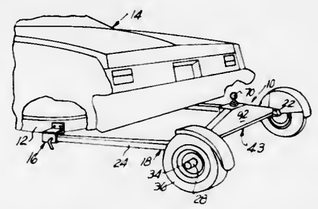
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**3,930,670**

## OSCILLATION DAMPING AND STABILIZING TRAILER HITCH DOLLY

**Robert William Haskins, Orchard Lake, Mich., assignor to Robert Whittemore Haskins, Orchard Lake, Mich.**

**Filed Oct. 8, 1974, Ser. No. 506,980**
**Int. Cl.² B60D *7/00***
**U.S. Cl. 280—476 R** **10 Claims**



1. An oscillation-damping and stabilizing trailer hitch dolly for connecting the chassis of a towing vehicle to a trailer with a conventional first trailer hitch component thereon, said dolly comprising
- a dolly coupling adapter structure adapted to be secured to the rearward portion of the towing vehicle chassis,
- a dolly frame including a cross member and a draft structure extending forward from said cross member into coupling engagement with said adapter structure,
- pivot means pivotally interconnecting said structures,
- axle means mounted on said frame transversely of said draft structure,
- ground wheels mounted on said axle means in laterally-spaced relationship for rotation relatively to said frame, a leaf spring mounted on said cross member transversely of said frame for vertical oscillation relatively thereto,
- and a second trailer hitch component adapted to cooperably engage the first trailer hitch component in separable hitching relationship, said second trailer hitch component operatively engaging and transmitting motion between said leaf spring and the first trailer hitch component.

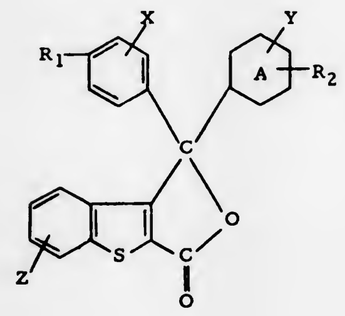
**3,930,671**

## COLOR FORMER AND PRESSURE-SENSITIVE COPYING PAPER

**Hideo Usui; Sadao Ishige; Teruo Kobayashi, all of Minami-ashigara, and Keiso Saeki, Fujimiya, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan**

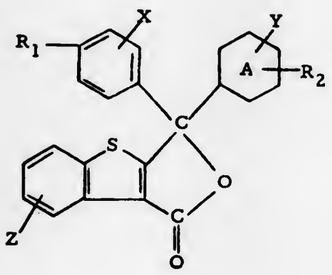
**Filed Apr. 17, 1974, Ser. No. 461,769**
**Claims priority, application Japan, Apr. 19, 1973, 48-44403**
**Int. Cl.² B41M** *5/16*
**U.S. Cl. 282—27.5** **6 Claims**

**1.** A pressure-sensitive copying paper system which comprises a support having thereon a color former layer containing a 1,3-dihydro-1-oxo-benzo[b]thieno[2,3-C]furan derivative represented by the following General Formula I:



(I)

or a 1,3-dihydro-3-oxo-benzo[b]thieno[2,3-C]furan derivative represented by the following General Formula II:



(II)

wherein ring A represents a benzene ring or a naphthalene ring, $R_1$ and $R_2$ each represents an amino group, and X, Y and Z each represents a hydrogen atom, a halogen atom, an alkyl group, an aralkyl group, an alkoxy group, an aralkoxy group, an acyloxy group, a nitro group or an amino group and a color developer layer for said color former on the same or opposite side of said support, or on a different support.

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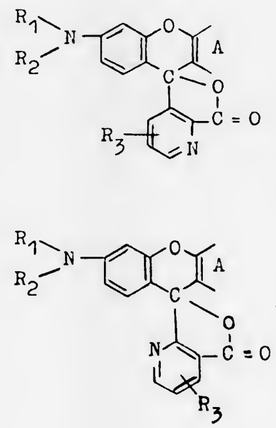
**3,930,672**

## PRESSURE-SENSITIVE COPYING PAPER CONTAINING LACTONE COMPOUNDS DERIVED FROM PYRIDINE-CARBOXYLIC ACID

**Minoru Ozutsumi; Yoshihide Miyazawa; Susumu Suzuka, all of Tokyo; Sadao Ishige, Kanagawa; Keiso Saeki, and Akio Watanabe, both of Shizuoka, all of Japan, assignors to Hodogaya Chemical Co., Ltd., Tokyo and Fuji Photo Film Co., Ltd., Minami-ashigara, both of, Japan**

**Filed Mar. 25, 1974, Ser. No. 454,527**
**Claims priority, application Japan, Mar. 23, 1973, 48-32719**
**Int. Cl.² B41M** *5/12, 5/16, 5/22*
**U.S. Cl. 282—27.5** **7 Claims**

**1.** A pressure-sensitive copying paper system comprising an adsorbent solid acid and a micro-encapsulated color former capable of forming a distinct color when reacted with said adsorbent solid acid, each coated on the same or different surfaces of one or more supports, said microcapsules containing an organic solvent having dissolved therein a lactone color former comprising at least one lactone compound derived from pyridine-carboxylic acid represented by the formula



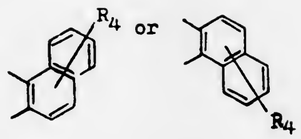
(I)

or a mixture thereof, wherein $R_1$ represents a hydrogen atom, a lower alkyl group or a benzyl group; $R_2$ represents a lower alkyl group, a benzyl group or a substituted or unsubstituted phenyl group wherein the substituent is a lower alkyl group or a halogen atom; $R_3$ represents a hydrogen atom, a lower alkyl group, a halogen atom or a phenyl group; and the partial



structure 

represents



wherein $R_4$ represents a hydrogen atom, a lower alkyl group, a lower alkoxy group, a halogen atom, an amino, mono-lower alkylamino, di-lower alkyl-amino, monobenzylamino, dibenzylamino, N-lower alkyl-N-benzylamino, anilino, N-lower alkylanilino or -NHCO-X group wherein X represents a lower alkyl, lower alkenyl or a substituted or unsubstituted styryl, phenyl or naphthyl group, the substituent being a lower alkyl, lower alkoxy, di-lower alkylamino, hydroxy or nitro group or a halogen atom, wherein the lower alkyl, alkoxy and alkenyl groups have 1 to 5 carbon atoms.

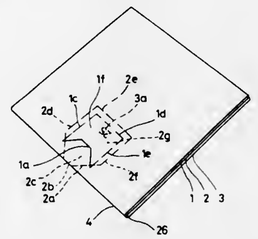
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**3,930,673**

## LOTTERY TICKET

**Stig Emil Sanden, Ystadnagen 22, S-241 00 Ystad, Sweden**

**Filed Aug. 9, 1974, Ser. No. 496,065**
**Claims priority, application Sweden, Aug. 28, 1973, 7311641**
**Int. Cl.² B42D** *15/00*
**U.S. Cl. 283—6** **7 Claims**




**1.** A lottery ticket of laminar sheet material adapted to be opened by breaking at least one outer and at least one inner seal, the improvement consisting in that the ticket comprises a top leaf (**1**) provided with weakening or perforation lines (**1***a*) disposed in spaced relation to the ticket edge to provide a finger-grip for tearing off a first lug (**1***b*) thereof, an intermediate leaf (**2**) provided with weakening or perforation lines (**2***a*) which provide a finger-grip for tearing off a lug (**2***c*, **2***f*) after said lug (**1***b*) of top leaf (**1**) has been torn off, said lug (**2***c*, **2***f*) of the intermediate leaf being partially disposed beneath a lug (**1***f*) or a window (**1***g*) of the top leaf (**1**) and defined by weakening or perforation lines (**2***d*, **2***e* and **2***f*) which, relative to the outer edges of the lottery ticket, are disposed outside weakening or perforation lines (**1***c*, **1***d* and **1***e*) defining said second lug (**1***f*) of the top leaf (**1**), or outside the edges defining the window (**1***g*) formed in the top leaf, so that at least a portion of the lug (**2***c*, **2***g*) of the intermediate leaf is larger than the lug (**1***f*) on the window (**1***g*) of the top leaf, said lottery ticket further comprising a bottom leaf (**3**) carrying a ticket number (**3***a*) or other suitable designation so disposed as to be visible in the opening formed when the second lug (**1***f*) of the top leaf and the lug (**2***c*, **2***g*) of the intermediate leaf have been lifted off, or exposed in the window (**1***g*) as the lug (**2***c*, **2***g*) of the intermediate leaf has been pulled out from between the top and bottom leaves (**1** and **3**).

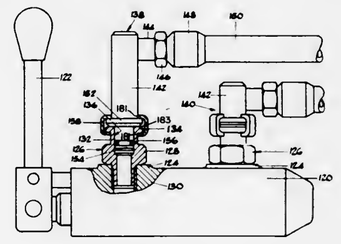
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**3,930,674**

## COUPLINGS

**Nils Gunnar Jonsson, 36 Rainbow Ave., Farramere, Benoni, 1500, South Africa**

**Filed Mar. 29, 1974, Ser. No. 456,381**
**Claims priority, application South Africa, Mar. 30, 1973, 73/2189; May 9, 1973, 73/3160; June 21, 1973, 73/4183; Sept. 21, 1973, 73/7464**
**Int. Cl.² F16L** *37/08*
**U.S. Cl. 285—80** **9 Claims**



**1.** A coupling for transmitting high pressure fluid comprising: two conduit members having interengaging sealing means and cylindrical flanges, said conduit flanges being in proximity with each other when the sealing means engage; and snap clip means in the form of a single generally arcuate web member subtending more than two right angles at the center of the arc, said web having two end portions each having a pair of flanges projecting radially inwardly and engaging the side faces of said conduit flanges, said clip flanges extending along a substantial portion of the circumference of said web and being sufficiently robust to prevent the conduit flanges from moving apart under the action of internal fluid pressure, the edges of said clip flanges engaging the walls of said conduit members adjacent said conduit flanges to space said web outwardly of the peripheries of said conduit flanges so as to form a space between said web and the peripheries of said conduit flanges, the central portion of said web being free of flanges and being resilient so that the flanged ends of the clip means can be moved apart to allow the clip means to snap over said cylindrical conduit flanges whereupon the flanges of said clip means resist separation of said conduit flanges and whereby rapid removal of the said clip means may be effected by inserting a tool into said space.

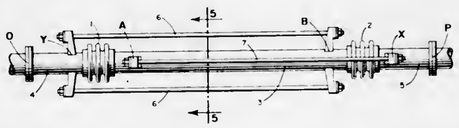
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**3,930,675**

## STRAIN EQUALIZER FOR THERMALLY STRESSED PIPES

**Joachim Sasse, Junkersdorf, Germany, assignor to Chemiebau Dr. A. Zieren GmbH & Co., Cologne, Germany**

**Continuation of Ser. No. 213,095, Dec. 28, 1971, abandoned. This application Aug. 14, 1974, Ser. No. 497,270**
**Claims priority, application Germany, Dec. 28, 1970, 2064140**
**Int. Cl.² F16L** *51/02*
**U.S. Cl. 285—114** **6 Claims**

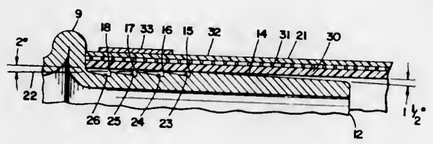


**1.** A device for compensating for the thermal expansion of a pipeline fixedly disposed between components so as to minimize bearing pressures at said components, comprising:

a. at least one linear pipeline section extending between a first and a second longitudinally spaced, fixedly disposed, stress-susceptible pipeline component;
b. longitudinally spaced first and second linear bellows-type strain equalizers interposed in said pipeline section between and spaced inwardly from said components, the portion of said pipeline between said longitudinally spaced first and second strain equalizers being continuous and rigid;
c. a first rigid longitudinal anchor rigidly secured at one end thereof to said pipeline section at a first point thereon between said strain equalizers and nearer the first strain equalizer, and rigidly secured at the other end thereof to said pipeline section at a second point thereon between the second strain equalizer and said second component;
d. a second rigid longitudinal anchor rigidly secured at one end thereof to said pipeline section at a third point thereon between the first strain equalizer and said first component, and rigidly secured at the other end thereof to said pipeline section at a fourth point thereon between said strain equalizers and nearer the second strain equalizer;
e. the distance between said second and third points being less than the sum of the distance between said first and second points plus the distance between said third and fourth points; and
f. the distance between said first point and said fourth point along which distance said anchors longitudinally overlap being approximately equal to the sum of the distance between said first component and said third point plus the distance between said second component and said second point.

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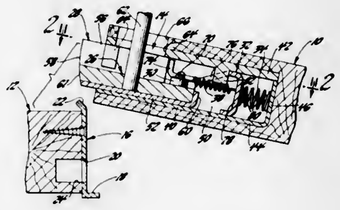
**3,930,676**
**HOSE COUPLING AND JOINT**
**Cecil L. Adams, Burton, Ohio, assignor to Parker-Hannifin Corporation, Cleveland, Ohio**
**Continuation of Ser. No. 89,483, Nov. 13, 1970, abandoned, which is a continuation of Ser. No. 788,490, Jan. 2, 1969, abandoned. This application Dec. 13, 1974, Ser. No. 532,456**
**Int. Cl.² F16L** *33/02*
**U.S. Cl. 285—253** **3 Claims**




1. A hose coupling joint comprising a hose of relatively hard but flexible material resistant to radially outward expansion, a coupling having a radial abutment and having a nipple extending from one side of the abutment into an end of the hose, the nipple having axially inner and outer annular portions each of greater length than their maximum outside diameters, said abutment extending radially beyond each of said inner and outer portions the outer portion having a smooth uninterrupted exterior surface that tapers at an angle of substantially 1½° to the longitudinal axis of the coupling from a smaller diameter at its outer end to a larger diameter at its inner end, said larger diameter being substantially the same as the normal inside diameter of the hose and said smaller diameter being smaller than the normal inside diameter of the hose to facilitate the insertion of said nipple into said hose and to permit flexing and radial movement of the hose relative to said outer portion, a first barb at the inner end of said outer portion, a series of additional barbs between said first barb and said abutment, the inner edge of each barb being smaller in diameter than the inner edge of the adjacent barb in the axially outward direction whereby a line through said edges makes an angle of about 2° with the longitudinal axis of said nipple, a circular clamp having a smooth inner surface and of less axial length than said inner portion surrounding the hose radially opposite all of said additional barbs and clamping the hose thereagainst, said clamp prior to applying clamping pressure having a substantially uniform inner diameter whereby upon radial contraction of said clamp there is progressively greater compression of the hose against said additional barbs in a direction toward said outer portion, the axially outer end of said clamp being spaced axially inwardly of said first barb whereby direct clamping pressure applied by the clamp to the hose will be on said additional barbs and there will be no direct clamping pressure from the clamp applied at the first barb so that stretching or flexing of the hose is not resisted in an abrupt manner at said first barb.

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**3,930,677**
**LATCH MECHANISM FOR CLOSURE MEMBER**
**Lyn C. Hollis, Pontiac, Mich., assignor to General Motors Corporation, Detroit, Mich.**
**Filed Nov. 21, 1974, Ser. No. 525,944**
**Int. Cl.² E05C** *1/12*
**U.S. Cl. 292—169.13** **2 Claims**

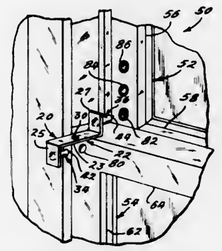



1. A latch mechanism for a closure member that is supported for movement between an open position wherein said closure member is spaced from a fixed strike plate having an opening formed therein and a closed position wherein said closure member is located adjacent said strike plate, said latch mechanism comprising a housing having an outer edge, a main bolt slidably supported in said housing, said main bolt having an outer end and an inner end and being adapted to be located in a retracted position wherein the outer end of the bolt is positioned substantially at the outer edge of the housing, and a normally extended position wherein the outer end of said main bolt is located outwardly beyond the outer edge of the housing a predetermined distance, and a fully extended position wherein the outer end of the bolt is located outwardly beyond the outer edge a distance greater than said predetermined distance, an auxiliary bolt having a pair of legs formed therewith and being slidably supported in said housing along side said main bolt, said auxiliary bolt having an outer end adapted to assume, a normally extended position wherein said outer end of the auxiliary bolt extends out of said housing a distance substantially equal to said predetermined distance and a retracted position wherein said outer end of the auxiliary bolt is located substantially at said outer edge of said housing, said outer end of the auxiliary bolt adapted to contact said strike plate and be moved into and be maintained in its retracted position when said closure member is in said closed position, an elongated link, an actuator member, a first pivot connection for connecting one end of said link to said auxiliary bolt, a second pivot connection for connecting the acutator member to said link adjacent to said first pivot connection, a lost motion connection for connecting the other end of said link to said main bolt, a tension spring extending between said main bolt and said actuator member, and a compression spring normally biasing said actuator member outwardly from said housing for maintaining the main bolt and the auxiliary bolt in said normally extended position when said closure member is in said open position and for causing the main bolt to be extended by said link to said fully extended position into the opening in said strike plate when said closure member is in said closed position.



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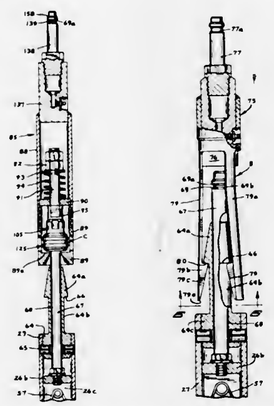
**3,930,678**
**LOCKING MEANS FOR SLIDING CLOSURES**
**James H. Alexander, 6175 Delmar, St. Louis, Mo. 63112**
**Filed Oct. 21, 1974, Ser. No. 516,406**
**Int. Cl.² E05C** *19/18*
**U.S. Cl. 292—288** **23 Claims**




1. Means for preventing relative movement between members mounted for relative sliding movement, each of said members having a surface with an opening formed therein, said means comprising a one-piece locking member having spaced substantially parallel means thereon for simultaneously cooperating with the openings formed in the relatively movable members whereby the members are locked in selected relative positions.

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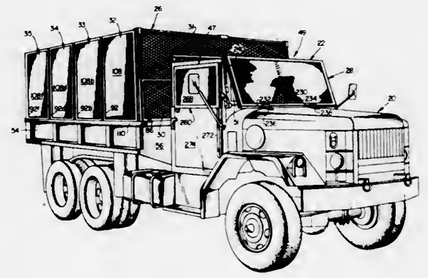
**3,930,679**
**DRY HOLE WIRE CORE BARREL APPARATUS**
**Ronald B. Anderson, Minneapolis, and Walter W. Svendsen, New Brighton, both of Minn., assignors to Longyear Company, Minneapolis, Minn.**
**Filed Apr. 11, 1974, Ser. No. 460,215**
**Int. Cl.² E21B** *25/00, 31/00*
**U.S. Cl. 294—86.34** **28 Claims**



1. A wire line core barrel inner tube assembly comprising tubular means for receivingly retaining a core therein, a latch body, means for connecting the core receiving means to the latch body, a latch mounted on the latch body for limited movement relative thereto between a drill stem latch seat engaging position and a retracted position, latch release means mounted on the latch body for limited movement relative thereto for releasing the latch from the drill stem latch seat engaging position, and a first overshot coupling member fixedly secured to the latch body.

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**3,930,680**
**MODULAR STRUCTURES FOR ENCLOSING A VEHICLE LOAD OR PASSENGER RECEIVING SPACE**
**Roger L. Littlefield, Rte. No. 2, Box 47A, Purcellville, Va. 22132**
**Continuation of Ser. No. 221,297, Jan. 27, 1973, which is a continuation of Ser. No. 867,233, Oct. 17, 1969, abandoned. This application July 13, 1973, Ser. No. 378,965**
**Int. Cl.² B60P** *3/32*
**U.S. Cl. 296—10** **28 Claims**



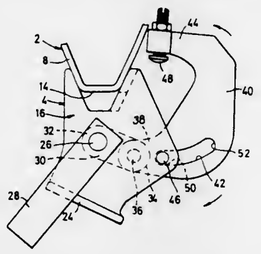
1. A conversion assembly for converting a truck having an open load or passenger-carrying bed structure into a carrier for either confining detained persons or protecting passengers wherein said truck has upwardly opening hollow stanchions extending upwardly from said bed structure, said conversion assembly comprising a series of enclosure-defining knockdown panels for enclosing said bed structure, a sub-assembly of said series of panels defining side and end wall portions of the enclosure defined by said series of panels, and said sub-assembly of panels being detachably mounted directly on said truck without the use of tool-manipulated fasteners of any kind, each of the panels forming said side wall portions comprising an inner frame, an outer frame fixed to said inner frame, a pair of legs rigid with said inner frame and being adapted to be removably slidably received in predetermined pair of said stanchions, and means fixed to said outer frame for enclosing the frame space bordered by said outer frame, said outer frame and said last mentioned means being disposed exteriorly of said pair of stanchions when said legs are received in said pair of stanchions, and said means enclosing said frame space comprising inner and outer screens fixed to said outer frame in spaced apart, essential parallel relation, with the outer one of said screens being sufficiently resilient to have a spring effect for repelling thrown objects.

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**3,930,681**
**AUTOMOTIVE VEHICLE TILT CAB LATCHING DEVICES**
**Arthur Malcolm Burton, Leighton Buzzard, and Ronald Jost, Luton, both of England, assignors to General Motors Corporation, Detroit, Mich.**
**Filed Oct. 21, 1974, Ser. No. 516,266**
**Claims priority, application United Kingdom, Nov. 8, 1973, 51835/73**
**Int. Cl.² B62D** *23/00*
**U.S. Cl. 296—35 R** **5 Claims**

1. In an automotive vehicle having a frame and a tilt cab adapted to be tilted about a hinge axis at the front of the vehicle frame from a down position to a raised position thereon, a tilt cab latching device comprising:
a tilt cab member movable, upon tilting of the cab, into and out of abutment with a member of said vehicle frame,
and a toggle clamp operable to clamp said tilt cab member and said frame member together when said tilt cab is in the down position, said toggle clamp comprising:

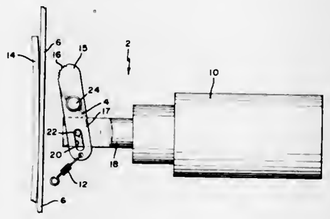
a latch housing secured on one of said tilt cab and frame members;
a pivot bar pivotally mounted on said housing and pivotable about the longitudinal axis of said pivot bar;
a lever fixed at one end thereof on said pivot bar and operable to pivot said pivot bar about said axis;
an over-centre link fixed at one end thereof on said pivot bar, and having at its other end a link pin;
a hook member of greater length than said over-centre link, and having two opposed ends, one of which is pivotally mounted on said link pin;
means connecting said hook member and said latch housing, said means comprising a slot formed in said hook member adjacent said one end thereof, and a guide-pin secured in said housing and extending through said slot, the means constraining said hook member so that angular movement of said lever into a first predetermined position effects movement of the hook member and the over-centre link into a position in which the over-centre link is at an angle to a line joining said pivot bar and the position of abutment of said tilt cab and frame members, a line joining the ends of the hook member is at an angle to said over-centre link and the other end of said hook member is disengaged from the other of said tilt cab and frame members;
and movement of the lever towards a second predetermined position pivots said over-centre link and link pin into a position over-centre relative to a line joining said pivot bar axis and said abutment position of said tilt cab and frame members, and the means constrains the hook member to move angularly about said link pin relative to said over-centre link whereby the other end of the hook member is brought into engagement with said other member to clamp together said tilt cab and frame members and latch said tilt cab to said frame.



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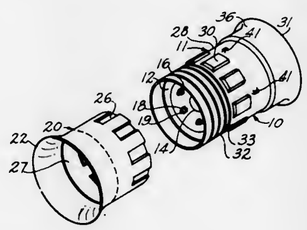
**3,930,682**
**SAFETY BELT TENSION RELIEVING APPARATUS**
**Frederick C. Booth, Birmingham, Mich., assignor to Allied Chemical Corporation, New York, N.Y.**
**Filed Sept. 30, 1974, Ser. No. 510,814**
**Int. Cl.² A62B** *35/00*
**U.S. Cl. 297—388** **10 Claims**

**1.** In a vehicle safety belt system adapted to restrain an occupant in a vehicle seat, the safety belt system including a shoulder belt and a retractor having a rewind mechanism biased to rewind the shoulder belt on a reel of the retractor, the improvement of a shoulder belt, tension-relieving apparatus adapted for relieving tension on the shoulder belt by the rewind mechanism of the retractor, said shoulder belt tension-relieving apparatus comprising:
a pressure sensing means disposed in the back portion of the seat adjacent to the back of the seated occupant, said pressure sensing means adapted to sense a condition when the seated occupant is leaning against the back portion of his seat;
a locking member disposed adjacent to a portion of the safety belt, having a locking position and an unlocking position and being adapted to be actuated from its unlocking position to its locking position, said locking member in its locking position preventing further rewinding of the shoulder belt into the retractor;
an electric actuating means mounted adjacent to said locking member, mechanically connected to said locking member and electrically connected to said pressure sensing means, said electric actuating means actuating said locking member to its locking position to thereby relieve the tension on said shoulder belt produced by the rewind mechanism of the retractor in response to said pressure sensing means sensing said occupant leaning against said back; and
a biasing means biasing said locking member in its unlocking position.



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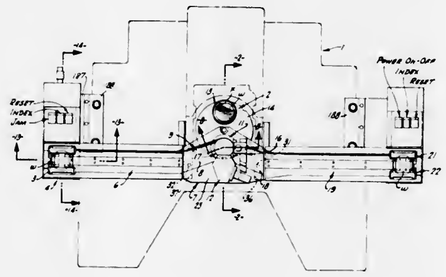
**3,930,683**
**DEMOUNTABLE PNEUMATIC TIRE RIM ASSEMBLY**
**Graeme J. MacKeown, Box 127, Rte. 5, Marysville, Ohio 43040**
**Filed Nov. 27, 1974, Ser. No. 527,905**
**Int. Cl.² B60B** *23/04*
**U.S. Cl. 301—11 R** **1 Claim**



**1.** In a demountable pneumatic tire rim assembly: a pneumatic tire rim assembly comprising a cylindrical support rim having a central mounting means thereon for fixed attachment to a vehicle, said support rim including a projecting portion extending therefrom, a removable rim having a projecting portion corresponding to at least part of the projecting portion of said support rim whereby said portions are assembled in coextensive and overlapping relationship to each other and whereby said removable rim is removably fitted to said support rim and a tire may be mounted and inflated on said assembled support rim and removable rim, and locking members on said removable rim which are formed by depressing the surface of the rim to form a plurality of cavities at the edge thereof out of the plane of the surface of the removable rim and which are engageable with corresponding locking members on said fixed support rim by relative motion there between to remove or replace same, and to retain said rims in coextensive overlapping relationship to receive the tire which is inflated thereon.



**3,930,684**
**AUTOMATIC WAFER FEEDING AND PRE-ALIGNMENT APPARATUS AND METHOD**
**Cecil A. Lasch, Jr., 21230 Homestead Road, Cupertino, Calif. 95014; Laszlo Sipos, 18883 Allendale Ave., Saratoga, Calif. 95070, and Karl Ursprung, 3655 Pruneridge Ave., Santa Clara, Calif. 95051**
**Continuation of Ser. No. 155,499, June 22, 1971, abandoned.**
**This application Oct. 9, 1973, Ser. No. 404,287**
**Int. Cl.² B65G** *47/24*
**U.S. Cl. 302—2 R** **62 Claims**

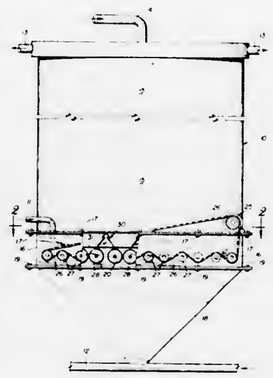


**1.** A method of pre-aligning wafers prior to mask alignment or like treatment thereof without handling, comprising
A. feeding generally circular wafers in sequence from a supply thereof, each of which includes a flat edge portion, to a pre-alignment station,
B. providing reading means at said station capable of determining automatically when the flat edge portion of each wafer is in a predetermined orientation,
C. rotating each said wafer in sequence at said pre-alignment station beneath said reading means on a directional fluid bearing which supports and imparts rotational movement thereto until said reading means senses each such wafer is in said predetermined orientation, and
D. maintaining such orientation of each such wafer while transferring the same to a mask alignment station from said pre-alignment station.

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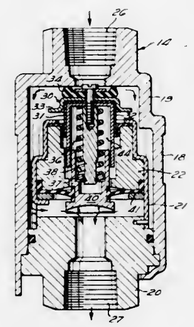
**3,930,685**
**SOLIDS FLOW CONTROL DEVICE**
**Thomas Henry Milliken, Riverton, Wyo., assignor to Western States Mining Partners, Ltd. "B", Riverton, Wyo.**
**Filed Oct. 31, 1974, Ser. No. 519,512**
**Int. Cl.² B65G** *53/30, 3/06*
**U.S. Cl. 302—15** **12 Claims**

**1.** A solids flow control device for controlling the rate of flow and the distribution of flow of solids in a continuous counter current contact between liquid and solids, comprising
a. a vessel provided with liquid intake means near its bottom receiving upwardly directed liquid for interaction with a bed of solids free to move downwardly in the vessel,
b. a series of rotatable rolls occupying the total cross section of the bottom of the vessel, said rolls being axially parallel and grouped in pairs in which the rolls of each pair turn counter to one another, each pair being spaced from an adjacent pair,
c. a series of horizontal baffles located above the spaces between pairs of rolls, said baffles extending the length of the rolls and over the two nearest rolls to about their vertical center lines, and
d. means rotating the rolls.



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**3,930,686**
**AIR BRAKE BLEND BACK PROPORTIONING VALVE**
**Edward S. Orzel, Cleveland, Ohio, assignor to The Weatherhead Company, Cleveland, Ohio**
**Filed May 31, 1974, Ser. No. 475,059**
**Int. Cl.² B60T** *15/36*
**U.S. Cl. 303—6 C** **9 Claims**



**8.** A fluid pressure proportioning valve comprising a housing having an inlet port and an outlet port, a shuttle piston slidably disposed in said housing, said shuttle piston having an inlet end face and an outlet end face, said inlet and outlet end faces each including a diaphragm having a radially outer portion secured to said housing, said inlet and outlet diaphragms being axially spaced apart and cooperatively defining in said housing a reference pressure chamber, said reference pressure chamber being constructed and arranged such that it is isolated from pressure in said inlet port and from pressure in said outlet port under all conditions, said inlet and outlet diaphragms each having one side exposed to the pressure in said reference pressure chamber, said inlet diaphragm having another side which carries a valve surface movable between an open position and a closed position for throttling flow from said inlet port to said outlet port to control increases in pressure in said outlet port in response to increases in pressure in said inlet port, said inlet end face having a predetermined cross-sectional inlet area on said other side of said inlet dia-

phragm exposed to pressure in said inlet port under all conditions constructed and arranged such that the pressure in said inlet port acting against said inlet area urges said valve surface toward said open position, said outlet diaphragm having another side, said outlet end face having a predetermined cross-sectional outlet area on said other side of said outlet diaphragm exposed to pressure in said outlet port constructed and arranged such that the pressure in said outlet port acting against said outlet area urges said valve surface toward said closed position when said outlet port pressure is less than a predetermined pressure, said outlet area being axially movable relative to said inlet area from a rest position to a displaced position, said outlet area being in said rest position when said outlet port pressure is less than said predetermined pressure, said outlet area being in said displaced position when said outlet pressure exceeds said predetermined pressure, and said outlet area being constructed and arranged such that the pressure in said outlet port acting against said outlet area is inoperative to urge said valve surface toward said closed position but urges said outlet area against said housing when said outlet area is in said displaced position.

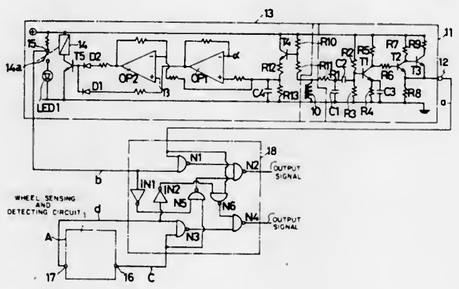
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**3,930,687**

## SIGNAL GENERATING CIRCUIT FOR ANTI-SKID BRAKE CONTROL APPARATUS

**Hiroyuki Amano, Chiryu, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan**

**Filed July 22, 1974, Ser. No. 490,922**
**Claims priority, application Japan, July 28, 1973, 48-85237**
**Int. Cl.² B60T *8/00***
**U.S. Cl. 303—21 AF** **7 Claims**



**7.** A signal generating circuit for anti-skid brake system including at least a pair of first and second sensing coils correlated to first and second wheels for sensing rotational conditions of said first and second wheels, respectively, and generating first and second signals in response thereto, wherein upon faulty conditions occuring in either one of said first and second sensing coils, the signal of the other one of said first and second sensing coils is entirely substituted to directly replace the signal of said faulty sensing coil in order to maintain anti-skid brake operation even in the event that one of the sensing coils is faulty.

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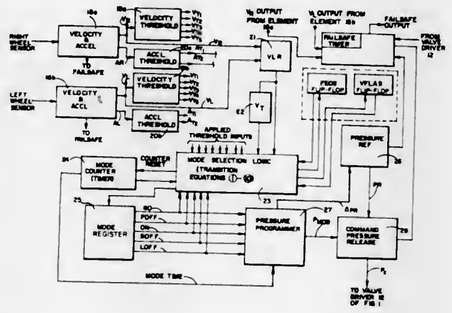
**3,930,688**

## ANTI-SKID CONTROL SYSTEM

**James E. Rau; Rogell Van Wyk, both of Anaheim, and George A. Watson, Tustin, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.**

**Continuation of Ser. No. 354,295, April 25, 1973, abandoned.**
**This application Oct. 15, 1974, Ser. No. 514,974**
**Int. Cl.² B60T *8/08***
**U.S. Cl. 303—21 P** **12 Claims**

**1.** A digital machine method for augmenting braking control of a braked wheeled vehicle employing fluid pressure operated wheel brakes, comprising the step of selectively modulating the fluid pressure applied to the valve of at least one braked wheel so as to cause the braking control to track



the knee of the road torque and wheel velocity versus time envelope.

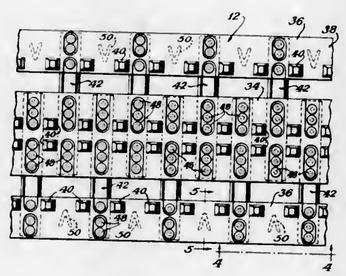
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**3,930,689**

## DRIVE BELT ASSEMBLY FOR SNOWMOBILES

**Kenneth A. Maki, Thief River Falls, Minn., assignor to Arctic Enterprises, Inc., Thief River Falls, Minn.**

**Filed May 23, 1974, Ser. No. 472,716**
**Int. Cl.² B62D *55/24***
**U.S. Cl. 305—35 EB** **7 Claims**



**1.** A drive belt assembly for a snowmobile, said assembly comprising, in combination, an endless drive belt operatively and drivably supported on said snowmobile, first and second lateral edges defined on said drive belt, longitudinally spaced rigid metallic drive cleats securely mounted on the outer surface of said drive belt, each of said cleats extending transversely partially across said belt, each of said cleats having first and second end portions, said second end portion being spaced inwardly from said second edge, an outer surface portion defined on said belt adjacent each of said cleats between said second end portion and said second edge, and flexible upright means projecting from each of said outer surface portions, said cleats and said flexible means cooperating to provide forward traction for said snowmobiles while substantially avoiding side slippage of said snowmobile.

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**3,930,690**

## AGITATOR SHAFT SEAL

**Roy F. Broyhill, Dakota City, Nebr. 68731**

**Filed Jan. 17, 1975, Ser. No. 541,851**
**Int. Cl.² F16C *1/24*, *33/72***
**U.S. Cl. 308—36.1** **7 Claims**

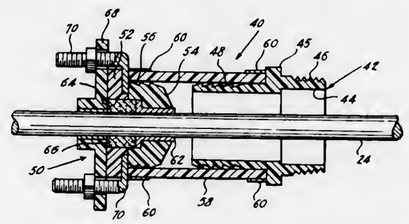
**1.** A method of applying a shaft seal to an agitator shaft for a tank for containing fluids, comprising the steps of:



providing an opening in the tank wall substantially larger than the diameter of the shaft,

arranging a portion of the shaft within the tank by passing it axially through the opening therein so that a portion remains exteriorly of the tank,

providing full and complete support for the shaft exteriorly of the tank and free of attachment thereto,



encasing the shaft exteriorly of the tank with a packing gland equipped seal unit having one end with a bore complementary to said opening, and

connecting said one end of said seal unit to the tank at the point of the opening therein.

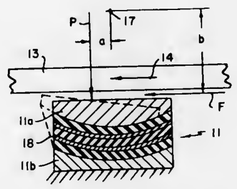
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**3,930,691**

## SWING PAD BEARING

**Jerome Greene, 1608 Comanche Road, Arnold, Md. 21012**

**Filed Apr. 12, 1974, Ser. No. 460,658**
**Int. Cl.² F16C *7/04*, *17/03*, *17/06*, *27/06***
**U.S. Cl. 308—160** **16 Claims**



**1.** A bearing having opposing relatively moving members including:

a plurality of pads mounted on one of said relatively moving members and interposed between said members;

each of said pads having a face portion and a base portion;

a fluid lubricant in contact with the bearing pads and said relatively moving members;

means responsive to the relative movement of the members to cause the face portion of each of said pads to swing in the direction of motion of the other of said members about a center of rotation positioned outside said pad in the direction of said other member.

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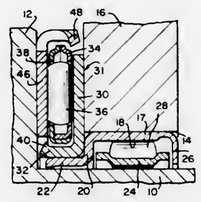
**3,930,692**

## COMBINED RADIAL AND THRUST BEARING

**Charles Edward Condon, Jr., Harwinton, and Charles Warrell Shattuck, Goshen, both of Conn., assignors to The Torrington Company, Torrington, Conn.**

**Filed Jan. 20, 1975, Ser. No. 542,112**
**Int. Cl.² F16C *19/04***
**U.S. Cl. 308—174** **8 Claims**

**1.** A combined radial and thrust bearing comprising: an axially extending rolling member radial bearing race having an axially extending raceway and a substantially radially inwardly extending annular portion; a radially extending rolling member thrust bearing race, an axial extension integrally connected to the inner periphery of the thrust bearing race or the inner periphery of said annular portion, or both,; a thrust bearing cage with rolling members; said thrust bearing cage having a predetermined inner periphery; means for retaining the thrust bearing cage against excessive axial movement; and radial bearing rolling members, said thrust bearing race being separate from and having at least a portion thereof in inter-



locking contact with said radially inwardly extending portion radially inwardly of the inner periphery of the thrust bearing cage so that force may be applied against the radially inner portion of the radially extending thrust bearing race and against the annular portion of the radial bearing race to assemble the bearing in a housing.

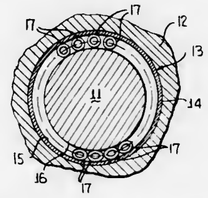
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**3,930,693**

## FULL COMPLEMENT BEARING HAVING PRELOADED HOLLOW ROLLERS

**Willard L. Bowen, Harwinton, Conn., assignor to The Torrington Company, Torrington, Conn. Continuation-in-part of Ser. No. 39,767, May 22, 1970 and continuation-in-part of Ser. No. 287,010, Sept. 7, 1972, Pat. No. 3,765,071.**

**Filed Feb. 2, 1973, Ser. No. 329,024**
**Int. Cl.² B63P *11/00*; B21H *1/14***
**U.S. Cl. 308—207 R** **11 Claims**



**1.** A full complement bearing comprising inner and outer race members and rollers positioned between said race members for individual relative movement; each of said rollers being circumferentially continuous, having a cylindrical central portion prior to being positioned between said race members, being hollow and preloaded between said race members so as to be in pressure contact with each of said race members at all times, and at least the initially cylindrical central portion having a degree of ovality.

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**3,930,694**

## BEARING FOR A VERTICAL AXLE

**Martin Acker, Block V14, Jena-Neulobeda, Gera, and Holm Scheufele, 32, Hanns-Eisler-Strasse, Jena-Winzerla, Gera, both of Germany**

**Filed Aug. 26, 1974, Ser. No. 499,101**
**Claims priority, application Germany, Sept. 20, 1973, 1217356**
**Int. Cl.² F16C *19/04***
**U.S. Cl. 308—227** **1 Claim**

**1.** A bearing for vertical axle, particularly for goniometers comprising

a non-displaceable member of an instrument,

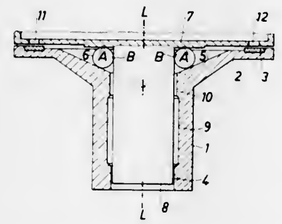
a bush being provided on said non-displaceable member,

a movable member of an instrument,

a cylindrical journal being rigidly connected to said movable member,

said bush being cylindrically and having a conical extension on its end portion adjacent to said movable member of said instrument,

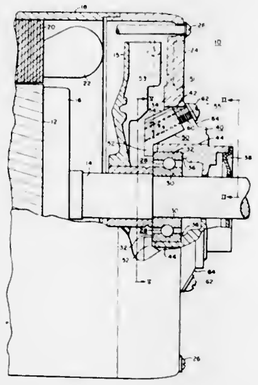
and a ball-bearing, surrounding said journal and being located in said conical extension, being in contact with said movable member, said journal, and said conical extension, said journal and said bush having a cylindrical region in common, said region being subdivided into three subsequent sections of different diameters, the first of said sections being located nearest relative to said ball bearing, and the third of said



sections being remotely located from said ball bearing, said second section being longer than said first and said third section, said journal and said bush having a diameter difference in the second section which is greater than that of the first section, the diameter difference in said third section being smaller than that of the first section, the differences of diameters between said journal and said bush in said third section related to the length of said third section being at least equal to the relation of the difference of diameter in said first section to the length of the common cylindrical region.

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**3,930,695**
**RACE SECURING DEVICE**
**Richard E. Forrest, Lima, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.**
**Filed Sept. 25, 1974, Ser. No. 509,167**
**Int. Cl.² F16B** *37/00*; **F16C** *33/30, 41/00, 43/00*
**U.S. Cl. 308—236** **5 Claims**

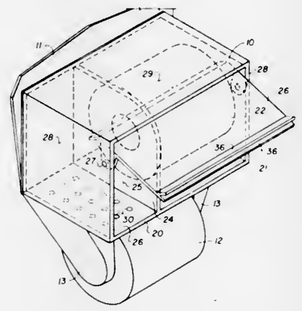


1. A bearing lock for confining a bearing within an end bell of a dynamoelectric machine, said bearing having an inner race, an outer race, and rolling elements therebetween, said end bell including an interior hub, said hub having a recessed seat adapted to receive said bearing and having an opening extending through said hub to an accessible exterior side of said end bell, said opening being adapted to receive said lock, comprising:

a nut having a shoulder portion in engagement with said hub and having a tang in engagement with said outer race of said bearing, said shoulder portion being in threaded engagement with a bolt, a predetermined portion of said hub being operable as a fulcrum for transmitting a mechanical force from said hub through said shoulder portion and said tang of said nut to said outer race of said bearing when assembled.

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**3,930,696**
**TOILET PAPER STORAGE AND DISPENSER**
**Florence M. Hight, and Duane D. Hight, both of Otis AFB, Mass., assignors to The Raymond Lee Organization, Inc., New York, N.Y.**
**Filed Sept. 4, 1974, Ser. No. 503,052**
**Int. Cl.² B65H** *19/00*; **A47B** *75/00*
**U.S. Cl. 312—39** **2 Claims**



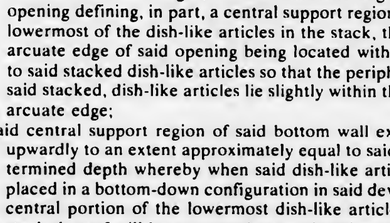
1. A cabinet for containing a storage roll of tissue and air freshener material mountable to the wall of a bathroom with means to dispense the stored air freshener material into the bathroom in which the device is installed comprising

a cabinet fitted with a partition dividing the interior into a first compartment and a second compartment, said first compartment of a size to hold a roll of tissue and said second compartment of a size for the storage of air freshener material, with an exterior wall of said second compartment perforated for permitting passage of air through the perforations, in which the cabinet is fitted with a pivotable door that in the closed position serves as an external wall of both compartments.

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**3,930,697**
**DISPENSER FOR STRIP MATERIAL**
**Victor Barouh, 935 Plum Tree Road West, Westbury, and Robert Glenn, 400 E. 56th St., New York, both of N.Y.**
**Filed Jan. 3, 1975, Ser. No. 538,413**
**Int. Cl.² B65H** *19/00*
**U.S. Cl. 312—39** **10 Claims**

1. A dispenser for strip material comprising a receptacle having an elongated support for supporting a feed roll of strip material, a cover overlying said receptacle and enclosing said feed roll of strip material, said receptacle and said cover having cooperating closely adjacent arcuate surfaces between which strip material is led, and a base detachably secured to said receptacle for forming in combination with said receptacle a storage compartment for storing strips of material removed from said feed roll of strip material.



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**3,930,698**
**PLATE HOLDER AND DISPENSER**
**Bruce W. Colgan, 1 Stagecoach Road, Northfield, Vt. 05663**
**Filed Oct. 21, 1974, Ser. No. 516,181**
**Int. Cl.² A47F** *1/00*
**U.S. Cl. 312—43** **7 Claims**



1. A dispenser for a plurality of stacked, dish-like articles, each of which is of a predetermined depth, comprising:

a bottom wall and a side wall extending away from said bottom wall, said side wall being of a configuration corresponding substantially to that of said dish-like articles and being of a height sufficient to receive a plurality of stacked dish-like articles therein;

said bottom wall having an arcuate opening formed therein, said opening substantially paralleling said side wall and circumscribing an arc of more than 180°, said opening being defined by a pair of substantially paralleling inner and outer arcuate edges, the inner arcuate edge of said opening defining, in part, a central support region for the lowermost of the dish-like articles in the stack, the outer arcuate edge of said opening being located with respect to said stacked dish-like articles so that the peripheries of said stacked, dish-like articles lie slightly within the outer arcuate edge;

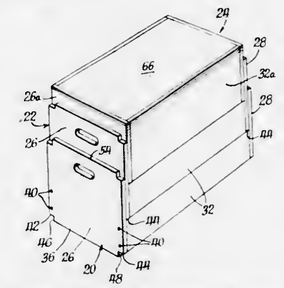
said central support region of said bottom wall extending upwardly to an extent approximately equal to said predetermined depth whereby when said dish-like articles are placed in a bottom-down configuration in said device, the central portion of the lowermost dish-like article in the stack thereof will be supported at an elevation such that the peripheral edge of said dish-like articles will be disposed approximately at the level of said bottom wall, said stack of dish-like articles being supported substantially solely by said central support region; and

said side wall having a heightwise extending slot formed therein in communication with said opening in said bottom wall.



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**3,930,699**
**STACKABLE AND NESTABLE CONTAINER UNITS**
**John G. Schnizlein, Jr., Naperville, Ill., assignor to Rosemary Schnizlein, Naperville, Ill.**
**Filed Feb. 6, 1975, Ser. No. 547,579**
**Int. Cl.² B65D** *21/06*; **F16B** *12/00*
**U.S. Cl. 312—108** **4 Claims**



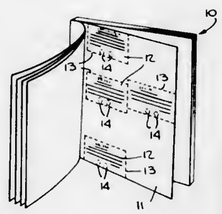
1. A stackable and nestable sequence of containers; each of said containers being rectangular in form and comprising two flat parallel end panels, two flat parallel side panels extending between the end panels in perpendicular relation thereto, and a flat bottom panel disposed between the end panels and between the side panels in proximate spaced relation to the lower edges of the side panels; said containers being of uniform width so that placement on one container on a parallel container below causes the side panels of the container above to directly overlie the side panels of the container below; said containers varying successively in length of differential longitudinal increments slightly exceeding the combined thickness of the two end panels so that placement of successively shorter containers on a parallel container below causes each container above to fit longitudinally between the end panels of the container below and which, conversely, causes each container below to fit longitudinally between the end panels of the container above when the containers are stacked in reverse sequence one above another; except for the longest container of the sequence, the two end panels of each container defining two lower support abutments substantially flush with the lower edges of the container side panels and facing downwardly to rest on the upper edges of the side panels of a longer container below; the lower portion of each end panel, except for end panels of the longest container, defining a pair of outwardly facing abutments extending downwardly from the adjacent lower support abutments to fit between the side panels of an underlying longer container to preclude relative lateral displacement of the containers; the end panels of containers, shorter than the longest container, projecting above the container side panels and defining respectively two upper support abutments facing upwardly in upwardly spaced and horizontally alined relation to the container side panels to fit against the lower edges of the side panels of an overlying longer container to support the latter in an elevated stacked relation to the lower container; and the upper portions of the end panels of containers, shorter than the longest container, defining respectively a pair of outwardly facing abutments projecting above the adjacent upper support abutments to fit beween the lower edges of the side panels of a longer container stacked thereabove to preclude lateral displacement of the containers.

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**3,930,700**
**INFORMATION STORAGE SYSTEM**
**Maurice C. Figueres, 209 W. 21st St., New York, N.Y. 10011**
**Filed Sept. 30, 1974, Ser. No. 510,710**
**Int. Cl.² B42D** *15/04*; **G09F** *7/12*
**U.S. Cl. 312—183** **11 Claims**

1. In a publication including a plurality of pages, at least one page being of heavy weight and having a plurality of selected areas thereof containing printed information, a line of weak-

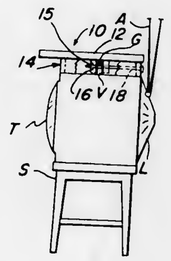
ening about each respective area for removal of each said area as a storage card from said one page, each said removed



storage card having means for permitting storage of said removed card for subsequent reference.

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**3,930,701**
**PORTABLE TELEVISION CABINET SURFACE EXTENDER**
**Daniel A. Otakie, One Benwell Road, Reisterstown, Md. 21136**
**Filed Dec. 10, 1973, Ser. No. 423,505**
**Int. Cl.² A47B** *13/08, 95/02*
**U.S. Cl. 312—244** **34 Claims**



**1.** In combination, a television cabinet having a substantially horizontal upper portion, a handle upwardly protrusive from said upper portion and having a recess defining a horizontal grip, a surface extender resting on said upper portion, handle engaging means including a laterally extending member carried by surface extender and engaging under said horizontal grip of said handle, and a portion of the surface extender extending beyond said substantially horizontal upper portion.
**34.** The combination of a surface extender and a television cabinet having a handle on the upper surface thereof, the surface extender comprising: a horizontal top, a frame depending downwardly from said top, and a laterally projecting elongate handle engaging member secured to said surface extender in vertically spaced relation with the underside of, said top said handle engaging member being axially slideable for thereby engaging said handle.

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**3,930,702**
**HANG-IT-ALL JEWELRY CABINET**
**John R. Pichowicz, P.O. Box 51, Westville Road, Plaistow, N.H. 03865**
**Filed Aug. 8, 1974, Ser. No. 495,449**
**Int. Cl.² A47B** *67/02*
**U.S. Cl. 312—245** **1 Claim**

**1.** A decorative wall cabinet for receiving and storing ladies jewelry; comprising,

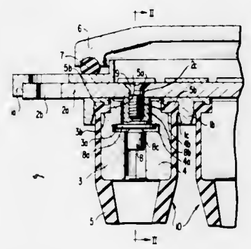
a thin box like chamber having a back wall, a top wall, side walls, a bottom wall and a lower short front wall,
a door covering the front of said chamber except for the short front wall thereof;
concealed hinges pivotally connecting the door to one of the side walls of the box;
said door having a front surface and a back surface;
a slightly recessed panel on the front outer surface of the door;
a decorative member mounted in said panel giving the visual effect to the wall cabinet of a picture hanging on the wall;
a large mirror;
means fixedly mounting said mirror on the back surface of said door;
a bar;
means mounting said bar on the back surface of the door below the mirror;
pins having slightly rounded heads fixed to and extending outwardly from said bar to receive short necklaces or chains in hanging position;
means forming a row of compartments adjacent the top box like chamber to receive small articles of jewelry;
a second bar;
means fixedly mounting said second bar to the sides and back walls of said box like chamber below the row of compartments;
a second row of headed pins mounted in and projecting from said second bar to receive long chains or necklaces in spaced hanging position;



a compartment bounded by the short front wall, the side walls, the back wall and the bottom wall of the box like chamber;
two drawers in said compartment;
hinge means attached to the short front wall of the chamber attaching the drawers to the chamber to allow the drawers to swing into and out of said compartment;
partitions in said drawers forming pockets to receive small articles of jewelry
means including nails for fixedly attaching said cabinet to a vertical surface such as a wall
whereby there is provided a cabinet wherein ladies jewelry may be retained in a neat orderly arrangement with the fine gold chains and strings of beads in spaced hanging relation and not in the mixed up, tangled and knotted condition experienced when storing them in a horizontal box normally used for jewelry wherein the side walls have reinforcing blocks fixedly attached to the inner surface of said walls, mounting blocks including inclined openings therethrough to receive said nails in downwardly slanting positions to cause the cabinet to be fixedly attached to a wall in increasingly tighter position.



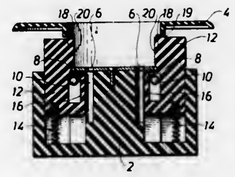
**3,930,703**
**CENTRAL PLUG CONNECTION**
**Norbert Kinast, Zaiserweiher, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany**
**Filed June 6, 1974, Ser. No. 477,047**
**Claims priority, application Germany, June 8, 1973, 2229334**
**Int. Cl.² H01R** *3/06*
**U.S. Cl. 339—14 R** **18 Claims**



**1.** A central plug connection, which comprises a frame box means of electrically insulating material and a ground rail means disposed within said frame box means, said ground rail means being adapted to be connected with vehicle ground, wherein electrical connecting lines coming from individual aggregates are provided with a plug socket means, each plug socket means being sealingly and disconnectably connected with the frame box means, said plug socket means including a ground connection electrically connected with said ground rail means, and wherein a common multi-plug is adapted to be inserted into the sockets of all plug socket means.

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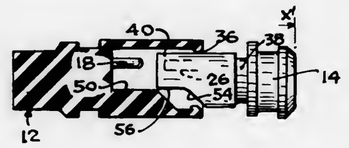
**3,930,704**
**WALL SOCKET**
**Dinko Dekanic, Strandsnasgatan 4, 330 23 Smalandsstenar, Sweden**
**Filed June 18, 1974, Ser. No. 480,528**
**Claims priority, application Sweden, June 20, 1973, 7308674**
**Int. Cl.² H01R** *13/44*
**U.S. Cl. 339—42** **7 Claims**



**1.** A wall socket having at least one opening into which an electrical contact pin of a plug may be introduced to make electrical contact therein comprising:
a socket body;
at least one guiding device;
means movably supporting the guiding device within the socket body for limited movement in the general direction of plug introduction;
at least one cam surface on the guiding device;
at least one contacting member movable between an inoperative position where it is inaccessible from the socket opening and an operative contact position;
means for supporting and springingly urging the contacting member lateral to the direction of plug introduction;
a lug integral with the guiding device and forming in conjunction therewith a recess;
the contacting member being housed within the recess of the guiding device when in the inoperative position; and means responsive to the introduction of a plug into the wall socket to force, by way of the cam surface, the contacting member into contact with the plug pin.

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**3,930,705**
**ELECTRICAL CONNECTOR ASSEMBLY**
**David A. Gallagher, Romeoville, Ill., assignor to Bunker Ramo Corporation, Oak Brook, Ill.**
**Filed Mar. 8, 1974, Ser. No. 449,422**
**Int. Cl.² H01R** *9/04*
**U.S. Cl. 339—59 M** **8 Claims**



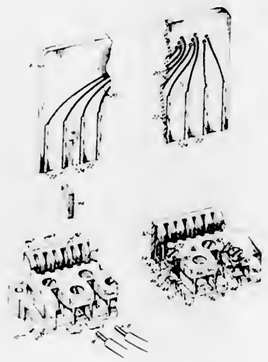
**1.** An electrical connector assembly for connecting each contact of one plurality of contacts with a respective contact of another plurality of contacts comprising:
a first connector body having a longitudinal axis with a plurality of axially extending passageways extending parallel to said axis and receiving a respective contact of said one plurality of contacts, said body having an annular wall at one end with an internal surface of said wall defining an encircled axially extending recess open at said one end with said one plurality of contacts extending parallel to the axis of said body into said recess and spaced from said one end;
a second connector body having a projecting front portion with a front end received in said recess and a longitudinal second body axis with a plurality of passageways extending parallel to said second body axis and receiving a respective contact of said other plurality of contacts said other plurality of contacts each terminating in said projecting front portion of said second body and spaced from said front end of said second connector body for engagement with a respective contact of the first plurality of contacts;
cam means on one of said connector bodies; and
cam follower means on the other connector body for engagement with the cam means on the one connector body in response to the receipt of said projecting front portion in said recess and axial pressure between said bodies to rotate the bodies relative one another to a predetermined angular position and angularly align each contact of the first plurality of contacts with a respective contact of the other plurality of contacts for engaging each contact of said one plurality of contacts with a respective contact of said other plurality of contacts.

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**3,930,706**
**CIRCUIT PANEL CONNECTOR**
**Edward A. Obuch, Linden, and William T. Waddington, Fanwood, both of N.J., assignors to Amerace Corporation, New York, N.Y.**
**Filed June 28, 1974, Ser. No. 484,168**
**Int. Cl.² H01R** *13/50*
**U.S. Cl. 339—64 M** **11 Claims**

**1.** A circuit panel connector for enabling connection of the circuit terminals along the edge of a circuit panel, such as a printed circuit board, with external conductors, said panel connector comprising:

a body of dielectric material;
an elongate socket in the body for receiving said panel edge, the socket having opposite side walls and a bottom;
a plurality of bifurcated electrical contacts in the body, the contacts each having a base juxtaposed with the bottom of the socket and opposed tines juxtaposed with the side walls and including contact members projecting beyond the side walls into the socket;
a plurality of tubular connector elements, one for each bifurcated contact, each connector element being captured within the body against movement relative thereto and being spaced from a corresponding bifurcated contact;
a conductive strap integral with the base of the bifurcated contact, said strap being recessed within the body and extending from the base to the tubular connector element, said strap being received within a corresponding

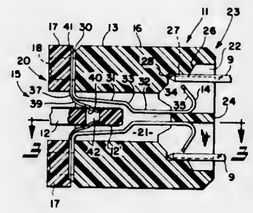


tubular connector element and being adapted to slide relative to the corresponding tubular connector element upon lateral movement of the corresponding bifurcated contact; and
means cooperating with each said tubular connector element for releasably clamping an external conductor to the connector element and in electrical contact with the strap, said body including an opening juxtaposed with each tubular connector element such that an external conductor will be guided through the opening and received within the tubular connector element between the strap and the clamping means;
each tine being spaced from the corresponding side wall with which the tine is juxtaposed to enable lateral movement of the bifurcated contact relative to the body and resilient flexing of both tines away from one another in response to entry of the panel edge between the contact members of the tines.

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**3,930,707**
**INTERFACE CONNECTOR**
**John T. Venaleck, Palnesville, and Kenneth W. Braund, Willoughby, both of Ohio, assignors to A P Products Incorporated, Palnesville, Ohio**
**Filed June 10, 1974, Ser. No. 477,605**
**Int. Cl.² H01R** *13/54*
**U.S. Cl. 339—75 MP** **17 Claims**

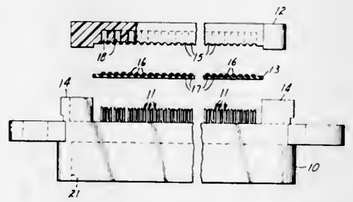
**1.** An interface connector for mechanically attaching a printed circuit board or the like to a plurality of electrically conductive pins for mechanical support by such pins and for electrically connecting circuits on such printed circuit board to respective pins, comprising:
an electrically non-conductive housing having forward and rear faces, the former having opening means for receiving inserted pins and the latter including an opening into a space in said housing for receiving an inserted portion of such printed circuit board; and
a plurality of electrically conductive contacts supported in relative electrically insulated relation in said housing, said contacts being movable in said housing between locked and unlocked condition with respect to such inserted pins, each contact having a forward locking end means



for strong mechanical and electrical attachment to a respective pin and a rearward end means for wiping engagement with a received printed circuit board to make electrical contact with a respective circuit printed on the latter;
each contact rearward end means including means responsive to insertion of such printed circuit board into said housing opening for urging said forward locking end means of said contact from unlocked condition to locked condition with a respective pin for mechanical support of said connector and printed circuit board by such pins.

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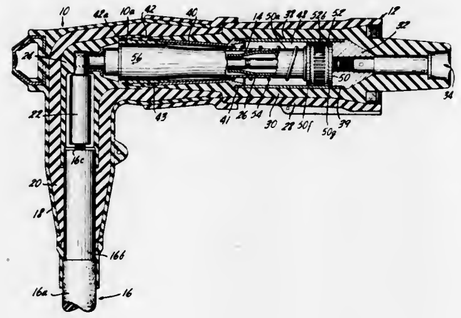
**3,930,708**
**FLAT CABLE WIRE-CONNECTOR**
**Albert D. Wedekind, West St. Paul, and John W. Benzer, East Bethel Township, Anoka County, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.**
**Filed Sept. 9, 1974, Ser. No. 504,135**
**Int. Cl.² H01R** *11/20*
**U.S. Cl. 339—99 R** **3 Claims**



**1.** A wire-connector for making solderless connection to wires of a compact flat cable, comprising a contact element having a flat metal plate body having parallel closely spaced sharp-ended prongs extending from one edge, including two outer prongs lying in a common plane and an inner prong lying in a plane parallel to said plane and offset therefrom by no more than twice the thickness of said plate, the ends of said prongs sloping inwardly toward the space between said planes to define a terminal wire-receiving trough.



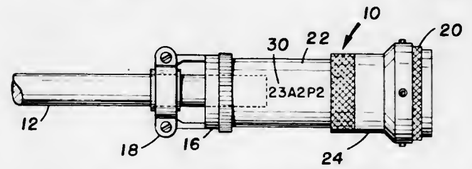
**3,930,709**
**ELECTRICAL CONNECTOR**
**Robert J. Stanger, Alpha, and Larry N. Siebens, Great Meadows,, N.J., assignors to Amerace Corporation, New York, N.Y.**
**Filed Mar. 10, 1975, Ser. No. 556,921**
**Int. Cl.² H01R** *13/52*
**U.S. Cl. 339—111** **28 Claims**



**20.** A female connector for use in connecting or disconnecting an energized high voltage circuit by engagement or disengagement with a complementary male connector having a male contact element, said female connector comprising:
a. a housing having first and second open ends and an axially extending passage therebetween;
b. terminal means accessible exteriorly of said housing and closing said housing first open end;
c. a conductive member fixedly disposed in said housing passage and electrically connected to said terminal means and having an inner cylindrical wall defining a bore coaxial with said housing passage;
d. a female contact assembly in said housing passage including
1. piston means axially movable in said conductive member bore and having a head disposed in facing relation to said terminal means,
2. a female contact element electrically connected to and movable with said piston means and disposed in facing relation to said housing second open end for engaging said male contact element, and
3. guide means movable with said piston means for receiving and guiding said male contact element for movement toward said female contact element and for evolving arc-quenching gas in response to an arc being struck between said male contact element and said female contact element during said movement, said piston means, said female contact element and said guide means defining a conduit therethrough for conveying said gas between said piston means head and said terminal means whereupon said piston means is operative to forcibly move said female contact element into engagement with said male contact element, and
e. contactor means having inwardly extending conductive finger portions engaging said piston means and outwardly extending finger portions engaging said inner cylindrical wall of said conductive member for providing electrical continuity between said female contact element and said terminal means.

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**3,930,710**
**CONNECTOR BACKSHELL ADAPTER AND METHOD OF USING SAME**
**Richard Sollanek, Ellicott, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**
**Filed Sept. 23, 1974, Ser. No. 508,491**
**Int. Cl.² H01R** *13/46*
**U.S. Cl. 339—143 R** **6 Claims**




**1.** In combination with an adapter device for use with an electrical connector, having a backshell element with cable clamping means detachably connected by threads means to a frontal cable connector with a connector mating ring, designed to be used with multi-element cables, wherein:
a tubular adapter is threadably formed at its opposing ends having external threads at one end and having internal threads at the other end to match the thread means of the electrical connectors backshell and mating rings, and is interposed between and connected by the tubular screw threads to the backshell and mating rings, so as to provide increased mechanical support and strain-relief to the multi-element cable which is held by the cable clamping means and which passes through the tubular adapter to connections on the connector and to aid in connection of large multi-element cable assemblies, the improvement which comprises a tubular adapter ring, slidably positioned about the tubular adapter, said adapter ring comprising at least two longitudinally adjacent, segments, a first segment having a cross-sectional diameter slightly larger than the cross sectional diameter of the tubular adapter and having a marginal region of its surface scribed with knurling; and a second segment having a cross-sectional diameter large enough to allow sliding engagement between the tubular adapter ring and the cable connector ring and having a plurality of tapped set screws circumferentially positioned around the adapter ring to provide locking engagement between the adapter ring the connector ring.

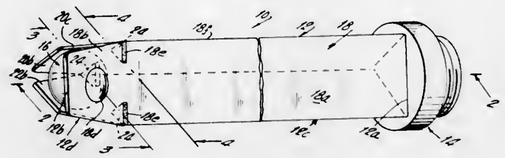
**5.** A method of attaching cables to equipment comprising the steps of:
interconnecting a cable connector backshell to an adapter device sleeve;
inserting a cable through the sleeve;
securing said cable to said backshell;
sliding an adapter device ring onto said sleeve;
mounting said cable onto a connector mating ring;
engaging said adapter device sleeve with said connector mating ring;
setting said adapter ring in place on said mounting ring; and
connecting the cable to the equipment.

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**3,930,711**
**SPECIAL EFFECTS LENS**
**Charles W. Powell, 227 E. 50th St., New York, N.Y. 10022**
**Filed Oct. 29, 1973, Ser. No. 410,454**
**Int. Cl.² G02B** *27/08*
**U.S. Cl. 350—4** **3 Claims**

**1.** A special effects lens comprising an elongated housing of substantially triangular shape in transverse section including three longitudinally extending walls each having a main section and an end section, said main section being attached along their longitudinal edges and said end sections being detached from each other, a spherical lens, means for mounting said spherical lens in the end sections of said elongated

housing in substantially axial alignment therewith, said mounting means including seats formed on said end sections, said end sections being spaced with respect to each other and in relation to the diameter of said spherical lens to grippingly engage and mount said spherical lens in said seats, a colored element mounted at each of the apices of said elongated

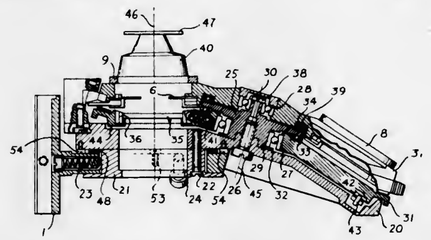


housing along a transverse plane, and a viewing end opposite said end section, said main sections of said longitudinally-extending walls being of a length substantially equal to the focal length of said spherical lens such that clear and sharp images of objects viewed over a wide range of distances from said spherical lens are produced at said viewing end.

## 3,930,712
## DUAL TURRET ATTACHMENT FOR A MICROSCOPE AND THE LIKE

**Olin W. Boughton, Williamsville, and Richard Schultz, Buffalo, both of N.Y., assignors to American Optical Corporation, Southbridge, Mass.**

**Filed Nov. 20, 1972, Ser. No. 308,071**
**Int. Cl.² G02B *21/08***
**U.S. Cl. 350—87** **1 Claim**



**1.** A sub-stage dual-turret attachment for a microscope comprising:

a body adapted to be removably mounted on the microscope frame,

a first rotatable turret connected to said body, said first rotatable turret having a plurality of openings therein, at least one of said openings being adapted to releasably retain an optical element therein, said first rotatable turret being manually rotatable about an axis to bring any one of said openings into substantial alignment with the optical axis of the microscope, first indexing means engagable with said first rotatable turret for releasably retaining any one of said openings in substantial alignment with the optical axis of the microscope, manually operable means for adjusting said optical element laterally in any desired direction with respect to the optical axis of the microscope;

a second rotatable turret connected to said body, said second rotatable turret having two apertures defined by iris diaphrams therein, two condenser lens systems carried by said rotatable turret in respective optical alignment with said two apertures, said second rotatable turret being manually rotatable about an axis to bring any one of said condenser lens systems into substantial alignment with the optical axis of the microscope,

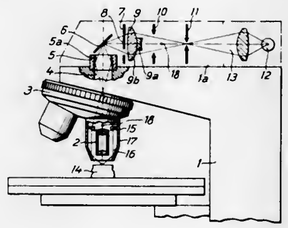
second indexing means engagable with said second rotatable turret for releasably retaining any one of said apertures and corresponding condenser lens systems in substantial alignment with the optical axis of the microscope; said first and second rotatable turrets have a common axis of rotation; and

orthogonal adjustment means to provide lateral movement for alignment of said attachment with the optical axis of the microscope, said orthogonal adjustment means including a pair of spaced protrusions on said body, a ring member having a first pair of diametrically opposed recesses adapted to cooperate with said protrusions to slidably locate said ring, a second pair of diametrically opposed recesses in said ring spaced equidistant from said first pair of diametrically opposed recesses, and a support having a pair of protrusions adapted to cooperate with said second pair of recesses to slidably locate said support, said support carrying said first and second rotatable turrets and lock means to hold the attachment in a selected position to provide optical alignment.

## 3,930,713
## INCIDENT LIGHT ILLUMINATION INSTRUMENT FOR SELECTIVE LIGHT AND DARK FIELD ILLUMINATION

**Hans-Werner Stankewitz, Steindorf, and Hans Determann, Nauborn, both of Germany, assignors to Ernst Leitz G.m.b.H., Wetzlar, Germany**

**Filed May 28, 1974, Ser. No. 473,818**
**Claims priority, application Germany, June 22, 1973, 2331750**
**Int. Cl.² G02B *21/10***
**U.S. Cl. 350—89** **6 Claims**



**1.** An incident light illumination apparatus having a light source for generating dark and light field illumination along an optical axis comprising:

a. at least one optical component (**9**) located along said optical axis (**18**), having a first outer zone (**9*b***) for dark field illumination beams (**13**) and a separate second inner zone (**9*a***) for light field illumination beams (**19**), said second inner zone (**9*a***) having a given reciprocal focal length different from said first outer zone (**9*b***);

b. a microscope objective (**2**) located along said optical axis;

c. an annular lens (**15**) located along said optical axis and arranged to said objective for directing in parallel divergent portions of said dark field illumination beams;

d. a sleeve (**17**) surrounding said object (**2**) and said annular lens (**15**) having an obtuse conical inner reflecting surface for directing said dark field illumination beams onto an object (**14**);

e. a microscope saddle bracket (**1**) provided with a bore (**4**) located along said optical axis (**18**) between said optical component (**9**) and said microscope objective (**2**) with a body of rotation (**5**) having an inside reflecting surface (**5*a***) located on said bore, said inside reflecting surface (**5*a***) solely reproducing said dark field beams (**13**) as a light ring in a plane on the rear side of said microscope objective (**2**); and

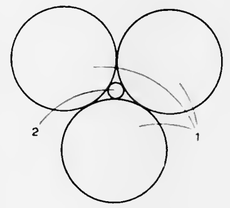
f. a splitting mirror (**6**) located along said optical axis (**18**) between said optical component (**9**) and said body of rotation (**5**).



## 3,930,714
## METHOD OF MANUFACTURING AN OPTICAL FIBRE LIGHT WAVEGUIDE

**Richard Burnaby Dyott, London, England, assignor to The Post Office, London, England**

**Filed Nov. 19, 1973, Ser. No. 417,045**
**Int. Cl.² G02B *5/14*; C03C *25/02, 23/20***
**U.S. Cl. 350—96** **4 Claims**



**1.** A method of making a monomode dielectric optical waveguide having at least one core of triangular cross-section of a first glass composition and a cladding of a second glass composition, the refractive index of the glass of said core being higher than that of the glass of said cladding, the steps comprising:

a. forming a bundle consisting of circular cross-section cladding rods of equal diameter in integral multiples of three with all rods parallel and the rods in each group of three in peripheral contact with the other two, with a core rod of circular cross-section arranged in the space defined between each group of three cladding rods and sized so as to be in peripheral contact with each surrounding cladding rod;

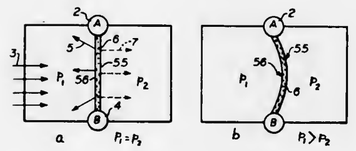
b. heating said bundle to a temperature at which the glasses of both said first and second compositions are plastic; and

c. drawing said bundle down by an amount sufficient to produce a triangular cross-section of said core rods and a circular cross-section of the drawn bundle.

## 3,930,715
## OPTICAL PLASMA DEVICES

**George C. Brumlik, 154 Upper Mountain Ave., Montclair, N.J. 07042**

**Filed May 24, 1973, Ser. No. 363,709**
**Int. Cl.² G02F *1/01***
**U.S. Cl. 350—160 R** **6 Claims**

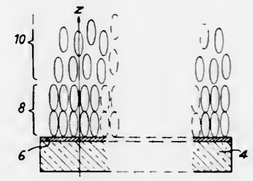


**1.** An optical reflector comprising a body of plasma matter in an electrical discharge field, wherein said plasma matter contains fine particles of refractory material in suspension.

## 3,930,716
## METHOD OF COLLECTING ORIENTATION OF THE MOLECULES OF A LIQUID CRYSTAL AND A LIQUID-CRYSTAL CELL FOR CARRYING OUT SAID METHOD

**Jacques Robert, Saint-Egreve, France, assignor to Commissariat a l'Energie Atomique, Paris, France**

**Continuation of Ser. No. 342,406, March 19, 1973, abandoned. This application Oct. 4, 1974, Ser. No. 512,038**
**Claims priority, application France, Mar. 31, 1972, 72.11503**
**Int. Cl.² G02F *1/13***
**U.S. Cl. 350—160 LC** **5 Claims**

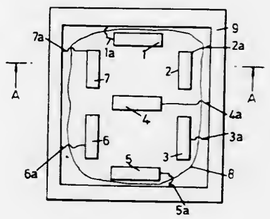


**1.** A method of collective orientation of the molecules of a mesomorphous liquid crystal in the proximity of a wall comprising the steps of depositing on said wall a thin film of solid smectic crystals and contacting said liquid crystal with said thin film.

## 3,930,717
## VARIABLE LIGHT TRANSMISSION DEVICE CONTAINING FERROUS AMMONIUM SULFATE AS AN AUXILIARY REDOX SYSTEM

**Michael John McDermott, and John Graham Allen, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England**

**Filed Mar. 15, 1974, Ser. No. 451,690**
**Claims priority, application United Kingdom, Mar. 16, 1973, 12904/73**
**Int. Cl.² G02F *1/36***
**U.S. Cl. 350—160 R** **7 Claims**

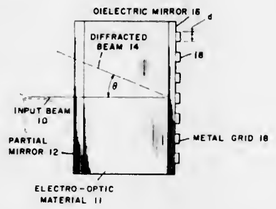


**1.** A device for the control of light transmission or reflection which comprises a working electrode having radiation transmission or reflection properties, a counter electrode, and a solution comprising (a) an active material which is an N(p-cyanophenyl)-substituted derivative of a compound, usually bicyclic, having two conjugated nitrogen-containing rings and (b) ferrous ammonium sulphate, said solution being in contact with both working and counter electrodes.

### 3,930,718
### ELECTRO-OPTIC MODULATOR

**Richard E. Jensen, Columbia, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed Apr. 12, 1974, Ser. No. 460,419**
**Int. Cl.² G02F *1/32***
**U.S. Cl. 350—160 R** **6 Claims**




1. An electro-optic modulator for modulating a coherent beam of light comprising:

a Fabry-Perot etalon including a first and a second parallel reflective surface, constructed of an electro-optic material;

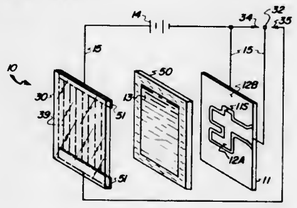
electrically charged metal grating means including an array of alternately connected electrodes of triangular cross-section attached to one reflective surface of said Fabry-Perot etalon for creating an electrically induced diffraction grating within said Fabry-Perot etalon to modulate said coherent beam of light;

wherein said coherent beam of light is reflected a multiple number of times within said Fabry-Perot etalong such that said coherent beam of light is diffracted said multiple number of times by said electrically induced diffraction grating thereby reducing the magnitude of an electrical signal required on said electrically charged metal grating from that required without said multiple reflections to produce a predetermined deviation of said coherent light beam.

### 3,930,719
### EDGE BRIGHTNESS DISPLAY AND METHOD USING A MATERIAL EXHIBITING DIELECTRIC ANISOTROPY

**Robert W. Madrid, Macedon, and Joseph J. Wysocki, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.**

**Filed Apr. 9, 1973, Ser. No. 349,504**
**Int. Cl. G02f *1/26***
**U.S. Cl. 350—160 LC** **16 Claims**



1. An electro-optic method, comprising:

a. providing a member comprising between two transparent electrodes a dielectric anisotropic material having, at least under the influence of an electrical field, optical uniaxiality; one of said electrodes having an imagewise portion separated from a background portion by an electrically insulating surface;

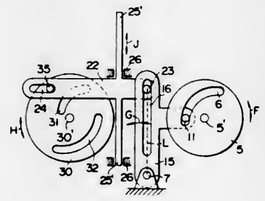
b. providing an electrical field across said dielectric anisotropic material by applying a voltage between the other of said two electrodes and each of imagewise and background portions of said one electrodes; and

c. removing the voltage between the imagewise portion of said one electrode and the other electrode; and applying a voltage between said imagewise and background portions of said one electrode.

### 3,930,720
### CONTROL DEVICE FOR A ZOOM LENS SYSTEM

**Kyozo Uesugi, Izumi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Japan**

**Filed Feb. 18, 1975, Ser. No. 550,521**
**Claims priority, application Japan, Feb. 18, 1974, 49-18502**
**Int. Cl.² G02B *15/00***
**U.S. Cl. 350—187** **25 Claims**



1. A control device for a zoom lens system having an optical system including a focus lens unit and a zoom lens unit coaxially arranged and movable along the optical axis of the optical sytstem, the position of the focusing lens unit being varied in accordance with the focal length of the optical system, the control device comprising:

zoom adjusting means for moving said zoom lens unit along the optical axis in response to a zooming operation so as to vary the focal length of said optical system;

means pivotally mounted about a point and being pivotable in response to a focusing operation; and,

focus adjusting means having a portion coupled to said pivotable means and additionally coupled to said focus lens unit, said focus adjusting means being operated in response to movement of said pivotable means and in response thereto causing movement of said focus lens unit along said optical axis for a distance dependent upon the distance between said coupled portion and said pivoting point so as to adjust the focal point of said optical system, said focus adjustment means also being coupled to said zoom adjusting means so that said coupled portion is movable in response to operation of said zoom adjusting means so as to vary the distance between said coupled portion and said pivoting point in accordance with a variance in the focal length of said optical system caused by the zooming operation.

### 3,930,721
### SLIDABLE MIRROR FOR ADJUSTABLE SPEED PROJECTOR WITH SYNCHRONIZED SOUND RECORDER

**Guy C. Caraway, 9703 Wiley Burke Ave., Downey, Calif. 90240**

**Division of Ser. No. 389,957, Aug. 20, 1973, Pat. No. 3,880,506, which is a division of Ser. No. 242,470, April 10, 1972, Pat. No. 3,779,632, which is a continuation-in-part of Ser. No. 89,861, Nov. 16, 1970, and a continuation-in-part of Ser. No. 91,061, Nov. 19, 1970, abandoned. This application Feb. 5, 1975, Ser. No. 547,260**
**Int. Cl.² G05D *25/00*; G03B *19/12***
**U.S. Cl. 350—266** **3 Claims**

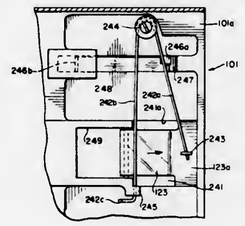
1. Retractable mirror apparatus comprising:

a mirror element having a base portion and a reflecting portion, said reflecting portion being disposed at an angle to said base portion;



a frame member having a straight groove for guiding said base portion to slide in a straight line between extended and retracted positions and an opening for receiving said reflecting portion of said mirror element when in the extended position;

a spring member mounted on said frame member and engaging said base portion of said mirror element to resiliently urge said mirror element against said frame member and toward the retracted position; and

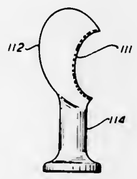


an actuating element for engaging said spring member to move said mirror element to the extended position so that said base portion lies against said frame member within said groove and said reflector portion extends through said opening in said frame member at an angle determined by the angle between said reflector portion and said base portion of said mirror element.

### 3,930,722
### SANITARY WIG VIEWING DEVICE

**Robert A. Anzivino, Somerset, N.J., assignor to Omri M. Behr, Edison, N.J.**

**Filed May 13, 1974, Ser. No. 469,278**
**Int. Cl.² G02B *5/10*; A47G *1/14***
**U.S. Cl. 350—296** **2 Claims**



1. A sanitary wig viewing means comprising:

a substantially oval, concave mirror having a focal length in the range of fifteen to thirty inches and having dimensions substantially those of the outline of the frontal elevation of a human face below the normal hair line of said face; and,

means for mounting a wig peripherally around at least the upper half of the circumference of said mirror.

### 3,930,723
### METHOD AND APPARATUS FOR VIEWING PICTURES

**James B. Holt, Woodland Hills, Calif., assignor to Creative Optics, Inc., Woodland Hills, Calif.**

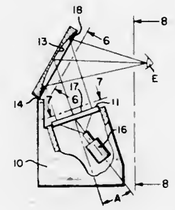
**Filed Apr. 22, 1974, Ser. No. 462,804**
**Int. Cl.² G03B *21/00*, *21/56***
**U.S. Cl. 353—70** **6 Claims**

1. A method for viewing pictures comprising the steps of:

a. providing a flat surface containing a picture to be viewed;

b. positioning a concave mirror at an angle to said surface, said angle being defined by the intersection of the plane of said concave mirror with said flat surface at a point below said concave mirror so that a viewer can view the picture as reflected to his eye by said concave mirror; and

c. securing marginal masking means directly in full surface contact to all of the marginal edges of said concave mirror to define within the masking means of reflecting area

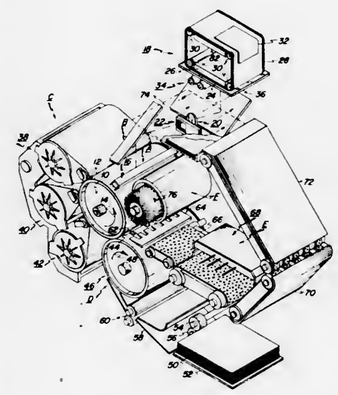


less than the total area of the picture whereby the visibility of the top, bottom, and side portions of the picture can be changed by the viewer shifting his line of sight, said masking means defining a window which appears closer than the viewed picture so that a three-dimensional effect results.

### 3,930,724
### MASKING APPARATUS FOR A MULTI-COLOR ELECTROPHOTOGRAPHIC PRINTING MACHINE

**James H. McVeigh, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.**

**Filed Nov. 12, 1973, Ser. No. 415,276**
**Int. Cl. G03g *15/04***
**U.S. Cl. 355—7** **5 Claims**



1. An electrophotographic printing machine of the type having an optical system arranged to create a light image of an original document which irradiates a charged photoconductive member recording an electrostatic latent image of the original documents thereon, wherein the improvement includes:

means for supporting the original document in a light receiving relationship with the optical system;

a substantially transparent sheet;

means for holding the original document in operative communication with said transparent sheet to enable selective portions of the original document to be masked on said transparent sheet;

at least one opaque substantially non-light absorbing strip adapted to be secured to said transparent sheet for masking a selected portion of the original document; and

means for moving said transparent sheet with said opaque strip secured thereto into a masking relationship with the original document.

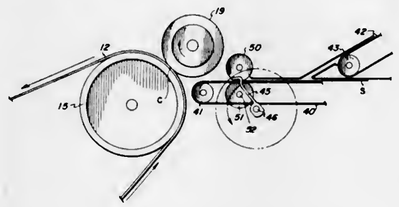
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**3,930,725**

## MULTIPLE SHEET FEEDING SYSTEM FOR ELECTROSTATOGRAPHIC PRINTING MACHINES

**Hugh L. Jones, Rochester, and James W. Van Deluyster, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.**

**Continuation of Ser. No. 284,830, Aug. 30, 1972, abandoned. This application Mar. 27, 1974, Ser. No. 455,433**
**Int. Cl.² G03G *15/00***
**U.S. Cl. 355—14** **3 Claims**



1. A reproduction machine having a plurality of processing stations to produce a developed latent image on a moving photoreceptor member for transferral to a sheet of copy paper, and a programming system for controlling operation of the processing stations in timed sequence relative to the movement of the photoreceptor member including:
a plurality of copy paper supply sources, each having a stack of paper sheets and a sheet separating device;
a sheet conveying mechanism associated with each of said paper sources whereby sheets separated from the stacks are transported therefrom by their respective conveying mechanisms;
registration means associated with said sheet conveying mechanisms for registering and aligning each sheet presented to said registration means by said conveying mechanisms,
drive means for moving said registration means at a speed such that registration and alignment of the sheet occurs at a linear sheet speed substantially equal to the linear speed of the photoreceptor member; and,
control means operatively connected to the machine programming system and said sheet separating devices to actuate said sheet separating devices at a predetermined point in the process of producing a developed image irrespective of the paper supply source being utilized, said sheet conveying mechanisms and said paper supply sources being arranged such that the sheets separated from said sources arrive at the registration means at the same predetermined time after actuation of the sheet separating devices associated therewith, thereby allowing the same timed relationship between actuation of any of the sheet separating devices and the registration of said sheets to allow sequential operation of the separating devices without requiring a change in machine timing.

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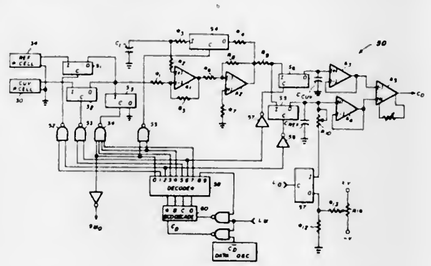
**3,930,726**

## SYSTEM FOR MEASURING VOLUMETRIC RATIOS OF LIQUID SUSPENDED SOLIDS

**Stephen E. Dolive, Orlando, Fla., assignor to Reginald C. Shuck, Orlando, Fla., a part interest**

**Filed May 29, 1974, Ser. No. 474,354**
**Int. Cl.² G01N *33/16***
**U.S. Cl. 356—39** **22 Claims**

1. A system for determining the volumetric ratio of solids suspended in a liquid, comprising:
means for passing a beam of electromagnetic energy through a sample of a liquid having solids suspended therein;
means for measuring a characteristic representative of the amount of said energy absorbed by said sample;
means for computing said volumetric ratio by electronically applying a proportionality factor to an output of said measuring means;



means for passing said beam through a standard sample of said liquid having a known volumetric ratio, said measuring means further comprising means for measuring a characteristic representative of the amount of said energy absorbed by said standard liquid sample; and
means for electronically calculating said proportionality factor as a ratio of said known volumetric ratio to the amount of said beam absorbed by said standard liquid sample.

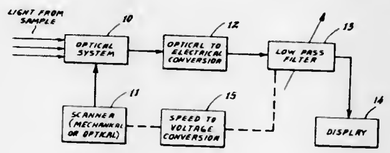
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**3,930,727**

## AUTOMATIC VARIABLE FILTERS FOR USE IN SCANNED SPECTROMETERS AND THE LIKE

**Joseph A. Vergato, Monroe, Conn., assignor to Perkin-Elmer Corporation, Norwalk, Conn.**

**Division of Ser. No. 283,399, Aug. 24, 1972, abandoned. This application Jan. 21, 1974, Ser. No. 435,361**
**Int. Cl.² G01J *3/42***
**U.S. Cl. 356—96** **5 Claims**




1. In a spectrometer of the type used for scanning an light source containing a pluality of unknown frequencies, by optically viewing and scanning said source over a predetermined range of frequencies, to develop electrical signals having frequency components related to those present in said source, and in combination, means for selectively filtering said electrical signals comprising:
a. variable low pass filter means responsive to said electrical signals, and capable of providing a plurality of different time constants related respectively to possible frequency components in said electrical signals to effectively respond to any one of said frequency components, said filter means having a control input terminal for application thereto of a control voltage signal for varying said time constant to any value included in said plurality of different time constants,
b. modulating means having an input responsive to the rate of scanning and providing at an output a modulated control voltage signal manifesting a variation according to said scanning rate, and



c. means coupling said modulated control voltage signal to said control input terminal of said filter means to vary said time constant according to said scanning rate.

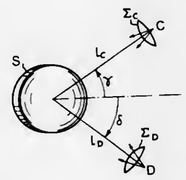
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**3,930,728**

## MONOCHROMATOR WITH CONCAVE GRATING

**Guy Pieuchard, Fontenay-le-Fleury; Jean Flamand, Chatenay-Malabry, and Genevieve Passereau, Bourg-la-Reine, all of France, assignors to Jobin-Yvon, Longjumeau, France**

**Filed July 19, 1974, Ser. No. 489,854**
**Claims priority, application France, Aug. 3, 1973, 73.28464**
**Int. Cl.² G01J *3/18***
**U.S. Cl. 356—99** **4 Claims**



1. A monochromator comprising a concave grating the lines of which are situated at the intersection of the concave surface with a family of surfaces geometrically like the equiphasic surfaces obtained as loci of the luminous intensity maxima produced by the interference of two beams from two point sources C and D, means defining an entry slit A and means defining an exit slit B, wherein the polar coordinates of said points C and D and of said entry slit A said exit slit B in a system of polar coordinates having as its origin the apex of said grating and as reference axis the axis of said grating in a plane of reference passing through the axis are connected by the following relationships:

$$\tan\alpha \ \tan\beta = -\frac{1}{2}$$

$$\frac{1}{l_A} = -\frac{1}{R}\cdot\frac{3}{4}\cdot\frac{\sin 2\beta}{\cos\omega\cos 2\omega\sin\phi}$$

$$\frac{1}{l_B} = \frac{1}{R}\cdot\frac{3}{4}\cdot\frac{\sin 2\alpha}{\cos\omega\cos 2\omega\sin\phi}$$

$$\left(\frac{1}{\sin\gamma-\sin\delta}\right)\left[\frac{\cos^2\gamma}{l_i}-\frac{\cos\gamma}{R}-\left(\frac{\cos^2\delta}{l_{ii}}-\frac{\cos\delta}{R}\right)\right]=\frac{\tan\omega}{R}$$

in which $(\alpha, l_A)$, $(\beta, l_B)$, $(\gamma, l_C)$ and $(\delta, l_D)$ are the polar coordinates of A, B, C and D, respectively, R is the radius of curvature of said grating, $\omega=(\alpha+\beta)/2$, $\omega$ being the angle of rotation of the grating, and $\phi=(\alpha-\beta)/2$, $2\phi$ being the angle at which the two slits at the summit of the grating are viewed.

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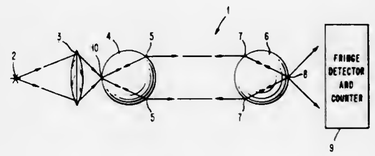
**3,930,729**

## INTERFEROMETER APPARATUS INCORPORATING A SPHERICAL ELEMENT OF INDEX OF REFRACTION OF TWO

**John Battiscombe Gunn, Mount Kisco, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.**

**Filed June 29, 1973, Ser. No. 375,287**
**Int. Cl.² G01B *9/02*; F16C *7/04***
**U.S. Cl. 356—106 R** **39 Claims**

1. An interferometer arrangement comprising:
a source of electromagnetic radiation for projecting said radiation along a given path; and




a pair of at least partially spherical, transparent elements disposed in said given path, said elements having an index of refraction of approximately 2 at the wavelength of said source.

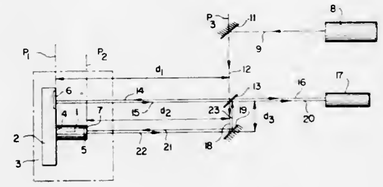
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**3,930,730**

## INTERFEROMETRIC DEVICE FOR MEASUREMENT OF VARIATIONS IN LENGTH OF A SAMPLE UNDER THE INFLUENCE OF TEMPERATURE

**Albert Adelin Suffrein Laurens, Paris; Jean-Paul Christy, Neuilly-sur-Seine, and Jean-Pierre Durand, Paris, all of France, assignors to Republic of France, Paris, France**

**Filed Sept. 6, 1973, Ser. No. 394,552**
**Claims priority, application France, Sept. 6, 1972, 72.31505**
**Int. Cl.² G01B *9/02***
**U.S. Cl. 356—106 R** **8 Claims**



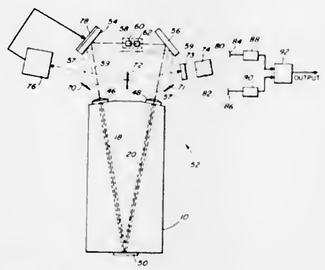
1. In an interferometric device for measurement of the variations in length of a sample under the influence of temperature, the length of the sample being within a plane of reference and a plane of measurement defined by two plane terminal faces of the sample, the device comprising a source of monochromatic light, means to form parallel beams from said source, a controllable temperature thermostatic enclosure, a sample holder placed in the enclosure, a reflecting reference surface for receiving one of said beams, a reflecting measurement surface joined to the plane of measurement for receiving the other of said beams, means to cause interferences of the two beams reflected respectively by the two reflecting surfaces, and a sensor to observe and measure interference fringes, the improvement comprising a bearing face presented by said sample holder for the terminal reference face of the sample, elastic means for applying the sample against said bearing face, and support means for supporting said reflecting reference surface inside said enclosure and ensuring that the variation of distance between the two reflecting surfaces will be equal to the variation in length of the sample when the temperature of the thermostatic enclosure is varied, said sample holder comprising a support for the reflecting measurement surface, of thickness $a_1$ and with coefficient of thermal dilatation $\lambda_1$, applied against the terminal measurement face of the sample, the support means for the reflecting reference surface having a thickness $a_2$, measured from the plane of reference, and a coefficient of dilatation $\lambda_2$, and these thicknesses and these coefficients of dilatation satisfying the equation $a_1\lambda_1$ equals $a_2\lambda_2$.

**3,930,731**

## LASER GYROSCOPE

**Keimpe Andringa, Sherborn, Mass., assignor to Raytheon Company, Lexington, Mass.**

**Filed Feb. 11, 1974, Ser. No. 441,088**
**Int. Cl. H01s** *3/10, 3/22*
**U.S. Cl. 356—106 LR** **14 Claims**



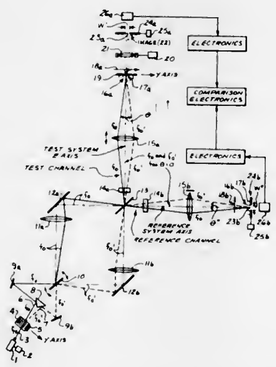
1. In combination:
a. means for directing a first pair of oppositely polarized laser waves through a laser medium in a first direction and a second pair of oppositely polarized laser waves through said laser medium in a direction opposite to such first direction, each of such polarized waves having a different frequency; and,
b. a polarization dispersive structure disposed in the path of the two pairs of waves comprising: an anisotropic crystal the crystallographic axes of such crystal being oriented to produce different delays to the oppositely sensed polarized laser waves passing therethrough, such delays being related to such orientation.

**3,930,732**

## DEVICE AND PROCESS FOR TESTING A LENS SYSTEM

**Sandor Holly, Falls Church, Va., assignor to Atlantic Research Corporation, Alexandria, Va.**

**Filed Nov. 22, 1974, Ser. No. 526,444**
**Int. Cl.² G01B** *9/00, 15/00*
**U.S. Cl. 356—107** **66 Claims**



1. In apparatus for testing the optical transfer function of a lens, comprising a radiation source; object-forming means in the object plane of the test lens, said object-forming means having a spatial-frequency which is adapted to being incrementally or continuously changed; adjustable mounting means for the test lens in the test channel; slit means for analyzing the image formed by the test lens; a reference channel; an detector means with associated electronics for measuring and comparing the modulation transfer function of the test lens and reference channel systems, the improvement comprising:
1. means for forming a moving-fringe interference pattern in the object plane of the test lens in the test channel, said means for forming said pattern comprising two converging, monochromatic, coherent-radiation beams of substantially the same intensity and size and respectively different frequencies $f_o$ and $f_o$ , the difference in frequency $\Delta f$ being in the ratio frequency range;
2. means for changing the fringe period $\lambda_s$ of said pattern equally and simultaneously in the range from infinity to a finite $\lambda_s$ determined by the design characteristics of the test lens;
3. means positioned across the $x$–$y$ plane of said fringe pattern for forming said pattern into a real-image target for said test lens in the object plane;
4. slit means positionable in the image plane of said test lens and, thereby, in the reimaged fringe pattern formed by said test lens in the test channel, said slit means being characterized by:
a. being positionable in such manner that its longitudinal axis is parallel to the reimaged fringe pattern planes;
b. being in a slit element positionable in the $x$–$y$ plane of said reimaged fringe pattern and having a width $W'$ adapted to being within the following relationship:

$$2\lambda_0 \leq W' \leq 0.5\lambda'_s,$$

wherein $\lambda_o$ is the radiation wavelength and $\lambda'_s$ is the smallest fringe period of said reimaged fringe pattern produced with said test lens;
5. detector means and associated electronics positionable downstream of said slit means for detecting the radiation transmitted by the slit, separating the AC and DC signal components of the transmitted radiation, and determining the AC/DC ratio of said signal components;
6. a reference channel comprising means for producing an AC/DC ratio equivalent to the AC/DC ratio producible by the movingfringe pattern in the object plane of the test lens in the test channel; and
7. means for comparing the AC/DC ratios produced by the reimaged fringe pattern in the test channel and the AC/DC ratios produced by the reference channel.

41. In a process for testing the optical transfer function of a lens system, comprising providing a radiation source; providing an object of fixed spatial frequency and an associated device for incrementally or continuously changing said spatial frequency in the object plane; adjustably mounting in the test channel a test lens; analyzing the image formed by the test lens by means of a slit positioned in said image; providing a reference channel; and detecting, measuring, and comparing the modulation transfer function of the test lens and reference channel systems, the improvement comprising:
1. forming a first moving-fringe interference pattern in the object plane of the test lens in the test channel and a second moving-fringe interference pattern in the reference channel, said first and second fringe patterns having respectively fringe periods $\lambda_s$ and $\lambda''_s$, each of said first and second fringe patterns being formed by converging two monochromatic, coherent-radiation beams of substantially same intensity and size and different frequency $f_o$ and $f_o$ , the difference in frequency $\Delta f$ being in the radio frequency range;
2. incrementally or continuously changing the fringe period of both of said first and second fringe patterns simultaneously in the range of infinity to a finite fringe period determined by the design characteristics of the test lens;
3. positioning a real-image former across the $x$–$y$ plane of said first fringe pattern, thereby forming said pattern into a real-image target;
4. positioning the test lens downstream of the object plane;
5. positioning a first slit element having a first slit in the image plane of the test lens and, thereby, in the reimaged fringe pattern formed by the test lens, said first slit being characterized by:
a. being positioned in such manner that its longitudinal axis is parallel to the fringe planes of the reimaged fringe pattern;
b. being in a slit element positioned in the $x$–$y$ plane of said reimaged fringe pattern; and
c. having a width $W'$ within the following relationship:

$$2\lambda_0 \leq W' \leq 0.5\lambda'_s,$$

wherein $\lambda_o$ is the radiation wavelength and $\lambda'_s$ is the smallest reimaged fringe period produced by said test lens;
6. positioning a second slit element having a second slit in said second moving-fringe pattern, said second slit being characterized by:
a. being positioned in such manner that its longitudinal axis is parallel to the fringe planes of said second fringe pattern;
b. being in a slit element positioned in the $x$–$y$ plane of said second fringe pattern; and
c. having a Width $W''$ within the following relationship:

$$2\lambda_0 \leq W'' \leq .05\lambda''_s,$$

wherein $\lambda''_s$ is the smallest fringe period produced by said second fringe pattern; and
7. continuously determining and comparing the ratio of the AC to DC signal components of the radiation transmitted through each of said first and second slits.

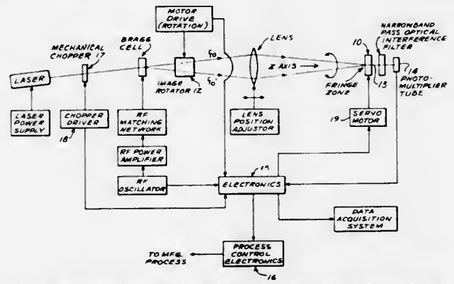


**3,930,733**

## PROCESS AND APPARATUS FOR MONITORING ANGULAR ORIENTATION

**Sandor Holly, Falls Church, Va., assignor to Atlantic Research Corporation, Alexandria, Va.**

**Filed Apr. 15, 1974, Ser. No. 461,319**
**Int. Cl.² G01B** *9/02*
**U.S. Cl. 356—110** **49 Claims**



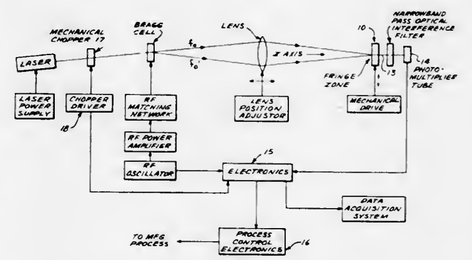
1. A process for sensing the angular orientation of at least one line or slit element of an article, comprising:
1. producing two coherent light beams of the same intensity, one of said beams having a different frequency from said other beam, the frequency difference being within the radio frequency range;
2. converging said beams to form an interference zone comprising a laterally moving fringe pattern within the zone of convergence, said pattern having a fringe period which is substantially wider than said element or the positive difference between the width of the element and a whole integer multiple of the fringe period;
3. positioning at least the portion of said article bearing said element within the interference zone in such manner that said article lies in a plane defined by the axis normal to the plane of the convergent beams and the axis normal to the fringe planes, and said element is in a position, relative to said article, such that the longitudinal axis of said element is substantially parallel to the fringe plane or can, by rotation of said fringe zone and/or said article relative to each other around the z-axis by the converging beam bisector, be brought into fringe-plane parallel position;
4. rotating the fringe zone and/or the article positioned within said fringe zone around the z-axis in such manner as to produce relative angular rotation between them; and
5. continuously determining the ratio of AC to DC signal components of the resulting scattered or transmitted radiation as rotation continues, whereby varying AC/DC ratios are obtained in the course of said rotation, a maximum AC/DC ratio indicates parallel fringe plane alignment of the element, and the degree of angular rotation from a given relative position of the fringe plane and the element to a succeeding position of parallel fringe-plane and element alignment indicates the angular orientation of the element on the article.

**3,930,734**

## PROCESS AND APPARATUS FOR SENSING MAGNITUDE AND DIRECTION OF LATERAL DISPLACEMENT

**Sandor Holly, Falls Church, and Shui Lin Chao, Alexandria, both of Va., assignors to Atlantic Research Corporation, Alexandria, Va.**

**Filed Apr. 26, 1974, Ser. No. 464,597**
**Int. Cl.² G01B** *9/02*
**U.S. Cl. 356—111** **70 Claims**

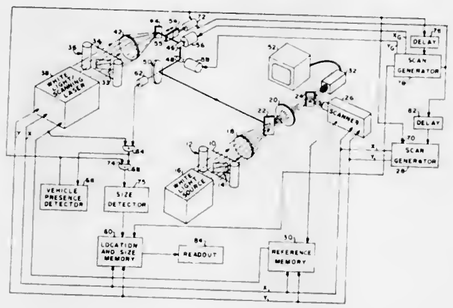


1. A process for sensing the magnitude and direction of lateral displacement of at least one line or slit element of an article comprising:
1. producing two coherent light beams of the same intensity, one of said beams having a different frequency from said other beam, the frequency difference $\Delta f$ being within the radio frequency range;
2. converging said beams to form an interference zone comprising a fringe pattern within the zone of convergence, said fringe pattern continuously moving laterally at a rate equal to $\Delta f$;
3. adjusting the fringe period $\lambda_s$ of the pattern to a width which is substantially wider than the width $w$ of said element or the positive difference between the width of the element and an integer multiple of the fringe period $n\lambda_s$;
4. positioning at least the portion of said article bearing said element within the interference zone in such manner that said article lies in a plane defined by the $x$-axis normal to the plane of the convergent beams and the $y$-axis normal to the fringe planes, and said element is in a position, relative to said article, such that the longitudinal axis of said element is substantially parallel to a fringe plane;
5. laterally shifting the fringe zone and/or the article positioned within said fringe zone along the $y$-axis in such a manner as to produce relative lateral displacement between them while maintaining said element substantially parallel to the fringe plane at least at the central portion of the fringe zone;
6. continuously determining the phase of the RF signal component of the radiation scattered or transmitted by said element as said relative lateral displacement between said zone and article continues from a first position to a second position of said element within the fringe zone;
7. simultaneously continuously comparing the phase of the scattered or transmitted radiation RF signal with the phase of a constant RF reference having a frequency equal to $\Delta f$; and

8. sensing the magnitude and direction of phase shift between said radiation RF signal and said RF reference between first and second positions, whereby said magnitude indicates the extent of lateral displacement of the element between said first and second position and said direction indicates the direction of relative lateral displacement.

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**3,930,735**
**TRAFFIC SURVEY SYSTEM**
**Joseph H. Kerr, Huntsville, Ala., assignor to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.**
**Filed Dec. 11, 1974, Ser. No. 531,572**
**Int. Cl.² G08G *1/00***
**U.S. Cl. 356—167** **6 Claims**

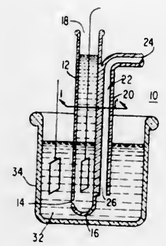



1. A traffic survey system comprising:
holding means for holding a transparency image frame of a discrete area containing at least one roadway;
light means including a beam of light positioned to project light on said transparency image frame and including beam positioning means responsive to an input scanning signal for causing said beam to scan discrete coordinately located areas of roadways on said transparency;
first scan generating means for generating a said scanning signal and supplying it to said light means, whereby said transparency image frame is scanned;
detection means responsive to light passed by said transparency for indicating the presence of a vehicle on a said roadway; and
memory means responsive to said scan generating means and said detection means for storing an indication of the presence of a vehicle in a coded memory location.

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**3,930,736**
**APERTURE TUBE WITH ATTACHED THIEF**
**Wallace Coulter, Miami Springs, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.**
**Filed July 1, 1974, Ser. No. 484,581**
**Int. Cl.² G01N *1/10***
**U.S. Cl. 356—246** **12 Claims**

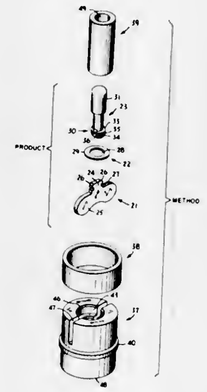
1. an apparatus for use in a particle measuring device wherein liquid suspensions of particles to be measured are brought into contact with the apparatus and wherein the liquid suspensions can adhere to the apparatus and carry over from one suspension to another causing contamination, the apparatus including in combination,
an aperture tube having a top end, a bottom end and an aperture formed therein a predetermined height below said top end,
a thief conduit attached to said aperture tube and forming a unitary structure therewith for reducing exterior surface area whereby said unitary structure minimizes carry over from one suspension to another for that portion of the



unitary structure brought into contact with said liquid suspensions of particles.

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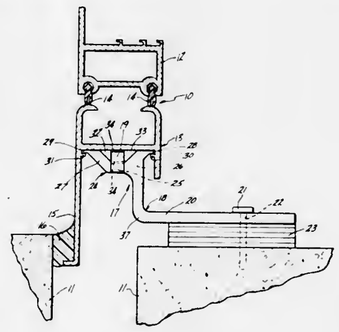
**3,930,737**
**STUD ASSEMBLY**
**Peter Schenk, West Islip, N.Y., assignor to Dzus Fastener Co., Inc., West Islip, N.Y.**
**Division of Ser. No. 412,707, Nov. 5, 1973, Pat. No. 3,874,065.**
**This application Aug. 19, 1974, Ser. No. 498,514**
**Int. Cl.² F16B *2/00***
**U.S. Cl. 403—354** **1 Claim**




1. A stud assembly comprising:
a head portion having opposing gripping surfaces extending from a base with at least one locking recess therein;
a stud member with a receptacle end portion having a slot therein and a circumferential groove adjacent the edge thereof;
the stud member positioned so that the base of the head portion is located in the slot and the circumferential groove is aligned with the recess;
a deformable washer in deformed condition so as to extend into the groove and slot of the stud and the locking recess of the head thereby locking the stud member to the head and forming a unitary stud assembly;
the stud member being substantially cylindrical in configuration; and
the receptacle end portion including the slot having a pair of spaced annular rings extending laterally therefrom with the spaced therebetween forming the circumferential groove and the slot extending through the rings.



**3,930,738**
**ADJUSTABLE WINDOW FRAME ANCHOR CLIP**
**David T. Thuss, Churchville, Pa.; Mitchell L. Stein, Willingboro, N.J.; John Gurniak, Elkins Park, and Michael C. Stefanski, Phoenixville, both of Pa., assignors to Swiss Aluminium Ltd., Chippis, Switzerland**
**Filed Nov. 5, 1974, Ser. No. 521,119**
**Int. Cl.² B25G *3/00*; F16B *1/00*; F16D *1/00*; F16G *11/00***
**U.S. Cl. 403—406** **8 Claims**

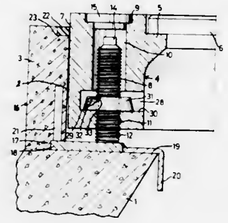


1. A clip member adapted to anchor a frame member to a wall structure which comprises:
a longitudinally extending generally L-shaped member adapted at one end thereof to fixedly engage said wall structure and provided at the opposite end thereof with a connecting means adapted to engage a pair of opposed grooves provided on the underside of said frame member, said connecting means being generally V-shaped, and the joined portion thereof comprising a base portion projecting perpendicularly from one end of said L-shaped member, said base portion possessing a proximal and a distal end in relation to said L-shaped member, and arm portions diverging from said proximal and said distal ends and from each other, said arm portions provided at the unconnected ends thereof with generally oppositely extending lip portions adapted to seat within the respective opposed grooves of said frame member; and
a wedge shaped fastener adapted to clamp said L-shaped member to said frame member by insertion in an opening defined by the surfaces of said frame member, said base portion and said arm portions, said fastener possessing longitudinally extended inclined surfaces with a plurality of laterally directed serrations for fixing said fastener in engagement with said surfaces.

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**3,930,739**
**MANHOLE FRAME WITH ADJUSTMENT SCREWS**
**Folke J. Larsson, and Rune H. Larsson, both of Box 32, 540 42 Forsvik, Sweden**
**Continuation-in-part of Ser. No. 282,829, Aug. 22, 1972, Pat. No. 3,858,998. This application Apr. 18, 1974, Ser. No. 461,939**
**Int. Cl.² E02D *29/14***
**U.S. Cl. 404—26** **3 Claims**

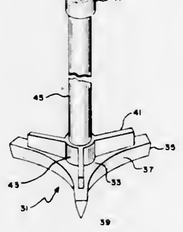
1. Manhole frame comprising a lid, adjustment screws, an annular member adapted to cover the manhole opening and having a rim for supporting said lid, said annular member having at least three axially extending holes located at a peripheral distance from each other and each having a diameter which slightly exceeds the diameter of a corresponding one of said adjustment screws, said annular member having further non-circular openings extending radially from the interior surface thereof and crossing said holes, removable blocks each having a shape and dimension corresponding to and being radially inserted in one of said side openings and a threaded hole having one of said screws extending therethrough and said screws being provided at their upper end with means for facilitating their turning, cup-shaped flexible



members each having a threaded bottom opening having one of said screws extending therethrough and end portions positioned on one of said blocks.

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**3,930,740**
**TOOLS FOR IMPRINTING NON-REPEATING STONE PATTERNS IN FRESH CONCRETE**
**Bradshaw Bowman, Carmel, Calif., assignor to Bomanite Corporation, Palo Alto, Calif.**
**Division of Ser. No. 459,266, April 9, 1974, Pat. No. 3,887,293, which is a continuation-in-part of Ser. No. 288,672, Sept. 13, 1972, Pat. No. 3,807,888. This application Oct. 17, 1974, Ser. No. 515,510**
**Int. Cl.² E01C *23/16***
**U.S. Cl. 404—93** **4 Claims**



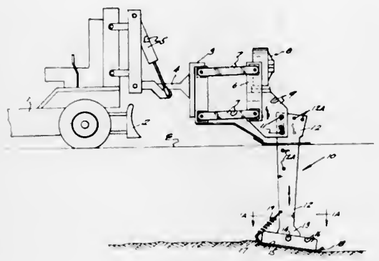
1. A tool for forming stone patterns in fresh concrete in non-repeating patterns consisting of a single blade group, said glade group including a plurality of blades all of which are joined together at a common point and forming that part of the pattern comprising the corners of the stones in the stone pattern, each blade of the group having sides downwardly converging to a penetrating edge, the penetrating edges of each of said blades defining a plane, and a shaft on the blade group extending upward generally normally from said plane.

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**3,930,741**
**VIBRATORY COMPACTOR ATTACHMENT**
**James D. Berry, 1579 N. 6th Ave., Springfield, Oreg. 97477**
**Filed Oct. 15, 1974, Ser. No. 514,404**
**Int. Cl.² E01C *19/34***
**U.S. Cl. 404—133** **4 Claims**

1. A tool for compacting earthen material within and covering a conduit burial trench by successive passes in opposite directions, said tool for attachment to a mobile prime mover having vibratory means thereon, said tool comprising,
a shank in perpendicular relationship to the surface being compacted and adapted at its upper end for pinned attachment to shank mounting means on the prime mover,
a shoe having upturned leading and trailing surfaces and an imperforate bottom surface,

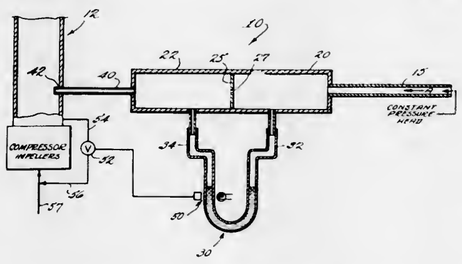
reinforcing bars extending lengthwise of the shoe,
pivot means coupling said shoe to the lower end of said shank permitting inclination of the shoe about the axis of said pivot means during a compacting operation so as to



permit the forwardly or rearwardly moving shoe to ride over material being compacted, and
said shoe contactable with said shank at points spaced from said axis to limit shoe inclination about said axis during tool operation.

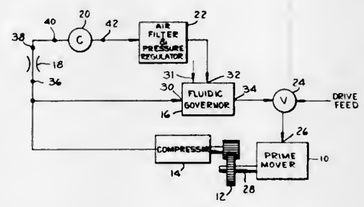
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**3,930,742**
**VELOCITY PROBE FOR COMPRESSOR SURGE CONTROL**
**Meherwan P. Boyce, College Station, Tex., assignor to Howell Instruments, Inc., Fort Worth, Tex.**
**Continuation-in-part of Ser. No. 408,809, Oct. 23, 1973. This application Oct. 3, 1974, Ser. No. 511,705**
**Int. Cl.² F01D** *21/14*
**U.S. Cl. 415—1** **11 Claims**



1. In combination, a compressor having a fluid inlet and a fluid outlet in which fluid outlet a flow of fluid is to be sensed, and
a velocity probe assembly for sensing the velocity of fluid flow, said assembly comprising,
a. first and second plenum chambers,
b. a divider between said plenum chambers,
c. an orifice in said divider for providing limited fluid communication between said first and second chambers,
d. indicating means for sensing the pressure differential between said chambers,
e. means for supplying a source of fluid under constant pressure to said first plenum chamber,
f. a sensing portion leading from and in fluid communication with said second plenum chamber, said sensing portion having an opening therein larger than said orifice and being mounted in the compressor adjacent a wall thereof near its outlet and situated in the boundary layer of the material flowing in the compressor outlet for detecting flow direction reversal in said boundary layer and thus detecting an impending surge condition.

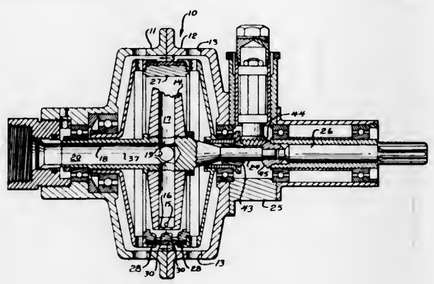
**3,930,743**
**FLUIDIC GOVERNOR SYSTEM**
**Hansjoerg Stern, Scotia, N.Y., assignor to General Electric Company, New York, N.Y.**
**Filed Dec. 26, 1973, Ser. No. 428,098**
**Int. Cl.² F04B** *49/00*; **F01D** *17/06*; **F01B** *25/06*
**U.S. Cl. 415—36** **8 Claims**




1. A fluidic governor system for controlling the speed of a drive shaft output of a prime mover, comprising:
a. a fluidic governor having a control input port, a power input port and a control output port;
b. a compressor, mechanically coupled to and driven by the drive shaft output of the prime mover, for generating both pneumatic power and a pulsating fluidic signal having a frequency proportional to the rotation of the drive shaft output of the prime mover, the pulsating fluidic signal being fluidically coupled to said control input port of said fluidic governor;
c. means for blocking the passage of said pulsating fluidic signal to said power input port of said governor and for converting the pneumatic power to a steady fluidic power supply, the steady fluidic power supply being fluidically coupled to said power input port of said fluidic governor; and
d. means for adjusting a drive feed supplied to a power input of the prime mover to correct the speed of the drive shaft output of said prime mover in response to a speed error signal which is generated from said control output port of said fluidic governor and whose magnitude is proportional to the error in the frequency of the pulsating fluidic signal from said compressor.

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**3,930,744**
**PRESSURE GAS ENGINE**
**James V. Theis, Jr., Delray Beach, Fla., assignor to Hollymatic Corporation, Park Forest, Ill.**
**Filed Oct. 10, 1973, Ser. No. 405,092**
**Int. Cl.² F04D** *5/00*
**U.S. Cl. 415—53 R** **11 Claims**

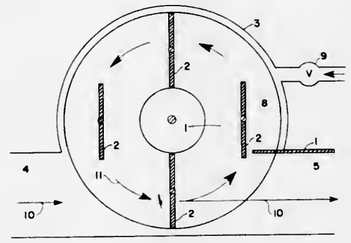


1. A pressure gas engine, comprising: an enclosing casing with spaced outlet openings; an inner first member in said casing of substantially circular cross section having first energy conversion means at its periphery for converting dynamic gas velocity to power; an outer second member in said casing surrounding said first member and having second energy conversion means facing said inner first member also for converting dynamic gas velocity to power; power means including a work output power shaft for mounting one of said first and second members additional means for mounting the other of said first and second members to effect relative rotation therebetween when said power is exerted on one of said first and second members, one of said energy conversion means comprising a straight through gas nozzle having a converging entrance, a throat and a diverging exhaust, said nozzle lying on a chord of its said member that is less than a diameter and exhausting into the other energy conversion means, said other energy conversion means comprising a series of impulse turbine buckets each spaced in its entirety from said member containing said nozzles and facing said nozzles, each bucket having an arcuate surface of constant radius transverse to the direction of said rotation, each said nozzle having its exhaust entering each bucket adjacent one edge for generally arcuate travel around said arcuate surface of the bucket and leaving the bucket at an exhaust edge that is opposite said one edge in an energy transmitting wiping action; means for supplying pressure gas to the converging end of said nozzle; and means for exhausting gas from said exhaust edges of said buckets in substantially unrestricted gas flow substantially directly into said casing for escape through said outlet openings in the casing.



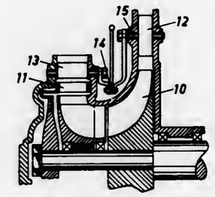
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**3,930,745**
**FLUID PUMPS**
**Donald V. Gassie, 316 Roosevelt St., Lafayette, La. 70501**
**Filed Dec. 20, 1974, Ser. No. 534,842**
**Int. Cl.² F04D** *5/00*
**U.S. Cl. 415—141** **1 Claim**



1. A double action fluid pump which consists of the combination of the nine following main components, viz; a rotor formed by two discs mounted in parallel on a common axle; multiple feathering blades on their own axles mounted between the said discs on bearings in each of the discs, with the outer edges of the blades, when in direct line with the said rotor axle, are even with and at right angles to the periphery of the said discs; a casing in which the said rotor-blade assembly is installed on bearings at the said casing's side, said casing being contoured to the said rotor and its related fluid movement area, and having a main suction chamber and a discharge chamber with their inlets and outlets in line with each other and in line with approximately one third of the lower periphery of the said rotor; a conventional blade feathering system; a vane forming the upper wall of the discharge chamber and extending from the outlet of the discharge chamber toward and to a point adjacent to the furthest point of blade travel in the direction of the discharge chamber inlet; a supplementary suction chamber which is located within the upper quadrant on the discharge side of the said casing, with the said vane serving as its lower wall, and its inlet through the casing wall at a point approximately one third the distance of the rotor diameter above the said vane; and a fluid control valve located outside of and connected hydraulically to the said supplementary suction chamber inlet.

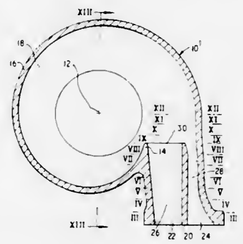
**3,930,746**
**OUTLET DIFFUSOR FOR A CENTRIFUGAL COMPRESSOR**
**Sven-Olof Kronogard, Lomma, Sweden, assignor to United Turbine AB & Co., Kommanditbolag, Malmo, Sweden**
**Filed June 11, 1974, Ser. No. 478,390**
**Claims priority, application Sweden, June 18, 1973, 84915/73**
**Int. Cl.² F01D** *17/00*; **F04D** *29/46*
**U.S. Cl. 415—149** **6 Claims**



1. An outlet diffusor in combination with a centrifugal compressor comprising a rotor for discharging radially and tangentially of the axis of rotation of the rotor, the diffusor comprising parallel, planar discs having an inner and outer periphery circumposed about the rotor, a plurality of individual separated elongated passage-forming elements circumferentially spaced, transversely between said discs, said elements comprising opposed planar, parallel side faces defining a segment of a circle along their length and extending in juxtaposed relation on the opposed inner surfaces of said discs and substantially from the inner to the outer periphery of said discs, said elements including opposed channel shaped edge faces converging in a concave transverse edge between said side faces and adjacent the inner periphery of said discs, the paraiiel side faces of the elements terminating in a rounded ends flanking the transverse edge at the inner periphery of the discs, the channel shaped edge faces merging into each other along the transverse edge, adjacent edge faces of adjacent elements combining to form divergent expansion passages from the inner to the outer periphery of said discs.

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**3,930,747**
**TURBINE HOUSING**
**William Edward Woollenweber, Columbus, Ind., assignor to Cummins Engine Company, Inc., Columbus, Ind.**
**Filed Nov. 28, 1973, Ser. No. 419,787**
**Claims priority, application United Kingdom, Dec. 6, 1972, 56221/72; Dec. 6, 1972, 56222/72; Dec. 6, 1972, 56223/72**
**Int. Cl. F02b** *37/00*; **F01d** *1/08*
**U.S. Cl. 415—205** **30 Claims**



1. In a centripetal flow turbine housing having a first inlet and a first inlet passageway receiving fluid flow and a volute section connected to said first inlet passageway for discharging said fluid flow, the improvement comprising at least one

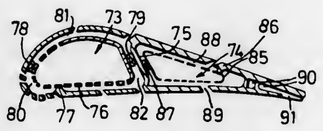
additional inlet spaced from said first inlet means forming at least one additional inlet passageway for receiving fluid flow from said additional inlet and defining an outlet for directing said fluid flow in a direction which is substantially parallel to the direction of flow through said first inlet passageway, said additional inlet passageway being surrounded at some point downstream from said inlets by at least 160° of said first inlet passageway as viewed in a plane generally normal with respect to the flow through said additional inlet passageway.

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**3,930,748**
**HOLLOW COOLED VANE OR BLADE FOR A GAS TURBINE ENGINE**

**Robert Frederick Redman, Beeston, and Michael John Sharpe, Derby, both of England, assignors to Rolls-Royce (1971) Limited, London, England**

**Filed July 27, 1973, Ser. No. 383,055**
**Claims priority, application United Kingdom, Aug. 2, 1972, 36058/72**
**Int. Cl.² F01D** *5/18*
**U.S. Cl. 416—97** **14 Claims**




1. A blade assembly for a gas turbine engine comprising: a hollow cooled blade having a wall defined by an exterior and an interior surface, a cooling air entry tube positioned interior of the blade and extending longitudinally of the same, said cooling air entry tube being sealed to the blade interior surface at spaced apart locations at or adjacent the tip and root of the blade to provide a space between the blade and the blade interior surface, means to operatively support said air entry tube from the interior surface of said blade, longitudinally extending partitions which seal between the blade interior surface and the exterior surface of the tube, said partitions dividing said space between the tube and the interior surface of said blade into a plurality of separate longitudinal sections, at least one of said partitions comprising a longitudinally extending deformable sealing member trapped between the respective tube and the interior surface of said blade, apertures in the tube arranged to allow air at different pressures into the different longitudinal sections, and film cooling holes extending from at least one of said sections through the blade wall to the exterior blade surface.

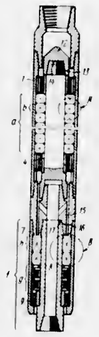
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**3,930,749**
**TURBODRILL**

**Moisei Timofeevich Gusman, Voroblevskoe shosse, 11, kv. 69; Boris Georgievich Ljubimov, 5 Parkovaya ulitsa, 48, korpus 14, kv. 7; Igor Leonidovich Konstantinov, Nagornaya ulitsa, 16, korpus 1, kv. 53; Irina Ivanovna Kuznetsova, Kremlevskaya naberezhnaya, 1/9, kv. 34; Boris Davidovich Malkin, ulitsa Vavilova, 54, korpus 1, kv. 38, and Gely Meierovich Nikitin, Kerchenskaya ulitsa, 2/35, kv. 147, all of Moscow, U.S.S.R.**

**Filed Dec. 12, 1974, Ser. No. 531,968**
**Int. Cl.² F03B** *13/02*
**U.S. Cl. 415—199 R** **3 Claims**

1. A turbodrill for drilling wells having a top portion for coupling with the bottom end of the drilling string for receiving drilling fluid which is positively fed therethrough and a bottom portion provided with a coupling member for a rock-disintegrating tool, said turbodrill comprising: a housing; stators fixed in said housing; said stators having blades arranged to form a circular patterns and to define guide passages for the flow of drilling fluid positively fed through the drilling string; a shaft having a central passage accommodated in said housing; bearing means mounted in said housing for rotation of said shaft relative to said housing and for transmitting the load from the drilling string to the rock-disintegrating tool; rotors fixed to said shaft, said rotors having blades arranged to form a circular pattern, said blades being directed oppositely relative to said stator blades and mounted in a manner such that said stator and rotor blades form turbodrill turbine stages in which the linear motion of the drilling fluid is transformed into the rotary motion of said rotors; means for fixing said stators and rotors of the turbine stages to said shaft and housing, respectively; the blades of said rotor and stator being shaped in such a manner that an angle ($\theta$) between tangents to a



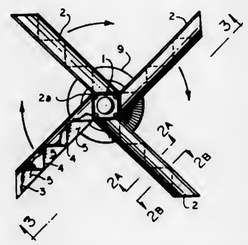
middle line of the profile of said blades at the inlet and outlet edges of said blades is determined by the relationshihp $\theta = 180° - (\text{from } 4.5 \text{ to } 7)\ \alpha_1$, wherein $\alpha_1$ is an angle between a line perpendicular to an axis of said blade patterns and the tangent to the middle line of the profile of said blades at the inlet edge thereof as measured in the direction towards the concave portion of the blade profile, an angle ($\alpha_2$) between the line perpendicular to the axis of said blade patters and the tangent to the middle line of said blades at the outlet edge thereof is determined by the relationship $\alpha_2 = (\text{from } 3.5 \text{ to } 6)\ \alpha_1$, and a ratio of maximum thickness ("δ") of the profile of said blades to the chord ("1") thereof is selected within the range $\delta/1 = \text{from } 0.09 \text{ to } 0.19$.

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**3,930,750**
**WIND POWER PLANT**

**Wilderich C. Schultz, 696 Wrelton Drive, San Diego, Calif. 92109**

**Filed Apr. 8, 1974, Ser. No. 459,033**
**Int. Cl.² F03D** *3/00*
**U.S. Cl. 416—197** **2 Claims**




1. A power plant of the windmill type comprising: a supporting structure, a propeller unit mounted on said supporting structure for rotation about a vertical axis and including a hub, a plurality of vanes affixed to said hub, each of said vanes having a shell of a generally parabolic cross-section defining a leading edge with a symmetrical air foil configuration and



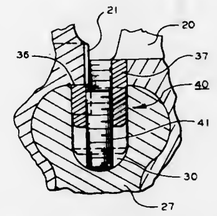
further defining an open trailing edge, and a zig-zag shaped webbing member mounted within said shell to define a series of essentially triangular individual cells extending the length of the shell and exposed to the open trailing edge thereof.

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**3,930,751**
**BUCKET LOCKING MECHANISM**

**William A. Straslicka, Norvelt, and Arthur J. Miller, Irwin, both of Pa., assignors to Carrier Corporation, Syracuse, N.Y.**

**Filed July 5, 1974, Ser. No. 485,867**
**Int. Cl.² F01D** *5/32*
**U.S. Cl. 416—220** **4 Claims**




1. In a rotor assembly of the type wherein a series of side entry blades are mounted upon a rotor disc by sliding the blade roots into complementary grooves formed within the disc, each blade further having a platform overlying the tang formed in the disc between each root receiving groove, the side edges of each platform being in close proximity with that of the next adjacent blade platform, the improvement comprising

a radially extending hole formed in each tang, the hole being formed so that it is substantially centered between adjacent blade platforms with the hole extending beneath each of said adjacent platforms,

a locking pin having a close sliding fit with said holes being mounted within each hole, said pin having a shoulder being arranged to pass beneath one of said adjacent platforms and an extended section passing outwardly from said hole and being slidably received within a complementary groove formed in the other of said adjacent platforms, and

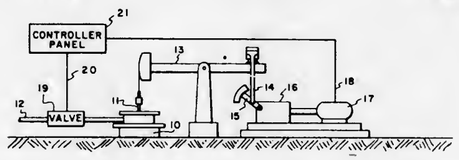
screw means operatively associated with each of said pins for raising the pin within said hole to lock the shoulder of said pin against said one adjacent platform whereby the damping characteristics and balance of each blade is adjustable.

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**3,930,752**
**OIL WELL PUMPOFF CONTROL SYSTEM UTILIZING INTEGRATION TIMER**

**Bobby L. Douglas, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.**

**Continuation-in-part of Ser. No. 365,881, June 1, 1973, Pat. No. 3,854,846. This application May 13, 1974, Ser. No. 469,264**
**Int. Cl.² F04B** *49/00*
**U.S. Cl. 417—12** **31 Claims**




1. A system for controlling the operation of a well pumping installation including a pump, a motor for operating said pump and a pumped fluid flowpipe, said system comprising:

flow detection means responsive to the flow of fluid from the well;

signal means for generating signals indicative of said response;

means for determining if the percentage of time during a given time interval that such signals are occurring is below a predetermined desirable value;

means for terminating the pumping operation when the percentage of time said signals are occurring is less than the predetermined desirable value;

means for restarting said pumping operation after a predetermined period of shutdown time in said system; and,

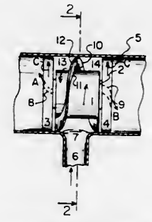
recycle means in said system for resetting said determining means and said terminating means to allow recycling of the pumping operation.

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**3,930,753**
**DUAL PREROTATOR**

**Joseph V. Foa, 3404 Thornapple St., Chevy Chase, Md. 20015**

**Filed July 23, 1974, Ser. No. 490,967**
**Int. Cl.² F04B** *19/24*
**U.S. Cl. 417—53** **8 Claims**




1. The method of dividing a first flow of a fluid into two subflows while simultaneously imparting to said subflows angular momenta of opposite signs, comprising feeding said first flow transversely into, and at some location along, a conduit formed by the space between two coaxial surfaces of revolution and generally helicoidal stationary surfaces substantially spanning said space, whereby one of said subflows flows in one direction away from said location and the other of said subflows flows in the other direction away from said location, and said subflows are, by virtue of said geometry, constrained to acquire angular momenta of opposite signs.

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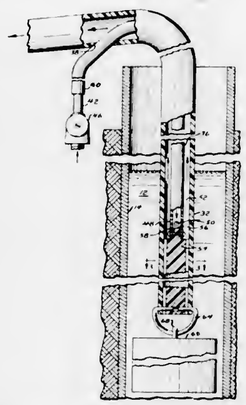
**3,930,754**
**PORTABLE WATER SAMPLING APPARATUS**

**Joe L. Mogg, Roseville, and Rueben E. Paulson, Minneapolls, both of Minn., assignors to Universal Oil Products Company, Des Plaines, Ill.**

**Filed Dec. 23, 1974, Ser. No. 535,906**
**Int. Cl.² F01D** *25/26;* **F03B** *11/00;* **E21B** *47/00*
**U.S. Cl. 417—108** **5 Claims**

1. A portable water pumping apparatus for sampling water from a well comprising: a storage reel having a hub and side flanges and storing a pair of elongated, flexible, telescopically positioned, radially spaced inner and outer tubing members and for supporting the upper end portion of each of said tubing members; handle means on said storage reel for reeling and unreeling the lower end portion of said tubing members into a well; a cylinder of pressurized gas and complementary means on said cylinder and on the upper end portion of the inner tubing member for attaching said cylinder to the upper end of said inner tubing member, valve means for controlling the flow of gas from said cylinder into said inner tubing member; weight means attached to said outer tubing member at its lower end portion; the lower end portions of the inner and outer tubing member communicating with each other, means communicating the space between the inner and outer tubing members with water to be pumped; and discharge opening means at the upper end of the outer tubing member for dis-

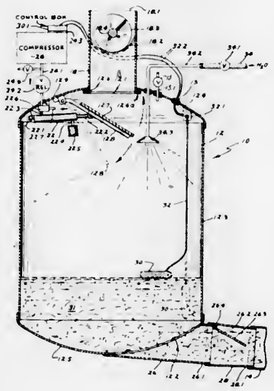
charging water forced up through the space between the inner and outer tubing members by gas passing down through the



lower end portion of said inner tubing member from said cylinder when the lower end portion of each tubing member is submerged beneath the water in a well.

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**3,930,755**
**AIR-PRESSURE ACTUATED SLURRY PUMP**
**Lawrence N. Lahr, Rte. 3, Box 373, and Donald J. Lahr, Rte. 3, Box 374, both of Sauk Center, Minn. 56378**
**Filed Aug. 9, 1974, Ser. No. 496,304**
**Int. Cl.² F04F** *1/06, 3/00*
**U.S. Cl. 417—120** **10 Claims**



1. A slurry pump particularly useful for pumping liquid manure and comprising:

a pressure tank with an inlet for admission of slurry to the tank and a lower outlet for passage of slurry from the tank, the inlet having a hinged plate swingable inwardly from the inlet and including an air-operated pneumatic cylinder and piston attached internally of the tank and oriented to force the plate upwardly and outwardly to provide an air-tight seal at the inlet when the piston is extended from the cylinder, and the outlet having means preventing backflow of slurry through the outlet;

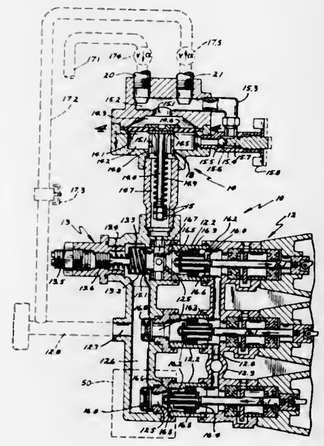
a source of air under pressure and an air line extending from the source of air and passing through a wall of the tank and communicating internally of the tank with the pneumatic cylinder to actuate the same, the air line including a pressure-actuated directional valve communicating in its closed position with the pneumatic cylinder and in its opened position with the tank to supply air under pressure to the latter when the pressure of air driving the pneumatic cylinder has reached a predetermined value;

level sensor means for sensing the recedence of slurry below a predetermined level as slurry is pumped from the pressure tank; and

control means responsive to the level sensor means for discontinuing the flow of pressurized air to the tank when the slurry level has decreased to the predetermined level.

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**3,930,756**
**METERING PULSE PUMP**
**William L. Bruggeman, White Bear Lake, Minn., assignor to Cat Pumps Corporation, Minneapolis, Minn.**
**Filed Jan. 14, 1974, Ser. No. 433,132**
**Int. Cl.² F04G** *23/04*; **F04B** *17/00, 9/08*
**U.S. Cl. 417—199 A** **12 Claims**



1. A metering pulse pump for metering an additive liquid into a liquid carrier under high pressure comprising:

a rapidly reciprocable piston pump with an inlet connectable to a source of liquid and an outlet, and an outlet line carrying liquid from the outlet under high pressure;

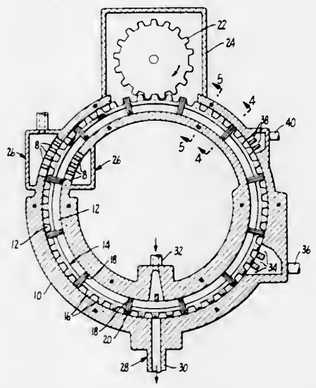
a pressure-relief valve at the outlet of the piston pump and permitting one-way flow therethrough into the outlet line, the pressure relief valve including a plug and valve seat, a spring biasing the valve into a closed position, and means for varying the spring pressure to control the pressure differential across the valve at which the valve will open;

a diaphragm pump having a housing defining a compartment having a movable diaphragm separating the compartment into a first chamber communicating directly with the outlet of the piston pump upstream of the pressure-relief valve and a second chamber having an inflow port connectable to a source of additive liquid and an outflow port through which additive liquid is pumped by movement of the diaphragm, the inflow and outflow ports respectively having check valves permitting flow only into and out of the second chamber; and

a manually closable bleeder duct communicating the first and second diaphragm pump chambers for priming the second chamber with liquid from the first chamber, the bleeder duct having a check valve permitting flow of liquid only from the first chamber to the second chamber when the duct is open.



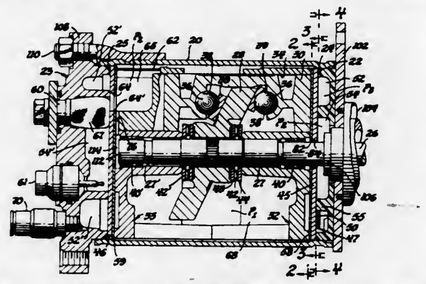
**3,930,757**
**PRESSURE EQUALIZING PUMP**
**Eric A. Salo, 15898 Via Pinale, San Lorenzo, Calif. 94580**
**Filed Mar. 10, 1975, Ser. No. 556,815**
**Int. Cl.² F04D** *17/08*
**U.S. Cl. 417—203** **4 Claims**



1. Pumping apparatus comprising a casing, a toroidal chamber defined by a surface within the casing, said chamber having angularly spaced inlet and outlet openings a ring of reduced transverse cross-section disposed within the chamber, spaced discs on the ring, expansible rings carried by the discs and disposed in engagement with said surface, said discs and rings dividing said chamber into a plurality of separate compartments, and means to rotatably drive said ring around said chamber comprising gear teeth formed around said ring at one side thereof, each of said discs being formed in part by one or more of said gear teeth, said expansible rings being positioned within grooves formed in those teeth which form in part said discs.

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**3,930,758**
**MEANS FOR LUBRICATING SWASH PLATE AIR CONDITIONING COMPRESSOR**
**Kwang H. Park, Dearborn Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.**
**Filed Mar. 22, 1974, Ser. No. 453,570**
**Int. Cl.² F04B** *1/12*; **F01M** *1/00*
**U.S. Cl. 417—269** **3 Claims**



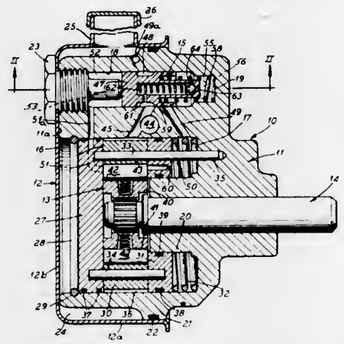
1. In a compressor, a cylindrical casing element, a pair of cylinder blocks disposed intermediate the ends of said cylindrical casing element defining a crankcase therebetween, front and rear cylinder heads disposed within opposite ends of said cylindrical casing element, said rear cylinder head having an inlet suction line and an outlet discharge line, valve plate means interposed between said cylinder heads and said cylinder blocks and having inlet and outlet ports therein, said cylinder heads each having a circular peripheral rib and an intermediate closed rib island defining an inner suction inlet chamber and an outer discharge outlet chamber adjacent said inlet and outlet ports respectively, the inlet and outlet chambers in said rear cylinder head being in communication with said inlet suction line and said outlet discharge line, respectively; a compressor drive shaft having its ends rotatably mounted in front and rear axially spaced bores of said cylinder blocks by means of front and rear needle journal bearings, said cylinder blocks having first passage means for conveying compressed gas between said head outlet chambers, each of said cylinder blocks each having a suction cavity in their outer end faces to provide front and rear suction cavities, said cylinder blocks having second suction crossover passage means therein for connecting said front and rear suction cavities, said cylinder blocks having three pairs of aligned pumping chambers spaced radially outward from the central axis of said shaft, three double ended pistons arranged to reciprocate within associated pairs of said pumping chambers, a swash plate disposed between said cylinder blocks and secured to said shaft so as to rotate therewith, means whereby rotation of said swash plate imparts reciprocation to said double ended pistons, front and rear drive shaft needle thrust bearing assemblies between said swash plate and the inner ends of said front and rear shaft bores so as to be in communication with the crankcase chamber, wherein the improvement comprising having the rear end surface of said shaft spaced a defined distance from the inner surface of said rear valve plate means, the front end of said shaft extending through aligned openings in said front valve plate means and through said front head suction chamber whereby said front shaft bore is in communication therewith, said aligned openings of a sufficient diameter to permit oil to flow from said front shaft bore into said front head suction chamber, said rear cylinder block having a radial slot formed in its outer transverse face providing communication between said rear suction cavity and the outer end of said rear shaft bore, whereby a differential suction pressure gradient is created therebetween which cooperates with the oilrefrigerant gas piston chamber blow-by during each compressive stroke of the pistons to provide a first flow of lubricating oil through the compressor rear needle thrust and journal bearings, said first oil flow being from said crankcase through said rear thrust bearings and rear journal bearings via said rear shaft bore for radially outward flow in said rear radial slot into said rear suction cavity, and thence via said suction crossover passage into said front suction cavity for differential pressure flow into said front head suction chamber and thence via piston blow-by into said front piston chambers for differential pressure return to said crankcase, and said second oil flow being from said crankcase through said front thrust and front journal bearings and thence via said front shaft bore through said aligned shaft openings into said front head suction chamber for return to said crankcase with said first oil flow.

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**3,930,759**
**INTEGRAL HOUSING PUMP WITH SERVO CONTROLLED CHEEK PLATE**
**Gilbert H. Drutchas, Birmingham, Mich., assignor to TRW Inc., Cleveland, Ohio**
**Filed June 3, 1974, Ser. No. 475,784**
**Int. Cl.² F04B** *49/02*
**U.S. Cl. 417—283** **12 Claims**

1. A positive displacement pump which comprises a one-piece housing having an outlet and first and second cavities open at one end, a train of pump components in the first cavity including a cam ring defining an interior pumping chamber with inlet and outlet sides, a rotor carrying pumping means riding in the cam ring and a fluid pressure loaded cheek plate pressed against one side of the cam ring, said first cavity providing a static fluid pressure chamber behind said cheek plate, servo valve components in the second cavity, a shaft rotatably carried by the housing coupled to said rotor, a cup-shaped shell telescoped over the housing closing the open end thereof and providing a fluid reservoir around the housing, and passages in said housing from the reservoir to the inlet

side of the pumping chamber and from the outlet side of the pumping chamber to the outlet, an orifice in the passage to the outlet, and passages in the housing from the upstream side of said orifice to the second cavity, from the inlet side of the pumping chamber to the second cavity and from the static



fluid pressure chamber to the second cavity whereby the servo valve is sensitive to pressure drop on opposite sides of the orifice and controls the unloading of the cheek plate and all components in the housing are placed in operating fluid communication by housing passages.

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**3,930,760**

## HYDRAULIC PUMP INCORPORATING MEANS FOR LIMITING VOLUME OF FLOW

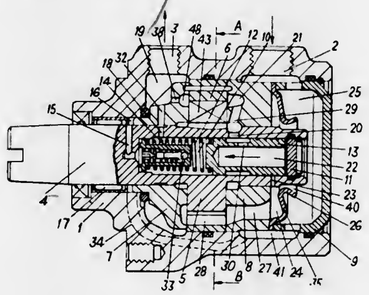
**Klaus Winter, Schwalbach, Germany, assignor to ITT Industries, Inc., New York, N.Y.**

**Filed Feb. 19, 1974, Ser. No. 443,490**

**Claims priority, application Germany, Apr. 11, 1973, 2318080**

**Int. Cl.² F04B** *49/00*

**U.S. Cl. 417—310** **5 Claims**



1. In a vane-type hydraulic pump, a rotor formed about a pump shaft within a pump housing, and flow control means for regulating discharge volume of the pump comprising an operating piston and a pressure relief valve disposed in a concentric bore within walls of the pump shaft, inlet and outlet means extending through said housing, duct means and chambers providing paths through a pressure line interconnecting said inlet and outlet means through walls of the piston and the pump shaft, means for sensing volume of flow in said pressure line and for providing the transfer of pressure signals through ducts in said piston to govern the position of said operating piston relative to an overflow line to thereby control volume of flow.

**3,930,761**

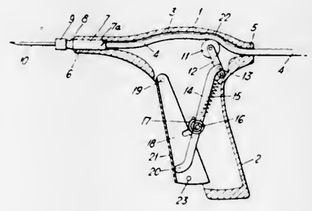
## PORTABLE AND MANUALLY OPERABLE PERISTALTIC PUMP

**Keith S. Barraclough, Basingstoke, England, assignor to The Boots Company, Ltd., Nottingham, England**

**Filed Dec. 19, 1972, Ser. No. 316,589**

**Int. Cl.² F04B** *43/08*; **A63H** *3/18*; **A61M** *5/00*

**U.S. Cl. 417—476** **1 Claim**



1. A peristaltic pump comprising a portable housing capable of being held in the hand and which carries means on an inner surface of the housing defining an elongated surface, a tube leading across the housing in contact with the inner surface of the housing defining an elongated surface and that includes, near one end of the housing, a non-return valve that allows fluid to flow only in the direction that leads away from the housing, the tube being a flexible tube along at least that part of its length in contact with the inner surface of the housing defining an elongated surface, a roller which is reciprocable along the flexible tube, means for squeezing the tube against the inner surface of the housing by a roller and thereby closing the tube and for moving the roller along the tube towards the non-return valve while thus squeezing the tube, means for continuously biasing the roller away from the non-return valve, and means to withdraw the roller from squeezing contact with said tube during or subsequent to its return to its initial position consisting of a depression in said inner surface of the housing defining an elongated surface at a point distant from the non-return valve, whereby the flexible tube returns substantially to its normal configuration while the non-return valve closes.

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**3,930,762**

## APPARATUS FOR USE AS A GAS COMPRESSOR OR GAS BLOWER

**John Maximilian Jules Varga, Halifax, England, assignor to Carding Specialists (Canada) Limited, Toronto, Canada**

**Filed July 9, 1973, Ser. No. 377,795**

**Claims priority, application United Kingdom, July 11, 1972, 32296/72**

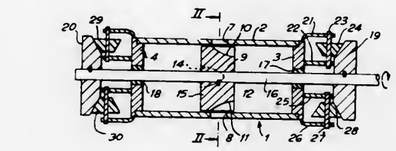
**Int. Cl.² F04B** *7/06*, *39/10*

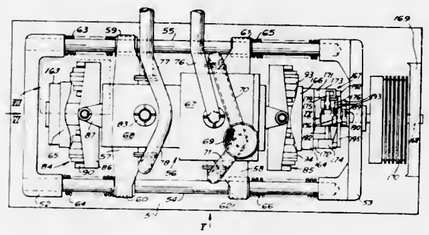
**U.S. Cl. 417—492** **3 Claims**

1. A gas compressor or blower comprising a cylinder having air intake and exhaust ports; a piston which is rotatably and reciprocably movable in the cylinder; valve means for admitting air into and exhausting air from at least one chamber lying to one side of the piston; a piston shaft to which the piston is secured, the piston shaft passing through seals at the axial ends of the cylinder; means for applying a rotary drive to the piston rod; and a cam arrangement for causing reciprocation of the piston rod as it rotates; the arrangement of ports and valve means being such that as the piston rotates and reciprocates air is induced into the chamber, is compressed in the chamber



and then exhausted from the chamber; means for axially balancing the piston shaft comprising support means, and means





for mounting said cylinder on said support means so that said cylinder has free axial movement on said support means.

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**3,930,763**

## ROTARY CELL PUMP FOR THE CONVEYING OF SAUSAGE STUFFING AND THE LIKE

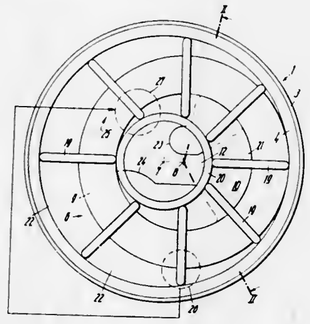
**Heinz Rose, Intschede, Germany, assignor to VEMAG Verdener Maschinen-und Apparatebau GmbH, Verden, Germany**

**Filed Sept. 17, 1973, Ser. No. 397,755**

**Claims priority, application Germany, Oct. 30, 1972, 2253142**

**Int. Cl.² F01C** *13/00*

**U.S. Cl. 418—6** **6 Claims**



1. A rotary pump for pumping material mixed with air comprising; a stationary hub and a stator surrounding the hub in concentric spaced relation therewith, a rotor disposed between said hub and said stator and eccentric relative to said hub and stator, said rotor with said hub and said stator comprising an inner material pump chamber and an outer air removal pump chamber respectively, said inner pump chamber receiving material having entrapped air therewith, means providing an inlet to said inner pump chamber to receive material and entrapped air therein, and means providing an outlet from said inner pump chamber and means to force said material therefrom and fluid flow means connected between said inner and outer chambers to extract entrapped air from the material within said inner chamber, means for venting said outer chamber.

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**3,930,764**

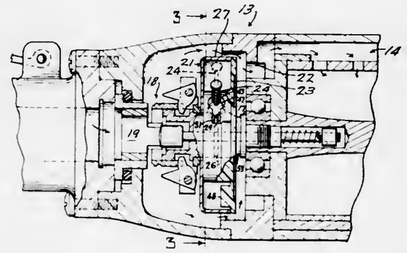
## AIR TOOL OVERSPEED SHUTOFF DEVICE

**George R. Curtiss, Chardon, Ohio, assignor to Cooper Industries, Inc., Houston, Tex.**

**Filed Dec. 26, 1974, Ser. No. 536,388**

**Int. Cl.² F01C** *21/12*; **G05D** *13/10*

**U.S. Cl. 418—43** **7 Claims**



1. In a rotary tool having a pneumatic motor, a rotary shaft connected to the motor, means defining a first inlet port through which pressurized air is supplied to drive the motor, a centrifugally operated rotatably driven governor including a valve cooperating with said first port to control the flow of air through said first port in relation to the rotational speed of said governor, and means defining a second inlet port, downstream of said governor, through which pressurized air from the first port travels to the motor, the improvement of a safety overspeed device operable to shut off the motor in response to a predetermined motor speed level, comprising valve closure means for engaging and closing the second inlet port, said closure means being slidably mounted for axial movement on the shaft and spaced from the second inlet port in normal operation, means connected to the shaft for rotating said closure means in its normal operating position, and means responsive to centrifugal force associated with a predetermined motor speed for moving said closure means toward and into engagement with the second inlet port.

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**3,930,765**

## ROTARY DISPLACEMENT PUMPS

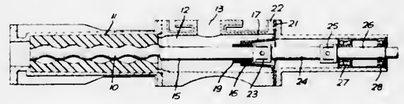
**William Edmund Waite, Molex Limited, The Trading Estate, Farnham, Surrey, England**

**Filed Feb. 11, 1974, Ser. No. 441,322**

**Claims priority, application United Kingdom, Feb. 9, 1973, 6605/73**

**Int. Cl.² F04C** *1/06*, *17/06*

**U.S. Cl. 418—48** **3 Claims**



1. In a rotary positive displacement pump of the internally-meshing screw kind having a stator, a rotor and a chamber at one end of the stator the chamber being defined by a surrounding wall; the improvement comprising drive means for the rotor comprising an elongated connecting member of circular cross section, one end of said member being rigidly secured to the rotor and extending into said chamber, a bearing for said connecting member within said chamber, the connecting member, near its end remote from the rotor, pass-

ing through said bearing, a resilient support member for said bearing, said resilient support member being liquid-impermeable and having the form of a frustum of a cone extending completely around and having its smaller end sealed to the bearing, the support member at its larger end being sealed also to the wall of said chamber thereby to form a fluidtight barrier between the bearing and said wall of the chamber, a drive shaft, first and second universal joints, and a connecting rod between said universal joints, said connecting member at the end beyond said bearing being connected by said first universal joint to said connecting rod, which connecting rod is connected by said second universal joint to said drive shaft, said chamber being elongated, said connecting member being secured to the rotor at one end of said chamber, said bearing being disposed at the other end of said chamber, and an inlet for material to be pumped opening into said chamber between said bearing and said one end of said chamber, said connecting member having a length to diameter ratio greater than three and extending at least most of the length of said chamber.

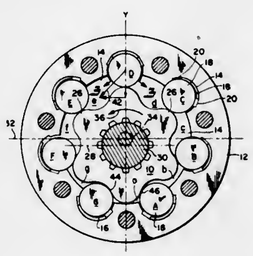
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**3,930,766**

## RADIAL BALANCING MEANS FOR A HYDRAULIC DEVICE

**Nils Einar Swedberg, Chanhassen, Minn., assignor to Eaton Corporation, Ohio**

**Continuation-in-part of Ser. No. 357,421, May 4, 1973, abandoned. This application Dec. 9, 1974, Ser. No. 530,638**
**Int. Cl.² F01C *1/02*; F03C *3/00*; F04C *1/02***
**U.S. Cl. 418—61 B** **6 Claims**



1. An internally-toothed member for use in a rotary fluid pressure device of the geroter type, said internally-toothed member comprising a ring member having a plurality of substantially semi-cylindrical pockets therein, a substantially cylindrical roller received in each of said pockets, each of said pockets having a configured surface including axially-extending recesses therein and roller support surfaces intermediate said recesses, said roller support surfaces defining at least one groove communicating between adjacent recesses.

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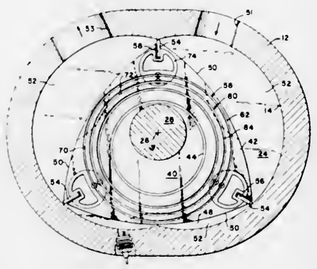
**3,930,767**

## CIRCULAR ROTOR SIDE SEAL FOR ROTARY MACHINES

**Jack A. Hart, Mount Clemens, Mich., assignor to General Motors Corporation, Detroit, Mich.**

**Filed July 16, 1974, Ser. No. 488,956**
**Int. Cl.² F01C *19/04*, *19/08*; F04C *27/00***
**U.S. Cl. 418—113** **3 Claims**

1. In a rotary machine comprising a housing having a cavity; a rotor disposed in said cavity; said rotor having a plurality of adjoining and intersecting peripheral faces and a pair of opposite side faces; an apex seal at each intersection of said peripheral faces; an output shaft rotatably supported by said housing and having an eccentric rotatably supporting said rotor; said rotor peripheral faces, said rotor side faces and said housing cooperatively defining a plurality of sealed variable volume working chambers spaced around said rotor that move with said rotor within said housing, an intake port periodically connected to said working chambers as said rotor rotates, an exhaust port periodically connected to each of said working chambers as said rotor rotates; the improvement comprising: said rotor side faces having circular seal grooves formed therein; a circular compression seal assembly mounted in each groove; a corner seal assembly at each intersection of said rotor peripheral faces, said corner seal assemblies being of



substantial size and containing a segment of said circular seal grooves and said compression seal assemblies, said corner seal assemblies also containing a portion of said apex seals, and a plug seal assembly mounted in each of said corner seal circular seal groove segments in sealing relationship with each said compression seal assembly therein thereby providing a complete side seal arrangement permitting sealing of said working chambers.

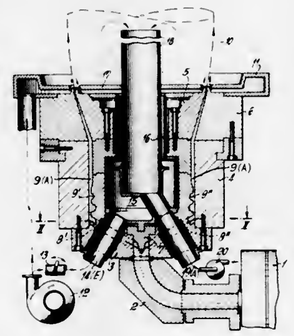
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**3,930,768**

## BLOW-HEAD FOR TUBULAR FILM

**Werner Josef Zimmermann, Lengerich of Westphalia, and Hartmut Upmeier, Tecklenburg, both of Germany, assignors to Windmoller & Holscher, Lengerich of Westphalia, Germany**

**Filed Feb. 12, 1974, Ser. No. 441,753**
**Claims priority, application Germany, Feb. 12, 1973, 2306834**
**Int. Cl.² B29D *23/04***
**U.S. Cl. 425—72** **4 Claims**



1. A sheet blow head for the manufacture of sheet tubes from a thermoplastic material with central melt feed line and with distributing bores that extend radially from it to the blow head casing, and which open into one distributing helical member of the blow head insert forming an increasingly larger overflow gap with the blow head casing, wherein the distributing bores take their course in the generated surface of an obtuse-angled cone, and an internal air cooling system, the improvement comprising channels supplying and exhausting interior air consisting of concentric pipes that penetrate the blow head axially, while the co-axial air supply channels are connected with the pertinent air conduits outside the blow head via, at least, one feed pipe and outlet pipe, each which extend substantially vertically through the generated surface of the cone and between adjoining distributor bores.



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**3,930,769**

## PROCESS AND APPARATUS FOR PRODUCING A THIN DOUGH MATERIAL

**Karl Gunther, Vienna, Austria, assignor to Vereinigte Nahrungsmittelindustrie Aktiengesellschaft, Vienna, Austria**

**Continuation of Ser. No. 319,394, Dec. 29, 1972, abandoned. This application Apr. 28, 1975, Ser. No. 572,297**
**Claims priority, application Austria, Jan. 4, 1972, 42/72**
**Int. Cl.² A21C *3/02***
**U.S. Cl. 425—84** **15 Claims**



1. Apparatus for producing a thin dough material from stretchable doughs, particularly doughs rich in gluten, comprising

a. rolling means for rolling the dough in a first direction into a flat sheet having a thickness exceeding the thickness of the final dough material to be produced,

b. means for continuously conveying said dough sheet from said rolling means while stretching said rolled sheet of dough in a second direction substantially transverse to said first direction,

c. means for continuously conveying said dough sheet from said stretching means while clamping the edges of said rolled and stretched dough sheet to maintain said rolled stretched dough sheet in substantially its most stretched condition, and

d. means for removing moisture from said rolled stretched dough sheet, at a rate greater than it would be removed by mere evaporation by exposure to ambient air, while said sheet is maintained in its stretched condition so that the moisture content of the dough sheet is lowered and the final desired dough material is produced.

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**3,930,770**

## EXPANDABLE POINCON METHOD AND APPARATUS

**David Alvin Gaudet, Cincinnati, Ohio, and John Moss Wathen, Jr., Chester, N.J., assignors to American Can Company, Greenwich, Conn.**

**Continuation of Ser. No. 308,563, Nov. 21, 1972, which is a division of Ser. No. 72,083, Sept. 14, 1970, abandoned. This application Feb. 24, 1975, Ser. No. 552,311**
**Int. Cl.² B29F *1/10***
**U.S. Cl. 425—107** **6 Claims**

1. Apparatus for molding a headpiece on a tubular body, comprising:

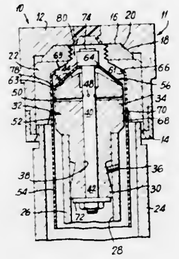
a female forming member having a surface defining a mold cavity with an opening thereinto, said cavity being configured to define the external surface of a headpiece;

a washer configured to define at least a portion of the internal surface of a headpiece, said washer being expandable to dispose a continuous peripheral portion thereof in close proximity to said cavity-defining surface;

means for disposing said washer within said cavity of said forming member adjacent said opening thereinto said female forming member and said washer cooperatively defining at least a portion of a head-piece forming space in said apparatus;

means for expanding said washer; and

means for introducing a flowable synthetic resinous material into said headpiece-forming space, said apparatus being adapted to receive an open-ended tubular body with the open end thereof seated within said cavity adjacent said opening thereinto, and with said washer at least partially disposed within the tubular body adjacent its open end so that, upon expansion of said washer, said peripheral portion thereof may be urged into sealing



engagement with the inner surface of the tubular body, in turn urging the outer surface of the tubular body into sealing engagement with said cavity-defining surface, the tubular body thereby sealing said forming space and cooperatively defining a mold cavity therewith, for forming a headpiece on the body.

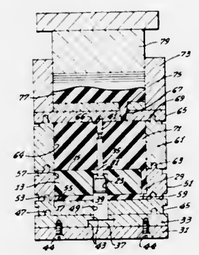
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**3,930,771**

## APPARATUS FOR MANUFACTURING A DUAL SEAL INSULATOR

**John E. Meyn, Anaheim, Calif., assignor to Microdot Inc., South Pasadena, Calif.**

**Division of Ser. No. 317,926, Dec. 26, 1972, Pat. No. 3,879,517. This application Aug. 5, 1974, Ser. No. 495,075**
**Int. Cl.² B29D *3/00***
**U.S. Cl. 425—129 R** **7 Claims**

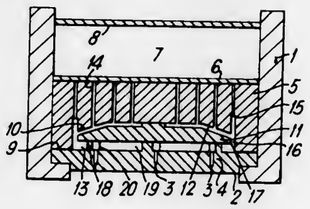


1. An apparatus for simultaneously molding a seal on each end of a plastic insert having first and second end faces and multiple bores extending therebetween; first means cooperating with the first end face to define a first cavity shaped to the configuration desired for one of the seals; said first means cooperating with the second end face to define a second cavity shaped to the configuration desired for another of the seals; second means for sealing the bores in the insert which are of two different diameters, the ends of said second means of one diameter extending across the first cavities, the ends of said second means of the other diameter extending across said second cavities, and third means for pressing a curable elastomeric material into the first cavity to occupy the area about said second means therein; the edge of the insert has at least one passage between the first and second cavities.

### 3,930,772
### MANUFACTURE OF CONJUGATE FILAMENTS

David Anthony Rees, and Desmond Alfred Price, both of Pontypool, England, assignors to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 330,624, Feb. 8, 1973, abandoned, which is a continuation of Ser. No. 146,057, May 24, 1971, abandoned. This application Apr. 2, 1974, Ser. No. 457,353
Claims priority, application United Kingdom, June 1, 1970, 26320/70
Int. Cl.² B29C *23/00*
U.S. Cl. 425—131.5 5 Claims

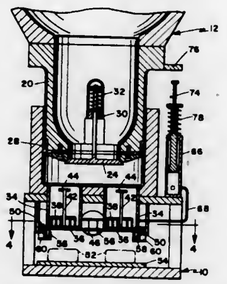


1. Apparatus for the production of conjugate filaments comprising a spinneret plate having an upper surface and containing extrusion orifices formed therethrough, a member to which viscous liquid polymers have access from all sides located on the upper surface of said spinneret plate and having narrow channels formed therein, each channel extending from a side of said member in a direction substantially perpendicular to the extrusion orifices and terminating in a closed end portion, each end portion being connected to a separate extrusion orifice formed below said end portion, and means located above and in contact with said member for supplying viscous liquid polymers to the upper surface of said spinneret plate in the form of superposed layers.

### 3,930,773
### MACHINE FOR MAKING CINNAMON ROLLS AND THE LIKE

Harry H. Bundschuh, 2404 Denver, San Diego, Calif. 92110

Filed May 31, 1974, Ser. No. 475,205
Int. Cl.² A21C *11/18*
U.S. Cl. 425—133.1 3 Claims

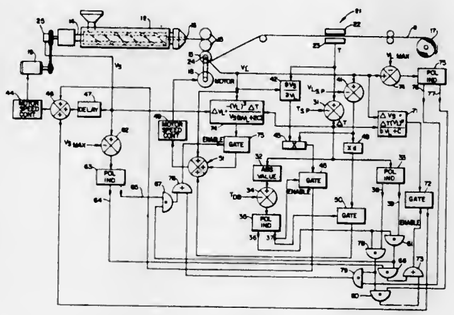


1. A machine for making cinnamon rolls and the like comprising:
- a dough hopper;
- a hollow piston having an open end connected to said hopper and the outer end having one-way means therein; a fixed cylinder operatively within which said piston is mounted, said cylinder having a substantially closed end with at least one open bottomed dough discharge outlet therein;
- spiral pass-through form means operatively mounted in said discharge outlet to receive and form dough expressed therethrough in a spiral shape;
- said spiral means comprising a rigid planar spiral strap having a lower edge defining a plane coincident with the bottom of said dough discharge outlet, and an apertured fluid distribution tube integral with the upper edge of said strap;
- means to inject flavored fluid into said fluid distribution tube;
- means to reciprocate said hopper and piston relative to said fixed cylinder, whereby dough is expressed through said spiral form means; and
- cut-off means operatively mounted to move across said discharge outlet and the lower edge of said spiral form means for periodically cutting off dough expressed through said spiral form means, whereby said strap serves as a positioning wall to maintain the shape of the expressed dough while cutting.

### 3,930,774
### EXTRUDER CONTROLLER

Ronald W. Brand, Columbus, Ohio; Richard A. Forbes, Springfield, Ill.; Robert L. Helks, Columbus, Ohio, and Bruce A. Huber, Boston, Mass., assignors to Industrial Nucleonics Corporation, Columbus, Ohio

Filed July 24, 1973, Ser. No. 382,062
Int. Cl.² B29D *3/06*
U.S. Cl. 425—141 17 Claims



1. In an apparatus for controlling an extruder system responsive to a supply of input material, said extruder system including a screw for feeding the input material through an extruder and means for taking a sheet product formed by the extruder away from the extruder, said screw and means for taking the product away from the extruder being capable of affecting thickness and throughput of the sheet; means for measuring the thickness of the formed sheet, means for establishing a signal indicative of a deadband region for the sheet thickness, means comparing a signal indicative of the measured sheet thickness and the deadband region indicating signal for deriving first and second signals respectively indicative of the thickness being within and outside of the deadband region, means for measuring take-away speed of the sheet product, means responsive to the first signal and a signal indicative of measured take-away speed for concomitantly controlling screw speed and take-away speed, and means responsive to the second signal and a signal indicative of measured thickness for controlling at least one of screw speed and take-away speed.

4. In an apparatus for controlling an extruder system responsive to a supply of input material, said extruder system including a screw for feeding the input material through an extruder and means for taking a sheet product formed by the extruder away from the extruder, the thickness, T, of the sheet product being related to rotational speed of the screw, $V_s$, and take-away speed of the sheet from the extruder, $V_L$, by:



$$T = a + b\frac{V_s}{V_L} + c\frac{V_s}{V_L^2},$$

where:

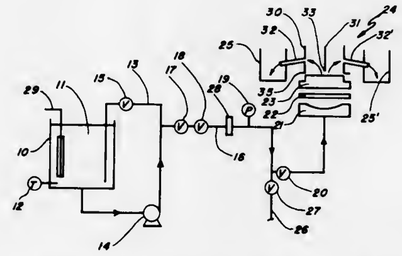
$a$, $b$, and $c$ are predetermined constants,

means responsive to a measured value of $V_L$ for computing a signal indicative of the rate of change of a variable of said equation with respect to another variable of said equation, means responsive to a measured value of one of the variables of said equation for deriving an error signal for said one variable, and means responsive to the rate of change indicating signal and the derived error signal for deriving a control signal for the speed of at least one of the screw rotational velocity and the take-away speed, and means responsive to the control signal for controlling the speed of the at least one of the screw rotational velocity and the take-away speed.

### 3,930,775
### TESTING AND CORRECTING METERING ACCURACY OF MULTIHOLE SPINNERETS

William Bernard Fisher, Chester; Howard Lyle Helmer, Colonial Heights, and David Pendlebury, Chester, all of Va., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Sept. 19, 1974, Ser. No. 507,509
Int. Cl.² G01B *13/00*; D01D *3/00*
U.S. Cl. 425—169 2 Claims

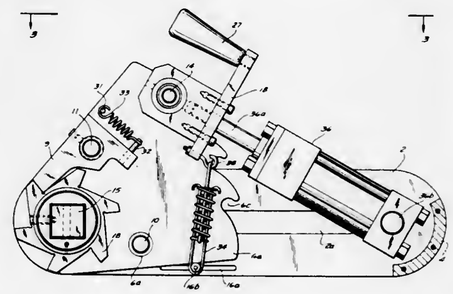


1. An apparatus for dividing and channeling the fluid flow from the exit end of an inverted split multihole spinneret, said split multihole spinneret being divided into parts by means of an unpierced stripe wide enough to form a visible split in said fluid flow at the exit end of said split multihole spinneret, said apparatus for dividing and channeling the fluid flow from the exit end of said split multihole spinneret comprising:
- a. an enclosed wall, said enclosed wall having a base, said enclosed wall along with said base being adapted to form a seal with the periphery of said exit end of said split multihole spinneret, without blocking any of the holes therethrough;
- b. a divider plate, said divider plate having its ends secured in said enclosed wall;
- c. sealing means, said sealing means being affixed to the bottom of said divider plate to form a seal with said unpierced stripe when said base of said enclosed wall is sealed against said periphery of said exit end of said split multihole spinneret, said enclosed wall with said divider plate thereby defining a plurality of open chambers the bases of which are formed by said exit end of said split multihole spinneret, the portion of said enclosed wall defining each of said open chambers having an aperture therein; and
- d. a plurality of tubes, the number of said tubes corresponding to the number of said apertures in said enclosed wall and leading outwardly therefrom; whereby the fluid flowing through said split multihole spinneret divides as it exits therefrom to flow through said tubes to a plurality of collection points.

### 3,930,776
### HYDRAULIC WRENCH

Philip J. Keller, Pompton Plains, N.J., assignor to Unex Corporation, Montclair, N.J.

Filed Aug. 16, 1974, Ser. No. 498,246
Int. Cl.² B25B *13/46*
U.S. Cl. 173—163 9 Claims

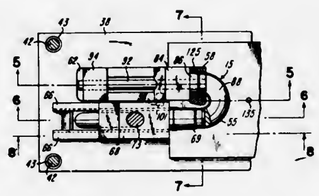


1. A hydraulic wrench, comprising a support; a drive assembly including a shaft journalled on said support and turnable relative thereto about a first axis, a sector drive plate turnable on said shaft and having an arcuate edge face formed with a plurality of slots spaced about said first axis and extending substantially parallel to the same, and a square drive member turnable with said shaft and adapted for insertion into a mating drive socket; transmission means for transmitting motion from said sector drive plate to said shaft so as to turn the latter; a hydraulic cylinder unit also mounted on said support for pivotal movement about a second axis spaced from and parallel to said first axis, said cylinder unit including a reciprocable piston rod having a working stroke; and a projection on said piston rod for engagement in the respective slots, so as to turn said sector drive plate on said shaft during the working stroke of said piston rod.

### 3,930,777
### PLASTIC U-SHAPED RETURN CONDUIT AND APPARATUS AND METHOD FOR MOLDING THE SAME

William C. Ramsey, 401 N. Union St., Bryan, Ohio 43506

Filed Dec. 11, 1974, Ser. No. 531,489
Int. Cl.² B29C *1/14*, *7/00*
U.S. Cl. 425—190 12 Claims



1. Apparatus for molding a U-shaped tubular conduit, comprising a first mold section and a second mold section adapted to be moved between opened and closed positions and cooperating to define a generally U-shaped cavity, a generally U-shaped core member disposed within said cavity and having opposite end portions, a first support member connected to one of said end portions of said core member, a second support member connected to the other of said end portions of said core member, means for injecting a moldable material into said cavity to form a molded conduit, means for retracting said second support member from said core member when said mold sections are in their open position, means for stripping the molded conduit from said core member after said

second support member is retracted, and means for directing the molded conduit past said first support member when the conduit is stripped from said core member.

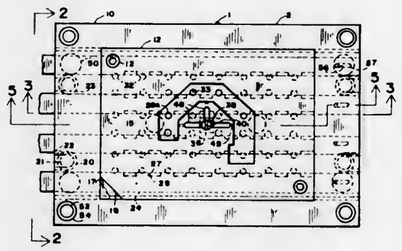
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**3,930,778**

## MOLDING EJECTOR DEVICE FOR INTERCHANGEABLE MOLDS

**Paul E. Roncelli, 4630 W. Maple Road, Birmingham, Mich. 48010**

**Filed July 24, 1974, Ser. No. 491,394**
**Int. Cl.² B28B** *7/10*
**U.S. Cl. 425—192** **15 Claims**



1. In a machine for molding articles, including a mold member having a mold cavity,

one or more headless ejector pins having reciprocable travel from said mold member to a rest position, and toward said mold member to an ejection position to eject a molded article from said mold cavity,

a carriage to carry said ejector pins in said reciprocable travel, said ejector pins being releasably mounted in said carriage,

latch means movable on said carriage, between a locking position to engage said ejector pins and resist their withdrawal from said carriage, and a release position to release said ejector pins and afford their withdrawal from said carriage,

means adapting said ejector pins for said engagement,

means to retain said latch means movably on said carriage.

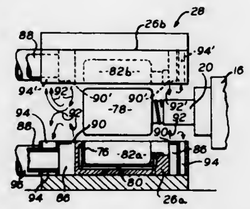
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**3,930,779**

## INJECTION MOLDING APPARATUS WITH IMPROVED COOLING

**John J. Farrell, Green Brook, N.J., assignor to Farrell Patent Company, Greenbrook, N.J.**

**Filed Jan. 15, 1974, Ser. No. 433,578**
**Int. Cl.² B29D** *23/02, 23/03*
**U.S. Cl. 425—242 B** **6 Claims**



1. A blow molding machine for making plastic articles including an injection station, a blowing station, and a stripper station; a core rod support that moves horizontally disposed core rods horizontally, successively from one station to the next through a cycle, a blow mold at the blowing station including a cavity into which successive core rods extend for blowing parisons on the core rods while in said cavity, a cooling chamber in the blow mold and through which cooling fluid circulates, an air conditioner that removes moisture from air to lower the dew point of the air, and means for supplying the dried air in a continuous curtain transversely disposed to the horizontally disposed core rods so as to prevent other air from contacting and depositing moisture on the mold, characterized by the blow mold having two sections that move toward and from each other to open and close the mold, and air discharge means located adjacent to one end of the space that is formed between the mold sections as they move away from one another, the dried air being supplied to said air discharge means and flowing therefrom as a curtain of air around said space and wherein said curtain is spaced from said blow article, characterized by the air discharge means comprising a jacket around the sides of one of the mold sections and forming with said sides a plenum having a slot at the end thereof which is closest to the other mold section and from which air is discharged around the entire periphery of the space between the mold sections when the mold sections are separated from one another.

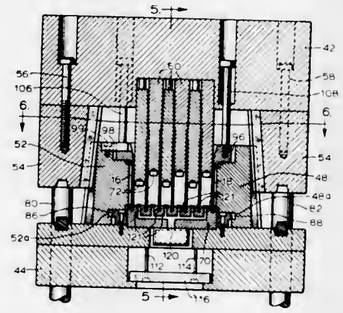
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**3,930,780**

## INJECTION MOLDING APPARATUS FOR PARTITIONED CONTAINERS

**Walter R. Lovejoy, Elmhurst, Ill., assignor to Beatrice Foods Co., Chicago, Ill.**

**Filed July 20, 1973, Ser. No. 381,144**
**Int. Cl.² B29C** *7/00*; **B29F** *1/00*
**U.S. Cl. 425—249** **5 Claims**



1. An injection mold for manufacture of an article having first and second pairs of opposed sidewalls defining a generally rectangular enclosure with an open top and bottom and having a plurality of partition walls extending between one of said pairs of opposed sidewalls for dividing said enclosure into a plurality of cells, comprising:

first mold means including a first base member and four sidewall members being movable between a closed position in which said four sidewall members are adjacent said first base member and cooperatively form a rectangular mold cavity conforming to the desired exterior dimensions of said generally rectangular enclosure and an open position in which said sidewall members are displaced along a predetermined angular path relative to the sidewalls of the article away from said first base member and laterally outwardly from one another;

core mold means disposed within the rectangular enclosure formed by said four sidewall members;

second mold means comprising a second base member movable between a closed position abutting one end of each of said four sidewall members for defining in conjunction with said core mold means and first mold means, when said four sidewall members are in said closed position, a mold cavity corresponding to said article and an open position in which said second mold means is displaced relative to said first mold means by a distance greater than the sidewall length of said article and along a path parallel to said four sidewalls of said article;

said core mold means comprising a first set of core elements rigidly secured to said first mold means and extending the major length of said sidewall members and a second set of core elements rigidly secured to said second mold means in registry with said first set of core elements and extending upwardly the remaining length of said sidewall members, said first and second sets of core elements being constructed and arranged for interlocking with one another when said second mold means is in its closed position to maintain a predetermined alignment of said first and second sets of core elements during molding of said article;

stripper ring means comprising a rectangular ring member of interior peripheral dimensions corresponding to the perimeter of said article and disposed adjacent the end of said sidewall members opposite said one ends and mechanically interlocked with said sidewall members for co-ordinated movement therewith and for engagement of the adjacent ends of the four sidewalls of the molded article to strip said article from said first set of core elements upon movement of said sidewall members from said closed to said open position; said stripper ring means further including ejector means supported by said second mold means and comprising a plurality of ejector rods for ejecting said article from said second set of core elements; and

interlock means for mechanically coupling said four sidewall members to said second mold means for co-ordinated movement from said closed position toward said open position of said second mold means and for releasing said sidewall members from said second mold means at approximately the open position of said sidewall members and for permitting continued movement of said second mold means to its open position.



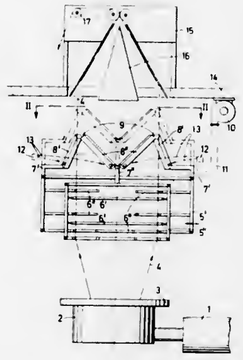
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**3,930,781**

## POST-COOLING APPARATUS FOR BLOWN THERMOPLASTIC FILM

**Hartmut Upmeier, Lengerich of Westphalia, Germany, assignor to Windmoller & Holscher, Lengerich of Westphalia, Germany**

**Filed Nov. 14, 1974, Ser. No. 523,923**
**Claims priority, application Germany, Nov. 15, 1973, 2357138**
**Int. Cl.² B29D** *7/22*
**U.S. Cl. 425—326** **7 Claims**



1. Post-cooling apparatus for blown thermoplastic film comprising at least one cooling air ring surrounding the tubular film downstream of the solidification line of the film, the ring having air outlets directed onto the tube, characterised in that the cooling air ring comprises a plurality of individual blow pipes (8', 8'') which are pivotally interconnected in pairs at their adjacent ends and are hinged at their outer ends, about axes perpendicular to the longitudinal axis of the blow pipe, to holding elements (7', 7'') that are radially adjustable with respect to the tube axis, the hinge axes on the holding elements being disposed so that the blow pipes form a uniform polygon as viewed longitudinally of the tube, and the length of the individual blow pipes being selected so that, with a radially outermost setting of the holding elements, the pipes extend in an obtuse angled zig-zag line circumferentially of the tube.

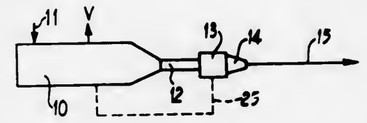
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**3,930,782**

## APPARATUS FOR EXTRUDING PLASTIC MATERIAL

**Bernard Keith Bigland, Radcliffe, England, assignor to The General Engineering Co. (Radcliffe) Limited, Radcliffe, Great Britain**

**Filed Apr. 10, 1974, Ser. No. 459,794**
**Claims priority, application United Kingdom, Apr. 11, 1973, 17490/73**
**Int. Cl.² B29F** *3/06*
**U.S. Cl. 425—376** **10 Claims**



1. An apparatus for extruding plastic materials comprising a screw extruder in which said plastic mterials are plasticized, drive means for the screw extruder, a feed means for supplying plastic materials to said screw extruder, an extruder die for shaping said plasticized material, positive displacement delivery means disposed between said screw extruder and said extruder die for receiving plasticized material from said extruder and for conveying plasticized materials to said die, and gear means operably connected between said positive displacement delivery means and said drive means whereby said delivery means and drive means are geared together for regulating the flow of plasticized material from said delivery means in response to flow from said screw extruder.

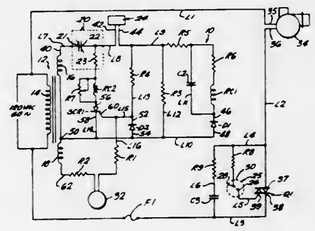
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**3,930,783**

## PRIMARY CONTROL MEANS FOR FURNACES

**Frederick T. Bauer, Holland, Mich., assignor to Robertshaw Controls Company, Richmond, Va.**

**Division of Ser. No. 363,325, May 24, 1973, Pat. No. 3,873,955, said Ser. No. 363,325, is a continuation of Ser. No. 109,487, Jan. 25, 1971, abandoned, said Ser. No. 109,487, is a division of Ser. No. 866,528, Oct. 15, 1969, Pat. No. 3,624,407. This application Aug. 19, 1974, Ser. No. 498,263**
**Int. Cl.² F23N** *5/08*
**U.S. Cl. 431—78** **7 Claims**



1. In an electrical primary control system for furnaces, the combination including burner control means adapted to be

connected to a main line source of AC current, a low voltage control circuit including burner ignition detection means, means providing a substantially lower voltage than line voltage in said control circuit, means in said low voltage control circuit including solid state means effective to actuate said burner control means in response to a signal from said ignition detection means, energy conversion means effective to interrupt the flow of current through said solid state means, said energy conversion means including a mounting base, first and second bimetallic blades, one end portion of said first blade being fixed to said base, the other end portion of said first blade being fixed directly to one end portion of said second blade, said first and second blades bending in opposite directions upon an increase in temperature, stop means carried by the other end portion of said second blade, a pair of contact members fixed to said base, said contact members being in electrical contact with each other when one of said members is in engagement with said stop means, electrical heating means encompassing said first blade and effective to heat said first blade to cause said stop means to be disengaged from said one contact member responsive to bending of said first blade, the directions of bending of said first and second blades responsive to change in temperature being such that an increase in temperature of said second blade will tend to counteract deflection of said stop means responsive to an equivalent increase in temperature of said first blade, manually operable means supported by said base and effective to move said contact member into engagement with said stop means, and means interfacing between said low voltage control circuit and said burner control means.

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**3,930,784**
**PHOTOFLASH LAMP HAVING NON-SHORTING CONSTRUCTION**

**Robert M. Anderson, Pepper Pike, Ohio, assignor to General Electric Company, Schenectady, N.Y.**

**Filed Dec. 19, 1974, Ser. No. 534,904**
**Int. Cl.² F21K** *5/02*
**U.S. Cl. 431—93** **14 Claims**

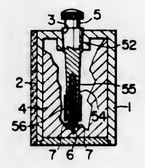


1. A photoflash lamp of the type comprising a bulb having a base, a pair of lead-in members extending through said base and into said bulb, and flash initiation means connected between said lead-in members within said bulb, said bulb containing combustible material ignitable by said flash initiation means, wherein the improvement comprises a plurality of bead members of electrically insulative material positioned within said bulb near siad base thereof and around at least one of said lead-in members thus reducing the possiblity of shorting between the lead-in members.

**3,930,785**
**PORTABLE LIGHTER**

**Taro Yanai, No. 6-15, Ohtemachi 3-chome, Maebashi, Gunma, Japan**

**Filed Apr. 5, 1974, Ser. No. 458,067**
**Int. Cl.² F23Q** *2/32*
**U.S. Cl. 431—127** **7 Claims**



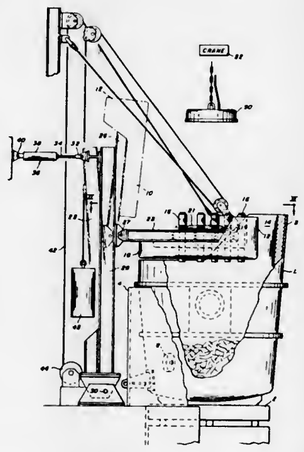
1. In a portable lighter including a hollow casing enclosing fuel padding impregnated with a fuel, and having a hole extending into the fuel padding and a striking surface on one outer surface thereof, and an ignition rod assembly removably insertable in said hole, the ignition rod assembly including a rod-shaped holder having one end adapted to be inserted in said hole, and an ignition wick and a striker piece mounted on said one end of said holder, whereby the ignition rod assembly may be manually removed from said holder to enable engagement of the striking piece with the striking surface to effect ignition of the wick; the improvement wherein said one end of said holder is externally threaded and has a diametral slit extending thereacross and a hole extending axially therein, said striker piece being mounted in said slit and extending across said hole, said wick being positioned within said hole at the side of said striker piece, and further comprising a sleeve having internal threads engaging said threads of said holder for holding said striker piece in said slit.

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**3,930,786**
**APPARATUS FOR HEATING STEEL SCRAP**

**William M. Bloom, Pittsburgh, Pa., assignor to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.**

**Division of Ser. No. 432,387, Jan. 10, 1974, Pat. No. 3,880,649. This application Nov. 29, 1974, Ser. No. 528,184**
**Int. Cl.² F27B** *14/00*
**U.S. Cl. 432—156** **8 Claims**



1. Apparatus for heating pieces of steel scrap which comprises a refractory lined container having an open top, means for charging said steel scrap into said container with the central part of the charge substantially denser than the peripheral part, a cover for closing the top of said container, means for moving said cover between an open and closed positions, a flue opening from said container adjacent the top thereof when said cover is in closed position, a plurality of spaced apart fuel-oxygen burners mounted around the periphery of said cover, said burners being positioned to direct their flames downwardly into said container generally parallel to the inside wall thereof, and means for controlling said burners to obtain a reducing atmosphere under pressure in said container.

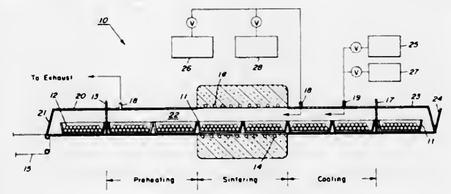


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**3,930,787**
**SINTERING FURNACE WITH HYDROGEN CARBON DIOXIDE ATMOSPHERE**

**William R. DeHollander, and Yogesh Nivas, both of San Jose, Calif., assignors to General Electric Company, San Jose, Calif.**

**Continuation of Ser. No. 299,222, Oct. 20, 1972, abandoned, which is a division of Ser. No. 62,353, Aug. 10, 1970, abandoned. This application Mar. 11, 1974, Ser. No. 450,077**
**Int. Cl. F27b** *9/04*
**U.S. Cl. 432—198** **10 Claims**



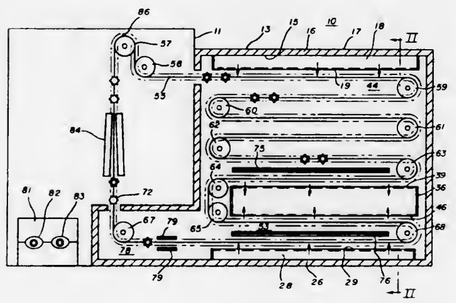

1. An enclosed heated sintering furnace for controlling the partial pressure of oxygen in the furnace and for removing impurities from structures of uranium oxide containing compositions being sintered in the furnace, the furnace having means for introducing an atmosphere comprising a mixture of hydrogen and carbon dioxide as initially introduced to the furnace and the furnace having means for passing the structures countercurrently to the atmosphere.

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**3,930,788**
**PARISON OVEN**

**Robert A. Daane, Rockton, Ill.; Edward D. Beachler; Raymond C. Vonderau, both of Beloit, Wis., and Nickolas N. Sokolow, Roscoe, Ill., assignors to Beloit Corporation, Beloit, Wis.**

**Filed May 24, 1974, Ser. No. 473,290**
**Int. Cl.² F27B** *9/14*
**U.S. Cl. 432—124** **14 Claims**



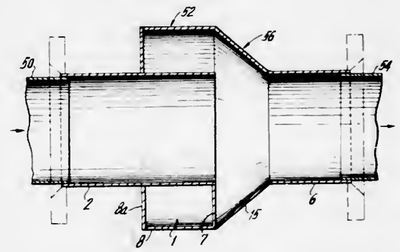
1. An oven for heating tubular thermoplastic parisons to a target temperature including:
means for transporting said parisons through the oven;
means for defining a first plenum in said oven;
means defining a second plenum in said oven;
said first plenum being disposed on one wall of the oven and said second plenum being disposed on a second wall of the oven, said second wall being opposite said first wall;
means defining an exhaust chamber disposed between said plenums;
said first plenum and said chamber defining a first heating zone;
means for supplying heating fluid to said first zone from said first plenum for fast heating of said parisons;
said second plenum and said chamber defining a second heating zone;
means for supplying heating fluid to said second zone from said second plenum for tempering said parisons and substantially equalizing the temperature of the parisons.

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**3,930,789**
**DEVICE FOR PREHEATING WASTE GASES OF AN EXHAUST CONDUIT**

**Kenner Erich, Esslingen-Waldenbronn, and Hans Hintennach, Baltmannsweiler, both of Germany, assignors to J. Eberspacher, Germany**

**Filed Feb. 20, 1974, Ser. No. 444,183**
**Claims priority, application Germany, Mar. 6, 1973, 23110647**
**Int. Cl.² F01N** *3/00*
**U.S. Cl. 432—222** **5 Claims**



1. A device for the rapid and independent preheating of admixing air, preferably secondary air for a catalytic exhaust gas treatment device in internal combustion engines, comprising an exhaust gas conduit having separated and aligned entrance and discharge portions for the flow of exhaust gases therethrough, means defining an annular chamber around said entrance portion adajcent the end thereof closest to said discharge portion and having an inwardly tapered transition connected to said discharge portion and enclosing the separation between said entrance and discharge portions, a burner having tubular discharge connected into said annular chamber, said annular chamber having an opening at the discharge end thereof adjacent said transition covering a sector of 60° to 120°, combustion means for generating combustion gases in said burner housing and delivering the combustion gases through said tubular discharge for partial annular flow around said annular chamber and exit through the opening of said annular chamber to said discharge, the opening being substantially diametrically opposite said entrance connection whereby the gases are whirled around the annular chamber before they are directed outwardly therefrom and into the transition and they are whirled in a whirling motion for admixing with the exhaust gases for combined flow of the combustion gases and exhaust gases through said discharge.

3,930,790

## METHOD AND APPARATUS FOR SHRINKING PLASTIC FILM OVER GROUPED ARTICLES

**John E. Rogosch, Canton, Ohio, assignor to Ethyl Corporation, Richmond, Va.**

**Filed Apr. 8, 1971, Ser. No. 132,281**
**Int. Cl.² B65B** *53/02*; **F24J** *3/00*
**U.S. Cl. 432—229** **3 Claims**

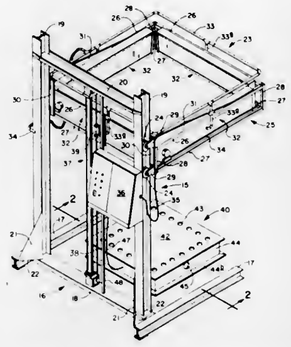
**1.** In an apparatus for shrinking plastic film around an article or group of articles, the combination comprising:

a. a support frame having a base and a substantially vertical support member;

b. a heater assembly mounted on said vertical support member for up and down movement;

c. heater means including at least one flameless fuel gas infrared heater unit mounted on said heater assembly to direct heat inwardly, said heater unit emitting more than fifty percent of its energy as infrared energy having a wavelength of from about two to about six microns and generating temperatures in the range of from about 700°F to about 1,000°F; and

d. power means mounted on said support frame and coupled to said heater assembly for moving said heater assembly up and down said power means including a double-acting, solely fluid powered assembly mounted vertically on said support frame and having a length equal to



or greater than the length of the path traversed by said heater assembly during up and down movement.



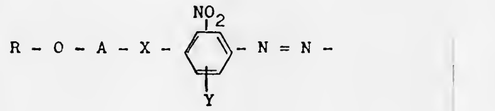
3,930,791

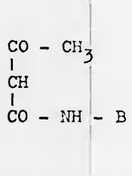
## PROCESS FOR THE DYEING OF SYNTHETIC FIBROUS MATERIAL FROM ORGANIC SOLVENTS

**Walter Birke; Franz Schön, both of Frankfurt am Main, and Willi Steckelberg, Hofheim, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany**

**Filed Nov. 1, 1973, Ser. No. 411,749**
**Claims priority, application Germany, Nov. 7, 1972, 2254377**
**Int. Cl.² D06P** *1/38*
**U.S. Cl. 8—1 B** **4 Claims**

**1.** A process for the continuous dyeing of textile materials consisting of, or containing, synthetic fibrous materials of the group consisting of high molecular polyamides, polyolefins, polyacrylonitriles, polyurethanes, polyvinylchlorides, polyvinylacetates, cellulose-2 ½-acetate, cellulose-triacetate and high molecular polyesters, which comprises impregnating the said fibrous materials with an organic dyebath containing at least one dyestuff of the formula





in which R represents a linear or branched alkylcarbonyl radical of at most 20 carbon atoms or the naphthoyl group being unsubstituted or substituted on the naphthalene nucleus by lower alkyl, X represents an oxygen or sulfuratom, Y represents hydrogen, chlorine or bromine, A represents a linear or branched alkylene groups of 1 to 4 carbon atoms unsubstituted or substituted by methoxy, ethoxy, phenoxy, or R being defined as above, and B represents (1) phenyl unsubstituted or substituted by fluorine, chlorine, bromine, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, trifluoromethyl, cyano, carboalkoxy, nitro, acetyl, benzoyl, phenoxy or phenyl, or (2) naphthyl, and heating the impregnated fibrous materials to a temperature between 100° and 240°C.

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3,930,792

## HAIR DYEING AND CONDITIONING COMPOSITIONS

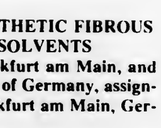
**George Alperin, Stamford; Richard DeMarco, Danbury, and Raymond Feinland, Stamford, all of Conn., assignors to Clairol Incorporated, New York, N.Y.**

**Continuation-in-part of Ser. No. 278,970, Aug. 9, 1972, abandoned. This application Oct. 31, 1974, Ser. No. 519,492**
**Int. Cl.² A61K** *7/13*
**U.S. Cl. 8—10.1** **15 Claims**

**1.** An aqueous hair dye composition of the semi-permanent type comprising

a. a tinctorial amount of a direct-dyeing nitroaminobenzene hair dye having good affinity for hair when applied at ambient temperatures;

b. from about 0.1% to 3% by weight based on the total weight of the compositions of a hair-substantive quaternary amine compound of formula:



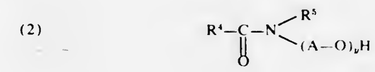
in which

i. $R^1$, $R^2$ and $R^3$ are alkyl having from 1 to 3 carbons;

ii. R is a long chain hydrocarbon having from 12 to 24 carbons; and

iii. X is an anion; and

c. from 0.2% to 3.5% by weight based on the total weight of the composition of a hair-substantive N-oxyalkylated fatty acid amide of formula:



in which:

i. $R^4$ is a long chain hydrocarbon having from 12 to 24 carbons;

ii. $R^5$ is hydrogen or $(A'—O)_xH$ in which A and A′ are the same or different divalent alkylene having 2 to 4 carbons; and x and y are the same or different whole numbers from 1 to 100.

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3,930,793

## PROCESS FOR THE DYEING OF SYNTHETIC FIBER MATERIALS FROM ORGANIC SOLVENTS

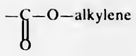
**Walter Birke; Rudolf Schickfluss; Franz Schon, all of Frankfurt am Main, and Willi Steckelberg, Hofheim, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany**

**Filed Oct. 19, 1973, Ser. No. 408,072**
**Claims priority, application Germany, Oct. 21, 1972, 2251703**
**Int. Cl.² C08K** *5/23*; **C09B** *43/18*; **D06P** *1/04*
**U.S. Cl. 8—41 B** **8 Claims**

**1.** A process for the continuous dyeing of textile material containing or consisting of synthetic fibers from organic solvents, which comprises impregnating the said textile materials with an organic dyebath containing at least one dyestuff of the formula



in which $A_1$ and $A_2$ each represent, independently of each other, phenylene, lower alkyl-phenylene, lower alkoxy-phenylene, chlorophenylene, bromophenylene or naphthylene, Y represents phenylene, lower alkyl-phenylene, lower alkoxy-phenylene, di(lower alkyl)-phenylene, di(lower alkoxy)-phenylene, lower alkyl-lower alkoxy-phenylene, chlorophenylene, bromophenylene, biphenylene, di(lower alkyl)-biphenylene, di(lower alkoxy)-bi-phenylene, di(chloro)-biphenylene or di(bromo)-biphenylene, $R_1$ represents a straight chain or branched alkylcarbonyl of at most 18 carbon atoms, benzoyl, lower alkyl-benzoyl, chlorobenzoyl or bromobenzoyl, and $R_2$ represents a straight chain or branched alkylcarbonyl of at most 18 carbon atoms, benzoyl, lower alkyl-benzoyl, chlorobenzoyl, bromobenzoyl or lower alkyl



(of 2 to 4 carbon atoms, and an organic solvent and subsequently fixing the dyestuffs by a heat treatment.

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**3,930,794**

## PROCESS FOR THE DYEING OF SYNTHETIC FIBER MATERIALS FROM ORGANIC SOLVENTS

**Walter Birke; Rudolf Schickfluss; Franz Schon, all of Frankfurt am Main, and Willi Steckelberg, Hofheim, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany**

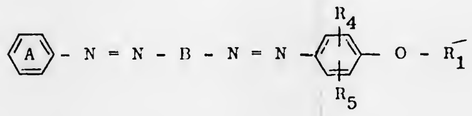
**Filed Oct. 19, 1973, Ser. No. 408,075**

**Claims priority, application Germany, Oct. 21, 1972, 2251704**

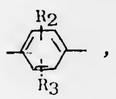
**Int. Cl.² C08K** *5/23;* **C09B** *43/18;* **D06P** *1/04*

**U.S. Cl. 8—41 B** **8 Claims**

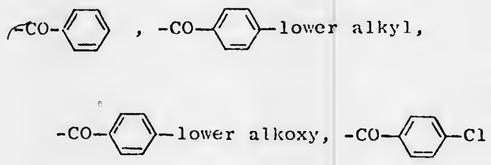
1. A process for the continuous dyeing of textile materials containing or consisting of synthetic fibrous materials from organic solvents, which comprises impregnating the said textile materials with an organic dyebath containing at least one dyestuff of the formula



in which the phenyl radical A is unsubstituted or substituted by 1 to 3 substituents of the group consisting of halogen, nitro, cyano, trifluoromethyl, lower alkyl, lower alkoxy and lower alkoxy-lower alkylene—O—, B represents naphthylene or



$R_2$, $R_3$, $R_4$ and $R_5$ each represent hydrogen, halogen, lower alkyl, lower alkoxy or lower alkoxy-lower alkylene—O—, and $R_1$ stands for a linear or branched alkylcarbonyl of at most 18 carbon atoms,



and an organic solvent, and fixing the dyestuffs by submitting the impregnated materials to a heat treatment.

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**3,930,795**

## PROCESS FOR THE LEVEL DYEING OF WOOL

**Hermann Fuchs, and Hermann-Heinz Konrad, both of Kelkheim, Taunus, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany**

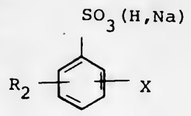
**Filed Sept. 6, 1973, Ser. No. 394,798**

**Claims priority, application Germany, Sept. 8, 1972, 2244240**

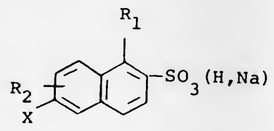
**Int. Cl.² C09B** *49/00;* **D06P** *3/14*

**U.S. Cl. 8—54** **5 Claims**

1. A process for the level dyeing of wool, having an anti-felting finish consisting of a coating layer of polyimine or of polyamine resin, according to the exhaustion method, with reactive dyestuffs which contain two or more sulfonic acid or sulfonate groups, other than sulfonic acid or sulfonate groups contained in the fiber-reactive groupings, which process comprises: carrying out the dyeings with a dyestuff or with a combination of dyestuffs having different absorbing capacity, from an aqueous bath at elevated temperature and adding at least one compound of the formula

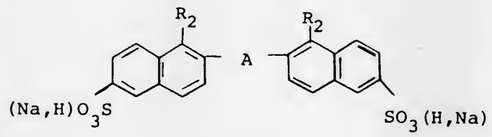


(I)



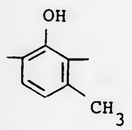
(II)

or



(III)

wherein X is hydrogen or the radical of the formula $—SO_3(H,Na)$, $R_1$ is alkyl having 2 to 14 carbon atoms, $R_2$ is hydrogen or alkyl having 2 to 14 carbon atoms and A is a bridge-member of the formula $—CH_2—$ or





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**3,930,796**

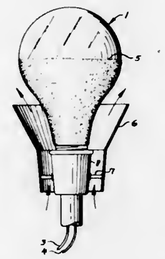
## CATALYTIC FUME CONTROL DEVICE

**Vladimir Haensel, Hinsdale, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.**

**Filed Sept. 13, 1973, Ser. No. 396,950**

**Int. Cl.² A61L** *9/00;* **B01J** *8/02;* **H01K** *1/28*

**U.S. Cl. 21—74 R** **8 Claims**



1. A catalytic converter for use in purifying air in a room or generally small zone, which comprises an electric lamp bulb adapted to be mounted in an electric current supplying receptacle and having on at least a portion of its external surface a covering of a refractory inorganic material and an oxidation catalyst comprising at least one metal of Groups I, V, VI and VIII of the Periodic Table, whereby the heat from the bulb will maintain a hot catalyst surface to assist in the catalytic conversion of fumes and odors passing over the bulb in natural convection current flow.

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**3,930,797**

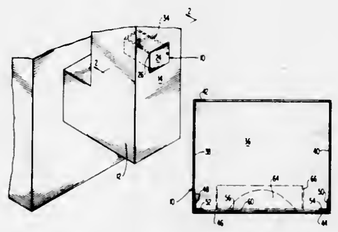
## AIR TREATMENT DEVICE

**Albert E. Gertz, 9232 Alcona St., Lanham, Md. 20801**

**Filed July 23, 1974, Ser. No. 491,058**

**Int. Cl.² A61L** *9/04;* **F24F** *3/12;* **A61L** *3/00;* **F24F** *13/16*

**U.S. Cl. 21—122** **1 Claim**



1. In combination, with an air duct having a duct wall, said wall having an opening therein, an air treatment device comprising:

A substantially rectangular face plate fixedly secured to the duct wall, the face plate defining a port, and the port being aligned with the opening in the duct wall;

hinge sleeves on one side of the face plate;

an imperforate door configured to fit over the face plate, the door having hinge sleeves on one side thereof aligned with the hinge sleeves of the face plate;

hinge pins extending through the aligned hinge sleeves, and hingedly connecting the door to the face plate, the door being movable from a pivoted open position providing access through the port and opening to a closed position over said port;

a box secured to the face plate and projecting through the opening into the duct;

the box having an imperforate back wall, imperforate side walls, and an open top frame;

the box further having a lower base wall secured to the side and back walls;

a pair of L-shaped flange members, one of said flange members being secured to each of the side walls, the flange members including horizontal foot portions which extend upwardly in closely spaced relation to the lower base wall;

an upper base wall mounted for a limited sliding movement within the box between the lower base wall and the foot portions of the flanges;

the upper base wall having a handle thereon to facilitate sliding movement thereof;

the upper and lower base walls each having a series of holes formed therein, said holes being spaced apart and having imperforate sections therebetween, the holes of the respective walls being selectively alignable and movement of the upper base wall serving to fully close, fully or partially align the holes; and

a quantity of air dispersible substance in an enclosure, said substance being conveyed through the duct when the holes are fully or partially aligned, said enclosure being supported on the upper base wall.

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**3,930,798**

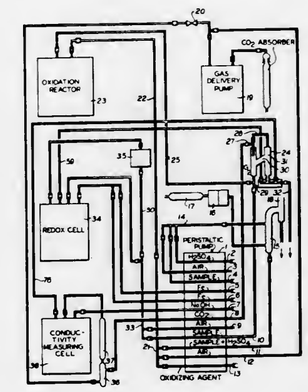
## METHOD AND APPARATUS FOR TESTING AQUEOUS SAMPLES

**Günter Schierjott, Tm Haarmannsbusch 1, 463 Bochum, Germany, and Herbert A. Bleier, Barawitzkagasse 27/1/536, A-1190 Vienna, Austria**

**Filed May 9, 1973, Ser. No. 358,833**

**Int. Cl.² G01N** *33/18*

**U.S. Cl. 23—230 R** **9 Claims**




1. A method of simultaneously and continuously determining the amount of inorganic carbon and organic carbon contained in an aqueous sample, and of determining the amount of an oxidizing agent consumed by such sample, this method comprising continuously treating a homogeneous aqueous sample with a strong acid to convert all the inorganically bound carbon contained in said sample to carbox dioxide and

thereby form a first gas-liquid mixture including said formed carbon dioxide and the treated sample, separating the gas, which is carbon dioxide, from said first gas-liquid mixture and determining the amount thereof, treating the liquid portion of said first gas-liquid mixture with an excess of an oxidizing agent to thereby convert all the organically bound carbon contained therein to carbon dioxide and thus form a second gas-liquid mixture, separating the gas, which is carbon dioxide, from said second gas-liquid mixture and determining the amount thereof, said amount being a measure of the total organic carbon of said sample and measuring the amount of unreacted oxidizing agent contained in the liquid portion of said second gas-liquid mixture to thereby determine the amount of said oxidizing agent which has been consumed by the sample.

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**3,930,799**

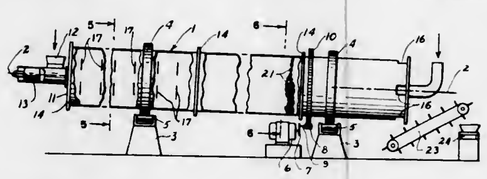
## APPARATUS FOR MAKING ORGANIC FERTILIZER

**Eric W. Eweson, 465 Park Ave., New York, N.Y. 10022**

**Continuation-in-part of Ser. No. 295,349, Oct. 5, 1972, abandoned. This application July 23, 1974, Ser. No. 490,955**

**Int. Cl.² C05F** *3/06*; **B01F** *9/06*

**U.S. Cl. 23—259.1** **3 Claims**



1. Apparatus for making organic fertilizer comprising a cylindrical drum having an inlet end and a discharge end, means for rotating said drum on a longitudinal axis tilted at an angle to the horizontal, a plurality of chains located within said drum, each of said chains having its ends mounted on the interior wall of the drum at diametrically opposed positions, the length of each chain being slightly greater than the circumferential distance between the points of attachment so as to form a loop therebetween, the points of attachment of each chain being spaced circumferentially from the points of attachment of other chains with the loop of each chain partially overlapping the loop of each adjacent chain, with all of said points of attachment lying substantially in a common plane whereby the loops of adjacent chains rub against each other as the drum rotates.

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**3,930,800**

## FLUIDIZED BED DESUBLIMING APPARATUS FOR RECOVERY OF ALUMINUM CHLORIDE

**Ronald C. Schoener, Lower Burrell, Pa.; Larry K. King; Lester L. Knapp, both of Maryville, Tenn., and Nicholas Kloap, Benton, Ark., assignors to Aluminum Company of America, Pittsburgh, Pa.**

**Division of Ser. No. 180,277, Sept. 14, 1971, abandoned. This application Aug. 29, 1973, Ser. No. 392,505**

**Int. Cl.² B01D** *7/00*; **B01J** *2/16*

**U.S. Cl. 23—264** **2 Claims**

1. Apparatus for effecting the desublimation of gaseous aluminum chloride to solid form, comprising

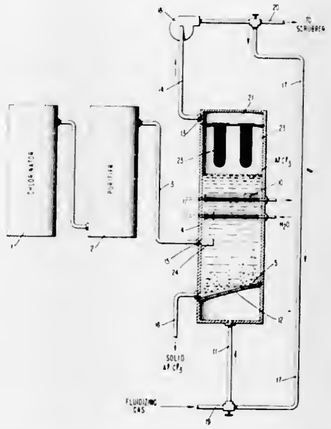
chamber means for confining a self replenishing fluidizable bed of particles of aluminum chloride,

a gas distribution plate defining the bottom of said fluidizable bed of particles,

a gas distribution inlet disposed beneath said distribution plate for introduction of substantially aluminum chloride free gas into said chamber to maintain said bed of particles of aluminum chloride in fluidized condition,

cooling means disposed within said chamber and in the portion thereof occupied by said bed of fluidized particles for maintaining the temperature of said bed of particles at a predetermined value below the upper ambient condition desublimation temperature of aluminum chloride.

means disposed remote from said gas distribution plate and from said cooling means for introducing a flow of gas containing gaseous aluminum chloride into said bed of fluidized aluminum chloride particles remote from all contact surfaces within said chamber which are at a temperature below the ambient desublimation temperature of aluminum chloride to desublime at least a substantial portion of said gaseous aluminum chloride on the surfaces of said aluminum chloride particles of said bed,



heating means for maintaining the temperature of said last mentioned means and the temperature of the gas emanating therefrom above the ambient desublimation temperature of aluminum chloride to prevent premature cooling and deleterious condensation of the gaseous aluminum chloride values thereon,

a residual gaseous effluent outlet disposed at the upper end of said chamber and remote from the upper surface of the bed of fluidized particles disposed therewithin, and

means disposed adjacent said gas distribution plate for withdrawing aluminum chloride particles from said bed.

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**3,930,801**

## APPARATUS FOR LIQUID EXTRACTING OF PRODUCTS WHICH ARE PART OF SOLID MATERIALS

**Charles Henri Jules Pinet, Hoegaarden, Belgium, assignor to "Raffinerie tirlemontoise", Brussels, Belgium**

**Filed Mar. 20, 1974, Ser. No. 453,121**

**Claims priority, application Belgium, Mar. 30, 1973, 797596**

**Int. Cl.² B01D** *11/02*

**U.S. Cl. 23—269** **4 Claims**

1. In an apparatus for extracting materials from solids by contacting the solids with counterflowing liquid, having:

a revolving drum housing means,

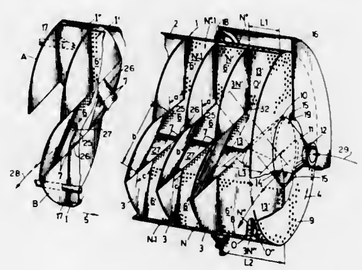
a pair of impervious to liquid wall means being mounted in said revolving drum housing means and being integral therewith, which wall means define windings of two staggered helical screws said staggered helical screws defining two screw conveyors for conveying liquid into two separate flows along one axial direction of the drum housing means, there being a first winding and a last winding for each of said helical screws which define respectively a screw sonveyors inlet end and outlet end for the liquid,

central axial partition walls extending between the screws succeeding windings and being integral with said drum housing means to separate said windings into half portions of windings and to define two series of cells for



solids, each cell being defined between a partition wall, said drum housing means and succeding half portions of windings, said axial partition walls being pervious to the liquid at peripheral portions thereof which extend from said housing means up to a distance from the drum housing means axis so that for each partition wall the peripheral portions comprise raising portions for the solids of one cell during revolving of the drum housing means,

channel means for interconnection of adjacent cells in each series of cells through openings in said half windings adjacent the central part of said partition walls, to convey solids from said solids raising portions along the central part of the axial partition walls from cell to cell in each series of cells in counteraxial direction in relation to the liquid flows direction, and



means for feeding liquid at the inlet side of each of said two screw conveyor:

the improvements comprising a first cell for solids in each series of cells which first cell is defined between the terminal half portion of the last winding of one of said helical screws and the succeeding half portion of the last winding of the second of said helical screws,

a supply compartment for solids, which supply compartment comprises a circular housing means being in axial extension of said drum housing means beyond said first cells for solids, said extension having a substantially equal diameter to that of said drum housing means, which circular housing means being pervious to the liquid, a terminal diametral wall provided with a central inlet opening for the solid being attached to said circular housing means at a distance from each screw conveyor last winding, a supply compartment axial partition wall being mounted in said supply compartment in extension of the partition wall defining the first cell for the solids of each series of cells, said supply compartment partition wall stopping at a distance from said central inlet opening in said diametral wall, said supply axial partition having its peripheral portions pervious to the liquid and being each one in extension of the partition wall raising portion of one series of cells first cell, said supply compartment axial partition wall dividing said supply compartment into two cupply cells, each one having along the generatrix corresponding to the raising part of the supply compartment partition wall of said cell, a width (L1) equal to said raising part of the partition wall and along the generatrix corresponding to the raising part of the partition wall of the second supply cell, a width (L2) corresponding to the sum of said raising part and of the raising part of the adjacent to said second supply cell first cell,

channel means being provided between said diametral terminal wall and said last screw conveyors half windings to convey the solids raised by the raising portion of the partition wall of each supply cell into the first cell for solids of each series of cells, and

said drum housing means comprises a portion which is pervious to the liquid, said pervious portion being situated in the extension of said circular housing means defining said supply compartment, said pervious portion of the drum housing means and said pervious circular housing means defining a cylindrical pervious housing means which extend from said terminal diametral wall on a distance corresponding to the sum of the width of one raising part of the partition wall of the supply compartment and to the width of the partition wall raising part of one of the adjacent to said supply cell first cells.

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**3,930,802**

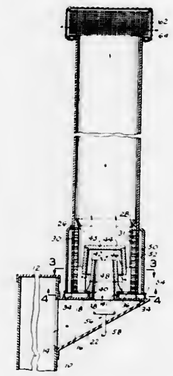
## INDUSTRIAL WASTE GAS INCINERATOR

**Albert W. Beasley, 11417 Seagoville Road, and James Clark, 11409 Seagoville Road, both of Mesquite, Tex. 75149**

**Filed Sept. 16, 1974, Ser. No. 506,493**

**Int. Cl.² F23G** *7/06*

**U.S. Cl. 23—277 C** **2 Claims**



1. An apparatus for oxidizing residual combustible hydrocarbons in a flue gas stream, comprising:

an upright casing having an internal high temperature resistant refractory lined lower end wall portion forming a combustion chamber and having a centrally apertured bottom wall defining the lower limit of the combustion chamber;

flue gas inlet means including a centrally apertured horizontally disposed ledge underlying said casing in supporting relation and walls depending from said ledge for forming a flue gas chamber communicating with the combustion chamber;

burner means in the flue gas chamber;

an inner tubular bushing of high temperature resistant refractory material coaxial with the casing bottom wall aperture and spaced inwardly of the combustion chamber refractory wall to define an annular expansion zone therebetween;

baffle means overlying said inner tubular bushing to cause initial settling and downward flow of gases and entrained particulate matter,

said baffle means including an inverted generally U-shaped in transverse section member formed from high temperature resistant refractory material loosely surrounding the upper end portion of said bushing, and,

a plurality of vertically disposed circumferentially spaced refractory material vanes interposed between said bottom wall and said inverted member for supporting the latter;

and,

means for introducing excess combustion air into the expansion zone and its downstream end portion including a plurality of circumferentially spaced-apart radial gussets

interposed between said horizontal ledge and the depending surface of said bottom wall,

said bottom wall having a like plurality of circumferentially spaced apertures, the apertures being respectively disposed between the position of said gussets, and a sleeve coextensive with the combustion chamber and loosely surrounding the depending end portion of said casing and forming a downwardly open excess combustion air chamber,

said refractory wall portion and the depending end portion of said casing having a plurality of cooperating circumferentially and vertically spaced openings extending horizontally therethrough.

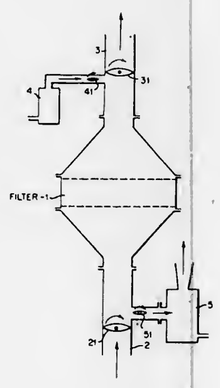
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**3,930,803**

## ANTI-POLLUTION APPARATUS

**Karl Winter, Dortmund, Germany, assignor to CEAG Concordia Elektrizitats-Aktiengesellschaft, Dortmund, Germany**

**Division of Ser. No. 153,345, June 15, 1971, Pat. No. 3,853,985. This application Sept. 23, 1974, Ser. No. 508,410**
**Claims priority, application Germany, June 19, 1970, 2030153**
**Int. Cl.² B01J *1/22*; B01D *53/34***
**U.S. Cl. 23—277 R** **5 Claims**



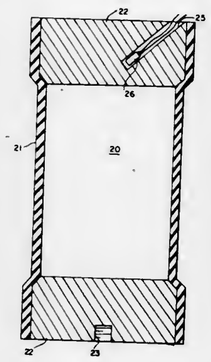

1. Apparatus for purifying an air or gas flow of combustible vaporous or gaseous impurities comprising an adsorption chamber, an adsorption filter disposed in said adsorption chamber, inlet means in said adsorption chamber for the introduction of an air or gas flow of combustible vaporous or gaseous impurities for passage to one side of said filter permitting said air or gas to pass therethrough and charge said filter to a predetermined level, outlet means in said adsorption chamber for the discharge of said air or gas passing through said filter and leaving the side of the filter opposite the side of introduction of said air or gas, a first gas inlet closing member on the inlet side for introduction of said air or gas containing impurities and a second gas outlet closing member on the discharge side of said air and gas for blocking the flow of said air or gas, a first burning chamber outside said adsorption chamber for generating an inert gas, connecting means for introducing said inert gas into said adsorption chamber at a point between said gas outlet closing member and said opposite side of the filter, thereby passing said inert gas through said filter in a direction of flow opposite that of said air and gas to desorb said filter and a third inert gas flow closing member to block the flow of said inert gas.

**3,930,804**

## DEEP SEA GAS GENERATOR CONTAINER

**George F. Hickey, Jr., Oxon Hill, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed Nov. 4, 1974, Ser. No. 520,769**
**Int. Cl.² B01J *7/02*; C06D *5/10*; F23R *1/14***
**U.S. Cl. 23—282** **5 Claims**




1. In a gas generator which comprises a slug of material which reacts with water to produce a gas, the improvement which includes,

an elongated open ended housing of extensible material,

said housing having an inside diameter substantially equal to the outside diameter of said slug of material,

a plastic end cap enclosing each end of said housing thereby confining said slug within said housing,

said plastic end caps having an outer diameter greater than the inner diameter of said housing of extensible material, said end caps extending said housing about the outer surface thereof,

an aperture extending from the outer surface of and into one end cap, the axis of the aperture being at an angle relative to and directed toward the long axis of said housing;

a blasting cap secured within said aperture,

whereby activation of said blasting cap ruptures said end cap permitting water to enter said housing thereby activating said slug of material to produce gas from the reaction.

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**3,930,805**

## APPARATUS RECEIVING CATALYSTS FOR THE DECONTAMINATION OF EXHAUST GAS OF INTERNAL COMBUSTION ENGINES

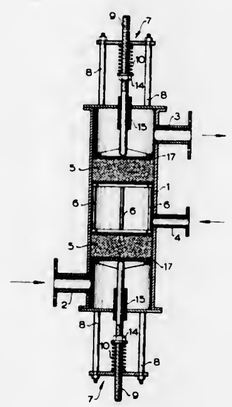
**Wilhelm Vogt; Eitel Goedicke; Gerhard Mietens, all of Hurth-Efferen, and Hermann Glaser, Erftstadt Lechenich, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany**

**Filed Aug. 27, 1973, Ser. No. 392,055**
**Int. Cl.² B01J *8/02*; F01N *3/15***
**U.S. Cl. 23—288 F** **5 Claims**

1. In an apparatus receiving catalysts for the decontamination of exhaust gas of internal combustion engines, wherein a container having a longitudinal axis and being disposed between a pair of covers is provided with an inlet for introducing exhaust gas thereinto and an outlet for removing decontaminated exhaust gas therefrom, said inlet and outlet being spaced from each other and at least one bed of particulate catalyst being confined between a pair of pressure plates permeable to gas being disposed in the space between the inlet and outlet, the improvement which comprises a clamping device being arranged outside and parallel with respect to the longitudinal axis of the container and being rigidly secured to



at least one of the pair of container covers; said clamping device being an open frame-shaped mounting including two supporting beams disposed substantially parallel to said longitudinal axis and which are spaced apart and held in position by means of a cross beam; a thrust rod being extended through said cross beam and through said at least one of said pair of covers by means of a central passageway forming part of said cover; the thrust rod portion projecting outwardly through




said passageway being threaded and carrying a nut positioned between said cross beam and said cover; and a helical spring concentrically surrounding said thrust rod, being clamped between said cross beam of said frame-shaped mounting and said nut and elastically urging the thrust rod into contact with at least one of the pair of pressure plates confining the bed of catalyst, whereby the bed of catalyst is maintained under compression.

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**3,930,806**

## LAMINATED COOKWARE UNITS

**Nick S. Racz, Palos Park, Ill., assignor to Burdett Manufacturing Company, Bridgeview, Ill.**

**Continuation-in-part of Ser. No. 3,044, Jan. 15, 1970, Pat. No. 3,788,513. This application Jan. 24, 1973, Ser. No. 326,072. The portion of the term of this patent subsequent to Jan. 29, 1991, has been disclaimed.**
**Int. Cl.² B02D *20/14***
**U.S. Cl. 29—195** **11 Claims**

1. A multiply, laminated cookware unit component comprising

a core comprising mild steel,

continuous second and third layers comprising substantially homogeneous and pore-free rolled non-ferrous sheets of aluminum or alloys thereof pressure bonded directly to said steel core, said core being sandwiched between the sheets of said second and third layers such that one of said second and third layers is positioned on the side of said core facing the food which is to be prepared by said cookware unit component.

**3,930,807**

## PLASTIC MOLDING HAVING SATIN FINISH TYPE METALLIC LUSTER

**Tatsumi Kobayashi, Yokohama; Tadashi Ito, Toride; Yoshihide Kamei, Kamakura; Teruhisa Oda, Sagamihara, and Toshio Matsuki, Machidn, all of Japan, assignors to Canon Kabushiki Kaisha, Japan**

**Filed Apr. 24, 1974, Ser. No. 463,834**
**Claims priority, application Japan, Apr. 25, 1973, 48-46981**
**Int. Cl.² B32B *15/08***
**U.S. Cl. 29—195** **6 Claims**

1. A metal-coated plastic molding having a satin finish type metallic luster comprising:

a. A plastic molding having a satin finish;

b. An intermediate electroless plated layer of electrically conductive material bonded to said satin finished base, said intermediate layer having a mechanically polished uniform surface; and

c. An electroplated metal outer layer bonded to said intermediate layer.

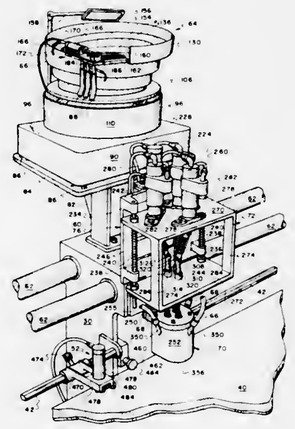
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**3,930,808**

## AUTOMATIC COLLET HINGE/SCREW PLACEMENT MACHINE

**Leslie R. Miller, Phoenix, Ariz., and John D. McKenney, South Laguna, Calif., assignors to Royal Industries, Inc., Pasadena, Calif.**

**Division of Ser. No. 403,747, Oct. 5, 1973, Pat. No. 3,889,343. This application Feb. 7, 1975, Ser. No. 547,891**
**Int. Cl.² B23P *19/00***
**U.S. Cl. 29—200 P** **14 Claims**



1. An automatic screw insertion machine comprising:

means for storing, delivering and inserting screws into a workpiece adjacent one edge thereof;

a table upon which the workpiece is placed to receive said screws, one edge portion of the table being generally below the first-mentioned means;

means for relatively lowering and elevating said table edge to facilitate placement of said workpiece edge directly beneath said first-mentioned means;

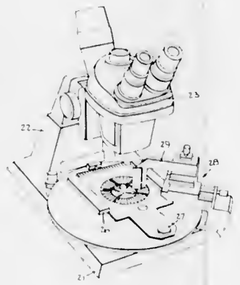
first stop means physically locating said workpiece edge exactly along a predetermined line on said table;

second stop means physically locating the ends of said workpiece in a predetermined position on said table in respect to said first-mentioned means.

## 3,930,809
## ASSEMBLY FIXTURE FOR FIXED POINT PROBE CARD

**Arthur Evans, Brookfield Center, Conn., assignor to Wentworth Laboratories, Inc., Brookfield, Conn.**

**Division of Ser. No. 390,184, Aug. 21, 1973, Pat. No. 3,849,728. This application July 15, 1974, Ser. No. 488,403**
**Int. Cl.² B23K 1/14; H05K 1/18**
**U.S. Cl. 29—203 J** **6 Claims**



1. A fixture for assembling a probe card adapted to test an integrated circuit pattern formed on a substrate, said card including a board having an opening providing access to said pattern and surrounded by an array of conductive pads and probes cantilevered from the pads, each probe being constituted by a needle-holding blade disposed in the vertical plane at a position slightly raised above its associated pad and having a needle extending therefrom to engage a contact on the pattern; said fixture comprising:

A. a chuck for holding said integrated circuit substrate to present the pattern thereof;

B. a platform for supporting said probe card board at a position in which the opening of the board is aligned with the chuck,

C. means for shifting said platform in the X and Y directions to orient said array of pads surrounding the board opening relative to the presented pattern,

D. an arm for gripping the blade of a probe to be assembled to hold the blade in the vertical plane, and

E. means to shift said arm in the X, Y and Z directions to align said blade at a raised position with respect to a selected pad and to align the point of the needle extending from the blade with a contact on said pattern, whereby when the blade is properly oriented it may be soldered to said pad.

## 3,930,810
## ADDITIVES FOR PETROLEUM DISTILLATES

**Marion J. Gattuso, Hoffman Estates, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.**

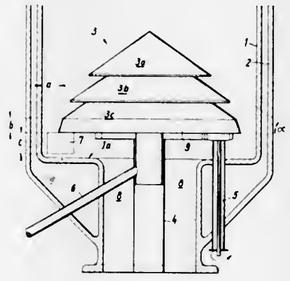
**Filed July 31, 1974, Ser. No. 493,377**
**Int. Cl.² C10L 1/22**
**U.S. Cl. 44—56** **12 Claims**

1. An additive formulation for petroleum distillates which comprises from about 50% to about 90% by weight of a solution of the polymeric reaction product of an epihalohydrin and an N-alkylpolyamine in which the alkyl group contains at least 12 carbon atoms, from about 10% to about 50% by weight of a solution of the polymeric reaction product of an epihalohydrin and a primary alkylamine in which the alkyl portion contains at least 12 carbon atoms, from about 1% to about 10% by weight of an alcohol of from 1 to 5 carbon atoms, and from about 1% to about 10% by weight of a copolymer of ethylene oxide and propylene oxide.

## 3,930,811
## REACTOR FOR THE PRESSURE GASIFICATION OF COAL

**Heinz Hiller, Rembrucken, and Paul Rudolph, Bad Homburg, both of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany**

**Filed Sept. 18, 1974, Ser. No. 507,178**
**Claims priority, application Germany, Oct. 17, 1973, 2351963**
**Int. Cl.² C10J 3/16, 3/42**
**U.S. Cl. 48—63** **4 Claims**



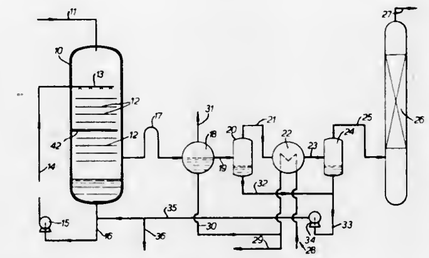
1. Reactor for the continuous gasification of coal under superatmospheric pressures at elevated temperatures with gaseous gasification agents which contain free oxygen and with oxygen-free gasifying agents such as water vapor and/or carbon dioxide, comprising substantially conical rotary grate means rotatably mounted in the lower portion of the stationary reactor housing, said reactor housing having a central ash discharge conduit below the rotary grate means, said rotary grate means being adapted to feed gasifying agent and/or discharge gasification residues, notwithstanding the inside diameter of the reactor housing, the clearance *a* between the rotary grate means and the housing is 100–200 millimeters, the height *b* of the annular rim of the rotary grate means is 100–350 millimeters, and the vertical distance *c* from the rotary grate means to the housing bottom is 100–350 millimeters, said rotary grate means having at least one scraper affixed thereto to withdraw ash from the housing bottom and move it to said central ash discharge conduit.

## 3,930,812
## METHANE SYNTHESIS

**Norman Harris, Stockton-on-Tees, and Ray Fowler, Amersham, both of England, assignors to Davy Powergas Limited, London, England**

**Filed June 24, 1974, Ser. No. 482,254**
**Claims priority, application United Kingdom, July 13, 1973, 33427/73**
**Int. Cl.² C10K 3/02**
**U.S. Cl. 48—197 R** **17 Claims**

2. A process for producing a product gas containing increased methane by the reaction of hydrogen with carbon monoxide and/or carbon dioxide comprising feeding a gaseous feedstock produced by gasification of fossil fuels or aliphatic alcohols with steam and/or oxygen to a reaction chamber which contains a catalyst of a Group VIII metal and is effective for the reaction at a temperature below 500°F., spraying water in the liquid phase over the catalyst so that the water evaporates and removes the heat of reaction within the chamber, the reaction in the chamber being carried out below a



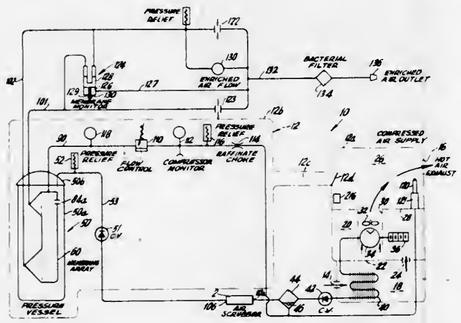
temperature of 550°F. and at a pressure of 0 to 2000 psig, to form the product gas of increased methane content.



## 3,930,813
## PROCESS FOR PRODUCING NITROGEN DIOXIDE-FREE OXYGEN-ENRICHED GAS

**David M. Gessner, Worcester, Mass., assignor to General Electric Company, Milwaukee, Wis.**

**Filed Nov. 27, 1974, Ser. No. 527,699**
**Int. Cl.² B01D 53/22, 53/16**
**U.S. Cl. 55—16** **8 Claims**



1. In a membrane permeation process to produce oxygen-enriched gas from atmospheric air comprising delivering a flow of atmospheric air feed to an array of selectively permeable membrane cells having a greater permeability of oxygen and nitrogen dioxide relative to nitrogen and maintaining a pressure differential across said array to produce an oxygen-enriched permeate therethrough, the improvement for reducing the nitrogen dioxide content in said permeate to substantially nil comprising:

i. initially passing the atmospheric air feed containing at least an ambient content of nitrogen dioxide into contact with triethanolamine until removal of the nitrogen dioxide from the air feed is substantially complete; and

ii. thereafter delivering the air depleted in nitrogen dioxide to the membrane cell array.

## 3,930,814
## PROCESS FOR PRODUCING OXYGEN-ENRICHED GAS

**David M. Gessner, Worcester, Mass., assignor to General Electric Company, Milwaukee, Wis.**

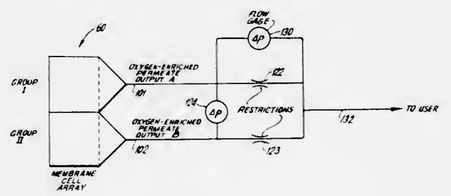
**Filed Nov. 27, 1974, Ser. No. 527,738**
**Int. Cl.² B01D 53/22**
**U.S. Cl. 55—16** **10 Claims**

1. In a membrane permeation process to produce oxygen enriched gas from atmospheric air comprising delivering a flow of atmospheric air to an array of series flow, selectively permeable membrane cells having a greater permeability of oxygen relative to nitrogen and maintaining a pressure differential across said array to produce an oxygen enriched permeate therethrough, the improvement for controlling and detecting membrane failure comprising:

i. dividing the selectively permeable membrane into two groups of cells;

ii. independently collecting the oxygen-enriched permeate output from each of said groups of cells;

iii. passing each collected permeate output through independent conduit means including means for restricting the flow of said oxygen enriched permeate output to



initially produce zero pressure differential between each conduit means, said pressure being measured in each conduit means at a location upstream of the flow restricting means;

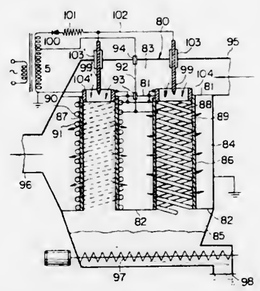
iv. continuously determining the presence or absence of a pressure differential between said conduit means; and

v. discontinuing the process when a pressure differential is determined to exist between the conduit means indicating a membrane leakage failure in one of the two groups of membrane cells.

## 3,930,815
## ELECTROSTATIC APPARATUS FOR REMOVING ENTRAINED PARTICULATE MATERIAL FROM A GAS STREAM

**Senichi Masuda, 40-10-605, 1-chome, Hishigahara, Kita, Tokyo, Japan**

**Continuation of Ser. No. 248,176, April 27, 1972, abandoned. This application Dec. 9, 1974, Ser. No. 530,680**
**Claims priority, application Japan, May 12, 1971, 46-31860; May 31, 1971, 46-37675**
**Int. Cl.² B03C 3/02**
**U.S. Cl. 55—123** **5 Claims**



1. Apparatus for removing particulate material from a gas stream in which it is entrained, comprising:

A. wall means defining

1. a downwardly opening inlet for a gas stream in which particles are entrained,

2. an outlet for cleaned gas, spaced from said inlet and having its axis substantially out of alignment with that of said inlet, and

3. a passage for constraining gas entering the inlet to flow to the outlet and wherein there is a zone in which gas

flowing from the inlet to the outlet undergoes a change in flow direction in the course of such flow;

B. a substantially tubular filter element of cloth-like material through which gas can pass, said filter element having its axis substantially coinciding with the axis of the inlet and having an upper end near the inlet, but being otherwise radially spaced from said wall means, said filter element being disposed at least in part in said zone and being arranged to have gas entering the inlet flow into the interior of the filter element and pass through the material thereof in flowing towards the outlet;

C. a plurality of elongated electrodes contiguous to said filter element, said electrodes being laterally spaced apart by substantially uniform distances along their lengths and being disposed entirely around and along the filter element;

D. means for connecting each of said electrodes with one terminal of an alternating voltage source, each electrode with a terminal other than that which its laterally adjacent electrodes are connected, to produce a constantly varying alternating electric field between every pair of laterally adjacent electrodes whereby particles in a gas stream flowing between the electrodes are repelled from the electrodes; and

E. means defining an upwardly opening receptacle beneath the filter element, into which particles repelled by the electrodes are induced to move.

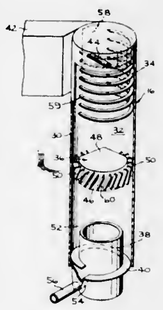
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**3,930,816**

## STRUCTURE FOR A GAS AND LIQUID CONTACTING CHAMBER IN A GAS EFFLUENT PROCESSING SYSTEM

**Gerhard Miczek, Apt. No. 4, 1501 Cowling Ave., Louisville, Ky. 40205**

**Filed Apr. 23, 1973, Ser. No. 353,347**
**Int. Cl.² B01D** *47/00*
**U.S. Cl. 55—238** **3 Claims**



**1.** In a gas effluent processing system, gas and liquid contacting apparatus adapted to separate particulate matter from a contaminated gas flow comprising an elongated cylindrical casing defining a contacting chamber, said casing disposed with its longitudinal axis extending generally vertically and having inlet conduit means disposed to direct contaminated gas and scrubbing liquid flows into contact within said chamber whereby said flows progress downwardly in a spiraling flow path therethrough and particulate matter is transferred from said gas flow to said liquid flow, means disposed at the lower end of said casing for exhausting gas flow from said chamber comprising an exhaust conduit having an upper end portion extending centrally upwardly into said chamber whereby surrounding space for liquid flow is defined between said upper end of said conduit and the sidewall of said casing, the lower end of said surrounding space being defined by a floor portion having a gradually downwardly spiraling surface which descends in a direction concurrent with the path of said whirling gas flow, leading to a liquid outlet conduit, said liquid outlet conduit being located below said floor portion and being directed generally outwardly for the purpose of receiving liquid flow guided thereto by said downwardly spiraling surface and draining said liquid flow with particulate matter therein away from said chamber, means located in the upper end of said chamber on a level of said inlet conduit means adapted to effect intermixing contact between the entering contaminated gas flow and the liquid flow comprising a plurality of ring-like segments disposed generally concentric to the chamber's longitudinal axis, each of said ring-like elements being generally planar in cross-section and having an outer pheripheral edge fastened in firm abutment against the inside surface of said casing and being extended radially-inwardly toward said chamber's longitudinal axis such that each of said segments forms a ledge for intersecting liquid flow moving downward to the chamber, the ring-like elements being vertically spaced apart to form a plurality of annular flow channels oriented in a descending arrangement, and said channels being disposed relative to the inlet conduit means so that the contaminated gas flow moves initially through said chamber circumferentially within said channels.

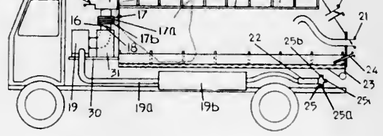
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**3,930,817**

## EXTRACTION APPARATUS

**Kenneth Thomas Stevenson; George Alfred Wesson, and George Armine Newell, all of Nottingham, England, assignors to Newclean Engineering Limited, Nottingham, England**

**Filed Apr. 24, 1974, Ser. No. 463,448**
**Claims priority, application United Kingdom, Oct. 31, 1973, 50550/73; Apr. 28, 1973, 20334/73**
**Int. Cl.² B01D** *46/04*
**U.S. Cl. 55—302** **8 Claims**



**1.** Extraction apparatus mounted on a roadway wheeled vehicle and comprising:

a. a storage chamber at the lower part of a detachably mounted tank;

b. a plenum chamber at the upper part of said tank;

c. means, including filter means, inter-connecting said storage chamber and said plenum chamber;

d. outlet means at one end of said plenum chamber and in communication therewith;

e. an extractor blower unit mounted in fixed position on said wheeled vehicle;

f. detachable means connecting said extractor unit to said plenum-chamber outlet means, said connecting means being adapted to be disconnected to allow said outlet means, said plenum chamber and said storage chamber to be moved relative to said fixed extractor unit;

g. a vent to atmosphere at said one end of said plenum chamber;

h. inlet means at the opposite end of said storage chamber;

i. valve means in said storage-chamber inlet means, in said plenum-chamber outlet means and in said plenum-chamber vent, whereby when said valves are placed in certain positions said extractor unit is effective to draw air through said inlet means into said storage chamber and through said filter means into said plenum chamber, and in other positions of said valves, air is sucked through said vent into said plenum chamber and through said filter means in the reverse direction into said storage chamber, thereby to effect self-cleaning of said filter means.



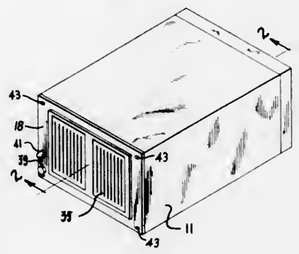
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**3,930,818**

## AIR CLEANER

**Redford W. McDougall, 3265 Lucerne Way, Sparks, Nev. 89431**

**Filed Dec. 20, 1974, Ser. No. 534,677**
**Int. Cl.² B01D** *31/00*
**U.S. Cl. 55—414** **3 Claims**



**1.** An air cleaner for removing airborne contaminants in a room, comprising, a housing adapted to be hung from a ceiling or mounted to a wall and defining a linearly elongated duct of rectangular cross section, a low efficiency filter mounted spanning said duct at one end thereof, a high efficiency filter mounted spanning said duct on the side of said low efficiency filter toward the opposite end of said duct from the end at which said low efficiency filter is mounted, said high efficiency filter having an efficiency of at least about 93 percent of the ASHRAE Discoloration Test Method (Standard **52–68**), a centrifugal blower mounted within said duct on the side of said high efficiency filter opposite said low efficiency filter, said blower having an axis of rotation which is perpendicular to the direction of elongation of said housing and having intake and discharge orifices, baffle means mounted to said housing for isolating said intake and discharge orifices of said blower, said baffle means including a substantially planar panel closing said duct at the end thereof opposite said low efficiency filter and having an orifice therein, means detachably securing said panel to said duct, said blower having said discharge orifice engaging said panel at said panel orifice through which said discharge orifice of said blower discharges in a direction substantially coinciding with the direction of flow of air through said duct, a directional air diffuser mounted across the path of discharge of said blower, and means mounting said blower and said air diffuser to said panel for removal therewith as a unit from said housing.

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**3,930,819**

## PRESS MOLDED HOT GLASSWARE HANDLING APPARATUS

**John Martin, Monterrey, Mexico, assignor to Fabrication de Maquinas, S.A., Monterrey, Mexico**

**Filed Feb. 6, 1975, Ser. No. 547,604**
**Int. Cl.² C03B** *39/00, 9/14, 18/00, 27/00*
**U.S. Cl. 65—25 R** **6 Claims**

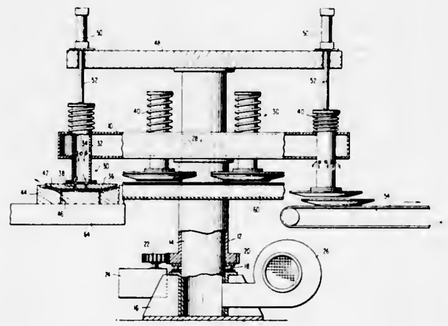
**1.** A method of removing freshly molded glass articles such as plates, cups, tumblers and the like from the mold in which they were formed, said mold having means communicating atmospheric pressure to the underside of the molded article, the steps comprising:

removing the press member from the mold to expose the upper surface of the molded article while still in the mold: positioning a Bernoulli nozzle member having a surface of the same configuration as the upper surface of the molded article in vertically closely spaced non-contacting alignment therewith, said nozzle member having fluid passageways extending therethrough and opening substantially tangentially into said surface;

forcing air under pressure through said fluid passageways along said nozzle surface to create a thin film of high velocity air at less than atmospheric pressure between said surface and the upper surface of said molded article; elevating said nozzle member to remove the article from the mold while maintaining closely spaced non-contacting relation between the nozzle and the article; and

directing a flow of air onto the underside of the article while supported by said nozzle; whereby said article is simultaneously formed, heat treated and cooled without the necessity of mechanical contact therewith.

**5.** Apparatus for removing freshly pressed glassware from a mold while still too hot to be self supporting said mold having means communicating atmospheric pressure to the underside of the molded article comprising:



a Bernoulli nozzle member having a surface of substantially the same size and shape as the upper surface of the glass ware, said nozzle member including a plurality of passageways therethrough terminating in openings directed substantially tangentially to said surface;

means for forcing air under positive pressure through said passageways to create a moving film of air along said surface;

means for supporting said member so that said surface is in closely spaced alignment with the glassware to be removed from its mold;

means for elevating said member together with the glassware to remove it from the mold; and

means for moving said support means in a plane parallel to the plane of the mold to permit a succession of molding and removal steps.

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**3,930,820**

## STRENGTHENING SHEET GLASS BY ION EXCHANGE

**William C. Cooke, and Albert H. Agett, both of Kingsport, Tenn., assignors to ASG Industries Inc., Kingsport, Tenn.**

**Filed June 11, 1974, Ser. No. 478,384**
**Int. Cl.² C03C** *21/00*
**U.S. Cl. 65—30 E** **3 Claims**

**1.** In the method of activating a molten bath of chemically impure potassium nitrate for use in strengthening glass by an ion exchange method, the improvement comprising adding to said molten potassium nitrate bath, an effective amount of potassium chloride or arsenous sulfide to remove substantially all of the calcium and magnesium impurities as compounds that are insoluble in potassium nitrate.

## 3,930,821
## PROCESS FOR MAKING CARBON-CONTAINING GLASS RESISTORS

**Thomas H. Elmer, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.**

**Filed Jan. 27, 1975, Ser. No. 544,287**
**Int. Cl.² C03C** *15/00, 7/00*
**U.S. Cl. 65—32** **6 Claims**

1. An improved process for making a carbon-impregnated glass electrical resistance material which comprises the steps of:
   a. impregnating a porous 96% silica glass with an aqueous solution of furfuryl alcohol;
   b. contacting the impregnated porous glass with an aqueous solution containing HCl in a concentration of at least about 6 Normal for a time sufficient to polymerize the furfuryl alcohol in the glass to a resin;
   c. drying the glass to remove water from the pore structure thereof, and
   d. firing the glass in a non-oxidizing atmosphere to a temperature of at least about 1,200°C. to convert the resin in the glass to carbon and to consolidate the porous glass.

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## 3,930,822
## PROCESS FOR MAKING CARBON-CONTAINING GLASS RESISTORS

**Thomas H. Elmer, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.**

**Filed Jan. 27, 1975, Ser. No. 544,288**
**Int. Cl.² C03C** *15/00, 7/00*
**U.S. Cl. 65—32** **4 Claims**

1. An improved process for making a carbon-impregnated glass electrical resistance material having an electrical resistivity in the $10^{1.5}$ – $10^{10}$ ohm-centimeter range which comprises the steps of:
   a. impregnating a porous 96% silica glass with an aqueous solution of furfuryl alcohol wherein furfuryl alcohol is present in an amount ranging about 1–50 percent by volume;
   b. flash heating the solution impregnated porous 96% silica glass to a temperature in the range of about 150°–225°C. and maintaining it at a temperature in that range for a time at least sufficient to polymerize the furfuryl alcohol present in the glass to a resin; and
   c. firing the glass containing the resin in a non-oxidizing atmosphere to a temperature of at least about 1,200°C. to convert the resin to carbon.

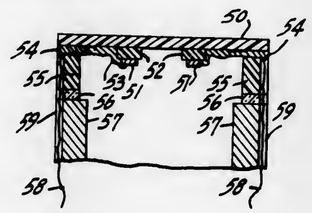
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## 3,930,823
## HIGH TEMPERATURE TRANSDUCERS AND HOUSING INCLUDING FABRICATION METHODS

**Anthony D. Kurtz, Englewood, and Joseph R. Mallon, Jr., Woodridge, both of N.J., assignors to Kulite Semiconductor Products, Inc., Ridgefield, N.J.**

**Division of Ser. No. 234,616, March 14, 1972, Pat. No. 3,800,264. This application May 7, 1973, Ser. No. 358,143**
**Int. Cl. C03c** *29/00*
**U.S. Cl. 65—33** **5 Claims**

1. A method for securing a disc-like diaphragm of the type having located on the surface thereof, a dielectrically isolated piezoresistive sensing element, to a silicon annular ring housing, said silicon ring having a substantially lower expansion property than a metal, comprising the steps of:
   a. mixing a fine powdered solder glass compound with a suspension vehicle to thereby form a frit of a paste-like consistency,
   b. placing the frit about the top periphery of said silicon annular ring,
   c. securing the diaphragm in congruency with the annular ring with the sensing element positioned in the aperture,
   d. heating the structure for a predetermined period at a first elevated temperature to insure full evaporation of said suspension vehicle,
   e. heating the bonded diaphragm and ring at a second higher temperature for a second period to provide a bond between said diaphragm and said ring, said bond having a crystalline structure, and



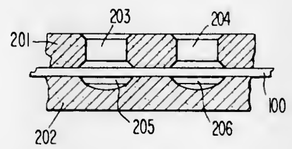

   f. solder glass bonding said silicon annular ring to a second housing of an annular configuration, fabricated from a metal.

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## 3,930,824
## METHOD OF FORMING LASER COMPONENTS

**Carl Harry Knowles, Moorestown, N.J., assignor to Metrologic Instruments, Inc., Bellmawr, N.J.**

**Filed July 19, 1974, Ser. No. 490,204**
**Int. Cl.² C03B** *11/08, 9/00, 19/00*
**U.S. Cl. 65—37** **3 Claims**




1. A method of manufacturing laser components comprising the steps of:
   providing a plurality of metallic annular elements interconnected in an integral matrix structure;
   placing said matrix elements between top and bottom mold portions to define cavities around each of said annular elements, each cavity closing against the corresponding annular element between the inner and outer circumference thereof, for partial overlap by the mold portions of each annular element;
   providing glass slugs in each of said cavities; melting and cooling said slugs to conform to the shape of said cavities, thereby partially to overlap each associated annular element with glass;
   optically finishing said glass; and
   separating each element from the matrix at points which were overlapped by said mold portions and which therefore were not overlapped by melted glass.

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## 3,930,825
## METHOD OF LASER BEAM CUTTING OF A RIBBON OF HOT GLASS

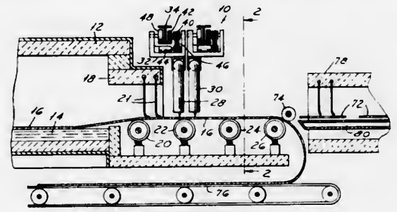
**Granger K. Chui, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.**

**Filed Nov. 29, 1974, Ser. No. 528,522**
**Int. Cl.² C03B** *21/02*
**U.S. Cl. 65—62** **6 Claims**

1. A method of forming an article of glass comprising:
   melting glass forming materials;
   forming a ribbon of flat glass in a ribbon forming apparatus;
   withdrawing the flat glass from the ribbon forming apparatus with the temperature of the flat glass being in excess of 1000°F.;



   moving the hot flat glass under at least a pair of focused laser beam devices which project laser beams onto the glass capable of cutting through the hot flat glass;
   moving the laser beams in a controlled manner having at least a lateral component for each beam as the hot flat glass moves thereunder so that one laser beam cuts out a first side portion of the article of glass and the other laser



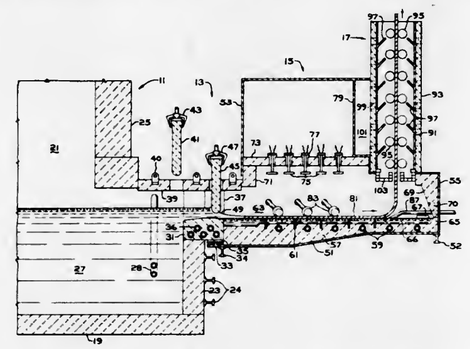

   beam cuts out a second side portion of the article of glass whereby a complete article shape is formed said laser beam paths having a common intersecting point at the beginning and end of each article;
   removing the excess of the flat glass not forming a part of the article; and
   cooling the glass article in a controlled manner to produce a final glass article.

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## 3,930,826
## CONDITIONING FLAT GLASS FOR REMOVAL FROM SUPPORTING LIQUID FOLLOWING FORMING

**James R. Schornhorst, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.**

**Filed Oct. 15, 1974, Ser. No. 514,969**
**Int. Cl.² C03B** *18/02*
**U.S. Cl. 65—65 A** **3 Claims**




1. In a method of making flat glass comprising the steps of delivering molten glass onto the surface of a pool of molten metal contained in an enclosed chamber, supporting the glass on the molten metal, advancing the delivered glass as a single layer of glass in a path along the surface of the pool of molten metal while cooling the glass to form a dimensionally stable, continuous sheet of glass and continuing to advance the dimensionally stable, continuous sheet of glass along the path of advance, freely lifting the dimensionally stable, continuous sheet of glass substantially vertically upwardly from the surface of the pool of molten metal and conveying the lifted, dimensionally stable, continuous sheet of glass substantially vertically upwardly from the pool of molten metal wherein, as the dimensionally stable, continuous sheet of glass is freely lifted from the pool of molten metal, it assumes a continuously curved shape along its length and an exposed meniscus of molten metal is formed across the width and against one surface of the dimensionally stable, continuous sheet of glass, which surface had been in contact with the molten metal prior to lifting, the improvement which comprises:
   cooling the molten metal from within the pool of molten metal substantially beneath the glass being lifted and beneath the exposed meniscus of molten metal at a depth and in an amount sufficient to induce a downward flow of molten metal for drawing the meniscus downwardly whereby the elevations and depressions characterizing the surface of the dimensionally stable, continuous sheet of glass which had been in contact with the molten metal are observably diminished.

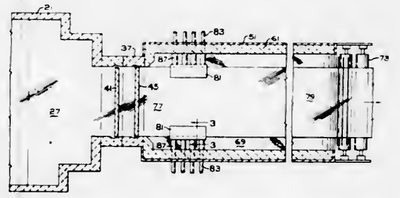
3. In an apparatus for making flat glass comprising means for preparing molten glass, means for delivering molten glass from the molten glass preparation means to a forming chamber, a forming chamber comprising an enclosed chamber having a bottom, a roof, spaced sidewalls and upstream and downstream ends and containing a pool of molten metal having a general depth in a lower portion and a head space for maintaining a protective atmosphere over the pool of molten metal in an upper portion and further comprising means for advancing the glass along the surface of the pool of molten metal and means for cooling the glass during its advance to form a continuous sheet of flat glass therefrom and means for lifting the continuous sheet of flat glass upwardly from the pool of molten metal at a lifting location and for conveying it upwardly therefrom, the improvement comprising:
   a trough extending transversely across the bottom of the chamber at the lifting location beneath the lifting means for providing a portion of the pool of molten metal with a depth sufficiently greater than the general depth of the pool of molten metal to provide for substantially greater thermally induced circulation in the portion of greater depth than in the remainder of the pool of molten metal; and
   means for selectively cooling the molten metal in the portion of the pool of molten metal beneath the lifting location to a temperature below the temperature of the molten metal upstream of the lifting location and below the temperature of the molten metal downstream of the lifting location, said cooling means extending at least partially lengthwise in the trough in the bottom of the forming chamber and extending at least partially beneath an exposed surface of the molten metal.

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## 3,930,827
## METHOD AND APPARATUS FOR STABILIZING MOVEMENT OF GLASS DURING ITS ADVANCE ALONG A MOLTEN METAL SURFACE

**E. Kears Pollock, Allison Park, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.**

**Filed Oct. 15, 1974, Ser. No. 514,978**
**Int. Cl.² C03B** *18/02*
**U.S. Cl. 65—65 A** **26 Claims**




1. In a process for making flat glass wherein molten glass is delivered onto the surface of a pool of molten metal in an enclosed forming chamber having a bottom, an upstream inlet end, a downstream outlet end, and a roof and side walls extending from the upstream end to the downstream end of the chamber and providing an enclosed space between them and beneath the roof; advancing the glass along the surface of the pool of molten metal from the upstream end toward the down-

stream end of the chamber; cooling the advancing glass to form a dimensionally stable, continuous sheet of glass therefrom; and removing the continuous sheet of glass from the forming chamber, wherein the advancing glass has tendency to drift from a direct path of advance; the improvement comprising

selectively adjusting and maintaining the temperature of at least one marginal edge portion of the advancing glass to maintain the advancing glass in a preselected path by controlling the transfer of heat between the marginal edge portion of the glass and a radiant cooler, wherein such control is achieved by partially shielding the cooler from the glass by a heat reflective enclosure having an elongated aperture facing a marginal edge portion of the advancing glass and substantially aligned with its edge.

**9.** In an apparatus for making flat glass comprising a forming chamber; means for delivering a layer of molten glass to the forming chamber; and means for removing a formed continuous sheet of flat glass from the forming chamber; wherein the forming chamber includes a bottom, an upstream end adjacent the molten glass delivery means, a downstream end adjacent the glass sheet removal means, side walls extending from the upstream end to the downstream end and upwardly from the bottom and a roof extending between the side walls and between the upstream and downstream ends providing an enclosed space, the enclosed space containing a pool of molten metal on the bottom for receiving and supporting glass delivered thereto and a headspace overlying the pool of molten metal; means for advancing glass along the surface of the pool of molten metal; and means for cooling the glass during its advance for forming it into a continuous sheet; the improvement comprising

a pair of radiators disposed in the headspace of the chamber, one radiator spaced inwardly from each side wall to overlie a marginal edge portion of an advancing layer of glass, each being individually controllable for separately adjusting and maintaining the temperature of the marginal edge portion of the glass it overlies, said radiators being spaced sufficiently from the upstream end of the chamber to provide for the development of an advancing layer of glass between them and the upstream end of the chamber and spaced sufficiently close to the upstream end of the chamber for overlying the glass before it is cooled sufficiently to reach dimensional stability, wherein each of said radiators comprises a cooler within an enclosure having a surface providing an aperture for facing a marginal edge portion of an advancing layer of glass.

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**3,930,828**

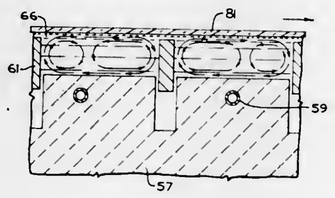
## THERMAL CONTROL IN A GLASS SHEET FORMING CHAMBER

**Gerald E. Kunkle, New Kensington, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.**

**Continuation-in-part of Ser. No. 483,508, June 27, 1974. This application Oct. 15, 1974, Ser. No. 514,989**

**Int. Cl.² C03B *18/02***

**U.S. Cl. 65—65 A** **8 Claims**




**1.** In a method of making glass comprising the steps of delivering molten glass onto the surface of a pool of supporting molten metal; advancing the glass along the surface of the pool of molten metal while cooling it and applying forces to it to form a continuous sheet of glass; removing the continuous sheet of glass from the surface of the pool of molten metal; and conveying the continuous sheet of glass from the pool of molten metal by applying a force to the glass; the improvement comprising

advancing the glass in a path along the surface of the pool of molten metal over a plurality of compartments of molten metal; separated from one another by barriers disposed across the path of advance of the glass, the molten metal of adjacent compartments being in communication immediately beneath the advancing glass; and cooling the molten metal within a compartment by removing sufficiently more heat from the molten metal in an upstream portion of the compartment closest the barrier over which glass first advances than from the molten metal in a downstream portion of the compartment closest the barrier over which the glass advances after advancing over molten metal in the compartment to provide a circulating flow of molten metal in the compartment to cool the glass advancing over the molten metal in the compartment.

**5.** In an apparatus for making flat glass comprising a glass-making furnace for supplying molten glass for forming, means for delivering molten glass from the furnace to a forming chamber, a glass forming chamber for forming a continuous sheet of glass connected to the glassmaking furnace through the molten glass delivery means; and means for removing and conveying a formed continuous sheet of glass from the forming chamber; wherein the forming chamber comprises a bottom, an upstream end in the vicinity of the molten glass delivery means, a downstream end in the vicinity of the glass sheet removing means, side walls and a roof providing an enclosed chamber having in its upper portion a space for containing a protective non-oxidizing atmosphere and having in its lower portion a pool of molten metal for supporting glass during forming, the pool of molten metal having an upper glass-supporting surface and a bottom portion adjacent the chamber bottom; means for advancing the glass along the surface of the pool of molten metal and for applying forces to the glass during its advance, the improvement comprising a plurality of barriers disposed across the forming chamber having upper surfaces at elevations beneath the upper surface of the pool of molten metal and segregating the pool of molten metal into a plurality of molten metal compartments, and means for cooling the molten metal of a compartment disposed beneath the upper surface of the pool of molten metal between adjacent barriers defining the compartment and closer to a first adjacent barrier closest to the upstream end of the chamber than to a second adjacent barrier closest to the downstream end of the chamber.

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**3,930,829**

## MOVABLE DAM BARRIERS FOR USE IN THE MANUFACTURE OF A GLASS RIBBON ON A MOLTEN METAL BATH

**John E. Sensi, Arnold, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.**

**Filed Oct. 15, 1974, Ser. No. 514,980**

**Int. Cl.² C03B *18/02***

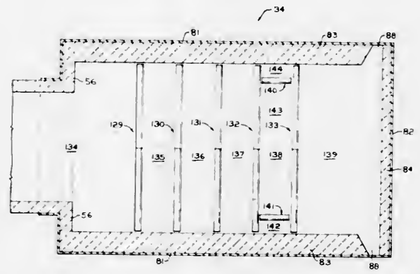
**U.S. Cl. 65—65 A** **24 Claims**

**1.** In a method of making a continuous ribbon of flat glass which comprises providing a layer of molten glass on the surface of a pool of supporting molten metal; advancing the layer of glass along the surface of the pool of molten metal in a downstream direction from upstream locations to succeeding downstream locations; and controlling the temperature of the layer of glass to cool the layer of glass to form a dimensionally stable ribbon of flat glass of a specified thickness wherein at least a portion of the cooling of the advancing layer of glass being by transfer of heat to the molten metal, the improvement, associated with changing from forming glass of a first specified thickness to forming glass of a second thinner specified thickness, comprising:

positioning movable dam barriers in the molten metal and extending at least partially transversely to the direction of glass advance to change the pattern of heat removal from the layer of glass within a sizing region in which the glass is at a temperature within its sizing temperature range by decreasing the spacing between at least two adjacent dam barriers in a downstream portion of the region from their spacing when forming glass of the first specified thickness.

**14.** In an apparatus for making flat glass wherein the apparatus is of the type having a glass melting furnace for supplying molten glass for forming; a glass forming chamber having a bottom and side portions for containing a pool of supporting






molten metal; delivery means connecting the exit end of the furnace and entrance end of the forming chamber for moving the molten glass from the furnace to the forming chamber to provide a layer of molten glass on the pool of supporting molten metal wherein the molten glass as it advances along the molten metal is cooled to form a continuous glass ribbon of a specified thickness wherein at least a portion of the cooling of the glass being by transfer of heat to the molten metal and means for continuously removing the glass ribbon from the forming chamber, the improvement comprising:

movable dam barriers mounted on the bottom of the forming chamber, each of said dam barriers comprising an outer cover of material which is substantially non-reactive with the molten metal and an inner body of material having a density greater than that of the molten metal.

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**3,930,830**

## METHOD FOR PRODUCING GLASS ARTICLES

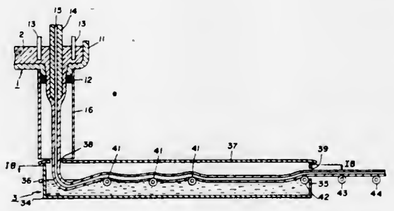
**Naohiro Yoshikawa, Otsu, and Takashi Yamaoka, Kusatsu, both of Japan, assignors to Nippon Electric Glass Company, Limited, Shiga, Japan**

**Filed Sept. 25, 1974, Ser. No. 509,279**

**Claims priority, application Japan, Sept. 26, 1973, 48-107512**

**Int. Cl.² C03B *15/14***

**U.S. Cl. 65—85** **8 Claims**




**5.** An improved method for producing an elongated article of a devitrifiable glass having an optimum working temperature in the vicinity of the liquidus temperature thereof, comprising the steps of

1. heating the glass to a temperature higher than the optimum working and liquidus temperatures thereof to melt the glass,
2. feeding the molten glass to a molding station whereat the molten glass is maintained at the higher temperature,
3. continuously leading the molten glass at the higher temperature through a molding orifice at the molding station, and
4. leading the molded glass article into contact with water before the temperature of the molded glass article drops down to the liquidus temperature whereby the molded glass article passes rapidly through the devitrifying temperature of the glass and devitrification of the glass is inhibited.

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**3,930,831**

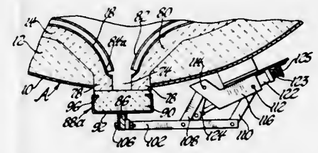
## FURNACE FOR HEAT TREATING GLASS SHEET MATERIAL

**Harold A. McMaster, 707 Riverside Drive, Woodville, Ohio 43469, and Norman C. Nitschke, 9102 Buck Road, Perrysburg, Ohio 43551**

**Division of Ser. No. 435,130, Jan. 21, 1974, Pat. No. 3,907,132, which is a continuation-in-part of Ser. No. 365,939, June 1, 1973, abandoned. This application Jan. 20, 1975, Ser. No. 542,339**

**Int. Cl.² C03B *29/04***

**U.S. Cl. 65—348** **9 Claims**




**1.** A furnace for heat treating glass sheet material and the like comprising: an enclosure having walls of refractory material, said walls having an outer insulating layer and an inner layer of material having a low coefficient of thermal expansion; at least one opening defined in said enclosure; said inner layer having spaced end portions projecting externally beyond said outer layer and the outer periphery of said enclosure to define said opening.

**8.** A door for controlling the opening of a furnace for heat treating glass sheet material and the like comprising: an elongated support bar; a plurality of blocks of refractory material supported on said bar in end-to-end relationship to define said door and means adjustably securing each of said blocks to said bar to permit the blocks to be individually adjusted with respect to said bar to accommodate irregularities in the opening to be controlled by said door said last named means comprising a metal jacket for each of said blocks partially enclosing the respective block; flanges projecting from said jackets and receiving said bar; and means securing said flanges to said rod to permit selective adjustment of said blocks transversely of said bar.

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**3,930,832**

## INHIBITION OF CORROSIVE ACTION OF ZINC-CONTAINING FERTILIZER SOLUTIONS

**James Earl Sansing, Jr., and Joseph Novotny, both of Baton Rouge, La., assignors to Allied Chemical Corporation, New York, N.Y.**

**Filed Apr. 21, 1975, Ser. No. 570,102**

**Int. Cl.² C05C *9/00***

**U.S. Cl. 71—30** **20 Claims**

**1.** A process of preparing a zinc-containing fertilizer solution of low corrosiveness toward carbon steel which comprises incorporating in an aqueous zinc nitrate-ammonium nitrate-

urea solution containing at least 8 percent by weight zinc nitrate, at least 14 percent by weight ammonium nitrate, at least 10 percent by weight urea, and the balance substantially consisting of water, about 0.1 to 5 percent by weight of a water-soluble thiosulfate compound selected from the group consisting of ammonium thiosulfate, sodium thiosulfate, and potassium thiosulfate.

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**3,930,833**

## MICRONUTRIENT METAL-CONTAINING PHOSPHATE GLASSES

**Gordon J. Roberts, Shaker Heights, Ohio, assignor to Ferro Corporation, Cleveland, Ohio**

**Filed Oct. 18, 1973, Ser. No. 407,530**
**Int. Cl.² C05G *3/00*; C03C *3/16***
**U.S. Cl. 71—64 G** **9 Claims**

**1.** A glass composition adapted in comminuted form to act as a micronutrient in both acidic and alkaline soils consisting essentially of a non-oxidizing phosphate base glass containing a nutrient amount of zinc oxide to nourish plant and seed growth in such acidic or alkaline soils, and a metal control agent to control the water-solubility of said glass composition and provide a water-extraction of said zinc oxide from said phosphate base glass at a rate within a predetermined range, said glass composition consisting essentially in weight percent of about:

| | Percent |
|---|---|
| $P_2O_5$ | 25 to 65 |
| Zinc Oxide | 30 to 60 |
| Control Agent | 5 to 20 |

said control agent being $R_2O$ or RCl or mixtures thereof, in which R is sodium or potassium.

**8.** The process of claim **6** in which said soil has an alkaline pH.

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**3,930,834**

## ALGAECIDAL COMPOSITION

**David T. Schultels, Jackson, and Donald E. Seymour, Shorewood, both of Wis., assignors to Applied Biochemists, Inc., Mequon, Wis.**

**Filed Jan. 14, 1974, Ser. No. 433,239**
**Int. Cl.² A01N *17/00***
**U.S. Cl. 71—67** **17 Claims**

**1.** An algaecide composition having improved stability, comprising an aqueous solution containing an algaecidal effective amount of a copper complex produced by reacting a water-insoluble copper compound selected from the group consisting of (a) copper carbonate, (b) copper oxide, (c) copper hydroxide, (d) copper bicarbonate, (e) copper benzoate, (f) copper thiocyanate and (g) naturally occurring copper minerals containing at least one of said (a)–(f) inclusive with an aqueous solution of an acid in sufficient amount to dissociate the copper ions from said compound, said acid selected from the group consisting of an inorganic acid and an organic acid having from 1 to 22 carbon atoms in the molecule, and thereafter chelating the copper ions with a chelating agent selected from the group consisting of (a) an alkanolamine having at least one alkanol group containing from 1 to 10 carbon atoms in the molecule, (b) polyethylene glycols having an average molecular weight in the range of 200 to 4000, (c) tertiary amines and (d) carboxylic acids having 1 to 22 carbon atoms in the molecule and (e) water soluble salts of (d), to provide the complex.

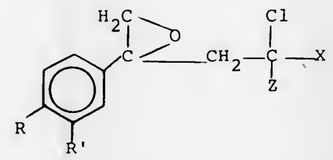
**3,930,835**

## PESTICIDAL COMPOSITIONS AND METHODS EMPLOYING SUBSTITUTED OXIRANE COMPOUNDS

**Thomas M. Ozretich, Vancouver, Wash., assignor to The Dow Chemical Company, Midland, Mich.**

**Continuation-in-part of Ser. No. 61,848, Aug. 6, 1970, abandoned. This application Oct. 2, 1972, Ser. No. 294,329. The portion of the term of this patent subsequent to Mar. 6, 1990, has been disclaimed.**
**Int. Cl.² A01N *9/28***
**U.S. Cl. 71—88** **33 Claims**

**1.** A method for controlling undesirable plants which comprises applying thereto an effective herbicidal amount of a substituted oxirane compound corresponding to the formula:



wherein X represents halogen; Z represents hydrogen, halogen, cyano or lower alkyl; R and R′ each independently represent hydrogen, halogen, cyano, nitro, alkoxy of from 1 to 4 carbon atoms, trifluoromethyl, benzyloxy or lower alkyl, with the proviso that when R′ is hydrogen, R is other than hydrogen.

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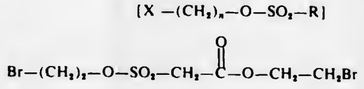
**3,930,836**

## SUBSTITUTED SULFONATE ANTIDOTE COMPOUNDS AND METHOD OF USE WITH HERBICIDES

**Duane R. Arneklev, Sunnyvale, Calif., assignor to Stauffer Chemical Company, Westport, Conn.**

**Continuation-in-part of Ser. No. 68,529, Aug. 31, 1970, abandoned, Division of Ser. No. 100,770, Dec. 22, 1970, abandoned. This application Apr. 12, 1974, Ser. No. 460,664**
**Int. Cl.² A01N *9/22***
**U.S. Cl. 71—93** **1 Claim**

**1.** In the method of controlling weeds wherein a herbicide is added to the habitat thereof, said herbicide containing an effective amount of a mixture of a thiocarbamate and a triazine, the improvement comprising adding to the habitat thereof from 0.01 to about 15 parts by weight for each part by weight of the herbicide mixture, an antidote compound represented by the formula:



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**3,930,837**

## 3-CHLORO-5-ACETAMIDAISOQUINOLINE AS A HERBICIDE

**Alexander Serban, Doncaster, Australia, assignor to ICI Australia Limited, Melbourne, Australia**

**Filed Dec. 14, 1972, Ser. No. 314,910**
**Claims priority, application Australia, Dec. 31, 1971, 7569/71; Aug. 28, 1972, 243/72**
**Int. Cl.² A01N *9/22***
**U.S. Cl. 71—94** **3 Claims**

**1.** A herbicidal composition comprising as active ingredient an effective ambient of 3-chloro-5-acetamidoisoquinoline and an inert carrier therefor.



**3,930,838**

## S-BENZYL-N,N-DISEC-BUTYLTHIOCARBAMATE AND ITS USE AS A RICE FIELD HERBICIDE AND A RICE GROWTH STIMULANT

**Giovanni Pellegrini; Giuseppe Losco; Antonio Quattrini, all of Milan, and Emilio Arsura, S. Donato Milanese (Milan), all of Italy, assignors to Montecatini Edison S.p.A., Milan, Italy**

**Continuation of Ser. No. 178,662, Sept. 8, 1971, abandoned. This application Dec. 14, 1973, Ser. No. 424,767**
**Claims priority, application Italy, Sept. 10, 1970, 29546/70**
**Int. Cl.² A01N *9/12***
**U.S. Cl. 71—100** **14 Claims**



**1.** A composition for controlling and killing rice field weeds and simultaneously stimulating the growth of rice, said composition comprising an effective amount of S-benzyl N,N-disec.butyl-thiocarbamate and an inert vehicle therefor.

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**3,930,839**

## SUBSTITUTED SULFONATE ANTIDOTE COMPOSITIONS AND METHOD OF USE WITH HERBICIDES

**Duane R. Arneklev, Sunnyvale, Calif., assignor to Stauffer Chemical Company, Westport, Conn.**

**Division of Ser. No. 100,770, Dec. 22, 1970, abandoned, and a continuation-in-part of Ser. No. 68,529, Aug. 31, 1970, abandoned. This application Apr. 12, 1974, Ser. No. 460,663**
**Int. Cl.² A01N *9/12***
**U.S. Cl. 71—100** **1 Claim**

**1.** In the method of controlling weeds wherein an effective amount of a thiolcarbamate herbicide is added to the habitat thereof the improvement comprising adding to the habitat thereof from about 0.01 to about 15 parts by weight for each part by weight of the herbicide an antidote compound represented by the formula:



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**3,930,840**

## RIPENING OF SUGARCANE BY USE OF CERTAIN ALCOHOLIC AND ETHOXYLATED COMPOUNDS

**Louis G. Nickell, Honolulu, Hawaii, assignor to Hawaiian Sugar Planters' Association, Honolulu, Hawaii**

**Continuation-in-part of Ser. No. 112,470, Feb. 3, 1971, abandoned. This application Apr. 5, 1974, Ser. No. 458,459**
**Int. Cl.² A01N *9/24***
**U.S. Cl. 71—122** **13 Claims**

**1.** A process for increasing the sugar yield of field grown, maturing sugarcane which comprises applying to the cane at a time at least about two weeks and up to about twelve weeks prior to harvest as essentially the sole ripening agent in an amount effective to increase sucrose yield, a compound selected from the group consisting of:

a. linear alcohols containing 11 to 15 carbon atoms,
b. polyalkylene glycols containing 2 to 3 carbon atoms in the alkylene group, and
c. ethoxylated phenols or alcohols corresponding to the formula

$$R-O+CH_2CH_2O+_nH$$

wherein R is phenyl, alkyl-substituted phenyl wherein the alkyl substituent contains from 8 to 15 carbon atoms, or alkyl of from 8 to 20 carbon atoms, and wherein *n* is an integer from 6 to 20.

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**3,930,841**

## THERMOPLASTIC PREALLOYED POWDER

**Timothy Earl Volin, Tuxedo; John Stanwood Benjamin, Suffern; Jay Michael Larson, Warwick, and Robert Lacock Cairns, Suffern, all of N.Y., assignors to The International Nickel Company, Inc., New York, N.Y.**

**Division of Ser. No. 316,077, Dec. 18, 1972, Pat. No. 3,865,575. This application June 10, 1974, Ser. No. 477,596**
**Int. Cl.² B22F *9/00***
**U.S. Cl. 75—.5 R** **8 Claims**

**1.** A process particularly adapted to improving the fabricating characteristics of difficulty workable alloys which comprises forming a charge of prealloyed powder of predesired composition, subjecting the prealloyed powder charge to a force capable of inducing strain energy into the powder, and continuing the application of said force at least until the amount of strain energy imparted is sufficient so as to alter the nature of the powder such that it is characterized by a Thermoplastic Physical Characteristic of at least TPC-1, whereby in the case of a difficultly workable composition the prealloyed powder is characterized by a lower flow stress and can be further processed at lower stress and/or temperature than prealloyed powder of the same composition but without strain energy having been imparted thereto.

### 3,930,842
### METHOD OF PRODUCING ALLOYS BASED ON CALCIUM, SILICON AND IRON

**Mark Abramovich Ryss, ulitsa Rossiiskaya, 32, kv. 2; Viktor Petrovich Zaiko, ulitsa Rossiiskaya, 63, kv. 135, both of, Chelyabinsk; Gerald Semenovich Belyaev, ulitsa 9 Gvardeiskoi divizii, 52, kv. 67, Istra Moskovskoi oblasti; Anatoly Konstantinovich Golev, prospekt Lenina, 71, kv. 111, Chelyabinsk; Aron Semenovich Mikulinsky, ulitsa Bosova, 1, kv. 54, Istra Moskovskoi oblasti; Vladimir Nikolaevich Gusarov, ulitsa Rossiiskaya, 32, kv. 3, Chelyabinsk; Stepan Evgenievich Pigasov, ulitsa Rosiiskaya, 32, kv. 20, Chelyabinsk; Igor Sergeevich Bedov, ulitsa Rossiiskaya, 57, kv. 28, Chelyabinsk; Valentin Nikotovich Pomogaev, ulitsa Rossiiskaya, 59, kv. 9, Chelyabinsk, and Georgy Nikolaevich Kozhevnikov, ulitsa Malysheva, 107, korpus 1, kv. 40, Sverdlovsk, all of U.S.S.R.**

**Continuation of Ser. No. 390,219, Aug. 21, 1973, abandoned. This application Aug. 20, 1974, Ser. No. 499,084**
**Int. Cl.² C22D** *7/06*
**U.S. Cl. 75—10 R** **8 Claims**

1. In a method for continuously producing calcium-silicon-iron alloys comprising the steps of: charging batches into an electric furnace and under a reducing atmosphere, each of the batches comprising lime, silicon-containing reducing agents and fluxes and being introduced in at least three portions; melting the at least three portions of one of the batches to form a melt consisting of a calcium-silicon-iron alloy and slag; and pouring the melt from the furnace prior to charging another one of the batches; the improvement comprising the steps of: charging a first portion consisting of lime and fluxes of each of the batches while pouring the melt formed from a previous batch from the furnace; charging at least one portion consisting of lime, the silicon-containing reducing agents and the fluxes of each of the batches after pouring the melt from a previous batch from the furnace; and charging a last portion of each of the batches during a period of 10 to 30 minutes prior to beginning the pouring of the melt from the furnace, the last portion comprising from 3 to 30% by weight of the melt prior to pouring.

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### 3,930,843
### METHOD FOR INCREASING METALLIC YIELD IN BOTTOM BLOWN PROCESSES

**Richard J. Fruehan, Franklin Township, Allegheny County, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.**

**Filed Aug. 30, 1974, Ser. No. 501,915**
**Int. Cl.² C21C** *5/34*
**U.S. Cl. 75—60** **8 Claims**

1. In the bottom blown process for the refining of molten pig iron, which comprises introducing an oxygen containing gas therein to decrease the impurity content thereof and produce a final molten steel product containing,

C . . . 0.08 max.

balance Fe, and incidental steelmaking residual elements, said gas being introduced during the initial blowing period, at an average total rate $R_T$, said total rate $R_T$ being the sum of $R_O$, the rate at which $O_2$ is introduced and $R_p$, the rate at which protective gasses are introduced, and wherein $R_O >> R_p$,

the improvement, subsequent to the time the C content of said melt is decreased to a level of 0.25%, which comprises introducing said $O_2$ at a generally decreasing rate, while maintaining the total gas input at a level not substantially different from $R_T$ by the introduction therein of a non-deleterious gas, said generally decreasing $O_2$ rate being achieved by introducing $O_2$ at an average rate within the range prescribed in the following periods;

i. the period wherein C decreases from 0.25 to 0.18%, at an average rate of from 0.4 $R_o$ to 1.0 $R_o$

ii. the period wherein C decreases from 0.18 to 0.09%, at an average rate of from 0.3 $R_o$ to 0.8 $R_o$

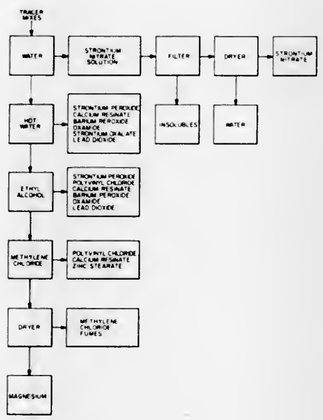
iii. the period wherein C decreases from 0.09% to the final level, at an average rate of from zero to 0.5 $R_o$.

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### 3,930,844
### METHOD FOR DISPOSAL OF PYROTECHNIC WASTE

**Clyde F. Parrish, Terre Haute; James E. Short, Jr., Switz City, and Karen S. Whorrall, West Baden, all of Ind., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed Feb. 6, 1975, Ser. No. 547,535**
**Int. Cl.² C22B** *26/22*
**U.S. Cl. 75—101 R** **4 Claims**




1. A method for disposing of tracer ammunition pyrotechnic material containing strontium nitrate, magnesium, strontium peroxide, polyvinyl chloride, calcium resinate and other pyrotechnic materials, with the combined percentages of strontium nitrate and magnesium comprising at least 60 percent of the total percentage of said tracer ammunition pyrotechnic material, comprising the steps of

first immersing said tracer ammunition pyrotechnic material in water sufficiently cold to dissolve only strontium nitrate,

then decanting the water solution of strontium nitrate and evaporating the water to reclaim strontium nitrate,

then removing all materials of said tracer ammunition pyrotechnic material other than magnesium by successive washes of hot water and solvents, and

then drying the remaining magnesium for reuse as a pyrotechnic material.

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### 3,930,845
### PRODUCING HIGH PURITY GOLD POWDER

**Herbert J. Bovey, Krugersdorp; Dennis A. Temple, and Basil J. Goldswain, both of Johannesburg, all of South Africa, assignors to Anglo American Corporation of South Africa, Johannesburg, South Africa**

**Filed Jan. 22, 1973, Ser. No. 325,307**
**Claims priority, application South Africa, Jan. 21, 1972, 72/0446**
**Int. Cl.² C22B** *3/00*
**U.S. Cl. 75—108** **5 Claims**

1. A process for treating a gold bearing Merrill slime, comprising the steps of:

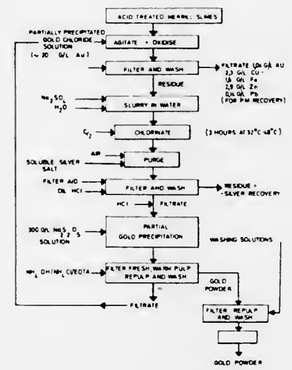
contacting said slime with a gold chloride solution with agitation, whereby dissolved gold is caused to be cemented out on said slime and base metal impurities are caused to go into solution;



separating the cemented slime from the solution;

suspending the cemented slime in water and chlorinating the suspension by passing chlorine gas through it;

separating the residual solution from the solids;




precipitating gold powder from the residual solution by the addition of less than a stoichiometric amount of a suitable reductant so that a proportion of the gold remains in the residual solution and

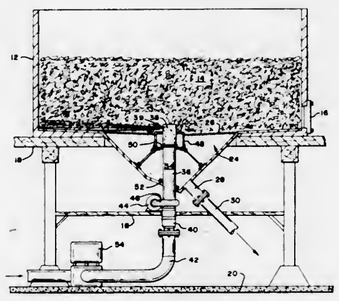
separating, washing and drying the precipitated gold powder.

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### 3,930,846
### METHOD FOR PRECIPITATING COPPER METAL FROM COPPER BEARING SOLUTIONS

**James Carl Compton, Hillsborough, and Wilbert Norman Sims, Alamo, both of Calif., assignors to Marcona Corporation, San Francisco, Calif.**

**Filed Oct. 10, 1974, Ser. No. 513,879**
**Int. Cl.² C22B** *15/12*
**U.S. Cl. 75—109** **6 Claims**



1. In a method of precipitating copper from a copper bearing solution in a container using a particulate solid precipitant which reduces the copper in solution to form the free copper, the steps of forming a bed of the solid precipitant, directing the copper bearing solution in a high velocity jet stream and rotating said stream to sweep out an arc which impinges upon and vigorously agitates the solid precipitant in its path with sufficient force to chemically react with the same to form a precipitate of the free copper of relatively small size in comparison to the precipitant and to entrain copper precipitate formed in the bed by such chemical reactions, and continuously separating the free copper and essentially all of the spent solution as underflow from the residual precipitant in the vessel, said precipitant bed being maintained in an essentially unflooded state in solid-to-solid contact.

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### 3,930,847
### RECOVERY OF COPPER BY CEMENTATION

**William Richard Stern, Tuscon, Ariz., assignor to The Anaconda Company, New York, N.Y.**

**Filed Mar. 15, 1974, Ser. No. 451,497**
**Int. Cl.² C22B** *15/12*
**U.S. Cl. 75—109** **5 Claims**

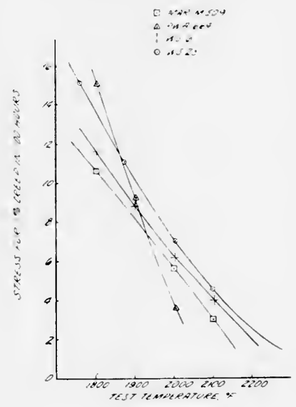
1. In the method of recovering copper from solutions containing the same by cementation using iron, the improvement comprising the use of copper-iron materials as part of the cementation launder, the copper and iron in said materials being substantially physically inseparable.

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### 3,930,848
### HIGH TEMPERATURE LOW DENSITY COBALT ALLOY

**Ralph J. Hecht, West Palm Beach, Fla., assignor to United Technologies Corporation, Hartford, Conn.**

**Filed Jan. 20, 1975, Ser. No. 542,463**
**Int. Cl.² C22C** *19/07*
**U.S. Cl. 75—171** **2 Claims**




1. A cobalt base alloy for high temperature use which consists essentially of, by weight, from 0.85 to 0.95% carbon, from 24 to 26% chromium, from 14 to 16% nickel, from 7.25 to 7.75% tungsten, from 2.0 to 2.4% titanium, from 1.0 to 1.4% zirconium, from 0.9 to 1.1% iron, balance essentially cobalt, said alloy being substantially free from tantalum and columbium.

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### 3,930,849
### ELECTRICAL CONTACT MATERIAL OF THE AG-CDO TYPE AND METHOD OF MAKING SAME

**Richard H. Krock, Weston, and Yuan-Shou Shen, Reading, both of Mass., assignors to P. R. Mallory & Co., Inc., Indianapolis, Ind.**

**Filed May 24, 1973, Ser. No. 363,592**
**Int. Cl.² C22C** *5/00*
**U.S. Cl. 75—173 A** **8 Claims**

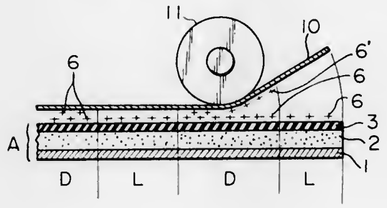
1. Ag-CdO type material suitable for use as an electrical contact material, the material consisting essentially of Ag and Cd with about 0.01 wt% to about 2 wt.% Sn, and about 0.001 wt% to about 0.2 wt.% of a metal selected from Mg, Ca, or mixtures of such metals, the material oxidized so as to convert the oxidizable constituents to their respective oxides prior to use of the material as an electrical contact material.

**3,930,850**

## PROCESS FOR ELECTROPHOTOGRAPHIC COPYING BY TRANSFER OF ELECTROSTATIC IMAGES

**Shoji Matsumoto, Neyagawa; Hitoshi Nishihama, Hirakata, and Tatsuo Aizawa, Osaka, all of Japan, assignors to Mita Industrial Company, Ltd., Osaka, Japan**

**Filed July 31, 1973, Ser. No. 384,294**
**Claims priority, application Japan, July 31, 1972, 47-76575**
**Int. Cl.² G03G** *13/18, 13/01, 13/22*
**U.S. Cl. 96—1 TE** **5 Claims**




**1.** An electrophotographic process which comprises
1. using an overcoated sensitive member consisting essentially of an electrically conductive base, a photoconductive layer and a light-transmitting surface insulating layer;
2. subjecting the surface of said overcoated sensitive member to a primary charging in a specific polarity;
3. exposing the surface of said overcoated sensitive member to an image having light and dark areas to produce on the surface of the charged sensitive member an electrostatic latent image corresponding to said light and dark image areas, and simultaneously or subsequently generating corona discharge current between said electrically conductive base and an electrode spaced from the surface of the overcoated sensitive member by a suitable distance, thereby to subject the overcoated sensitive member to a secondary charging;
4. then, uniformly exposing the entire surface of the overcoated sensitive member to activating light to substantially remove the charge formed on the interface between the surface insulating layer and the photoconductive layer;
5. transferring the electrostatic latent image to the surface of the charge retainable transfer material by bringing the surface of the transfer material into contact with the surface of the sensitive member without applying voltage between the sensitive member and the transfer member or charging the back surface of the transfer member uniformly beforehand; and
6. developing the electrostatic latent image transferred to the surface of the transfer material;

said process further characterized in that the corona discharge current of the secondary charging is an asymmetric alternating current in which a current component of the same polarity as the primary charging is greater than a current component of the opposite polarity, and its asymmetry is such that when the potential of the surface of th sensitive member as a result of the secondary charging has reached an equilibrium, its equilibrium potential is substantially equal to the untransferable upper limit potential whereby after the uniform exposure of step (4) the electrostatic image formed on the surface of the sensitive member has a potential in the light non-image area substantially equal to the untransferable upper limit potential and a potential in the dark image area higher than the untransferable upper limit potential.

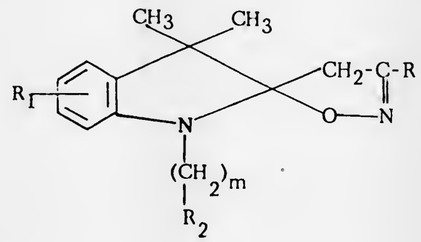
**3,930,851**

## ELECTROPHOTOGRAPHIC PROCESS USING METHYLENE INDOLINE PHOTOCONDUCTIVE DERIVATIVES

**Hisatake Ono; Syu Watarai, and Harumi Katsuyama, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan**

**Continuation-in-part of Ser. No. 187,190, Oct. 6, 1971, Pat. No. 3,850,949. This application Mar. 28, 1974, Ser. No. 455,797**
**Int. Cl.² G03G** *13/22, 5/06*
**U.S. Cl. 96—1 R** **8 Claims**

**1.** An electrophotographic process comprising the steps of charging, image exposing and developing a member comprising a resin binder and a compound of formula (A) which is more than 25 percent of the total components of the member;




(A)

wherein $R_1$ is selected from the group consisting of an hydrogen atom, halogen atom, alkyl group having 1 to 4 carbon atoms, alkoxy group having 1 to 4 carbon atoms, alkoxycarbonyl group having an alkyl group of 1 to 4 carbon atoms, nitro group, alkylene group having 1 to 3 carbon atoms which is able to make a bis-compound, and a bond which is able to make a bis-compound; $R_2$ is selected from the group consisting of an hydrogen atom, hydroxyl group, alkoxycarbonyl group having alkyl group of 1 to 4 carbon atoms, cyano group and a phenyl group; R is selected from the group consisting of a substituted phenyl group (where the substituted group is selected from the group consisting of an hydrogen atom, halogen atom, alkyl group having 1 to 4 carbon atoms, and an alkoxy group having 1 to 4 carbon atoms), alkylene group having 1 to 3 carbon atoms which is able to make a bis-compound, phenylene group which is able to make a bis-compound, and a bond which is able to make a bis-compound; and *m* is an integer from 1 to 4.

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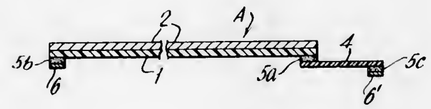
**3,930,852**

## ELECTROPHOTOGRAPHIC SENSITIVE MEMBER WITH ATTACHING MEANS

**Susumu Tanaka, Sakai; Yuji Enoguchi, Higashi-Osaka, and Hidetoshi Kawabata, Tondabayashi, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan**

**Filed Apr. 8, 1974, Ser. No. 458,612**
**Claims priority, application Japan, Apr. 11, 1973, 48-41640**
**Int. Cl.² G03G** *5/00*
**U.S. Cl. 96—1.5** **5 Claims**

**1.** An electrophotographic sensitive member comprising a longitudinally extending flexible first web including a substrate provided with an electrically conducting layer and a photoconductive layer superimposed on said electrically conducting layer, and a connecting member extending longitudinally from an end of said first web and including an electrically




insulating molecularly longitudinally stretch oriented, flexible, polymeric resin second web which is unidirectionally longitudinally heat contractible.



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**3,930,853**

## ACCELERATING AGING METHOD FOR SELENIUM-ARSENIC PHOTOCONDUCTORS

**Anthony J. Ciuffini, Dallas, Tex., assignor to Xerox Corporation, Stamford, Conn.**

**Filed Dec. 6, 1973, Ser. No. 422,502**
**Int. Cl.² G03G** *5/04*
**U.S. Cl. 96—1.5** **9 Claims**

**1.** In a process for improving the operating efficiency and to increase low density copy resolution of a xerographic photoreceptor comprising a substrate and at least one selenium-arsenic alloy as a photoconductor layer, the improvement comprising exposing the uncharged photoconductor layer of the photoreceptor to a nonimaging visible or ultraviolet light flux while at a temperature of about 55°–180°C.

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**3,930,854**

## ELECTROSTATIC COPY PAPER CONTAINING MANGANOUS SALT

**Edgar L. Jones, Prospect Heights; Leonard Laskin, and Phillip E. Sokol, both of Chicago, all of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.**

**Continuation of Ser. No. 677,739, Oct. 24, 1967, abandoned. This application July 3, 1974, Ser. No. 485,647**
**Int. Cl.² G03G** *5/08*
**U.S. Cl. 96—1.8** **9 Claims**

**7.** an electrostatic copy paper as recited in claim **5** in which said photoconductive coating further includes a small proportion of dye sensitizers to improve sensitivity to visible light.

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**3,930,855**

## PROCESS FOR THE PHOTOGRAPHIC PRODUCTION OF GIVEN TRANSPARENCY OR DENSITY DISTRIBUTIONS

**Reinhard Müller, Leverkusen, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany**

**Continuation-in-part of Ser. No. 251,966, May 10, 1972, abandoned. This application Apr. 10, 1974, Ser. No. 459,857**
**Claims priority, application Germany, May 11, 1971, 2123265**
**Int. Cl.² G03C** *5/04*
**U.S. Cl. 96—27 R** **5 Claims**

**1.** Photographic process for the production of density or transparency profiles in photographic layers, characterized by the following stages:
a. a photographic material containing at least one silver halide gelatin emulsion layer is exposed behind a photographic test wedge in the usual manner, the exposed photographic material is developed to produce a resulting image, the curve characterizing the photographic properties of the layer is deduced from the resulting image of the test wedge, the exposure being plotted along the abscissa on a linear scale and transparency or density along the ordinate;
b. on this graph, the required transparency or density distribution is entered as a function of the auxiliary space coordinate X and this distribution is reflected on the characteristic curve obtained in Stage (a) to determine the brightness distribution required for subsequent exposure on the same photographic material;
c. the brightness distribution obtained by reflection in Stage (b) is produced by suitable optical anamorphotic means in which the image plane along the auxiliary space coordinate X is substantially unfocused whereby it defines substantially only brightness and
d. to produce an image by using the obtained brightness distribution in the geometric shape of the desired profile on the same photographic material of stage a which is then developed with the same developer as that used for developing the photographic material in stage (a).

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**3,930,856**

## PHOTOPOLYMERISABLE COMPOSITIONS AND THEIR USES WITH DIAZONIUM SALTS AS PHOTOCATALYSTS

**Peter Pinot de Moira, Old Harlow, and John Philip Murphy, Witham, both of England, assignors to Ozalid Company Limited, England**

**Filed July 25, 1973, Ser. No. 382,330**
**Claims priority, application United Kingdom, Aug. 2, 1972, 35983/72**
**Int. Cl.² G03F** *7/08;* **G03C** *1/54*
**U.S. Cl. 96—33** **14 Claims**

**1.** A light-sensitive material comprising a support carrying a coating of a photopolymerisable epoxy resin composition and containing, as a photosensitive compound capable of catalyzing hardening of the epoxy resin, a diazonium salt soluble in organic solvents wherein the anion of said diazonium salt is difluorophosphate, said diazonium salt being free of amino groups and groups which would react with Lewis acids which are produced as a result of the decomposition of the diazonium salt.

**2.** A light-sensitive material comprising a support carrying a coating of a photopolymerisable epoxy resin composition containing, as a photosensitive compound capable of catalyzing hardening of the epoxy resin, a diazonium salt soluble in organic solvents wherein the anion of said diazonium salt is phosphotungstate, said diazonium salt being free of amino groups and groups which would react with Lewis acids which are produced as a result of the decomposition of the diazonium salt.

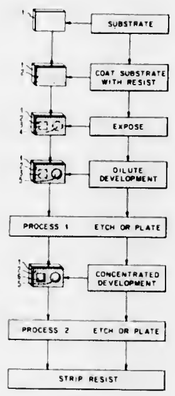
**12.** A method of making a printing plate, which comprises exposing to ultra-violet light under a master a material as claimed in claim **1** and developing the exposed material by removing the coating from the unexposed areas of the support by means of a solvent.

**3,930,857**

## RESIST PROCESS

**Diana Jean Bendz; Gerald Andrei Bendz, both of Pine Bush, and Anne Marie Wildman, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.**

**Filed May 3, 1973, Ser. No. 357,061**
**Int. Cl.² G03C** *5/00*
**U.S. Cl. 96—36.2** **7 Claims**




**1.** A resist process comprising:

a. forming a resist layer on a substrate,

b. exposing said layer patternwise while varying the exposure energy across the pattern to form a plurality of exposed regions in said layer having differing solubility rates,

c. developing said resist layer with a first developer so as to remove the portions of said layer having the greatest solubility rate from said substrate and form a resist mask having a first configuration,

d. subjecting the exposed portions of said substrate to a first additive or subtractive treatment with the remainder of said resist layer acting to protect the covered portions of said substrate from the treatment,

e. developing the resist layer with a second, more concentrated, developer so as to remove the patterns of said layer having the next greatest solubility rate from said substrate to form a resist mask having a second configuration,

f. subjecting the exposed portions of said substrate to a second additive or subtractive treatment with the remainder of said resist layer acting to protect the covered portions of said substrate from said treatment.

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**3,930,858**

## HEAT DEVELOPMENT PROCESS UTILIZING A PHOTOSENSITIVE COMPOSITION CONTAINING A HALOGENATED POLYMER AND A STRONG ORGANIC ELECTRON ACCEPTOR

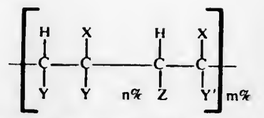
**William W. Limburg, Penfield, and Leon A. Teuscher, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.**

**Filed Nov. 1, 1973, Ser. No. 411,628**
**Int. Cl.² G03C** *5/24*
**U.S. Cl. 96—48 HD** **13 Claims**

**1.** A method of forming an image which comprises:

a. exposing to actinic radiation in an imagewise manner a composition consisting essentially of:

1. a polymeric molecule containing a number of units characterized by the formula:



wherein X is chlorine, bromine, or iodine, Y and Y′ are X or hydrogen and Z is Y or an alkyl, aryl or alkaryl constituent containing from 1 to 8 carbon atoms, and *n* percent and *m* percent are numbers from 0 to 100 representing the relative mole percent composition of the individual units in the polymer, sufficient to provide at least 2 conjugated double bonds upon dehydrohalogenation; and

2. a strong organic electron acceptor which is a composition having $\pi$ electron systems either on or conjugated with 2, 3 or 4 electron withdrawing groups selected from the group of cyano (CN), nitro ($NO_2$), chloro (Cl), bromo (Br) and trifluoromethyl ($-CF_3$); and

b. heating the so-exposed composition to a temperature and for a time sufficient to form a visible image in the exposed areas without causing image formation in the non-exposed areas.

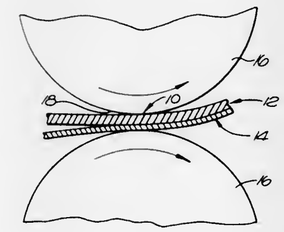
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**3,930,859**

## PHOTOGRAPHIC PROCESS, SYSTEM, RECORDING MEDIUM AND MONOWEB

**Richard A. Corrigan, Temple City, Calif., assignor to Bell & Howell Company, Chicago, Ill.**

**Filed July 20, 1973, Ser. No. 381,183**
**Int. Cl.² G03C** *5/26, 1/06*
**U.S. Cl. 96—50 R** **10 Claims**




**1.** An improved photographic recording medium comprising:

a layer of silver halide emulsion;

a barrier layer, soluble in aqueous alkali but insoluble in water and acidic media, disposed on a surface of said emulsion layer, said barrier layer comprising a material selected from the group consisting of: a monoalkyl ester-containing copolymer derivative of methyl ethyl ether-maleic anhydride copolymer, and a vinyl acetate-maleic anhydride copolymer; and

an acidic developer for said silver halide with said barrier layer, said developer being activatable at an alkaline pH.

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**3,930,860**

## SPECTRALLY SENSITIZED COLOR PHOTOGRAPHIC MATERIALS SUITABLE FOR HIGH TEMI ERATURE RAPID DEVELOPMENT

**Keisuke Shiba; Masanao Hinata, and Seiiti Kubodera, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan**

**Filed Jan. 2, 1974, Ser. No. 429,983**
**Claims priority, application Japan, Dec. 29, 1972, 48-2544**
**Int. Cl.² G03C** *7/00*
**U.S. Cl. 96—56** **10 Claims**

**1.** A method for producing an image having a reduced amount of fog which comprises a step of color developing at a temperature of at least 30°C., an exposed light-sensitive silver halide material containing at least one spectrally sensitized silver halide photographic emulsion layer on a support, said emulsion layer containing at least one sensitizing dye having the halide ion concentration increasing effect which can be determined by:

a. warming mixture A to 70°C., wherein mixture A comprises:

| | |
|---|---|
| Distilled water | 500 ml |
| Ammonium Bromide | 20 g |
| Sodium chloride | 10 g |
| Citric acid | 50 g |
| Gelatin | 70 g |

b. adding mixture B to mixture A with agitation over 50 minutes, wherein mixture B comprises:

| | |
|---|---|
| Distilled water | 500 ml |
| Silver Nitrate | 50 g |
| Citric acid | 50 g |

c. physically aging, cooling, setting and washing with water the product from Step (b) to yield an emulsion with a pH of 6.4 and a pAg of 7.8;

d. charging a first and a second emulsion vessel each with 100 g. of the product from Step (c), melting at 40°C., stirring and storing the two emulsions;

e. adding a sensitizing dye to the first emulsion vessel as a methanol solution in a concentration of $1 \times 10^{-3}$ or $5 \times 10^{-4}$ mol, stirring and allowing said first emulsion to stand for about 10 minutes;

f. adding the quantity of methanol used in Step (e) to the said second emulsion;

g. measuring any potential difference ($\Delta EAg$) between said two emulsions;

h. determining the increase or decrease in the pAg of the said first emulsion from the measurement of the $\Delta EAg$; and

i. choosing those dyes which cause an increase in the pAg of the first emulsion.



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**3,930,861**

## SILVER HALIDE EMULSIONS CONTAINING 3-ANILINO-2-PYRAZOLIN-5-ONE COLOR COUPLERS

**Raphael Karel Van Poucke, Berchem; Hector Alfons Vanden Eynde, Edegem, and Leo August Van Wijnsberghe, Gravenwezel, all of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium**

**Filed Mar. 18, 1974, Ser. No. 452,325**
**Claims priority, application United Kingdom, Apr. 6, 1973, 16626/73**
**Int. Cl.² G03C** *7/00, 1/40*
**U.S. Cl. 96—56.5** **10 Claims**

**1.** Method of producing a magenta coloured photographic image in a photographic light-sensitive silver halide material which comprises exposing the material and developing it with an aromatic primary amino colour developing agent in the presence of a 3-anilino-2-pyrazolin-5-one colour coupler wherein the anilino group carries an aryloxysulphonyl group.

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**3,930,862**

## DYE DEVELOPER TRANSFER PHOTOSENSITIVE MATERIAL WITH SUBSTITUTED CATECHOL AUXILIARY DEVELOPER

**Motohiko Tsubota, and Yoshiharu Fuseya, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan**

**Filed May 16, 1974, Ser. No. 470,507**
**Claims priority, application Japan, May 16, 1973, 48-54457**
**Int. Cl.² G03C** *7/00, 5/54, 1/76, 1/40*
**U.S. Cl. 96—73** **6 Claims**

**1.** A light-sensitive member for use in a color diffusion transfer element which comprises a support having thereon at least one silver halide emulsion layer and at least one dye developing agent combined with the silver halide in said silver halide emulsion layer, wherein at least one layer on said support contains an auxiliary developing agent selected from the group consisting of a catechol having at least one substituent selected from the group consisting of an alkoxy group, an acylamino group, an acylimino group, an alkylsulfonamido group, an alkylthio group, an arylthio group, an alkylseleno group, an arylseleno group and a heterocyclic group; dissolved in a substantially water-insoluble solvent and present in said layer as finely divided liquid droplets.

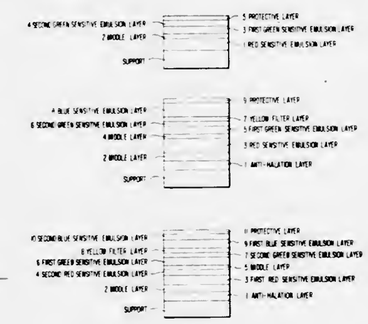
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**3,930,863**

## COLOR PHOTOGRAPHIC SENSITIVE MATERIAL

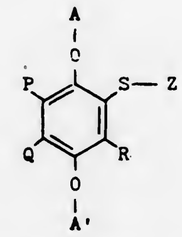
**Keisuke Shiba; Takeshi Hirose; Toshiaki Aono; Reiichi Ohi, and Tadao Shishido, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan**

**Filed Apr. 15, 1974, Ser. No. 461,087**
**Claims priority, application Japan, Apr. 13, 1973, 48-41870**
**Int. Cl.² G03C** *7/00, 7/16, 1/48, 1/40*
**U.S. Cl. 96—74** **14 Claims**




**1.** An incorporated type multi-layer color photographic sensitive material comprising a support having thereon at least two photosensitive emulsion layer units each containing color couplers which form images having a different color from each other by color development, wherein at least one of said photosensitive emulsion layer units comprises two or more individual layers, and at least one of said individual layers contains a hydroquinone derivative for interlayer color correction.

**2.** The multi-layer color photographic sensitive material of claim **1**, wherein said hydroquinone derivative has the general formula (I)



(I)

wherein P, Q and R each represents a hydrogen atom, an alkyl group, an alkenyl group, a hydroxyl group, an alkoxy group, an amino group, an alkylthio group, an aryl group, an arylthio group, a heterocyclic group, or a —SZ group, and wherein P and Q can combine to form a carbocyclic ring; A and A′ each represents a hydrogen atom or an alkaline splitable group selected from the group consisting of an acyl group and an

alkoxycarbonyl group; and Z represents a heterocyclic residue, said heterocyclic residue being photographically inactive when combined and released upon development.

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**3,930,864**
**AUXILIARY MORDANT LAYER FOR EXCESS DYE FORMED IN INTEGRAL COLOR TRANSFER ASSEMBLAGE**

**Edward P. Abel, and Richard W. Becker, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.**

**Filed Apr. 15, 1974, Ser. No. 461,031**
**Int. Cl.² G03C *1/40, 7/00, 5/54***
**U.S. Cl. 96—77** **28 Claims**



**1.** In a photographic assemblage comprising:

a. a support having thereon at least one photosensitive silver halide emulsion layer, said emulsion layer having associated therewith a dye image-providing material;

b. a dye image-receiving layer; and

c. means for discharging an alkaline processing composition within said assemblage;

said assemblage containing a silver halide developing agent, the improvement comprising employing a scavenger mordant layer in said assemblage to scavenge excess dye and unwanted byproducts produced during processing of said assemblage, said scavenger mordant layer being so located in said assemblage that when said alkaline processing composition is discharged within said assemblage to form a layer, the scavenger mordant layer will be on one side of both said alkaline processing composition layer and said emulsion layer and the dye image-receiving layer will be on the other side of said layers, and wherein said scavenger mordant layer is located in a timing layer or behind a timing layer with respect to said silver halide emulsion layer and said alkaline processing composition layer so that at least approximately four times as much dye will be imagewise transferred after processing to said dye image-receiving layer as compared with said scavenger mordant layer.

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**3,930,865**
**PHOTOPOLYMERIZABLE COPYING COMPOSITION**

**Raimund Josef Faust, Wiesbaden-Biebrich, and Kurt Walter Klüpfel, Wiesbaden-Sonnenberg, both of Germany, assignors to Hoechst Aktiengesellschaft, Germany**

**Filed Dec. 18, 1974, Ser. No. 533,833**
**Claims priority, application Germany, Dec. 21, 1973, 2363806**
**Int. Cl.² G03C *1/68, 1/70***
**U.S. Cl. 96—86 P** **16 Claims**

**1.** A photopolymerizable copying composition comprising at least one polymerizable compound, at least one photoinitiator, and at least one copolymer of

A. an unsaturated carboxylic acid,

B. an alkyl methacrylate with at least 4 carbon atoms in the alkyl group, and

C. at least one additional monomer which is capable of copolymerization with monomers (A) and (B), the homopolymer of said additional monomer having a glass transition temperature of at least 80°C.

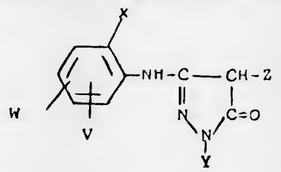
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**3,930,866**
**SILVER HALIDE COLOR PHOTOGRAPHIC MATERIALS CONTAINING 3-ANILINO-5-PYRAZOLONE COUPLERS**

**Yasushi Oishi; Minoru Yamada; Hiroyuki Amano, and Tokio Nishimura, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan**

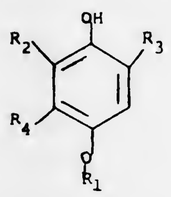
**Filed Apr. 23, 1974, Ser. No. 463,236**
**Claims priority, application Japan, Apr. 25, 1973, 48-47465**
**Int. Cl.² G03C *1/40***
**U.S. Cl. 96—100** **22 Claims**

**1.** A color photographic material comprising at least one silver halide emulsion layer containing a magenta dye forming coupler comprising a 3-anilino-5-pyrazolone type coupler having a hydrophobic ballast group on the aromatic nucleus of the anilino group contained in combination with a phenolic compound containing an ether bond at the 4-position and having the ability to improve the light fastness of the magenta dye image formed by the coupling reaction of said magenta dye forming coupler with the oxidation produce of an aromatic primary amine color developing agent and a nucleus-substituted hydroquinone, wherein said magenta dye forming coupler is represented by the general formula (I)



(I)

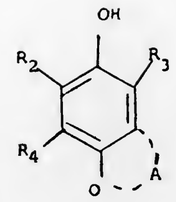
wherein X represents an alkyl group, an aryl group, an alkoxy group, an aryloxy group, an N-substituted amino group, an amido group, a halogen atom, a hydroxyl group, a cyano group, or a nitro group; Y represents an aryl group or a heterocyclic group; Z represents a hydrogen atom or a coupling releasable group which is releasable from the active carbon at the coupling position of said coupler when the coupler couples with the oxidation product of an aromatic primary amine color developing agent; W represents a hydrophobic ballast group; and V represents a hydrogen atom or a group as defined for X or W; and wherein said phenolic compound is represented by the general formulae (III-*a*), (III-*b*) or (III-*c*):



(III-a)

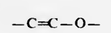
wherein $R_1$ represents an alkyl group, an aryl group, an aralkyl group, or a terpenyl group; and $R_2$, $R_3$ and $R_4$, which may be the same or different, each represents a hydrogen atom, an alkyl group, an alkoxy group, an aryl group, an aryloxy group, an aralkyl group, an aralkoxy group, an alkenyl group, an alkenoxy group, an acylamino group, or a halogen atom;



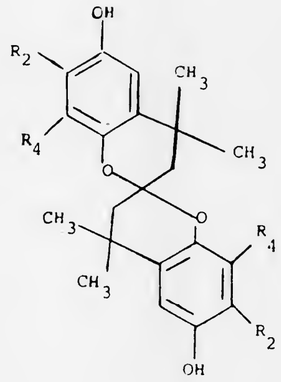


(III-b)

wherein $R_2$, $R_3$ and $R_4$, which may be the same or different, each represents a hydrogen atom, an alkyl group, an alkoxy group, an aryl group, an aryloxy group, an aralkyl group, an aralkoxy group, an alkenyl group, an alkenoxy group, an acylamino group, or a halogen atom; and A represents the non-metallic atoms necessary for forming a 5-membered ring or a 6-membered ring together with the



moiety; or



(III-c)

wherein $R_2$ and $R_4$, which may be the same or different, each represents a hydrogen atom, an alkyl group, an alkoxy group, an aryl group, an aryloxy group, an aralkyl group, an aralkoxy group, an alkenyl group, an alkenoxy group, an acylamino group, or a halogen atom.

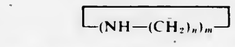
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**3,930,867**
**MACROCYCLIC POLYAMINES AS SENSITIZERS FOR SILVER HALIDE EMULSIONS**

**John H. Bigelow, Rochester, N.Y., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.**

**Filed Jan. 7, 1974, Ser. No. 431,302**
**Int. Cl.² G03C *1/28***
**U.S. Cl. 96—107** **21 Claims**

**1.** A photographic colloid-silver halide emulsion containing a sensitizing amount of a chemical sensitizer or a salt or metal chelate thereof, said chemical sensitizer having the formula



where *m* is 4–7 and each *n* is independently 2–5.

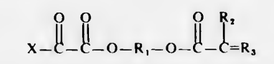
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**3,930,868**
**LIGHT SENSITIVE ARYLGLYOXYACRYLATE COMPOSITIONS**

**Thaddeus M. Muzyczko, Melrose Park, and Donald W. Fieder, Wheaton, both of Ill., assignors to The Richardson Company, Des Plaines, Ill.**

**Filed May 23, 1973, Ser. No. 363,018**
**Int. Cl.² G03C *1/68***
**U.S. Cl. 96—115 P** **10 Claims**

**1.** A light sensitive and polymerizable composition having the following general structure:



wherein X represents an aromatic or a heterocyclic structure, $R_1$ represents an alkyl group having from one to ten carbon atoms, $R_2$ represents a grouping selected from the group consisting of hydrogen, or a lower alkyl group having from one to five carbon atoms, and $R_3$ represents an alkenyl group having from one to 10 carbon atoms.

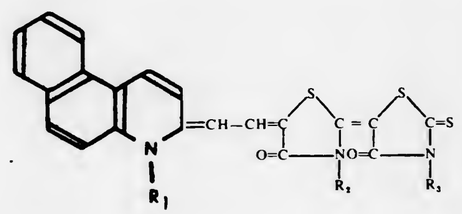
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**3,930,869**
**PHOTOGRAPHIC SILVER HALIDE PHOTOSENSITIVE MATERIALS**

**Akira Tanaka; Shoichi Horii; Seigo Ebato; Mamoru Sekido, and Shoji Oka, all of Nagaokakyo, Japan, assignors to Mitsubishi Paper Mills, Ltd., Japan**

**Filed Jan. 4, 1974, Ser. No. 430,624**
**Claims priority, application Japan, Jan. 12, 1973, 48-6466**
**Int. Cl.² G03C *1/10***
**U.S. Cl. 96—123** **8 Claims**

**1.** A photographic silver halide emulsion containing, as a sensitizing dye, at least one compound having the following general formula:



wherein $R_1$, $R_2$ and $R_3$ are selected from the group consisting of alkyl of not more than 5 carbon atoms, alkyl of not more than 5 carbon atoms substituted with alkoxy of not more than

5 carbon atoms, alkyl of not more than 5 carbon atoms substituted with alkoxycarbonyl of not more than 5 carbon atoms, dicarbomethoxyphenyl and allyl with the proviso that all of $R_1$, $R_2$ and $R_3$ cannot be alkyl at the same time.

8. A photographic silver halide emulsion according to claim 1 wherein it contains additionally 1,1',3,3'-tetraethyl-5,5',6,6'-tetrachlorobenzimidazolocarbocyanineiodide.

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### 3,930,870
### SILICON POLISHING SOLUTION PREPARATION

**Jagtar Singh Basi, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.**

**Filed Dec. 28, 1973, Ser. No. 429,418**
**Int. Cl.² C09K** *13/04*
**U.S. Cl. 106—3** **16 Claims**

1. In a process for preparing a silicon chemical-mechanical polishing solution comprising cupric nitrate and ammonium fluoride in water in an amount effective to chemical-mechanical polish silicon, the improvement which comprises bringing cupric nitrate, ammonium nitrate and nitric acid into aqueous solution and then adding thereto ammonium fluoride, said nitric acid and ammonium nitrate being present in an amount effective to prevent copper precipitation.

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### 3,930,871
### THICKENING COMPOSITIONS

**Charles A. Starace, Brooklyn, N.Y., assignor to Kelco Company, San Diego, Calif.**

**Filed Mar. 10, 1971, Ser. No. 123,082**
**Int. Cl.² C09J** *3/06, 3/26;* **C09K** *3/00*
**U.S. Cl. 106—35** **9 Claims**

1. A denture adhesive composition consisting essentially of about 10 to about 40 parts by weight of a Xanthomonas hydrophilic colloid and from about 60 to about 90 parts by weight of dextrin, said colloid-dextrin mixture providing the adhesive property.

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### 3,930,872
### BINDER COMPOSITIONS

**Richard H. Toeniskoetter, Worthington, and John J. Spiwak, Columbus, both of Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.**

**Continuation of Ser. No. 351,903, April 17, 1973. This application Nov. 14, 1973, Ser. No. 415,852. The portion of term of this patent subsequent to Dec. 12, 1992 has been disclaimed.**
**Int. Cl.² B28B** *7/34*
**U.S. Cl. 106—38.3** **26 Claims**

1. Binder composition which comprises:

A. boronated aluminum phosphate containing boron in an amount from about 3 mole % to about 40 mole % based upon the moles of aluminum and containing a mole ratio of phosphorus to total moles of aluminum and boron of about 2:1 to about 4:1;

B. an oxygen-containing alkaline earth metal compound capable of reacting with the aluminum phosphate and which contains alkaline earth metal and an oxide; and

C. water;

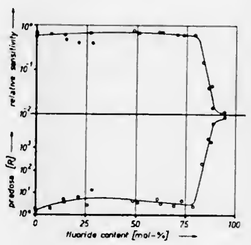
wherein the amount of boronated aluminum phosphate is from about 50 to about 95% by weight based upon the total weight of aluminum phosphate and alkaline earth compound; the amount of alkaline earth compound is from about 50 to about 5% by weight based upon the total weight of aluminum phosphate and alkaline earth compound; and the amount of water is from about 15 to about 50% by weight based upon the total weight of boronated aluminum phosphate and water.

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### 3,930,873
### RADIO-PHOTOLUMINESCENCE DOSIMETER GLASS OF LOW ENERGY DEPENDENCE AND METHOD OF MANUFACTURING SAME

**Hans-Herbert Kaes, Wetzlar-Dorlar, and Hans Staaden, Stockhausen, both of Germany, assignors to Ernst Leitz G.m.b.H., Wetzlar, Germany**

**Filed July 23, 1973, Ser. No. 381,775**
**Claims priority, application Germany, July 24, 1972, 2236302**
**Int. Cl. C03c** *3/16*
**U.S. Cl. 106—47 R** **28 Claims**




1. A radio-photoluminescence dosimeter glass of low dependence on energy, consisting essentially of an inorganic silver compound and at least one metal fluoride selected from the group consisting of an alkali metal, alkaline earth metal, lanthanum, and aluminum.

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### 3,930,874
### BONDED FUSED GRAIN BASIC REFRACTORY AND BATCH THEREFOR

**Donald L. Gulle, Horseheads, and Robert K. Smith, Corning, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.**

**Filed June 17, 1974, Ser. No. 480,286**
**Int. Cl.² C04B** *35/02, 35/04, 35/48*
**U.S. Cl. 106—57** **11 Claims**

1. A size-graded batch for the production of basic refractory bodies and consisting essentially of, with percentages on the weight basis, a mixture of,

a. dead-burned magnesite,

b. at least one strength additive selected from the group consisting of materials yielding silica, materials yielding zirconia, and mixtures thereof, and

c. at least one refractory grain analytically consisting essentially of 50–67% MgO and 33–50% CaO and selected from the group consisting of dead-burned grain, fused grain, and mixtures thereof,

40–50% of the batch being a coarse grain fraction whose grains are substantially all −4+35 Tyler mesh and composed of said refractory grain,

20–30% being an intermediate grain fraction whose grains are substantially all −20+65 Tyler mesh and composed of said refractory grain,

20–35% being a fine fraction whose particles are substantially all −100 Tyler mesh and consisting essentially of said strength additive in amount sufficient to provide, based on the whole batch, 0.5–4.0% of oxide selected from $SiO_2$, $ZrO_2$ and mixtures thereof, with the balance of the fine fraction being substantially all said dead-burned magnesite.



### 3,930,875
### PUMP MEMBER FOR MOLTEN METAL

**Toshihiko Ochiai; Mitsutoshi Hirano, both of Yokohama, and Hiroshi Inoue, Kawaguchi, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan**

**Filed Apr. 24, 1973, Ser. No. 354,133**
**Claims priority, application Japan, Apr. 25, 1972, 47-40875**
**Int. Cl. C04b** *35/58*
**U.S. Cl. 106—65** **7 Claims**

1. A pump member of a hot chamber type aluminium metal die casting machine which directly contacts molten aluminium metal in operation, consisting essentially of a sintered mass of a powdered mixture of the following ingredients in the percentages by weight indicated:

| | |
|---|---|
| rare earth oxide | 0.1 to 10% |
| metal silicate | 0.2 to 8% |
| aluminum oxide | 0 to 10% |
| aluminum nitride | balance, |

wherein said metal silicate is selected from the group consisting of aluminium silicate, magnesium silicate, calcium silicate, feld spars, augites, olivines and micas.

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### 3,930,876
### INORGANIC COATING COMPOSITION

**Jun Nakajima, Kyoto; Hiroshi Iwai, Hiratsuka; Iwao Momiyama, Hiratsuka; Tatsuo Fukushima, Hiratsuka, and Rentaro Takeda, Hiratsuka, all of Japan, assignors to Matsushita Electric Works, Ltd. and Kansai Paint Company, Ltd., both of, Japan**

**Division of Ser. No. 228,388, Feb. 22, 1972, abandoned. This application June 17, 1974, Ser. No. 480,258**
**Int. Cl.² C09D** *1/02;* **C09J** *1/02*
**U.S. Cl. 106—74** **7 Claims**

1. A method of preparing an aqueous coating composition which comprises mixing (A) a water soluble silicate selected from the group consisting of (1) silicates of the formula:

$$M_2O.xSiO_2 \qquad (I)$$

wherein M represents a member selected from the group consisting of alkali metals, $-N(CH_2OH)_4$, $-N(C_2H_4OH)_4$ and $-C(NH_2)_2NH$, and x is a number of from 0.5 to 5 inclusive, (2) silicates of the formula (1) modified with at least one of fluorides of silicofluorides of a metal selected from the group consisting of Ca, Al, Mg, Zn and Zr and (3) silicates of the formula (1) modified with at least one of oxides or hydroxides of a metal selected from the group consisting of Al, Ca, Mg, Zr, V, Zn and Cs, (B) a phosphate type hardener selected from the group consisting of condensed phosphates prepared by heating a mixture of the phosphate of the formula(II):

$$M_iO_j.mP_2O_5 \qquad (II)$$

wherein M represents a metal selected from the group consisting of Al, Mg, Ca, Mn, Zn, Fe and Cu, $i$ is 1 or 2 and $j$ is 1 or 3 depending upon the valency (2 or 3) of the metal M and m is a number of from 0.25 to 4 inclusive with at least one double oxides of (i) at least one metal selected from Zn, Mg and Ca and (ii) at least one metal selected from transition metals and metals belonging to Group IV of Periodic Table, the condensed phosphates having been pretreated with at least one of the said silicates (1) or modified silicates (2) and (3) before being mixed with the water soluble silicate (A) and (C) water.

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### 3,930,877
### CATIONIC STARCH AND CONDENSATES FOR MAKING THE SAME

**Thomas Aitken, Chicago, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.**

**Division of Ser. No. 387,828, Aug. 13, 1973, Pat. No. 3,854,970. This application Aug. 21, 1974, Ser. No. 499,283**
**Int. Cl.² C08L** *3/02*
**U.S. Cl. 106—287** **5 Claims**

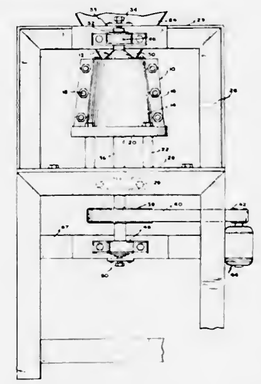
1. An additive to produce cationic starch which consists of a condensate of epichlorohydrin with an equimolar amount of dimethylamine modified by at least a minor amount up to 30 percent molar amount of ammonia based on the dimethylamine and substituted therefor.

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### 3,930,878
### METHOD AND APPARATUS FOR REDUCING STARCH-ONTAINING MATERIAL TO FLOUR

**Fausto Celorio Mendoza, Cumbres de Acultzingo No. 185, Lomas de Chapultepec, Mexico (10, D.F.)**

**Continuation-in-part of Ser. No. 392,625, Aug. 29, 1973, abandoned. This application Apr. 22, 1974, Ser. No. 462,798**
**Claims priority, application Mexico, Nov. 27, 1972, 139970; Mar. 2, 1973, 141691**
**Int. Cl.² B02C** *2/00;* **C13L** *1/08*
**U.S. Cl. 127—67** **8 Claims**



1. A device for reducing starch-containing material to flour while simultaneously rupturing the starch granules therein comprising, in combination, truncated inner and outer cone members mounted on a common vertical axis, said inner cone member having a first series of closely spaced grinding grooves on the outer surface thereof, a first feed groove disposed between each first series of grinding grooves for feeding the starch-containing material to the grinding grooves, said outer cone member having a second series of closely spaced grinding grooves on the inner surface thereof, a second feed groove disposed between each second series of grinding grooves on said outer cone member for feeding the starch-containing material to the grinding grooves, said first and second feed grooves having a depth larger than the grinding grooves, said cone members being substantially coextensive in the axial direction, hopper means for supplying starch-containing material to be ground to the annular space between said cone members at the upper end for movement therebetween, said inner cone member having an inwardly tapering upper end disposed in the bottom of said hopper and forming therewith a feed throat leading to the annular space between said cone members, and motor means for driving at least one of said cone members in rotation.

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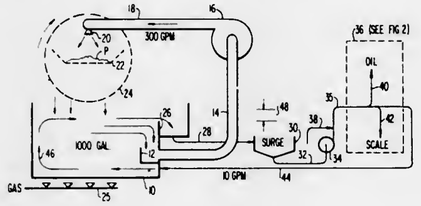
### 3,930,879
### CLOSED ALKALINE WASH WATER SYSTEM FOR CLEANING METAL PARTS

**Paul R. Erickson, Glendale; Lawrence M. Sontoski, West Allis, both of Wis., and Albert R. Sylvester, Calumet City, Ill., assignors to Rexnord Inc., Milwaukee, Wis.**

**Filed Mar. 20, 1974, Ser. No. 453,120**
**Int. Cl.² B08B** *3/10;* **B01D** *17/02, 21/10*
**U.S. Cl. 134—10** **13 Claims**

10. The method of cleaning metal-working oil and scale from metal parts in the process of their manufacture with a

given supply of an alkaline wash water, which method comprises withdrawing wash water from said supply, circulating the withdrawn wash water over said parts and returning the wash water with oil and scale to the supply, separately withdrawing and continuously circulating a small portion of said supply through the central zone of a gravity separator, providing the wash water in the separator with a detention time which allows the oil and scale to separate therefrom, separately removing the oil and scale from the top and bottom of the separator, respectively, drawing separated wash water off from the central zone of the separator, and returning the separated wash water to said supply.




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**3,930,880**

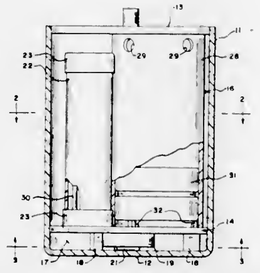
**SLAB GEL DIFFUSION DESTAINER**

**Stanton A. Hoefer, San Francisco, Calif., assignor to Hoefer Scientific Instruments, San Francisco, Calif.**

**Filed Mar. 18, 1974, Ser. No. 452,076**

**Int. Cl.² B08B** *3/10, 11/02*

**U.S. Cl. 134—111** **10 Claims**



**1.** A destainer for electrophoresis slab gels utilizing a circulating washing liquid comprising a liquid container having side walls and a bottom wall, a partition supported within said container occupying substantially all of a cross section between the side walls and dividing said container into first and second compartments, said partition having a plurality of openings therethrough, means for defining a return flow path in communication with said first container compartment at one end and with said second container compartment through a first one of said plurality of openings at the other end, filter means mounted in said return flow path and extending across substantially all of a cross section of said return flow path, a plurality of gel slab holders supported by said partition in communication with each of said plurality of openings other than said first one, flexible means permeable to the washing liquid for containing said slab gels, said flexible means being formed for rolling into a cylinder for insertion into said gel slab holders, means for defining a continuous flow path including said means for defining a return flow path and said gel slab holders, and means for circulating the washing liquid through said continuous flow path, whereby substantially all of the washing liquid is circulated past all external surfaces of the slab gels in a filtered condition.

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**3,930,881**

**IMMOBILIZED BATTERY ELECTROLYTE**

**John P. Cestaro, Trenton, and Linda J. Crosby, Freehold, both of N.J., assignors to NL Industries, Inc., New York, N.Y.**

**Filed July 22, 1974, Ser. No. 490,395**

**Int. Cl.² H01M** *47/00*

**U.S. Cl. 136—26** **9 Claims**

**1.** An immobilized electrolyte paste adaptable for use in a lead acid storage battery wherein the immobilized electrolyte paste comprises 1.5 to 4.0 parts sulfuric acid having a specific gravity from 1.050 to 1.350 and 1 part organic microparticles being inert to sulfuric acid and having a particle diameter of 0.1 to 3 $\mu$.

**7.** A lead acid storage battery comprising:

a. A battery case;

b. Positive and negative lead base plates wherein the positive and negative plates are alternately positioned in the battery case in spaced apart relationship;

c. Means for maintaining the positive and negative plates in spaced apart relationship; and

d. An immobilized electrolyte paste which comprises a mixture of 1.5 to 4 parts sulfuric acid having a specific gravity from 1.050 to 1.350 and 1 part organic microparticles being inert to sulfuric acid and having a particle diameter of 0.1 to 3 $\mu$.

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**3,930,882**

**RECHARGEABLE GALVANIC CELL**

**Kazuya Ohsawa; Katsuyoshi Hirasa, both of Yokohama, and Hideo Kinoshita, Ishikawa, all of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo and The Furukawa Battery Co., Ltd., Yokohama, both of, Japan**

**Filed Jan. 25, 1974, Ser. No. 436,621**

**Claims priority, application Japan, Jan. 31, 1973, 48-12577; Feb. 6, 1973, 48-14999; Apr. 9, 1973, 48-40203; Apr. 9, 1973, 48-40204**

**Int. Cl. H01m** *43/06*

**U.S. Cl. 136—30** **17 Claims**

**1.** A rechargeable galvanic cell comprising a zinc anode, a cathode and an electrolyte wherein the electrolyte comprises an aqueous alkaline solution containing alkali metal zincate and a polycation selected from the group consisting of ionen type polycation and pendant type polycation in an amount sufficient to suppress the formation of zinc dendrites on said zinc anode during cell charge, said ionen type polycation having quaternary nitrogen included in the main chain of the molecule and said pendant type polycation having quaternary nitrogen included in the side chain of the molecule.

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**3,930,883**

**ZINC-CONTAINING ELECTRODE**

**Ludwig Kandler, Munich-Solln, Germany, assignor to Rheinisch-Westfalisches Elektrizitatswerk Aktiengesellschaft, Essen, Germany**

**Continuation of Ser. No. 185,836, Jan. 10, 1971, abandoned, which is a division of Ser. No. 64,419, Aug. 17, 1970, abandoned. This application Feb. 27, 1974, Ser. No. 446,514**

**Claims priority, application Germany, Aug. 16, 1969, 1941722**

**Int. Cl.² H01M** *35/30*

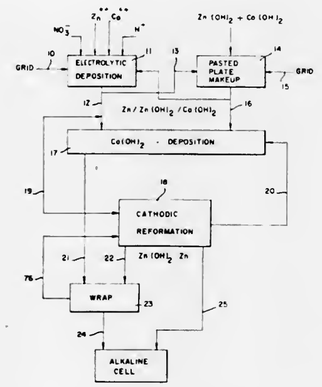
**U.S. Cl. 136—31** **2 Claims**

**1.** A method of making a negative electrode for an alkaline accumulator, comprising the steps of:

a. electrolytically depositing zinc and calcium upon a conductive support in the form of Zn, $Zn(OH)_2$ and $Ca(OH)_2$ from an electrolytic bath containing zinc ion, calcium ion and nitrate ion with the ratio of zinc ion to calcium ion made relatively high and establishing the proportions of zinc and calcium deposited on said support in a first electrochemically active layer directly upon said support;

b. electrochemically depositing on said first electrochemically active layer an outer electrochemically active layer containing zinc and calcium as Zn, $Zn(OH)_2$ and $Ca(OH)_2$ from an electrolyte containing zinc ion, calcium ion and nitrate ion with the ratio of zinc ion to calcium ion made less than in step (a) whereby the outer layer has a smaller ratio of zinc to calcium; and






c. forming said layers by electrolyzing same to transform the deposited zinc ion of said layers into elemental zinc.

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**3,930,884**

**ACTIVATED STABLE OXYGEN ELECTRODE**

**Georg Zimmermann; Manfred Schonborn, both of Gerlingen; Horst Magenau, Stuttgart; Horst Jahnke, Gerlingen, and Brunhilde Becker, Stuttgart, all of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany**

**Filed May 8, 1974, Ser. No. 467,911**

**Claims priority, application Germany, May 25, 1973, 2326667**

**Int. Cl.² H01M** *4/88, 4/90*; **B01J** *31/12*

**U.S. Cl. 136—86 D** **8 Claims**

**1.** A stable oxygen electrode which retains its useful catalytic activity over a long service life, comprising an electrode carrier containing an activated transition metal chelate of 5,14-dihydrodibenzo(5,9,14,18)-tetraaza(14)-annulene, said activated metal chelate having been activated by heating in an inert gas atmosphere at a temperature between about 600°C and 1000°C for a minimum time of 5 minutes.

**2.** The electrode of claim **1**, wherein said metal is selected from the group consisting of cobalt, iron, copper and nickel.

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**3,930,885**

**ORGANIC ELECTROLYTE RESERVE CELL**

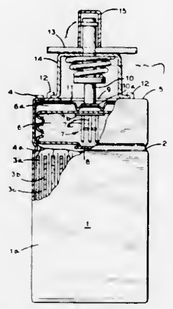
**Arabinda N. Dey, Needham, Mass., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.**

**Filed Jan. 11, 1973, Ser. No. 322,677**

**Int. Cl.² H01M** *2/10*

**U.S. Cl. 136—114** **3 Claims**

**1.** An organic electrolyte reserve cell comprising, a cell casing having an open end, a spring loaded disposable plunger activation mechanism having a vertically movable plunger placed therein and adapted to be moved by the spring, said plunger mechanism connected to said cell casing by a plurality of ears formed in said open end of said casing; a metal resilient lid for closing said casing, said lid having a central depressed portion to which said plunger is in abutment and whereby said central depressed lid portion may be moved upon movement of said plunger at a predetermined time; a plastic containing electrolyte reservoir having an accordian like configuration contained in said casing, a circular disc in said reservoir having a severality of impact rigid bars connected to the underside of said electrolyte reservoir opposite the depressed center of said metal cell lid, a frangible flat disc connected to said electrolyte reservoir and being placed over the electrodes of said cell, whereby when said always rigid impact bars are



driven down against said frangible disc quickly and positively breaks the same so as to allow the organic electrolyte to quickly flow and activate the cell electrodes and to energize the cell without trouble.

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**3,930,886**

**POROUS FLUORO-CARBON POLYMER MATRICES**

**Edward C. Mesiti, Jenkintown, Pa., and Solomon Rosenblatt, Montclair, N.J., assignors to Leesona Corporation, Warwick, R.I.**

**Continuation of Ser. No. 197,932, Nov. 11, 1971, abandoned, Division of Ser. No. 850,339, Aug. 12, 1969, Pat. No. 3,627,859, which is a continuation of Ser. No. 543,786, April 20, 1966, abandoned, which is a continuation-in-part of Ser. No. 491,864, Sept. 30, 1965, abandoned. This application June 18, 1973, Ser. No. 370,719**

**Int. Cl.² H01M** *2/14*

**U.S. Cl. 136—146** **5 Claims**

**1.** A hydrophobic polymeric matrix having preselected wettable characteristics comprising a continuous phase of sintered fluorocarbon polymeric material having a series of integral interconnecting pores and a discontinuous colloidal mineral phase deposited in or at the surfaces of said pores, said mineral phase being uniformly arranged from major surface to major surface of said matrix.

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**3,930,887**

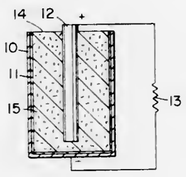
**BATTERIES WITH IMPROVED SHELF LIFE**

**Willard P. Conner, Chadds Ford, Pa., assignor to Hercules Incorporated, Wilmington, Del.**

**Filed Feb. 20, 1974, Ser. No. 445,007**

**Int. Cl.² H01M** *23/00*

**U.S. Cl. 136—107** **18 Claims**



**1.** In a battery having self-discharge characteristics and an anode and a cathode within a container the improvement of which comprises a high resistance element connected across said anode and said cathode, wherein said high resistance element has a value selected to provide a predetermined low current drain on said battery.

### 3,930,888
### MOLTEN METAL ANODE

George C. Bowser, Baltimore, Md., and James R. Moser, deceased, late of Shrewsbury, Pa. (by Patricia Karen Moser, administratrix), assignors to Catalyst Research Corporation, Baltimore, Md.

Division of Ser. No. 360,162, May 14, 1973, Pat. No. 3,891,460. This application Mar. 17, 1975, Ser. No. 558,733
Int. Cl.² H01M 4/06
U.S. Cl. 136—120 R 12 Claims

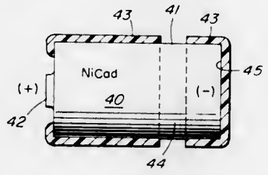



1. An anode assembly for a heat activated battery comprising an anode having substantially parallel inner and outer surfaces and a side surface, said anode consisting essentially of a foraminous metal substrate wettable by and filled with a fusible metal selected from the group consisting of alkali metals, alkaline earth metals and alloys thereof melting below the operating temperature of the battery, and a housing covering the outer surface and side of said anode and consisting of an impervious metal portion in electrical contact with said anode and a porous portion in sealing engagement against the periphery of said metal portion and in contact with said anode, said porous portion being formed from refractory fibers.

### 3,930,889
### MULTIPLE SOURCE BATTERY-POWERED APPARATUS

George William Rugglero, Watertown; Robert Myrick Kelly, Burlington, and Eliashiv Mazor, Allston, all of Mass., assignors to Bell & Howell Company, Chicago, Ill.

Filed July 22, 1974, Ser. No. 490,895
Int. Cl.² H01M 2/02
U.S. Cl. 136—166 8 Claims



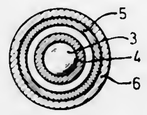

1. An electric battery in an electrically-conductive case forming one terminal for the battery, said case having a side surface between first and second ends and enclosing one of said ends, an electrically-insulating cover over said side surface and said one end, and an aperture in said cover over said side surface located nearer to one of said ends than to the other for giving via said side surface the only contact access to said one terminal, a second battery terminal being located in the other of said ends.

### 3,930,890
### STORAGE BATTERY GAS RECOMBINATION CATALYST DEVICE

Hermann Dietz, Gerlingen, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed May 14, 1974, Ser. No. 469,779
Claims priority, application Germany, May 23, 1973, 2326169
Int. Cl.² H01M 2/12; B01J 8/00
U.S. Cl. 136—179 6 Claims

1. A device for promoting catalytic recombination of gases generated in a storage battery, comprising a catalyst body encased in a porous hydrophobic shell consisting of superposed layers respectively of sintered and unsintered polytetrafluoroethylene, said body being of such dimensions and constitution that a multiplicity of said bodies may float freely on the electrolyte of a storage battery and that the specific weight of the device as a whole is less than the specific weight of the




electrolyte in its condition of lowest battery charge, said catalyst body being constituted largely of a material having a high proportion of void space in its interior and a low bulk density and serving as a carrier for a finally divided catalyst material.

### 3,930,891
### PILOT BURNER THERMOCOUPLE APPARATUS

Donnell H. Fox, Newport Beach, Calif., and Charles Matilo, North Olmsted, Ohio, assignors to Robertshaw Controls Company, Richmond, Va.

Filed Nov. 26, 1973, Ser. No. 419,226
Int. Cl.² G01K 7/02
U.S. Cl. 136—217 2 Claims



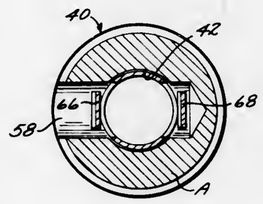
1. Thermocouple apparatus for use with a burner having a mounting bracket formed with aligned upper and lower apertures, said thermocouple apparatus comprising:
- an elongated thermocouple body of generally cylindrical configuration and including a mounting portion, said body being received by the apertures of said bracket;
- an upper adaptor having a sleeve that tapers downwardly toward said lower aperture and radially and is formed with a bore that receives the body of said thermocouple, with the exterior surface of said sleeve telescopically engaging the upper aperture of said mounting bracket;
- a tapered frusto-conical flexible spring clip that is openable circumferentially and has its larger end removeably engaged with the underside of said sleeve and its smaller end frictionally engaged with the mounting portion of said thermocouple; and
- with the frictional resistance between the smaller end of said spring clip and the mounting portion of said thermocouple body being greater than the frictional resistance between said spring clip and said sleeve whereby as said thermocouple body is withdrawn downwardly through said sleeve said sleeve remains engaged with said bracket, while said spring remains attached to and is removed with said body.



### 3,930,892
### REPLACEMENT THERMOCOUPLE APPARATUS FOR A PILOT BURNER

Donnell H. Fox, Newport Beach, and Donald K. Murrell, La Mirada, both of Calif., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Nov. 26, 1973, Ser. No. 419,225
Int. Cl.² G01K 7/02
U.S. Cl. 136—217 4 Claims

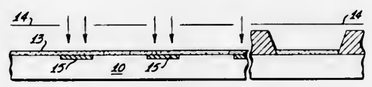



1. Thermocouple apparatus for use with a burner having a mounting bracket formed with a threaded aperture, said thermocouple apparatus comprising:
- an elongated thermocouple body of generally cylindrical configuration having a flame-receiving tip and said body also having a mounting portion formed with external axially spaced grooves;
- a barrel like adaptor body formed with a coaxial opening that receives said thermocouple body, said body also being formed with external threads engageable with the threads of the mounting bracket aperture to secure said body therewithin; and
- a tapered frusto-conical spring clip that is openable circumferentially and includes means for locking said spring to said adaptor so as to be both axially and nonrotatably secured within the opening of said adaptor body, said spring clip being formed with a detent frictionally engaged with the grooves of the thermocouple body mounting portion whereby said body may be vertically adjusted relative to said adaptor body.

### 3,930,893
### CONDUCTIVITY CONNECTED CHARGE-COUPLED DEVICE FABRICATION PROCESS

Wallace Edward Tchon, Phoenix, Ariz., assignor to Honeywell Information Systems, Inc., Phoenix, Ariz.

Filed Mar. 3, 1975, Ser. No. 554,855
Int. Cl.² H01L 21/263
U.S. Cl. 148—1.5 11 Claims




6. A method of fabricating charge-coupled semiconductor devices on a first portion of a semiconductor substrate and fabricating metal oxide semiconductor devices on a second portion of the same substrate, said method comprising the steps of:
- A. applying a layer of thick oxide to said semiconductor substrate;
- B. removing said thick oxide layer at predetermined locations of said first and second portions of said substrate;
- C. applying a layer of gate oxide;
- D. applying a first mask to the layer of gate oxide, said first mask having openings of predetermined size and location relative to one another in that part of said first mask overlying said first portion of said substrate, and said first mask having no openings in that part of said first mask overlying said second portion of said substrate;
- E. implanting regions in said substrate of a different semiconductor resistivity than said substrate through the holes of said first mask;
- F. removing said first mask from said substrate;
- G. applying a layer of polysilicon over said gate oxide layer;
- H. applying a second mask to said layer of polysilicon, said second mask having holes therein of different location than the holes of said first mask;
- I. removing the portions of said layers of polysilicon and gate oxide underlying said holes in said second mask;
- J. removing said second mask;
- K. doping the remaining portions of said polysilicon and the portions of said substrate underlying the removed portions of said polysilicon and gate oxide layers by diffusing impurity atoms into same;
- L. applying a layer of third oxide to said second portion of said substrate;
- M. removing said layer of third oxide overlying those portions of the second portion of said substrate which were doped in step K;
- N. applying a layer of metal over said second portion of said substrate; and
- O. removing portions of said layer of metal at predetermined locations of said second portion of said substrate.

### 3,930,894
### METHOD OF PREPARING COPPER BASE ALLOYS

Stanley Shapiro, New Haven; Michael J. Pryor, Woodbridge, and Ronald N. Caron, Branford, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Division of Ser. No. 445,447, Feb. 25, 1974. This application Nov. 29, 1974, Ser. No. 528,149
Int. Cl.² C22F 1/08
U.S. Cl. 148—2 6 Claims

1. A method of preparing wrought copper base alloys having good hot rollability, good stress corrosion resistance, good strength properties and good bend characteristics which comprises:
- A. casting a copper base alloy having the composition consisting essentially of: tin from 2 to 11 percent; phosphorus from 0.01 to 0.3 percent; a transition metal selected from the group consisting of chromium, zirconium, titanium, vanadium and mixtures thereof in an amount from 0.2 to 0.8 percent each; a material selected from the group consisting of iron from 0.3 to 2.0 percent, cobalt from 0.3 to 2.0 percent, and mixtures thereof, wherein the total iron plus cobalt must be at least 0.8 percent, balance copper;
- B. homogenizing for at least 15 minutes at a temperature between 700°C and the solidus temperature of the alloy;
- C. hot rolling at a starting temperature in excess of 650°C and up to within 50°C of the solidus temperature, and at a finishing temperature in excess of 400°C; and
- D. cold rolling the material,

thereby obtaining a copper base alloy having a grain size less than 0.010 mm and containing particulate phases uniformly dispersed throughout the matrix thereof, wherein a first of said phases contains an iron and/or cobalt-transition metal intermediate phase comprising a solid solution of said iron and/or cobalt plus transition metal and wherein a second of said phases contains iron and/or cobalt-transition metal phosphides.

3,930,895

## SPECIAL MAGNESIUM-MANGANESE ALUMINUM ALLOY

**Clarence J. Moser, and Wilbur E. Stephens, both of Riverside, Calif., assignors to Amax Aluminum Company, Inc., San Mateo, Calif.**

**Filed Apr. 24, 1974, Ser. No. 463,575**
**Int. Cl.² B22D** *21/04, 11/06;* **C22C** *21/04*
**U.S. Cl. 148—2** **2 Claims**

1. A method of improving the deep drawing and ironing characteristics of a type 3004 aluminum alloy in sheet form which comprises providing said alloy consisting essentially of by weight about 0.1 to 0.3% Si, about 0.25 to 0.8% Fe, about 0.1 to 0.25% Cu, about 0.75 to 1.75% Mg, with the manganese content controlled over the range of about 2 to 3% Mn and the balance essentially Al for use in the production of containers, such as beverage cans and the like which comprises,

establishing a molten bath of said alloy and chill casting said alloy by passing said molten alloy bath between a pair of water-cooled rotating rolls to produce a cast sheet metal stock,

heating said sheet metal stock to a temperature of about 950°F to 1050°F for a time sufficient to homogenize said alloy,

air cooling said sheet metal stock to room temperature,

and cold rolling said sheet metal stock to the desired gage with intermediate anneals where necessary to produce a cold rolled sheet metal product,

whereby the matrix of said sheet metal product is characterized metallographically by a microstructure comprising a uniform dispersion of particles of an intermetallic compound of Al and Mn, with the majority of the particles ranging in size from about 4 to 12 microns, said sheet metal product being also characterized by improved deep drawing and ironing characteristics when die-formed into a container.

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3,930,896

## METHOD FOR PRODUCING METAL FILM RESISTOR BY ELECTROLESS PLATING

**Hiroshi Takahama, Higashi-Osaka, and Hachiro Hamaguchi, Nara, both of Japan, assignors to Tatsuta Densen Kabushiki Kaisha, Japan**

**Filed May 17, 1974, Ser. No. 471,140**
**Claims priority, application Japan, May 18, 1973, 48-56614**
**Int. Cl.² C23C** *19/00;* **B05D** *5/12*
**U.S. Cl. 148—6.3** **5 Claims**

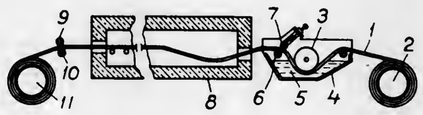
1. A method for producing a nickel-cobalt alloy film for use as a resistor, which comprises immersing a ceramic or glass base material in a stannous chloride solution, a silver salt solution and a palladium chloride solution, respectively, subjecting the thus treated base material to electroless plating in a bath containing 0.016 – 0.038 mol of cobalt ions, nickel ions in an amount to provide a molar ratio of cobalt ions to nickel ions of 6:1 to 15:1, 0.28 – 0.47 mol of sodium hypophosphite and 0.34 – 0.75 mol of sodium citrate, all bath component amounts being based on one liter of bath composition, at a bath temperature of 20°–50°C while maintaining the pH of the bath at 9.5 – 10.5 by means of ammonium hydroxide, heat-treating the resultant metal film in an atmosphere which substantially prevents oxidation of the metal film at a pressure below 10 mm Hg and temperature above 230°C, with the proviso that KT ≧ 1000 wherein K is the heat treatment temperature in °C and T is the time of the heat treatment in hours, and surface treating the heat-treated metal film in an atmosphere which causes oxidation of the metal film at a pressure above 10 mm Hg and temperature above 150°C, with the proviso that KT ≧ 200 wherein K and T are as defined above.

3,930,897

## METHOD OF TREATING AN OBJECT OF SILICON STEEL PROVIDED WITH AN INSULATING PROTECTIVE COATING OF SILICATE WITH A SOLUTION OF PHOSPHATE

**Carl-Artur Akerblom, Surahammar, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden**

**Filed Oct. 25, 1974, Ser. No. 518,149**
**Claims priority, application Sweden, Nov. 1, 1973, 7314861**
**Int. Cl.² C23F** *7/10*
**U.S. Cl. 148—6.15 R** **4 Claims**




1. Method of producing a phosphate coating on an object of silicon steel having an insulating coating of silicate, with a solution of phosphate, which comprises coating the object with an aqueous solution containing phosphate ions and complex metal-ammonia ions consisting essentially of cupric and/or chromic ions, said aqueous solution having a content of phosphate ions, complex metal ions, ammonium ions and dissolved ammonia of together 5 to 50 per cent by weight, the solution having a pH of at least 9, and heating the coated object to a temperature of at least about 550°C for a time sufficient to anchor the resulting phosphate layer to the silicate coating.

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3,930,898

## PROCESS FOR IMPARTING A DARK PATINA TO LOW-ELTING METAL ARTICLES

**Marion S. Cooley, 531 Chisholm Trail, Wyoming, Ohio 45215**

**Filed Dec. 17, 1973, Ser. No. 425,528**
**Int. Cl.² C23C** *3/00;* **C23F** *5/02*
**U.S. Cl. 148—6.24** **5 Claims**

1. A process for imparting a dark patina to the surface of an article formed from a low-melting alloy metal, the alloy metal being an alloy metal of Bi, Pb, Sn and Cd having a melting point below 350°F, comprising exposing the alloy metal surface of said article to a mineral acid solution of a copper salt selected from the group consisting of copper sulfate, copper chloride and copper nitrate.

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3,930,899

## METHOD OF SPRAYING MOLYBDENUM ON ALUMINUM OR ALUMINUM ALLOY

**Hiroshi Sakamaki, Utsunomiya; Shohei Ishikawa, Omiya, and Toshiyuki Maeda, Ageo, all of Japan, assignors to Nippon Piston Ring Co., Ltd., Tokyo, Japan**

**Filed Dec. 5, 1973, Ser. No. 421,908**
**Claims priority, application Japan, Dec. 6, 1972, 47-121647**
**Int. Cl.² C23C** *7/00*
**U.S. Cl. 148—6.27** **4 Claims**

1. A method of spraying a molybdenum layer onto an aluminum or aluminum alloy surface having enhanced adhesion thereto comprising

a. subjecting the surface to a zinc-substitution treatment to form a zinc layer in said surface, and

b. spraying the molybdenum onto the substituted zinc layer to form the molybdenum layer, the aluminum or aluminum alloy not being heated prior to step (b), such that the zinc from the zinc-substituted layer melts into the sprayed molybdenum layer.

2. A method of spraying a molybdenum layer onto an aluminum or aluminum alloy surface having enhanced adhesion thereto comprising



a. subjecting the surface to a zinc-substitution treatment to form a zinc layer in said surface,

b. preliminarily spraying nickel aluminide onto the substituted zinc layer between steps (a) and (b) which has a high adhesion to the zinc layer, and

c. spraying the molybdenum onto the preliminarily sprayed nickel aluminide layer of (b) to form the molybdenum layer, the aluminum or aluminum alloy not being heated prior to step (c), such that the zinc from the zinc-substituted layer melts into the sprayed nickel aluminide-molyhdenum layer.

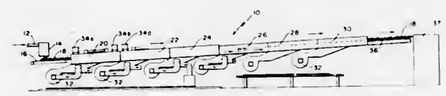
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3,930,900

## PROCESS FOR COOLING HOT ROLLED STEEL ROD

**Norman A. Wilson, Shrewsbury, Mass., assignor to Morgan Construction Company, Worcester, Mass.**

**Filed Oct. 21, 1974, Ser. No. 516,767**
**Int. Cl.² C21D** *9/52*
**U.S. Cl. 148—12 B** **10 Claims**



1. A process for treating steel rod comprising hot rolling the rod, depositing the rod directly from rolling onto a moving conveyor in spread-out rings, and controlling the loss of heat by said rod by applying radiant heat to the rod selectively in substantially inverse proportion to the accumulated mass of said rod from side to side of said rings.

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3,930,901

## COATING INGOT PRETREATMENT

**Richard C. Krutenat, Richland, Wash., assignor to United Technologies Corporation, Hartford, Conn.**

**Filed Jan. 6, 1975, Ser. No. 538,611**
**Int. Cl.² C22F** *1/02*
**U.S. Cl. 148—13** **6 Claims**

6. The method of pretreating a coating alloy ingot containing alumina inclusions which lead to unacceptable spitting in the coating processes involving vacuum vapor deposition which comprises:

including elemental yttrium in the coating alloy; and

heat treating the ingot in a time/temperature treatment in vacuum sufficient to substantially convert the alumina to aluminum and yttria.

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3,930,902

## RELATIVE SLIDING MEMBERS

**Takeshi Hiraoka, Ageo, and Shigeru Urano, Ohmiya, both of Japan, assignors to Nippon Piston Ring Co., Ltd., Tokyo, Japan**

**Filed Jan. 31, 1975, Ser. No. 546,172**
**Claims priority, application Japan, Jan. 31, 1974, 49-13340**
**Int. Cl.² C22C** *38/16*
**U.S. Cl. 148—31.5** **1 Claim**

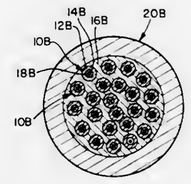
1. Relative sliding members in mating combination comprising a nitrified sintered alloy consisting of by weight 0.9–2.00% of T.C, 2.00–6.00% of Cu, 0.40–0.80% of Mo, less than 1.00% and other elements, and the balance iron, and an alloy cast iron consisting of by weight 2.00–3.50% of carbon, 1.50–2.50% of silicon, 0.03–1.00% of manganese, less than 0.30% of phosphorous, less than 0.12% of sulfur, 0.20–1.00% of copper, 0.2–1.00% of molybdenum, and the balance iron.

3,930,903

## STABILIZED SUPERCONDUCTIVE WIRES

**Robert N. Randall, and James Wong, both of Wayland, Mass., assignors to Supercon, Inc., Natick, Mass.**

**Filed Feb. 7, 1974, Ser. No. 440,523**
**Int. Cl.² H01L** *39/00;* **H01B** *12/00*
**U.S. Cl. 148—32** **6 Claims**




1. Superconductive multi-filament wire product comprising, means defining a copper matrix with a plurality of spaced filaments therein,

each of the filaments comprising a layer therein of type II superconducting intermetallic compound of Beta-Wolfram structure, being the diffusion reaction product of source filaments comprising a cross-section multilayer configuration of a refractory metal layer each containing component elements of the compound,

the copper matrix having a resistance ratio greater than 100 and being essentially free of said component elements, and the diffusion layer being 0.5-2 microns thick, the compound layers of the fialments being metallurgically bonded to the copper matrix.

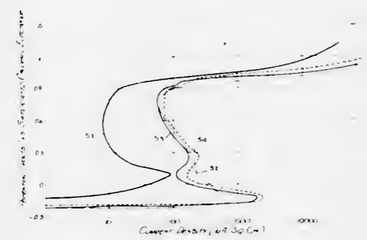
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3,930,904

## NICKEL-IRON-CHROMIUM ALLOY WROUGHT PRODUCTS

**Herbert L. Eiselstein; James C. Hosier, and Ralph C. Scarberry, all of Huntington, W. Va., assignors to The International Nickel Company, Inc., New York, N.Y.**

**Division of Ser. No. 326,369, Jan. 24, 1973, abandoned. This application Oct. 29, 1974, Ser. No. 518,609**
**Int. Cl.² C22C** *38/44, 38/48*
**U.S. Cl. 148—38** **8 Claims**



1. A high strength, corrosion-resistant, wrought and heat treated nickel-chromium-molybdenum-columbium-iron alloy product having the microstructural condition that results from annealing at about 1800°F and having a fine-grain annealed microstructure characterized by grain size of ASTM 7 and finer, a metallurgically stable solid-solution austenitic phase structure that remains essentially devoid of sigma phase and resists embrittlement when heated at 1400°F., and a room temperature yield strength of at least 65,000 pounds per square inch and composed of an alloy consisting essentially of 38% to 42% nickel, 14% to 17% chromium, 5% to 7% molybdenum, 1.5% to 2.5% columbium, up to 0.08% carbon, up to 1.5% manganese and balance essentially iron in a proportion whereby iron is at least 29% and not greater than 40% of the alloy.

### 3,930,905
### METHOD OF MANUFACTURING AN OBJECT OF SILICON STEEL

**Carl-Artur Akerblom, Surahammar, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden**

**Filed Oct. 11, 1973, Ser. No. 405,492**
**Claims priority, application Sweden, Oct. 26, 1972, 13813/72**
**Int. Cl.² H01F** *1/04*
**U.S. Cl. 148—113** **10 Claims**

1. An object of silicon steel having a heat-resistant, electrically insulating coating firmly thereto, said heat-resistant, insulating coating comprising a layer of a thickness of 0.1–5 microns consisting essentially of calcium titanate.

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### 3,930,906
### METHOD FOR FORMING AN INSULATING GLASS FILM ON A GRAIN-ORIENTED SILICON STEEL SHEET HAVING A HIGH MAGNETIC INDUCTION

**Toshio Irie, Kobe; Yasuo Yokoyama, Ashiya; Toshitomo Sugiyama, Kobe; Hiroshi Shimanaka, Funabashi, and Shigeru Kobayashi, Chiba, all of Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan**

**Filed Feb. 24, 1975, Ser. No. 552,029**
**Claims priority, application Japan, Feb. 28, 1974, 49-22860**
**Int. Cl.² H01F** *1/04*
**U.S. Cl. 148—113** **6 Claims**

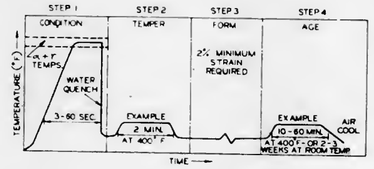
1. In a method for producing a grain-oriented silicon steel sheet having $B_8$ value of more than 1.88 Wb/m² and provided with a uniform insulating glass film having a high adhesion to a base metal, in which a cold rolled silicon steel sheet having a final gauge is subjected to decarburization annealing under wet hydrogen atmosphere to form an oxide layer consisting mainly of $SiO_2$ and FeO on the surface of the steel sheet, a separator containing MgO is coated on the decarburization annealed steel sheet, the thus treated sheet is wound into a coil and the coiled sheet is heated by keeping the temperature at 800°–920°C constantly for at least 10 hours to fully develop secondary recrystallized grains of (110) [001] orientation and then raising and keeping the temperature at 1,000°–1,200°C constant to form $MgO\text{-}SiO_2$ glass film on the surface of the steel sheet, the improvement which comprises using a neutral gas inert against iron at least in the above described temperature keeping stage of 800°–920° C and replacing the natural gas with hydrogen gas the above described temperature keeping stage of 1,000°–1,200°C.

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### 3,930,907
### HIGH STRENGTH DUCTILE HOT ROLLED NITROGENIZED STEEL

**Donald J. Bailey, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.**

**Filed Dec. 2, 1974, Ser. No. 529,009**
**Int. Cl.² C21D** *6/02, 9/46*
**U.S. Cl. 148—12.3** **5 Claims**




1. The method of producing a high yield strength steel comprising the steps of:

heating an aging low carbon steel to a temperature within the alpha plus gamma region of the iron carbon phase diagram for a time sufficient to dissolve a substantial proportion of the carbon into the ferrite of said steel and to form a predetermined proportion of said steel into austenite,

quenching said steel to substantially retain the solubilized carbon in solution and to transform at least the major proportion of said austenite into a form selected from the group consisting of martensite and bainite,

tempering said steel,

plastically deforming the steel an amount equivalent to at least 2 percent on the tensile stress-strain diagram,

aging said deformed steel for time sufficient to develop a desired superior yield strength,

said predetermined proportion of austenite being an amount necessary to provide the aged steel with said yield strength when said steel is deformed at least the equivalent of 2 percent on the tensile stress-strain diagram,

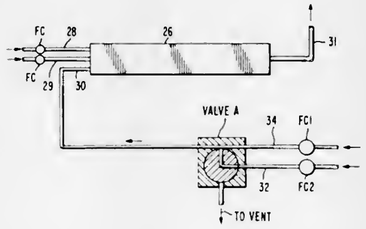
said temper providing the said quenched steel with sufficient ductility for subsequent forming without preventing the development of said desired yield strength.

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### 3,930,908
### ACCURATE CONTROL DURING VAPOR PHASE EPITAXY

**Stuart Talbot Jolly, Yardley, Pa., assignor to RCA Corporation, New York, N.Y.**

**Filed Sept. 30, 1974, Ser. No. 510,462**
**Int. Cl.² H01L** *21/20, 21/205*
**U.S. Cl. 148—175** **8 Claims**




1. In the process of vapor phase epitaxy, a method for quickly and accurately varying the rate of flow of a gaseous component into the reaction chamber, comprising the steps of:

a. establishing at least one primary gaseous flow into said reaction chamber,

b. establishing a desired flow of said gaseous component, and

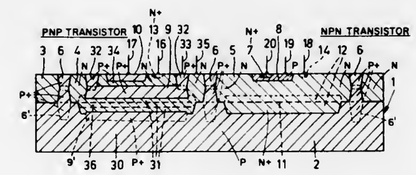
c. communicating with gaseous component directly into said primary gaseous flow with said gaseous component passing through substantially no intervening space before reaching said primary gaseous flow such that said gaseous component is swept into said reaction chamber whenever said gaseous component is communicated directly into said primary gaseous flow.



### 3,930,909
### METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE UTILIZING SIMULTANEOUS OUTDIFFUSION DURING EPITAXIAL GROWTH

**Albert Schmitz; Cornelis Mulder, and Arie Slob, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.**

**Continuation of Ser. No. 31,435, April 13, 1970, abandoned, Division of Ser. No. 676,235, Oct. 18, 1967, Pat. No. 3,702,428. This application Nov. 26, 1974, Ser. No. 527,236**
**Claims priority, application Netherlands, Oct. 21, 1966, 6614858**
**Int. Cl.² H01L** *21/20, 21/22, 27/04*
**U.S. Cl. 148—175** **10 Claims**




1. A method of making a semiconductor device comprising the steps of providing a semiconductor body having a substrate portion of one conductivity type and having a surface, introducing in a first limited area surface region of the substrate portion and at said surface one-type forming impurities, introducing in a second surface region of the said substrate portion and at said surface opposite-type forming impurities, said second surface region completely overlapping said first surface region, growing an epitaxial layer of the opposite conductivity type on the said surface containing the first and second surface regions, the impurity concentrations in and the depth of said first and second surface regions and the relative diffusion coefficients of the impurities having values such that upon the application of heat the said one-type forming impurities form a first buried layer of one conductivity type, and the said opposite-type forming impurities form a second buried layer of the opposite conductivity type which completely separates the first buried layer from underlying substrate parts of one conductivity type, and forming in the epitaxial layer portion overlying the first buried layer at least part of the semiconductor circuit element.

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### 3,930,910
### BLASTING COMPOSITION CONTAINING AN ALKANOL

**John R. Post, P. O. Box 1134, Littleton, Colo. 80120**

**Division of Ser. No. 311,935, Dec. 4, 1972, Pat. No. 3,810,425. This application Mar. 18, 1974, Ser. No. 451,825**
**Int. Cl.² C06B** *45/02*
**U.S. Cl. 149—21** **10 Claims**

1. A blasting agent having a density of 1.10 to 1.55 gm/cc. comprising crushed ammonium nitrate, 1–17% by weight nitropropane and 1–17% by weight of alkanol having 1 to 5 carbon atoms, wherein the combined weight percentage of nitropropane plus alkanol is 10–18%.

### 3,930,911
### BLASTING COMPOSITION AND METHOD OF MAKING SAME

**Jared W. Clark, 1604 Loudon Heights Road, Charleston, W. Va. 25314**

**Filed Mar. 5, 1974, Ser. No. 448,207**
**Int. Cl.² C06B** *31/28*
**U.S. Cl. 149—46** **16 Claims**

1. A non-emulsified blasting composition which consists essentially of a substantially uniform mixture of from about 80 to about 94 weight per cent ammonium nitrate, from about 3 to about 6 weight per cent oxidizeable carbonaceous material, from about 0.1 to about 10 weight per cent organic acid soluble in said carbonaceous material and having about 8 to about 20 carbon atoms, from about 1 to about 9 weight per cent water and from about 0.5 to about 1.5 moles of ammonia per mole of said organic acid, and wherein the density of the said blasting composition is greater than the density of water.

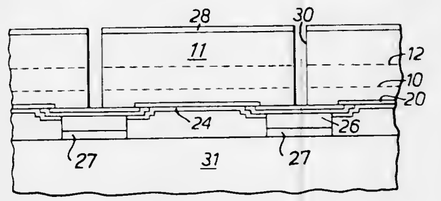
13. A process for the preparation of a blasting composition which comprises mixing from about 80 to about 94 per cent ammonium nitrate with from about 0.1 to about 10 weight per cent acid, from about 3 to about 6 weight per cent oxidizeable carbonaceous material, from about 1 to about 9 weight per cent water and from about 0.5 to about 1.5 moles of ammonia per mole of said acid, wherein said acid contains from about 8 to about 20 carbon atoms and is soluble in said oxidizeable carbonaceous material, carrying on the mixing of said components until the resultant product attains a density greater than the density of water.

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### 3,930,912
### METHOD OF MANUFACTURING LIGHT EMITTING DIODES

**Philip Henry Wisbey, Braintree, England, assignor to The Marconi Company Limited, Chelmsford, England**

**Filed Sept. 16, 1974, Ser. No. 506,006**
**Claims priority, application United Kingdom, Nov. 2, 1973, 50970/73**
**Int. Cl.² H01L** *21/20*
**U.S. Cl. 156—3** **6 Claims**




1. A method of forming a plurality of light emitting diodes in an arrangement of columns and rows, said method comprising the steps of:

providing an n-type epitaxial layer formed on an $n^+$-type substrate;

diffusing a p-type dopant into selected regions of said epitaxial n-type layer to form a plurality of p-type islands arranged in columns and rows, each p-type island having a junction with said n-type epitaxial layer to form a p-n diode of said arrangement;

covering each row of said arrangement with a different one of a plurality of first conductors, each first conductor being electrically connected to all p-n diodes in its row and being electrically isolated from every other first conductor;

mounting said arrangement on a transparent support with said plurality of first conductors adjacent thereto;

covering said $n^+$ type substrate with a plurality of second conductors in orthogonal relation to said plurality of first conductors, each second conductor being aligned with a

different one of said columns and said second conductors being spaced apart to form gaps therebetween which are registered with areas between p-type islands; and

etching those portions of said n-type epitaxial layer and said $n^+$ type substrate which coincide with said gaps.

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**3,930,913**

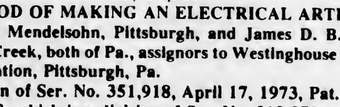
## PROCESS FOR MANUFACTURING INTEGRATED CIRCUITS AND METALLIC MESH SCREENS

**Adir Jacob, Framingham, Mass., assignor to LFE Corporation, Waltham, Mass.**

**Filed July 18, 1974, Ser. No. 489,598**

**Int. Cl.² B29C** *17/08*; **C23F** *1/02*

**U.S. Cl. 156—8** **12 Claims**




**1.** In a process for the manufacture of thin film integrated circuits including a step in which a patterned layer of organic material is overlaid on a metallic layer, the improvement in the further step of removing the organic material comprising the step of:

exposing the organic material to a low temperature, low pressure plasma formed from a gaseous mixture of oxygen and nitrogen, wherein the oxygen fraction lies within the range of 0.5 to 15% by volume.

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**3,930,914**

## THINNING SEMICONDUCTIVE SUBSTRATES

**Harold Arthur Hetrich, Reading, Pa., assignor to Western Electric Co., Inc., New York, N.Y.**

**Division of Ser. No. 281,261, Aug. 16, 1972, Pat. No. 3,841,930, which is a division of Ser. No. 150,345, June 7, 1971, Pat. No. 3,701,705. This application Aug. 1, 1974, Ser. No. 493,960**

**Int. Cl.² H01L** *7/50*

**U.S. Cl. 156—16** **10 Claims**

**1.** A method of thinning a portion of a workpiece, which comprises the steps of:

depositing a fluid in a cavity;

positioning the face of the workpiece on the fluid to leave no space between the face of the workpiece and the fluid;

retaining the workpiece in the cavity with an apertured member, whereby the face is masked by the fluid and a portion of the backside of the workpiece opposite the face is masked by the member; and

treating through the aperture of the member the unmasked backside of the workpiece to remove at least a portion of such workpiece, while the masked face and the masked portion of the backside of the workpiece remain untreated.

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**3,930,915**

## METHOD OF MAKING AN ELECTRICAL ARTICLE

**Morris A. Mendelsohn, Pittsburgh, and James D. B. Smith, Turtle Creek, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**Division of Ser. No. 351,918, April 17, 1973, Pat. No. 3,845,438, which is a division of Ser. No. 210,878, Dec. 22, 1971, Pat. No. 3,759,734. This application July 19, 1974, Ser. No. 490,149**

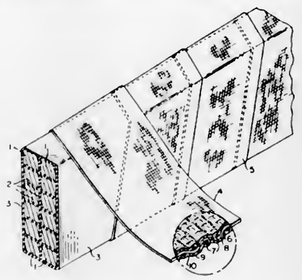
**Int. Cl.² H01B** *13/06*

**U.S. Cl. 156—53** **14 Claims**

**1.** A method of making an electrical article comprising

a. lap-wrapping a conductor with a binding tape having a rough-textured surface which comprises a woven ribbon coated with a dry, non-tacky, non-pressure sensitive, swellable resin composition cured beyond the B-stage;

b. immersing said wrapped conductor into a curable solventless impregnating resin under pressure;



c. removing said wrapped conductor from said solventless impregnating resin; and

d. curing said impregnating resin.

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**3,930,916**

## HEAT RESISTANT PANELS

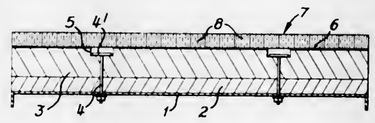
**Stanley John Shelley, Dewsbury, England, assignor to Zirconal Processes Limited, Bromley, England**

**Filed June 18, 1974, Ser. No. 480,504**

**Claims priority, application United Kingdom, June 28, 1973, 30736/73**

**Int. Cl.² C04B** *43/02*

**U.S. Cl. 156—71** **3 Claims**




**1.** A method of manufacturing lining element modules for the hot-face surface of a furnace or oven which comprises:

dividing into laterally extending strips a sheet of refractory fibrous material having fibers extending longitudinally parallel to the flat plane of the sheet,

attaching the resulting strips to a support with the fibers in each strip positioned end-on to said support with an unhardened refractory cement,

said support comprising:

a layer of heat insulating block material,

a backing metal sheet, and

a further heat-insulating layer clamped between said metal sheet and said block material,

and then heating the resulting assembly to harden said cement and fix the strips to said support with the fibers end-on to the support.

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**3,930,917**

## LOW DENSITY LAMINATED FOAM AND PROCESS AND APPARATUS FOR PRODUCING SAME

**Michael D. Esakov, Greer, and Arvid Honkanen, Spartanburg, both of S.C., assignors to W. R. Grace & Co., Duncan, S.C.**

**Filed Sept. 23, 1974, Ser. No. 508,316**

**Int. Cl.² B32B** *3/26*

**U.S. Cl. 156—78** **4 Claims**

**1.** A process for laminating covering material selected from the group consisting of paper and metal foil to foamed polystyrene sheet comprising the steps of:

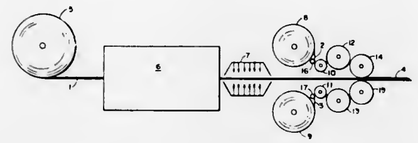
a. aging the thermoplastic foam sheet after it has been extruded;

b. expanding the foam sheet in a steam atmosphere at a temperature in the range of 180°F to 212°F;



c. further expanding said foam sheet by heating it outside of said steam atmosphere until the foam reaches the temperature in the range of 180° to 230°F;

d. heating said covering material until it is above the melting point of the foam; and,



e. applying said heated covering material to the heated and softened foam sheet to bond said sheet to said foam thereby forming polystyrene foam laminate.

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**3,930,918**

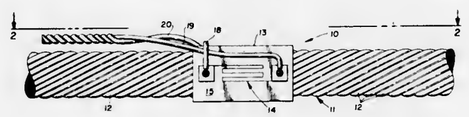
## METHOD OF PREPARING A STEEL CORD FOR THE MEASUREMENT OF STRESS THEREIN

**Bruce Milan Cernik, Medina, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio**

**Filed Apr. 22, 1974, Ser. No. 462,708**

**Int. Cl.² G01M** *17/02*

**U.S. Cl. 156—110 R** **3 Claims**



**1.** A method of preparing a steel cord for the measurement of stress therein comprising the steps of immersing a portion of the steel cord in a melted solder material thereby encapsulating the portion of the wire; permitting said solder to cool and solidify; forming at least one flat surface on said solder; placing a transducer having lead wires associated therewith on said flat surface so that stresses along the steel cord can be monitored by said transducer; building said steel cord into a tire having reinforcing cords therein by forming a channel in the tire by removing at least one of the reinforcing cords, placing said steel cord in the channel so formed, and covering said steel cord to completely encapsulate the same in the tire; conducting said lead wires of said transducer through the tire to expose the same internally of the tire; and temporarily affixing said lead wires to the inside of the tire preparatory to curing of the tire by first wrapping the same in a starch impregnated cloth and thereafter placing a skim stack over said cloth and lead wires.

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**3,930,919**

## PREPARATION OF A THERMOSETTING RESIN ARTICLE

**Peter R. Chant, and Albert W. de Ruyter van Steveninck, both of Delft, Netherlands, assignors to Shell Oil Company, Houston, Tex.**

**Filed Apr. 16, 1973, Ser. No. 351,733**

**Claims priority, application United Kingdom, Apr. 24, 1972, 18890/72**

**Int. Cl.² B29D** *27/00*

**U.S. Cl. 156—155** **2 Claims**

**1.** In the process of producing an article of thermosetting resin which comprises

a. impregnating a flexible, compressible, wettable sheet having an open-cell structure with a curable thermosetting resin,

b. applying a layer of fibrous reinforcing material to at least one side of the impregnated sheet,

c. compressing the sheet and reinforcing layer to the extent that resin is expelled from the sheet into the fibrous reinforcing layer and to impregnate this layer with resin throughout its thickness, and

d. allowing the resin in the sheet and layer to cure while maintaining the compression,

the improvement which comprises uniformly incorporating a gas release agent into the curable thermosetting resin so that gas pressure is generated within the impregnated sheet during compression of the sheet thereby promoting the expulsion of resin from the sheet into the reinforcing layer.

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**3,930,920**

## PROCESS OF MANUFACTURING TENNIS RACKET FRAMES OR THE LIKE

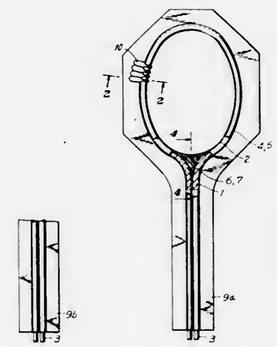
**Karl Heinz Kicherer, Nurtingen, Germany, assignor to Modicus Karl-Heinz Kicherer, Nurtingen, Wurttemberg, Germany**

**Continuation-in-part of Ser. No. 305,586, Nov. 10, 1972, abandoned. This application Feb. 14, 1975, Ser. No. 550,131**

**Claims priority, application Germany, June 20, 1972, 2229920**

**Int. Cl.² B65C** *3/26*

**U.S. Cl. 156—156** **6 Claims**



**1.** A process of manufacturing frames for tennis rackets from a fiber-reinforced plastic material in a mold including a pair of complementary mold halves, each said mold half having an internal mold cavity substantially defining the contour of said racket frame, comprising the steps of:

a. positioning a first layer of a plastic impregnated material in each said mold cavity extending beyond the rim of said mold cavity; superimposing a second layer of a uni-directionally oriented plastic strip material on said first layer;

b. encompassing each of a pair of elastic, gas-impervious, heat resistant hollow tubes with a uni-directionally oriented plastic strip material; winding a further layer of a diagonally oriented plastic strip material about said uni-directionally oriented plastic strip material;

c. positioning one said plastic material-encompassed tube within respectively each of said mold half cavities;

d. filling the spaces intermediate said tubes and the surfaces of each of said mold cavities with a hard foam member;

e. folding the portions of said first plastic impregnated material extending beyond said mold cavity rim about said hard foam member; and

f. closing said mold halves; heating said mold while concurrently pressurizing said tubes so as to polymerize the plastic material of the layers while conforming to the shape of said mold cavities; and withdrawing said elastic tube from said molded tennis racket frame.

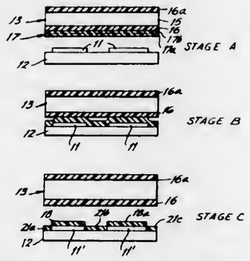
### 3,930,921
## METHOD OF FINISHING LEATHER

**Hugh H. Connett, Wayne, Pa., assignor to Barrett & Company, Newark, N.J.**

**Continuation-in-part of Ser. Nos. 163,611, July 19, 1971, abandoned, and Ser. No. 237,696, March 24, 1972, Pat. No. 3,809,597. This application Aug. 13, 1973, Ser. No. 387,942**

**Int. Cl.² B32B** *31/20, 27/08, 31/12*; **D06P** *3/32*

**U.S. Cl. 156—234** **9 Claims**




1. A method of finishing leather, which comprises:

a. superimposing the leather substrate to be finished on a release layer having a releasable finish coating thereon, at least the outer stratum of the finish coating on said layer comprising a thermoplastic, adhesive acrylic polymer coating adapted to be bonded to and permanently adhere to the surface of the leather; said finish coating comprising a first stratum for forming a base coat of the finish on the leather, said base coat being constituted of said thermoplastic, adhesive acrylic polymer coating; and a second stratum for forming a top coat of the finish on the leather, said top coat being constituted of a hard non-tacky nitrocellulose lacquer;

b. subjecting the superimposed layers to the application of heat and pressure to transfer the finish coating to the leather; and

c. separating the release layer from the thus finished leather.

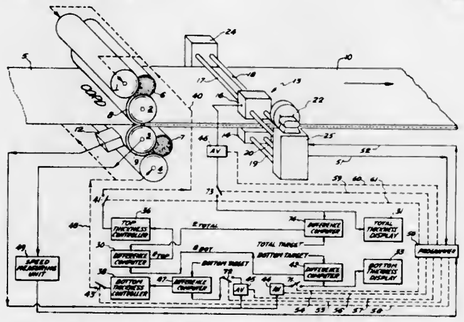
### 3,930,922
## PROCESS CONTROL

**John Francis Donoghue; Dan Edward Forney; Robert Lee Helks, all of Columbus; Gerald A. Lasson, Dublin; Robert Eugene McCall, Columbus, and Charles Ray Rich, Powell, all of Ohio, assignors to Industrial Nucleonics Corporation, Columbus, Ohio**

**Filed June 12, 1972, Ser. No. 261,997**

**Int. Cl.² B32B** *31/06*

**U.S. Cl. 156—243** **13 Claims**



1. Apparatus for automatically controlling a tire calendar to maintain a desired thickness profile in a strip of laminated sheet material including first and second layers of rubber and in intermediate layer of tire cord, in which said first layer of rubber is formed in a substantially continuous fashion between a first pair of coacting calender rolls having adjustable elements at either end thereof for adjusting the spacing between said first pair of rolls to vary the thickness of said first layer of rubber, and said second layer of rubber is formed in a substantially continuous fashion between a second pair of coacting calender rolls having adjustable elements at either end thereof for adjusting the spacing between said second pair of rolls to vary the thickness of said second layer of rubber, and in which said layer of tire cord is laminated between said first and second layers of rubber by adjoining calender rolls, said apparatus comprising

first measuring means located in a fixed position adjacent one of said adjoining calender rolls at the input side thereof for providing indications of the thickness of said first layer of rubber,

second measuring means located at the strip output side of said adjoining calender rolls for providing indications of the total thickness of said strip and being arranged to scan across said strip,

means for averaging the indications of thickness provided by said first measuring means to provide a first signal and for separately averaging the indications of thickness provided by said second measuring means to provide a second signal,

first comparison means for comparing the first signal indication of average first layer thickness with a first layer target to provide a first layer error indication,

first controller means responsive to said first layer error indication for actuating said adjustable elements associated with said first pair of coacting calender rolls to maintain said first layer thickness substantially at said first layer target,

means for coordinating the operation of said first and second measuring means and said averaging means, whereby said averaging means provides a third signal that provides an indication of average first layer thickness for a period of time substantially equal to the time required by said second measuring means to traverse a selected portion of said strip to provide the second signal indication of average total thickness, and said traversal by said second measuring means is delayed by an amount of time necessary to ensure that the respective indications provided by said first and second measuring means and separately averaged by said averaging means to produce said second and third signals, respectively, are derived from substantially the same longitudinal portion of said strip,

combining means responsive to said third signal indication of average first layer thickness and said second signal indication of average total thickness for providing a control signal representing the change in thickness of said layer required to maintain the total thickness of said strip at a total thickness target, and

second controller means responsive to said control signal for actuating said adjustable elements associated with said second pair of coacting calender rolls, to maintain said total thickness substantially at said total thickness target.

### 3,930,923
## NYLON EXTRUSION COATING

**Bentley W. Elliott, Milwaukee, Wis., assignor to Milprint, Inc., Milwaukee, Wis.**

**Continuation-in-part of Ser. No. 68,094, Aug. 31, 1970, abandoned. This application Oct. 4, 1972, Ser. No. 296,499**

**Int. Cl.² B29F** *3/08*

**U.S. Cl. 156—244** **6 Claims**

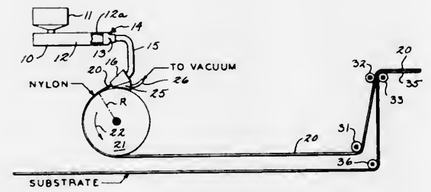
1. An extrusion coating process for the production of flexible packaging films of nylon coated substrates consisting of the steps of:

1. heating nylon in an extruder to a melt temperature of 450° to 550°F, and discharging the nylon as a molten web through an extruder die onto the periphery of a rotating chill roll;

2. arranging the extrusion die at an angle to the chill roll such that the molten nylon web is perpendicular to the lips of the extrusion die when it leaves the die and, further, such that the molten nylon web tangentially contacts the surface of the chill roll;

3. subjecting the zone between the molten nylon web and the underlying surface of the chill roll to sub-atmospheric pressure;






4. rapidly cooling the extruded nylon on the surface of the chill roll to under 200°F to form a nylon web with a volume crystallinity of 35% or less; then

5. withdrawing the cooled nylon web from the chill roll, and thereafter joining the nylon to a substrate web to thereby form the completed packaging film.

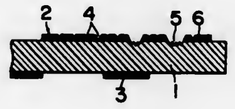
### 3,930,924
## PROCESS FOR MAKING IDENTIFICATION CARDS

**Satoshi Oka, No. 205, Futaba-cho, Futatsugi, Matsudo, Chiba; Tawara Junro, No. 135, Oaza-Kumagawa, Fussa, Tokyo; Akira Ohmameuda, No. 89, Oheda, Kasukabe, Saitama, and Kazumasa Uda, No. 9-3, Hisagi-cho, Tsogo, Yokohama, Kanagawa, all of Japan**

**Division of Ser. No. 253,940, May 17, 1972, Pat. No. 3,897,964. This application Feb. 28, 1973, Ser. No. 337,716**

**Int. Cl.² B32B** *31/18, 31/20*; **B44C** *1/22*

**U.S. Cl. 156—268** **8 Claims**



1. A method for manufacturing an identification card comprising the steps of:

forming a base material,

forming a colored layer, having a color different from the color of the base material, on at least a portion of the base material,

heating and pressing the base material and the colored layer together to embed the colored layer into the base material and integrate it to the base material thereby forming a final flat card ready to be engraved,

and engraving to varying depths a portion of the colored layer and part of the base material under the colored layer with an engraving machine to create an engraved image.

### 3,930,925
## MASTER PLATE TREATING DEVICE FOR A DUPLICATING MACHINE

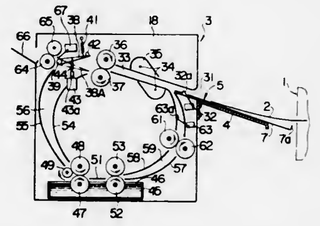
**Masanori Yamanaka, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan**

**Filed Oct. 7, 1974, Ser. No. 512,993**

**Claims priority, application Japan, Oct. 18, 1973, 48-117285**

**Int. Cl.² C23F** *1/02*

**U.S. Cl. 156—345** **4 Claims**



1. A master plate treating device comprising:

a closed path having an inlet for introducing a developed master plate therethrough into the closed path and an outlet for discharging said master plate from the closed path after subjecting the same to selected treatments and permitting the master plate to move therethrough;

heating means mounted in one portion of said closed path interposed between said inlet and said outlet for heating the master plate passing through said one portion of the closed path;

ink-repellent etching solution applying means mounted in another portion of said closed path interposed between said inlet and said outlet for applying an ink-repellent etching solution to the master plate passing through said another portion of the closed path;

means disposed in the vicinity of said outlet for switching the master plate between two directions, one direction leading to said outlet and the other direction permitting the master plate to move further on in said closed path; and

means for controlling said for switching the master plate.

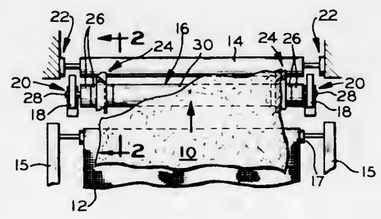
### 3,930,926
## APPARATUS FOR FORMING TUBULAR FIBROUS INSULATORY ARTICLES

**Romain Eugene Loeffler, Defiance, Ohio, assignor to Johns-Manville Corporation, Denver, Colo.**

**Continuation of Ser. No. 180,322, Sept. 14, 1971, abandoned. This application July 2, 1973, Ser. No. 376,064**

**Int. Cl.² B30B** *3/04*; **B29J** *1/00*

**U.S. Cl. 156—446** **7 Claims**



1. In an appartus for forming a tubular shaped article from a continuous fibrous blanket having a binder therein, said blanket having a thick body portion and at least one feathered longitudinal edge portion generally paralleling its direction of advance, including a mandrel for winding said blanket around

to form said tubular article, a pressure roll for forcefully bearing against said blanket while it is being wrapped around said mandrel, and a conveyor for conveying said blanket to said mandrel, the improvement comprising:

means for gathering said feathered edge portion, for displacing said edge portion towards said thick body portion without severing the blanket, and for forming regular ends having a more uniform density on said tubular article, said gathering, displacing, and end-forming means comprising at least one forming member pivotally mounted in the path of said blanket at a point in the path before said blanket reachs said mandrel, said forming member having a first surface extending parallel to the direction of advance of the blanket and inclined to a major face of said blanket at a first obtuse angle, a second surface in the form of an ear contiguous with said first surface and inclined with respect to the advance of the blanket at a second obtuse angle, said second surface being inclined with respect to the face of the blanket a greater degree than said first surface, and a third surface lying in a plane perpendicular to the axis of said mandrel and defining a tube end forming face, said first surface extending around said pressure roll from a location in advance of where said blanket contacts said roll to a point where said feathered edge has been gathered and displaced toward said thick body portion, said second surface being contiguous with and located downstream from said first surface, and said third surface being adjacent to said pressure roll at a point downstream from said second surface.

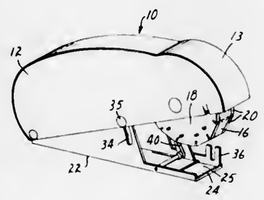
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**3,930,927**

## TAPE DISPENSER FOR DOUBLE-COATED TAPE

**Dorman N. Thompson, Oakdale, Minn., and Aldon W. Haglund, Hudson, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.**

**Filed May 20, 1974, Ser. No. 471,328**
**Int. Cl.² B32B** *31/18, 35/00*
**U.S. Cl. 156—530** **5 Claims**




1. An apparatus for dispensing discrete lengths of double-coated adhesive tape onto a substrate comprising:

a housing having one open side;

an applicating drum rotatably mounted in and near one end of said housing, said drum having a plurality of flat applicating surfaces disposed about the circumference thereof; means for supporting a supply of double-coated adhesive tape in said housing near the opposite end of said housing, said applicating drum and said tape being positioned whereby tape from said supply roll contacts said drum at a tape receiving position remote from a tape applying position where said tape is applied to said substrate, said supply being adapted to feed a continuous length of tape to said applicating drum;

a base pivotally attached to the housing adjacent said opposite end and extending along the open side of said housing, the base having an end with an opening adjacent said one end of said housing through which a single applicating surface can pass;

means attached to said housing and said base to bias said one end of said housing away from said base;

means for rotating said applicating wheel upon movement of said one end of said housing toward and away from said base to bring an applicating surface bearing double-coated tape into an applicating position;

registering means to position said applicating surface in registry with the opening in said base; and

cutting means for severing the double-coated tape on said applicating surface from the supply of tape;

whereby as the apparatus is activated, a severed length of tape is exposed in said opening and transferred to said substrate.

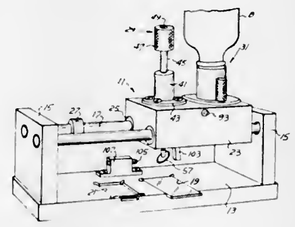
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**3,930,928**

## AUTOMATIC COVER SLIPPER FOR MICROSCOPE SLIDES

**Thomas J. Tapert, 243 Minnesota, Troy, Mich. 48084**

**Filed July 18, 1974, Ser. No. 489,830**
**Int. Cl.² B32B** *31/12*; **G02B** *21/34*
**U.S. Cl. 156—556** **7 Claims**



1. In an automatic cover slipper for microscope slides; a base with spaced upright end walls;

guide means above said base interconnecting said walls;

a manually reciprocating slide on said guide means having an advanced and a retracted position;

there being a pair of parallel spaced transverse slots in said base adapted to receive a microscope slide, and a stack of slide covers respectively;

a slide cover lifter assembly on said reciprocating slide including a depending suction cup overlying and in the advanced position of said reciprocating slide adapted for engaging registry with a slide cover for lifting it off the stack;

a cement dispenser assembly on said reciprocating slide spaced longitudinally of said lifter assembly, mounting a cement reservoir and including a control valve adapted to deliver a drop of cement upon said microscope slide; said lifting assembly on movement of the reciprocating slide to retracted position adapted to transfer the slide cover into registry with the microscope slide and for dropping the slide cover into juxtaposition thereon;

said slide cover lifter assembly including a lifter guide sleeve secured upon said reciprocating slide; there being a bore and a counter-bore in the reciprocating slide in axial registry with said sleeve;

a spring in said counter bore;

a lifter tube guidably projected through said sleeve and yieldably mounted on said spring, supporting said suction cup at its lower end;

and an apertured handle upon the upper end of said tube, said handle aperture communicating with the lifter tube and suction cup.

7. In an automatic cover slipper for microscope slides; a base with spaced upright end walls;

guide means above said base interconnecting said walls;

a manually reciprocating slide on said guide means having an advanced and a retracted position;



there being a pair of parallel spaced transverse slots in said base adapted to receive a microscope slide, and a stack of slide covers respectively;

a slide cover lifter assembly on said reciprocating slide including a depending suction cup overlying and in the advanced position of said reciprocating slide adapted for engaging registry with a slide cover for lifting it off the stack;

a cement dispenser assembly on said reciprocating slide spaced longitudinally of said lifter assembly, mounting a cement reservoir and including a control valve adapted to deliver a drop of cement upon said microscope slide; said lifting assembly on movement of the reciprocating slide to retracted position adapted to transfer the slide cover into registry with the microscope slide and for dropping the slide cover into juxtaposition thereon;

said cement dispenser assembly including an upright cylindrical body mounted on and projected through said reciprocating slide;

said reservoir including a bottle of cement inverted with its neck supported within the upper end of said body;

said control valve being a ball check valve within said body; a bellows suspended within said body having a chamber adapted to receive cement from said bottle;

a vertically adjustable end plate on said bellows mounted on and depending from said body, having an outlet;

an apertured adapter mounted over said outlet and including a depending apertured dispenser needle;

a bellows actuator on said reciprocal slide operably engageable with said adjustable bellows end plate for momentarily compressing the bellows and expelling a measured quantity of cement through said needle;

said bellows actuator including a transverse rock shaft journalled upon said reciprocating slide;

a cantilever secured to said rock shaft and having a bifurcated end operatable registerable with said bellows end plate;

a control arm secured to and depending from said rock shaft;

and a stop on said base in the path of forward movement of said control arm, whereby when the reciprocating slide is moved to advance position, the arm is tilted by said stop actuating said cantilever and expelling a drop of cement down onto the microscope slide.

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**3,930,929**

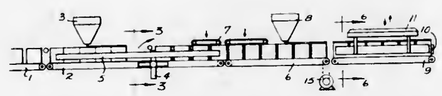
## APPARATUS TO CONSTRUCT WALL PANELS HAVING OPENINGS FOR DOORS AND WINDOWS

**Hans Lingl, Nen-Ulm, Germany, assignor to Lingl Corporation, Paris, Tenn.**

**Continuation-in-part of Ser. No. 409,005, Oct. 23, 1973, Pat. No. 3,849,228. This application May 24, 1974, Ser. No. 473,301**

**Claims priority, application Germany, Nov. 3, 1972, 2253816; July 3, 1973, 2333709. The portion of the term of this patent subsequent to Nov. 19, 1991, has been disclaimed.**

**Int. Cl.² B32B** *31/04*; **E04B** *01/00, 02/02*
**U.S. Cl. 156—558** **5 Claims**



1. An apparatus for the production of wall panels having openings for doors and windows by perpendicular superposition of rows of blocks wherein said blocks have mortar disposed between both their horizontal and vertical faces in which said apparatus comprises:

a. a conveying means adapted to support and transport a row of blocks;

b. means for aligning said blocks with their intended vertical faces horizontally oriented;

c. first applying means for applying mortar of a predetermined thickness onto the intended vertical faces of said blocks;

d. means for turning said blocks by 90° after passage from said first applying means whereby the intended vertical faces are oriented vertically and the intended horizontal faces are oriented horizontally;

e. means for bringing the intended vertical faces together to form vertical joints;

f. second applying means for applying mortar of a predetermined thickness onto said intended horizontal faces of said turned blocks;

g. second aligning means disposed adjacent to an end section of said conveying means for aligning portions of a row of blocks into groups which form piers when rows of blocks comprising said groups are stacked on top of another; and

h. means for transporting a predetermined number of said blocks onto a horizontal support so that a row of a wall panel of such blocks is formed.

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**3,930,930**

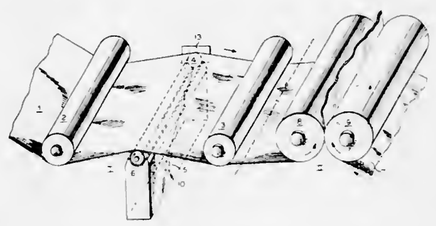
## APPARATUS FOR MANUFACTURING A LAMINATE BY MEANS OF A SOLVENTLESS ADHESIVE

**Rudiger De Keyser, Rillaar, and Andre Depuydt, Teper, both of Belgium, assignors to U.C.B. Societe Anonyme, Brussels, Belgium**

**Division of Ser. No. 209,148, Dec. 17, 1971, Pat. No. 3,840,419. This application June 13, 1974, Ser. No. 479,677**

**Claims priority, application United Kingdom, Dec. 21, 1970, 60585/70**

**Int. Cl.² B05C** *1/08*; **B32B** *31/12*; **C09J** *5/00*
**U.S. Cl. 156—578** **10 Claims**



1. An apparatus for manufacturing a laminate having a width of at least 30 cm. by means of a solventless adhesive, said apparatus comprising:

an adhesive distributor means including a predosing element and an elastic-surfaced rotating element adjacent said predosing element;

means for rotating said elastic-surfaced rotating element;

means for continuously supplying solventless adhesive at a predetermined rate to said distributor means between said elastic-surfaced rotating element and said predosing element, and for applying all of said solventless adhesive from said predosing element to said elastic-surfaced rotating element in a layer having a thickness of from 5 to 50 microns;

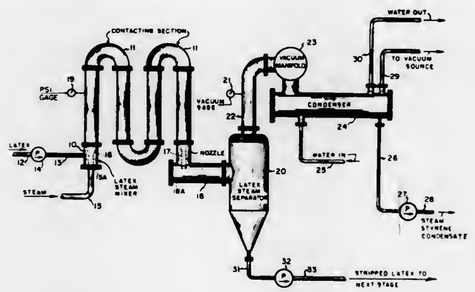
means for moving with respect to said elastic-surfaced rotating element a first film at a linear speed of from 10 to 50 times the circumferential speed of said elastic-surfaced rotating element, and for transferring all of said layer of solventless adhesive from said elastic-surfaced rotating element to said first film in a coating having a thickness of from 0.5 to 5 microns; and

means for bonding said thus coated first film to a second film to form a laminate.

## 3,930,931
## APPARATUS AND METHOD FOR STRIPPING STYRENE FROM AN AQUEOUS DISPERSION OF STYRENE-BUTADIENE POLYMER LATEX

Lawrence C. Baughman, Akron, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 344,816, March 26, 1973, abandoned. This application June 7, 1974, Ser. No. 477,399
Int. Cl.² B01D 1/16, 1/22
U.S. Cl. 159—4 ST 7 Claims




1. In apparatus adapted to remove a volatile material from an aqueous dispersion of particles of a polymeric material wherein the volatile material has a boiling point higher than the water phase of such dispersion, such as for removing styrene from an aqueous latex dispersion of a styrene-butadiene polymer, the combination comprising:

a. a vaporous mixture contacting tube means requiring no external heating and defining an elongated and substantially open and unrestricted pressurable contacting chamber;

b. mixing means connected with one end of said contacting tube means and adapted to mix said dispersion in heated condition with a hot stripping gas to form a vaporous mixture and to inject said vaporous mixture into said contacting chamber to form a turbulent flow of said vaporous mixture through said chamber with said vaporous mixture being maintained at a temperature range of about 212°F–270°F (100°C–132°C) and at a selected pressure above about 5 psig (35 KPa);

c. said contacting chamber being of width selected to permit substantially unrestricted flow and minimum pressure drop of the turbulent flow of said vaporous mixture through said chamber and of length selected to permit an optimum approach to substantially equilibrium saturation of said volatile material into said stripping gas;

d. post contacting tube means connected into a standard flash separator means having vacuum producing means adapted to maintain said post contacting tube means and the chamber of said separator means at a vacuum of about 15–25 inches (38–64 cm) of mercury to separate said volatile material along with said stripping gas from said aqueous dispersion;

e. flow throttling discharge nozzle means connected between said vaporous mixture contacting tube means and said post contacting tube means and adapted to discharge said vaporous mixture from said contacting chamber into said post contacting tube means with the size of said nozzle means being selected to cause said vaporous mixture to discharge and expand into the vacuum within said post contacting tube means with an explosive expansion action and also to maintain said selected pressure within said contacting chamber in combined action with said mixing means;

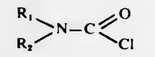
f. means for removing said aqueous dispersion separated as a liquid from said separator means and for separately removing said volatile material along with said stripping gas from said separator means.

## 3,930,932
## PROCESS FOR SIZING CELLULOSE FIBRE CONTAINING MATERIAL

James Axel Christer Björklund, Saltsjo-Boo, and Karin Ulla Elisabet Helmer, Solna, both of Sweden, assignors to Kemanord AB, Stockholm, Sweden

Filed Jan. 31, 1974, Ser. No. 438,317
Claims priority, application Sweden, Jan. 31, 1973, 7301319
Int. Cl.² D21D 3/00
U.S. Cl. 162—158 2 Claims

1. In the known process for sizing cellulose fibers in aqueous suspension or for sizing paper products containing cellulose fibers which comprises treating the cellulose fibers with an amount of a carbamoyl chloride which is sufficient to effect sizing of the cellulose fibers, said carbamoyl chloride having the general formula



wherein $R_1$ is an organic hydrophobic group and $R_2$ is a lower alkyl group or has the same meaning as $R_1$, the improvement which comprises combining with the carbamoyl chloride a material selected from the group consisting of alkyl chloroformates or alkyl isocyanates, wherein the alkyl chain in each instance contains 8 – 40 carbon atoms, the ratio of the carbamoyl chloride to chloroformate or the ratio of the carbamoyl chloride to the isocyanate being within the range of from about 1:0.5 to 1:1.

2. A composition for sizing cellulose fibers in aqueous suspension or paper products containing cellulose fibers comprising a water dispersion of

a. an emulsifier in an emulsifying amount,

b. a carbamoyl chloride as sizing agent, and

c. a material selected from the group consisting of alkyl chloroformates or alkyl isocyanates, wherein the alkyl chain in each instance contains 8–40 carbon atoms and where the ratio of carbamoyl chloride to chloroformate or isocyanate respectively is within the range of from about 1:0.05 to 1:1.

## 3,930,933
## DEBONDED CELLULOSE FIBER PULP SHEET AND METHOD FOR PRODUCING SAME

Donald K. George, Aiken, and Joseph H. Angel, Columbia, both of S.C., assignors to Riegel Textile Corporation, New York, N.Y.

Filed Nov. 25, 1970, Ser. No. 92,936
Int. Cl.² D21D 3/00
U.S. Cl. 162—179 7 Claims

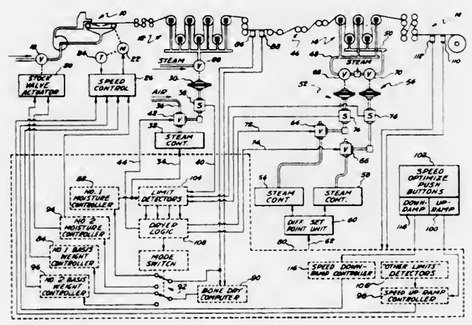
1. A debonded cellulose fiber pulp sheet that is adapted to be fiberized easily by mechanical action to form a fluffy, lofty and absorbent fibrous material, said sheet being impregnated with an admixture of a long chain fatty alkyl cationic compound having at least 12 carbon atoms in at least one alkyl chain, and a natural non-drying oil which has no adverse effect on the pulp and which per se does not effect debonding of the fibers but coacts with the cationic compound to effect debonding of the fibers of the pulp sheet and thereby render it easily fiberizable.



## 3,930,934
## SPEED OPTIMIZATION CONTROL FOR FIBROUS SHEET MAKING MACHINES SUCH AS PAPER MAKING MACHINES WITH DRYER LIMITED CONDITIONS

David Allan Spitz, Columbus, Ohio, assignor to Industrial Nucleonics Corporation, Columbus, Ohio

Continuation of Ser. No. 232,858, March 8, 1972. This application June 5, 1974, Ser. No. 476,464
Int. Cl.² D21F 1/06, 5/00, 9/02, 11/02
U.S. Cl. 162—198 5 Claims




1. In a control system for a fibrous sheet making machine having means for regulating the flow of fibrous material to the machine to control the basis weight and for regulating the dryer system to control the moisture content of the sheet, the improvement of means responsive to a speed up-ramp signal for increasing the speed of the machine, means responsive to the dryer system for detecting a limiting condition for the operation thereof which could prevent the dryer from removing a substantially greater amount of moisture per unit time, and means responsive to detection of said limiting condition for discontinuing said regulating and substituting therefor first and second signals for regulation of the fibrous material flow and machine speed, respectively, to control the moisture content and prevent a change in basis weight when the moisture is changed and a third signal to regulate the machine speed to control basis weight.

3. A method for controlling a fibrous sheet forming machine having a stock valve, a steam dryer with a steam valve and means for controlling the speed of the sheet being formed, the drying rate of the dryer having a limit, comprising:

a. controlling the sheet basis weight and moisture content with the stock valve and steam valve respectively, while increasing the speed of the sheet until the limit on the dryer rate is reached:

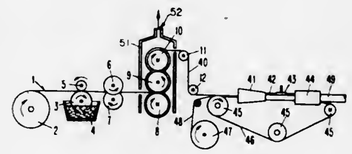
b. sensing the limit condition being reached discontinuing step (a) above and,

c. in response to the limit on the dryer rate being reached, controlling the sheet moisture with first and second signals that change the stock valve and sheet speed, respectively, to prevent a change in basis weight when the moisture is changed, while controlling the sheet basis weight with a third signal that changes the sheet speed, and at the same time maintaining the dryer drying rate at the limit.

## 3,930,935
## APPARATUS FOR MAKING WEBS OF FILTERING MATERIAL FOR TOBACCO PRODUCT FILTERS, PARTICULARLY CIGARETTE FILTERS

Paul Adolf Muller, Triesenberg, Liechtenstein, and Hans Muster, Hadlikon-Hinwil, Switzerland, assignors to Celfil Company Establishment, Vaduz, Liechtenstein

Division of Ser. No. 161,366, July 8, 1971, Pat. No. 3,849,526. This application Nov. 29, 1973, Ser. No. 420,095
Claims priority, application Switzerland, May 13, 1971, 7064/71
Int. Cl.² D21H 5/06, 5/16
U.S. Cl. 162—361 3 Claims



1. Apparatus for treating an elongated web of fibrous material to render the same particularly adapted to be gathered transversely and enclosed in a wrapper to make a filter cord subdividable into filter rods and filter plugs for cigarettes, comprising:

a first pair of meshing non-contacting rotating rolls provided with narrow longitudinal grooves alternating with narrow longitudinal ribs, said grooves and ribs being parallel to the axes of said rolls, said ribs being adapted to engage a web of fibrous material passed through the bight between said rolls and to prevent appreciable longitudinal contraction of the web so that the latter is stretched longitudinally in closely-spaced successive narrow transverse areas to loosen and expose fibers in such areas without substantial impairment of the longitudinal continuity of the web;

a second pair of non-contacting meshing rotating rolls provided with narrow circumferential grooves alternating with narrow circumferential ribs adapted to engage a web of fibrous material passed through the bight between said rolls and to prevent appreciable lateral contraction of the web so that the web is grooved in a direction parallel to its travel and stretched transversely of the grooves in a plurality of closely-spaced narrow longitudinal areas to loosen and expose fibers in such areas without substantial impairment of the transverse continuity of the web; and

means for advancing a web of fibrous material succesively through the bights between the rolls of said first and second pairs.

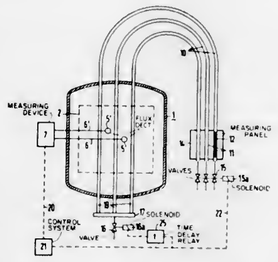
## 3,930,936
## NUCLEAR REACTOR

Werner Aeite; Erich Klar, and Hans-Gerd Spillekothen, all of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Apr. 24, 1973, Ser. No. 353,999
Claims priority, application Germany, May 8, 1972, 2222432
Int. Cl.² G21C 17/00
U.S. Cl. 176—19 R 4 Claims

1. A nuclear reactor having a reactor core and means for determining the flux density in this core and including flux detectors located in the core at fixed positions and flux probes which are movable in the core through a range of positions; wherein the improvement comprises means for moving said movable probes automatically in response to actuation of said

detectors by flux densities of predetermined value, one of said values being lower relative to another and said operating




means being responsive to actuation of said detectors by either of these values independently of the other value.

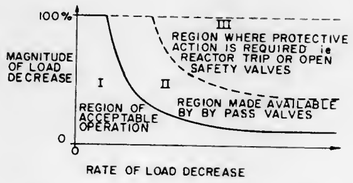
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**3,930,937**

## STEAM RELIEF VALVE CONTROL SYSTEM FOR A NUCLEAR REACTOR

**Jose Marcelo Torres, Simsbury, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.**

**Filed Apr. 2, 1973, Ser. No. 347,260**
**Int. Cl. G21c** *7/32, 17/10, 7/00*
**U.S. Cl. 176—20** **3 Claims**




**1.** A control rod interlock system for a nuclear power plant having a nuclear reactor with a core and control rods for controling the power output thereof, and having a working fluid circuit for providing the working fluid to a load, and having steam relief valves for diverting the working fluid around the load, the interlock system comprising:

a. means responsive to said working fluid for detecting a condition of said working fluid;

b. means responsive to said detecting means for generating a signal indicative of a steam relief valve demand; and

c. means responsive to said signal indicative of steam relief valve demand for preventing the movement of said control rods out of said core of said reactor.

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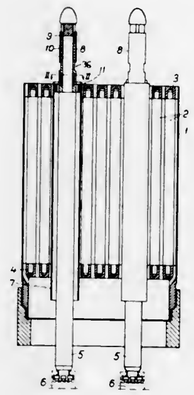
**3,930,938**

## ATTACHMENT AND LOCKING OF FINGER CONTROL RODS IN A NUCLEAR REACTOR OF BWR TYPE

**Ake Bergiund, and Antti Suvanto, both of Vasteras, Sweden, assignors to Asea-Atom, Vasteras, Sweden**

**Continuation-in-part of Ser. No. 290,006, Sept. 18, 1972, abandoned. This application Oct. 4, 1973, Ser. No. 403,492**
**Claims priority, application Sweden, Oct. 11, 1971, 12819/71**
**Int. Cl.² G21C** *7/08*
**U.S. Cl. 176—36 C** **8 Claims**

**1.** In a nuclear reactor of BWR type, having a fuel assembly and a finger control rod having a longitudinal axis movable between upper and lower positions with respect to said fuel assembly, at least one member movable in the direction of the longitudinal axes of the control rod, and means releasably securing said control rod to said member, said assembly and said control rod having cooperating means thereon responsive to the position of the control rod with respect to the fuel assembly to permit release of said locking means only when



said control rod is moved to its upper position with respect to said fuel assembly.

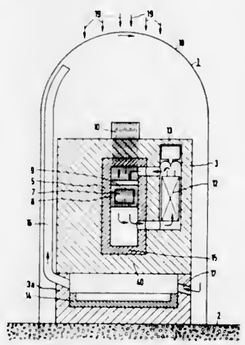
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**3,930,939**

## PRESSURE SUPPRESSION SYSTEM FOR A NUCLEAR REACTOR

**Dietmar Bittermann; Claus Goetzmann; Klaus Hassmann; Hans-Joachim Preuss, all of Erlangen; Manfred Schatz, Nurnberg, and Peter Rau, Mittelehrenbach, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany**

**Filed June 27, 1973, Ser. No. 374,121**
**Claims priority, application Germany, July 14, 1972, 2234782**
**Int. Cl.² G21C** *9/00*
**U.S. Cl. 176—38** **6 Claims**



**1.** A gas-coolant nuclear reactor including a core enclosed by a pressure vessel, a melted core intercept basin below the core and a metal containment vessel enclosing the vessel and basin and having a metal top having an outer surface which is exposed to the outside of the top; wherein the improvement comprises means for conducting a fluid coolant cooling a melted core in said basin, from the basin to an extended area of the inside of said top of said metal containment vessel for cooling by the conduction of heat through the containment vessel's wall to the outside of the containment vessel, said top of said containment vessel having double walls between which said conducting means connects.

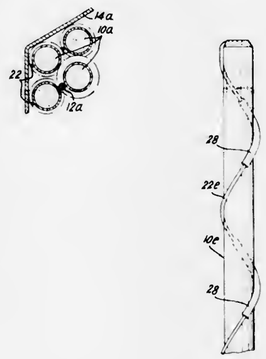


**3,930,940**

## NUCLEAR FUEL SUBASSEMBLY

**André Cayol; André Chalony, both of Aix-en-Provence; Georges Clottes, Manosque; Jean-Pierre Praizey; Jean Skok, both of Aix-en-Provence, and Henri Venobre, Vinon-sur-Verdon, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France**

**Filed Dec. 10, 1970, Ser. No. 96,782**
**Claims priority, application France, Dec. 12, 1969, 69.43162; Nov. 20, 1970, 70.41793**
**Int. Cl.² G21C** *3/08, 3/10*
**U.S. Cl. 176—78** **5 Claims**



**1.** A nuclear fuel sub-assembly comprising a shroud of substantially polygonal cross-section containing at least one cluster of elongated parallel fuel pins disposed on a uniform lattice, said shroud having an inlet and an outlet for receiving and discharging a coolant which circulates in the shroud along a direction generally parallel to the pins, each fuel pin being provided over at least the greater part of its length with radially projecting helical spacer means providing a minimum spacing between each fuel pin and the adjacent pins or the shroud, the length of the radial projection of the spacer means on each outer fuel pin of the cluster where said spacer means engage the shroud being smaller than the length of the radial projection of the spacer means on each inner fuel pins of the cluster, the spacer means being a wire, the wires of the inner fuel pins and mounted in tube sections having an external diameter the same as that of the wires carried by the inner fuel pins, said tube sections being placed in the zones in which the outer fuel pins confront inner fuel pins and adjacent outer pins and internal longitudinal ribs on said shroud projecting between the outer fuel pins.

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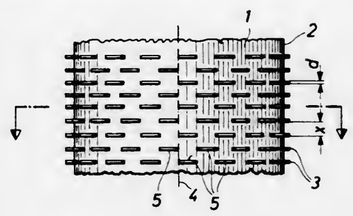
**3,930,941**

## FUEL ELEMENT FOR A REACTOR

**Ekkehard Meerwald, Monchweiler, and Mario Dalle Donne, Blankenloch-Buchig, both of Germany, assignors to Gesellschaft fur Kernforschung m.b.H., Karlsruhe, Germany**

**Filed Nov. 9, 1973, Ser. No. 414,447**
**Claims priority, application Germany, Nov. 14, 1972, 2255699**
**Int. Cl. G21c** *3/08*
**U.S. Cl. 176—81** **3 Claims**

**1.** A nuclear fuel element cladding tube having a longitudinal axis and an outer surface, comprising a plurality of fins carried on said surface, said fins being arranged in a plurality of parallel-spaced rows extending at right angles to said axis, the fins in any one of said rows being spaced from one another and being offset relative to the fins of an immediately adjacent row, the distance between immediately adjacent rows being twice the height of the individual fins and the distance between two adjacent fins in alignment parallel to said axis being four times said height.



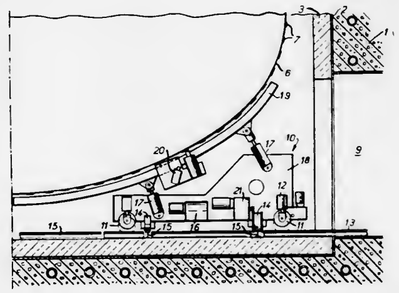
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**3,930,942**

## INDUSTRIAL TECHNIQUE

**Paul Thome, Saint-Cloud, France, assignor to Babcock-Atlantique, S.A., Paris, France**

**Filed Mar. 22, 1973, Ser. No. 343,769**
**Claims priority, application France, Mar. 27, 1972, 72.10599**
**Int. Cl. G21c** *17/08*
**U.S. Cl. 176—87** **13 Claims**



**1.** An installation for a fluid having an undesirable effect, comprising a normal retaining wall for the fluid, a second wall adapted to retain the fluid in the event of breakdown of the first wall, and a space between the two walls, characterized in that the surface of the first wall disposed facing the second wall is bare and the said space is adapted to receive a trolley which can travel along said surface and which is equipped with at least one repair device for the said installation.

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**3,930,943**

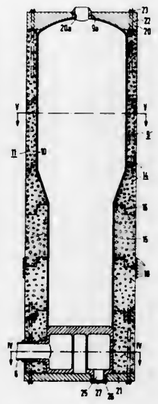
## NUCLEAR POWER PLANT COMPONENT PROTECTION

**Eberhard Michel, Nuremberg; Richard Ruf, and Heinrich Dorner, both of Erlangen, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany**

**Filed Nov. 21, 1973, Ser. No. 417,798**
**Claims priority, application Germany, Nov. 28, 1972, 2258226**
**Int. Cl. G21f** *3/00;* **G21c** *11/02*
**U.S. Cl. 176—87** **9 Claims**

**1.** A nuclear power plant installation comprising a concrete biological shield forming a pit, a reactor pressure vessel positioned in said pit, a steam generator having a substantially cylindrical side wall and positioned on the outside of said pit, and coolant pipe lines of substantially cylindrical shape and interconnecting said vessel and generator by extending through said shield; wherein the improvement comprises segmentally cylindrical segments interfitted to form cylindrical

enclosures surrounding said generator and line on the outside of said shield, and which are made of non-metallic heat-



insulating material, and high-tensile strength metal elements encircling said segments.

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**3,930,944**
**UROKINASE PRODUCTION**

**Evelyn Carmon Nicol, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.**

**Filed Mar. 31, 1975, Ser. No. 564,966**
**Int. Cl.² C12K** *9/00*; **C07G** *7/026*
**U.S. Cl. 195—1.7** **2 Claims**

1. The process of producing urokinase from a contiguous culture of live kidney cells in an aqueous nutrient medium containing, in addition to the usual cell culture maintenance additives, between 6 and 50 $\mu$g. of pronase per 100 milliliters of said nutrient.

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**3,930,945**
**UROKINASE PRODUCTION**

**L. James Lewis, Iowa City, Iowa, assignor to Abbott Laboratories, North Chicago, Ill.**

**Filed Mar. 31, 1975, Ser. No. 564,966**
**Int. Cl.² C12K** *9/00*; **C07G** *7/026*
**U.S. Cl. 195—1.7** **2 Claims**

1. The process of producing urokinase from a contiguous culture of live kidney cells in an aqueous nutrient medium containing, in addition to the usual cell culture maintenance additives, between 0.3 and 1.2 parts by weight of glycine per 100 parts by volume of said nutrient.

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**3,930,946**
**YEASTS**

**Paul Maldonado, Chatou; Jean-Pierre Desmarquest; Claude Gaillardin, both of Paris, and Daniel Binet, Rueil Malmaison, all of France, assignors to Institut Francaise du Petrole, des Carburants et Lubrifiants, Paris and Institut Francais du Petrole, Rueil-Malmaison, both of, France**

**Filed Nov. 26, 1973, Ser. No. 418,838**
**Claims priority, application France, Nov. 24, 1972, 72.41913**
**Int. Cl.² C12B** *1/00*
**U.S. Cl. 195—28 R** **6 Claims**

1. A process for the preparation of a stable diploid of *Candida lipolytica* which comprises (a) in a first stage, separately cultivating two haploid strains of *Candida lipolytica* of opposed sign in a medium rich in assimilable carbon nutrient; (b) in a second stage, cultivating the two resultant strains together in a medium poor in assimilable carbon nutrient; and (c) in a third stage, after the appearance of diploid colonies, treating them with a mutagenic agent to stabilize them.

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**3,930,947**
**METHOD OF PRODUCING MICROBIAL CELLS FROM METHANE**

**Yasushi Morinaga; Shigeru Yamanaka, both of Yokohama, and Yoshio Hirose, Fujisawa, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan**

**Filed Dec. 18, 1974, Ser. No. 534,144**
**Claims priority, application Japan, Dec. 26, 1973, 49-1201**
**Int. Cl.² C12B** *1/00*
**U.S. Cl. 195—28 R** **6 Claims**

1. A method which comprises culturing Methylomonas sp. FERM P-2400 in an aqueous culture medium containing an assimilable nitrogen source and inorganic salts, in the presence of methane as the major carbon source, until the cells of said strain multiply in said culture medium, and recovering the multiplied cells from said medium.

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**3,930,948**
**ENZYMATIC METHOD FOR PRODUCING AROMATIC ETHYLAMINES**

**Konosuke Sano, Machidi; Keizo Matsuda, Kawasaki; Hidetsugu Nakazawa, Uji, and Koji Mitsugi, Yokohama, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan**

**Filed July 29, 1974, Ser. No. 492,906**
**Claims priority, application Japan, Aug. 3, 1973, 48-87399**
**Int. Cl.² C12D** *13/00*
**U.S. Cl. 195—29** **3 Claims**

1. A method for producing substituted ethylamine, which comprises holding an amino acid and an effective amount of decarboxylase produced by a Micrococcus in an aqueous solution at pH 5 to 12 at a temperature of 10°to 50°C, and recovering the substituted ethylamine produced from the aqueous solution, said amino acid being tryptophan, 5-hydroxytryptophan, 5-fluorotryptophan, 6-fluorotryptophan, 4-methyltryptophan, 5-methyltryptophan, 6-methyltryptophan, 7methyltryptophan, 5-methoxytryptophan, phenylalanine, $\beta$-phenylserine, 2-hydroxyphenylalanine, 4-aminophenylalanine, 4-chlorophenylalanine, 2-fluorophenylalanine, 3-fluorophenylalanine, 4-fluorophenylalanine, tyrosine, 3-nitrotyrosine, 3-iodotyrosine, 3,5-diiodotyrosine, or 3,5-dibromotyrosine, and said substituted ethylamine being tryptamine, serotonin, $\beta$-(5-fluoroindolyl) -ethylamine, $\beta$-(6-fluoroindolyl) -ethylamine, $\beta$-(4-methylindolyl) -ethylamine, $\beta$-(5-methylindolyl) -ethylamine, $\beta$-(6-methylindolyl) -ethylamine, $\beta$-(7-methylindolyl) -ethylamine, $\beta$-(5-methoxyindolyl) -ethylamine, $\beta$-phenylethylamine, $\beta$-phenyl-$\beta$-hydroxyethylamine, $\beta$-(2-hydroxyphenyl) -ethylamine, $\beta$-(4-aminophenyl) -ethylamine, $\beta$-(4-chlorophenyl) -ethylamine, $\beta$-(2-fluorophenyl) -ethylamine, $\beta$-(3-fluorophenyl) -ethylamine, $\beta$-(4-fluorophenyl) -ethylamine, $\beta$ -(4-hydroxyphenyl) -ethylamine, $\beta$-(3nitor-4-hydroxyphenyl) -ethylamine, $\beta$-(3iodo-4-hydroxyphenyl) -ethylamine, $\beta$-(3,5-diiodo-4-hydroxyphenyl) -ethylamine, or $\beta$-(3,5-dibromo-4-hydroxyphenyl) -ethylamine.

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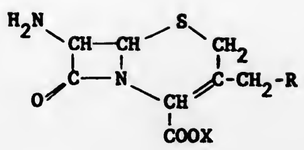
**3,930,949**
**PROCESS FOR THE PRODUCTION OF 7-AMINO-$\Delta^3$-CEPHEM DERIVATIVES**

**Carl Kutzbach, Wuppertal, and Uwe Petersen, Cologne, both of Germany, assignors to Bayer Aktiengesellschaft, Germany**

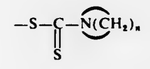
**Filed Oct. 22, 1974, Ser. No. 517,002**
**Claims priority, application Germany, Nov. 3, 1973, 2355078**
**Int. Cl.² C12D** *1/02*
**U.S. Cl. 195—29** **17 Claims**

1. A process for the production of a compound of the formula:

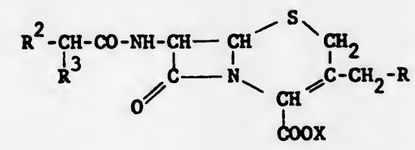




wherein:
R is hydrogen; hydroxy; amino; cyano; —O—CO—$NH_2$;



wherein $n$ is an integer from 4 to 6; —O—CO—$R^1$; —NH—CO—$R^1$ or —S—CS—O—$R^1$ wherein $R^1$ is alkyl of 1 to 4 carbon atoms; -S-Het or Het wherein Het is a 5- or 6-membered hetero-aromatic ring unsubstituted or substituted by 1 to 3 alkyl moieties of 1 to 3 carbon atoms or said ring having a positive charge; and
X is hydrogen; or, is a negative charge if R has a positive charge,
which comprises reacting a compound of the formula:



or a salt thereof with an inorganic or organic base,
wherein:
R and X are as above defined;
$R^2$ is phenyl, phenoxy, 2-thienyl or 2-furyl, unsubstituted or substituted in the ring by amino, hydroxy or alkyl of 1 to 3 carbon atoms; and
$R^3$ is hydrogen, amino, hydroxy or alkyl of 1 to 3 carbon atoms,
with penicillinacylase which is bound by covalent bonds to a water-insoluble carrier.

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**3,930,950**
**METHOD OF IMMOBILIZING AN ENZYME**

**Garfield P. Royer, Worthington, Ohio, assignor to The Ohio State University Research Foundation, Columbus, Ohio**

**Filed Apr. 9, 1974, Ser. No. 459,300**
**Int. Cl.² C07G** *7/02*
**U.S. Cl. 195—63** **16 Claims**

1. A method of immobilizing an enzyme comprising:
providing an activated support member which is capable of reacting with an enzyme to cause said enzyme to become chemically bonded thereto;
in sequence, (1) mixing an enzyme and a substrate and thereby forming an enzyme-substrate complex and (2) contacting said activated support member with the enzyme-substrate complex, said support member being maintained in activated condition prior to contact with the complex by preventing its contact with reactive materials, whereby said enzyme moiety of said enzyme-substrate complex becomes chemically bonded to said support member.

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**3,930,951**
**BONDING ENZYMES TO POROUS INORGANIC CARRIERS**

**Ralph A. Messing, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.**

**Filed May 28, 1974, Ser. No. 473,717**
**Int. Cl.² C07G** *7/02*
**U.S. Cl. 195—63** **6 Claims**

1. A method of preparing an immobilized enzyme composite which comprises the steps of (1) reacting an essentially waterinsoluble inorganic carrier with a solution of 4,4'-bi(2-methoxybenzenediazonium chloride) to form surface diazo groups on the carrier, the carrier being porous and having an average pore diameter at least as large as the larger of the enzyme or its substrate but less than about 1000A, the carrier consisting of particles having an average particle size between about 4 to 200 mesh, U.S. Standard Sieve, and selected from the group consisting of porous glass, porous alumina, porous silica, and porous mixtures of alumina and silica; (2) removing the surface-treated carrier from the reaction solution; and (3) then reacting the treated carrier with an aqueous enzyme solution to chemically couple enzymes to the carrier through the surface diazo groups.

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**3,930,952**
**MICROBIOLOGICAL REDUCTION OF $PGA_2$ AND 15-EPI $PGA_2$**

**George Greenspan, Narberth, Pa., and Michael R. G. Leeming, Canterbury, England, assignors to American Home Products Corporation, New York, N.Y.**

**Continuation of Ser. No. 420,407, Nov. 30, 1973, abandoned. This application Apr. 4, 1975, Ser. No. 565,034**
**Int. Cl.² C12D** *1/02*
**U.S. Cl. 195—51 R** **13 Claims**

1. A process for the preparation of 7-[2-(3-hydroxy-1-octenyl)-5-oxo-cyclopentyl]-5-heptenoic acid which comprises subjecting 7-[2-(3-hydroxy-1-octenyl)-5-oxo-cyclopenten-1-yl]-5-heptenoic acid to the fermentative action of an organism selected from the genera:
a. *Streptomyces*,
b. *Pseudomonas*, and
c. *Corynebacterium*;
and then isolating the prostaglandin product.

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**3,930,953**
**GLUCOSE OXIDASE POOR IN CATALASE AND PROCESS FOR OBTAINING IT**

**Josef Stärk, Marburg, Lahn, Germany, assignor to Behringwerke Aktiengesellschaft, Marburg, Lahn, Germany**

**Filed Feb. 15, 1974, Ser. No. 443,149**
**Claims priority, application Germany, Feb. 17, 1973, 2308013**
**Int. Cl.² C07G** *7/028*
**U.S. Cl. 195—62** **7 Claims**

1. A process for obtaining glucose oxidase poor in catalase which comprises precipitating a prepurified glucose oxidase composition with a water-soluble salt of an acridine base, and subsequently purifying it by chromatography on a cation exchanger and an anion exchanger.

7. Glucose oxidase poor in catalase, prepared by the process of claim 1, containing more than 250 units/mg of protein of glucose oxidase activity and less than 0.1 unit/mg of protein of catalase activity.

**3,930,954**

## NEUTRAL PROTEASE USEFUL FOR ANIMAL TISSUE AND CELL CULTURE

**Yoshio Irie, Matsudo, Japan, assignor to Godo Shusei Kabushiki Kaisha, Tokyo, Japan**

**Filed May 30, 1974, Ser. No. 474,771**
**Claims priority, application Japan, May 31, 1973, 48-61127**
**Int. Cl.² C07G** *7/02*; **C12K** *9/00*; **C12D** *13/10*
**U.S. Cl. 195—62** **1 Claim**

1. A neutral protease having the following characteristics:
a. optimum pH of 8.5 for proteolytic activity to casein,
b. stable within a pH range of 4–9,
c. active within a temperature range of 20°–75°C, with the optimum temperature being 60°C,
d. absence of activity at pH below 3 and pH above 10, and absence of activity upon heating at 65°C for 10 minutes,
e. activity inhibited by ethylene-diaminetetraacetate, citric acid, o-phenanthroline, 2,2'-dipyridyl, sodium fluoride, N-bromosuccinimide and iodine,
f. activity enhanced by $Ca^{++}$, $Mn^{++}$, $Mg^{++}$, $Fe^{++}$, $Fe^{+++}$ and $Al^{+++}$,
g. molecular weight of 35,900 as determined by ultracentrifugal analysis,
h. elemental analysis of 46.57% C, 7.17% H, 31.57% O, 14.48% N and 0.21% S, and
i. cleaves the peptide bonds in the oxidized B-chain of insulin at positions Phe(1)-Val(2), His(5)-Leu(6), His(10)-Leu(11), Glu(13)-Ala(14), Ala(14)-Leu(15), Leu(15)-Tyr(16), Tyr(16)-Leu(17), Leu(17)-Val(18), Gly(23)-Phe(24), Phe(24)-Phe(25), Phe(25)-Tyr(26) and Lys(29)-Ala(30).

**3,930,955**

## PROCESS FOR PRODUCING PTERIN DEAMINASES HAVING ANTITUMOR ACTIVITY

**Hitoshi Kusakabe; Kenjiro Kodama; Yuichirow Midorikawa; Haruhiko Machida; Akira Kuninaka, and Hiroshi Yoshino, all of Choshi, Japan, assignors to Yamasa Shoyu Kabushiki Kaisha, Choshi, Japan**

**Filed May 13, 1974, Ser. No. 469,689**
**Claims priority, application Japan, May 12, 1973, 48-52101**
**Int. Cl.² A61K** *37/48*; **C12D** *13/10*
**U.S. Cl. 195—66 R** **11 Claims**

1. A process for the production of pterin deaminase which comprises growing a microorganism selected from the genera Aspergillus, Mucor, Rhizopus, and Penicillium, extracting pterin deaminase, and isolating the extracted pterin deaminase.

**3,930,956**

## METHOD FOR THE GENETIC DETECTION OF MICROORGANISMS

**Elliot Juni, Ann Arbor, Mich., assignor to The Regents of the University of Michigan, Ann Arbor, Mich.**

**Filed Oct. 29, 1973, Ser. No. 410,533**
**Int. Cl.² C12K** *1/04*
**U.S. Cl. 195—103.5 R** **34 Claims**

1. A method for detecting the presence of a specific microorganism in a biological sample comprising the steps o:
a. contacting said biological sample with an aqueous solution containing a surfactant capable of lysing microorganism cells present in said biological sample to form a sterile, crude, aqueous extract comprising endogenous deoxyribonucleic acid;
b. contacting a viable, transformable variant of said specific microorganism with said crude extract to form a mixture, said specific microorganism possessing a distinguishing characteristic relative to said variant, said variant being supported on a microbiological medium capable of diffusing aqueous solutions; and
c. subjecting said mixture to an analysis for detecting the presence of said distinguishing characteristic; said surfactnat in step (a) being present in said aqueous solution at a concentration sufficient to lyse substantially all of the microorganism cells present in said biological sample while sufficient to destroy a substantial amount of said variant upon contacting said variant with said crude extract in step (b) and during the diffusion of said crude, aqueous extract into said microbiological medium.

**3,930,957**

## APPARATUS AND METHOD FOR BIOLOGICAL ANALYSIS

**John P. Cummings, Bloomington, Minn., and Robert B. Koch, Starkville, Miss., assignors to Honeywell Inc., Minneapolis, Minn.**

**Filed July 11, 1974, Ser. No. 487,706**
**Int. Cl.² C12K** *1/04*
**U.S. Cl. 195—103.5 R** **10 Claims**

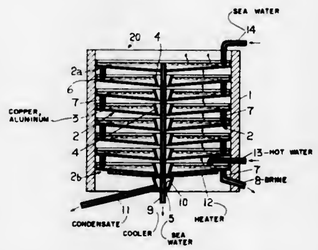
1. A continuous method for determining the concentration of a component of interest in a sample wherein the detection of the concentration of charge carriers of an ionic indicating product species of an enzyme-catalyzed reaction is indicative of the concentration of said component of interest, said method comprising the steps of:
combining said sample with a substantially ionically inactive carrier solution containing an organic buffer;
flowing the combined solution through a quantity of an enzyme selected to catalyze the desired reaction, wherein said enzyme is immobilized in a manner which allows free contact between the solution components and the enzyme molecules occasioning substantially no loss of enzyme thereby;
measuring the increase in conductance of said combined solution;
generating an output indicative of the concentration of said component of interest;
reclaiming said carrier solution after said enzyme catalyzed reaction by reducing the conductance of the reacted solution substantially to that existing before said reaction; and
recycling said reclaimed carrier solution to be reused with subsequent samples.

**3,930,958**

## DESALINATION APPARATUS

**Nobuo Maruichi, Ikeda, Japan, assignor to Zeoplant Co., Ltd., Osaka, Japan**

**Filed May 29, 1974, Ser. No. 474,192**
**Int. Cl.² B01D** *1/22*, *1/26*, *3/02*
**U.S. Cl. 202—174** **7 Claims**




4. A desalination apparatus comprising, in combination, at least three evaporating-condensing elements coaxially superposed in a vertical structure, with circumscribing rims sealed against a casing and inwardly declining bottom diaphragms; a feed tube above the topmost one of said elements for introducing salt water to be desalinated; said diaphragms having upwardly diverging inner walls defining central ducts which constitute an axial passageway through the structure; liquid-conveying discharge pipes leading from each of said elements to the next lower element, except of the lowermost one of said elements, which has instead a tube for discharging concentrated salt water; means for heating said lowermost element; a drain receiver below the lowermost one of said ducts for leading away condensed vapors; and a vertical, vapor-condensing and feed conveying cooling pipe projecting with its top into said topmost element, below the water level therein, and passing downward through said axial passageway and drain receiver.

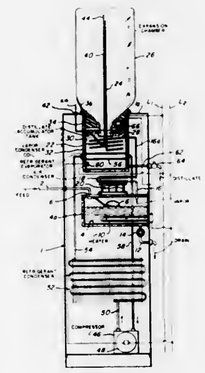


**3,930,959**

## COMBINED WATER COOLER & DISTILLER

**John D. Kirschmann, 933 Anderson St., Bismarck, N. Dak. 58501**

**Filed Aug. 27, 1973, Ser. No. 392,121**
**Int. Cl.² B01D** *3/42*, *3/00*
**U.S. Cl. 202—181** **4 Claims**



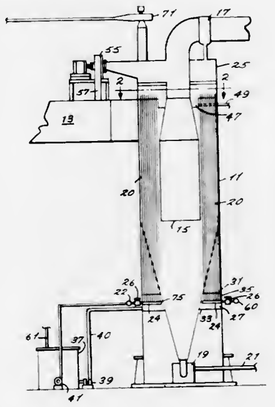
1. A combination water distiller and cooler comprising:
a boiler container and associated heating means for generating steam from water;
a raw water supply conduit connected to said boiler container;
a steam condensing coil in fluid flow communication with said boiler container;
a distilled water accumulating tank in fluid flow communication with the outlet of said condensing coil, said condensing coil being disposed in heat exchange relation with distilled water accumulated in said tank;
a refrigerant compressor, condenser and evaporator interconnected in refrigerant flow relationship in a closed refrigeration circuit, said evaporator being disposed in heat exchange relation with said accumulating tank so as to cool the water accumulating therein, the cooling effect of said evaporator and cooled distilled water serving to condense steam flowing through said steam condensing coil;
an expansion chamber in the form of a vessel mounted on the top of said distilled water accumulating tank and having an outlet of reduced area at the bottom end thereof opening into the upper end of said accumulating tank, and said steam condensing coil terminating in a tubular segment extending upwardly within said vessel through said outlet at the bottom end thereof to a point adjacent the top of said vessel; and
air flow passage means extending upwardly inside of said vessel through said outlet at the bottom thereof and having a first open end exposed to the surrounding atmosphere and a second open end within said vessel.

**3,930,960**

## EVAPORATOR-CONDENSER UNIT FOR PRODUCING POTABLE WATER FROM SEWAGE

**Fred W. Taylor, 60 Village Circle, Bartow, Fla. 33830**

**Filed May 28, 1974, Ser. No. 473,676**
**Int. Cl.² B01D** *3/02*
**U.S. Cl. 202—185 R** **6 Claims**



1. An evaporator-condenser unit comprising an elongated enclosed housing defining a chamber therein,
means for introducing hot combustion gases into the upper portion of said chamber, said gases being forced in a cyclonic wind downwardly about the inside periphery of said chamber,
an array of tubes positioned about the inside periphery of said chamber, said hot gases impinging upon and passing about said tubes,
means for periodically cleaning said tubes of particulate matter, said cleaning means including a plurality of injection nozzles, one each positioned at the mouth of a corresponding tube,
means for pumping relatively cool sanitary waste water up through said tubes, said waste water cooling said tubes to thereby provide a plurality of surfaces upon which the water vapor in said hot gases are condensed, the cyclonic wind action of said gases in said chamber forcing said condensation from said tubes downwardly in said chamber,
means for collecting said condensation proximate the bottom of said chamber, and
means for conducting said gases away from said chamber after passing through said array of tubes.

**3,930,961**

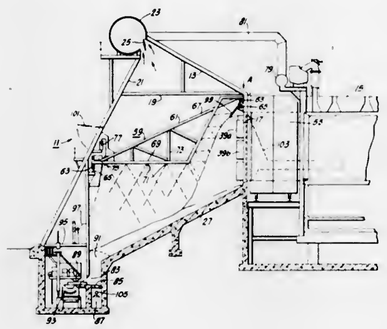
## HOODED QUENCHING WHARF FOR COKE SIDE EMISSION CONTROL

**John D. Sustarsic, McKees Rocks, and Ronald O. McClelland, Pittsburgh, both of Pa., assignors to Koppers Company, Inc., Pittsburgh, Pa.**

**Filed Apr. 8, 1974, Ser. No. 458,680**
**Int. Cl.² C10B** *39/04*, *27/00*
**U.S. Cl. 202—227** **8 Claims**

1. In apparatus for quenching hot coke pushed from coke oven chambers through a coke guide onto a coke wharf from which the quenched coke is removed by a rotary plow and a belt conveyor, the combination with said coke wharf of:
a. an enclosure covering said coke wharf and having doors in said enclosure opposite said coke oven chambers;

b. means on said coke guide for opening and closing a door in said enclosure when said guide is aligned with a coke oven chamber to be pushed;
c. at least one movable structure within said enclosure that carries nozzles that emit water for quenching said coke as it falls onto said wharf;



d. means at each door within said enclosure for deflecting said coke as it passes therethrough;
e. means for collecting and removing effluent from said enclosure when coke is quenched within said enclosure; and
f. means supplying said water to said nozzles.

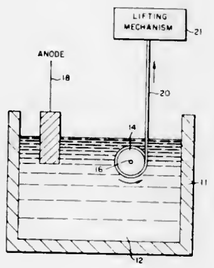
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**3,930,962**

**PROCESS AND APPARATUS FOR PRODUCING THIN COPPER FOILS ON A MOLYBDENUM OR TZM ALLOY DRUM**

**Glenn M. Cook, Harvard, Mass., and Walter E. Galin, Pawtucket, R.I., assignors to Kennecott Copper Corporation, New York, N.Y.**

**Filed Feb. 21, 1975, Ser. No. 551,767**
**Int. Cl.² C25D *1/04***
**U.S. Cl. 204—13** **7 Claims**



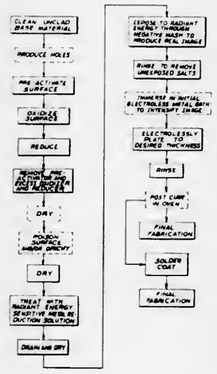

**1.** In a process for preparing thin copper foils, the improvement comprising,
electrodepositing the copper on a rotating electrode having a molybdenum surface.

**3,930,963**

**METHOD FOR THE PRODUCTION OF RADIANT ENERGY IMAGED PRINTED CIRCUIT BOARDS**

**Joseph Polichette, South Farmingdale, and Edward J. Leech, Oyster Bay, both of N.Y., assignors to Photocircuits Division of Kollmorgen Corporation, Glen Cove, N.Y.**

**Continuation-in-part of Ser. No. 167,435, July 29, 1971, Pat. No. 3,772,078. This application Feb. 11, 1972, Ser. No. 225,645. The portion of the term of this patent subsequent to Nov. 13, 1990, has been disclaimed.**
**Int. Cl.² H05K *3/18***
**U.S. Cl. 204—15** **53 Claims**




**33.** In a process for making printed circuit boards, the steps comprising:
a. providing an insulating base material having a resinous oxidizable surface;
b. treating the base with an oxidizing agent to oxidize the surface and produce a microporous surface;
c. treating the base having a microporous surface to remove excess oxidizing agent;
d. treating the base with a poison to retard extraneous electroless metal deposition;
e. drying the base;
f. treating the base with a solution of a reducible non-noble metal salt, a radiation sensitive reducing compound and a secondary reducer;
g. drying the base;
h. exposing the base to radiant energy in selected areas to produce free metallic nuclei in the form of a non-conducting real image of the desired circuit pattern;
i. rinsing the base to remove unexposed metal salts;
j. immersing the base in an initial electroless metal bath to intensify the real image; and
k. electroplating the intensified image to form conductor lines of the desired thickness on the base to produce the printed circuit board.



**3,930,964**

**METHOD FOR PAINTING ALUMINUM OR ALUMINUM-ASED ALLOY MATERIAL**

**Toshiro Takahashi, No. 93, 3-chome Magarikane; Toshihiro Nagano, No. 126-14, Chiyoda, both of Shizuoka; Matsuo Suzuki, No. 126-6, Kitahama, Yaizu; Shozo Zuzuki, No. 1-34, 3-chome, Oshika; Yasuo Aoshima, No. 376, Shinden, Denma-cho, both of Shizuoka; Teruo Asahina, No. 378, Gohei, Fujieda; Katsushige Ikeda, No. 7-36, 2-chome, Mizuo, Ibaragi, Osaka; Isao Hayashi, No. 2010-4, Kuzuha, Hirakata, Osaka; Takashi Kato, No. 38, 3-chome, Hasibanishino, Moriguchi, Osaka, and Nobuo Minagawa, No. 7-20, Nangu, Ashiya, all of Japan**

**Division of Ser. No. 316,718, Dec. 20, 1972, Pat. No. 3,876,453. This application Oct. 29, 1974, Ser. No. 518,865**
**Claims priority, application Japan, Dec. 25, 1971, 47-1785; Dec. 25, 1971, 47-1786; Dec. 25, 1971, 47-1787; Dec. 25, 1971, 47-1788; Dec. 25, 1971, 47-1789; Mar. 29, 1972, 47-31305; July 5, 1972, 47-66612; July 5, 1972, 47-66613; July 14, 1972, 47-70632; Sept. 28, 1972, 47-96643**
**Int. Cl.² B05D *3/02*, *7/00*; C25D *11/18***
**U.S. Cl. 204—37 R** **4 Claims**

1. A method for painting aluminous material comprising the steps of:
1. immersing a degreased and washed aluminous material in water at a temperature higher than 75°C and applying a current thereto to form a colorless clear boehmite layer,
2. immersing the aluminous material provided with the boehmite layer in a water-soluble thermosetting resin paint bath containing an organic amine having a temperature of 40°–60° C and thereafter removing the aluminous material from the paint bath and
3. heating the now painted aluminous material to a temperature of 150°–210°C for a time sufficient to bake and cure the paint and simultaneously to complete the formation of the boehmite layer.

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**3,930,965**

**ZINC-COPPER ALLOY ELECTROPLATING BATHS**

**Charles N. Abbott, Dayton, Ohio, assignor to McGean Chemical Company, Inc., Cleveland, Ohio**

**Filed Mar. 18, 1974, Ser. No. 452,143**
**Int. Cl.² C25D *3/58***
**U.S. Cl. 204—44** **8 Claims**

**3.** An aqueous electroplating bath for the production of zinc-copper alloys by electrodeposition which comprises 13.5 to 40.4 gm/l zinc cyanide, 10.6 to 31.7 gm/l copper cyanide, 30.0 to 52.5 gm/l sodium cyanide (free) and 15 to 45 gm/l sodium hydroxide having dissolved therein a mixture of additives comprising:
a. an effective amount of at least one buffering agent selected from the group consisting of boric acid, alkali metal borate, alkali metal phosphate, alkali metal carbonate, glycine and mixtures thereof;
b. about 0.001 to about 0.025 gm./l of at least one metallic ionic material selected from the group consisting of nickel ion and cobalt ion and mixtures thereof; and
c. about 0.01 to about 2.0 gm./l of ethylenediaminetetra acetic acid (as alkali metal salt).

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**3,930,966**

**METHOD OF FORMING COLORED OXIDE FILM ON ALUMINUM OR ALUMINUM ALLOY**

**Toshiro Takahashi; Toshihiro Nagano, both of Shizuoka; Kenji Wada, Tokyo, and Yasushi Suzuki, Shizuoka, all of Japan, assignors to Riken Light Metal Industries Company, Ltd., Japan**

**Filed Mar. 20, 1974, Ser. No. 452,724**
**Int. Cl.² C25D *11/08*, *11/14***
**U.S. Cl. 204—58** **5 Claims**

**1.** A method of forming a colored oxide film on aluminum which contains incidental impurities and on aluminum alloys by electrolyzing the aluminum material by applying a rectangular pulse voltage thereto in an electrolytic bath consisting essentially of an aqueous solution of sulfuric acid to form an aluminum oxide film containing aluminum suboxides and having crystal lattice defects on the surface of the aluminum material, said rectangular pulse voltage having a peak voltage value in the range of from about 5 volts to about 120 volts and a period in the range of from about 0.2 seconds to about 120 seconds.

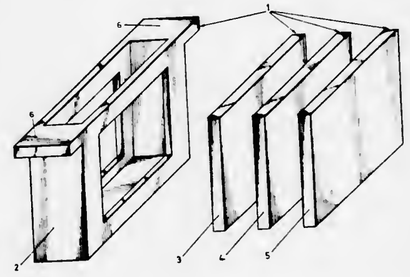
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**3,930,967**

**PROCESS FOR THE ELECTROLYSIS OF A MOLTEN CHARGE USING INCONSUMABLE BI-POLAR ELECTRODES**

**Hanspeter Alder, Flurlingen, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland**

**Filed July 3, 1974, Ser. No. 485,343**
**Claims priority, application Switzerland, Aug. 13, 1973, 11646/73**
**Int. Cl.² C25C *3/00*, *7/02***
**U.S. Cl. 204—67** **31 Claims**



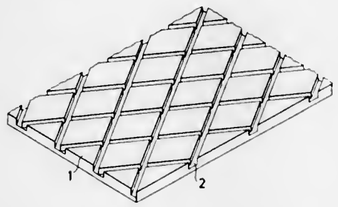

**1.** In a process for the production of metals in a multicell type furnace, by the electrolysis of metal compounds dissolved in a molten electrolyte, comprising the steps of:
disposing a first anode and a first cathode spaced apart therefrom in the furnace,
dividing said furnace into cells by disposing at least one inconsumable bipolar electrode between said first anode and said first cathode, said bipolar electrode including a second anode the surface of which is composed of electron conductive ceramic oxide and a second cathode the surface of which is composed of another electron conductive material, joined together in such a way that, under conditions found in the operating cell, they form a mechanical and an electrical unit,
maintaining a predetermined electrical potential across the first anode and the first cathode whereby a current flows through the cell and the anions have their charges removed at the anodes, and the metal ions have their charges removed at the surface of the cathodes.

**12.** In a multicell furnace for production of metals by electrolysis of metal compounds dissolved in a molten electrolyte, a first anode and a first cathode disposed spaced apart in said furnace; and
at least one inconsumable bipolar electrode disposed substantially parallel to and between said first anode and first cathode dividing said furnace into separate cells, including a second anode the surface of which is composed of electron conductive ceramic oxide and a second cathode the surface of which is composed of another electron conductive material, joined together in such a way that, under conditions found in the operating cell, they form a mechanical and an electrical unit; said first and second anode being composed of the same material and said first and second cathode being composed of the same material.

### 3,930,968
### PROCESS FOR THE MANUFACTURE OF PHENYLHYDRAZINE

Jurgen Cramer, Frankfurt am Main, Germany; Hartmuth Wilhelm Alt, deceased, late of Munich, Germany; by Ortwin Franz Felix Alt, heir, Straubing, and by Gudrun Anneliese Beyer, nee Alt, heir, Hohensachsen, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Feb. 1, 1974, Ser. No. 438,694
Claims priority, application Germany, Feb. 5, 1973, 2305574
Int. Cl.² C25B 3/04, 11/02, 11/12
U.S. Cl. 204—74 6 Claims



1. In a process for producing phenylhydrazine by cathodic reduction of diazoaminobenzene in an electrolytic cell having a cathode zone with graphite cathode therein, an anode zone with an anode therein and a diaphragm separating said cathode zone from said anode zone, and in which process a catholyte comprising an alkali metal hydroxide, ammonium hydroxide, an organic base or mixtures thereof at a temperature of −20° to 90°C. is caused to flow through said cathode zone, a voltage is applied across said anode and cathode to reduce diazoaminobenzene to phenylhydrazine in said cell and phenylhydrazine is recovered from said catholyte, the improvement which comprises providing in said cell a graphite cathode having grooves or internal passages formed therein and causing said catholyte to flow through said grooves or passages to produce phenylhydrazine at an improved yield.

### 3,930,969
### PROCESS FOR OXIDIZING METAL SULFIDES TO ELEMENTAL SULFUR USING ACTIVATED CARBON

Tom P. Chen, Arvada, Colo., assignor to Cyprus Metallurgical Processes Corporation, Los Angeles, Calif.

Filed June 28, 1974, Ser. No. 484,132
Int. Cl.² C25C 1/00; C22B 9/08, 15/08; C25C 1/20
U.S. Cl. 204—105 R 30 Claims

1. In a chemical leach reaction process wherein metal sulfides selected from the group consisting of sulfides of metals of groups Ib, IIb, IVa, Va and VIII of the Periodic Table are subjected to a reaction with an aqueous medium of a temperature of at least 50°C wherein the sulfide sulfur is oxidized to elemental sulfur, and the metal values are solubilized, the improvement comprising performing the leach reaction in the presence of at least about 2% by weight of the metal sulfides being treated of activated carbon.

### 3,930,970
### PHOTOLYSIS OF ALCOHOL NITRITES

Derek Harold Richard Barton, London, England, assignor to Research Institute for Medicine and Chemistry Inc., Cambridge, Mass.

Filed Nov. 5, 1974, Ser. No. 521,098
Int. Cl.² B01J 1/10
U.S. Cl. 204—158 R 15 Claims

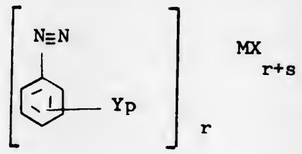
1. A process for the preparation of a mononitrate ester of a diol whereby a nitrite ester of an alcohol having a hydrogen atom which is or is able to be conformationally adjacent to the hydroxy group and in which the atoms joining the hydrogen atom and the hydroxyl group include at least two adjacent atoms forming part of a ring, is photolysed in the presence of molecular oxygen, whereby a corresponding compound is formed in which the said hydrogen atom is replaced by a nitrooxy group.

### 3,930,971
### COATING COMPOSITIONS

Gabriel Karoly, Springfield, and John L. Gardon, Westfield, both of N.J., assignors to M & T Chemicals Inc., Greenwich, Conn.

Continuation-in-part of Ser. No. 228,317, Feb. 22, 1972, abandoned. This application Mar. 11, 1974, Ser. No. 449,973
Int. Cl.² C08F 2/50
U.S. Cl. 204—159.11 6 Claims

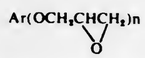
1. An improved pigmented liquid composition which is rapidly polymerizable to form solid coatings upon exposure to ultraviolet light at ambient temperature, the liquid composition comprising at least one epoxide, a pigment which is present at a concentration (Cp) of between 10 and 50% by volume, based on said composition, and between 0.25 and 5% by weight of a diazonium compound of the general formula




wherein X represents a halogen radical and M represents an element selected from the group consisting of antimony, arsenic, bismuth, boron, iron, phosphorus and tin; Y is selected from at least one of the group consisting of nitro, hydroxyl, halogen, N-morpholino, alkyl, alkoxy, aryl, amino, arylamino, alkyamino and arylmercapto radicals, *p* is an integer between 1 and 5, inclusive, *r* is an integer equal to the absolute value of the charge on the complex anion $MX_{r+s}$ and s is an integer equal to the valence state of M wherein the improvements consist of:

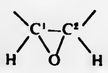
a. the presence of at least one liquid epoxide selected from the group consisting of:

1. those exhibiting the general formula




and low molecular weight telomers thereof wherein Ar represents an aryl or alkaryl hydrocarbon radical, *n* is the integer 2 or 3,

2. compounds containing at least two epoxide radicals of the formula




wherein $C^1$ and $C^2$ form part of a five- or six-membered carboxylic ring structure, said epoxide comprising the entire liquid epoxide component or a major fraction thereof, and

b. the presence of at least one carboxylic acid anhydride selected from the group consisting of liquid anhydrides of dicarboxylic acids, polycarboxylic acids and liquid mixtures containing two or more anhydrides of dicarboxylic or polycarboxylic acids with the proviso that the liquid composition contains at least 1.8 equivalent weights of epoxide per equivalent weight of acid anhydride.



### 3,930,972
### PROCESS FOR PREPARING THERMALLY STABILIZED OXYMETHYLENE POLYMER FROM TRIOXANE WITH THIOCYANATE AND RADIATION

Akihiko Ito; Masaru Yoshida; Yoshiaki Nakase; Tadafumi Yamauchi, all of Takasaki; Tadashi Iwai, Ube, and Koichiro Hayashi, Sapporo, all of Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

Continuation of Ser. No. 280,804, Aug. 15, 1972, abandoned. This application Sept. 10, 1973, Ser. No. 395,731
Claims priority, application Japan, Aug. 20, 1971, 46-62985
Int. Cl.² C08G 2/02, 2/00
U.S. Cl. 204—159.21 4 Claims

1. A process for preparing an oxymethylene polymer comprising

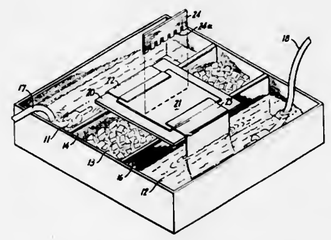
mixing trioxane with about 0.01 to 15 per cent by weight based on the weight of said trioxane of a thiocyanate and carrying out polymerization by keeping the mixture at a temperature in the range of from about 30° to about 140°C,

said polymerization being initiated and promoted by irradiating said mixture with an ionizing radiation at a dose rate of about $10^2$ – $10^8$ rad/hr and for a total dose of about $10^2$ – $10^8$ rad.

### 3,930,973
### ELECTROPHORETIC PROCESS

Samuel T. Nerenberg, 2906 Washington, Wilmette, Ill. 60091

Continuation-in-part of Ser. No. 233,448, March 10, 1972, abandoned. This application Nov. 15, 1972, Ser. No. 306,714
Int. Cl.² B01D 13/02
U.S. Cl. 204—180 S 4 Claims



1. In an electrophoretic method for separating components of a mixed macromolecule sample, the steps of

a. depositing an electrically conductive buffer solution containing at least two flexible paper-thin liquid-permeable membranes in spaced apart side-by-side relationship onto an essentially rigid generally flat support plate and layering an interconnecting buffer solution containing wick between adjacent edges of said membranes;

b. pressing the membranes against the plate to provide a flat configuration to the membranes corresponding to that of the plate with intimate contact between the membranes and the plate;

c. removing excess buffer solution from the membranes and area of contact between the membranes and the plate;

d. providing two paths of buffer solution sorbed in wicks, each extending from an opposing edge of an outermost of said membranes to separate reservoirs of buffer solution;

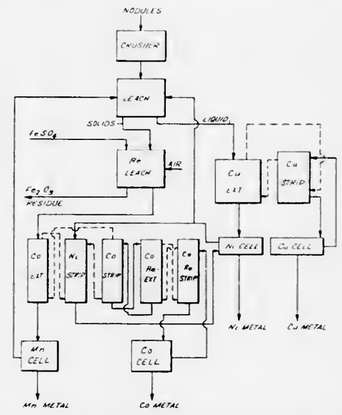
e. applying a plurality of samples to the exposed surfaces of at least two of said membranes; and

f. electrophesing the samples by passing an electric current across said membranes between said buffer reservoirs maintained at opposite polarities while said membranes are maintained having one surface in contact with said plate and with their opposite surfaces exposed.

### 3,930,974
### TWO STAGE SELECTIVE LEACHING OF METAL VALUES FROM OCEAN FLOOR NODULE ORE

William S. Kane, Wicomic, and Paul H. Cardwell, Zanoni, both of Va., assignors to Deepsea Ventures, Inc., Gloucester Point, Va.

Continuation-in-part of Ser. No. 272,226, July 17, 1972, which is a continuation of Ser. No. 40,585, May 26, 1970, abandoned, which is a continuation of Ser. No. 247,554, April 26, 1972. This application May 21, 1973, Ser. No. 361,968
Int. Cl. C25c 1/10
U.S. Cl. 204—105 M 25 Claims




1. A process for selectively removing metal values from an ocean floor nodule ore, the nodule ore comprising as primary components the oxides of manganese and iron and as secondary components, compounds of copper, cobalt and nickel, the process comprising the steps of (a) leaching the nodule ore with an aqueous solution of a mineral acid, which is capable of reacting with the ore to form water-soluble salts of nickel and copper, without reducing substantially any of the tetravalent manganese in the ore to divalent manganese, selected from the group consisting of sulfuric acid and aqueous hydrogen halide solutions, to form an aqueous solution comprising the dissolved water-soluble salts of copper and nickel; (b) separating the aqueous solution from insoluble ore solids to form a pregnant leach solution comprising the mixed soluble salts of copper and nickel; (c) separating the individual copper and nickel metal values by selectively extracting at least one of the metal values from the aqueous leach solution to form two separate solutions of the individual metal values, respectively, in the form of a water-soluble salt of each; (d) obtaining an aqueous, releach solution comprising dissolved water-soluble salts of manganese and cobalt, substantially free from iron, by the following steps: (i) releaching the insoluble ore solids with an aqueous solution of a reducing agent cabable of forming water-soluble salts of cobalt and manganese, and selected from the group consisting of ferrous sulfate, ferrous halides and sulfur dioxide to form an aqueous solution comprising dissolved cobalt, manganese and iron, and, in any chronological order or simultaneously, (ii) separating the aqueous solution from an insoluble ore residue; (iii) oxygenating the aqueous solution to convert the dissolved iron to an insoluble iron oxide, and (iv) separating the aqueous solution from the insoluble iron oxide; (e) separating out the individual metal values from the releach solution by selectively extracting cobalt from the releach solution to form a separate solution of the cobalt value in the form of a water-soluble salt and a releach raffinate substantially free of cobalt; and (f) reducing the individual metal values thus obtained to the respective elemental metals by cathodically electroplating the individual metal values.

### 3,930,975
### SPUTTERING METHOD FOR PRODUCING SOLDER-FAST COPPER LAYERS

**Gert Siegle, Hildesheim; Hans Lutz; Helmut Adam, both of Stuttgart, and Erhard Gössl, Gerlingen, all of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany**

**Filed Oct. 10, 1974, Ser. No. 513,548**

**Claims priority, application Germany, Oct. 27, 1973, 2353942**

**Int. Cl.² C23C** *15/00*; **H01L** *21/283*

**U.S. Cl. 204—192** **15 Claims**

**1.** Method of producing a solder-fast thin film circuit unit having copper layer connection paths and contact patches which comprises the step of cathodically sputtering copper onto a substrate in a circuit pattern including contact patches, said sputtering being carried out in a gas discharge medium consisting of a monatomic gas with an admixture of between 0.5 and 16% by volume of a normally predominantly diatomic atmospheric gas under conditions in which said atmospheric gas is taken up in part in said copper layer and reduces the conductivity of the deposited copper to between 7 and 40% of the conductivity of a pure copper layer, whereby contact patches capable of being soldered and of withstanding soldering are produced.

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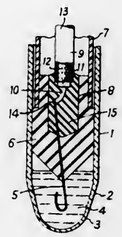
### 3,930,976
### GLASS ELECTRODE ASSEMBLY

**John Cadwaladr Owen, Lightwater, England, assignor to George Kent Limited, Luton, England**

**Continuation-in-part of Ser. No. 164,410, July 20, 1971, abandoned. This application Jan. 31, 1974, Ser. No. 438,399**

**Int. Cl.² G01N** *27/36*

**U.S. Cl. 204—195 G** **3 Claims**



**1.** An electrochemical electrode assembly comprising a tube of glass terminating in a glass member defining a glass membrane, said member containing a quantity of electrolyte in contact with the internal surface of said membrane, the external surface of said membrane being externally accessible, closure means retaining the electrolyte in said tube, an electrical conductor passing through said closure means and extending into said electrolyte, an electrical lead extending into said tube and connected to said conductor, an electrical screen surrounding said lead and extending to the proximity of said closure member, and a sleeve mounted within said tube and abutting at one end against said closure means, said closure means comprising a plug of resilient electrically-insulating material having two portions of different diameter, the larger diameter portion of said plug being of a size such that it is compressed by said tube and provides a sealing fit against the inside wall of said tube and said electrical conductor, and the smaller diameter portion of said plug being fitted within said sleeve and providing a sealing fit against the inside wall of the sleeve, whereby said plug forms an electrically-insulating barrier between the electrolyte and said electrical screen.

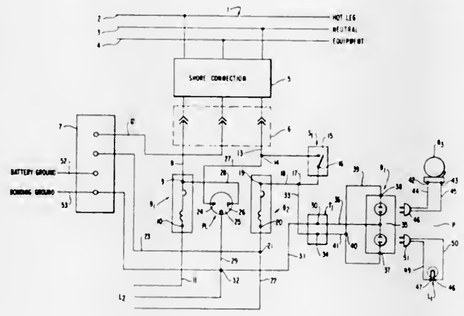
### 3,930,977
### PROTECTION SYSTEM FOR EQUIPMENT AND METALLIC FITTINGS OF NON-METALLIC HULLS OF POWER BOATS

**Ralph E. Wood, Lake Worth, Fla., assignor to Dunwood Development Corporation, Lake Worth, Fla.**

**Continuation-in-part of Ser. No. 324,665, Jan. 18, 1973. This application Apr. 23, 1973, Ser. No. 353,507**

**Int. Cl.² C23F** *13/00*; **B63B** *17/00*

**U.S. Cl. 204—196** **3 Claims**




**1.** In a system protecting personnel and electrical equipment of docked power boats having non-metallic hulls and protecting the immersed metal fittings of such hulls from corrosion, said boats being supplied from a shore-based source of **3-wire,** customary voltage alternating current comprising a hot leg, a neutral leg and an equipment ground;

circuit breakers inserted in the hot leg and the neutral leg of the alternating current supply;

a polarity alarm which will continue to operate when a circuit breaker is in open position;

a grounding socket adapted to receive a polarity light tester;

a battery ground;

a ground plate and a bonding ground, and

an electrical circuit in which the negative lead of the battery ground, the equipment ground, and the neutral leg of the shore-based alternating current supply are electrically connected with both the ground plate and the bonding ground of the boat.

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### 3,930,978
### CIRCUIT OF ELECTROLYTIC CELLS

**Wolfgang Strewe, Dortmund; Luciano Mosé, Dortmund-Hoechsten; Wolfgang Kramer, Herdecke, and Bernd Strasser, Hamm, all of Germany, assignors to Friedrich Uhde GmbH, Dortmund, Germany**

**Filed Jan. 20, 1975, Ser. No. 542,650**

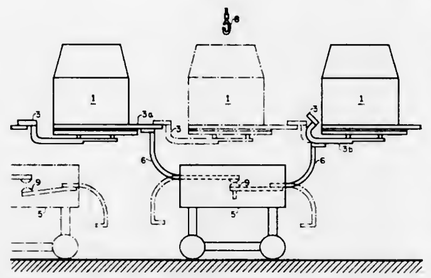
**Claims priority, application Germany, Oct. 9, 1974, 2448194**

**Int. Cl.² C25B** *9/04*

**U.S. Cl. 204—228** **8 Claims**

**1.** A circuit of electrolytic cells installed in electrical series, comprising:

a plurality of vertical electrode cells whose aspect ratio of cell length to cell width is at least 2:1, said cells being disposed in at least one row so that the anode lead-in and cathode lead-out busbars are disposed along the length of each cell, said cell circuit containing at least one portable jumper switch beneath a cell row and movable along the center line of the cell row, said portable jumper switch having cell connectors on opposite sides, said jumper switch permitting that a cell may be taken out of service by conducting the current through the jumper switch without interrupting continuous operation of the other cells in the circuit thereby ensuring that the electric current flow through said connectors of the jumper switch from one cell to the other cell connected to the jumper switch is rectilinear in the top view of the cell row.





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### 3,930,979
### POROUS DIAPHRAGMS

**Christopher Vallance, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England**

**Filed June 27, 1974, Ser. No. 483,907**

**Claims priority, application United Kingdom, July 18, 1973, 34167/73**

**Int. Cl.² C25C** *2/00*

**U.S. Cl. 204—252** **20 Claims**

**1.** A process for the manufacture of a porous diaphragm of a synthetic material for use in an electrolytic cell which comprises forming a sheet of the synthetic material in admixture with a solid particulate additive to be removed therefrom, introducing said sheet into an electrolytic cell, and removing solid particulate additive from the sheet in situ in the cell by treating the sheet with an acid containing a corrosion inhibitor.

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### 3,930,980
### ELECTROLYSIS CELL

**Oronzio De Nora, Milan, Italy, and Vittorio De Nora, Nassau, Bahamas, assignors to Oronzio De Nora Impianti Elettrochimici S.p.A., Milan, Italy**

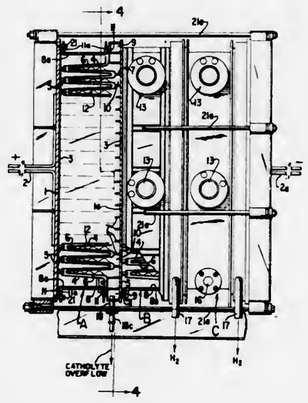
**Filed June 30, 1970, Ser. No. 51,162**

**Int. Cl.² C25B** *13/00*

**U.S. Cl. 204—256** **22 Claims**

**1.** In an electrolysis cell, a plurality of cell units, a rectangular frame around each cell unit, an anode compartment and a cathode compartment in each cell unit, said anode compartments and cathode compartments being separated from the anode and cathode compartments of the adjacent cell units by a continuous separating partition of a ferrous metal on the cathode side and a valve metal on the anode side, said frames and the anode and cathode compartments therein being substantially rectangular throughout and extending substantially from top to bottom and from side to side of said cell units, a plurality of valve metal anodes in hollow wave form in each said anode compartment, valve metal electrical connectors between the base of the waves of said anodes and the valve metal of said separating partition, said electrical connectors spacing the anodes from the valve metal of said partitions, an electrically conductive electrocatalytic coating on said anode waves, a plurality of metal cathodes in wave form in said cathode compartments, electrical connectors between the base of said cathode waves and the ferrous metal of said partitions, said electrical connectors spacing the cathodes from the ferrous metal of said partitions, said anodes and cathodes extending substantially vertically in said compartments substantially from the top to the bottom and from side to side of said compartments, said anodes and cathodes being nested together to provide a substantially uniform spacing between the anode and cathode surfaces, a lining on the side walls of said anode compartments resistant to the electrolyte and electrolysis conditions, means to feed an electrolyte to said cell, means to pass an electrolysis current through the electrolyte between said anode and cathode surfaces, means to discharge anodic gases and cathodic gases from said cell, and means to discharge a catholyte liquor from the cathode compartments of said cell.

**14.** In a bipolar electrolysis cell, a positive end unit containing anodes and cathodes, a negative end unit containing anodes and cathodes and a plurality of intermediate units containing anodes and cathodes, all of said units being substantially rectangular and each of said units having an anode compartment and a cathode compartment, said anode compartments and cathode compartments being separated from the adjacent cell units by a continuous partition of ferrous metal on the cathode side and a valve metal on the anode side, a corrosion resistant lining in each of said anode compartments, said units being connected in series to pass an electrolysis current through all of said cell units, the anode being constructed of a valve metal in the form of open mesh hollow finger-like waves and the cathodes being constructed of ferrous metal in the form of hollow finger-like waves which are nested together, means to permit anodic gases rising through the electrolyte to escape from the electrolyte from both the front and back of the anodes and from the top of each cell unit, the cathodes of one cell unit being connected back to back to the anodes of the adjacent cell unit by a metal to metal contact between the valve metal anodes and the ferrous metal cathodes through said partitions.



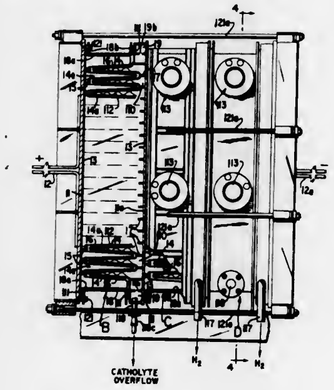

**19.** In an electrolysis cell, a first hollow rectangular metal box-like support, vertically mounted hollow metal anode fingers supported on and projecting from said first box-like support, means to introduce electrolyte into said first box-like support and said anode fingers, a second hollow rectangular metal box-like support, vertically mounted hollow cathode fingers supported on and projecting from said second box-like support, means to discharge spent electrolyte from said second box-like support, the said first and second box-like supports being secured together, back to back, in electronically conductive contact.

3,930,981

## BIPOLAR ELECTROLYSIS CELLS WITH PERFORATE METAL ANODES AND BAFFLES TO DEFLECT ANODIC GASES AWAY FROM THE INTERELECTRODIC GAP

**Oronzio De Nora, Milan, Italy, and Vittorio De Nora, Nassau, Bahamas, assignors to Oronzio De Nora Impianti Elettrochimici S.p.A., Milan, Italy**

**Filed June 24, 1974, Ser. No. 482,319**
**Claims priority, application Italy, June 25, 1973, 25775/73**
**Int. Cl.² C25B** *11/03, 11/08, 11/10*
**U.S. Cl. 204—256** **22 Claims**



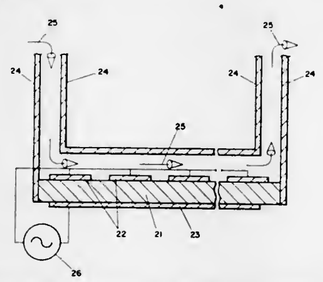

**16.** In a bipolar electrolyzer, substantially vertically mounted hollow wave anodes and cathodes forming an interelectrodic gap therebetween, vertical grooves in said anodes through which gases released at the anode rise and gas passages through the anodes and deflectors for deflecting the anodic gases away from the interelectrodic gap.

3,930,982

## FERROELECTRIC APPARATUS FOR DIELECTROPHORESIS PARTICLE EXTRACTION

**Howard D. Batha, Tonawanda, N.Y., and Leslie E. Cross, State College, Pa., assignors to The Carborundum Company, Niagara Falls, N.Y.**

**Filed Apr. 6, 1973, Ser. No. 348,835**
**Int. Cl.² B01D** *13/02*
**U.S. Cl. 204—299** **10 Claims**



**1.** Apparatus for generating a periodic non-uniform electric field, external to the field-genrating electrodes, comprising

a. a ferroelectric material, polarizable in directions perpendicular to the surface of the ferroelectric material; the ferroelectric material comprising at least one portion, the direction of polarization of which is to be alternated during generation of the periodic non-uniform electric field, and at least another portion, the direction of polarization of which is to remain the same during generation of the periodic non-uniform electric field;

b. a plurality of electrodes, applied to opposite sides of the ferroelectric material, covering both sides of the portions of the ferroelectric material, the direction of polarization of which is to be alternated during generation of the periodic non-uniform electric field, but leaving uncovered at least one side of the portions of the ferroelectric material so as to produce a non-uniform electric field, the direction of polarization of which is to remain the same during generation of the periodic non-uniform electric field, defining a location external to the field-generating electrodes and adjacent the boundary between the alternately polarized portions of the ferroelectric material, in which the periodic non-uniform electric field is to be generated; and

c. means for providing alternating potential to the electrodes

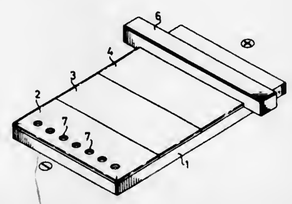
1. for alternating the direction of polarization of the covered portions of the ferroelectric material and leaving polarized in their original direction, the uncovered portions of the ferroelectric material;
2. for producing periodically alternately polarized portions of the ferroelectric material; and
3. for generating a periodic non-uniform electric field external to the field-generating electrodes, in the location adjacent the boundary between the alternately polarized portions of the ferroelectric material.

3,930,983

## ARRANGEMENT AND PROCESS FOR DETERMINING ANTIGENS

**Axel Sieber, Marburg, Marbach, Germany, assignor to Behringwerke Aktiengesellschaft, Marburg an der Lahn, Germany**

**Filed Feb. 12, 1975, Ser. No. 549,431**
**Claims priority, application Germany, Feb. 14, 1974, 2406959**
**Int. Cl.² B01K** *5/00*
**U.S. Cl. 204—299** **4 Claims**



**1.** An arrangement for the simultaneous qualitative or quantitative determination of several antigens in mixtures of antigens by immuno-electrophoresis in a matrix containing antibodies, which arrangement comprises coating the support for the matrix with several matrix strips, one following the other and each containing a specific antiserum.

3,930,984

## COAL-ANTHRACENE OIL SLURRY LIQUEFIED WITH CARBON MONOXIDE AND BARIUM-PROMOTED CATALYSTS

**Armin C. Pitchford, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.**

**Division of Ser. No. 77,360, Oct. 1, 1970, Pat. No. 3,728,252. This application Nov. 6, 1972, Ser. No. 303,759**
**Int. Cl. C10g** *1/08*
**U.S. Cl. 208—10** **7 Claims**

**1.** A method for liquefying coal in which the coal is slurried in anthracene oil, said method comprising contacting said coal anthracene oil slurry with a catalytically active metal selected from the group consisting essentially of molybdenum, nickel, cobalt, and iron promoted with a barium compound in the presence of carbon monoxide at a temperature in the range of 675° to 720°F and a pressure in the range of about 1,000 to about 5,000 psig for a time sufficient to carry out the process of liquefaction of the coal.



3,930,985

## METHOD OF PRODUCING SPECIAL COKES

**Franz Schieber, Pegnitzstrasse 12, 8505 Rothenbach, Germany; Petar Husnjak, M. Tita 8; Frane Paro, Rade Koncara, both of Sisak, Yugoslavia; Konrad Koziol, Pegnitzstrasse 12; Baptist Zenk, Muhlhof 1, both of 8505 Rothenbach, Germany; Nada Lenac-Lukacevic, M. Tita 6, Sisak, Yugoslavia; Dieter Zollner, Handlstr. 99, 8501 Schwaig, Germany; Peter Walser, Grunthal 1, 8505 Rothenbach, Germany, and Friedrich Rittmann, Am Buck 18, 8501 Ruckersdorf, Germany**

**Filed May 8, 1972, Ser. No. 251,026**
**Claims priority, application Germany, May 7, 1971, 2122620**
**Int. Cl.² C10G** *9/14*
**U.S. Cl. 208—46** **3 Claims**

**1.** A method of producing cokes for use in connection with the making of ultra-high-power electrodes which includes in combination the steps of: coking a mixture of from 50 to 90% by weight of atmospheric virgin reduced crude oil having a density of from 0.935 to 0.965 grams per cubic centimeter, a viscosity of from 2.8° to 4.3° Engler at 100°C, a sulfur content of from 0.85 to 1.10%, a coke value according to Conradson of from 5 to 7%, a content in aromatics of from 40 to 60%, an asphalt content below 1.8% with a boiling component less than 20% within the temperature range of from 250° to 350°C, and with a content in ash forming elements of less than 0.05% and with from 10 to 50% by weight of a catalyst-free catalytic residue which has been obtained by catalytic cracking of distillates low in residues and ashes and which has a viscosity of from 2.5° to 3.2° Engler at 50°C, with a sulfur content of less than 0.6%, a coke value according to Conradson of from 3.5 to 4.5%, a content in aromatics exceeding 35%, an asphalt content of less than 0.6% and boiling components of from 8 to 12% for the range of from 250° to 300°C and boiling components of from 30 to 40% for the range of from 300° to 350°C in a 24 to 48 hour cycle at temperatures of from 475° to 515°C at pressures of from 3 to 7 atmospheres above atmospheric pressure, said coking being effected at such a recycling ratio as to obtain a yield in green coke of from 15 to 40%, in which as atmospheric virgin reduced crude oil residues there are used atmospheric distillation residues from Pannonian petroleum.

3,930,986

## HIGH OCTANE MOTOR FUEL PRODUCTION

**Charles V. Berger, Western Springs, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.**

**Continuation-in-part of Ser. No. 405,251, Oct. 10, 1973, Pat. No. 3,867,276, which is a continuation-in-part of Ser. No. 237,776, March 24, 1972, abandoned. This application Dec. 23, 1974, Ser. No. 536,048**
**Int. Cl.² C10G** *37/10*
**U.S. Cl. 208—60** **7 Claims**

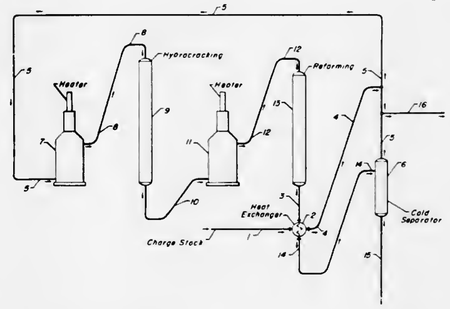
**1.** In a process for the production of a high octane motor fuel which comprises the steps of:

a. hydrocracking naphtha boiling range hydrocarbons containing cyclic components including aromatics with hydrogen, in a first reaction zone, in contact with a first catalytic composite of a Group VIII noble metal component and a zeolitic aluminosilicate carrier material and at a temperature in the range of about 350°F. to about 800°F. and a pressure from about 100 to about 700 psig. which is conducted adiabatically and therefore has a marked propensity for a high temperature run-away;

b. reacting the resulting first reaction zone effluent without intermediate separation thereof, in a second reaction zone, in contact with a second catalytic composite comprising platinum and alumina, at a temperature in the range of about 800°F. to about 1100°F. and at a pressure of from about 100 to about 700 psig; and,

c. recovering said high octane motor fuel from the resulting second reaction zone effluent;

the method of maintaining the over-all exothermic temperature increase in said first reaction zone at a relatively high value while preventing a run-away exothermic reaction, which method comprises:




1. employing a first reaction zone inlet temperature generally below the hydrocracking range but sufficient to promote exothermic hydrogenation of aromatics so that the induced temperature increase initiates a favorable hydrocracking rate; and,
2. employing a first reaction zone outlet pressure favoring sufficient endothermic dehydrogenation of naphthenes to aromatics to prevent a run-away hydrocracking situation.

3,930,987

## CATALYST AND METHOD OF PREPARING SAME

**Harry S. Grand, Willingboro, N.J., assignor to Mobil Oil Corporation, New York, N.Y.**

**Continuation-in-part of Ser. No. 350,580, April 12, 1973, abandoned, which is a continuation-in-part of Ser. No. 125,326, March 17, 1971, abandoned. This application May 30, 1974, Ser. No. 474,750**
**Int. Cl.² C10G** *13/02, 11/02*; **B01J** *29/06*
**U.S. Cl. 208—111** **16 Claims**

**10.** A composite catalyst comprising a matrix having a particulate crystalline aluminosilicate zeolite dispersed therein, said crystalline aluminosilicate zeolite carrying rare earth cations, said matrix comprising an inorganic oxide wherein at least 50 weight percent of said inorganic oxide is silica, alumina, or silica-alumina, said composite containing impregnated rare earth in an amount equivalent to about 1 to 6 percent by weight, expressed as $RE_2O_3$, said amount being over and above the rare earth level present in said composite by virtue of rare earth ion exchange alone.

**15.** A method of catalytically converting petroleum charge stocks comprising contacting a petroleum charge stream under catalytic conversion conditions with the catalyst of claim **10.**

3,930,988

## RECLAIMING USED MOTOR OIL

**Marvin M. Johnson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.**

**Filed Feb. 24, 1975, Ser. No. 552,287**
**Int. Cl.² C10M** *11/00*; **C10G** *17/00*
**U.S. Cl. 208—182** **12 Claims**

**1.** A process for reducing the ash content of used lubricating oils which comprises:

a. contacting used lubricating oil with an aqueous solution of ammonium sulfate and/or ammonium bisulfate under

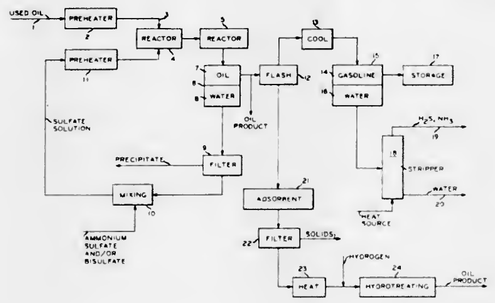
conditions of temperature and pressure sufficient to react said ammonium sulfate and/or ammonium bisulfate with metal-containing components present in the used lubricating oil and form metal-containing solids,

b. allowing the reaction mass of (a) to separate into an oil phase and an aqueous phase containing said solids, and

c. recovering the oil phase as a marketable low-ash oil product.

**5.** A process according to claim **1** which additionally contains the step of

d. contacting said oil phase recovered in (c) with an absorbent selected from activated clay, silica gel, and alumina under conditions sufficient to remove polar compounds




including oxygen-, nitrogen-, and sulfur-containing compounds therefrom.

**6.** A process according to claim **5** which additionally contains the steps of

e. subjecting said oil phase reduced in said polar compounds to hydrotreating in the presence of hydrogen and a hydrofining catalyst selected from nickel-molybdenum sulfide on alumina, cobalt molybdate, and tungsten-nickel sulfide on alumina under conditions including a temperature in the range of 500°F to 800°F (260°–427°C) sufficient to remove residual polar compounds and unsaturated compounds, and

f. recovering as product the hydrotreated oil phase which is suited to use as a lube stock.

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**3,930,989**

## METHOD FOR REDUCTION OF SULFUR AND NITROGEN CONTENT IN HYDROCARBONS

**Bernard E. Welchman, Houston, Tex., and John H. Knight, Aurora, Colo., assignors to The Superior Oil Company, Houston, Tex.**

**Filed Oct. 21, 1974, Ser. No. 516,865**
**Int. Cl.² C10G *19/00***
**U.S. Cl. 208—230** **9 Claims**

**1.** A method for reducing the sulfur and nitrogen content of a hydrocarbon containing sulfur and nitrogen impurities which comprises:

a. contacting said hydrocarbon in the liquid or gaseous phase with nahcolite in an amount effective to remove sulfur and nitrogen impurities from said hydrocarbon; and

b. removing the nahcolite containing combined sulfur and nitrogen from said hydrocarbon.

**6.** A method of reducing sulfur dioxide and nitrogen oxide(s) emissions in the combustion of a combustible hydrocarbon containing sulfur and nitrogen impurities, which comprises contacting said combustible hydrocarbon in the liquid or gaseous phase prior to combustion with nahcolite, in an amount effective to appreciably reduce sulfur dioxide and nitrogen oxide(s) emissions.

**3,930,990**

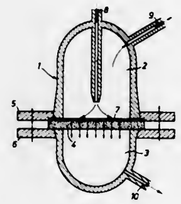
## PROCESS FOR SEPARATING HYDROCARBONS

**Jean-Pierre Brun, Orsay; Gerard Bulvestre, Mandres-les-Roses; Michel Guillou, Creteil; Pierre Thirion, Bougival, and Rene Pautrat, Le Mans, all of France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), Hauts-de-Seine, France**

**Continuation-in-part of Ser. No. 193,494, Oct. 28, 1971, Pat. No. 3,819,742. This application Apr. 5, 1974, Ser. No. 458,129**

**Claims priority, application France, Nov. 3, 1970, 70.39537. The portion of the term of this patent subsequent to June 25, 1991, has been disclaimed.**

**Int. Cl.² B01D *13/00*; C07C *7/00***
**U.S. Cl. 208—308** **53 Claims**



**1.** In a process for separating hydrocarbons from mixtures thereof of hydrocarbons with similar boiling points by permeation or pervaporation through a specific membrane, the improvement consisting of contacting a mixture of hydrocarbons with similar boiling points with a membrane formed of a high molecular weight polymer containing functional groups chemically combined by covalent bonding within the polymer forming the said membrane, said high molecular weight polymer being less selective than said functional groups, the said groups possessing a physiochemical affinity, with respect to one of said hydrocarbons and substantially the absence of such an affinity with respect to other hydrocarbons of the mixture; said functional groups being the same as those of a liquid organic solvent having a particular affinity for separating one of the hydrocarbons of the mixture; said affinity resulting from the formation of an electronic complex characterized by a resonant structure between the solvent molecules and the molecules of the said hydrocarbon, which is selectively separated by the specific membrane; the membrane used being substituted with an active group selected from the group consisting of nitrile, pyrrolidone, β-lactam, N-substituted groups, and sulfonic acid functional groups; and applying a gradient of pressure or chemical potential to the said membrane whereby on one side of the membrane a fraction enriched with the hydrocarbon having selectively passed through the membrane, and on the other side of the membrane a fraction containing predominantly the other hydrocarbons of the mixture are obtained.

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**3,930,991**

## MEAT PROCESSING

**Robert M. Gillespie, Grand Rapids, Mich., assignor to Sortex Company of North America, Inc., Lowell, Mich.**

**Division of Ser. No. 297,347, Oct. 13, 1974, Pat. No. 3,851,074. This application Oct. 25, 1974, Ser. No. 517,969**
**Int. Cl.² B07C *5/342***
**U.S. Cl. 209—3** **9 Claims**

**1.** A system for processing trim meat pieces having lean meat portions and fat portions, said system comprising:

means for dividing said trim meat pieces into substantially regular shape meat chunks having higher lean meat content and lower lean meat content;

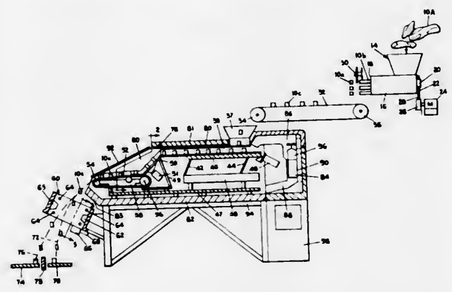


means for singularizing said meat chunks;

means to cool said meat chunks to a low temperature in said singularizing means;

A photometric sensing means for detecting an optical property related to the lean meat content of said meat chunks;

means for passing said singularized meat chunks through said photometric sensing means; and



means to sort said meat chunks according to the value of the optical property thus detected;

whereby said meat chunks are sorted according to the lean meat content thereof to achieve a fat rich concentrate and a lean meat rich concentrate.

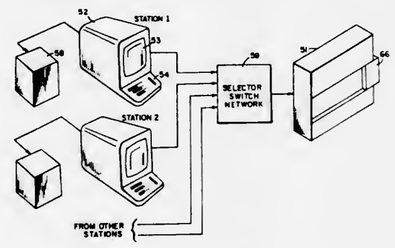
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**3,930,992**

## INFORMATION STORAGE RETRIEVAL SYSTEM

**Irwin D. Baumel, Jericho; Nathan A. Moerman, Roslyn Heights, and Attilio A. De Meo, Brooklyn, all of N.Y., assignors to Sanders Associates, Inc., Nashua, N.H.**

**Division of Ser. No. 730,246, May 20, 1968, Pat. No. 3,854,004. This application Feb. 19, 1974, Ser. No. 443,649**
**Int. Cl.² G06K *21/00***
**U.S. Cl. 209—73** **11 Claims**




**1.** In combination with a storage bin having a plurality of substantially planar records stored on edge therein and wherein each of said records is provided with a tab extending beyond the edge of the remainder of the record, apparatus positioned adjacent to said bin for partially extracting a preselected record, comprising,

a finger assembly including a pair of tab grasping fingers resiliently urged to an open position and selectively actuatable to a closed position,

means for positioning said finger assembly opposite the tab of said preselected record,

a record transporting mechanism including a pair of endless belts adjacent to each other for frictionally engaging a record therebetween and transporting it in either direction, and

means for successively

driving said belts in a direction to repel records toward said bin,

advancing said finger assembly forward toward said records,

closing said fingers so as to grasp the tab of the preselected record,

retracting said finger assembly to its initial position whereby said record is drawn between said belts despite their motion tending to repel the record, while adjacent records are repelled,

reversing the direction of motion of said belts, and

releasing said fingers,

whereby said preselected record is partially extracted from said bin.

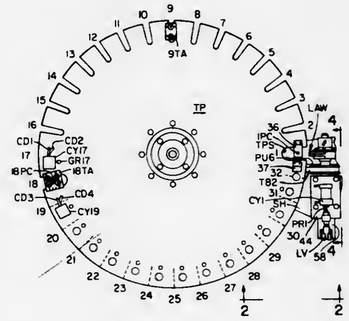
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**3,930,993**

## CAPACITOR TESTING AND SORTING APPARATUS

**Howard S. Best, Horseheads; Daniel J. Bustraan, Big Flats, and Bernard P. McDonnell, Elmira, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.**

**Filed Nov. 25, 1974, Ser. No. 527,067**
**Int. Cl.² G01R *11/52*, *27/26***
**U.S. Cl. 209—73** **15 Claims**




**1.** Apparatus for automatically testing and sorting a succession of similar cylindrical capacitors having axial leads and sequentially transported through a first path of travel to a loading station for transfer of each said capacitor successively to said apparatus, such apparatus comprising, in combination;

A. a capacitor conveyor having a capacitor receiving station located adjacent said loading station and carrying a succession of capacitor clamping assemblies;

B. means at said receiving station for successively transferring each said capacitor arriving at said loading station to said receiving station and thereby to said conveyor;

C. motor means for imparting periodic movements to said conveyor to successively convey said capacitors received at said receiving station through a second path of travel including, in sequence, such receiving station, a succession of capacitor electrical charge stations, a capacitor current leakage testing station, a capacitor electrical discharge station, a first capacitor reject station, an electrical capacitance testing station, a second capacitor reject station, and a succession of capacitor sorting stations, there being on said conveyor one of said capacitor clamping assemblies for each said station in said second path of travel;

D. a vertically reciprocative tool plate supported above said conveyor for movement between raised and lowered positions, such tool plate supporting,

a. at said receiving station, an opener for said clamping assemblies;

b. at each of said electrical charge, testing, and discharge stations, a capacitor lead contacting device; and

c. at each of said reject and sorting stations, an actuable opener for said clamping assemblies for selectively releasing capacitors clamped and carried thereby;

d. said motor means imparting said vertically reciprocative movement to said tool plate during dwell periods between said periodic movements of said conveyor, such tool plate briefly dwelling in its said lowered position at the end of each movement to such position;

E. means associated with each said electrical charge station for supplying through said capacitor lead contacting device, at each such charge station, an electrical charge to each capacitor moved to each respective charge station;

F. means associated with said current leakage testing station for testing, through said capacitor lead contacting device at such testing station, the current leakage of each capacitor moved to such station, such testing means providing a reject leakage classification for each said capacitor tested and having unsatisfactory leakage characteristics;

G. means associated with said electrical discharge station for discharging, through said capacitor lead contacting device at such discharge station, each of said capacitors moved to such station;

H. means for transferring each said reject leakage classification for a capacitor along with the respective capacitor as it is conveyed through said electrical discharge station to said first capacitor reject station;

I. means at said first reject station, and responsive to said classification transferring means, for actuating said actuable opener at such reject station to open each clamping assembly which is carried thereto and which is conveying a capacitor with a reject leakage classification, each such opening of a clamping assembly releasing into a reject bin the capacitor then being conveyed by the respective assembly;

J. means associated with said electrical capacitance testing station for testing, through said capacitor lead contacting device at such testing station, the capacitance of each capacitor moved to such station, such testing means providing a capacitance classification for each said capacitor tested;

K. means for transferring each said capacitance classification for a capacitor along with the respective capacitor during its conveyance from said capacitance testing station to said second reject station and sorting stations;

L. means at said second reject station, and responsive to said capacitance classification transferring means, for actuating said actuable opener at such reject station to open each clamping assembly which is carried thereto and which is conveying a capacitor with a capacitance classification which is without the limits of a selected range of capacitance, each such opening of a clamping assembly releasing into a reject bin the capacitor then being carried by the respective assembly; and

M. means at each of said sorting stations for selectively actuating said actuable opener at each of the respective such stations to open said clamping assemblies carried thereto to thereby release capacitors carried by such assemblies, each such actuation of a clamping assembly opener being selected by said capacitance classification transferring means to release each capacitor into a container respectively associated with the capacitance classification of such capacitor.

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**3,930,994**

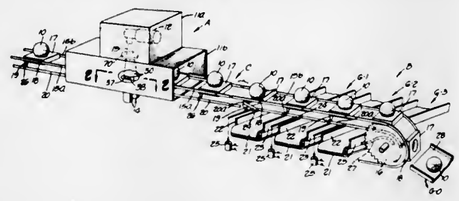
## METHOD AND MEANS FOR INTERNAL INSPECTION AND SORTING OF PRODUCE

**Tim D. Conway, Alta Loma, and Paul F. Paddock, Riverside, both of Calif., assignors to Sunkist Growers, Inc., Sherman Oaks, Calif.**

**Filed Oct. 3, 1973, Ser. No. 403,173. The portion of the term of this patent subsequent to Oct. 30, 1990, has been disclaimed.**
**Int. Cl.² B07C 5/34**
**U.S. Cl. 209—74 M** **40 Claims**

1. The method of automatically selecting and separating internally damaged citrus fruit from undamaged fruit, which comprises the steps of:

a. simultaneously scanning meat portions on opposite sides of each fruit core with light rays;



b. sensing variations in light transparencies of the scanned portions;

c. integrating the sensed variations to evaluate said damage and nondamage; and

d. classifying the fruits in accordance with such evaluations.

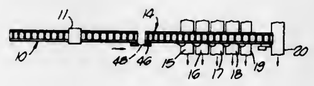
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**3,930,995**

## GRADE DISTRIBUTING APPARATUS

**Paul F. Paddock, Riverside, and Jerry W. Cramer, Upland, both of Calif., assignors to Sunkist Growers, Inc., Sherman Oaks, Calif.**

**Filed Aug. 19, 1974, Ser. No. 498,531**
**Int. Cl.² B07B 13/08**
**U.S. Cl. 209—74** **10 Claims**



1. In a sorting conveyor in a system for classifying and sorting objects by grades wherein the objects successively pass through an inspection station where evaluation signals are generated for a given set of grades of the objects and the sorting conveyor has a series of successive discharge stations corresponding to the given grades where the objects are released in response to the corresponding evaluation signals,

the combination of:

a conveyor;

a continuous series of interconnected holders for the inspected objects provided by the conveyor to convey the objects to the successive discharge stations,

each of said holders having a normal state to transport an object and being biased to a release state to release the object,

each holder being hingedly mounted on the conveyor with the hinge axis offset on one side from the center of gravity of the conveyor so that the holder is gravitationally biased to swing downward to discharge an object therefrom;

a corresponding series of latches on the conveyor traveling with the respective holders to releasably retain the holders in their normal states,

in which the corresponding latch releasably secures the holder to the conveyor on the opposite side of the center of gravity of the holder so that releasing the latch causes the holder to swing downward to release an object in the holder;

said latch being responsive to return swinging movement of the holder to latch the holder at its normal position, and in which the latch includes a downwardly extending spring-biased latch arm for hook engagement with a portion of the holder and the end of the latch arm is formed with a cam surface to cooperate with said portion of the holder so that on the return movement of the holder said portion of the holder impinges on said cam surface to retract the latch arm out of the way and then the latch arm snaps into engagement with the portion of the holder;

trippers at the respective discharge stations operable in response to corresponding evaluation signals to release the holders as the holders reach the discharge stations; and

fixed means in the path of the released holder to cam the holder back to its normal position.



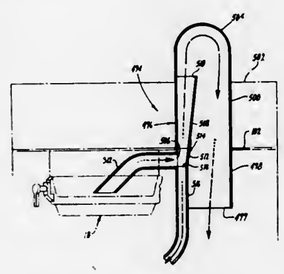
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**3,930,996**

## AUTOMATIC POPCORN POPPING METHOD

**Alan M. Day, Oakland, and Gordon D. Browning, Castro Valley, both of Calif., assignors to Humbolt Instrument Co., San Leandro, Calif.**

**Division of Ser. No. 283,932, Aug. 25, 1972, Pat. No. 3,812,774, which is a division of Ser. No. 875,759, Nov. 12, 1969, Pat. No. 3,697,289. This application May 6, 1974, Ser. No. 466,866**
**Int. Cl.² B07B 7/01**
**U.S. Cl. 209—139 R** **4 Claims**



1. The method of removing popped corn from the closed pot of a popcorn popping machine in which popcorn has been cooked in heated seasoning oil, including the steps of: maintaining the pot closed except for an air inlet opening and an evacuation outlet: directing an air current through the air inlet opening into the pot; carrying the popped corn and unpopped kernels out of the pot with said air current through the evacuation outlet; directing the air current with the evacuated popped corn and kernels along a path whereby the kernels drop downwardly by gravity and the popped corn is directed along a path separated from the kernals; and collecting the kernels for removal from the machine.

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**3,930,997**

## UNIVALENT METAL DOUBLE CYANIDE AS REDUCING AGENTS IN FROTH FLOTATION OF MINERAL

**Vojislav Petrovich, 1925 W. Schiller St., Chicago, Ill. 60622**

**Filed Apr. 30, 1974, Ser. No. 465,409**
**Int. Cl.² B03D 1/02**
**U.S. Cl. 209—166** **1 Claim**

1. An improved method of beneficiating ores and minerals selected from the group of dioxides of manganese, tin, titanium, thorium, the vanadates and the wolframates by froth flotation process to produce a froth concentrate of desired metal value, which improvement comprises; effecting froth flotation of the ore by treating the comminuted ore of the mineral slurry with dipotassium manganese, or dipotassium iron, or dipotassium nickel tricyanide, which compounds act as reducing agents reducing said ores and minerals with the recited cyanides to a lower oxidizing state, and an addition of adequate amounts of potassium cyanide and sulfuric acid, followed by an effective amount of a collector selected from the group of olefine alcohols or propargyl carbinols, said alcohols and said carbinols have from 5 to 15 carbon atoms; and recovering a froth concentrate relatively rich in the desired metal value to leave the tailings relatively poor in the desired metal value.

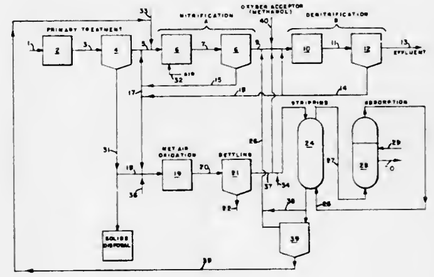
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**3,930,998**

## WASTEWATER TREATMENT

**Paul V. Knopp, Wausau, and Wayne B. Gitchel, Rothschild, both of Wis., assignors to Sterling Drug Inc., New York, N.Y.**

**Filed Sept. 18, 1974, Ser. No. 506,977**
**Int. Cl.² C02C 3/00**
**U.S. Cl. 210—5** **8 Claims**



1. In a process of nitrogen removal from wastewater comprising:

a. mixing wastewater containing reduced nitrogenous compounds with active nitrifying organisms and an oxygen-containing gas for a sufficient length of time to convert substantially all of the nitrogenous material to the nitrate form and thereby produce a nitrified wastewater stream and accumulated biomass;

b. separating said nitrifying organisms and accumulated biomass from said nitrified wastewater stream, recycling the separated nitrifying organisms and accumulated biomass to the nitrification contacting step, and periodically or continuously removing a portion of the accumulated biomass from the nitrifying step;

c. contacting said nitrified wastewater stream with heterotrophic denitrifying organisms and an organic carbon source for a length of time sufficient to reduce the nitrate nitrogen to elemental nitrogen;

d. separating said denitrifying organisms and accumulated biomass from the denitrified wastewater stream, recycling the separated denitrifying organisms and accumulated biomass to the denitrification step, and periodically or continuously removing a portion of the accumulated biomass from the denitrifying step; and

e. removing a final effluent with nitrogen removed therefrom; the improvement which comprises heating the biomass removed from the nitrifying and denitrifying steps in the presence of an oxygen-containing gas at a temperature of 175°C. to 315°C. at an oxygen partial pressure of 5 to 250 psi to partially oxidize the biomass and convert substantially all of the organic nitrogen to ammonia nitrogen, separating the resulting oxidized mixture into a solid phase and a liquid phase, removing ammonia from the liquid phase and directing said liquid phase to the denitrifying contact step to provide a source of organic carbon for the denitrifying organisms.

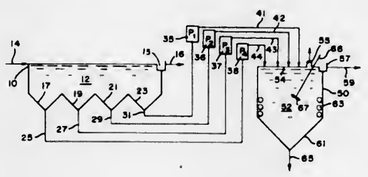
### 3,930,999
### PULSE TRANSFER THICKENING

**John B. Rosenquest, Jr., New Canaan, Conn., assignor to Dorr-Oliver Incorporated, Stamford, Conn.**

**Filed Dec. 12, 1973, Ser. No. 426,661. The portion of the term of this patent subsequent to June 11, 1991, has been disclaimed.**

**Int. Cl.² B01D** *17/00*

**U.S. Cl. 210—19** **9 Claims**



1. A method for obtaining improved thickening of sewage sludge in a primary settling tank which comprises regular pulsed discharge of the thickened sludge from the primary settling tank, wherein from 1 to 20 discharge pulses per minute are employed, each pulse imparting to the sludge a peak velocity of at least 2.5 feet per second.

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### 3,931,000
### COALESCING DIALYSIS

**Charles Eugene Hamilton, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.**

**Filed Nov. 1, 1972, Ser. No. 302,838**

**Int. Cl.² B01D** *13/00*

**U.S. Cl. 210—22** **6 Claims**

1. A process comprising:
   a. contacting a heterogeneous dispersion in which the disperse phase is a polysubstituted phenolic compound with one side of a membrane in which the disperse phase is soluble and on which the disperse phase coalesces; and
   b. contacting the opposite side of the membrane with a membrane insoluble reactant for the disperse phase whereby the disperse phase is reacted to produce a material which is essentially insoluble in the membrane without the build-up of a back pressure against said opposite side of said membrane.

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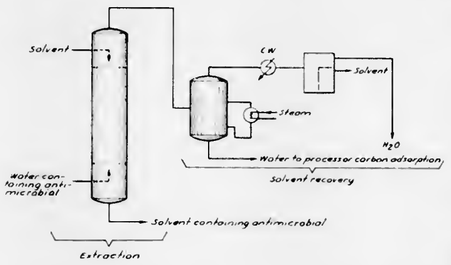
### 3,931,001
### PENTACHLOROPHENOL RECOVERY WITH METHYLENE CHLORIDE

**William D. Winn, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.**

**Filed June 14, 1974, Ser. No. 479,340**

**Int. Cl.² B01D** *3/00, 11/00*

**U.S. Cl. 210—22** **1 Claim**




1. A process for recovering pentachlorophenol from water which comprises:
   a. contacting in a zone the water containing pentachlorophenol in a countercurrent manner with methylene chloride to produce an aqueous phase and a methylene chloride phase;
   b. withdrawing the aqueous phase from the top of said contacting zone;
   c. withdrawing said methylene chloride phase from the bottom of said contacting zone;
   d. heating the withdrawn aqueous phase to distill the methylene chloride from the phase;
   e. discarding the residue of said distillation;
   f. condensing the methylene chloride and water vapors from said distillation;
   g. separating the condensed methylene chloride from said condensed water by decantation;
   h. mixing the methylene chloride so separated with the withdrawn methylene chloride phase from the contacting zone;

   said contacting zone being packed to increase the contact of the methylene chloride and the water phases;

   said methylene chloride being employed in an amount sufficient to (1) dissolve the pentachlorophenol in the water entering the zone and (2) in an amount in excess of that necessary to saturate the aqueous phase in order to insure phase separation of the water and methylene chloride.

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### 3,931,002
### PROCESS FOR REMOVING HEAVY METALS FROM SOLUTIONS

**Johannes H. Ottenheym, Sittard, and Bernardus H. N. Dassen, Kerkrade, both of Netherlands, assignors to Stamicarbon B.V., Geleen, Netherlands**

**Filed June 18, 1973, Ser. No. 370,592**

**Claims priority, application Netherlands, June 17, 1972, 7208321; May 1, 1973, 7306014; May 17, 1973, 7306862**

**Int. Cl.² B01D** *15/00*; **C02B** *1/42*; **C07G** *7/00*

**U.S. Cl. 210—24** **3 Claims**

1. A process for removing heavy metals from solutions and gaseous mixtures which comprises:
   a. contacting the solutions or gaseous mixtures with a sulphur-containing reagent selected from the group consisting of reduced keratin, Bunte salts of keratin, and natural or synthetic polyamides at least part of whose amide groups has been replaced by thio-amide groups, whereby the metals are bound to the reagent, and
   b. separating the loaded reagent formed in (a), wherein the Bunte salts of keratin are derived from keratin by treatment of the keratin in an aqueous medium with the aid of sulphite ions in which an oxidant is used to cause the reaction to go to completion and wherein the sulphite ions are derived from either alkali metal sulphites or alkaline earth metal sulphites and a tetrathionate is used as an oxidant.

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### 3,931,003
### ION EXCHANGER FOR THE TREATMENT OF WASTE WATER

**Sven Erik Jorgensen, Langkaer Vaenge 9, DK-3500 Vaerlose, Denmark**

**Filed Feb. 27, 1974, Ser. No. 446,476**

**Claims priority, application United Kingdom, Mar. 2, 1973, 10248/73**

**Int. Cl.² B01D** *15/04*

**U.S. Cl. 210—28** **10 Claims**

1. A method for the treatment of waste water to remove dissolved high molecular weight organic compounds, ammonium ions and phosphate ions therefrom which comprises subjecting the waste water to a treatment with a chemical selected from the group consisting of precipitating agents and flocculating agents and subsequently passing the pretreated water through a bed consisting of a cellulose ion-exchanger impregnated with γ-manganese dioxide.



### 3,931,004
### METHOD OF TREATING WASTE LIQUIDS FROM PHOTOGRAPHIC PROCESSINGS

**Isao Shimamura, and Haruhiko Iwano, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan**

**Filed Apr. 19, 1973, Ser. No. 352,817**

**Claims priority, application Japan, Apr. 21, 1972, 47-40205**

**Int. Cl.² B01D** *15/06*

**U.S. Cl. 210—32** **17 Claims**

1. A method of treating a waste liquid from a reducer used for the reducing treatment of photographic printing materials containing ferricyanide ions and/or ferrocyanide ions from photographic processings which comprises contacting the waste liquid with a weakly-basic anion-exchange resin in the presence of ammonium ions and thiosulfate ions.

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### 3,931,005
### PROCESS FOR SEPARATING OIL FROM EMULSIONS OF OIL IN WATER

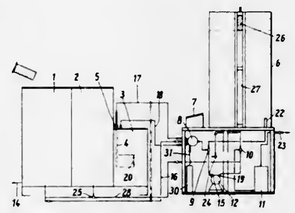
**Adolf Gasser, 9495 Triesen, Liechtenstein**

**Continuation of Ser. No. 164,872, July 26, 1971, abandoned, which is a continuation of Ser. No. 827,387, May 21, 1969, abandoned. This application Aug. 31, 1973, Ser. No. 393,682**

**Claims priority, application Austria, May 27, 1968, 5063/68**

**Int. Cl.² B01D** *17/04*

**U.S. Cl. 210—43** **16 Claims**



1. A single-stage process of separating oil from an oil-in-water emulsion which comprises adding a ferric salt to the emulsion, thereafter adding to the emulsion containing the ferric salt used oil and an alkali in sufficient amount to adjust the hydrogen-ion concentration of the mixture to a pH between 5.5 and 6.5, subsequently adding an aqueous solution of high-molecular weight water-soluble polymeric flocculating agent to the mixture, intimately mixing the mixture and thereafter allowing it to stand for a sufficient period for it to stratify into two phases, one phase consisting essentially of water free from oil and the other consisting of the flocculating agent and the ferric hydroxide containing the oil present in the emulsion, and finally separating the two phases.

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### 3,931,006
### METHOD OF REDUCING SLUDGE ACCUMULATION FROM TAR SANDS HOT WATER PROCESS

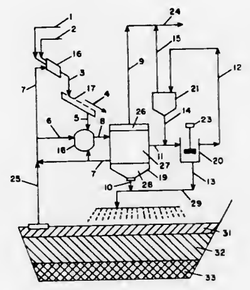
**Robert A. Baillie, and James Van Dyck Fear, both of West Chester, Pa., assignors to Great Canadian Oil Sands Limited, Toronto, Canada**

**Filed Oct. 17, 1974, Ser. No. 515,777**

**Int. Cl.² B01D** *21/00*

**U.S. Cl. 210—46** **1 Claim**

1. In a hot water process for extracting bitumen from tar sands wherein said tar sands are mulled with water at a temperature in the range of 170° to 190°F. to provide a bituminous froth product and a waste water stream containing 35 to 75% solids by weight including sand, silt, clay and bitumen and wherein said waste water stream is stored in a retention pond containing an upper layer of water and a lower layer of sludge containing up to 50% by weight dispersed solids including clay, silt and bitumen, the improvement which comprises a method for compacting said sludge layer which comprises dispersing said waste water stream over the surface of said



pond thereby raining the sand in said waste water stream through said sludge layer thereby compacting said sludge layer and increasing the proportion of the non-sludge layer in the pond.

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### 3,931,007
### METHOD OF EXTRACTING HEAVY METALS FROM INDUSTRIAL WASTE WATERS

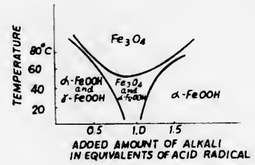
**Izuru Sugano; Toshiro Tsuji, and Masaru Kanamori, all of Tokyo, Japan, assignors to Nippon Electric Company Limited, Tokyo, Japan**

**Filed Dec. 17, 1973, Ser. No. 425,123**

**Claims priority, application Japan, Dec. 19, 1972, 47-127816; Dec. 20, 1972, 47-128666; Apr. 10, 1973, 48-41172**

**Int. Cl.² C02B** *1/20*

**U.S. Cl. 210—50** **11 Claims**




9. A method of removing at least one heavy metal selected from the group consisting of Pb, Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, Y, Cd, Sn, Hg, Bi, Al, and Mg from waste water, comprising the steps of providing said waste water with ferrous ions and a base selected from the group consisting of hydroxides and carbonates of alkali metals and alkaline earth metals and ammonium hydroxide, the mol amount of ferrous ions being at least two times the total mols of heavy metals present in the waste water other than ferrous ions, the base being added in an amount corresponding to 0.9 to 1.2 equivalent of acid radicals present in the water, thereby providing a suspension of metal hydroxides including ferrous hydroxide, bubbling an oxygen-containing gas into the suspension to oxidize said suspension and form a crystalline precipitate consisting essentially of at least one ferric compound selected from the group consisting of ferrites, magnetite, and oxyhydrate of iron and containing said at least one metal originally contained in said waste water, and separating the precipitate from said waste water.

**3,931,008**

## APPARATUS FOR THE TREATMENT OF LIQUID WASTES

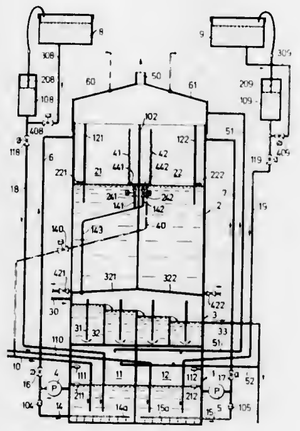
**Jean-Claude Page, Fribourg; Armand Rappaz, Villars-sur-Glane, and Ulrich Frauchiger, Marly, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland**

**Continuation of Ser. No. 361,901, May 21, 1973, abandoned. This application Nov. 21, 1974, Ser. No. 525,907**

**Claims priority, application Switzerland, June 8, 1972, 8506/72**

**Int. Cl.² B01D** *21/08*

**U.S. Cl. 210—104** **3 Claims**



**1.** An apparatus for the treatment of at least two liquid wastes which are chemically incompatible with one another, comprising at least two addition chambers for receiving respective wastes, a common dilution chamber above said addition chambers, at least two sedimentation chambers above said dilution chamber, inlet means for introducing a respective liquid waste into each of said addition members, inlet means for introducing a respective treating substance into each of said addition chambers, at least two pumps each respectively connected with one of said addition chambers, respective pipe means connecting each pump with one of said sedimentation chambers and for recirculating liquid from said one addition chamber back thereto, means for removing sediment from said sedimentation chambers, filter chambers each associated with a respective one of said sedimentation chambers for collection of filtered overflow therein, conduit means for receipt of overflow from said sedimentation chambers and delivery to said common dilution chamber, means for introducing diluent to said dilution chamber, means for withdrawing diluted product from said dilution chamber, and a valved cross-over transfer conduit connecting the filter chamber of one of said sedimentation chambers with another non-respective addition chamber for selective supply of filtered overflow to said other addition chamber, whereby fresh wastes are separately treated, allowed to settle and are then combined for dilution prior to discharge.

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**3,931,009**

## WATER PURIFICATION APPARATUS AND TIMING DEVICE FOR INITIATING A BACKWASHING CYCLE

**Oliver Thurston Davis, Rte. 1, P.O. Box 33, Dunlap, Tenn. 37327**

**Filed Jan. 17, 1974, Ser. No. 434,184**

**Int. Cl.² B01D** *23/24, 23/20;* **G01F** *3/24*

**U.S. Cl. 210—108** **8 Claims**

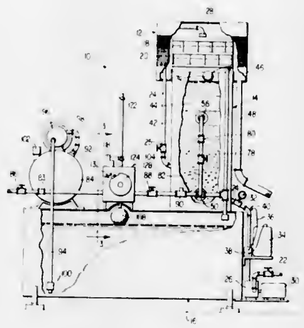
**1.** A water purification apparatus comprising:

a. an aeration chamber means for areating unpurified water introduced thereto from a source;

b. a filter chamber means directly beneath said areation chamber means containing a granular media extending from the top to the bottom of said filter chamber for filtering said aerated water;

c. means in said filter chamber for collecting said filtered water;

d. reservoir means directly beneath said filter chamber for storing said collected water;



e. automatic means for stopping the introduction of unpurified water to said aeration chamber when said reservoir means is full;

f. automatic means for controlling the flow of said filtered water from said collecting means to said reservoir in response to the water level of said areated water in said filter chamber;

g. means for introducing backwash water at different levels within said granular media; and

h. automatic means for starting the introduction of said backwash water in response to the frequency said reservoir has been filled and emptied of purified water.

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**3,931,010**

## SERUM/PLASMA SEPARATORS WITH CENTRIFUGAL VALVES

**Waldemar A. Ayres, Rutherford, and William J. Holderith, Wyckoff, both of N.J., assignors to Becton, Dickinson and Company, East Rutherford, N.J.**

**Filed Feb. 27, 1974, Ser. No. 446,353**

**Int. Cl.² B01D** *21/26*

**U.S. Cl. 210—109** **5 Claims**

**1.** A self-contained fluid separator assembly, capable of separating blood into its component parts of plasma or serum and cellular portion, comprising:

a. a container having at least one open end which is adapted to receive blood for subsequent separation into a light phase ans a heavy phase;

b. a closure sealing the open end of the container, the closure being formed of a self-sealing elastomeric material which is penetrable by a cannula through which blood to be separated is conducted into the container;

c. a piston having a specific gravity relatively greater than the cellular portion of the blood and slidably mounted in the upper portion of the container and having means on an outer surface in sealing engagement with an inner surface of the container;

d. centrifugally actuated valve means associated with said piston, said valve means being in the form of a downwardly projecting substantially dome-shaped concave diaphragm having a specific gravity greater than blood and having a slit therein openable when subjected to substantial centrifugal force, said valve means being normally closed, so that when said container is subjected to



moderate centrifugal force the blood separates into its light phase and heavy phase with the piston staying in the upper portion of the container, and subsequently when increased centrifugal force is used on the valve means automatically opens with the light phase passing up through the valve means enabling the piston to move down through the light phase while retaining sealing engagement with the inner surfaces of the container, said valve means remaining open until termination of the substantial centrifugal force; and



mechanical stop means on the container whereby the piston when moving through the light phase will stop a predetermined distance from one of the ends of the container followed by termination of substantial centrifugal force which permits the vlave means to automatically shift from an open position to a closed position to provide an impervious barrier between the separated light phase and heavy phase of the blood.

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**3,931,011**

## FLUID SEPARATION APPARATUS

**Mark S. Richards, and Shannon B. Copeland, both of Modesto, Calif., assignors to Racor Industries, Inc., Modesto, Calif.**

**Filed Nov. 19, 1973, Ser. No. 417,225**

**Int. Cl.² B01D** *27/08*

**U.S. Cl. 210—136** **5 Claims**

**1.** Apparatus for separating low density fluid from high density fluid and particles comprising:

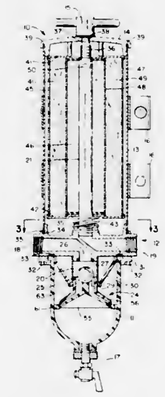
a. a fluid impervious hollow elongated chamber closed at one end by cup means;

b. a fluid inlet passage extending into said chamber intermediate the ends thereof and having a tubular portion with a free end extending toward said cup means along the axis of elongation of said chamber;

c. a fluid impervious funnel member surrounding said tubular portion of said inlet passage in close spaced relation to the outer surface thereof, the apex of said funnel member extending toward said cup member and the outer periphery of said funnel member forming a fluid-tight annular joint with the inner wall of said chamber;

d. a deflector turbine means mounted at the free end of said tubular portion of said inlet passage to receive fluid from said inlet passage and urge said fluid to move in generally annular paths about the axis of elongation of said chamber, said deflector turbine means including a frusto-conical fluid impervious surface spaced from the free end of said tubular portion of said inlet passage having helical flutes therein and extending across said chamber with the apex thereof adjacent said free end of said tubular portion of said inlet passage and the periphery of the base thereof in close spaced relation to the inner surface of said chamber, said periphery of the base of said frusto-conical fluid impervious surface having a plurality of protuberances spaced from each other thereabout with each of said protuberances being located between a different pair of flutes on said frusto-conical surface and extending into contact with the inner surface of said chamber, and a frusto-conical member having an aperture at its apex communicating with said free end of said tubular portion of said inlet passage and having an inner frusto-conical surface mating with said fluted frusto-conical fluid impervious surface in close spaced relation thereto and an outer frusto-conical surface substantially parallel to said inner frusto-conical surface;

e. an outlet passage extending out of said chamber intermediate its ends and having a tubular portion extending



away from said cup means along the axis of elongation of said chamber;

f. a tubular filter element more pervious to said low density fluid than said high density fluid surrounding said tubular portion of said outlet passage in spaced relation thereto, the outer surface of said tubular filter element being spaced from the inner surface of said chamber;

g. fluid impervious wall means extending outwardly from the outer surface of said tubular portion of said outlet passage and across the inner end of said tubular filter element, said wall means forming fluid-tight joints with said outer surface of said tubular portion of said outlet passage and with the inner end of said tubular filter element and having its outer periphery in close spaced relation to the inner surface of said chamber; and

h. fluid impervious cap means closing the other end of said chamber.

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**3,931,012**

## SEWAGE TREATMENT SYSTEM

**Henry Huse, Darien, Conn., assignor to Atlantic Fluidics, Inc., Stamford, Conn.**

**Filed Feb. 19, 1974, Ser. No. 443,255**

**Int. Cl.² B01D** *33/00*

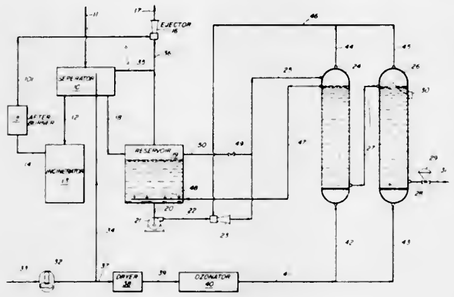
**U.S. Cl. 210—152** **2 Claims**

**1.** A sewage treatment system including in combination: an incinerator for receiving solids and burning them to inert ash, a liquid reactor column for receiving separated liquids,

a separator for receiving sewage wastes containing solids and liquids and for separating the solids and the liquids, said separator including an endless screen, drive and idler pulleys supporting said screen for movement in a horizon-

tal plane, first means for disposing said sewage wastes on said screen so that liquid flows therethrough by gravity and solids are held on said screen and dropped by gravity at one of said pulleys and second and third means for respectively delivering said liquid to said column and said solids to said incinerator;

said incinerator including a removable vessel for receiving said solids, tungsten-quartz infrared radiant heaters directed to the top of said vessel to incinerate said solids contained therewithin, an insulated first chamber enclosing said vessel and said radiant heaters, an insulated and gasketed access door to said first chamber, an afterburner, a second chamber of said afterburner, conduit means connecting said first and second chambers for flow



of gas and vapor discharge from said first chamber to said second chamber, infra-red radiant heating elements external of said second chamber and heating the same, said second chamber being provided with conductive and non-corrosive material through which gases and vapor are directed whereby upon contact residual hydrocarbon gases are oxidized and vapors superheated and means for introducing air into said afterburner to act as an oxidizer; means for introducing ozone into said column to contact the liquids therein oxidizing organic pollutants in the liquids; and

level control means on said column to control liquid level in said column and by linkage to overflow valve control the flow of water through the column and maintain a constant level of water in the column.

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**3,931,013**

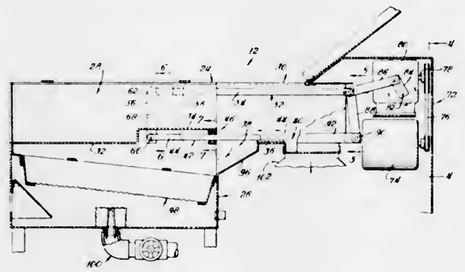
## WATER SEPARATOR-RECIRCULATOR FOR DISHWASHING MACHINE

**Erik O. Vilen, La Grange Park, and Vytas Zygas, Cicero, both of Ill., assignors to G. S. Balkeslee & Co., Cicero, Ill.**

**Filed Aug. 30, 1974, Ser. No. 501,889**

**Int. Cl.² B01D** *33/22*

**U.S. Cl. 210—152** **7 Claims**



**1.** A water-waste separator comprising a trough into which mixed water and waste is introduced at one end thereof, a first opening in the bottom of said trough intermediate of the ends thereof, a second opening in the bottom of said trough at the other end thereof, a plurality of horizontal laterally spaced apart elongated grid bars overlying said first opening and accommodating the flow of water therethrough into said first opening, a stationary transverse wiper unit along the upstream side of said first opening and having a plurality of laterally spaced apart apertures, said grid bars being slidably supported in said apertures of said wiper unit, and means for oscillating said grid bars whereby waste collected thereon is cyclically forced by said wiper unit over the ends of said grid bars and is directed into said second opening.

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**3,931,014**

## FILTER PLATE-AND-DIAPHRAGM ASSEMBLIES FOR A FILTER PRESS

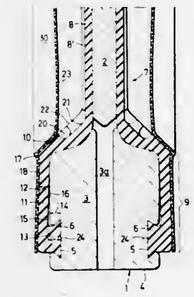
**Franz Heimbach, and Alfons Schotten, both of Duren, Germany, assignors to Eberhard Hoesch & Soehne, Duren, Germany**

**Filed Apr. 29, 1974, Ser. No. 465,364**

**Claims priority, application Germany, May 2, 1973, 2322044**

**Int. Cl.² B01D** *25/12*

**U.S. Cl. 210—231** **7 Claims**



**1.** In a filter plate-and-diaphragm assembly of the type including a filter plate having a base and a marginally extending frame, the frame having a sealing face; a pressure diaphragm having a dished base and a marginally extending sealing zone lying over the sealing face of the frame; the sealing zone including a sealing face oriented toward and adjoining the sealing face of the frame; means provided in said filter plate for introducing a pressure medium between the diaphragm base and the plate base; a portion of the diaphragm and a portion of the filter plate together defining between themselves and inwardly of the sealing zone, a pressure chamber for the pressure medium, the improvement comprising:

a. means defining a groove in said frame;

b. a rib forming part of said diaphragm and received in said groove, said rib being situated in said sealing zone adjacent an edge thereof, said edge being remote from said portions defining said pressure chamber, whereby said sealing face of said diaphragm being disposed between said rib and said portions defining said pressure chamber;

c. means defining open channels on that side of the diaphragm base that is oriented away from the plate base;

d. a truncated pyramidal portion forming part of said diaphragm and connecting said sealing zone of said diaphragm with the diaphragm base; and

e. means defining a plurality of additional open channels in said truncated pyramidal portion, said additional open channels being oriented away from the plate base.



**3,931,015**

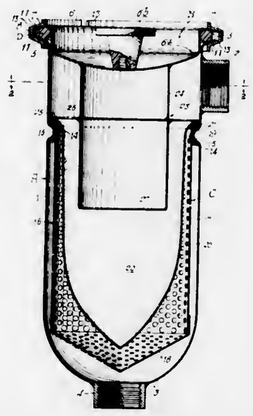
## FILTER VESSEL AND FILTER ELEMENT ASSEMBLY

**Bernard M. Jenkins, Chatham, N.J., assignor to C. B. Kaupp & Sons, Inc., Maplewood, N.J.**

**Filed Dec. 4, 1974, Ser. No. 529,370**

**Int. Cl.² B01D** *29/10*

**U.S. Cl. 210—232** **3 Claims**



**1.** A filter comprising a casing having a vertical cylindrical side wall, an open top, a side inlet extending through said side wall below said open top, and a bottom outlet, said cylindrical wall having a circumferentially indented portion providing an inner circumferential shoulder below said inlet and above said outlet, a filter element open at its top and having a circumferential outward projection separably seated on said shoulder below said inlet, a cover including a top wall and closing said top of said cylindrical side wall and having an extension to extend into said casing to a point below said inlet and engage said outward projection of the filter element and press said projection against said shoulder when the cover is closed, said extension having perforations located above said shoulder when the cover is closed and providing for flow of liquid from said inlet through the open top of said filter element, and means for releasably holding said cover in closed position.

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**3,931,016**

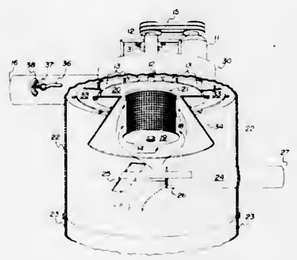
## SELF-CLEANING FLUID FILTER

**Grady R. Lovelady, 1624 San Altos Place, Lemon Grove, Calif. 92045**

**Filed Feb. 20, 1975, Ser. No. 551,258**

**Int. Cl.² B01D** *23/24*

**U.S. Cl. 210—297** **4 Claims**



**1.** A self-cleaning fluid filter comprising:

a housing, said housing having an intake opening in one side thereof, and a centrally located exhaust opening in a top portion thereof;

a pump disposed immediately above said exhaust opening, said pump having a plurality of blades;

a pump duct surrounding said pump and having an exhaust opening;

an annular plate fixedly attached to the bottom edges of the blades of said pump;

a cylindrical filter drum attached to said annular plate at a top portion thereof and extending downwardly into said housing through said centrally located exhaust opening, said annular plate and said cylindrical filter drum being disposed in close proximity to said exhaust opening with said annular plate overlapping said exhaust opening; and

a deflection plate disposed in proximity to said inlet in the direction of flow from said inlet and angled for deflecting particles away from said cylindrical drum.

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**3,931,017**

## FILTER UNIT

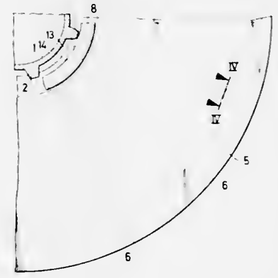
**Wilfried Schulte, Hofheim, Taunus; Horst Sowa, Frankfurt am Main, and Klaus Kerger, Schwalbach, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany**

**Filed Apr. 25, 1974, Ser. No. 464,205**

**Claims priority, application Germany, Apr. 27, 1973, 2321320**

**Int. Cl.² B01D** *33/02*

**U.S. Cl. 210—330** **4 Claims**

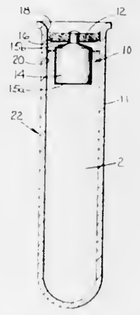


**1.** A filter unit for use in a filter casing having fluid inlet and outlet openings, said unit including a hollow shaft having a plurality of elongated radial ribs thereon extending along the length of the shaft, defining fluid flow channels therebetween, and filtrate outlet openings communicating with said channels and an outlet in said casing; a plurality of filter disks concentrically mounted in stacked superimposed relation on said shaft and each having first and second opposite surfaces with said second surfaces having radially extending ribs formed thereon of predetermined height; a plurality of spacer rings concentrically mounted on said shaft and respectively located between and engaged with adjacent pairs of filter disks, said rings each having a plurality of spacer cams formed on one side thereof engaging the first side of an immediately adjacent filter disk and defining a predetermined free cross-sectional area between the ring and the immediately adjacent filter disk engaged with its spacer cams, a plurality of filtering sheets respectively secured to said filter disks on the first side thereof, each of said sheets having inner ends positioned over the side of the spacer ring engaged with its associated filter disk which is opposite to the spacer cams thereof, thereby to define a fluid passage between the sheet and the disk which communicates through said free cross sectional area of the ring with the flow channels defined by said shaft ribs, whereby fluid to be filtered flows between the ribs on the second side of a filter disk through the filter medium on the first side of its adjacent filter disk to be filtered thereby, and the filtrate then flows into said passage to said channels and filtrate outlet openings in the shaft.

### 3,931,018
### ASSEMBLY FOR COLLECTION, SEPARATION AND FILTRATION OF BLOOD

**Howard North, Jr., Newfoundland, N.J., assignor to Becton, Dickinson and Company, East Rutherford, N.J.**

**Filed Aug. 9, 1974, Ser. No. 496,029**
**Int. Cl.² B01D** *33/00*
**U.S. Cl. 210—359** **14 Claims**

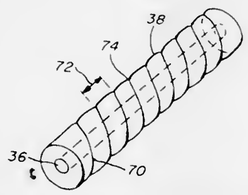



1. An assembly for the collection, separation and filtration of the liquid portion of blood, which comprises:
a tubular container having one open end and one closed end;
a removable closure for said open end;
a piston component which comprises,
a. a cylindrical flexible filter member slidably mounted in said container so as to form a sliding fit with the inner wall of said container and having a central portion and a peripheral portion; and
b. a mass member having a width which is less than the diameter of said filter member, said mass member being attached to the central portion of one end of said filter member so that the periphery portion of said filter member extends radially beyond said mass member, whereby said mass does not mate with the inner walls of said container, said filter member and said mass member together having a specific gravity within the range of from about 1.03 to about 1.09.

### 3,931,019
### REINFORCED COALESCING CELL

**Leslie L. Fowler, Tulsa, Okla., assignor to Products and Pollution Controls Co., Tulsa, Okla.**

**Continuation-in-part of Ser. No. 408,458, Oct. 23, 1073, abandoned. This application Feb. 18, 1975, Ser. No. 550,188**
**Int. Cl.² B01D** *25/22*
**U.S. Cl. 210—485** **3 Claims**




1. A coalescing cell for use in coalescing oil dispersed in a water emulsion, comprising:
an elongated perforated tube core into which emulsion is injected;
at least one layer of emulsion breaking fibrous material wound around said core through which emulsion is forced to pass; and
a length of wire wound helically on the exterior cylindrical surface of said fibrous material, the wire being wound thereon with a tension of about 10 to 25 pounds, the spacing between the wire being between ¼ inch and 1 inch, the wire forming a helical indentation in the cylindrical surface of the fibrous material.

### 3,931,020
### SMOKELESS FORGING LUBRICANT

**Lester E. Burgess, Swarthmore, and Sheldon A. Spachner, Havertown, both of Pa., assignors to Gulf & Western Industries, Inc., New York, N.Y.**

**Filed Aug. 22, 1974, Ser. No. 499,436**
**Int. Cl.² C10M** *1/10, 3/02, 5/02, 7/02*
**U.S. Cl. 252—30** **25 Claims**

1. A lubricant for metal working operations comprises a mixture of sodium bicarbonate, sodium nitrite, and a particulate lubricant selected from the group consisting of graphite and zinc oxide.

### 3,931,021
### METHOD FOR CONTROLLING VISCOSITY OF LUBRICATING OILS

**Robert D. Lundberg, Somerville, N.J., assignor to Exxon Research and Engineering Company, Linden, N.J.**

**Filed May 17, 1974, Ser. No. 470,806**
**Int. Cl.² C01M** *1/44*
**U.S. Cl. 252—32.5** **38 Claims**

1. A method for controlling the viscosity of a lubricating oil, said lubricating oil having a solubility parameter of from about 6.0 to about 10.5 and a viscosity of from 35 to 50,000 SUS at 100°F., which comprises incorporating in said lubricating oil an ionomeric polymer, said ionomeric polymer comprising a hydrocarbon backbone which is substantially soluble in said lubricating oil and from 0.2 to 10 mole % pendant ionic groups, said pendant ionic groups being selected from the group consisting of carboxylate, phosphonate and sulfonate groups, and said pendant ionic groups being neutralized to a degree of from 50 to 500 mole % with a basic material selected from Groups IA, IIA, IB, and IIB of the Periodic Table of the Elements and lead, tin and antimony, and polar cosolvent having a solubility parameter of from about 10 to 20, the solubility parameter of said polar solvent being at least 1.0 unit higher than the solubility parameter of said lubricating oil, and said polar cosolvent being soluble or miscible with said lubricating oil, wherein said ionomeric polymer is incorporated into said lubricating oil at a level of from 0.1 to 20 weight % of said lubricating oil, and said polar cosolvent being incorporated into said lubricating oil in an amount of from 10 to 600 moles per mole of pendant ionic group.

20. A composition of matter comprising a major amount of a lubricating oil having a solubility parameter of from 6.0 to 10.5 and a viscosity of 35 to 50,000 SUS at 100°F., and an ionomeric polymer, said ionomeric polymer comprising a hydrocarbon backbone which is substantially soluble in said lubricating oil and from 0.2 to 10 mole % pendant ionic groups, said pendant ionic groups being selected from the group consisting of carboxylate, phosphonate and sulfonate groups, and said pendant ionic groups being neutralized to a degree of from 50 to 500 mole % with a basic material selected from Groups IA, IIA, IB, and IIB of the Periodic Table of the Elements and lead, tin and antimony, and a polar cosolvent having a solubility parameter of from about 10 to 20, the solubility parameter of said polar solvent being at least 1.0 unit higher than the solubility parameter of said lubricating oil, said polar cosolvent being soluble or miscible with said lubricating oil, wherein said composition of matter comprises from 0.1 to 20 weight %, based on said lubricating oil, of said ionomeric polymer, and from 10 to 600 moles polar cosolvent per mole pendant ionic group.

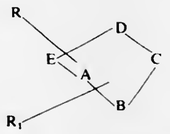


### 3,931,022
### TURBINE LUBRICANT AND METHOD

**Ralph P. Chesluk; Norman R. Odell; Lawrence F. Kuntschik, all of Nederland, and James A. White, Houston, all of Tex., assignors to Texaco Inc., New York, N.Y.**

**Filed Sept. 16, 1974, Ser. No. 506,089**
**Int. Cl.² C10M** *1/38, 3/32, 5/28, 7/36*
**U.S. Cl. 252—47.5** **13 Claims**

1. A vapor phase rust inhibiting, oxidation stable, lubricating composition having improved air release properties and comprising in combination, a major amount of a mineral lubricating oil having an SUS viscosity at 100°F. between 70 and 5000; a minor effective oxidation stabilizing amount of a heterocyclic anti-oxidant compound of the formula:




wherein R and $R_1$ are alkyl or aryl, straight or branched chain, or form a six membered ring and have one to 30 carbon atoms each; or can be absent and at least one member of the group ABCDE is carbon and at least three other members are selected from the group of nitrogen, oxygen and sulfur, a minor effective antifoaming amount of an antifoaming agent, a minor effective vapor phase rust inhibiting amount of a $C_8$ to $C_{10}$ aliphatic monocarboxylic acid, a minor work load improving amount of tricresylphosphate and a minor effective antioxidant amount of an alkylphenol antioxidant.

### 3,931,023
### TRIARYL PHOSPHATE ESTER FUNCTIONAL FLUIDS

**Harry Dounchis, Trenton, N.J., assignor to FMC Corporation, Philadelphia, Pa.**

**Filed July 22, 1974, Ser. No. 490,767**
**Int. Cl.² C10M** *1/10, 3/02, 5/02, 7/02*
**U.S. Cl. 252—49.8** **14 Claims**

1. Functional fluid compositions comprising, as the base stock, 95 to 99.99 percent by weight of a mixed liquid tertiary-butylphenyl/phenyl phosphate containing from about 15 to 60 percent by weight mono- and di-t-butylphenyl radicals, and in admixture with the base stock about 0.01 to 5 percent by weight of a lubricant additive.

### 3,931,024
### NITROGEN-CONTAINING DISPERSANT FROM POLYOLEFIN

**Shih-En Hu, Westfield, N.J., assignor to Exxon Research and Engineering Company, Linden, N.J.**

**Filed June 8, 1972, Ser. No. 260,777**
**Int. Cl.² C10M** *1/32, 3/26, 5/20, 7/30*
**U.S. Cl. 252—51.5 R** **11 Claims**

1. An oil composition comprising a major proportion of an oil selected from the class consisting of gasoline, middle distillate fuel, hydrocarbon lubricating oil and synthetic lubricating oil, to which has been added from about 0.001 to about 10 weight percent of an oil-soluble nitrogen-containing dispersant which is an addition product obtained by directly reacting, with essentially no water produced, at about 60°to 250°C., about 0.2 to about 2.5 moles of an aliphatic polyamine which is an alkylene amino compound containing from 2 to 12 nitrogen atoms wherein pairs of nitrogen atoms are joined by alkylene groups of 2 to 4 carbon atoms, with one mole of an oxygen-containing product of the non-catalyzed air oxidation of a 400 to 4000 molecular weight unsaturated polymer of a $C_2$ to $C_5$ monoolefin, or of the non-catalyzed air oxidation of said polymer that has first been halogenated with sufficient chlorine or bromine to incorporate about 0.5 to 2 atoms of halogen per double bond of said polymer, wherein said air oxidation consists of contacting said polymer with air at a temperature of about 120° to 250°C. sufficient to obtain said oxygen-containing product having about 1 to about 4.5 wt. % oxygen, and wherein about 70 to 100 percent of said reaction between said polyamine and said oxygen-containing product is said addition product, and wherein essentially all of the oxygen present in said oxygen-containing product is still present after reaction with said polyamine to form said nitrogen-containing dispersant.

### 3,931,025
### MAGNETIC IRON OXIDES WITH IMPROVED ORIENTABILITY AND A PROCESS FOR THEIR PRODUCTION

**Peter Woditsch; Gunter Buxbaum; Franz Hund, and Volker Hahnkamm, all of Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

**Filed Aug. 29, 1974, Ser. No. 501,740**
**Claims priority, application Germany, Sept. 21, 1973, 2347486**
**Int. Cl.² C01G** *49/06*
**U.S. Cl. 252—62.62** **7 Claims**

1. An acicular, magnetic iron oxide pigment containing about 0.1 to 2 percent by weight of zinc and phosphate ions.

### 3,931,026
### ELECTRICALLY INSULATING ENCAPSULATING COMPOSITION FOR SEMICONDUCTOR DEVICES

**Rolf Berkner, Wolkersdorf, Germany, assignor to Semikron Gesellschaft fur Gleichrichterbau und Elektronik m.b.H., Nurnberg, Germany**

**Filed Dec. 22, 1972, Ser. No. 319,925**
**Int. Cl.² H01B** *3/00*
**U.S. Cl. 252—63.2** **25 Claims**

1. An electrically insulating composition adapted for the encapsulation of a semiconductor body and for protecting the semiconductor surface against harmful impurities, comprising a mixture of:
a. a polymerizable and/or condensable organic resin;
b. at least one filler which improves the electrical properties of the semiconductor body; and
c. at least one organic chelating agent which binds undesirable impurities in said resin and in filler, the amount of said chelating agent being sufficient to bind undesirable impurities on the surface of said semiconductor body when said composition is applied to said semiconductor body after formation of said composition.

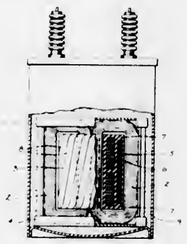
### 3,931,027
### CELLULOSE MATERIAL TREATED WITH A THERMOSETTING RESIN AND HAVING IMPROVED PHYSICAL PROPERTIES AT ELEVATED TEMPERATURES

**Fred S. Sadler, Racine, and John Lapp, Franklin, both of Wis., assignors to McGraw-Edison Company, Milwaukee, Wis.**

**Filed June 25, 1973, Ser. No. 372,975**
**Int. Cl.² H01B** *3/18, 3/00;* **D06M** *13/34, 13/00*
**U.S. Cl. 252—63.7** **17 Claims**

1. A method of treating cellulose material to increase its physical properties at elevated temperatures, comprising the steps of impregnating the cellulose material with an aqueous treating medium having dispersed therein a liquid uncured thermosetting resin selected from the group consisting of

epoxy resins and polyester resins, and an organic amine, evaporating the water from the aqueous medium, and thereafter



curing the resin to provide a treated cellulose material having improved physical properties at elevated temperatures.

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**3,931,028**
**HEAT TRANSFER FLUID**

**Larry L. Jackson; Walter F. Seifert, and Daniel E. Collins, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.**

**Continuation-in-part of Ser. No. 139,882, May 3, 1971. This application Apr. 23, 1973, Ser. No. 353,851**
**Int. Cl.² C09K** *5/00*
**U.S. Cl. 252—73** **7 Claims**

1. A heat transfer fluid consisting essentially of (a) diphenyl oxide, (b) biphenyl and (c) methylbiphenyl, ethylbiphenyl or mixture thereof, wherein (a) and (b) are present in essentially the proportions in their binary eutectic mixture and (c) is present in an amount sufficient to significantly lower the freezing point of the mixture of (a) and (b) said amount of (c) being at least about 5% by volume but not exceeding about 70% by volume.

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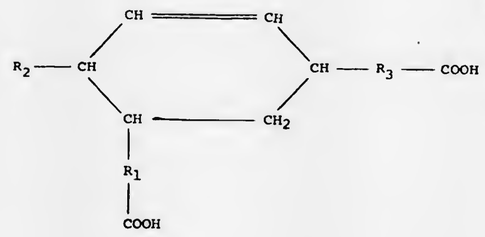
**3,931,029**
**CORROSION INHIBITED ANTIFREEZE COMPOSITIONS AND PROCESS FOR INHIBITING THE CORROSION OF SOLDER ALLOYS**

**Daniel R. Dutton, Woodhaven, and John W. Compton, Taylor, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.**

**Filed Oct. 15, 1974, Ser. No. 514,822**
**Int. Cl.² C09K** *5/00*; **C23F** *11/12*
**U.S. Cl. 252—76** **39 Claims**

1. A corrosion inhibited antifreeze composition comprising a water soluble liquid alcohol freezing point depressant and an inhibitor, the inhibitor being present in the antifreeze composition in an amount effective to inhibit the corrosion of solder alloys when intimately contacted therewith, the inhibitor being present in an amount of about 0.01–1% by weight and comprising at least one substance selected from the group consisting of

a. compounds corresponding to the structural formula:




wherein $R_1$ is an alkylene radical containing from zero to 12 carbon atoms inclusive, $R_2$ is an alkyl radical containing from one to 10 carbon atoms inclusive and $R_3$ is an alkylene radical containing from one to 12 carbon atoms inclusive, and

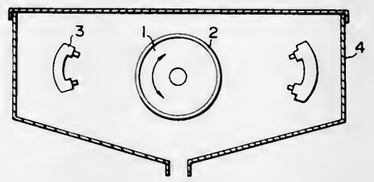
b. the mono- and di- metal salts, the mono- and di- ammonium salts and the mono- and di- amides of (a).

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**3,931,030**
**ETCHING COMPOSITION FOR ETCHING NICKEL SCREEN ROLLS OR PLATES**

**Yoshio Ohno, Tokyo, Japan, assignor to Kenseido Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan**

**Filed Oct. 2, 1973, Ser. No. 402,698**
**Int. Cl.² C09K** *13/06*
**U.S. Cl. 252—79.4** **1 Claim**




1. An etching composition for nickel screen rolls or plates which comprises 5 – 15% by volume of 62% $HNO_3$ and 15 – 25% by volume of 35% hydrogen peroxide and 3 – 6% by volume of additives and a balance of water; said additives comprising 40 – 60% by volume of a petroleum hydrocarbon solvent which is incompatible with water, 15 – 25% by volume of sulfate salt of glyceride of fatty acid consisting essentially of 18 carbon atoms, sulfate salt of fatty acid consisting essentially of 18 carbon atoms, or sulfate salt of fatty alcohol consisting essentially of 18 carbon atoms, 4 – 6% by volume of a first etching promoter selected from the group consisting of dialkyl sulfosuccinate salt, sulfonate salt of $C_{10}$ – $C_{12}$ petroleum hydrocarbon, sulfonate salt or sulfate salt of $C_{10}$ – $C_{12}$ fatty acid, and sulfonate salt or sulfate salt of $C_{10}$ – $C_{12}$ fatty alcohol and 20 – 30% by volume of a second etching promoter selected from the group consisting of butyl carbitol, polypropylene glycol, polyethylene glycol, a mixture thereof and a block copolymer thereof.

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**3,931,031**
**SURFACE ACTIVE COMPOSITIONS**

**John W. Willard, Sr., Rapid City, S. Dak., assignor to CAW Industries, Inc., Rapid City, S. Dak.**

**Continuation-in-part of Ser. No. 317,097, Dec. 20, 1972, Pat. No. 3,893,943, said Ser. No. 317,097, is a continuation of Ser. No. 108,198, Jan. 20, 1971, abandoned. This application Aug. 16, 1973, Ser. No. 388,774**
**Int. Cl.² C11D** *7/54*
**U.S. Cl. 252—99** **21 Claims**

1. A composition of matter for use in removing stains and soil from substrates consisting essentially of as active ingredients

A. major proportion by weight of a surface active agent effective in removing stains and soil from substrates washed therewith in water, and

B. catalytically effective minor proportion by weight of a catalyst,

the surface active agent being present in an amount effective to remove stains and soil from substrates washed in water containing the said composition and the catalyst being present in a catalytically effective amount which promotes the removal of the stains and soil from the substrates.



the catalyst being prepared by a process comprising

admixing a water soluble alkali metal silicate with an aqueous medium containing a dissolved substance which is a source of calcium ion and a dissolved substance which is a source of magnesium ion,

the aqueous medium containing said dissolved substances in amounts to provide between about $1 \times 10^{-4}$ and $1 \times 10^{-1}$ mole per liter each of calcium ion and magnesium ion,

the aqueous medium containing said dissolved substances in amounts to provide a molar ratio of calcium ion to magnesium ion between about 2.0:1.0 and 1.0:2.0,

the alkali metal silicate having an alkali metal oxide to silicon dioxide ratio between about 0.9:1.0 and less than 2.0:1.0 and being admixed with the aqueous medium in an amount of about 0.05–2 moles per liter,

reacting the alkali metal silicate with said dissolved substances providing calcium ion and magnesium ion in the aqueous medium in liquid phase to produce an aqueous suspension of finely divided particles of the reaction product,

admixing a micelle-forming surfactant with the aqueous medium in an amount to form catalyst micelles comprising said finely divided particles of the reaction product upon agitating the aqueous medium, and

agitating the aqueous medium containing the finely divided particles of the reaction product and surfactant to form said catalyst micelles.

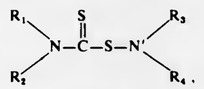
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**3,931,032**
**ANTIBACTERIAL AND GERMICIDAL N,N-DIALKYLTHIOCARBAMOYL SULFENAMIDE DETERGENT COMPOSITIONS**

**Kenneth S. Karsten, Westport, Conn., assignor to R. T. Vanderbilt Company, Inc., East Norwalk, Conn.**

**Filed Oct. 1, 1973, Ser. No. 402,313**
**Int. Cl.² C11D** *3/48*, *9/50*
**U.S. Cl. 252—107** **6 Claims**

1. A skin-substantive microorganism-inhibiting cleansing composition comprising a synthetic organic detergent selected from the group consisting of anionic, nonionic cationic and amphoteric detergents and fatty acid soaps, and a biostatically effective amount of a compound of the general formula:




said compound being selected from the group consisting of compounds wherein (1) $R_1$ and $R_2$ are methyl or ethyl, $R_3$ and $R_4$ are cyclohexyl; (2) $R_1$ and $R_2$ are methyl and $R_3$ is hydrogen when $R_4$ is phenyl; and (3) $R_1$ with $R_2$ and $R_3$ with $R_4$ form heterocyclic rings.

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**3,931,033**
**LIQUID FOAM-REGULATED NONIONIC DETERGENT COMPOSITIONS**

**Albrecht Löhr, Eggerscheid; Manfred Hennemann, Dusseldorf-Benrath, and Günter Jakobi, Hilden, all of Germany, assignors to Henkel & Cie G.m.b.H., Dusseldorf-Holthausen, Germany**

**Filed Dec. 11, 1974, Ser. No. 531,534**
**Claims priority, application Germany, Dec. 14, 1973, 2362114**
**Int. Cl.² C11D** *1/825*, *3/44*, *10/04*, *17/08*
**U.S. Cl. 252—122** **13 Claims**

1. A liquid foam-regulated washing and cleansing agent composition containing non-ionic surface-active compounds and organic water-miscible solvents consisting essentially of

a. from 30 to 60 percent by weight of a combination of two ethoxylated alcohols having from 12 to 20 carbon atoms selected from the group consisting of alkanols, alkenols and mixtures thereof, where one of the two ethoxylated alcohols is adducted with an average of from 2 to 6 mols of ethylene oxide and the other ethoxylated alcohol is adducted with an average of 8 to 20 mols of ethylene oxide, and where the quantitative ratio of the lower ethoxylated alcohol to the higher ethoxylated alcohol is from 1:3 to 1:1;

b. from 2 to 6 percent by weight of an alkali metal soap of fatty acids with substantially from 12 to 18 carbon atoms;

c. from 0.1 to 1 percent by weight of a water-soluble organic sequestering agent for heavy metal ions;

d. from 20 to 35 percent by weight of a water-miscible solvent combination of a monohydric ether alcohol having from 5 to 8 carbon atoms selected from the group consisting of alkoxyalkanols and alkoxyalkoxyalkanols, and a diol having from 2 to 6 carbon atoms selected from the group consisting of alkanediols and alkoxyalkanediols, said alcohol and said diol having boiling points of over 160°C and flash points of over 60°C and the quantitative ratio of said alcohol to said diol being from 2:1 to 1:2, with the proviso that up to 3 percent by weight, based on the total composition, of said monohydric ether alcohol is replaced with a monohydric alcohol selected from the group consisting of ethanol and isopropyl alcohol; and

e. at least 8 percent by weight up to the balance of 100% by weight, of water.

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**3,931,034**
**DETERGENT MATERIALS CONTAINING ENZYMES**

**Jack Thomas Inamorato, Westfield, and Robert Tweedy Hunter, Jr., Mendham, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.**

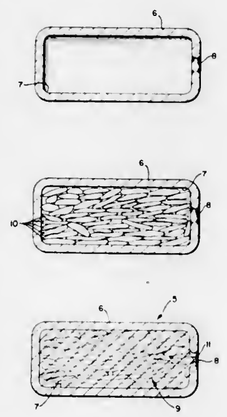
**Continuation of Ser. No. 200,629, Nov. 19, 1971, abandoned, which is a continuation of Ser. No. 733,279, May 31, 1968, abandoned. This application Aug. 20, 1973, Ser. No. 389,762**
**Int. Cl.² C11D** *9/38*, *10/00*
**U.S. Cl. 252—132** **7 Claims**

1. A detergent composition for the washing of fabrics which consists essentially of a mixture of a surface active synthetic organic detergent selected from the group consisting of anionic, nonionic and amphoteric detergents and a mixture of enzyme powders, which enzyme powder mixture consists essentially of about 90,000 Novo alpha-amylase units of a bacterial alpha-amylase to about ⅝ Anson unit of an alkaline protease, with the alkaline protease being present in an amount to provide one Anson unit thereof for each 100 to 500 grams of detergent composition.

### 3,931,035
### SOAP BAR

Theodore G. Brown, 4401 Lantana Ave., Sacramento, Calif. 95824

Filed Apr. 2, 1975, Ser. No. 564,342
Int. Cl.² C11D 9/00, 13/14, 17/00, 17/04
U.S. Cl. 252—134 4 Claims



1. A soap bar comprising a hollow shell of bar soap material defining a large cavity and an access opening, said shell, cavity and access opening having the configuration shown in FIG. 1, and a hard core of soap material of a size and shape substantially filling said cavity.

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### 3,931,036
### COMPACTED ALKALI METAL SILICATE

Richard H. Pierce, Broomall, Pa., assignor to Philadelphia Quartz Company, Valley Forge, Pa.

Filed May 13, 1974, Ser. No. 469,149
Int. Cl.² B01J 2/00, 2/20, 2/22; C11D 7/14
U.S. Cl. 252—135 10 Claims

1. In the known process of preparing product granules of hydrated alkali metal silicate with a particle size larger than 100 mesh, a mol ratio of $SiO_2/M_2O$ between 1.6/1.0 and 4.0/1.0 wherein M stands for an alkali metal, a bulk density of 35 to 75 lbs/ft³ and a moisture content of 12 to 26%, the improvement comprising:

a. preparing a damp, uniform mixture of 90 to 97% alkali metal silicate powder and 3 to 10% alkali metal silicate solution by:

1. maintaining said alkali metal silicate powder with a moisture content of 10 to 20% and a particle size of less than 100 mesh in motion while adding to said powder the alkali metal silicate solution containing 25 to 45% silicate solids in 1 to 4 minutes, and

2. blending said mixture for 1 to 4 minutes by maintaining it in motion;

b. subjecting said mixture to a pressure between 500 and 2500 psi, thereby forming a compacted sheet of 1/32 to ⅛ inch thickness;

c. aging the compacted material for 5 to 15 minutes; and

d. granulating said sheet and recovering 50 to 75% of the resulting granules that are larger than 100 mesh.

### 3,931,037
### SUBSTANTIALLY UNCOLORED DETERGENT PRODUCTS CONTAINING COLORING MATERIALS

Randall Brian Hall, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 202,600, Nov. 26, 1971, abandoned.
This application Nov. 1, 1973, Ser. No. 411,883
Int. Cl.² C11D 3/06
U.S. Cl. 252—135 3 Claims

1. A process for preparing a granular composition for use in a granular detergent product comprising the steps of:

a. mixing together, by weight, from about 0.001 percent to about 10 percent of a dry particulate coloring material selected from the group consisting of Polar Brilliant Blue GAW 180 percent, FD&C Blue No. 1, Rhodamine BM, Pontacyl Light Yellow 36, Polar Brilliant Blue RAW, Phthalocyanine Blue, Phthalocyanine Green, and Ultramarine Blue having substantially no particles larger than 150 μ with from 90 percent to 99.999 percent of a granular material selected from the group consisting of hydratable salts and detergent compositions having an average particle size of about 150 μ to about 1000 μ;

b. spraying onto the mixture prepared in step (a) during continuous mixing, from about 1 percent to about 15 percent, based on the total weight of (a), of water to form agglomerates of said coloring material and said granular material.

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### 3,931,038
### SCALE AND CORROSION INHIBITION FOR COOLING WATER SYSTEMS

Francesca Mochi-Bartolani; Mauro Minervini, and Aurelio Mannini, all of Rome, Italy, assignors to Nalco Chemical Company, Oak Brook, Ill.

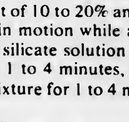
Filed July 31, 1973, Ser. No. 384,353
Int. Cl.² C02B 5/00
U.S. Cl. 252—181 8 Claims

1. A corrosion and scale inhibiting composition useful in preventing corrosion of iron and other metal surfaces in contact with cooling water consisting of:

| | | Range |
|---|---|---|
| 1) | Alkoxylated polyol phosphate ester | 30–50% |
| 2) | $ZnCl_2$ | 2–25% |
| 3) | Tannin | 5–25% |
| 4) | Water | 30–10% |

wherein said polyol ester is R′(OR)y where R′ is an aliphatic hydrocarbon radical from 1-6 carbon atoms and Y = 2-5 and where R is:

(A) $(AlkO)_nH$ or

(B)


n is 1 to 30, and AlkO is an ethylene oxide, a propylene oxide or a butylene oxide with the proviso that at least one occurrence of R is (B).



### 3,931,039
### COMPOSITION FOR DIFFUSING PHOSPHORUS

Mitsuo Yamashita; Akio Mikogami, both of Tokyo; Masashi Hasegawa, and Hiroshi Oizumi, both of Kanagawa, all of Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 1, 1973, Ser. No. 411,766
Int. Cl.² H01B 3/02; H01L 21/225, 21/223
U.S. Cl. 252—184 6 Claims

1. A composition for diffusing phosphorus which comprises 30 – 95 percent by weight of phosphorus nitride and 70 – 5 percent by weight of silicon dioxide.

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### 3,931,040
### GAS GENERATING COMPOSITION

Jack D. Breazeale, Palo Alto, Calif., assignor to United Technologies Corporation, East Hartford, Conn.

Filed Aug. 9, 1973, Ser. No. 386,899
Int. Cl.² C06D 5/06; B60R 21/10
U.S. Cl. 252—188.3 R 15 Claims

1. A gaseous nitrogen generating composition comprising a mixture of a metal azide and a material selected from the group consisting of: $Fe_2O_3$, $AlF_3$, $Al_2O_3+Fe_2O_3$, $B_2O_3$, CuCl, CuO, $Fe_3O_4$, $MnO_2$, $SiO_2$, $TiO_2$ and mixtures thereof, said materials being oxides and salt of elements lower in the electrochemical series of the elements than the metal component of the azide and being capable of liberating sufficient heat upon exothermic reaction with said azide to maintain a self-sustained combustion.

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### 3,931,041
### LIQUID CRYSTAL COMPOSITIONS

Franklin D. Saeva, and Richard L. Schank, both of Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 228,958, Feb. 24, 1972, Pat. No. 3,819,531. This application Feb. 14, 1974, Ser. No. 442,567
Int. Cl.² C09K 3/34; G02B 5/23; G02F 1/01, 1/16
U.S. Cl. 252—299 5 Claims

1. An imaging method comprising the steps of

a providing an imaging member comprising a layer of a liquid crystalline composition having the optical properties of the cholesteric liquid crystalline mesophase, said composition consisting essentially of at least one nematic liquid crystalline material and at least one structurally similar non-mesomorphic optically active material which is represented by a general formula selected from the group consisting of

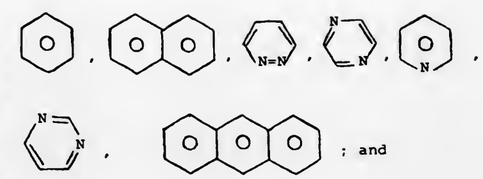
W-Ar-Z, and

W-Ar-X = Y-Ar-Z

where X and Y are radicals chosen from the group consisting of

X = Y = CH
X = CH, Y = N
X = Y = N
X = N, Y = N → O
X = CH, Y = N → O

where W and Z can be the same or different and are chosen from the group consisting of $NH_2$ and alkenyl, alkynyl, alkoxy, alkyl, ester, carbonate, and aldehyde radicals having up to and including nine carbon atoms, and where Ar is chosen from the group consisting of



; and

b applying an electrical field in imagewise configuration across said layer whereby the image portions of said layer are distinguishable from the background portions of said layer.

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### 3,931,042
### CATHODOCHROMIC SODALITE

Roelof Egbert Schuil, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed June 20, 1973, Ser. No. 371,717
Claims priority, application Netherlands, June 27, 1972, 7208817
Int. Cl.² F21V 9/00
U.S. Cl. 252—300 7 Claims

1. A cathodochromic sodalite defined by the formula $Na_3Al_3Si_3O_{12}.NaX$ in which X represents at least one halogen selected from the group consisting of chlorine, bromine and iodine, wherein the sodalite contains at least one element selected from the group consisting of tin, lead and germanium in a quantity of between 0.05 and 2 atom % calculated with respect to silicon.

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### 3,931,043
### FILMING AMINE EMULSIONS

Jerry Lee Walker, and Thomas Edward Cornelius, III, both of Coraopolis, Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Filed June 21, 1973, Ser. No. 372,136
Int. Cl.² C23F 11/14
U.S. Cl. 252—392 16 Claims

1. A stable, fluid corrosion-inhibiting composition comprising from about 1 percent by weight to about 90 percent by weight of an aliphatic amine selected from the group consisting of octadecylamine, coco amine, and hydrogenated tallow amine, from about 1 percent by weight to about 10 percent by weight of a dispersing agent which is at least one member selected from the group consisting of ethoxylated beta amines and ethoxylated beta diamines and from about 10 percent to about 99 percent water.

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### 3,931,044
### METHOD FOR RECOVERING MOLYBDENUM CATALYST VALUES AND USE OF SAID VALUES IN THE RECYCLING OF SAID CATALYST

Jean Maurin, Montivilliers, France, assignor to Compagnie Francaise de Raffinage, Paris, France

Continuation of Ser. No. 178,234, Sept. 7, 1971, abandoned.
This application Feb. 25, 1974, Ser. No. 445,322
Claims priority, application France, Sept. 9, 1970, 70.32746
Int. Cl.² B01J 37/00, 31/12; C07C 29/02
U.S. Cl. 252—414 14 Claims

1. A process for regenerating as a molybdic ester, a molybdenum catalyst used in synthesizing a vicinal alkane diol having four or five carbon atoms per molecule by contacting in an aqueous medium butene or methyl-butene, an alkane hydroperoxide which forms an alcohol as reduction product, and a catalyst which consists essentially of the reaction product of molybdic acid or ammonium molybdate with a vicinal alkanediol having four or five carbon atoms per molecule; sepa-

rating the products of the reaction by distillation to isolate any unreacted olefin, said alcohol, said diol, and with the distillation bottoms said catalyst; comprising the steps of:

a. taking at least a portion of said bottoms and reacting ammonia with the molybdenum content thereof to form ammonium molybdate;
b. separating said ammonium molybdate from at least any organic phase of the reaction mixture resulting from step (a);
c. reacting an aqueous solution of said ammonium molybdate with an amount of said diol to convert said ammonium molybdate to the corresponding molybdic ester precipitate with released ammonia being recycled to step (a).
d. separating said precipitate from the reaction mixture of step (c) and recycling it as at least a portion of the catalyst for said synthesizing process.

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**3,931,045**

## CATALYST ACTIVATION

**Elton E. Rush, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.**

**Filed May 7, 1973, Ser. No. 357,642**
**Int. Cl.² B01D** *15/06*; **B01J** *37/12*
**U.S. Cl. 252—416** **11 Claims**

**1.** In a process for activating a solid, particulate metal oxide catalytic material which comprises contacting said material with a heated free oxygen-containing gas, the improvement which comprises emplacing a deposit having a thickness in the range of about 0.05 inch to about 1 inch of said particulate catalytic material on a porous substrate comprising a sintered metal; passing a stream of a free oxygen-containing gas through said deposit and said porous substrate at a temperature in the approximate range of 400° to 2,000°F for a period of time sufficient to activate said catalytic material, said deposit being maintained in a quiescent state during said time period, dislodging the thus activated catalytic material from said porous substrate; and separately recovering said activated catalytic material.

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**3,931,046**

## V-P-ZR CATALYSTS AND METHOD OF PREPARATION THEREOF IN THE ABSENCE OF HYDROGEN HALIDE

**Benjamin Weinstein, Morganville; Anthony T. Jurewicz, and Lewis Brewster Young, both of Kendall Park, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.**

**Filed Apr. 17, 1974, Ser. No. 461,667**
**Int. Cl.² B01J** *27/18*
**U.S. Cl. 252—429 R** **4 Claims**

**1.** A method for preparing a vanadium-phosphorus-zirconium catalyst composite that consists essentially of:

a. forming an aqueous mixture of $V_2O_5$, $VOCl_3$, $VO(NO_3)_3$, $NH_4VO_3$, or $VF_5$ and a lower dialkyl phosphonate, in a P/V atomic ratio of 0.5, refluxing said mixture for between about 0.5 hour and 5 hours;
b. adding $ZrOCl_2.4H_2O$, $ZrOCl_2.8H_2O$, $ZrO(OAc)_2.H_2O$, $ZrCl_4$, $Zr(OAc)_4$, $Na_2ZrCl_6$, or $ZrOBr_2.XH_2O$, in a Zr/V atomic ratio of between about 0.0025 and about 0.5, continuing refluxing for between about 0.5 hour and about 5 hours;
c. adding phosphoric acid or a compound hydrolyzable to phosphoric acid, in a P/V atomic ratio of between about 0.6 and about 1, continuing refluxing for between about 0.5 hour and about 5 hours to form a slurry; and
d. drying said slurry.

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**3,931,047**

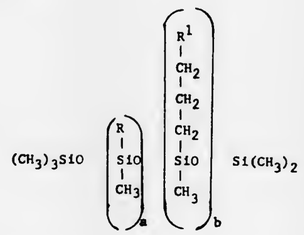
## CATALYST COMPOSITION FOR ROOM TEMPERATURE VULCANIZING SILICONE COMPOSITIONS AND CATALYZED COMPOSITIONS THEREFROM

**Robert A. Smith, Schenectady, N.Y., assignor to General Electric Company, Waterford, N.Y.**

**Division of Ser. No. 432,409, Jan. 10, 1974, Pat. No. 3,865,759. This application Oct. 29, 1974, Ser. No. 518,947**
**Int. Cl.² B01J** *31/12*
**U.S. Cl. 252—431 C** **7 Claims**

**1.** A catalyst composition for room temperature vulcanizing silicone rubber compositions, said catalyst composition comprising:

i. a stannous carboxylate of a branched chain alkyl carboxylic acid having from about eight to about 12 carbon atoms in the alkyl chain; and, as a stabilizing carrier therefor,
ii. a fluid organopolysiloxane composition having an average formula:



where R is a higher alkyl radical, $R^1$ is selected from the class consisting of monovalent and divalent hindered t-butyl-substituted hydroxy aryl radicals, the sum of *a* plus *b* is from 5 to 40, inclusive, and the ratio of *b* over the sum of *a* plus *b* is from 0.005 to 0.1, inclusive.

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**3,931,048**

## HYDROCARBON CONVERSION CATALYTIC COMPOSITE

**Lee Hilfman, Mount Prospect, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.**

**Filed May 3, 1974, Ser. No. 466,759**
**Int. Cl.² B01J** *29/06*; **C10G** *13/02*
**U.S. Cl. 252—455 R** **3 Claims**

**1.** A catalytic composite comprising a combination of a nickel component, and a tungsten component with a silica-alumina carrier material wherein said carrier material is co-gelled silica-alumina consisting of from about 43 percent to about 57 percent by weight alumina and from about 57 to 43 percent by weight silica and wherein said components are present in amounts sufficient to result in the composite containing, on an elemental basis, about 2 to about 10 percent by weight of the nickel component and about 8 to about 20 percent by weight of the tungsten component.

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**3,931,049**

## METHOD FOR PRODUCING A CATALYST

**James A. Ford, North Haven, Conn., and Sheldon H. Butt, Godfrey, Ill., assignors to Olin Corporation, New Haven, Conn.**

**Division of Ser. No. 385,077, Aug. 2, 1973, Pat. No. 3,876,456, which is a continuation-in-part of Ser. No. 342,271, March 16, 1973, Pat. No. 3,810,754. This application Dec. 12, 1974, Ser. No. 532,071**
**Int. Cl.² B01J** *29/34*
**U.S. Cl. 252—455 R** **9 Claims**

**1.** A method for producing a catalyst comprising the steps of:

A. providing a nickel alloy substrate, said alloy containing from 2 to 6% aluminum, from 0.5 to 4% silicon and the balance essentially nickel;



B. applying to said substrate a layer of a surface material of copper or a copper alloy by electroplating, said layer having a thickness of from 1,000 A to 0.1 inch; and
C. heat treating the substrate-surface layer combination at a temperature of from 750° to 1050°C for from 5 minutes to 4 hours in an atmosphere nonoxidizing to nickel, whereby the surface layer and the substrate interdiffuse so that the ratio of nickel to copper at the surface of the catalyst is from 50–50 to 90–10%.

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**3,931,050**

## CATALYST FOR PURIFYING EXHAUST GAS FROM VEHICLES

**Mitsuru Asano, Okazaki; Minoru Ohta, Anjo, and Masami Oki, Nagoya, all of Japan, assignors to Nippon Soken, Inc. and Nippondenso Co., Ltd., both of, Japan**

**Filed Apr. 12, 1974, Ser. No. 460,580**
**Claims priority, application Japan, Apr. 13, 1973, 48-42369**
**Int. Cl.² B01J** *21/04*, *23/40*, *23/64*
**U.S. Cl. 252—462** **10 Claims**

**1.** A catalyst for purifying exhaust gas from vehicles, which comprises a monolithic carrier having a plurality of exhaust gas passages penetrating through the carrier, a layer of active refractory metallic oxide selected from the group consisting of γ-alumina, magnesium oxide, beryllium oxide and thorium oxide containing a catalytic metal of the platinum group deposited as first layer on inside surfaces of said plurality of the passages, and a layer of exhaust gas-permeable refractory metallic oxide selected from the group consisting of γ-alumina, magnesium oxide, beryllium oxide, thorium oxide, lanthanum oxide, barium oxide and lithium oxide free from said catalytic metal deposited as an outermost layer further upon the first layer.

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**3,931,051**

## CATALYST FOR THE OXIDATION OF AMMONIA

**Horst Dubler, Grossauheim, Germany, assignor to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Germany**

**Filed Aug. 12, 1974, Ser. No. 496,811**
**Claims priority, application Germany, Aug. 17, 1973, 2341624**
**Int. Cl.² B01J** *21/04*, *23/64*
**U.S. Cl. 252—465** **11 Claims**

**1.** A catalyst gauze packet suitable for use in the oxidation of ammonia to nitrogen oxide wherein 20 to 100 percent of the individual gauzes in the packet consist essentially of wires of platinum-rhodium alloy and wires of an oxidation-resistant, heat-resistant non-noble metal alloy, and the balance of the individual gauzes consist essentially of wires of platinum-rhodium alloy.

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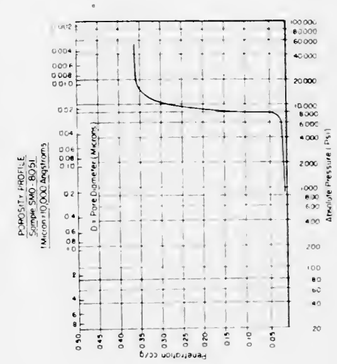
**3,931,052**

## ALUMINA-SUPPORTED CATALYST FOR RESIDUA DEMETALATION AND DESULFURIZATION

**Stephen M. Oleck, Moorestown; Thomas R. Stein, Cherry Hill; Howard S. Sherry, Cherry Hill, and Donald Milstein, Cherry Hill, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.**

**Division of Ser. No. 392,708, Aug. 29, 1973. This application Mar. 3, 1975, Ser. No. 554,897**
**Int. Cl.² B01J** *23/16*, *23/74*, *23/06*
**U.S. Cl. 252—465** **8 Claims**

**1.** A hydrodemetalation-desulfurization catalyst comprising : at least one metal selected from the group consisting of Group VI-B metals, Group VIII metals and zinc composited with an alumina base, said composite catalyst having not less than about 65 percent of the volume of the pores with a diameter within the range of about 180A to about 300A, and further having a surface area of about 40 m²/g to about 100 m²/g, and an average pore diameter of about 200A to about 400A.



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**3,931,053**

## CATALYST FOR CONVERSION OF HYDROCARBONS AND METHOD OF PREPARING SAME

**Evgeny Vasilievich Kazakov, Tovarischesky pereulok, 17, kv. 47, Moscow; Igor Fedorovich Balitsky, ulitsa Parkovaya, 4, kv. 104; Viktor Stanislavovich Sobolevsky, ulitsa Moskovskaya, 2/14, kv. 5, both of Novomoskovsk Tulskoi oblasti; Vladimir Petrovich Semenov, Vadkovsky pereulok, 4/6, kv. 69, Moscow; Galina Nikiforovna Kashirina, ulitsa Komsomolskaya, 7, kv. 88, Novomoskovsk Tulskoi oblasti; Natalya Alexandrovna Krugilkova, ulitsa Chapaeva, 12a, kv. 56, Novomoskovsk Tulskoi oblasti; Viktor Ivanovich Yagodkin, ulitsa Kalinina, 32, kv. 15, Novomoskovsk Tulskoi oblasti; Mikhail Arkadievich Shpolyansky, Bolshaya Gruzinskaya ulitsa, 14, kv. 86, Moscow; Sergei Ivanovich Ruzinsky, poselok 25 let Khimkombinata, ulitsa Azotchikov, 4, kv. 1, Novomoskovsk Tulskoi oblasti; Igor Dmitrievich Gorbachevich, poselok Syrovo, ulitsa Dachnaya, 17, kv. 1, and Ivan Emanuilovich Gergert, prospekt Lenina, 76/2, kv. 44, Podolsk Moskovskoi oblasti, all of U.S.S.R.**

**Filed Apr. 18, 1974, Ser. No. 462,087**
**Int. Cl.² B01J** *21/04*, *23/78*
**U.S. Cl. 252—466 J** **10 Claims**

**1.** A catalyst for conversion of hydrocarbons consisting of a mixture of oxides of nickel, aluminium, magnesium, calcium and of barium.

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**3,931,054**

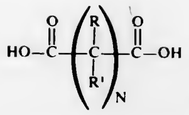
## METHOD OF CATALYST MANUFACTURE

**George R. Lester, Park Ridge, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.**

**Filed Apr. 19, 1974, Ser. No. 462,470**
**Int. Cl.² B01J** *23/56*, *23/74*, *21/04*
**U.S. Cl. 252—466 PT** **9 Claims**

**1.** A method of manufacturing a catalytic composite which comprises:

(a) commingling a refractory inorganic oxide carrier material in an impregnating solution with a metal component selected from the group consisting of iron group metal salt, noble metal salt and noble metal acid and from about 0.05 to about 0.75 wt. % dibasic carboxylic acid having the following structural formula:



where:

R is selected from hydrogen, hydroxyl and alkyl groups;

R' is selected from hydrogen, alkyl and carboxyl groups; and

*n* is within the range of 0–6

b. maintaining said carrier material in said solution for a period of from about 2 to about 10 minutes, thereafter commingling from about 0.1 to about 1.5 wt. % sulfur-containing carboxylic acid with said solution, based on the weight of said carrier material, said sulfur-containing acid being selected from the group consisting of thiomalic, thioglycolic and mercaptopropionic acids, and effecting the deposition of said metal component concentrated in a thin subsurface layer on the carrier material;

c. thereafter washing, drying and calcining the impregnated carrier material.

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## 3,931,055
## ELECTRICALLY CONDUCTING CERAMIC TO METAL SEAL, PARTICULARLY FOR SPARKPLUGS AND METHOD OF ITS MANUFACTURE

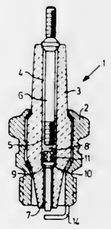
**Karl-Hermann Friese, Leonberg, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany**

**Filed Aug. 29, 1973, Ser. No. 392,493**

**Claims priority, application Germany, Sept. 15, 1972, 2245403**

**Int. Cl.² H01B** *1/04*

**U.S. Cl. 252—503** **17 Claims**



**1.** An electrically conducting material for ceramic to metal seals, particularly suitable for spark plugs, said material being composed of glass granules and of a conducting powder composed principally of carbon black in its powder form and containing no substantial amount of a metal other than not more than 5% by volume of a powdered metal capable of forming a carbide between 750° and 950°C and other than not more than 5% by volume of a metal melting at a temperature not higher than the melting point of zinc (419°C), said material being mixed together and sintered in place and exhibiting, with reference to a cylindrical body of about 4.5 mm diameter and about 4.5 mm length, a resistance between 0.5 and 50 Ohms.

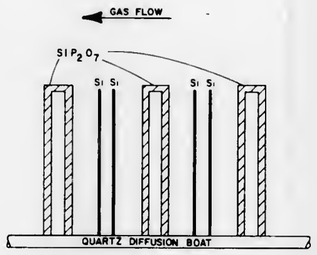
## 3,931,056
## SOLID DIFFUSION SOURCES FOR PHOSPHORUS DOPING CONTAINING SILICON AND ZIRCONIUM PYROPHOSPHATES

**Thomas A. Myles, Tonawanda Township, and Curtis E. Zimmer, Youngstown, both of N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.**

**Filed Aug. 26, 1974, Ser. No. 500,765**

**Int. Cl.² H01B** *1/06*; **C04B** *35/48*, *35/02*; **H01L** *7/36*

**U.S. Cl. 252—520** **10 Claims**




**1.** A solid phosphorus containing source body for semiconductor diffusion doping, said body consisting essentially of from about 5 to about 95 percent by weight of silicon pyrophosphate and from about 95 to about 5 percent by weight of zirconium pyrophosphate.

**3.** A method for the formation of solid phosphorus diffusion bodies comprising preparing a blend consisting essentially of from 5 to 95 weight percent $SiP_2O_7$ with from 95 to 5 weight percent $ZrP_2O_7$, cold-pressing a portion of said blend to thereby form a shaped unfired body, and sintering said body at a temperature of from about 1080°C to about 1200°C.

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## 3,931,057
## SURFACTANT COMPOSITIONS

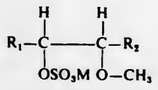
**Shih K. Liu, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.**

**Division of Ser. No. 197,504, Nov. 10, 1971, which is a continuation-in-part of Ser. No. 710,644, March 5, 1968, abandoned. This application Dec. 17, 1973, Ser. No. 425,596**

**Int. Cl.² C11D** *1/12*, *1/68*

**U.S. Cl. 252—551** **3 Claims**

**3.** A detergent formulation consisting essentially of, as a surfactant, at least 2% by weight of a mixture of alkane vicinal methyl ether sulfate compounds represented by the formula



wherein M is selected from the group consisting of alkali metals and ammonium and $R_1$ and $R_2$ are each selected from the group consostomg of hydrogen and linear alkyl groups containing from 1 to 15 carbon atoms, at least one of $R_1$ and $R_2$ being an alkyl group and the total number of carbon atoms in $R_1$ and $R_2$ being from 14 to 15 and the weight ratio of compounds in which the number of carbon atoms in $R_1$ and $R_2$ is 14 to compounds in which the number of carbon atoms in $R_1$ and $R_2$ is 15 being from 1:4 to 3:2 and a detergency builder, the ratio of surfactant to detergency builder being from about 10:1 to about 1:10.



## 3,931,058
## POLYGLYCIDYL COMPOUNDS, PROCESSES FOR THEIR MANUFACTURE AND USE

**Hans Batzer, Arlesheim; Juerger Habermeier, Pfeffingen, and Daniel Porret, Binningen, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland**

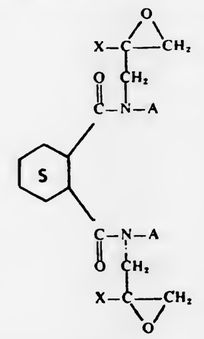
**Division of Ser. No. 183,234, Sept. 23, 1971, Pat. No. 3,798,242. This application Dec. 20, 1973, Ser. No. 426,780**

**Claims priority, application Switzerland, Sept. 25, 1970, 14268/70**

**Int. Cl.² C08G** *54/28*

**U.S. Cl. 260—2 EC** **1 Claim**

**1.** A curable mixture which is suitable for the manufacture of moldings, including sheet-like structures, consisting essentially of a polyglycidyl compound of the formula:



wherein A is phenyl or a phenyl substituted with at least one methyl, methoxy, trifluoromethyl or nitro group; and X is methyl or hydrogen and a curing agent for said epoxide resin.

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## 3,931,059
## PROCESS FOR PREPARING POLYCARBODIIMIDE FOAMS IN THE PRESENCE OF PHOSPHETANE OXIDE OR SULFIDE ADDUCTS

**Andrea La Spina, Garbagnate Milanese, Italy; Werner Dietrich, and Reinhard Schliebs, both of Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen Bayerwerk, Germany**

**Filed Aug. 19, 1974, Ser. No. 498,788**

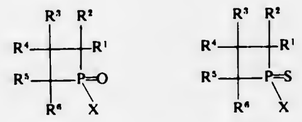
**Claims priority, application Germany, Aug. 21, 1973, 2342148**

**Int. Cl.² C08G** *18/14*, *18/16*

**U.S. Cl. 260—2.5 BF** **8 Claims**

**1.** In a process for making a rigid foam plastic which contains carbodiimide groups from an organic polyisocyanate, the improvement which comprises includig a catalytic amount of an addition compound of

a. a phosphetane oxide or phosphetane sulphide of the general formulae I and II



(I) (II)

wherein

X denotes a $C_1$–$C_{18}$ alkyl, $C_2$–$C_{18}$ alkenyl, $C_6$–$C_{14}$ aryl, $C_7$–$C_{20}$ aralkyl, $C_1$–$C_{18}$ alkoxy or $C_6$–$C_{14}$ aroxy group and $R^1$ to $R^6$ denote hydrogen and/or $C_1$–$C_4$ alkyl groups and

b. a mono-, di- and/or polyhydric alcohol with a molecular weight of about 32 to about 250, a protonic acid which has a pH of between 1 and 8 in N/10 aqueous solution, a metal salt or an acid chloride and allowing the polyisocyanate to react.

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## 3,931,060
## POLYURETHANE FOAM FREE FROM INTERNAL DISCOLORATION

**Rudiger Schubart, Cologne; Ulrich Nehen, Leverkusen; Ernst Roos, Odenthal-Osenau, and Manfred Dahm, Bergisch-Neukirchen, all of Germany, assignors to Bayer Aktiengesellschaft, Bayerwerk, Germany**

**Filed Aug. 12, 1974, Ser. No. 496,616**

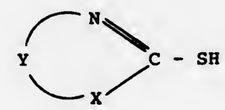
**Claims priority, application Germany, Aug. 14, 1973, 2340995**

**Int. Cl.² C08G** *18/30*; **C08K** *5/13*, *5/47*

**U.S. Cl. 260—2.5 BB** **7 Claims**

**1.** In a process for producing a polyurethane foam which is substantially free from discoloration at the center thereof from a foamable mixture containing an organic polyisocyanate, an organic compound which contains at least 2 active hydrogen atoms, a blowing agent and a catalyst for the reaction between the polyisocyanate and the said organic compound, the improvement which comprises effecting the reaction in the presence of a sufficient amount in effective proportions of

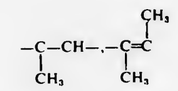
a. a heterocyclic mercapto compound of the general formula

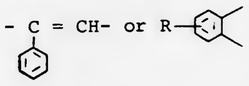


in which

X = —O—, —S—, —NH—, —N—($C_1$–$C_{12}$)—alkyl, —N—($C_5$–$C_6$)—cycloalkyl—, —N—phenyl, —N—($C_7$–$C_{12}$)—aralkyl, —N—($C_7$–$C_{12}$)—alkyl—aryl— or —N—CO—($C_1$–$C_6$)—alkyl,

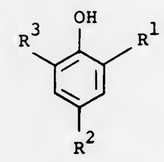
Y = —$CH_2$—$CH_2$—, —CH=CH—,





R = H, ($C_1$–$C_{12}$)—alkyl, ($C_1$–$C_{12}$)—alkoxy—carbonyl—, ($C_1$–$C_{12}$)—alkoxy and

b. a phenol of the general formula



in which $R^1$ and $R^3$ may be the same or different and denote $C_1$–$C_9$—alkyl—, $C_5$–$C_8$—cycloalkyl, $C_7$–$C_9$—alkylaryl—, indanyl— or norbornyl groups and $R^2$=$R^1$ or —$CH_2$—$CH_2$—COO—($C_1$–$C_{12}$)—alkyl.

3,931,061
**BLUSHED POLYSTYRENE PIGMENT**
Harry F. Kohne, Jr., Glenwood, and Frederick L. Kurrle, Laurel, both of Md., assignors to Westvaco Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 388,383, Aug. 15, 1973, abandoned. This application Dec. 3, 1974, Ser. No. 529,093
Int. Cl.² C08J 9/00
U.S. Cl. 260—2.5 B 2 Claims

1. A composition of matter comprising a synthetic opaque polystyrene pigment prepared from a polystyrne emulsion and consisting essentially of expanded spherical particles that are optically efficient in the absence of mineral matter, characterized as:
1. having an air containing microporous structure as a result of the presence of air-solid interfaces within the individual particles;
2. having an average ultimate particle diameter in the range of from about 0.10 and 0.20 micron;
3. having a G.E. Bulk brightness of about 99.7; and,
4. having a scattering coefficient of from about 0.41 to 0.48 when applied to cellophane with a 2% solution of sodium carboxymethylcellulose at a coat weight of from about 2.3 to 12.0 pounds per ream.

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3,931,062
**FLEXIBLE HOT-MOLDED FLAME RETARDANT POLYURETHANE FOAMS**
David Stanley Cobbledick, Kent, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio
Filed Nov. 8, 1973, Ser. No. 413,805
Int. Cl.² C08G 18/14, 18/62; C08K 3/22, 3/26
U.S. Cl. 260—2.5 AC 9 Claims

1. In the method of making a flexible or semi-flexible hot-molded low density, fire retardant polyurethane foam by the reaction of (A) a polyetherpolyol having from two to four hydroxyl groups and having a molecular weight of from about 1,000 to 10,000, (B) an organic polyisocyanate and (C) a blowing agent comprising water in admixture with (D) a surfactant, (E) a catalyst comprising from about 0.05 to 3.2 parts by weight per 100 parts by weight of said polyol of a tertiary amine and from 0.1 to 0.9 part by weight per 100 parts by weight of said polyol of a tin-containing polyurethane catalyst (F) from about 1 to 50 parts by weight per 100 parts by weight of said polyol of a finely divided, solid chlorine-containing polymeric resin containing an average of from 0.4 to 1 chlorine atom per carbon and having an intrinsic viscosity of from about 0.25 to 2.5 as measured in 0.3 percent by weight solution in cyclohexanone at 25°C., (G) finely divided zinc oxide in an amount of from about 0.1 to 10 parts by weight per 100 parts by weight of said polyol (A), (H) finely divided antimony trioxide in an amount of from about 0.5 to 15 parts by weight per 100 parts by weight of said polyol (A), and, optionally, (J) a chlorinated paraffin having an average molecular weight of from about 250 to 1400 and containing from about 40 to 70% by weight of chlorine, using the one-shot prepolymer process, the improvment comprising incorporating in said formulation from 0.5 to 2.5 parts by weight per 100 parts by weight of polyetherpolyol (A) of at least one compound selected from the class consisting of oxides, hydroxides and basic salts of metals from Group 2*a* of the Periodic Table of the Elements, said metals having atomic numbers of 12 to 20 inclusive, said compounds having an average particle size of from about 0.05 to 200 microns, any magnesium oxide having an activity number of 0 to about 60, there being at least 0.05 part by weight of said compounds in any premix of components containing at least 10 parts by weight of polyetherpolyol (A).

3,931,063
**PROCESS FOR THE MANUFACTURE OF POROUS SOLIDS CONSISTING OF CROSSLINKED UREA-FORMALDEHYDE POLYCONDENSATION PRODUCTS**
Alfred Renner, Muenchenstein, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland
Continuation-in-part of Ser. No. 383,696, July 30, 1973, abandoned, which is a continuation of Ser. No. 65,329, Aug. 19, 1970, abandoned. This application Mar. 14, 1974, Ser. No. 451,380
Int. Cl.² C08J 9/00; C08L 1/26
U.S. Cl. 260—2.5 F 13 Claims

1. A process for the manufacture of porous more or less agglomerated individual particles of crosslinked urea-formaldehyde polycondensation products having an internal surface area greater than 10 $m^2/g$ and having a tendency to become agglomerated which comprises forming an aqueous solution of urea and formaldehyde or of a precondensate of urea and formaldehyde, adjusting the pH of the resulting solution at a temperature of between room temperature and 100°C to a pH value of 1.2– 1.5 by adding a Bronsted acid having a dissociation constant of not less than $1 \times 10^{-6}$ so as to form a precipitate, the molar ratio of formaldehyde:urea being at least 0.5 and at most 1.0 not later than at the time of precipitation, separating off the resultant precipitate and drying.

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3,931,064
**POLYMER FOAMS**
Neil Hunter Ray; Bruce Cochran Lane, and Bryan Shaw, all of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England
Filed May 6, 1974, Ser. No. 467,556
Claims priority, application United Kingdom, May 24, 1973, 24829/73
Int. Cl.² C08K 3/40, 5/29, 5/34
U.S. Cl. 260—2.5 AK 12 Claims

1. A composition comprising an isocyanate-based polymeric foam material selected from polyurethane, polyisocyanurate, and polyurethane/polyisocyanurate foam materials and produced by reacting a foamable liquid mixture of a polyisocyanate containing two or more isocyanate groups and a compound containing two or more groups reactive with isocyanate groups, and dispersed in said foam material inorganic oxide glass powder having a particle size in the range 0.1 to 300 microns the inorganic oxide glass having a transformation temperature of not greater than 300°C.

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3,931,065
**POLYURETHANE-MODIFIED POLYISOCYANURATE FOAM AND A METHOD FOR THE PREPARATION THEREOF**
Kaneyoshi Ashida, and Takao Yagi, both of Tokyo, Japan, assignors to Nisshin Boseki Kabushiki Kaisha, Japan
Filed Feb. 13, 1967, Ser. No. 615,395
Claims priority, application Japan, Feb. 18, 1966, 41-9401; Dec. 27, 1966, 41-84772; Dec. 30, 1966, 42-128
Int. Cl.² C08G 18/14
U.S. Cl. 260—2.5 AW 5 Claims

1. A method for the preparation of a rigid, highly flame resistant polyurethane-modified polyisocyanurate foam which comprises reacting
A. at least one aromatic polyisocyanate having no orthosubstituent and having a plurality of aromatic nuclei in the molecule,
B. at least one polyether polyol containing more than 3 hydroxy groups and having an equivalent weight of at least 114,
C. at least one foaming agent useful for the preparation of polyurethane foam,



D. at least one catalyst useful for the trimerization of the isocyanate group,
E. at least one surfactant and
F. at least one flame retardant useful for the preparation of polyurethane foam, the proportion of said components A, B, C, D, E and F being such as to satisfy the relationships of
1. the equivalent ratio defined by the expression, $Ae/(Be + Ce + De + Ee + Fe) > 2$, and
2. the weight ratio defined by the expression, $0.22 \geq Bw/Aw \geq 0.04$ wherein A, B, C, D, E and F represent said components respectively, represents the number of chemical equivalents of said components, and w represents the weight of said components and wherein any one of components C, D, E and F is nonreactive with the component A, the non-reactive component is eliminated from the relationship.

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3,931,066
**HIGH RESILIENCE POLYURETHANE FOAM**
John E. Puig, Wallingford, and Bruce G. van Leuwen, Trumbull, both of Conn., assignors to Olin Corporation, New Haven, Conn.
Filed Aug. 8, 1974, Ser. No. 495,611
Int. Cl.² C08G 18/14, 18/32, 18/48; C08K 5/54
U.S. Cl. 260—2.5 AS 16 Claims

1. In a process for preparing a flexible high resilience polyurethane foam from a reaction mixture comprised of an organic polyisocyanate, a foaming agent, a reaction catalyst polydimethylsiloxane fluid surfactant, and a polyether polyol reactant characterized by (1) a molecular weight of at least 4000, (2) a polyhydroxy alcohol nucleus having a functionability of 2–4, (3) polyoxyalkylene chain segments attached to said nucleus and (4) a ratio of primary to secondary hydroxy groups ranging from about 1.5:1 to about 6:1, the improvement which comprises including in said reaction mixture a foam stabilizing proportion of a supplemental polyether polyol having at least about 30% of primary hydroxy groups, an average of 2–6 hydroxy groups, and a hydroxyl number from about 250 to about 800, said supplemental polyol being an adduct of alkylene oxide having 2–4 carbon atoms and a mixture selected from the group consisting of a mixture of dextrose and water, a mixture of dextrose and an aliphatic diol or triol, and a mixture of dextrose, water and an aliphatic diol or triol.

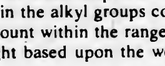
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3,931,067
**HYDROPHOBIC MICROPOROUS MATERIALS AND PROCESS FOR PRODUCING SAME**
Bruce S. Goldberg, Clifton, N.J., and Dennis E. Johnson, Cambridge, Mass., assignors to Amerace Corporation, New York, N.Y.
Filed Aug. 16, 1974, Ser. No. 498,154
Int. Cl.² C08K 3/24, 3/34, 3/36, 5/02
U.S. Cl. 260—2.5 M 38 Claims

1. A process for producing a gas permeable hydrophobic article from a normally hydrophobic microporous material characterized by a polymeric matrix and a filler dispersed throughout said matrix forming a plurality of micropores therein, said filler comprising a compound having an active polar group, said process comprising the step of reacting the filler compound dispersed throughout said polymeric matrix with a silane whereby the contact angle of a water-based liquid deposited on the surface of said article after said reaction is rendered too great to permit wetting of said article therewith.

3,931,068
**BLENDS OF BIODEGRADABLE THERMOPLASTIC OXYALKANOYL POLYMER, A NATURALLY OCCURRING BIODEGRADABLE PRODUCT, FILLER AND PLASTIC ADDITIVE**
Robert A. Clendinning, New Providence; James E. Potts, Millington, and Walter D. Niegisch, Watchung, all of N.J., assignors to Union Carbide Corporation, New York, N.Y.
Division of Ser. No. 275,974, July 28, 1972, Pat. No. 3,850,863. This application July 15, 1974, Ser. No. 488,492
Int. Cl.² C08L 67/06
U.S. Cl. 260—7.5 28 Claims

1. A blend comprising (i) from about 3 to about 97 weight percent of biodegradable thermoplastic oxyalkanoyl polymer, said polymer having a reduced viscosity value of at least about 0.1 and upwards to about 12 and being further characterized in that at least about 10 weight percent of said thermoplastic oxyalkanoyl polymer is attributable to recurring oxyalkanoyl units of the formula

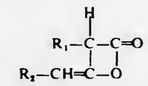


wherein $x$ is an integer having a value of 2 to 7, with the proviso that $x$ does not equal 3; (ii) from less than 97 to about 3 weight percent of naturally occurring biodegradable product; and (iii) more than 0 to about 75 weight percent of ingredients of the group consisting of plastic additives, fillers, and mixtures thereof, based on the total weight of said blend.

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3,931,069
**DISPERSION FOR SIZING CELLULOSE FIBRES AND USE THEREOF**
Claes Olof Axel Lundin, Boras, Sweden, assignor to KemNaord AB, Stockholm, Sweden
Filed July 10, 1973, Ser. No. 377,972
Claims priority, application Sweden, July 14, 1972, 9282/72
Int. Cl.² C08L 1/28; D21H 3/26, 3/38; D21D 3/00
U.S. Cl. 260—17 R 7 Claims

1. A cationic dispersion for the sizing of cellulose fibers having a total solids content of up to 30 percent by weight which contains
a. ketene dimer, having the general formula



wherein $R_1$ and $R_2$ each individually represents an organic hydrophobic hydrocarbon group having about 8 – 40 carbon atoms,
b. water,
c. a dispersing agent selected from the group consisting of a water-soluble or water-dispersible cationic polymer, the amount of the dispersing agent being within the range of about 0.5 to 10 percent by weight based upon the weight of the ketene dimer; and
d. a water-soluble or water-dispersible alkyl hydroxyalkyl cellulose, wherein the alkyl groups contain 1 – 4 carbon atoms, in an amount within the range of about 0.5 to 10 percent by weight based upon the weight of the ketene dimer,
e. the ratio of cellulose ether to cationic polymer being within the range of 1:20 – 20:1,
f. said alkyl hydroxyalkyl cellulose having a Brookfield viscosity within the range of from 20 – 12,000 cp in a 2 percent water solution at a temperature of 20°C.

3,931,070
## PLYWOOD ADHESIVE
Wayne H. Bond, and Thomas J. Moehl, Albany, Oreg., assignors to Georgia-Pacific Corporation, Portland, Oreg.
Filed Jan. 15, 1975, Ser. No. 541,082
Int. Cl.² C08L 97/02
U.S. Cl. 260—17.5 10 Claims

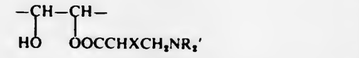
1. In a process of applying a phenol-formaldehyde resin adhesive containing amylaceous or proteinaceous materials to plywood veneer using a curtain coater, the improvement which comprises adding at least 1 percent, based upon the weight of the phenol-formaldehyde resin in said adhesive, of a sodium base lignosulfonate and from 0.05 to 1 percent, based upon the weight of the phenol-formaldehyde resin, of a trialkyl phosphate having alkyl substituents of from 1 to 6 carbon atoms.

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3,931,071
## COMPOSITIONS OF ACRYLATED EPOXIDIZED SOYBEAN OIL AMINE COMPOUNDS USEFUL AS INKS AND COATINGS
David John Trecker, Groton; George Wayne Borden, Niantic, both of Conn., and Oliver Wendell Smith, South Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.
Division of Ser. No. 343,692, March 22, 1972, which is a division of Ser. No. 103,912, Jan. 4, 1971, abandoned. This application June 3, 1974, Ser. No. 476,054
Int. Cl. C08f 19/14, 21/01
U.S. Cl. 260—18 PF 7 Claims

1. A composition comprising:

I. an acrylated epoxidized soybean oil amine compound having in the molecule the group:



wherein X is hydrogen or methyl and R′ taken singly is alkyl of 1 to 15 carbon atoms or aryl having up to 15 carbon atoms and the two R′ groups taken together with the nitrogen atom attached thereto form a heterocyclic ring having from 5 to 6 ring atoms, said compound being the reaction product of:

A. epoxidized soybean oil reacted with at least 2 moles of acrylic acid or methacrylic acid per mole thereof and

B. from 5 to 40 mole percent, based on acrylyl groups of an organic amine of the formula $R_2'$ NH wherein R′ is as defined above, and

II. an acrylyl compound.

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3,931,072
## PARTICLEBOARD, HARDBOARD, AND PLYWOOD PRODUCED IN COMBINATION WITH A LIGNIN SULFONATE-PHENOL FORMALDEHYDE GLUE SYSTEM
Robert P. Coyle, Anderson, Calif., assignor to Champion International Corporation, Stamford, Conn.
Filed Aug. 24, 1972, Ser. No. 283,573
Int. Cl.² C08H 5/02; C08L 61/10
U.S. Cl. 260—17.5 3 Claims

1. Process for the preparation of an improved glue system for adhering wood particles to each other which comprises preparing a lignin sulfonate formaldehyde prepolymer by heating a solution of a salt of a lignosulfonic acid with an alkali metal hydroxide, thereafter adding a first amount of formaldehyde to form said prepolymer, thereafter adding phenol to said prepolymer followed by the addition of a second amount of formaldehyde, and heating the resulting mixture to form the glue system.

3,931,073
## HOT MELT COMPOSITIONS
Winston J. Jackson, Jr., Kingsport, Tenn., and William R. Darneli, Weber City, Va., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed July 22, 1974, Ser. No. 490,430
Int. Cl.² C08G 63/48; C09J 3/02
U.S. Cl. 260—22 D 16 Claims

1. An adhesive composition comprising

A. from about 50 to about 95 weight percent of a copolyester of

1. a glycol component containing at least about 80 mole percent of a glycol having from 2 to 10 carbon atoms, and

2. an acid component which is at least about 48 mole percent of an aromatic dicarboxylic acid having from 8 to 20 carbon atoms or an ester forming derivative thereof, and from about 5 to about 40 mole percent dimer acid, and

B. from about 50 to about 5 weight percent of an aliphatic hydrocarbon having a molecular weight of from about 250 to about 1200.

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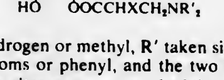
3,931,074
## MODIFIERS FOR HIGH NITRILE POLYMERS
I. Luis Gomez, Longmeadow, Mass., assignor to Monsanto Company, St. Louis, Mo.
Filed Mar. 14, 1974, Ser. No. 451,037
Int. Cl.² C08L 91/00
U.S. Cl. 260—23 R 21 Claims

1. A nitrile polymer which has been compounded with a modifier which is a combination of (1) a $C_{12}$ to $C_{28}$ saturated aliphatic fatty acid ester of a compound selected from the group consisting of glycerol and sorbitan; and (2) a polyoxyethylene sorbitan ester of a $C_{12}$ to $C_{28}$ saturated fatty acid, wherein the polyoxyethylene contains from 4 to 30 oxyethylene units; wherein the weight ratio of component (1) to component (2) is in the range of from 80/20 to 20/80; and wherein the amount of modifier used is in the range of from 0.01 to 1.0% by weight based on the weight of the nitrile polymer.

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3,931,075
## ACRYLATED EPOXIDIZED SOYBEAN OIL AMINE COMPOSITIONS AND METHOD
David John Trecker, Groton; George Wayne Borden, Niantic, both of Conn., and Oliver Wendell Smith, South Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.
Division of Ser. No. 343,691, March 22, 1973, Pat. No. 3,878,077, which is a continuation-in-part of Ser. No. 103,912, Jan. 4, 1971, abandoned. This application June 3, 1974, Ser. No. 476,055
Int. Cl. C08f 19/14, 21/04
U.S. Cl. 260—23 EP 10 Claims

1. Acrylated epoxidized soybean oil amine compounds having in the molecule the group:



wherein X is hydrogen or methyl, R′ taken singly is alkyl of 1 to 15 carbon atoms or phenyl, and the two R′ groups taken together with the nitrogen atom attached thereto form a heterocyclic ring having from 5 to 6 ring atoms, said compound being the reaction product of:

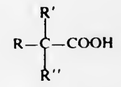
A. epoxidized soybean oil reacted with at least two moles of acrylic acid or methacrylic acid per mole thereof and

B. from 5 to 40 mole percent, based on acrylyl groups of an organic amine of the formula $R'_2NH$ wherein R′ is as defined above.



3,931,076
## ELIMINATION OF PINKING IN VINYL ASBESTOS FORMULATIONS
Gerald Rubin, Edison, N.J., assignor to Exxon Research and Engineering Company, Linden, N.J.
Filed Jan. 9, 1974, Ser. No. 431,892
Int. Cl.² C08K 3/34, 5/09, 5/34
U.S. Cl. 260—23 XA 8 Claims

1. A vinyl asbestos composition comprising a vinyl resin, asbestos, fillers, a stabilizing amount of from 0.1% to 2.5% by weight based on the weight of said composition of melamine and an effective amount of from 0.01 to 10% by weight based on the weight of said composition of an anti-pinking additive selected from the group consisting of trialkyl acetic acids having the formula



wherein R, R′ and R″ are alkyl groups having from 1–18 carbon atoms.

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3,931,077
## REACTIVE HOT MELT ADHESIVE COMPOSITION AND METHOD FOR USE THEREOF
Taku Uchigaki; Kenichi Omori, and Masataka Okamura, all of Yokkaichi, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Japan
Filed Jan. 4, 1974, Ser. No. 432,844
Claims priority, application Japan, Jan. 11, 1973, 48-5528
Int. Cl.² C08L 93/00
U.S. Cl. 260—26 5 Claims

1. A reactive hot melt-type adhesive composition comprising (a) a reactive compound, (b) a thermoplastic resin and (c) a tackifier; wherein:

a. the reactive compound is a urethane prepolymer having terminal isocyanate groups at both ends thereof and a viscosity higher than 300,000 cps at 25°C; resulting from the addition polymerization of at least one diisocyanate and at least one diol

b. the thermoplastic resin is an ethylene-vinylacetate copolymer or an ethylene-acrylic acid copolymer, or an ethyleneacrylate copolymer or an atactic polypropylene or a polyethyleneterephthalate linear polymer; and

c. the tackifier is a hydrogenated abietic acid-type rosin or esters thereof having its double bonds removed by hydrogenation in whole or in part, or a terpene-phenol copolymer of a mono- or diterpene wherein the terpene has 10 carbon atoms and having a 1.0 to 3.0 molar ratio of terpene to phenol; said adhesive composition comprising 20 – 73 wt % of said urethane prepolymer (a), 2 – 25 wt % of said thermoplastic resin (b) and 25 – 55 wt % of said tackifier (c) said composition having a viscosity ranging from 9000 cp to 2000 cp in the temperature range of 100° – 130°C.

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3,931,078
## SEALANT AND COATING COMPOSITIONS FROM POLY(OXYALKYLENE)-POLYESTER-POLY(-MONOSULFIDE)-POLYTHIOLS, COAL TAR, AND FILLERS
Oren L. Marrs, and Richard C. Doss, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Filed Feb. 20, 1974, Ser. No. 444,143
Int. Cl.² C08L 95/00
U.S. Cl. 260—28 15 Claims

1. Compositions capable of being cured to sealant and coating compositions having improved tensile break values, modulus values and elongation values comprising:

a. about 10 to about 65 weight percent of at least one poly-(oxyalkylene)-polyester-poly(monosulfide)-polythiol having an average of more than two mercapto groups per molecule,

b. about 25 to about 60 weight percent coal tar,

c. about 10 to about 60 weight percent of at least one filler selected from clays, carbon black, slate flour, silica, limestone, calcium carbonate, asbestine, titanium dioxide, iron oxide, alumina, and zirconia, and

d. at least one curing agent in an amount sufficient to convert at least about 70 percent of the mercapto groups in the polymer to polysulfide linkages.

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3,931,079
## VISCOSITY STABILIZED WAX EMULSION POLISH COMPOSITION
Louis M. Wise, Berkeley Heights; Andrew M. Murdoch, Paramus, and Leon E. Paszek, Mountainside, all of N.J., assignors to American Home Products Corporation, New York, N.Y.
Filed Sept. 15, 1971, Ser. No. 180,906
Int. Cl.² C09G 1/10
U.S. Cl. 260—28.5 7 Claims

1. The method of stabilizing the viscosity of multi-component wax emulsion shoe polish compositions by incorporating from about 0.1% to about 1.0% by weight, of a stabilizer selected from the group consisting of compounds having the formula: $R—X—O—(C_2H_4O)_n—H$

wherein R is an aliphatic group containing from about 9 to about 18 carbon atoms and X is selected from the group consisting of phenylene, carbonyl and a carbon to oxygen bond and *n* is a whole number from about 14 to about 50 in an emulsion shoe polish composition consisting essentially of (a) from about 1.0 to 10.0% by weight of a wax; (b) up to about 1.0% by weight of a dimethyl polysiloxane having a viscosity in the range of about 200 to about 500 centistokes at 35°C.; (c) from about 0.5% to about 2.0% by weight of an emulsifier selected from the class consisting of an alkali metal salt of a fatty acid having $C_{10}$ to $C_{22}$ carbons and an amine salt of a fatty acid having $C_{10}$ to $C_{22}$ carbons; (d) from about 0.5 to about 3% by weight of morpholine; (e) from about 0.1 to about 1% by weight of a carboxy vinyl polymer; (f) from about 0.1 to about 1.0% by weight of triethanolamine; (g) up to about 5.0% of a dye; and (h) from about 20.0 to 95.0% by weight of water.

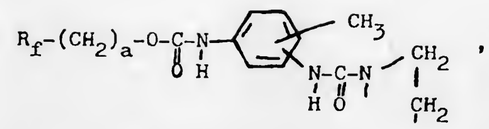
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3,931,080
## AQUEOUS AMINOPLAST COATING COMPOSITION WITH POLYMERS OF FLUORINATED ETHYLENE IMINES
Klaus-Dieter Hammer, Mainz; Wolfgang Heinrich, Wiesbaden; Dieter Hoffmann, Bobingen, and Erich Schulerer, Altotting, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany
Filed Dec. 3, 1973, Ser. No. 421,095
Claims priority, application Germany, Dec. 6, 1972, 2259613
Int. Cl.² B23B 27/40, 27/42; C08L 61/34, 75/12
U.S. Cl. 260—29.4 R 15 Claims

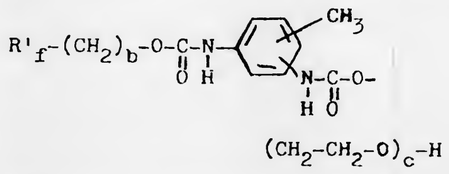
1. An aqueous composition of matter for the treatment of structures of polyurethane having a velvety surface comprising

A. about 1 to about 10 % by weight of a water soluble aminoplast precondensate,

B. about 0.1 to about 3 % by weight of a dispersion of a polymer consisting essentially of recurring units of the formula

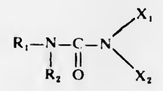


in which $R_f$ is perfluoroalkyl of 6 to 10 carbon atoms and *a* is 1 or 2, which polymer is dispersed in a dispersant of the formula



in which R'$_f$ is perfluoroalkyl of 5 to 7 carbon atoms, *b* is 1 or 2 and *c* is a number of about 18 to about 50, in which dispersion the ratio by weight of polymer to dispersant is from about 40 : 60 to about 60 : 40,

C. about 0.05 to about 2 % by weight of a urea of the formula



in which $R_1$ is alkyl of 8 to 24 carbon atoms, $R_2$, $X_1$ and $X_2$ each is hydrogen or hydroxymethyl or $X_1$ and $X_2$ together are ethylene, and

D. about 0.05 to about 8 % by weight of a water soluble inorganic acidic cross-linking condensation catalyst.

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**3,931,081**

## FLAMEPROOF MOULDING COMPOSITIONS BASED ON POLYOLEFINS

**Franz-Josef Dany, Erftstadt Lechenich; Joachim Wortmann, Turnich; Peter Munch, Hürth-Burbach; Gunther Braun, Oberhausen, and Rudolf Kern, Mainz-Weisenau, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main and Ruhrchemie Aktiengesellschaft, Oberhausen, both of, Germany**

**Filed June 25, 1974, Ser. No. 482,986**

**Claims priority, application Germany, Aug. 4, 1973, 2339581**

**Int. Cl.² C08G** *6/00*

**U.S. Cl. 260—29.1 SB** **2 Claims**

1. Improved flameproof moulding composition, comprising a pulverulent blend of a polyolefin and a plurality of flame retardants consisting of, in addition to red phosphorus, at least one organic nitrogen compound, selected from the group consisting of melamine and polyacrylonitrile, the amount of flame retardants being about 10–30 weight % of said composition, the quantitative ratio of red phosphorus and the organic nitrogen compound being 30:70–70:30, the improved moulding composition containing as a stabilizer

a. between about 1 and 10 weight % of amidosulfonic acid or ammonium bisulfate, based on the total quantity of the flame-retardant, or

b. between about 5 and 15 weight % of a paraffin oil having a density between about 0.83 and 0.88 g/cc and a viscosity between about 15 and 380 centipoises, or of a mineral oil boiling within the range 170 and 35°C, or of a silicon oil, based on the quantity of red phosphorus, or

c. between about 20 and 50 weight % of pentaerythritol, based on the quantity of organic nitrogen compound, or

d. mixtures of (a) and (b).

**3,931,082**

## MICROCRYSTALLINE POLYESTERS AND DISPERSIONS THEREOF

**Mamerto M. Cruz, Jr., Pennington, N.J.; Nicholas Z. Erdi, New York, N.Y., and Orlando A. Battista, Yardley, Pa., assignors to FMC Corporation, Philadelphia, Pa.**

**Continuation of Ser. No. 166,601, July 27, 1971, abandoned, which is a continuation-in-part of Ser. No. 760,358, Sept. 17, 1968, abandoned. This application Apr. 23, 1974, Ser. No. 463,313**

**Int. Cl.² C08G** *63/12*

**U.S. Cl. 260—29.2 N** **10 Claims**

1. A process for separating a finely divided, microcrystalline polyester particulate product having two separate melting point ranges from a fiber forming, synthetic, linear polyester having an inherent crystalline-amorphous morphology and a single melting point range comprising hydrolyzing the polyester with a basic solution comprising an aqueous solution of a lower aliphatic amine or ammonia whereby ester groups in the amorphous regions are preferentially hydrolyzed and solubilized without substantial dissolution of the crystalline regions thereby forming a polyester material having a terminal amide group and having a higher crystallinity than the precursor polyester, removing solubilized amorphous regions, recovering an insoluble microcrystalline polyester having a terminal amide group and two separate melting point ranges and then mechanically disintegrating the recovered microcrystalline polyester until at least 5% by weight has a particle size not exceeding 1 micron.

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**3,931,083**

## WATER-REDUCING ADMIXTURES FOR CERAMIC PASTES

**Isamu Sasaki, Tokyo; Iwao Kojima; Fujio Namigata, both of Yokohama; Yoku Ishigame, and Hiroshi Mihara, both of Kawasaki, all of Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan**

**Filed Jan. 30, 1974, Ser. No. 437,934**

**Claims priority, application Japan, Feb. 6, 1973, 48-14243; Oct. 6, 1973, 48-111941**

**Int. Cl.² C04B** *7/02*; **C08G** *8/18*

**U.S. Cl. 260—29.3** **7 Claims**

1. A ceramic paste comprising a hydraulic cement, water and as a water-reducing additive between about 0.1 to 2.0% by weight based on the weight of said cement, of phenol substituted with at least one member selected from the group consisting of sulfo radical and sulfomethyl radical, wherein the hydrogen atoms of acidic radicals in part of said phenol compound are substituted by atoms selected from the group consisting of sodium, potassium and calcium.

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**3,931,084**

## FLUOROCARBON POLYMER COMPOSITIONS, CONTAINING SILICONE FILM BUILDER AND AL, PHOSPHATE, MINERAL ACID ADHESIVE

**Ronald Peter Buckley, Stevenage; John Wilmar Edwards, Welwyn Garden City, and Barry William Farrant, St. Neots, all of England, assignors to Imperial Chemical Industries Limited, London, England**

**Filed June 4, 1973, Ser. No. 367,005**

**Claims priority, application United Kingdom, June 9, 1972, 27012/72**

**Int. Cl.² C08L** *27/18*

**U.S. Cl. 260—29.6 F** **8 Claims**

1. A liquid coating composition free of chromium compounds consisting essentially of

a. A solid fluorocarbon polymer dispersed in an aqueous medium;

b. an adhesive dissolved in the aqueous medium to assist adhesion of the fluorocarbon polymer to substrate surfaces, the adhesive being selected from the group consisting of aluminum chloride, a halogen-containing complex phosphate of aluminum containing a chemically-bound hydroxy compound R-OH where R is a hydrogen atom or an inert organic group and wherein the ratio of aluminum-to-phosphorus is equal to or less than 1.8 and a composition which is constituted by aluminum ions, phosphate ions and the ions of a mineral acid wherein the ratio of the number of atoms of aluminum to the number of phosphate ions is equal to or less than 1.8, the amount of the adhesive being such that the weight of aluminum is from 0.2 to 4.5 gm per 100 gm of fluorocarbon polymer;

c. a film building amount of an alkyl aryl polysiloxane dispersed in the aqueous medium; and

d. a stabilizing amount of non-ionic surfactant; the polysiloxane and non-ionic surfactant being present respectively in amounts to insure that the composition will form coatings on a substrate by a single application which, after drying, baking and sintering, are at least 20 $\mu$m thick without discernible cracks, showing good adhesion to the substrate, non-stick properties and freedom from toxicity.



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**3,931,085**

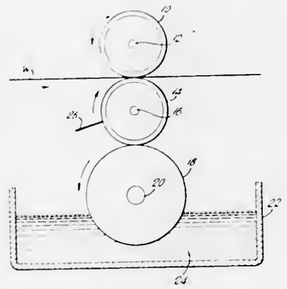
## SYNTHETIC RESIN COMPOSITIONS

**Arthur H. Drelich, Plainfield, and George J. Lukacs, Perth Amboy, both of N.J., assignors to Johnson & Johnson, New Brunswick, N.J.**

**Division of Ser. No. 260,613, June 7, 1972, Pat. No. 3,849,173. This application Feb. 27, 1974, Ser. No. 446,254**

**Int. Cl.² C08L** *35/00*, *45/00*

**U.S. Cl. 260—29.6 M** **25 Claims**



1. A synthetic resin composition having an alkaline pH comprising:

1. 0.1% to 60% by weight on a solids basis of a synthetic resin solid colloidally dispersed in an aqueous medium;

2. 0.01% to 5% by weight based on the weight of said resin solid, of a polyvalent metal complex coordination compound;

3. 5% to 90% molecular equivalent on a stoichiometric basis of said polyvalent metal, of a water-soluble ionically active ammonium or alkali metal salt of an acid capable of being chemically converted into an ionically-inactive polyvalent metal salt of said acid by chemical reaction and precipitation or sequestration of said polyvalent metal salt; and

4. carboxyl groups included in said synthetic resin or in a separately added water-soluble polymeric carboxylic thickener which carboxyl groups act to coagulate the composition.

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**3,931,086**

## THERMOSETTING ACRYLIC EMULSIONS BASED ON N-METHYLOL ALLYL CARBAMATES

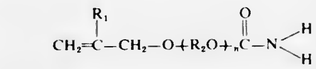
**Martin K. Lindemann, Greenville, S.C., assignor to Chas. S. Tanner Co., Greenville, S.C.**

**Filed May 13, 1974, Ser. No. 469,565**

**Int. Cl.² C08F** *16/04*; **C08L** *61/20*

**U.S. Cl. 260—29.6 TA** **12 Claims**

1. A thermosetting acrylic emulsion comprising water having dispersed therein an emulsion copolymer of monoethylenic monomers at least 65% of which are nonreactive acrylic monomers, and from 0.2–15% of reactive monomers at least about one-third of which are an N-methylol derivative, or a $C_1$ – $C_n$ alcohol ether thereof, of an allyl carbamate having the formula:



in which $R_1$ is hydrogen or methyl, $R_2$ is an alkylidene group containing from 2–4 carbon atoms, and *n* is an integer from 0–10.

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**3,931,087**

## PRESSURE-SENSITIVE EMULSION INTERPOLYMERS CONTAINING 2-ACRYLAMIDO-2-METHYLPROPANESULFONIC ACID AND HAVING GLASS TRANSITION TEMPERATURES IN THE RANGE OF −15° TO −75°C

**James C. Baatz, West Springfield, and Albert E. Corey, East Longmeadow, both of Mass., assignors to Monsanto Company, St. Louis, Mo.**

**Filed May 31, 1974, Ser. No. 475,062**

**Int. Cl.² C08F** *200/00*, *20/38*

**U.S. Cl. 260—29.65 Q** **9 Claims**

1. An aqueous emulsion of a pressure sensitive interpolymer wherein the interpolymer comprises:

A. from 0.1 to 1.5 weight percent of 2-acrylamido-2-methylpropanesulfonic acid, and

B. at least one monomer selected from the group consisting of esters of acrylic acid and methacrylic acid containing from 6 to 20 carbon atoms;

and wherein the interpolymer has a weight average molecular weight in the range 10,000 to 1,000,000 and a glass transition temperature in the range of −15° to −75°C.

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**3,931,088**

## ADHESIVE COMPOSITION CONSISTING OF POLYVINYLALCOHOL SOLUTION OR POLYVINYLACETATE LATEX MODIFIED WITH HYDROPHOBIC SOLUTION OF ISOCYANATE COMPOUND

**Selichi Sakurada, Shimizu; Yasuaki Miyazaki, Hino; Tatsuaki Hattori; Makoto Shiraishi, both of Toyama, and Taisei Inoue, Mitaka, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki; Asahi Co., Ltd. and Koyo Sangyo Co., Ltd., both of Tokyo, all of, Japan**

**Filed Aug. 1, 1973, Ser. No. 384,542**

**Claims priority, application Japan, Aug. 5, 1972, 47-78587**

**Int. Cl.² C08L** *29/04*, *23/36*

**U.S. Cl. 260—29.6 RB** **8 Claims**

1. An adhesive composition comprising (1) an aqueous solution of polyvinyl alcohol and (2) a hydrophobic solution of an isocyanate compound.

3,931,089

## ACID COMPOSITIONS COMPRISED OF POLYMERIC 2-CRYLAMIDO-2-METHYLPROPANESULFONIC ACID AS THICKENER

Curtis Lee Karl, Minneapolis, Minn., assignor to General Mills Chemicals, Inc., Minneapolis, Minn.

Filed June 6, 1974, Ser. No. 476,975
Int. Cl.² C08F 220/56
U.S. Cl. 260—29.65 Q 4 Claims

1. A composition of matter comprising water in an amount of at least 25% by weight of the composition, an acid selected from the mineral acids, the water soluble carboxylic acids containing one to four carbon atoms and mixtures thereof in an amount to produce a pH level of about 2 or below, and a thickener selected from a homopolymer and the alkali and alkaline earth metal salts of the homopolymer of 2-acrylamido-2-methylpropanesulfonic acid in an amount of about 0.05% to 5.0% by weight of the composition.

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3,931,090

## RUBBER COMPOSITION FOR FLEXIBLE BELTS

Paul C. Amatangelo, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 26, 1974, Ser. No. 464,392
Int. Cl.² C08L 91/00
U.S. Cl. 260—23.7 M 17 Claims

1. A composition for manufacture of belts used to feed or transport substrate material, said belts being characterized by resistance to overcure reversion, by a high coefficient of friction for said substrate material and by a high resistance to physical degradation due to dynamic mechanical stress, comprising, synthetic polyisoprene; about 6.0 to about 15.0 parts by weight metallic oxide per 100 parts of polyisoprene; about 1.0 to about 5.0 parts by weight fatty acid per 100 parts of polyisoprene; 0.0 to about 2.0 parts by weight antioxidant per 100 parts polyisoprene and sulfur-containing cure ingredients and accelerators comprising about 0.5 to about 1.5 parts by weight of at least one organic polysulfide chosen from the group consisting of the dimorpholine polysulfides and the liquid aliphatic polysulfides per 100 parts of polyisoprene, about 0.5 to about 1.5 parts by weight of at least one sulfenamide accelerator per 100 parts of polyisoprene, about 0.5 to about 1.0 part by weight of at least one thiuram sulfide of the type having at least two sulfide groups or mercaptobenzothiazyl disulfide, accelerator per 100 parts of polyisoprene, and about 0.1 to about 1.3 parts by weight sulfur per 100 parts of polyisoprene.

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3,931,091

## POLYVINYL CHLORIDE COMPOSITIONS PLASTICIZED WITH M-ETHYLPHENYL PHOSPHATE

Pierre M. J. G. de Radzitzky d'Ostrowick, Brussels, Belgium, assignor to Labofina S.A., Brussels, Belgium

Filed May 14, 1973, Ser. No. 360,368
Claims priority, application Germany, Oct. 27, 1972, 2252686
Int. Cl.² C08K 5/52
U.S. Cl. 260—30.6 R 6 Claims

1. Plasticized polyvinyl chloride compositions comprising polyvinyl chloride and an a plasticizer consisting essentially of organic phosphate selected from the group consisting of the phosphates of the formula $(C_6H_5)_x(m\text{-}C_2H_5C_6H_4)_y\ PO_4$, wherein $x$ is 0, 1 or 2 and $y$ is 1, 2 or 3, $x + y$ being 3, and mixtures of said phosphates, the amount of said organic phosphates being within the range of 20 to 100 parts by weight per 100 parts by weight of polyvinyl chloride.

3,931,092

## FINELY-DIVIDED POLYMERIC SOLIDS HAVING IMPROVED PHYSICAL PROPERTIES

Gerhard G. Ramlow, East Windsor, N.J.; Louis C. Pizzini, Trenton, Mich.; John T. Patton, Jr., Wyandotte, Mich., and John R. Murphy, Trenton, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Apr. 29, 1974, Ser. No. 465,234
Int. Cl.² C08F 216/02, 267/06, 2/12
U.S. Cl. 260—33.4 R 21 Claims

1. A finely-divided dispersed solid polymer prepared by polymerizing at a temperature between 25°C. and 180°C. in the presence of from about 0.05 to 5.0 weight percent based on the weight of (a) below of a free radical catalyst and from about one part to nineteen parts by weight per part of (b) below of an organic solvent having a boiling point between 25°C. and 250°C.:

a. from about 55 to 95 weight percent of an ethylenically unsaturated monomer or mixture of monomers, and
b. from about 45 to 5 weight percent of a hydroxy-terminated organic compound having from one to eight hydroxyl groups, a hydroxyl equivalent weight of from 500 to 10,000 and containing a polymerizable carbon-to-carbon double bond, said weight percents of (a) and (b) being based on the total weight of (a) and (b).

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3,931,093

## THERMOSETTING COMPOSITIONS OF A POLY(ARYLACETYLENE) AND A PHENOLALDEHYDE RESIN

Joseph Henry Del Nero, West Chester, Pa., assignor to Hercules Incorporated, Wilmington, Del.

Filed Feb. 24, 1975, Ser. No. 552,522
Int. Cl.² C08K 5/01; C08L 61/00
U.S. Cl. 260—33.6 UA 12 Claims

1. A thermosetting composition comprising from about 10 to about 50% by weight of a phenol-aldehyde resin and from about 50 to about 90% by weight of a polymer composition comprising a prepolymer of at least one polyacetylenically substituted aromatic compound, said prepolymer having a number average molecular weight of from about 900 to about 12,000, a ratio of aromatic protons to olefinic protons greater than about 2.4 and containing from about 5 to about 20% terminal acetylenic groups by weight of the prepolymer.

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3,931,094

## FILLED THERMOPLASTIC CONTAINING FIBROUS DISPERSION AID

Leon Segal, Morristown, and Albert H. Steinberg, Morris Plains, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed July 2, 1973, Ser. No. 375,430
Int. Cl.² C08K 7/14
U.S. Cl. 260—37 N 14 Claims

1. A method for improving the processability of highly filled thermoplastic compositions, which are formable under heat and pressure and which have 25 to 50% by weight filler, comprising the steps of:

a. combining the thermoplastic polymer, filler and a dispersion material consisting essentially of 0.5 to 15% fibrous material having an aspect ratio at least about 10 times the aspect ratio of the filler said fibrous material being of sufficient length before blending such that its length after blending is less than about ⅛ inch; and
b. intimately blending the resultant mixture.



3,931,095

## FIRE RETARDANT THERMOSETTING RESIN COMPOSITION

Renichi Kondo, Tokyo; Koji Nakagawa, Toyama; Makoto Fukuda, Kanagawa; Ikuji Kishi, and Tateki Ohtsuki, both of Tokyo, all of Japan, assignors to Nippon Kayaku K.K. and Denki Kagaku Kogyo Kabushiki Kaisha, both of Tokyo, Japan

Filed June 28, 1974, Ser. No. 484,016
Claims priority, application Japan, June 28, 1973, 48-72261
Int. Cl.² C08K 3/22
U.S. Cl. 260—38 8 Claims

1. A fire retardant thermosetting resin composition consisting essentially of a thermosetting resin and tricalcium aluminate hexahydrate crystals, wherein the proportion of the tricalcium aluminate hexahydrate crystals is about 10 to 90% by weight based on the total weight of the tricalcium aluminate hexahydrate crystals and the resin, and wherein said tricalcium aluminate hexahydrate crystals have a particle size ranging from about 0.5 to 50$\mu$.

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3,931,096

## LOW FLUID LOSS CEMENTING COMPOSITIONS

Lawrence James Guilbault, McMurray, and Frederick Alan Hoffstadt, Coraopolis, both of Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Filed Oct. 30, 1974, Ser. No. 519,155
Int. Cl.² C08K 3/22, 3/34
U.S. Cl. 260—42.13 2 Claims

1. A low fluid loss cement composition capable of forming a fluid slurry when mixed with water, said cement composition comprising dry hydraulic cement and from about 0.05 to about 5.0 percent by weight, based on dry hydraulic cement, of a water-soluble polymer of methacrylamidopropyltrimethylammonium chloride.

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3,931,097

## ETHYLENE-PROPYLENE COPOLYMER RUBBER COMPOSITION HAVING HIGH MODULUS

Ryota Fujio, Akigawa; Nobuyuki Kataoka, Tokyo; Motozumi Kitayama, Tachikawa; Yoshihide Fukahori, and Shiro Anzai, both of Higashi-Murayama, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Dec. 4, 1974, Ser. No. 529,426
Claims priority, application Japan, Dec. 4, 1973, 48-134835; June 23, 1974, 49-9230
Int. Cl.² C08K 3/04, 3/22; C08L 23/26
U.S. Cl. 260—42.21 15 Claims

1. An ethylene-propylene copolymer rubber composition having a high Young's modulus, which comprises

100 parts by weight of a mixture of the following ingredients (a) and (b) in a weight ratio of ingredient (a)/ingredient (b) of 67/33–50/50,

said ingredient (a) being an ethylene-propylene copolymer having a Mooney viscosity of at least 75, which may contain an unsaturated third component, and

said ingredient (b) being divinylbenzene,

(c) 0.3–2.5 parts by weight of an organic peroxide, and

(d) 0.01–0.25 part by weight of sulfur,

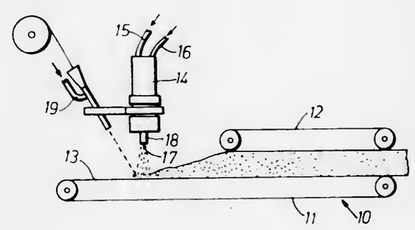
said rubber composition when cured at 120–180°C being homogeneous and having a Young's modulus of 200–500 Kg/cm², a tensile strength of at least 200 Kg/cm², an elongation of at least 300%, a tear energy $\Gamma$ of at least 10 Kg/cm, and retentions of Young's modulus and tensile strength at 70°C of at least 50%.

3,931,098

## METHOD FOR PRODUCING WEBS, PANELS OR SANDWICH ELEMENTS OF FOAM PLASTICS REINFORCED WITH ROVINGS

Peter Herweg, Burscheid, and Franz Prager, Opladen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 12, 1974, Ser. No. 441,933
Claims priority, application Germany, Feb. 15, 1973, 2307490
Int. Cl.² B29H 7/20
U.S. Cl. 264—45.3 1 Claim




1. A method for producing a continuous fiber reinforced foam plastic web comprising:

a. directing a continuous roving onto a moving support means by means of an air nozzle wherein the roving is deposited in the form of random loops and the angle between the air nozzle and the moving support is used to control the form of the loops formed in the roving as it is deposited;
b. depositing a foamable reaction mixture onto said support means either before or after the deposition of said roving;
c. allowing said mixture to foam and permeate said roving; and
d. using the relative sequence and time lag between the mixture deposition and the roving deposition to control the ultimate position of the roving in the foamed web and to insure that the distribution of the roving is three dimensional such that the roving provides reinforcement for the web.

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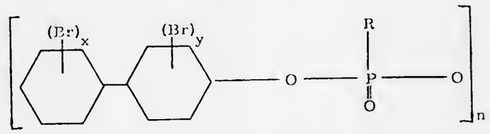
3,931,099

## FIRE RETARDANT POLYESTER FIBERS

Henry L. King, Cary, N.C., assignor to Monsanto Company, Decatur, Ala.

Continuation-in-part of Ser. No. 147,168, May 26, 1971, abandoned. This application Nov. 24, 1972, Ser. No. 309,036
Int. Cl.² C08K 5/53
U.S. Cl. 260—45.7 P 7 Claims

1. A synthetic fiber in which the fiber-forming substance is any long chain synthetic polymer comprising at least 85% by weight of an ester of a dihydric alcohol and terephthalic acid and not more than about 20%, based on the weight of the polymer, of a compound having the general formula:



where R is a radical selected from the group consisting of alkyl, aryl, and brominated aryl; where $x + y$ equal 4–8, and where $n$ is an integer of from 2–100.

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### 3,931,100
### FLAME RETARDANT POLYCARBONATE COMPOSITION

**Victor Mark, Evansville, Ind., assignor to General Electric Company, Pittsfield, Mass.**

**Filed Dec. 28, 1973, Ser. No. 429,645**
**Int. Cl.² C08L 69/00**
**U.S. Cl. 260—45.7 S** **6 Claims**

**1.** A flame retardant aromatic carbonate polymer composition comprising in admixture an aromatic carbonate polymer and a minor amount of an additive having the following formula: $(X_mR')_s[(X_nR)(SO_3M)]_p$

wherein X is an electron withdrawing radical, M is a metal selected from the group consisting of alkali metals and alkaline earth metals, R′ is an aryl radical of 1–2 aromatic rings, R is an organic radical selected from the group consisting of cycloaliphatic, olefinic and cycloolefinic radicals of 1–10 carbon atoms, $n$ and $m$ are integers of from 0–11, $s$ is an integer of from 0–5 and $p$ is an integer of from 1–4; or mixtures of the above formula.

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### 3,931,101
### FLAMEPROOF MOULDING COMPOSITIONS BASED ON POLYOLEFINS

**Franz-Josef Dany, Erfstadt Lechenich; Joachim Wortmann, Hurth; Peter Münch, Hurth-Burbach, and Günther Braun, Oberhausen, all of Germany, assignors to Hoechst Aktiengesellschaft and Ruhrchemie Aktiengesellschaft, both of, Germany**

**Filed May 21, 1973, Ser. No. 362,517**
**Claims priority, application Germany, May 25, 1972, 2225323**
**Int. Cl.² C08G 6/00**
**U.S. Cl. 260—45.8 NT** **5 Claims**

**1.** A flameproof molding composition comprising a pulverulent blend of a polyolefin and a plurality of flame retardants consisting of, in addition to red phosphorus, melamine, the amount of flame retardants being about 10–30 weight % of said composition, the quantitative ratio of red phosphorus and melamine being 1:1 – 3:1.

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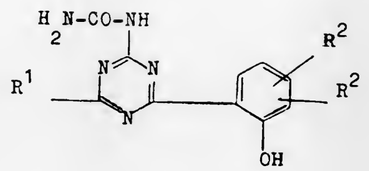
### 3,931,102
### MOULDING COMPOSITION BASED ON POLY(OXYMETHYLENE)

**Hans-Hermann Grossmann, Oberems, Taunus; Karlheinz Burg, and Günter Sextro, both of Naurod, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany**

**Filed Oct. 4, 1974, Ser. No. 512,296**
**Claims priority, application Germany, Oct. 8, 1973, 2350415**
**Int. Cl.² C08K 5/13, 5/21, 5/34**
**U.S. Cl. 260—45.8 NT** **1 Claim**

**1.** Moulding composition based on poly(oxymethylene), consisting of (a) from 99.9 to 95 weight percent of a poly(oxymethylene) and

(b) from 0.1 to 5 weight percent of a hydroxyphenyl-ureido-s-triazine having the formula



in which $R^1$ represents a hydrogen atom, an alkyl radical or an alkoxy radical each having from 1 to 6 carbon atoms, a phenyl or a phenoxy radical — each of which may be substituted by a hydroxyl group or an amino group being able to carry one or two alkyl radicals having from 1 to 6 carbon atoms each — or an amino group which may carry one or two alkyl radicals having each from 1 to 6 carbon atoms; and $R^2$ represents a hydrogen atom, a hydroxyl group, an alkyl radical or alkoxy radical each having from 1 to 6 carbon atoms or a phenyl radical.

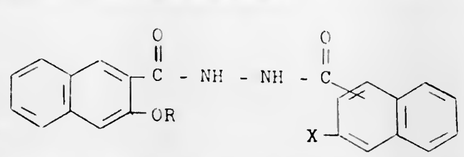
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### 3,931,103
### COPPER INHIBITORS FOR POLYOLEFINS

**William Baptist Hardy, Bound Brook, N.J., assignor to American Cyanamid Company, Stamford, Conn.**

**Filed Oct. 18, 1974, Ser. No. 515,941**
**Int. Cl.² C08G 6/00**
**U.S. Cl. 260—45.85 B** **13 Claims**

**1.** A stabilizer composition useful in the enhancement of the resistance of polyolefins to copper-catalyzed thermal degradation comprising, in combination, a hindered-phenol antioxidant and a compound of the formula



wherein R is alkyl of 1 to 8 carbon atoms, and X is hydrogen or —OR.

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### 3,931,104
### PLASTICS STABILIZED AGAINST ULTRAVIOLET RADIATION

**Walter Luders, Neu-Isenburg, and Edgar Fischer, Frankfurt am Main, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany**

**Filed June 10, 1974, Ser. No. 477,834**
**Claims priority, application Germany, June 12, 1973, 2329782**
**Int. Cl.² C08G 6/00**
**U.S. Cl. 260—45.85 R** **16 Claims**

**1.** A plastic material consisting essentially of a polymer selected from homopolymers and copolymers of ethylene, propylene, butene and 4-methyl-1-pentene and polystyrene and from 0.5 to 2% by weight of an ultra-violet radiation stabilizer which is a tertiary phosphine oxide or sulfide of the formula



in which X is oxygen or sulfur and either (a) $R_1$ and $R_2$ are $\beta$-cyano-ethyl and $R_3$ is a radical other than $\beta$-cyanoethyl selected from the group of radicals consisting of hydroxyalkyl, haloalkyl, hydroxy haloalkyl carbalkoxyalkyl, acyloxyalkyl, phenylhydroxyalkyl wherein the phenyl radical may be substituted by one or more halogens, and cyanoethyl wherein the alkyl radical has 1 to 6 carbon atoms or (b) $R_1$, $R_2$ and $R_3$ are the same and each is selected from said group of radicals.

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### 3,931,105
### CATALYST COMPOSITION FOR ROOM TEMPERATURE VULCANIZING SILICONE COMPOSITIONS AND CATALYZED COMPOSITIONS THEREFROM

**Robert A. Smith, Schenectady, N.Y., assignor to General Electric Company, Waterford, N.Y.**

**Division of Ser. No. 432,409, Jan. 10, 1974, Pat. No. 3,865,759. This application Oct. 29, 1974, Ser. No. 518,948**
**Int. Cl.² C08G 77/04**
**U.S. Cl. 260—46.5 G** **1 Claim**

**1.** In a room temperature vulcanizable silicone rubber composition comprising:

A. a linear diorganopolysiloxane having terminal silicon-bonded hydroxyl groups;

B. a polyfunctional organosilicon compound containing more than two functional groups and capable of cross-linking (A); and

C. a tin soap condensation catalyst, the improvement which comprises using, as component (C), a catalyst composition comprising:

i. a stannous carboxylate of a branched chain alkyl carboxylic acid having from about 8 to about 12 carbon atoms in the alkyl chain; and, as a stabilizing carrier therefor,

ii. a fluid organopolysiloxane composition having an average formula:



where R is higher alkyl radical, $R^1$ is selected from the class consisting of monovalent and divalent hindered t-butyl-substituted hydroxyaryl radicals, the sum of $a$ plus $b$ is from 5 to 40, inclusive, and the ratio of $b$ over the sum of $a$ plus $b$ is from 0.005 to 0.1, inclusive.

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### 3,931,106
### GENERATION AND USE OF DINITRILE OXIDES

**John Crosby; Robert Allan Campbell Rennie; John Tanner, all of Runcorn, England, and Robert Michael Paton, Edinburgh, Scotland, assignors to Imperial Chemical Industries Limited, London, England**

**Filed May 6, 1974, Ser. No. 467,512**
**Claims priority, application United Kingdom, May 11, 1973, 22582/73; June 26, 1973, 30218/73; Nov. 12, 1973, 52380/73**
**Int. Cl.² C08G 77/04**
**U.S. Cl. 260—46.5 UA** **21 Claims**

**1.** A process for the modification of a polyfunctional species which comprises mixing the said species with a furoxan containing a monocyclic or polycyclic ring system fused to the carbon atoms of the furoxan ring, and subsequently heating the mixture to a temperature at which a dinitrile oxide compound is generated in situ by thermal decomposition at a temperature ranging from 30°–280°C of the furoxan and caused to react with the said polyfunctional species, wherein the polyfunctional species contains functional groups capable of entering into 1–3 addition or 1–3 cycloaddition reactions with the nitrile oxide and wherein said polyfunctional species is monomeric or polymeric and if said species is monomeric then the molar proportion of furoxan: monomeric material is between 3:2 to 2:3 and if said species is polymeric, then furoxan:polymeric material is 1:3 to 1:1000.

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### 3,931,107
### POLYALKOXY MONOVINYLAROMATIC COMPOUND IN COPOLYMERIZATION OF A CONJUGATED DIENE WITH A MONOVINYL-SUBSTITUTED AROMATIC COMPOUND

**William J. Trepka, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.**

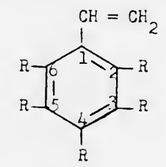
**Filed June 21, 1973, Ser. No. 372,240**
**Int. Cl.² C08F 236/04**
**U.S. Cl. 260—47 UA** **35 Claims**

**1.** A polymerization process which comprises contacting at least one polymerizable conjugated diene and at least one polymerizable monovinyl-substituted aromatic hydrocarbon with an effective amount of an organolithium initiator under polymerization conditions including effective temperature and pressure in the presence of a polyalkoxy monovinyl-substituted aromatic compound randomizer, wherein said polyalkoxy monovinyl-substituted aromatic compound is characterized by at least two adjacent alkoxy groups on a benzene ring nucleus, and wherein said randomizer is employed in quantity effective to promote the formation of random copolymers between said conjugated diene and said monovinyl-substituted aromatic hydrocarbon.

**30.** A polymerization process which comprises contacting at least one polymerizable monomer which is at least one polymerizable conjugated diene, or at least one polymerizable conjugated diene and at least one copolymerizable monovinyl-substituted aromatic hydrocarbon, under polymerization conditions, with the organolithium initiator prepared by the process comprising contacting at least one hydrocarbon lithium compound with at least one polyalkoxy monovinyl-substituted aromatic compound in a ratio effective to result in said initiator,

wherein said hydrocarbon lithium compound is represented by $R''Li_x$ wherein R″ is a hydrocarbon radical containing up to 20 carbon atoms per molecule, $x$ is an integer of 1 to 4, inclusive,

said polyalkoxy monovinyl-substituted aromatic hydrocarbon is represented by



wherein each R is hydrogen, alkoxy —OR′, hydrocarbyl, or halogen, such that at least two R groups are OR′ and are adjacent the benzene ring, R′ is an alkyl radical, R groups where hydrocarbyl are alkyl, cycloalkyl, or aryl, and wherein two adjacent R groups together with the corresponding carbons of the benzene ring can be a 5 to 10 membered ring system, said halogen is fluorine or chlorine, and wherein said polyalkoxy monovinyl-substituted aromatic hydrocarbon contains 10 to 20 carbon atoms per molecule, and

wherein said polymerization conditions include a temperature, pressure, and amount of said organolithium initiator

effective for said polymerization process to produce a polymer of said conjugated diene, or copolymer of said conjugated diene with said monovinyl-substituted aromatic hydrocarbon.

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### 3,931,108
### PROCESS FOR PREPARING POLYCARBONATES

**Rudolf Binsack; Heinrich Haupt; Hugo Vernaleken, all of Krefeld, and Eckart Reese, Dormagen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen Bayerwerk, Germany**

**Filed Oct. 24, 1973, Ser. No. 409,201**

**Claims priority, application Germany, Nov. 9, 1972, 2254917**

**Int. Cl.² C08G** *63/62*

**U.S. Cl. 260—47 XA** **6 Claims**

1. In the process of producing a polycarbonate suitable for film extrusion having a relative viscosity measured at a concentration of 0.5 g of polycarbonate in 100 ml of methylene chloride solution at a temperature of 25°C of between about 1.35 and about 1.55 by reacting an aqueous alkaline solution of an aromatic dihydroxy compound with phosgene under the conditions of a phase boundary reaction the improvement which comprises the sequential steps of

a. allowing the reaction to proceed to give an oligomeric polycarbonate having a degree of polymerization of about 5 to 15;

b. adding a catalytic amount of tertiary amine and about 0.05 to 2.0 mol percent relative to the aromatic dihydroxy compound, of a branching agent having more than three phenolic hydroxy groups to the phase boundary reaction mixture; and

c. allowing the condensation reaction to go to completion.

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### 3,931,109
### PROCESS FOR COATING SUBSTRATES WITH HIGH MOLECULAR WEIGHT EPOXY RESINS

**Patrick Henry Martin, Danville, Calif., assignor to The Dow Chemical Company, Midland, Mich.**

**Continuation-in-part of Ser. No. 234,390, March 13, 1972, abandoned. This application Mar. 8, 1974, Ser. No. 449,408**

**Int. Cl.² C08G** *30/04*

**U.S. Cl. 260—47 EP** **8 Claims**

1. An epoxy resin coating composition comprising in dispersed form

1. a liquid epoxy resin having more than one 1,2-epoxy groups

2. a mixture comprising a solid phenolic hydroxyl containing compound having more than one phenolic hydroxyl group and a catalytic amount of a catalyst for effecting the reaction between the epoxy groups and the phenolic hydroxyl groups selected from the group consisting of phosphonium salts of organic and inorganic acids, imidazoles, imidazolines and quaternary ammonium compounds;

wherein the epoxy resin and phenolic hydroxyl-containing compound are employed in quantities such as to provide a product having an average molecular weight of at least about 15,000 and wherein said phenolic hydroxyl-containing compound and catalyst mixture is dispersed in said liquid epoxy resin.

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### 3,931,110
### RAPID CURING ADHESIVE COMPOSITIONS COMPRISING THE REACTION PRODUCT OF A KETONE ALDEHYDE CONDENSATION POLYMER AND A PRIMARY AROMATIC AMINE

**Harlan G. Freeman; Gene F. Baxter, and George Graham Allen, all of Seattle, Wash., assignors to The Dow Chemical Company, Midland, Mich.**

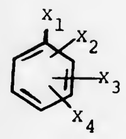
**Division of Ser. No. 174,942, Aug. 25, 1971, Pat. No. 3,784,515, which is a continuation-in-part of Ser. No. 113,681, Feb. 8, 1971, abandoned, which is a continuation-in-part of Ser. No. 821,996, May 2, 1969, abandoned, which is a continuation-in-part of Ser. No. 639,270, May 18, 1967, Pat. No. 3,518,159. This application Oct. 23, 1973, Ser. No. 408,407**

**Int. Cl.² C08G** *6/02*

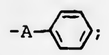
**U.S. Cl. 260—64** **34 Claims**

1. A rapid curing adhesive composition comprising

a. an amine-modified condensation polymer comprising the reaction product of a ketone-formaldehyde condensation polymer containing reactive alkylol groups with a primary aromatic amine of the formula



wherein $X_1$ is $-NH_2$ or $-CH_2NH_2$; $X_2$ is $-NH_2$, $-CH_2NH_2$ or $-OH$; $X_3$ is $-NH_2$, $-CH_2NH_2$, $-NO_2$, $-OH$, alkyl of 1 to 5 carbon atoms, hydrogen, halogen, halogenated alkyl, alkyoxy or



$X_4$ is hydrogen, alkyl of 1 to 4 carbon atoms or aryl; and A is $-SO_2-$, $-NH-$, $-O-$, $-S-$, $-C{=}C-$, $-S-S-$, $-N{=}N-$ or



where $Y_1$ and $Y_2$ are hydrogen or alkyl of 1 to 3 carbon atoms and $z$ is 0, 1 or 2; the amount of said amine being at least 0.1 part by weight per part of said ketone-formaldehyde condensation polymer; and

b. a curing agent reactable with said modified condensation polymer at ambient temperatures, the amounts of said modified polymer and curing agent being sufficient to cause said composition to rapidly become insoluble and infusible at ambient temperatures.



### 3,931,111
### SOLUBLE HYDROPHILIC POLYMERS AND PROCESS FOR PROCESSING THE SAME

**Jinrich Kopecek; Jiri Vacik, both of Prague, and Ladislav Sprincl, Prague-Stodulky, all of Czechoslovakia, assignors to Ceskoslovenska akadamie ved, Prague, Czechoslovakia**

**Filed Feb. 26, 1973, Ser. No. 335,748**

**Claims priority, application Czechoslovakia, Feb. 29, 1972, 1333-72**

**Int. Cl.² C08G** *2/38, 18/62*; **A61K** *31/785*

**U.S. Cl. 260—67 R** **11 Claims**

1. A water soluble hydrophilic low molecular weight polymer suitable for medical use including blood plasma substitute comprising the polymerizate of at least one monomer selected from the group consisting of N-alkyl methacrylamides, N-hydroxyalkyl methacrylamides, N-alkyl acrylamides, N-hydroxyalkyl acrylamides, N,N-dialkyl acrylamides, and mono-esters of acrylic and methacrylic acids with di-, tri- and higher homologous polyethlene glycols wherein the alkyl radicals are selected from the group consisting of unsubstituted and substituted alkyl radicals, the substituents being selected from the group consisting of hydroxy, amino and alkoxy groups, said low molecular weight polymer having an average molecular weight in a range of 10,000 to 60,000 and containing up to 1% maximum of a fraction having a molecular weight above 100,000, said low molecular weight polymer being condensed with at least one bifunctional compound selected from diisocyanates, halides of dicarboxylic acids, phosgene and dialdehydes derived from dicarboxylic acids to form a condensation polymer having a molecular weight in a range of 60,000 to 250,000 and having cleavable cross-links.

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### 3,931,112
### PROCESS FOR N-METHYLOLATING DIISOCYANATE POLYADDITION PRODUCTS

**Kuno Wagner, Leverkusen-Steinbuechel, and Hans Jürgen Müller, Cologne, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen Bayerwerk, Germany**

**Filed Feb. 22, 1974, Ser. No. 444,628**

**Claims priority, application Germany, Feb. 28, 1973, 2309862**

**Int. Cl.² C08G** *12/20*; **C08K** *5/05*

**U.S. Cl. 260—72 B** **9 Claims**

1. A process for N-methylolating a polyurethane comprising reacting

a. a polyurethane containing about 0.2 to 0.4 NH equivalents obtained from urea groups for every 200 parts by weight of polyurethane with

b. between 0.1 to 10 equivalents of formaldehyde per methylolatable NH equivalent, dissolved in a solvent mixture of

c. an inert organic solvent selected from the group consisting of benzene, toluene, xylene, ethyl benzene, chlorobenzene, tetrahydrofuran, dioxane, 1,3-dioxalene, glycol carbonate, ethyl glycol acetate, methylene chloride, chloroform and trichloroethylene and

d. a tertiary alcohol

at a temperature of between about −20° and 160°C.

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### 3,931,113
### IMPACT-RESISTANT THERMOPLASTIC POLYESTER URETHANES

**Nelson V. Seeger, Cuyahoga Falls, and Andrew J. Kaman, Norton, both of Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.**

**Continuation-in-part of Ser. No. 154,944, June 21, 1971, abandoned. This application Nov. 30, 1972, Ser. No. 311,043**

**Int. Cl.² C08G** *18/75, 18/42*

**U.S. Cl. 260—75 NT** **16 Claims**

1. A transparent, thermoplastic polyesterurethane that is the reaction product of (a) essentially linear hydroxy-terminated polyester selected from the group consisting of poly(1,4-butylene adipate) having a molecular weight of about 2000, poly(1,4-butylene azelate) having a molecular weight of from about 1000 to about 2000 and poly(epsilon caprolactone) having a molecular weight of from about 1000 to about 2000, (b) aliphatic diol of from 2 to 10 carbon atoms, and (c) ,4'-methylene-bis(cyclohexyl isocyanate), the mole ratio of (b) to (a) ranging from about 0.9 to 1.2:1 for polyesters of about 1000 molecular weight to from about 0.7 to 5:1 for polyesters of about 2000 molecular weight, and the number of isocyanate groups provided by (c) being substantially equivalent to the total number of hydroxy groups provided by (a) and (b) whereby to provide a polyesterurethane that is substantially free of unreacted isocyanate groups.

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### 3,931,114
### POLYBUTYLENE TEREPHTHALATE BLOW MOLDED ARTICLE

**John S. Gall, North Haledon, and George W. Halek, Summit, both of N.J., assignors to Celanese Corporation, New York, N.Y.**

**Division of Ser. No. 261,847, June 12, 1972, Pat. No. 3,814,786. This application Jan. 17, 1974, Ser. No. 434,455**

**Int. Cl.² C08G** *63/70, 63/16*

**U.S. Cl. 260—75 T** **4 Claims**

1. A polybutylene terephthalate blow molded article wherein said polybutylene terephthalate has an intrinsic viscosity in the range of 1.05 to 1.4 deciliters per gram measured in orthochlorophenol at 25°C.

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### 3,931,115
### PROCESS OF SPRAYING POLYURETHANE-POLYUREA COMPOSITIONS AND APPLICATIONS THEREOF

**Albert Pierre Strassel, Ville d'Avray (Hauts-de-Seine), France, assignor to Societe Anonyoe: Produits Chimiques Ugine Kuhlmann, Paris, France**

**Filed Mar. 26, 1973, Ser. No. 344,617**

**Claims priority, application France, Apr. 5, 1972, 72.11953**

**Int. Cl.² C08G** *18/28*

**U.S. Cl. 260—75 NH** **6 Claims**

1. A method for forming a film of polyurethane-polyurea on a support comprising spraying said support with a two component composition mixed at the time of spraying consisting as first component a solution of at least one organic diamine in a solvent and as a second component a prepolymer liquid at prepolymer spray temperatures of 20° to 130°C containing both polyether and polyester linkages in a ratio of 9:1 to 1:9 and prepared by reacting at least one polyol with a molecular weight of 300 to 6000 and an organic polyisocyanate with a ratio of NCO/OH between about 1.5 and 3 and recovering the support with a polyurethane-polyurea coating, said second component containing from 0 up to 30% of a solvent and having a viscosity of 2000 cps or less at the prepolymer spray temperature, the proportions of the first and second components being such that the ratio of $NH_2$/OH is greater than 0.5 and the ratio of NCO/OH + $NH_2$ is between 0.95 and 1.6.

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### 3,931,116
### CURABLE AMINE-TERMINATED POLYURETHANE-UREA/EPOXIDE LACQUERS

**Carl Bernstein, Deerfield; Konstantinos Arvanitis, Chicago, and Yuen Ng, Chicago, all of Ill., assignors to Witco Chemical Corporation, New York, N.Y.**

**Continuation-in-part of Ser. No. 280,369, Aug. 14, 1972, abandoned. This application Mar. 14, 1974, Ser. No. 451,266**

**Int. Cl.² C08G** *18/30*; **C08K** *5/20*

**U.S. Cl. 260—77.5 R** **17 Claims**

1. A curable polymer-forming lacquer solution comprising:

a. An amine terminated polyetherurethane-urea prepared by the addition of an isocyanate terminated polyalkylene ether diol prepolymer to an excess of diamine, there being at least one active hydrogen on each amine group of said diamine, in an organic solvent system, and

b. A chain-extending amount of a polyepoxide of about 0.1 to about 9.0 percent, by weight, based on said amine-terminated polyetherurethane-urea present in said organic solvent system of component (a).

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3,931,117

## COATING POWDERS FOR PROTECTIVE FILMS BASED ON ε-CAPROLACTAM-BLOCKED ISOCYANATES

David P. Leonard, Overland Park, Kans., assignor to Cook Paint and Varnish Company, Kansas City, Mo.

Filed Aug. 1, 1974, Ser. No. 493,887
Int. Cl.² C08G 18/80, 18/42
U.S. Cl. 260—77.5 TB 4 Claims

1. A coating powder for use in the preparation of protective films which comprises an intimate mixture of:

i. a caprolactam-blocked organic polyisocyanate and

ii. A film-forming hydroxy-containing polyester, or a film-forming hydroxy-containing polymer obtained by reacting from 10–30 parts of a hydroxy lower alkyl acrylate or methacrylate, from 35–45 parts of a lower alkyl acrylate or methacrylate and from 35–45 parts of styrene or vinyl toluene, wherein the polyisocyanate is present in sufficient quantity to provide from about 0.8 to 1.20 blocked isocyanate groups for each hydroxy group in the coating powder, the caprolactam-blocked organic polyisocyanate component (i) being a 1:1 molar mixture of

(a) a caprolactam-blocked aliphatic or aromatic polyisocyanate selected from the group consisting of isophorone diisocyanate, 4,4′-methylene bis-(cyclohexyl isocyanate), toluene diisocyanate, tetramethylene diisocyanate, pentamethylene diisocyanate, hexamethylene diisocyanate, propylene-1,2-diisocyanate, butylene-1,2-diisocyanate, ethylene diisocyanate, cyclopentylene-1,3-diisocyanate, cyclohexylene-1,3-diisocyanate, m-phenylene diisocyanate, p-phenylene diisocyanate, 4,4′-diphenyl diisocyanate, 1,5-napthalene diisocyanate, 2,4-toluene diisocyanate, 2,6-toluene diisocyanate, toluene trisisocyanate, 1,4-xylene diisocyanate, and 4,4′-diphenylmethane diisocyanate; and

(b) a caprolactam-blocked polyisocyanate prepolymer derived from the condensation of a polyhydric alcohol and one or more of the polyisocyanates in (a).

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3,931,118

## AMINOALKANESULFONATE-MODIFIED POLYAMIDES

James W. Cleary, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sept. 2, 1971, Ser. No. 177,427
Int. Cl.² C08G 69/48
U.S. Cl. 260—78 SC 9 Claims

1. A fiber-forming aliphatic polycarbonamide wherein recurring amide linkages and terminal sulfonate groups are integral parts of a polymer chain which consists essentially of a polymerization product obtained from reactants consisting essentially of (A) at least one polyamide-forming component selected from the group consisting of amino acid, lactam, dicarboxylic acid and diamine, and salt of dicarboxylic acid and diamine, and (B) at least one basic dyeability modifier selected from the group consisting of aminoalkanesulfonic acid and alkali metal salt thereof having the formula $RNHR'SO_3M$ wherein M is hydrogen or an alkali metal, R is hydrogen or a monovalent saturated hydrocarbon radical having 1–12 carbon atoms per radical, R′ is a divalent saturated hydrocarbon radical having 1–18 carbon atoms per radical; said basic dyeability modifier being present therein in an amount of from about 0.05 to about 4 mol percent based on the mols of recurring amide units in the polycarbonamide.

3,931,119

## AROMATIC CARBOXAMIDE-SULPHONAMIDE POLYCONDENSATES

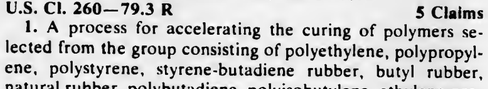
Jean-Claude Lehlanc, Venissieux,, France, assignor to Rhone-Poulenc S.A., Paris, France

Filed Sept. 10, 1973, Ser. No. 395,435
Claims priority, application France, Sept. 13, 1972, 72.32426
Int. Cl.² C08G 69/32
U.S. Cl. 260—78 R 4 Claims

1. A heat-resistant film- or fibre-forming aromatic polyamide-sulphonamide consisting essentially of recurring units of the formula:

$$—CO—Ar_1—COHN—Ar_2—SO_2NH—Ar_3—(SO_2NH—Ar_4)_n—NH—$$

in which each of the Ar radicals, which may be identical or different, represents



*n* is 0 or an integer at least equal to 1 and the arrow above $—SO_2NH—$ groups indicates that each of these groups can be reversed to give $—NH—SO_2—$ groups, said polyamide-sulphonamide being resistant to temperatures as high as 350° to 450°C. and soluble in organic solvents without it being necessary to add inorganic salt.

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3,931,120

## FLAMEPROOF MODACRYLIC FIBERS

Yoshihisa Shichijo; Hideo Sato; Toshio Iwasa, and Yasuo Uchida, all of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 196,100, Nov. 5, 1971, Pat. No. 3,824,222.
This application Sept. 26, 1973, Ser. No. 400,801
Claims priority, application Japan, Nov. 5, 1970, 45-96831
Int. Cl.² C08F 28/02, 230/02
U.S. Cl. 260—79.3 MU 4 Claims

1. A modacrylic synthetic fiber prepared from a polymer composition consisting essentially of polymerized units of

a. at least 50 percent by weight based on the composition of acrylonitrile;

b. at least 25 percent by weight based on the composition of vinylidene chloride;

c. 0.1 to 3 percent by weight based on the composition of bis(2-chloroethyl) vinylphosphonate; and

d. at least one ethylenically unsaturated compound copolymerizable therewith, present in an amount of up to 10 percent by weight and which includes at least one ethylenically unsaturated monomer having a dye site therein for a basic dye, said monomer having a dye site being present in an amount of up to 1 percent by weight.

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3,931,121

## PROCESS FOR ACCELERATING THE CURING OF POLYMERS WITH ORGANO CHLORONITROSO COMPOUNDS

Pauls Davis, Gibraltar; Herwart C. Vogt, Grosse Ile, and Charles F. Deck, Trenton, all of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Nov. 11, 1974, Ser. No. 522,614
Int. Cl.² C08F 8/30; C08C 19/12
U.S. Cl. 260—79.3 R 5 Claims

1. A process for accelerating the curing of polymers selected from the group consisting of polyethylene, polypropylene, polystyrene, styrene-butadiene rubber, butyl rubber, natural rubber, polybutadiene, polyisobutylene, ethylene-propylene copolymers, bis-1,4-polyisoprene, ethylene-propylene dichloropentadiene terpolymer, polyvinyl chloride polymer, vinyl chloride-vinyl acetate copolymers, vinyl chloride-vinylidene chloride copolymers polyperfluoropropylene vinylidene fluoride, chlorinated natural rubber, sulfochlorinated polyethylene, polychloroprene, chlorinated butyl rubber, chlorinated polyethylene and chlorinated polypropylene, wherein said polymers are crosslinked with polyfunctional chloronitroso groups in the presence of a metallic or metallic salt accelerator selected from the group consisting of anhydrous cupric sulfate, ferric chloride, cupric chloride, nickel bromide, and iron powder, cobalt acetate tetrahydrate and ferrous ammonium sulfate dodecahydrate.



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3,931,122

## METHOD FOR PRODUCING HIGH MOLECULAR WEIGHT POLYACRYLAMIDE TYPE RESINS

Shin-ichi Isaoka, Kyoto; Tutomu Shintani, Toyonaka; Shigenori Taziri, Ibaraki; Shiro Sakai, Higashiosaka, and Wataru Thoma, Yamatotakada, all of Japan, assignors to Sumitomo Chemical Company, Limited, Japan

Filed Jan. 24, 1974, Ser. No. 436,046
Claims priority, application Japan, Jan. 25, 1973, 48-10861
Int. Cl.² C08F 2/14, 2/20
U.S. Cl. 260—80.3 N 3 Claims

1. A process for producing resinous polymers of acrylamide which comprises copolymerizing acrylamide with at least one monovinyl monomer selected from the group consisting of acrylonitrile, acrylic acid and its salts, methacrylic acid and its salts and vinylpyridine, the total amount of acrylamide and the monovinyl monomer being 20 to 30 percent by weight based on the total amount of the reaction mixture and the amount of acrylamide being 65 to 99 percent by weight based on the total amount of acrylamide and the monovinyl monomer, in a solvent mixture of water and acetone, said solvent mixture containing 23 to 30 percent by weight of acetone, in the presence of a redox type catalyst consisting essentially of at least one persulfate selected from the group consisting of potassium persulfate, sodium persulfate and ammonium persulfate, at least one aliphatic amine selected from the group consisting of dimethylaminoethanol, triethanolamine, hexamethylene diamine, diethylene triamine, triethylene tetramine, tetraethylene pentamine, polyethylenimine, tetramethylethylene diamine, tetramethylpropylene diamine and tetramethylhexamethylene diamine and at least one Lewis acid selected from the group consisting of the chlorides and bromides of aluminum, antimony, lithium and zinc, the weight ratio of the persulfate to the aliphatic amine being 1 : 0.5–2.5 and the weight ratio of the aliphatic amine to said Lewis acid being 1 : 0.5–3.0, the amount of said redox type catalyst being 0.01 to 1.0 percent by weight based on the total amount of acrylamide and the monovinyl monomer.

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3,931,123

## HYDROPHILIC NITRITE COPOLYMERS

Jiri Vacik, and Jindrich Kopecek, both of Praha, Czechoslovakia, assignors to Ceskoslovenska akadamie ved, Prague, Czechoslovakia

Filed Apr. 30, 1973, Ser. No. 355,496
Claims priority, application Czechoslovakia, May 2, 1972, 2961/72
Int. Cl.² C08F 8/42, 16/02
U.S. Cl. 260—80.73 3 Claims

1. A composition comprising a hydrophilic copolymer having reactive —C N groups, which contains (A) 2 – 50 mol. percent of methacrylonitrile or acrylonitrile and (B) 50 – 98 mol. percent of glycol monoesters of acrylic or methacrylic acid, where the glycol is selected from the group consisting of ethylene glycol, diethylene glycol, triethylene glycol and their mixtures.

3. A low-temperature hydrogenation catalyst comprising the composition of claim 2 having bonded thereto a metal selected from the group consisting of Pt, Pd, and Rh.

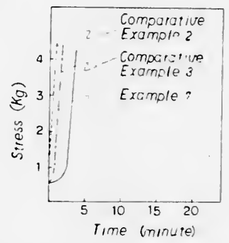
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3,931,124

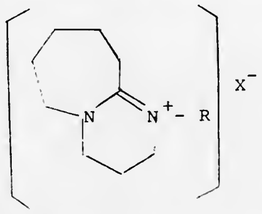
## FLUOROELASTOMER COMPOSITION

Yutaka Kometani; Shun Koizumi, both of Toyonaka; Takeshi Suzuki, Kyoto; Yasuyoshi Furukawa, Neyagawa; Masayasu Tomoda, Takatsuki, and Kiyoichi Kondo, Settsu, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Division of Ser. No. 303,769, Nov. 6, 1972, Pat. No. 3,857,807.
This application Mar. 25, 1974, Ser. No. 454,165
Claims priority, application Japan, Nov. 11, 1971, 46-90488; July 25, 1972, 47-74849
Int. Cl.² C08F 214/18, 214/20, 214/22, 214/24
U.S. Cl. 260—80.77 17 Claims




1. A fluoroelastomer composition comprising (a) a fluoroelastomer copolymer, (b) at least one member selected from the group consisting of bivalent metal oxide, bivalent metal hydroxide and mixture of bivalent metal oxide or metal hydroxide with metal salt of weak acid, (c) an aromatic polyhydroxy compound, and from about 0.2 to 10 parts per 100 parts by weight of fluoroelastomer copolymer of (d) a quaternary ammonium compound having the general formula:




wherein R is alkyl group having 1 to 24 carbon atoms or aralkyl group having 7 to 20 carbon atoms, and $X^-$ is an anion such as halide ion, hydroxylate ion, alkoxylate ion, carboxylate ion, phenoxide ion, sulfonate ion, sulfate ion, sulfite ion and carbonate ion.

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3,931,125

## PROCESS FOR PRODUCING HYDROCARBON RESIN AND PRESSURE-SENSITIVE ADHESIVES CONTAINING SAME

Shigeru Katayama; Izuru Yokoyama, and Katsuhiko Tasaka, all of Iwakuni, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Mar. 19, 1974, Ser. No. 452,577
Claims priority, application Japan, Mar. 19, 1973, 48-30853
Int. Cl.² C08F 214/00, 212/00
U.S. Cl. 260—82 18 Claims

1. A process for producing a hydrocarbon resin (C) which comprises copolymerizing 100 parts by weight of vinyl aromatic hydrocarbons (A) comprising about 80 to 100% by weight isopropenyltoluene and 0 to 20% by weight vinyl aromatic hydrocarbons having 8 to 9 carbon atoms and from about 5 to 100 parts by weight of a fraction (B) having a boiling point range from about −15°C to 45°C and comprising a major proportion by weight of unsaturated hydrocarbons

having 4 to 5 carbon atoms, which is the by-product in the refining or cracking of petroleum, in the presence of a Friedel-Crafts catalyst.

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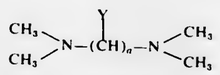
**3,931,126**

## MODIFICATION OF CONJUGATED DIENE POLYMERS BY TREATMENT WITH ORGANOLITHIUM AND N,N,N′,N′-TETRAMETHYLALKYLENEDIAMINE COMPOUNDS

**Floyd E. Naylor, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.**

**Filed Oct. 4, 1967, Ser. No. 672,692**
**Int. Cl.² C08C** *19/22*
**U.S. Cl. 260—83.7** **10 Claims**

**1.** A method for reducing the inherent viscosity of a preformed polymer wherein said polymer is at least one of a polymer of at least one conjugated diene having from about 4 to 8 carbon atoms per molecule and a copolymer of said conjugated diene with a vinyl aromatic compound containing up to 20 carbon atoms per molecule, which comprises reacting said preformed polymer for at least two minutes in an inert hydrocarbon diluent at a pressure sufficient for liquid-phase operation with (1) an organolithium treating agent selected from (a) compounds represented by the formula $R(Li)_x$ wherein R is a hydrocarbon radical selected from the group consisting of alkyl, cycloalkyl, alkenyl, cycloalkenyl, aryl radicals, and combinations thereof, and x is an integer of from 1 to 4, (b) a halogen-substituted phenyllithium, or (c) a lithium adduct of naphthalene or stilbene and (2) N,N,N′,N′-tetramethylalkylenediamine, wherein said N,N,N′,N′-tetramethylalkylenediamine is



wherein *a* is an integer from 1 to 6, inclusive, and each Y is selected from the group consisting of hydrogen and alkyl radicals containing from 1 to 3, inclusive, carbon atoms, and wherein the mole ratio of said organolithium treating agent to said N,N,N′,N′-tetramethylalkylenediamine is in the range of from 1:10 to 10:1 and wherein from 20 to 200 gram millimoles of said N,N,N′,N′-tetramethylalkylenediamine are used per 100 grams of said polymer.

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**3,931,127**

## CYCLIZED COPOLYMER FROM A CONJUGATED DIENE AND AN ALPHA OLEFIN, AND THE PRODUCTION THEREOF

**Adel Farhan Halasa, Bath, and Tai Chun Cheng, Akron, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio**

**Filed Nov. 19, 1973, Ser. No. 417,311**
**Int. Cl.² C08F** *4/46, 36/04, 236/04*
**U.S. Cl. 260—85.3 R** **3 Claims**

**1.** A cyclized polymer with a molecular weight of substantially 500 to 200,000 which includes substantially 20 to 60 percent of cyclized units having in the cycle 50 to 95 parts by weight of conjugated diene units and 50 to 5 parts by weight of alpha olefin units, each conjugated diene unit containing 4 to 8 carbon atoms and each alpha olefin unit containing 2 to 8 carbon atoms, and in addition to the cyclized portion of the polymer, an uncyclized portion, 10 to 15 percent of which is cis-1,4 polymer, 20 to 25 percent of which is trans-1,4 polymer and between about 70 to 60 percent of which is 1,2-polymer.

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**3,931,128**

## PROCESS FOR PREPARING COPOLYMER OF ACRYLONITRILE AND AROMATIC VINYL COMPOUND

**Hidehiko Takizawa, and Mitsuto Hisashige, both of Ichihara, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan**

**Filed Apr. 30, 1974, Ser. No. 465,655**
**Int. Cl.² C08F** *220/44*
**U.S. Cl. 260—85.5 HC** **5 Claims**

**1.** A process for preparing a copolymer of acrylonitrile and an aromatic vinyl compound comprising suspension polymerizing acrylonitrile and an aromatic vinyl compound chosen from the group consisting of styrene, o-methylstyrene, m-methylstyrene, p-methylstyrene and α-methylstyrene in an initial weight ratio of acrylonitrile to vinyl compound of 30–50: 70–50 which is during the process adjusted to a ratio of 20–35: 80–65 by the addition of vinyl compound, in the presence of at least one azo catalyst selected from the group consisting of 1,1′-azobiscyclohexanitrile, 1,1′-azobiscycloheptanitrile, 2,2′-azobis(2-nitropropane), 2,2′-azobis-(2-thiocyanopropane) and 2,2′-azobis(2-methoxycarbonyl propane) and at least one peroxide catalyst selected from the group consisting of ditertiary butyl peroxide, 2,5-dimethyl-2,5-di(tertiary butyl peroxy) hexane, tertiary butyl peroxy acetate and tertiary butyl peroxy isopropyl carbonate in an amount of catalyst of about 0.01 to 0.5% by weight, and and about 0.005 to 0.2% by weight, respectively, based on the weight of the monomers, and maintaining the temperature at a first level of about 90° to 110°C until the conversion of the monomers reaches 70%, and then, increasing the temperature to a second level in excess of said first level in the range of about 110° to 140°C until completion of the polymerization.

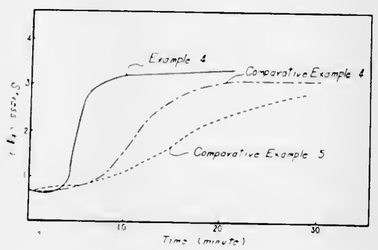
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**3,931,129**

## FLUOROELASTOMER COMPOSITION

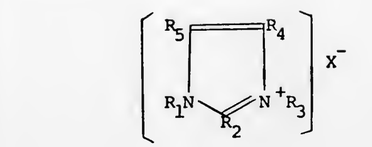
**Yutaka Kometani; Shun Koizumi, both of Toyonaka; Takeshi Suzuki, Kyoto; Yasuyoshi Furukawa, Osaka; Masayasu Tomoda, Takatsuki, and Kiyoichi Kondo, Settsu, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan**

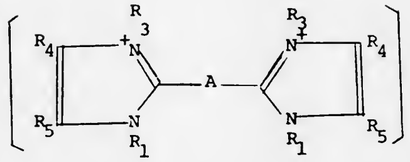
**Division of Ser. No. 303,764, Nov. 6, 1972, Pat. No. 3,864,298. This application Mar. 25, 1974, Ser. No. 454,164**
**Claims priority, application Japan, Nov. 11, 1971, 46-90488; July 25, 1972, 47-74848**
**Int. Cl.² C08F** *214/22*
**U.S. Cl. 260—87.7** **16 Claims**

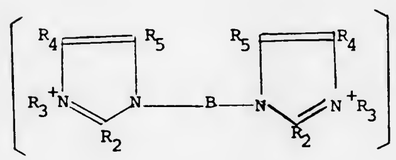


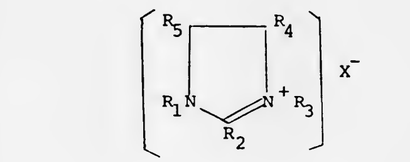

**1.** A fluoroelastomer composition comprising per 100 parts by weight of (a) a fluoroelastomer, (b) from 2 to 30 parts by weight of at least one member selected from the group consisting of bivalent metal oxide, bivalent metal hydroxide and mixture of bivalent metal oxide or metal hydroxide with metal salt of weak acid, (c) from 0.5 to 5 parts by weight of an aromatic polyhydroxy compound, and (d) from 0.2 to 10 parts by weight of a quaternary ammonium compound having the general formula:

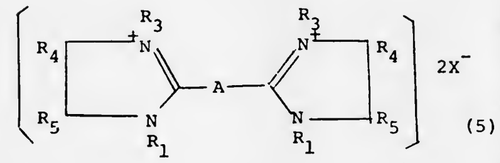




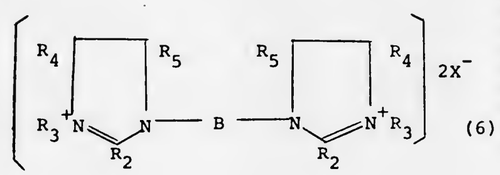








or



wherein $R_1$ is alkyl group having 1 to 20 carbon atoms, carbocyclic group, heterocyclic group or aralkyl group having 7 to 20 carbon atoms, $R_2$ is hydrogen, alkyl group having 1 to 12 carbon atoms, carbocyclic group, heterocyclic group, phenyl group, substituted phenyl group, aralkyl group having 7 to 12 carbon atoms, alkoxyl group having 1 to 12 carbon atoms, benzyloxy group, hydroxyl group, carboxyl group, alkoxycarbonyl group, acyl group, benzoyl group or cyclohexylcarbonyl group, $R_3$ is alkyl group having 1 to 20 carbon atoms or aralkyl group having 7 to 20 carbon atoms, $R_4$ and $R_5$ are hydrogen or lower alkyl group, A is alkylene group or phenylene group, B is alkylene group, and $X^-$ is an anion such as halide ion, hydroxylate ion, alkoxylate ion, phenoxide ion, carboxylate ion, sulfonate ion, sulfate ion, sulfite ion and carbonate ion.

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**3,931,130**

## PROCESS FOR REMOVING RESIDUAL VOLATILE SOLVENT IMPURITIES FROM POLYMER MOLDING PELLETS

**Heinz Beining, Hamm-Westtuennen, Germany, assignor to Du Pont of Canada, Ltd., Montreal, Canada**

**Filed Jan. 16, 1974, Ser. No. 433,708**
**Int. Cl.² C08F** *210/00, 212/00*
**U.S. Cl. 260—88.2 S** **10 Claims**

(1)

(2)



(3)

(4)

**1.** In a process for the treatment of pellets of a crystalline, thermoplastic polymer to remove residual volatile solvents contained therein by heating below the melting point of the polymer, the improvement which comprises passing the pellets slurried with water into the base of a generally cylindrical, vertical column of hot water, passing the pellets in plug-flow upwardly through the column of hot water, said water being maintained at a temperature between at least 100°C. and about 8°C. below the crystalline melting point of the polymer, while removing excess, cooler water from the base of the column of water at a rate such that the height of the water in the column remains constant, continuously supplying heat to the column of water at a point above the base of the column at a rate sufficient to maintain the temperature in the column, maintaining sufficient pressure on the top of the column to prevent boiling of the water, and withdrawing the pellets from the top of the column of water to a drying column and there drying them with a hot gas comprising superheated steam while recovering the volatile solvent, stripped from the pellets, from the water drawn off from the bottom of the column, by steam distillation.

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**3,931,131**

## PROCESS AND APPARATUS FOR SUSPENSION POLYMERIZATION

**Hiroyuki Noziri; Mituaki Sugahara, and Hirotada Tanno, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan**

**Filed Dec. 13, 1974, Ser. No. 532,638**
**Claims priority, application Japan, Dec. 18, 1973, 48-140369; Mar. 13, 1974, 49-28022**
**Int. Cl.² C08F** *2/18, 14/00*
**U.S. Cl. 260—91.7** **4 Claims**

**1.** A suspension polymerization process which comprises polymerizing a member selected from the group consisting of ethylene halides and mixtures of an ethylene halide and a monomer copolymerizable therewith in an aqueous medium

in the presence of a suspending agent and an oil-soluble catalyst under pressure in a pressure polymerization vessel the internal exposed surfaces of which are at least partially lined with wood thereby to prevent adhesion thereto of the resulting polymer.

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### 3,931,132
### UTILIZATION OF OXYGEN DIFLUORIDE FOR SYNTHESES OF FLUOROPOLYMERS

**George M. Low, Deputy Administrator of the National Aernautics and Space Administration, with respect to an invention of, and Madeline S. Toy, Orange, Calif.**

**Filed June 11, 1970, Ser. No. 45,549**
**Int. Cl.² C08F *114/00*; C08L *9/00, 27/12***
**U.S. Cl. 260—92.1** **6 Claims**

**1.** A method of modifying a polyperfluoro-1,2 and 1,4 butadiene polymer containing a high percentage of pendant 1,2-perfluoro vinyl groups and being prepared by the free radical polymerization of perfluorobutadiene by a gaseous perfluoroalkyl peroxide catalyst, said polymer consisting essentially of units of the formula:

$$+CF(CF=CF_2)_x-(CF_2CF=CFCF_2)_y+$$

where

*x* and *y* are integers such that the molecular weight is at least 25,000 comprising the step of:

reacting said polymer with oxygen difluoride at a temperature of no less than 25°C to form a polymer containing acyl groups of the formula:

$$+C(=O)CF(CF=CF_2)_x-(CF_2CF=CFCF_2)_y+$$

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### 3,931,133
### SUSPENSION POLYMERIZATION PROCESS FOR ETHYLENIC MONOMERS

**Jacques Desilles, Billere, France, assignor to Aquitaine Total Organico, Courbevoie, France**

**Continuation of Ser. No. 211,062, Dec. 22, 1971, abandoned. This application Dec. 12, 1973, Ser. No 426,619**
**Claims priority, application France, Dec. 31, 1970, 70.47502**
**Int. Cl. C08f *7/04, 3/76, 19/02***
**U.S. Cl. 260—93.5 W** **25 Claims**

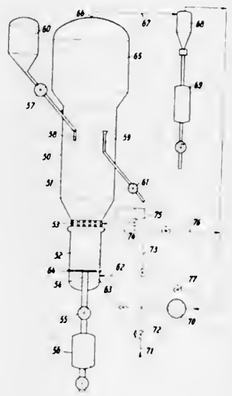
**1.** A process for the suspension polymerization of styrene in the presence of a tertiary butyl perbenzoate, which comprises co-precipitating in water, a mixture of an alkali metal phosphate and an alkali metal carbonate containing at least one gram-ion of carbonate to 3 gram-ions of phosphate equivalents by means of a soluble salt of metals selected from the group consisting of calcium, barium, magnesium, iron and aluminum in an amount of at least 10 metal ions to 6 phosphate equivalents and 1 metal ion to each carbonate ion, at a temperature range from about ambient to 40°C, dispersing in the thus obtained suspension, whose concentration range is from 0.01 to 10 g/liter, the said styrene and tertiary butyl perbenzoate, then raising the temperature of the resulting suspension to about 140°C for a period of from 3 to 24 hours.

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### 3,931,134
### PROCESS AND APPARATUS FOR THE SEPARATING OUT OF COARSE AND/OR HEAVY PARTICLES FROM A VARIABLE PARTICLE SIZE AND/OR VARIABLE PARTICLE WEIGHT MIXTURE OF GRANULAR SOLIDS MAINTAINED IN A VORTEX STATE

**Rainer Hartmann, Frankfurt am Main; Oskar Dorschner, Bad Homburg, and Hans-Werner Gross, Buchschlag, all of Germany, assignors to Veba-Chemie AG, Gelsenkirchen-Buer, Germany**

**Division of Ser. No. 792,682, Jan. 21, 1969, Pat. No. 3,627,129. This application July 6, 1971, Ser. No. 160,186**
**Claims priority, application Germany, Jan. 24, 1968, 1607648. The portion of the term of this patent subsequent to Nov. 6, 1990, has been disclaimed.**
**Int. Cl.² C08F *2/34, 10/00***
**U.S. Cl. 260—93.7** **8 Claims**



**1.** Process of continuously recovering particulate material of coarser grain size from admixture with material of smaller grain size, which particulate material contains an olefin polymerization catalyst, which process comprises feeding a gaseous olefin through a first zone; establishing and maintaining a gas-solids suspension consisting of solid particulate material in said gaseous olefin in said first zone, said solid particulate material being reactable with said olefin so as to increase in grain size olefin undergoes polymerization; feeding said olefin from said first zone through an intermediate zone whose cross-section is a smaller cross-section up to about 0.85 that of said dispersed suspension first zone thereby increasing the velocity of said olefin relative to its velocity in said first zone; feeding said olefin from said intermediate zone to a second zone having a crosssectional area about 2 to 15 times that of said first zone; establishing and maintaining a dense fluidized bed of said solid particulate material in said second zone; and recovering coarser grain solid particles from the base of said dispersed suspension first zone.



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### 3,931,135
### PROCESS FOR REUSING POLYMERIZATION SOLVENT BY RECYCLING

**Mamoru Asada; Akinobu Shiga, and Kiyoshi Matsuyama, all of Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan**

**Filed Dec. 17, 1973, Ser. No. 425,594**
**Claims priority, application Japan, Dec. 16, 1972, 47-126351; Dec. 16, 1972, 47-126352**
**Int. Cl.² C08F *2/14, 4/52, 10/00***
**U.S. Cl. 260—93.7** **2 Claims**

**1.** In a process for mass polymerizing or suspension polymerizing α-olefins in a polymerization zone to produce a polymer-polymerization solvent slurry using a catalyst system consisting of, as catalyst component (A), titanium trichloride or an eutectic mixture of titanium trichloride and a metal halide, and, as catalyst component (B), an organoaluminium compound, the improvement which comprises polymerizing the α-olefins using an organoaluminium compound represented by the formula $AlR_{3-n}Cl_n$, wherein R represents an alkyl group and *n* is about 0.9 as catalyst component (B), said organoaluminium compound being a mixture of trialkylaluminium and dialkylaluminium halide, separating the polymer produced and the solvent before adding a polymerization inhibitor to the polymer, recycling the solvent to the polymerization zone, adding purified fresh solvent, fresh catalyst component (A) and fresh catalyst component (B) to said separated solvent and further carrying out the polymerizing.

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### 3,931,136
### CATALYTIC PRODUCTION OF A HIGH MOLECULAR WEIGHT CIS-1,4-POLYISOPRENE

**Kan Mori, Kawasaki; Hiroharu Ikeda, Yokohama; Isao Nagaoka; Tooru Shibata, both of Yokkaichi; Sigeo Kawatani, Nishinomiya, and Tatsuhiko Kikuchi, Kawasaki, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan**

**Continuation-in-part of Ser. No. 26,105, April 6, 1970, abandoned. This application May 23, 1974, Ser. No. 472,632**
**Int. Cl.² C08D *1/14, 3/12***
**U.S. Cl. 260—94.3** **2 Claims**

**1.** In the process for producing at least an 80% yield of high molecular weight high cis-1,4-polyisoprene by contacting isoprene in the presence of cyclopentadiene in amounts up to about 100 ppm. with a polymerization catalyst, the improvement which comprises using as said polymerization catalyst a catalyst consisting of

A. titanium tetrachloride,

B. an organoaluminum compound of the formula $AlR_3$ wherein each R is selected from the group consisting of alkyl, aryl and cycloalkyl radicals, and

C. a beta-diketone of the formula

$$R'-C(=O)-CH_2-C(=O)-R''$$

wherein R′ and R″ are each independently selected from the group consisting of alkyl and aryl radicals, said catalyst being prepared by mixing first the components (B) and (C) and then adding the component (A) thereto, and the molar ratio of the component (A) to the component (B) being in the range of from 0.1:1 to 2:1, and the molar ratio of the component (B) to the component (C) being in the range of from 1:0.05 to 1:0.7.

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### 3,931,137
### HERBICIDAL COMPOSITIONS

**Brian Graham White, Bracknell, England, assignor to Imperial Chemical Industries Limited, London, England**

**Continuation of Ser. No. 703,532, Feb. 7, 1968, abandoned. This application May 22, 1974, Ser. No. 472,513**
**Claims priority, application United Kingdom, Feb. 24, 1967, 8854/67**
**Int. Cl.² C07B *21/00***
**U.S. Cl. 260—96.5 R** **6 Claims**

**1.** A solid cyrstalline, essentially dry complex of a herbicidal bipyridylium salt selected from the group consisting of

1,1′-ethylene-2,2′-bipyridylium dibromide,
1,1′-dimethyl-4,4′-bipyridylium dichloride,
1,1′-di-2-hydroxyethyl-4,4′-bipyridylium dichloride,
1,1′-bis-3,5 -dimethylmorpholinocarbonylmethyl-4,4′-bipyridylium dichloride,
1-(2-hydroxyethyl)-1′-methyl-4,4′-bipyridylium dichloride,
1,1′-di-carbamoylmethyl-4,4′-bipyridylium dichloride,
1,1′-di-N-methylcarbamoylmethyl-4,4′-bipyridylium dichloride,
1,1′-bis-N,N-dimethylcarbamoylmethyl-4,4′-bipyridylium dichloride,
1,1′-diacetonyl-4,4′-bipyridylium dichloride, 1,1′-diethoxycarbonylmethyl-4,4′-bipyridylium dibromide, and
1,1′-diallyl-4,4′-bipyridylium dibromide in combination with urea or thiourea, said complex having the formula $X(A)_n(H_2O)_m$, wherein X represents the bipyridylium salt, A represents a compound selected from urea and thiourea, *n* is selected from the integers 1, 2, and 4 and *m* is O or an integer of from 1–4, any water in said complex being present as lattice hydration.

**4.** A process of preparing a solid crystalline, essentially dry complex of a herbicidal bipyridylium salt selected from the group consisting of

1,1′-ethylene-2,2′-bipyridylium dibromide,
1,1′-dimethyl-4,4′-bipyridylium dichloride,
1,1′-di-2-hydroxyethyl-4,4′-bipyridylium dichloride,
1,1′-bis-3,5-dimethylmorpholinocarbonylmethyl-4,4′-bipyridylium dichloride,
1-(2-hydroxyethyl)-1′-methyl-4,4′-bipyridylium dichloride,
1,1′-di-carbamoylmethyl-4,4′-bipyridylium dichloride,
1,1′-di-N-methylcarbamoylmethyl-4,4′-bipyridylium dichloride,
1,1′-bis-N,N-dimethylcarbamoylmethyl-4,4′-bipyridylium dichloride,
1,1′-diacetonyl-4,4′-bipyridylium dichloride,
1,1′-diethoxycarbonylmethyl-4,4′-bipyridylium dibromide, and
1,1′-diallyl′4,4′-bipyridylium dibromide in combination with urea or thiourea, said complex having the formula $X(A)_n(H_2O)m$, wherein X represents the bipyridylium salt, A represents a compound selected from urea and thiourea, *n* is selected from the integers 1, 2, and 4 and *m* is O or an integer of from 1–4, any water in said complex being present as lattice hydration, which comprises adding urea or thiourea to a heated solution of said bipyridylium salt in which the concentration of bipyridylium cation is a least 10% on a grams per milliliter basis and separating and drying the resulting crystalline complex so that any water therein is present as lattice hydration.

### 3,931,138
### N-CARBOBENZOXY-PYROGLUTAMYL-HISTIDINE

Masahiko Fujino, Hyogo; Shigeru Kobayashi, Osaka; Obayashi, Mikihio, Kyoto; Susumu Shinagawa, and Tsunehiko Fukuda, both of Osaka, all of Japan, assignors to Abbott Laboratories, North Chicago, Ill.

Continuation-in-part of Ser. No. 340,893, March 13, 1973, Pat. No. 3,870,694. This application Sept. 16, 1974, Ser. No. 506,367

Int. Cl.² C07C *103/52*; C07G *7/00*

U.S. Cl. 260—112.5 TR 2 Claims

1. Carbobenzoxy-pyroglutamyl-histidine.

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### 3,931,139
### TRIPEPTIDES HAVING AN ANTIDEPRESSIVE AND PROLACTIN-RELEASING ACTION

Hans Wissmann, Bad Soden, Taunus; Rolf Geiger, Frankfurt am Main; Wolfgang Konig, Langenhain, Taunus; Hansjorg Kruse, Kelkheim, Taunus, and Karl Seeger, Hofheim, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

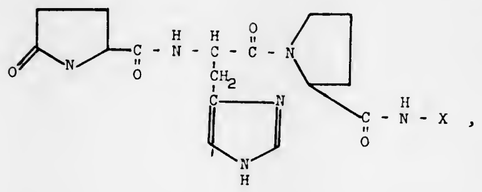
Filed Aug. 22, 1974, Ser. No. 499,403

Claims priority, application Germany, Aug. 25, 1973, 2343035; Apr. 4, 1974, 2416428

Int. Cl.² C07C *103/52*; A61K *37/00*

U.S. Cl. 260—112.5 TR 7 Claims

1. A tripeptide of the formula



wherein X is alkyl having 3 to 8 carbon atoms, cycloalkyl having 5 to 7 carbon atoms, or aralkyl having 1 or 2 carbon atoms in the alkyl portion thereof.

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### 3,931,140
### (H-GLY-GLY-TYR-ALA)¹-SOMATOSTATIN

Dimitrios Sarantakis, West Chester, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Jan. 27, 1975, Ser. No. 544,434

Int. Cl.² C07C *103/52*; A61K *37/00*

U.S. Cl. 260—112.5 R 5 Claims

1. A compound selected from the group consisting of

H-Gly-Gly-L-Tyr-L-Ala-Gly-L-Cys-L-Lys-L-Asn-
S
S
L-Phe-L-Phe-L-Trp-L-Lys-L-Thr-L-Phe-L-Thr-L-Ser-L-Cys-OH,

the corresponding linear heptadecapeptide, the protamine zinc, protamine aluminum and non-toxic acid addition salts thereof.

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### 3,931,141
### NOVEL HEPTAPEPTIDES HAVING GASTRIN ACTIVITY

Hans Wissmann, Bad Soden; Rolf Geiger, Frankfurt am Main, and Rudolf Schleyerbach, Hofheim, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Nov. 15, 1973, Ser. No. 416,012

Claims priority, application Germany, Nov. 17, 1972, 2256445

Int. Cl.² C07C *103/52*; A61K *37/00*

U.S. Cl. 260—112.5 R 4 Claims

1. A heptapeptide of the formula

$$HOOC\text{-}(CH_2)_3\text{-}CO\text{-}Ala\text{-}Tyr\text{-}Gly\text{-}Trp\text{-}X\text{-}Asp\text{-}Phe\text{-}NH_2,$$

wherein X is leucine (Leu) or methionine (Met) and the optically-active amino acids are L-amino acids.

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### 3,931,142
### HETEROCYCLIC CONTAINING DISAZO COMPOUNDS

John Lenoir; Paul Tschopp, both of Marly-le-Petit; Hansrolf Loeffel, Bern, and de Montmollin: Rene, Riehen, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

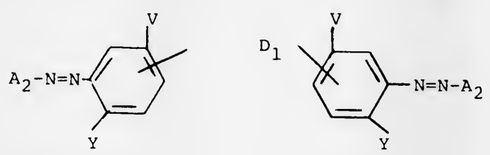
Division of Ser. No. 183,244, Sept. 23, 1971, abandoned. This application Oct. 23, 1973, Ser. No. 408,769

Claims priority, application Switzerland, Sept. 23, 1971, 14136/70

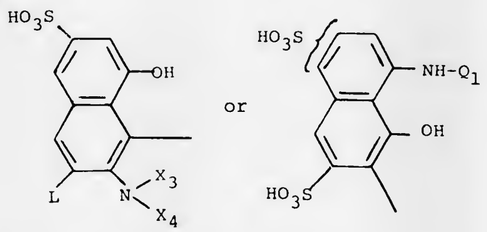
Int. Cl.² C07C *107/04*

U.S. Cl. 260—156 14 Claims

1. A disazo dyestuff of the formula



wherein $A_2$ denotes



wherein $Q_1$ denotes hydrogen, pyridinecarboxyl, benzoyl, phenylsulfonyl or substituted benzoyl, pyridenecarboxyl or phenylsulfonyl wherein the substituents are selected from the group consisting of

halo, nitro, cyano, trifluoromethyl, lower alkyl,
lower alkoxy,
$-CO-W_1$,
$-SO_2-W_2$,



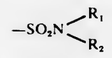
$-NH-CO-W_3$,
or
$-NH-SO_2-W_4$

wherein $W_1$ is hydroxyl, lower alkyl, lower alkoxy, phenyl, or $-NH_2$, $W_2$ is hydroxyl, lower alkyl, phenyl, or $-NH_2$, $W_3$ is hydrogen, lower alkyl, phenyl, HOOC-lower alkylene, HOOC-phenylene, $HO_3S$-phenylene, furyl, thienyl or pyridyl, and $W_4$ is lower alkyl, phenyl, lower alkylphenylene or HOOC-phenylene;

$X_4$ is hydrogen or lower alkyl,

$X_3$ is hydrogen, lower alkyl, phenyl or substituted phenyl wherein the substituents are selected from the group consisting of lower alkyl, lower alkoxy, halo, sulfo, lower alkylsulphonyl and lower alkylcarbonyl,

Y is $-CF_3$, -CN, $-SO_2T_1$ or



wherein $T_1$ is lower alkyl, phenyl or lower alkylphenyl, or lower alkyl, phenyl or lower alkylphenyl substituted by hydroxyl, carboxy or sulfo;

$R_1$ is hydrogen, lower alkyl, lower hydroxyalkyl, lower alkoxyalkyl, sulpho lower alkyl, phenyl or phenyl substituted by carboxy, sulpho, halo, lower alkyl or lower alkoxy;

$R_2$ is hydrogen, lower alkyl or lower hydroxyalkyl;

V is hydrogen, lower alkyl, lower alkoxy or halo;

L is hydrogen or sulpho; and

$D_1$ is a dicarboxylic acid amide radical derived from pyridine, thiophene or furane dicarboxylic acid.

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### 3,931,143
### UNSYMMETRICAL ALIPHATIC MONOAZO COMPOUNDS

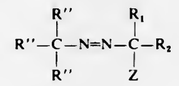
Ronald Edward MacLeay, Williamsville, and Chester Stephen Sheppard, Tonawanda, both of N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 725,180, April 29, 1968, abandoned, which is a continuation-in-part of Ser. No. 616,158, Feb. 15, 1967, abandoned. This application June 1, 1971, Ser. No. 149,061

Int. Cl.² C07C *107/02*

U.S. Cl. 260—192 13 Claims

1. A compound having the formula



where:

a. R'' is alkyl of 1–13 carbons, aralkyl of 7–12 carbons or phenyl, not more than one R'' being phenyl;

b. $R_1$ and $R_2$ are alkyl or substituted alkyl of 1–20 carbons, cycloalkyl or bicycloalkyl of 3–10 carbons or, taken together, form an alkylene diradical of 2–16 carbons, and $R_2$ can also be phenyl or substituted phenyl, the alkyl and phenyl substituents being selected from lower alkoxy, phenoxy, lower alkyl-substituted phenoxy, carboxy, hydroxy, lower alkoxycarbonyl, phenylcarbonyloxy, lower alkylcarbonyloxy, halogen, cyano and lower alkylsulfonato, and the phenyl substituents being further selected from lower alkyl; and

c. Z is $-CN$, $-C(O)NH_2$ or $-C(NOH)NH_2$.

### 3,931,144
### MAGENTA IMAGE-PROVIDING PHENYLAZONAPHTHYL DYES

Carl H. Eldredge; Jan R. Haase, and Richard A. Landholm, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

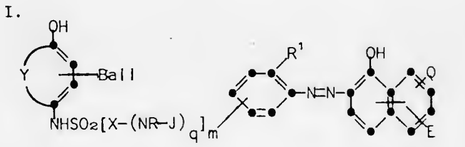
Continuation-in-part of Ser. No. 331,728, Feb. 12, 1973, abandoned. This application Feb. 5, 1974, Ser. No. 439,816

Int. Cl.² C09B *29/10*, *29/20*; G03C *5/30*, *5/54*

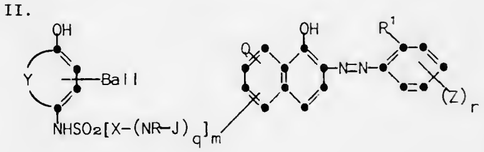
U.S. Cl. 260—197 10 Claims

1. A nondiffusible sulfonamido compound which is alkali-cleavable upon oxidation to release a diffusible colorproviding moiety from a benzene nucleus thereof, said compound having a formula as follows:

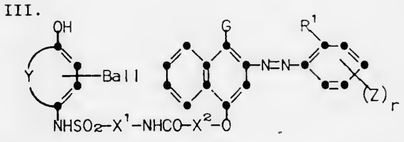
I.



II.



III.



wherein Ball represents an organic ballasting group containing at least 8 carbon atoms which renders the compound nondiffusible in a photographic element during development in an alkaline processing composition;

Y represents the carbon atoms necessary to complete a benzene or naphthalene nucleus;

X represents $-R^2\text{-}L_n\text{-}R^2{}_p$- where each $R^2$ can be the same or different and each represents alkylene having 1 to 8 carbon atoms; phenylene; or phenylene substituted with chloro, bromo, cyano, nitro, methoxy, methyl, carboxy, or sulfo; L represents oxy, carbonyl, carboxamido, carbamoyl, sulfonamido, sulfamoyl, sulfinyl or sulfonyl; n is an integer having a value of 0 or 1; p is 1 when n equals 1 and p is 1 or 0 when n equals 0, provided that when p is 1 the carbon content of the sum of both $R^2$ radicals does not exceed 14 carbon atoms;

R represents hydrogen, or alkyl having 1 to 6 carbon atoms;

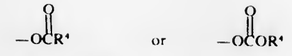
J represents sulfonyl or carbonyl;

m and q each represent an integer having a value of 0 or 1;

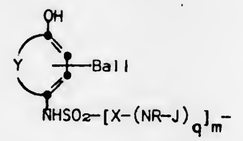
$R^1$ represents hydrogen, chloro, bromo, fluoro, alkyl having 1 to 6 carbon atoms or alkoxy having 1 to 6 carbon atoms;

Q is the 5- or 8-position relative to the hydroxy radical and represents hydrogen, hydroxy, or $-NHCOR^3$ or $-NHSO_2R^3$ wherein $R^3$ is alkyl having 1 to 6 carbon atoms, alkyl having 1 to 4 carbon atoms substituted with hydroxy, cyano, sulfinyl, carboxy or sulfo; benzyl, phenyl or phenyl substituted with carboxy, chloro, methyl, methoxy, or sulfonyl;

G represents hydroxy, an alkali metal salt thereof, a photographically inactive amine salt thereof, or a hydrolyzable acyloxy group having the formula:



wherein $R^4$ is alkyl having 1 to 18 carbon atoms or phenyl;
E represents hydrogen, sulfo, $-SO_2NR^5R^6$ wherein $R^5$ represents hydrogen or alkyl having 1 to 6 carbon atoms and $R^6$ represents hydrogen, alkyl having 1 to 6 carbon atoms, alkyl having 1 to 4 carbon atoms substituted with hydroxy, cyano, sulfamoyl, carboxy or sulfo; benzyl; phenyl, or phenyl substituted with hydroxy, sulfonyl, sulfamoyl, carboxy, or sulfo; or E represents

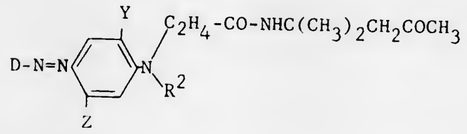


wherein each member is as described previously;
*r* is an integer having a value of 1 or 2;
Z represents chloro, bromo, or fluoro; carboxy, $-COOR^4$ wherein $R^4$ is as described previously, sulfo, a sulfamoyl radical as described for E, as well as hydrogen, alkoxy having 1 to 6 carbon atoms, alkyl having 1 to 6 carbon atoms, alkyl having 1 to 6 carbon atoms substituted with cyano, hydroxy, sulfamoyl, carboxy, or alkylsulfonamido having 1 to 4 carbon atoms; or $-CON(R^5)_2$ wherein each $R^5$ is the same or different and is as described previously;
$X^1$ represents alkylene, phenylene or substituted phenylene as described for $R^2$;
$X^2$ represents alkylene as described for $R^2$;
with the proviso that there be only one sulfo or carboxy radical present in said compound and that only one of $R^1$ and Z be hydrogen.

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**3,931,145**
**KETO-AMIDO CONTAINING PHENYLAZOPHENYL DYESTUFFS**
**Lester N. Stanley, Delmar, and Russell E. Farris, Elnora, both of N.Y., assignors to GAF Corporation, New York, N.Y.**
**Filed Dec. 27, 1972, Ser. No. 319,034**
**Int. Cl.² C07C** *107/06*
**U.S. Cl. 260—207** **9 Claims**

**1.** A dyestuff of the formula:



wherein
D is (a) phenyl or phenyl substituted with a substituent selected from the group of chlorine, bromine, fluorine, cyano, thiocyano, lower alkylsulfonyl, nitro, trifluoromethyl, lower alkoxy, lower alkanoyl, benzoyl, lower alkoxycarbonyl, unsubstituted carbamyl, unsubstituted sulfamyl, and carbamyl or sulfamyl N-mono-or N, N-disubstituted with lower alkyl
Z is hydrogen, halogen, lower alkyl or NHX and X is $SO_2$—R, $SO_2OR$, COR or COOR with R being hydrogen, phenyl or lower alkyl;
Y is hydrogen, lower alkyl or lower alkoxy
$R^2$ is $C_2H_4$—CO—$NHC(CH_3)_2CH_2COCH_3$, hydrogen, lower alkyl, lower alkenyl, lower alkynyl or lower alkyl, lower alkenyl or lower alkynyl substituted with chlorine, bromine, fluorine, hydroxy, cyano, thiocyano, lower alkoxy, hydroxyethoxy, polyloweralkyleneoxy, lower alkoxycarbonyl, lower alkanoyloxy, benzoyloxy, unsubstituted carbamyl, or carbamyl N-mono- or N,N-di- substituted with lower alkyl.

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**3,931,146**
**HYDROGENATED PULLULAN**
**Koso Kato, and Makoto Shiosaka, both of Okayama, Japan, assignors to Hayashibara Biochemical Laboratories, Incorporated, Japan**
**Filed May 28, 1974, Ser. No. 473,749**
**Claims priority, application Japan, June 1, 1973, 48-62277**
**Int. Cl.² C07G** *3/00*
**U.S. Cl. 260—209** **1 Claim**

**1.** Hydrogenated pullulan produced by reacting an aqueous solution of pullulan with hydrogen gas under a pressure of 20 to 150 kg/cm² in the presence of a hydrogenation catalyst until said pullulan is free from reducing power capable of being detected by the method of Somogyi-Nelson.

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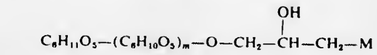
**3,931,147**
**WATER-SOLUBLE DERIVATIVES OF SODIUM MANNOHEPTONATE**
**Kenneth R. Gray, and John C. Steinberg, both of Shelton, Wash., assignors to International Telephone and Telegraph Corporation, New York, N.Y.**
**Filed Sept. 10, 1973, Ser. No. 395,627**
**Int. Cl.² C07H** *3/02*
**U.S. Cl. 260—209 R** **3 Claims**

**1.** A water-soluble metal complex of sodium mannoheptonate in which the metal is selected from the group consisting of aluminum, and chromium trivalent ions.

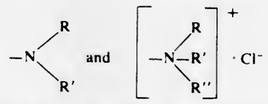
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**3,931,148**
**HYDROXYALKYLAMINO GLYCOSIDES AND PROCESS OF PREPARATION**
**William K. Langdon, Grosse Ile, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.**
**Filed Dec. 23, 1974, Ser. No. 535,520**
**Int. Cl.² C07H** *15/02*
**U.S. Cl. 260—210 R** **12 Claims**

**1.** A compound having the formula



wherein M is selected from the group consisting of



wherein R is selected from the group consisting of hydrogen or hydrocarbon ranging from $CH_3$–$C_{18}H_{37}$, R′ is selected from the group consisting of hydrocarbon ranging from $C_8H_{17}$ to $C_{18}H_{37}$, R″ is selected from the group consisting of benzyl or hydrocarbon ranging from $CH_3$ to $C_{18}H_{37}$, the moieties $C_6H_{11}O_5$ and $C_6H_{10}O_5$ represent glycosyl units and *m* is a number from 0 to 20.



**3,931,149**
**COPPER COMPLEXES OF DIISOPROPYLIDENE XYLO--HEXULOFURANOSONATE COMPOUNDS**
**William Szkrybalo, Verona, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.**
**Filed Aug. 16, 1974, Ser. No. 497,994**
**Int. Cl.² C07H** *17/04*
**U.S. Cl. 260—210 R** **7 Claims**

**1.** Copper (II) 2,3:4,6-di-O-isopropylidene-alpha-L-xylo-2-hexulofuranosonate hydrate.

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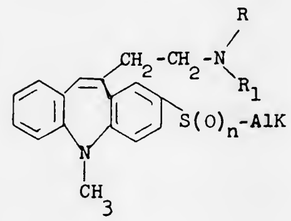
**3,931,150**
**PROBENECIDOXYMETHYL AND 1-ETHYL ESTERS OF AMPICILLIN**
**Burton G. Christensen, Scotch Plains, and William J. Leanza, Berkeley Heights, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.**
**Filed July 30, 1974, Ser. No. 492,654**
**Int. Cl.² C07D** *499/68*
**U.S. Cl. 260—239.1** **4 Claims**

**1.** Probenecidoxymethyl ester of ampicillin or probenecidoxy-1-ethyl ester of ampicillin and non-toxic salts thereof.

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**3,931,151**
**DIBENZO (B,F) AZEPINES**
**Lucien Nedelec, Le Raincy; Jacques Guillaume, Aulnay-sous-Bois, and Andre Allais, Les Lilas, all of France, assignors to Roussel-UCLAF, Paris, France**
**Filed Oct. 3, 1973, Ser. No. 403,108**
**Claims priority, application France, Oct. 9, 1972, 72.35665**
**Int. Cl.² C07D** *223/26*
**U.S. Cl. 260—239 D** **6 Claims**

**1.** A compound selected from the group consisting of a compound of the formula



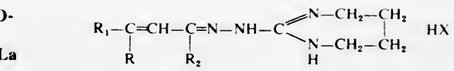
I

wherein R is alkyl of 1 to 4 carbon atoms, R is selected from the group consisting of hydrogen and alkyl of 1 to 4 carbon atoms, *n* is 0 or 2 and AlK is alkyl of 1 to 2 carbon atoms and their non-toxic, pharmaceutically acceptable acid addition salts.

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**3,931,152**
**2-(1,3-DIAZACYCLOALKENYL)-2-HYDRAZONES OF SUBSTITUTED CHALCONES**
**Andrew Stephen Tomcufcik, Old Tappan; Raymond George Wilkinson, Montvale, both of N.J., and Ralph Grassing Child, Pearl River, N.Y., assignors to American Cyanamid Company, Stamford, Conn.**
**Filed Jan. 29, 1974, Ser. No. 437,549**
**Int. Cl.² C07D** *243/04*
**U.S. Cl. 260—239 BC** **13 Claims**

**1.** A substituted chalcone of the formula:



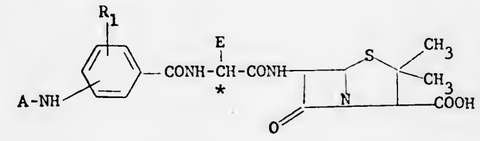
HX

wherein $R_1$ and $R_2$ are the same or different and are selected from the group consisting of monohalophenyl, monomethylphenyl, dimethylphenyl, $C_1$-$C_4$-alkylthiophenyl, methylsulfonylphenyl, trifluoromethylphenyl and biphenylyl; R is hydrogen or methyl and X is chloro, iodo or bromo.

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**3,931,153**
**PENICILLINS**
**Gunter Schmidt, and Karl Georg Metzger, both of Wuppertal, Germany, assignors to Bayer Aktiengesellschaft, Germany**
**Filed Nov. 29, 1973, Ser. No. 419,950**
**Claims priority, application Germany, Dec. 8, 1972, 2260118**
**Int. Cl.² C07D** *499/44*
**U.S. Cl. 260—239.1** **20 Claims**

**1.** A compound of the formula:



or a pharmaceutically acceptable nontoxic salt thereof wherein
the carbon atom designated by * is asymmetrically substituted;
$R_1$ is hydrogen, halo, lower alkyl, hydroxy, nitro or A—NH—;
A is $R_3CO$— or $R_4CS$— in which
$R_3$ is hydrogen; lower alkyl; halo(lower alkyl); cycloalkyl of 3 to 11 carbon atoms unsubstituted or substituted by hydroxy or alkyl of 1 or 2 carbon atoms; cycloalkenyl of 3 to 11 carbon atoms; bicycloalkyl of up to 8 carbon atoms; bicycloalkenyl of up to 8 carbon atoms; aryl of 6 to 10 carbon atoms, unsubstituted or substituted by from 1 to 3 substituents selected from the group consisting of alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, halo, trifluoromethyl, nitro, amino and alkylsulfonyl of 1 to 4 carbon atoms, or substituted by methylenedioxy; azidoaryl of 6 to 10 carbon atoms; azido(lower alkyl); amino; or thienyl; and
$R_4$ is lower alkylamino or arylamino of 6 to 10 carbon atoms; and
E is phenyl; phenyl substituted by hydroxy, azido, lower alkyl, lower alkoxy, lower alkylthio or chloro; or thienyl.

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**3,931,154**
**PROCESS FOR THE PREPARATION OF STEROID OXIRANES**
**Rainer Philippson, Bergkamen, Germany, assignor to Schering Aktiengesellschaft, Berlin & Bergkamen, Germany**
**Filed July 2, 1974, Ser. No. 485,099**
**Claims priority, application Germany, July 7, 1973, 2335154**
**Int. Cl.² C07J** *17/00*
**U.S. Cl. 260—239.55 R** **10 Claims**

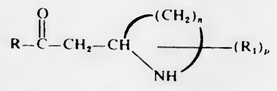
**1.** In a process for the production of a $\alpha,\beta$-unsaturated keto steroid having a spiro oxirane group from a polyketo steroid having an isolated keto group and an $\alpha,\beta$-unsaturated keto group, the improvement which comprises reacting the polyketo steroid with dimethyl sulfonium methylide in a non-reactive polar solvent and in the presence of an alkali metal tertiary alcoholate.

### 3,931,155
### PROCESS FOR PREPARING 2-AZACYCLOALKYLMETHYL KETONES

J. Martin Grisar, and George P. Claxton, both of Cincinnati, Ohio, assignors to Richardson-Merrell Inc., Wilton, Conn.

Filed Apr. 25, 1973, Ser. No. 354,206
Int. Cl.[2] C09B *23/00*
U.S. Cl. 260—240 J 11 Claims

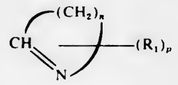
1. A process of preparing 2-azacycloalkylmethyl ketones having the formula:



wherein $n$ is an integer of from 3 to 5, $p$ is an integer of from 1 to 2, R is a neutral organic radical selected from the group consisting of alkyl, alkenyl, carbocycle furanyl, pyrrolyl, benzothienyl, pyrazolyl, oxazolyl, benzimidazolyl, dibenzofuranyl and dibenzothienyl, $R_1$ is hydrogen or lower alkyl having from 1 to 4 carbon atoms which comprises heating a solution of a methyl ketone having the formula



with an excess of magnesium methyl carbonate to form a magnesium chelate; cooling the reaction mixture and reacting said chelate solution in an atmosphere of carbon dioxide with a 1-azacycloalkene having the formula:



and isolating the product therefrom.

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### 3,931,156
### METHINE DYES

Marcel Jan Libeer; Henri Depoorter; Gerrit Godfried Van Mierlo, all of Mortsel-Antwerp, and Raymond Gerard Lemahieu, Wervik-West-Flanders, all of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

Continuation of Ser. Nos. 547,140, Feb. 2, 1966, abandoned, and Ser. No. , , Division of Ser. No. 197,925, May 28, 1962, Pat. No. 3,243,298. This application Apr. 30, 1973, Ser. No. 355,770
Claims priority, application United Kingdom, May 29, 1961, 19269/61
Int. Cl. C09b *23/10, 23/14*
U.S. Cl. 260—240.4 7 Claims

2. A sensitizing dye for photographic silver halide emulsions selected from the class consisting of merocyanine and styryl dyes, said dyes derived from 1,2-alkylene benzimidazole or 1,2-alkylene naphthimidazole in which the alkylene group contains from 3 to 4 carbon atoms in the chain connecting the nitrogen atom in the 1-position and the carbon atom in the 2-position of the imidazole ring.

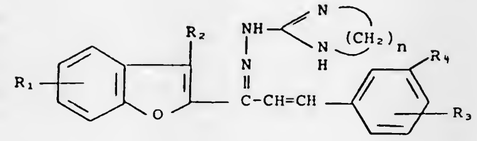
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### 3,931,157
### SUBSTITUTED 2-BENZOFURANYL PROPENONES AND METHOD OF PREPARATION

Ralph Grassing Child, Pearl River, N.Y.; Raymond George Wilkinson, Montvale, and Andrew Stephen Tomcufcik, Old Tappan, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Dec. 18, 1974, Ser. No. 534,029
Int. Cl.[2] C07D *405/12*
U.S. Cl. 260—240 R 10 Claims

1. A compound selected from those of the formula:



wherein $R_1$ and $R_3$ may be the same or different and are selected from the group consisting of hydrogen, chloro, bromo, fluoro, $C_1$–$C_4$ alkoxy, phenyl, $C_1$–$C_4$ alkyl, and $C_1$–$C_4$ alkyl thio, $R_2$ is selected from the group consisting of hydrogen, $C_1$–$C_4$ alkyl and phenyl, $R_4$ is hydrogen, $C_1$–$C_4$ alkyl or chloro and when $R_3$ and $R_4$ are present on adjacent carbon atoms, they may represent —O—$CH_2$—O—, $n$ is 2, 3 or 4 or an acid addition salt thereof.

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### 3,931,158
### CIS AND TRANS-6-SUBSTITUTED-11-AMINOALKYLIDENE-5,6-DIHYDROMORPHANTHRIDINES

Jules Freedman, Thiensville, Wis., assignor to Richardson-Merrell Inc., Wilton, Conn.

Filed Dec. 6, 1973, Ser. No. 422,419
Int. Cl.[2] C07D *223/18*
U.S. Cl. 260—240 TC 3 Claims

1. cis-2-Chloro-11-(3-dimethylaminopropylidene)-6-phenyl-5,6-dihydromorphanthridine.

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### 3,931,159
### SUBSTITUTED 3-BENZOYLACRYLAMIDO-CEPHALOSPORANIC ACID DERIVATIVE

Peter H. L. Wei, Springfield, and Ronald J. McCaully, Malvern, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Mar. 18, 1974, Ser. No. 452,013
Int. Cl.[2] C07D *501/22, 501/24*
U.S. Cl. 260—240 J 2 Claims

1. The compound which is 7-[3-(p-chlorobenzoyl)acrylamido]-3-methyl-8-oxo-5-thia-1-azabicyclo[4.2.0]oct-2-ene-2-carboxylic acid.

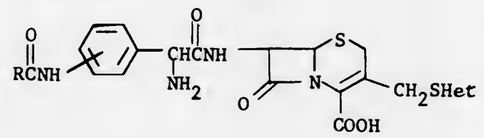


### 3,931,160
### α-AMINO-α-(ACYLAMIDOPHENYL)ACETAMIDOCEPHALOSPORINS

George L. Dunn, Wayne, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

Filed May 15, 1974, Ser. No. 470,233
Int. Cl.[2] C07D *501/20*
U.S. Cl. 260—243 C 17 Claims

1. A compound of the formula



wherein:
the RCONH group is attached at the para or meta positions;
R is hydrogen, lower alkyl of 1–4 carbon atoms, or trifluoromethyl; and
Het is a 5 or 6 member heterocyclic ring containing carbon and 1–4 atoms selected from the group consisting of N, O, and S, unsubstituted or substituted with one or two substituents selected from the group consistingof $C_1$–$C_6$ alkyl, $C_1$–$C_6$ alkoxy, allyoxy, oxide, carbamyl, carboxyl, carbalkoxy of $C_1$–$C_6$, halogen, mercapto, methylthio, trifluoromethyl, hydroxy, amino, alkylamino and dialkylamino, each undefined alkyl having 1–6 carbon atoms,
or a non-toxic pharmaceutically acceptable salt thereof.

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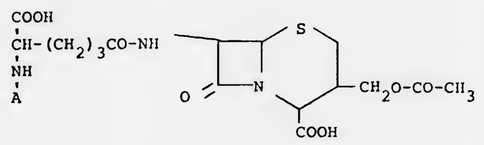
### 3,931,161
### CEPHALOSPORIN DERIVATIVES

Carlo Buitar, Bologna; Giuseppe Mascellani, San Pietro, Bologna, and Guido Guerra, Bologna, all of Italy, assignors to Alfa Farmaceutici S.p.A., Bologna, Italy

Filed Mar. 6, 1973, Ser. No. 338,515
Claims priority, application United Kingdom, Mar. 9, 1972, 11006/72
Int. Cl.[2] C07D *501/20*
U.S. Cl. 260—243 C 11 Claims

1. In a process of recovering cephalosporin C from a fermentation broth thereof by treating said broth with a reactant which causes a protecting moeity to become attached to the amino side chain of said cephalosporin C, the improvement which comprises employing an acid chloride of the formula R-CO-Cl, wherein R is an aliphatic hydrocarbon radical of 9–21 carbon atoms, as said reactant and wherein said fermentation broth is treated with at least 1.5 mols of said reactant per mol of cephalosporin C in the broth.

10. A cephalosporin derivative of the formula



wherein A is R-CO-, R representing an aliphatic hydrocarbon group of 9–21 carbon atoms; the sodium, potassium, calcium, zinc, iron, cadmium, copper, aluminum, ammonium, and organic base salts thereof, wherein said organic base is selected from the group consisting of quinoline, cyclohexylamine, 5-ethyl-2-methylpyridine, 2-picoline, 3-picoline, 4-picoline, N-ethylmorpholine, N-methylmorpholine, 2,6-lutidine, N,N-diethylcyclohexylamine, hexamethylenetetramine, N,N-diethylbenzylamine, and N,N-dibenzylethylenediamine.

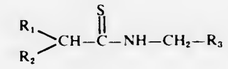
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### 3,931,162
### N-AMINOMETHYL HETEROCYCLIC THIOACETAMIDES

Henry C. Caldwell, Ambler, and Bernard Loev, Broomall, both of Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Division of Ser. No. 266,181, June 26, 1972, which is a continuation-in-part of Ser. No. 220,418, Jan. 24, 1972, abandoned. This application Dec. 3, 1974, Ser. No. 529,210
Int. Cl.[2] C07D *295/12, 215/12*
U.S. Cl. 260—247.1 M 5 Claims

1. A compound of the formula:



in which:
$R_1$ is 2-quinolyl;
$R_2$ is hydrogen, lower alkyl, lower alkenyl or -$(CH_2)_n$-phenyl;
$R_3$ is di-lower alkylamino, N-lower alkyl-N-phenylamino, pyrrolidino, piperidino or morpholino and
$n$ is 0 or 1 or a pharmaceutically acceptable acid addition salt thereof. -thiazolyl)thiopropanamide.

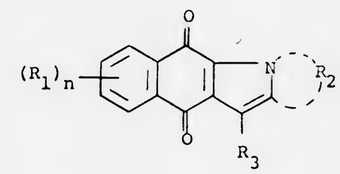
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### 3,931,163
### NAPHTHOQUINONE DERIVATIVES

Bansi Lal Kaul, Basel, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Filed Oct. 30, 1973, Ser. No. 411,086
Claims priority, application Switzerland, Nov. 3, 1972, 16035/72; Dec. 18, 1972, 18382/72; Jan. 12, 1973, 435/73
Int. Cl.[2] C07D *251/26, 239/00*
U.S. Cl. 260—248 CS 17 Claims

1. A compound of formula I,



wherein
$R_1$ signifies a chlorine atom; a bromine atom; a nitro group; an unsubstituted ($C_{1-4}$) alkoxy group; a ($C_{1-4}$) alkoxy group substituted by a chlorine atom, a bromine atom, a hydroxy group or a ($C_{1-4}$) alkoxy group; or a group of the formula



in which

each of $R_{30}$ and $R_{31}$, which may be the same or different, signifies a hydrogen atom; an unsubstituted ($C_{1-4}$) alkyl group; a ($C_{1-4}$) alkyl group substituted by a chlorine atom, a bromine atom, a hydroxy group or a ($C_{1-4}$) alkoxy group; an unsubstituted phenyl radical; a phenyl radical substituted by up to three substituents selected from the group consisting of chloro, bromo, hydroxy and ($C_{1-4}$) alkoxy; or a group of formula R—Y—or R′—Z—,

in which

R signifies an unsubstituted ($C_{1-4}$) alkyl group; a ($C_{1-4}$) alkyl group substituted by a chlorine atom, a bromine atom, a hydroxy group or a ($C_{1-4}$) alkoxy group; an unsubstituted phenyl radical; or a phenyl radical substituted by a chlorine atom, a bromine atom, a hydroxy group or a ($C_{1-4}$) alkoxy group;

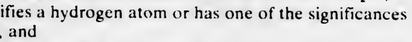
Y signifies a radical of formula —O—CO— or $—SO_2—$,

R′ signifies a hydrogen atom or has one of the significances of R, and

Z signifies a radical of formula —CO—, —NR′CO— or $—NR′SO_2—$ in which R′ is as defined above,

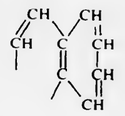
with the proviso that when one of $R_{30}$ or $R_{31}$ signifies an unsubstituted phenyl radical, a substituted phenyl radical or a group of the formula R—Y— or R′—Z—, as defined above, the other signifies other than an unsubstituted phenyl radical, a substituted phenyl radical or a group of the formula R—Y— or R′—Z—;

$R_2$ signifies a radical of formula P,



P

or a radical of formula Q,



Q

which radicals are unsubstituted or are substituted by up to three substituents selected from the group consisting of chloro; bromo; unsubstituted ($C_{1-4}$) alkyl or alkoxy; ($C_{1-4}$) alkyl or alkoxy substituted by a chlorine atom, a bromine atom, a hydroxy group or a ($C_{1-4}$) alkoxy group; phenoxy; nitro or a group of the formula R—Y—, R—Y—O—, R—Y—NH—, R′—Z—, R′—Z—O—, and R′—Z—NH— in which R, R′, Y and Z are as defined above,

$R_3$ signifies an unsubstituted s-triazinyl radical or an s-triazinyl radical substituted by up to two substituents selected from the group consisting of fluoro; chloro; bromo; unsubstituted ($C_{1-4}$) alkyl or alkoxy; ($C_{1-4}$) alkyl or alkoxy substituted by a chlorine atom, a bromine atom, a hydroxy group or a ($C_{1-4}$) alkoxy group; hydroxy; phenoxy or a group of the formula



in which $R_{30}$ and $R_{31}$ are as defined above, and

*n* is 0, 1 or 2,

which compound is free from sulphonic acid groups.

**3,931,164**

## HETEROCYCLIC COMPOUNDS

**Ian Trevor Kay, Wokingham, England, assignor to Imperial Chemical Industries Limited, London, England**

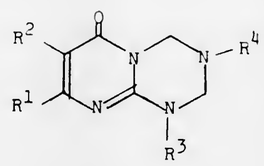
**Filed Oct. 25, 1974, Ser. No. 518,216**

**Claims priority, application United Kingdom, Nov. 7, 1973, 51595/73; Jan. 24, 1974, 3267/74**

**Int. Cl.² C07D** *251/42*

**U.S. Cl. 260—249.5** **3 Claims**

**1.** A compound of formula:



wherein $R^1$, $R^2$ and $R^3$ are alkyl groups of from one to six carbon atoms and $R^4$ is an alkyl group of from one to 20 carbon atoms or benzyl, allyl, cyclohexyl, phenyl or carboxymethyl.

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**3,931,165**

## TRI-SUBSTITUTED TRIAZINES

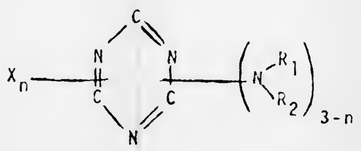
**Sol J. Barer, 18-01 Fox Run Drive, Plainsborough, N.J. 08536; Richard F. Stockel, 475 Rolling Hills Road, Bridgewater Township, N.J. 08876, and Jaroslav Vit, 40 Partridge Run, Belle Mead, N.J. 08502**

**Continuation-in-part of Ser. No. 360,740, May 16, 1973, abandoned. This application May 2, 1974, Ser. No. 466,321**

**Int. Cl.² C07D** *251/44*, *251/50*

**U.S. Cl. 260—249.8** **19 Claims**

**1.** A compound having the formula:



wherein *n* is 1 or 2; wherein X is a halogen; wherein $R_1$ is hydrogen, halogen, alkyl of 1 to 12 carbon atoms, allyl, benzyl, cyclopropyl or cyclohexyl; wherein $R_2$ is alkyl of 1 to 12 carbon atoms, allyl, cyanoisopropyl, benzyl, cyclopropyl, cyclohexyl, phenyl, halophenyl, methylphenyl, ethylphenyl, propenylphenyl, diphenyl, naphthyl or phenanthryl, with the proviso that at least one $R_1$ is halogen.



**3,931,166**

## CERTAIN 2,5-DIMETHYL-3-THIOPYRAZINES

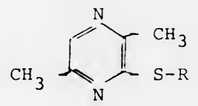
**Max Winter, Geneva; Fritz Gautschi, Commugny; Ivon Flament, and Max Stoll, both of Geneva, all of Switzerland, assignors to Firmenich & Cie, Geneva, Switzerland**

**Division of Ser. No. 243,866, April 13, 1972, abandoned, which is a division of Ser. No. 70,560, Sept. 8, 1970, Pat. No. 3,702,253, which is a continuation-in-part of Ser. No. 543,069, April 18, 1966, abandoned, which is a continuation-in-part of Ser. No. 452,342, April 30, 1965, abandoned. This application July 26, 1974, Ser. No. 492,108**

**Int. Cl.² C07D** *241/18*

**U.S. Cl. 260—250 B** **5 Claims**

**1.** A new composition of matter consisting essentially of a pyrazine sulfur compound having the general formula:



wherein R is methyl, ethyl, furfuryl or acetyl.

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**3,931,167**

## PROCESS FOR THE MANUFACTURE OF 3-KETO-6-AZIDO-4,6-BIS-DEHYDRO-STEROIDS AND INTERMEDIATES USEFUL THEREIN

**Michael J. Green, East Brunswick, N.J., and Satish C. Bisarya, Moradabad, India, assignors to Schering Corporation, Kenilworth, N.J.**

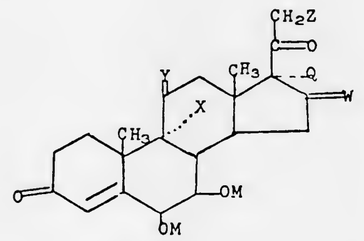
**Continuation of Ser. No. 373,056, June 25, 1973, abandoned. This application June 10, 1974, Ser. No. 477,938**

**Int. Cl.² C07J** *1/00*, *5/00*

**U.S. Cl. 260—239.55 R** **32 Claims**

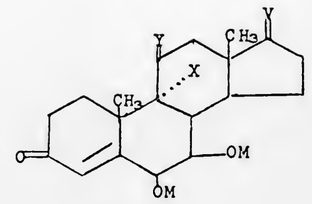
**1.** The process for the manufacture of a 3-keto-6-azido-4,6-bis-dehydro-steroid of the pregnane and androstane series which comprises treating a 3-keto-6β,7-dihydrocarbonsulfonyloxy-4-dehydro-steriod of the pregnane and androstane series, said hydrocarbonsulfonyloxy having up to 12 carbon atoms, with an azide reagent selected from the group consisting of an alkali metal azide, an alkaline earth metal azide, a tetralower alkylammonium azide and a tetra-lower alkylguanidinium azide, in a non-reactive organic solvent.

**16.** A compound selected from the group consisting of a 3-keto-6β,7β-dihydroxy-4-dehydro-steroid derivative of the following formulae I and II and the 1-dehydro analogs thereof:



I

and



II

wherein M is an acyl radical of a hydrocarbonsulfonic acid having up to 12 carbon atoms,

Q is a member selected from the group consisting of hydrogen, hydroxy and OR, R being an acyl radical of a hydrocarbon carboxylic acid having up to 12 carbon atoms;

V is a member selected from the group consisting of oxygen, (H, β-$OR_1$); (α-methyl, β-$OR_1$), (α-lower alkinyl, β$OR_1$) and (α-halogenoalkinyl β-$OR_1$) wherein $R_1$ is a member selected from the group consisting of hydrogen and lower alkanoyl;

W is a member selected from the group consisting of



(H, α-lower alkyl), (H, β-lower alkyl), (H, α-OH), (H, α-OR′) wherein R′ is an acyl radical of a hydrocarbon carboxylic acid having up to 12 carbon atoms, =CHT when Q is other than hydrogen wherein T is a member selected from the group consisting of hydrogen, lower alkyl, fluorine, chlorine, and W and Q together is alkylidenedioxy;

X is a member selected from the group consisting of hydrogen and halogen having an atomic weight less than 100; Y is a member selected from the group consisting of



provided X is hydrogen, oxygen, (H,βOH), and (H, β-halogen of atomic weight less than 100) provided X is halogen;

Z is a member selected from the group consisting of OR″ (R″ being an acyl radical of a hydrocarbon carboxylic acid having up to 12 carbon atoms), hydrogen and halogen, and Z together with Q is a member selected from the group consisting of alkylidenedioxy and alkylorthoalkanoate.

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**3,931,168**

## CINNAMAMIDOHYDANTOINS

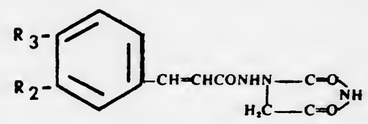
**Robert J. Alaimo, Norwich, and Christopher J. Hatton, Earlville, both of N.Y., assignors to Morton-Norwich Products, Inc., Norwich, N.Y.**

**Filed Aug. 1, 1974, Ser. No. 493,681**

**Int. Cl.² C07D** *233/80*

**U.S. Cl. 260—240 J** **12 Claims**

**1.** A compound of the formula:



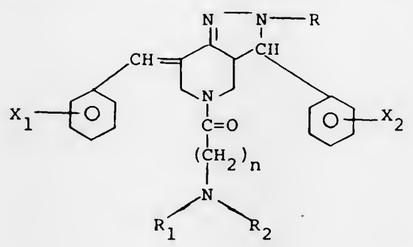
wherein $R_2$ is a member of the group consisting of hydrogen, chloro, fluoro and trifluoromethyl; $R_3$ is a member of the group consisting of hydrogen, chloro, fluoro, methyl, ethyl and cyano; and $R_2$ and $R_3$ taken together are methylenedioxy.

### 3,931,169
### 5-SUBSTITUTED-PYRAZOLO(4,3-C)PYRIDINES

**John Krapcho, Somerset, and Chester Frank Turk, Kendall Park, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.**

**Filed Jan. 29, 1975, Ser. No. 544,980**
**Int. Cl.² C07D** *471/02*
**U.S. Cl. 260—240 R** **16 Claims**

1. A compound of the formula



wherein $X_1$ and $X_2$ are the same or different and are selected from the group consisting of hydrogen, F, cl, lower alkyl, lower alkoxy, or $CF_3$; R is selected from the group consisting of hydrogen, lower alkyl, phenyl lower alkyl, $x_{1\ or\ 2}$- substituted phenyl lower alkyl wherein $X_{1\ or\ 2}$ is as previously defined, hydroxy lower alkyl or lower alkanoyl; $R_1$ and $R_2$ are the same or different and are selected from the group consisting of hydrogen or lower alkyl or



may be taken together to form a 5- or 6-membered heterocyclic ring which may include one other heteroatom selected from the group consisting of sulfur, nitrogen or oxygen; and *n* is 0 to 4; and N-oxides and pharmaceutically acceptable acid addition salts thereof.

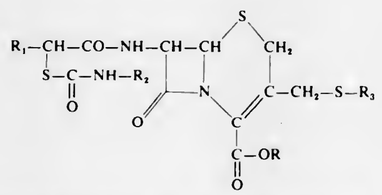
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### 3,931,170
### 3-HETEROTHIO DERIVATIVES OF (CARBAMOYLTHIOACETYL)CEPHALOSPORINS

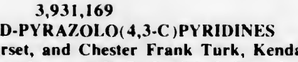
**Uwe D. Treuner, and Hermann Breuer, both of Regensburg, Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.**

**Filed Aug. 30, 1974, Ser. No. 501,902**
**Int. Cl.² C07D** *501/50*; **A61K** *31/545*
**U.S. Cl. 260—243 C** **11 Claims**

1. A compound of the formula



wherein R is hydrogen, lower alkyl, phenyl-lower alkyl, diphenylmethyl, tri(lower alkyl)silyl,



alkali metal, alkaline earth metal, mono (lower alkyl) amine salt or tri (lower alkyl) amine salt; $R_1$ is hydrogen, lower alkyl, phenyl, thienyl, furyl or pyridyl; $R_2$ is lower alkyl, phenyl-lower alkyl or diphenyl methyl; $R_3$ is $R_5$-thiadiazole, $R_5$-oxadiazole, $R_5$-isoxazole, $R_5$-isothiazole, $R_5$-tetrazole or $R_5$-pyridine-N-Oxide; $R_4$ is lower alkyl, phenyl, phenyl-lower alkyl or diphenyl methyl; and $R_5$ is hydrogen or lower alkyl; said lower alkyl groups having up to seven carbon atoms.

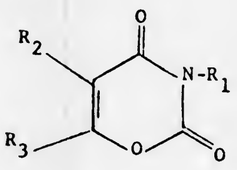
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### 3,931,171
### PROCESS FOR THE PRODUCTION OF 2,3-DIHYDRO-1,3-OXAZINEDIONE-(2,4)-COMPOUNDS

**Gerhard Jäger, Wuppertal-Elberfeld; Hans-Jurgen Weinzelburger, Wuppertal-Cronenberg, and Richard Wegler, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

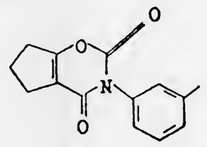
**Continuation of Ser. No. 109,951, Jan. 26, 1971, abandoned. This application Nov. 13, 1972, Ser. No. 306,125**
**Claims priority, application Germany, Feb. 5, 1970, 2005118**
**Int. Cl.² C07D** *265/08, 265/12*
**U.S. Cl. 260—244 R** **17 Claims**

1. Process for the production of a 2,3-dihydro-1,3-oxazinedione-(2,4) compound of the formula



in which

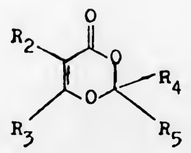
$R_1$ is alkyl with 1 to 10 carbon atoms or cycloalkyl of from 5 to 6 carbon atoms, norbornyl methyl, benzyl, phenylethyl, benzoyl, phenylsulfonyl, phenylmercaptocarbonyl, phenyl or naphthyl which radicals may be substituted by up to three alkyl of from 1 to 6 carbon atoms, phenyl, alkoxy of from 1 to 2 carbon atoms, haloalkyl of from 1 to 2 carbon atoms, fluorine, chlorine, bromine, iodine, cyano, nitro, or amino groups; or $R_1$ can be trichloropyrimidyl or dichlorotriazyl; or $R_1$ can be the group of the formula



$R_2$ is hydrogen and $R_3$ is methyl, or $R_2$ and $R_3$ together form a trimethylene radical which may be substituted by one or more alkyl radicals,

which process comprises reacting, at a temperature of from 80° to 200°C, a 1,3-dioxinone-(4) of the formula





in which

$R_2$ and $R_3$ have the meaning stated above, and

$R_4$ is hydrogen or alkyl, and

$R_5$ is alkyl or aryl, or

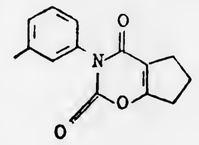
$R_4$ and $R_5$ taken together form a divalent alkylene group of the formula $-(CH_2)_n-$, where *n* is 4, 5 or 6;

with an isocyanate of the formula

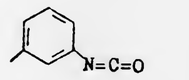
$$R'_1-N=C=O$$

in which

$R_1'$ has the meaning stated above for $R_1$, except that $R_1'$ cannot be the group of the formula



but $R_1'$ may also be a radical of the formula



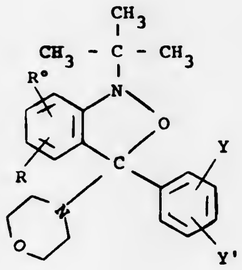
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### 3,931,172
### 1-TERTIARY-BUTYL-3-MORPHOLINO-3-PHENYL-2,1-BENZISOXAXOLINES

**Robert V. Coombs, Chatham, and Goetz E. Hardtmann, Florham Park, both of N.J., assignors to Sandoz Inc., E. Hanover, N.J.**

**Filed Feb. 25, 1974, Ser. No. 445,267**
**Int. Cl.² C07D** *263/54*
**U.S. Cl. 260—247.5 EP** **6 Claims**

1. A compound of the formula:



wherein

R° and R are independently hydrogen, halo of atomic weight of from 18 to 80, lower alkyl of 1 to 4 carbon atoms, lower alkoxy of 1 to 4 carbon atoms or trifluoromethyl, and

Y and Y' are independently hydrogen, halo of atomic weight of from 18 to 80, lower alkyl of 1 to 4 carbon atoms, lower alkoxy of 1 to 4 carbon atoms or trifluoromethyl.

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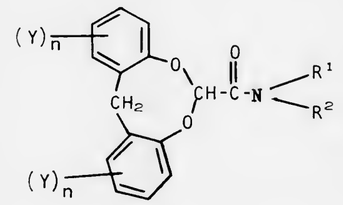
### 3,931,173
### DIOXOCIN CARBOXAMIDE DERIVATIVES

**Roger Alan Parker, Cincinnati, Ohio, and David Lawrence Wenstrup, Edgewood, Ky., assignors to Richardson-Merrell Inc., Wilton, Conn.**

**Filed July 22, 1971, Ser. No. 165,357**
**Int. Cl.² C07D** *295/18*
**U.S. Cl. 260—247.7 T** **9 Claims**

1. A compound selected from

A. a compound of the formula



B. a pharmaceutically acceptable acid addition salt of the salt forming compounds, wherein each Y is selected from the group consisting of hydrogen, or chlorine; *n* is 1; $R^1$ and $R^2$ are hydrogen, lower alkyl of from 1 to 4 carbon atoms, picolyl, or o-tolyl or $-NR^1R^2$ taken together are piperidino, or morpholino.

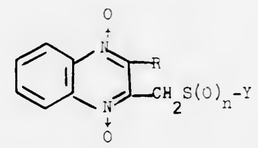
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### 3,931,174
### ALKYLMERCAPTOMETHYLQUINOXALINE-1,4-DIOXIDES AND OXIDIZED DERIVATIVES THEREOF

**James W. McFarland, Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.**

**Filed Jan. 23, 1974, Ser. No. 435,874**
**Int. Cl.² C07D** *241/44*
**U.S. Cl. 260—250 Q** **10 Claims**

1. A compound of the formula



wherein R is selected from the group consisting of hydrogen and methyl;

Y is lower alkyl; and

*n* is 0 or an integer from 1 to 2.

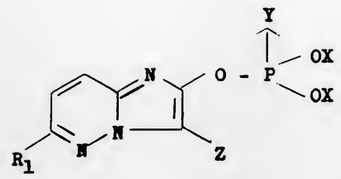
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### 3,931,175
### IMIDAZO(1,2B)PYRIDAZINYL ESTERS, PROCESS AND INSECTICIDAL COMPOSITIONS

**Jacques Perronnet, Paris, and Laurent Tallani, Les Pavillons-sous-Bois, both of France, assignors to Roussel-UCLAF, Paris, France**

**Filed July 1, 1974, Ser. No. 484,774**
**Claims priority, application France, July 5, 1973, 73.24736**
**Int. Cl.² C07D** *237/26*
**U.S. Cl. 260—250 AC** **9 Claims**

1. Substituted imidazo(1,2b)pyridazinyl esters having the formula



wherein $R_1$ is a member selected from the group consisting of hydrogen and halogen, Y is a member selected from the group consisting of oxygen and sulfur, X is alkyl having 1 to 6 carbon atoms, and Z is a member selected from the group consisting of hydrogen and —COOR′, wherein R′ is alkyl having 1 to 6 carbon atoms.

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**3,931,176**

**HYDROXYALKYL SUBSTITUTED-4,5-DIHYDROPYRIDAZIN(2H)-3-ONES**

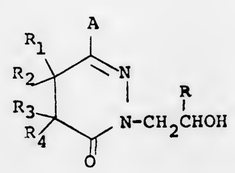
**William J. Houlihan, Mountain Lakes, N.J., assignor to Sandoz Inc., E. Hanover, N.J.**

**Continuation-in-part of Ser. No. 366,670, June 4, 1973, abandoned, which is a continuation-in-part of Ser. No. 182,159, Sept. 20, 1971, abandoned, which is a continuation-in-part of Ser. No. 166,565, July 27, 1971, abandoned, which is a continuation-in-part of Ser. No. 88,976, Nov. 12, 1970, abandoned. This application Oct. 25, 1973, Ser. No. 409,653**

**Int. Cl.² C07D** *237/04*

**U.S. Cl. 260—250 A** **12 Claims**

1. A compound of the formula:

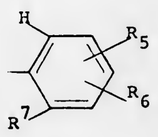


where

R is lower alkyl having 1 to 4 carbon atoms,

$R_1$, $R_2$, $R_3$, and $R_4$ each independently represent hydrogen or lower alkyl having 1 to 4 carbon atoms, and

A represents



where

$R^7$ represents hydrogen; fluoro, chloro or straight chain lower alkyl having 1 to 4 carbon atoms, and

$R_5$ and $R_6$ each independently represent hydrogen, fluoro, chloro, trifluoromethyl or lower alkyl having 1 to 4 carbon atoms

provided that when both $R^5$ and $R^6$ represent trifluoromethyl, they are on other than adjacent carbon atoms and that at least one of $R^5$, $R^6$, and $R^7$ is hydrogen.

**3,931,177**

**6-(3-SUBSTITUTED AMINO-2-HYDROXYPROPOXYARYL)-4,5-DIHYDRO-3(2H)-PYRIDAZINONES**

**William John Coates, Welwyn Garden City; Anthony Maitland Roe, Hatfield, and Robert Antony Slater, Letchworth, all of England, assignors to Smith Kline & French Laboratories, Inc., Welwyn Garden City, England**

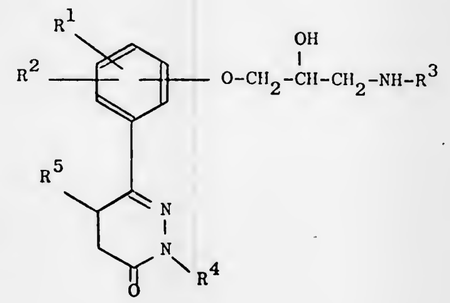
**Filed Dec. 12, 1974, Ser. No. 531,957**

**Claims priority, application United Kingdom, Dec. 19, 1973, 58726/73**

**Int. Cl.² C07D** *237/04*

**U.S. Cl. 260—250 A** **16 Claims**

1. A compound of the formula:



wherein

$R^1$ is hydrogen, lower alkyl, lower alkenyl, $—CF_3$, halogen, cyano, nitro, hydroxy, lower alkoxy, lower alkenyloxy, amino, lower alkanoylamino, lower alkylamino, di lower alkylamino or morpholino,

$R^2$ is hydrogen, methyl, or together with $R^1$ forms a benzene ring fused to the benzene ring shown to form a naphthyl group;

$R^3$ is isopropyl or tertiary butyl; and

$R^4$ and $R^5$, which may be the same or different, are hydrogen or methyl;

or a pharmaceutically acceptable acid addition salt thereof.

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**3,931,178**

**1-SUBSTITUTED-2-IMINO-PYRIDO[2,3-D]PYRIMIDIN-4(1H)-ONES**

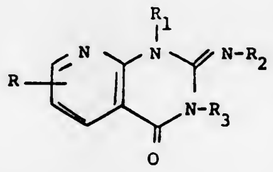
**Goetz E. Hardtmann, Florham Park, N.J., assignor to Sandoz Inc., E. Hanover, N.J.**

**Continuation-in-part of Ser. No. 437,470, Jan. 28, 1972, abandoned, which is a continuation-in-part of Ser. No. 373,475, June 25, 1973, abandoned. This application July 24, 1974, Ser. No. 491,250. The portion of the term of this patent subsequent to Jan. 6, 1993, has been disclaimed.**

**Int. Cl.² C07D** *239/00*

**U.S. Cl. 260—256.4 F** **15 Claims**

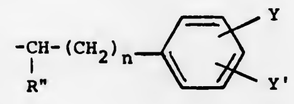
1. A compound of the formula





wherein

$R_1$ is alkyl of 1 to 6 carbon atoms, alkenyl of 3 to 8 carbon atoms or phenalkyl of the formula:



*n* is 0 or 1,

R″ is hydrogen or methyl provided that R″ is hydrogen when n is 1,

$R_2$ is hydrogen, alkyl of 1 to 6 carbon atoms or alkenyl of 3 to 6 carbon atoms,

$R_3$ is hydrogen, alkyl of 1 to 6 carbon atoms or alkenyl of 3 to 6 carbon atoms,

R is hydrogen or alkyl of 1 to 3 carbon atoms, and

Y and Y′ are independently hydrogen, fluoro, chloro, alkyl of 1 to 3 carbon atoms or alkoxy of 1 to 3 carbon atoms or one is hydrogen and the other bromo or trifluoromethyl, or a pharmaceutically acceptable acid addition salt of the compounds in which each of $R_2$ and $R_3$ is hydrogen.

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**3,931,179**

**N,N-BIS(4-QUINAZOLINYL)ALKANEDIAMINES**

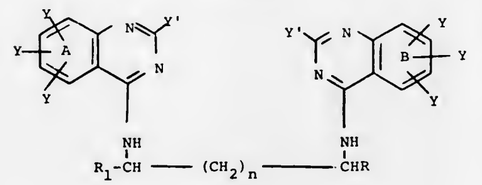
**William R. J. Simpson, Mendham, N.J., assignor to Sandoz Inc., E. Hanover, N.J.**

**Filed Mar. 6, 1974, Ser. No. 448,524**

**Int. Cl.² C07D** *239/86*

**U.S. Cl. 260—256.4 Q** **7 Claims**

1. A compound of the formula:



wherein R and $R_1$ are independently hydrogen or alkyl of 1 to 4 carbon atoms,

*n* is 0 to 12,

each Y is independently hydrogen, fluoro, chloro, bromo, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, trifluoromethyl, nitro, amino or N,N-dialkylamino in which each alkyl is of 1 to 3 carbon atoms or two adjacent Y together form 6,7-methylenedioxy or 6,7-ethylenedioxy with the other Y on any such alkylenedioxy substituted ring being hydrogen, provided that adjacent Ys do not both have a tert-butyl moiety, further provided that no more than 2 Ys in each A and B ring are nitro, trifluoromethyl, amino or dialkylamino, and also provided that when any Y is amino or dialkylamino, then any dissimilar Y is hydrogen, fluoro, chloro, bromo, alkyl or alkoxy, and

each Y′ is independently hydrogen, fluoro, chloro, bromo or alkyl of 1 to 4 carbon atoms, or

a pharmaceutically acceptable acid addition salt thereof.

**3,931,180**

**SUBSTITUTED 6-HYDROXY PYRIMIDINES**

**Herbert Mühle; Karlheinz Milzner, both of Basel, and Fritz Reisser, Therwil, all of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland**

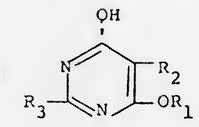
**Filed Mar. 19, 1974, Ser. No. 452,525**

**Claims priority, application Switzerland, Mar. 23, 1973, 4254/73**

**Int. Cl.² C07D** *239/00*

**U.S. Cl. 260—256.4 C** **12 Claims**

1. A compound of the formula:



wherein

$R_1$ is alkyl ($C_1$–$C_6$) or cycloalkyl ($C_3$–$C_6$),

$R_2$ is hydrogen, alkyl ($C_1$–$C_6$) or alkenyl-($C_2$–$C_6$) and

$R_3$ is a radical $—NR_4R_5$

wherein $R_4$ and $R_5$ are either each, independently, hydrogen or alkyl ($C_1$–$C_6$) or together with the nitrogen atom to which they are bound form piperidino, morpholino or pyrrolidino,

or alkoxy or alkylthio ($C_1$–$C_6$).

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**3,931,181**

**2,4-DIAMINO-5-BENZYLPYRIMIDINES**

**Ivan Kompis, Oberwil; Gerald Rey-Bellet, Basel, and Guido Zanetti, Fullinsdorf, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.**

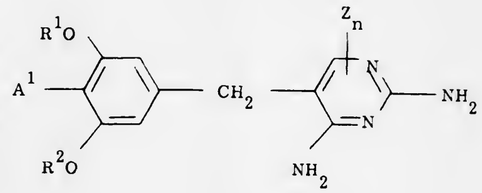
**Filed July 16, 1974, Ser. No. 489,050**

**Claims priority, application Switzerland, July 27, 1973, 10995/73**

**Int. Cl.² C07D** *239/00*

**U.S. Cl. 260—256.4 N** **21 Claims**

1. A compound of the formula



wherein $R^1$ and $R^2$, individually, are lower alkyl of 1 to 4 carbon atoms or lower alkenyl of 2 to 3 carbon atoms; Z is an oxygen atom bonded to one of the cyclic nitrogen atoms, n is 0 or 1, and $A^1$ is trifluoromethyl.



(a) (b)

wherein $R^6$ is oxo and $R^7$ is hydrogen, lower alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms; or $R^6$ is hydroxyimino and $R^7$ is lower alkyl of 1 to 4 carbon atoms; or $R^6$ taken together with $R^7$ is nitrils; $R^8$ and $R^9$, individually, are hydrogen or lower alkyl of 1 to 4 carbon atoms; and $R^{10}$ is hydroxy, lower alkoxy of 1 to 4 carbon atoms or $-N(R^3)(R^4)$, wherein $R^3$ and $R^4$, individually, are hydrogen, lower alkyl of 1 to 4 carbon atoms or lower alkanoyl of 1 to 4 carbon atoms; or $R^9$ and $R^{10}$, individually, are lower alkoxy of 1 to 4 carbon atoms or lower alkylthio of 1 to 4 carbon atoms; or $R^9$ taken together with $R^{10}$ are lower alkylenedioxy of 2 to 3 carbon atoms or lower alkylenedithio of 2 to 3 carbon atoms; or a pharmaceutically acceptable acid addition salt thereof.

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## 3,931,182
## LACTONES OF THE DIAZAXANTHENE SERIES, THEIR PRODUCTION AND THEIR USE AS DYE-FORMING COMPONENTS FOR COPYING METHODS

**Hellmut Kast, Bobenheim-Roxheim, and Guenter Dunkelmann, Ludwigshafen, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany**

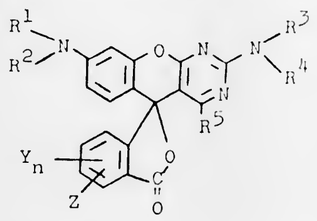
**Filed July 31, 1974, Ser. No. 493,384**

**Claims priority, application Germany, Aug. 1, 1973, 2338953**

**Int. Cl.² C07D** *239/00*

**U.S. Cl. 260—256.4 F** **7 Claims**

1. A lactone of the diazaxanthene series of the formula:



in which

$R^1$ is hydrogen or alkyl of one to three carbon atoms;

$R^2$ is phenyl; or phenyl monosubstituted by alkyl of one to three carbon atoms, chloro or bromo;

$R^3$ and $R^4$ independently of one another are each alkyl of one to six carbon atoms per alkyl or alkoxyalkyl of two to twelve carbon atoms; or $R^3$ and $R^4$ together with the nitrogen form a piperidino group, a pyrrolidino group or a $N^1$-methylpiperazino group;

$R^5$ is hydrogen or alkyl of one to three carbon atoms;

Y is hydrogen or chloro;

Z is hydrogen or chloro; or Z is nitro or alkyl of one to three carbon atoms when Y is hydrogen; and

*n* is one of the integers 1, 2 and 3.

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## 3,931,183
## 1-SUBSTITUTED-2-DISUBSTITUTEDAMINO-PYRIDO[2,3-D]PYRIMIDIN-4(1H)-ONES

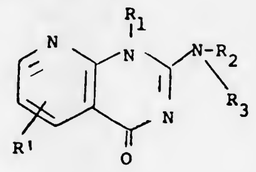
**Goetz E. Hardtmann, Florham Park, N.J., assignor to Sandoz Inc., E. Hanover, N.J.**

**Continuation-in-part of Ser. No. 437,471, Jan. 28, 1974, abandoned. This application July 24, 1974, Ser. No. 491,249. The portion of the term of this patent subsequent to Jan. 6, 1993, has been disclaimed.**

**Int. Cl.² C07D** *239/00*

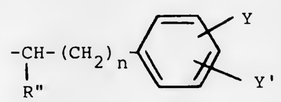
**U.S. Cl. 260—256.4 F** **10 Claims**

1. A compound of the formula



wherein

$R_1$ is alkyl of 1 to 6 carbon atoms, alkenyl of 3 to 8 carbon atoms or phenalkyl of the formula:



*n* is 0 to 1

R'' is hydrogen or methyl,

$R_2$ and $R_3$ are independently alkyl of 1 to 4 carbon atoms or alkenyl of 3 to 6 carbon atoms,

R' is hydrogen or alkyl of 1 to 3 carbon atoms, and

Y and Y'' are independently hydrogen, fluoro, chloro, alkyl of 1 to 3 carbon atoms or alkoxy of 1 to 3 carbon atoms or one is hydrogen and the other bromo or trifluoromethyl.

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## 3,931,184
## PURIFICATION METHOD FOR PROLYL-LEUCYLGLYCINAMIDE

**Charles George Lex, Kenosha, Wis., assignor to Abbott Laboratories, North Chicago, Ill.**

**Filed Oct. 31, 1974, Ser. No. 519,463**

**Int. Cl.² C07C** *103/52*; **C07G** *7/00*

**U.S. Cl. 260—112.5 R** **2 Claims**

1. The process of purifying the crude tripeptide L-prolyl-L-leucylglycinamide consisting essentially in dissolving 1 part by weight of said tripeptide in at least about 3 parts by volume of methanol, adding at least 12 parts by volume of diethyl ether to said solution, and crystallizing said tripeptide at a temperature of 0° – 25° C.

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## 3,931,185
## 1-PHENYL-2,2,4,4-4-$C_1$-$C_2$ ALKYL-3-[4-(PHENYL OR PYRIDYL)-PIPERAZINO]-CYCLOBUTANOLS-(1)

**Manfred Kleemann, Tamm; Joachim Kahling, Biberach, Riss; Gerhart Griss, Biberach, Riss, and Rudolf Hurnaus, Biberach, Riss, all of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany**

**Filed Nov. 6, 1973, Ser. No. 413,233**

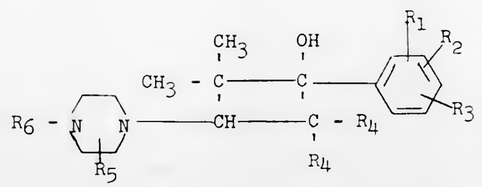
**Claims priority, application Germany, Nov. 11, 1972, 2255439; Oct. 3, 1973, 2349639**

**Int. Cl.² C07D** *295/12*

**U.S. Cl. 260—268 PH** **11 Claims**

1. A compound of the formula





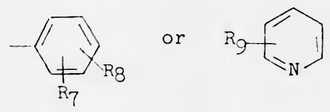
wherein $R_1$ is hydrogen, fluorine, chlorine, bromine, hydroxyl, trifluoromethyl, benzyloxy, alkyl of 1 to 5 carbon atoms, alkoxy of 1 to 3 carbon atoms, benzyloxy, acetoxy, benzoyloxy, isobutyryloxy, phenyl or cyclohexyl,

$R_2$ and $R_3$ are each hydrogen, methyl or methoxy, or any two of $R_1$, $R_2$ and $R_3$ taken together are methylenedioxy,

$R_4$ is hydrogen or alkyl of 1 to 2 carbon atoms,

$R_5$ is hydrogen or methyl, and

$R_6$ is



where $R_7$ and $R_8$ are each hydrogen, fluorine, chlorine, bromine, trifluoromethyl, hydroxyl, nitro, benzyloxy, alkyl or 1 to 2 carbon atoms, alkoxy of 1 to 3 carbon atoms, methylthio, acetoxy, benzoyloxy or isobutyryloxy, and

$R_9$ is hydrogen, chlorine, bromine, hydroxyl, nitro, amino, benzyloxy, carboxy, carbomethoxy, carbethoxy, methyl, methoxy or acetoxy,

provided however, that only one of $R_1$, $R_7$, $R_8$ and $R_9$ is acetoxy, benzoyloxy or isobutyryloxy; a physiologically compatible acid addition salt thereof; or, when $R_9$ is carboxy, a physiologically compatible salt thereof formed with an inorganic or organic base.

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## 3,931,186
## PROCESS FOR PREPARING NAPHTHOLYENE ARYLIMIDAZOL-PERI-DICARBOXYLIC ACID IMIDES

**Otto Fuchs, Frankfurt am Main, and Adolf Kroh, Munster, Oberlahnkreis, both of Germany, assignors to Hoechst Aktiengeselischaft, Frankfurt am Main, Germany**

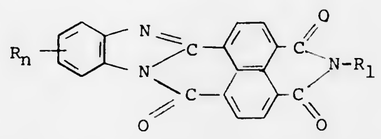
**Filed Sept. 18, 1973, Ser. No. 398,559**

**Claims priority, application Germany, Sept. 20, 1972, 2246110**

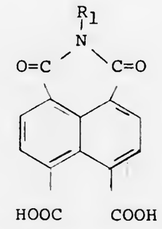
**Int. Cl.² C07D** *471/16*

**U.S. Cl. 260—282** **1 Claim**

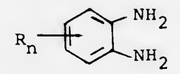
1. Process for preparing naphthoylene-arylimidazolperidicarboxylic acid-imide-compounds of the formula



wherein $R_1$ is hydrogen, hydroxy or amino, phenyl, alkyl having 1 to 8 carbon atoms, hydroxyalkyl, alkoxyalkyl, aminoalkyl, mono- or dialkylaminoalkyl, hydroxyalkoxy-alkyl, alkoxyalkoxyalkyl, carbalkoxyalkyl, carboxylalkyl or phenylalkyl each having 1 to 6 carbon atoms in the alkyl or alkoxy portion and R is hydrogen or halogen, alkyl, alkoxy, carbalkoxy each having 1 to 4 carbon atoms, nitro, cyano, carbonamido, mono- or diloweralkylcarbonamide or sulfonamido, mono- or diloweralkylsulfonamido and n represents the integers 1 to 3, in which process naphthalimide-4,5-dicarboxylic acids of the formula



are condensed in a medium consisting essentially of water at a pH of from 1.5 to 4.0 with a diamine of the formula



at temperatures of from 80°to 160°C, R, R and n having the above meanings.

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## 3,931,187
## N-(HETEROARYL-METHYL)-7α-ACYL-6,14-(ENDOETHENO OR ENDOETHANO)-TETRAHYDRO-NORORIPAVINES OR-THEBAINES AND SALTS THEREOF

**Adolf Langbein; Herbert Merz; Gerhard Walther, and Klaus Stockhaus, all of Ingelheim am Rhein, Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany**

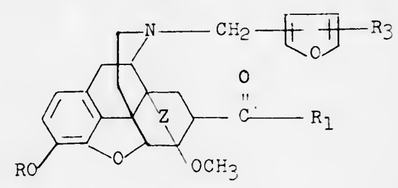
**Filed June 13, 1973, Ser. No. 369,499**

**Claims priority, application Germany, June 19, 1972, 2229770**

**Int. Cl.² C07D** *489/12*

**U.S. Cl. 260—285** **6 Claims**

1. A compound of the formula



wherein

R is hydrogen, methyl or acetyl,

$R_1$ is methyl, phenyl or hydrogen,

Z is $-CH=CH-$ or $-CH_2-CH_2-$, and

$R_3$ is hydrogen or methyl,

or a non-toxic, pharmacologically acceptable acid addition salt thereof.

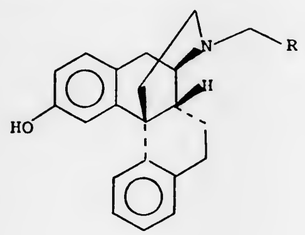
**3,931,188**

## 3-HYDROXY-5,6-BENZOMORPHINAN DERIVATIVES

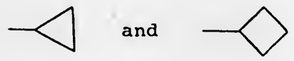
James L. Douglas, Montreal; Jacques Meunier, LaSalle, and Marcel Menard, Candiac, all of Canada, assignors to Bristol-Myers Company, New York, N.Y.

Filed May 6, 1974, Ser. No. 467,339
Int. Cl.² C07D *221/22, 221/28;* A61K *31/485*
U.S. Cl. 260—285 9 Claims

1. A compound having the formula



wherein R is selected from the group consisting of



or a pharmaceutically acceptable acid addition salt thereof.

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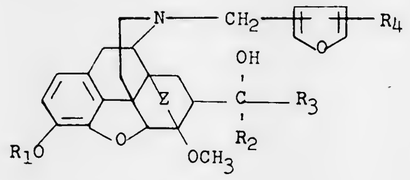
**3,931,189**

## N-(HETEROARYL-METHYL)-6,14-(ENDOETHANO OR ENDOETHENO)-7α-HYDROXYALKYL-TETRAHYDRO-NORORIPA-VINES OR-NORTHEBAINES AND SALTS THEREOF

Adolf Langbein; Herbert Merz; Gerhard Walther, and Kalus Stockhaus, all of Ingelheim am Rhein, Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

Filed June 13, 1973, Ser. No. 369,500
Claims priority, application Germany, June 21, 1972, 2230154
Int. Cl.² C07D *489/12*
U.S. Cl. 260—285 6 Claims

1. A compound of the formula



wherein
$R_1$ is hydrogen, methyl or acetyl,
$R_2$ is hydrogen or methyl,
$R_3$ is hydrogen, methyl, n-propyl, phenethyl or phenyl,
$R_4$ is hydrogen or methyl, and
Z is —CH=CH— or —$CH_2$—$CH_2$—, or a non-toxic, pharmacologically acceptable acid addition salt thereof.

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**3,931,190**

## PREPARATION OF 2-CHLOROPYRIDINE BY HYDROGENOLYSIS

Roland R. Kyi, North Haven, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Mar. 4, 1974, Ser. No. 447,705
Int. Cl.² C07D *213/61*
U.S. Cl. 260—290 HL 9 Claims

1. A process for preparing 2-chloropyridine consisting essentially of reacting together in the liquid phase at a temperature in the range of −10°C. to 100°C., 2,6-dichloropyridine at least 0.25 gram-atoms per mole of 2,6-dichloropyridine of a finely divided metal selected from the group consisting of zinc, iron, cobalt and aluminum and at least 0.1 part by weight per part by weight of said 2,6-dichloropyridine of a base selected from the group consisting of an alkali metal hydroxide and an alkaline earth metal hydroxide.

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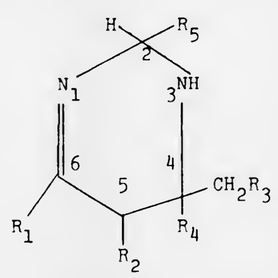
**3,931,191**

## CONVERSION OF TETRAHYDROPYRIMIDINES TO PYRIDINES

Bernardus A. Oude Alink, St. Louis, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Continuation-in-part of Ser. No. 292,494, Sept. 27, 1972. This application Aug. 1, 1973, Ser. No. 384,440
Int. Cl.² C07D *213/04*
U.S. Cl. 260—290 P 5 Claims

1. The process of converting a 2,3,4,5-tetrahydropyrimidine of the formula



wherein $R_1$, $R_2$, $R_3$, $R_4$, and $R_5$ may be the same or different are hydrogen, alkyl, aryl, cycloalkyl, alkaryl, aralkyl or heterocyclic to the corresponding pyridine which comprises heating said tetrahydropyrimidine to a temperature between 75°C. and 350°C. sufficiently high to remove ammonia and hydrogen so as to form said pyridine.

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**3,931,192**

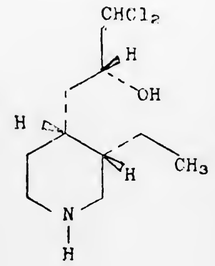
## PROCESS FOR PIPERIDINE INTERMEDIATES FOR QUININE, QUINIDINE AND ANALOGS THEREOF

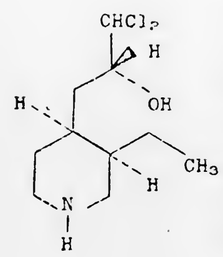
Guenter Grethe, North Caldwell, and Milan Radoje Uskokovic, Upper Montclair, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 166,583, July 27, 1971, Pat. No. 3,823,146, which is a continuation-in-part of Ser. No. 117,131, Feb. 19, 1971, abandoned, which is a continuation-in-part of Ser. No. 20,034, March 16, 1970, abandoned. This application May 2, 1974, Ser. No. 466,423
Int. Cl.² C07D *211/02*
U.S. Cl. 260—293.52 2 Claims

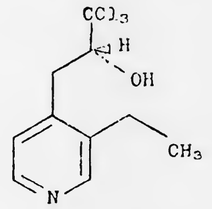
1. A process for preparing diastereomeric compounds of the formulas







enantiomers and racemates thereof, which comprises hydrogenating a compound of the formula



enantiomer and racemate thereof, in an acidic medium in the presence of a hydrogenation catalyst.

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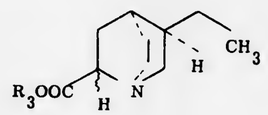
**3,931,193**

## QUINUCLIDINE DERIVATIVES

Guenter Grethe, North Caldwell, and Milan Radoje Uskokovic, Upper Montclair, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 166,583, July 27, 1971, Pat. No. 3,823,146, which is a continuation-in-part of Ser. No. 117,131, Feb. 19, 1971, abandoned, which is a continuation-in-part of Ser. No. 20,034, March 16, 1970, abandoned. This application May 2, 1974, Ser. No. 466,355
Int. Cl.² C07D *453/02*
U.S. Cl. 260—293.53 5 Claims

1. A racemic epimer of the formula



wherein $R_3$ is lower alkyl.

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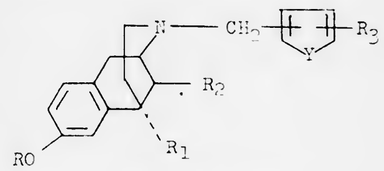
**3,931,194**

## 2-HETEROARYL-METHYL)-5,9β-DIALKYL-6,7-BENZO-MORPHANS AND SALTS THEREOF

Herbert Merz; Adolf Langbein; Klaus Stockhaus, and Helmut Wick, all of Ingelheim am Rhein, Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

Filed June 5, 1973, Ser. No. 367,114
Claims priority, application Germany, June 19, 1972, 2229695
Int. Cl.² C07D *221/26*
U.S. Cl. 260—293.54 6 Claims

1. A racemic or optically active compound of the formula



wherein R is hydrogen, methyl or acetyl,
$R_1$ and $R_2$ are each alkyl of 1 to 3 carbon atoms,
$R_3$ is hydrogen or methyl, and
Y is oxygen or sulfur,
or a non-toxic, pharmacologically acceptable acid addition salt thereof.

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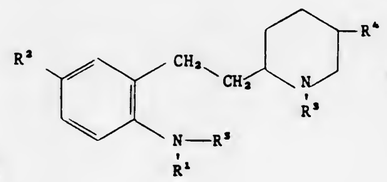
**3,931,195**

## SUBSTITUTED PIPERIDINES

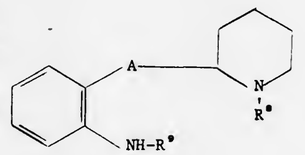
Stanley J. Dykstra, and Joseph L. Minielli, both of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

Continuation-in-part of Ser. No. 120,754, March 3, 1971, abandoned. This application July 31, 1973, Ser. No. 384,341
Int. Cl.² C07D *211/08*
U.S. Cl. 260—293.58 28 Claims

1. A compound selected from the group consisting of substituted piperidines having Formula I and Formula XII

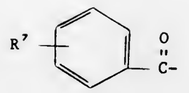


Formula I



Formula XII

wherein
$R^1$ represents hydrogen;
$R^2$ represents hydrogen or methylenedioxy attached in the benzenoid 4,5-position;
$R^3$ represents hydrogen or methyl;
$R^4$ represents hydrogen;
$R^5$ is cinnamoyl or



wherein

$R^7$ is selected from the group consisting of hydrogen, chlorine, dimethylamino, alkylthio of from 1 to 4 carbon atoms inclusive, alkyl of from 1 to 4 carbon atoms inclusive, methoxy, 3,4-dimethoxy, 3,5-dimethoxy, and 3,4,5-trimethoxy;

$R^8$ represents lower alkyl of 1 to 4 carbon atoms inclusive;

$R^9$ is selected from the group consisting of cinnamoyl or



wherein

$R^{10}$ is methoxy;

A is a divalent radical selected from the group consisting of $-CHCH_2-$, $-CH_2CH-$, $-CHCH_2CH_2-$, $-CH-$, $-(CH_2)_3-$;

and a pharmaceutically acceptable salt thereof.

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**3,931,196**

**PHOSPHINOLINES AND PHOSPHINDOLINES**

**John Melvin Swan, Canterbury, Australia, assignor to Monash University, Clayton, Australia**

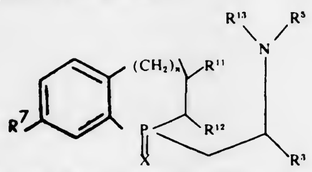
**Filed Feb. 26, 1973, Ser. No. 335,760**

**Claims priority, application Australia, Feb. 28, 1972, 810972; May 31, 1972, 9157/72**

**Int. Cl.² C07F 9/53**

**U.S. Cl. 260—293.62** **8 Claims**

**1.** A compound of the formula



wherein $n$ is 0 or 1; X is O or S; $R^4$ is hydrogen or methyl; $R^5$ is hydrogen or methyl, or may be bound to $R^{13}$ to form a morpholino, piperidino or pyrrolidino ring; $R^7$ is hydrogen or hydroxy; $R^{11}$ and $R^{12}$ are hydrogen; $R^{13}$ is methyl, or $R^{13}$ and $R^5$ may be joined together as above stated to form a morpholino, piperidino, or pyrrolidino ring.

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**3,931,197**

**SUBSTITUTED PIPERIDINE DERIVATIVES**

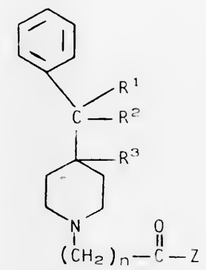
**Albert A. Carr, and C. Richard Kinsolving, both of Cincinnati, Ohio, assignors to Richardson-Merrell Inc., Wilton, Conn.**

**Filed Feb. 8, 1974, Ser. No. 440,856. The portion of the term of this patent subsequent to Apr. 23, 1991, has been disclaimed.**

**Int. Cl.² C07D 211/22**

**U.S. Cl. 260—293.62** **14 Claims**

**1.** A compound selected from a base of the formula



wherein $R^1$ is selected from the group consisting of cyclohexyl, phenyl, and a substituted phenyl ring wherein the substituent on the substituted phenyl ring is attached at the ortho, meta, or para position of the phenyl ring and is selected from the group consisting of halogen, a straight or branched lower alkyl group of from 1 to 4 carbon atoms, and a lower alkoxy group of from 1 to 4 carbon atoms; $R^2$ is selected from the group consisting of hydrogen or hydroxy; $R^3$ represents hydrogen; or $R^2$ and $R^3$ taken together form a second bond between the carbon atoms bearing $R^2$ and $R^3$; n is an integer of from 1 to 3; Z is selected from the group consisting of thienyl, naphthyl, phenyl or a substituted phenyl ring wherein the substituent on the substituted phenyl ring is attached at the ortho, meta or para position of the phenyl ring and is selected from the group consisting of halogen, a straight or branched alkyl group of from 1 to 6 carbon atoms, an alkoxy group of from 1 to 6 carbon atoms, a cycloalkyl group of from 3 to 6 carbon atoms, di(lower)alkylamino, or a saturated monocyclic heterocyclic group selected from the group consisting of pyrrolidino, piperidino, morpholino, and N-(lower)alkylpiperazino with the proviso that when $R^1$ is phenyl, Z is naphthyl or a substituted phenyl ring wherein the substituent on the substituted phenyl ring is attached at the ortho, meta or para position of the phenyl ring and is selected from the group consisting of a straight or branched alkyl group of 5 or 6 carbon atoms, an alkoxy group of 5 or 6 carbon atoms and a cycloalkyl group of from 3 to 6 carbon atoms; and pharmaceutically acceptable acid addition salts thereof.

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**3,931,198**

**2-AMINO-5-SPIRO SUBSTITUTED OXAZOLINE-4-ONE COMPOUNDS**

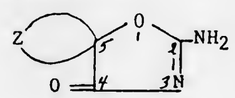
**Michael Raymond Harnden, Horsham, England, assignor to Abbott Laboratories, Chicago, Ill.**

**Division of Ser. No. 170,652, Aug. 10, 1971, Pat. No. 3,720,681, which is a continuation-in-part of Ser. No. 27,120, April 9, 1970, abandoned, which is a continuation-in-part of Ser. No. 689,356, Dec. 11, 1967, abandoned. This application Feb. 20, 1973, Ser. No. 333,599**

**Int. Cl.² C07D 211/18**

**U.S. Cl. 260—293.66** **4 Claims**

**1.** A compound of the formula



wherein Z is $C_4$ to $C_8$ cycloalkyl, 3-methylcyclohexyl, 4-methylcyclohexyl, 3,4,5-trimethylcyclohexyl, 4-piperidyl, 1,2,6-trimethyl-4-piperidyl, N-isopropyl-4-piperidyl, or N-(2-phenethyl)-4-piperidyl.



**3,931,199**

**BENZOPYRANO AND BENZOTHIOPYRANO [2,3-6] PYRIDINES**

**Michio Nakanishi; Takanori Oe, both of Nakatsu, and Mineo Tsuruda, Shiida, all of Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan**

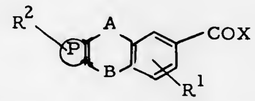
**Filed Mar. 19, 1974, Ser. No. 452,574**

**Claims priority, application Japan, Mar. 19, 1973, 48-32109; Nov. 8, 1973, 48-134214; Jan. 10, 1974, 49-6376; Jan. 10, 1974, 49-6377**

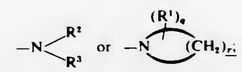
**Int. Cl.² C07D 491/08, 513/08**

**U.S. Cl. 260—294.8 B** **11 Claims**

**1.** A member selected from the group consisting of chemical compounds of the formula:



wherein A is a carbonyl group; B is an oxygen atom or a sulfur atom; each of $R^1$ and $R^2$ is a hydrogen atom, a halogen atom, an alkyl group having 1 to 4 carbon atoms, an alkoxy group having 1 to 4 carbon atoms, a phenyl group or a substituted phenyl group, the substituent being selected from the group consisting of a halogen atom, an alkyl group having 1 to 4 carbon atoms and an alkoxy group having 1 to 4 carbon atoms; X is an alkyl group having 1 to 4 carbon atoms, a cycloalkyl group having 3 to 6 carbon atoms or OM (wherein M is a hydrogen atom, an alkyl group having 1 to 4 carbon atoms, a metal atom or $NH_4$); and ring P represents a pyridine ring.



each X independently represents bromo, chloro, fluoro, or iodo;

each X′ independently represents trichloromethyl, $NH_2$, trifluoromethyl, methyl, methylthio or methoxy;

$n$ represents an integer of 0 to 4, inclusive;

each $q$ independently represents an integer of 0 to 2, inclusive;

each $p$ independently represents an integer of 0 or 1;

$r$ represents an integer of 4 or 5;

each $R^1$ is hydrogen or methyl;

Y is a chalcogen of atomic number 8 to 16, inclusive or $-SO_2-$;

Q is methyl, ethyl or halo;

Z is a chalcogen of atomic number 8 to 16, inclusive;

$R^2$ represents hydrogen, alkyl of from 1 to 4 carbon atoms, inclusive or alkoxy of from 1 to 4 carbon atoms, inclusive; and

$R^3$ represents alkyl of from 1 to 4 carbon atoms, inclusive.

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**3,931,200**

**SUBSTITUTED PYRIDINYLALKOXY-, PYRIDINYLALKYLSULFONYL- AND PYRIDINYLALKYLTHIO- PHENYLUREAS**

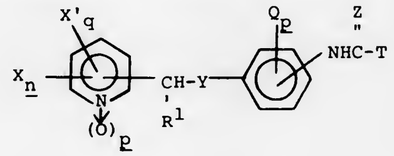
**Alin H. Gulbenk, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.**

**Filed Jan. 22, 1974, Ser. No. 435,608**

**Int. Cl.² C07D 213/75**

**U.S. Cl. 260—294.8 E** **22 Claims**

**1.** A compound of the formula:



wherein

T is



**3,931,201**

**SUBSTITUTED PYRIDINYLOXY(THIO)PHENYL -ACETAMIDES, -UREAS AND UREA DERIVATIVES**

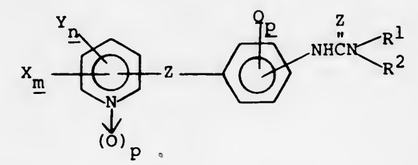
**Howard Johnston, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.**

**Filed Jan. 22, 1974, Ser. No. 435,615**

**Int. Cl.² C07D 213/02**

**U.S. Cl. 260—294.8 H** **14 Claims**

**1.** A compound corresponding to the formula:



wherein:

each $p$ independently represents an integer of 0 or 1;

each X independently represents bromo, chloro, iodo or fluoro;

$m$ represents an integer of 0 to 4, inclusive;

each Y independently represents nitro, $ZR^3$, $-C(X')_3$ or



$n$ represents an integer of 0 to 2, inclusive;

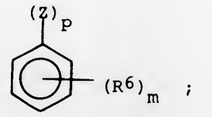
each Z independently represents oxygen or sulfur;

Q represents methyl, ethyl, halo, nitro or trifluoromethyl;

each X′ independently represents hydrogen or halo;

$R^1$ represents hydrogen, alkyl of from 1 to 4 carbon atoms or alkoxy of from 1 to 4 carbon atoms;

$R^2$ represents alkyl of from 1 to 3 carbon atoms or



$R^3$ represents alkyl of from 1 to 3 carbon atoms;
$R^4$ and $R^5$ each independently represent hydrogen or alkyl of from 1 to 4 carbon atoms; and
each $R^6$ represents halo or alkyl of from 1 to 3 carbon atoms.

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**3,931,202**

**PYRIDYL PHENYL-CARBAMATE RODENTICIDES**

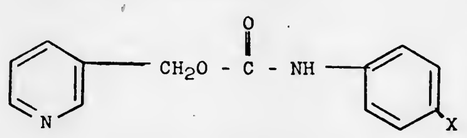
**J. Edgar Ware, Jr., Quakertown; Edward E. Kilbourn, and David L. Peardon, both of Chalfont, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.**

**Continuation-in-part of Ser. Nos. 428,463, Dec. 26, 1973, abandoned, Ser. No. 298,692, Oct. 18, 1972, abandoned, Ser. No. 245,608, April 19, 1972, Pat. No. 3,865,931, and Ser. No. 235,015, March 15, 1972, abandoned. This application June 12, 1974, Ser. No. 478,678**

**Int. Cl.² C07D** *213/75*

**U.S. Cl. 260—294.8 F** **12 Claims**

**1.** A compund having the formula:



wherein X is selected from the group consisting of $-NO_2$, $-CN$, $-CF_3$, $-SR$, $-SOR$, $-SO_2R$, and $-SO_2NH_2$ wherein R is lower alkyl.

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**3,931,203**

**3-PYRIDYLMETHYL ARYL UREA RODENTICIDES**

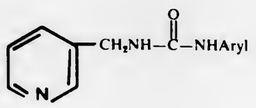
**Edward E. Kilbourn; David L. Peardon, both of Chalfont, and J. Edgar Ware, Quakertown, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.**

**Continuation-in-part of Ser. No. 342,334, March 19, 1973, abandoned. This application Apr. 11, 1974, Ser. No. 460,264**

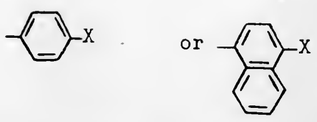
**Int. Cl.² C07D** *213/75*

**U.S. Cl. 260—294.9** **8 Claims**

**1.** A compound, or an acid addition salt thereof, having the formula



wherein Aryl is



wherein X is selected from the group consisting of $-NO_2$, $-CN$, $CF_3$, $-C(O)R_1$ wherein $R_1$ is alkyl of 1 to 4 carbon atoms.

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**3,931,204**

**THIENO[3,4-D]PYRIMIDINES**

**Paul Croisier, Waterloo, Belgium, assignor to U.C.B. Societe Anonyme, Belgium**

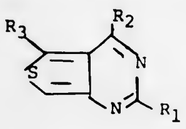
**Division of Ser. No. 162,255, July 13, 1971, Pat. No. 3,850,919. This application Jan. 17, 1974, Ser. No. 434,116**

**Claims priority, application United Kingdom, July 14, 1970, 34144/70**

**Int. Cl.² C07D** *239/00*

**U.S. Cl. 260—256.5 R** **7 Claims**

**1.** A compound selected from the group consisting of
a. thieno[3,4-d]pyrimidines of the formula:



wherein $R_1$ is a member selected from the group consisting of hydrogen, chloro, alkyl, alkoxy, alkylamino, and phenylamino, all the alkyl groups having 1 to 7 carbon atoms, the alkoxy group having 1 to 5 carbon atoms.

$R_2$ is a member selected from the group consisting of alkylamino, hydroxyalkylamino, cycloalkylamino, phenylamino, dialkylamino, di(hydroxyalkyl)-amino, all of the alkyl groups having 1 to 7 carbon atoms and the cycloalkyl group having 3 to 6 carbon atoms, and $R_3$ is a member selected from the group consisting of hydrogen and methyl and

b. the addition salts thereof with pharmaceutically acceptable acids.

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**3,931,205**

**SUBSTITUTED ALKANOIC ACIDS AND DERIVATIVES**

**Michio Nakanishi; Takanori Oe, both of Oita, and Mineo Tsuruda, Fukuoka, all of Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan**

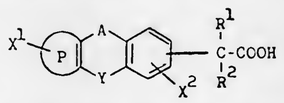
**Filed July 18, 1973, Ser. No. 380,415**

**Claims priority, application Japan, July 21, 1972, 47-73679; July 21, 1972, 47-73680; Jan. 13, 1973, 48-6759; Jan. 13, 1973, 48-6760; Apr. 3, 1973, 48-38418**

**Int. Cl.² C07D** *471/00*

**U.S. Cl. 260—295 T** **18 Claims**

**1.** A compound selected from the group consisting of



wherein each of $X^1$ and $X^2$ is a hydrogen atom, a halogen atom, an alkyl group having 1 to 4 carbon atoms or an alkoxy group having 1 to 4 carbon atoms; each of $R^1$ and $R^2$ is a hydrogen atom or an alkyl group having 1 to 4 carbon atoms; A is carbonyl, methylene or alkylidene having 2 to 4 carbon atoms; Y is —O—; and ring P represents a pyridine or pyridine N-oxide ring; and a pharmaceutically acceptable salt thereof.



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**3,931,206**

**PROSTANOIC ACID DERIVATIVES**

**Jean Bowler; Keith Blakeney Mallion, and Dora Nellie Richardson, all of Macclesfield, England, assignors to Imperial Chemical Industries Limited, London, England**

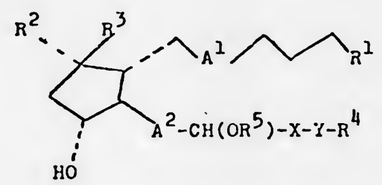
**Filed Sept. 14, 1973, Ser. No. 397,327**

**Claims priority, application United Kingdom, Sept. 27, 1972, 44652/72**

**Int. Cl.² C07D** *213/44*

**U.S. Cl. 260—295 R** **6 Claims**

**1.** A prostanoic acid derivative of the formula:



wherein $R^1$ is carboxy, hydroxymethyl or alkoxycarbonyl of 2 to 11 carbon atoms, $A^1$ is ethylene or vinylene, either $R^2$ is hydroxy and $R^3$ is hydrogen or $R^2$ and $R^3$ together are oxo, $A^2$ is ethylene or trans-vinylene, $R^5$ is hydrogen, either X is alkylene of 1 to 3 carbon atoms bearing 0, 1 or 2 alkyl substituents of 1 to 3 carbon atoms and Y is oxygen, sulphur or a direct bond, or X and Y are both a direct bond, $R^4$ is a pyridyl radical bearing 0 to 4 substituents selected from the group consisting of halogen, alkyl of 1 to 5 carbon atoms and alkoxy of 1 to 5 carbon atoms, and which compound bears 0 to 1 alkyl of 1 to 4 carbon atoms on carbon atom 2, 3 or 4 thereof, and for those compounds wherein $R^1$ is carboxy, a pharmaceutically or veterinarily acceptable base addition salt thereof.

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**3,931,207**

**TETRAMIC ACID ANALOGS OF PULVINIC ACID**

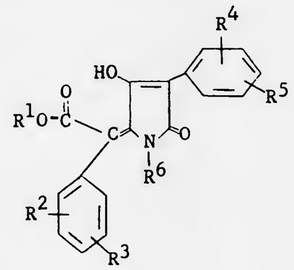
**Joseph Weinstock, Phoenixville, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.**

**Filed Dec. 14, 1973, Ser. No. 424,581**

**Int. Cl.² C07D** *401/04*

**U.S. Cl. 260—295.5 R** **7 Claims**

**1.** A compound of the formula:



in which:
$R^1$ is lower alkyl of from one to four carbon atoms;
$R^2$, $R^3$, $R^4$ and $R^5$ are each hydrogen, lower alkyl of from one to four carbon atoms, lower alkoxy of from one to four carbon atoms, phenyl, phenoxy, halogen, trifluoromethyl, hydroxy or taken together in adjacent positions, methylenedioxy; and
$R^6$ is hydrogen, phenyl, phenyl substituted with methyl, halogen or trifluoromethyl or a heterocycle selected from the group consisting of 2-thiazolyl, 2-pyridyl, 3-pyridyl, 3-pyridazinyl, 2-pyrazinyl, 2-oxazolyl, 2-imidazolyl, 3-pyrazolyl and 5-isothiazolyl, said heterocycle being unsubstituted or substituted with methyl, halogen or trifluoromethyl.

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**3,931,208**

**PROCESS FOR THE PRODUCTION OF THIAZOLINES-(3)**

**Heribert Offermanns, Grossauheim; Friedrich Asinger, Rott; Wolf-Dieter Pfeifer, Grossauheim; Paul Scherberich, Neu Isenburg, and Gerd Schreyer, Grossauheim, all of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany**

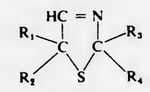
**Filed Nov. 5, 1973, Ser. No. 413,048**

**Claims priority, application Germany, Nov. 9, 1972, 2254701**

**Int. Cl.² C07D** *277/10*

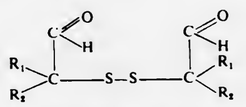
**U.S. Cl. 260—306.7 R** **22 Claims**

**1.** A process for the production of a thiazoline-(3) compound of the formula



I

wherein $R_1$ and $R_2$ individually are lower alkyl or ar- lower alkyl groups or $R_1$ and $R_2$ together are an alkylene group which joins with the adjacent carbon atom to form a closed carbocyclic ring, $R_3$ is hydrogen, lower alkyl or ar- lower alkyl, $R_4$ is lower alkyl or ar- lower alkyl or $R_3$ and $R_4$ together are an alkylene group which joins with the adjacent carbon atom to form a closed carbocyclic ring comprising reacting (1) a 2,2'-dioxodisulfide of the formula



II

with (2) an oxo compound of the formula



III.

(3) hydrogen sulfide and (4) ammonia in the presence of (5) an amine and (6) an ammonium salt of an acid.

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**3,931,209**

**2-ALKYL-4-THIADIAZOLYL-1,2,4-TRIAZOLIDIN-3-ONES**

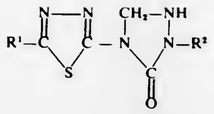
**John Krenzer, Oak Park, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.**

**Filed Mar. 28, 1974, Ser. No. 455,697**

**Int. Cl.² C07D** *513/02*

**U.S. Cl. 260—306.8 D** **8 Claims**

**1.** A compound of the formula



wherein $R^1$ is selected from the group consisting of lower alkyl, lower alkenyl, lower chloroalkyl, trifluoromethyl, lower alkoxy, lower alkylthio, lower alkylsulfonyl, lower alkylsulfinyl and cycloalkyl of from 3 to 7 carbon atoms optionally substituted with from 1 to 2 substituents selected from the group consisting of lower alkyl, lower alkoxy, chlorine, bromine and fluorine; and $R^2$ is lower alkyl.

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**3,931,210**

## PRODUCTION OF P-AMINOBENZOIC ACID

**Hans-Georg Zengel, Kleinwallstadt, and Manfred Bergfeld, Erlenbach, both of Germany, assignors to Akzo N.V., Arnhem, Netherlands**

**Filed Mar. 13, 1974, Ser. No. 450,673**

**Claims priority, application Germany, Mar. 19, 1973, 2313580**

**Int. Cl.² C07C *101/56***

**U.S. Cl. 260—518 R** **16 Claims**

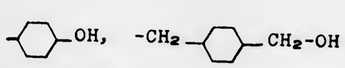
1. A process for the production of p-aminobenzoic acid which comprises:

reacting ammonia, which contains not more than 15% by weight of water, in the liquid phase at temperatures of 50° to 132°C. and at an ammonia pressure of 20 to 115 atmospheres in a first stage with at least one monoester reactant of the formula



wherein

R is methyl, ethyl, propyl, isopropyl, butyl, isobutyl, phenyl,



or $-CH_2CH_2-OH$, and

Y is hydrogen, sodium, lithium, magnesium, calcium or ammonium, with the proviso that where Y is sodium, the reaction mixture also contains at least a catalytic amount of the monomethyl terephthalate or monoglycol terephthalate;

substantially removing ammonia from the resulting terephthalic acid monoamide intermediate product including any ammonia present in the form of ammonium ions; and subjecting the ammonia free monoamide product to the Hofmann reaction in a second stage to obtain the p-aminobenzoic acid product.

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**3,931,211**

## OXAZOLE COMPOUNDS, PROCESS FOR THEIR MANUFACTURE AND USE THEREOF

**Kurt Weber, Basel, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland**

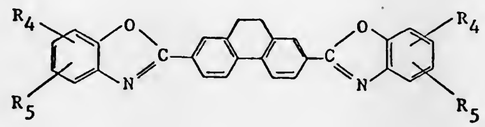
**Filed Sept. 6, 1973, Ser. No. 394,940**

**Claims priority, application Switzerland, Sept. 15, 1972, 13547/72**

**Int. Cl.² C07D *263/56***

**U.S. Cl. 260—307 D** **5 Claims**

1. A compound of the formula



wherein $R_4$ represents alkyl or alkoxy with 1 to 4 carbon atoms, phenyl or phenoxy, $R_5$ represents hydrogen or alkyl with 1 to 4 carbon atoms and $R_4$ and $R_5$ in ortho-position to each other represent tetramethylene, or trimethylene.

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**3,931,212**

## METHOD FOR TREATING CARDIOVASCULAR CIRCULATORY INSUFFICIENCIES AND HYPOTONIA WITH 2-HYDROXY-PHENYL-1-OXA-4-AZASPIROALKANE DERIVATIVES

**Gerhard Satzinger, Denzlingen, and Manfred Herrmann, St. Peter, both of Germany, assignors to Warner-Lambert Company, Morris Plains, N.J.**

**Filed June 28, 1974, Ser. No. 484,376**

**Claims priority, application Germany, July 19, 1973, 2336746**

**Int. Cl.² C07D *263/06***

**U.S. Cl. 260—307 FA** **4 Claims**

1. The compound 2-(3'-Hydroxyphenyl)-1-Oxa-4-Azaspiro [4,6] Undecane.

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**3,931,213**

## 3-CHLORO-2-OXAZOLIDINONES

**James J. Kaminski, and Nicolae S. Bodor, both of Lawrence, Kans., assignors to Interx Research Corporation, Lawrence, Kans.**

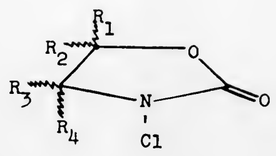
**Filed Dec. 18, 1974, Ser. No. 533,945**

**Int. Cl.² C07D *263/22***

**U.S. Cl. 260—307 C** **7 Claims**

1. A compound having the formula:





where either $R_1$ and $R_2$ are the same or different non-tertiary lower-alkyl, and $R_3$ and $R_4$ are each hydrogen or $R_1$ and $R_2$ are each hydrogen, and $R_3$ and $R_4$ are the same or different non-tertiary lower-alkyl.

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**3,931,214**

## 2-AMINO-2-OXAZOLINES AND PROCESS FOR PREPARING THEM

**Klaus-Dieter Kampe, Neuenhain, Taunus; Milos Babej, Frankfurt am Main, and Joachim Kaiser, Bad Soden, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany**

**Filed Oct. 31, 1973, Ser. No. 411,240**

**Claims priority, application Germany, Nov. 2, 1972, 2253554**

**Int. Cl.² C07D *263/28***

**U.S. Cl. 260—307 F** **3 Claims**

1. 4,4-Dimethyl-2-amino-2-oxazoline.

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**3,931,215**

## BENZOFURAN DERIVATIVES

**Anton Horn, Kelkheim, Taunus; Erich Schinzel, Hofheim, Taunus; Wilfried Sahm, Kelkheim, Taunus, and Gunter Rosch, Altenhain, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany**

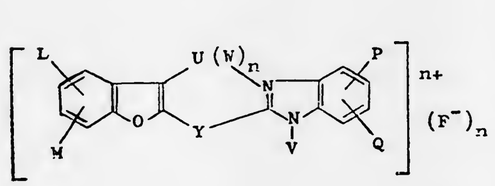
**Filed Jan. 21, 1974, Ser. No. 435,276**

**Claims priority, application Switzerland, Jan. 26, 1973, 1172/73**

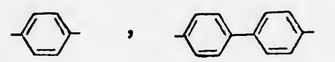
**Int. Cl.² C07D *235/18***

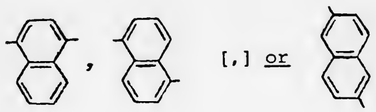
**U.S. Cl. 260—309.2** **10 Claims**

1. A compound of the formula



in which L, M, P and Q are hydrogen, halogen, lower alkyl, lower alkoxy or phenyl of L and M together or P and Q together are a cyclohexenyl or phenyl ring annellated at the positions 4 and 5; U is hydrogen, lower alkyl or phenyl; V is hydrogen, lower alkyl, benzyl, phenyl or phenyl substituted by chlorine, methyl or methoxy; W is lower alkyl, cyanomethyl, carbamylmethyl, carboxymethyl, lower carboalkoxymethyl, benzyl or benzyl substituted in the phenyl moiety by chlorine, methyl of methoxy; Y is a group of the formula





*n* is zero or 1 and F is a colorless anion.

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**3,931,216**

## PROCESS FOR THE MANUFACTURE OF 2-ARYLAMINO-2-IMIDAZOLINE DERIVATIVES AND THEIR SALTS

**Rudolf Franzmair, Linz-Ebelsberg, Austria, assignor to Boehringer Ingelheim GmbH, Germany**

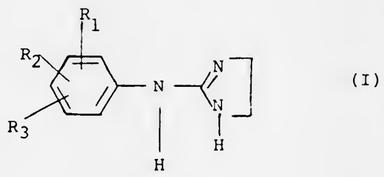
**Filed Mar. 29, 1974, Ser. No. 456,200**

**Claims priority, application Germany, Apr. 2, 1973, 2316377**

**Int. Cl.² C07D *49/34***

**U.S. Cl. 260—309.6** **8 Claims**

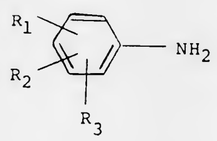
1. A process for the preparation of 2-arylamino-2-imidazoline derivatives selected from the group consisting of compounds of the formula



(I)

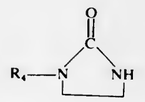
in which each of $R_1$, $R_2$ and $R_3$, which may be the same or different, is selected from the group consisting of hydrogen,

chlorine, bromine, alkyl with 1–4 C-atoms, alkoxy with 1–4 C-atoms and nitro, with the proviso that in each case at least one of $R_1$, $R_2$ and $R_3$ is not a hydrogen atom, or acid addition salt thereof, which comprises reacting aniline derivatives of the formula



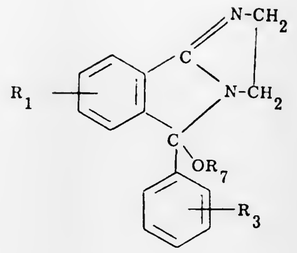
(II)

in which $R_1$, $R_2$ and $R_3$ are as defined above, with 1-acrylimidazolidin-2-ones of the formula



(III)

in which $R_4$ is selected from the group consisting of the residues of aliphatic-cycloaliphatic- and araliphatic monocarboxylic acids, alkyl-carbonic-, aralkylcarbonic and aryl-carbonic acids, in the presence of at least 2 mols of phosphorus oxychloride per mol of the aniline derivative of the formula (II) at a temperature from room temperature to at most the boiling point of phosphorus oxychloride, neutralizing the resulting phosphorus containing intermediate product to give an acyl derivative of the compounds of formula I, whereby acyl is $R_4$ and splitting off the acyl group in said acyl derivative by treating it with splitting agent selected from the group consisting of lower aliphatic monoalcohols, inorganic acids, organic acids, alkaline sodium salts, alkaline potassium salts, ammonia, amines and alkalialcoholates for more than one hour and recovering said compound of formula I directly as the base or acidifying said base and recovering it as an acid addition salt.



wherein $R_1$ and $R_3$ are each independently selected from the group consisting of hydrogen and halogen; and $R_7$ is lower alkyl

or a pharmaceutically acceptable acid addition salt thereof.

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**3,931,217**

**2,3-DIHYDRO-5-ALKOXY-5-PHENYL-5H-IMIDAZO[2,1-]ISOINDOLES**

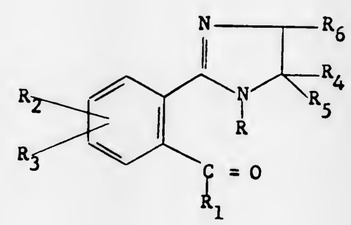
**Werner Metlesics, Clifton, and Leo Henryk Sternbach, Upper Montclair, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.**

**Division of Ser. No. 639,315, May 18, 1967, which is a continuation-in-part of Ser. No. 626,965, March 30, 1967. This application May 6, 1974, Ser. No. 467,428**

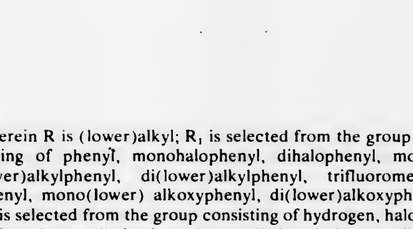
**Int. Cl.² C07D** *235/02*

**U.S. Cl. 260—309.6** **2 Claims**

1. A compound of the formula

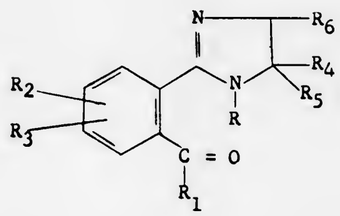


wherein R is (lower)alkyl; $R_1$ is selected from the group consisting of phenyl, monohalophenyl, dihalophenyl, mono(-lower)alkylphenyl, di(lower)-alkylphenyl, trifluoromethylphenyl, mono(lower)alkoxyphenyl, di(lower)alkoxyphenyl, thienyl, pyridyl, furyl, and tetrahydro-2-naphthyl; $R_2$ is selected from the group consisting of hydrogen, halogen, amino, (lower)alkylamino, (lower)alkyl and (lower) alkoxy; $R_3$ is hydrogen when $R_2$ and $R_3$ are dissimilar and when $R_2$ and $R_3$ are the same they are both selected from the group consisting of hydrogen, halogen, (lower)alkyl and (lower)alkoxy; $R_4$, $R_5$ are each hydrogen or lower alkyl and attached to the same carbon atom; and $R_6$ is hydrogen or (lower)alkyl which comprises heating a compound of the formula



wherein R, $R_1$, $R_2$, $R_3$, $R_4$, $R_5$ and $R_6$ are as defined above and $R_7$ is selected from the group consisting of lower alkylsulfonyl, phenylsulfonyl, monohalophenysulfonyl, dihalophenylsulfonyl, mono(lower)alkylphenylsulfonyl, di(lower)alkylphenylsulfonyl and lower alkoxyphenylsulfonyl, on a steam bath with sulfuric acid of from about 90° to about 100° concentration.

2. Compounds of the formula



wherein R is (lower)alkyl; $R_1$ is selected from the group consisting of phenyl, monohalophenyl, dihalophenyl, mono(-lower)alkylphenyl, di(lower)alkylphenyl, trifluoromethylphenyl, mono(lower) alkoxyphenyl, di(lower)alkoxyphenyl; $R_2$ is selected from the group consisting of hydrogen, halogen, amino (lower)alkylamino, (lower)alkyl and (lower) alkoxy; $R_3$ is hydrogen when $R_2$ and $R_3$ are dissimilar and when $R_2$ and $R_3$ are the same they are both selected from the group consisting of hydrogen, halogen, (lower) alkyl and (lower)alkoxy; $R_4$ and $R_5$ are each hydrogen or lower alkyl and attached to the same carbon atom; and $R_6$ is hydrogen or (lower)alkyl, or the pharmaceutically acceptable acid addition salt of such a compound.

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**3,931,218**

**2-(N-ALKYL-2-IMIDAZOLIN-2-YL)BENZOPHENONES AND PROCESS FOR THEIR PREPARATION**

**Theodore S. Sulkowski, Wayne, and Albert A. Mascitti, Norristown, both of Pa., assignors to American Home Products Corporation, New York, N.Y.**

**Continuation-in-part of Ser. No. 332,535, Feb. 14, 1973, abandoned. This application Aug. 7, 1974, Ser. No. 495,262**

**Int. Cl.² C07D** *49/34*

**U.S. Cl. 260—309.6** **25 Claims**

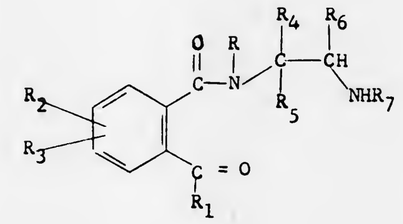
1. A process for the preparation of compounds of the formula



wherein R is (lower)alkyl; $R_1$ is selected from the group consisting of phenyl, monohalophenyl, dihalophenyl, mono(-lower)alkylphenyl, di(lower)-alkylphenyl, trifluoromethylphenyl, mono(lower)alkoxyphenyl, di(lower)alkoxyphenyl, thienyl, pyridyl, furyl, and tetrahydro-2-naphthyl; $R_2$ is selected from the group consisting of hydrogen, halogen, amino, (lower)alkylamino, (lower)alkyl and (lower) alkoxy; $R_3$ is hydrogen when $R_2$ and $R_3$ are dissimilar and when $R_2$ and $R_3$



are the same they are both selected from the group consisting of hydrogen, halogen, (lower)alkyl and (lower)alkoxy; $R_4$ and $R_5$ are each hydrogen or lower alkyl and attached to the same carbon atom; and $R_6$ is hydrogen or (lower)alkyl which comprises heating a compound of the formula



wherein R, $R_1$, $R_2$, $R_3$, $R_4$, $R_5$ and $R_6$ are as defined above and $R_7$ is selected from the group consisting of lower alkylsulfonyl, phenylsulfonyl, monohalophenysulfonyl, dihalophenylsulfonyl, mono(lower)alkylphenylsulfonyl, di(lower)alkylphenylsulfonyl and lower alkoxyphenylsulfonyl, on a steam bath with sulfuric acid of from about 90° to about 100° concentration.

2. Compounds of the formula



wherein R is (lower)alkyl; $R_1$ is selected from the group consisting of phenyl, monohalophenyl, dihalophenyl, mono(-lower)alkylphenyl, di(lower)alkylphenyl, trifluoromethylphenyl, mono(lower) alkoxyphenyl, di(lower)alkoxyphenyl; $R_2$ is selected from the group consisting of hydrogen, halogen, amino (lower)alkylamino, (lower)alkyl and (lower) alkoxy; $R_3$ is hydrogen when $R_2$ and $R_3$ are dissimilar and when $R_2$ and $R_3$ are the same they are both selected from the group consisting of hydrogen, halogen, (lower) alkyl and (lower)alkoxy; $R_4$ and $R_5$ are each hydrogen or lower alkyl and attached to the same carbon atom; and $R_6$ is hydrogen or (lower)alkyl, or the pharmaceutically acceptable acid addition salt of such a compound.

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**3,931,219**

**PROCESS FOR PREPARING HEXAHYDROTHIENO[3,4-]IMIDAZOLE-2,4-DIONES**

**Yasuhiko Aoki, Toyonaka; Hiroyuki Suzuki; Hisao Akiyama, both of Nishinomiya, and Shigeru Okano, Kawanishi, all of Japan, assignors to Sumitomo Chemical Company, Limited, Japan**

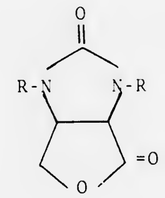
**Filed Sept. 27, 1974, Ser. No. 509,904**

**Claims priority, application Japan, Sept. 27, 1973, 48-109021**

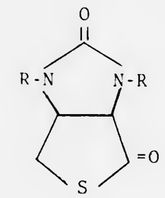
**Int. Cl.² C07D** *49/34*

**U.S. Cl. 260—309.7** **9 Claims**

1. A process for the conversion of a hexahydrofuro[3,4-d]imidazole-2,4-dione compound having the formula:



wherein R is alkyl, aryl or aralkyl into the corresponding hexahydrothieno[3,4-d]imidazole-2,4-dione compound having the formula:



wherein R is as defined above which comprises reacting the starting hexahydrofuro[3,4-d]imidazole-2,4-dione compound with a dithiocarbamate having the formula R'NHCSSM wherein R' is alkyl, cycloalkyl or aryl and M is an alkali metal.

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**3,931,220**

**β-PHENYL-β-AZOLYL-NITROETHANES**

**Uwe Petersen, Cologne; Siegfried Petersen; Hans Scheinpflug, both of Leverkusen, and Brigitte Hamburger, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

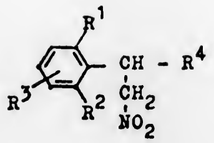
**Filed Nov. 30, 1973, Ser. No. 420,496**

**Claims priority, application Germany, Dec. 12, 1972, 2260704**

**Int. Cl.² C07D** *231/12*

**U.S. Cl. 260—310 R** **4 Claims**

1. A β-phenyl-β-azolylnitroethane of the formula



in which

$R^1$, $R^2$ and $R^3$ each individually is hydrogen; methyl or ethyl optionally substituted by fluorine or chlorine; halogen; nitrile; thiocyano; nitro; or alkoxycarbonyl with up to 6 carbon atoms in the alkoxy radical, and

$R^4$ is a pyrazolyl-1, a benzopyrazolyl-1 or a tetrahydrobenzylpyrazolyl-1 radical optionally substituted on a carbon atom by halogen, methyl, ethyl, nitro or trifluoromethyl.

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**3,931,221**

**PROCESS FOR PREPARING 3-ANILINO-PYRAZOLONES-(5)**

**Ernst Meier; Hans Glockner, both of Munich; Karl Küffner, Unterhaching; Immo Boie, and Fritz Nittel, both of Cologne, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen-Bayerwerk, Germany**

**Filed Dec. 27, 1973, Ser. No. 428,670**

**Claims priority, application Germany, Jan. 4, 1973, 2300221**

**Int. Cl.² C07D** *231/20*

**U.S. Cl. 260—310 A** **5 Claims**

1. In the process of preparing a 3-anilino-pyrazolone-(5) magenta color coupler by condensing a hydrazine with a hydrohalide of a beta-anilino-acrylic acid ester having in the beta position a second group replaceable by the hydrazine during a pyrazolone-ring-forming cyclization, the improvement according to which the replaceable group is $NH_2$.

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**3,931,222**

**TETRAHYDRO-CARBAZOLE DERIVATES**

**Peter E. Cross, Canterbury; Roger P. Dickinson, Worth, near Deal, and John E. G. Kemp, Canterbury, all of England, assignors to Pfizer Inc., New York, N.Y.**

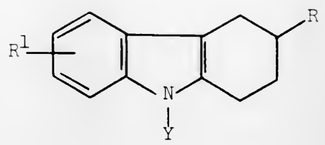
**Filed May 29, 1974, Ser. No. 474,151**

**Claims priority, application United Kingdom, June 2, 1973, 26414/73**

**Int. Cl.² C07D** *209/86*

**U.S. Cl. 260—315** **7 Claims**

1. A compound of the formula:



or an N-oxide or a pharmaceutically-acceptable acid addition salt thereof wherein R is alkyl of from 3 to 5 carbon atoms, $R^1$ is hydrogen, halogen, lower alkyl, lower alkoxy or hydroxy; and Y is aminoalkyl of the formula —Alk—$NR^2R^3$ in which $R^2$ and $R^3$ taken separately are each lower alkyl and $R^2$ and $R^3$ taken together with the nitrogen atom to which they are attached form a pyrrolidino, piperidino, perhydroazepino, morpholino, thiomorpholino or 1,1-dioxo-perhydro-1,4-thiazino group and 'Alk' is a divalent alkyl group containing from 2 to 4 carbon atoms; or Y is an amino-cyclic group of the formula $-C_nH_{2n}-CH(Z)$, in which $n$ is 0 to 3 and Z is a divalent group which completes a pyrrolidine, piperidine or perhydroazepine ring, the nitrogen atom in said ring being separated from the nitrogen atom to which the aminocyclic group is attached by a chain of from 2 to 4 carbon atoms.

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**3,931,223**

**3-(DIMETHYLAMINO)-1,2,3,4,8,9-HEXAHYDRO-1H[1]BENZAZEPINO[1,2,3-K,J]CARBAZOLE**

**Aram Mooradian, Schodack, N.Y., assignor to Sterling Drug Inc., New York, N.Y.**

**Filed June 3, 1974, Ser. No. 475,446**

**Int. Cl.² C07D** *209/88*

**U.S. Cl. 260—315** **3 Claims**

1. 3-(Dimethylamino)-1,2,3,4,8,9-hexahydro-1H[1]benzazepino[1,2,3-k,j]carbazole or a medicinally acceptable acid-addition salt thereof.

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**3,931,224**

**AROMATIC IMIDODICARBOXYLIC ACID DIALLYL ESTERS, PREPOLYMERS THEREOF, CURED RESINS THEREOF, AND PROCESSES FOR PRODUCING THESE**

**Toshihiro Santa; Yuzo Aito; Katsuhisa Watanabe, all of Hino; Kiyokazu Tsunawaki, Hachioji; Yuji Mitani, Hino, and Kiyoshi Nawata, Hachioji, all of Japan, assignors to Teijin Limited, Osaka, Japan**

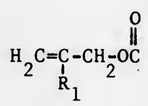
**Filed Sept. 4, 1973, Ser. No. 393,839**

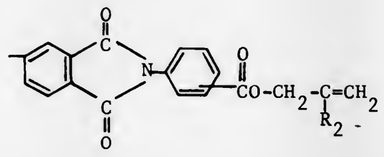
**Claims priority, application Japan, Sept. 7, 1972, 47-89104; Sept. 8, 1972, 47-89536; Dec. 22, 1972, 47-129127; Dec. 22, 1972, 47-129128**

**Int. Cl.² C07D** *209/48*

**U.S. Cl. 260—326 A** **3 Claims**

1. An aromatic imidodicarboxylic acid diallyl ester of the formula







wherein $R_1$ and $R_2$ are the same or different and represent a hydrogen atom or methyl group.

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**3,931,225**

**PROCESS FOR PREPARING O-NITROBENZYLKETONES**

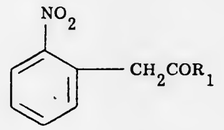
**Rodney Ian Fryer, North Caldwell, and Edward Ernest Garcia, West Caldwell, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.**

**Filed Jan. 21, 1974, Ser. No. 435,050**

**Int. Cl.² C07D** *209/48*; **C07C** *49/76*

**U.S. Cl. 260—326 N** **3 Claims**

1. A process for preparing o-nitrobenzylketone of the formula



wherein $R_1$ is lower alkyl, halo-lower alkyl, phenyl, halogen-substituted phenyl, lower alkyl-substituted phenyl, lower alkoxy-substituted phenyl or phthalimido-lower alkyl,

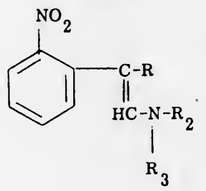
which comprises the steps of:

a. reacting a trans-$\beta$-substituted amino-2-nitrostyrene of the formula



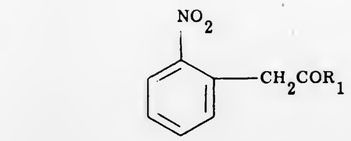
wherein $R_2$ and $R_3$, independently, are lower alkyl, or when taken together are lower alkylene,

with an acyl halide selected from the group consisting of lower alkanoyl halide, halo-lower alkanoyl halide, phthalimido-lower alkanoyl halide, benzoyl halide, halogen-substituted benzoyl halide, lower alkyl-substituted benzoyl halide and lower alkoxy-substituted benzoyl halide, to yield the corresponding compound of the formula



wherein R is lower alkanoyl, halo-lower alkanoyl, phthalimido-lower alkanoyl, benzoyl, halogen-substituted benzoyl, lower alkyl-substituted benzoyl or lower alkoxy-substituted benzoyl, and $R_2$ and $R_3$, independently, are lower alkyl, or when taken together, are lower alkylene, at a temperature in the range of from 0° to the reflux temperature of the reaction mixture and subsequently,

b. hydrolyzing the product of step (a) to yield a compound of the formula



wherein $R_1$ is lower alkyl, halo-lower alkyl, phenyl, halogen-substituted phenyl, lower alkyl-substituted phenyl, lower alkoxy-substituted phenyl or phthalimido-lower alkyl.

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**3,931,226**

**PROCESS FOR THE PREPARATION OF DIAZEPINO[1,2-A]INDOLES**

**Alan Chapman White, Windsor, England, and Stanley Charles Bell, Penn Valley, Pa., assignors to John Wyeth & Brother Limited, Maidenhead, England**

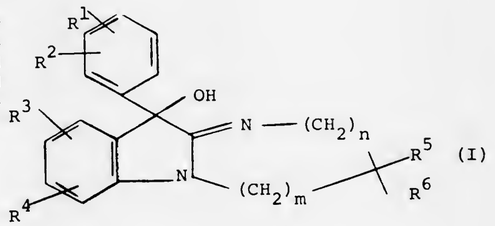
**Filed Apr. 8, 1974, Ser. No. 458,611**

**Claims priority, application United Kingdom, Apr. 12, 1973, 17551/73**

**Int. Cl.² C07D** *487/04*

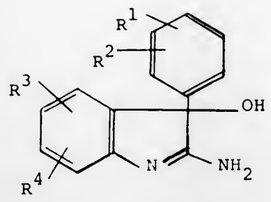
**U.S. Cl. 260—326.5 B** **6 Claims**

1. A process for the preparation of an indole derivative selected from the group consisting of a compound of the formula (I)



(I)

and an acid addition salt thereof, wherein $R^1$, $R^2$, $R^3$ and $R^4$ are selected independently from the group consisting of hydrogen, hydroxyl, lower alkyl containing 1 to 4 carbon atoms, lower alkoxy containing 1 to 4 carbon atoms, trifluoromethyl, and halogen, $R^5$ and $R^6$ are selected independently from the group consisting of hydrogen and lower alkyl containing 1 to 4 carbon atoms and $n$ and $m$ are selected from the group consisting of 1 and 2 such that the sum of $m + n$ is 3, which process comprises condensing an indole derivative of formula (II)



(II)

wherein $R^1$, $R^2$, $R^3$ and $R^4$ have the meanings given above with a dihaloalkane of formula (III)



(III)

where $R^5$, $R^6$, *m* and *n* have the meanings given above and Hal and Hal′ are each chlorine or bromine.

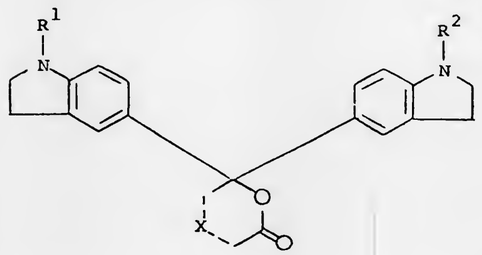
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## 3,931,227
## 3,3-DI-(INDOLIN-5-YL)-PHTHALIDES AND NAPHTHALIDES

**Alan L. Borror, Lexington, and Paulina P. Garcia, Arlington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.**

**Continuation-in-part of Ser. No. 241,807, April 6, 1972, abandoned. This application Dec. 26, 1973, Ser. No. 427,580**
**Int. Cl.² C07D** *209/08, 209/18*
**U.S. Cl. 260—326.11 R** **8 Claims**

**1.** A compound of the formula:



wherein $R^1$ and $R^2$, the same, are hydrogen or a group which is unsubstituted and which contains up to 20 carbon atoms selected from alkyl; cycloalkyl; aryl selected from phenyl and naphthyl; alkaryl wherein the aryl portion of said alkaryl is phenyl; and aralkyl wherein the aryl portion of said aralkyl is phenyl; and X represents the atoms necessary to complete a ring-closing moiety selected from phthalide, unsubstituted or substituted in the 7-position with —COOR wherein R is hydrogen or alkyl containing 1 to 4 carbon atoms and naphthalide, unsubstituted.

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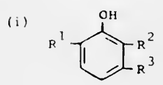
## 3,931,228
## PROCESS FOR PREPARING PHTHALIDE AND NAPHTHALIDE INDICATOR DYES

**Alan L. Borror, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.**

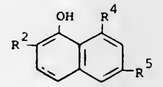
**Continuation-in-part of Ser. No. 108,662, Jan. 21, 1971, abandoned. This application Feb. 28, 1974, Ser. No. 446,716**
**Int. Cl.² C07D** *209/10, 209/12, 209/14*
**U.S. Cl. 260—326.12 R** **31 Claims**

**1.** A process which comprises the steps of:

1. reacting in substantially equimolar proportions in an inert organic liquid solvent at a temperature between about 20°C. and 120°C. in the presence of an acid catalyst selected from toluene-p-sulfonic acid, sulfuric acid, trifluoroacetic acid and trichloroacetic acid, (a) a compound selected from

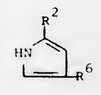


(i)



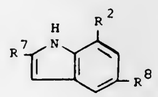
(ii)

and

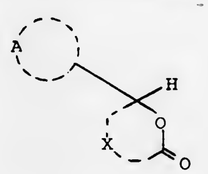


(iii)

and (iv)



wherein $R^1$ is selected from hydrogen, alkoxy containing 1 to 3 carbon atoms and alkyl containing 1 to 3 carbon atoms; $R^2$ is selected from hydrogen, hydroxy, carboxy, sulfonamido, sulfamoyl, o-hydroxyphenyl, bis-trifluoromethylcarbinol, methoxy, alkyl containing 1 to 16 carbon atoms; $R^3$ is selected from hydrogen, alkoxy containing 1 to 18 carbon atoms and alkyl containing 1 to 3 carbon atoms; $R^4$ is selected from hydrogen, hydroxy and carboxy; $R^5$ is selected from hydrogen and alkoxy containing 1 to 18 carbon atoms; $R^6$ is selected from hydrogen, phenyl, alkyl containing 1 to 3 carbon atoms, and alkoxy containing 1 to 18 carbon atoms; $R^7$ is selected from hydrogen, phenyl, o-hydroxyphenyl and alkyl containing 1 to 3 carbon atoms and $R^8$ is selected from hydrogen, cyano, carboxy, halo, trifluoromethyl, sulfonyl and alkoxy containing 1 to 18 carbon atoms with (b) an aldehydic acid selected from phthalaldehydic acid, unsubstituted or substituted in one of the 4- or 7-positions with carboxy and naphthalaldehydic acid, unsubstituted, to form the corresponding adduct having the formula:



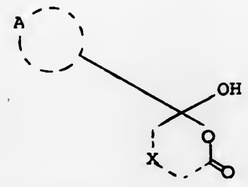
wherein A is a radical selected from p-hydroxyphenyl, p-hydroxynaphthyl, pyrr-2-yl and indol-3-yl corresponding to said (i), (ii) and (iii) and (iv), respectively, and X represents the carbon atoms necessary to complete a ring-closing moiety selected from phthalide, unsubstituted or substituted in the 4- or 7-position with carboxy, and naphthalide, unsubstituted; and

2. reacting said adduct with a quinone selected from chloranil, o-chloranil and 2,3-dichloro-5,6-dicyano-1,4-benzoquinone in a molar ratio of about 1.1 to 1.5 moles of quinone per 1.0 mole of adduct in an inert organic liquid



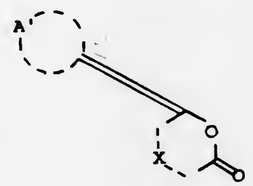
solvent at a temperature between about 20°C. and 200°C. to form the corresponding oxidation product selected from

(I)

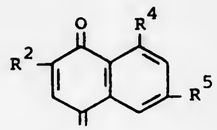


wherein A and X have the same meaning given above, and

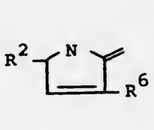
(II)



wherein A′ is selected from



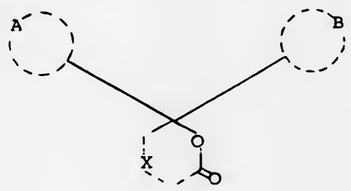
and



wherein $R^1$, $R^2$, $R^3$, $R^4$, $R^5$, $R^6$, $R^7$ and $R^8$ and X have the same meaning given above and mixtures of (I) and (II), said (I) being produced under anhydrous conditions and said (II) and said mixtures of (i) and (II) being produced in the presence of moisture.

**2.** A process as defined in claim **1** which includes the additional step of:

3. reacting said oxidation product with a compound (c) selected from (i), (ii), (iii) and (iv) as defined in (a) above in substantially equimolar proportions in an inert organic liquid solvent at a temperature between about 20°C. and 120°C. in the presence of an acid catalyst selected from toluene-p-sulfonic acid, sulfuric acid, trifluoroacetic acid, trichloroacetic acid and a Lewis acid to form the corresponding 3,3-disubstituted phthalide or naphthalide,



wherein A and B each is a radical selected from p-hydroxyphenyl, p-hydroxynaphthyl, pyrr-2-yl, and indol-3-yl corresponding to said (i), (ii), (iii) and (iv), respectively, and X represents the carbon atoms necessary to complete a ring-closing moiety selected from phthalide, unsubstituted or substituted in the 4- or 7-position with carboxy and naphthalide, unsubstituted.

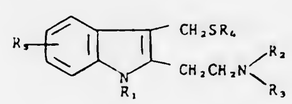
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## 3,931,229
## 3-THIOMETHYL-2[2-(DIALKYLAMINO)ETHYL]INDOLES

**Harold Zinnes, Rockaway, and Martin L. Schwartz, Gillette, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.**

**Continuation-in-part of Ser. No. 391,171, Aug. 23, 1973, abandoned. This application Apr. 8, 1974, Ser. No. 458,916**
**Int. Cl.² C07D** *209/04*
**U.S. Cl. 260—326.12 R** **22 Claims**

**1.** A compound of the formula



wherein $R_1$, $R_2$ and $R_3$ are hydrogen or alkyl having 1 to 7 carbon atoms, $R_4$ is alkyl having 1 to 7 carbon atoms, aryl having 6 to 10 carbon atoms, aralkyl in which aryl and alkyl are as defined, or a 5 or 6-membered heterocyclic ring having one or two atoms selected from the group consisting of nitrogen, oxygen or sulfur and $R_5$ is hydrogen, alkyl having 1 to 7 carbon atoms, alkoxy having 1 to 7 carbon atoms, and hydroxyl and the corresponding pharmaceutically acceptable acid addition salt.

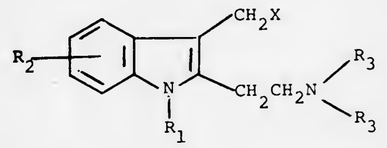
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## 3,931,230
## 3-SUBSTITUTED ISOTRYPTAMINE DERIVATIVES AND PROCESS FOR THEIR PRODUCTION

**Harold Zinnes, Rockaway, and Martin L. Schwartz, Gillette, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.**

**Filed Apr. 12, 1974, Ser. No. 460,397**
**Int. Cl.² C07D** *209/14*
**U.S. Cl. 260—326.15** **3 Claims**

**1.** A compound of the formula:



wherein $R_1$ is hydrogen, lower alkyl or phenyl lower alkyl, $R_2$ is hydrogen, lower alkyl, lower alkoxy, halogen, trifluoromethyl, cyano or nitro; $R_3$ is lower alkyl; and X is cyano.

3,931,231

## 4,5,6,7-TETRACHLORO-2-THIO-PHTHALIDE

Ernst Roos, Odenthal-Osenau; Klaus Wagner, Cologne, and Hans Scheinpflug, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

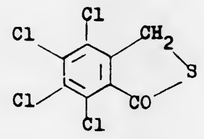
Filed Oct. 31, 1974, Ser. No. 519,716

Claims priority, application Germany, Dec. 11, 1973, 2361513

Int. Cl.² C07D *333/72*

U.S. Cl. 260—330.5 8 Claims

1. 4,5,6,7-Tetrachloro-2-thio-phthalide of the formula



3,931,232

## 3-ALKYL XANTHENE COMPOUNDS

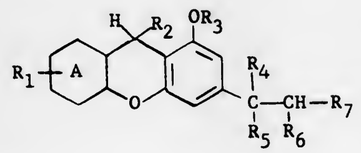
Paul E. Bender, Willingboro, N.J., and Bernard Loev, Broomall, Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Filed June 24, 1974, Ser. No. 482,049

Int. Cl.² C07D *311/82, 311/80*

U.S. Cl. 260—335 7 Claims

1. A compound of the formula:



in which:

ring A is a benzene ring, a cyclohexane ring or a cyclohexene ring with the double bond at position 5a-8a;

$R_1$ is hydrogen, methyl or ethyl;

$R_2$ is hydrogen, methyl or ethyl;

$R_3$ is hydrogen or alkanoyl of from two to five carbon atoms;

$R_4$ is hydrogen, methyl or ethyl and $R_5$ and $R_6$ are hydrogen or methyl, at least one of $R_4$, $R_5$ and $R_6$ being other than hydrogen; and

$R_7$ is alkyl of from four to eight carbon atoms.

3,931,233

## PROCESS FOR THE PRODUCTION OF 5-BROMO-5-NITRO-1,3-DIOXANE

Jens Conrad, Hilden, Germany, assignor to Henkel & Cie G.m.b.H., Dusseldorf, Germany

Filed Sept. 13, 1973, Ser. No. 396,885

Claims priority, application Germany, Dec. 23, 1972, 2263206

Int. Cl.² C07D *319/06*

U.S. Cl. 260—340.7 6 Claims

1. A process for the production of 5-bromo-5-nitro-1-3-dioxane consisting essentially of condensing the reactants formaldehyde and 2-bromo-2-nitro-propanediol-1,3, in substantially equimilar amounts in the presence of the inert water-immiscible organic solvent ethylene chloride, and concentrated sulfuric acid as sole catalyst under conditions whereby water produced is removed from the reaction, said concentrated sulfuric acid being slowly added to said solution of reactants at the reflux temperature and recovering said 5-bromo-5-nitro-1,3-dioxane.

3,931,234

## 3,3A-BETA-4,5,6,6A,BETA-HEXAHYDRO-4BETA-NITROMETHYL-5α-HYDROXYL-2-OXO-2H-CYCLOPENTA[B]FURAN AND ITS DERIVATIVES

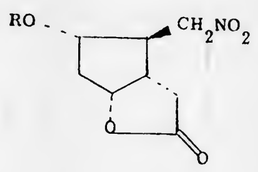
Jane Liu Jernow, Verona, and Perry Rosen, North Caldwell, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 457,528, April 3, 1974, Pat. No. 3,855,250, which is a division of Ser. No. 317,589, Dec. 22, 1972, abandoned. This application Sept. 23, 1974, Ser. No. 508,131

Int. Cl.² C07D *307/83*

U.S. Cl. 260—343.3 4 Claims

1. A compound of the formula:



wherein R is hydrogen, tetra-hydropyranyl, alpha-lower alkoxy-lower alkyl, benzyl, lower alkyl silyl, alkanoyl or benzoyl;

or enantiomers or racemates thereof.

3,931,235

## PROCESS FOR PREPARING SULFUR-CONTAINING HYDROXY PYRONES

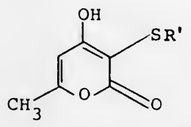
Robert F. Harris, and Joseph E. Dunbar, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 316,240, Dec. 18, 1972, Pat. No. 3,818,046. This application Dec. 28, 1973, Ser. No. 429,313

Int. Cl.² C07D *309/38*

U.S. Cl. 260—343.5 1 Claim

1. A process for making a compound corresponding to the formula



wherein R′ represents a 1 to 20 carbon alkyl, phenyl, halophenyl, nitrophenyl, lower alkylphenyl, benzyl, phenethyl, naphthylmethyl, halobenzyl, lower alkylbenzyl, nitrobenzyl, propargyl, allyl, cyclohexyl loweralkyl, (lower alkylthio)-loweralkyl or adamantyl, which comprises reacting an alkali metal salt of 4-hydroxy-6-methyl-2-pyrone with a substantially equimolar proportion of an R′-thiolsulfonate of the formula $R^2$—$SO_2SR'$ wherein $R^2$ is methyl, phenyl or p-tolyl in the presence of an inert organic solvent at substantially reflux temperature; and recovering the said compound.

3,931,236

## OXIDATION AND DEHYDROHALOGENATION OF HALOTETRAHYDROPYRANS

Hans D. Holtz, and John E. Mahan, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 17, 1973, Ser. No. 351,980

Int. Cl.² C07D *309/30*

U.S. Cl. 260—343.5 3 Claims

1. A process for preparing a 5,6-dihydro-1,2-pyrone comprising the steps of reacting a monohalotetrahydropyran selected from the group consisting of 4-chlorotetrahydropyran,



3-chlorotetrahydropyran, 4-bromotetrahydropyran, 3-bromotetrahydropyran, 4-iodotetrahydropyran, and 3-iodotetrahydropyran with oxygen at a partial $O_2$ pressure of from about 2 to about 200 psig and a temperature of from about 30° to about 180°C in the presence of a free radical initiator selected from the group consisting of 2,2′-azobis(2-methylpropionitrile) (AIBN), di-tert-butyl peroxide, tert-butyl hydroperoxide, cumyl peroxide, benzoyl peroxide, and cumene hydroperoxide, capable of functioning as oxidation initiators under the reaction conditions employed.

3,931,237

## PRODUCTION OF 2,2-DISUBSTITUTED PROPIOLACTONES

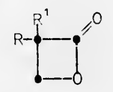
Jerry D. Holmes, Longview, Tex., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 394,370, Sept. 4, 1973, abandoned. This application July 23, 1974, Ser. No. 491,092

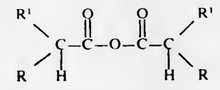
Int. Cl.² C07D *305/12*

U.S. Cl. 260—343.9 24 Claims

1. A process for producing a 2,2-disubstituted propiolactone having the formula



which comprises the steps of reacting an isoanhydride having the formula



wherein R and R¹ individually may be straight- or branched-chain alkyl, having 1 to 10 carbon atoms, with formaldehyde or a formaldehyde yielding material at a temperature of from about 190°C. to about 400°C., in the presence of a catalyst consisting of the metal oxide-silica gel complex which results from heating the calcined residue of a mixture of silica gel and a water-soluble salt of a metal selected from the group consisting of tantalum, titanium, niobium and zirconium to a temperature of from about 650°C. to about 1000°C. in the presence of water vapor.

3,931,238

## PREPARATION OF ALCOHOLS AND ETHERS

Charles M. Starks, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Continuation-in-part of Ser. No. 233,714, March 10, 1972, abandoned. This application Apr. 17, 1974, Ser. No. 461,570

Int. Cl.² C07D *307/06*; C07C *41/00, 21/00, 29/12*

U.S. Cl. 260—346.1 R 20 Claims

1. A process for preparing alcohols and ethers wherein the process comprises reacting a substituted hydrocarbon compound containing 1 to 40 carbon atoms and containing 1 to 10 chlorine or bromine atoms or an alkyl sulfate group, with at least a stoichiometric amount of an alkali metal hydroxide, in aqueous solution, at a temperature in the range of about 25° to about 300°C in the presence of a catalytic amount, in the range of from about 0.01 to about to about 20 weight percent based on said organic compound, of a betaine, and recovering from the reaction mixture by distillation said alcohol and said ether, said process being characterized further in that:

A. the hydrocarbon fraction of the substituted hydrocarbon compound is selected from the group consisting of:

1. terminally substituted linear alkyl groups containing 1 to 18 carbon atoms,
2. 1 to 20 continuous methylene groups,
3. internally substituted alkanes containing 4 to 40 carbon atoms,
4. alkenes containing 3 to 40 carbon atoms, and
5. mono- and di-haloakyl-substituted monocyclic aromatic compounds selected from the group consisting of benzyl chloride and α,α′-dichloroxylene, and

B. the betaine is selected from the group consisting of:

1. compounds represented by the formula

$$R'_3M\cdot(CH_2)_nCO_2R''X^-,$$

and

2. compounds represented by the formula

$$R'_3M\cdot(CH_2)_nCO_2^-$$

wherein

R′ is selected from the group consisting of alkyl groups containing from 2 to 20 carbon atoms and mono- or di-alkyl substituted phenyl or benzyl groups, wherein the alkyl radical contains from 1 to 20 carbon atoms,

R″ is selected from the group consisting of hydrogen and alkyl groups containing from 1 to 20 carbon atoms,

M is selected from the group consisting of nitrogen and phosphorus,

*n* is an integer in the range of 1 to 20, and

*x* is selected from the group consisting of halides and alkyl sulfates.

3,931,239

## 6-OXO-7-SUBSTITUTED-6H-INDENO-[5,4-B]FURAN-(AND THIOPHENE)-CARBOXYLIC ACIDS

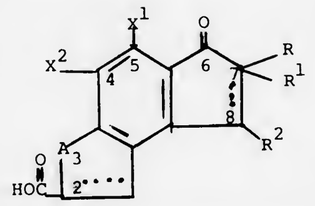
Edward J. Cragoe, Jr., Lansdale, and Otto W. Woltersdorf, Jr., Chalfont, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Apr. 3, 1974, Ser. No. 457,662

Int. Cl.² C07D *307/77*

U.S. Cl. 260—346.2 M 20 Claims

1. A compound having the formula:



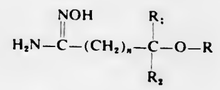
wherein the dotted lines indicate no unsaturation or 1,2-,7,8-, and 1,2,7,8- unsaturated embodiments; A is oxygen or sulfur; R is hydrogen, lower alkyl or halo; $R^1$ is lower alkyl or cycloalkyl having from 3–6 carbon atoms; R and $R^1$, together with the carbon atom to which they are attached, may be joined to form a cycloalkyl radical having from 3 to about 6 carbon atoms; $R^2$ is hydrogen, lower alkyl or phenyl; $X^1$ is lower alkyl or halo; $X^2$ is hydrogen, lower alkyl or halo; a 7-alkylidene embodiment is characterized in that the substituent at the 7-position is = $CR^3R^4$; wherein $R^3$ and $R^4$ are independently selected from a group consisting of hydrogen, lower alkyl, cycloalkyl having from 3 – 6 carbon atoms, and phenyl; and if the dotted line at the 7,8-position represents unsaturation the R radical is nonexistent; and the non-toxic, pharmacologically acceptable salt and lower alkyl ester derivatives thereof.

## 3,931,240
## BENZOFURANYLOXY AND BENZTHIENYLOXY AND CERTAIN 2,3-DIHYDRO BENZOFURANYLOXY AND BENZOTHIENYLOXY AMIDOXIMES

Fernand Binon, Strombeek-Bever, Belgium, and Pierre Luc Eymard, Fontaine, France, assignors to Labaz, Paris, France

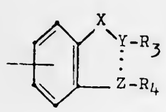
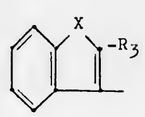
Filed Dec. 6, 1974, Ser. No. 530,076
Claims priority, application France, Jan. 15, 1974, 74.01286
Int. Cl.² C07D *307/83*
U.S. Cl. 260—346.2 R 5 Claims

1. An amidoxime derivative corresponding to the general formula:



I

or a pharmaceutically acceptable acid addition salt thereof, wherein $R_1$ and $R_2$, which are the same or different, represent hydrogen or a straight-chain lower alkyl radical containing form 1 to 3 carbon atoms, n is 0, 1 or 2 and R is selected from the groups consisting of

A =  B = 

wherein X represents oxygen or sulphur, Y...Z represents HC-CH or C≡C, $R_3$ and $R_4$, which are the same or different, represent hydrogen or a branched- or straight-chain lower alkyl radical containing from 1 to 3 carbon atoms with the provisos that:

a. when n is 1, $R_1$ and $R_2$ are each hydrogen and R is selected from the groups A and B.

b. when n is 2, $R_1$ and $R_2$ are each hydrogen and R is selected from the groups A and B.

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## 3,931,241
## METHOD FOR PREPARATION OF CITRACONIC ACID AND DERIVATIVES THEREOF

Chiyuki Fujii; Yoshio Kosai, and Iwao Kibayashi, all of Machida, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

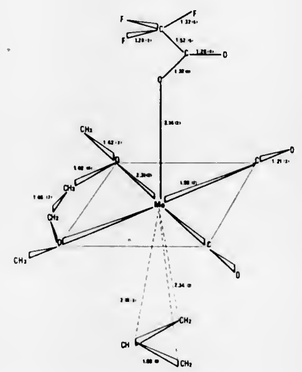
Filed Aug. 30, 1974, Ser. No. 501,959
Claims priority, application Japan, Aug. 31, 1973, 48-98040
Int. Cl.² C07D *307/60*
U.S. Cl. 260—346.8 R 5 Claims

1. A method for the preparation of citraconic acid and derivatives thereof comprising reacting methylsuccinic acid, methylsuccinic acid halide, methylsuccinic acid anhyride, methylsuccinic acid monoesters or diesters wherein said esters are those with aliphatic alcohols having 1 to 8 carbon atoms and with aromatic alcohols, or a mixture thereof with chlorine at a temperature ranging from about 100° to 500°C.

## 3,931,242
## NEW MOLYBDENUM AND TUNGSTEN COMPOUNDS, THEIR MANUFACTURE AND THEIR USE AS CATALYSTS IN THE STEREOSPECIFIC POLYMERISATION OF UNSATURATED ORGANIC COMPOUNDS

Francois Dawans, Bougival, and Emmanuel Goldenberg, Poissy, both of France, assignors to Institut Francaise du Petrole, des Carburants et Lubrifiants, Paris, France

Continuation-in-part of Ser. No. 215,425, Jan. 4, 1972, abandoned. This application Dec. 28, 1973, Ser. No. 429,209
Claims priority, application France, Jan. 8, 1971, 71.00583; Jan. 8, 1971, 71.00584
Int. Cl.² C07F *11/00*
U.S. Cl. 260—346.1 M 7 Claims



1. A compound of the formula

$$[(H_{3-n}X_n)C{-}CO_2M\text{-}(CO)_m(R)_p(L)_q]_r$$

in which each X is fluorine, chlorine or bromine with the provision that at least one X is fluorine, *n* is an integer selected from 1, 2 and 3, M is a metal selected from the group consisting of molybdenum and tungsten, R is selected from the group consisting of a hydride ion or a methyl, ethyl, allyl, methallyl, crotyl, phenyl or benzyl radical, L is a tetrahydrofuran or dioxane Lewis base, *m* is an integer from 1 to 3 inclusive, *p* is 1 and *q* is an integer selected from the values 1 and 2, and *r* is 1, with the proviso that the values of *m*, *p* and *q* are such that in the valence shell of said metal M the sum of the number of electrons contributed by said metal M and the number of electrons contributed by the ligands is 18.

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## 3,931,243
## PRODUCTION OF PHTHALIC ANHYDRIDE

John E. Paustian, Whippany, and Abraham P. Gelbein, Plainfield, both of N.J., assignors to The Lummus Company, Bloomfield, N.J.

Continuation-in-part of Ser. No. 372,047, June 21, 1973. This application Jan. 28, 1974, Ser. No. 436,861
Int. Cl.² C07D *307/89*
U.S. Cl. 260—346.7 8 Claims

1. A process for producing phthalic anhydride, comprising:

a. hydrolyzing a feed comprising phthalonitrile with an aqueous solution of a tertiary aliphatic amine at a temperature of from 150° to 500°F while removing evolved ammonia to produce the corresponding diamine salt of phthalic acid; and

b. thermally decomposing said diamine salt of phthalic acid while continuously removing evolved amine to produce phthalic anhydride.

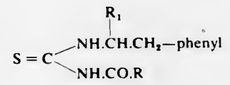


## 3,931,244
## THIOUREAS

John Leheup Archibald, Windsor, and John Lambert Jackson, Henley-on-Thames, both of England, assignors to John Wyeth & Brother Limited, Maidenhead, England

Filed May 13, 1974, Ser. No. 469,145
Claims priority, application United Kingdom, May 31, 1973, 26080/73
Int. Cl.² C07D *307/68*
U.S. Cl. 260—347.2 8 Claims

1. A thiourea of the formula



wherein R is selected from the group consisting of phenyl, furyl and phenyl monosubstituted by a member of the group consisting of halogen, lower alkyl, lower alkoxy and trifluoromethyl and $R^1$ is selected from the group consisting of hydrogen and methyl.

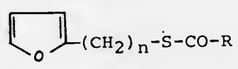
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## 3,931,245
## FLAVORING AGENT

Max Winter, Geneva; Fritz Gautschi, Vaud; Ivon Flament, and Max Stoll, both of Geneva, all of Switzerland, assignors to Firmenich & Cie, Geneva, Switzerland

Division of Ser. No. 243,866, April 13, 1972, abandoned, which is a division of Ser. No. 70,560, Sept. 8, 1970, Pat. No. 3,702,253, which is a continuation of Ser. No. 543,069, April 18, 1966, abandoned, which is a continuation-in-part of Ser. No. 452,342, April 30, 1965, abandoned. This application July 26, 1974, Ser. No. 492,105
Int. Cl.² C07D *307/54*
U.S. Cl. 260—347.2 9 Claims

1. A furan sulfur compound of the formula



wherein *n* is 1 and R is methyl, ethyl, propyl, 1-methyl-prop-1-en-1-yl, 2-methyl-prop-1-en-1-yl, furyl or hydrogen; and wherein *n* is 2 and R is methyl.

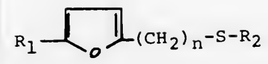
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## 3,931,246
## FLAVORING AGENTS

Max Winter, Geneva; Fritz Gautschi, Vaud; Ivon Flament, and Max Stoll, both of Geneva, all of Switzerland, assignors to Firmenich & Cie, Geneva, Switzerland

Division of Ser. No. 243,886, April 13, 1972, abandoned, which is a division of Ser. No. 70,560, Sept. 8, 1970, Pat. No. 3,702,253, which is a continuation of Ser. No. 543,069, April 18, 1966, abandoned, which is a continuation-in-part of Ser. No. 452,342, April 30, 1965, abandoned. This application July 26, 1974, Ser. No. 492,106
Int. Cl.² C07D *307/38*
U.S. Cl. 260—347.2 5 Claims

1. A furan sulfur compound of the formula:



wherein when n is O, $R_1$ and $R_2$ are methyl; when n is 1, $R_1$ and $R_2$ are methyl or $R_1$ is hydrogen and $R_2$ is 5-methylfuryl; and when n is 2, $R_1$ and $R_2$ are hydrogen.

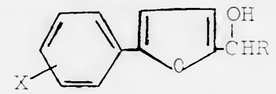
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## 3,931,247
## 5-(SUBSTITUTED)PHENYLFURFURYL ALCOHOLS

Stanford S. Pelosi, Jr., Norwich, N.Y., assignor to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed Dec. 11, 1974, Ser. No. 531,465
Int. Cl.² C07D *307/42*
U.S. Cl. 260—347.2 10 Claims

1. A compound of the formula:



wherein X is 4-nitro, 3,4-dichloro, 3-trifluoromethyl, 4-amino, 4-acetamido, 4-methylsulfonyl, 4-cyano, or 4-chloro and R is methyl, ethyl or chloromethyl.

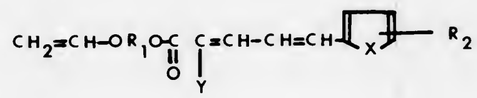
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## 3,931,248
## REACTIVE HIGH POLYMER COMPOUND

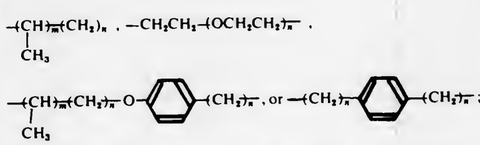
Yukio Maekawa; Masato Satomura, and Akira Umehara, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Feb. 4, 1974, Ser. No. 439,673
Claims priority, application Japan, Feb. 2, 1973, 48-13511; Feb. 2, 1973, 48-13513
Int. Cl.² C07D *307/54*
U.S. Cl. 260—347.5 4 Claims

1. A monomer represented by the following formula;



wherein $R_1$ represents



$R_2$ represents H, $C_nH_{2n}^+{}_1$, Cl, Br, F or $NO_2$; X represents O or S; Y represents H or CN; *m* represents 0 or 1; and *n* is 1, 2, 3 or 4.

3,931,249

## EPOXIDATION USING PHTHALOCYANINE CATALYSTS

Adin Lee Stautzenberger, Corpus Christi, Tex., assignor to Celanese Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 105,134, Jan. 8, 1971, abandoned, which is a continuation of Ser. No. 746,289, July 22, 1968, abandoned. This application Feb. 13, 1974, Ser. No. 442,273

Int. Cl.² C07D *301/20*

U.S. Cl. 260—348.5 L 6 Claims

1. In a process for the catalytic reaction of an organic hydroperoxide with an ethylenically unsaturated hydrocarbon of 3 to about 20 carbon atoms which is free of acetylenic unsaturation so as to introduce an oxirane oxygen at the site of an ethylenic double bond in said hydrocarbon, the improvement which comprises employing nickel phthalocyanine as catalyst for said reaction, the reaction being conducted in a reaction zone containing a liquid reaction medium consisting essentially of ethylenically-unsaturated hydrocarbon or mixtures of ethylenically-unsaturated hydrocarbon with an unreactive reaction solvent, together with said hydroperoxide and said catalyst, the reaction temperature being about 80° to 150°C, the reaction pressure being one which is high enough to keep said reaction medium in the liquid phase, and the concentration of nickel phthalocyanine in said reaction medium being at least about $10^{-6}$ molar.

3,931,250

## HETEROCYCLIC COMPOUND AS ODOR- AND FLAVOR-MODIFYING AGENT

Alan Francis Thomas, Geneva, Switzerland, assignor to Firmenich SA, Geneva, Switzerland

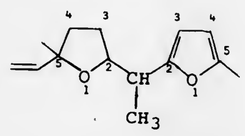
Filed Nov. 1, 1974, Ser. No. 520,154

Claims priority, application Switzerland, Nov. 2, 1973, 15424/73

Int. Cl.² C07D *307/34*

U.S. Cl. 260—347.8 2 Claims

1. A pure compound of formula



I

3,931,251

## PROCESS FOR THE MANUFACTURE OF 1-NITROANTHRAQUINONE

Axel Vogel, Cologne, and Reinold Schmitz, Blecher, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Germany

Filed Oct. 5, 1973, Ser. No. 403,765

Claims priority, application Germany, Oct. 6, 1972, 2248990

Int. Cl.² C07C *79/37*

U.S. Cl. 260—369 9 Claims

1. In a process wherein a reaction mixture obtained by the nitration of anthraquinone and comprising 1-nitroanthraquinone and containing dinitroanthraquinone as an impurity is treated at temperatures of 75°C–150°C with an aqueous solution of a salt of sulfurous acid to solubilize said dinitroanthraquinone and the solubilized dinitroanthraquinone is removed from said 1-nitroanthraquinone the improvement which comprises conducting the treatment in the presence of an inert organic solvent selected from the group consisting of aromatic and araliphatic hydrocarbons of the benzene and naphthalene series with up to thirty carbon atoms which may contain in the nucleus halogen, nitro, sulphone, ether, thioether, keto or carbalkoxy groups or mixtures thereof or aliphatic and alicyclic hydrocarbons with up to thirty carbon atoms which may contain halogen, nitro, sulphone, sulfoxide, ether, thioether, hydroxyl, carbonyl, carboxyl, carboalkoxy, or carboaryloxy groups or mixtures thereof.

3,931,252

## PROCESS FOR THE PREPARATION OF PURE 1-NITROANTHRAQUINONE

Wolfgang Auge, Odenthal; Bernd Thelen, Leverkusen; Karl-Werner Thiem, Cologne, and Rutger Neeff, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Germany

Filed Nov. 16, 1973, Ser. No. 416,642

Claims priority, application Germany, Nov. 18, 1972, 2256644

Int. Cl.² C07C *79/37*

U.S. Cl. 260—369 10 Claims

1. In the process for manufacturing pure 1-nitroanthraquinone wherein anthraquinone is nitrated with at least 90% by weight nitric acid or 90% by weight of a mixture of nitric acid and another inorganic acid at temperatures of −40° to +80°C; the improvement which comprises adjusting the acid content to from 76% at a molar ratio of acid to nitration products of 19:1 to 96% at a molar ratio of 4:1 after nitration has occurred, allowing crude 1-nitroanthraquinone to crystallize, and subsequently rectifying the precipitated reaction product at temperatures of 200° to 400°C and pressures of from 0.5 to 100 mm. of mercury.

3,931,253

## PROCESS FOR THE PRODUCTION OF AMINOANTHRAQUINONE

Franz Krenmueller, and Heinrich Till, Kufstein, Tirol, both of Austria, assignors to Sandoz Ltd., (Sandoz AG), Basel, Switzerland

Filed Aug. 6, 1973, Ser. No. 385,758

Claims priority, application Switzerland, Aug. 8, 1972, 11700/72

Int. Cl.² C09B *1/20*

U.S. Cl. 260—378 23 Claims

1. A process for producing an aminoanthraquinone or a diaminoanthraquinone or mixtures thereof from a nitroanthraquinone selected from the group consisting of 1-nitroanthraquinone, 2-nitroanthraquinone, 1,2-dinitroanthraquinone, 1,6-dinitroanthraquinone, 1,7-dinitroanthraquinone, 1,8-dinitroanthraquinone, 1,5-dinitroanthraquinone, 2,7-dinitroanthraquinone, 2,6-dinitroanthraquinone, and mixtures thereof, comprising the steps of: 1) dissolving said nitroanthraquinone in an inert organic solvent selected from the group consisting of a liquid substituted or unsubstituted aromatic hydrocarbon, a liquid ether and a liquid carboxylic acid ester, the weight ratio of solvent to nitroanthraquinone being between 100:1 and 1:2, 2) adding to said mixture, based on the weight of nitroanthraquinone, between 0.05 percent and 10 percent of a metal hydrogenation catalyst selected from the group consisting of noble metal and Raney nickel; 3) heating the resultant mixture to an upper temperature of between 50° and 200°C.; 4) hydrogenating the resultant heated mixture with molecular hydrogen at a partial pressure between 0.5 and 15 atmospheres, while maintaining said upper temperature; 5) separating the undissolved spent catalyst at said upper temperature from the reaction mixture containing dissolved aminoanthraquinone; 6) cooling the reaction mixture to a lower temperature to precipitate the aminoanthraquinone, said lower temperature being between 40° and 150°C. below the upper temperature; and 7) recovering the precipitated aminoanthraquinone, said process characterized in that the inert solvent is such that the resulting aminoanthraquinone is soluble therein at an upper temperature and insoluble therein at a lower temperature, the catalyst being removed at the upper temperature.



3,931,254

## PROCESS FOR THE PREPARATION OF ANTHRAQUINONE

Raymond Janin, Allee F. Irigny, and Leon Krumenacker, Serezin-du-Rhone, both of France, assignors to Rhone-Poulenc S.A., Paris, France

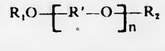
Filed May 8, 1974, Ser. No. 468,140

Claims priority, application France, May 11, 1973, 73.17156

Int. Cl.² C07C *49/68*; C09B *1/06*

U.S. Cl. 260—385 11 Claims

1. In a process for the preparation of anthraquinone which comprises oxidising anthracene by means of oxygen or an oxygen-containing gas in the liquid phase, in an inert organic diluent, in the presence of a copper salt, the improvement wherein the copper salt is a halogen-copper bond free copper salt of an inorganic or carboxylic acid and the organic diluent is a compound of the general formula:



in which $R_1$ and $R_2$ denote a hydrogen atom, R′ denotes a linear or branched alkylene radical containing up to 10 carbon atoms, and n is an integer from 1 to 3.

3,931,255

## PROCESS FOR THE PRODUCTION OF 5-NITRO-1,4-NAPHTHOQUINONE

Friedrich Dürholz, Remscheid, and Rolf Pütter, Duesseldorf, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 27, 1974, Ser. No. 527,797

Claims priority, application Germany, Dec. 1, 1973, 2359950

Int. Cl.² C07C *76/02*

U.S. Cl. 260—396 R 6 Claims

1. Process for producing 5-nitro-1,4-naphthoquinone which comprises reducing an oxime selected from the group of 8-nitro-1,4-naphthoquinone-1-oxime, 5-nitro-1,4-naphthoquinone-1-oxime and mixtures of the foregoing in a reaction medium selected from the group of water, an organic solvent and mixtures of water and an organic solvent in the presence of iron (II) ions and a hydrogen halide at a temperature in the range of from −20° to 100°C, and thereafter oxidizing the naphthol product formed, or the corresponding salt, optionally without intermediate isolation, at a temperature in the range of from −10° to 100°C to form the desired 5-nitro-1,4-naphthoquinone.

3,931,256

## CHEMICAL PROCESS FOR PRODUCTION OF BILE ACIDS

William H. Saltzman, New Rochelle, N.Y., assignor to Intellectual Property Development Corporation, New Rochelle, N.Y.

Continuation of Ser. No. 417,170, Nov. 19, 1973, which is a continuation-in-part of Ser. No. 290,960, Sept. 21, 1972, abandoned. This application Feb. 6, 1975, Ser. No. 547,854

Int. Cl.² C07J *9/00*

U.S. Cl. 260—397.1 9 Claims

1. A method for the production of substantially pure bile acids from natural animal bile, which comprises:

a. Extracting the naturally occurring bile acids from the natural animal bile by the treatment thereof with a multiphasic organic solvent system having at least two phase, in one phase of which the said bile acids are soluble and the naturally occurring pigments and impurities contained therein are not soluble, and in the remaining phases of which the said impurities and pigments are soluble and the said bile acids are not soluble;

b. Hydrolyzing the said extracted bile acids by treating with an alkali metal base;

c. Esterifying the resultant hydrolyzed bile acids by treating with an alcohol esterification agent;

d. Isolating the desired esterified bile acid; and

e. Recovering the resultant substantially pure free bile acid.

3,931,257

## POLYENE COMPOUNDS

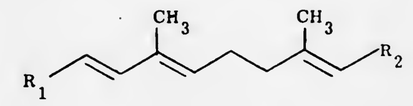
Beverly Ann Pawson, Montclair, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Aug. 7, 1974, Ser. No. 495,367

Int. Cl.² C11C *1/00*, *3/00*

U.S. Cl. 260—408 4 Claims

1. A compound selected from compounds represented by the formula



wherein $R_1$ is a 2,6,6-trimethyl-cyclohex-1-en-1-yl group or a phenyl group substituted in positions 2 and 6 by a member selected from the group consisting of halogen, lower alkyl and lower alkoxy and in at least one of positions 3, 4 and 5 by a member selected from the group consisting of halogen, hydroxy, lower alkyl, lower alkenyl, lower alkoxy, lower alkenoxy, lower alkanoyloxy and $R_2$ is carboxyl .

2. A compound in accordance with claim 1 wherein said compound is 3,7-dimethyl-9-(2,6,6-trimethyl-cyclohex-1-en-1-yl)-nona-2,6,8-trien-1-oic acid.

3. A compound in accordance with claim 1 wherein said compound is 3,7-dimethyl-9-(4-methoxy-2,3,6-trimethyl-phenyl)-nona-2,6,8-trien-1-oic acid.

4. A compound in accordance with claim 1 wherein said compound is 3,7-dimethyl-9-(3-chloro-2,6-dimethyl-4-methoxy-phenyl)-nona-2,6,8-trien-1-oic acid.

3,931,258

## RECOVERY OF SUGAR CANE WAX

Alan W. Lake, Transvaal, South Africa, assignor to Chemical Services (Proprietary) Limited, Johannesburg, South Africa

Filed Dec. 4, 1974, Ser. No. 529,587

Claims priority, application South Africa, Dec. 13, 1973, 73/9454

Int. Cl.² C11B *13/00*, *1/10*

U.S. Cl. 260—412.5 10 Claims

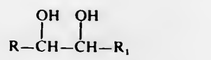
1. A method of recovering sugar cane wax from filter cake derived from the treatment of sugar cane including the steps of forming an aqueous slurry of the filter cake, the slurry containing a quaternary ammonium compound as a cationic surface active agent to weaken the bond between wax and fibers in the slurry, if the slurry is alkaline adjusting the pH of the slurry to the acid side, heating the slurry to melt the wax, adding an extractant vehicle which is a solvent for the wax to the slurry to extract the wax from the aqueous phase, and separating the extractant vehicle containing the wax from the liquid phase of the slurry.

## 3,931,259
## PROCESS FOR THE PREPARATION OF CARBOXYLIC ACIDS

**Herbert Lepper, Cologne-Mulheim, and Werner Stein, Erkrath-Unterbach, both of Germany, assignors to Henkel & Cie G.m.b.H., Dusseldorf-Holthausen, Germany**

**Filed Nov. 19, 1971, Ser. No. 200,609**
**Claims priority, application Germany, Dec. 1, 1970, 2059042**
**Int. Cl.² C08H 17/36**
**U.S. Cl. 260—413** **7 Claims**

1. A process for the preparation of carboxylic acids consisting essentially of the steps of reacting an organic material starting substance selected from the group consisting of (a) an alkane vicinal diol having 6 to 18 carbon atoms having the formula



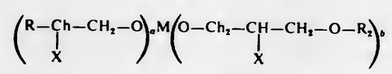
wherein R is alkyl having 4 to 16 carbon atoms and wherein $R_1$ is hydrogen or alkyl having 1 to 12 carbon atoms with the proviso that the total number of carbon atoms in said diol is from 6 to 18 and that when $R_1$ is alkyl at least one of R or $R_1$ has at least 6 carbon atoms, (b) monoesters or diesters of said alkane vicinal diol with lower alkanoic acids, and (c) mixtures of (a) and (b) with nitric acid having a concentration of at least 65% in the absence of an oxidation catalyst at temperatures from 40° to 100°C with the molar ratio of diol or diol ester to nitric acid being from 1:10 to 1:20 to produce said carboxylic acids; and recovering said carboxylic acids.

## 3,931,260
## ORGANO METALLIC COMPOUNDS

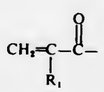
**Kevin M. Foley, Hebron, and Francesco M. Vigo, Heath, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio**

**Filed Feb. 22, 1974, Ser. No. 445,015**
**Int. Cl.² C07F 7/00**
**U.S. Cl. 260—429.3** **16 Claims**

1. A compound having the formula



wherein M is a tetravalent metal selected from the group consisting of titanium, tin, germanium and zirconium, R is hydrogen or alkyl, $R_2$ is a group of the formula



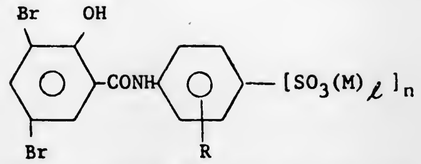
wherein $R_1$ is hydrogen or methyl, X is halogen, *a* and *b* are each integers from 1 to 3, with the sum of *a* and *b* being equal to 4.

## 3,931,261
## BROMOSALICYLANILIDE BIOCIDAL AGENTS

**Albert F. Strobel, Delmar, N.Y., assignor to GAF Corporation, New York, N.Y.**

**Filed Sept. 17, 1971, Ser. No. 181,560**
**Int. Cl.² C07F 3/06**
**U.S. Cl. 260—429.9** **9 Claims**

1. Compounds of the following general formula:



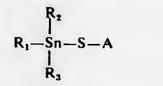
wherein R is hydrogen or halogen, n is a whole number of 1 or 2, *l* is ½ or 1 and M is selected from the group consisting of alkali metals, alkaline earth metals, copper and zinc.

## 3,931,262
## HYDROPHILIC AND DIFFICULTLY VOLATILE BIOCIDAL TRIORGANOTIN COMPOUNDS

**Hermann Otto Wirth; Hans Joachim Lorenz, both of Bensheim-Auerbach, and Hans-Helmut Friedrich, Lindenfels, Odenwald, all of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.**

**Continuation-in-part of Ser. No. 382,633, July 25, 1973. This application July 31, 1974, Ser. No. 493,305**
**Claims priority, application Germany, Aug. 4, 1972, 2238360; July 6, 1973, 2334383**
**Int. Cl.² C07F 7/22**
**U.S. Cl. 260—429.7** **34 Claims**

1. A triorganotin compound of the general formula I



(I)

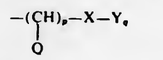
wherein $R_1$, $R_2$ and $R_3$ each independently represents a linear or branched aliphatic group with 1 to 16 carbon atoms, which can be saturated or singly olefinically unsaturated, a cyclopentyl, cyclohexyl or phenyl group, the sum of the carbon atoms of the substituents $R_1$, $R_2$ and $R_3$ being at most 18, and A represents a strongly hydrophilic residue selected from the group consisting of

a. a polyethylene oxide of the formula



with 2 to 15 ethylene oxide units (*n* is 2 to 15),

b. a carboxylate or sulphonate of the general formula II

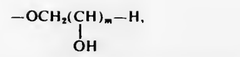


(II)

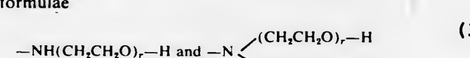
wherein Q represents hydrogen or hydroxyl, p is a whole number from 1 to 6, X is $-CO_2-$ or $-SO_3-$, or where *p* is 0, X is the succinic acid radical, the p-benzenesulphonic acid radical or the o-benzoic acid radical and Y represents an once or twic charged cation with *g*—1 in the first case and *l* = ½ in the second case,

c. a carboxylic acid ester or a carboxylic acid amide of formula II, wherein Q and p have the same meaning given hereinbefore, X is —CO—, *q* is 1 and Y represents for the ester a polyethylene oxide radical of the formula —O—$(CH_2CH_2O)_n$-H in which *n* is 2 to 15, a polyhydroxyalkyl radical of the formula



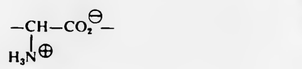


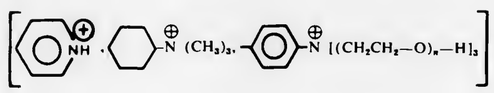
in which *m* is 2 to 6, or radicals of pentaerythritol, dipentaerythritol or trimethylolpropane, and for the amide the radical of primary or secondary amine- polyethylene oxide adducts of the formulae



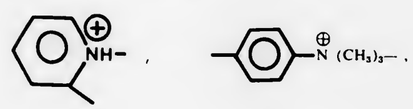
wherein *r* is in the first case 1 to 15 and *r* and *s* in the second case are numbers which are the same or different, the sum of *r* and *s* being 2 to 15, and

d. an ammonium salt of formula II wherein Q and p have the meanings given hereinbefore, X represents a radical of the formulae

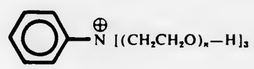




or $-NZ_3^+$ wherein Z represents lower alkyl groups, which are the same or different, polyethylene oxide radicals with 2 to 6 ethylene oxide units, β-hydroxyethyl and/or hydrogen, or where *p* is 0, X represents



or



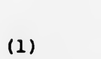
wherein *n* is 1 to 6, and Y represents a monovalent or divalent negative counterion, wherein in the first case *q*=1 and in the second case *q*= ½,

## 3,931,263
## ORGANOTIN MERCAPTIDE PROCESS

**Kenneth R. Molt, Montgomery, Ohio**

**Filed June 13, 1974, Ser. No. 479,142**
**Int. Cl.² C07F 7/22**
**U.S. Cl. 260—429.7** **25 Claims**

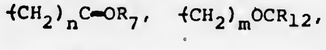
1. A process of preparing an organotin halide mercaptide or a mixture of an organotin halide and an organotin mercaptide from an organotin sulfide comprising reacting in the absence of a catalyst:



(1)

with a compound of the formula $R_{11}X$, while the organotin sulfide is in the water wet condition, where R, $R_2$, $R_3$, $R_4$, $R_5$ and $R_6$ are alkyl, cycloalkyl, alkenyl, aryl or aralkyl, $R_1$ and $R_{11}$ are





alkyl, cycloalkyl, alkenyl or aralkyl, $R_{12}$ is alkyl or alkenyl, X is halogen of atomic weight 35 to 80, n is 1 or 2, m is 2 or 3, and $R_{14}$ is hydrogen or methyl.

## 3,931,264
## METHOD FOR RECOVERING SOLUBILIZED ORGANOTIN HALIDES

**William A. Larkin, Morristown, and Jean W. Bouchoux, Nutley, both of N.J., assignors to M & T Chemicals Inc., Greenwich, Conn.**

**Filed Aug. 22, 1974, Ser. No. 499,503**
**Int. Cl.² C07F 7/22**
**U.S. Cl. 260—429.7** **6 Claims**

1. A method for isolating an organotin halide of the general formula $(CH_3)_aSnX_{4-a}$ or $C_4H_9SnX_3$, wherein a is the integer 2 or 3 and X represents chlorine, bromine or iodine, in substantially pure form from an aqueous solution containing more than about 2% by weight of said organotin halide, the method consisting essentially of the following steps:

1. combining said aqueous solution with an amount of a chemically inert water-soluble, inorganic salt sufficient to attain a concentration of from 50 g. to said salt per 100 cc. of water up to the concentration equivalent to a saturated or super-saturated solution of said salt;
2. maintaining the temperature of the solution at between ambient and the boiling point of the solution as required to effect a separation of the organotin halide from the aqueous phase;
3. isolating the organotin halide.

## 3,931,265
## PROCESS FOR PRODUCING ANIONIC METAL-CONTAINING SULFONATES

**Roy C. Sias, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.**

**Continuation of Ser. No. 240,273, March 31, 1972, abandoned. This application Nov. 12, 1973, Ser. No. 415,285**
**Int. Cl.² C07F 9/68**
**U.S. Cl. 260—440** **12 Claims**

1. A process of producing a reaction product of a polyamine compound, an oil-soluble sulfonic acid and arsenic oxide or a hydrate thereof comprising:

a. admixing said arsenic oxide or hydrate thereof and said oil-soluble sulfonic acid with said polyamine compound,

said sulfonic acid being present in sufficient amount to neutralize at least one amine group of said polyamine, and at least one amine group of said polyamine being available to react with said arsenic oxide or hydrate thereof;

b. agitating and heating the resulting mixture to the reflux temperature of said mixture for a period of time sufficient to allow formation of said reaction product; and

c. recovering said reaction product.

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**3,931,266**

## ORGANO SILICON COMPOUNDS

**Kevin M. Foley, Hebron, and Francesco M. Vigo, Heath, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio**

**Filed Apr. 2, 1973, Ser. No. 347,241**
**Int. Cl.² C07F** *7/04, 7/18*
**U.S. Cl. 260—448.8 A** **20 Claims**

**1.** Organo silicon compounds prepared by reaction of a halosilane selected from the group consisting of an organo halosilane having the formula

$$(R_6)_nSiX_{(4-n)}$$

wherein $R_6$ is an organic group selected from the group consisting of alkyl, alkenyl, cycloalkyl and phenyl, n is an integer from 1 to 2 and X is halogen and a tetrahalosilane, with a monoepoxide selected from the group consisting of a styrene oxide and an epoxide having the formula

$$CH_2-CH-CH_2-O-R_2$$

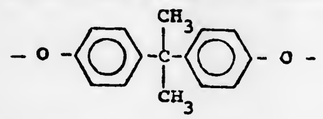
wherein $R_2$ is an organic group selected from the group consisting of phenyl and amino, halo and alkyl substituted phenyl, alkyl, alkenyl and a group having the formula

$$CH_2=C(R')-C(=O)-$$

wherein R′ is hydrogen or methyl, and at least one diepoxide selected from the group consisting of an epoxide of the formula

$$CH_2-CH-CH_2-R_3-CH_2-CH-CH_2$$

wherein $R_3$ is a divalent organic group selected from the group consisting of alkylene, alkyleneoxyalkylene, oxyalkyleneoxy, oxyalkyleneoxyalkyleneoxy, a group of the formula



and a group of the formula



and a cyclohexane diepoxide, with the diepoxide being reacted in an amount less than two epoxide equivalents based upon a mole of silane.

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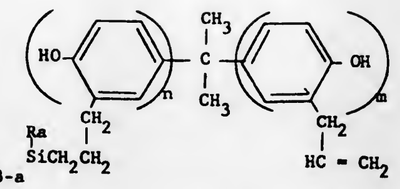
**3,931,267**

## SILYLATED BISPHENOL

**George L. Brode, Somerville, N.J., assignor to Union Carbide Corporation, New York, N.Y.**

**Filed July 31, 1974, Ser. No. 493,406**
**Int. Cl.² C07F** *7/04, 7/08, 7/18*
**U.S. Cl. 260—448.8 R** **4 Claims**

**1.** A silane compound having the formula:



wherein R is a lower alkyl radical; *n* is 1 or 2; *m* is 0 or 1; the sum of $n + m$ is 2; *a* is 0, 1 or 2; and X is a hydrolyzable group.

**4.** 2,2-bis[4-hydroxy-3-(gamma-trimethoxysilylpropyl)phenyl] propane.

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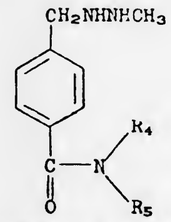
**3,931,268**

## METHYLHYDRAZINOMETHYL-SUBSTITUTED BENZOIC ACID AMIDES

**Werner Bollag, Basel; Hugo Gutmann, Reinach; Balthasar Hegedüs, Binningen; Ado Kaiser, Neu-Frenkendorf; Albert Langemann, Binningen; Marcel Müller, Frenkendorf, and Paul Zeller, Allschwil, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.**

**Division of Ser. No. 593,734, Nov. 14, 1966, Pat. No. 3,520,926, which is a continuation-in-part of Ser. No. 200,059, June 5, 1962, abandoned. This application May 6, 1970, Ser. No. 35,292**
**Claims priority, application Switzerland, June 9, 1961, 6734/61**
**Int. Cl.² C07C** *103/76, 103/78, 103/82, 103/22*
**U.S. Cl. 260—465 D** **8 Claims**

**1.** A compound selected from the group consisting of compounds of the formula



and pharmaceutically acceptable acid addition salts thereof; wherein $R_4$ is hydrogen and $R_5$ is selected from the group consisting of hydroxy-lower alkyl, (2-methylhydrazinomethyl)phenyl, hydrogen, lower alkoxy-lower alkyl, cyclo-lower alkyl, and cyano-lower alkyl.

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**3,931,269**

## ALPHA-ACYL SUBSTITUTED NAPHTHYLACETIC ACIDS

**Julius Diamond, Lafayette Hill, and Ching Tan Tsuei, Lansdale, both of Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.**

**Division of Ser. No. 422,479, Dec. 6, 1973, Pat. No. 3,892,803. This application Feb. 28, 1975, Ser. No. 553,961**
**Int. Cl.² C07C** *153/07*
**U.S. Cl. 260—455 R** **5 Claims**

**1.** A compound which is α-acetylthio-6-methoxy-2-naphthylacetic acid.

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**3,931,270**

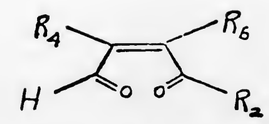
## PROCESS FOR PRODUCING 2-THIA SUBSTITUTED 1,4 DIONES

**William J. Evers, Middletown, and Bernard J. Mayers, Cliffwood Beach, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.**

**Continuation-in-part of Ser. No. 386,452, Aug. 7, 1973, abandoned. This application Jan. 7, 1975, Ser. No. 539,092**
**Int. Cl.² C07C** *153/07*
**U.S. Cl. 260—455 R** **7 Claims**

**1.** A process for producing a substituted or unsubstituted 3-thia alkane-4-one-1-al comprising the step of intimately admixing an alk-2-ene-4-one-1-al having the structure:

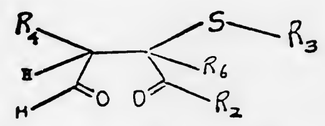




with a sulfur compound having the formula:

$$R_3SH$$

in the presence of an organic base selected from the group consisting of secondary amines and tertiary amines thereby providing a substituted or unsubstituted 3-thia alkane-4-one-1-al having the structure:



wherein $R_3$ is selected from the group consisting of acetyl and benzoyl; wherein $R_2$ is lower alkyl; and wherein $R_4$ and $R_6$ are the same or different and are each selected from the group consisting of hydrogen and lower alkyl.

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**3,931,271**

## PROCESS FOR THE PRODUCTION OF SECONDARY ALCOHOL ETHER SULFATES

**Horst Baumann, Leichlingen; Wilfried Umbach, Langenfeld, and Werner Stein, Erkrath-Unterbach, all of Germany, assignors to Henkel & Cie G.m.b.H., Dusseldorf, Holthausen, Germany**

**Filed Feb. 24, 1971, Ser. No. 118,549**
**Claims priority, application Germany, Apr. 8, 1970, 2016656**
**Int. Cl.² C07C** *139/00, 139/10, 141/00*
**U.S. Cl. 260—458** **8 Claims**

**1.** A process for the production of secondary alcohol ether sulfates which consists essentially of reacting crude adducts of secondary alkanols having from 6 to 22 carbon atoms adducted with 1 to 10 mols of an alkylene oxide selected from the group consisting of ethylene oxide and propylene oxide, said crude adduct having at least 1 mol of oxypropylene per mol of alcohol and being obtained from the oxyalkylation reaction without intervening purification, with from 1.0 to 1.2 mols per mol of said crude adduct, of a sulfating agent stronger than concentrated sulfuric acid selected from the group consisting of sulfur trioxide, sulfur trioxide/air mixtures, oleum and chlorosulfonic acid, at temperatures of from 10°C to 30°C, and recovering said secondary alcohol ether sulfate having a high degree of sulfation.

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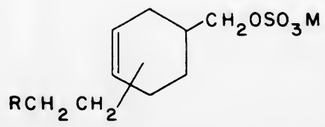
**3,931,272**

## BIODEGRADABLE DETERGENTS

**Herman S. Bloch, Skokie, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.**

**Continuation-in-part of Ser. No. 277,837, Aug. 3, 1972, Pat. No. 3,867,432. This application Dec. 4, 1974, Ser. No. 529,319**
**Int. Cl.² C07C** *141/10*
**U.S. Cl. 260—458** **6 Claims**

**1.** A biodegradable detergent compound of the formula:



in which M is an alkali metal and R is an alkyl group of from 1 to about 14 carbon atoms.

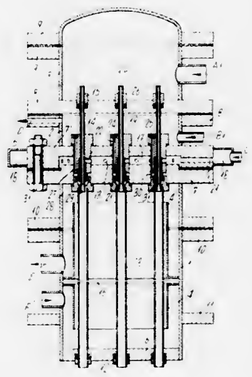
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**3,931,273**

## METHOD FOR SULPHONATIZING AND SULPHATIZING ORGANIC COMPOUNDS WITH SULPHUR TRIOXIDE AND APPARATUS THEREFOR

**Agostino Lanteri, Busto Arsizio, Varese, Italy, assignor to Costruzioni Meccaniche G. Mazzoni S.p.A., Busto Arsizio, Varese, Italy**

**Continuation of Ser. No. 114,973, Feb. 12, 1971, abandoned. This application Mar. 14, 1974, Ser. No. 451,200**
**Claims priority, application Italy, Feb. 23, 1970, 20991/70**
**Int. Cl.² C07C** *141/02, 143/16, 143/12, 143/34*
**U.S. Cl. 260—458** **7 Claims**



**1.** An improved process for continuously sulfonating and sulfating a liquid organic compound selected from the group consisting of olefins, aromatic hydrocarbons, alkyl aromatic hydrocarbons, fatty alcohols, fatty acids, fatty acid esters, ethoxylated fatty alcohols, and ethoxylated alkyl phenols, wherein the liquid reactant consisting of said sulfonatable and sulfatable organic compound and a gaseous reactant consisting of a mixture of sulfur trioxide and inert gas are fed, each from a single space, through distribution means, to a plurality of externally cooled parallel reaction tubes with downward annular two-phase flow to effect sulfonation and sulfation of said compound, which process comprises: introducing said liquid reactant circumferentially into said tubes, introducing said gaseous reactant centrally into said tubes immediately beyond the introducing openings for said liquid reactant, introducing to said tubes further inert gas from a further separated single space through said introducing openings and in contact with said liquid reactant, the flow rate of said further inert gas being in the range of 8–19 percent of the overall inert gas flow rate in each tube, the pressure drops of said further inert gas at the entrance of said tubes being in the range of 0.5–8 percent of the pressure drop in the distribution means of said gaseous reactant, so that said further inert gas actually distributes to said tubes producing an overall gas flow rate in each tube which is a decreasing function of the resistance therein to the gas flow, thereby substantially to equalize the pressure downstream of all the distribution means for the

liquid and gaseous reactants in order to provide for uniform distribution of the reactants to said reaction tubes without limiting the pressure drop therein, which is utilized as an energy factor for increasing liquid reactant flow rate, promoting heat removal and interphase mass transfer and reducing liquid phase residence time.

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**3,931,274**
**BIS(2,3-DIBROMOPROPYL CARBONATES) OF TETRAHALOBISPHENOL A**

**Robert M. Thomas, Palisades Park, N.J., and Rastko I. Mamuzic, West Lafayette, Ind., assignors to Great Lakes Chemical Corporation, West Lafayette, Ind.**

**Filed Mar. 27, 1973, Ser. No. 345,435**
**Int. Cl.² C07C** *69/96;* **C08K** *5/10, 5/159, 3/36*
**U.S. Cl. 260—463** **3 Claims**

**1.** A compound selected from the group consisting of (a) bis(2,3-dibromopropyl carbonate) of tetrabromobisphenol A and (b) bis(2,3-dibromopropyl carbonate) of tetrachlorobisphenol A.

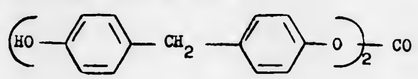
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**3,931,275**
**BIS(4-(4-HYDROXYBENZYL)PHENYL) CARBONIC ACID ESTER**

**Mario Gustav Buzzolini, Convent Station, N.J., assignor to Sandoz Inc., E. Hanover, N.J.**

**Continuation-in-part of Ser. No. 323,299, Jan. 12, 1973, abandoned. This application Dec. 3, 1973, Ser. No. 420,954**
**Int. Cl.² C07C** *69/96, 43/20;* **A61K** *31/265*
**U.S. Cl. 260—463** **3 Claims**

**1.** The compound of the formula



**3.** The compound which is bis (4-[4-benzyloxybenzyl]-phenyl) carbonic acid ester.

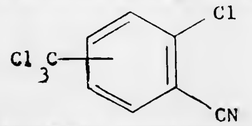
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**3,931,276**
**2-CHLORO-TRICHLORO-BENZONITRILES**

**Erich Klauke, Odenthal-Hahnenberg, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany**

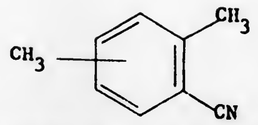
**Filed Mar. 5, 1973, Ser. No. 338,008**
**Claims priority, application Germany, Mar. 23, 1972, 2214058**
**Int. Cl.² C07C** *121/52*
**U.S. Cl. 260—465 G** **8 Claims**

**1.** Benzonitrile derivative having the formula:



**3.** Process for preparing a 2-chloro-trichloromethyl-benzonitrile which comprises the steps of

i. reacting a dimethyl benzonitrile having the formula



in a first reaction stage with chlorine at a temperature in the range of 20° to 200°C, forming bis-(trichloromethyl)-benzonitrile; and

ii. further chlorinating said bis-(trichloromethyl)-benzonitrile in a second reaction stage at a temperature in the range of from 200° to 280°C until the elimination of carbon tetrachloride is over, forming a 2-chloro-trichloromethylbenzonitrile.

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**3,931,277**
**NOVEL ISOCYANATES AND PROCESSES FOR THEIR PREPARATION**

**Gerhard Lohaus, and Hilmar Mildenberger, both of Kelkheim, Taunus, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany**

**Filed Nov. 20, 1973, Ser. No. 417,639**
**Claims priority, application Germany, Nov. 22, 1972, 2257240**
**Int. Cl.² C07C** *143/128*
**U.S. Cl. 260—465 D** **5 Claims**

**1.** Sulfonylamino-sulfonyl-isocyanates of the formula

$$R_2—SO_2—\underset{\displaystyle R_1}{\underset{|}{N}}—SO_2—NCO \qquad (I)$$

where $R_1$ is alkyl having from 1 to 12 carbon atoms, or cycloalkyl having from 4 to 8 carbon atoms, and $R_2$ is alkyl or halogeno-alkyl, each having from 1 to 20 carbon atoms; cycloalkyl having from 5 to 8 carbon atoms; phenyl, benzyl or naphthyl optionally substituted by halogen, alkyl or alkoxy each having from 1 to 4 carbon atoms, cyano and/or nitro.

**2.** A process for the preparation of compounds of formula **1**, which comprises reacting sulfonamides of the formula

$$R_2SO_2—NH—R_1 \qquad (II)$$

in which $R_1$ and $R_2$ are as defined in claim **1**, with chlorosulfonyl-isocyanate at a temperature from 80° to **200**°C.

**5.** In a process for reacting sulfonamides of the general formula

$$R_2—SO_2—NH—R_1 \qquad (II)$$

in which $R_1$ and $R_2$ are as defined in claim **1** to obtain the compounds of formula

$$R_2—SO_2—\underset{\displaystyle R_1}{\underset{|}{N}}—SO_2—NCO \qquad (I)$$

whereby compound of the formula II is reacted with chlorosulfonyl isocyanate at a temperature of from 0° to 80°C to form sulfochlorides of the general formula

$$R_2—SO_2—\underset{\displaystyle R_1}{\underset{|}{N}}—CO—NH—SO_2Cl \qquad (III)$$

the step comprising rearranging the intermediate products of formula III to compounds of formula I by heating said compounds of formula III at a temperature from 80°C to 200°C.



**3,931,278**
**PROCESS FOR PREPARING 5-OXOHEXANE-NITRILE**

**Werner Muller, Kelkheim, Taunus, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany**

**Filed June 11, 1974, Ser. No. 478,263**
**Claims priority, application Germany, June 13, 1973, 2329923**
**Int. Cl.² C07C** *120/00, 121/34*
**U.S. Cl. 260—465.1** **5 Claims**

**1.** In a process for preparing 5-oxohexane-nitrile by reaction of acetone with acrylonitrile at from 50°C to 250°C in the presence of from 0.001 to 0.02 mols of an acid per mol of acrylonitrile and from 0.01 to 0.2 mols of a compound per mol of acrylonitrile, said compound being selected from the group consisting of primary amines and Schiff bases, the improvement comprising carrying out the reaction in the presence of water maintained at the rate of from 0.2 to 5 weight percent, calculated on the reaction mixture.

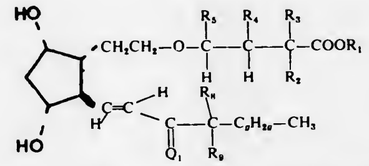
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**3,931,279**
**5-OXA PROSTAGLANDIN $R_1\alpha$ ANALOGS**

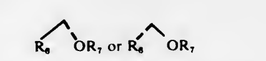
**Norman A. Nelson, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.**

**Filed May 21, 1973, Ser. No. 361,991**
**Int. Cl.² C07C** *69/38, 69/74, 63/592, 63/60*
**U.S. Cl. 260—468 D** **44 Claims**

**1.** An optically active compound of the formula



or a racemic compound of that formula and the mirror image thereof, wherein $C_9H_{20}$ is alkylene of one to 9 carbon atoms inclusive, with one to 5 carbon atoms, inclusive, in the chain between $—CR_8R_9—$ and terminal methyl; wherein $Q_1$ is



wherein $R_6$ and $R_7$ are hydrogen or alkyl of one to 4 carbon atoms, inclusive, being the same or different; wherein $R_1$ is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive; wherein $R_3$, $R_8$, and $R_9$ are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that $R_9$ is fluoro only when $R_8$ is hydrogen or fluoro; wherein $R_2$ is hydrogen or fluoro, with the proviso that $R_2$ is fluoro only when $R_3$ is hydrogen or fluoro; and wherein $R_4$ and $R_5$ are hydrogen or alkyl of one to 4 carbon atoms, inclusive, being the same or different, with the proviso that no more than one of $R_3$, $R_4$, and $R_5$ is alkyl; including the lower alkanoates thereof, and the pharmacologically acceptable salts thereof when $R_1$ is hydrogen.

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**3,931,280**
**PROCESS FOR PREPARING ALKYL TRANS-CHRYSANTHEMATE**

**Tsuneyuki Nagase, Takatsuki; Gohu Suzukamo, Ibaraki; Masami Fukao, Takatsuki, and Hirosuke Yoshioka, Ikeda, all of Japan, assignors to Sumitomo Chemical Company, Limited, Japan**

**Filed Sept. 7, 1973, Ser. No. 395,150**
**Claims priority, application Japan, Sept. 7, 1972, 47-90223**
**Int. Cl.² C07C** *67/30*
**U.S. Cl. 260—468 H** **6 Claims**

**1.** A process for preparing an alkyl trans-chrysanthemate which comprises treating the corresponding cis-isomer with an alkali metal lower alkoxide in the amount of about 1/100 to 1/5 mole of said alkali metal lower alkoxide per 1 mole of the starting cis-isomer at a temperature of about 50° to 200°C. in the absence of a solvent.

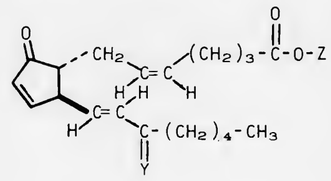
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**3,931,281**
**SUBSTITUTED ANILIDE ESTER OF $PGA_2$**

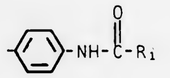
**Walter Morozowich, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.**

**Filed Jan. 8, 1974, Ser. No. 431,598**
**Int. Cl.² C07C** *69/74*
**U.S. Cl. 260—468 D** **11 Claims**

**1.** An optically active compound of the formula

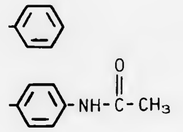


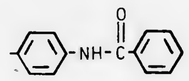
or a racemic compound of that formula and the mirror image thereof, wherein Z is



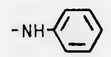
wherein $R_1$ is

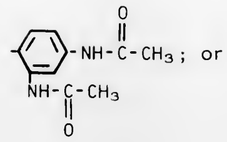
$-CH_3$

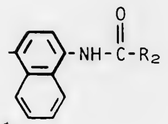




$-NH_2$ or



(2)  ; or

(3) 

wherein $R_2$ is

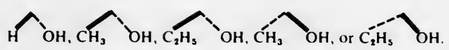


$-CH_3$

 or

$-NH_2$ ;

and wherein Y is



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**3,931,282**

**11α-HYDROXYMETHYL PROSTAGLANDINS**

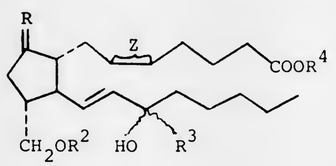
**Joseph M. Muchowski, and Angel Guzman, both of Mexico City, Mexico, assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.**

**Filed Feb. 21, 1974, Ser. No. 444,689**

**Int. Cl.² C07C** *61/38, 69/74*

**U.S. Cl. 260—468 D** **15 Claims**

**1.** An 8R-antimeric or racemic compound selected from the group of those represented by the following formula:



wherein

R is the grouping



each of $R^1$ and $R^2$ is hydrogen or a hydrocarbon carboxylic group of 1 to 6 carbon atoms;

$R^3$ is methyl or ethyl;

$R^4$ is hydrogen, a lower alkyl group of 1 to 6 carbon atoms or the pharmaceutically acceptable, non-toxic salts of compounds in which $R^4$ is hydrogen;

Z is a cis double bond and the wavy lines ( ) indicate the α or β configuration or mixtures thereof, provided that when $R^3$ is α, the hydroxyl group, attached to the same carbon atom as $R^3$, is β; and when $R^3$ is β, the hydroxyl group, attached to the same carbon atom as $R^3$, is α.

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**3,931,283**

**11β-PGF₂ β COMPOUNDS**

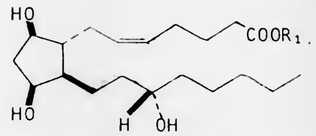
**John E. Pike, and William P. Schneider, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.**

**Division of Ser. No. 403,094, Oct. 3, 1973, Pat. No. 3,890,371, which is a division of Ser. No. 159,478, July 2, 1971, Pat. No. 3,772,350, which is a continuation-in-part of Ser. No. 71,390, Nov. 11, 1970, abandoned. This application July 8, 1974, Ser. No. 486,373**

**Int. Cl.² C07C** *61/38, 69/74*

**U.S. Cl. 260—468 D** **3 Claims**

**1.** The compound of the formula



wherein $R_1$ is hydrogen, alkyl of 1 to 8 carbon atoms, inclusive, cycloalkyl, of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl or phenyl substituted with one, 2, or 3 chloro or alkyl of 1 to 4 carbon atoms, inclusive, and the pharmacologically acceptable salts thereof when $R_1$ is hydrogen.

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**3,931,284**

**11β-PGE₂ COMPOUNDS**

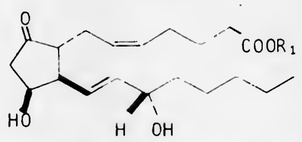
**John E. Pike, and William P. Schneider, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.**

**Division of Ser. No. 403,094, Oct. 3, 1973, Pat. No. 3,890,371, which is a division of Ser. No. 159,478, July 2, 1971, Pat. No. 3,772,350, which is a continuation-in-part of Ser. No. 71,390, Nov. 11, 1970, abandoned. This application July 8, 1974, Ser. No. 486,374**

**Int. Cl.² C07C** *61/38, 69/74*

**U.S. Cl. 260—468 D** **3 Claims**

**1.** The compound of the formula



wherein $R_1$ is hydrogen, alkyl of 1 to 8 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl or phenyl substituted with one, 2, or 3 chloro or alkyl of 1 to 4 carbon atoms, inclusive, and the pharmacologically acceptable salts thereof when $R_1$ is hydrogen.



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**3,931,285**

**SUBSTITUTED TOLYL ESTERS OF PGE₁**

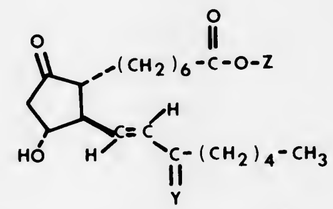
**Walter Morozowich, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.**

**Division of Ser. No. 431,599, Jan. 8, 1974. This application Dec. 12, 1974, Ser. No. 531,996**

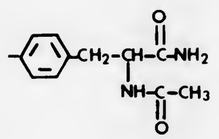
**Int. Cl.² C07C** *133/08, 103/82*

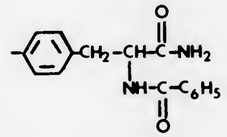
**U.S. Cl. 260—468 D** **10 Claims**

**1.** An optically active compound of the formula:

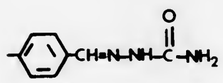


or a racemic compound of that formula and the mirror image thereof, wherein Z is

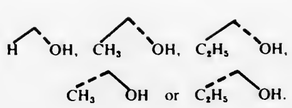




or



and wherein Y is



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**3,931,286**

**NOVEL BENZOYLPHENYLACETIC ACID DERIVATIVES**

**Jean Meier, La Varenne Saint-Hilaire, and Odile Le Martret, Paris, both of France, assignors to Roussel-UCLAF, Paris, France**

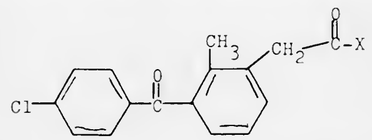
**Filed June 5, 1974, Ser. No. 476,667**

**Claims priority, application France, June 14, 1973, 73.21622**

**Int. Cl.² C07C** *69/95*

**U.S. Cl. 260—469** **3 Claims**

**1.** A benzoylphenylacetic acid compound of the formula



wherein X is selected from the group consisting of geranyloxy and pivaloyloxymethoxy.

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**3,931,287**

**POLYENE COMPOUNDS**

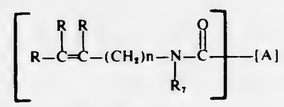
**Clifton L. Kehr, Silver Spring, and Walter R. Wszolek, Sykesville, both of Md., assignors to W. R. Grace & Co., New York, N.Y.**

**Continuation of Ser. No. 40,737, May 26, 1970, abandoned, which is a continuation-in-part of Ser. No. 617,801, Feb. 23, 1967, abandoned, which is a continuation-in-part of Ser. No. 567,841, July 26, 1966, abandoned. This application Aug. 22, 1973, Ser. No. 390,665**

**Int. Cl.² C07C** *125/06*

**U.S. Cl. 260—471 C** **5 Claims**

**1.** A polyene compound which comprises the formula:



wherein R is a radical selected from the group consisting of hydrogen, fluorine, chlorine, phenyl, benzyl, alkyl, and cycloalkyl; said alkyl having from 1 to 9 carbon atoms and said cycloalkyl having from 3 to 8 carbon atoms; wherein [A] is free of reactive carbon-to-carbon unsaturation and formed of at least two repeating units selected from the group consisting of $-(CH_2)_{\overline{g}}$, $-(C_2H_4O)_{\overline{h}}$, $-(C_3H_6O)_{\overline{h}}$, and $-(C_4H_8O)_{\overline{h}}$, $g$ is an integer from 1 to 9 and $h$ is an integer from 1 to 200; said compound having a molecular weight in the range of 300 to 20,000 and a viscosity in the range from essentially 0 to 20 million centipoises at 70°C; and wherein $R_7$ is a member of the group consisting of hydrogen, phenyl, cycloalkyl, alkyl, and $CH_2{=}CH-$, wherein said alkyl has from 1 to 9 carbon atoms, said cycloalkyl has from 3 to 8 carbon atoms, and n is at least 1.

## 3,931,288
## ALKYL ESTERS OF 4-CHLOROPHENOXY-4-OXO-CYCLOALKYL-CARBOXYLIC ACID

Leo Berger; Willy Leimgruber, both of Montclair, N.J., and Fausto Eugenio Schenker, Riehen, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 234,375, March 13, 1972, Pat. No. 3,803,180, which is a continuation-in-part of Ser. No. 128,570, March 26, 1971, abandoned. This application Nov. 23, 1973, Ser. No. 418,713

Int. Cl.² C07C *69/76*

U.S. Cl. 260—473 G 2 Claims

1. A compound, 3-(4-chlorophenoxy)-4-oxo-cyclohexanecarboxylic acid ethyl ester.

2. A compound, 3-(4-chlorophenoxy)-4-oxo-cyclopentanecarboxylic acid methyl ester.

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## 3,931,289
## 3-OXA PHENYL-SUBSTITUTED PGE COMPOUNDS

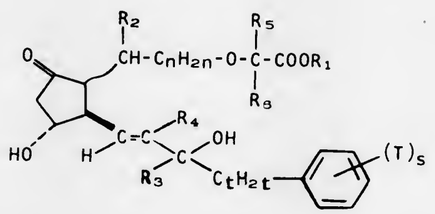
Gordon L. Bundy, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 185,448, Sept. 30, 1971, abandoned, which is a continuation-in-part of Ser. No. 103,338, Dec. 31, 1970, abandoned. This application Apr. 11, 1974, Ser. No. 459,759

Int. Cl.² C07C *05/22*, *69/76*

U.S. Cl. 260—473 A 30 Claims

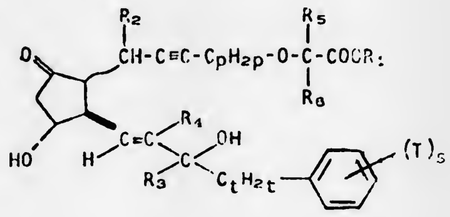
1. A compound of the formula:



wherein $R_1$ is hydrogen, alkyl of one to 8 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive, or ethyl substituted in the $\beta$-position with 3 chloro, 2 or 3 bromo, or 1, 2, or 3 iodo; wherein $R_2$, $R_3$, $R_4$, $R_5$, and $R_6$ are hydrogen or alkyl of one to 4 carbon atoms, inclusive; wherein $C_nH_{2n}$ is alkylene of one to 10 carbon atoms, inclusive, with one to 5 carbon atoms, inclusive, between —CH-$R_2$— and —O—; wherein $C_tH_{2t}$ represents (1) a valence bond or (2) alkylene of one to 10 carbon atoms, inclusive, substituted with zero, one, or 2 fluoro, with one to 7 carbon atoms, inclusive, between —$CR_3OH$— and the ring; wherein T is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or —$OR_9$, wherein $R_9$ is hydrogen, alkyl of one to 4 carbon atoms, inclusive, or tetrahydropyranyl, and s is zero, one, 2, or 3, with the proviso that no more than two T are other than alkyl; and wherein ~ indicates attachment of the group to the ring in alpha or beta configuration; including the lower alkanoates thereof, and the pharmacologically acceptable salts thereof when $R_1$ is hydrogen.

2. A compound of the formula:





wherein $R_1$ is hydrogen, alkyl of one to 8 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive, or ethyl substituted in the $\beta$-position with 3 chloro, 2 or 3 bromo, or 1, 2, or 3 iodo; wherein $R_2$, $R_3$, $R_4$, $R_5$, and $R_6$ are hydrogen or alkyl of one to 4 carbon atoms, inclusive; wherein $C_pH_{2p}$ is alkylene of one to 8 carbon atoms, inclusive, with one, 2, or 3 carbon atoms between —CH=CH— and —O—; wherein $C_tH_{2t}$ represents (1) a valence bond or (2) alkylene of one to 10 carbon atoms, inclusive, substituted with zero, one, or 2 fluoro, with one to 7 carbon atoms, inclusive, between —$CR_3OH$— and the ring; wherein T is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or —$OR_9$, wherein $R_9$ is hydrogen, alkyl of one to 4 carbon atoms, inclusive, or tetrahydropyranyl, and $s$ is zero, one, 2, or 3, with the proviso that no more than two T are other than alkyl; and wherein ~ indicates attachment of the group to the ring in alpha or beta configuration; including the lower alkanoates thereof, and the pharmacologically acceptable salts thereof when $R_1$ is hydrogen.

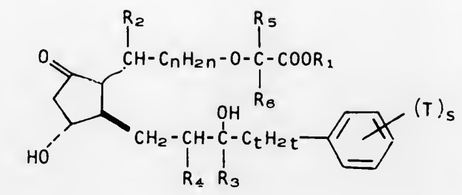
3. A compound of the formula:



wherein $R_1$ is hydrogen, alkyl of one to 8 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive, or ethyl substituted in the $\beta$-position with 3 chloro, 2 or 3 bromo, or 1, 2, or 3 iodo; wherein $R_2$, $R_3$, $R_4$, $R_5$, and $R_6$ are hydrogen or alkyl of one to 4 carbon atoms, inclusive; wherein $C_pH_{2p}$ is alkylene of one to 8 carbon atoms, inclusive, with one, 2, or 3 carbon atoms between —C C— and —O—; wherein $C_tH_{2t}$ represents (1) a valence bond or (2) alkylene of one to 10 carbon atoms, inclusive, substituted with zero, one, or 2 fluoro, with one to 7 carbon atoms, inclusive, between —$CR_3OH$— and the ring; wherein T is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or —$OR_9$, wherein $R_9$ is hydrogen, alkyl of one to 4 carbon atoms, inclusive, or tetrahydropyranyl, and s is zero, one, 2, or 3, with the proviso that no more than two T are other than alkyl; and wherein ~ indicates attachment of the group to the ring in alpha or beta configuration; including the lower alkanoates thereof, and the pharmacologically acceptable salts thereof when $R_1$ is hydrogen.

4. A compound of the formula:





wherein $R_1$ is hydrogen, alkyl of one to 8 carbon atoms, inclusive, cycloalkyl or 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive, or ethyl substituted in the $\beta$-position with 3 chloro, 2 or 3 bromo, or 1, 2, or 3 iodo; wherein $R_2$, $R_3$, $R_4$, $R_5$, and $R_6$ are hydrogen or alkyl of one to 4 carbon atoms, inclusive; wherein $C_nH_{2n}$ is alkylene of one to 10 carbon atoms, inclusive, with one to 5 carbon atoms, inclusive, between —CH-$R_2$— and —O—; wherein $C_tH_{2t}$ represents (1) a valence bond or (2) alkylene of one to 10 carbon atoms, inclusive, substituted with zero, one, or 2 fluoro, with one to 7 carbon atoms, inclusive, between —$CR_3OH$— and the ring; wherein T is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or —$OR_9$, wherein $R_9$ is hydrogen, alkyl of one to 4 carbon atoms, inclusive, or tetrahydropyranyl, and s is zero, one, 2, or 3, with the proviso that no more than two T are other than alkyl; and wherein ~ indicates attachment of the group to the ring in alpha or beta configuration; including the lower alkanoates thereof, and the pharmacologically acceptable salts thereof when $R_1$ is hydrogen.

## 3,931,291
## PREPARATION OF OPTICALLY ACTIVE ALLETHRORONE VIA ALLETHRONYL ACID PHTHALATE

Fukashi Horiuchi, Kawani, Japan, assignor to Sumitomo Chemical Company, Limited, Osaka, Japan

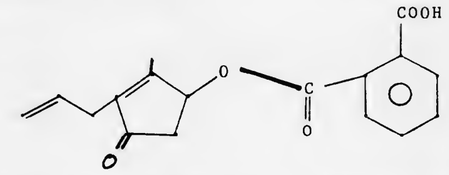
Filed Mar. 22, 1974, Ser. No. 453,997

Claims priority, application Japan, Mar. 28, 1973, 48-36005; Apr. 18, 1973, 48-44411; June 11, 1973, 48-66039; June 11, 1973, 48-66040

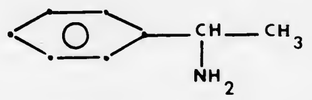
Int. Cl.² C07C *69/80*

U.S. Cl. 260—475 N 2 Claims

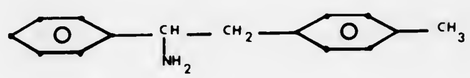
1. A method for preparing optically active allethronyl acid phthalate, which comprises reacting (±)-allethronyl acid phthalate of the formula



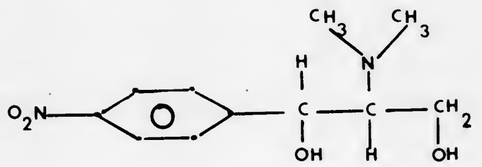
with an optically active amine selected from the group consisting of $\alpha$-phenylethylamine of the formula



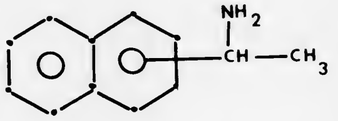
$\alpha$-phenyl-$\beta$-p-tolylethylamine of the formula,



threo-2-dimethylamino-1-(p-nitrophenyl)-1,3-propanediol of the formula,



and naphthylethylamine of the formula



in the presence of a solvent selected from the group consisting of benzene, toluene, hexane, chloroform, tetrachloromethane, chlorobenzene, dichloroethane, tetrachloroethylene, ethylether, isopropylether, acetone, methylethyl ketone, methylisobutyl ketone, diisobutyl ketone, ethyl acetate, metha-

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## 3,931,290
## PREPARATION OF CARBOXYLIC ACID ALKYL ESTERS

Yolande Bourgau, Bron; Jean Berthoux, Decines, and Ghislain Schwachhofer, Miribel, all of France, assignors to Rhone-Progil, Paris, France

Filed Sept. 8, 1972, Ser. No. 287,412

Claims priority, application France, Sept. 17, 1971, 71.34327; Mar. 30, 1972, 72.12000

Int. Cl.² C07C *67/04*

U.S. Cl. 260—475 R 10 Claims

1. In a process for the preparation of carboxylic acid alkyl esters comprising the reaction of a linear or branched 1-halo-alkane containing from 6–18 carbon atoms and an alkali metal salt of a carboxylic acid selected from the group consisting of aliphatic mono-acids and diacids and aromatic mono-acids and diacids, in the presence of a nitrogen containing catalyst, the improvement wherein:

the reaction mixture consists essentially of an heterogeneous liquid phase of the organic halo-alkane and an aqueous solution of the carboxylic acid alkali metal salt; and wherein said reaction mixture is heated at 110°–250°C. and at least those pressures which would be generated by the reaction in a closed autoclave, said catalyst consisting essentially of a nitrogenous compound selected from the group consisting of ammonia, primary and secondary amines, and of tertiary amines and quaternary ammonium salts containing in the whole molecule at least 10 carbon atoms, said catalyst being chosen from compounds in which the nitrogen is not connected to a carbon belonging to an unsaturated cycle, and wherein said catalyst is present in a molar percentage between 0.5 and 5% with regard to said carboxylic acid alkali metal salt.

nol, ethanol, propanol, isopropyl alcohol, a mixture thereof and an aqueous mixture thereof,

the ratio of the optical active amine being 0.5 to 1.5 mole to 1 mole of the allethronyl acid phthalate, to form a diastereomeric salt thereof, and decomposing the resolved salt to obtain the optically active allethronyl acid phthalate.

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### 3,931,292
### PREPARATION OF OMEGA-AMINO-SUBSTITUTED BETA-ALKOXYCARBOXYLIC ESTERS

**Johan W. Garritsen, Sittard, and Josef M. Penders, Maastricht, both of Netherlands, assignors to Stamicarbon B.V., Geleen, Netherlands**

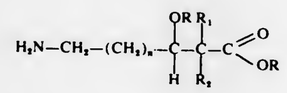
**Filed Dec. 5, 1973, Ser. No. 422,008**

**Claims priority, application Netherlands, Dec. 8, 1972, 16661**

**Int. Cl.² C07C** *101/18*

**U.S. Cl. 260—482 R** **2 Claims**

1. An ω-amino-β-alkoxycarboxylic acid ester of the general formula



wherein

$n$ is an integer of from 1 to 5, the two R groups which may be the same or different, represent an alkyl group or a cycloalkyl group containing not more than 10 carbon atoms, and

$R_1$ and $R_2$, which may be the same or different, represent hydrogen, an alkyl group or a cycloalkyl group containing not more than 10 carbon atoms.

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### 3,931,293
### PROCESSES FOR PRODUCING CIS ALKYL-2-METHYL-PENTENOATES AND ISOMER MIXTURES CONTAINING HIGH PROPORTIONS OF CIS ALKYL-2-METHYL-3-PENTENOATES

**Ching Y. Tseng, Middletown; John B. Hall, Rumson; Manfred Hugo Vock, Locust; Joaquin F. Vinals, Red Bank, all of N.J., and Edward J. Shuster, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.**

**Filed July 22, 1974, Ser. No. 490,719. The portion of the term of this patent subsequent to Jan. 6, 1992, has been disclaimed.**

**Int. Cl.² C07C** *69/54*

**U.S. Cl. 260—486 R** **1 Claim**

1. A process for preparing a mixture containing 80% cis-2-methyl-3-pentenoic acid $C_2$–$C_6$ alkyl ester and 20% 2-methyl-2-pentenoic acid $C_2$–$C_6$ alkyl ester comprising the steps of:

a. reacting in the presence of a non-reactive solvent at a temperature in the range of 40°–60°C methyl acetylene with a methyl magnesium halide to form a methyl acetylene magnesium halide Grignard reagent;

b. reacting in the presence of a non-reactive solvent at a temperature in the range of 20°–30°C the methyl acetylene magnesium halide Grignard reagent with acetaldehyde to form a 3-pentyn-2-ol magnesium halide salt;

c. hydrolyzing said 3-pentyn-2-ol magnesium halide salt with concentrated mineral acid to form 3-pentyn-2-ol;

d. reacting said 3-pentyn-2-ol with a halogenating reagent selected from the group consisting of phosphorous trichloride, phosphorous tribromide and $SOCl_2$ at a temperature in the range of 20°–80°C to form a 4-halo-2-pentyne;

e. reacting in the presence of a non-reactive solvent at a temperature in the range of 25°–50°C said 4-halo-2-pentyne with magnesium to form a 4-magnesium halo-2-pentyne Grignard reagent;

f. reacting said 4-magnesium halo-2-pentyne Grignard reagent with $CO_2$ to form a magnesium halo carboxylate salt mixture;

g. hydrolyzing said magnesium halo carboxylate salt mixture with aqueous mineral acid at a temperature in the range of 20°–30°C to form a mixture of 2-methyl-3-pentenoic acid and 2-methyl-2,3-pentadienoic acid;

h. reacting in the presence of a non-reactive solvent said mixture of 2-methyl-3-pentynoic acid and 2-methyl-2,3-pentadienoic acid with hydrogen; the reaction taking place at a pressure of 20–200 psig and a temperature in the range of 20°–40°C in the presence of a $Pd/CaSO_4$ catalyst to form a mixture containing 80% cis-2-methyl-3-pentenoic acid and 20% 2-methyl-2-pentenoic acid; and

i. intimately admixing said mixture of 80% cis-2-methyl-3-pentenoic acid and 2-methyl-2-pentenoic acid with an alkali metal base and a compound having the formula RX, wherein R is $C_2$–$C_6$ alkyl, and X is selected from the group consisting of chloro, bromo and iodo in the presence of a solvent selected from the group consisting of hexamethyl phosphoramide, a dilower alkyl formamide and dimethyl sulfoxide at a temperature in the range of 0°–50°C.

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### 3,931,294
### PRODUCTION OF 2-PHENYL-ETHYLENE PHOSPHONIC ACID

**Theodor Auel, Hurth-Kendenich; Gero Heymer, Erftstadt Liblar, and Hans-Werner Stephan, Cologne, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany**

**Filed June 21, 1974, Ser. No. 481,813**

**Claims priority, application Germany, Sept. 29, 1973, 2343460**

**Int. Cl.² C07F** *9/38*

**U.S. Cl. 260—502.4 R** **3 Claims**

1. In a process for making 2-phenyl-ethylene phosphonic acid by reacting with styrene with phosphorus pentachloride in a molar ratio of about 1 : 2 in liquid phase and hydrolyzing the resulting complex 2-phenyl-ethylene phosphonic acid tetrachloride with water, the improvement which comprises starting the reaction with the use, as the liquid phase (A), of the equimolar mixture of 2-phenyl-ethylene phosphonic acid dichloride and phosphorus oxychloride obtained as an intermediary product; introducing styrene and phosphorus pentachloride thereinto with continuous agitation; partially hydrolyzing the complex 2-phenyl-ethylene phosphonic acid tetrachloride by adding a predetermined quantity of water to obtain an equimolar mixture of 2-phenyl-ethylene phosphonic acid dichloride and phosphorus oxychloride; continuously using as the liquid phase (A) at least two thirds of the resulting clear solution and continuously distilling off under reduced pressure phosphorus oxychloride from the remainder of the solution; hydrolyzing the remaining 2-phenyl-ethylene phosphonic acid dichloride by admixing it with an overstoichiometric proportion of water to obtain an aqueous solution of 2-phenyl-ethylene phosphonic acid; cooling the aqueous solution and effecting the precipitation of crystalline phosphonic acid therefrom.

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### 3,931,295
### HYDROXYLATION OF AROMATIC COMPOUNDS

**Stephen N. Massie, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.**

**Filed July 23, 1974, Ser. No. 491,008**

**Int. Cl.² C07F** *9/38*; **C07C** *143/64*, *143/44*, *65/04*

**U.S. Cl. 260—502.4 R** **11 Claims**

1. A process for the nuclear hydroxylation of an aromatic compound having the formula $R_mArX_nH$ in which Ar is a monocyclic or polycyclic hydrocarbon nucleus, R is selected from the group consisting of carboxylic, sulfonic, phosphonic acid groups, alkali metal salt or alkaline earth metal salts of the acids, X is independently selected from the group consisting of hydrogen, alkyl, aryl, cycloalkyl, alkoxy, aralkyl, alkaryl, halogen and amino substituents, $m$ being an integer from 1 to about 5 and $n$ being an integer between 0 and 5, which comprises reacting said aromatic compound with hydrogen peroxide at a temperature of from about −10°C. to about 150°C., a pressure of from about atmospheric to about 100 atmospheres and a mol ratio of from about 1:1 to about 1:10 mols of hydrogen peroxide per mol of aromatic compound in the presence of a catalyst consisting essentially of an alkaline solution of an aromatic nitrile selected from the group consisting of benzonitrile and alkyl benzonitrile and recovering the resultant hydroxylated aromatic compound.



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### 3,931,296
### TRANS-Δ²-PROSTAGLANDINS

**Masaki Hayashi, 32-408 Nanpeidai; Hirohisa Wakatsuka, 1319 Makita-cho, and Seiji Kori, 1-281 Higashishiroyama-cho, all of Takatsuki, Japan**

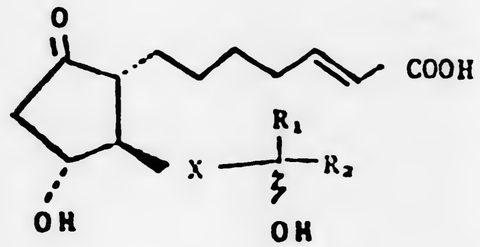
**Filed Dec. 21, 1973, Ser. No. 427,403**

**Claims priority, application Japan, Dec. 29, 1972, 48-2427; Nov. 2, 1973, 48-122796**

**Int. Cl.² C07C** *61/38*, *69/74*

**U.S. Cl. 260—514 D** **11 Claims**

1. A compound of the formula:



in which X is $-CH_2CH_2-$ or trans $-CH=CH-$, $R_1$ is a branched-chain alkyl radical of 1 to 10 carbon atoms or a straight- or branched-chain alkyl radical of 1 to 6 carbon atoms substituted by phenyl or cycloalkyl of 5 to 7 carbon atoms and $R_2$ is hydrogen or a straight- or branched-chain alkyl radical of 1 to 4 carbon atoms, and in which /\/\ indicates attachment of the hydroxyl radical to the carbon atom in alpha or beta configuration, and the corresponding cyclodextrin clathrates, alkyl esters and non-toxic salts thereof.

11. A compound which is 15-methyl-trans-Δ²-$PGE_1$.

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### 3,931,297
### 10-HYDROXY PGC COMPOUNDS

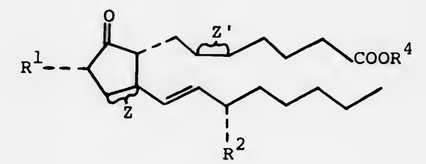
**Pierre Crabbe, Mexico City, Mexico, assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.**

**Continuation-in-part of Ser. No. 204,772, Dec. 3, 1971, abandoned. This application Sept. 8, 1972, Ser. No. 287,249**

**Int. Cl.² C07C** *61/38*, *64/74*

**U.S. Cl. 260—514 D** **3 Claims**

1. A compound selected from the group of those represented by the formula:



wherein $R^1$ and $R^2$ are independently selected from the group of hydroxy, hydrocarbon carboxylic containing from one to 12 carbon atoms or the group consisting of methoxy, ethoxy, cycopentyloxy, tetrahydrofuran-2-yloxy, tetrahydropyran-2-yloxy and 4-methoxytetrahydropyran-4-yloxy;

$R^4$ is hydrogen or lower alkyl;

Z is a carbon-carbon double bond; and

Z′ is a cis-olefin double bond or a saturated linkage; and pharmaceutically acceptable salts where $R^4$ is hydrogen.

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### 3,931,298
### CHEMICAL PROCESS FOR FORMING 2,6-DIMETHYLANILINE

**John C. Wollensak, Bloomfield Hills, Mich., assignor to Ethyl Corporation, Richmond, Va.**

**Continuation-in-part of Ser. No. 123,428, March 11, 1971, abandoned. This application Sept. 20, 1974, Ser. No. 507,925**

**Int. Cl.² C07C** *85/02*

**U.S. Cl. 260—581** **25 Claims**

1. In a process for converting a hydroxy aromatic starting material to the corresponding aromatic amine, said process comprising reacting said hydroxy aromatic with ammonia in the presence of a catalyst at a temperature of about 200°–400°C, the improvement wherein said catalyst is a Group VIII metal catalyst in combination with from about 0.05 to about 0.5 moles of a saturated cyclohexanone co-catalyst per mole of said hydroxy aromatic.

20. A process for making 2,6-dimethylaniline, said process comprising adding a palladium catalyst to 2,6-dimethylphenol, hydrogenating said 2,6-dimethylphenol with about 0.1–1.0 moles of hydrogen per mole of 2,6-dimethylphenol to reduce a portion of said 2,6-dimethylphenol, adding about 1–4 moles

of ammonia per mole of initial 2,6-dimethylphenol, heating the mixture in a sealed vessel at 200°–400°C to convert said 2,6-dimethylphenol to 2,6-dimethylaniline, and recovering said 2,6-dimethylaniline.

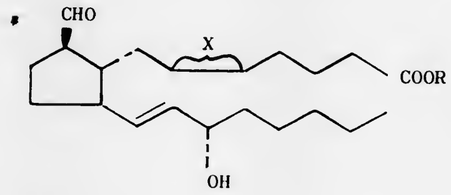
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**3,931,299**
**9β-FORMYL PROSTAGLANDIN DERIVATIVES**

**Donald P. Strike, St. Davids, Pa., assignor to American Home Products Corporation, New York, N.Y.**

**Filed Sept. 13, 1974, Ser. No. 505,803**
**Int. Cl.² C07C** *61/38, 69/71*
**U.S. Cl. 260—514 D** **3 Claims**

**1.** A chemical compound of the structure:




wherein
i. X is a single bond; or
ii. X is a cis double bond,
and R is hydrogen or alkyl of from 1 to 6 carbon atoms.

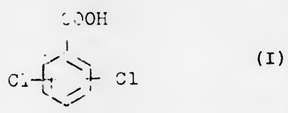
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**3,931,300**
**PROCESS FOR THE PRODUCTION OF DICHLOROBENZOIC ACIDS**

**Helmut Junge, Wachenheim, and Hans-Juergen Quadbeck-Seeger, Ludwigshafen, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany**

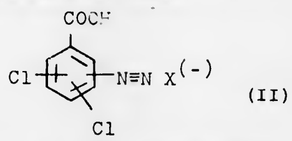
**Filed Apr. 8, 1974, Ser. No. 458,766**
**Claims priority, application Germany, Apr. 11, 1973, 2318106**
**Int. Cl.² C07C** *63/12*
**U.S. Cl. 260—515 A** **11 Claims**

**1.** A process for the production of a dichlorobenzoic acid of the formula



(I)

which comprises:
reacting at an elevated temperature the diazonium salt of a dichloroaminobenzoic acid of the formula



(II)

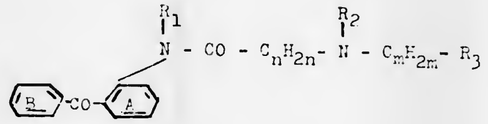
in which X is the anion of an acid, with a saturated aliphatic or araliphatic alcohol in an amount of from 1 mole to 10 moles per mole of starting material (II) in the presence of water in an amount of at least 100% by weight based on the alcohol.

**3,931,301**
**BENZOPHENONE DERIVATIVES AND PROCESS FOR THEIR PREPARATION III**

**Heinz Günter Greve, and Klaus Resag, both of Frankfurt am Main-Fechenheim, Germany, assignors to Cassella Farbwerke Mainkur Aktiengesellschaft, Frankfurt am Main-Fechenheim, Germany**

**Division of Ser. No. 358,455, May 8, 1973, Pat. No. 3,888,899. This application Aug. 26, 1974, Ser. No. 500,245**
**Claims priority, application Luxemburg, May 12, 1972, 65340**
**Int. Cl.² C07C** *149/20, 65/20*
**U.S. Cl. 260—516** **3 Claims**

**1.** Benzophenone derivative having the structural formula




and the acid addition salts thereof, wherein
$R_1$ and $R_2$ are substituents selected from the group consisting of hydrogen, saturated and unsaturated alkyl groups having 1 – 4 carbon atoms;
$R_3$ is a substituent selected from the group consisting of —COOH and —COOMe, Me signifying a pharmacologically acceptable metallic cation;
*n* is an integer selected from 1 and 2; and
*m* is an integer selected from 1, 2 and 3, and wherein the ring A may be substituted with a substituent selected from the group consisting of halogen, nitro, trifluoromethyl, methyl, methoxy and methylmercapto and the ring B may be substituted with a substituent selected from the group consisting of fluorine and chlorine.

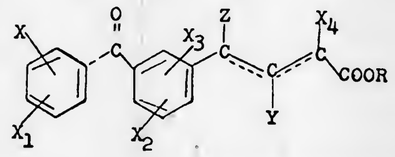
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**3,931,302**
**4-(M-BENZOYLPHENYL)BUTYRIC ACID DERIVATIVES**

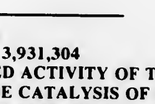
**Andre Allais, Les Llias; Jean Meier, Coeullly-Champigny, and Jacques Dube, Eaubonne, all of France, assignors to Roussel-UCLAF, Paris, France**

**Filed Aug. 29, 1972, Ser. No. 284,575**
**Claims priority, application France, Sept. 3, 1971, 71.31902. The portion of the term of this patent subsequent to June 26, 1990, has been disclaimed.**
**Int. Cl.² C07C** *65/22*
**U.S. Cl. 260—517** **7 Claims**

**1.** A compound selected from the group consisting of butyric acid derivatives of the formula




wherein X, $X_1$, $X_2$ and $X_3$ are individually selected from the group consisting of hydrogen, halogen, lower alkyl of 1 to 5 carbon atoms, lower alkoxy of 1 to 5 carbon atoms, lower alkylthio of 1 to 5 carbon atoms, trifluoromethoxy, trifluoromethylthio, trifluoromethyl, OH and dilower alkylamino of 1 to 5 carbon atoms for each alkyl, R is selected from the group consisting of hydrogen, lower alkyl of 1 to 5 carbon atoms, o-carboxyphenyl, 2,3-dihydroxypropyl and




wherein P and Q are individually lower alkyl of 1 to 5 carbon atoms, Z and $X_4$ are individually selected from the group consisting of hydrogen and lower alkyl of 1 to 5 carbon atoms and Y is selected from the group consisting of hydrogen and —OH and the dotted line indicates the optional presence of a double bond when Y is hydrogen and when R is hydrogen or o-carboxyphenyl, the salts thereof with a non-toxic, pharmaceutically acceptable mineral or organic base.



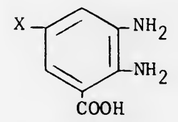
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**3,931,303**
**PROCESS FOR PREPARING 5-HALO-2,3-PHENYLENEDIAMINE-1-CARBOXYLIC ACID**

**Charles H. Chang, Loudonville, N.Y., and David I. Randall, Easton, Pa., assignors to GAF Corporation, New York, N.Y.**

**Filed June 28, 1973, Ser. No. 374,574**
**Int. Cl.² C07C** *101/68*
**U.S. Cl. 260—518 A** **7 Claims**

**1.** A process for preparing 5-halo-2,3-diamino benzoic acids having the formula:




wherein X is a member selected from the group consisting of chlorine, bromine and fluorine which comprises the high temperature reaction of 2,5-dihalo-3-nitrobenzoic acid with ammonium hydroxide at a temperature of 125° and 140°C. to produce 5-halo-3-nitroanthranilic acid and reducing said 5-halo-3-nitroanthranilic acid to 5-halo-2,3-diamino benzoic acid.

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**3,931,304**
**BISMUTH ENHANCED ACTIVITY OF TRANSITION METAL-BROMINE CATALYSIS OF DI- AND TRI-METHYL BENZENE OXIDATION IN LIQUID PHASE**

**Gene L. Wampfler, Lombard, Ill., assignor to Standard Oil Company, Chicago, Ill.**

**Filed May 21, 1973, Ser. No. 362,463**
**Int. Cl.² C07C** *51/33*
**U.S. Cl. 260—524 R** **2 Claims**

**1.** A method of preparing o-phthalic acid or trimellitic acid by oxidizing o-xylene or pseudocumene with molecular oxygen at a temperature in the range of 130° to 275°C in the presence of acetic acid under a pressure to maintain acetic acid in the liquid phase at such temperature, the improvement comprising the use of catalysis provided by the components consisting essentially of bismuth, bromine and the variable valence metals cobalt and manganese wherein said variable valence metals are present in the amounts of from 2 to 5 milligram atoms and bromine is present in amounts of from 2 to 10 milligram atoms, each on a per gram mole of o-xylene or pseudocumene basis and the ratio of bismuth to said variable valence metals is from 0.1 to 1.0:1.0 milligram atom basis.

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**3,931,305**
**TEREPHTHALIC ACID RECOVERY BY CONTINUOUS FLASH CRYSTALLIZATION**

**Jay A. Fisher, Naperville, Ill., assignor to Standard Oil Company, Chicago, Ill.**

**Filed Aug. 20, 1973, Ser. No. 389,717**
**Int. Cl.² C07C** *51/46, 51/44, 63/26*
**U.S. Cl. 260—525** **8 Claims**

**1.** For the recovery of crystalline terephthalic acid product having a maximum p-toluic acid content not exceeding 150 ppm from a liquid aqueous solution substantially saturated with terephthalic acid containing 500–6,000 ppm of p-toluic acid at a temperature in the range of 400° to 550° F., the improved process comprising continuously charging such aqueous solution to the first of two or more series connected flash solvent evaporation and stirred crystallization zones each operated at a successively lower temperature wherein at least the zones operated at a temperature within and below the range of 360°–320° F. crystallize decreasing proportions of originally dissolved terephthalic acid, the flash evaporated solvent is removed from each zone and the temperature of recovery of terephthalic acid product is the same as the temperature of the last zone.

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**3,931,306**
**PROCESS FOR PRODUCING ISOMER MIXTURES CONTAINING HIGH PROPORTIONS OF CIS-2-METHYL-3-PENTENOIC ACID**

**John B. Hall, Rumson; Manfred Hugo Vock, Locust; Joaquin Vinals, Red Bank, all of N.J., and Edward J. Shuster, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.**

**Continuation-in-part of Ser. No. 408,854, Oct. 23, 1973, abandoned. This application July 22, 1974, Ser. No. 490,717**
**Int. Cl.² C07C** *57/02*
**U.S. Cl. 260—526 N** **1 Claim**

**1.** A process for preparing a mixture containing 80% cis-2-methyl-3-pentenoic acid and 20% 2-methyl-2-pentenoic acid comprising the steps of:
a. reacting in the presence of a non-reactive solvent at a temperature in the range of 40°–60°C methyl acetylene with a methyl magnesium halide to form a methyl acetylene magnesium halide Grignard reagent;
b. reacting in the presence of a non-reactive solvent at a temperature in the range of 20°–30°C the methyl acetylene magnesium halide Grignard reagent with acetaldehyde to form a 3-pentyn-2-ol magnesium halide salt;
c. hydrolyzing said 3-pentyn-2-ol magnesium halide salt with concentrated mineral acid to form 3-pentyn-2-ol;
d. reacting in the presence of a non-reactive solvent at a temperature in the range of 20°–30°C the methyl acetylene magnesium halide Grignard reagent with acetaldehyde to form a 3-pentyn-2-ol magnesium halide salt;
e. reacting in the presence of a non-reactive solvent at a temperature in the range of 25°–50°C said 4-halo-2-pentyne with magnesium to form a 4-magnesium halo-2-pentyne Grignard reagent;
f. reacting said 4-magnesium halo-2-pentyne Grignard reagent with $CO_2$ to form a magnesium halo carboxylate salt mixture;
g. hydrolyzing said magnesium halo carboxylate salt mixture with aqueous mineral acid at a temperature in the range of 20°–30°C to form a mixture of 2-methyl-3-pentenoic acid and 2-methyl-2,3-pentadienoic acid; and
h. reacting in the presence of a non-reactive solvent said mixture of 2-methyl-3-pentynoic acid and 2-methyl-2,3-pentadienoic acid with hydrogen; the reaction taking place at a pressure of 20°–200 psig and a temperature in the range of 20°–40°C in the presence of a $Pd/CaSO_4$ catalyst to form a mixture containing 80% cis-2-methyl-3-pentenoic acid and 20% 2-methyl-2-pentenoic acid.

### 3,931,307
## PROCESS FOR THE STABILIZATION OF METHIONINE

Gerd Eikelmann, Grossauheim; Rudolf Fahnenstich, Mombris; Theodor Lussling, Grossauheim; Sven-Peter Mannsfeld, Steinbach; Gerhard Pohl; Herbert Tanner, both of Grossauheim, and Hans Wagner, Constance, all of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Germany

Filed Nov. 30, 1973, Ser. No. 420,574
Claims priority, application Germany, Dec. 2, 1972, 2259159
Int. Cl.² C07C *149/247*
U.S. Cl. 260—534 S 9 Claims

1. A process for stabilizing methionine containing contaminants occurring in its production, said methionine being in the wet condition and having a pH of at least 5 comprising adjusting the pH of the methionine to 3.0 to 4.9 and drying the thus pH adjusted methionine to recover storage stable dry methionine which upon dissoltion in water gives a pH of 3.0 to 4.9.

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### 3,931,308
## PROCESS FOR CONVERSION OF LYSINE DIHYDROCHLORIDE TO LYSINE MONOHYDROCHLORIDE

Stylianos Sifniades, Parsippany, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 368,007, June 7, 1973, abandoned. This application May 28, 1974, Ser. No. 473,453
Int. Cl.² C07C *99/00, 99/06, 99/12*
U.S. Cl. 260—534 L 12 Claims

1. In a method for converting an aqueous solution of lysine dihydrochloride to crystalline lysine monohydrochloride wherein the lysine dihydrochloride is produced from the hydrolysis of α-amino-ε-caprolactam, or α-amino-ε-caprolactam hydrochloride with more than two mols of hydrochloric acid per mol of α-amino-ε-caprolactam, the improvement comprising the steps of:

a. neutralizing said solution with α-amino-ε-caprolactam or a transition metal complex chloride salt thereof;
b. crystallizing lysine monohydrochloride from said solution by addition of an organic solvent; and
c. removing the precipitated crystalline lysine monohydrochloride.

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### 3,931,309
## PROCESS FOR THE PREPARATION OF CARBON TETRACHLORIDE AND PHOSGENE

Wilhelm Riemenschneider, Frankfurt am Main; Hans Krekeler, Wiesbaden, and Helmut Meidert, Frankfurt am Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed July 6, 1971, Ser. No. 160,154
Claims priority, application Germany, July 8, 1970, 2033786; Oct. 5, 1970, 2048841
Int. Cl.² C07C *51/58*
U.S. Cl. 260—544 K 10 Claims

1. A process for the preparation of a mixture of carbon tetrachloride and phosgene in the absence of catalysts, which comprises reacting

a. oxygen-containing carbon-hydrogen compounds, in which the number of carbon atoms exceeds the number of oxygen atoms by at least one, or
b. a compound selected from the group consisting of oxygen-containing carbon-hydrogen compounds, carbon monoxide, carbon dioxide, water, and mixtures thereof, in admixture with a compound selected from the group consisting of benzene, toluene, naphthalene, anthracene, diphenyl, chlorinated compounds thereof, methyl chloride, chloroform, chlorinated alkanes and alkenes of at least two carbon atoms, chlorinated cycloalkanes, and mixtures thereof, with chlorine at a temperature of up to 400°C. in a preliminary reaction zone and continuing the reaction in a main reaction zone at a temperature in the range of from 400° to 800°C. and a pressure of between 50 and 800 atmospheres gage.

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### 3,931,310
## PHOSPHORUS-CONTAINING CONDENSATION PRODUCTS

Hermann Nachbur, Dornach, and Arthur Maeder, Therwil, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Aug. 31, 1972, Ser. No. 285,268
Claims priority, application Switzerland, Sept. 10, 1971, 13304/71
Int. Cl.² C07F *9/54*
U.S. Cl. 260—551 P 9 Claims

1. A water-soluble condensation product from tetrakis-(hydroxymethyl)-phosphonium compound and dicyandiamide, produced by the process, comprising condensing a tetrakis-(hydroxymethyl)-phosphonium salt or tetrakis(hydroxymethyl)-phosphonium hydroxide with dicyandiamide or methylolated dicyandiamide, at a molar ratio of 1:0.02 to 0.2, at 40° to 120°C in the presence of an inert organic solvent or aqueous medium or in the melt, to give the condensation product, while simultaneously removing by distillation from the reaction mixture any water present or formed during the condensation.

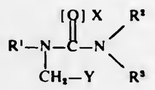
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### 3,931,311
## N,N,N-TRISUBSTITUTED N-HALOGENOMETHYLUREA AND THIOUREA COMPOUNDS AND PROCESS FOR THEIR PREPARATION

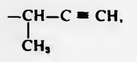
Rudolf Thomas; Wolfgang Kramer, both of Wuppertal; Ludwig Eue, Cologne; Carl Metzger, and Gerhard Jager, both of Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 21, 1973, Ser. No. 334,495
Claims priority, application Germany, Mar. 4, 1972, 2210603
Int. Cl.² C07C *127/19, 157/02*
U.S. Cl. 260—552 7 Claims

1. N,N',N'-trisubstituted N-halogenomethylurea compound of the formula



in which
X is oxygen or sulfur
$R^1$ is phenyl, unsubstituted or substituted with chlorine, bromine, trifluoromethyl, trifluoromethoxy, nitro, methyl, ethyl, methoxy, methylthio, ethoxy or chlorophenoxy,
$R^2$ and $R^3$ are selected from the group of methyl, butyl, allyl,



and chloroethyl,
and Y is chlorine.

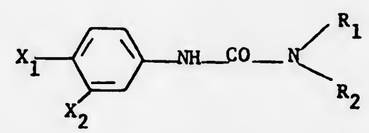


### 3,931,312
## NOVEL N(-DIFLUOROMETHYLMERCAPTOPHENYL) UREA COMPOUNDS AND HERBICIDAL COMPOSITIONS

Erich Klauke, Odenthal; Engelbert Kühle, Bergisch-Gladbach, and Ludwig Eue, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 87,589, Nov. 6, 1970, abandoned. This application May 1, 1973, Ser. No. 356,261
Claims priority, application Germany, Jan. 24, 1970, 2003143
Int. Cl.² C07C *127/19*
U.S. Cl. 260—553 A 8 Claims

1. N-arylurea compound of the formula



in which
$X_1$ and $X_2$ are difluorochloromethylmercapto, chlorine or hydrogen with the proviso that one and only one of $X_1$ and $X_2$ is difluorochloromethylmercapto;
$R_1$ is hydrogen, alkyl of from 1 to 4 carbon atoms; and
$R_2$ is alkyl of from 1 to 4 carbon atoms.

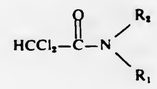
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### 3,931,313
## SCHIFF'S BASE DICHLOROACETAMIDES

Don R. Baker, Orinda, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 272,271, July 17, 1972, Pat. No. 3,867,444. This application Nov. 1, 1974, Ser. No. 519,895
Int. Cl.² C07C *103/34*
U.S. Cl. 260—561 H 3 Claims

1. A compound having the formula



in which $R_1$ is selected from the group consisting of alkyl having from 1 to 6 carbon atoms, inclusive, alkenyl having from 3 to 6 carbon atoms, inclusive, alkynyl having from 3 to 6 carbon stoms, inclusive, and alkoxyalkyl having a total of from 2 to 8 carbon atoms, inclusive; and $R_2$ is alkylimino having from 1 to 6 carbon atoms, inclusive.

3. A compound according to claim 2 in which $R_1$ is methyl and $R_2$ is 2-isopropylimino.

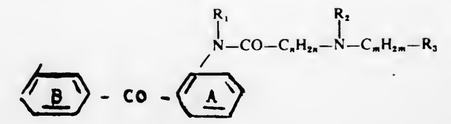
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### 3,931,314
## BENZOPHENONE DERIVATIVES AND PROCESS FOR THEIR PRODUCTION

Heinz Günter Greve, and Klaus Resag, both of Frakfurt am Main-Fechenheim, Germany, assignors to Cassella Farbwerke Mainkur Aktiengesellschaft, Frankfurt am Main-Fechenheim, Germany

Division of Ser. No. 358,455, May 8, 1973. This application Aug. 26, 1974, Ser. No. 500,246
Claims priority, application Luxemburg, May 12, 1972, 65340
Int. Cl.² C07C *103/34*
U.S. Cl. 260—562 N 2 Claims

1. Benzophenone derivative having the structural formula



and the acid addition salts thereof, wherein $R_1$ and $R_2$ are substituents selected from the group consisting of hydrogen, saturated and unsaturated alkyl groups having 1 – 4 carbon atoms; $R_3$ is $—CONH_2$; $n$ is an integer selected from 1 and 2; and $m$ is an integer selected from 1, 2 and 3, and wherein the ring A is substituted at the 5-position with a substituent selected from the group consisting of halogen, nitro, trifluoromethyl, methyl, methoxy and methylmercapto and the ring B is substituted at the 2' position with a substituent selected from the group consisting of fluorine and chlorine.

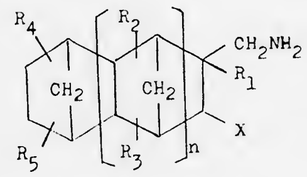
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### 3,931,315
## ALICYCLIC AMINO COMPOUNDS AND THEIR PRODUCTION

Akisato Katanosaka, Toyonaka, and Manabu Hanamoto, Daito, both of Japan, assignors to Nard Institute, Ltd., Japan

Filed Oct. 11, 1973, Ser. No. 405,640
Claims priority, application Japan, Oct. 11, 1972, 47-101701
Int. Cl.² C07C *87/40*
U.S. Cl. 260—563 P 5 Claims

1. An alicyclic amino compound of the general formula:



wherein $R_1$, $R_2$, $R_3$, $R_4$ and $R_5$ are each hydrogen or alkyl having 1 to 6 carbon atoms; X is hydrogen, alkyl having 1 to 6 carbon atoms or aminomethyl; $n$ is an integer of 1 or 2.

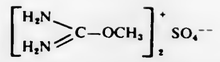
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### 3,931,316
## METHOD OF PREPARING O-METHYL-ISOUREA HYDROGEN SULFATE AND O-METHYL-ISOUREA SULFATE FROM CYANAMIDE

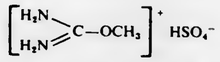
Stefan Weiss, Trostberg, Germany, assignor to Suddeutsche Kalkstickstoff-Werke AG, Trostberg, Germany

Filed Dec. 18, 1974, Ser. No. 533,870
Claims priority, application Germany, Aug. 10, 1974, 2438585; Aug. 10, 1974, 2438584
Int. Cl.² C07C *123/00*
U.S. Cl. 260—564 E 11 Claims

1. A method of preparing O-methyl-isourea sulfate of the formula



which comprises holding a mixture of substantially equimolar amounts of cyanamide and O-methyl-isourea hydrogen sulfate of the formula



in a liquid medium essentially consisting of methanol at a temperature of 5° to 40°C for a period sufficient for forming said O-methyl-isourea sulfate, and recovering the formed O-methyl-isourea sulfate from said medium.

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**3,931,317**
**N-TRIFLUOROMETHYL-N-(TRIHALOMETHYLTHIO)-AMINO-BENZO-IMIDE CHLORIDES**
**Engelbert Kühle, Bergisch-Gladbach, and Erich Klauke, Odenthal, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**
**Filed June 14, 1974, Ser. No. 479,385**
**Claims priority, application Germany, July 4, 1973, 2333939**
**Int. Cl.² C07C *119/00***
**U.S. Cl. 260—566 D** **5 Claims**

**1.** A substituted aminobenzimide-chloride of the formula



in which

X, X′ and X″ each independently is fluorine, chlorine or bromine,

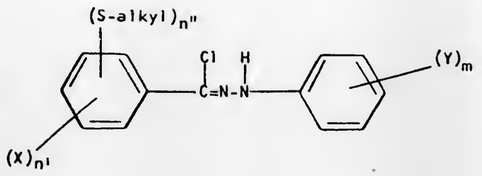
R is hydrogen, halogen, nitro, trifluoromethyl, or alkyl or alkoxy each with up to 3 carbon atoms, and

R′ is alkyl with up to 16 carbon atoms, cycloalkyl with up to 7 carbon atoms, aralkyl with a total of up to 8 carbon atoms, or aryl with up to 10 carbon atoms.

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**3,931,318**
**ALKYLTHIO BENZOYL CHLORIDE PHENYLHYDRAZONES**
**Girts Kaugars, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.**
**Division of Ser. No. 54,622, July 13, 1970. This application Dec. 6, 1974, Ser. No. 530,085**
**Int. Cl.² C07C *109/16***
**U.S. Cl. 260—566 B** **10 Claims**

**1.** The new chemical compounds ar or ar′ (alkylthio) benzoyl chloride phenylhydrazones having the structural formula:

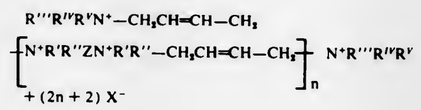


wherein "alkyl" is of from 1 to 6 carbon atoms, inclusive, X is halogen, alkyl of from 1 to 6 carbon atoms, inclusive, alkylthio of from 1 to 6 carbon atoms, inclusive, $\alpha$-$F_n$alkyl of from 1 to 3 carbon atoms, inclusive, wherein $n$ is the integer 2 or 3, and nitro; Y is alkyl of from 1 to 6 carbon atoms, inclusive, halogen, alkylthio of from 1 to 6 carbon atoms, inclusive, $\alpha$-$F_n$alkyl of from 1 to 3 carbon atoms, inclusive, and nitro; $n'$ is an integer 0 to 3, inclusive; $n''$ is 1 except when Y is alkylthio, when it can be zero; $m$ is an integer from 0 to 3, inclusive, the sum of $n' + n'' + m$ being not more than 6, the sum of carbon atoms in the alkyl substituents being not more than 15, there being no more than one nitro group in the molecule, and no more than two $\alpha$-$F_n$alkyl groups on any benzene ring or three total.

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**3,931,319**
**CAPPED POLYMERS**
**Harold A. Green, Havertown, Pa.; John J. Merianos, Jersey City, and Alfonso N. Petrocci, Glen Rock, both of N.J., assignors to Millmaster Onyx Corporation, New York, N.Y.**
**Filed Oct. 29, 1974, Ser. No. 518,596**
**Int. Cl.² C07C *87/46***
**U.S. Cl. 260—567.6 P** **1 Claim**

**1.** The compound



wherein R′ and R″ are selected from the group consisting of (a) primary or secondary alkyls having 1 to 20 carbon atoms, (b) hydroxy or dihydroxy derivatives of R′ and R″, (c) benzyl, and (d) benzyl having at least one alkyl group bonded to the benzene ring, with the total sum of alkyl carbon atoms attached to the benzene ring being less than 7; wherein R‴, $R^{IV}$ and $R^{V}$ are selected from the group consisting of (a) primary or secondary alkyls having 1 to 20 carbon atoms and (b) hydroxyalkyl; wherein Z consists of 1 to 3 aliphatic divalent radicals, each of which has 2 to 10 carbon atoms with each aliphatic radical having 0 to 2 double bonds and 0 to 2 hydroxy substituents; wherein X is selected from the group consisting of chlorine and bromine; and wherein $n$ is an integer of about 2 to about 30.



**3,931,320**
**PROCESS FOR THE PRODUCTION OF AROMATIC POLYAMINES**
**Willi Eifler, Schildgen; Roderich Raue, Leverkusen-Wiesdorf; Ernst-Heinrich Rohe, Leverkusen, and Josef Finkel, Cologne-Stammheim, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen Bayerwerk, Germany**
**Filed May 23, 1972, Ser. No. 256,036**
**Claims priority, application Germany, June 2, 1971, 2127263**
**Int. Cl. C07c *87/28***
**U.S. Cl. 260—570 D** **5 Claims**

**1.** In a process for the production of an aromatic polyamine comprising condensing a primary or secondary aromatic amine with formaldehyde or a formaldehyde precursor in the presence of an acid catalyst and liberating the polyamine upon completion of condensation by the addition of a basically reacting reagent, wherein a first mixture of the total quantities of the amine and the catalyst required for the reaction is formed and cooled to below about 40°C. and wherein a second mixture containing amine, catalyst, aldehyde, precondensates formed therefrom, and water, issues from a mixer at a maximum temperature of about 40°C., the improvement which comprises separating said second mixture into

a. a side stream which is admixed with the first mixture to form a reacting mixture liberating heat, which heat is dissipated in a heat exchanger, and introducing the reacting mixture at a temperature of at most about 40°C. into the mixer into which the formaldehyde or formaldehyde precursor is added, and

b. a main stream which is passed through a reaction zone, maintained at a maximum temperature of about 40°C., and into a heated residence reactor maintained at a temperature from about 80°C. to about 200°C., wherein the condensation reaction is completed.

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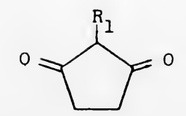
**3,931,321**
**PROCESS FOR THE PREPARATION OF O-AMINOTHIOPHENOLS**
**Siegfried Planker, and Konrad Baessler, both of Frankfurt am Main, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany**
**Continuation of Ser. No. 258,312, May 31, 1972, abandoned. This application Oct. 24, 1974, Ser. No. 517,791**
**Claims priority, application Germany, June 4, 1971, 2127898**
**Int. Cl.² C07C *85/11***
**U.S. Cl. 260—580** **6 Claims**

**1.** In a process for the preparation of an o-aminothiophenol compound from o-chloro-nitrobenzene-compounds by the action of water-soluble hydrogen-sulfides or sulfides, the improvement comprising isolating the free aninothiophenol from the alkaline solution by neutralization with mineral acid in the presence of from 1.5 to 2.5 moles of a water-soluble sulfite or of from 0.75 to 1.25 moles of a water-soluble disulfite per mole of o-chloronitrobenzene compound at a temperature within the range of from about 0°C to about 30°C and at a pH ranging from 5 to 7.

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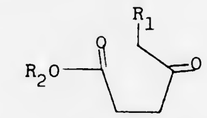
**3,931,322**
**SYNTHESIS OF 2-ALKYL-CYCLOPENTAN-1,3-DIONES**
**Urs Oskar Hengartner, Montclair, and Pius Anton Wehrli, North Caldwell, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.**
**Filed Jan. 25, 1974, Ser. No. 436,579**
**Int. Cl.² C07C *45/00***
**U.S. Cl. 260—586 C** **14 Claims**

**1.** A process for the preparation of a compound of the formula



I

wherein $R_1$ is lower alkyl, which comprises treating a compound of the formula



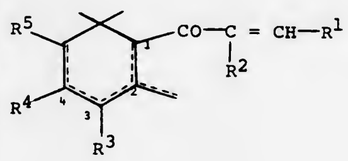
II

wherein $R_1$ and $R_2$ are each lower alkyl, with a colloidal suspension of an alkali metal primary lower alkyl alcoholate in an inert organic solvent medium, at an elevated temperature.

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**3,931,323**
**PROCESS FOR THE PREPARATION OF ALKENOYL-SUBSTITUTED CYCLOHEXENES**
**George Hermann Büchi, and John Christopher Vederas, both of Cambridge, Mass., assignors to Firmenich SA, Geneva, Switzerland**
**Filed Mar. 21, 1973, Ser. No. 343,490**
**Claims priority, application Switzerland, Mar. 30, 1972, 4769/72**
**Int. Cl.² C07C *45/00***
**U.S. Cl. 260—586 R** **2 Claims**

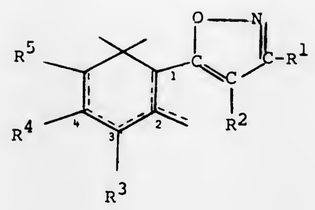
**1.** A process for preparing compounds of formula



IV

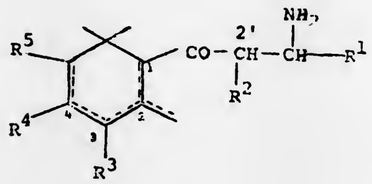
wherein the ring contains one endocyclic double bond in position 1, 2, 3 or 4, or an exocyclic double bond in position 2, or two conjugated double bonds in position 1 and 3, the double bonds being represented by dotted lines; and each of the symbols $R^1$, $R^2$, $R^3$, $R^4$ and $R^5$ represents either a hydrogen atom or a lower alkyl radical having 1 to 6 carbon atoms; which comprises:

a. reducing a compound having the formula



I

wherein the dotted lines and the symbols $R^1$, $R^2$, $R^3$, $R^4$ and $R^5$ are as described above, by means of an alkali metal or an alkaline earth metal in solution of liquid ammonia and in the presence of tert-butanol as a proton donor to yield a $\beta$-amino-ketone compound having the formula



IV

wherein the dotted lines of the ring and the symbols $R^1$, $R^2$, $R^3$, $R^4$ and $R^5$ are as described above; and

b. subsequently removing an ammonia molecule from the said $\beta$-amino-ketone compound by addition of a mineral acid or p-toluene-sulphonic or by heating.

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**3,931,324**

**2-HYDROCARBYL ETHERS OF CYCLOALIPHATIC KETONES AND PROCESS FOR THEIR PREPARATION**

**Rudolph Rosenthal, Broomall, and Giovanni A. Bonetti, Ardmore, both of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.**

**Continuation-in-part of Ser. No. 126,869, March 22, 1971, abandoned. This application Nov. 20, 1973, Ser. No. 417,679**

**Int. Cl.² C07C *45/00***

**U.S. Cl. 260—586 R** **10 Claims**

1. A process for preparing 2-hydrocarbyloxy cycloalkanones comprising reacting a 1,1-bis (hydrocarbylperoxy) cycloalkane with cycloalkanone in the presence of a molybdenum containing catalyst selected from the group consisting of metallic molybdenum and compounds of molybdenum at a reaction temperature of from about 20°C. to about 150°C.; the molar ratio of cycloalkanone to 1,1-bis (hydrocarbylperoxy) cycloalkane being from about 1:1 to about 10:1.

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**3,931,325**

**PERFLUOROCYCLOHEXENE-1,4-DIONE**

**Harold E. Doorenbos, Midland, and Hughie R. Frick, Bay County, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.**

**Filed Mar. 4, 1974, Ser. No. 448,135**

**Int. Cl.² C07C *49/48***

**U.S. Cl. 260—586 R** **2 Claims**

1. Perfluorocyclohexene-1,4-dione.

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**3,931,326**

**ALKENOYL-CYCLOHEXADIENES**

**Ervin Kovats, Lausanne; Edouard Demole, Geneva; Gunther Ohloff, Bernex, Geneva, all of Switzerland, and Max Stoll, deceased, late of Lully, Geneva, Switzerland (by Suzanne Stoll, executrix), assignors to Firmenich SA, Geneva, Switzerland**

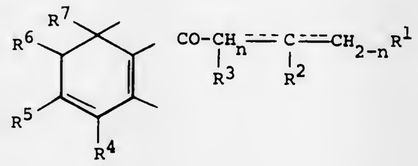
**Continuation of Ser. No. 35,594, May 7, 1970, abandoned, which is a continuation-in-part of Ser. No. 774,179, Nov. 7, 1968, abandoned. This application Nov. 14, 1974, Ser. No. 523,743**

**Claims priority, application Switzerland, Nov. 9, 1967, 15667/67; Nov. 1, 1968, 16309/68; May 7, 1969, 6976/69; Aug. 8, 1969, 12065/69; Apr. 14, 1970, 5559/70; Apr. 17, 1970, 5725/70**

**Int. Cl.² C07C *49/61***

**U.S. Cl. 260—586 R** **10 Claims**

1. A composition of matter consisting essentially of a compound having the formula



containing a double bond in the position 2′ - or 3′ - of the acyl side chain, the double bonds being represented by dotted lines, and wherein $n$ is zero or 1, $R^1$, $R^2$, and $R^3$ represent hydrogen or one of them a lower alkyl radical, and $R^4$, and $R^5$, $R^6$, and $R^7$ represent hydrogen or one of them a lower alkyl radical.



**3,931,327**

**PROCESS FOR THE PREPARATION OF A DIKETONE DERIVATIVE**

**Hugo Strickler, Dardagny,Ge; Joseph J. Becker, Geneva, and Gunther Ohloff, Bernex,Ge, all of Switzerland, assignors to Firmenich SA, Geneva, Switzerland**

**Filed Dec. 3, 1974, Ser. No. 529,229**

**Claims priority, application Switzerland, Dec. 7, 1973, 17173/73**

**Int. Cl.² C07C *45/00***

**U.S. Cl. 260—586 P** **9 Claims**

1. Process for the preparation of 2,2,6-trimethyl-cyclohex-5-en-1,4-dione, which comprises oxidizing, in the gas phase, 3,3,5-trimethyl-cyclohex-5-en-1-one in the presence of vanadium oxide or a mixture of vanadium oxides deposited on an inert solid support by means of oxygen or an oxygen containing gas mixture.

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**3,931,328**

**BENZOBICYCLOALKANE KETONES**

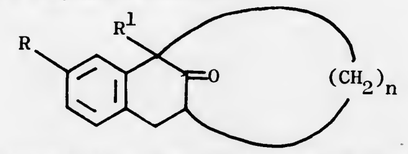
**Meier E. Freed, Paoli, and John R. Potoski, Spring City, both of Pa., assignors to American Home Products Corporation, New York, N.Y.**

**Division of Ser. No. 262,849, June 14, 1972, Pat. No. 3,836,670, which is a continuation-in-part of Ser. No. 200,517, Nov. 19, 1971, abandoned, which is a continuation-in-part of Ser. No. 94,983, Dec. 3, 1970, abandoned. This application Dec. 3, 1973, Ser. No. 421,476**

**Int. Cl.² C07C *49/84*, *49/82***

**U.S. Cl. 260—590 B** **8 Claims**

1. A compound of the formula:



wherein R is lower alkyloxy or hydroxy; $R^1$ is lower alkyl and n is an integer from 3 to 5.

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**3,931,329**

**ALDEHYDE CONDENSATION PRODUCTS OF FLUOROALIPHATIC PHENOLS**

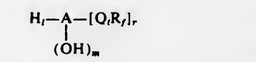
**Leland S. Endres, San Luis Obispo, Calif.; Leo F. Gehlhoff, Lake Elmo, and Dallas D. Zimmerman, Shoreview, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.**

**Division of Ser. No. 85,278, Oct. 29, 1970, Pat. No. 3,832,409. This application Jan. 23, 1974, Ser. No. 435,669**

**Int. Cl.² C07C *49/80***

**U.S. Cl. 260—592** **4 Claims**

1. A condensation polymer having an average molecular weight of about 800 to about 1500 of the condensation catalyst catalyzed reaction of a phenol of the formula



wherein $l$, m and r are 1 or 2, t is 1; H is a hydrogen atom sufficiently reactive to undergo a catalyzed condensation reaction with an aldehyde; A is an aryl nucleus containing from 6 to 15 carbon atoms; OH is a phenolic hydroxyl group; $R_f$ is a monovalent fluorinated saturated aliphatic radical containing from 3 to 20 carbon atoms and Q is selected from the class consisting of carbonyl and carbonamide and a saturated aliphatic aldehyde containing not more than 7 carbon atoms in addition to the aldehyde carbon atom or benzaldehyde.

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**3,931,330**

**PROCESS FOR THE PRODUCTION OF BENZALDEHYDE**

**Nazar S. Aprahamian, West Nyack, N.Y., assignor to Union Carbide Corporation, New York, N.Y.**

**Filed May 4, 1972, Ser. No. 250,450**

**Int. Cl.² C07C *47/52*, *47/54*, *47/55***

**U.S. Cl. 260—599** **11 Claims**

1. A liquid phase process for the production of benzaldehyde consisting essentially of admixing in the presence of a chromium, cobalt, iron or manganese containing catalyst, toluene with an aliphatic saturated aldehyde consisting of carbon, hydrogen, and oxygen atoms and having 2 to 7 carbon atoms and a molecular oxygen containing gas wherein the molar ratio of toluene to aldehyde is about 0.1 to about 250 mols of toluene per mol of aldehyde, the molar ratio of oxygen to aldehyde is about 1:1 to greater than 1:20, and the temperature is in the range of about 50°C to about 250°C.

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**3,931,331**

**PROCESS OF PREPARING $\alpha$-FORMYL SULFIDES AND 2-HYDROCARBYLTHIOALDOXIMES THEREFROM**

**Chempolil Thomas Mathew, Randolph, and Harry Edwards Ulmer, Morristown, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.**

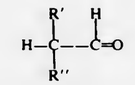
**Continuation of Ser. No. 327,979, Jan. 30, 1973, Pat. No. 3,873,624. This application Oct. 24, 1974, Ser. No. 517,679. The portion of the term of this patent subsequent to Mar. 25, 1992, has been disclaimed.**

**Int. Cl.² C07C *47/00***

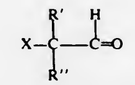
**U.S. Cl. 260—601 R** **12 Claims**

1. A process for preparing an $\alpha$-formyl sulfide comprising

a. reacting under reflux conditions a halogen selected from the group consisting of chlorine, bromine and iodine with an aldehyde of the formula



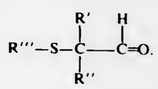
wherein R′ and R″ independently are hydrogen, hydrocarbon radicals of 1 to 18 carbon atoms selected from the group consisting of alkyl, cycloalkyl, alkenyl, cycloalkenyl and aryl or substituted hydrocarbon radicals of the above group wherein the substituted moieties are selected from the group consisting of alkyl of 1 to 18 carbon atoms, aryl of 6 to 18 carbon atoms, halogen, cyano, sulfo, mercapto, alkylthio of 1 to 6 carbon atoms, hydroxy, alkoxy of 1 to 6 carbon atoms, dialkoxy phosphino in which each alkoxy group contains 1 to 6 carbon atoms, dialkyl phosphonoxy in which each alkyl group contains 1 to 6 carbon atoms, carboxy, alkoxy carbonyl in which the alkoxy group contains 1 to 6 carbon atoms, nitro and combinations thereof, to thereby form an $\alpha$-haloaldehyde of the formula



wherein X is chlorine, bromine or iodine, and

b. reacting in an aqueous medium under basic conditions and at a temperature in the range of about −20 to about 90°C the thus formed $\alpha$-haloaldehyde with a thiol salt of the formula R‴SM, wherein R‴ is a hydrocarbon radical of 1 to 18 carbon atoms selected from the group consisting of alkyl, cycloalkyl, alkenyl, cycloalkenyl and aryl or a substituted hydrocarbon radical of the above group wherein the substituted moiety is selected from the group consisting of alkyl of 1 to 18 carbon atoms, aryl of 6 to 18 carbon atoms, halogen, cyano, alkylthio of 1 to 6 carbon atoms, amido, sulfo, sulfonamido, hydroxy, alk-

oxy of 1 to 6 carbon atoms, dialkoxy phosphino in which each alkoxy group contains 1 to 6 carbon atoms, dialkyl phosphonoxy in which each alkyl group contains 1 to 6 carbon atoms, carboxy, alkoxy carbonyl in which the alkoxy group contains 1 to 6 carbon atoms, nitro and combinations thereof, and M is an alkali or alkaline earth metal, thereby forming an α-formyl sulfide of the formula



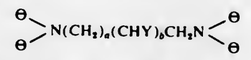
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## 3,931,332
## STABILIZED HYDROFORMYLATION REACTION SYSTEMS

**John B. Wilkes, Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.**

**Continuation of Ser. No. 878,599, Nov. 20, 1969, abandoned. This application June 4, 1973, Ser. No. 367,049**
**Int. Cl.² C07C *45/08***
**U.S. Cl. 260—604 HF** **6 Claims**

1. In the cobalt carbonyl complex compound catalyzed reaction of a hydroformylatable monoolefinic hydrocarbon with carbon monoxide and hydrogen in a hydroformylation reactor, wherein during the course of said reaction cobalt metal resulting from destructive dissociation of said cobalt compound plates-out on the interior surfaces of said reactor, the improvement which consists essentially of carrying out the reaction at a temperature in the range from 100° to 225°C., with the reactants in contact with a cobalt carbonyl complex compound stabilizer consisting of a diamine of the formula



wherein said θ are the same or different and are selected from the group consisting of hydrogen and alkyl groups having a carbon atom content less than 25; wherein at least one of the θ is an alkyl group having a carbon atom content in the range from about 10 to 25; wherein Y is an alkyl group having a carbon atom content less than 25; and wherein *a* is 0, 1, or 2 and *b* is 0 or 1 with the sum of $a + b$ being 1 or 2; and wherein for each mol of cobalt in the catalyst an amount of the stabilizer in the range from 0.001 to 0.45 mol is present in the reactor and wherein the cobalt catalyst is free of phosphine compounds.

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## 3,931,333
## PRODUCTION OF HALOGEN-CONTAINING TERTIARY PHOSPHINE OXIDES

**Hubert Neumaier, Knapsack; Manfred Finke, Fischbach, and Richard Schüller, Cologne-Holweide, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany**

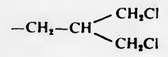
**Filed June 21, 1974, Ser. No. 481,815**
**Claims priority, application Germany, Sept. 19, 1973, 2347109**
**Int. Cl.² C07F *9/02***
**U.S. Cl. 260—606.5 P** **9 Claims**

1. A process for making halogen-containing tertiary phosphine oxides of the general formula I



(I)

in which the substituents $R_1$ and $R_2$ being methyl, propyl or chloromethyl and $R_3$ stands for chloromethyl-, chloropropyl or

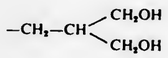


which comprises reacting a compound of the general formula II



(II)

in which $R_4$ and $R_5$ stand for methy, propyl or hydroxymethyl and $R_6$ being hydroxymethyl, hydroxypropyl or



with at least equivalent proportions, based on the number of hydroxyl groups, of gaseous hydrogen chloride at temperatures within the range about 100° and 300°C; freeing the reaction mixture, during the reaction or after termination thereof, from water originating from the reaction; and separating from the resulting reaction mixture the halogen-containing tertiary phosphine oxide by distillation or crystallization.

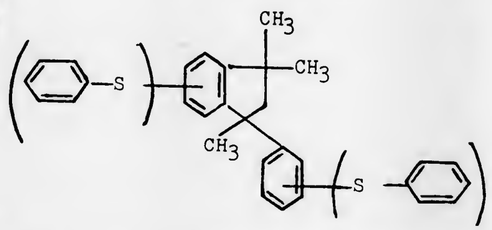
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## 3,931,334
## LUBRICANT COMPOSITIONS COMPRISING SUBSTITUTED INDANS

**Robert M. Gemmill, Jr., Woodbury, and John W. Schick, Cherry Hill, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.**

**Division of Ser. No. 125,853, March 18, 1971, Pat. No. 3,792,096, which is a division of Ser. No. 836,161, June 24, 1969, Pat. No. 3,640,870. This application July 5, 1973, Ser. No. 376,485**
**Int. Cl.² C07C *149/00***
**U.S. Cl. 260—609 E** **2 Claims**

1. A substituted indan having the structure:



2. A process for producing the indan of claim 1 which comprises subjecting a mixture of a thiophenoxycumene compound and a halogen to a temperature from about 0°C to about 20°C to effect halogenation of the isopropyl group of said cumene compound; and thereafter subjecting the halogenated cumene compound thus produced to a temperature from about 100°C to about 200°C in the presence of an acidic catalyst having an ionization contant greater than about $1 \times 10^{-5}$ to an extent at which the aforementioned compound is converted to its corresponding indan.



## 3,931,335
## PROCESS FOR SELECTIVELY PRODUCING 4,4-MONOTHIODIPHENOLIC COMPOUNDS IN HIGH YIELDS

**Merle E. Cisney, Camas, and Robert A. Damon, Vancouver, both of Wash., assignors to Crown Zellerbach Corporation, San Francisco, Calif.**

**Filed Aug. 26, 1974, Ser. No. 500,806**
**Int. Cl.² C07C *149/36***
**U.S. Cl. 260—609 F** **27 Claims**

1. A process for selectively producing 4,4′-monothiodiphenol compounds in high yields, which comprises:

a. forming a reaction system having a reactant portion including either one of an unsubstituted and sterically nonhindered ortho-substituted phenolic compound and sulfur dichloride, an initiation promoter portion including a crystalline additive of said 4,4′-monothiodiphenolic product compound, and a catalytic amount of anhydrous hydrogen chloride, and a solvent portion including a substantially saturated compound having a solubility parameter of at least about 7.0 $(Cal/cc)^{1/2}$ up to 9.0 $(Cal/cc)^{1/2}$ and a low degree of hydrogen bonding;

b. reacting said phenolic compound and sulfur dichloride, in the presence of said initiation promoter and solvent portions, respectively at a temperature greater than the freezing point of the phenolic compound and solvent portion, and less than the temperature at which a substantial amount of undesirable, noncrystalline by-product will be produced, to produce said 4,4′-monothiodiphenolic, selective, high yield product; and

c. recovering said 4,4′-monothiodiphenolic product from said reaction system.

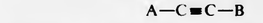
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## 3,931,336
## PRODUCTION OF OXYALKYLATED α-HYDROXY ACETYLENIC COMPOUNDS

**Kurt Schneider, Bad Durkheim, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany**

**Filed Aug. 20, 1973, Ser. No. 389,479**
**Claims priority, application Germany, Aug. 22, 1972, 2241156; Aug. 22, 1972, 2241157; Aug. 22, 1972, 2241155**
**Int. Cl.² C07C *41/02*, *41/10***
**U.S. Cl. 260—615 R** **5 Claims**

1. In a process for the production of an α-hydroxy acetylenic compound of the formula

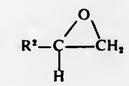


I

in which A is nydrogen or B, and B is



$R^1$ being hydrogen or alkyl of 1 to 4 carbon atoms, oxyalkylated at the hydroxy groups with 1 to 3 moles per hydroxy group of an alkylene oxide having the formula



II

in which $R^2$ is hydrogen or alkyl of 1 to 4 carbon atoms, the improvement which comprises carrying out the reaction in the presence of 0.1 to 10%, based on the weight of the acetylenic compound, of an organic phosphine derivative of the formula



III

in which $R^3$ is alkyl of 1 to 5 carbon atoms, phenyl, chlorophenyl, bromophenyl, iodophenyl, phenylsubstituted by alkyl of 1 to 4 carbon atoms, nitrophenyl or aminophenyl, in a pressure vessel for about 10 to 16 hours at 50° to 150°C. under a pressure of from 1 to 20 atmospheres gauge.

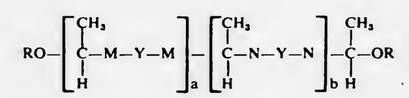
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## 3,931,337
## MULTI-BLOCK POLYACETAL COPOLYMER SURFACTANTS

**William K. Langdon, Grosse Ile, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.**

**Filed Aug. 19, 1974, Ser. No. 498,315**
**Int. Cl.² C07C *43/00*, *43/30***
**U.S. Cl. 260—615 A** **2 Claims**

1. A surfactant having the formula



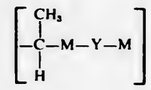
wherein R is an alkyl radical containing 1 to 4 carbon atoms, Y is the residue of an organic compound selected from the group consisting of ethylene glycol, diethylene glycol, propylene glycol, dipropylene glycol, butylene glycol, amylene glycol, hexylene glycol, heptylene glycol and octylene glycol, minus the terminal hydrogens,

M is a hydrophilic chain of units selected from the group consisting of oxyethylene and oxyethylene-oxypropylene units wherein the oxyethylene content of said hydrophilic chain is from about 75 to 100 weight percent and the oxypropylene content is from 0 to about 25 weight percent, the total number of oxyethylene and oxypropylene units in M being from about 4 to about 30,

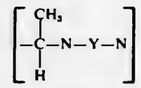
N is a hydrophobic chain of units selected from the group consisting of oxypropylene units and oxyethylene-oxypropylene units wherein the oxypropylene content is from about 75 to 100 weight percent and the oxyethylene content is from 0 to about 25 weight percent,

the total number of oxyethylene and oxypropylene groups in N being from about 4 to about 20,

wherein groups



and



may be linked either in a random or an ordered manner, and *a* and *b* are numbers from 2 to 20 in a ratio between 1:9 to 9:1.

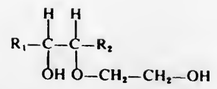
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## 3,931,338
## METHOD FOR PRODUCTION OF HYDROXYALKYLGLYCOL ETHERS

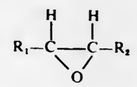
**Wolfgang Rupilius, Hilden Rhineland, Germany, assignor to Henkel & Cie G.m.b.H., Dusseldorf, Germany**

**Filed Apr. 8, 1974, Ser. No. 458,752**
**Claims priority, application Germany, Apr. 14, 1973, 2318950**
**Int. Cl.² C07C *41/02***
**U.S. Cl. 260—615 R** **7 Claims**

1. In the method for the production of hydroxyalkylglycol ethers of the formula



wherein $R_1$ and $R_2$ are each alkyl having 2 to 22 carbon atoms, with the proviso that the sum of $R_1$ plus $R_2$ is from 6 to 26 carbon atoms, comprising reacting a vicinal non-terminal epoxide of the formula



wherein $R_1$ and $R_2$ have the above-defined meanings with ethylene glycol in the presence of a catalytic amount of an acid alkoxylation catalyst; wherein the improvement comprises conducting said reaction in the presence of at least one solvent consisting essentially of at least one saturated hydrocarbon having 4 to 24 carbon atoms.

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### 3,931,339
### REMOVAL AND NEUTRALISATION OF ACID CATALYST FROM PRODUCTS OF CUMENE HYDROPEROXIDE CLEAVAGE

**Maurice Dudley Cooke, East Horsley, England, assignor to BP Chemicals International Limited, London, England**

**Filed Dec. 13, 1973, Ser. No. 427,021**
**Claims priority, application United Kingdom, Jan. 11, 1973, 1531/73**
**Int. Cl.² C07C *37/24***
**U.S. Cl. 260—621 A** **8 Claims**

1. A process for the removal and neutralization of mineral acid catalyst and organic acid by-products from the reaction mixture resulting from mineral acid catalyzed cumene hydroperoxide cleavage which process comprises contacting at a temperature below about 50°C. said reaction mixture in a first zone with an aqueous solution comprising an acidic or neutral inorganic salt and an excess of alkaline alkali metal hydroxide or phenate sufficient to neutralize said mineral acid and organic acid by-products and to maintain the pH of the aqueous phase between 7 and 9 whereby said acids are extracted from the organic phase into the aqueous phase and neutralized therein, separating said aqueous phase containing the neutralized acids therefrom, then contacting at a temperature of from about 10°–60°C. said organic phase in a second zone with an aqueous solution comprising an acidic or neutral inorganic salt and a weak acid selected from the group consisting of carbonic acid, citric acid and oxalic acid in an amount sufficient to decompose alkali metal phenate carried over from the first zone, and thereafter separating the aqueous phase therefrom.

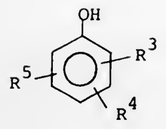
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### 3,931,340
### CHLORINATION OF AROMATIC COMPOUNDS

**Akio Nishihara; Hidekastu Kato; Yaoki Jimbo; Yoshiro Tomoda, and Jinichi Oml, all of Tokyo, Japan, assignors to Asahi Denka Kogyo K.K., Tokyo, Japan**

**Division of Ser. No. 378,217, July 11, 1973, Pat. No. 3,916,014. This application May 23, 1974, Ser. No. 472,657**
**Claims priority, application Japan, Aug. 3, 1972, 47-77975; Aug. 3, 1972, 47-77976**
**Int. Cl.² C07C *39/28***
**U.S. Cl. 260—623 H** **4 Claims**

1. A process for the nuclear mono chlorination of a phenol of the formula



wherein $R^3$ is hydrogen; hydroxy; halogen; alkyl having one to 4 carbon atoms; alkyl having 1 to 4 carbon atoms substituted by aryl, hydroxy aryl, mono-halogenated hydroxy aryl, hydroxyl, or carboxyl; aryl; or aryl substituted by halogen, alkyl having 1 to 3 carbon atoms or halogen and said latter alkyl; $R^4$ and $R^5$, which are the same or different, are hydrogen; alkyl having 1 to 4 carbon atoms; alkyl having one to 4 carbon atoms substituted by aryl, hydroxy aryl, mono-halogenated hydroxy aryl, hydroxyl or carboxyl; provided that when $R^5$ is hydrogen, $R^3$ and $R^4$ can both be halogen, provided further that said phenol has at least one replaceable hydrogen on the 2, 4 or 6 positions relative to the phenolic hydroxyl, which comprises: contacting in the liquid phase, reactants consisting essentially of

A. said phenol

B. from 0.5 to 5.0 moles of copper (I) chloride plus copper (II) chloride, per mole of said phenol, and

C. an aqueous solution of hydrochloric acid providing a concentration of hydrochloric acid in the reaction system of more than 2N,

at a temperature in the range of 85° to 130°C, at a pressure in the range of from atmospheric to about 2 kg/cm² gauge, and adding to the reaction system chlorine gas to convert copper (I) chloride to copper (II) chloride, the chlorine gas being supplied at a rate effective to maintain the mole ratio of (a) copper (I) chloride/(b) copper (I) chloride plus copper (II) chloride, in the range of from 0.005/1 to 0.15/1, throughout the reaction to obtain a reaction product comprised predominantly of said phenol monochlorinated by replacement of one of said replaceable hydrogens by chlorine.

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### 3,931,341
### TREATED PENTACHLOROPHENOL

**Thomas P. Brady, Natick, and Horst G. Langer, Wayland, both of Mass., assignors to The Dow Chemical Company, Midland, Mich.**

**Filed Apr. 16, 1973, Ser. No. 351,229**
**Int. Cl.² C07c *39/36***
**U.S. Cl. 260—623** **2 Claims**

1. Substantially free flowing, non-blooming pentachlorophenol having admixed therewith about 0.5–10% by weight of benzyl alcohol.

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### 3,931,342
### PROCESS FOR THE RECOVERY OF GLYCOLS FROM AN AQUEOUS SOLUTION

**Ming N. Sheng, Cherry Hill, N.J., assignor to Atlantic Richfield Company, Los Angeles, Calif.**

**Filed May 31, 1974, Ser. No. 475,340**
**Int. Cl.² C07C *27/26***
**U.S. Cl. 260—637 R** **12 Claims**

1. A process for the recovery of glycols or glycerol having from 2 to 4 carbon atoms in the molecule from an aqueous solution containing said glycol or glycerol, a dissolved borate and osmium compounds derived from the aqueous phase oxidation of a $C_2$–$C_4$ olefinic compound selected from the group consisting of ethylene, propylene, allyl alcohol and butylene with molecular oxygen in the presence of an octavalent osmium catalyst and an alkali metal borate which comprises the steps of:

adding to the aqueous solution at least one water soluble organic solvent selected from the group consisting of lower alkanones, lower alkanols, lower alkyl ethers and cyclic ethers containing only carbon, hydrogen and oxygen, and lower alkyl nitriles to co-precipitate borate and reduced osmium compounds from said solution;

separating the precipitated borate and osmium compounds from said solution to form a water-solvent-glycol mixture containing a minor amount of an alkali metal acetate; and distilling said mixture to separate water and solvent and recovering the desired glycol or glycerol.



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### 3,931,343
### NITROSOCHLORINATION OF CYCLO-OLEFINS

**John Pisanchyn, Morristown; Stylianos Sifniades, Madison; Robert Fuhrmann, Morris Plains, and Fred W. Koff, Clifton, all of N.J., assignors to Allied Chemical Corporation, New York, N.Y.**

**Filed Feb. 11, 1974, Ser. No. 441,610**
**Int. Cl.² C07C *81/00***
**U.S. Cl. 260—647** **6 Claims**

1. In a process for the nitrosochlorination of cyclo-olefins wherein a cyclo-olefin is dissolved in liquid sulfur dioxide and contacted with NOCl at a reaction temperature below −10°C, the improvement which comprises maintaining a substantially oxygen-free environment throughout the reaction by excluding air and peroxides and thereafter separating the resulting nitrosochloride.

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### 3,931,344
### BROMOFLUOROCYCLOPROPANES

**Charles Alden Billings, Concord; Gerald Joseph O'Neill, Arlington; Charles William Simons, Bedford, and Robert S. Holdsworth, Arlington, all of Mass., assignors to W. R. Grace & Co., Cambridge, Mass.**

**Continuation-in-part of Ser. No. 499,761, Aug. 22, 1974. This application Dec. 26, 1974, Ser. No. 536,573**
**Int. Cl.² C07C *23/04***
**U.S. Cl. 260—648 F** **1 Claim**

1. 1-Bromo-1,2-difluoro-2-methylcyclopropane.

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### 3,931,345
### HYDROGENATION AND HYDRODEALKYLATION PROCESS

**Vladimir Mikhailovich Gryaznov, Leninskie Gory MGU zona L, kv. 11; Viktor Sergeevich Smirnov, Kutuzovsky prospekt, 26, kv. 555; Alexandr Petrovich Mischenko, Khersonskaya ul., 7, korpus 4, kv. 515; Natalia Vsevolodovna Orekhova, Ul. Marii Ulyanovoi, 8, korpus 1, kv. 95; Boris Petrovich Krivdin, Belyaevo-Bogorod-skoe, kvartal 48, korpus 23, kv. 114; Viktoria Petrovna Polyakova, ul. Trofimova, 15 kv. 201, and Evgeny Mikhailovich Savitsky, ul. Dmitria Ulyanova, DNR-3, kv. 13, all of Moscow, U.S.S.R.**

**Division of Ser. No. 92,195, Nov. 23, 1970, Pat. No. 3,799,889. This application Apr. 6, 1973, Ser. No. 348,626**
**Int. Cl.² C07C *5/10, 3/58***
**U.S. Cl. 260—667** **14 Claims**

1. In a method for the hydrogenation of aromatic hydrocarbons the improvement comprising reacting said hydrocarbons under hydrogenation conditions including a temperature of 100° to 300°C over a catalyst comprising a palladium-molybdenum alloy with a molybdenum content in the alloy of 0.1 to 30% by weight, said catalyst being in the form of granules, powder, or gauze, or membranes, films, foils or tubes selectively permeable only to hydrogen.

8. In a method for the hydrodealkylation of aromatic hydrocarbons, the improvement comprising reacting said hydrocarbons under hydrodealkylation conditions including a temperature of 400° to 650°C over a catalyst comprising a palladium-molybdenum alloy having a molybdenum content of 0.1 to 30% by weight in the form of granules, powder, or gauze or membranes, films, foils, or tubes that are selectively permeable only to hydrogen.

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### 3,931,346
### PROCESS FOR PREPARING A POLYMERIZABLE DIENE POLYMER

**Jihei Inomata, Komae; Seiichi Hino, and Tatsuo Tani, both of Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan**

**Continuation-in-part of Ser. No. 276,788, July 31, 1972. This application Apr. 1, 1974, Ser. No. 456,655**
**Int. Cl.² C08D *5/02, 1/20***
**U.S. Cl. 260—635 E** **6 Claims**

1. A process for preparing a liquid polymerizable diene polymer, which comprises:

reacting a liquid polymerizable unsaturated carboxylic acid, anhydride, ester or acid halide with a liquid polydroxydiene polymer having terminal and pendant hydroxy groups obtained from the reaction of one mole of a living polymer having a molecular weight of 500 to 10,000 which is prepared by reacting a conjugated diolefin or a mixture of said conjugated diolefin and a vinyl compound having the formula: $CH_2{=}CR_1R_2$, wherein $R_1$ represents a hydrogen atom or an alkyl group and $R_2$ represents an aryl group or a pyridyl group in the presence of sodium or lithium metal or an organo sodium or lithium compound with 0.5 mole to 2.0 moles of epichlorohydrin, epibromohydrin, epifluorohydrin, chlorobutylene oxide or bromobutylene oxide.

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### 3,931,347
### PURIFICATION OF DINITROTOLUENE

**David H. Rosenblatt, Baltimore, and William H. Dennis, Jr., Braddock Heights, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.**

**Filed Dec. 5, 1974, Ser. No. 529,873**
**Int. Cl.² C07C *79/10***
**U.S. Cl. 260—645** **8 Claims**

1. A process for separating 2,4- and 2,6-dinitrotoluenes from isomeric dinitrotoluene impurities, which comprises suspending a mixture of 2,4- and 2,6-dinitrotoluenes containing a small amount of isomeric dinitrotoluene impurities, in an aqueous solution containing a small amount of an alkali metal disulfide which is sufficient to convert said isomeric dinitrotoluene impurities to water-soluble reaction products but insufficient to convert a substantial amount of said 2,4- and 2,6-dinitrotoluene isomers, and separating the insoluble 2,4- and 2,6-dinitrotoluenes from said aqueous mixture containing the water soluble reaction products of said isomeric dinitrotoluene impurities.

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### 3,931,348
### PROCESS FOR PREPARING DIMETHYL NAPHTHALENE

**Katsuo Taniguchi, Iwakuni; Shizunori Miyamoto, and Hideto Matsuoka, both of Ohtake, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan**

**Filed Dec. 21, 1973, Ser. No. 427,342**
**Claims priority, application Japan, Dec. 25, 1972, 47-129386; Feb. 14, 1973, 48-18326**
**Int. Cl. C07c *15/24***
**U.S. Cl. 260—668 F** **13 Claims**

1. A process for preparing dimethyl naphthalenes selected from at least one of 1,6-, 2,6-, or 2,7-dimethyl naphthalene which comprises

heating a compound (I) selected from the group consisting of methyl-4-(p-tolyl)butane, methyl-4-(p-tolyl) butene and methyl-4-(p-tolyl)butadiene wherein the p-tolyl is attached at the terminal position of the butane, butene or butadiene skeleton,

in the vapor phase at a temperature of about 200°C to about 700°C for a contact time of about 0.1 to about 15 seconds,

in the presence of the cyclization-dehydrogenation catalyst selected from the group consisting of (a) an oxide of

rhenium and (b) a mixture of (a) with an oxide of chromium.

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3,931,349
## CONVERSION OF METHANOL TO GASOLINE COMPONENTS

James C. W. Kuo, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Sept. 23, 1974, Ser. No. 508,113
Int. Cl.² C10G 37/06; B01J 29/28
U.S. Cl. 260—668 R 9 Claims

1. In an exothermic conversion process relied upon for producing gasoline boiling range components from a methanol rich feed which comprises:

passing preheated methanol feed in contact with a catalyst and under conditions selective for restricting the conversion of methanol to a product comprising dimethyl ether, combining a light hydrocarbon gasiform diluent with said product comprising dimethyl ether in an amount which will dissipate exothermic heat released upon subsequent contact with a ZSM-5 type crystalline zeolite conversion catalyst and

contacting said ether comprising product and said light hydrocarbon diluent with a ZSM-5 type crystalline zeolite under conditions selective for converting said ether to products boiling in the gasoline boiling range.

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3,931,351
## MODIFICATION OF IRON AND BARIUM FERRITE CATALYSTS

Robert E. Hinkson, and William H. Taylor, both of Houston, Tex., assignors to Petro-Tex Chemical Corporation, Houston, Tex.

Division of Ser. No. 400,755, Sept. 26, 1973, Pat. No. 3,852,370, which is a continuation-in-part of Ser. No. 249,963, May 3, 1972, abandoned. This application Aug. 1, 1974, Ser. No. 493,494The portion of the term of this patent subsequent to June 13, 1989, has been disclaimed.
Int. Cl.² C07C 5/48
U.S. Cl. 260—680 D 5 Claims

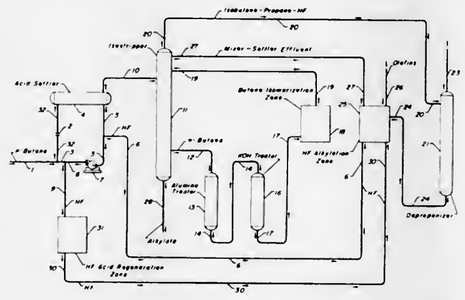
1. A process for the oxidative dehydrogenation of hydrocarbons having 4 to 7 carbon atoms having a stright chain of at least 4 carbon atoms to produce less saturated hydrocarbons of the same number of carbon atoms which comprises contacting, at a temperature of greater than 400°C., said hydrocarbon, a halogen or halogen compound which would liberate halogen said halogen being iodine, bromine or chlorine under the conditions of reaction and from 0.2 to 2.5 moles of oxygen per mole of said hydrocarbon with a catalyst for the dehydrogenation consisting essentially of iron ferrite and 0.35 to 1.3 moles of a metal oxide modifier which is a mixture of ZnO and PbO per mole of iron oxide.

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3,931,352
## HF ACID TREATING THE PARAFFIN FEED STREAM TO AN INTEGRATED PARAFFIN ISOMERIZATION-ALKYLATION PROCESS

Michael Z. Mikulicz, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed July 11, 1974, Ser. No. 487,514
Int. Cl.² C07C 3/54, 5/24
U.S. Cl. 260—683.49 12 Claims



1. A process for the isomerization of a liquid normal paraffin feed stream containing water, sulfur and nitrogen contaminants which are detrimental to solid isomerization catalyst, which process comprises the steps of:

a. contacting said liquid feed stream with liquid hydrofluoric acid to remove aforesaid detrimental contaminants therefrom;

b. separating the treated feed stream of step (a) from contaminant-containing liquid hydrofluoric acid;

c. stripping the treated feed stream of step (b) in a fractionation zone to remove hydrogen fluoride therefrom;

d. treating the stripped feed stream of step (c) for the removal of any remaining fluorides therefrom;

e. contacting the thus purified feed stream of step (d) with solid isomerization catalyst at isomerization conditions;

f. introducing the isomerization effluent of step (e) to said fractionation zone of step (c) for fractionation therein together with said treated feed stream; and

g. withdrawing isoparaffin product from said fractionation zone.

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3,931,350
## PROCESS FOR PRODUCING ALKYLAROMATICS

Allen K. Sparks, Des Plaines, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Division of Ser. No. 265,092, June 21, 1972, Pat. No. 3,848,006, which is a continuation-in-part of Ser. No. 803,057, Feb. 27, 1969, abandoned. This application Mar. 25, 1974, Ser. No. 454,626
Int. Cl.² C07C 3/52
U.S. Cl. 260—671 B 3 Claims

1. In a process for producing a linear alkylaromatic product from a $C_9$–$C_{18}$ n-paraffin-containing feed stock and a monocyclic aromatic hydrocarbon by (i) contacting said $C_9$–$C_{18}$ n-paraffin-containing feed stock with chlorine or bromine in a halogenation step to form a monohalogenated n-paraffin alkylating agent, and (ii) reacting said aromatic hydrocarbon with said alkylating agent in an alkylation step, utilizing an alkylation catalyst, to provide said linear alkylaromatic product, wherein oxygen-containing hydrocarbonaceous compounds are present in said feed stock in concentrations sufficient to inhibit the rate of halogenation of said n-paraffin in said halogenation step, the improvement which comprises contacting said feed stock, prior to said halogenation step, with a sorbent selected from the group consisting of dehydrated silica gel, activated alumina, activated charcoal, zeolites, clay and sulphonic ion-exchange resin under separation conditions, including a contact time of about 0.1 to about 120 minutes and a temperature of about 0° C. to about 200° C., sufficient to remove at least a portion of said oxygen-containing compounds from said feed stock, whereby the rate of halogenation of said n-paraffin is increased.



3,931,353
## POLYMERIZABLE CYCLOACETAL RESINOUS COMPOSITION

Toshiaki Hanyuda, Yokohama, and Eiichiro Takiyama, Tokyo, both of Japan, assignors to Showa High Polymer Co., Ltd., Japan

Division of Ser. No. 407,626, Oct. 18, 1973. This application July 9, 1974, Ser. No. 486,838
Int. Cl.² C08F 24/00
U.S. Cl. 260—836 6 Claims

1. A polymerizable cycloacetal resinous composition, which comprises

A. A resin prepared by reacting 1 equivalent of diallylidenepentaerythritol (I) with 0.8 – 2.0 equivalents of polyhydric alcohol unsaturated monocarboxylic acid ester mono-ol (II) having both a hydroxyl group and a polymerizable or copolymerizable unsaturated bond in the same molecule, with or without the presence of a solvent, in the presence of polymerization inhibitor and addition reaction catalyst

B. An unsaturated polyester of a polycarboxylic acid or epoxyacrylate resin prepared from an epoxy resin and an unsaturated monocarboxylic acid and in the presence or absence of

C. vinyl monomers.

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3,931,354
## REACTION PRODUCTS OF CARBOXYL TERMINATED 1,2-POLYBUTADIENE WITH EPOXIDES AND AROMATIC BIS(MALEIMIDES)

Clyde H. Sheppard, Rancho Palos Verdes, and Robert J. Jones, Hermosa Beach, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Aug. 26, 1974, Ser. No. 500,433
Int. Cl.² C08L 63/02, 63/04, 63/08, 63/10
U.S. Cl. 260—836 9 Claims

1. A hard thermoset resin which is a reaction product of the ratio of:

1. one mole of 1,2-polybutadiene having at least two carboxyl terminal groups;

2. two moles of an epoxide selected from the group consisting of alkylene epoxide, cycloalkylene epoxide, alkoxyarylene epoxide, arylene epoxide, alkyl cycloalkylene epoxide, cycloalkene epoxide, and alkylenecycloalkylene epoxide;

3. 0.1 to 0.8 moles of an aromatic amine maleimide per mole of 1,2-polybutadiene; and

4. a peroxide free radical initiator.

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3,931,355
## RADICAL-INITIATED POLYMERIZATION REACTIONS AND MIXTURE

Hans Rudolph, Krefeld-Bockum, and Hans-Joachim Traenckner, Krefeld-Fischelin, both of Germany, assignors to Bayer Aktiengesellschaft, Germany

Continuation-in-part of Ser. No. 315,329, Dec. 15, 1972, abandoned. This application Jan. 24, 1974, Ser. No. 436,181
Claims priority, application Germany, Dec. 24, 1971, 2164482
Int. Cl.² C08F 4/16
U.S. Cl. 260—865 18 Claims

1. A method of polymerizing a substance containing polymerizable carbon-carbon double bonds which comprises polymerizing the substance in the presence of a trialkyl or triaryl silyl-ether of a tetraaryl-1,2-glycol.

3,931,356
## CONTINUOUS PROCESS FOR THE PREPARATION OF ABS TYPE POLYBLENDS

William O. Dalton, Hampden, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Apr. 26, 1974, Ser. No. 464,418
Int. Cl.² C08L 9/02, 9/06, 51/06, 55/02
U.S. Cl. 260—876 R 38 Claims

1. A continuous mass polymerization process for the preparation of an ABS type polyblend, the steps comprising:

A. continuously charging a monomer composition comprising at least one alkenyl nitrile monomer of the formula:



wherein R is selected from the group consisting of hydrogen and alkyl radicals containing from 1 through 4 carbon atoms each and at least one monoalkenyl aromatic monomer of the formula:



wherein:

Ar is selected from the group consisting of a phenyl radical, an alkaryl radical of 6 through 9 carbon atoms, a monochlorophenyl radical, a dichlorophenyl radical, a monobromophenyl radical, and a dibromophenyl radical, and

X is selected from the group consisting of hydrogen and an alkyl radical containing less than three carbon atoms to a reaction zone,

B. continuously maintaining in said reaction zone a reaction system comprising a liquid phase of said monomers with a vapor phase of said monomers generally thereabove,

1. said liquid phase filling said reaction zone to an extent of from about 10 to 95 percent by volume and comprising said monomer composition,

2. said vapor phase filling the balance up to 100 percent by volume of said reaction zone, the exact composition of said vapor phase being in substantial equilibrium with the exact composition of said liquid phase,

C. continuously subjecting said reaction system in said reaction zone to mixing action sufficient to maintain a substantially uniform composition distribution throughout said liquid phase in said reaction zone,

D. continuously mass polymerizing said monomers at a temperature from 100° to 180°C. and a pressure of from about 5 to 150 psia forming a matrix copolymer dissolved in said liquid phase,

E. continuously removing said vapor phase from said reaction zone at a rate sufficient to maintain, in combination with any heat of reaction being absorbed in said reaction zone by said charging of monomers and with any heat of reaction being removed from said reaction zone through the peripheral boundaries thereof, in said reaction zone a substantially constant temperature and a corresponding substantially constant pressure within the respective temperature and pressure ranges above specified,

F. continuously removing said liquid phase from said reaction zone at a rate sufficient to maintain the above specified volume of said liquid phase, followed by

G. continuously dispersing uniformly a first and second grafted diene rubber into said liquid phase so as to provide from about 1 to 40% by weight of said first and second grafted rubbers in said liquid phase, said first grafted diene rubber being dispersed as rubber particles having a weight average particle size of about 0.7 to 10 microns, a swelling index of at least about 5 and having present occluded and grafted copolymer in an amount of

from about 1 to 5 parts per part of rubber, said second grafted diene rubber being dispersed as rubber particles having a weight average particle size of about 0.1 to 0.5 microns, a swelling index of at least about 2 and being grafted with about 0.4 to 2.5 parts of copolymer per part of rubber, said second grafted rubber comprising from about 70 to 97% of the total weight of said first and second grafted diene rubbers dispersed providing a bimodal particle size distribution of said first and second grafted rubber particles in said liquid phase,

H. continuously separating said matrix copolymer and said first and second grafted rubbers from said liquid phase removed in step (G) as an ABS polyblend,

I. said charging additionally being conducted:

1. at a rate substantially equal to the total rate at which monomers are polymerized in said reaction zone, and removed from said reaction zone, and
2. in a ratio of total alkenyl nitrile monomers such that both a substantially constant said monomer composition is effectively maintained in said liquid phase in said reaction zone and in said matrix copolymer formed from said monomer composition,

J. the interrelationship between said charging, said liquid phase removal, and said substantially constant temperature and corresponding substantially constant pressure in said reaction zone being such that:

a. the weight percentage of said matrix copolymer in said liquid phase in said reaction zone is maintained at a substantially predetermined constant value,
b. the rate at which said matrix copolymer is formed from said monomer composition in said reaction zone ranges from about 0.05 to 2.0 pounds of said matrix copolymer produced per pound of said liquid phase per hour,

K. the interrelationship in said reaction zone between said mixing action and said vapor phase removal being such that said reaction system is maintained under substantially isothermal conditions,

L. the interrelationship between said charging, said vapor phase removal, and said reaction zone being such that:

1. at least about 10 percent of the heat of reaction is removed from said reaction zone by said vapor phase removal,
2. up to about 90 percent of the heat of reaction is absorbed by said charging, and
3. up to about 50 percent of the heat of reaction is removed through the peripheral boundaries of said reaction zone through heat transfer.

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### 3,931,357
### SEPARATE STREAMS WITH DIFFERENT CATALYST PRIOR TO COMBINATION

**Klaus Meyer; Roland Streck, and Heinrich Weber, all of Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany**

**Filed Aug. 28, 1973, Ser. No. 392,238**

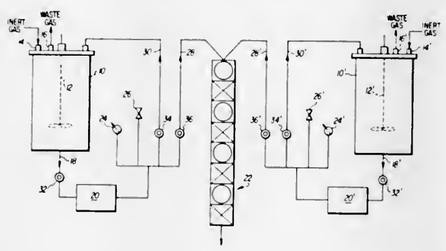
**Claims priority, application Germany, Aug. 31, 1972, 2242794**

**Int. Cl.² C08L 9/00, 23/16**

**U.S. Cl. 260—889** **18 Claims**

1. A process for grafting a polydiene or a polyalkenamer onto an unsaturated polyolefin rubber backbone, which comprises:

a. dispersing in a first liquid stream a catalytically effective amount of a first organic solvent-soluble Ziegler-Natta metathesis catalyst component containing a metal of Subgroups V thru VII of the periodic table;
b. dispersing in a second liquid stream separate from said first liquid stream a catalytically effective amount of a second organic solvent-soluble Ziegler-Natta metathesis catalyst component containing an alkyl or a hydride of a metal from Main groups I thru III of the periodic table;
c. dispersing, separately or as a mixture, into one or both of said first and second liquid streams or into at least one further liquid stream (i) a polydiene or a polyalkenamer having at least one metathesisable double bond per molecule and (ii) an unsaturated polyolefin rubber comprising a metathesisable copolymer of two or more α-olefins with an unconjugated diolefin; and
d. intensively intermixing said liquid streams under metathesis reaction condictions to form in situ a catalytic



amount of a complete Ziegler-Natta metathesis catalyst system and to metathetically graft said polydiene or polyalkenamer onto said polyolefin rubber, thereby reducing side reactions between the catalyst components and the polymer components of said streams; and
e. recovering the resultant graft copolymer characterized by an increased reduced specific viscosity as compared to the starting polymer and a low gel content.

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### 3,931,358
### THIO AND SULFONYL GLYOXYLNITRILEOXIME PHOSPHATES AND PHOSPHONATES

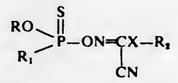
**Arnold D. Gutman, Berkeley, Calif., assignor to Stauffer Chemical Company, Westport, Conn.**

**Filed Jan. 31, 1972, Ser. No. 222,368**

**Int. Cl.² A01N 9/36; C07F 9/165, 9/40**

**U.S. Cl. 260—940** **19 Claims**

1. A compound of the formula



in which R is lower alkyl having 1 to 4 carbon atoms, inclusive; $R_1$ is selected from the group consisting of lower alkyl having 1 to 4 carbon atoms, inclusive, and lower alkoxy having 1 to 4 carbon atoms, inclusive; X is selected from the group consisting of thio and sulfonyl; $R_2$ is selected from the group consisting of benzyl, naphthyl, phenyl or substituted phenyl wherein said substituents are selected from the group consisting of chloro, bromo, methyl and methoxy.

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### 3,931,359
### O-(4-IODOPHENYL) THIONO (PHOSPHONIC ACID ESTERS AND ESTER AMIDES

**Karl-Julius Schmidt, Wuppertal; Bernhard Homeyer, Opladen; Ingeborg Hammann, Cologne, and Wilhelm Stendel, Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

**Filed Jan. 9, 1973, Ser. No. 322,262**

**Claims priority, application Germany, Jan. 20, 1972, 2202528**

**Int. Cl.² A01N 9/36; C07F 9/205, 9/24, 9/40**

**U.S. Cl. 260—959** **4 Claims**

1. An iodo-phenyl-thiono-phosphoric (phosphonic) acid ester or ester amide selected from the group consisting of

O-isopropyl-O-(4-iodophenyl)-methanethionophosphonic acid ester,



O-isopropyl-O-(4-iodophenyl)-ethanethionophosphonic acid ester, or

O-ethyl-N-isopropyl-thionophosphoric acid ester amide.

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### 3,931,360
### COLOR IMPROVEMENT OF PHOSPHATE ESTERS

**Silvio L. Giolito, Whitestone, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.**

**Filed Dec. 23, 1974, Ser. No. 535,769**

**Int. Cl.² C07F 9/12**

**U.S. Cl. 260—975** **9 Claims**

1. In a method for producing alkylphenyl esters of phosphoric acid which comprises the alkylation of phenol with an olefin followed by the addition of $POCL_3$ in the presence of a Friedel-Crafts catalyst at an elevated temperature, the improvement which comprises contacting said esters with an effective amount of a solution of a soluble alkali metal nitrilotriacetate salt for a period of time sufficient to reduce the color to the desired level whereby said esters are decolorized and stabilized against subsequent color formation.

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### 3,931,361
### COLOR IMPROVEMENT OF PHOSPHATE ESTERS

**Fred Jaffe, Ossining; Silvio L. Giolito, Whitestone, and Edward N. Walsh, New City, all of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.**

**Filed Dec. 23, 1974, Ser. No. 535,883**

**Int. Cl.² C07F 9/12**

**U.S. Cl. 260—975** **12 Claims**

1. A method for producing alkylphenyl esters of phosphoric acid which comprises the alkylation of phenol with an olefin followed by the addition of $POCl_3$ in the presence of a Friedel-Crafts catalyst at an elevated temperature the improvement which comprises contacting said esters with an effective amount of a water-soluble salt of a dithionite or formaldehyde sulfoxylate selected from the group consisting of sodium, potassium, lithium, ammonium, calcium, and mixtures thereof, for a period of time sufficient to reduce the color to the desired level whereby said esters are decolorized and stabilized against subsequent color formation.

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### 3,931,362
### COLOR IMPROVEMENT OF PHOSPHATE ESTERS

**Silvio L. Giolito, Whitestone, and Fred Jaffe, Ossining, both of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.**

**Filed Dec. 23, 1974, Ser. No. 535,884**

**Int. Cl.² C07F 9/12**

**U.S. Cl. 260—975** **10 Claims**

1. In a method for producing alkylphenyl esters of phosphoric acid which comprises the alkylation of phenol with an olefin followed by the addition of $POCl_3$ in the presence of a Friedel-Crafts catalyst at an elevated temperature, the improvement which comprises contacting said esters with an effective amount of an oxidizable nitrogenous compound selected from the group consisting of hydrazine, semicarbazide, and mixtures thereof, for a period of time sufficient to reduce the color to the desired level whereby said esters are decolorized and stabilized against subsequent color formation.

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### 3,931,363
### COLOR IMPROVEMENT OF PHOSPHATE ESTERS

**Silvio L. Giolito, Whitestone, N.Y., and Stanley B. Mirviss, Stamford, Conn., assignors to Stauffer Chemical Company, Westport, Conn.**

**Filed Dec. 23, 1974, Ser. No. 535,885**

**Int. Cl.² C07F 9/12**

**U.S. Cl. 260—975** **15 Claims**

1. In a method for producing alkylphenyl esters of phosphoric acid which comprises the alkylation of phenol with an olefin followed by the addition of $POCl_3$ in the presence of a Friedel-Crafts catalyst at an elevated temperature, the improvement which comprises contacting said esters with an effective amount of an organoaluminum compound in accordance with the formula:

$$R'_nAlH_m$$

wherein R′ is a radical selected from the group consisting of alkyl, cycloalkyl, aryl, alkaryl or aralkyl and contains up to 20 carbon atoms; and n varies from 1–3, and m varies from 0–2; for a period of time sufficient to reduce the color to the desired level whereby said esters are decolorized and stabilized against subsequent color formation.

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### 3,931,364
### COLOR IMPROVEMENT OF PHOSPHATE ESTERS

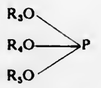
**Silvio L. Giolito, Whitestone, N.Y., and Stanley B. Mirviss, Stamford, Conn., assignors to Stauffer Chemical Company, Westport, Conn.**

**Filed Dec. 23, 1974, Ser. No. 535,886**

**Int. Cl.² C07F 9/12**

**U.S. Cl. 260—975** **11 Claims**

1. In a method for producing alkylphenyl esters of phosphoric acid which comprises the alkylation of phenol with an olefin followed by the addition of $POCl_3$ in the presence of a Friedel-Crafts catalyst at an elevated temperature, the improvement which comprises contacting said esters with an effective amount of a phosphite ester corresponding to the formula:



wherein $R_3$, $R_4$ and $R_5$ are radicals, each independently selected from the group consisting of alkyl, cycloalkyl, phenyl, alkylphenyl and phenylalkyl, wherein the alkyl groups contain from 1 to about 20 carbon atoms, and wherein at least one radical from the group $R_3$, $R_4$ and $R_5$ is phenyl or alkylphenyl; for a period of time sufficient to reduce the color to the desired level whereby said esters are decolorized and stabilized against subsequent color formation.

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### 3,931,365
### COLOR IMPROVEMENT OF PHOSPHATE ESTERS

**Silvio L. Giolito, Whitestone, N.Y., and Stanley B. Mirviss, Stamford, Conn., assignors to Stauffer Chemical Company, Westport, Conn.**

**Filed Dec. 23, 1974, Ser. No. 535,887**

**Int. Cl.² C07F 9/12**

**U.S. Cl. 260—975** **10 Claims**

1. In a method for producing alkylphenyl esters of phosphoric acid which comprises the alkylation of phenol with an olefin followed by the addition of $POCl_3$ in the presence of a Friedel-Crafts catalyst at an elevated temperature, the improvement which comprises contacting said esters with an effective amount of a water-soluble salt of a reduced form of sulfur wherein the cation is selected from the group consisting of sodium, potassium, ammonium, calcium, and mixtures thereof; and wherein the anion is selected from the group consisting of thiosulfate, sulfite, bisulfite, and mixtures thereof; for a period of time sufficient to reduce the color to the desired level whereby said esters are decolorized and stabilized against subsequent color formation.

3,931,366

## COLOR IMPROVEMENT OF PHOSPHATE ESTERS

Silvio L. Giolito, Whitestone, N.Y., and Don Keith Worster, Point Pleasant, W. Va., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Dec. 23, 1974, Ser. No. 535,888
Int. Cl.² C07F 9/12
U.S. Cl. 260—975 7 Claims

1. In a method for producing alkylphenyl esters of phosphoric acid which comprises the alkylation of phenol with an olefin followed by the addition of $POCl_3$ in the presence of a Friedel-Crafts catalyst at an elevated temperature, the improvement which comprises the in situ contacting of an effective amount of $PCl_3$ with the alkylation mixture, to produce an ester which is decolorized and stabilized against subsequent color formation.

3,931,367

## COLOR IMPROVEMENT OF PHOSPHATE ESTERS

Silvio L. Giolito, Whitestone, N.Y., and Don Keith Worster, Point Pleasant, W. Va., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Dec. 23, 1974, Ser. No. 535,889
Int. Cl.² C07F 9/12
U.S. Cl. 260—975 8 Claims

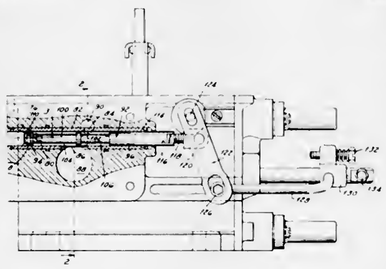
1. In a method for producing alkylphenyl esters of phosphoric acid which comprises the alkylation of phenol with an olefin followed by the addition of $POCl_3$ in the presence of a Friedel-Crafts catalyst at an elevated temperature, the improvement which comprises contacting said esters with an effective amount of a stannous fatty acid salt consisting essentially of stannous octoate for a period of time sufficient to reduce color to the desired level whereby said esters are decolorized and stabilized against subsequent color formation.

3,931,368

## FUEL FLOW PROPORTIONING VALVE

Thomas D. Barker, Farmington; Steve R. Mueller, Ypsilanti; Clifford A. Nickel, Plymouth, and Thomas A. Sweder, Allen Park, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Feb. 4, 1974, Ser. No. 439,456
Int. Cl.² F02M 9/06
U.S. Cl. 261—36 A 1 Claim



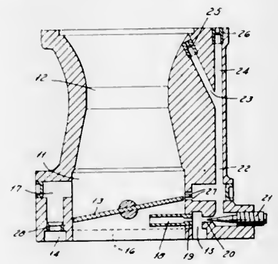
1. A carburetor having an air/fuel mixture passage defined in part by a variable area venturi having a movable wall to vary the area, a source of fuel under pressure, a fuel supply port connected to the source, a fuel conduit having a portion extending across the venturi adjacent the throat section thereof for cooperation with the movable wall and having a number of axially spaced fuel discharge ports uncovered progressively upon movement of the wall to enlarge the venturi, and a fuel flow spool type metering valve operably associated with the supply port and movable with the wall and constructed to meter fuel flow to the conduit as a function of the position of the valve and the wall, the construction including a hollow valve body sleeve having a circular segment removed to define a flat fuel inlet slot of predetermined axial and lateral extent communicating with the supply port, the valve being slidably movable within the sleeve and having a central land straddled by the inlet slot, the sleeve having a pair of fuel outlet ports one on each side of and spaced from the slot whereby fuel flow from the supply port through the slot is split by the land in direct proportion to the position of the land from a central null position to flow fuel in the proportioned amounts to each outlet, and means connecting one outlet to the source, and the other outlet to the fuel conduit, the supply port being maintained filled with fuel at all times to fill the inlet port to provide a predetermined schedule of fuel flow volume to opposite sides of the land as a function of the shape of the inlet port as it is traversed by the land.

3,931,369

## CARBURETOR IDLE SYSTEM FUEL ATOMIZER

Dennis L. E. Dale, Benfleet; Anthony S. D. Dedman, Cheltenham; John G. Donnelly, Maldon, and Frank T. Newbury, Dunmow, all of England, assignors to Ford Motor Company, Dearborn, Mich.

Filed May 9, 1974, Ser. No. 468,790
Claims priority, application United Kingdom, Nov. 16, 1973, 53331/73
Int. Cl.² F02M 3/08
U.S. Cl. 261—41 D 2 Claims



1. A carburetor idle speed fuel atomizer comprising, in combination, an engine carburetor having an induction passage open to atmospheric pressure at one end and adapted to be connected to an engine intake manifold at the opposite end so as to be subject to engine vacuum varying in level from ambient atmospheric pressure at engine shutdown to a maximum subatmospheric pressure level during engine deceleration operating conditions, a throttle valve rotatably mounted across said passage and movable from an engine idle speed position essentially closing the induction passage to a wide open throttle position, and return, for controlling flow through the passage, the carburetor including an idle speed air and fuel supply system including a fuel/air mixture passage containing fuel and air connected to the induction passage around the throttle valve and having a discharge end connected to the induction passage below the closed throttle position so as to provide an idle air/fuel mixture during engine running operation even though the throttle valve is in a closed position, the fuel/air mixture passage having idle transfer ports connecting the latter passage to the induction passage adjacent the edge of the throttle valve when in an idle speed position for the subjection of the fuel/air mixture passage to the pressure of the induction passage above and below the throttle valve, the idle speed system including a mixing chamber connected at one end to the discharge end of the fuel/air mixture passage and at its other end to the induction passage, the idle speed system also including an additional air passage connected at one end to the induction passage above the throttle valve and connected at its other end to the mixing chamber to dilute the idle speed fuel/air mixture to the desired fuel/air ratio for idling purposes, the atomizer comprising an elongated tube



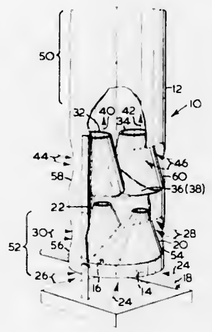
projecting into the induction passage and having a nozzle in the other end of the mixing chamber and having an air/fuel flow opening of a size in proportion to the level of manifold vacuum acting thereon to provide sonic velocity to the flow therethrough to atomize the fuel particles in the flow, the additional air passage having a flow restriction therein sufficient to create a pressure depression in the idle speed mixing chamber upon operation of the engine to effect induction of the air and fuel into the mixing chamber from the idle speed fuel/air mixture passage, the nozzle cross-sectional area being smaller than that of the flow restriction to provide the pressure differential across the nozzle sufficient to provide the sonic flow.

3,931,370

## DOUBLE FUNNEL WITH BAFFLE CASCADE AERATION UNIT

Declan S. Murphy, Valois, Canada, assignor to Atara Corporation, Canada

Filed Jan. 10, 1975, Ser. No. 540,235
Claims priority, application Canada, Jan. 10, 1974, 189883
Int. Cl.² C02C 1/06; C02B 3/08; B01D 47/02
U.S. Cl. 261—77 5 Claims



1. An assembly adapted to aerate sewage comprising:
oxygen-containing gas supply means having two delivery orifices to form two streams of gas;
two first funnels converging downstream and secured downstream from and cooperating with said orifices so that oxygen-containing gas issuing from the orifice can entrain liquid and become mixed therewith;
two second funnels converging downstream and spaced downstream from the first funnels;
baffle means in the flow path between the exit from the first funnels and the entry to the second funnels; and
means securing the first funnels, the baffle means and the second funnels together so that the mixture of oxygen-containing gas and sewage streaming from the exit of the first funnels impinges on the baffle means before entering the second funnels.

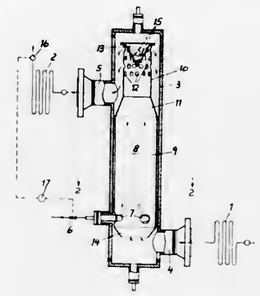
3,931,371

## ATTEMPERATOR

Erich Maurer, Oberhausen, and Herbert Fangrat, Bottrop, both of Germany, assignors to Babcock & Wilcox Limited, London, England

Filed July 22, 1974, Ser. No. 490,831
Claims priority, application Germany, July 25, 1973, 2337738
Int. Cl. F22g 5/12
U.S. Cl. 261—116 10 Claims

1. An attemperator comprising an upright vessel, a sleeve disposed within the vessel in spaced relation therewith, and respective inlet and outlet means provided for said vessel and sleeve to accommodate the flow of vapor therethrough, said inlet means being subjacent to the outlet means, the sleeve including a perforated upper segment defining the outlet therefrom, a fixed cone-shaped deflector extending into at least a portion of the perforated segment and forming a closure over the top of said sleeve, and a lower segment of said vessel and sleeve being formed with a plurality of spaced openings fitted with fixed nozzle means for upwardly injecting a cooling fluid within the sleeve for mixing with the vapor to regulate the temperature thereof.

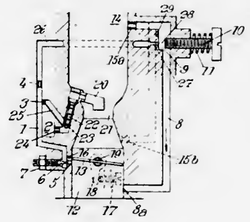


3,931,372

## CARBURETTORS FOR INTERNAL COMBUSTION ENGINES

Michel Eugene Pierlot, Le Pecq, France, assignor to Societe Industrielle de Brevets et d'Etudes S.I.B.E., Neuilly-sur-Seine, France

Filed Nov. 13, 1974, Ser. No. 523,491
Claims priority, application France, Nov. 21, 1973, 73.41413
Int. Cl.² F02M 3/06
U.S. Cl. 261—41 D 8 Claims

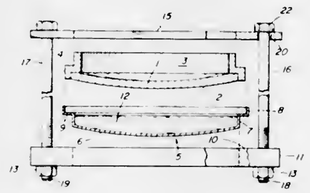


1. In a carburettor for an internal combustion engine having an intake conduit and an operator operable throttle member in said conduit, an idling circuit comprising: an idling duct connected to a source of fuel and to a source of atmospheric air via respective calibrated orifices and formed with an adjustable orifice located downstream of said calibrated orifices on the path of air and fuel; an air duct having an inlet connected to receive atmospheric air and formed with a first passage having means for adjusting its cross-section, both said ducts having respective outlets opening into a zone of said intake conduit which is located downstream of the throttle member for the underpressure prevailing in that zone when the throttle member is in an idling position to draw a rich mixture of fuel and air via the idling speed duct and dilution air via the air duct, wherein the idling duct is connected to a second passage of the air duct whose section is adjustable by said adjusting means simultaneously with the first passage, said second passage being located upstream of the first passage in the direction of flow of air in said air duct.

3,931,373
## REPLICATION PROCESSES FOR PRODUCING PLASTIC OPTICAL COMPONENTS

John O. Beattie, Riverside, Conn., assignor to J. O. Beattie Research Company, Stamford, Conn.

Division of Ser. No. 210,519, Dec. 21, 1971, Pat. No. 3,830,460, which is a continuation-in-part of Ser. No. 841,758, July 15, 1969, abandoned. This application Apr. 15, 1974, Ser. No. 460,859
Int. Cl.² B29D 11/00
U.S. Cl. 264—1 14 Claims



1. A process for producing a plastic optical element having a predetermined surface configuration comprising:
a. forming a replica mold having a surface configuration negative to said element's predetermined surface configuration, said negative surface configuration being formed from a polymeric composition which has a flexural modulus above about $2 \times 10^5$ psi so that the mold will resist distortion of the plastic optical element during cure thereof, said polymeric composition also being one which: (1) is releasable from a master mold surface; (2) has balanced adhesion to said plastic optical element during cure thereof; (3) is resistant to solvent attack by said plastic optical element during cure thereof; (4) is thermally stable at the molding temperature for said plastic optical element; and (5) is capable of forming an optical quality surface on the plastic optical element;
b. molding said plastic optical element against said replica mold surface configuration; and,
c. releasing said optical element after cure thereof from said replica mold.

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3,931,374
## PROCESSES FOR THE MANUFACTURE OF FUEL BLOCKS CONTAINING A METALLIC POWDER AND IN THE CORRESPONDING BLOCKS

Helène Denise Moutet nee Layrisse, Massy; Maurice J. Pugibet, Paris, and Jean-Jacques Scherchen, Yerres, all of France, assignors to Office National d'Etudes et de Recherches Aerospatiales (O.N.E.R.A.), Chatillon-sous-Bagneux, France

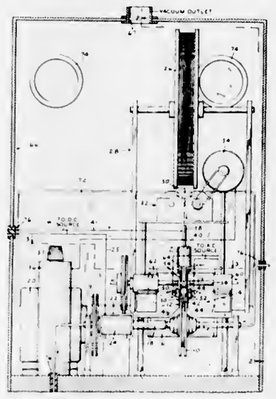
Filed Oct. 9, 1970, Ser. No. 79,689
Claims priority, application France, Oct. 13, 1969, 69.35024
Int. Cl.² C06B 21/00
U.S. Cl. 264—3 C 5 Claims

1. In a method for the manufacture of a fuel block containing a powder of at least one energizing light metal selected from the group consisting of lithium, beryllium, sodium, magnesium, potassium, boron, aluminum and silicon, the steps of applying to the surface of each particle of said metallic powder a discontinuous coating comprised of discrete particles of a polyfluoroethylene compound, preparing a liquified mixture containing said coated metallic powder particles and an organic fuel compound which is normally solid at ambient temperature, and forming a dried fuel block from said mixture, said coated metallic powder particles comprising from 20 to 40% of the total weight of said dried fuel block.

3,931,375
## PRODUCTION OF METAL POWDER

Joseph T. Blucher, Waltham, Mass., and Donald D. Dalrymple, North Warren, Pa., assignors to Industrial Materials Technology, Inc., Woburn, Mass.

Division of Ser. No. 344,040, March 22, 1973, Pat. No. 3,830,603. This application Apr. 24, 1974, Ser. No. 463,656
Int. Cl.² B22D 23/08
U.S. Cl. 264—10 3 Claims



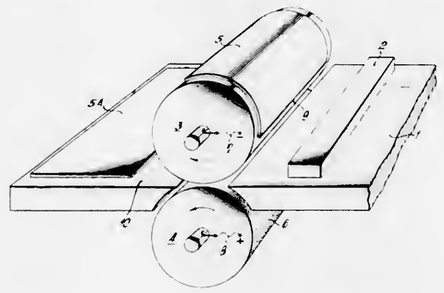
1. A method of producing metal particles in powder form from a metal wire which comprises the steps of
a. creating a first direct current electromagnetic field in the region of a rotatable disc and having lines of force substantially parallel to the axis of rotation of said disc;
b. feeding a consumable metal wire through said first magnetic field and into contact with said disc in a direction substantially perpendicular to said lines of force of said first magnetic field;
c. applying a direct electrical potential between said wire and said disc to cause direct current flow through said wire and said disc, said current being of a magnitude sufficient to melt the end of said wire when in contact with said disc and said current causing a second magnetic field to be formed about said wire having lines of force substantially perpendicular to the lines of force of said electromagnetic field;
d. rotating said disc to break electrical contact between said wire and said disc and to cause the formation of an electrical arc between the end of said wire and said disc whereby additional portions of the end of said wire are melted;
e. continuously feeding the end of said wire against said rotating disc to reestablish contact between the end of said wire and said disc whereby a cycle of continuously making and breaking the electrical contact between said wire and said disc is established;
f. removing molten metal droplets, formed from the area of contact of said wire and said disc, by the interaction of the lines of force of said electromagnetic field and the lines of force of said second magnetic field; and
g. cooling to solidification the molten metal removed from said area of contact and collecting same in particle form.



3,931,376
## METHOD FOR ROLLING OUT A BAR-SHAPED PRE-MOLDING OF CERAMIC MATERIAL TO FORM A PLATE

Jochen Hartmann, Schwarzenfeld, Germany, assignor to Fetok GmbH, Chur, Switzerland

Filed May 6, 1971, Ser. No. 140,845
Claims priority, application Germany, May 6, 1970, 2022354
Int. Cl.² B28B 3/12
U.S. Cl. 264—22 1 Claim



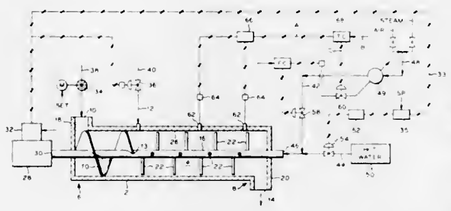
1. A method for rolling out bar-shaped premolding of ceramic material to form a thin plate, comprising passing the premolding through the nip of a pair of rolls, of which the upper roll is smooth and the lower roll is rough, allowing the ceramic material to adhere to the upper roll and travel round with it for at least one revolution and then detaching the ceramic material from the upper roll by applying an electric field to the rolls so that the upper roll becomes negative in relation to the lower roll, said electric field being of sufficient intensity to detach said material from said upper roll and said ceramic material being a ceramic material capable of being detached fromm said smooth roll by the application of said electric field.

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3,931,377
## CARBON BLACK PELLETIZING METHOD AND APPARATUS

Robert E. Dollinger, Hurst, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sept. 13, 1973, Ser. No. 396,815
Int. Cl.² B01J 2/12
U.S. Cl. 264—40 6 Claims



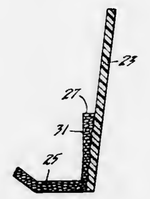
1. A process for the production of carbon black pellets while controlling the cake buildup comprising
a. introducing carbon black and a pelleting liquid into a pelletizer having an inner surface maintained at a temperature above about 212° F.;
b. moving a series of mixing elements through the carbon black and the pelleting liquid thus forming a mixture;
c. jetting a plurality of fluid streams through said mixing elements against said inner surface of said pelletizer for periods and in an amount sufficient to prevent carbon black cake buildup and hardening on said inner surface;
d. forming carbon black pellets from said mixture during said mixing step; and
e. recovering the carbon black pellets from said pelletizer.

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3,931,378
## FOAM BEAD BOTTOM PLASTIC CUP AND METHOD OF MAKING SAME

Clifford Clayton Goehring, Princeton, N.J., assignor to American Can Company, Greenwich, Conn.

Division of Ser. No. 256,347, May 24, 1972, abandoned. This application June 17, 1974, Ser. No. 480,301
Int. Cl.² B29D 27/00
U.S. Cl. 264—45.4 6 Claims



1. A method for producing a disposable molded, lapped seam, fused foam plastic cup having leakproof seals between the bottom wall and sidewall and along the sidewall seam and wherein the side seam and the sidewall are of identical thickness comprising the steps of:
a. providing an extruded, foamed plastic sheet material;
b. compressing said sheet material to a thickness less than that of the final sidewall;
c. forming a blank from said compressed sheet of suitable size and shape to form the sidewall of said cup;
d. providing mold means comprising female and male mold members;
e. providing pre-expanded foam beads in sufficient quantity to form the bottom wall of said cup;
f. positioning said sidewall blank in said mold means;
g. introducing said pre-expanded foam beads in the bottom of said female mold member;
h. joining said mold members sufficiently to space them an amount greater than the thickness of said compressed sidewall blank and equal to the thickness of the final sidewall of said cup and
i. molding and fusing said sidewall blank and foam beads in the presence of steam to expand said compressed sheet into the space between said mold members and to simultaneously compress, form and fuse a bottom wall from said foam beads to said sidewall.

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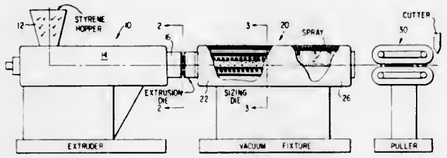
3,931,379
## FOAMED PROFILE EXTRUSION PROCESS

Bob Joe Cruson, and Ronald D. Medley, both of Big Spring, Tex., assignors to Cosden Oil & Chemical Company, Big Spring, Tex.

Filed July 17, 1973, Ser. No. 380,010
Int. Cl.² B29D 27/00; B29F 3/06
U.S. Cl. 264—45.5 4 Claims

1. A process for the manufacture of profiled products having a specific gravity of from about 0.3 to 0.6 by the steps of extruding an expandable styrene polymer composition in substantially unexpanded condition through a die orifice having the desired profile and subsequently passing the resinous material through a sizing member having the desired profile and cross-section whereupon the resinous material fully expands within the confines of said sizing member to produce the desired product having a non-foamed outer layer of styrene polymer and a foamed interior cross-section and wherein

the expandable styrene polymer composition is one consisting essentially of from about 0.2 to 1.0 parts by weight of an



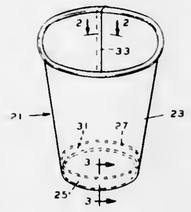

alkaline earth metal carbonate and from about 0.2 to 1.0 parts by weight of citric acid as a blowing agent per 100 parts by weight of styrene polymer.

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**3,931,380**
**METHOD OF MAKING NESTABLE FOAMED PLASTIC CUPS**

**Ilie Mila Belivakici, Kendall Park; Clifford Clayton Goehring; James Alan Wachtel, both of Princeton; William Joseph Lahm, Middlesex, all of N.J., and Carl Richard Storms, Easton, Pa., assignors to American Can Company, Greenwich, Conn.**

**Division of Ser. No. 214,847, Jan. 3, 1972, abandoned. This application Dec. 26, 1973, Ser. No. 427,739**
**Int. Cl.² B29D** *27/00*
**U.S. Cl. 264—45.5** **4 Claims**



1. A method of making from foamed plastic sheet material a molded, lapped seam, fused cup having wall portions thinner than the initial sheet material, leakproof seals between the bottom and sidewalls and wherein the seam and the sidewall are of identical thickness comprising the steps of:
1. providing an extruded, foamed plastic sheet material having a density of about 16 to 17 lbs./ft.³ and a substantial skin on its outer surface only, a density gradient wherein the cell size of said sheet increases inwardly from said outer surface and a thickness greater than the final sidewall thickness;
2. comprising said extruded sheet to a thickness less than that of the final sidewall thereby decreasing the cell size variation;
3. forming a blank from said compressed sheet of suitable shape and size to form the sidewall of said cup;
4. providing mold means comprising female and male mold members;
5. positioning said sidewall blank in said female mold member;
6. positioning a blank of suitable shape and size to form the bottom wall of said cup on said male mold member;
7. joining said mold members sufficiently to form a mold cavity wherein the mold members are spaced an amount greater than the thickness of said compressed sidewall blank and equal to the thickness of the final sidewall of said cup; and
8. fusing said sidewall and bottom wall blanks thus positioned in said mold cavity in the presence of steam to expand said compressed sheet into the space between said mold members to form a cup having a sidewall increased in thickness and decreased in cell size variation from that of the compressed sheet.

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**3,931,381**
**MOLD RELEASE METHOD FOR POLYURETHANE INTEGRAL-SKIN FOAM**

**Charles D. Lindberg, Scotia, N.Y., assignor to The General Tire & Rubber Company, Akron, Ohio**

**Continuation of Ser. No. 69,894, Sept. 4, 1970, abandoned, which is a continuation-in-part of Ser. No. 776,268, Nov. 15, 1968, abandoned. This application Sept. 9, 1974, Ser. No. 504,202**
**Int. Cl.² B29C** *1/04*; **B29D** *27/00*
**U.S. Cl. 264—45.5** **3 Claims**

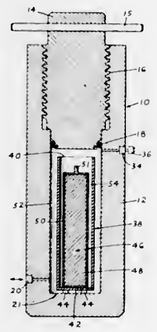
1. A method of preparing a mold to release flexible polyurethane integral skin foam comprising:
a. applying a continuous coating of a fused polytetrafluoroethylene polymer to the mold surfaces;
b. applying a thin film of a liquid mixture comprising (by weight) from 1 to 10 parts of a hydrocarbon wax having a melting point of from about 200° to 220°F., an acid number of about zero, and a saponification number of about zero, from 7 to 26 parts of sodium di(2-ethylhexyl) sulfosuccinate, and from 330 to 300 parts of a solvent for said wax and said sodium di(2-ethylhexyl) sulfosuccinate over said coating; and,
c. drying said film prior to injecting the mixture of foam reactants into the said mold.

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**3,931,382**
**METHOD FOR RAPID ISOSTATIC PRESSING**

**Donald E. Witkin, Warren, Pa., assignor to National Forge Company, Irvine, Pa.**

**Continuation of Ser. No. 359,224, May 11, 1973, abandoned. This application Jan. 27, 1975, Ser. No. 544,646**
**Int. Cl.² B29F** *3/04*
**U.S. Cl. 264—88** **17 Claims**



1. The process of isostatically pressing an article at a temperature above its bonding temperature comprising:
a. inserting said article in a dry isostatic pressing vessel;
b. substantially filling said vessel with a liquid without said liquid contacting said article; and
c. filling the remainder of said vessel and raising the pressure of said liquid to a pressure above the critical pressure of said liquid to compact said article before said article cools to a temperature below its bonding temperature.

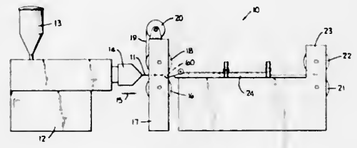


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**3,931,383**
**METHOD FOR CONTINUOUSLY FORMING PLASTIC SHEET WITH VACUUM PRESSURE**

**Richard H. Erlewine; Charles W. Richter, III, and Arthur J. Calpha, Jr., all of Marion, Ind., assignors to General Plastics Corporation, Marion, Ind.**

**Division of Ser. No. 350,727, April 13, 1973, Pat. No. 3,887,320. This application May 28, 1974, Ser. No. 473,423**
**Int. Cl.² B29C** *17/04*
**U.S. Cl. 264—92** **4 Claims**



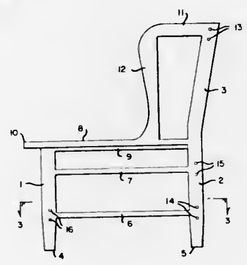
1. A method of forming grooves in a sheet of plastic comprising the steps of:
providing a heated plastic sheet in a formable state with said sheet including longitudinally extending edges;
forcing said sheet while in a heated condition onto a support having length with a smooth inclined forward portion and with grooves extending rearwardly therefrom in the direction of said length;
contacting continuously said forward portion across the width of said sheet to effect an airtight seal therebetween; contacting said longitudinally extending edges of said sheet against said support to effect an airtight seal therebetween;
moving said sheet across said support in the direction of said length while keeping said support stationary and while maintaining an airtight seal between said sheet and said forward portion of said support and between said edges of said sheet and said support;
maintaining said forward portion of said support in a heated condition to maintain said sheet in a soft condition and allow for effecting said air tight seal;
withdrawing during said moving step air from said grooves of said support creating a vacuum pressure between said sheet and said support and forcing said sheet into said grooves of said support to form grooves in said sheet; and, allowing said sheet having grooves therein to cool and set.

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**3,931,384**
**METHOD OF MAKING END FRAMES FOR UPHOLSTERED FURNITURE**

**Larry J. Forquer; Robert P. Habgood, Jr., both of Bradford, Pa., and John M. Rembold, Limestone, N.Y., assignors to Plexowood, Inc., Bradford, Pa.**

**Filed Oct. 2, 1972, Ser. No. 293,845**
**Int. Cl.² B29J** *5/00*
**U.S. Cl. 264—120** **1 Claim**



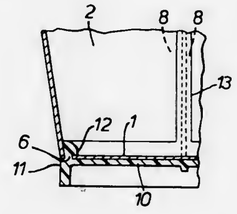
1. The method of pressure molding a pair of right and left hand end frames each having a planar portion and a portion diverging from the planar portion comprising (a) filling with a mixture of wood flakes and resin the cavity of a pressure mold comprehending the planar portion of each said end frame and filling with the same mixture the cavity of an attached pressure mold portion comprehending the diverging portion, said pressure molds being sufficiently deep to accommodate the uncompressed mixture of wood flakes and resin required to form said end frame pre-forms, (b) compressing the mixture to produce a self-sustaining preform having the shape of the mold and its attached portion, removing the compressed pre-form from the mold, (c) detaching the mold portion comprehending the diverging portion and substituting therefore a mold portion comprehending the portion diverging in the opposite direction, (d) filling the cavity of the mold and its attached portion with a mixture of wood flakes and resin and compressing the mixture to produce a self-sustaining pre-form which is the mirror image of the pre-form first produced, (e) transferring each pre-form to a curing mold shaped to receive and support each pre-form including its diverging portion and (f) heating and pressing each pre-form to a density greater than that of the wood from which the flakes are derived so as to bond the wood flakes together with the resin in both the planar and diverging portions of each pre-form to form fully bonded end frames.

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**3,931,385**
**METHOD FOR THE PRODUCTION OF COMPOSITE CONTAINERS**

**Brian Leo Chudleigh Sutch, Thames Ditton, England, assignor to Airfix Industries Limited, London, England**

**Filed Feb. 12, 1974, Ser. No. 441,892**
**Claims priority, application United Kingdom, Feb. 12, 1973, 6722/73; Mar. 22, 1973, 14016/73**
**Int. Cl.² B29D** *3/00*; **B65D** *3/20*
**U.S. Cl. 264—154** **11 Claims**



1. The method of making an article having a first wall including an arcuate edge portion and a second wall folded relative to the first wall from the arcuate edge portion of said first wall comprising forming a flat blank having first and second panels conforming to the respective first and second walls with the arc of the arcuate edge portion of said first panel intersecting the adjacent edge of said second panel at two spaced positions, forming a slit in the blank between said spaced positions to define a pair of hinge parts at the ends of the slit adjacent the points of intersection of said panels and also to define a cut-away in at least one of the panels when the panels are folded relative to one another about said hinge parts to the relative panel positions required by the shape of the article, folding said panels to said relative positions, confining the so folded panels between two mould tools which define a blank cavity for receiving the panels in their relative folded positions and also define a mould cavity in the region of the cut-away and in the region of edges of the panels juxtaposed by virtue of folding said panels to their relative positions, and injecting material into the mould cavity to complete that panel having the cut-away formed by said slit and to connect said juxtaposed edges.

**3,931,386**
**PROCESS FOR PRODUCING DRAWN OR UNDRAWN FLAME-RESISTANT, ANTI-FUSING CURED PHENOLIC CONTINUOUS FILAMENTS**
**Isao Kimura, Suita, and Hiroaki Koyama, Osaka, both of Japan, assignors to Nippon Kynol Incorporated, Osaka, Japan**
**Filed Oct. 30, 1972, Ser. No. 302,010**
**Claims priority, application Japan, Nov. 6, 1971, 46-88433**
**Int. Cl.² B29C** *25/00*
**U.S. Cl. 264—236** **13 Claims**

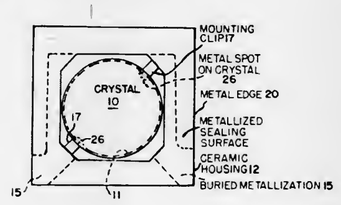
1. A process for producing a drawn or undrawn flame-resistant and anti-fusing cured phenolic continuous filament which comprises melt-spinning an uncured novolak resin which may contain up to 40% by weight based on the total weight of a fiber-foaming thermoplastic synthetic resin selected from the group consisting of nylon resin and polyurethane resin and then curing the melt-spun filament with a curing agent in the presence of a catalyst; said novolak resin produced by the reaction of a phenol selected from the group consisting of phenol, o-cresol, m-cresol, p-cresol, 2,3-xylenol, 2,5-xylenol, 2,4-xylenol, 2,6-xylenol, 3,4-xylenol 3,5-xylenol o-ethylphenol, m-ethylphenol, p-ethylphenol, p-phenylphenol, p-tertiary butyl phenol, p-tertiary amylphenol, bisphenol A, resorcinol and mixtures thereof and an aldehyde selected from the group consisting of formaldehyde, paraformaldehyde, benzaldehyde hexamethylenetetramine, furfural and mixtures thereof; characterized by pre-curing the melt-spun filament with an aldehyde as a curing agent in the presence of an acid catalyst in a single pre-curing bath, and then curing the pre-cured filament with an aldehyde in the presence of a basic catalyst.

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**3,931,387**
**CATALYST SYSTEM FOR INJECTION MOLDING POLYURETHANES**
**Fritz Hostettler, Freehold, N.J., assignor to Inter-Polymer Research Corporation, Farmingdale, N.J.**
**Filed Apr. 17, 1973, Ser. No. 351,859**
**Int. Cl.² C08G** *18/24*; **B29G** *3/00*
**U.S. Cl. 264—328** **1 Claim**

1. A process for preparing polyurethane elastomers which comprises combining:
   a. at least one polyether diol, polyester diol or mixture thereof, at least one organic bifunctional extender selected to be a diamine, aminoalcohol or glycol having a rate of reactivity greater than the alkylene glycols and the hindered amines, and a catalytically effective amount of a catalyst system comprising per 100 parts of polymerization mixture,
      i. 0.2 parts of triethylenediamine
      ii. 0.6 parts of an organometallic catalyst selected to be a dialkyltin diazelate, phenyl mercuric propionate, or combination thereof, and
      iii. at least 0.8 parts of a basic amine catalyst selected to be N-methyldicyclohexyl amine, an N-alkylmorpholine, or a combination thereof; and
   b. a prepolymer resulting from the reaction of at least one polyether diol, polyester diol or mixture thereof with at least one organic diisocyanate in proportions such that the ratio NCO/OH is greater than about 2:1 in a mixing and injecting apparatus under a mixing screw speed in excess of 10,000 r.p.m., injecting the liquid mixture into a mold and curing the contents of the mold.

**3,931,388**
**CRYSTAL RESONATOR HOUSING CONFIGURATIONS**
**Erich Hafner, New Shrewsbury, and John R. Vig, Colts Neck, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.**
**Filed May 31, 1974, Ser. No. 475,077**
**Int. Cl.² H01L** *41/04*
**U.S. Cl. 310—9.4** **7 Claims**




1. A force responsive resonator assembly of the type capable of mechanically vibrating or flexing at a predetermined rate, comprising:
   a. a crystal having parallel upper and lower surfaces and a squared outer edge;
   b. a frame assembly having a central aperture, said frame assembly fabricated from an insulator material and including first and second layers of metallic conducting material embedded in the wall of said assembly, said first and second layers aligned in a common plane and located on opposite sides of said aperture;
   c. first and second support members mounted on said frame located within said aperture and electrically coupled to said first and second layers of said metallic conducting material;
   d. each said support member comprising a flexible curved ribbon member secured within said central aperture and electrically connected to said first and second layers of said metallic conducting material, said ribbon member including a V-shaped slot having a width substantially greater than the height of said crystal;
   e. said crystal being mounted in said central aperture with said edges of said crystal extending into said V-shaped slots, said edges being joined to said ribbon members along a line at the upper and lower periphery of said edges; and
   f. means coupled to said frame assembly at both ends of said central aperture to hermetically enclose said force responsive member within the hollow formed by said aperture.

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**3,931,389**
**PROCESS OF DESULFURIZING HOT GASES**
**Karl Bratzler, Bad Homburg; Alexander Dorges, Frankfurt am Main; Georg Kempf, Schoneck; Paul Rudolph, Bad Homburg, and Johann Schlauer, Frankfurt am Main-Goldstein, all of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany**
**Continuation of Ser. No. 256,057, May 23, 1972, abandoned.**
**This application Oct. 23, 1974, Ser. No. 517,343**
**Claims priority, application Germany, June 4, 1971, 2127763**
**Int. Cl.² B01D** *53/34*
**U.S. Cl. 423—232** **8 Claims**

1. Process for desulfurizing hot raw gas produced by the gasification of coal with oxygen-containing gases and water vapor under pressure which comprises:
   a. cooling said raw gas in at least two stages, in the last cooling stage before the desulfurizing step, cooling said raw gas by indirect heat exchange to a temperature below the temperature of the desulfurizing step and removing condensate;



   b. in a subsequent stage raising the temperature of the raw gas to the temperature of the desulfurizing step and introducing said raw gas into a desulfurizing stage where it is treated with a hot solution of one or more alkali salts of weak inorganic acids to selectively remove the sulfur compounds from the gas; and
   c. regenerating the laden desulfurizing solution and recycling it to the desulfurizing stage.

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**3,931,390**
**CATALYTIC PROCESS FOR REMOVING SULFUR DIOXIDE FROM GAS STREAMS**
**Frank C. Palilla, Framingham; Gary G. Gaudet, and Helmut Lingertat, both of Dorchester, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.**
**Filed Nov. 18, 1974, Ser. No. 524,855**
**Int. Cl.² C01B** *17/00*; **B01J** *8/00*
**U.S. Cl. 423—244** **21 Claims**

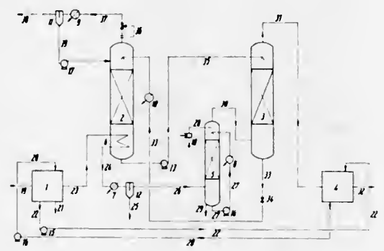
1. A process for removing sulfur dioxide from a gas stream containing sulfur dioxide comprising passing a gas stream containing sulfur dioxide and a sufficient amount of carbon monoxide or hydrogen to reduce at least a portion of said sulfur dioxide to elemental sulfur through a reaction chamber charged with a material of the formula $Ln_2O_3 \cdot Co_2O_3$, where Ln is either Y or Gd, to catalytically produce at a sufficiently elevated temperature a product stream containing elemental sulfur and carbon dioxide or water, and thereafter removing said elemental sulfur from said product stream.

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**3,931,391**
**PROCESS FOR OXIDATION OF AMMONIA**
**Edgar Koberstein, Alzenau, and Klaus-Peter Müller, Grossauheim, both of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Germany**
**Division of Ser. No. 282,044, Aug. 21, 1972, Pat. No. 3,850,851. This application May 10, 1974, Ser. No. 468,988**
**Claims priority, application Germany, Aug. 27, 1971, 2142897**
**Int. Cl.² C01B** *21/26*
**U.S. Cl. 423—404** **5 Claims**

1. A process for oxidizing ammonia to nitric oxides suitable for forming nitric acid comprising heating at 750° to 950°C a mixture of ammonia and air or oxygen in the presence of a catalyst said catalyst having been prepared by forming cobalt oxide doped with 0.1–10 atom % of lithium into shape, then calcining in air or oxygen at 300°–700°C and subsequently tempering at 700°–900°C in a reaction gas mixture of air and 8–10 volume % of ammonia to stabilize the form.

**3,931,392**
**ENHANCEMENT OF ULTIMATE TENSILE STRENGTH OF CARBON FIBERS**
**Victor R. Deitz, Chevy Chase, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**
**Filed Jan. 10, 1974, Ser. No. 432,773**
**Int. Cl.² B29C** *25/00*; **D01F** *9/12*
**U.S. Cl. 423—447** **8 Claims**



1. A method of treating carbon fibers to enhance their tensile strength; which comprises,
   immersing said carbon fibers in liquid bromine within a container for a period of from about one hour to several day at ambient temperature;
   removing any excess bromine from said container and said fibers;
   subsequent to the disappearance of any coloration due to bromine vapor, heating the treated carbon fibers at a temperature of from about 150°C to about 250°C for about 1 hour, and
   cooling said heated fibers within a helium atmosphere to ambient temperature.

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**3,931,393**
**CATALYTIC PROCESS FOR REMOVING SULFUR DIOXIDE FROM GAS STREAMS**
**Frank C. Palilla, Framingham, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.**
**Filed Oct. 23, 1974, Ser. No. 515,114**
**Int. Cl.² C01B** *17/04*
**U.S. Cl. 423—570** **23 Claims**

1. A process for removing sulfur dioxide from a gas stream containing sulfur dioxide comprising passing a gas stream containing sulfur dioxide and a sufficient amount of carbon monoxide and/or hydrogen to reduce at least a portion of said sulfur dioxide to elemental sulfur through a reaction chamber containing a material $x\ La_2O_3 \cdot y\ Co_2O_3$, where $x$ and $y$ are varied independently from 1 to 3, inclusive, to catalytically produce at a sufficiently elevated temperature a product stream comprising elemental sulfur and carbon dioxide or water, and thereafter removing said elemental sulfur from said product stream.

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**3,931,394**
**HYDROGEN SULFIDE REMOVAL**
**Akira Toyama, Kobe, and Koji Ishizaki, Akashi, both of Japan, assignors to Kobe Steel Ltd., Japan**
**Continuation of Ser. No. 792,837, Jan. 21, 1969, abandoned. This application May 5, 1971, Ser. No. 140,585**
**Int. Cl. C01b** *17/04*
**U.S. Cl. 423—573** **5 Claims**

1. The process for the removal of hydrogen sulfide from gaseous or aqueous material through conversion of hydrogen sulfide into sulfur which comprises bringing said material into contact with nitrohumic acid or the sodium, potassium or ammonium salt thereof.

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**3,931,395**
**PROCESS FOR GENERATING HYDROGEN GAS**
**Werner F. Beckert; Ottmar H. Dengel, both of Oxon Hill, Md., and Rodger W. McKain, Lima, Ohio, assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**
**Division of Ser. No. 335,390, Feb. 23, 1973, which is a division of Ser. No. 152,422, June 11, 1971, Pat. No. 3,734,863, which is a continuation-in-part of Ser. No. 872,419, Oct. 29, 1969, abandoned. This application June 28, 1974, Ser. No. 484,201**
**Int. Cl.² C01B** *1/02*, *21/00*; **C01D** *3/04*
**U.S. Cl. 423—648** **26 Claims**

1. A method for generating hydrogen gas which comprises heating a composition comprising the intimate mixture in the solid state of at least one compound having the general for-

mula $(NH_4)_nX$ wherein X is an inorganic acid group and n is the valency of said inorganic acid group and at least one compound having the general formula $Y(ZH_4)_m$ wherein Y is a mono- or divalent metal capable of forming complex hydrides and is selected from the group consisting of alkali metals and alkaline earth metals, m is the valency of said mono- or divalent metal and Z is a trivalent metal capable of forming complex hydrides and is selected from the group consisting of boron and aluminum, wherein said compounds are present in about stoichiometric amounts or are present in amounts such that there is a stoichiometirc excess of one of the components, to a temperature high enough that said $Y(ZH_4)_m$ reacts with said $(NH_4)_nX$ to produce hydrogen gas.

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**3,931,396**

## METHOD OF PREPARATION OF A COMPOSITION HAVING A BASE OF 99M TECHNETIUM FOR DIAGNOSIS BY SCINTIGRAPHY

**André Bardy, Morangis, and Jacqueline Beydon, Paris, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France**

**Continuation-in-part of Ser. No. 365,695, May 31, 1973, abandoned. This application Mar. 26, 1974, Ser. No. 455,005**

**Int. Cl. A61k** *27/04*

**U.S. Cl. 424—1** **7 Claims**

1. A method for preparing a tin-pyrophosphate complex labelled with 99 m Tc and intended for medical diagnosis by scintigraphy, comprising a first step consisting in admixing a pyrophosphate solution with a freshly prepared solution of stannous chloride in an acidic medium, and at least partially neutralizing the solution, and a second step consisting in admixing the thus obtained mixture with a solution containing 99 m Tc, at the moment of use.

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**3,931,397**

## BIOLOGICALLY ACTIVE MATERIAL

**Michael Raymond Harnden, Horsham, England, assignor to Beecham Group Limited, United Kingdom**

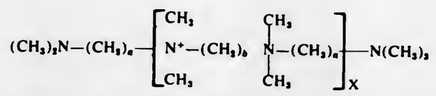
**Division of Ser. No. 303,955, Nov. 6, 1972, Pat. No. 3,845,033. This application Nov. 8, 1973, Ser. No. 413,863**

**Claims priority, application United Kingdom, Nov. 5, 1971, 51514/71**

**Int. Cl.² A61K** *45/04*

**U.S. Cl. 424—85** **5 Claims**

1. A pharmaceutical composition useful for treating viral infections caused by any one or more of a wide variety of DNA and RNA viruses in suseptible mammals which comprises an effective serum-interferon producing ribonuclease-stable amount of an antiviral complex which is a principally ionic complex soluble in 0.15 M aqueous sodium chloride solution in which the cations are organic polymer polycations having a plurality of quaternary nitrogen sites located at intervals along the polymer chains, said polycations having the formula



wherein each of *a* and *b*, independent of the other, is an integer of from 2 to 6 and X is a number which is such that the average molecular weight of the polycation divided by the equivalent weight which is the molecular weight of the polycation divided by the value $(2X + 2)$ is not greater than 98, and the anions are one of: (a) double-stranded ribonucleic acid polyanions, said double-stranded ribonucleic acid being of natural origin, or (b) polyanions of a double-stranded ribonucleic acid of natural origin which has been subject to chemical or enzymatic reaction which alters one or more of the primary, secondary, and tertiary structure, provided that the resultant ribonucleic acid retains a substantial degree of base pairing between complementary strands, said antiviral complex having more than 60% of the anionic sites on the double-stranded ribonucleic acid anions neutralized by the quaternary cationic sites on the quaternary polymer, in combination with a pharmaceutically acceptable nontoxic liquid injectable or topical carrier.

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**3,931,398**

## METHOD FOR LOCAL IMMUNIZATION AGAINST DENTAL CARIES

**Abdul Gaffar, Somerset, and Hans Wilhelm Marcussen, Jr., Piscataway, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.**

**Filed June 20, 1973, Ser. No. 371,842**

**Int. Cl.² A61K** *39/02, 5/00, 7/26*

**U.S. Cl. 424—92** **10 Claims**

1. In a method for immunization against dental caries, which comprises administering subcutaneously by injection a vaccine, the improvement which comprises locally administering into or near the oral cavity a vaccine constituting an aqueous saline dispersion of an active ingredient selected from the group consisting of (1) a polyglucan polysaccharide elaboration product of a strain of microorganism of the species *S.mutans* or *S.sanguis*, and (2) a polyfructan polysaccharide elaboration product of a strain of microorganism within the genus streptococcus, to an animal susceptible to dental caries, said active ingredient being administered in an amount effective for immunization.

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**3,931,399**

## PROCESS FOR ISOLATING A FIBRIN-STABILIZING FACTOR

**Hans Bohn, Marbach near Marburg an der Lahn, and Fritz Emmerich, Marburg an der Lahn, both of Germany, assignors to Behringwerke Aktiengesellschaft, Marburg an der Lahn, Germany**

**Continuation-in-part of Ser. No. 210,224, Dec. 20, 1971, abandoned. This application Dec. 21, 1973, Ser. No. 427,252**

**Claims priority, application Germany, Dec. 22, 1970, 2063069**

**Int. Cl.² A61K** *35/48*

**U.S. Cl. 424—105** **1 Claim**

1. A process for isolating a fibrin-stabilizing factor which comprises:

a. extracting human placentae at a temperature from 0°C. to 20°C. with a dilute aqueous sodium chloride solution and removing solid contaminants from the extract;

b. adding a dilute aqueous solution of diaminoethoxy-acridine lactate to said extract at a temperature from 5°C. to 20°C. and at a pH between 5.0 and 7.5 in an amount furnishing 6 to 10 grams of said lactate per 100 grams of protein content in said extract to form a first precipitate, and isolating said first precipitate;

c. dissolving said precipitate at a temperature from 5°C. to 20°C. in a dilute solution of alkali metal chloride at a pH between 7.0 and 8.0, said solution containing about 5 percent, by weight of said alkali metal chloride, of a complexing agent selected from the group consisting of ethylene diamine tetraacetic acid and nitrilo-triacetic acid, and removing any insoluble substances from the solution;

d. adding a quaternary ammonium base to the solution in an amount from 0.04 to 0.08 percent, by weight of the solution, at a temperature from 5°C. to 20°C. to form a second precipitate, and removing and discarding this second precipitate;

e. adding a dilute aqueous solution of diaminoethoxy-acridine lactate to the solution at a temperature from 5°C. to 20°C. to form a third precipitate, and isolating said third precipitate;

f. dissolving said third precipitate in a dilute solution of an alkali metal chloride at a temperature from 5°C. to 20°C. and at a pH between 7.0 and 8.0, said solution containing about 5 percent, by weight of said alkali metal chloride, of ethylene diamine tetraacetic acid or nitrilo-triacetic acid and removing any insoluble substances from the solution;

g. adding 20 to 30 percent of solid ammonium sulfate to the solution to form a fourth precipitate, and isolating said fourth precipitate;

h. forming a paste from said fourth precipitate and a dilute solution of ethylene diamine tetraacetic acid or nitrilo-triacetic acid and dialyzing said paste against tris(hydroxymethyl)-aminoethane/hydrochloric acid buffer containing ethylene diamine tetraacetic acid or nitrilo-triacetic acid and sodium azide, whereby the paste is solubilized;

i. adjusting the pH of the dialyzed solution to 6.0 to form a fifth precipitate which is separated and discarded, and readjusting the pH to 7.0;

j. gel filtering the solution on cross-linked dextran, eluting with tris(hydroxymethyl)-aminomethane/hydrochloric acid buffer containing ethylene diamine tetraacetic acid or nitrilo-triacetic acid and sodium azide, and collecting and combining active fractions having an activity of more than 2 units of fibrin-stabilizing factor;

k. adding sufficient solid ammonium sulfate to the collected active fractions to form a sixth precipitate containing the fibrin-stabilizing factor, and isolating said sixth precipitate;

l. dissolving said sixth precipitate in a neutral tris(hydroxymethyl)-aminomethane/ethylene diamine tetraacetic acid buffer;

m. dialyzing the solution against neutral tris(hydroxymethyl)-aminomethane/ethylene diamine tetraacetic acid buffer;

n. adjusting the pH of the dialyzed solution to 5.0 to precipitate the fibrin-stabilizing factor and isolating the precipitate.

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**3,931,400**

## FORTIMICIN B AND PROCESS FOR PRODUCTION THEREOF

**Takashi Nara, Tokyo; Seigo Takasawa, Kawasaki; Ryo Okachi, Machida; Isao Kawamoto, Machida, and Mitsuyoshi Yamamoto, Machida, all of Japan, assignors to Abbott Laboratories, North Chicago, Ill.**

**Filed Apr. 5, 1974, Ser. No. 458,422**

**Claims priority, application Japan, July 23, 1973, 48-42696; July 23, 1973, 48-80866**

**Int. Cl.² A61K** *35/00*

**U.S. Cl. 424—118** **3 Claims**

1. A composition of matter having antibiotic activity characterized by:

a. molecular weight of 348;

b. molecular formula of $C_{15}H_{32}N_4O_5$;

c. an ultraviolet absorption spectrum essentially as shown in FIG. 1;

d. an infrared absorption spectrum essentially as shown in FIG. 2; and

e. a nuclear magnetic reasonance spectrum essentially as shown in FIG. 3. said composition of matter being Fortimicin B.

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**3,931,401**

## 1,N⁶-ETHENO-5'-ADENOSINE CARBOXAMIDES FOR INCREASING CORONARY SINUS PARTIAL PRESSURE OF OXYGEN

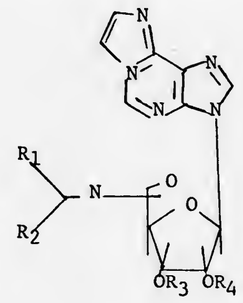
**Raj Nandan Prasad, Pierrefonds, and David Lyon Garmaise, Montreal, both of Canada, assignors to Abbott Laboratories, North Chicago, Ill.**

**Division of Ser. No. 317,326, Oct. 21, 1972, Pat. No. 3,830,796. This application May 21, 1974, Ser. No. 472,029**

**Int. Cl.² A61K** *31/70*

**U.S. Cl. 424—180** **2 Claims**

1. A method of increasing coronary sinus partial pressure of oxygen in a patient in need of such treatment comprising administering an effective coronary sinus partial pressure of oxygen increasing amount of a compound of the formula



wherein $R_1$ and $R_2$ each are hydrogen, loweralkyl, a cycloalkyl of 3 to 6 carbon atoms, loweralkenyl or loweralkynyl and $R_3$ and $R_4$ each are hydrogen, acetyl, propionyl, butyryl, or $R_3$ and $R_4$ taken together form an isopropylidene or benzylidene moiety; or a pharmaceutically acceptable acid addition salt thereof, to said patient.

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**3,931,402**

## PREPARATIONS CONTAINING HEXOSES

**Giuseppe Ghielmetti, and Rodolfo Ferrari, both of Milan, Italy, assignors to Societa Prodotti Antibiotici S.p.A., Milan, Italy**

**Continuation of Ser. No. 93,592, Dec. 2, 1970, which is a continuation of Ser. No. 742,198, July 3, 1968, abandoned. This application July 6, 1973, Ser. No. 377,135**

**Int. Cl.² A61K** *31/70*

**U.S. Cl. 424—180** **12 Claims**

1. A composition useful for administering an immediate source of energy to a patient consisting essentially of a mixture of glucose with a salt selected from the group consisting of an alkali metal salt of glucose-1-phosphate, glucose-6-phosphate, and 6-phosphogluconate, said salt constituting 0.1–50% by weight of the mixture.

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**3,931,403**

## ANTIMICROBIAL COMPOSITIONS

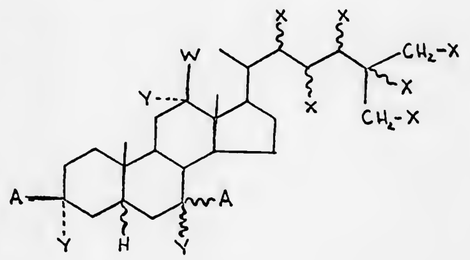
**William H. Saltzman, New Rochelle, N.Y., assignor to Intellectual Property Development Corporation, New Rochelle, N.Y.**

**Continuation of Ser. No. 363,460, May 25, 1973, abandoned. This application Nov. 14, 1974, Ser. No. 523,627**

**Int. Cl.² C07J** *9/00*

**U.S. Cl. 424—238** **5 Claims**

1. A composition possessing antimicrobial properties, comprising from about 10 to 1500 milligrams of a compound of the formula:



wherein
each Y is hydrogen;
each A is hydroxy, acyloxy, or alkoxy;
W is hydrogen, hydroxy, acyloxy, or alkoxy;
A and Y, when taken together is oxo (O=);
W and Y, when taken together is oxo (O=);
each X is hydrogen, hydroxy, acyloxy, or alkoxy, at least one X being hydroxy, acyloxy, or alkoxy;
said compound combined with a pharmaceutically acceptable nontoxic inert carrier.

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## 3,931,404
## HIGH DOSAGE ORALLY ADMINISTRABLE CEPHALOSPORIN ANTIBIOTIC PREPARATIONS

**Werner Fulberth, Kelkheim, Taunus; Dietrich Hiller, Wiesbaden; Alfred Muller, Ehlhalten, Taunus, and Gerhard Ross, Liederbach, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany**

**Filed Dec. 4, 1973, Ser. No. 421,605**
**Claims priority, application Germany, Dec. 6, 1972, 2259646**
**Int. Cl.² A61K *31/54***
**U.S. Cl. 424—246** **7 Claims**

1. An antibiotic preparation in compressed tablet form consisting essentially of cephalexin or cephaloglycin and from 5 to 15 percent, by weight of said preparation, of pharmaceutical excipients selected from the group consisting of starch, crystalline cellulose, lactose, ultraamylopectin, talc, and magnesium stearate.

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## 3,931,405
## NEW PENICILLIN ESTERS AND METHODS AND COMPOSITIONS FOR TREATING INFECTIOUS DISEASES

**Bertil Åke Ekström; Odon Kálmán Jozsef Kovács, and Olof Harald Sjöberg, all of Sodertalje, Sweden, assignors to Astra Lakemedel Aktiebolag, Sodertalje, Sweden**

**Filed Feb. 27, 1973, Ser. No. 336,213**
**Claims priority, application United Kingdom, Mar. 13, 1972, 11691/72**
**Int. Cl.² A61K *31/43***
**U.S. Cl. 424—271** **6 Claims**

1. A pharmaceutical preparation for the treatment of diseases caused by bacterial organisms wherein the active ingredient is an anti-bacterially effective amount of the compound 1'-ethoxycarbonyloxyethyl 6-(D-α-benzylsulphonylaminophenyl-acetamido)penicillanate or a therapeutically acceptable salt thereof in association with a pharmaceutically acceptable carrier, wherein the amount of active ingredient is in the range of about 1%–95%.

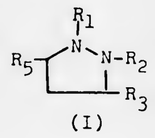
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## 3,931,406
## PYRAZOLIDINE FUNGICIDES

**Herman Berenson, Trenton, N.J., assignor to American Cyanamid Company, Stamford, Conn.**

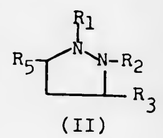
**Filed Feb. 3, 1975, Ser. No. 546,480**
**Int. Cl.² A01N *9/22***
**U.S. Cl. 424—273** **11 Claims**

1. A method for protecting growing plants from attack by fungal organisms comprising applying to the foliage of said plants a fungicidally effective amount of a compound having a formula selected from the group consisting of:



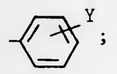
(I)

and



(II) HX

wherein $R_1$ and $R_2$ each represent alkyl $C_1$–$C_4$; $R_3$ and $R_5$ each represent a member selected from the group consisting of cycloalkyl $C_3$–$C_7$, and



Y represents a member selected from the group consisting of hydrogen, halogen and alkyl $C_1$–$C_4$; and HX represents an acid.

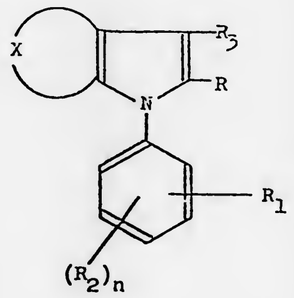
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## 3,931,407
## METHOD OF TREATMENT WITH AND COMPOSITIONS CONTAINING CONDENSED PYRROLES BEARING AN N-PHENYL SUBSTITUENT

**Richard C. Allen, Somerville, and V. Brian Anderson, High Bridge, both of N.J., assignors to American Hoechst Corporation, Somerville, N.J.**

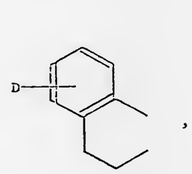
**Division of Ser. No. 336,919, March 1, 1973, Pat. No. 3,878,225. This application Oct. 31, 1974, Ser. No. 519,844**
**Int. Cl.² A61K *31/40***
**U.S. Cl. 424—274** **24 Claims**

13. A method of treating inflammation and pain which comprises administering to a patient an effective amount from about 1 to about 200 mg/kg per doz of an active compound of the formula

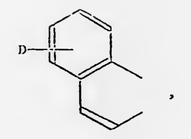




wherein
R is alkyl of one to six carbon atoms; thienyl; phenyl; diphenyl; or phenyl substituted by halogen, trifluoromethyl alkyl of one to six carbon atoms, alkoxy of one to six carbon atoms, nitro, cyano, or hydroxy;
$R_1$ is carboxyl, alkoxycarbonyl of two to seven carbon atoms, carbamoyl, N-alkylcarbamoyl of two to seven carbon atoms, N,N,-dialkylcarbamoyl of three to seven carbon atoms, hydroxycarbamoyl, or dialkylphosphinylalkoxycarbonyl of four to 10 carbon atoms;
$R_2$ is hydrogen, hydroxyl, mercapto, halogen, trifluoromethyl, alkoxy of one to six carbon atoms, alkanoyloxy of one to six carbon atoms, amino, alkanoylamino of one to six carbon atoms, dialkylthiocarbamoyloxy of three to seven carbon atoms, or dialkylcarbamoylthio of three to seven carbon atoms; *n* is 1 to 2;
$R_3$ is hydrogen, alkanoyl of one to six caron atoms, or phenyl;
X is alkylene of three to five carbon atoms, alkylene of three to five carbon atoms substituted by alkyl or alkoxy of one to six carbon atoms, divinylene, divinylene substituted by alkyl of one to six carbon atoms,



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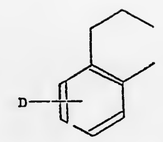


,



,

or



,

wherein D is hydrogen, alkoxy of one to six carbon atoms, or halogen.

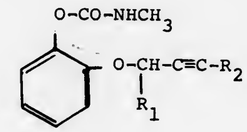
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## 3,931,408
## PESTICIDAL COMPOSITIONS AND METHODS OF KILLING PESTS USING 2-ALKINYLOXYPHENYLCARBAMATES

**Erwin Nikles, Liestal, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland**

**Division of Ser. No. 885,331, Dec. 15, 1969, abandoned. This application June 6, 1974, Ser. No. 476,964**
**Claims priority, application Switzerland, Dec. 20, 1968, 19031/68**
**Int. Cl.² A01N *9/20***
**U.S. Cl. 424—300** **6 Claims**

1. A method of combating insects and acarids which comprises applying thereto an insecticidally and acaricidally effective amount of a compound of the formula



in which each of $R_1$ and $R_2$ represents alkyl of from one to four carbon atoms or one of $R_1$ and $R_2$ represents hydrogen.

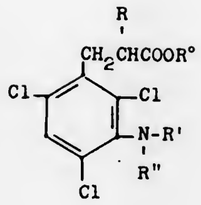
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## 3,931,409
## COMPOSITION AND METHOD FOR TREATMENT OF HYPERURICEMIA

**Ardie R. Nickel, Fishkill; Franklin J. Rosenberg, Bethlehem, and James H. Ackerman, Rensselaer, all of N.Y., assignors to Sterling Drug Inc., New York, N.Y.**

**Division of Ser. No. 348,531, April 6, 1973, Pat. No. 3,892,800. This application Nov. 4, 1974, Ser. No. 520,630**
**Int. Cl.² A61K *31/24*, *31/205***
**U.S. Cl. 424—309** **10 Claims**

1. A composition for the treatment and prophylaxis of hyperuricemia in a mammal which comprises in unit dosage form a uricosurically effective amount of a compound in an inert diluent, said compound having the formula



wherein:

R, R° and R'' are hydrogen or alkyl of 1–4 carbon atoms; and

R' is hydrogen or alkanoyl of 1–6 carbon atoms, R' being limited to alkanoyl when R'' is alkyl;

or pharmaceutically acceptable salts thereof where R° is hydrogen.

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**3,931,410**

**COMPOSITION AND METHOD OF USE**

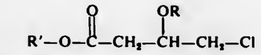
**Gilbert A. Youngdale, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.**

**Continuation of Ser. No. 446,663, Feb. 28, 1974, abandoned, which is a continuation of Ser. No. 332,738, Feb. 15, 1973, abandoned, which is a continuation of Ser. No. 93,455, Nov. 27, 1970, abandoned. This application Sept. 30, 1974, Ser. No. 510,225**

**Int. Cl.² A61K *31/22***

**U.S. Cl. 424—311** **6 Claims**

**1.** A pharmaceutical preparation in the form of an oral ration for rodents consisting essentially of an effective amount for producing epididymal lesions and infertility in male rodents of a compound of the formula:



wherein R' is a member selected from the group consisting of hydrogen and alkyl of from one to eight carbon atoms, inclusive, and R is a member selected from the group consisting of hydrogen and an acyl radical of a hydrocarbon carboxylic acid of one to 18 carbon atoms, inclusive, compounded with an ingestible bulking agent acceptable to said rodents, said ration providing at least about 15 mg./kg. of male rodent body weight.

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**3,931,411**

**METHOD FOR TRANQUILIZATION WITHOUT GENERAL DEPRESSION**

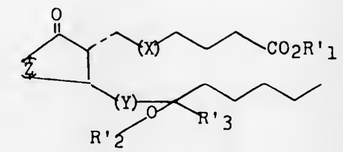
**Walter Joseph Potts, Glenview, Ill., assignor to G. D. Searle & Co., Chicago, Ill.**

**Continuation-in-part of Ser. No. 151,564, June 9, 1971, Pat. No. 3,792,179. This application Dec. 26, 1973, Ser. No. 428,077**

**Int. Cl.² A61K *31/20*, *31/23***

**U.S. Cl. 424—312** **4 Claims**

**1.** A method for tranquilizing mammals without general depression comprising administering to a mammal in need of tranquilization an effective amount of a compound of the formula



wherein $R_1$ and $R_3$ represent hydrogen or lower alkyl containing 1–7 carbon atoms, $R_2$ represents hydrogen or alkanoyl containing 1–6 carbons, X represents ethylene or cis vinylene, Y represents trans vinylene or ethynylene, and Z represents cis vinylene, or hydroxy- or (lower alkyl)-substituted ethylene in which the methylene portion is adjacent to the carbonyl of the cyclopentane ring in the formula.

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**3,931,412**

**FUNGUS AND BACTERIA CONTROL WITH DI-CARBOXYLIC ACID ESTERS**

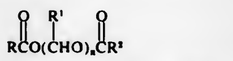
**Daniel L. Kensler, Jr., West Des Moines, Iowa; Gustave K. Kohn, Berkeley, Calif., and David D. Walgenbach, Brookings, S. Dak., assignors to Chevron Research Company, San Francisco, Calif.**

**Continuation-in-part of Ser. No. 266,945, June 28, 1972, abandoned, which is a continuation-in-part of Ser. No. 71,364, Sept. 11, 1970, abandoned, which is a continuation-in-part of Ser. No. 871,940, Oct. 28, 1969, abandoned. This application May 9, 1974, Ser. No. 468,629**

**Int. Cl.² A01N *9/24***

**U.S. Cl. 424—313** **29 Claims**

**1.** A method for controlling the growth of fungi which comprises applying to said fungi or their habitat a fungicidally effective amount of a di-ester of the formula



wherein R is alkyl of 1 to 6 carbon atoms or alkenyl of 2 to 6 carbon atoms, $R^2$ is alkyl of 1 to 6 carbon atoms or alkenyl of 2 to 6 carbon atoms, $R^1$ is hydrogen, alkyl of 1 to 6 carbon atoms, chloroalkyl of 1 to 4 carbon atoms and 1 to 5 chloro groups, alkenyl of 2 to 6 carbon atoms, phenyl, or alkphenyl of 7 to 10 carbon atoms, and *n* is 1, 2 or 3.

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**3,931,413**

**CONTROL OF FUNGI**

**Eric Lionel Frick, Maidstone, and Roy Terry Burchill, Bearsted, both of England, assignors to National Research Development Corporation, London, England**

**Continuation-in-part of Ser. No. 359,505, May 11, 1973, Pat. No. 3,833,736. This application May 23, 1974, Ser. No. 472,841**

**Claims priority, application United Kingdom, June 15, 1972, 28026/72**

**Int. Cl.² A01N *9/00*, *9/22*, *9/24***

**U.S. Cl. 424—318** **18 Claims**

**1.** A method for the treatment of plants in order to inhibit infection caused by a fungus which is capable of overwintering in the bud of the plant said fungus selected from the group consisting of *Venturia inaequalis*, *Venturia pirina*, *Podosphaera leucotricha*, *Sphaerotheca pannosa* var. *Persicae*, *Uncinula necator* and *Taphrina deformans*, which consists essentially of applying a fungidical amount of an aliphatic acid containing six to 18 carbon atoms to said buds of the plant during the period of dormancy of said buds.



**3,931,414**

**FISH BAIT COMPOSITION**

**Samuel J. Popell, Chicago, Ill., assignor to Popell Bros., Inc., Chicago, Ill.**

**Filed July 12, 1974, Ser. No. 488,218**

**Int. Cl.² A01K *85/00*; A23L *1/325***

**U.S. Cl. 426—1** **23 Claims**

**1.** A fish bait composition which includes

a dry component comprising a pulverulent fish food including at least fish meal, said fish food having at least a 30% protein content, and said dry component further comprising pulverized freeze dried fish eggs which have a fine particle size relative to the coarser particle size of the fish food,

said pulverized freeze dried fish eggs being distributed throughout said coarser fish food,

water intimately mixed with said dry component in an amount sufficient to moisten all the particles present in said dry component, and

said pulverized freeze dried fish eggs present in the dry component being in an amount sufficient to provide binding so a resultant cohesive mass of the moistened fish bait particles can be formed for mounting to a fish hook and retention on said fish hook when depositing the fish hook and mounted fish bait composition into a body of water to attract fish.

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**3,931,415**

**RAW FISH BAIT PRODUCT AND METHOD OF MAKING SAME**

**Lars T. Larsen, and Robert M. Morse, both of 766 Plaza Hermosa, Novato, Calif. 94947**

**Filed Oct. 7, 1974, Ser. No. 512,820**

**Int. Cl.² A23L *1/325*; A23K *1/10*; A01K *97/04***

**U.S. Cl. 426—1** **6 Claims**

**6.** A method of making a raw fish bait product comprising the steps of comminuting the remnants of fresh raw fish; drying the comminuted mass to a point where said mass is substantially dry to the touch and has a substantially coarse mealy texture and consistency; then compressing and compacting said comminuted dry raw fish particles into a discrete body of geometric form and shape having structural integrity sufficient to maintain its basic form and shape when submerged in water.

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**3,931,416**

**PROCESS FOR MANUFACTURING CALCIUM-SODIUM-HOSPHATE CONSISTING MAINLY OF RHENANIT AND SUITABLE FOR USE AS SUPPLEMENTARY ANIMAL FOOD**

**Gerhard Grams, Kleinelchen, and Hans Ratajczak, Cologne, both of Germany, assignors to Chemische Fabrik Kalk GmbH, Germany**

**Filed Aug. 8, 1974, Ser. No. 495,817**

**Claims priority, application Germany, Aug. 11, 1973, 2340739**

**Int. Cl.² A23K *1/16***

**U.S. Cl. 426—648** **2 Claims**

**1.** In a process for manufacturing calcium-sodium-phosphates consisting mainly of Rhenanit and suitable as supplementary animal food by heating a mixture of crude phosphate, phosphoric acid and sodium hydroxide or sodium compounds with anions, which are volatile under the process reaction conditions, to temperatures not exceeding 1,000°C, the improvement comprising granulating the mixture which contains 1.75 to 2.25 mole CaO and 1.25 to 0.75 mole $Na_2O$ per mole $P_2O_5$, drying the resulting granules, heating the granules for at least 10 minutes, while being subjected to vigorous movement, up to temperatures between 600° to 1,000°C so as to defluorinate the granulated mixture, and finally cooling the granules to room temperature so as to obtain a calcium-sodium-phosphate product having a substantially reduced fluorine content.

**3,931,417**

**METHOD OF MANIFOLD COPYING**

**Robert J. Wright, Tranmere, Australia, assignor to Moore Business Forms Inc., New York, N.Y.**

**Continuation-in-part of Ser. No. 120,763, March 3, 1971, abandoned. This application Jan. 3, 1972, Ser. No. 215,201**

**Claims priority, application Australia, Feb. 26, 1971, 25945/71**

**Int. Cl.² G03G *16/00***

**U.S. Cl. 427—19** **5 Claims**

**1.** The method of manifold copying comprising the following steps:

A. Preparing a multiplicity of thin record sheets to form on each sheet an image-receiving dielectric surface coating having a resistivity of at least $10^{12}$ ohms per square centimeter and a lower resistivity coated reverse surface having a resistivity in the range of $10^3$ to $10^8$ ohms per square centimeter at 50 percent relative humidity, limiting the dielectric surface coating to a coating weight of no more than 10 grams per square meter;

B. forming a manifold pack by stacking a plurality of said record sheets, sheet-on-sheet, with all of the dielectric surfaces facing in one direction so that each dielectric surface in the stack, except the outermost dielectric surface, is in direct contact with the lower resistivity reverse surface of the next adjacent sheet;

C. positioning the manifold pack on a support with the reverse surfaces facing toward the support and the dielectric surfaces facing outwardly from the support;

D. contacting the dielectric surface of the outermost sheet with pressure imaging means in accordance with a given pattern to be reproduced, whereby the dielectric surface of each sheet except the outermost sheet is contacted in pattern form by the lower resistivity surface of the overlying sheet, thereby forming a latent image of said pattern on each dielectric surface;

E. separating the sheets of the manifold pack, the dielectric surface of each sheet retaining a latent image of said pattern; and

F. developing the latent image on each sheet, without further charging or imaging, with a developer including marking means capable of deposition in response to said latent image.

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**3,931,418**

**PROCESS FOR THE PRODUCTION OF INSULATING COATINGS ON ELECTRICAL CONDUCTORS**

**Karl-Heinz Risken, Mainz-Finthen, Germany, assignor to Dr. Kurt Herberts & Co. Gesellschaft mit beschrankter Haftung Vorm. Otto Louis Herberts, Wuppertal-Barmen, Germany**

**Filed Feb. 6, 1974, Ser. No. 440,054**

**Int. Cl.² B05D *5/12*, *3/02***

**U.S. Cl. 427—120** **21 Claims**

**1.** In a process for the production of an insulating coating on an electrical conductor comprising coating the conductor by passing the conductor through a bath of a thermosetting polyester-based stoving resin comprising a condensation product of a polyvalent aromatic carboxylic acid with a polyhydric alcohol and a stoving catalyst and thereafter heating the coated conductor to an elevated temperature sufficient to cure the condensation product, the improvement which comprises said polyester-based resin being a low molecular weight resin having from about 0.85 to 1 mole of polyhydric alcohol in co-condensed form per equivalent of polycarboxylic acid and having a melt viscosity of from 1,000 to 40,000 m Pa s at a temperature between room temperature and 120° C., said polyester-based resin containing a co-condensed carboxylic acid compound containing a five-membered imide ring and said coating being carried out by passing the conductor through a melt of said resin at a melt temperature between room temperature and 120° C., said melt being substantially free of solvents which do not take part in the reaction by

which the polyester resins are produced and containing less than about 10% content of said solvent.

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**3,931,419**

## COATING WITH ARYLENE SULFIDE POLYMER CURED WITH THE AID OF CERTAIN COMPOUNDS

**Jennings P. Blackwell, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.**

**Division of Ser. No. 420,256, Nov. 29, 1973, Pat. No. 3,879,355. This application Dec. 18, 1974, Ser. No. 534,069**
**Int. Cl.² B05D *3/02*; B32B *15/08***
**U.S. Cl. 427—388** **10 Claims**

1. A method of forming a coated substrate comprising:
applying a coating composition comprising an arylene sulfide polymer and an effective cure accelerating amount of a compound selected from the group consisting of:
a. aluminum phosphate;
b. a polyfunctional benzene derivative in which at least two positions on the benzene nucleus are replaced by a functional group selected from OH and $NH_2$ with the substitution being in the meta or para position if only two positions are substituted;
c. a metal salt selected from cobalt sulfate, cobalt acetate, ferrous sulfate, or cupric naphthenate; and
d. ammonium persulfate, to a substrate;
and thereafter heating said substrate for a time within the range of 10 to 40 minutes and a temperature within the range of 575° to 725°F.

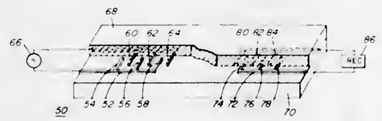
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**3,931,420**

## TEMPERATURE COMPENSATED ACOUSTIC SURFACE WAVE DEVICE

**Manfred B. Schulz, Sudbury, and Melvin G. Holland, Lexington, both of Mass., assignors to Raytheon Company, Lexington, Mass.**

**Division of Ser. No. 185,601, Oct. 1, 1971, Pat. No. 3,786,373. This application May 14, 1973, Ser. No. 359,801**
**Int. Cl.² B05D *5/12***
**U.S. Cl. 427—100** **10 Claims**




1. The method of forming a surface wave delay line comprising the steps of:
depositing at least an electrode array upon a non-piezoelectric substrate; and
depositing a piezoelectric overlay film on said electrode array, the thickness of said film being such that the temperature coefficient of delay of surface waves is substantially zero at at least one wavelength of said surface waves.

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**3,931,421**

## COATING WITH A DISPERSION OF AN ARYLENE SULFIDE POLYMER CONTAINING HIGH MOLECULAR WEIGHT FLUOROCARBON POLYMER

**Dale O. Tieszen, and James T. Edmonds, Jr., both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.**

**Division of Ser. No. 299,145, Oct. 19, 1972, Pat. No. 3,856,736. This application Sept. 13, 1974, Ser. No. 505,918**
**Int. Cl.² B05D *3/00*, *7/00***
**U.S. Cl. 427—385** **14 Claims**

1. A process for forming a coated article comprising:
applying to a substrate a dispersion formed by subjecting fluorocarbon polymer, in particulate form, having a molecular weight sufficient to give a melt viscosity flow of 0° at 380°C using a 5000 g. weight, to intensive dry milling by ball milling or rod milling with a pigment in particulate form; and thereafter subjecting the resulting mixture to intensive milling by ball milling or rod milling with poly (arylene sulfide) in particulate form in a liquid selected from water, ethylene glycol, or propylene glycol; and
heating said thus applied dispersion at a temperature of at least 500°F to form a cured coating.

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**3,931,422**

## POLYESTER/STARCH PAPER SIZING

**Mark E. Bateman, Woodridge, and Eugene M. Holda, Glen Ellyn, both of Ill., assignors to Standard Oil Company, Chicago, Ill.**

**Filed Oct. 4, 1974, Ser. No. 512,109**
**Int. Cl.² B05D *1/02*; C08L *3/02*; C09D *3/20***
**U.S. Cl. 427—424** **5 Claims**

1. The method of improving the water-resistance of paper which comprises sizing said paper at the size press with a composition comprising degraded starch and a polyester of polyhydric alcohol and a trimellitic acid compound, said polyester having an average molecular weight under about 4,000 and an acid number of at least 35, wherein said polyester is present in a weight ratio of 0.1 to 100 parts by weight per each 100 parts by weight starch solids.

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**3,931,423**

## NON-AERATED PUDDING COMPOSITIONS

**William Alexander Mitchell, Lincoln Park, N.J.; George Emil Orozovich, Flushing, and William Charles Seidel, Monsey, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.**

**Filed May 16, 1974, Ser. No. 470,477**
**Int. Cl.² A23L *1/187***
**U.S. Cl. 426—579** **6 Claims**

1. An instant non-aerated creamytextured pudding composition comprising in combination a low molecular weight aliphatic acid ester of a polyhydric alcohol and a modified starch, the amount of acid ester present being in the range of about 0.3 to 3 percent by weight of the pudding such that no preparation said pudding has a reduced tendency to foam.

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**3,931,424**

## PREFABRICATED THERMAL INSULATION STRUCTURE AND METHOD

**Jack C. Helf, Los Alamitos, and Frank E. Mack, Huntington Beach, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.**

**Filed Dec. 13, 1973, Ser. No. 424,519**
**Int. Cl.² B32B *7/04***
**U.S. Cl. 428—33** **11 Claims**

1. A multilayer insulation system comprising
a first layer of cellular foam,
a liquid-impervious membrane attached to the inner surface of said first layer,
a second layer of cellular foam having one surface attached to the inner surface of said membrane, said second layer of foam comprising a plurality of foam blocks attached to said membrane in edge-to-edge abutment with one another, and means for forming an expansion joint between adjacent ones of said foam blocks of said second layer, said means for forming an expansion joint comprising
a pair of mating rabbets formed in adjacent edges of outer surfaces of adjacent blocks of said second layer,
a barrier strip mounted within said mating rabbets between the blocks of said second layer and said membrane, and means for sealing said barrier strip to the contacting surfaces of said membrane and blocks of said second layer, whereby the blocks of the second layer are free to spread apart for the major portion of their thickness but remain sealed to each other by the barrier strip at the outermost portion thereof in contact with the membrane.



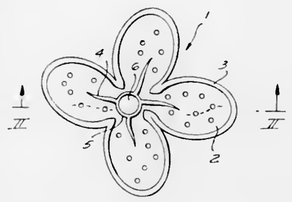
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**3,931,425**

## SIMULATED STAINED-GLASS ARTICLE AND METHOD OF MAKING THE SAME

**Minoru Kuroda, Amagasaki, Japan, assignor to Nishizawa Shoji Co. Ltd, Amagasaki, Japan and Dimension Weld International Corporation, Stamford, Conn., part interest to each**

**Filed May 3, 1974, Ser. No. 466,700**
**Int. Cl.² B44C *5/08***
**U.S. Cl. 428—38** **13 Claims**




1. A simulated stained-glass article which has a realistic appearance when viewed from either side, comprising a top layer of at least translucent synthetic plastic sheet material having two opposite major surfaces; a bottom layer of clear synthetic plastic sheet material laminated to one of said surfaces of said top layer; raised ridges on the other of said major surfaces and forming design lines which visually subdivide said top layer into a plurality of portions; first black color lines substantially coextensive with said ridges at said other major surface; second black color lines on said one major surface and each registering with one of said first black color lines; and a plurality of transparent inks of different colors applied to the respective portions on at least one of said major surfaces.

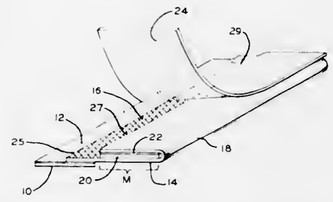
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**3,931,426**

## MARKING TAPE ASSEMBLY

**Philip N. Braun, and Robert J. Filsinger, both of Syracuse, N.Y., assignors to Philip N. Braun, Syracuse, N.Y.**

**Continuation-in-part of Ser. No. 301,658, Oct. 27, 1972, abandoned, and a continuation-in-part of Ser. No. 170,169, Aug. 9, 1971, abandoned. This application July 11, 1974, Ser. No. 487,544**
**Int. Cl.² B32B *3/04***
**U.S. Cl. 428—40** **10 Claims**




1. A marking tape assembly for applying permanent marking indicia to an identifying label, said assembly comprising in combination:
a. a first sheet having a pressure sensitive adhesive on one surface thereof;
b. a second sheet having a pressure transferable permanent marking material on one surface thereof;
c. a tape element having a heat sensitive adhesive on one surface thereof and adapted to receive on the other surface markings transferred from said one surface of said second sheet;
d. said first and second sheets being secured together by said pressure sensitive adhesive, a first portion of said one surface of said first sheet being covered by said second sheet, and a second portion adapted to be exposed for adherence to a support surface;
e. said second sheet and said tape being so constructed and arranged that said one surface of said second sheet is in facing engagement with said other surface of said tape, and the latter is disposed to receive markings transferred from said second sheet when said second portion of said one surface of said first sheet is secured to a support surface; and
f. a protective sheet releasably secured to said first sheet in covering relation to said second portion of said one surface.

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**3,931,427**

## STAMP DYED NAPPED FABRIC

**Jose Benzaquen, Caseros, Argentina, assignor to Benzaquen Sociedad Anonima Industrial, Commercial, Immobiliaria & Financiera, Argentina**

**Continuation-in-part of Ser. No. 311,261, Dec. 1, 1972, Pat. No. 3,872,557. This application Oct. 12, 1973, Ser. No. 405,933**
**Claims priority, application Argentina, Nov. 23, 1972, 245277**
**Int. Cl.² B32B *33/00*; D06C *11/00***
**U.S. Cl. 428—91** **6 Claims**

1. A process for treating the surface of a woven fabric which comprises stamping one side of a substantially crude woven textile fabric with a dye to superficially dye the surface of said one side of the fabric; and, submitting the side of the fabric thus stamped with dye to a superficial abrasion to produce a feltlike appearance and a simultaneous mutation in the coloring of said superficially dyed surface.

5. A fabric having a treated surface, said fabric comprising a woven base fabric having one of its sides stamped with a dye such that the surface of said one side of the fabric is superficially dyed, said superficially dyed surface being abraded to produce a plurality of superficially raised fibrils on the threads of said superficially dyed surface resulting in a feltlike appearance and shade of dye differing from the shade of the dye stamped on said surface, and the other side of said fabric being substantially untreated.

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**3,931,428**

## SUBSTRATE COATED WITH SUPER-HYDROPHOBIC LAYERS

**Franklin G. Reick, Westwood, N.J., assignor to Michael Ebert, Mamaroneck, N.Y., a part interest**

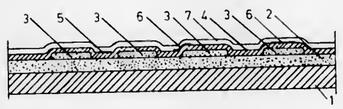
**Filed Jan. 4, 1974, Ser. No. 430,621**
**Int. Cl.² C08J *7/04*, *9/42*; D06N *7/04***
**U.S. Cl. 428—149** **13 Claims**

1. A product having super-hydrophobic properties, comprising a substrate having a micro-rough face which is physically hydrophobic, said face being coated with hydrophobic fumed silicon dioxide particles which are bonded to said face by a binder having chemical hydrophobic properties, the amount of said binder, by weight relative to the amount of said particles being less than one-half the amount of said particles.

### 3,931,429
### SURFACE COVERING MATERIALS

Michael Charles Austin, Tonbridge, England, assignor to Marley Tile A.G., Zug, Switzerland

Filed Feb. 25, 1974, Ser. No. 445,343
Claims priority, application United Kingdom, July 6, 1973, 32411/73
Int. Cl.² B32B 3/00, 3/26
U.S. Cl. 428—158 15 Claims




1. A process for the production of surface covering materials having a textured effect which comprises (a) applying a layer of a first foamable resinous composition on to a substrate; (b) applying a second foamable resinous composition on to selected areas of the surface of the said first foamable resinous composition; (c) applying at least one essentially non-foaming resinous layer over the said first and second foamable resinous compositions; and (d) heating to effect foaming of the first and second foamable resinous compositions whereby a surface covering material having a textured effect is produced; the said first and second foamable resinous compositions being selected whereby upon heating substantial foaming of the said second foamable resinous composition occurs before any substantial foaming of the said first foamable resinous composition.

13. A surface covering material having a textured effect which comprises a substrate of backing layer, a layer of a first foamed resinous composition on the substrate or backing layer, a second foamed resinous composition on selected areas of the said first foamed resinous composition and a layer of an essentially nonfoamed resinous composition over the said first and second foamed resinous compositions; the surface of the said material being at a higher level in areas with both first and second foamed resinous composition applied than in other areas of the surface covering material; and the said second foamed resinous composition having a structure characteristic of a resinous composition which has foamed to a significant extent whilst supported by a non-foaming substrate.

### 3,931,430
### METHOD OF DESENSITIZING A PRESSURE SENSITIVE RECORDING SHEET AND THE PRODUCT THEREOF

Tomonori Tada, and Akira Shiono, both of Osaka, Japan, assignors to Kanzaki Paper Mfg. Co. Ltd., Tokyo, Japan

Filed Nov. 7, 1973, Ser. No. 413,437
Claims priority, application Japan, Nov. 11, 1972, 47-113377
Int. Cl.² B41M 5/02
U.S. Cl. 428—195 9 Claims

1. A method of desensitizing a pressure sensitive recording sheet comprising applying to a predetermined area of the pressure sensitive recording sheet a desensitizer which comprises a reaction product produced by the reaction of (1) ammonia, alkylamines, alkyleneamines selected from the group consisting essentially of ethylenediamine, propylenediamine, hexamethylenediamine, diethylenetriamine and triethylenetetramine, alkenylamines, cyclicamines or arylamines with (2) one member selected from the group consisting of alkylglycidylethers, cycloalkylglycidylethers, arylglycidylethers, alkenylglycidylethers, glycidylalkylates, glycidylalkenates and glycidylarylates.

### 3,931,431
### PHOTOGRAPHS COATED WITH A PROTECTIVE AND FINISHING LAYER

Lewis A. Giorgi, 286 New Main St., Yonkers, N.Y. 10701

Division of Ser. No. 324,583, Jan. 18, 1973, abandoned. This application Apr. 18, 1974, Ser. No. 461,895
Int. Cl.² B32B 3/30
U.S. Cl. 428—201 4 Claims

1. A finishing composition brushed or sprayed onto contoured colored studio photographs to form a colorless transparent protective coating thereon which when dry retains flexiblity and elasticity characteristics independent of time, humidity and atmospheric conditions, said composition being composed essentially of commercial particulate vinyl resin dissolved or dispersed in methyl isobutyl ketone, diisobutyl ketone or trimethyl nonanone containing naphtha, a naphthene or a xylene and free from benzene, methanol, acetone and chlorinated hydrocarbons having solvent action on the colored studio photographs, said vinyl resin being polyvinyl chloride or a vinyl chloride copolymer wherein the vinyl chloride predominates.

### 3,931,432
### PRINTING PROCESS

Alan James Butters; Walter Peace, both of Manchester, and James Duncan Pont, Reading, all of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Dec. 26, 1973, Ser. No. 428,311
Claims priority, application United Kingdom, Jan. 4, 1973, 493/73
Int. Cl.² B41M 1/00
U.S. Cl. 428—206 10 Claims

1. A process for the gravure or flexographic printing of flexible substrates wherein the printing vehicle comprises a dispersion of particles of a synthetic film-forming polymer, which is a homopolymer of methyl methacrylate or a copolymer thereof with alkyl esters of acrylic or methacrylic acid in which the alkyl groups contain from 2 to 8 carbon atoms, in an inert organic liquid in which the polymer is insoluble, the dispersion (a) being stabilized by a polymeric stabilizer which is a block or graft polymer one polymeric constituent of which, being an anchoring component which associates with the particles of disperse polymer, is compatible with the polymer of which the disperse particles are formed and another polymeric constituent of which is solvated by the organic liquid of the dispersion, to provide a stabilizing steric protective barrier at least 12 A thick, and (b) being of such a composition that after evaporation of not more than 50% by weight of the organic liquid present the residue remains as a stable dispersion capable of blending homogeneously with fresh dispersion, and wherein the polymer particles are subsequently integrated upon the substrate, said printing vehicle having a solids content in the range of 20 to 70% by weight and a viscosity of from 16 to 40 seconds measured in a No. 4 Ford cup at 20°C.

### 3,931,433
### SIMULATED BEVERAGE PULP, BEVERAGE MIX, BEVERAGE PREPARED THEREFROM AND PROCESS

James D. Eskritt, Port Hope, Canada; Brian C. Shrimpton, Chipping Warden, England, and Linda A. Ven Huizen, North Vancouver, Canada, assignors to General Foods, Limited, Toronto, Canada

Filed Dec. 6, 1973, Ser. No. 422,245
Claims priority, application Canada, Dec. 8, 1972, 158827
Int. Cl.² A23L 1/27
U.S. Cl. 426—250 11 Claims

1. A simulated beverage pulp comprising a codried pregelatinized starch and a water-insoluble dye.

9. A process for preparing a simulated beverage pulp comprising admixing a pregelatinized starch with a water-insoluble dye, codrying the mixture and grinding the codried admixture to a fine powder.



### 3,931,434
### METHOD OF MANUFACTURING DEHYDRATED FRUIT USED AS AN ADDITIVE TO POWDERED INSTANT FOOD

Hiroshi Murai, Tokyo, Japan, assignor to Nagatanien Honpo Co., Ltd., Tokyo, Japan

Filed Jan. 7, 1974, Ser. No. 431,386
Int. Cl.² A23B 7/02
U.S. Cl. 426—295 4 Claims

1. A method of manufacturing dehydrated fruit used as an additive to powdered instant food which comprises coating granulated sugar on the surface of raw preliminarily dried fruit containing 20 to 30 percent of water, mechanically pressing the fruit so as to embed the granulated sugar into the fruit in a solid state and dehydrating the fruit thus embedded with the granulated sugar at a temperature up to 100°C until the water content in the fruit is reduced to below 6 percent.

### 3,931,435
### ELECTRON BEAM POSITIVE RESISTS CONTAINING ACETATE POLYMERS

Edward Gipstein, Saratoga, Calif.; Wayne M. Moreau, Wappingers Falls, N.Y., and Omar U. Need, III, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1974, Ser. No. 534,541
Int. Cl.² B05D 3/06
U.S. Cl. 427—43 5 Claims

1. A process for forming an image with a positive resist, said process comprising the steps of:
1. forming on a substrate a film of a composition comprising polymeric methyl methacrylate, said composition having increased sensitivity to electron beam radiation due to the presence in said composition of from 1 to 20% by weight based on said polymeric methyl methacrylate of polymerized vinyl acetate or polymerized isopropenyl acetate,
2. exposing said film in a predetermined pattern to radiation,
3. removing the radiation exposed portion of said film with a solvent.

### 3,931,436
### SEGMENTED GAS DISCHARGE DISPLAY PANEL DEVICE AND METHOD OF MANUFACTURING SAME

George A. Kupsky, State College, Pa., assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed July 30, 1974, Ser. No. 492,993
Int. Cl.² H01J 9/00
U.S. Cl. 427—96 4 Claims

1. In a process for making a gas discharge information display panel of the type in which plural cathode electrodes are exposed to the gas medium confined in a discharge chamber and the anode electrode is a transparent electrode carried on a viewing plate and in which a dielectric mask outlines the cathode electrodes, and said cathode electrodes are printed with conductive silver paste and firing same on a glass substrate forming a part of said panel said dielectric mask being applied as a heat fused coating on said glass substrate, said viewing plate being joined to said glass substrate in spaced relation by a heat fusible glass seal, the improvement comprising firing said conductive silver paste at a temperature higher than any temperature subsequently used in the fabrication of said information display panel so as to substantially eliminate cathode porosity and provide a smooth cathode surface.

3. In a batch process for making a plurality of gas discharge information display panels, printing with a conductive silver paste, on a common glass substrate a plurality of separate groups of cathode electrodes, one said group for each panel, firing said silver paste as defined in claim 1, applying a separate dielectric mask to each said separate group of cathode segments, and separating said common glass substrate to a plurality of separate glass substrates, each separate glass substrate carrying one of said separate groups of cathode electrodes, joining one said viewing plate to each separated substrate and filling with an ionizable gaseoue medium.

### 3,931,437
### SURFACE TREATMENT OF MICROPOROUS MATERIAL

Frank Peter Civardi, Wayne, and Hans Georg Kuenstler, Clifton, both of N.J., assignors to Inmont Corporation, New York, N.Y.

Continuation of Ser. No. 56,936, July 21, 1970, Pat. No. 3,764,363, and a continuation-in-part of Ser. Nos. 843,425, July 22, 1969, abandoned, and Ser. No. 867,762, Oct. 20, 1969, abandoned. This application Sept. 27, 1973, Ser. No. 401,480. The portion of the term of this patent subsequent to Oct. 9, 1990, has been disclaimed.
Int. Cl.² B05D 5/00, 3/12, 3/10, 3/04
U.S. Cl. 427—246 12 Claims




1. Process for the treatment of microporous material which consists essentially of providing a sheet material having a water vapor transmission of at least about 100 g/m²/24 hrs. and having at least one surface zone of microporous polymeric material, said surface zone being wet with a liquid, applying to the outer surface of said surface zone a solution of polymeric material in a solvent which attacks the polymeric material of said surface zone, coagulating said solution by the action of said liquid present in said surface zone and removing said solvent and said liquid supplied by said surface zone by evaporation to form an adherent layer less than 20 microns in thickness on said surface zone, said liquid being a non-solvent for the polymeric material of said solution and of said surface zone and being a coagulant for said solution whereby to coagulate said solution as a water vapor permeable layer on said outer surface, there being sufficient of said non-solvent in said zone to effect said coagulation.

### 3,931,438
### DIFFERENTIAL DENSIFICATION STRENGTHENING OF GLASS-CERAMICS

George H. Beall, Big Flats, and Kenneth Chyung, Elmira, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Continuation-in-part of Ser. No. 196,593, Nov. 8, 1971, abandoned. This application Nov. 7, 1973, Ser. No. 413,544
Int. Cl.² 65 30; B32B 7/02, 17/06; C03B 32/00
U.S. Cl. 428—218 4 Claims

1. A strengthened laminated glass-ceramic article comprising a glass-ceramic core portion and a compressively-stressed glass-ceramic surface layer laminated to and substantially enveloping said core portion, wherein
a. the difference in thermal expansion coefficient between the core and surface layer glass-ceramics is less than about $5 \times 10^{-7}$/°C.;
b. the glass-ceramic core portion is formed of a composition having at a selected crystallization temperature a density $D_a$ prior to crystallization *in situ* and a density $D_d$ subsequent thereto;
c. the compressively-stressed glass-ceramic surface layer is formed of a composition having at said crystallization

temperature a density $D_s$ prior to crystallization *in situ* and a density $D_{sf}$ subsequent thereto; and wherein

d. the values of the densities $D_{ci}$, $D_{cf}$, $D_{si}$, and $D_{sf}$ are such that the present value of the densification differential (D) as defined by the expression:

$$D = \frac{D_{cf} - D_{ci}}{D_{ci}} - \frac{D_{sf} - D_{si}}{D_{si}} \times 100$$

is positive.

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**3,931,439**

**MODIFIED ASPHALT HYDRAULIC SEALER**

**Clarence R. Bresson, and Forrest D. Spaulding, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.**

**Division of Ser. No. 325,387, Jan. 22, 1973, Pat. No. 3,856,732. This application Aug. 14, 1974, Ser. No. 497,289**

**Int. Cl.² B23B** *27/00*

**U.S. Cl. 428—265** **8 Claims**

1. An improved hydraulic barrier system capable of withstanding a hydrostatic pressure at least equal to 35 feet of water at a temperature of 100°F comprising at least one layer of a suitable fabric having applied thereto a sealant composition consisting essentially of an air-blown cut-back asphalt having incorporated therein from 1 to 10 weight percent of an additive selected from the group consisting of (a) a hydrogenated random butadiene-styrene copolymer containing from about 30 to about 44 parts by weight of butadiene per 100 parts by weight of total monomers with the remainder being styrene; (b) a butadiene-styrene block copolymer having the configuration S-B-S, containing about 70 weight percent butadiene and about 30 percent styrene; and (c) mixtures of (a) and (b) in a weight ratio of (a) to (b) in the range of 1:10 to 10:1.

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**3,931,440**

**ROOFING SHINGLE UTILIZING AN ASPHALT COMPOSITION AND METHOD OF MAKING AN ASPHALT-SATURATED BASE SHEET**

**Philip Bickford Shepherd, Sedalia, and Robert William Croop, Littleton, both of Colo., assignors to Johns-Manville Corporation, Denver, Colo.**

**Filed Feb. 11, 1974, Ser. No. 441,524**

**Int. Cl.² D04H** *1/08*; **B32B** *19/04*

**U.S. Cl. 428—281** **5 Claims**

1. An asphalt shingle comprising:

a. a base sheet; and

b. an asphalt composition substantially completely encapsulating and at least partially penetrating in said base sheet, said composition including

i. asphalt,

ii. a filler material dispersed throughout said asphalt, and iii. glass fiber bundles of preselected type dispersed throughout said asphalt, said bundles each comprising a plurality of monofilaments and bonding substance for maintaining said monofilaments bonded together, said composition comprising between approximately 0.1% and 3% glass fiber bundles by weight of said composition,

c. said bonding substance being such that

i. when said composition is maintained at between approximately 350°F and 450°F, said substance maintains substantially all of said monofilaments in each of said bundles bonded together, and

ii. when said composition reaches a temperature of approximately 700°F, said substance becomes ineffective to maintain said monofilaments bonded together, whereby said monofilaments separate and disperse throughout said asphalt.

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**3,931,441**

**FIBER-SPHERE ARTICLE OF MANUFACTURE**

**John Vincent Milewski, Somerville, N.J., assignor to Exxon Research and Engineering Company, Linden, N.J.**

**Filed Sept. 14, 1973, Ser. No. 397,225**

**Int. Cl.² B32B** *5/16*

**U.S. Cl. 428—283** **5 Claims**

1. A fiber and sphere reinforced plastic article of manufacture comprising:

a resin matrix material as binder; and,

a mixture of glass fiber and glass bead sphere reinforcing materials, said fiber and sphere materials being present in a maximum packing condition thereby providing substantially low voids between said fibers and spheres in said article, said fibers having a definite length to diameter ratio ranging from 1/1 to 100/1, said fiber loading being between 0 and 100% in said mixture of fiber and spheres, and the ratio of the diameter of the spheres to that of the fibers being selected from values between 5 and 100 and between 0.1 and 0.01.

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**3,931,442**

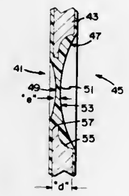
**TEMPORARY MODIFICATION OF A PATTERN MASK FOR USE IN FORMING A COLOR CRT SCREEN AND A PROCESS FOR MODIFYING THE SAME**

**Peter H. Rollason, Cayuga, N.Y., assignor to GTE Sylvania Incorporated, Stamford, Conn.**

**Continuation of Ser. No. 337,361, March 2, 1973, abandoned. This application Nov. 4, 1974, Ser. No. 520,244**

**Int. Cl.² H01J** *31/00*

**U.S. Cl. 428—336** **4 Claims**




1. In a screen-related multi-apertured pattern member as used in a color cathode ray tube, a temporary modification improvement of the apertured portion for utilization during at least one selected radiant energy exposure step of the procedure for fabricating a patterned screen structure disposed on the interior surface of an associated viewing panel, said temporary modification improvement comprising:

a dried light-attenuating coating of a water-soluble polyhydric secondary alcohol in the form of a polyvinyl alcohol solution substantially uniformly covering both surfaces of said apertured member to effect a bridging meniscus of coating in each aperture thereof, said coating being formed from a homogeneous solution of a 50—50 volumetric percentage of water and a $C_1$–$C_2$ monohydric alcohol having six to eight weight percent of polyvinyl alcohol solids dissolved therein, said coating meniscus being formed of a continuous film bridging the central region of said aperture and merging peripherally into a gradual thickening of coating effecting annular support within the aperture perimeter, the central region of said meniscus having a minimum thickness in the order of one micron, said coating material having homogeneously dispersed therein a watersoluble light attenuating chemical composition substantially selectively absorbent of ultraviolet radiant energy within substantially the 350 to 380 nanometer bandwidth range as utilized in said screen exposure step, the degree of absorptive modification in each aperture being resultant of the variations in thickness of the homogeneous composition of said coating meniscus and the concentration of absorptive chemical material dissolved therein, said uv absorbent coating additionally providing a uniform covering for the interstitial maaterial defining said apertures thereby reducing deleterious reflections of actinic radiation during screen structure fabrication.



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**3,931,443**

**DUPLICATING SYSTEMS**

**David John Neale, Woodford Green, and Stanford Frederick Dawney, Brentwood, both of England, assignors to Lamson Industries Limited, London, England**

**Continuation-in-part of Ser. No. 176,284, Aug. 30, 1971, abandoned. This application Aug. 6, 1973, Ser. No. 385,706**

**Claims priority, application United Kingdom, Nov. 4, 1970, 52484/70**

**Int. Cl.² B41M** *5/04*

**U.S. Cl. 428—341** **24 Claims**

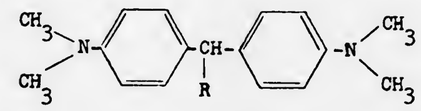
1. In a process for hectographic duplicating, said process comprising the steps of

a. forming hectographic transfer sheets by applying a coating of a composition comprising at least 20% by weight of at least one at least substantially colorless dyestuff precursor, and a film-forming vehicle therefor, at a dry coated weight of about 5 to about 40 gsm, to a base web.

b. thereafter contacting said coating with a hectographic sheet, and transferring selected portions of said coating to the hectographic sheet by the application of pressure, to form an imaged hectographic master and,

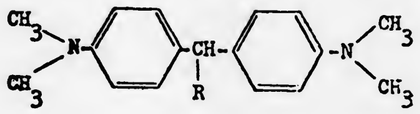
c. thereafter successively contacting the imaged hectographic master with a plurality of hectographic copy sheets moistened with an ethanol spirit duplicating fluid, and converting the dyestuff precursor into the dyestuff to form legible copies,

the improvement comprising using, as said dyestuff precursor, a leucauramine dyestuff precursor of the formula



wherein R is methoxy, sodium p-carboxyphenylamino or sodium-p-sulphophenylamino.

**20.** A hectographic transfer sheet consisting essentially of a base web having a coating on at least one side thereof, said coating comprising at least 15% by weight of at least one dyestuff precursor of the formula



wherein R is methoxy, sodium p-carboxyphenylamino or sodium-p-sulphophenylamino, and a film-forming vehicle therefor; wherein the coating is at a dry coated weight of about 5 to about 40 gsm.

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**3,931,444**

**BACKING SHEET COATED WITH CATALYST AND SELF CURING INTERPOLYMER ADHESIVE**

**Lawrence W. McKenna, Wilbraham, and Donald M. Gardner, Springfield, both of Mass., assignors to Monsanto Company, St. Louis, Mo.**

**Division of Ser. No. 333,916, Feb. 20, 1973, Pat. No. 3,893,982. This application Dec. 6, 1974, Ser. No. 530,257**

**Int. Cl.² C08F** *15/40*

**U.S. Cl. 428—355** **5 Claims**

1. An article of manufacture which comprises a substrate coated on at least one side with a pressure-sensitive permanently tacky composition comprising a dried mixture of an interpolymer and between 0.01 and 1.0 parts by weight of 1,3-bis(dimethylamino)-2-hydroxypropane per 100 parts by weight of the interpolymer, wherein the interpolymer has a weight average molecular weight in the range of 10,000 to 500,000, a glass transition temperature in the range of −15° to −75°C. and comprises:

1. between 0.1 and 15 weight percent of an $\alpha,\beta$-ethylenically unsaturated aliphatic carboxylic acid,
2. between 0.1 and 2 weight percent of a glycidyl monomer selected from the group consisting of glycidyl acrylate, glycidyl methacrylate, and allyl glycidyl ether,
3. between 35 to 84.9 weight percent of a monomer selected from the group consisting of esters of acrylic acid and methacrylic acid containing from 6 to 20 carbon atoms, and
4. optionally, a monomer selected from the group consisting of $\alpha$-olefins containing 2 to 10 carbon atoms, vinyl esters of alkanoic acids containing from 3 to 10 carbon atoms, vinyl and methyl esters of acrylic and methacrylic acids, acrylonitrile, methacrylonitrile, styrene and vinyl chloride.

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**3,931,445**

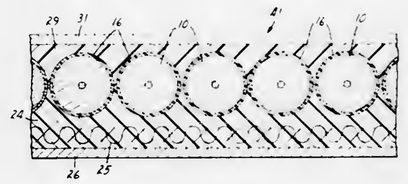
**PRECOATED LARGE-DIAMETER MONOFILAMENTS FOR PREPREG TAPE**

**Joseph N. Schurb, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.**

**Division of Ser. No. 80,207, Oct. 12, 1970, Pat. No. 3,775,061, which is a continuation-in-part of Ser. No. 649,167, June 27, 1967, abandoned. This application June 26, 1973, Ser. No. 373,860**

**Int. Cl.² B32B** *9/00*; **D02G** *3/00*

**U.S. Cl. 428—366** **3 Claims**




1. A flexible handleable reinforcing filament adapted for inclusion in prepreg tape from which are molded high-strength substantially void-free resinous structural members uniformly reinforced with continuous collimated reinforcing filaments, said reinforcing filament consisting essentially of a continuous length of a single high-strength large-diameter monofilament coated with a nontacky circumferential layer at least about 0.1 mil in thickness that comprises a partially crosslinked precoat resin composition that comprises epoxy resin modified by inclusion of a high-molecular-weight polymeric component that exhibits substantial elongation when stressed beyond its yield point to increase the capability of elongation of the precoat resin composition when fully crosslinked; is highly adherent to the monofilament; has high strength in the molded condition; and exhibits substantially no flow when the coated monofilament is embedded in the matrix sheet of resin compo-

sition of a prepreg tape and the tape is subjected to a useful molding operation.

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### 3,931,446
### PROCESS FOR PRODUCING POLYMERIC PIEZOELECTRIC ELEMENTS AND THE ARTICLE FORMED THEREBY

**Naohiro Murayama, Iwaka, and Takao Oikawa, Iwaki, both of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan**

**Continuation-in-part of Ser. No. 184,170, Sept. 27, 1971, abandoned. This application Mar. 11, 1974, Ser. No. 449,809**
**Claims priority, application Japan, Sept. 26, 1970, 45-83771**
**Int. Cl.² B05D** *5/12*; **B32B** *27/00*
**U.S. Cl. 428—421** **11 Claims**

**1.** A polarized piezoelectric film comprising an oriented or unoriented polyvinylidene fluoride having electrodes on both surfaces, wherein said PVDF has an infrared absorbance ratio $D_{530}/D_{510}$ of not more than 1.2.

**5.** A process for producing highly piezoelectric elements which comprises stretching a polyvinylidene fluoride film having a major proportion of the $\alpha$-type crystal structure at a temperature not higher than 100°C in at least one axial direction to form a polyvinylidene fluoride film having a major proportion of the $\beta$-type crystal structure as exibited by an infrared absorbance ratio $D_{530}/D_{510}$ of not more than 1.2; attaching electrodes on both surfaces of the resulting film; and then treating the resulting film with the electrodes to a temperature of at least 40°C, but below the melting point of said film, while applying to said film a direct current voltage of between 200 KV/cm amd 1,500 KV/cm.

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### 3,931,447
### FUSED SILICIDE COATINGS CONTAINING DISCRETE PARTICLES FOR PROTECTING NIOBIUM ALLOYS

**Salvatore J. Grisaffe, and Stanley R. Levine, both of Rocky River, Ohio, assignors to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.**

**Filed May 4, 1973, Ser. No. 357,312**
**Int. Cl.² B32B** *9/06, 15/04*
**U.S. Cl. 428—450** **8 Claims**

**1.** A niobium alloy having an oxidation protective coating consisting essentially of

a fused silicide material with a higher thermal expansion coefficient than said niobium alloy, and

fibers selected from the group consisting of tungsten and molybdenum in said silicide material to modify the physical properties of said coating by providing dispersed nucleation sites therein, said fibers having a thermal expansion coefficient lower than that of said fused silicide material whereby said coating has a thermal expansion coefficient between that of said fibers and said fused silicide material.

**3.** A niobium alloy having an oxidation protective coating consisting essentially of

a fused silicide material with a higher thermal expansion coefficient than said niobium alloy, and

discrete particles comprising oxide fibers in said silicide material to modify the physical properties of said coating by providing dispersed nucleation sites therein, said discrete particles having a thermal expansion coefficient lower than that of said fuse silicide material whereby said coating has a thermal expansion coefficient between that of said discrete particles and said fused silicide material.

**8.** A method of modifying a fused silicide coating for protecting a surface of a niobium alloy having a lower thermal expansion coefficient than that of the fused silicide coating material whereby said fused silicide coating material is prone to crack upon cooling from elevated temperatures, said method comprising the steps of

distributing a plurality of discrete particles of active metals selected from the group consisting of molybdenum, tungsten, columbium and tantalum in said coating material on the surface of said niobium alloy, and

heating the coating material with said particles therein whereby said coating material is fused with the microstructure thereof altered and the thermal expansion coefficient reduced thereby minimizing the number of tensile cracks.

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### 3,931,448
### COATED ARTICLES

**Robert E. Parkinson, Monroeville Borough, Allegheny County, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.**

**Division of Ser. No. 290,599, Sept. 20, 1972, abandoned, which is a continuation-in-part of Ser. No. 139,197, April 30, 1971, abandoned. This application Dec. 7, 1973, Ser. No. 422,642**
**Int. Cl.² B32B** *13/12, 15/08*
**U.S. Cl. 428—451** **3 Claims**

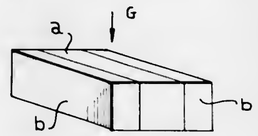
**1.** A coated article comprising a substrate coated with a composition comprising an aqueous dispersion of: from about 25 to about 95 weight percent of resin solids of a copolymer of ethylene and acrylic acid, wherein the acrylic acid constitutes about 18% to 24% of the copolymer; blended with b. from about 5 to about 75 weight percent of resin solids of a water-dispersible, heat-reactable, rseol, A-stage type phenolic resin essentially free of unreacted phenol and containing a substantial amount of trimethylol phenol.

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### 3,931,449
### RESINOUS LAMINATES HAVING IMPROVED GAS PERMEATION AND RESISTANCE TO DELAMINATION

**Sadao Hirata; Syunsaku Hirata, both of Yokohama; Toru Suzuki, Yokosuka, and Akira Kishimoto, Tokyo, all of Japan, assignors to Toyo Seikan Kaisha Limited, Tokyo, Japan**

**Filed Aug. 16, 1973, Ser. No. 388,805**
**Claims priority, application Japan, Aug. 17, 1972, 47-82348; Oct. 4, 1972, 47-98993; July 7, 1973, 48-76138**
**Int. Cl.² B32B** *27/08*; **C08G** *41/04*
**U.S. Cl. 428—474** **17 Claims**




**1.** A resin laminate structure comprising at least one layer (a) of a polyolefin and at least one layer (b) consisting essentially of (A) a polyolefin and (B) a saponified product of ethylene-vinyl acetate copolymers having an ethylene content of 25 to 50 mole % and a degree of saponification of at least 96% at an A : B mixing weight ratio ranging from 90 : 10 to 10 : 90, said two layers being laminated by means of co-extrusion without an adhesive so that said layer (a) and said layer (b) are adjacent to each other, wherein said layer (b) is of such a multi-layer laminar structure that the polymer composition is different with respect to the thickness direction but substantially identical with respect to the plane direction and that when the layer (b) is divided into at least two layers in the direction of the thickness, at least that divided layer adjacent to said layer (a) contains predominantly the polyolefin (A), namely contains said saponified product in an amount expressed by the following formula

$$M_2 = m_2 X$$

wherein $X$ stands for the average content (% by weight) of the saponified product of the ethylene-vinyl acetate copolymer in the said layer (b), $m_2$ is a number of from 0 to 0.95, and $M_2$ is the content (% by weight) of said saponified product in said specific divided layer,

and an adjacent divided layer contains predominantly the saponified product of the ethylene-vinyl acetate copolymer (B), namely contains the saponified product in an amount expressed by the following formula

$$M_1 = m_1 X$$

wherein $X$ is as defined above, $m_1$ is a number of at least 1.05, and $M_1$ is the content (% by weight) of said saponified product in said specific divided layer.

**13.** A resin laminate structure comprising two surface layers of a polyolefin and an intermediate layer of a blend consisting essentially of (A) said polyolefin, (B) a saponified product of an ethylene-vinyl acetate copolymer having an ethylene content of 25 to 50 mole % and a degree of saponification of at least 96% and (C) a thermoplastic polymer containing a carbonyl group at the main or side chain thereof at a concentration of 120 to 1400 milliequivalents per 100 g of the polymer, the weight ratio of B : C being within 95 : 5 to 50 : 50, said polyolefin (A) being present in an amount of 5 to 100 parts by weight per 100 parts by weight of the sum of said polymers (B) and (C), and said two surface layers and said intermediate layer being laminated by means of co-extrusion without an adhesive so that said two surface layers and said intermediate layer are adjacent to each other, wherein said intermediate layer has such a multi-layer laminar structure that the polymer composition is different with respect to the thickness direction but substantially identical with respect to the plane direction and that when the intermediate layer is divided into three layers in the direction of the thickness, the two divided layers adjacent to said polyolefin surface layers each contain predominantly the polyolefin (A) and the carbonyl group-containing thermoplastic polymer (C), namely contain said saponified product (B) in an amount expressed by the following formula

$$M_1 = m_1 X$$



wherein $X$ stands for the average content (% by weight) of the ethylene-vinyl acetate copolymer saponified product in the blend layer, $m_1$ is a number of from 0 to 0.95, and $M_1$ is the content (% by weight) of said saponified product in said divideo outer layer,

and the divided inner layer contains predominantly the ethylene-vinyl acetate copolymer saponified product (B), namely contains said saponified product (B) in an amount expressed by the formula

$$M_2 = m_2 X$$

wherein $X$ is as defined above, $m_2$ is a number of at least 1.05 and $M_2$ is the content (% by weight of said saponified product in said divided inner layer.

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### 3,931,450
### POLYURETHANE FOAM COMPOSITE

**John T. Patton, Jr., Wyandotte; Louis C. Pizzini, Trenton; John G. Demou, Lincoln Park, all of Mich., and Gerhard G. Ramlow, East Windsor, N.J., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.**

**Filed Oct. 10, 1974, Ser. No. 513,639**
**Int. Cl.² B32B** *3/26*
**U.S. Cl. 428—315** **8 Claims**

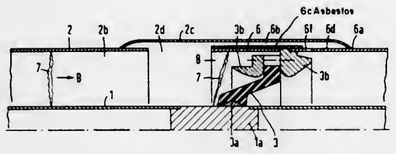
**1.** A polyurethane foam composite prepared by heat sealing a substrate and a polyurethane foam prepared by the reaction in the presence of a blowing agent of an organic polyisocyanate with a graft polyol obtained by the in situ polymerization in the presence of a free radical catalyst of an ethylenically unsaturated monomer or mixture of monomers in a polyol.

**2.** The composite of claim 1 wherein the substrate is polyvinyl chloride.

### 3,931,451
### APPARATUS FOR PREVENTING BURN-OFF DUE TO AN ACCIDENTICAL STANDING ARC IN HIGH VOLTAGE APPARATUS

**Rolf Durschner, Mohrendorf, and Werner Lehmann, Erlangen, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany**

**Filed Feb. 6, 1974, Ser. No. 440,050**
**Claims priority, application Germany, Feb. 14, 1973, 2307195; Nov. 29, 1973, 2360070**
**Int. Cl.² H01B** *9/04, 9/06*
**U.S. Cl. 174—11 R** **15 Claims**

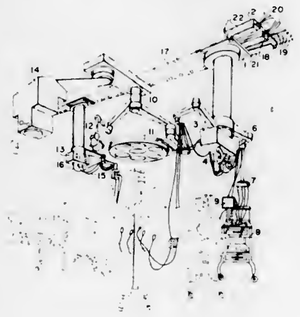



1. In high voltage apparatus including a voltage carrying part which is enclosed by a housing and supported within the housing by insulating members and wherein gas under pressure is contained within the housing as insulation and which further includes an inner reinforcement member forming a double wall along with the outer housing wall with a space being formed therebetween to prevent burn-off in the case of an accidental standing arc, the improvement comprising said inner reinforcement member forming a double wall in the area of each of said insulating members, said inner reinforcement member including means for relieving the pressure to which said double wall portion is subjected in the case of an accidental standing arc burning near an insulating member and including means for retarding the heat generated thereby from being transmitted to the wall of said housing in amounts sufficient to cause damage.

### 3,931,452
### DEVICE FOR ATTACHMENT OF CEILING-SUPENDED EQUIPMENT

**Agne Lars Harry Nilsson, 430 60 Landvetter, Borgasvagen 20, Sweden**

**Filed Sept. 24, 1973, Ser. No. 400,400**
**Claims priority, application Sweden, Sept. 26, 1972, 12432/72**
**Int. Cl.² H02G** *3/26*
**U.S. Cl. 174—48** **9 Claims**

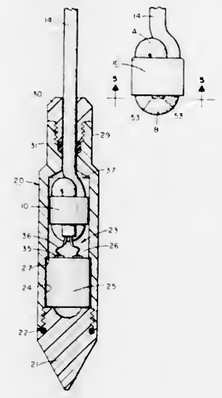


1. A load-carrying structure adapted for attachment to ceiling joists of a medical facility and comprising an elongate girder whose width is larger in dimension than its height and having at least two separate, isolated channels in its width direction, one of said channels accommodating electric cables and the other channel accommodating piping for supply of fluid therethrough, and means for carrying equipment connected at predetermined locations to said girder and being detachable from and displaceable with respect to said predetermined location to thereby permit greater latitude in positioning of equipment carried by said means, said girder structure being of electrically conductive material and constituting a common electrical earth connection for equipment effectively supported thereby.

### 3,931,453
### GEOPHONE CASE WITH IMPROVED CABLE ANCHOR

**Ernest M. Hall, Jr., Houston, Tex., assignor to Walker, Hall, Sears, Inc., Houston, Tex.**

**Filed Aug. 23, 1974, Ser. No. 499,868**
**Int. Cl.² G01V** *1/16;* **H01R** *13/58;* **H05K** *5/02*
**U.S. Cl. 174—65 R** **1 Claim**



1. A case having an interior chamber for housing a geophone, said chamber having an opening accepting therethrough an electric cable, including conductors, in water-tight fashion,
   a cylindrical anchor in the chamber anchoring the cable to the case, said anchoring having at least three substantially parallel bores therethrough, and said three bores extending between and through the top and bottom faces of said anchor,
   said cable making two 180° bends in passing through said bores, whereby an upward pull on said cable is resisted by said bends;
   one of said bores receiving at least one conductor of the cable therethrough, and a solder ball on the tip of the received conductor anchoring the conductor to said anchor.

### 3,931,454
### PRINTED CIRCUIT BOARD AND METHOD OF PREPARING IT

**Gerhard R. Sprengling, Blairsville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.**

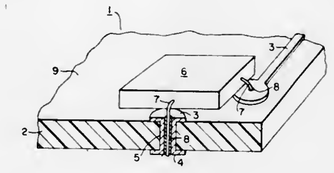
**Filed Oct. 17, 1972, Ser. No. 298,213**
**Int. Cl.² H05K** *3/28, 1/18*
**U.S. Cl. 174—68.5** **13 Claims**

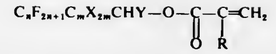
1. A method of preparing a printed circuit board composed of an insulating board having a conducting circuit bonded to at least one side comprising:





1. connecting with solder electronic components to the conducting circuit of the said printed circuit board;
2. coating the printed circuit board with a layer up to about 0.1 mils thick of a compound selected from the group consisting of monomers of the general formula





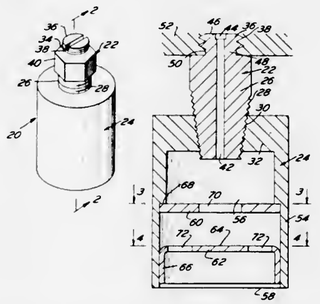
and prepolymers thereof containing up to about 100 polymeric units, where $n$ is an integer from 2 to 9, $m$ is an integer from 1 to 9, R is —H or $-CH_3$, Y is selected from the group consisting of H, F, Cl, and Br, and 80 to 100% of the X atoms are F and 0 to 20% of the X atoms are selected from the group consisting of H, Cl, Br, and mixtures thereof;

3. removing at least one of said electronic components by melting said solder without first removing said layer and thermally bonding another electronic component in place thereof; and
4. recoating said printed circuit board around the area where said other electronic component was bonded with a layer of said compound up to about 0.1 mils thick.

### 3,931,455
### BREATHER CAP WITH BAFFLE

**Norman Burnell, Hallandale, Fla., assignor to Lumidor Products, Corporation, Hialeah, Fla.**

**Filed Mar. 25, 1974, Ser. No. 454,512**
**Int. Cl.² H02G** *15/00*
**U.S. Cl. 174—135** **6 Claims**

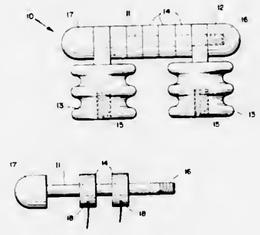


1. A breather cap assembly for use with an electrical cable having an impervious sheath thereabout which sheath defines a space between it and said cable, said sheath including a threaded opening therein in communication with said space, said breather cap assembly being arranged for securement to said cable sheath to enable said space to be in free communication with the ambient atmosphere surrounding the outside of the sheath, while serving to prevent the ingress of water into said space, said breather cap assembly comprising hollow baffle means and nipple means secured thereto and including one threaded end for securement within said threaded opening in said sheath, said nipple means including an orifice extending therethrough and in communication with the interior of the baffle means, said baffle means having a central longitudinal axis and including an open free end disposed furthest from said nipple means and first and second baffles mounted within the interior of said baffle means and normal to said central axis for increasing the distance along the interior of said baffle means that water must traverse to reach said orifice, said first baffle including an opening on said central axis and said second baffle including plural openings laterally offset and spaced about said central axis, said threaded end of the nipple means including an end face through which said orifice extends and an enlarged slot cut in said face for substantially the full width of said face and in communication with said orifice to ensure that free communication between the space within the cable sheath and the ambient atmosphere is not blocked when said breather cap assembly is secured to said cable.

### 3,931,456
### HIGH VOLTAGE DISTRIBUTOR

**James F. McChesney, Jr., Seabrook, Md., assignor to The United States of America as represented by the United STates National Aeronautics and Space Administration Office of General Counsel-Code GP, Washington, D.C.**

**Filed May 15, 1974, Ser. No. 470,428**
**Int. Cl.² H01B** *17/00;* **H01R** *9/06, 3/00*
**U.S. Cl. 174—145** **7 Claims**



1. An improvement in high voltage distributors which are resistant to corona and high voltage breakdown of the type having a conductive member, insulating means supporting the conductive member and a plurality of conductive washer-like means retained by said conductive member comprising:
   having said conductive member and said plurality of washer-like means together integrally defining a relatively smooth total surface area.

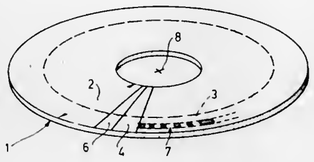
### 3,931,457
### INFORMATION CARRIER HAVING ADDRESSED INFORMATION TRACKS

**Johannes Antonius Maria Mes, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.**

**Filed Mar. 26, 1973, Ser. No. 344,637**
**Claims priority, application Netherlands, Sept. 4, 1972, 12015/72**
**Int. Cl. H04n** *5/78*
**U.S. Cl. 178—6.6 DD** **5 Claims**

1. An information carrier in the form of a record disc for recording video information of the type wherein said information is recorded in a series of adjacent sequential tracks as a sequence of blocks of information optically encoded in geometrical form along the tracks, the improvement wherein each succeeding block of information along each track comprises a recorded video frame and a unique address code, each

recorded video frame starting on a radial line on the disc, and each unique address code starting on a further line on the disc,




the address codes therefore being contained within a sector on the disc.

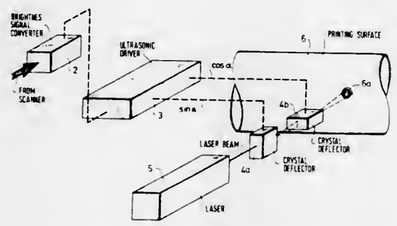
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**3,931,458**

## METHOD AND APPARATUS FOR ENGRAVING ELEMENTAL AREAS OF CONTROLLED VOLUME ON A PRINTING SURFACE WITH AN ENERGY BEAM

**Mamiliano Dini, Brescia, Italy, assignor to European Rotogravure Association, Munich, Germany**

**Filed Aug. 24, 1973, Ser. No. 391,255**
**Claims priority, application Germany, Aug. 25, 1972, 2241850**
**Int. Cl.² G03F 7/00**
**U.S. Cl. 178—6.6 B** **19 Claims**




**1.** A method of engraving printing plates by means of energy beams to obtain multisteps of degree of engravement up to a substantially continuous engraving effect, said method comprising:

providing an energy beam which, with respect to its energy and frequency, is modulated at most only to small degree, focusing said beam to a fraction of the maximum dimention of an engraved cell,

etching the surface of the individual engraved cells by means of said focused beam along a beam path, and

modulating the length and spatial distribution density of the beam path on the cell surface in accordance with the tone intensity of a corresponding point of an original picture with which the respective cell of the printing plate is associated.

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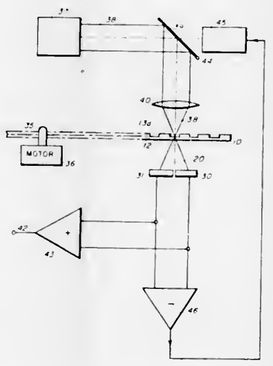
**3,931,459**

## VIDEO DISC

**Adrianus Korpel, Prospect Heights, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.**

**Filed Feb. 4, 1974, Ser. No. 439,680**
**Int. Cl.² G11B 7/24; H04N 1/00, 3/02**
**U.S. Cl. 178—6.6 A** **9 Claims**

**1.** For use in an optical image reproducing system of the type in which information stored in a record track of a carrier is derived by scanning said track with a beam of light, a record disc having a record track composed of pits alternating with lands and in which the depth dimension of said pits introduces a phase change of approximately $(k + \frac{1}{2})\pi$ radians between portions of said beam which impinge upon said pits and portions of said beam which impinge upon lands adjacent said pits, where $k$ is zero or any integer.



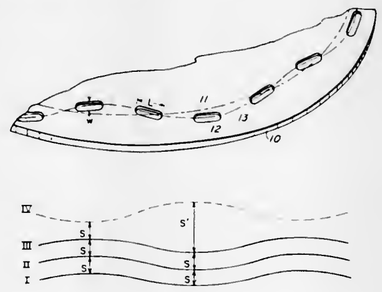

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**3,931,460**

## VIDEO DISC WITH MULTITURN UNDULATING STORAGE TRACK

**William H. Watson, Schaumburg, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.**

**Filed Feb. 4, 1974, Ser. No. 439,681**
**Int. Cl.² G11B 7/24; H04N 1/00, 3/02**
**U.S. Cl. 178—6.6 A** **2 Claims**




**1.** A record disc comprised of a storage medium having information stored in a variable-depth track which comprises a series of convolutions individually having a generally circular mean path to be read by a beam of energy and characterized by the fact that each track convolution has periodic fixed-amplitude lateral undulations disposed symmetrically with respect to its mean path,

the undulations of said series of convolutions having such relative phase that said convolutions are in nested concentric relation with a substantially uniform spacing with respect to one another,

and further characterized by the fact that the phase of said undulations is correlated with that of a component of the stored information.



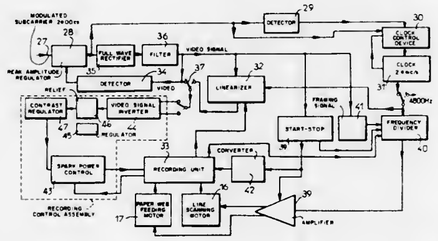
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**3,931,461**

## TELEREPRODUCTION SYSTEM FOR DOCUMENTS

**Daniel Auchére, Grenoble, and Jean Paul Barbier Neyret, Saint Martin d'Heres, both of France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly-sur-Seine, France**

**Filed Apr. 24, 1974, Ser. No. 463,740**
**Claims priority, application France, Apr. 27, 1973, 73.15430**
**Int. Cl.² H04N 1/12**
**U.S. Cl. 178—6.6 A** **13 Claims**




**1.** A system for the telereproduction of documents wherein an original document is scanned in a line-by-line manner and corresponding electrical signals are generated, and a carrier or sub-carrier wave is modulated by said electrical signals generated by said line-by-line scanning of the original document to produce a video carrier signal which is transmitted, comprising:

means for receiving and demodulating the transmitted video carrier signal;

a reproduction scanning device in the receiver;

means for synchronizing the operation of said reproduction scanning device with the scanning device of the transmitter;

means for applying the demodulated video signals to said reproduction scanning device at a rate exactly proportional to the speed of scanning thereof, said applying means comprising a memory for storing the video signals obtained from demodulation of the received video carrier signal; and

said reproduction scanning device comprising a scanning unit including a line scanning tracer point, a rotating shaft driving said scanning unit, a paper band on which recording is to be made and which is movable in a direction perpendicular to said line scanning tracer point, and a linearizing device comprising a rotating disc driven by said rotating shaft and provided at its edge with teeth having widths corresponding to respective equal displacements of said tracer point along the scanned line, means associated with said disc for supplying a control signal having a frequency proportional to the speed of movement of said tracer point during the scanning of each line and means responsive to said control signal and coupled to said memory for controlling the extraction of the video signals stored in said memory each time said tracer point has advanced by a step of constant value.

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**3,931,462**

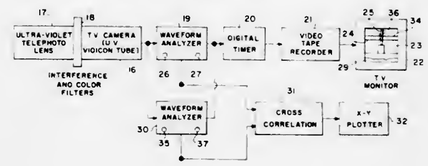
## STACK PLUME VISUALIZATION SYSTEM

**Reginald J. Exton, Williamsburg, Va., assignor to The United States of America as represented by the United States National Aeronautics and Space Administration Office of General Counsel-Code GP, Washington, D.C.**

**Filed Mar. 11, 1975, Ser. No. 557,448**
**Int. Cl.² H04N 7/18**
**U.S. Cl. 178—6.8** **13 Claims**

**1.** Apparatus for measuring at a remote location the $SO_2$ concentration in plume from a smokestack comprising:

an ultraviolet video system means for viewing said plume from a remote location against the background sky at wavelengths where $SO_2$ molecules absorb a substantial amount of light and for producing electrical signals representative of the scene viewed, and




TV monitor meeans for receiving the output of said video system and for producting a picture of the $SO_2$ concentration in said plume.

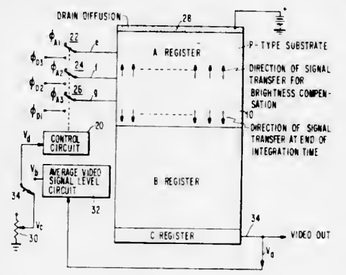
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**3,931,463**

## SCENE BRIGHTNESS COMPENSATION SYSTEM WITH CHARGE TRANSFER IMAGER

**Peter Alan Levine, Kendall Park, N.J., assignor to RCA Corporation, N.Y.**

**Filed July 23, 1974, Ser. No. 491,114**
**Int. Cl.² H04N 3/14; H01L 29/78, 31/00**
**U.S. Cl. 178—7.1** **8 Claims**




**8.** The improvement, in a charge transfer imager which includes an image sensing array, said image sensing array including means during a field time for sensing an image projected onto the image sensing array and storing a charge pattern corresponding thereto, a temporary storage array, an output register, means during each vertical retrace period for transferring the contents of the image sensing array to the temporary storage array, means during each horizontal line retrace period for shifting a row of information into the output register, and means during each horizontal line period for shifting the information stored in the output register out of the output register of:

means during solely the horizontal line retrace periods of an initial portion of each field time for removing from the image sensing array the charge pattern concurrently being accumulated thereon.

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**3,931,464**

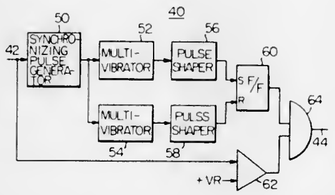
## LINE SKIP SYSTEM FOR FACSIMILE DEVICE

**Katsuo Murase, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan**

**Filed Oct. 10, 1974, Ser. No. 513,687**
**Claims priority, application Japan, Nov. 1, 1973, 48-123090**
**Int. Cl.² H04N 1/38**
**U.S. Cl. 178—7.1** **8 Claims**

**1.** In a method of facsimile transmission in which a document having a ruled line in a predetermined position thereon is pre-scanned in a path substantially perpendicular to the

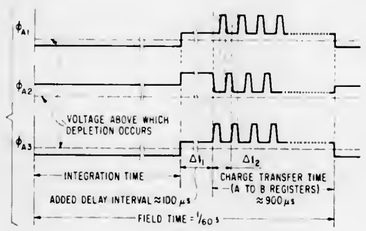
ruled line to determine if the path contains information, an electrical signal being generated when information is encountered, and scanned for transmission along the same path only if it is determined that the path contains information, the improvement of determining if the path contains information in such a manner that the presence of the ruled line is ignored, the improvement comprising the steps of:




a. generating gating signal in synchronism with pre-scanning the path except while pre-scanning a predetermined portion of the path which intersects the ruled line;
b. simultaneously sensing for the presence of the gating signal and the electrical signal; and
c. determining that the path contains information only if the gating signal and the electrical signal are sensed simultaneously.

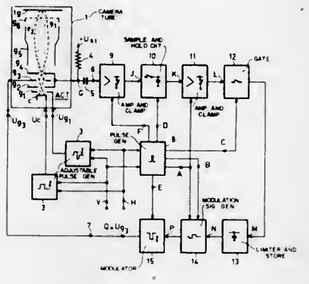
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**3,931,465**
**BLOOMING CONTROL FOR CHARGE COUPLED IMAGER**
**Peter Alan Levine, Kendall Park, N.J., assignor to RCA Corporation, New York, N.Y.**
**Filed Jan. 13, 1975, Ser. No. 540,436**
**Int. Cl.² H04N** *3/14*; **H01L** *29/78, 27/14*
**U.S. Cl. 178—7.1** **2 Claims**




1. A method of controlling blooming in a charge coupled device image sensing array which includes a substrate and electrodes capacitively coupled to the substrate comprising the steps of:
during the integration time, maintaining certain of the electrodes at a potential to create depletion regions in the substrate regions beneath these electrodes within which charge can be stored and maintaining other of the electrodes at a potential to create accumulation regions in the substrate between the depletion regions;
at the end of the integration time and for a relatively short interval compared to the integration time, changing the potential on said other electrodes to a value to place the substrate regions formerly in accumulation into depletion and concurrently changing the potential applied to said certain electrodes to a value to drive the substrate regions beneath said certain electrodes into deeper depletion; and
applying thereafter multiple phase voltages to said electrodes for propagating any stored charge along the substrate.

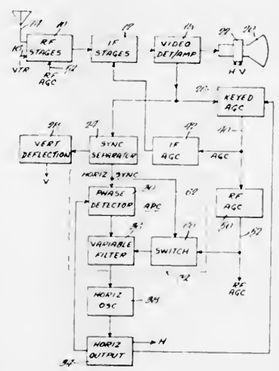
**3,931,466**
**CIRCUIT ARRANGEMENT FOR USE IN A TELEVISION CAMERA TUBE WITH AN ANTI-COMET TAIL ELECTRON GUN**
**Wouter Van Den Berg, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, N.Y., N.Y.**
**Filed Mar. 8, 1974, Ser. No. 449,354**
**Claims priority, application Netherlands, Mar. 13, 1973, 7303466**
**Int. Cl.² H04N** *5/34*
**U.S. Cl. 178—7.2** **19 Claims**




19. A method for eliminating the comet tail effect from a television camera tube, said method comprising periodically sampling a video signal during line flyback times, storing a sampled signal, comparing two successively sampled and stored signals, and changing the focus of the lens electrode of said tube during line flyback times upon said compared signals being unequal.

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**3,931,467**
**SYNCHRONIZING CIRCUIT HAVING A VARIABLE BANDPASS FILTER**
**John F. Kulkens, Park Ridge, Ill., assignor to Warwick Electronics Inc., Chicago, Ill.**
**Filed Oct. 24, 1974, Ser. No. 517,545**
**Int. Cl.² H04N** *5/04*
**U.S. Cl. 178—7.3 R** **13 Claims**



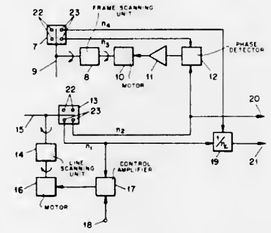

1. In a receiver having a variable gain amplifier stage for amplifying a composite signal including an information component and a sync component, and an AGC circuit for generating an automatic gain control signal which controls the gain of the amplifier stage in response to the received signal strength, the improvement comprising:



synchronizing means for generating a sync pulse which is synchronized with the sync component including
a bandpass filter having a bandwidth variable to alter the ability of the synchronizing means to synchronize onto the sync components; and
means coupling the AGC circuit to the bandpass filter for varying the bandwidth under control of the automatic gain control signal.

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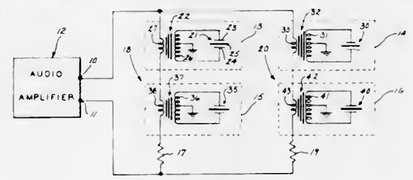
**3,931,468**
**METHOD AND A DEVICE FOR GENERATING LINE RASTERS IN AN INFRA-RED IMAGING SYSTEM**
**Jan Dahlqvist, Akersberga; Bo Matsson, Marsta, and Benny Johansson, Sollentuna, all of Sweden, assignors to AGA Aktiebolag, Lidingo, Sweden**
**Filed Mar. 5, 1974, Ser. No. 448,271**
**Claims priority, application Sweden, Mar. 6, 1973, 7303076**
**Int. Cl.² H04L** *7/00*
**U.S. Cl. 178—69.5 R** **4 Claims**




1. A device for the generation of a signal to synchronize a frame sweep with a mechanical frame scanning device comprising a line scanning device responsive to a reference signal to maintain a speed in accordance therewith, said line scanning device producing a line synchronizing signal in accordance with the speed thereof, a frame scanning device responsive to said line synchronizing signal to control the speed thereof, said frame scanning device producing a frame speed signal responsive to the speed of said frame scanning device, and frequency dividing means responsive to said line scanning device, and periodically reset by said frame speed signal, for providing a frame synchronizing signal.

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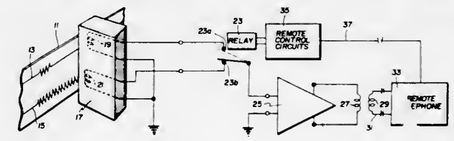
**3,931,469**
**CROSSOVER NETWORK FOR A MULTI-ELEMENT ELECTROSTATIC LOUDSPEAKER SYSTEM**
**Douglas M. Elliott, Milwaukee, Wis., and Alpha M. Wiggins, Punta Gorda, Fla., assignors to Koss Corporation, Milwaukee, Wis.**
**Filed June 21, 1974, Ser. No. 481,533**
**Int. Cl.² H04R** *3/14*
**U.S. Cl. 179—1 D** **7 Claims**




1. In an electrostatic speaker system having a pair of input terminals connectable to receive an audio signal from an audio amplifier, the combination comprising:
an electrostatic driver having a pair of terminals connected to a respective pair of fixed plates which present a relatively fixed, highly capacitive impedance across said terminals;
a step-up transformer having a primary winding connected in a series branch across said speaker input terminals to receive said audio signal, and a secondary winding magnetically coupled to said primary winding and electrically connected to the input terminals of said electrostatic driver to form a parallel resonant circuit therewith, the inductance of said secondary winding being selected such that the parallel resonant circuit it tuned to a selected audio frequency, and
an impedance device connected in said series branch to voltage divide the audio signal with the primary winding of said step-up transformer.
wherein the impedance of the primary winding of said step-up transformer increases substantially for a range of frequencies about said tuned audio frequency with the result that a majority of the audio signal within said frequency range is applied to said electrostatic driver and a majority of the audio signal outside said frequency range is applied to said impedance device.

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**3,931,470**
**TAPE MARKING AND INDICATING DEVICE FOR REMOTE CONTROL OPERATION**
**Joseph J. Zimmermann, Elm Grove, Wis., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.**
**Filed Nov. 4, 1974, Ser. No. 520,507**
**Int. Cl.² G11B** *15/18*
**U.S. Cl. 179—6 R** **6 Claims**



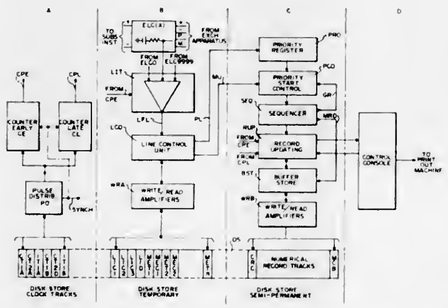

1. In a remotely controlled telephone answering device for recording messages from remotely located telephones, apparatus comprising:
a recording medium comprising at least a first channel having positional information recorded thereon and a second channel for recording telephone messages;
playback means comprising first and second sensing means for respectively monitoring said first channel and said second channel and converting said positional information and said recorded messages into electrical signals representative thereof;
means including an amplifier for amplifying and converting said electrical signals into audio signals for conveying the content of said positional information and said recorded messages to said telephones; and
switching means for selectively coupling said first sensing means and said second sensing means to said amplifier during different time intervals.

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**3,931,471**
**ELECTRONIC METERING ARRANGEMENT FOR USE IN TELEPHONE AND LIKE EXCHANGES**
**Leopold Laurens Coletta Geuens, Herenthout, and Willy Francisca Van Hoeck, Boom, both of Belgium, assignors to GTE International Incorporated, Stamford, Conn.**
**Filed Apr. 1, 1974, Ser. No. 456,673**
**Claims priority, application United Kingdom, Mar. 30, 1973, 15571/73**
**Int. Cl.² H04M** *15/10*
**U.S. Cl. 179—7 MM** **3 Claims**

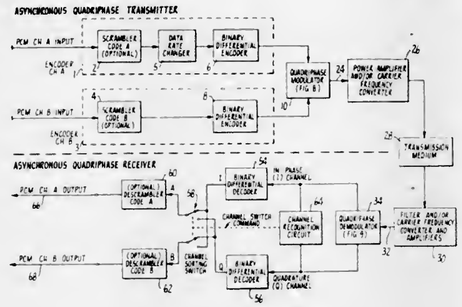
1. In an automatic telephone system central office serving a plurality of subscribers lines, with each line terminated at

said central office in a line circuit and having an identifying line number and said central office including equipment to supply periodic metering pulses for local and interoffice calls; a memory disc having a surface of magnetic material and including means for rotating said disc about its axis at a fixed rate, said disc including a first reset track and a second timing track and a plurality of meter fee recording tracks, a first counter resettable by said reset track and arranged to count in decimal code the output of said timing track, said first counter having an output corresponding to the designations of each said line number having a metering position on said disc, a pulse-plus-bias-line-gate for each said line circuit preconditioned in response to a metering pulse, said output of said first counter operative to periodically scan each said line for the presence of a preconditioned pulse-plus-bias-line-gate and to condition it to a conductive state during the interval of the counter when its count corresponds to the pulse-plus-bias-line-gates designation, a first, a second, a third and a fourth individual store for each said line in said plurality of recording tracks, said individual stores for each of said lines constituting tracks on said disc divided into sections individual to said lines, and said individual stores comprising a plurality of sections along the radius of said disc in a plurality of tracks,



means operated in response to the presence of a conditioned pulse-plus-bias-gate to write a "one" in a said first metering store associated with said line, first logic means operated upon a first succeeding revolution of said disc to read said "one" for said particular line from said first individual store and the continued presence of said conditioned pulse-plus-bias-gate to write a "one" in said second individual store associated with said line, second logic means operated upon a second succeeding revolution of said disc to read said "one" for said particular line from said second individual store and the absence of said conditioned state of said pulse-plus-bias-gate to write a "one" in said third individual store associated with said line, and third logic means operated upon a third succeeding revolution of said disc to read said "one" for said particular line from said third individual store and the absence of said conditioned state of said pulse-plus-bias-gate to write a "one" in said fourth individual store associated with said line, other means operated in response to reading a "one" for a particular one of said lines in said fourth metering store to operate a temporary storage means to register the "one" for said line and subsequently into a permanent storage means to register the cumulative metering count as read from said temporary store for said line.

**3,931,472**
**ASYNCHRONOUS QUADRIPHASE COMMUNICATIONS SYSTEM AND METHOD**
**Walter J. Gill, Saratoga, and James A. Mellenger, Sunnyvale, both of Calif., assignors to Avantek, Inc., Santa Clara, Calif.**
**Continuation-in-part of Ser. No. 225,823, Feb. 14, 1972, Pat. No. 3,809,817. This application May 7, 1974, Ser. No. 467,656. The portion of the term of this patent subsequent to May 7, 1991, has been disclaimed.**
**Int. Cl.² H04J** *3/06*
**U.S. Cl. 179—15 BA** **16 Claims**



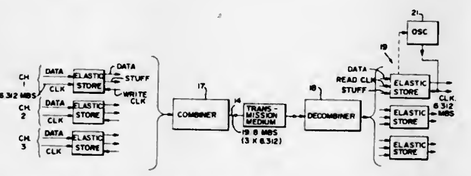

**1.** In a communications system transmitting two independently timed binary data signals on a single quadriphase modulated carrier through a transmission medium, the combination comprising

A. means receiving said two independently timed binary data signals for continuously uniquely identifying at least one of said signals, said means preserving the independent timing of said signals,

B. means receiving said independently timed data signals from said last recited means for generating a quadriphase modulated carrier signal in accordance with said signals, and

C. means for applying said quadriphase modulated carrier signal to said transmission medium.

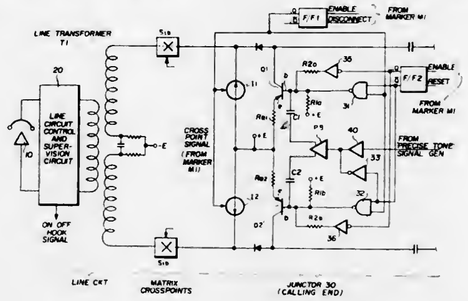
**3,931,473**
**DIGITAL MULTIPLEXER SYSTEM**
**Walton C. Ferris, Jr., Palo Alto, Calif., assignor to TRW Inc., Los Angeles, Calif.**
**Filed Sept. 3, 1974, Ser. No. 502,293**
**Int. Cl.² H04J** *3/06*
**U.S. Cl. 179—15 AF** **4 Claims**




**1.** A digital multiplexer system for multiplexing a plurality of digital data channels into a serial bit stream, which is divided into frames by a frame counter means, each frame being indicated by a frame pattern for transmission to a demultiplexing receiver which also includes a frame counter means such system using a plurality of stuff words having redundant bits in said bit stream to indicate whether or not to substitute at least one stuff bit to accommodate timing irregularities, said system comprising; means for sensing said stuff words and for providing an error signal if said bits of said stuff words are not redundant because of an error during said transmission, means for sensing said frame pattern for sensing a misframe signal for resetting said frame counter means of said receiver.



**3,931,474**
**TONE INJECTION CIRCUIT**
**Donald W. McLaughlin, Bolingbrook, and David Q. Lee, Chicago, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.**
**Filed Dec. 30, 1974, Ser. No. 537,291**
**Int. Cl.² H04Q** *1/44*
**U.S. Cl. 179—16 AA** **6 Claims**




**1.** In a communication system including a pair of terminating circuits coupled to a junctor via a matrix, said system being a two-wire system and each of said terminating circuits appearing as an inlet on said matrix and said junctor having two ports on the outlet of said matrix, each of said terminating circuits including a fixed resistance in one of said two wires and said junctor including a pair of constant current sources feeding said fixed resistances in the respective ones of said terminating circuits and thereby providing the holding current for holding up the connections through said matrix from said junctor to said terminating circuits, the release of said connections being under control of said junctor, and a system controller, the improvement comprising a tone signal injection circuit within said junctor, said tone signal injection circuit comprising a pair of transistors operating as constant current sources and supplying a constant current to the respective ones of said two wires; biasing means for biasing the respective ones of said pair of transistors to operate in a linear mode; phase splitter amplifier means for coupling tone signals to the respective ones of said transistors to modulate the constant current to the respective ones of said two wires, whereby the tone signals are coupled to a terminating circuit.

**3,931,475**
**ELECTRONIC SWITCHES AND SWITCH NETWORKS**
**Erich Bachle; Helmut Klem, and Bernhard Rall, all of Ulm, Danube, Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Germany**
**Filed Dec. 17, 1974, Ser. No. 533,696**
**Claims priority, application Germany, Dec. 21, 1973, 2363669**
**Int. Cl.² H04Q** *3/52*
**U.S. Cl. 179—18 GF** **11 Claims**

**1.** In an electronic switching device for a switching network in a telephone central office, the switching device having a signal input and output and presenting a series branch constituting a switchable signal conduction path extending between the input and the output, and presenting a shunt branch transverse to the conduction path, the switching device including a switching transistor having its collector-emitter path connected in the series branch and impedance means connected in the shunt branch, the transistor being switchable between a conductive state in which the series branch has a low resistance and the shunt branch has a high resistance, and a blocking state in which the series branch has a high resistance and the shunt branch has a low resistance, the improvement wherein:

said impedance means comprise

a control transistor of opposite conductivity type to said switching transistor and having its collector connected to the base of said switching transistor,

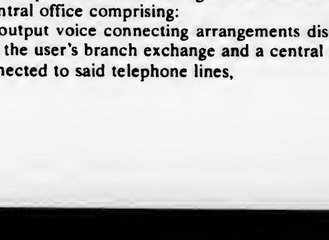
a source of a control voltage connected to the base of said control transistor,

a feedback resistor connected to the emitter of said control transistor, and

voltage-dependent resistor means having one end connected to the base of said switching transistor and controlled by the base voltage of said switching transistor to present a high resistance when said switching transistor is in its conductive state and to present a low resistance when said switching transistor is in its blocking state;

and said device further comprises:

first operating voltage supply means connected for supplying to the emitter of said switching transistor a first operating voltage having an absolute value greater than that




of a control voltage capable of placing said control transistor in its conductive state;

second operating voltage supply means connected to the other end of said voltage-dependent resistor means for supplying thereto a second operating voltage having an absolute value greater than that of said first operating voltage and sufficient to place the base of said switching transistor at a potential which causes said switching transistor to remain in its blocking state as long as said voltage-dependent resistor means presents such low resistance;

third operating voltage supply means providing a third operating voltage having a value approximately equal to the voltage across said feedback resistor when said control transistor is in its blocking state; and

additional resistor means connected between said third operating voltage supply means and the collector of said switching transistor and presenting a high resistance, at least when said switching transistor is in its conductive state, for causing said switching transistor to then operate in its saturation region.

**3,931,476**
**METHOD AND SYSTEM FOR AUTOMATICALLY CONTROLLING THE CONNECTION OF INTER-CITY TELEPHONE CALLS AT A USERS FACILITY**
**Gordon H. Matthews, Dallas, Tex., assignor to Action Communication Systems, Inc., Dallas, Tex.**
**Filed Jan. 3, 1974, Ser. No. 430,501**
**Int. Cl.² H04M** *7/14*
**U.S. Cl. 179—18 AD** **32 Claims**

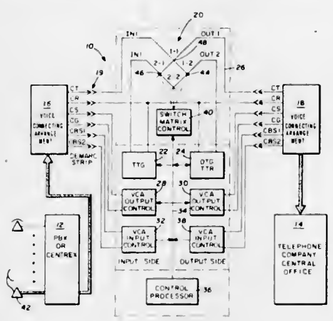
**8.** A system for automatically controlling the connection of inter-city telephone calls at a user's branch exchange between a plurality of input telephone lines and a plurality of leased long distance telephone lines extending to various area zones through a central office comprising:

input and output voice connecting arrangements disposed between the user's branch exchange and a central office and connected to said telephone lines,

circuitry connected to said input voice connecting arrangements for receiving dialing signals from said user's branch exchange,

a switching matrix connected between said voice connecting arrangements, and

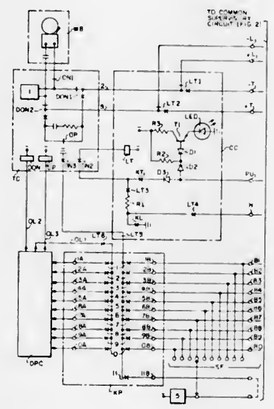
an automatic digital processing machine connected to said circuitry for receiving said dialing signals and in response thereto selecting the most economical available one of



said long distance telephone lines for completing each dialed call in accordance with a predetermined ranking of said long distance telephone lines according to economy of use, said processing machine then operating said switching matrix to establish audio connections through said voice connecting arrangements between the calling input telephone lines and the selected most economical long distance telephone lines.

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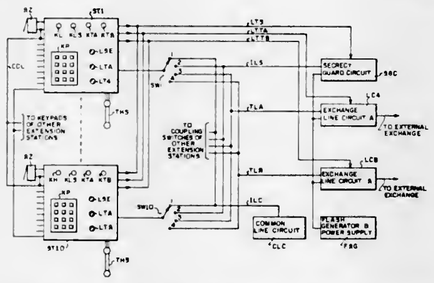
**3,931,477**
**TELEPHONE INTERCOMMUNICATION SYSTEMS**
**Bloomfield James Warman, Como, Italy, assignor to GTE International Incorporated, Stamford, Conn.**
**Filed Sept. 19, 1974, Ser. No. 507,322**
**Claims priority, application United Kingdom, Oct. 26, 1973, 50058/73**
**Int. Cl.² H04M *3/00***
**U.S. Cl. 179—37** **4 Claims**



1. A telephone intercommunication system including: a plurality of extension telephone stations, at least one supervisory means providing access to and warning of incoming calls from a communication line external to the system, and at least one internal communication line; the arrangement being such that in an idle condition all of said extension telephone stations are normally interconnected via said internal communication line to provide for communication between any two or more of said extension telephone stations when in a line-looped or off-hook condition, and said supervisory means providing to all of said extension stations, independently of said internal communication line or lines, warning of an incoming call from the corresponding external line; said supervisory means including means for preventing access of other telephone stations to said external exchange line while one of said stations is connected thereto; and each extension telephone station includng manually operable line coupling switch means giving access via the corresponding supervisory means to the corresponding external communication line, independently of said internal communication line or lines; each extension telephone station further including a line coupling relay having changeover contacts for connecting a speech transmission circuit to said internal communication line and to said external line; an energizing current path for said line coupling relay including a switch contact closed by manually operated means; and a holding current path for said relay including at least one self-holding contact of said relay; and said supervisory means including; a first common terminal connected to said energizing current path of said telephone station; a second common terminal connected to said holding current path of each telephone station; and means operated responsive to signal potentials at said first and second common terminals upon completion of both of said energizing and holding current paths of one telephone station, said responsive means being so adapted to control the potential at said first common terminal that energization of any line coupling relay of a further telephone station is inhibited.

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**3,931,478**
**TELEPHONE INTERCOMMUNICATION SYSTEM PROVIDED WITH A COMMON COMMUNICATION LINE TO WHICH ACCESS IS GUARDED**
**Bloomfield James Warman, Como, Italy, assignor to GTE International Incorporated, Stamford, Conn.**
**Filed Sept. 19, 1974, Ser. No. 507,323**
**Claims priority, application United Kingdom, Oct. 26, 1973, 50059/73**
**Int. Cl.² H04M *1/00***
**U.S. Cl. 179—37** **4 Claims**

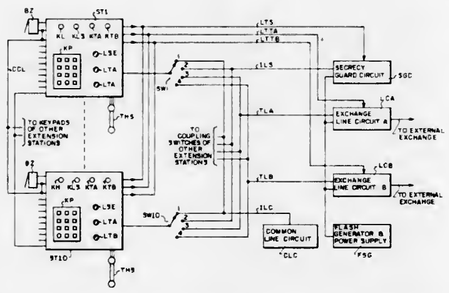


1. A telephone intercommunication system including a plurality of telephone stations, a common communication circuit accessible to each of said telephone stations via line coupling switch means individual to each station, and a common control means for operating the line coupling switch means of each station to establish a connection to said common communication circuit in response to actuation of a corresponding manually operable control means of that station, the arrangement being such that when, following establishment of an initial connection to said common communication circuit via said line coupling switch means, the condition occurs that all of said manually operable control means are inoperative, said common control means is rendered ineffective to establish any further connection to the common communication circuit until the existing connections are released; said system further including means for detecting whether the number of connections established to said common communication circuit exceeds two when said condition occurs, and means for providing a corresponding warning signal at each telephone station.



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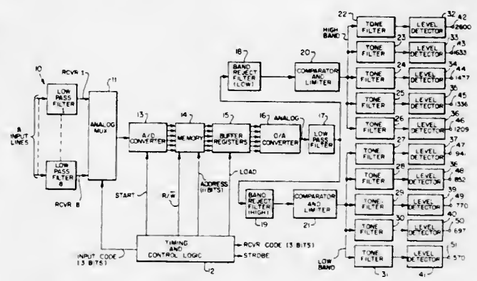
**3,931,479**
**TELEPHONE INTERCOMMUNICATION SYSTEM PROVIDING COMMON ACCESS TO A COMMUNICATION LINE**
**Bloomfield James Warman, Como, Italy, and Maurice Wilfrid Kingsnorth, London, England, assignors to GTE International Incorporated, Stamford, Conn.**
**Filed Sept. 19, 1974, Ser. No. 507,324**
**Claims priority, application United Kingdom, Oct. 26, 1973, 50060/73**
**Int. Cl.² H04M *1/00***
**U.S. Cl. 179—37** **5 Claims**



1. A telephone communication system including a plurality of extension telephone stations, and a common supervisory means for controlling access to a communication line from each of said telephone stations, said telephone stations and said supervisory means both including elements of a common control circuit for influencing the condition of said supervisory means, and said common control circuit including a single signaling wire extending between said telephone stations and said supervisory means, the signal potential established in said wire being dependent on the condition of circuit means of each telephone station and at least two circuit means of said supervisory means, and the later circuit means being controlled in accordance with said signal potential; each of said telephone stations also including at least one circuit means controlled in accordance with said signal potential; said circuit means of each extension telephone station comprising line switching means for establishing a connection between the telephone speech transmission circuit of said station and terminal means of said station; said circuit means of said supervisory means comprising first switching means for effecting a connection between line wires of said communication line and common terminal means of said supervisory means connected to said terminal means of all of said extension telephone stations, and second switching means for connecting a hold loop to said line wires; the arrangement being such that with both said line switching means of any one telephone station and said first switching means of the supervisory means operated to establish a through connection from the communication line to said one telephone station, a stable state exists; and each telephone station further including manually operable means for varying the potential existing in said single signal wire in said stable state whereby by release of the first switching means and operation of the second switching means of the supervisory means a hold loop is applied to the communication line wires, and including means responsive to hanging up of said telephone station for varying the potential existing in said single signal wire in said stable state whereby by rendering both of said first and second switching means inoperative the communication line wires are released.

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**3,931,480**
**TIME COMPRESSION RECEIVER**
**Margaret A. Poole, Wayland, Mass., assignor to GTE Sylvania Incorporated, Stamford, Conn.**
**Filed Sept. 4, 1974, Ser. No. 502,939**
**Int. Cl.² H04M *1/50***
**U.S. Cl. 179—84 VF** **6 Claims**



1. Receiver apparatus for detecting the presence of signals of predetermined frequencies on any of a plurality of receiver input lines including in combination

multiplexing means for repeatedly sampling the receiver input lines in order and producing at its output connection analog samples of the input signals present on said receiver input lines;

analog-to-digital converting means coupled to the output connection of the multiplexing means for converting each of said analog samples to a digital sample;

memory means coupled to said analog-to-digital converting means for storing said digital samples;

memory readout means for reading out of the memory means the digital samples associated with each of the receiver input lines, all of the samples associated with a receiver input line being read out for each receiver input line in turn, the digital samples associated with a receiver input line being read out in the same order as the analog samples associated with that receiver input line were produced by the multiplexing means;

digital-to-analog converting means coupled to the memory readout means for converting each of said digital samples to an analog pulse;

filter means coupled to the digital-to-analog converting means for converting the analog pulses associated with a receiver input line to an analog signal, the signal frequencies present in an analog signal being equal to the predetermined frequencies present in the associated input signal times an integral multiple of the number of receiver input lines;

detecting means coupled to the filter means for determining the presence or absence of each of the signal frequencies in the analog signal and for producing indications thereof which indicate the presence or absence of each of the predetermined frequencies in the associated input signal; receiver identifying means for producing receiver identifying signals designating the particular receiver input line with which said indications are associated;

said memory readout means being operable to readout in order from the memory means during a line readout period all the stored digital samples associated with a receiver input line starting with the oldest stored digital sample, the digital samples associated with each receiver input line in order being read out during successive line readout periods in a recurring sequence;

said filter means being operable to convert the analog pulses associated with a receiver input line to an analog signal during a line readout period;

said detecting means being operable to produce indications indicating the presence or absence of each of the predetermined frequencies in the associated input signal during a line readout period;

said receiver identifying means being operable to produce receiver identifying signals designating the particular receiver input line with which said indications are associated during the line readout period while said indications are being produced;

said multiplexing means being operable to sample a receiver input line and produce an analog sample during a data sampling period;

said analog-to-digital converting means being operable to convert the analog sample produced during a data sampling period to a digital sample during the same data sampling period;

memory input control means for writing a digital sample into the memory means during the same data sampling period it was produced;

a multiplicity of digital samples associated with each of the receiver input lines being written into the memory means during a memory input period equal to a line readout period times an integral multiple (M) of the number (N) of receiver input lines; and

said memory readout means being operable to read out a multiplicity of digital samples associated with a receiver input line from the memory means during a line readout period.

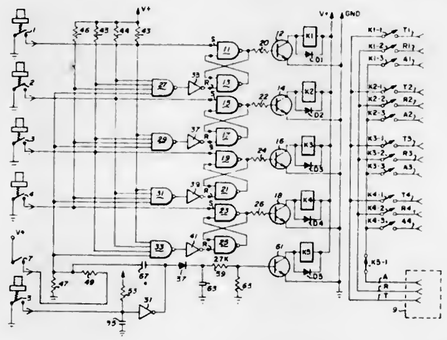
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**3,931,481**

## PLURAL LINE SELECTOR APPARATUS FOR ENABLING SELECTION OF ONE OF A PLURALITY OF TELEPHONE LINES

**Joseph Monroe Jackson, Menlo Park, Calif., assignor to Litton Business Telephone Systems, Inc., Sunnyvale, Calif.**

**Filed Sept. 20, 1974, Ser. No. 507,927**
**Int. Cl.² H04Q** *3/00*
**U.S. Cl. 179—99** **7 Claims**



**6.** A line selection device for coupling a telephone instrument circuit associated with a telephone instrument of the type having a hookswitch to a selected one of a plurality of trunk telephone line circuits comprising:

a first plurality of manually operable spring-return single-pole single-throw selection switches, each of said switches containing a pair of electrical contacts in a normally open circuit for closing an electric circuit therethrough in response to placement to the switch operate condition, said plurality of selection switches corresponding in number to the plurality of output telephone lines with one of the switches being associated with a corresponding one of said trunk line circuits;

a source of high voltage and a source of low reference voltage, one source being of a higher voltage level relative to the other;

means connecting one contact of each selection switch to said source of low reference voltage;

a first plurality of electromechanical relay means, said plurality corresponding in number to said plurality of selection switches and one of said relay means associated with one of said first switch means, each of said relay means including a winding, and a set of contacts normally open responsive to energization of said winding for operating to the closed position contact; each of said contact sets of said relays connected between a common circuit in said telephone instrument and a corresponding one of said plurality of trunk telephone line circuits;

a corresponding first plurality of NPN type transistors, each of said plurality being associated with a corresponding one of said relay means in said first plurality of relay means, each of said transistors having a base, a collector, and an emitter;

means connecting each relay winding electrically in series between said source of high voltage and the collector of a corresponding one of said transistors;

a plurality of NAND gate latches, said plurality corresponding in number to said first plurality of switches and transistors with each NAND gate latch being associated with a corresponding one of said transistors and said switches, each of said NAND gate latches including a first input, a second input, and a first output, each said NAND gate latch means normally in a first condition having a low voltage at said second output and responsive to a low voltage at its first input for switching to a second condition having a high at its said second output and further responsive to a high applied at its second input for switching back to said first condition;

means connecting said first output of each one of said plurality of NAND gate latches to the base of a corresponding one of said transistors for energizing said transistor means in response to the establishment of the corresponding NAND gate latch means in the second condition;

a first plurality of resistor means corresponding in number to the number of NAND gate latch means, each having a first and a second end, one end of each resistor means being connected to said source of high voltage;

a plurality of NAND gates corresponding in number to the plurality of NAND gate latches, each of said NAND gates having a plurality of separate inputs corresponding in number to said NAND gate latch means and an output, each of said NAND gates normally providing a low voltage at the output thereof and responsive to a low voltage at any one of its plurality of inputs for providing a high voltage at the output thereof;

each one of said NAND gates being associated with a corresponding one of said NAND gate latch means;

a first plurality of voltage inverter means, said plurality corresponding in number to said plurality of NAND gates, each of said inverter means containing an input and an output for providing a low voltage or a high voltage at the output thereof in response to the input thereof having applied thereto either a high voltage or low voltage, respectively, each one of said inverter means having an input coupled to the output of a corresponding one of said NAND gates and its output connected to said second input of a corresponding one of said NAND gate latch means;

means coupling said remaining end of each one of said first plurality of resistor means electrically in common with the remaining contact of a corresponding one of said selector switch means, said first input of a corresponding one of said NAND gate latch means and one input of each of those of said NAND gate means not associated with said respective one of said NAND gate latch means, whereby operation of a selector switch means associated therewith applies a low voltage to said first input of said NAND gate latch means associated therewith and to one input of each of the non-associated NAND gates;



bias resistor means connected at one end to said low source; means connecting the remaining end of said bias resistor means electrically in common to one separate input of each of said NAND gate means;

means for connecting said source of high voltage in circuit with one end of said hookswitch of said telephone instrument, said hookswitch means, normally open, for closing an electrical circuit upon removal of a telephone handset from its cradle;

second resistor means, said second resistor means having a substantially lesser resistance than said bias resistor means;

means for connecting the remaining end of said hookswitch means and said second resistor means in an electrical series to the remaining end of said bias resistor.

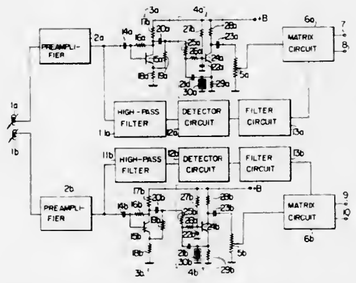
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**3,931,482**

## FOUR-CHANNEL STEREOPHONIC REPRODUCING SYSTEM FOR REPRODUCING DISCRETE FOUR-CHANNEL STEREOPHONIC DISCS

**Yukio Sugimoto, Katano; Makoto Okamasa, Kyoto, and Toyoshi Fukumura, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan**

**Filed Apr. 24, 1974, Ser. No. 463,669**
**Claims priority, application Japan, Apr. 25, 1973, 48-48027**
**Int. Cl.² G11B** *3/74*; **H04B** *5/00*
**U.S. Cl. 179—100.4 ST** **6 Claims**




**1.** A four-channel stereophonic reproducing system for reproducing first, second, third and fourth audio signals from a first stereophonic composite signal consisting of a main channel signal comprised of an addition of said first and second audio signals and a sub-channel signal obtained by frequency modulating or phase modulating a difference between said first and second audio signals, and a second stereophonic composite signal consisting of a main channel signal comprised of an addition of said third and fourth audio signals and a sub-channel signal obtained by frequency modulating or phase modulating a difference between said third and fourth audio signals, said system comprising: first reproducing means for reproducing said first and second signals from said first stereophonic composite signal; and second reproducing means for reproducing said third and fourth audio signals from said second stereophonic composite signal, each of said first and second reproducing means including main channel signal reproducing means having a low-pass filter for passing said main channel signal in said first or second stereophonic composite signal, and sub-channel signal reproducing means having a high-pass filter for passing said subchannel signal in said first or second stereophonic composite signal, said sub-channel signal reproducing means including a detector circuit for detecting the output of said high-pass filter and a filter circuit for eliminating higher frequencies of the output of said detector circuit, and said main channel signal reproducing means further including a phase correction circuit for producing a phase lag equal to that of the signal in said sub-channel signal reproducing means.

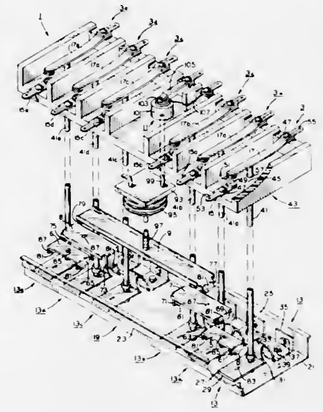
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**3,931,483**

## MULTIPLE CIRCUIT CONTROL SWITCH HAVING ARTICULATED CASCADED OPERATING MECHANISM

**Paige W. Thompson, Morrison, Ill., assignor to General Electric Company, Fort Wayne, Ind.**

**Filed Jan. 15, 1974, Ser. No. 433,593**
**Int. Cl.² H01H** *9/00*, *37/38*
**U.S. Cl. 200—1 R** **45 Claims**



**1.** In an electrical switch having a plurality of means adapted to be movable generally sequentially for switching power through the electrical switch; and a plurality of movable means adapted to be conjointly and relatively movable and disposed in cascaded articulated relation between the switching means, at least some of the movable means being conjointly movable relative to at least some of the others thereof for effecting the sequential operation of the switching means.

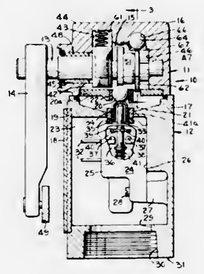
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**3,931,484**

## LEVER OPERATED LIMIT SWITCH HAVING A MECHANISM TO INCREASE OVERTRAVEL

**Richard Lincoln Chace, Bloomington; John Augustine Kilcoin, and William Semonchik, both of Normal, all of Ill., assignors to General Electric Company, New York, N.Y.**

**Filed Dec. 23, 1974, Ser. No. 535,668**
**Int. Cl.² H01H** *3/16*
**U.S. Cl. 200—47** **9 Claims**



**1.** A rotary limit switch for indicating when a device reaches a limiting position, comprising:

a. a housing having first and second portions;

b. a motion converter at least partially disposed within said first portion of said housing, said motion converter in-

cluding a lever having one end adapted to engage the device, and a shaft assembly having one portion thereof attached to another end of said lever and another portion thereof providing a switch motion upon movement of said shaft assembly and said lever by the device, in at least a first direction from an initial position;

c. a switch assembly disposed within the interior of said second portion of said housing, said switch assembly having at least a first and a second contact and operating means for moving said first and second contacts into and out of engagement with one another;

d. actuating means mechanically coupling the switch motion of said motion converter to said operating means of said switch assembly;

e. a first means for restoring said shaft assembly in a second direction opposite the first direction towards the initial position from a position within a range defined by a first predetermined position and the initial position of said shaft; and

f. a second means for restoring said shaft assembly in the second direction towards the initial position from a position within a range at least defined by a second predetermined position and the first predetermined position of said shaft, the first predetermined position being closer to the initial position than is the second predetermined position as said shaft is returning to the initial position, whereby when said shaft is returning to the initial position from a position within the range defined by the first and second predetermined positions, said second restoring means moves said shaft assembly toward the initial position until said shaft is positioned within the range defined by the first predetermined position and the initial position, and then said first restoring means continues to move said shaft assembly toward the initial position.

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**3,931,485**

## FLUID LEVEL FLOAT SWITCH WITH SEALING DIAPHRAGM

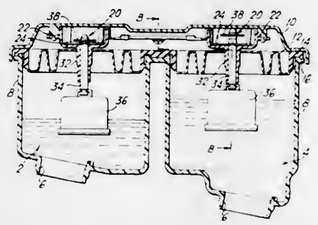
**Anatole Spielfiedel, Paris, and Jean Orven, Frepillon, both of France, assignors to General Motors Corporation, Detroit, Mich.**

**Filed Jan. 13, 1975, Ser. No. 540,559**

**Claims priority, application United Kingdom, Jan. 24, 1974, 3275/74**

**Int. Cl.² H01H** *35/18*

**U.S. Cl. 200—84 R** **4 Claims**



1. A brake fluid reservoir assembly comprising:

a reservoir chamber having a base and a side wall upstanding from the base and terminating in a peripheral rim bounding an open end of said chamber;

a flexible sealing diaphragm fitted over said peripheral rim and closing said open end;

a reservoir cover fitted over said diaphragm and retaining said diaphragm on said peripheral rim;

a casing depending from the underside of said reservoir cover towards said diaphragm;

a pair of stationary electric contacts located in said casing; electric leads of a low-fluid-level warning circuit connected to said contacts;

a guide sleeve projecting from said casing and passing sealingly through said diaphragm into said chamber;

a rod slidably mounted in said guide sleeve, and having a lower end with a fluid float secured thereto, the rod having an upper end upon which is mounted a movable contact, the rod having a length such that at one level of fluid in said chamber said float supports said rod with said movable contact above and out of engagement with said stationary contacts, and at a predetermined lower level of fluid in said chamber said movable contact comes into engagement with said stationary contacts to complete said low-fluid-level circuit.

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**3,931,486**

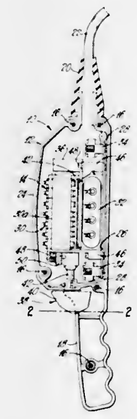
## PENDANT SWITCH ASSEMBLY FOR HOISTS

**Rolf Lutz Manfred Raetz, Essen, Germany, assignor to Eaton Corporation, Ohio**

**Filed July 29, 1974, Ser. No. 492,656**

**Int. Cl.² H01H** *21/10*

**U.S. Cl. 200—157** **9 Claims**



1. A hoist pendant control assembly comprising:

a housing having a handle portion for grasping said housing and a main body for enclosing control elements therein; a rocker actuator mounted within a recess formed in the handle portion of said housing to allow angular movement of the rocker by the hand of an operator grasping the handle, said actuator having a plurality of control positions;

a series of adjoining micro-switches mounted to a common base plate within the main body of said housing; and

a multi-stepped shaft rotatable by rotation of said rocker actuator, the steps of said shaft being located proximate to said micro-switches to allow different degrees of shaft rotation to actuate different micro-switches.

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**3,931,487**

## ELECTRIC MOMENTARY ACTION PUSH-BUTTON SWITCH

**Victor Russenberger, Nogent-sur-Marne, France, assignor to Etablissements Russenberger, Paris, France**

**Filed June 25, 1974, Ser. No. 482,842**

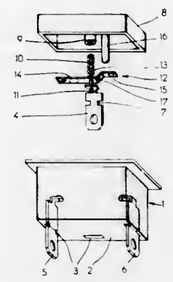
**Claims priority, application France, June 27, 1973, 73.23508**

**Int. Cl.² H01H** *13/52*

**U.S. Cl. 200—159 R** **4 Claims**

1. Electric switch comprising a casing provided with a base through which pass a first terminal belonging to two electric circuits outside the casing, a second and third terminal belonging respectively to said two circuits; said first, second and third terminals being integral with the base of the casing and arranged such that the first terminal is located between the second and third terminals, the switch also comprising a push-button slidably mounted in an opening of the casing opposite said base, and a metal switching member in sliding contact with the first terminal and able to be brought into contact either with the second terminal or with the third terminal, prestressed resilient connecting means mounted between the switching member and the push-button and which, on the one hand, urges the push-button into a normally released position and, on the other hand, pushes the switching member into contact with the first terminal and with the second terminal, thus normally closing the first electric circuit and means for





rotating the switching member, integral with the push-button and able, when the latter is depressed, to tilt the switching member around the first terminal such that said member separates from the second terminal and comes into contact with the third terminal, thus closing the second electric circuit, said resilient connecting means being constituted by a rod projecting under the push-button and passing with clearance through the first terminal and the switching member in its region of contact with the first terminal and terminating in a flared end which prevents the separation of the rod and the first terminal and thus the withdrawal of the push-button from the casing, and a prestressed helical spring wound around said rod in order to keep the switching member pressed against the first terminal and to urge the push-button into the released position.

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**3,931,488**

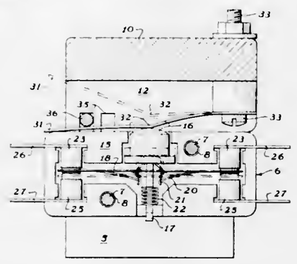
## MULTIPLE SWITCH ACTUATOR

**Edward T. Beyer, Rosamond, Calif., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.**

**Filed June 20, 1950, Ser. No. 169,241**

**Int. Cl.² H01H** *3/20, 17/00;* **F42C** *15/12*

**U.S. Cl. 200—331** **1 Claim**



1. The combination of a plurality of push-button switches and a lock-out device comprising an elongated support, means affixing the switches to the support in adjacent relation, said switches each being in an on condition when the push-button is in the out position, spring means urging each of the push-buttons in an out position, a plurality of parallel levers, one each for each of said switches, each lever being supported at one end on said elongated support and extending transversely over and beyond the respective switch push-button, an elongated groove adjacent the tops of the switches in said elongated support, a transverse groove in said elongated support for each of said levers and intersecting the elongated groove, a lockout wire extending through said elongated groove above the levers in their depressed position, whereby the push-buttons are likewise in depressed position, said lock-out wire adapted to be withdrawn to release the levers and permit each push-button spring means to actuate its corresponding switch.

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**3,931,489**

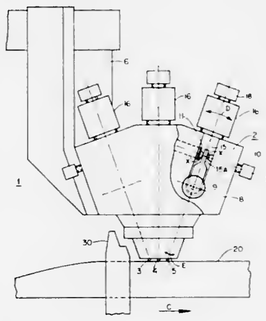
## MULTIARC SEAM WELDING APPARATUS FOR THIN METAL SHEET

**Harold Roderburg, Langenhagen, and Gert Nordmann, Hannover, both of Germany, assignors to Kabel-und Metallwerke Gutehoffnungshuette Aktiengesellschaft, Germany**

**Continuation of Ser. No. 412,812, Nov. 5, 1973, abandoned. This application May 21, 1975, Ser. No. 579,336**

**Int. Cl.² B23K** *9/02*

**U.S. Cl. 219—60 R** **3 Claims**



1. Apparatus for welding a thin strip workpiece in motion and particularly for welding adjacent longitudinal edges of a moving metal strip workpiece being formed at a forming station into a tubular configuration, said apparatus including a welding head and welding head bracket means, said welding head bracket means including pivot means for rotating said welding head and vertical adjustment means for selectively positioning said welding head with respect to said workpiece; the improvement comprising:

first, second and third welding electrodes being similarly configurated and having their welding tips in a spaced linear arrangement along a common axis, said second electrode being disposed intermediate said first and third electrodes and positioned normal to said workpiece, said first and third electrodes being aslantly positioned with respect to said second electrode and inclined toward said second electrode in the direction of said workpiece;

first, second and third electrode holder means engaging said first, second and third electrodes, respectively for individually displacing each of said electrodes vertically toward and away from said workpiece; and

first and second tilt adjustment means coupled to said first and third electrode holder means, respectively, for individually adjusting the inclination of said first and third electrodes to permit the welding tips of each electrode to be closely disposed to an adjacent welding tip along said common axis and cause the welding baths created by said first and third electrodes during a welding operation to

overlap the welding bath created by said second electrode;

said welding head having an exterior portion thereof proximate said first electrode configured to closely follow the inclination of said first electrode to enable said welding head to be closely positioned to said forming station and thereby place the welding bath generated by said third electrode at a position wherein said longitudinal edges of the workpiece are sufficiently constrained by said forming station.

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**3,931,490**

## ELECTRON BEAM VAPORIZATION APPARATUS

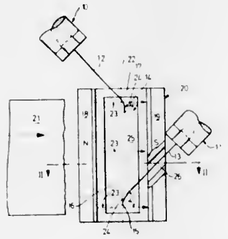
**Wolfgang Grothe, Lehningen, and Klaus Brill, Korntal, both of Germany, assignors to Robert Bosch G.m.b.H., Gerlingen-Schillerhohe, Germany**

**Filed Aug. 28, 1974, Ser. No. 501,142**

**Claims priority, application Germany, Sept. 17, 1973, 2346799**

**Int. Cl.² B23K** *15/00*

**U.S. Cl. 219—121 EB** **13 Claims**



1. Electron beam vaporization apparatus to vaporize the vaporization substance (16) and apply such substance, in a vacuum, on a work surface (21) particularly wide tapes, webs, or the like, said apparatus having

an elongated evaporation substance holding vessel, or trough or crucible (17);

a magnet system (18, 19, 19*a*, 19*b*; 29) located alongside both sides of the elongated vessel (17) and generating a magnetic field (23) transverse to the major dimension of the vessel, and

the improvement wherein

at least one electron beam (12, 13, 40, 41) is provided, directed towards the substance (16) in the vessel (17) said beam being directed through said field to interact therewith, the direction of the beam upon interaction with the field being at an angle ($\alpha$) greater than zero and less than 90° with respect to the direction of the magnetic field (23), the strength of the magnetic field and the charge of the electron beem with respect to said angle having such relative values that the electron beam is deflected by interaction with the magnetic field to assume a spiral path which penetrates the surface (25) of the evaporation substance (16).

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**3,931,491**

## APPARATUS FOR CUTTING A STACK OF SHEET MATERIAL WITH A THERMAL CUTTING BEAM WHILE PREVENTING FUSING TOGETHER OF ADJACENT SHEETS

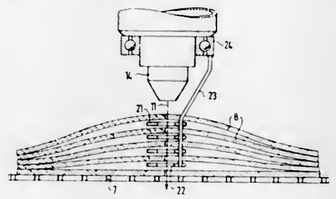
**Günter Stumpf, 7421 Mehrstetten (Kreis Munsingen), Germany**

**Filed May 20, 1974, Ser. No. 471,772**

**Claims priority, application Germany, May 22, 1973, 2326049**

**Int. Cl.² B23K** *15/00*

**U.S. Cl. 219—121 L** **9 Claims**



1. A device for cutting a stack of layers of sheet material comprising projecting means for projecting a thermal cutting beam towards said layers of sheet material and movable relative to said layers of sheet material thereby to cut said layers of sheet material along a line of cut, and spacing means for spacing said layers of sheet material apart in the vicinity of said thermal cutting beam so as substantially to prevent fusing together of adjacent layers of sheet material, said spacing means comprising spaced members interspersable with said layers of sheet material, said spaced members having respective pre-formed apertures extending therethrough which are aligned with one another so as to permit passage of said beam therethrough and supporting means securing said spaced members relative to said projecting means at least in one direction of movement of said projecting means, said apertures being positioned relative to said supporting means such that said beam is aligned with said apertures.

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**3,931,492**

## THERMAL PRINT HEAD

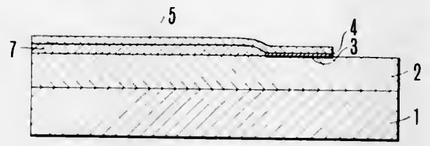
**Rikuo Takano, Musashino; Mitsushi Matsunaga, Tokorozawa; Akira Yoshida, Tokyo; Kiyoshi Nawata, Kawasaki, and Shigehisa Nakaya, Kodaira, all of Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan**

**Filed June 7, 1973, Ser. No. 367,705**

**Claims priority, application Japan, June 19, 1972, 47-60488; Jan. 12, 1973, 48-5992**

**Int. Cl.² H05B** *3/12*

**U.S. Cl. 219—216** **16 Claims**



1. A thermal print head circuit provided with a plurality of heat sources capable of converting electrical energy into heat energy for printing on a thermosensitive medium with the heat energy converted comprising:

a multilayer device including a substrate member, a first member formed over said substrate member, and a plurality of second members arranged on said first member forming a potential barrier at the junctions between said first member and said second members thereon; and



potential applying means for applying an inverse voltage across said potential barrier for generating heat at said junction as the sole source of said heat energy for printing.

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**3,931,493**

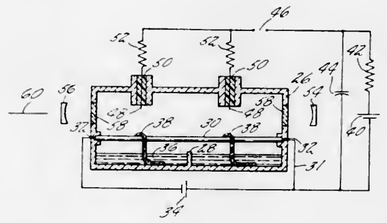
## APPARATUS AND METHOD FOR THE PRODUCTION OF METAL VAPOR

**Carl M. Ferrar, Rockville, Conn., assignor to United Technologies Corporation, Hartford, Conn.**

**Division of Ser. No. 372,116, June 21, 1973, Pat. No. 3,863,178. This application Oct. 15, 1974, Ser. No. 514,541**

**Int. Cl.² F22B** *3/02*

**U.S. Cl. 219—274** **5 Claims**



1. Apparatus for continuously producing vapor from a liquid and cyclically alternating a metal working medium between its vapor and liquid phases comprising:

a closed vessel for the containment of the working medium in either the vapor or liquid phase wherein the vessel includes an outer wall which defines a vapor region in the vessel and provides a surface upon which the vapor condenses into liquid, and a reservoir which defines a liquid region in the vessel and provides a sump into which flows the working medium condensed on the outer wall;

a heater element internal of the vessel to provide a hot surface at a temperature sufficient to boil liquid phase working medium which is brought into contact with the surface;

a power source for supplying energy to the heater element; and

liquid metal transfer means for moving the working medium in the liquid phase from the reservoir region to the surface of the heater element.

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**3,931,494**

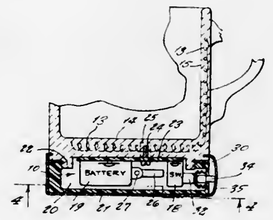
## RECHARGEABLE BATTERY HEATING UNIT

**Barbara Fisher, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007**

**Filed Apr. 1, 1975, Ser. No. 564,094**

**Int. Cl.² F27D** *11/02*

**U.S. Cl. 219—441** **2 Claims**




1. In a vessel incorporating a rechargeable battery heating unit; the combination of a vessel formed of dielectric material and an electric heating system integral therewith and comprising an electric circuit consisting of a heating coil, thermostat, on-off switch and rechargeable battery, said heating coil being molded in a bottom wall and in a side wall of said vessel, said thermostat, on-off switch and battery being contained within a compartment formed below said bottom wall by a removable bottom cap screwed thereon and sealed water tight by a rubber gasket, said battery being integral with plug means consisting of a pair of plug prongs, said prongs being pivotable about transverse pins, thereby allowing said prongs to be connected to a female receptacle of an extension electric cord for recharging said battery, said cap being made of semi-flexible plastic and includes a resilient, accordian boot integrally formed therethrough, an inner side of an end wall of said boot bearing against a push button of said on-off switch, and an outside of said boot end wall having an external button bearing thereagainst.

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**3,931,495**

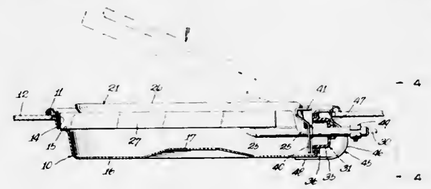
## ELECTRIC HEATING UNITS

**Walter J. Dzaack, Glenshaw; Donald M. Cunningham, Pittsburgh, and Frank T. Walton, Oakmont, all of Pa., assignors to Emerson Electric Co., St. Louis, Mo.**

**Filed Dec. 11, 1974, Ser. No. 531,665**

**Int. Cl.² H05B** *3/68*

**U.S. Cl. 219—463** **9 Claims**



1. An electric heating unit for a stove panel and the like, comprising:

a pan adapted to be supported on the stove panel, said pan having an opening in its side wall,

a sheathed electric heating element having a flat active heating portion supported crosswise of the top of said pan, said element having at least two terminal portions extending downwardly from said active heating portion and laterally thereof and extending through said pan opening for connection to a source of electrical energy, and an elastomeric closure connected to said pan around said pan opening and around the sheath of each terminal portion, said closure closing and sealing said pan opening, said terminal portions extending through said closure in sealed relation and the latter cooperating with said terminal portions to provide the sole hinge about which said heating element may be pivoted to swing said active heating portion upwardly from its supported position on the top of said pan, said closure providing the sole support for the heating element in its upward position.

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**3,931,496**

## ELECTRICAL HEATING PLATE WITH TERMINAL MEANS FOR HIGH TEMPERATURE FILM HEATER

**Bohdan Hurko, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.**

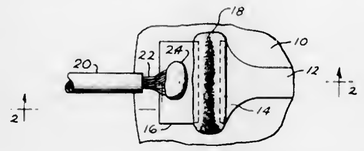
**Filed Nov. 21, 1974, Ser. No. 525,846**

**Int. Cl.² H05B** *3/16*

**U.S. Cl. 219—543** **8 Claims**

1. An electrical heating plate comprising a high temperature electrical resistance heating film bonded to a dielectric substrate, said film comprising a narrow continuous strip of metallic film of noble metals, the film having terminal means in the form of a widened end portion and a widened film elec-

trode of dissimilar noble metal that is adapted to be bonded to the dielectric substrate, the heating film end portion being widely separated from said electrode, and a thin metal oxide film diffusion barrier overlapping both the heating film end portion and the film electrode and bonded to the dielectric substrate so as to bridge the gap between the heating film and




the electrode and retard the migration and mass flow between the electrode and the heating film during high temperature operations, said widened film end portion and said widened film electrode reducing the electrical resistance per unit area of the terminal means and thereby reducing its heating action and operating temperature.

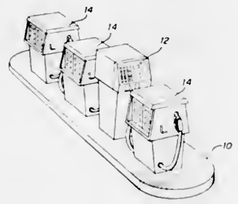
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**3,931,497**

## AUTOMATED FUEL DISPENSER

**Fred J. Gentile, Dallas, and Martin D. Cothran, Euless, both of Tex., assignors to Docutel Corporation, Dallas, Tex.**

**Filed Oct. 19, 1973, Ser. No. 408,092**
**Int. Cl.² G06K** *5/00, 15/00;* **H04Q** *5/00*
**U.S. Cl. 235—61.7 B** **34 Claims**




**1.** An automatic document controlled dispensing system with remote stations and a communication connection with a regional computer, comprising in combination:

reading means at a remote station for reading verification data from a credit document inserted into a terminal console,

verification means at the remote station coupled to said reading means and receiving therefrom the verification data from the terminal console and verifying the authenticity of an inserted credit document,

means responsive to the verification of a document for setting up an authorization request message for an authenticated document,

means for transmitting the authorization request message to the regional computer and for transmitting a credit authorization message or a refuse credit authorization message from the regional computer to a selected remote station, and

means for dispensing an article selected in response to the credit authorization message.

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**3,931,498**

## CUTOFF SAW

**John F. Bowker, Edmonds, Wash., assignor to The Black Clawson Company, Middletown, Ohio**

**Filed Apr. 19, 1972, Ser. No. 245,297**
**Int. Cl.² G06M** *7/00, 3/02*
**U.S. Cl. 235—92 DN** **2 Claims**

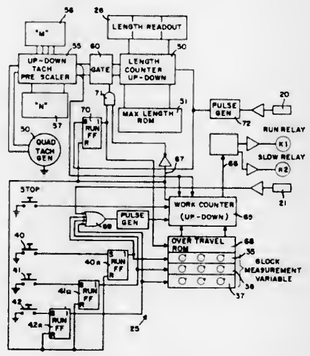
**1.** Apparatus for converting pulses representing movement in one unit of measurement to pulses representing another unit of measurement, including

means for generating pulses representing both distance and direction of movement,

clock means for supplying clock pulses at a rate higher than the pulse rate of said pulse generating means,

first and second adjustable counter means,

means responsive to said first counter for supplying a predetermined number of clock pulses to said second counter for each pulse supplied by said pulse generating means, and




gate means responsive to the pulse output of said pulse generating means for directing said predetermined number of pulses to cause said second counter to count either up or down, depending on the direction of movement of said pulse generating means,

said second counter providing one of two outputs, depending upon the direction of movement of said pulse generating means, whenever the number of pulses supplied thereto obtains a predetermined value,

whereby the output from said second counter means is determined by the pulses supplied from said pulse generating means as modified between ratio of the predetermined number preset into the first and second counter means.

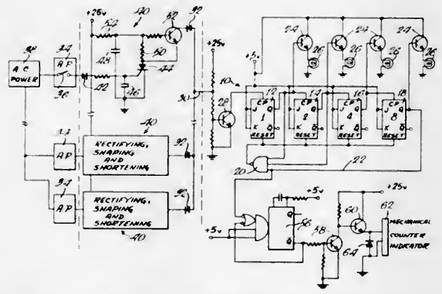
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**3,931,499**

## BOWLING GAME COUNTER

**Claude E. Ellis, Muskegon, Mich., assignor to Brunswick Corporation, Skokie, Ill.**

**Continuation of Ser. No. 56,612, July 20, 1970, Pat. No. 3,710,080. This application May 26, 1972, Ser. No. 257,442**
**Int. Cl.² G06M** *3/08*
**U.S. Cl. 235—92 GA** **3 Claims**




**1.** An apparatus for counting the number of frames bowled upon a plurality of bowling lanes and calculating therefrom



the equivalent number of games played upon all the lanes, comprising;

a plurality of first signal generating means each associated with one of a plurality of bowling lanes for generating a first electrical signal upon the completion of a frame on its associated lane,

counting means comprising a plurality of electrical pulse shaping circuit means each triggered by signals from a selected one of said first signal generating means for generating a second electrical signal in response to said first signal but very substantially shorter in time duration than said first signal,

means responsive to random signals from said plurality of second signal generating means for recording the number of equivalent games represented thereby, including a dividing binary counter having a single input connected to the outputs of said plurality of short signal generating circuits and operative to count frames completed on all lanes and divide the count by 11 to determine the equivalent number of completed games represented thereby.

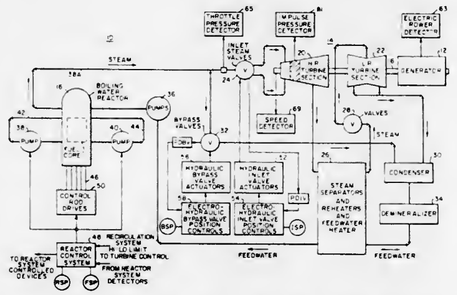
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**3,931,500**

## SYSTEM FOR OPERATING A BOILING WATER REACTOR STEAM TURBINE PLANT WITH A COMBINED DIGITAL COMPUTER AND ANALOG CONTROL

**Gary W. Berkebile; Francesco Lardi, both of Pittsburgh, Pa., and Leaman B. Podolsky, Wilmington, Del., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**Filed Nov. 13, 1973, Ser. No. 415,869**
**Int. Cl. G06f** *15/56;* **F01b** *25/00*
**U.S. Cl. 235—151.21** **10 Claims**




**1.** An electric power plant, comprising a steam turbine, an electric generator operated under the driving power of the turbine, a boiling water nuclear reactor for generating steam to drive the turbine, valve means operatively connecting the reactor steam outlet to the turbine steam inlet to control the admission of steam to the turbine, said reactor having control rods positionable within the reactor to vary the reactor energy level and having a fluid recirculation means to vary the rate of steam generation for an existing reactor energy level, an automatic reactor recirculation control means to vary the rate of steam generation in response to a change in a load demand representation, said system including a means to generate a desired load demand representation, a means to generate a pressure setpoint representation, a pressure control means to position the valve means to control the steam pressure between the reactor outlet and the valve means to correspond to the pressure setpoint representation, a means responsive to a change in the generated load demand representation to change the pressure setpoint representation in anticipation of a change in the rate of steam generation, means to detect the limits of operational capability of the recirculation system, and a means responsive to one of the detected limits to render a change in the generated load demand representation ineffective to operate the pressure control means to anticipate a change in the rate of steam generation beyond the limits of capability of the recirculation system.

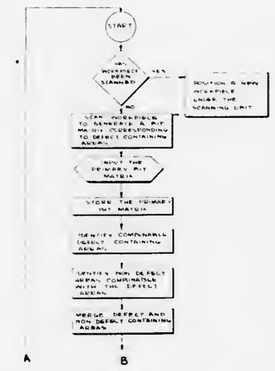
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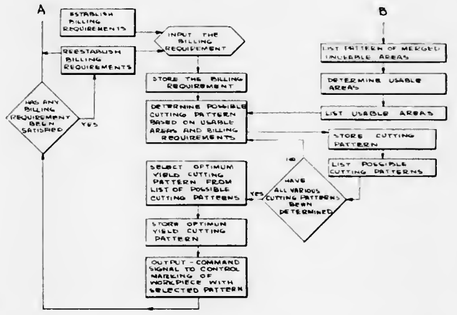
**3,931,501**

## APPARATUS AND METHOD FOR OPTIMIZING THE YIELD OF USABLE PIECES FROM BOARDS AND THE LIKE

**Anthony J. Barr, and Alexander G. Mullin, both of Raleigh, N.C., assignors to National Association of Furniture Manufacturers, Inc., Washington, D.C.**

**Filed Aug. 30, 1973, Ser. No. 392,885**
**Int. Cl.² G06F** *15/46;* **B26D** *5/00*
**U.S. Cl. 235—151.1** **26 Claims**



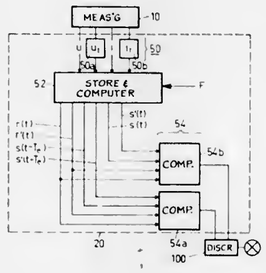




**1.** An apparatus for optimizing the yield of pre-determined usable pieces from a workpiece such as a board of lumber or the like having randomly disposed defects designated on a plane surface thereof comprising means for supporting a workpiece; scanning means movable relative to said workpiece along the length thereof for detecting unusable defect containing areas disposed on said plane surface of said workpiece and correspondingly producing output signals; means movable relative to said workpiece along the length thereof for marking cutting lines thereon; a computer including means responsive to the output signals of said scanning means for producing and storing a primary bit matrix corresponding to a pattern of scanned unusable defect containing areas, means for identifying predetermined combinable unusable defect containing areas and predetermined combinable unusable non-defect containing areas, means for merging predetermined combinable unusable defect containing areas and predetermined combinable unusable non-defect containing areas to produce information corresponding to a pattern consisting of one or a combination of a group consisting of combined and uncombined unusable areas, defining usable areas, means for establishing and storing pre-determined billing requirements, programmed means responsive to said predetermined billing

requirements and said defined usable areas for selecting a cutting pattern for said workpiece providing an optimum yield of usable pieces complying to at least a portion of said predetermined billing requirements and means for transmitting command signals to said marking means corresponding to said selected cutting pattern; and means for inputting said predetermined billing requirements into said computer.

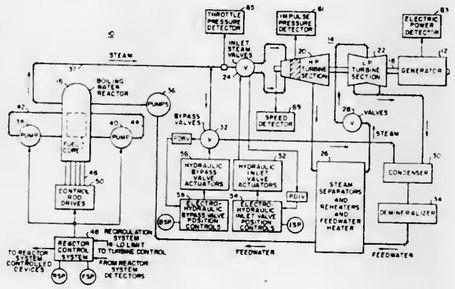
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**3,931,502**
**METHOD AND APPARATUS FOR LOCALIZATION OF FAILURES ON ELECTRICAL LINES**
**Jürg Konlas, Fribourg, Switzerland, assignor to BBC Brown Boveri & Company Ltd., Baden, Switzerland**
**Filed Jan. 21, 1974, Ser. No. 434,790**
**Claims priority, application Switzerland, Jan. 31, 1973, 1386/73**
**Int. Cl. G01r** *31/08*; **G06r** *15/20*
**U.S. Cl. 235—151.31** **26 Claims**




1. Method of localizing a failure on an electrical line in which current and voltage values are determined at a measuring point ($x_o$) for monitoring at least one line segment and calculating therefrom conditions at at least one appraisal point ($x_i$) on said line segment to determine the presence of a failure, comprising the steps of:
a. carrying out a plurality of measured value determinations of the current and voltage concurrently present at the measuring point ($x_o$) for each appraisal point ($x_i$), each such measured value determination including at least one set of two pairs of current and voltage values concurrently observed at the measuring point ($x_o$), each such set having a relative time displacement ($T_i$) between the value pairs equal to twice the wave propagation time between the measuring point ($x_o$) and the appraisal point ($x_i$);
b. storing the first concurrent value pair of each said set of value pairs, or a magnitude pair derived from said value pair, for at least the time interval ($T_i$) corresponding to twice the wave propagation time;
c. utilizing respective stored and just-measured value pairs determined at the measuring point ($x_o$) to calculate the time-average, over a suitable integration time ($t$), of a unimodal function of the voltage at the appraisal point ($x_i$) to provide an evaluation function (B); and
d. comparing said evaluation function (B) with at least one reference value to control the generation of a failure signal.

**3,931,503**
**SYSTEM FOR OPERATING A BOILING WATER REACTOR STEAM TURBINE POWER PLANT UTILIZING DUAL ANALOG THROTTLE PRESSURE CONTROLLERS**
**Gary W. Berkebile; Francesco Lardi, both of Pittsburgh, Pa., and Leaman B. Podolsky, Wilmington, Del., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.**
**Filed Nov. 13, 1973, Ser. No. 415,868**
**Int. Cl. G06f** *15/56*; **G21c** *7/36*
**U.S. Cl. 235—151.21** **9 Claims**




1. A system for operating an electric power plant, comprising a boiling water reactor and steam turbine, a plurality of inlet and bypass valves for controlling steam flow from the reactor to the turbine, an electric generator driven by said turbine, a first and second steam throttle pressure detector, means for generating a throttle pressure setpoint signal, a first and a second analog pressure controller governed by the throttle pressure setpoint signal and an associated respective first and second detector to generate an output signal for controlling the valves, first circuit means including a gating means to render the operation of the valves responsive to the output of only the controller having a first distinctive condition relative to the output of the other controller, selection means to selectively cause the first and second controller output to be in said first distinctive relative condition, second circuit means responsive to a failure of the first pressure detector to cause the output of the second pressure controller to be in said distinctive relative condition, and third circuit means responsive to a failure of the second detector when the first detector is defective to render the first and second controllers ineffective to control the valves.

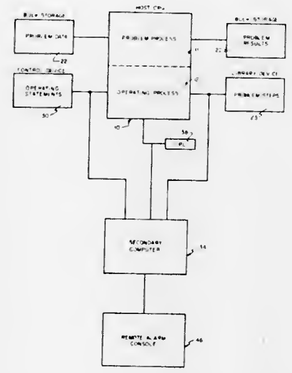
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**3,931,504**
**ELECTRONIC DATA PROCESSING SECURITY SYSTEM AND METHOD**
**Edward A. Jacoby, Santa Clara, Calif., assignor to Basic Computing Arts, Inc., Sunnyvale, Calif.**
**Continuation-in-part of Ser. No. 224,152, Feb. 7, 1972, abandoned. This application Dec. 12, 1973, Ser. No. 424,014**
**Int. Cl.² G06F** *9/00*, *11/00*
**U.S. Cl. 235—153 R** **20 Claims**

1. An electronic system for preventing undetected alteration, destruction, removal or reproduction of data available to a central processing unit (CPU) of a computer implementing at least one problem process and an operating process comprising:
means for monitoring operating statements communicated to the CPU for the operating process and means for monitoring problem steps to be used by the operating process in governing the problem process, both said monitoring means electronically reflecting the nature of the information monitored;
means for comparing the monitored information with predetermined standards comprising representations of operating statements and problem steps; and



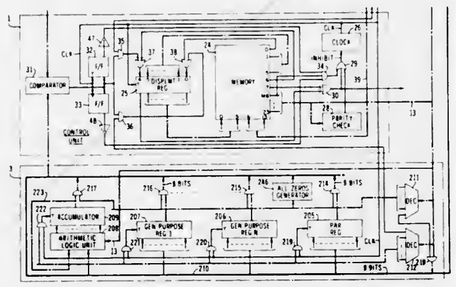
means for initiating a predetermined counteraction when the comparing means electronically indicates that the




monitored information is outside the limits defined by the predetermined standards.

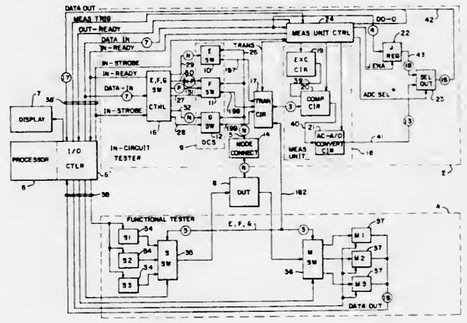
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**3,931,505**
**PROGRAM CONTROLLED DATA PROCESSOR**
**Richard Walter Sevcik, Downers Grove, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**
**Filed Mar. 13, 1974, Ser. No. 450,896**
**Int. Cl.² G06F** *11/08*, *15/16*
**U.S. Cl. 235—153 AE** **8 Claims**




1. A data processing arrangement comprising:
a plurality of program controlled data manipulation units arranged to react in nonidentical manners in the execution of certain classes of program order words;
a memory containing program order words and data;
means for communicatiing program order words and data from said memory to said data manipulation units;
a comparison circuit for comparing data produced by said data manipulation units, including data produced in the execution of said certain classes of program order words and for generating match and mismatch signals indicating the identity and lack of identity of said compared data, respectively,
inhibiting means, connected to said comparison circuit and to said data manipulation units and responsive to said mismatch signals for inhibiting further operation of said data processing arrangement; and
means coupled to said memory and to said inhibiting means and responsive to program order words obtained from said memory for generating control signals for precluding said inhibiting means for inhibiting the operation of said data processing arrangement.

**3,931,506**
**PROGRAMMABLE TESTER**
**Ronald N. Borrelli, Moraga, and Douglas W. Raymond, Berkeley, both of Calif., assignors to Zehntel, Inc., Concord, Calif.**
**Filed Dec. 30, 1974, Ser. No. 537,563**
**Int. Cl.² G06F** *11/00*; **G01R** *31/28*
**U.S. Cl. 235—153 AC** **25 Claims**



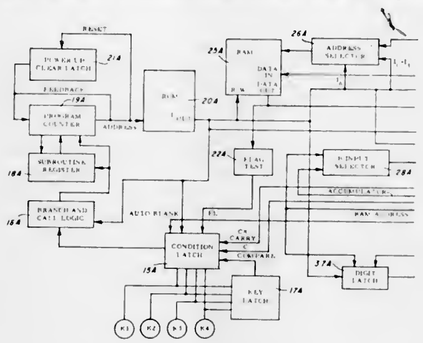

1. A testing apparatus for testing electrical properties of a circuit under test formed by a plurality of components interconnected at nodes comprising,
a plurality of selectable connection switches having switch outputs for connection to selected nodes of the circuit under test,
connection switch controller means for controlling said connection switches to connect said switch outputs to said selected nodes,
controllable measurement unit means connected to receive said switch outputs for measuring electrical properties of the circuit under test with predetermined tests,
measurement unit controller means for controlling said measurement unit means to perform predetermined tests, program controlled processor means for processing a program of instructions, including subroutines of instructions correlated to predetermined tests in said measurement unit, said processor connected to said connection switch controller to cause said switch outputs to be connected to said selected nodes and said processor connected to said measuring unit controller for controlling said measurement unit to perform a selected one of the predetermined tests in accordance with a correlated subroutine.

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**3,931,507**
**POWER-UP CLEAR IN AN ELECTRONIC DIGITAL CALCULATOR**
**George L. Brantingham, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.**
**Filed Nov. 26, 1974, Ser. No. 527,509**
**Int. Cl.² G06F** *15/02*
**U.S. Cl. 235—156** **10 Claims**

1. In a calculator system having data storage means, an arithmetic unit for performing operations on data and control circuitry including addressable instruction storage means for providing commands which define the operation of the system, a power-up clear circuit arrangement comprising:
a. bistable latch means responsive to initial power applied to said system to be set in a first predetermined state;
b. program counter means for generating addresses of said instruction storage means, said program counter means including means responsive to the initial application of power to said system for selectively incrementing said program counter means; and
c. logic gate means coupled to the output of said program

counter means and to said latch means for setting said latch means to a second predetermined state in response



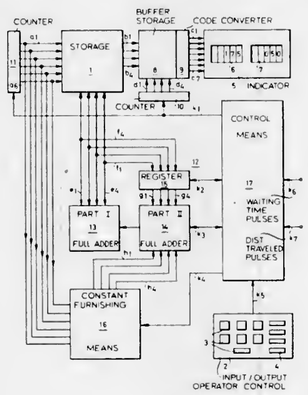
to a predetermined address generated by said program counter means.

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**3,931,508**
**ARRANGEMENT FOR FURNISHING AN INDICATION OF TOTAL FARE INCLUDING SURCHARGES IN AN ELECTRONIC TAXIMETER**

**Heinz Kelch, Buchenberg, Germany, assignor to Kienzle Apparate GmbH, Villigen, Black Forest, Germany**

**Filed Mar. 22, 1974, Ser. No. 454,238**
**Claims priority, application Germany, Mar. 24, 1973, 231,473. The portion of the term of this patent subsequent to Oct. 22, 1991, has been disclaimed.**
**Int. Cl.² G07B *13/04***
**U.S. Cl. 235—168** **5 Claims**



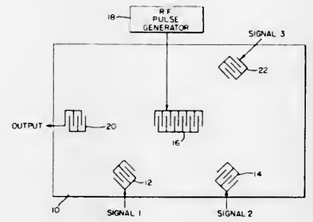
**1.** In an electronic taximeter having input means for furnishing function signals under external activation, control means connected to said input means for furnishing control signals corresponding to the so-furnished function signals, storage means having first storage locations for storing data required for computing the fare based on distance travelled and waiting time, second storage locations for storing the so-computed fare and third storage locations for storing data representing additional charges, computer means operative under control of said control signals for carrying out computations on data supplied thereto, and indicator means having a plurality of indicator positions each connected to a corresponding one of said storage locations in said storage means under control of said control signals, for furnishing a visual indication of the data stored in said corresponding ones of said storage locations, the improvement, comprising, in combination, switch means in said input means for furnishing a total tariff signal upon external activation; and control circuit means in said control means for furnishing control signals in response to said total tariff signal, for supplying data stored in said second and third storage locations to said computer means, controlling said computer means to add said data stored in said third storage locations to said data stored in said second storage locations and furnish a corresponding sum signal, and for transferring said sum signal to said corresponding ones of said storage locations connectable to said indicator locations, whereby visual indication of said sum signal is furnished under control of said control signals.

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**3,931,509**
**APPARATUS FOR OBTAINING THE CONVOLUTION AND/OR CORRELATION OF SIGNALS UTILIZING ACOUSTIC WAVES**

**Oberdan W. Otto, Los Angeles, Calif., assignor to The Board of Trustees of Leland Stanford Jr. University, Stanford, Calif.**

**Filed Mar. 11, 1974, Ser. No. 449,948**
**Int. Cl.² G06G *7/19*; H03H *7/30***
**U.S. Cl. 235—181** **7 Claims**



**1.** Signal processing apparatus which comprises
a piezoelectric medium,
a pair of input transducers disposed adjacent said medium in positions to enable the coupling of two electromagnetic input signals into said medium to generate first and second acoustic wave signals which propagate at different angles and overlap at a predetermined position,
means for applying a switching signal to said medium so as to parametrically interact with the overlapped acoustic wave signals, and
output transducer means on said medium at a position to couple energy from the parametrically interacted signals to provide an integrated output signal.

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**3,931,510**
**EQUALIZATION STORAGE IN RECIRCULATING MEMORIES**

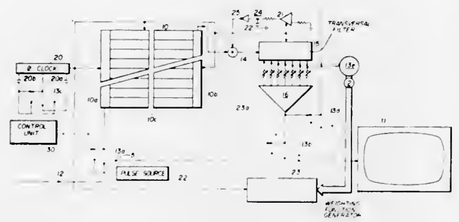
**Allan R. Kmetz, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.**

**Filed July 12, 1974, Ser. No. 487,104**
**Int. Cl.² G11C *11/40*; H03K *5/159***
**U.S. Cl. 235—193** **13 Claims**

**1.** In a data handling system, the combination comprising:
a. a CTD analog shift register having data input means and data output means,
b. a CTD transversal filter section of limited length connected to the output of said analog shift register, said transversal filter section comprising a plurality of cells and tap weight means for weighting outputs from said cells by weighting functions to compensate dispersion distortion due to one pass of an analog signal through said analog shift register,



c. linear amplifier means connected to sum weighted outputs from the cells of said transversal filter section, and



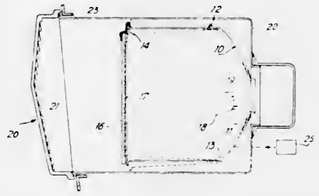
d. means selectively operable to connect the output of said amplifier means to the data input means of said analog shift register.

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**3,931,511**
**VEHICLE HEADLAMPS**

**Olivier Puyplat, Paris, France, assignor to Cibie Projecteurs, Bobigny, France**

**Filed Dec. 6, 1974, Ser. No. 530,328**
**Claims priority, application France, Dec. 12, 1973, 73.44325**
**Int. Cl.² F21V *13/04***
**U.S. Cl. 240—41.3** **3 Claims**



**1.** A motor vehicle headlamp comprising an parabolic mirror, a lamp having a dipped beam filament disposed in front of the focus of the mirror, the mirror having a central part surrounding the lamp and a peripheral part surrounding the central part, a front lens provided with relief patterns to intercept and disperse at least a part of the reflected dipped beam, an auxiliary lens positioned between the lamp and the front lens and provided with relief patterns to intercept and disperse at least a part of the light reflected by the central part of the mirror, the front lens being rigidly connectable to the vehicle and the auxiliary lens being rigidly connected to the mirror so as to be movable therewith.

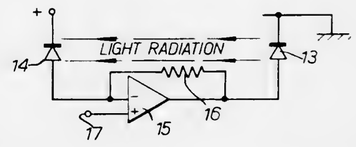
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**3,931,512**
**LINE DATA AND TELEVISION TRANSMISSION**

**Alan Hugh Kent, Wokingham; Geoffrey Frank Hennell, Iver Heath; George Hedley Storm Rokos, Hitchin, and Peter Howard Fell, Maidenhead, all of England, assignors to Plessey Handel und Investments A.G., Zug, Switzerland**

**Filed May 30, 1974, Ser. No. 474,765**
**Claims priority, application United Kingdom, June 1, 1973, 26263/73**
**Int. Cl.² H04B *9/00***
**U.S. Cl. 250—199** **3 Claims**

**1.** A data transmission system comprising, in combination, a light emitting diode for producing light signals in response to electrical signals supplied thereto, an optical fiber transmission line having one end disposed adjacent said diode to form a junction for receiving and transmitting said light signals, a light detector of annular configuration surrounding said transmission line disposed adjacent said junction for collecting the overspill light emanating from said diode adjacent said junction and for converting said collected light to electrical signals



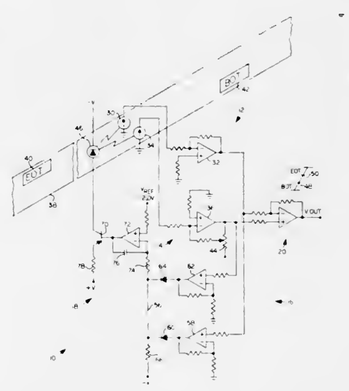

and negative feedback circuit means including an amplifier connected to the output of said light detector for applying said collected light electrical signals to said diode in a predetermined phase relationship therewith to control and linearize the operation of said diode.

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**3,931,513**
**SENSING CIRCUIT FOR TAPE POSITION MARKERS**

**Lloyd Michael Germain, Woodland Hills, Calif., assignor to Ampex Corporation, Redwood City, Calif.**

**Filed Sept. 23, 1974, Ser. No. 508,438**
**Int. Cl.² G01J *1/32***
**U.S. Cl. 250—205** **15 Claims**

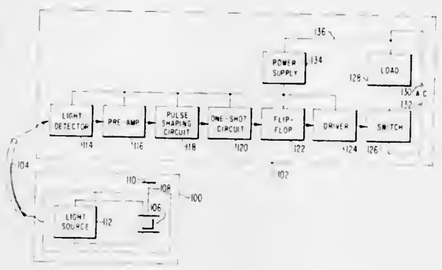


**1.** A tape position marker sensor for sensing reflective markers at different positions across a magnetic tape path for a magnetic tape transport, the sensor comprising:
a light source disposed to illuminate the tape path with an illumination intensity which is dependent upon an illumination command signal;
a pair of photo detectors disposed to detect the intensities of illumination from the light source which are reflected from different positions across the width of the tape path and generate light intensity signals indicative thereof; and
control circuit means for generating an illumination command signal in response to the light intensity signals to command a light source illumination of proper intensity to maintain the light intensity signal from the photo detector receiving illumination of least intensity at a predetermined level.

## 3,931,514
## OPTICAL SWITCHING SYSTEM

**David Ross Patterson, Trenton, N.J., assignor to RCA Corporation, New York, N.Y.**

**Filed Dec. 20, 1974, Ser. No. 534,880**
**Int. Cl.² H01J 39/12**
**U.S. Cl. 250—206** **15 Claims**




7. A switching system for controlling the power provided to a load from a source of power, said system comprising:

a transmitter comprising:

a piezoelectric device;

a light source connected across said piezoelectric device; and

means for imparting a mechanical strain to said piezoelectric device;

at least one fiber optic light guide, one end of said fiber optic light guide being positioned with respect to said transmitter for receiving the light emitted from said light source at said one end; and

a receiver comprising:

a light detection means positioned in relation to the other end of said at least one fiber optic light guide to receive and detect the occurrence of light emitted from said light source and for providing a first electrical signal in response to the detection of said occurrence of light;

signal conditioning means, responsive to said first electrical signal for providing a second electrical signal having a desired amplitude level;

a flip-flop circuit having an input and an output terminal, said flip-flop circuit exhibiting a first stable voltage level at said output terminal thereof in response to given occurrences of said second electrical signal applied to the input terminal thereof and exhibiting a second stable voltage level in response to other occurrences of said second electrical signal applied to the input terminal thereof; and a switching means connected in circuit with said load and said source of power and responsive to said first stable voltage level for enabling the flow of power from said source to said load and responsive to said second stable voltage level for preventing the flow of power from said source to said load.

## 3,931,515
## RADIANT ENERGY DETECTION APPARATUS

**William J. Parkin, Wayland, Mass., assignor to Sanders Associates, Inc., Nashua, N.H.**

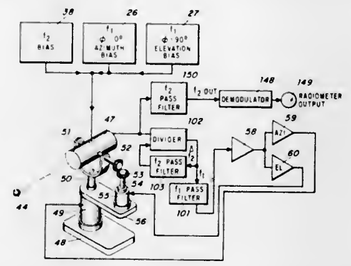
**Continuation-in-part of Ser. No. 272,181, April 5, 1963. This application Sept. 24, 1964, Ser. No. 399,111**
**Int. Cl. H01J 39/12; G01J 1/20**
**U.S. Cl. 250—216** **6 Claims**

1. Radiant energy detection apparatus, comprising:

radiation responsive, variable impedance detector means having a detector element adapted to vary in impedance in response to said radiation for producing a composite signal representative of a plurality of parameters of said radiant energy in accordance with the variation of a detector element impedance with respect to another detector element impedance, said element having four input ohmic terminals arranged in a rhombic pattern and a centrally disposed output terminal;

primary biasing means coupled to said detector means for coupling a pair of quadrature phased, alternating current primary bias signals through said element through said input terminals;

load impedance means coupled to said detector means for developing a reference signal representative of a selected one of said plurality of parameters in accordance with the variation of said detector element impedance with respect to said load impedance;

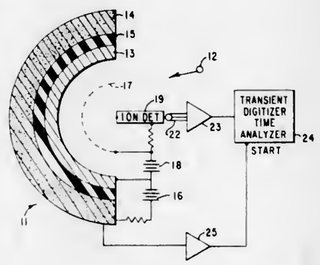



secondary biasing means coupled to said detector means for coupling a secondary bias signal through said load impedance and said element through all of said terminals; and computer means coupled to said detector and load means for producing, in response to said composite and reference signals, an output signal representative of the quotient between said composite and reference signals, whereby variations in said output signal occur independently of variations in said selected one of said plurality of parameters.

## 3,931,516
## MOVING PARTICLE COMPOSITION ANALYZER

**James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Siegfried O. Auer, Lanham, Md.**

**Filed Aug. 30, 1974, Ser. No. 502,124**
**Int. Cl.² H01J 39/34**
**U.S. Cl. 250—281** **13 Claims**



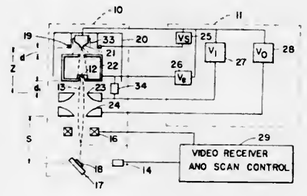

1. Apparatus for enabling an analysis to be performed of the composition of microscopic particles moving relative to the apparatus comprising a capacitor having: a front electrode upon which the particles impact, a back electrode, and a solid dielectric sandwiched between the front and back electrodes, said front electrode and the dielectric together having a thickness such that an impinging particle can penetrate them; means for biasing said front electrode negatively relative to said back electrode, whereby an impinging particle results in positive ions of the impacting particle being ejected from the front electrode, means for providing an electric field in front of the front electrode to draw the ejected positive ions derived from the front electrode away from the front electrode, and a positive ion detector located to be responsive to the ions drawn from the front electrode.



## 3,931,517
## FIELD EMISSION ELECTRON GUN

**Vincent J. Coates, Los Altos, and Leonard M. Welter, Saratoga, both of Calif., assignors to American Optical Corporation, Southbridge, Mass.**

**Division of Ser. No. 225,970, Feb. 14, 1972, abandoned, and a continuation-in-part of Ser. No. 46,425, June 15, 1970, Pat. No. 3,678,333. This application Jan. 2, 1975, Ser. No. 537,880**
**Int. Cl.² H01J 37/285**
**U.S. Cl. 250—310** **7 Claims**

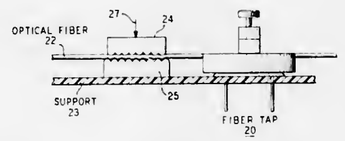



1. In a charged particle microprobe system including a housing defining a vacuum chamber, a field emission tip disposed in said chamber for generating said charged particles, electrode means for establishing focusing and accelerating fields for forming a beam of said charged particles and a shield electrode disposed such that said field emission tip is within the region of said shield and voltage means connected to said electrode means, said shield electrode and said field emission tip for supplying electrical potential to said electrode means to establish said focusing and accelerating field, the improvement comprising a member disposed generally radially about said field emission tip and substantially coextensive therewith intermediate said tip and said shield, means connecting said member to said voltage means to establish a field for attracting stray particles in the region contiguous said field emission tip.

## 3,931,518
## OPTICAL FIBER POWER TAPS EMPLOYING MODE COUPLING MEANS

**Stewart Edward Miller, Locust, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**

**Filed Nov. 11, 1974, Ser. No. 522,519**
**Int. Cl.² G02B 5/14**
**U.S. Cl. 250—227** **4 Claims**




3. An arrangement for tapping optical power from an intermediate portion of an optical fiber waveguide without requiring that the fiber be terminated or broken, said fiber comprising an inner core formed of a low optical loss material in which the optical power is essentially confined, said inner core being surrounded by an outer cladding having an index of refraction less than that of said inner core, said arrangement being characterized by:

means disposed at a first intermediate longitudinal position along said fiber for coupling a portion of the optical power in said fiber from said inner core to said outer cladding;

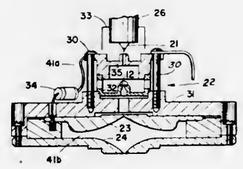
a body of dielectric material disposed in contact with a second intermediate longitudinal position along said fiber spaced along the wave path from said first longitudinal position for coupling optical power out of said outer cladding of said fiber, said body having an index of refraction which is approximately equal to or greater than the index of refraction of said outer cladding of said fiber; and

a photodetector responsive to the wavelength of the optical signal to be propagated through said fiber and disposed adjacent to said dielectric body, said photodetector being oriented to intercept the optical power coupled out of said outer cladding of said fiber by said dielectric body.

## 3,931,519
## FIELD EMISSION ELECTRON GUN

**Vincent J. Coates, Los Altos, and Leonard M. Welter, Saratoga, both of Calif., assignors to American Optical Corporation, Southbridge, Mass.**

**Division of Ser. No. 225,970, Feb. 14, 1972, abandoned, which is a continuation-in-part of Ser. No. 46,425, June 15, 1970, Pat. No. 3,678,333. This application Jan. 2, 1975, Ser. No. 537,876**
**Int. Cl.² H01J 37/285**
**U.S. Cl. 250—310** **3 Claims**

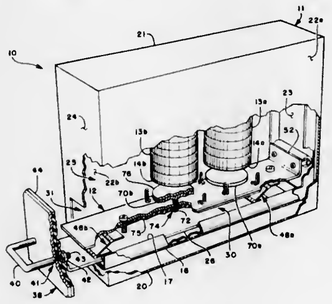


1. In a charged particle microprobe system including a field emission gun having a housing defining a vacuum chamber, a field emission tip disposed in said chamber for generating said charged particles, electrode means for establishing focusing and accelerating fields for forming a beam of said charged particles, voltage means connected to said electrode means and said field emission tip for supplying electrical potential to said electrode means to establish said focusing and accelerating fields, an extraction electrode in juxtaposition to said tip and voltage means connected to said tip and extraction electrode for developing an electric field for generating said charged particles, the improvement comprising an electrical insulator member disposed intermediate said extraction electrode and said focusing and accelerating electrode means, said insulator member having a lateral extent at least as great as the lateral extent of at least one of said extraction electrode and said focusing and accelerating electrode means and having a centrally located aperture aligned with said beam of charged particles whereby said vacuum chamber is divided by said insulator substantially forming an extraction electrode chamber and a focusing and accelerating electrode chamber.

### 3,931,520
### SAMPLE POSITIONING APPARATUS

**Thomas H. Bell, Boulder; Charles H. Johnson, Jr., Arvada; Robert L. Lane, Golden; Bradley E. Martin, Arvada, and William H. Tyree, Boulder, all of Colo., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.**

**Filed Nov. 8, 1974, Ser. No. 522,176**
**Int. Cl.² G01T *1/00***
**U.S. Cl. 250—328** **8 Claims**

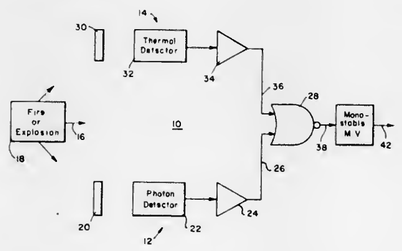


1. Apparatus for use in alpha-particle counting by moving samples toward and away from the ends of photomultiplier tubes comprising a reciprocally movable base member, a platform adjacent said base member, sample holder means carried by said platform for retaining and positioning samples to be counted; a rotatable link member interconnecting said base member and said platform for reciprocal movement of said platform with said base member and for translating said platform and sample holder means generally perpendicularly with respect to said base member concomitant with reciprocal movement of said base member to present samples into close proximity to said ends of the photomultiplier tubes and remove them therefrom, guide means for positioning and guiding said base member during reciprocal movement thereof, and a stop and guide member in the path of movement of a portion of said platform for terminating the reciprocal movement of said platform and effecting substantially straight movement of said platform and sample holders toward and away from said photomultiplier tube ends.

### 3,931,521
### DUAL SPECTRUM INFRARED FIRE DETECTOR

**Robert J. Cinzori, Santa Barbara, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.**

**Filed June 29, 1973, Ser. No. 375,265**
**Int. Cl.² G01J *1/00***
**U.S. Cl. 250—339** **19 Claims**




1. An electrical detection system responsive to a fire or explosion for generating an output signal, including in combination:

a. long wavelength channel means responsive to radiant energy in a predetermined spectral band above about six microns of electromagnetic radiation and received from a fire or explosion for generating a first logic signal,

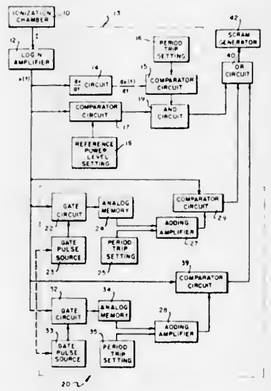
b. short wavelength channel means responsive to radiant energy in a predetermined spectral band less than about two microns of electro-magnetic radiation and received from said fire or explosion for generating a second logic signal, and

c. output gate means coupled to receive both said first and second logic signals and responsive thereto to generate said output control signal which may be further processed to control the suppression of said fire or explosion.

### 3,931,522
### PERIOD METER FOR REACTORS

**Gordon K. Rusch, Downers Grove, Ill., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.**

**Filed Sept. 27, 1974, Ser. No. 509,971**
**Int. Cl.² G01T *3/00***
**U.S. Cl. 250—390** **5 Claims**




1. In a device for developing a reactor scram signal in response to a reactor period T less than a specific value, the device including means for measuring the neutron flux density of the reactor and developing a first output signal which is a function of the neutron flux density, a differentiator coupled to the means for measuring for diffentiating the first output signal to develop a second output signal and a first comparator coupled to the differentiator and being responsive to the second output signal greater than a particular value to develop a first alarm signal, an apparatus for reducing noise induced scrams comprising:

a second comparator coupled to the first comparator and the means for measuring and being responsive to first output signal greater than a predetermined value and coincidentally the first alarm signal to develop a second alarm signal, a first gate circuit coupled to the means for measuring, a first signal storage circuit coupled to said first gate circuit, a timing circuit for developing periodically a first timing signal coupled to said first gate circuit, said first gate circuit being responsive to said first timing signal to couple the first output signal to said first signal storage circuit, said first signal storage circuit acting to continuously develop a third output signal equal to the first output signal at the instant said first output signal is coupled to said first storage circuit plus a particular quantity with said third output signal being updated each time said first output signal is coupled to said first signal storage circuit in response to said first timing signal, a third comparator coupled to the means for measuring and said first signal storage circuit and being responsive to the first output signal greater than said third output signal to develop a third alarm signal, and an OR gate coupled to said second and third comparators and being responsive to an alarm signal developed thereby to develop a reactor scram signal.



### 3,931,523
### ACTIVATION NEUTRON DETECTOR

**Tristan Silovanovich Ambardanishvili, territori-a ippodroma, korpus 4, kv. 38; Mikhail Alexandrovich Kolomiitsev, ulitsa Ozhio, 7, both of Tbilisi; Tamara Yakovlevna Zakharina, Mtskhetsky raion, poselok ZAGES, ulitsa Lenina 24, kv. 22, Grunzinskaya SSR; Vakhtang Justinovich Dundua, territoria ippodroma, korpus 4, kv. 25, and Ninel Vladimirovna Chikhladze, Digomsky massiv, kvartal 6, korpus 10, kv. 28, both of Tbilisi, all of U.S.S.R.**

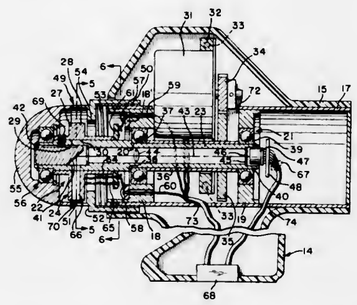
**Filed Nov. 8, 1973, Ser. No. 414,105**
**Int. Cl. G01t *3/00***
**U.S. Cl. 250—390** **17 Claims**

1. An activation neutron detector in the form of a molded and cured composition, comprising a polycondensation resin inert to neutrons, and a material capable of being activated by neutrons to form a radioactive isotope, and distributed over the entire volume of said resin, said material consisting of at least two chemical elements, each forming radioactive isotopes that have different radiation energies when spontaneously disintegrating under the effect of neutrons as a result of activation, said elements being in the form of chemically free substances, of substances having said elements in a bound form, or a combination thereof.

### 3,931,524
### SCANNING APPARATUS

**Carlos B. Herrin, Bellbrook, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio**

**Continuation-in-part of Ser. No. 425,395, Dec. 21, 1973, abandoned. This application Oct. 4, 1974, Ser. No. 512,824**
**Int. Cl.² G06K *7/10***
**U.S. Cl. 250—566** **20 Claims**

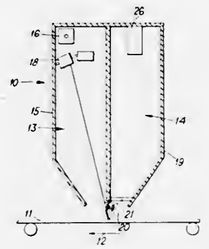


1. Apparatus for scanning a concave coded record, comprising: a rotor having a rotational axis, means carried by the rotor for illuminating the coded record, a light receptor in alignment with the rotational axis, means carried by the rotor for receiving light reflected from the concave record inwardly toward the rotational axis and for bending the reflected light toward the light receptor, and means for driving the rotor to scan the concave record.

### 3,931,525
### DETECTION OF BLEMISHES IN SURFACES

**Graham Morley Clarke, Edinburgh, Scotland, assignor to Ferranti, Limited, Hollinwood, England**

**Filed Sept. 7, 1973, Ser. No. 394,980**
**Claims priority, application United Kingdom, Sept. 21, 1972, 43838/72**
**Int. Cl.² G01N *21/32***
**U.S. Cl. 250—572** **10 Claims**



1. A detector of blemishes in a surface, the detector and surface being movable relative to one another, the detector including a transmitting station comprising a source of a beam of electromagnetic radiation, focussing means operable to focus the beam to a spot at the surface, the spot having an area of the same order of magnitude as the smallest blemish to be detected, and scanning means operable to cause the beam to scan the surface transversely to the direction of said relative motion, and a receiving station comprising radiation detection means inside a light integrating enclosure having an aperture extending across the width of the scan to collect light substantially only specularly reflected from said surface, and diffusing means mounted in, and coextensive with, said aperture, and through which said reflected light passes, the radiation detection means being responsive to a reduction in the level of diffused light in the enclosure to provide an indication of a blemish at the corresponding position of the beam.

### 3,931,526
### PROCESS AND A DEVICE FOR MEASURING TRANSMISSION FACTORS

**Aime Marie Berthon, Paris, France, assignor to Aerazur Constructions Aeronautiques, Issy-les-Moulineaux, France**

**Filed Apr. 9, 1974, Ser. No. 459,435**
**Claims priority, application France, Apr. 13, 1973, 73.13574; Mar. 12, 1974, 74.08381**
**Int. Cl.² G01H *21/26***
**U.S. Cl. 250—575** **8 Claims**



1. A device for measuring the atmospheric transmission factor between two points defining a fixed measurement path of predetermined distance and for determining the intensity of the ambient light, comprising:

an emitter of light impulses located at one end of said measurement path,

a main photoreceiving cell located at the other end of said measurement path for receiving light from said emitter through said measurement path and producing a first electrical signal,

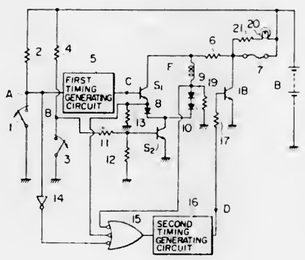
an auxiliary photoreceiving cell for receiving light from said emitter and ambient light and producing a second electrical signal, said main and auxiliary photoreceiving cells having linear and stable dynamic gain characteristics,
a first mirror having a first focus,
a second mirror having a second focus, said emitter being located at the focus of said first mirror and directing a substantially parallel light beam towards said second mirror, said main photoreceiving cell being located at the focus of said mirror, said auxiliary photoreceiving cell being located substantially at the apex of said first mirror whereby said auxiliary photoreceiving cell receives ambient light through a large aperture,
filtering neams connected to said auxiliary photoreceiving cell for passing a d.c. signal component in said second electrical signal which is representative of the ambient light and,
means connected to said main and auxiliary photoreceiving cells for dividing a pulsed signal component in said first electrical signal by a pulsed signal component in said second electrical signal to produce an output signal which is representative of said transmission factor.

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## 3,931,527
## IGNITION CIRCUIT FOR VEHICLE OCCUPANT PROTECTING SYSTEM

**Kazuo Oishi, Oobu; Hideaki Sasaya; Akihiro Kobayashi, both of Aichi, and Takashi Yamada, Anjo, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan**

**Filed July 5, 1974, Ser. No. 485,999**
**Claims priority, application Japan, July 6, 1973, 48-76771**
**Int. Cl.² H01H *35/14***
**U.S. Cl. 307—10 R** **10 Claims**

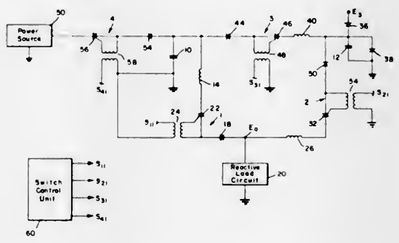



1. An ignition circuit for a vehicle occupant protecting system comprising:
a heating element for actuating by the action of heat generation thereof an occupant protecting system installed in a vehicle;
first normally closed switch means connected in parallel with said heating element and adapted to open in response to a collision of a vehicle;
second normally open switch means connected in series with a parallel circuit of said heating element and said first switch means, means for closing said second switch means in response to a collision of said vehicle, and
a power source for supplying electric power to said heating element through said second normally open switch means upon the closing thereof when a collision occurs.

## 3,931,528
## PULSE GENERATOR FOR REACTIVE LOADS

**Robert P. Farnsworth, Los Angeles, and Robert D. Washburn, Malibu, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.**

**Filed Aug. 23, 1974, Ser. No. 500,214**
**Int. Cl.² H03K *3/00***
**U.S. Cl. 307—108** **19 Claims**



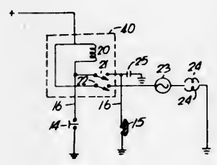

1. A pulse generator adapted for providing electric pulses to a reactive load circuit, said pulse generator comprising:
first and second electric energy storage circuits;
means for applying electric energy to said first energy storage circuit;
first energy transfer means for providing a transfer of electric energy from said first energy storage circuit to said reactive load circuit upon the application of an enabling signal to said first energy transfer means;
second energy transfer means for providing a transfer of electric energy from said reactive load circuit to said second energy storage circuit upon the application of an enabling signal to said second energy transfer means;
third energy transfer means for providing a transfer of electric energy from said second energy storage circuit to said first energy storage circuit upon the application of an enabling signal to said third energy transfer means;
switch control means for applying enabling signals to said first, second, and third energy transfer means during first, second, and third sequential time periods, respectively;
whereby electric energy stored in said first energy storage circuit is sequentially circulated to said reactive load circuit, to said second energy storage circuit and back to said first energy storage circuit, and whereby the duration of the pulse supplied to said reactive load circuit is a function of the interval between said first and second sequential time periods.

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## 3,931,529
## TURN SIGNAL INDICATOR

**Lonnie C. Williamson, Jr., 9103 White Oak Circle, Houston, Tex. 77040**

**Filed June 11, 1974, Ser. No. 478,211**
**Int. Cl.² B60Q *1/00***
**U.S. Cl. 307—119** **2 Claims**



1. A turn signal indicator switch assembly for use on a motor cycle comprising



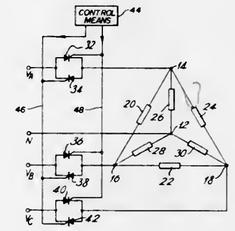
a housing fitted with clamps for fastening to a motorcycle handlebar, adjacent to a hand grip of the handlebar
a momentary contact push button, normally open switch mounted in said housing, with the switch button projecting beyond the housing, and a mercury switch mounted in said housing, in the normally closed position for the installed position of the assembly, such that the normally open push button switch may be connected in series with the coil of a self-latching relay that controls an electrical turn indication signal and the mercury switch may be connected in series with the self-latching circuit of the said relay so that
momentary actuation of the push button switch causes the self-latching relay to close and remain close, thus actuating the turn indicator signal and movement of mercury in the mercury switch, responsive to turning motion of the handlebar, causes the said relay to open and turn off the said indicator signal.

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## 3,931,530
## APPARATUS FOR CONTROLLING THE SUPPLY OF POWER TO A RESISTIVE LOAD

**Rex Mountford Davis, Loughborough, and Brian Robert Downing, Nottingham, both of England, assignors to National Research Development Corporation, London, England**

**Filed July 19, 1974, Ser. No. 490,187**
**Claims priority, application United Kingdom, July 19, 1973, 34487/73**
**Int. Cl.² H01H *9/56***
**U.S. Cl. 307—133** **5 Claims**

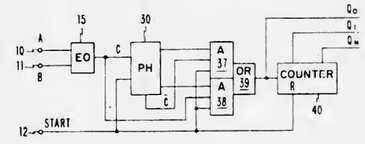



1. Apparatus for controlling the supply of power from an alternating current electrical supply of at least three phases and a neutral to a resistive load comprising:
means for connecting the load as a combined star-delta load having current paths both between (a) each phase connection of the load and two adjacent phase connections of the load and (b) between each phase connection of the load and a common point which is directly connected to said neutral,
a plurality of switching means connected to the supply, one for each phase, for selectively connecting the phase connection of the load for that phase to the corresponding phase of the supply, each said switching means having a conducting and a non-conducting state, and
control means connected to said switching means for changing the various switching means from their non-conducting stages to their conducting states and vice versa in a selected sequence and for changing the sequence selected, said control means including means for changing each switching means from its non-conducting to its conducting state only when voltage across that switching means is substantially zero, each switching means changing from its conducting to its non-conducting state only when current through that switching means is substantially zero.

## 3,931,531
## OVERLAPPED SIGNAL TRANSITION COUNTER

**Glenn P. Check, and Roger F. Dimmick, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.**

**Filed Dec. 17, 1974, Ser. No. 533,736**
**Int. Cl.² H03K *21/06***
**U.S. Cl. 307—220 R** **7 Claims**



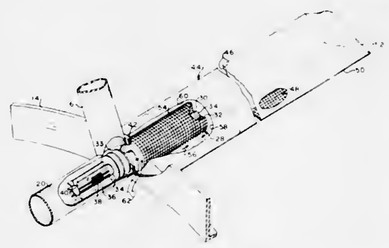

1. A counter circuit for counting signal transitions of overlapped out of phase bi-level signals in response to an asynchronously occurring start signal comprising
means responsive to said overlapped out of phase bi-level signals for generating a single signal having signal transitions for every signal transition, positive and negative, occurring within said overlapped signals,
means responsive to said start signal for storing the level of said single signal at the time said start signal occurs,
binary counter means, and
logic means responsive to said single signal and said stored level to provide counter advance signals to said binary counter means for each signal transition in said single signal.

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## 3,931,532
## THERMOELECTRIC POWER SYSTEM

**Ambrose W. Byrd, Huntsville, Ala., assignor to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.**

**Filed Mar. 19, 1974, Ser. No. 452,769**
**Int. Cl.² G21H *1/10***
**U.S. Cl. 310—4** **7 Claims**



1. A thermoelectric power system comprising:
a heat means having a fluid inlet and fluid outlet for receiving a fluid at said inlet, heating said fluid, and providing it as a heated fluid at said outlet;
at least one thermoelectric generator assembly, each comprising:
a fluid chamber having an inlet coupled to the outlet of said heat means and a fluid outlet, said chamber being heated by fluid from said heat means,
first and second heat pipes, each comprising an elongated closed tube having a wick along the interior surface of said tube and containing a working fluid,
a mounting means for sealably extending one end region of said first heat pipe into said chamber and the opposite end region of said first heat pipe into said second heat pipe,

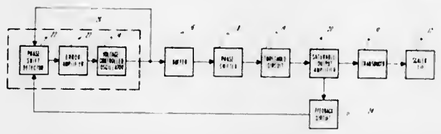
a thermoelectric element having a hot junction and a cold junction, said thermoelectric element being positioned within said second heat pipe and being positioned with its cold junction in engagement with said working fluid of said second pipe, and

radiation means coupled to said second heat pipe for radiating into space heat absorbed by said second heat pipe from said cold junction of said thermoelectric element; and

pumping means interconnecting said heat means and said chamber of each said assembly for pumping heated fluid from the outlet of said heat means through each said chamber and back to said heat means, whereby heat is transferred from said heat means by fluid flow to each said chamber, thence by said first heat pipe to a said hot junction, thence from said cold junction to said second heat pipe, and thereafter disposed of by radiation.

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**3,931,533**
**ULTRASONIC SIGNAL GENERATOR**
**Frank A. Raso, Spencerport, and John J. Saeli, Rochester, both of N.Y., assignors to Sybron Corporation, Rochester, N.Y.**
**Filed May 30, 1974, Ser. No. 474,359**
**Int. Cl.² H01L** *41/10*
**U.S. Cl. 310—8.1** **6 Claims**



1. An electrical ultrasonic signal generator for a hand tool including a transducer responsive to electrical ultrasonic signals to transmit ultrasonic moments to a tool attached thereto comprising:

controllable oscillator circuit means responsive to a control signal applied thereto for controlling the frequency of oscillation;

circuit means for applying the oscillator circuit means signals to said transducer;

feedback circuit means for generating feedback signals at the frequency at which said transducer responds to the oscillator circuit means signals; and

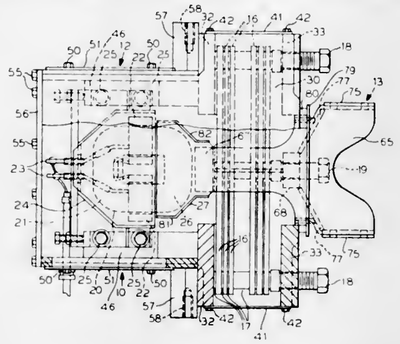
control circuit means for comparing phase of the feedback signals with the said phase oscillator circuit means signals for applying a control signal to said oscillator circuit means that is a function of the phase difference between the feedback and oscillator circuit means signals to maintain the oscillation circuit means signals at a substantially constant preset phase relation with the feedback signals; wherein said circuit means for applying the oscillator circuit means signals to said transducer includes;

amplifier circuit means responsive to the oscillator circuit means signals for alternately switching between saturation and cut off to apply substantially square wave signals to said transducer.

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**3,931,534**
**MAIN FRAME AND CENTER CLAMP FOR A VIBRATING MOTOR**
**William R. Gray, Joplin, Mo.; Henry A. Kahrmann, Jr., Columbus, and Ming K. Shieh, Westerville, both of Ohio, assignors to Dresser Industries, Inc., Dallas, Tex.**
**Filed Apr. 12, 1974, Ser. No. 460,508**
**Int. Cl.² H02K** *33/02*
**U.S. Cl. 310—29** **20 Claims**

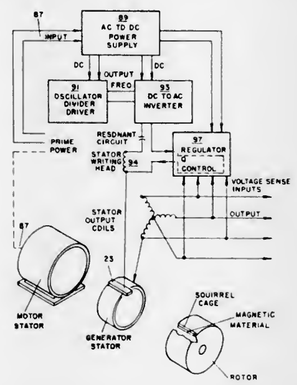
1. A vibrating motor comprising a main frame; a center clamp; a leaf spring between said main frame and said center clamp for vibration of said main frame and said center clamp relatively to each other, said main frame having means to secure each end of said leaf spring to the main frame including, a seat block for each end of said leaf spring, a clamping block spaced opposite said seat block, a spacer block between said seat block and said clamping block, and clamping means in said clamping block to clamp said one end of the leaf spring



against said seat block, wherein said seat block, said clamping block and said spacer block are welded to an element of the main frame and form a rigid assembly for holding said end of the leaf spring in securely clamped position; and means to secure said center clamp to said leaf spring intermediate the ends thereof.

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**3,931,535**
**CONSTANT FREQUENCY MOTOR GENERATOR SET WITH ONLY ONE ROTOR**
**John F. Roesel, Jr., Rte. 2, Box 281M, Bradenton, Fla. 33505**
**Filed Sept. 24, 1973, Ser. No. 400,032**
**Int. Cl.² H02K** *16/00, 47/04, 21/00*
**U.S. Cl. 310—113** **29 Claims**




1. A single rotor, motor-generator set, providing a constant output AC generator frequency notwithstanding rotation at a varying speed by the motor, comprising in combination:

a. a rotor and stator means, said stator means including motor and generator stator elements having motor and generator peripheries defined thereon, said peripheries of said motor and generator stator elements being in close proximity to said rotor which is located for rotation close to the two stator elements and so disposed that magnet lines of force can couple between the rotor and the generator stator element;

b. a first rotor periphery adjacent the periphery of the motor stator element and a second rotor periphery facing the periphery of the generator stator element with driven means on the motor stator element periphery and driven means on the rotor first periphery;

c. a layer of permanent magnet material on said rotor second periphery;

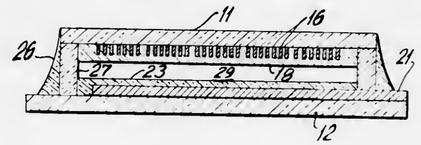
d. at least one magnetizing station along said generator stator element periphery with magnet forming means thereat disposed to form permanent magnets in said permanent magnet material as said rotor periphery turns past said station with frequency excitation means coupled to the magnet forming means said magnet forming means being responsive to the frequency of said frequency excitation means and forming magnets at said frequency;

e. at least one set of power takeoff elements disposed at least partially around the periphery of said generator stator elements angularly separated from said magnetizing station; and,

f. a feedback loop between the power takeoff elements and the magnet forming means for maintaining the output voltage at a desired level by controlling the strength of the permanent magnets formed in said permanent magnet material.

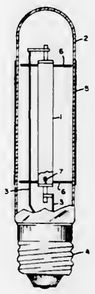


**3,931,537**
**MATRIX ELECTRODE GAS DISCHARGE DISPLAY PANEL HAVING TERMINALS SPACED WIDER THAN ELECTRODES**
**Kazunori Nishida, and Isao Inomata, both of Tokyo, Japan, assignors to Nippon Electric Company Limited, Tokyo, Japan**
**Filed Feb. 4, 1974, Ser. No. 439,252**
**Claims priority, application Japan, Feb. 27, 1973, 48-24809**[U]; Feb. 27, 1973, 48-24810[U]
**Int. Cl.² H01J** *61/067, 61/30*
**U.S. Cl. 313—188** **2 Claims**




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**3,931,536**
**EFFICIENCY ARC DISCHARGE LAMP**
**Timothy Fohl, Carlisle, and James C. Morris, Wakefield, both of Mass., assignors to GTE Sylvania Incorporated, Danvers, Mass.**
**Filed July 15, 1974, Ser. No. 488,633**
**Int. Cl.² H01J** *61/40, 5/16*
**U.S. Cl. 313—113** **5 Claims**



1. A high intensity arc discharge lamp comprising an arc tube containing a light emitting metal and having electrodes at its ends, the arc tube emission including both desired and undesired radiation, and a selective reflector surrounding said arc tube, said reflector efficiently transmitting desired radiation and efficiently reflecting portions of the undesired radiation to which the arc tube wall is transparent and to which the discharge plasma is optically thick, the reflection being sufficient to substantially improve lamp efficiency, said efficiently reflected portions of undesired radiation including radiation at 810 and 1140 nanometers.

2. In a matrix electrode gas discharge display panel for displaying a plurality of patterns arranged in a row, comprising a first plate of an electrically insulating material, a plurality of first electrodes formed on said first plate parallel to said row, a second plate of an electrically insulating material, a plurality of parallel second electrodes formed in groups on said second plate spatially transverse to said first electrodes and with a predetermined pitch, means for hermetically sealing said first and second plates to provide a gas discharge space between said first and second electrodes with an ionizable gas sealed in said space, first terminal areas formed on said first plate along an edge portion thereof and connected to said first electrodes, groups of second terminal areas formed on said second plate along both edge portions thereof and connected to said second electrodes, and means for supplying a voltage between selected ones of said first and second terminal areas to produce gas discharges in said space in accordance with said patterns, at least one of said first and second plates being sufficiently transparent to allow said gas discharges to be viewed therethrough, the improvement wherein the second electrodes of one of said electrode groups are spaced on said second plate from the electrodes of adjacent electrode groups by a distance wider than said pitch and are not interposed between the electrodes of other electrode groups, and said second terminal area groups are connected to the second electrodes of alternate ones of said electrode groups and made wider than said electrode groups, each of said second terminal area groups being spaced apart from other terminal groups, each of said electrode groups being associated with a respective one of said patterns.

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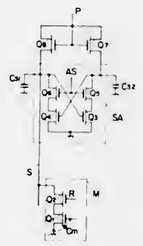
**3,931,538**
**SIGNAL DETECTOR FOR A SEMICONDUCTOR MEMORY DEVICE**
**Kiyoo Itoh, Kodaira; Keisuke Hashizume, Hachiooji, and Katsuhiro Shimohigashi, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Japan**
**Filed Oct. 9, 1973, Ser. No. 404,325**
**Claims priority, application Japan, Oct. 9, 1972, 47-100683**
**Int. Cl.² H03K** *5/20, 3/26*
**U.S. Cl. 307—235 R** **13 Claims**

9. A sensing circuit for a memory arrangement including only one sense line and at least one memory cell connected thereto, said circuit comprising:

a flip-flop formed of at least one pair of inverter circuits, the output of each inverter circuit being connected to the input of the other inverter circuit through a positive feedback loop, only the input of one of said inverter circuits being connected to said sense line, and said in-

verter circuits being positively electrically unbalanced with each other;

means for selectively applying a voltage to the inputs of said inverter circuits at a first predetermined time to charge said sense line;



means for selectively applying a readout signal to said memory cell at a second predetermined time to initiate the discharge of said sense line; and

means for selectively actuating said feedback loop of said flip-flop at a third predetermined time to accelerate said discharge of said sense line.

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**3,931,539**

## SUPERORTHICON-TYPE TELEVISION CAMERA TUBE HAVING TARGET AND FINE-MESH METAL GRID COATED WITH SEMICONDUCTOR MATERIAL OF RELATIVELY LOW INELASTIC ELECTRON REFLECTION FACTOR

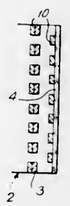
**Pasha Lvovna Sokolova, Udelny prospekt 55, kv. 2, and Boris Vasilievich Krusser, Antonovsky pereulok, 3, kv. 24, both of Leningrad, U.S.S.R.**

**Filed June 13, 1973, Ser. No. 369,762**

**Claims priority, application U.S.S.R., Apr. 12, 1968, 1232167**

**Int. Cl.² H01J** *31/36, 31/08*

**U.S. Cl. 313—377** **8 Claims**



1. A superorthicon-type television camera tube comprising a photoelectric cathode, a target spaced opposite the cathode, said target including a film, said film being subject to secondary emission upon exposure to a photoelectric image and storing a resulting charge, a fine-mesh metal grid between said film and said cathode, a coating on both said grid and film of the target and of a semiconductor material having an inelastic electron reflection factor lower than that of the material of said film, semiconductor material being selected from the group comprising oxides of magnesium, aluminum, lithium and compounds of said oxides, said grid having a side facing the cathode and a side facing the target, said coating being on the side of the grid facing said cathode, an electron gun for scanning said target, and an evacuated envelope in which said cathode, target and gun are located.

**3,931,540**

## SHADOW MASK ASSEMBLY

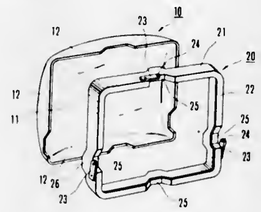
**Takao Kawamura, Mobara, Japan, assignor to Hitachi, Ltd., Japan**

**Filed Apr. 30, 1971, Ser. No. 139,020**

**Claims priority, application Japan, Apr. 30, 1970, 45-36262**

**Int. Cl.² H01J** *29/07, 29/02*

**U.S. Cl. 313—404** **3 Claims**



1. In a shadow mask assembly of the type including a substantially rectangular shallow dish-shaped shadow mask, a rectangular reinforcing frame of L-shaped cross-section having an annular side surface adapted to engage the periphery of said shadow mask and a transverse flat surface formed by a flange bent inwardly at right angles with respect to said side surface, and a plurality of leaf springs for supporting said shadow mask assembly, one end of each of said leaf springs being secured to said side surface, the improvement in which portions of the side surface of said frame in alignment with the free end of at least one pair of leaf springs are deformed to provide a protrusion extending toward the shadow mask and a depression in alignment with said portrusion with said transverse flat surface following said depressions.

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**3,931,541**

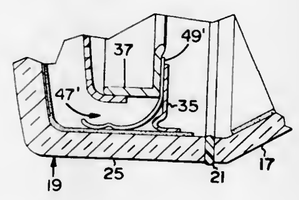
## CONNECTIVE MEANS FOR A CATHODE RAY TUBE MASK-PANEL ASSEMBLY

**Kurt H. Brenner, Jr., Seneca Falls, N.Y., assignor to GTE Sylvania Incorporated, Stamford, Conn.**

**Continuation of Ser. No. 464,495, April 26, 1974, abandoned. This application May 5, 1975, Ser. No. 574,237**

**Int. Cl.² H01J** *29/06, 29/02*

**U.S. Cl. 313—407** **1 Claim**



1. An improvement in a color cathode ray tube mask-panel assembly whereof the face panel includes a forwardly oriented viewing area with a cathodoluminescent screen interiorly formed thereon and a perimetrical wall therearound having an interiorly disposed electrically conductive film thereon, and whereof the mask portion of the assembly spatially supported within the panel includes a peripheral frame having a substantially planar ledge therearound wherefrom peripheral beam shielding means extend to substantially contact the panel wall, said improvement being enhanced electrical connective means within said assembly comprising:

metallic electrical contactor means formed as a resilient conductive member having an attachment portion and an integral flexural contact portion, said attachment portion being affixed to the planar ledge of said frame in a manner sandwiched between said frame and said shielding means, with said flexural portion being flexed substantially perpendicular thereto to effect substantially parallel positioning to the side portion of said frame in the spacing between said mask frame and the adjacent panel sidewall extending in a forwardly directed manner toward said viewing area, said flexed contact portion being formed as a plurality of parallel resilient fingers each making at least two areal regions of constant pressured contact with the panel sidewall to provide a plurality of positive areal electrical connections between the mask and the conductive film disposed on the wall of said panel.



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**3,931,542**

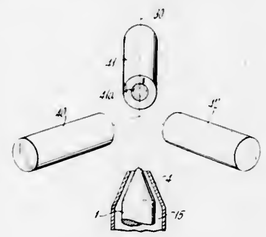
## METHOD AND APPARATUS FOR ENERGIZING MATERIALS IN AN ELECTRIC ARC

**Charles Sheer, Teaneck, N.J.; Samuel Korman, Hewlett, N.Y., and Derek J. Angier, Somerville, N.J., assignors to Sheer-Korman Associates, Inc., New York, N.Y.**

**Continuation of Ser. No. 374,519, June 28, 1973, abandoned, which is a continuation-in-part of Ser. No. 165,473, July 26, 1971, abandoned. This application Jan. 3, 1975, Ser. No. 538,361**

**Int. Cl.² H01J** *17/30;* **H05H** *1/00*

**U.S. Cl. 315—111.2** **9 Claims**



1. Apparatus for energizing materials in a free-burning electric arc column comprising in combination: a cathode having a conical tip; at least three anodes radially disposed and substantially equally spaced around an extension of the cathode axis, said anodes being inclined at an angle of from about 45° to about 135° with respect to the cathode axis; means for individually adjusting the current to each anode; and means for forcefully projecting fluid material along a path parallel to the surface of the cathode and into and through the arc column.

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**3,931,543**

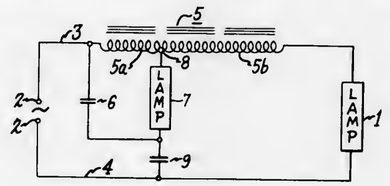
## STARTING AND OPERATING CIRCUIT FOR GASEOUS DISCHARGE LAMPS

**Joe A. Nuckolls, Hendersonville, N.C., assignor to General Electric Company**

**Filed Sept. 30, 1974, Ser. No. 510,287**

**Int. Cl.² H05B** *41/14*

**U.S. Cl. 315—177** **19 Claims**




1. A starting and operating circuit for gaseous discharge lamps comprising, in combination, a source of alternating current, ballasting means including an induction coil connected at its input side to said alternating current source, said induction coil comprising an input portion and an output portion, a first gaseous discharge lamp having high voltage starting characteristics connected to the output side of said induction coil, a second gaseous discharge lamp having low voltage breakdown characteristics connected to the input portion of said induction coil, and a high frequency discharge capacitor connected across said second gaseous discharge lamp and said input coil portion and forming a series discharge loop therewith for providing high frequency, high voltage, low energy pulses for starting said first discharge lamp.

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**3,931,544**

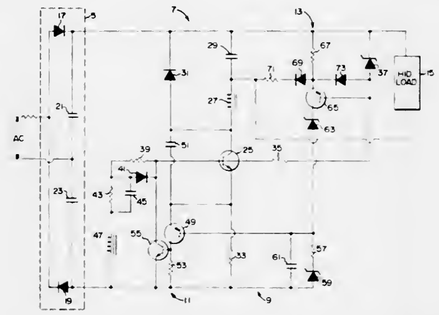
## FAST WARM UP ELECTRONIC BALLAST CIRCUIT FOR A HIGH PRESSURE DISCHARGE LAMP

**Ira Jay Pitel, Williamsport, Pa., assignor to GTE Sylvania Incorporated, Stamford, Conn.**

**Filed Dec. 5, 1974, Ser. No. 529,818**

**Int. Cl.² H05B** *41/16*

**U.S. Cl. 315—273** **15 Claims**




1. A ballast circuit for a high pressure arc lamp comprising:

a potential source;

oscillator means coupled to said potential source;

current sampling means coupled to said oscillator means;

first switching means coupled to said current sampling means and to said oscillator means;

load circuit means coupled to said potential source and to said oscillator means; and

second switching means coupled to said potential source and load circuit means and to said first switching means, said second switching means effecting an abrupt shift in current flow through said load circuit means in accordance with attainment of a threshold level of voltage of said load circuit means.

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**3,931,545**

## HORIZONTAL DEFLECTION CIRCUIT

**Francis C. Marino, Dix Hills, N.Y., assignor to Redactron Corporation, Hauppauge, N.Y.**

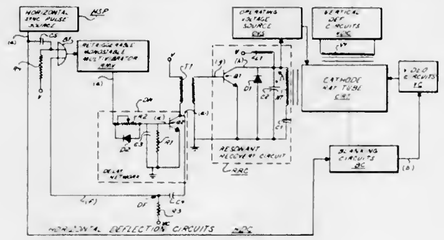
**Filed Dec. 13, 1974, Ser. No. 532,378**

**Int. Cl.² H01J** *29/52*

**U.S. Cl. 315—384** **8 Claims**

1. In a cathode ray tube display device having a horizontal deflection coil through which current flows under control of a first transistor which is switched between a saturation state and a cut off state to establish the sweep and retrace portions of a line scan, apparatus for controlling the switching of the first transistor between the states and for generating a blanking signal which occurs during the retrace portions of the line scans comprising means for generating a horizontal synchronizing signal, means for generating a blanking signal of a given time duration and at a first predetermined period of time after the generation of a horizontal synchronizing signal, said first

predetermined period of time being greater than the maximum storage time of the first transistor, a pulse generator means having an input terminal and an output terminal for generating a pulse at said output terminal each time a signal is received at said input terminal, a passive delay means connected to said output terminal for delaying at least the leading edge of a pulse generated by said pulse generator means for



a second predetermined period of time, and applying means for applying the pulse delayed by said passive delay means to said first transistor to control the switching thereof, said second predetermined period of time being chosen so that the sum of the storage time of said first transistor plus the said second predetermined period of time is greater than said first predetermined period of time.

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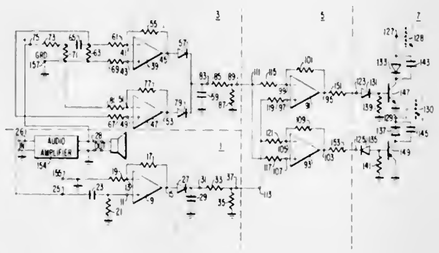
**3,931,546**
**OVER-VOLTAGE PROTECTION CIRCUIT**
**Hans Jakobs, Schaumburg Township, Cook County, and Charles J. Juhnke, Deerfield, both of Ill., assignors to C. E. Niehoff & Co., Chicago, Ill.**
**Filed May 28, 1974, Ser. No. 474,011**
**Int. Cl.² H02H 3/20, 7/06**
**U.S. Cl. 317—16** **12 Claims**



1. For use with an electric generating machine having an excitation winding, a pair of power output terminals and an output winding electrically coupled to said output terminals, an overvoltage protection system comprising:
- energizing means for applying excitation current to said excitation winding;
- thyristor means having main electrodes connected in a series circuit with said output winding, and a control electrode;
- voltage sensing means connected to said control electrode, said voltage sensing means being responsive to voltage generated by said output winding for rendering said thyristor means electrically conductive between said main electrodes when said voltage reaches a predetermined level; and
- current sensing means coupled to one of said main electrodes for sensing the current flow through said main electrodes, said current sensing means being further connected to said energizing means and including impedance means connected in a series circuit with said main electrodes, wherein said impedance means includes a semiconductor diode connected in series with said main electrodes, said diode being responsive to the current flow through said main electrode for providing a voltage thereacross representative of said current flow, said energizing means being responsive to said current sensing means for preventing the application of excitation current to said excitation winding when the current flowing through the main electrode reaches a predetermined level.

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**3,931,547**
**PROTECTION CIRCUIT**
**Miroslav Glogolja, Edison, N.J., assignor to RCA Corporation, New York, N.Y.**
**Filed Aug. 9, 1974, Ser. No. 496,358**
**Int. Cl.² H02H 3/28**
**U.S. Cl. 317—31** **11 Claims**



1. A short circuit protection circuit for an audio amplifier which includes an input terminal, an output terminal, an NPN driver transistor having a base electrode, and a PNP driver transistor having a base electrode, said circuit comprising:
- first sensing means coupled to the input terminal of said audio amplifier for producing an output voltage proportional in magnitude to the magnitude to the signal at said input terminal;
- second sensing means coupled to the output terminal of said audio amplifier for producing an output voltage proportional in magnitude to the magnitude of the signal appearing at said output terminal;
- comparator means coupled to said two sensing means for comparing their output voltages and for producing an output signal manifestation indicative of the sense of the difference between these voltages; and
- switching means responsive to said signal manifestation for providing relatively low impedance paths between said base electrodes and a point of reference potential when said output voltages differ in one sense and relatively high impedance paths when said output voltages differ in the opposite sense.

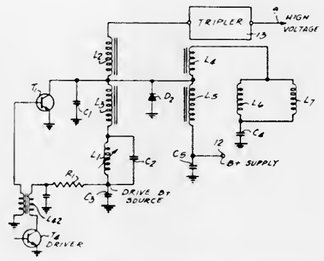
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**3,931,548**
**OVER VOLTAGE PROTECTION CIRCUIT**
**Donald J. Barchok, Chicago, Ill., assignor to Admiral Corporation, Chicago, Ill.**
**Filed Apr. 26, 1974, Ser. No. 464,301**
**Int. Cl.² H02H 7/10**
**U.S. Cl. 317—33 VR** **2 Claims**

1. An overload protection circuit for a high voltate television circuit comprising an oscillator driver, a high voltage primary driving winding connected to said oscillator driver, a tuning coil connected in series with said high voltage primary driving winding, a high voltage primary connected in series with said tuning coil and driving winding, a horizontal driver



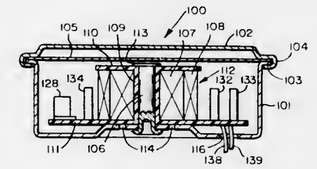
connected to said high voltage primary, a B+ source connected in series with said primary driving winding, said tuning



coil, and said high voltage primary and connected to said oscillator driver to provide supply voltage therefor.

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**3,931,549**
**CONTROL CIRCUIT FOR ELECTROMAGNETIC TRANSDUCER**
**Charles Berns, Fairfield, and Jacob Neuhof, Bridgeport, both of Conn., assignors to General Signal Corporation, Rochester, N.Y.**
**Filed Oct. 24, 1974, Ser. No. 517,681**
**Int. Cl.² H01H 47/32**
**U.S. Cl. 317—148.5 R** **7 Claims**

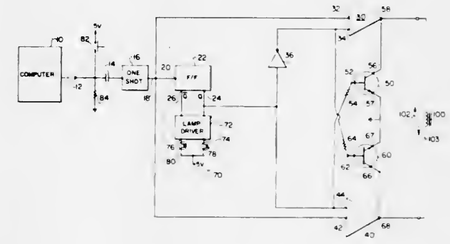


1. A circuit for driving an electromagnetic transducer comprising:
- a. a transistor having base, collector and emitter electrodes:
- b. a direct current potential source;
- c. an electromagnetic transducer having first and second inductively coupled coils for producing opposing and unequal magnetomotive forces in response to a flow of direct current from said direct current potential source through said coils;
- d. said first coil being in a circuit between one terminal of said potential source and said collector electrode and said second coil being in a circuit between the other terminal of said potential source and said emitter electrode;
- e. first bias means for coupling a control potential derived from said potential source to said base electrode for biasing said base to a predetermined potential; and
- f. second bias means including inductive action between said first and second coils for biasing said transistor.

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**3,931,550**
**ELECTRONIC LATCHING RELAY CONTROL**
**Joseph A. Dalpee, New Carrollton, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**
**Filed Nov. 25, 1974, Ser. No. 526,999**
**Int. Cl.² H03H 9/00**
**U.S. Cl. 317—148.5 R** **2 Claims**

1. A switching control circuit for providing, under control of a control signal, actuating voltages and sustaining currents for actuating a voltage actuated device comprising:



conditioning means for producing an output pulse upon the occurence of said control signal;
- bistable means connected to the output of said conditioning means for providing an output signal and complimentary output signal respectively to an output terminal and a complimentary output terminal, each of said output signals having complimentary values at a given time, said values alternating upon the occurence of said output pulse;
- first AND decision means for generating one of said actuating voltages, having a first input terminal coupled to the output of said conditioning means, a second input terminal coupled to said bistable means so as to energize said first AND-driver second input terminal with a high level signal only upon the occurence of said complimentary output signal, and an output terminal;
- second AND decision means for generating one of said actuating voltages, having a first input terminal coupled to the output of said conditioning menas, a second input terminal coupled to said bistable means so as to energize said second AND-driver second input terminal with a high level signal only upon the occurence of said output signal, and an output terminal;
- first output means for providing one of said sustaining currents, having a control terminal coupled to said second AND-driver second input terminal and having output terminals connected between the circuit ground and said first AND decision means output terminal;
- second output means for providing one of said sustaining currents, having a control terminal coupled to said first AND-driver second input terminal and having output terminals connected between the circuit ground and said second AND decision means output terminal;

means connected to said output and complimentary output signal terminals for indicating the state of said output and complimentary output signals; and

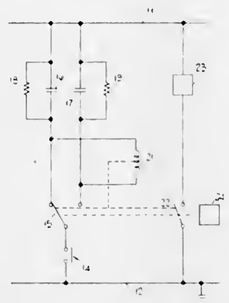
means connected to the input of said conditioning means for producing a control signal;

whereby said first AND decision means produces an actuating voltage establishing current through said voltage actuated device in a first direction only upon the joint occurence of said output pulse and said complimentary signal, and whereby said second output means is in a conducting state and supplies a sustaining current through said voltage actuated in said first direction only during the occurence of said complimentary output signal, and further whereby said second AND decision means produces an actuating voltage establishing current through said voltage actuated device in a second direction only upon the joint occurence of said output pulse and said output signal, and whereby said first output means is in a conducting state and supplies a sustaining current in said second direction only during the occurence of said output signal.

### 3,931,551
### CONTROL CIRCUITS FOR DOUBLE ACTING ELECTROMAGNETS

**William David Holt, Colne, England, assignor to The Lucas Electrical Company Limited, Birmingham, England**

**Filed Mar. 28, 1974, Ser. No. 455,622**
**Claims priority, application United Kingdom, May 16, 1973, 23268/73**
**Int. Cl.² H01H** *47/00*
**U.S. Cl. 317—151** **6 Claims**



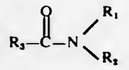
1. In combination with a double acting electromagnet, a load circuit controlled by the electromagnet, and a source of electrical energy having first and second terminals, the improvement comprising a control circuit for controlling the energization of the electromagnet from the source of electrical energy including first switch means operable at least between first and second positions, first and second energy storage means coupled to said first switch means at one terminal thereof and to the first terminal of the source of energy at the other terminal thereof, said first switch means being coupled to the second terminal of the source of energy, the electromagnet being connected to said one terminal of each said first and second energy storage means, said first energy storage means being connected to directly charge from the source of energy and said second energy storage means being connected to charge through the electromagnet when said first switch means is in said first position, and said second storage means being connected to charge directly from the source of energy and said first storage means being connected to charge through the electromagnet from the source of energy when said first switch means is in said second position, a second switch means connected between the source and the electromagnet and said storage means for controlling the current flow in the electromagnet, said first switch means reversing the current through the electromagnet upon successive actuations of said first switch means, holding means for retaining said first switch means in the last position thereof between actuations of said second switch means, and means forming an independent discharge path for each of said first and second storage means between actuations of said second switch means.

### 3,931,552
### CAPACITOR ELECTROLYTE

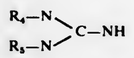
**Daniel J. Anderson, and James C. Jimerson, both of Indianapolis, Ind., assignors to P. R. Mallory & Co., Inc., Indianapolis, Ind.**

**Division of Ser. No. 804,986, March 6, 1969, abandoned. This application Apr. 21, 1971, Ser. No. 136,230**
**Int. Cl.² H01G** *9/02*
**U.S. Cl. 317—230** **10 Claims**

1. A liquid or semi-liquid electrolyte capacitor including anode electrode means of a valve metal, a valve metal oxide in contact with the anode electrode means, cathode electrode means, and electrolyte means contacting the valve metal oxide and the cathode electrode means, the electrolyte means comprising an organic solvent including glycol monoethers or diethers having up to 20 carbon atoms or amides having the formula



where $R_1$, $R_2$ and $R_3$ are H or lower alkyl and mixtures thereof, the organic solvent has dissolved therein an ionizable solute of 0.01 wt.% up to the solubility limit of the organic solvent, the ionizable solute including acid at least partially neutralized and a neutralizing agent, the acid including boric acid or phosphoric acid or mono and dicarboxylic acids having up to 12 carbon atoms and mixtures thereof, the neutralizing agent including ammonia or alkyl and alkanol amines having 4 to 12 carbon atoms or guanidine type compounds having the formula

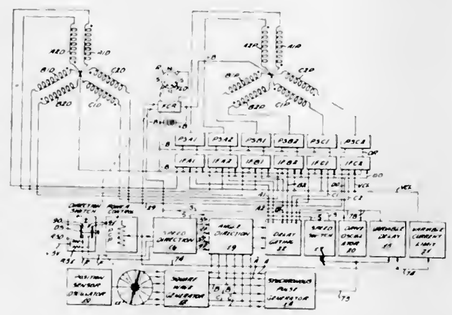


where $R_4$ and $R_5$ are lower alkyl or aryl or H, cyclic nitrogen compounds including pyridine or substituted pyridines and mixtures thereof, and a substance separate from the ionizable solute including acids or non-metal salts or chromium oxygen complexes and mixtures thereof, the substance yielding in solution chromate radicals having at least some solubility in the electrolyte to the extent of about 0.01% to about 2.5% by weight of the electrolyte.

### 3,931,553
### ELECTRONIC COMMUTATION SYSTEM HAVING MOTOR STATOR WINDINGS IN PUSH-PULL

**Frederick A. Stich, and Glenn W. Schwantes, both of Milwaukee, Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.**

**Division of Ser. No. 278,577, Aug. 7, 1972. This application July 1, 1974, Ser. No. 484,988**
**Int. Cl.² H02K** *29/00*
**U.S. Cl. 318—138** **5 Claims**



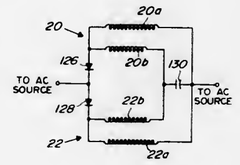
1. An electronic commutation system comprising, in combination, an electric motor having a stator and a rotor rotatable within said stator and n angularly displaced stator phase windings each of which comprises a pair of power windings, where n is an integer greater than one,
means for generating magnetic poles in said rotor,
an electric power source,
a pair of controllable semiconductor power switches associated with each stator phase winding each of which is connected in series with one of said power windings and said power source so that the magnetic fluxes generated by said power windings of each phase are in opposite directions, whereby said power windings operate in push-pull,
means for deriving a plurality of time-displaced rotor position signals at a frequency which is a function of rotor angular velocity during rotation of said rotor through 360 electrical degrees each of which is indicative of a different position of said rotor within said stator, and
means for turning on each of said power switches during a different rotor position signal so that the magnetic field generated by said stator phase windings rotates in synchronism with said rotor poles, the power switches associated with said pair of power windings of each stator phase being turned on during rotor position signals which are complements of each other.



### 3,931,554
### RECIPROCATING MOTOR-COMPRESSOR SYSTEM

**Nikolaos E. Spentzas, 594 Rozanne Drive, Addison, Ill. 60101**

**Filed Aug. 13, 1974, Ser. No. 496,936**
**Int. Cl.² H02K** *33/12*
**U.S. Cl. 318—122** **18 Claims**



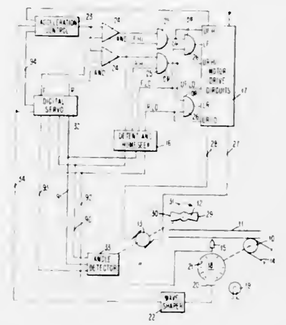

1. A reciprocating system comprising:
an armature;
means connected to opposing ends of said armature for supporting said armature for lateral movement over a predetermined range;
first and second laterally displaced electromagnetic coils disposed about said armature, each of said first and second coils having first and second parallel windings alternate energization of said electromagnetic coils being effective to cause said armature to reciprocate;
first and second unidirectional rectifying means each connected in a first series circuit with one of said first windings of a respective one of said first and second electromagnetic coils and in a second series circuit with the second winding of said respective one of said first and second electromagnetic coils for alternately energizing said first and second coils in response to an alternating current voltage applied thereto and;
means for shifting the phase of the current through said second windings connected in series with each of said second windings and said first and second unidirectional rectifying means.

### 3,931,555
### ACCELERATION CONTROL SYSTEM FOR A D-C MOTOR

**George J. Dohanich, Jr.; John C. Rohde, both of Endicott, and Gary A. Trudgen, Endwell, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.**

**Continuation-in-part of Ser. No. 317,017, Dec. 20, 1972, abandoned. This application May 20, 1974, Ser. No. 471,624**
**Int. Cl.² H02P** *5/16*
**U.S. Cl. 318—314** **9 Claims**

1. A motor control system comprising in combination
a rotatable d-c motor, and
drive control means for said motor including means for selectively accelerating said motor to various desired velocities within a predetermined angle of rotation of said motor including,
an external source of digital pulses for generating a frequency analog signal representing desired motor velocity, and acceleration control means for supplying to said motor drive control signals having a duty rate which varies in accordance with the square of said desired motor velocity comprising
means for converting said frequency analog signal to first and second control signals,
said first control signal being a direct voltage signal representing a desired motor velocity,

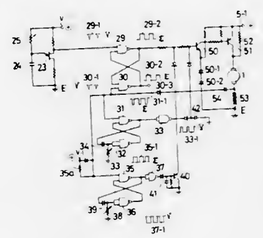


said first control signal having a voltage level dependent on the frequency of said digital pulses,
said second control signal being a periodic signal having a frequency representing said desired motor velocity,
said second control signal having a predetermined peak voltage level equal to at least the voltage level of the maximum desired velocity and a frequency dependent on said frequency analog signal,
and means for generating said drive control signals at said duty rate in accordance with the comparative voltage levels of said first and second control signals.

### 3,931,556
### SYSTEM FOR DRIVING A DIRECT-CURRENT MOTOR IN SYNCHRONISM WITH AN EXTERNAL SIGNAL

**Itsuki Ban, 828, Higa-Oizumi, Nerima, and Manabu Shiraki, Koizumiso, 44-1, 2-chome, Cyuou, Nakano, both of Tokyo, Japan**

**Filed Oct. 15, 1973, Ser. No. 406,374**
**Claims priority, application Japan, Oct. 16, 1972, 47-102702**
**Int. Cl.² H02K** *29/00*
**U.S. Cl. 318—330** **8 Claims**



1. A system for driving a direct-current motor in synchronism with an external synchronizing signal in the form of a train of pulses, said system comprising:

a DC power supply for feeding said motor;
means for producing said synchronizing signal;
means for producing a rotor position signal in phased relationship to the rotation of said motor, said rotor position signal being also in the form of a train of pulses;
a first control circuit for initiating the flow of current from said DC power supply through said motor in a forward direction thereof to cause the latter to produce driving torque in response to each pulse of said synchronizing signal and for terminating the flow of current from said DC power supply to said motor in response to each pulse of said rotor position signal;
a second control circuit for modifying the operation of said first control circuit, said second control circuit including:
first sensing means for producing an output signal upon sensing a first state in which the actual speed of said motor is lower than synchronous speed; and
first circuit means responsive to said output signal from said first sensing means, said first circuit means being effective to cause said first control circuit to permit said motor to be fed continuously from said DC power supply as long as said output signal is being produced by said first sensing means; and
a third control circuit for modifying the operation of said first control circuit, said third control circuit including:
second sensing means for producing an output signal upon sensing a second state in which the actual speed of said motor is higher than the synchronous speed; and second circuit means responsive to said output signal from said second sensing means, said second circuit means being effective to cause said first control circuit to prevent said motor from being fed from said DC power supply as long as said output signal is being produced by said second sensing means.

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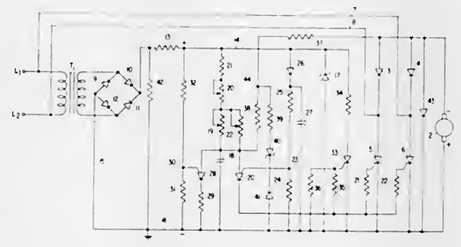
**3,931,557**
**DC MOTOR STALL PROTECTION CIRCUIT**
**David W. Osburn, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.**
**Filed Nov. 13, 1974, Ser. No. 523,211**
**Int. Cl.² H02P 7/74**
**U.S. Cl. 318—434** **7 Claims**



1. A motor stall protection circuit comprising in combination with a supply potential source, an electric motor and a speed control circuit therefor of the type which completes an energizing circuit for the motor across the supply potential source through the current carrying electrodes of a switching transistor: an NPN transistor having base, collector and emitter electrodes, said collector-emitter electrodes being connected in circuit with said speed control circuit for extinguishing said switching transistor while said NPN transistor is conductive through said collector-emitter electrodes; means for producing a direct current reference potential signal which increases rapidly in magnitude when the controlled motor has become stalled; a Zener diode; and means for applying said direct current reference potential signal across the series combination of said Zener diode and said base-emitter electrodes of said NPN transistor for supplying base drive current to said NPN transistor while the level of said direct current potential is of a magnitude equal to the inverse breakdown potential level of said Zener diode.

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**3,931,558**
**SCR MOTOR SPEED CONTROL SYSTEM WITH TRIGGER STABILIZATION CIRCUIT**
**John M. Houser, Pickens, S.C., assignor to The Singer Company, New York, N.Y.**
**Filed Oct. 11, 1974, Ser. No. 513,983**
**Int. Cl.² H02P 5/16**
**U.S. Cl. 318—345** **6 Claims**



1. A system for controlling the speed of a D.C. motor fed from an A.C. voltage source using first and second silicon controlled rectifiers (SCR's) in a full-wave configuration, comprising a full-wave, unfiltered, zener-controlled reference voltage, a timing capacitor, adjustable resistor means for charging said capacitor from said reference voltage at time-controlled rates, a first trigger device operative responsively to the attainment of a predetermined voltage on said capacitor to apply a trigger pulse to said first and second SCR's a second trigger device operative responsively to a predetermined low value of the reference voltage substantially at the end of each half cycle of the A.C. voltage to provide a low-impedance discharge path for said capacitor to assure that said capacitor is substantially discharged at the beginning of each half cycle.

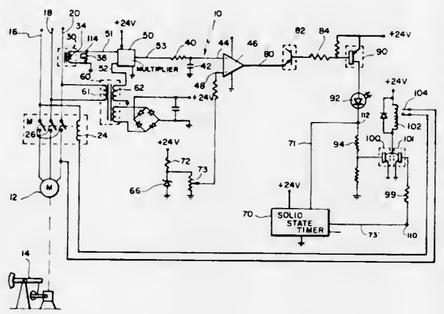
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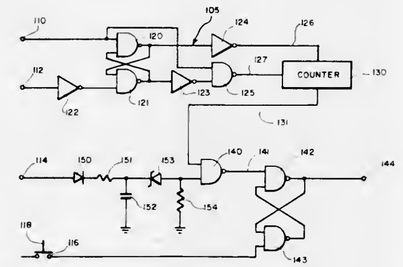
**3,931,559**
**MALFUNCTION DETECTOR CIRCUIT FOR THE USE WITH A PUMP-OFF CONTROL CIRCUIT**
**Fount E. McKee, Houston, Tex., assignor to Delta-X Corporation, Houston, Tex.**
**Filed Aug. 2, 1974, Ser. No. 494,140**
**Int. Cl.² H02H 7/08**
**U.S. Cl. 318—455** **7 Claims**

1. A malfunction detector circuit in combination with a pump-off control circuit which is periodically actuated by a timer and which monitors the average current drawn by the drive motor of a well pump and includes an output comprising,
timer signal receiving means connected to and receiving a signal from the timer when the pump-off control circuit is actuated by the timer,
output means connected to and actuated by the timer signal receiving means for indicating that a malfunction has occurred,
control circuit signal receiving means connected to the output of the pump-off control circuit for monitoring when the control circuit is controlling the drive motor instead of the timer,
interlocking means connected between the timer signal receiving means and the control circuit signal receiving means, said interlocking means actuated by the control



circuit signal receiving means and controlling the output of the timer signal receiving means whereby the output

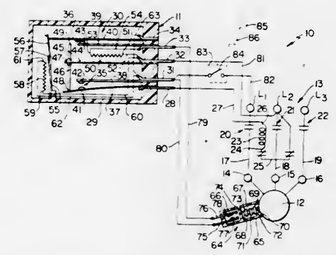




means will only be actuated in the event the control circuit receiving means fails to receive a signal.

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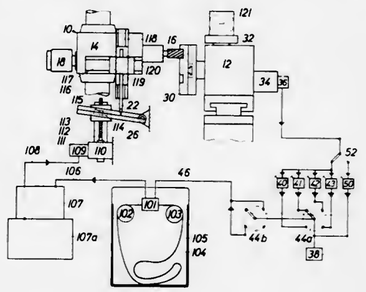
**3,931,560**
**MOTOR CONTROL SYSTEM AND ELECTRICAL SWITCH CONSTRUCTIONS THEREFOR OR THE LIKE**
**James R. Willson, Trumbull, Conn., assignor to Robertshaw Controls Company, Richmond, Va.**
**Division of Ser. No. 216,685, Jan. 10, 1972, Pat. No. 3,787,793. This application Nov. 9, 1973, Ser. No. 414,395**
**Int. Cl.² H02H 5/08**
**U.S. Cl. 318—481** **3 Claims**



1. A control system for a motor having a required oil pressure value for safe operation thereof comprising an electrical power source, a time delay switch means having a switch for interconnecting said source to said motor to operate the same each time said switch means is initially activated by being placed across said power source, said switch means having a time delay bimetal means that is adapted to move and open said switch if said oil pressure of said motor does not reach said required value within a predetermined time period from the initial activation of said switch means, and an oil pressure responsive switch operatively interconnected to said time delay bitmetal means and said motor to terminate the switch opening movement of said time delay bimetal means if said oil pressure reaches said predetermined value thereof during said predetermined time period, said bimetal means comprising a bimetal member and an electrical heater for heating said bimetal member when said heater is operatively interconnected to said power source, said pressure responsive switch terminating said switch opening movement of said bimetal member by continuously interconnecting said power source to said heater as long as said oil pressure is above said predetermined value, said switch means having means for initially interconnecting said heater to said power source when said switch means is initially activated by being placed across said power source whereby the energized heater causes movement of said bimetal member and, thus, the start of said predetermined time period, said switch means having a first switch for interconnecting said power source to said motor, said bimetal member opening said first switch when at ambient temperature and closing said first switch when being heated by said heater, said switch means having a second switch that initially interconnects said power source to said heater when closed and disconnects said heater from said power source when opened, said bimetal member opening said second switch when heated to a certain amount by said heater.

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**3,931,561**
**CURVE MILLING OR CURVE GRINDING MACHINES**
**Alfred Schmermund, 62 Kornerstrasse, 5820 Gevelsberg, Germany**
**Filed Dec. 6, 1973, Ser. No. 422,485**
**Claims priority, application United Kingdom, Dec. 21, 1972, 59031/72**
**Int. Cl.² G05B 19/24**
**U.S. Cl. 318—571** **6 Claims**



1. A shaping machine comprising, in combination:
a frame;
tool support means displaceably mounted on said frame;
workpiece support means rotatably mounted on said frame;
first displacement means to rotatably displace said workpiece support means;
a control member displaceably mounted on said frame;
second displacement means to displace said control member relative to said frame;
coupling means to couple said control member to said tool support means, thereby to impart displacement to said tool support means in dependence upon the displacement of said control member;
a repetitious signal generator coupled to said first displacement means to generate a predetermined number of repetitious signals on each predetermined angular displacement of said workpiece support means;
divider means to output a signal on the generation of each of a predeterminable number of said repetitious signals,

said divider means comprising a plurality of divider devices each having respective input means and respective output means, each said divider device providing a plurality of said output signals at said respective output means corresponding to the number of said repetitious signals applied to said respective input means divided by a respective divider ratio;

selectably operable setting means to set each said divider device to said divider ratio and thereby to determine the numerical value of said predeterminable number;

first storage means to store said output signals derived from said divider means;

means to derive control signals from said first storage means in dependence on the state thereof;

first connector means responsive to said control signals to connect the respective output means of each said divider device successively to said first storage means;

second storage means to store a series of signals each coded to represent a respective predetermined displacement of said tool support means;

extractor means;

second connector means responsive to said control signals to successively connect the respective output means of selected ones of said divider devices to said extractor means, said extractor means being responsive to successive ones of said signals output from said divider means and applied to said extractor means to serially extract respective ones of said stored signals from said second storage means; and

translator means connected to said extractor means to receive said signals extracted therefrom, to translate said extracted signals into command signals each corresponding to the displacement represented by a respective one of said extracted signals, and to apply said command signals to said second displacement means.

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**3,931,562**

## ELECTRIC DRIVING ARRANGEMENT USING A STEPPING MOTOR

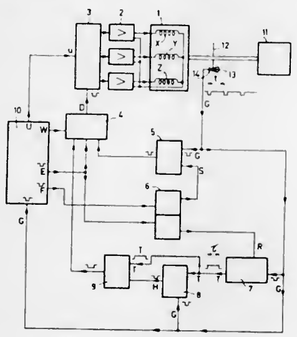
**Johannes Mattheus Visscher, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.**

**Continuation of Ser. No. 856,672, Sept. 10, 1969, abandoned. This application July 23, 1974, Ser. No. 491,162**

**Claims priority, application Netherlands, Sept. 14, 1968, 6813189**

**Int. Cl.² G05B *19/40***

**U.S. Cl. 318—685** **9 Claims**



**1.** An electric controller for a stepping motor having at least three stator windings or winding parts comprising, means for energizing said windings that includes a ring counter having an equal number of positions, means for applying a first starting pulse to the counter, the stepping motor driving a member which at each step generates a step measuring pulse, feedback means for coupling said pulse back to the input of the ring counter in a manner such that after said first starting pulse has been applied to the ring counter the stepping motor is accelerated by the step pulses in an optimum manner and attains a speed at which it can no longer be stopped with certainty within a single step, a bistable switch connected to control the pulse transmission path through the feedback means, means for applying the start pulse to the bistable switch to set same to a running state in which it allows the transmission of the step measuring pulses to the ring counter, means for actuating said bistable switch to a second deceleration state, a pulse delay circuit coupled to said pulse generating member, said delay circuit having a minimum delay time which is slightly smaller than the time interval between two successive step measuring pulses at a chosen deceleration speed of the stepping motor at which it can be stopped with certainty within a single step, means for coupling the bistable switch to the delay circuit so that the delay circuit is cut off by the bistable switch in said running state and is actuated in the deceleration state of the switch so as to be reset to an operative state by each of the step measuring pulses, and a gate circuit connected to receive said step pulses and controlled by the pulse delay circuit in a manner such that the gate circuit, in the operative state of the delay circuit, allows the step measuring pulses to pass to the ring counter so that the ring counter energizes the stator windings with a one step delay whereby the stepping motor is decelerated to the chosen deceleration speed in an optimum manner.

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**3,931,563**

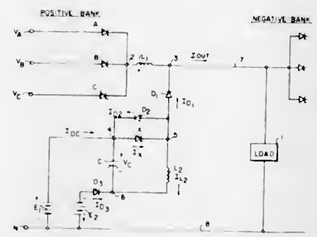
## FORCE COMMUTATION STATIC FREQUENCY CHANGER APPARATUS USING DIRECT CURRENT CHOPPER TECHNIQUE

**Eric J. Stacey, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**Filed Sept. 25, 1974, Ser. No. 509,168**

**Int. Cl.² H02M *5/45***

**U.S. Cl. 321—7** **28 Claims**




**28.** An AC to AC static frequency changer apparatus having first and second terminals for developing a polyphase AC output voltage of a predetermined frequency at one of said first and second terminals from a polyphase AC input voltage of a given frequency applied at the other of said first and second terminals for power flow therebetween comprising a plurality of unilateral main switching means cyclically and temporarily controlled for conduction, said main switching means being associated in pairs with the respective phases of the input terminals, and a DC voltage source, DC chopper means coupled between said DC voltage source and said plurality of main switches, said DC chopper means including cyclically controlled unilateral auxiliary switching means for applying a reverse voltage represented by the difference between said DC voltage and the line to neutral input voltage to said main switches, said reverse voltage being larger than the incoming line voltage for any conducting one of said main switches and with said auxiliary switching means being controlled for conduction at an instant subsequent to conduction of one of said main switches to apply said reverse voltage thereto and to establish a temporary path for the load current in derivation to said conductive one of said main switches,



thereby to commutate conduction from said one main switch to the next main switch being controlled for conduction.

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**3,931,564**

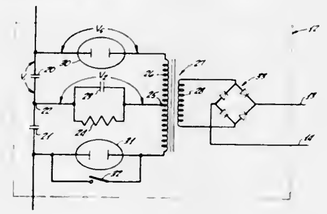
## APPARATUS FOR THE DIRECT CONVERSION OF THE KINETIC ENERGY OF CHARGED PARTICLES

**L. Stewart Mims, 11391 Arroyo Ave., Santa Ana, Calif. 92705**

**Filed Dec. 6, 1973, Ser. No. 422,582**

**Int. Cl. H02m *7/46***

**U.S. Cl. 321—27 R** **3 Claims**



**1.** Apparatus for converting the output of a high voltage D.C. source to a lower voltage and a higher current comprising a plurality of power conversion means, each of said power conversion means including:

a pair of capacitors, all of the capacitors of said plurality of power conversion means being connected electrically in series across said D.C. source output, said D.C. source charging said capacitors, each of said power conversion means receiving only a portion of said high voltage;

transformer means including a primary and a secondary; and

means for alternately, periodically discharging only a small portion of the charges on said capacitors for converting said high voltage portion to an A.C. signal, said discharging means comprising:

a second capacitor connected between the junction between said pair of capacitors and the center of said primary of said transformer means; and

a pair of switching means connected between the other sides of said pair of capacitors and the opposite ends of said primary of said transformer means, said switching means comprising gas glow tubes, said transformer means reducing the voltage and increasing the current of said A.C. signal, the secondaries of said transformer means of each of said power conversion means being connected electrically in parallel.

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**3,931,565**

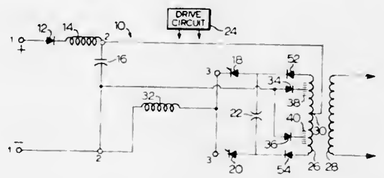
## INVERTERS

**Alfred Max Hase, 6 Manorwood Road, Scarborough, Ontario, Canada**

**Filed Oct. 3, 1974, Ser. No. 511,789**

**Int. Cl.² H02M *7/515***

**U.S. Cl. 321—45 R** **22 Claims**




**1.** In an inverter circuit having a direct current input and an alternating current output, the combination comprising:

a. an input diode connected to said direct current source with its polarity arranged so as to be conductive under normal operating conditions of said inverter;

b. an input filter choke in series with said direct current input and said input diode;

c. a polarized capacitor across said direct current input and said input diode and input choke, with the positive side of said capacitor facing the positive side of said direct current source;

d. a pair of silicon controlled rectifiers facing in the same direction with respect to said direct current input, and an unpolarized commutation capacitor connected so as to be facing the side of each of said silicon controlled rectifiers which is remote from said direct current source;

e. a drive circuit connected to the gates of said silicon controlled rectifiers so as to drive said silicon controlled rectifiers in a manner so that, at any time, one or the other of them is conductive;

f. a transformer having a primary and a secondary winding, where said primary winding is connected so that at any instant at least a portion thereof is in series with the silicon controlled rectifier which is conductive at that instant, and where said alternating current output is from said secondary winding;

g. a pair of de-coupling diodes, each connected to said primary winding so as to have 100% of the primary winding between their connection points, the other sides of said de-coupling diodes being connected to said silicon controlled rectifiers so that one de-coupling diode and one silicon controlled rectifier are in series at each end of said primary winding; said unpolarized commutating capacitor being connected between the common points of each of said series connections of said de-coupling diodes and said silicon controlled rectifiers;

h. a commutation choke in series with said silicon controlled rectifiers and connected so that each of said silicon controlled rectifiers is in series with at least a portion of said commutation choke;

i. and a feedback circuit comprising at least one diode arranged so as to be in counter-polarity to said polarized capacitor and connected to the opposite polarity side of said polarized capacitor at one side of said diode, and facing the primary winding of said transformer at the other side of said diode;

said inverter circuit thereby having fixed frequency, 180 electrical degrees, direct current commutation, where the commutation is independent of the load conditions on said inverter; and said inverter further having closed loop feedback which is electrically isolated from the load on said inverter.

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**3,931,566**

## TEMPERATURE COMPENSATED CURRENT SENSING CIRCUIT FOR A POWER SUPPLY

**Geoffrey John Pask, and Anastasios Moschopoulos, both of Ottawa, Canada, assignors to Northern Electric Company Limited, Montreal, Canada**

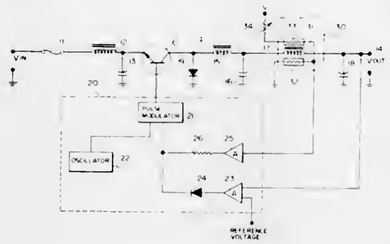
**Filed Dec. 10, 1974, Ser. No. 531,341**

**Int. Cl.² G05F *1/58***

**U.S. Cl. 323—4** **1 Claim**

**1.** In a current regulator for a power supply having a current control means connected serially between an input terminal and a corresponding output terminal of the power supply and a control circuit connected to the control means for controlling the current therethrough, a current sensing circuit for providing a control signal to said control circuit, comprising, an inductor connected between said control means and said output terminal of the power supply, said inductor comprising a coil wound on a magnetic core, a first magnetoresistive element positioned in flux coupling proximity to said inductor for varying said control signal in accordance with the current flowing through the inductor, and a second magnetoresistive element mounted in heat sensing contact with said core but

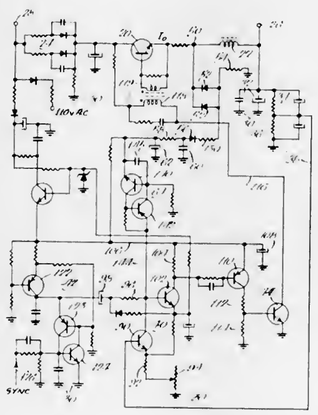
substantially outside the flux path thereof, said second magnetoresistive element being responsive to the temperature of



the core for varying said control signal thereby to compensate for thermal drift of the power supply.

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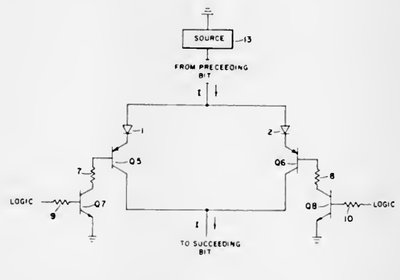
**3,931,567**
**DC POWER SUPPLY WITH LOAD CURRENT REGULATION**
**Raymond T. Kostecki, Glenview, Ill., assignor to Warwick Electronics Inc., Chicago, Ill.**
**Filed Feb. 8, 1974, Ser. No. 440,690**
**Int. Cl.² G05F *1/58***
**U.S. Cl. 323—9** **6 Claims**



1. In a DC power supply having an input terminal for unregulated DC input voltage and an output terminal for regulated DC output voltage the improvement comprising:
- a switching device for interrupting the DC input current to produce current pulses;
- reactive impedance means for smoothing the current pulses produced by the switching device to produce the DC output voltage;
- rectifier means connected to the reactive impedance means for maintaining current flow through the impedance when the switching device is non-conductive;
- current sensing means connected to the rectifier means for developing a control signal proportional to the current pulses through the rectifiers;
- control circuit means for varying the switching period of the switching device to regulate said output voltage comprising;
- first and second transistors having the collector of the first transistor coupled to the base of the second transistor and having their emitters connected together,
- a source of reference potential connected to said emitters,
- oscillator means connected to the base of the second transistor,
- voltage sensing means connected to said output terminal for developing a signal indicative of the power supply output voltage, said voltage sensing means being connected to the base of the first transistor, said control circuit operable to generate a signal for controlling the conduction period of the switching device, and
- overload protection means comprising semiconductor switch means connected to said current sensing means and to the base of the second transistor and operable to disable said control circuit and shutdown said power supply when said control signal exceeds a predetermined level.

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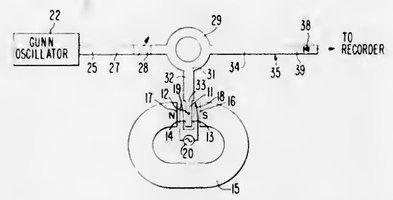
**3,931,568**
**EFFICIENT BIASING SCHEME FOR MICROWAVE DIODES**
**Walter R. Jost, Richfield, Minn., and Stuart S. Horwitz, Baltimore, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.**
**Filed May 2, 1974, Ser. No. 466,440**
**Int. Cl.² H03K *17/00***
**U.S. Cl. 323—25** **2 Claims**




1. A circuit comprising a first transistor having emitter, collector and base elements; supply means connected to said first transistor so as to provide a voltage potential across its elements; switching means connected between the supply means and the base element of said transistor so as to control the operation of said transistor; said switching means is a second transistor having emitter, collector and base elements; the collector of said second transistor being connected to the base of said first transistor; the emitter of said second transistor being connected to said supply means; a control voltage input connected between the base and emitter of said second transistor; said first transistor is a PNP transistor; said second transistor is a NPN transistor; said supply voltage is a DC supply voltage; a third PNP transistor having emitter, collector base elements; first and second diodes; said first diode being connected in series with an emitter collector path of said first transistor; said second diode being connected in series with an emitter collector path of said third transistor; the combination of said first diode and said first transistor collector emitter path being connected in parallel with the combination circuit of said second diode and said third transistor emitter collector path; a fourth NPN transistor having emitter collector and base elements; said fourth transistor having its emitter collector path connected in series between the base of said third transistor and said supply means; said control voltage input being a binary logic control voltage input; and one side of the control voltage input being connected to the base circuit of said second transistor and the other side of the control voltage input being connected to the base circuit of said fourth transistor.



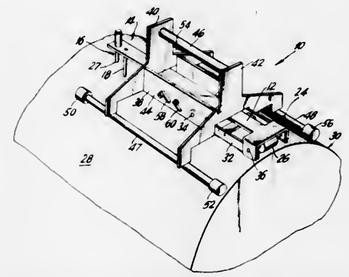
**3,931,569**
**NARROW CAVITY LOW COST EPR SPECTROMETER**
**James S. Hyde, Menlo Park, Calif., assignor to Varian Associates, Palo Alto, Calif.**
**Filed Feb. 19, 1974, Ser. No. 443,542**
**Int. Cl.² G01R *33/08***
**U.S. Cl. 324—0.5 A** **19 Claims**




1. An EPR spectrometer comprising a microwave resonant cavity, means for exciting the cavity with RF energy, said cavity being so configured that a resonant mode is established when said cavity is excited by said RF energy, said mode having a unidirectional electric field vector and at least one plane parallel to said unidirectional vector where the magnitude of said vector is zero, means for applying a polarizing, relatively steady magnetic field to the cavity in a direction parallel to said unidirectional vector, means for supporting a low loss sample holder in said cavity so that the holder has a longitudinal axis aligned perpendicular to said unidirectional vector and lies in one of said planes, said cavity and the space for the sample within the holder having approximately the same dimensions in the direction of said unidirectional vector so that there is provided a relatively high filling factor for the sample in the cavity between pole faces of the means for applying the magnetic field, said dimensions being much less than one-half of a wavelength of the RF energy exciting the cavity so that the cavity has a relatively low unloaded Q.

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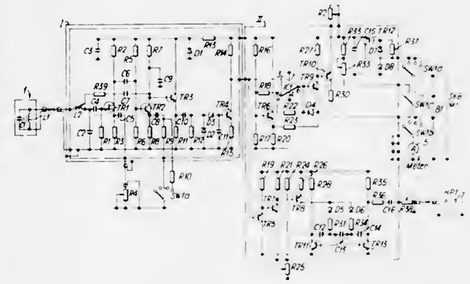
**3,931,570**
**APPARATUS FOR MEASURING CELL VOLUME IN A GRAVURE PRINTING SURFACE**
**Harvey F. George, West Hempstead; Robert H. Oppenheimer, Glen Cove, and Charles G. Marrara, Franklin Square, all of N.Y., assignors to Gravure Research Institute, Inc., Port Washington, N.Y.**
**Filed Sept. 19, 1974, Ser. No. 507,559**
**Int. Cl.² G01R *33/00***
**U.S. Cl. 324—34 R** **16 Claims**



1. An apparatus for measuring the volume of gravure printing cells which is positioned directly on a gravure printing surface comprising:
- a frame;
- engaging means coupled to said frame for engagement with the gravure printing surface;
- a probe beam movable coupled to said frame;
- back end support means mounted on said probe beam for contacting the gravure printing surface;
- a magnetic reaction probe mounted on said probe beam;
- a probe positioning member coupled to said probe beam; and
- means for lowering said probe beam so that said probe positioning member engages the gravure printing surface and said magnetic reaction probe is positioned a predetermined distance from the gravure printing surface.

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**3,931,571**
**EDDY CURRENT METAL SURFACE FLAW DETECTOR**
**Donald Henry Hocking, St. Albans; John Henry Calvert, Hatfield, and Richard Dennis, Bushey Heath, all of England, assignors to Hocking Associates (Electronics) Limited, England**
**Filed June 14, 1974, Ser. No. 480,136**
**Claims priority, application United Kingdom, Aug. 21, 1973, 39488/73**
**Int. Cl.² G01R *33/12***
**U.S. Cl. 324—37** **11 Claims**

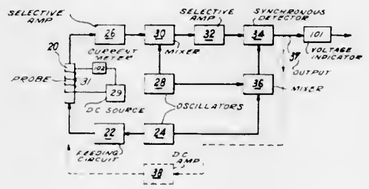


1. In a device for detecting flaws in a surface of the kind having a detector coil for responding to variations in eddy currents induced in said surface; an oscillator circuit for establishing an oscillatory electromagnetic field at said coil and generating an output signal varying with the impedance of said coil; and means actuated by said output signal to provide an indicator signal which is substantially in linear proportion to a dimension of the flaw for the purpose of actuating indicating or measuring means to identify the flaw, the improvement consisting in that the oscillator circuit includes:
- a tuned detector circuit comprising said detector coil,
- an inductor in series with said tuned circuit,
- a two-stage amplifier with adjustable gain, connected to said inductor,
- a feedback circuit maintaining zero phase shift between the said amplifier stages, and
- a capacitor providing capacitive reactance between the output of the amplifier and earth, means to adjust the oscillator so that the amplitude of the output signal decreases successively when the detector coil is moved from free air to adjacent a flawless part of the surface and then adjacent a flaw in the surface, said actuated means including a discriminator circuit whose discrimination level is set to pass only those oscillator signals whose amplitudes are less than or about equal to the amplitude of the output signal when the detector is adjacent a flawless part of the surface.

### 3,931,572
### METHOD AND APPARATUS FOR MEASURING MAGNETIC FIELDS UTILIZING ODD HARMONICS OF AN EXCITATION SIGNAL

Guy Chiron, St. Martin D'Heres, and Louis Debreuil-Monet, Valence, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Aug. 16, 1973, Ser. No. 388,901
Claims priority, application France, Sept. 4, 1972, 72.31277
Int. Cl.² G01R *33/02*
U.S. Cl. 324—43 R 24 Claims




1. A method of measuring the component of a magnetic field comprising the steps of:

applying as an excitation to a thin ferromagnetic film having an axis of easy magnetization; an axis of difficult magnetization, and a field of anisotropy, a first electrical signal for producing an alternating magnetic field of frequency F in the direction of difficult magnetization said alternating field having an amplitude less than the said anistropy field so that the direction of magnetization of the said film undergoes an oscillation without reversal;

detecting from the easy axis of said film for analysis a second electrical signal representing the variation in the magnetic induction B within the said film, said signal containing analyzable odd harmonics of the excitation frequency F, said harmonics existing only in the presence of said component under measurement; and

analyzing any of the odd harmonic frequencies of the said electrical signal whose amplitude is representative of the component of the field under measurement along the axis of difficult magnetization.

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### 3,931,573
### RADIATION DETECTOR

Samuel Hopfer, Brooklyn, N.Y., assignor to General Microwave Corporation, Farmingdale, N.Y.

Filed May 5, 1972, Ser. No. 250,582
Int. Cl.² G01R *5/26*, *21/04*
U.S. Cl. 324—106 33 Claims

1. An electrical circuit device for detecting free space radio frequency radiation fields, said device including:

a plurality of spaced conductive strips in the form of thin resistive films whose thickness is small compared to the skin depth at the radio frequency, said strips being connected in an electrically conductive path,

and a non-metallic housing for said strips including means for surrounding said strips with dielectric material for passing said radiation fields to said strips,

the area of spacing between adjacent ones of said strips being greater than the area of said strips so that the impedance of said strips is largely resistive over a broad band of radio frequencies.

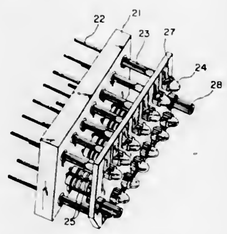



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### 3,931,574
### DEVICE AND METHOD OF WIRE WRAP (OR OTHER ELECTRICAL INTERCONNECTION BETWEEN I.C. SOCKETS) CHECKOUT

Ralph W. Curtis, Jr., 7018 Wood Thrust Drive, Lanham, Md. 20801; William P. Byrne, 9821 Raintree Road, Burke, Va. 22015, and Alan G. Pezzulich, 720 N. Ripley St., Alexandria, Va. 22304

Filed Nov. 19, 1974, Ser. No. 525,251
Int. Cl.² G01R *31/02*, *31/08*
U.S. Cl. 324—158 F 2 Claims




1. A reuseable plug-in test module for testing wire wrap board electrically interconnected circuits which comprises:

a base made of electrically insulating material;

a pair of rows of linearly aligned equally spaced socket pins secured in said base and insulated from each other;

said pins extending above and below said base,

a plurality of visual light emitting means electrically connected with one each of said spaced socket pins above said base;

an electrical conductor common to each of said light emitting means;

a resistor means electrically connected between each said light emitting means and said common electrical conductor;

an electrical conductor post connected with each end of said common electrical conductor;

a thin insulator board secured above the upper ends of said socket pins in said base and supported thereby,

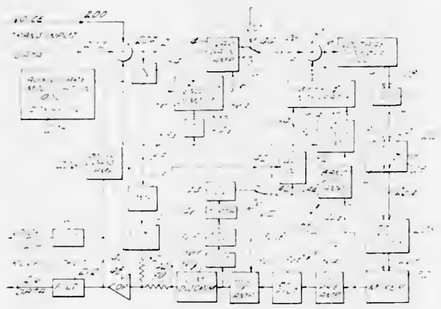
said insulator board supporting said plurality of visual light emitting means, said resistor means, said common electrical conductor, and said electrical posts connected with each end of said common electrical conductor.



### 3,931,575
### FILTER STABILIZED SINGLE OSCILLATOR TRANSCEIVERS

Salvatore Amoroso, Jr., Fairfield, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Oct. 21, 1974, Ser. No. 516,536
Int. Cl.² H04B *1/40*
U.S. Cl. 325—17 6 Claims



1. A transceiver, adapted for use in a duplex transceiver system including a pair of such transceivers settable for operation with one in a master mode and one in a slave mode, said transceiver comprising:

a single, voltage-tunable oscillator having means for providing a frequency-controlling voltage input thereto;

an FM receiver having the same IF frequency in the master mode as in the slave mode and including an RF mixer that drives said FM receiver and that provides a frequency-determining feedback signal;

antenna means for transmitting and receiving microwave energy;

an RF filter, having a center frequency and having a pass band greater than said IF frequency, the output of said RF filter coupled to said RF mixer;

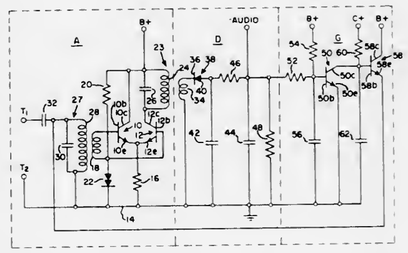
means for coupling energy from said oscillator to said antenna means for transmission thereby and for simultaneously coupling energy received at said antenna means and a small portion of the energy of said oscillator to the input of said RF filter; and

frequency control means including means providing an initial frequency sweep controlling voltage to the input of said oscillator to thereby sweep the frequency of said oscillator to a frequency within said band of frequencies, and having an input connected for response to the feedback signal output of said RF mixer, for providing a frequency control voltage to the frequency-controlling voltage input means of said oscillator in response to said feedback signal and to said initial frequency sweep controlling voltage to establish operation of said oscillator at a frequency separated from said center frequency by one-half of said IF frequency, and further including means settable to designate said transceiver for operation in the master mode or the slave mode, and operable when set in the slave mode to provide said frequency control voltage to establish operation of said oscillator at one side of said center frequency and operable when set in the master mode to provide said frequency control voltage to establish operation of said oscillator at the other side of said center frequency.

### 3,931,576
### AUTOMATIC GAIN CONTROL CIRCUIT FOR RADIO RECEIVER

Antal Csicsatka, Utica, and Leslie H. String, Johnstown, both of N.Y., assignors to General Electric Company, Syracuse, N.Y.

Filed Jan. 14, 1975, Ser. No. 540,814
Int. Cl.² H04B *1/16*; H03G *5/28*
U.S. Cl. 325—409 2 Claims




1. A radio receiving apparatus including an intermediate frequency amplifier stage and a detector stage coupled to said amplifier stage and means for varying the gain of said intermediate frequency amplifier stage inversely respective the amplitude of a carrier wave being processed through said intermediate frequency amplifier stage and said detector, said intermediate frequency amplifier including a tuned circuit, and said detector including means for developing a voltage proportional to the amplitude of a carrier wave being processed by said detector, and said means for varying the gain of said intermediate frequency amplifier including a first transistor in a normally saturated conductivity condition in the absence of a processed carrier wave and coupled to said detector for receiving said detector developed voltage to decrease the conductivity of said first transistor in the presence of a processed carrier wave, a second transistor connected in an emitter follower circuit configuration including an emitter follower output and coupled to the output of said first transistor, said second transistor being non-conductive during the saturated condition of said first transistor and becoming increasingly conductive as the conductivity of said first transistor decreases, said emitter follower output being connected to said tuned circuit of said intermediate frequency amplifier to decrease the Q of said tuned circuit and thereby reduce the gain of said intermediate frequency amplifier as said conductivity of said second transistor increases.

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### 3,931,577
### RADIO RECEIVER PROTECTION ARRANGEMENT

Robert Leigh Barnett, Carlingford, Australia, assignor to Amalgamated Wireless (Australia) Limited, Sydney, Australia

Filed July 2, 1974, Ser. No. 485,285
Int. Cl.² H04B *1/18*
U.S. Cl. 325—362 5 Claims

1. A radio receiver protection arrangement comprising:

an aerial input terminal;

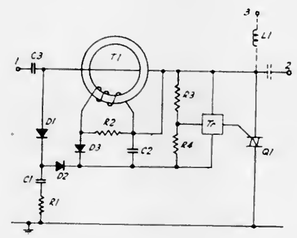
an output terminal adapted to be coupled to the input of a radio receiver;

an aerial lead connected between said input and output terminals;

rectifier means connected to said aerial lead for providing a first unidirectional signal representative of peak voltage on said aerial lead;

rectifier means coupled to said aerial lead for providing a second unidirectional signal representative of current through said aerial lead;

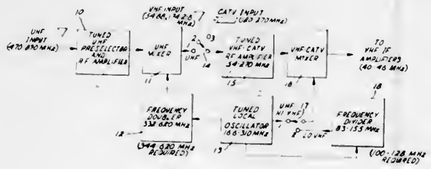
means for combining said first and second signals to form a third signal representative of the aggregate levels of said first and second signals;
an electronic switch connected between said aerial lead and ground; and




means responsive to said third signal for closing said electronic switch to shunt said input signal therethrough at a predetermined level of said third signal.

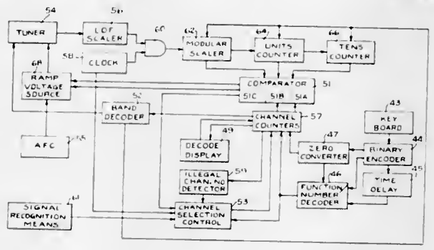
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**3,931,578**
**MULTIPLE FREQUENCY BAND RECEIVER TUNER SYSTEM USING SINGLE, NON-BANDSWITCHED LOCAL OSCILLATOR**
**Norman C. Gittinger, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.**
**Filed Dec. 26, 1973, Ser. No. 428,074**
**Int. Cl.² H04B 1/16**
**U.S. Cl. 325—461** **21 Claims**




**18.** A multiple frequency band television receiver tuner system adapted for UHF, VHF and CATV bands comprising:
a UHF mixer circuit having a first input connectable to a source of UHF television signals in a first frequency band;
a VHF-CATV mixer having a first input;
a second input connectable to a source of VHF-CATV television signals in a second frequency band;
switch means operative to connect said first input of said VHF-CATV mixer alternately to said second input or to an output of said UHF mixer;
local oscillator circuit means tunable over a third frequency band and having a first output in a first output frequency band and a second output in a second output frequency band, said second output frequency band being double said first output frequency band;
said first output of said local oscillator circuit means connected to a second input of said VHF-CATV mixer and said second output connected to a second input of said UHF mixer;
said first output frequency band selected so that the output of said UHF mixer circuit is characterized by television signals in a frequency band substantially coextensive with said second frequency band.

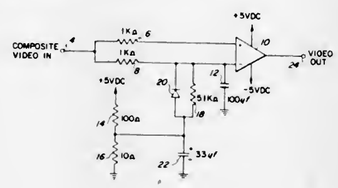
**3,931,579**
**DIGITAL SIGNAL SEEKING TUNING SYSTEM**
**John Ma, Glenview, and Akio Tanaka, Evanston, both of Ill., assignors to Zenith Radio Corporation, Chicago, Ill.**
**Filed Apr. 1, 1974, Ser. No. 457,010**
**Int. Cl.² H04B 1/34**
**U.S. Cl. 325—464** **39 Claims**




**1.** In a television tuning system including a voltage controllable oscillator for selectively tuning a plurality of fixed frequency bandwidth television channels in a predetermined range of frequencies, channel number selection means for sequencing through channel numbers, comparison means, voltage generating means for changing the tuning frequency of said voltage controllable oscillator under the control of said comparison means, and signal recognition means, the method of operating said tuning system comprising the steps of:
encoding on a sample basis the tuning frequency of said oscillator into channel number information related to the channel number of corresponding receivable television channels;
initiating the channel number selection means to produce a change to an adjacent channel number;
driving said voltage controllable oscillator from said voltage generator means;
comparing the channel number information from said channel number selection means with the encoded channel number information from said oscillator to determine a preselected condition in said comparison means, said preselected condition occurring only when said oscillator tuning is within a restricted frequency range about the frequency corresponding to the channel number from said selection means; and
reinitiating the channel number selection means to produce a change to another channel number if no television signal is recognized by said signal recognition means during the existence of said preselected condition.

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**3,931,580**
**DIGITAL LINE RECEIVER CIRCUIT**
**Edward F. Hebda, Lomita, Calif., assignor to Xerox Corporation, Stamford, Conn.**
**Filed June 10, 1974, Ser. No. 477,885**
**Int. Cl.² H04B 3/36**
**U.S. Cl. 328—164** **5 Claims**



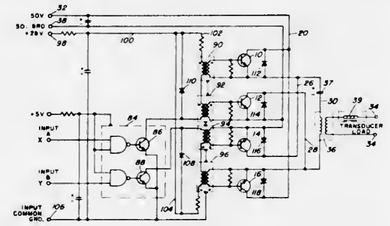

**1.** A circuit for detecting the state changes of a digital video waveform comprising:



a. a differential amplifier having a first and second input and an output,
b. means for applying a digital signal to said first and second inputs, and
c. said second input having connected thereto
1. time delay means to delay the application of said waveform to said second input,
2. biasing means to prevent the voltage at said second input to reach the voltage at said first input during steady state operation, and
3. means for preventing negative voltages from appearing at said second input.

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**3,931,581**
**HIGH-EFFICIENCY, SWITCHING, POWER AMPLIFIER**
**Louis J. Kush, Jr., State College; Claus P. Janota, Lemont; Richard D. Koontz, Pennsylvania Furnace, and Leon H. Sibul, State College, all of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**
**Filed Sept. 30, 1974, Ser. No. 510,189**
**Int. Cl.² H03F 3/217, 3/387**
**U.S. Cl. 330—10** **8 Claims**

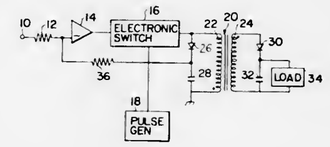



**1.** A switching, power amplifier comprising:
signal conditioner means for receiving a signal to be transmitted and converting said signal to a plurality of voltage logic levels;
power source means;
electrical load means;
a plurality of switching means, arranged in a bridge configuration for switching a current from said power source means through said electrical load means to a ground potential;
a plurality of voltage-transforming means, a different, voltage-transforming means coupled to each of said switching means for switching its respective switching means in accordance with a predetermined signal condition;
driver means for receiving said plurality of voltage logic levels from said signal conditioner means and,
energizing opposite pairs of voltage-transforming means in accordance with each voltage logic level change by first removing the power from the previously energized pair of voltage-transforming means and after a predetermined time delay approximately equal to the turn-off time of said switching means energizing the opposite pair of voltage-transforming means, said energized voltage-transforming means switching their respective switching means when those voltage-transforming means have reached said predetermined signal condition.

**8.** A method for switching the switching means contained in the arms of a power amplifier bridge, each arm of said bridge being coupled to the signal to be transmitted through a voltage transformer having at least one primary winding, the voltage transformers in opposite arms of said bridge being connected to operate simultaneously as a pair, the method comprising the steps of:
receiving a signal to be transmitted;
converting said signal to be transmitted to voltage logic levels;
inserting a predetermined time delay before each voltage logic level change to prevent a bridge short circuit due to slow switching of said switching means;
running a current alternately through the primaries of the pairs of voltage transformers in accordance with said delayed, voltage logic levels; and
upon the collapse of the current running through the primaries of a pair of transformers, switching into a conductive state said switch means coupled to those transformers.

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**3,931,582**
**ISOLATED DC AMPLIFIER CIRCUIT**
**Kazuo Kato, Tohkai, and Yasuji Kamata, Hitachi, both of Japan, assignors to Hitachi, Ltd., Japan**
**Filed Aug. 22, 1974, Ser. No. 499,794**
**Claims priority, application Japan, Aug. 22, 1973, 48-93336**
**Int. Cl.² H03F 3/38**
**U.S. Cl. 330—10** **6 Claims**

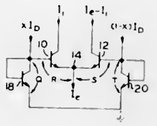



**1.** An isolated DC amplifier circuit comprising:
a DC amplifier;
an electronic switching element connected to the output terminal of said DC amplifier;
a pulse generator connected to said electronic switching element;
a pulse transformer having a primary winding and a secondary winding, one terminal of the primary winding being connected to the output terminal of said electronic switching element;
a first rectifier, one terminal of which being connected to the one terminal of the primary winding of said pulse transformer;
a first condenser, one terminal of which is connected to the other terminal of said first rectifier, and the other terminal of said first condenser being connected to the other terminal of the primary winding of said pulse transformer; feedback means connected between the junction point of said first rectifier and said first condenser, and a negative input terminal of said DC amplifier;
a second rectifier, one terminal of which is connected to one terminal of the secondary winding of said pulse transformer, the polarity of the primary winding and secondary winding of said pulse transformer being defined so that both said first and second rectifiers are simultaneously rendered conductive, when said pulse transformer is energized; and
a second condenser one of which terminal being connected to the other terminal of said second rectifier, and the other terminal of said second condenser being connected to the other terminal of the secondary winding of said pulse transformer.

## 3,931,583
## WIDEBAND DIFFERENTIAL AMPLIFIER

**Barrie Gilbert, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.**

**Continuation of Ser. No. 258,111, May 30, 1972, abandoned, which is a division of Ser. No. 27,765, April 13, 1970, which is a continuation-in-part of Ser. Nos. 701,257, Jan. 29, 1968, abandoned, and Ser. No. 835,558, June 23, 1969, abandoned.**
**This application Jan. 13, 1975, Ser. No. 540,499**
**Int. Cl.² H03F 3/14**
**U.S. Cl. 330—38 M** **11 Claims**



1. An integrated circuit wide band differential amplifier comprising:

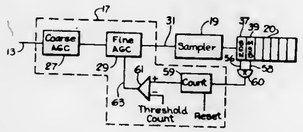
a. a pair of differentially coupled transistors having normally non-linear current and voltage output characteristics as a function of an input voltage applied thereto, said differentially coupled transistors being disposed in a unitary semiconductor substrate, the emitters of which are coupled together to a reference voltage through a suitable source of current, each transistor also having a base terminal and a collector output terminal, and

b. a pair of input devices receiving differential input currents, each input device coupled to a different one of said base terminals, said input devices each comprising an input transistor having a p-type region and an n-type region forming a p-n junction, one of said p and n-type regions of said input transistor of said input devices being coupled to the base of one of said differentially coupled transistors and the other of said p and n-type regions of each said input transistor being coupled to said source of reference voltage, said differentially coupled transistors and said input transistors having substantially identical current and voltage output characteristics as a function of input voltage applied thereto.

## 3,931,584
## AUTOMATIC GAIN CONTROL

**David M. Motley, Santa Ana, and King Y. Cheng, Tustin, both of Calif., assignors to Hycom Incorporated, Irvine, Calif.**

**Filed Sept. 12, 1974, Ser. No. 505,211**
**Int. Cl.² H03G 3/22**
**U.S. Cl. 330—129** **4 Claims**




1. An automatic gain control system adapted to receive a first analog signal having a first fluctuating power level comprising:

coarse automatic gain control means responsive to the first analog signal to amplify the first analog signal by a first gain to provide a second analog signal having a second power level which fluctuates less than said first fluctuating power level;

fine automatic gain control means responsive to said second analog signal to amplify the second analog signal by a variable gain to provide a third analog signal having a third power level, said third power level fluctuating less than said second power level;

first means responsive to said third analog signal for providing a digital signal related to the power level of said third signal;

said digital signal having a characteristic which statistically should occur a first number of times during a predetermined interval for the power level of the third analog signal;

means for counting the actual number of times said characteristic actually occurs during said interval;

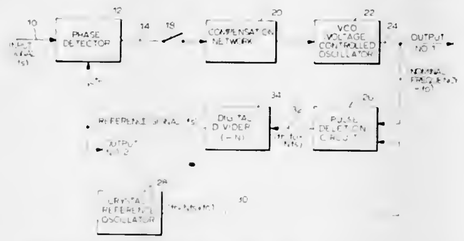
means for comparing said first number with said actual number and for providing a gain control signal in response to such comparison; and

said fine automatic gain control means being responsive to said gain control signal for varying the gain of said fine automatic gain control means to thereby adjust the power level of said third signal.

## 3,931,585
## PHASE COMPARISON SYSTEMS EMPLOYING IMPROVED PHASELOCK LOOP APPARATUS

**A. Clifford Barker, and Edmund S. Zavada, both of Hampton, Va., assignors to Navidyne Corporation, Hampton, Va.**

**Filed June 17, 1974, Ser. No. 479,996**
**Int. Cl.² H03B 3/04**
**U.S. Cl. 331—1 A** **9 Claims**




1. Phaselock loop apparatus comprising:

means for producing an error signal representative of the phase difference between an input signal and a reference signal;

means responsive to said error signal for generating a signal having a frequency which varies in accordance with said phase difference;

means for generating a pulse train signal having a pulse repetition frequency which is orders of magnitude higher than the frequency of said variable-frequency signal; and means for deriving said reference signal from said variable-frequency signal and said further signal, said deriving means including a pulse deletion circuit which deletes pulses from said pulse train signal in response to said variable-frequency signal.

## 3,931,586
## SCANNING OSCILLATOR STABILIZATION

**Ralph A. Carpenter, Temple Hills, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed Mar. 21, 1975, Ser. No. 560,747**
**Int. Cl.² H03B 3/04, 23/00**
**U.S. Cl. 331—1 R** **4 Claims**

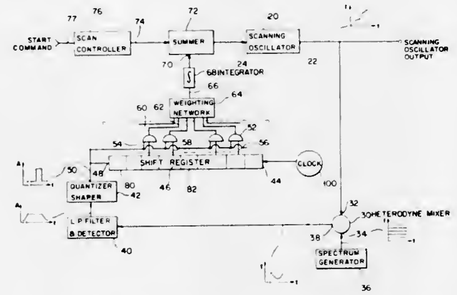
1. In a control-system for a scanning-oscillator having a frequency scanning-range R, said oscillator being controlled by a signal from a scanning-oscillator controller, the improvement comprising:

means connected to the output of said scanning-oscillator for generating a crossing-signal upon the frequency of the scanning-oscillator output-signal crossing each of a set of equally spaced in frequency check-frequencies within said scan range R;

means connected to the output of said crossing-signal generating means for delaying each said crossing-signal by a time, termed the desired time, between the occurrence of said crossing-signals when said output signal is following a desired linear change in frequency;

means connected to the output of said crossing-signal generating means and to said delaying means for determining when the time difference between the occurrence of two successive ones of said crossing signals is different by at least a predetermined threshold amount from said desired






time, and for generating an error signal having a magnitude proportional to said difference and a sign indicative of the sense of said difference;

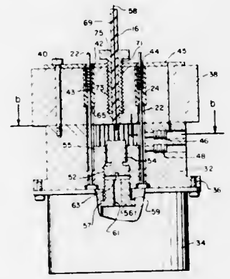
means, having a first input terminal connected to the output of said time difference determining error signal generating means; a second input terminal connected to the output of said scanning-oscillator controller, and an output terminal coupled to the control input of said scanning oscillator for combining said error signal and the signal from said controller;

whereby said signal form said controller is modified by combination with error signal.

## 3,931,587
## MICROWAVE POWER ACCUMULATOR

**Robert S. Harp, West Lake Village, and Harry L. Stover, Newberry Park, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.**

**Continuation of Ser. No. 324,938, Jan. 19, 1973, abandoned.**
**This application Feb. 3, 1975, Ser. No. 546,230**
**Int. Cl.² H03B 7/14**
**U.S. Cl. 331—56** **15 Claims**



1. A microwave power accumulator including, in combination:

a. a plurality of coaxial circuits, each having a longitudinal axis of predetermined length and further having at least one solid state microwave diode at one end of said axis and a lossy termination element at the other end thereof, and conductor means connecting said diode and said element, said coaxial circuits operative to generate microwave power which is substantially free of spurious harmonics,

b. a central power combining cavity being defined in part by a periphery enclosing a given space and having a central axis at the center of said periphery,

c. said coaxial circuits positioned around said periphery of said cavity and having their longitudinal axes spaced an equal distance from said central axis of said cavity,

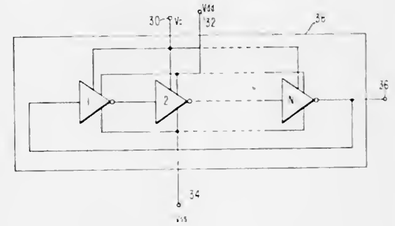
d. said cavity further having an output port therein centrally disposed with respect to said coaxial circuits for receiving the combined power outputs from all of said coaxial circuits, and

e. said diode in each coaxial circuit being electromagnetically coupled to said cavity, and the resonance of said cavity causing the oscillation of said coaxial circuits at a predetermined frequency.

## 3,931,588
## VOLTAGE CONTROLLED OSCILLATOR UTILIZING FIELD EFFECT TRANSISTORS

**William Frederick Gehweiler, Moorestown, N.J., assignor to RCA Corporation, New York, N.Y.**

**Filed Sept. 10, 1974, Ser. No. 504,839**
**Int. Cl.² H03B 3/04, 5/02**
**U.S. Cl. 331—57** **3 Claims**




1. A voltage controlled oscillator comprising:

an odd number of cascaded inverter stages connected in a ring configuration:

means for applying operating biasing voltages to each of said stages;

each of said stages comprising two semiconductor devices of one conductivity type and two semiconductor devices of another conductivity type, each of said devices having first and second main electrodes and a control electrode, each stage having a control terminal connected to a common point adapted for connection to a source of control signals, the signal propagation delay of a given stage being controlled by control signals applied to the control terminal associated therewith with each stage of said ring configuration providing substantially the same delay with respect to one another in response to the control signals applied to said common point; and

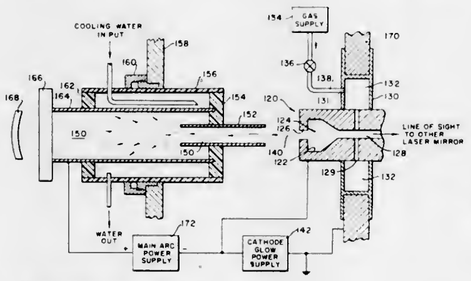
an output terminal connected to a point between two of said stages for providing an output signal having a controllable frequency.

**3,931,589**

## PERFORATED WALL HOLLOW-CATHODE ION LASER

**Sol Aisenberg, Natick, and Kuowei Chang, Lexington, both of Mass., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed Mar. 21, 1974, Ser. No. 453,237**
**Int. Cl.² H01S *3/22, 3/03***
**U.S. Cl. 331—94.5 PE** **24 Claims**




1. A gas laser comprising:

elongated laser enclosure means having a lasing axis running lengthwise through said enclosure, said laser enclosure being filled with a suitable gas for lasing at a predetermined pressure;

hollow cathode means with perforated walls located within said laser enclosure means, said cathode means having at least two apertures axially aligned along said lasing axis; auxiliary anode means positioned near said cathode means and arranged so as not to obstruct said cathode apertures;

said cathode means and said auxiliary anode means each being adapted to receive a voltage potential, the potential difference between the voltages applied to said cathode means and auxiliary anode means being sufficiently high so that a plasma of electrons and ions is situated within the interior of said hollow cathode means;

accelerating anode means positioned within said laser enclosure means axially along said lasing axis and energized with a sufficient voltage potential relative to said auxiliary anode means so that a collimated beam of high energy electrons and ions is drawn from one of said apertures in said cathode means, the high energy electrons of said beam causing a population inversion sufficient to form a laser beam along said lasing axis, said accelerating anode means having a central opening to permit the passage therethrough of both the laser beam and said beam of electrons and ions; and

feedback-output means positioned along said lasing axis for reflecting a portion of said laser beam back along said laser axis, and for allowing the remaining portion of said laser beam to be emitted from said gas laser.

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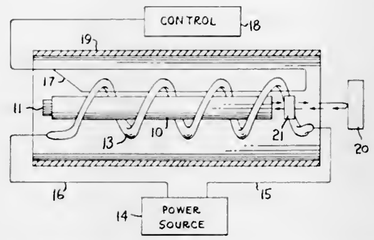
**3,931,590**

## Q-SWITCHING DEVICE FOR GLASS LASERS

**Charles B. Greenberg, Murrysville, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.**

**Continuation-in-part of Ser. No. 65,894, Aug. 21, 1970, Pat. No. 3,865,747, which is a continuation-in-part of Ser. No. 673,614, Oct. 9, 1967, abandoned. This application Jan. 17, 1974, Ser. No. 434,157**
**Int. Cl.² H01S *3/16***
**U.S. Cl. 331—94.5 E** **2 Claims**

1. A Q-switching device for use in combination with a laser composed of a host body of glass containing a lasing element, said Q-switching device consisting essentially of the reaction product of a mixture of glass batch materials, a uranium salt reactive therewith and cerium dioxide, said cerium dioxide and uranium salt being present in amounts sufficient to provide a product containing from 0.01 to 20 percent $CeO_2$ based on the weight of the glass, and a total uranium content, expressed as $UO_2^{+2}$, of from 0.01 to 15 percent based on the




weight of the glass, wherein at least 91 percent is present in the valence form $UO_2^{+2}$.

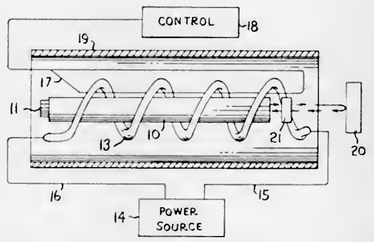
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**3,931,591**

## Q-SWITCHING DEVICE FOR GLASS LASERS

**Charles B. Greenberg, Murrysville, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.**

**Division of Ser. No. 65,894, Aug. 21, 1970, Pat. No. 3,865,747, which is a continuation-in-part of Ser. No. 673,614, Oct. 9, 1967, abandoned. This application Jan. 17, 1974, Ser. No. 434,156**
**Int. Cl.² C03C *3/04, 3/10*; H01S *3/10***
**U.S. Cl. 331—94.5 E** **1 Claim**




1. A self Q-switching laser device including means for pumping $Nd^{+3}$ ions, comprising a glass article consisting essentially of:

a. a conventional host glass selected from the group consisting of: soda-lime-alumina-silica glass, soda-lime-silica glass, high silica borosilicate glass, germanate glass, flint glass, and lead silicate glass;

b. from 0.01 to 30 percent by weight $Nd_2O_3$ lasing element;

c. from 0.01 to 15 percent by weight uranium expressed as $UO_2^{+2}$, at least 91 percent of the uranium content being in the $UO_2^{+2}$ valence form, and serving as the Q-switcher;

d. from 0.01 to 20 percent by weight $CeO_2$ to maintain at least 91 percent of the uranium ions in the $UO_2^{+2}$ valence state.

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**3,931,592**

## SURFACE ACOUSTIC WAVE TUNED LASER

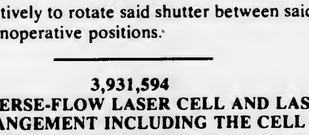
**Richard Swart Hughes, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed June 14, 1974, Ser. No. 480,190**
**Int. Cl.² H01S *3/10***
**U.S. Cl. 331—94.5 C** **6 Claims**

1. A tunable laser, comprising:

an optically resonant cavity bounded at one end by a partially reflective mirror through which is provided the output beam of said laser, including a source of laser light in said cavity; and

tuning means in the optical path of said cavity for acousto-optically tuning the laser to oscillate at selected wavelengths in response to an electrical signal, comprising an electrical signal, a piezoelectric crystal in the optical path of said light opposite said partially reflective mirror from




said source having at lease one reflective surface for reflecting said light, and interdigitized fingers on the reflective surface of said crystal for receiving said electrical signals and generating surface acoustic waves in said surface in response to said signals;

wherein the laser is tuned at least in part by said surface acoustic waves.

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**3,931,593**

## LASER BEAM CONTROL DEVICE

**H. Laurance Marshall, Palo Alto, Calif., assignor to GTE Sylvania Incorporated, Mountain View, Calif.**

**Filed Apr. 22, 1974, Ser. No. 462,738**
**Int. Cl.² H01S *3/02***
**U.S. Cl. 331—94.5 D** **1 Claim**




1. In combination

a high power laser having an output beam directed along an axis,

an opaque shutter extending across the beam path at an obtuse angle with respect to the incident beam to define an operative reflecting position and movable to an inoperative position out of the beam path,

said shutter having a convexospherical surface at the point of incidence of said beam when the shutter is in the operative position whereby to reflect and expand said beam, energy absorber means in the path of said reflected beam, and

means selectively to rotate said shutter between said operative and inoperative positions.

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**3,931,594**

## TRANSVERSE-FLOW LASER CELL AND LASER ARRANGEMENT INCLUDING THE CELL

**Fritz Peter Schäfer, Gottingen-Nikolausberg, Germany, assignor to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V., Gottingen, Germany**

**Filed Jan. 27, 1975, Ser. No. 544,225**
**Claims priority, application Germany, Sept. 4, 1974, 2442325**
**Int. Cl.² H01S *3/02***
**U.S. Cl. 331—94.5 L** **8 Claims**

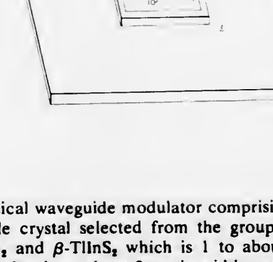
1. A transverse-flow cell for a laser comprising:

a. at least three substantially wedge-shaped elements permeable to radiant pumping energy,

1. each element having two side faces converging toward an edge elongated in a direction common to the edges of said elements,

2. said edges jointly defining therebetween a cavity elongated in said direction and having a longitudinal axis,

3. each side face and an adjacent side face of another element defining therebetween a conduit communicating with said cavity, the circumferential width of said conduit relative to said axis being but a small fraction of the radial and axial dimensions of said conduit; and



b. end wall means fixedly connecting said elements and sealing said cavity in said common direction,

1. said end wall means including a wall portion permeable to visible light and sealing said cavity in one longitudinal direction.

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**3,931,595**

## OPTICAL WAVEGUIDE MODULATOR USING SINGLE CRYSTALS OF $TLGASe_2$ OR $\beta TLINS_2$

**Thelma J. Isaacs, Monroeville; Milton Gottlieb, Pittsburgh, and John D. Feichtner, Murrysville, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**Filed Apr. 23, 1974, Ser. No. 463,338**
**Int. Cl.² G02F *1/11*; H01S *3/10***
**U.S. Cl. 332—7.51** **14 Claims**



1. An optical waveguide modulator comprising

1. a single crystal selected from the group consisting of $TlGaSe_2$ and $\beta$-$TlInS_2$ which is 1 to about 50 microns thick and at least about 3mm in width and length;

2. means for generating an acoustic wave in said crystal moving across the thickness of said crystal; and

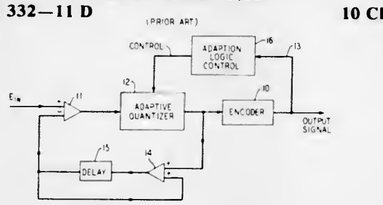
3. means for passing a monochromatic light beam from an incoming waveguide through said crystal along the length of said crystal, then back into an outgoing waveguide.

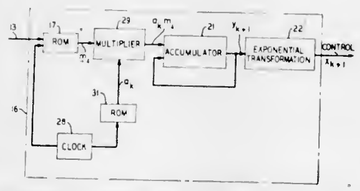
**3,931,596**

## ADAPTIVE QUANTIZER APPARATUS USING TRAINING MODE

**Allen Gersho, Berkeley Heights, and David Joel Goodman, Summit, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**

**Filed Sept. 30, 1974, Ser. No. 510,412**
**Int. Cl.² H03K** *13/22*
**U.S. Cl. 332—11 D** **10 Claims**



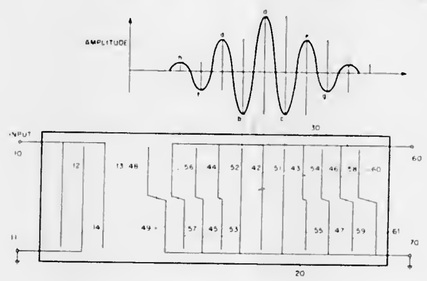

1. Apparatus for controlling an adaptive quantizer wherein the improvement comprises: means responsive to the output signal of said adaptive quantizer for altering the range scale of said quantizer by a multiplicative factor which is a function of the magnitude of the output signal of said quantizer and a function of time which is independent of the input signal to said quantizer.

**3,931,597**

## APPARATUS AND METHOD FOR PHASE-ENCODED SURFACE WAVE DEVICES

**Frederick Y. Cho, and Bill J. Hunsinger, both of Fort Wayne, Ind., assignors to The Magnavox Company, Fort Wayne, Ind.**

**Filed Feb. 4, 1974, Ser. No. 439,482**
**Int. Cl.² H03H** *9/02, 9/26, 9/30;* **H01L** *41/04*
**U.S. Cl. 333—30 R** **18 Claims**



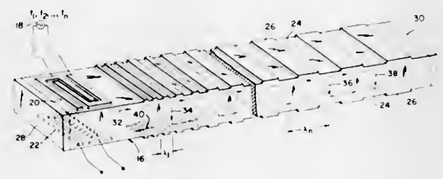

14. An electro-acoustic device having encoding of preestablished frequency characteristic, comprising:
a first group of electrodes;
a second group of electrodes, wherein said second group of electrodes is interleaved with said first group of electrodes, said first group of electrodes including a first plurality of sets of portions of electrodes, individual signals generated by each of said sets producing a preselected combined signal; said first and second group of electrodes being substantially perpendicular to a first and second conducting region respectively;
an acoustic-wave propagating medium, said first and said second group of electrodes being coupled to said medium; and
wherein said preselected combined signal is determined by a time-domain representation of said preestablished frequency characteristics.

**3,931,598**

## NORMAL REFLECTIVE ARRAY COMPRESSOR AND METHOD

**Wayne L. Bongianni, Placentia, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed Dec. 17, 1974, Ser. No. 533,554**
**Int. Cl.² H03H** *9/26, 9/30, 9/22;* **H01L** *41/08*
**U.S. Cl. 333—30 R** **5 Claims**



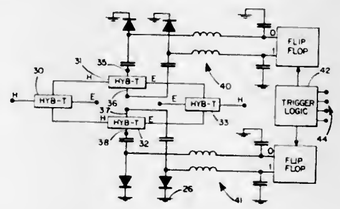
1. An acoustic wave device comprising:
a piezoelectric substrate having oppositely disposed flat surfaces;
an input transducer on one surface of said substrate for launching acoustic surface waves traveling down said surface;
an output transducer on the other opposite surface of said transducer for collecting acoustic surface waves traveling on said opposite surface in a direction opposite to the direction of travel on said one surface;
said input and output transducers comprising metallic electrodes, the electrodes of said input transducer being in line with corresponding electrodes of said output transducer;
arrays of electrode fingers on each of said surfaces, each said array having spacings between adjacent electrodes thereof which vary along the length of the substrate over which the acoustic surface wave is adapted to travel; the widths of the electrodes and the spacings between them of both arrays being the same with corresponding electrodes and spacings of both arrays on said opposite surfaces being in line with each other.

**3,931,599**

## HYBRID PHASE INVERTER

**Edward Salzberg, 19 Black Oak Road, Wayland, Mass. 01778**

**Filed Jan. 30, 1975, Ser. No. 545,525**
**Int. Cl.² H01P** *1/18*
**U.S. Cl. 333—31 R** **9 Claims**




1. A hybrid junction phase inverter comprising:
a. a hybrid-T junction having a first pair of branches connected as input/output terminals and a second pair of branches connecting as switching terminals;
b. first and second switchable impedances connected to provide opposite and reversible impedance terminations of said second pair of branches; and
c. switching means for reversing the impedance states of said switchable impedances.

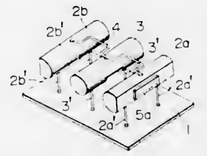


**3,931,600**

## MECHANICAL FILTER

**Toshio Nagashima; Ichiro Imaguchi, and Shigeo Igarashi, all of Hamura, Japan, assignors to Kokusai Electric Co., Ltd., Tokyo, Japan**

**Filed May 24, 1974, Ser. No. 472,987**
**Claims priority, application Japan, June 11, 1973, 48-65589; June 11, 1973, 48-65591; June 11, 1973, 48-65590; June 15, 1973, 48-70837**
**Int. Cl.² H03H** *9/02, 9/26;* **H04R** *17/00;* **H01L** *41/04*
**U.S. Cl. 333—71** **14 Claims**



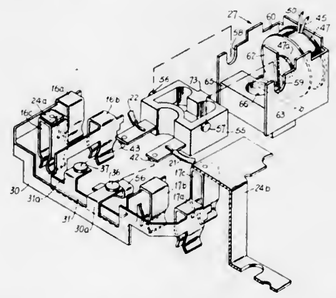
1. A mechanical filter comprising an input electromechanical transducer element and an output electro-mechanical transducer element, each of truncated circular cross-section and disposed in predetermined, substantially parallel, spaced relationship, and a coupler element, having a flexural or longitudinal mode resonance characteristic, mechanically cascade-connecting the electro-mechanical transducer elements, wherein the ratio of *d* to D of the input electro-mechanical transducer element is made to differ from that of the output electro-mechanical transducer element, where *d* represents the maximum width in the direction perpendicular to the truncated edge of each of said transducer elements and D indicates the maximum width in the direction parallel to the truncated edge of each of said transducer elements.

**3,931,601**

## RECEPTACLE DEVICE GROUND FAULT CIRCUIT INTERRUPTER

**Richard W. Anderson, Manitowoc, Wis., assignor to AMF Incorporated, White Plains, N.Y.**

**Filed Nov. 27, 1974, Ser. No. 527,823**
**Int. Cl.² H01H** *83/04*
**U.S. Cl. 335—18** **13 Claims**



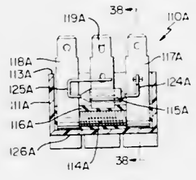
1. In a receptacle model ground fault circuit interrupter device, wherein said device includes at least first and second electrical plug receptacles and circuit breaker means for disconnecting said receptacles from an electrical source, and further includes ground fault circuit interrupting means for actuating said circuit breaker means upon sensing a ground fault, improved means for electrically connecting said receptacles in parallel and connecting the parallel connected receptacles to said circuit breaker means, said improvement comprising
a case having four side walls and a front face,
first and second spaced receptacle means ins said front face for receiving prongs of at least two male electrical plugs, first and second preformed bus conductors of generally U-shaped configuration disposed within said case, said bus conductors being preformed from relatively rigid and flat stock metal,
each bus conductor having two legs with a crossover portion therebetween, the crossover portion of the second bus conductor being shorter than that of the first one,
insulating partition means within said case for holding said first bus conductor in a fixed position with its crossover portion adjacent one side wall of the case,
additional insulating partition means within the case for holding the second bus conductor in a fixed position nested at least partially within said first bus conductor with the crossover portions of the two bus conductors closely adjacent and substantially parallel,
a pair of female clip receptacles located, respectively, adjacent the free ends of the two side legs of each bus conductor,
said free ends of the two bus conductors and said clip receptacles being constructed and arranged to receive prongs of electrical male plugs inserted through said receptacle means in said front face.

**3,931,602**

## THERMAL LIMITER FOR ONE OR MORE ELECTRICAL CIRCUITS AND METHOD OF MAKING THE SAME

**Emil Robert Plasko, Washington Township, Ohio, assignor to Micro Devices Corporation, Dayton, Ohio**

**Continuation-in-part of Ser. No. 490,732, July 22, 1974, which is a division of Ser. No. 321,753, Jan. 8, 1973, Pat. No. 3,839,692, which is a continuation-in-part of Ser. No. 217,927, Jan. 14, 1972, Pat. No. 3,764,948, which is a continuation-in-part of Ser. No. 101,848, Dec. 28, 1970, Pat. No. 3,649,942, which is a continuation-in-part of Ser. No. 62,369, Aug. 10, 1970, abandoned. This application Feb. 24, 1975, Ser. No. 552,668**
**Int. Cl.² H01H** *85/02*
**U.S. Cl. 337—163** **2 Claims**

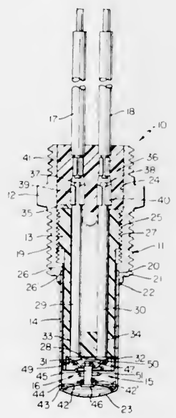


1. A self contained thermal limiter construction for at least one electrical circuit comprising a thermally responsive device; an electrical heater means disposed in a selected position relative to said device; three blade-like lead members having their narrow dimension disposed in aligned relation along a substantially straight line with one of said lead members being operatively interconnected to one end of each of said device and said heater means and the other two lead members being respectively operatively interconnected to the other ends of said device and said heater means; a cup-shaped, rectangular housing having an open end receiving said heater means and said device therein with all of said lead members having at least portions thereof exposed from said housing, and an insulating mass covering and securing said heater means without contacting said device, whereby said selected positioning provides a controlled time delay between application of elec-

trical current to said heater means and actuation of said device for opening of said electrical circuit.

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**3,931,603**
**TEMPERATURE RESPONSIVE ELECTRICAL SWITCH CONSTRUCTION AND METHOD OF MAKING THE SAME**
**Arthur V. Vickery, Maryville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.**
**Filed Sept. 19, 1974, Ser. No. 507,340**
**Int. Cl.² H01H *37/12***
**U.S. Cl. 337—360** **18 Claims**

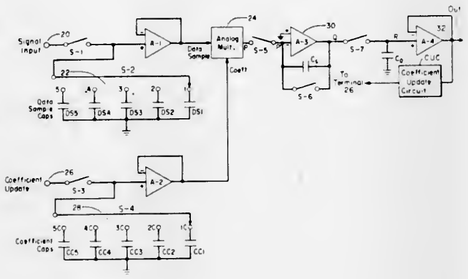


1. A temperature responsive electrical switch construction comprising a housing means having a chamber therein, a pair of spaced apart contacts carried by said housing means and projecting into said chamber, a movable bridging member disposed in said chamber for bridging said contacts when disposed against the same, a bimetal member disposed in said chamber and being operatively interconnected to said bridging member to control movement thereof relative to said contacts in relation to the sensed temperature of said bimetal member, said housing means having adjusting means for initially adjusting the contact pressure between said contacts and said bridging member when said bimetal member is sensing a certain temperature, and interconnection means interconnecting said bimetal member to said bridging member, said interconnection means having overrun means to prevent excessive load on said bimetal member during adjustment of said contact pressure, said interconnection means comprising a post carried by said bimetal member and projecting loosely through said bridging member to provide lost motion therebetween in a contact closing direction.

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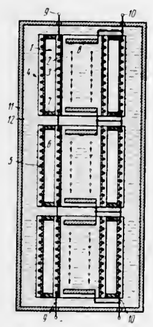
**3,931,604**
**SAMPLING AUTOMATIC EQUALIZER**
**Paul E. Treynor, 8601 Powhatan St., New Carrollton, Md. 20784**
**Filed Apr. 10, 1974, Ser. No. 459,643**
**Int. Cl.² H04B *3/14***
**U.S. Cl. 333—18** **12 Claims**

1. An automatic tranversal equalizer including means for sampling an input signal, a plurality of capacitors for storing the sampled input signal in sequence, a further plurality of capacitors for storing tap coefficient voltages derived from the output of the equalizer, means for sequentially updating said further plurality of capacitors, and a single multiplier having a first input connected to receive said data samples stored by the first mentioned plurality of capacitors in a predetermined sequence, and a second input for receiving the coefficient tap voltages stored by said further plurality of capacitors in a predetermined sequence and for providing an output in accordance with the product of said data samples and said coefficient tap voltages.



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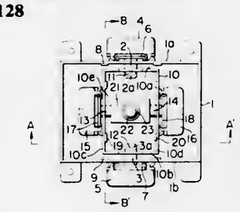
**3,931,605**
**HIGH-VOLTAGE RESISTOR UNIT**
**Vasily Fedorovich Bolbochan, ulitsa Kulbysheva, 119, kv. 88, Kishinev; Anatoly Viktorovich Vorobiev, prospekt Nauki, 6/1, kv. 78, Leningrad, and Ivan Fedorovich Drabenko, ulitsa Dimo 9/3, kv. 41, Kishinev, all of U.S.S.R.**
**Filed Jan. 9, 1974, Ser. No. 431,974**
**Int. Cl.² H01C *1/06***
**U.S. Cl. 338—64** **2 Claims**

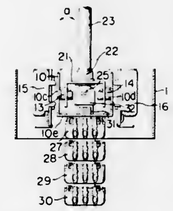


1. A high-voltage resistor unit comprising: a metal casing; a chain of series-connected resistors comprising hollow cylinders arranged in said case; microwire windings of said resistors wound on said hollow cylinders; series-connected screens separate for each of said resistors in the form of hollow cylinders with screening windings wound thereon, each of said screening windings enveloping the winding of each of said resistors so that the potential at each point of the screening winding is substantially equal to the potential at a corresponding point of said winding of said resistor; a liquid dielectric filling said metal casing; and the screen windings hermetically sealing the winding of each of said resistors from said liquid dielectric.



**3,931,606**
**DEVICE FOR SIMULTANEOUSLY CONTROLLING A PLURALITY OF VARIABLE RESISTORS**
**Shunzo Oka, Osaka, and Matsuo Nishioka, Nishinomiya, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan**
**Continuation of Ser. No. 321,831, Jan. 8, 1973, abandoned.**
**This application Nov. 21, 1973, Ser. No. 418,026**
**Int. Cl.² H01C *10/16***
**U.S. Cl. 338—128** **1 Claim**



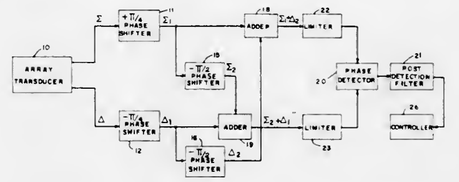


1. A multiple-shaft simultaneous control device for controlling variable resistors comprising:
an outer frame having a first pair of opposed walls;
a first pair of variable resistors fixed to said first pair of opposed walls and having rotatable control shafts coaxially projecting inwardly through said opposed walls;
an inner frame fixed to the control shafts of said first pair of variable resistors and being provided with a second pair of opposed walls;
a second pair of variable resistors fixed to said second pair of opposed walls and having rotatable control shafts coaxially projecting inwardly through said second pair of opposed walls, the control shaft axes of said first and second pairs of variable resistors intersecting orthagonally;
a connecting member in said inner frame affixed to the control shafts of said second pair of variable resistors;
an operating shaft rotatably mounted on said connecting member, whereby rocking motion of said operating shaft selectively rotates the control shafts of either or both of said first and second pairs of variable resistors;
an additional variable resistor connected to the inner frame and having a control shaft projecting through said inner frame;
and a universal joint connecting the control shaft of the additional variable resistor to the operating shaft, said universal joint being located at the intersection of the control shaft axes of said first and second pairs of variable resistors.

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**3,931,607**
**ARRAY TRANSDUCER ANGULAR TRACKING SYSTEM**
**Richard D. Ingram, Boalsburg, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**
**Filed Jan. 12, 1972, Ser. No. 217,406**
**Int. Cl.² G01S *3/80***
**U.S. Cl. 340—6 R** **8 Claims**

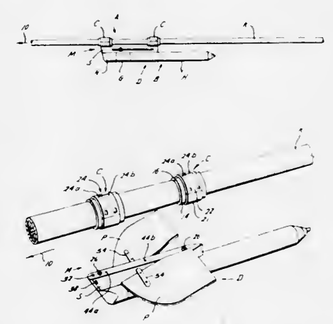
1. A signal processing system for determining the directional information in a plurality of signals comprising:
first and second means for receiving a first and second signal in phase quadrature to each other and phase shifting the first signal 90° with respect to the second signal;
third means connected to receive said first means output for phase shifting said first signal −90°;
fourth means connected to said second means for phase shifting said second signal −90°;
a first adder connected to receive the output signals of said first means and said fourth means for adding the first and fourth means output signals and providing an output signal indicative of the sum;



a second adder connected to receive the output signals of said second means and said third means for adding the second and said third means output signals and providing an output signal indicative of the sum; and
a phase sensitive detector connected to receive the output signals of said first and second adder for providing an output signal indicative of the directional information within said first and second signals.

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**3,931,608**
**CABLE DEPTH CONTROL APPARATUS**
**Jimmy R. Cole, Houston, Tex., assignor to Syntron, Inc., Houston, Tex.**
**Filed Apr. 25, 1974, Ser. No. 463,980**
**Int. Cl.² G01V *1/28***
**U.S. Cl. 340—7 PC** **12 Claims**



1. An apparatus for controlling the depth in water of a seismic cable, comprising:
a. depth control means for regulating the depth of the cable, said depth control means comprising:
1. comparator means for comparing the force of ambient water pressure at the depth where the cable is operating and a reference force representing the desired cable depth;
2. control body means for containing said comparator means; and
3. diving plane means responsive to said comparator means for moving the cable to the desired depth; and
b. connector means for mounting said depth control means to the cable, said connector means comprising:
1. support shank means mounted between said control body means and the cable, said support shank means having said diving plane means therewith; and

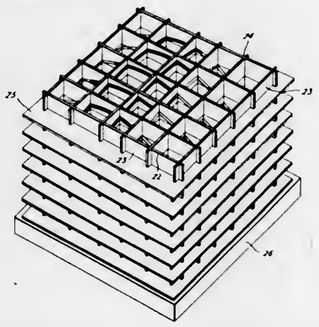
2. connecting collar means for attaching said support shank means to the cable.

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### 3,931,609
### THREE-DIMENSIONAL SEISMIC DISPLAY

**Nigel A. Anstey, Sevenoaks, England, assignor to Seiscom Delta, Inc.**

**Filed Feb. 11, 1974, Ser. No. 441,023**
**Claims priority, application United Kingdom, Feb. 14, 1973, 7187/73**
**Int. Cl.² G01V *1/00***
**U.S. Cl. 340—15.5 DS** **26 Claims**



1. A method of forming a three-dimensional seismic display representing subsurface features of the earth as indicated by reflections along lines of profile in a seismic survey, comprising the steps of:

a. preparing a plurality of seismic sections containing reflections;

b. forming mirror images of the sections;

c. removing a portion of the sections and the images to leave exposed edges related to a reflection of interest in the sections and images; and

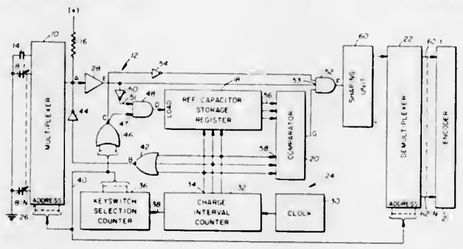
d. mounting the sections and their respective images back-to-back with each other at spatially related positions with respect to the other sections and their respective images according to the location of the lines of profile for the sections in the survey.

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### 3,931,610
### CAPACITIVE KEYSWITCH SENSOR AND METHOD

**Robert E. Marin, Park Ridge, and Roger K. Simonson, Deerfield, both of Ill., assignors to Teletype Corporation, Skokie, Ill.**

**Filed Nov. 29, 1973, Ser. No. 420,132**
**Int. Cl.² B41J *5/08*; G08C *9/00*; G01R *17/02***
**U.S. Cl. 340—172.5** **18 Claims**




1. The method of repetitively determining whether each of a plurality of capacitive keyswitches is actuated or deactuated during each of a plurality of keyswitch-scanning cycles, the keyswitches being of the type which change from a first capacitance value to a second capacitance value when the keyswitch is actuated, which comprises:

prior to the start of each keyswitch-scanning cycle, sampling the capacitance of a reference capacitor having a capacitance value approximately midway between the first and second values of the keyswitches, with a capacitance testing circuit, and generating a first data signal having a parameter which is a function of the sampled capacitance of the reference capacitor;

next, sequentially sampling the capacitance of each successive keyswitch with the same testing circuit and under the same testing conditions, and generating a second data signal having a corresponding parameter which indicates the capacitance of each individual keyswitch in the sequence relative to the reference capacitor; and then

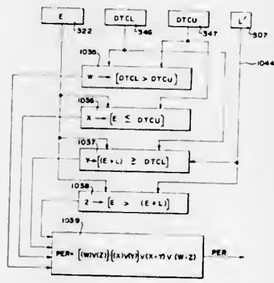
comparing the second data signal with the first data signal, and generating an output control signal whenever the comparison of the second data signal with the first data signal indicates that one of the keyswitches exhibits the second capacitance value thus indicating that the corresponding keyswitch has been actuated.

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### 3,931,611
### PROGRAM EVENT RECORDER AND DATA PROCESSING SYSTEM

**Glenn D. Grant, San Jose, and David E. Chambers, Cupertino, both of Calif., assignors to Amdahl Corporation, Sunnyvale, Calif.**

**Filed Dec. 10, 1973, Ser. No. 423,111**
**Int. Cl. G06f *11/00***
**U.S. Cl. 340—172.5** **13 Claims**




1. In a data processing system having memory and address processing circuitry, the apparatus comprising,

first means for providing a system address used in the operation of said system, second means for providing a lower address and third means for providing an upper address where said lower and said upper addresses define an address event range, fourth means for providing a length number representing the number of contiguous addresses, from said system address to a high address used in the operation of said system, said length number and said system address defining an address operation range bounded by said system address and said high address,

first carry-lookahead adder means, connected to receive said system address and said lower address, for providing a first signal if said system address is greater than or equal to said lower address,

second carry-lookahead adder means, connected to receive said system address and said upper address for providing a second signal if said system address is less than or equal to said upper address,

third carry-lookahead adder means connected to receive said upper address and said lower address for providing a third signal when said lower address is greater than said upper address,

fourth carry-lookahead adder means, connected to receive said length number and said system address for providing a fourth signal when said system address is greater than said high address,



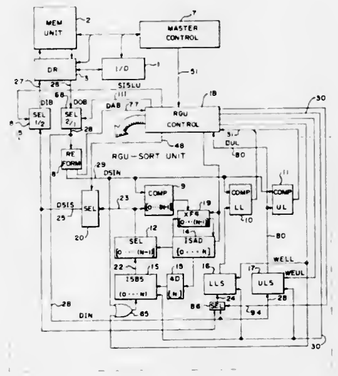
logic means for detecting the presence of said first, second, third and fourth signals to provide an event record when said system address is within said address event range.

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### 3,931,612
### SORT APPARATUS AND DATA PROCESSING SYSTEM

**William W. Stevens, and Donald J. Ruder, both of Atherton, Calif., assignors to Triad Systems Corporation, Menlo Park, Calif.**

**Filed May 10, 1974, Ser. No. 468,811**
**Int. Cl.² G06F *7/02***
**U.S. Cl. 340—172.5** **30 Claims**




1. An apparatus for sorting information items into an ordered sequence of items running between a lowest order item and a highest order item, comprising,

memory unit means for storing the items to be sorted,

a plurality of buffer stores each for storing one of said items,

a plurality of comparators, each for comparing an item from one of said buffer stores with an item from said memory unit means to provide, for each comparator, "greater than" and "less than" comparator outputs signifying the results of comparing said items,

a plurality of address means for storing item addresses in an address sequence where said item addresses are associated with buffered items in said buffer stores,

a plurality of selection means for connecting said buffer stores to said comparators, each under control of an item address in a corresponding one of said address means,

transfer means including a plurality of transfer circuits, each connected between one of said address means and an adjacent one of said address means and each for selectively transferring the item addresses between said one and said adjacent one of said address means in response to a "greater than" comparator output from one of said comparators corresponding to said one of said address means, said transfer means including means for transferring an item address for each said item from said memory unit means to any one of said address means having a "greater than" comparator output from a corresponding address means on one side and a "less than" comparator output from a corresponding address means on the other side of said one of said address means, said transfer means thereby establishing said address sequence as a sorted order of said item addresses,

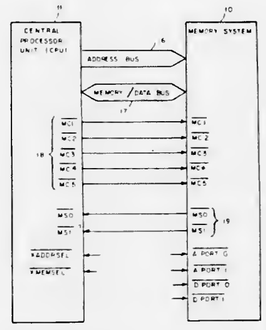
output means for reading out items, from the buffer stores selected by said selection circuits, in said sorted order of said item addresses.

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### 3,931,613
### DATA PROCESSING SYSTEM

**Ronald H. Gruner, Framingham, and Richard T. McAndrew, Chelmsford, both of Mass., assignors to Data General Corporation, Southboro, Mass.**

**Filed Sept. 25, 1974, Ser. No. 509,183**
**Int. Cl.² G06F *5/00***
**U.S. Cl. 340—172.5** **12 Claims**




1. A data processing system for providing access to a memory unit by a plurality of central processor units, said system comprising

a plurality of central processor units;

a memory unit comprising a plurality of memory modules;

an address bus for transferring addresses from said central processor units to said memory unit;

a data bus for transferring data between said central processor units and said memory unit;

multiprocessor control means comprising means for providing a processor word cycle

having a plurality of time phases; means for controllably providing access to

said address and data buses by different groups

of said central processor units during different

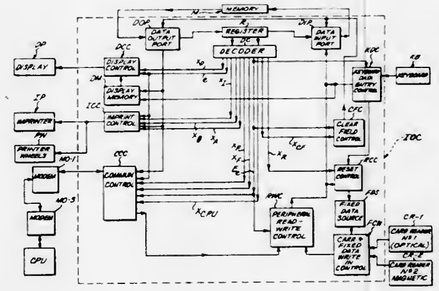
ones of said plurality of time phases during each instruction word cycle.

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### 3,931,614
### DATA TERMINAL HAVING IMPROVED DATA OUTPUT PRESENTATION

**Suresh Laherilal Vasa, Warrensville Heights; John Patrick Klosky, Mentor, and James Lucian Maynard, Northfield, all of Ohio, assignors to Addressograph Multigraph Corporation, Cleveland, Ohio**

**Filed June 26, 1973, Ser. No. 373,776**
**Int. Cl.² G06F *3/12, 1/00*; B41J *5/00***
**U.S. Cl. 340—172.5** **8 Claims**




1. A data terminal comprising:

memory means for storing a plurality of data characters including information data characters, each information data character being representative of one of S different indicia;

means for entering said data characters into said memory means for storage thereby;

means for outputting from said memory the said stored data characters in a data character series sequence including said information data characters;

controllable presenting means for presenting said indicia and including N presenting means each having S different sequential presenting conditions for respectively presenting said S different indicia;

means for sequentially indexing each of said N presenting means from a common starting condition and in sequential order toward said S condition;

means for counting said indexed conditions from said starting condition to said S condition and sequentially providing a count signal representative of each indexed presenting condition; and

control means responsive to a present command signal for concurrently controlling said N presenting means to present indicia represented by a maximum of N said information data characters, each said data characters being associated with one of said N presenting means for presenting the indicia represented by its associated data character, said control means including means synchronized with said indexing means and operative during each said index count condition to sequentially compare the indicia represented by the respective said information data characters with the indicia represented by said index count signal and including means for providing a first signal when the indicia represented by a said information data character is the same as that represented by the index count signal, and circuit means responsive to said first signals for selectively holding each one of said presenting means in its indexed presenting condition when the indicia represented by its associated data character is the same as that represented by said index count signal,

said first signal responsive circuit means including an N stage shift register with each stage being associated with one of said N presenting means, means for loading said shift registers so that at the end of each sequence of comparisons for each index count each register exhibits a binary condition representative of whether the comparison for its associated presenting means indicated that the indicia represented by the associated data information character is the same as that represented by the index count.

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**3,931,615**

## CONTROLLER FOR DIGITAL DEVICES

**Glenn A. Oliver, Campbell; Kenneth D. Krossa, and Douglas B. Earl, both of Los Altos, all of Calif., assignors to Scientific Micro Systems, Mountain View, Calif.**

**Filed July 22, 1974, Ser. No. 490,854**

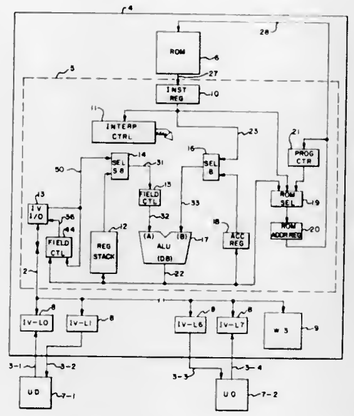
**Int. Cl.² G06F *7/38***

**U.S. Cl. 340—172.5** **27 Claims**

1. An apparatus for controlling digital devices comprising, interface buffer means for storing input signals from a digital device and for storing output signals for a digital device where said input and output signals are operands,

memory means for storing a program of instructions including instructions for specifying said buffer means as a source of and as the destination of variable-field operands utilized in executing said instructions,

interpreter means connected to said memory means to fetch instructions from said memory means and connected to said buffer means to fetch and store operands from and to said buffer means, said interpreter means including means for sequentially fetching instructions from said memory means, means for executing fetched instructions, and means for fetching and storing variable-field operands from and to said buffer means in the execution of instructions whereby said input signals from a digital




device are interpreted under program control to produce output signals to control a digital device.

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**3,931,616**

## STORAGE DEVICE DRIVE CIRCUIT

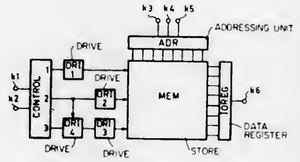
**Hendrik Klos, Beekbergen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.**

**Filed Oct. 10, 1974, Ser. No. 513,704**

**Claims priority, application Netherlands, Oct. 17, 1973, 7314271**

**Int. Cl.² G11C *7/00*; H03K *19/20***

**U.S. Cl. 340—173 R** **6 Claims**




1. A storage device comprising

a store having a plurality of addressable storage locations;

an addressing unit for generating address of said storage locations;

a drive unit, having a plurality of outputs, for sequentially generating drive signals on said outputs; and

a combinatory logical drive element, having inputs connected to at least two of said outputs, for generating an output drive signal transition for increasing the allowable tolerance between at least two signal transitions of said drive signals from said outputs of said drive unit.

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**3,931,617**

## COLLECTOR-UP DYNAMIC MEMORY CELL

**Lewis K. Russell, San Jose, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.**

**Filed Oct. 7, 1974, Ser. No. 512,909**

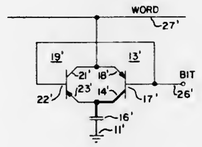
**Int. Cl.² G11C *11/40***

**U.S. Cl. 340—173 R** **5 Claims**

1. In a bipolar dynamic memory cell of the type utilized for storing information by writing and alternately reading information on a word line in response to a bit signal input, a



semiconductor body of one conductivity type having a planar surface, a first transistor formed in said body having emitter, base and collector regions, said emitter region being coupled to said word line and said base region being coupled to said bit signal input, said collector region being of a second conductivity type and being formed in said body and extending to said surface to form a junction boundary of predetermined capaci-




tance between said collector region and said body, a second transistor formed in said body and having emitter, base and collector regions, the base region of said second transistor being coupled to said bit signal input, and the emitter and collector regions of said second transistor being connected to the capacitor formed by the junction and to said word line to provide a controlled current path between the same.

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**3,931,618**

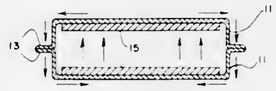
## HOUSING STRUCTURE AND MAGNETIC BIASING FOR BUBBLE MEMORIES

**Richard F. Lacey, Palo Alto, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.**

**Filed Nov. 14, 1973, Ser. No. 415,700**

**Int. Cl.² G11C *11/14, 5/04***

**U.S. Cl. 340—174 S** **1 Claim**




1. A method for providing a desired d.c. magnetic bias field within a housing for magnetic bubble chips comprising the steps of:

mounting a pair of magnetic elements within the housing with a gap therebetween;

applying a first external magnetic field to said housing in a direction desired as the direction of said bias field, the magnitude of said first external magnetic field being sufficient to magnetize said magnetic elements so that a magnetic field produced by them in the gap therebetween is of a magnitude greater than that of the desired d.c. magnetic bias field; and

applying a second external magnetic field to said housing in a direction opposite that of said first magnetic field, the magnitude of said second external field being sufficient to reduce the magnetization of said magnetic elements so that a magnetic field produced by them in the gap therebetween is of the magnitude of the desired d.c. magnetic bias field and simultaneously magnetically saturating said housing.

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**3,931,619**

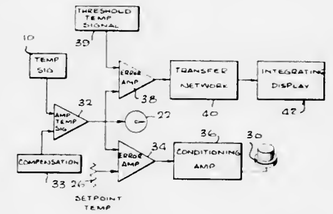
## OVERTEMPERATURE MONITOR AND INTEGRATOR APPARATUS

**Manuel S. Moore, and Charles F. Paluka, both of Los Angeles, Calif., assignors to Manuel S. Moore, North Hollywood, Calif.**

**Continuation of Ser. No. 71,814, Sept. 14, 1970, abandoned. This application Dec. 8, 1972, Ser. No. 313,429**

**Int. Cl.² G08B *23/00***

**U.S. Cl. 340—228 R** **8 Claims**




1. An overtemperature monitor and integrator apparatus for monitoring overtemperature and integrating overtemperature and time in a thermally powered engine comprising:

sensing means for mounting in a thermally powered engine for sensing the temperature of a thermally powered engine and for producing a first electrical signal related in value to the sensed temperature;

signal generator means for producing a second electrical signal related in value to a threshold temperature;

comparator means coupled to said sensing means and said signal generator means for comparing the first and second electrical signals and for producing an output signal only when the first electrical signal indicates a sensed temperature exceeding the threshold temperature, and for producing an output signal related in value to that temperature excess to comprise a temperature excess signal; and

means for integrating the product of the value of the temperature excess signal and time and for displaying such product whereby to display the thermal stress or damage on such engine.

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**3,931,620**

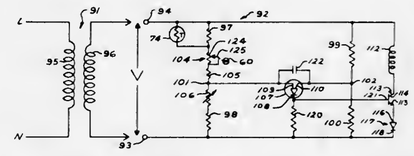
## TEMPERATURE-RESPONSIVE ALARM CONTROL CIRCUIT

**Carl E. Wellman, Jr., and Ronald J. Doerr, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.**

**Filed June 26, 1974, Ser. No. 483,141**

**Int. Cl.² G08B *21/00*; F24C *15/00***

**U.S. Cl. 340—228 R** **5 Claims**




1. A condition responsive circuit of the type having impedance means for supplying an indication of predetermined external conditions to be sensed, the circuit comprising:

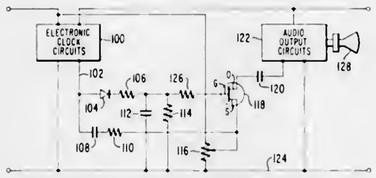
a pair of input supply terminals adapted to be coupled to an electrical energy source for supplying alternating current;

a four-leg impedance bridge network having first and second common terminals coupled across the input supply terminals and two comparison terminals intermediate respectively the first and second legs of the bridge network and the third and fourth legs;

a threshold device coupled to the comparison terminals of the bridge network to function as a threshold detector;
the condition sensing impedance means being coupled in circuit with one of the legs of the bridge network;
a buzzer alarm device having a coil coupled serially with load switching means across the input supply terminals, the load switching means being responsive to a switched-on state of the threshold device to become operative for effecting operation of the buzzer alarm device when a predetermined external condition is sensed; and
means for establishing a reference level for the load switching means and for limiting current to the buzzer alarm device during the negative excursion of the AC cycle.

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**3,931,621**
**VARIABLE AMPLITUDE TIMED ALARM SYSTEM**
**Charles Frederick Rose, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.**
**Filed Dec. 10, 1973, Ser. No. 423,455**
**Int. Cl.² G08B** *3/00*
**U.S. Cl. 340—384 E** **10 Claims**

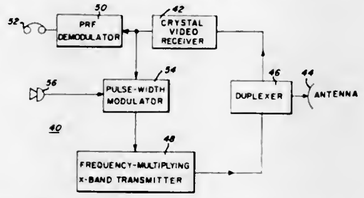



1. A timed alarm system comprising:
a. an audio signal source;
b. a sound reproducing system; and
c. means for coupling said signal source to said sound reproducing system comprising:
1. an active device having a control electrode and a main current conduction path;
2. a charge storage device coupled to said control electrode;
3. means operable to discharge said storage device;
4. means for charging said storage device at a predetermined rate; and
5. switching means for coupling said storage device to said charging means, said rate of charging being selected such that a voltage developed at said control electrode will render said main current path of said active device continuously and gradually increasingly conductive thereby coupling said audio source to said sound reproducing system to produce an audio alarm signal which automatically increases in a continuous and gradual manner as said storage device charges following operation of said switching means.

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**3,931,622**
**VOICE-MODULATED TRANSPONDER SYSTEM**
**Nathan Freedman, West Newton, Mass., assignor to Raytheon Company, Lexington, Mass.**
**Continuation of Ser. No. 65,348, Aug. 19, 1970, abandoned, which is a continuation of Ser. No. 747,661, July 25, 1968, abandoned. This application May 22, 1973, Ser. No. 362,717**
**Int. Cl.² G01S** *9/56;* **H03K** *7/08, 7/10*
**U.S. Cl. 343—6.5 R** **7 Claims**

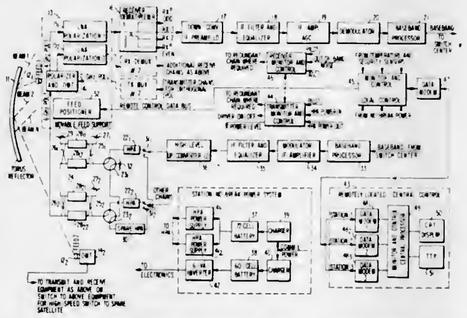
1. A system for communicating between an interrogator and a transponder comprising:
an interrogator including means for transmitting a pulse train signal, said transmitting means comprising means for modulating a pulse repetition frequency of its pulse train signal in accordance with a first voice type signal;
the transponder including means for receiving said pulse train signal and means responsive to said received pulse train signal for transmitting a pulse train signal having the same pulse repetition frequency and modulation thereof as said received pulse train signal, said transponder transmitting means comprising means for modulating the pulse width of its transmitted pulses in accordance with a second voice type signal;
said interrogator further including means for receiving signals transmitted by said transponder, means coupled to said interrogator receiving means and to said interrogator transmitting means for providing signals in response to




the time elapsed between the transmission of a pulse signal by said interrogator and the reception of a pulse signal from said transponder, and means coupled to said interrogator receiving means for demodulating said pulse width modulation to recover said second voice type signal; and
said transponder further including means coupled to said transponder receiving means for demodulating said frequency modulation to recover said first voice type signal.

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**3,931,623**
**RELIABLE EARTH TERMINAL FOR SATELLITE COMMUNICATIONS**
**William K. Sones, Ellicott City; Laurence F. Gray, Bethesda, and Louis Pollack, Rockville, all of Md., assignors to Communications Satellite Corporation, Washington, D.C.**
**Filed May 31, 1974, Ser. No. 475,228**
**Int. Cl. H04b** *7/14*
**U.S. Cl. 343—225** **8 Claims**



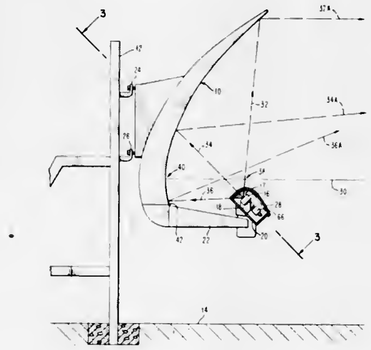
1. In a satellite communications system comprising a network of central monitoring and central facilities and a plurality of unattended, reliable earth terminals connected by communication links to each central monitoring and control facility, each of said reliable earth terminals operating with two or more satellites in synchronous orbit above the earth and comprising:
a. antenna means including a fixed reflector and a separate feed for each of said satellites,
b. modular transmitter means connected to each of said separate antenna feeds and including a plurality of identical high power amplifiers equal in number to at least one more than the number of respective channels in the corresponding satellite but less than twice the number of channels, the bandwidth of each of said high power amplifiers being equal to or slightly greater than the total satellite communication bandwidth modular filter matrix means connected to a corresponding antenna feed and



divided into a plurality of contiguous frequency bands equal in number to the number of respective satellite channels, and switch means for connecting a number of said plurality of high power amplifiers equal in number to the number of respective channels to said filter matrix means, the remaining high power amplifiers serving as spares and said switching means being operative to substitute one of said spares for any high power amplifier which fails,
c. low-noise receiver means connected to each of said separate antenna feeds and including an uncooled parametric amplifier having a plurality of independent identical, interchangeable parametric amplifier modules connected in cascade by an integrated multi-port microwave circulator means whereby said modules can be removed and replaced without interruption to service, and
d. monitor and control means connected to said modular transmitter means and said low-noise receiver means for monitoring and providing limited direct control of transmitting and receiving parameters, said monitor and control means also transmitting operating data of said reliable earth terminal over one of said communication links to its corresponding central monitoring and control facility.

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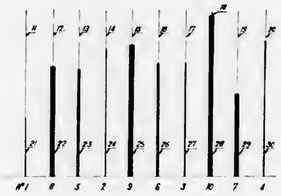
**3,931,624**
**ANTENNA ARRAY FOR AIRCRAFT GUIDANCE SYSTEM**
**Warren Hundley, Upper Saddle River, N.J., and Michael A. Eovine, Woburn, Mass., assignors to Tull Aviation Corporation, Armonk, N.Y.**
**Filed Mar. 21, 1974, Ser. No. 453,347**
**Int. Cl.² H01Q** *13/10, 19/14*
**U.S. Cl. 343—768** **15 Claims**



1. An antenna array for radiating a partern of angularly spaced microwave radio beams which are particularly useful to provide localizer signals for instrument guidance of aircraft comprising
a radiation reflector in the form of a sector of a concave cylinder having substantially open ends,
said relector being arranged facing in a substantially horizontal direction and such that the parallel cylinder generation element lines thereof are substantially horizontal,
a plurality of slotted wave guide microwave signal radiating elements horizontally positioned below the focal plane of the reflector and at an angle thereto and arranged to direct microwave energy directly to said reflector for reflection thereby,
said radiating elements being positioned and operable to direct radiation in serval separate narrow beams to said reflector at different azimuth angles and such that the center lines of said beams are in substantial alignment in elevation within a common plane,
the reflected beams having uniform elevation patterns as determined primarily by the cylindrical curvature and the elevation rotational position of said radiation reflector and substantially independent of the different azimuth angles of said beams,
and the reflected beams having different azimuth angles and selected azimuth patterns symmetrical about the respective center lines thereof as determined primarily by the radiation characteristics of said radiating elements and substantially independent of the characteristics of said radiation reflector.

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**3,931,625**
**SHORTENED MULTI-ROD BROADBAND ANTENNA**
**Bernard Chiron, and Jean Gelin, both of Paris Cedex, France, assignors to Societe Lignes Telegraphiques et Telephoniques, Paris Cedex, France**
**Filed July 10, 1974, Ser. No. 487,143**
**Claims priority, application France, July 18, 1973, 73.26250**
**Int. Cl.² H01Q** *9/32*
**U.S. Cl. 343—787** **7 Claims**

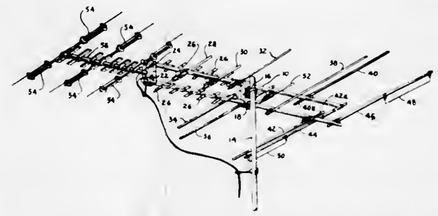




1. A broadband multi-rod antenna comprising a plurality of loaded shortened monopoles supported in parallel relation to each other spaced equidistantly around the circumference of an imaginary cylinder, the resonant frequency of adjacent ones of said monopoles being different.

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**3,931,626**
**STAGGERED TUNED TV RECEIVING ANTENNA WITH INTEGRATED UHF-VHF SECTIONS**
**Sylvan Simons, 45 Brick Oven Road, Port Chester, N.Y. 10573**
**Filed Dec. 7, 1973, Ser. No. 422,749**
**Int. Cl.² H01Q** *21/08*
**U.S. Cl. 343—815** **6 Claims**



1. A multi-element VHF television receiving antenna capable of responding to two widely separated frequencies of a

frequency range of approximately 3 to 1 comprising two parallel cross-arms, a plurality of cross-phased axially spaced dipoles secured to said cross-arms, at least one of said dipoles having inboard conductors and electrically connected paddle-shaped conductors in which the perimeter of the paddle is selected for ½ wavelength response at the lower of said two widely spaced frequencies, and the length of the inboard conductors for the combination of the conductors being selected so that the impedance of the combination of the inboard conductors and the paddle-shaped conductors will make it resonant for approximately 3/2 wavelength at the higher of the two frequencies.

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**3,931,627**

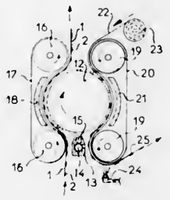
## ELECTROGRAPHIC DEVICES AND APPARATUS FOR NON-ELECTROSTATICALLY PRODUCING IMAGES FROM AN ORIGINAL PROVIDED WITH A CONDUCTIVITY PATTERN

**Marcus Cantarano, No. 47 ave. F. Roosevelt (94320) Thiais, France**

**Division of Ser. No. 151,488, June 9, 1971, Pat. No. 3,826,672, which is a continuation-in-part of Ser. No. 631,792, April 18, 1967, abandoned. This application Jan. 7, 1974, Ser. No. 431,960. The portion of the term of this patent subsequent to June 17, 1992, has been disclaimed.**

**Int. Cl.² G03G** *15/04*; **G01D** *15/06*

**U.S. Cl. 346—74 ES** **23 Claims**



1. A device for producing electrographic images from an original provided with a conductivity pattern ranging from a portion having a greater conductivity to a portion having a lesser conductivity, said device comprising means for placing a thin layer of electrically chargeable particles in contact with said conductivity pattern, means for generating an alternating electric field of sufficient strength across said layer of electrically chargeable particles and said conductivity pattern so as to transfer electric charges from said conductivity pattern to said electrically chargeable particles whereby said particles receive electric charges having different maximum values according to the different conductivities of said portions of said conductivity pattern whereby a portion of said particles are sufficiently charged and removed from said layer of electrically chargeable particles and the remainder of said particles are insufficiently charged so that they continue to remain in said particles layer thereby producing a stable electrographic image.

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**3,931,628**

## EXPOSURE TIME CONTROL DEVICE FOR AN ELECTRIC SHUTTER IN A SINGLE REFLEX CAMERA WITH THROUGH THE LENS MEASURING SYSTEM

**Yasuhiro Nanba, Toyokawa, and Masayoshi Sahara, Sakai, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan**

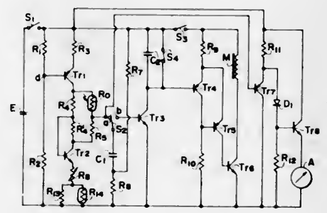
**Continuation of Ser. No. 131,151, April 5, 1971, abandoned. This application Dec. 14, 1972, Ser. No. 315,211**

**Claims priority, application Japan, Apr. 6, 1970, 45-28599**

**Int. Cl.² G03B** *7/08*

**U.S. Cl. 354—24** **4 Claims**

1. In an electric shutter control device for a single lens reflex camera including a light receptive means receiving light through an objective lens of the camera, a light detecting circuit including said light receptive element and an output terminal and for generating an output voltage indicative of the light incident on said light receptive means at said output terminal, means for storing said output voltage, switch means for selectively connecting one terminal of said means for storing to said output terminal, means for timing the closing of the shutter in accordance with said stored output voltage,



and an electric power source for energizing the electric shutter control device, the improvement comprising:

biasing means including a first and a second resistor serially connected with each other and the junction point therebetween connected with another terminal of said means for storing for applying a biasing voltage to said another terminal, said biasing means being connected substantially in parallel with said electric power source.

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**3,931,629**

## CONTROL ELEMENT FOR DISPLACING COMPONENTS OF OPTICAL SYSTEMS

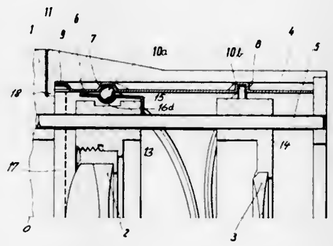
**Paul Himmelsbach, Bad Kreuznach, Germany, assignor to Jos. Schneider & Co. Optische Werke, Bad Kreuznach, Rheinland, Germany**

**Filed Apr. 15, 1974, Ser. No. 461,143**

**Claims priority, application Germany, Apr. 17, 1973, 2319403**

**Int. Cl.² G03B** *3/00*, *13/02*; **G02B** *15/00*, *7/02*

**U.S. Cl. 354—195** **10 Claims**



1. In an optical system comprising a plurality of members centered on an axis which are to be jointly displaced in a coordinated manner, the combination therewith of a common control element for said members comprising a substantially continuous foil of imperforate sheet material with spaced-apart deformations offset from the body of the foil constituting a plurality of camming grooves, said foil being rotatable about said axis, and projections on said members respectively received in said camming grooves, said foil being of substantially constant thickness throughout said body and said deformations.



**3,931,630**

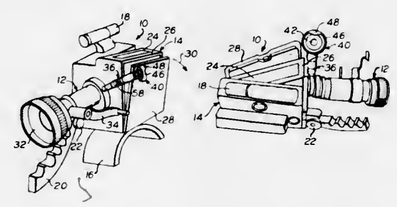
## VIEWFINDER ASSEMBLY

**James J. Crawford, Ringwood, N.J., assignor to Frezzolini Electronics, Inc., Hawthorne, N.J.**

**Filed Aug. 20, 1974, Ser. No. 498,949**

**Int. Cl.² G03B** *13/02*, *13/10*

**U.S. Cl. 354—219** **7 Claims**



1. In a camera of the type comprising a body, a camera lens connected to said body, and a side door on said camera body for access to the interior thereof; a viewfinder assembly comprising:

a. a support barrel mounted on said camera lens;

b. a circular main body section adapted to support optical elements therein;

c. an eyepiece at one end of said main body section extending outwardly therefrom;

d. said main body section having a normal operating position corresponding to a first position in which said eyepiece is positioned in the path of movement of said door and said eyepiece is oriented in viewing position;

e. and mounting means for mounting said main body section for rotational movement between said first position and a second position in which said eyepiece is positioned out of the path of movement of said door to permit said door to be opened,

i. said mounting means comprising at least one elongated circumferential slot in said main body section,

ii. and a radially extending pin on said support barrel slidingly received in said slot to permit relative rotation between said main body section and said support barrel,

iii. said slot being sized so that said main body section is oriented in said first position when said pin engages one end of said slot and said main body section is oriented in said second position when said pin engages the other end of said slot,

iv. indexing means at the ends of said slot for releasably retaining said main body section in said first and second positions,

v. said indexing means comprising enlarged openings at the ends of said slots and extending beyond said slot to provide detents,

vi. and biasing means for biasing said main body section in a direction whereby said pin is received in said detents.

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**3,931,631**

## GALLIUM PHOSPHIDE LIGHT-EMITTING DIODES

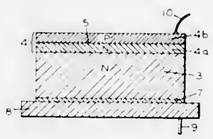
**Warren O. Groves, and Arnold S. Epstein, both of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.**

**Continuation of Ser. No. 381,823, July 23, 1973, which is a continuation of Ser. No. 158,181, June 30, 1971, abandoned. This application Apr. 1, 1974, Ser. No. 457,025**

**Int. Cl. H05h** *33/00*

**U.S. Cl. 357—17** **7 Claims**

1. An article of manufacture comprising a layer of electroluminescent GaP epitaxially grown from vapor phase reactant materials, said layer having a bulk region substantially free of nitrogen atoms and a surface region containing nitrogen atoms in a concentration within the range of from $1.0 - 3.0 \times 10^{19}$ $cm^{-3}$, said bulk and surface regions both containing N-type impurity atoms in a concentration within the range of $2.0 \times 10^{16}$ $cm^{-3}$ to $2.0 \times 10^{17}$ $cm^{-3}$ and said surface region further containing P-type impurity atoms at a surface concentration of about $1 \times 10^{19}$ $cm^{-3}$ to define a P-N junction in said surface region.



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**3,931,632**

## SWITCHING DEVICE EQUIPPED WITH A SEMICONDUCTOR MEMORY ELEMENT

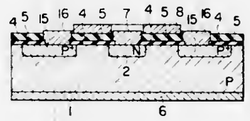
**Kosaku Uchida, Neyagawa; Tsutomu Kobayashi, Kadoma, and Susumu Koike, Fujiidera, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan**

**Continuation of Ser. No. 318,644, Dec. 26, 1972, abandoned. This application Mar. 28, 1974, Ser. No. 455,883**

**Claims priority, application Japan, Dec. 28, 1971, 47-69; Dec. 28, 1971, 47-70; Dec. 28, 1971, 47-71; Dec. 28, 1971, 47-72**

**Int. Cl.² H01L** *29/78*, *29/66*; **H03K** *3/353*; **G11C** *11/44*

**U.S. Cl. 357—23** **4 Claims**



1. Switching apparatus, comprising: a semiconductor memory element having a semiconductor substrate of a first conductivity type, first and second regions of a different conductivity type from that of said substrate formed separately in the surface of said substrate and forming corresponding step junctions with said substrate, wherein said second region is highly doped, a first insulating film through which charge carriers can pass overlying all but said first region, and a second insulating film having charge carrier trapping levels overlying said first insulating film; first, second, and third electrodes in contact, respectively, with said first region, said substrate, and said second insulating film; a D.C. source coupled between said first and second electrodes and providing a reverse bias potential between said first and second electrodes; first and second control circuits coupled between said second and third electrodes, said control circuits including means for supplying voltages of opposite polarity between said second and third electrodes; and control terminal means for sensing the touch of a human body and for selectively coupling said first and second control circuits between said second and third electrodes.

3,931,633

## ELECTRON TUBE INCLUDING A PHOTOCATHODE

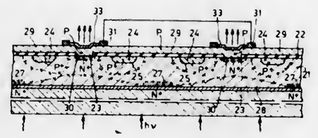
John Martin Shannon, and John Ernest Ralph, both of Salfords, near Redhill, England, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 398,479, Sept. 18, 1973, abandoned. This application Mar. 5, 1975, Ser. No. 555,604

Claims priority, application United Kingdom, Sept. 22, 1972, 43959/72; Sept. 22, 1972, 43956/72; Sept. 22, 1972, 43957/72

Int. Cl.² H01L 27/14

U.S. Cl. 357—30 11 Claims



1. A semiconductor photocathode comprising a semiconductor body having an *n*-type portion and having a surface, a p-type zone at the body surface and forming a *p-n* junction located not substantially more than a diffusion length for electrons from a free surface of said *p*-type zone, said free surface of said *p*-type zone being coated with material producing a work function less than or equal to the distance between the Fermi level and the bottom of the conduction band in said *p*-type semiconductor, a field effect transistor having source and drain regions separated by a channel region in the *n*-type portion and having a gate electrode at a surface of the *n*-type portion and separated by a barrier from the channel region, means connecting electrically in series the *p*-type zone, the *p-n* junction, and one of the transistor source and drain regions, means for electrically pulsing the gate whereby a depletion region is established in the channel substantially cutting off current therein, and means for applying a potential across the field effect transistor and the *p*-type zone and *p-n* junction such that that *p-n* junction becomes forward biased when current is caused to flow through the channel region by contraction of the depletion region, said transistor structure being mounted such that electromagnetic radiation directed at the photocathode can reach the channel and generate charge carriers in or within a diffusion length of said depletion region thereby causing contraction thereof in accordance with the intensity of the incident radiation causing current to flow through the channel, whereby electrons are injected into the *p*-type zone and upon reaching the coated surface will become emitted therefrom.

3,931,634

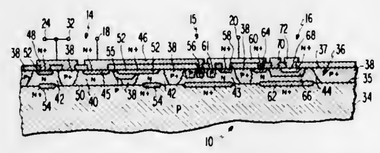
## JUNCTION-ISOLATED MONOLITHIC INTEGRATED CIRCUIT DEVICE WITH MEANS FOR PREVENTING PARASITIC TRANSISTOR ACTION

Mark Berwyn Knight, North Caldwell, N.J., assignor to RCA Corporation, New York, N.Y.

Filed June 14, 1973, Ser. No. 370,051

Int. Cl.² H01L 27/04

U.S. Cl. 357—48 3 Claims



1. A monolithic integrated circuit device comprising a substrate of semiconductor material of one type conductivity,

a plurality of islands of semiconductive material of conductivity type opposite to that of said substrate on said substrate and separated from each other by intermediate isolation regions of semiconductive material of said one type conductivity,

circuit connections within said device, said connections being such that the PN junction between at least one of said islands and said substrate and said isolation region is at least sometimes forward biased while the PN junctions between other islands and said substrate and isolation regions remain reverse biased,

means for collecting carriers injected into said substrate and isolation regions from said at least one island at a location close to the place of injection, whereby said carriers do not travel to one or more of said reverse-biased junctions, said means for collecting carriers comprising a zone of said opposite type conductivity surrounding said at least one of said islands and separated therefrom by an isolation region of said one type conductivity,

said device further comprising conductive means for connecting said carrier collecting zone to said isolation region, and

means including a region of relatively high conductivity of said opposite type conductivity in said substrate adjacent to said carrier collecting zone for reducing the effective resistance and increasing the collection efficiency of said zone.

3,931,635

## SEMICONDUCTOR DEVICE WITH A CONTROL ELECTRODE IN PRESSURE CONTACT WITH THE SEMICONDUCTOR DISC

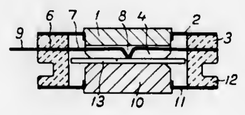
Dan Sundström, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed May 7, 1974, Ser. No. 467,677

Claims priority, application Sweden, June 12, 1973, 73082166

Int. Cl.² H01L 23/42, 23/44

U.S. Cl. 357—79 3 Claims



1. A semiconductor device comprising a semiconductor disc, a box having a bottom member and a lid member, said members being formed of a metallic material and each being in electrical contact with one side of the semiconductor disc, two rings of rigid insulating material to which said members are secured, a metal ring between and secured to said rings, and a control electrode secured at its ends to said metal ring and extending substantially diametrically thereacross, said control electrode having a projecting contact part in engagement with one side of the semiconductor disc and of such height as to be held by the control electrode in pressure contact with such side.



3,931,636

## BATTERY CONSERVATION SYSTEM FOR COLOR TELEVISION CAMERA

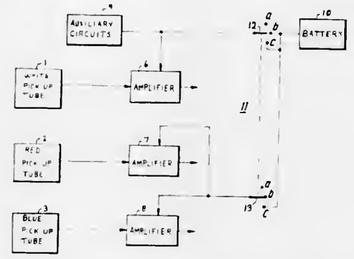
Hans Dieter Schneider, Gross-Gerau, Germany, assignor to Robert Bosch Fernsehanlagen G.m.b.H., Darmstadt, Germany

Filed Apr. 29, 1974, Ser. No. 465,157

Claims priority, application Germany, May 18, 1973, 2325193

Int. Cl.² H04N 9/62, 9/09

U.S. Cl. 358—10 8 Claims




1. In a portable color television camera designed for operation from a limited self-contained energy source and comprising three pick-up tubes for producing video signals from different spectral components of a color image, three amplifier means respectively connected for amplifying video signals from the three pick-up tubes, and auxiliary circuitry for use in connection with the camera, the improvement comprising selectively operable switch means for reducing power consumption by causing the camera to operate to produce only a black-and-white video signal when a color video signal from all three pick-up tubes is not required.

3,931,637

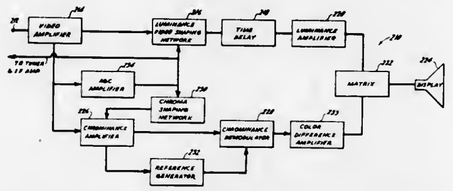
## DUAL CHANNEL AUTOMATIC PICTURE SHARPNESS CONTROL

David H. Carpenter, Fairfield, Conn., assignor to Matsushita Electric Corporation of America, Secaucus, N.J.

Continuation-in-part of Ser. No. 369,525, June 13, 1973, abandoned. This application June 14, 1974, Ser. No. 479,199

Int. Cl.² H04N 9/02

U.S. Cl. 358—38 5 Claims




1. In a color television receiver responsive to color television signals and including means for receiving said color television signals, means for demodulating said color television signals to provide video signals, means coupled to receive said video signals for separating said video signals into a luminance signal component and a chrominance signal component and means responsive to said video signals for providing an AGC signal having a strength related to the strength of said video signals, the combination of a first video shaping means, means coupling said AGC signal to said first video shaping means to control the response thereof, means coupling said luminance signal component of said video signal to said first video shaping means, a second video shaping means, means coupling said AGC signal to said second video shaping means to control the response of said second video shaping means, means coupling said chrominance signal component to said second video shaping means, said first and second video shaping means being responsive to the strength of said AGC signal for automatically varying the frequency content of said luminance and chrominance signal components of said video signal.

3,931,638

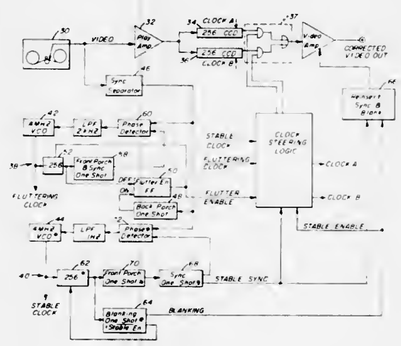
## APPARATUS FOR MODIFYING THE TIME BASE OF SIGNALS

James U. Lemka, Robert A. Lentz, both of Del Mar, Calif., assignor to Eastman Technology, Inc., Rochester, N.Y.

Filed Jan. 10, 1974, Ser. No. 432,363

Int. Cl.² H04N 5/79

U.S. Cl. 360—36 3 Claims




1. Apparatus for removing flutter from a train of TV line-representative signals, comprising:

a. means for comparing the phase of sync signals in said signal train with reference signals occurring at a normal sync rate, thereby to produce a phase error signal,

b. means for producing a first clock signal having a predetermined frequency,

c. means responsive to said phase error signal to produce a second clock signal having a frequency which varies with respect to said predetermined frequency and in proportion to said phase error signal,

d. first and second analog shift register means for storing a predetermined number of samples of said line-representative signals,

e. means for alternately applying said first clock signal to said first and second analog shift register means at the line frequency of signals in said train and, simultaneously, applying said second clock signal alternately to said second and first analog shift register means, whereby signal samples are clocked out of one register means at said predetermined frequency while signal samples are clocked into the other register means at a flutter dependent rate,

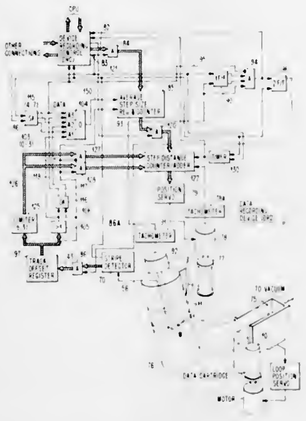
f. means for counting the clocks of said first and second clock signals, and

g. means responsive to sync signals in said train thereof, and to the counts of said first and second clock signals to block all but video information from being processed via said analog shift register means.

### 3,931,639
### TRANSVERSE TRACK LOCATION DEVICE WITH CALIBRATED STEPPER MOTOR

**Nelson Kay Arter, Longmont; George William Brock, Boulder; Howard Carl Jackson, Longmont, and James Warren Leggate, Boulder, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.**

**Filed July 12, 1974, Ser. No. 487,946**
**Int. Cl.² G11B** *21/04, 15/46*
**U.S. Cl. 360—70** **8 Claims**



**1.** The method of operating a helical scan tape recorder of the incremental step type, including the steps of,

moving the tape to a stripe a preset number of stripes ahead of a first stripe to be transduced,

presetting a tachometer move control to a given number supposedly representative of a number of tach pulses between adjacent stripe center lines,

stepping the tape a stripe at a time toward said first stripe said preset number of stripes,

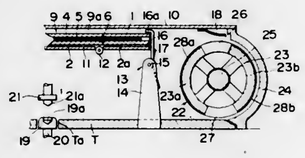
sensing stripe location data, and

adjusting said given number in accordance with said stripe location data and which of said preset number of stripes said stripe location data represents.

### 3,931,640
### AUTOMATIC FLEXIBLE RECORD FEEDING DEVICE

**Ichiro Takahara, Kadoma; Tadahiko Yabu, and Takashi Miwa, both of Hirakata, all of Japan, assignors to Sanyo Electric Company, Ltd., Japan**

**Filed Mar. 22, 1974, Ser. No. 453,854**
**Claims priority, application Japan, Apr. 4, 1973, 48-39706**
**Int. Cl.² G11B** *17/04, 5/012, 5/80*
**U.S. Cl. 360—86** **4 Claims**




**1.** A record feeding device for use in association with a video disc record of the type utilizing a flexible foil-type disc adapted to be driven only at its center at a relatively high speed and concurrently adapted to hover on a rotation-induced air cushion above a stationary table during rotation of said disc record, said record feeding device comprising:

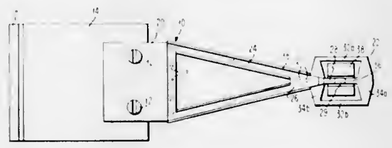
a cylindrical transfer roll supported above and adjacent to an outer peripheral portion of the stationary table for rotation about the longitudinal fixed axis thereof, said longitudinal axis of said cylindrical transfer roll extending parallel to the plane of a jacket receiving surface on which a jacket, accommodating therein said flexible foil-type record, is placed and also to the plane of said stationary table, said longitudinal axis further extending at right angles to the axis of rotation of said disc record, said cylindrical transfer roll having at least one escapement recess means on the outer peripheral surface thereof, said escapement recess means being inwardly recessed from the outer peripheral surface of said transfer roll and extending substantially over the total width of said transfer roll, said cylindrical transfer roll being adapted to rotate in one direction to transport the flexible foil-type disc record from the jacket receiving surface onto said stationary table in readiness for the disc record to be rotated and also to rotate in the opposite direction to transfer the same disc record from the stationary table back to said jacket receiving surface, wherein said cylindrical transfer roll does not rotate during rotation of the flexible foil-type record, wherein when said disc record is to be transported from said jacket receiving surface to said stationary table and from said stationary table back to said jacket receiving surface, said escapement recess means is positioned adjacent to and clear of an outer peripheral portion of said disc record, and wherein when said disc record is rotating above said stationary table, said escapement recess means is in a position to avoid interference between said disc record and said transfer roll; and

cooperative means which cooperate with said transfer roll for causing said disc record to move between said jacket receiving surface and said stationary table in response to rotation of said transfer roll, said cooperative means and said transfer roll defining a curved path therebetween coaxial with the longitudinal axis of said transfer roll for the passage of said disc record between said jacket receiving surface and said stationary table, said disc record when moved through said curved path during rotation of said transfer roll in any of said directions having the opposite surfaces frictionally and slidingly contacting said transfer roll and cooperative means, respectively.

### 3,931,641
### TRANSDUCER SUSPENSION MOUNT APPARATUS

**Robert B. Watrous, Los Gatos, Calif., assignor to International Business Machines Corporation, N.Y.**

**Filed Aug. 22, 1974, Ser. No. 499,738**
**Int. Cl.² G11B** *5/48, 21/16, 5/60*
**U.S. Cl. 360—104** **15 Claims**



**1.** A magnetic head arm assembly defining a longitudinal axis comprising:

a rigid arm section;

a spring element joined to said arm section formed with a flanged channel and a rectangular type flexure at its free end, said flexure having two outer flexible fingers parallel to said longitudinal axis joined at their ends by a relatively wider cross leg and a third inner finger extending from said cross leg with a free end centrally located and parallel to said two outer flexible fingers;

a load beam positioned within said channel; and

a load protuberance on said third finger with which said load beam makes contact.



### 3,931,642
### MAGNETIC HEAD AND METHOD OF MAKING THE SAME

**Koichi Kugimiya, Toyonaka, and Eiichi Hirota, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan**

**Filed June 15, 1973, Ser. No. 370,451**
**Claims priority, application Japan, June 20, 1972, 47-62179; Feb. 9, 1973, 48-16973; Feb. 9, 1973, 48-16975; Feb. 9, 1973, 48-16980**
**Int. Cl.² G11B** *5/14, 5/221*
**U.S. Cl. 360—127** **21 Claims**

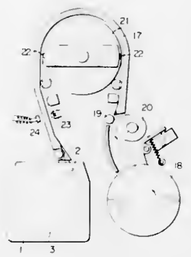


**1.** A magnetic head comprising a magnetic core having a winding wound thereon, said magnetic core being a ferrite body having the shape of the core and being composed of crystallites which have the (111)-crystallographic planes thereof substantially oriented parallel with each other.

### 3,931,643
### MAGNETIC HEAD CLEANING TAPE CARTRIDGE FOR USE IN MAGNETIC RECORDING AND REPRODUCING APPARATUS OF THE ROTARY HEAD TYPE

**Akio Kuroe, Katano, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan**

**Filed Apr. 8, 1974, Ser. No. 459,046**
**Claims priority, application Japan, Apr. 6, 1973, 48-41961[U]; May 22, 1973, 48-60667[U]; May 23, 1973, 48-61015[U]; May 23, 1973, 48-61016[U]; June 15, 1973, 48-71338[U]**
**Int. Cl.² G11B** *5/41;* **B47L** *25/00*
**U.S. Cl. 360—128** **7 Claims**



**1.** In a magnetic recording-reproducing apparatus of a rotary having automatic threading means and automatic rewinding means in which winding of a tape is stopped before initiating the rewinding operation, a magnetic head cleaning tape cartridge, comprising:

a. a leader tape of high light transmissivity;

b. a cleaning tape connected to said leader tape and made of fibrous material, said cleaning tape having less light transmissivity than said leader tape;

c. a polishing tape connected to said cleaning tape and including an abrasive material which is less abrasive than said fibrous material, said polishing tape having less light transmissivity than said leader tape;

d. a trailer tape of high light transmissivity connected to said polishing tape;

e. a single reel around which is wound a composite tape including said leader, cleaning, polishing and trailer tapes; and

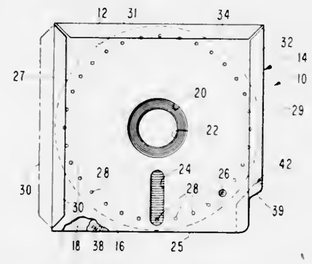
f. a cartridge case rotatably housing said single reel therein;

g. the length of said leader, cleaning, polishing, and trailer tapes being such that said polishing tape is located on the rotary head when said composite tape is stopped before initiating the rewinding operation.

### 3,931,644
### JACKET FOR A MAGNETIC DISK RECORDING ASSEMBLY

**Paul F. Ward, San Jose, Calif., assignor to Information Terminals Corporation, Sunnyvale, Calif.**

**Filed Mar. 3, 1975, Ser. No. 554,994**
**Int. Cl.² G11B** *23/02, 25/04*
**U.S. Cl. 360—133** **10 Claims**




**1.** A magnetic disk recording assembly comprising:

a polygonal jacket having a pair of opposed, generally flat sides presenting a disk-receiving space therebetween, the jacket further having a notch at one corner thereof, the notch presenting an opening between the adjacent portions of said sides, each side having a central aperture therethrough, one of the sides having a radial slot therein extending between and spaced from the corresponding aperture and an outer margin of the corresponding side; a disk rotatably disposed within said space and having a central hole aligned with said apertures, said disk having a surface provided with a coating of magnetic material thereon, said surface being exposed through said slot;

means coupling the outer margins of the sides together to retain the disk in said space; and

means between the sides and only in the immediate vicinity of the notch for closing the opening and for reinforcing said adjacent portions of the sides.

**5.** A jacket for a magnetic disk recording assembly comprising:

a polygonal body having a pair of opposed, generally flat sides presenting a disk-receiving space therebetween, said body further having a notch at one corner thereof, the notch presenting an opening between the adjacent portions of said sides, each side having a central aperture therethrough, one of the sides having a radial slot therein extending between and spaced from the corresponding aperture and an outer margin of the corresponding side, said slot being adapted to expose a portion of the surface of a disk in said space;

means for coupling the outer margins of said sides together to thereby retain a disk in said space; and

means positionable between the sides and adjacent to said notch for closing the opening and for reinforcing said adjacent portions of said sides.

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**3,931,645**
**FLEXIBLE DISK STORAGE APPARATUS HAVING DISKS OF VARIOUS RADII FOR ENHANCING AXIAL DISK LOCATION**

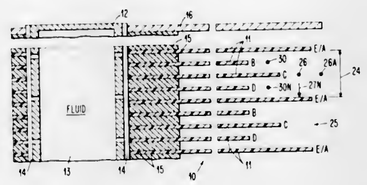
**Paul D. Dodd, Boulder, and Donald E. Griffiths, Longmont, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.**

**Filed Aug. 29, 1974, Ser. No. 501,738**
**Int. Cl.[2] G11B** *5/82, 21/02, 5/016, 5/012*
**U.S. Cl. 360—135** **11 Claims**

**8.** A flexible disk assembly, including in combination:

a center support;

a plurality of record indicia type circular disks coaxially disposed on said support, different ones of said disks having at least three different radii; and




a plurality of minimum radius disks axially alternatively disposed with disks having other than said minimum radius.

# DESIGNS

JANUARY 6, 1976

**238,315**
**BELT**

**Leo J. Terwilleger, Orlando, Fla.**
**(1001 Esplanade Way, 17B, Casselberry, Fla. 32707)**

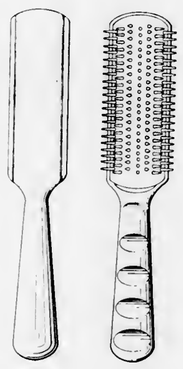
**Filed Aug. 26, 1974, Ser. No. 500,329**
**Term of patent 14 years**
**Int. Cl. D2—***07*
**U.S. Cl. D2—381**



**238,316**
**HAIR BRUSH**

**Evan R. Kahn, 808 NE. 160th Terrace, North Miami Beach, Fla. 33162**

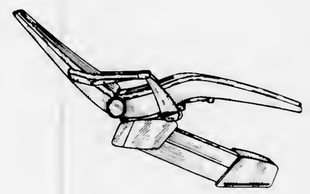
**Filed June 28, 1974, Ser. No. 484,459**
**Term of patent 14 years**
**Int. Cl. D4—***02*
**U.S. Cl. D4—31**



**238,317**
**DENTAL CHAIR OR SIMILAR ARTICLE**

**Peter Schoeller, Erlangen, and Erich Heubeck, Bensheim/Zell, Germany, assignors to Siemens AG**

**Filed Dec. 21, 1973, Ser. No. 427,369**
**Term of patent 14 years**
**Int. Cl. D6—***01*
**U.S. Cl. D6—22**

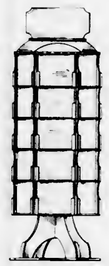


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**238,318**
**DISPLAY STAND OR SIMILAR ARTICLE**

**Louis M. Ohis, Jr., 2904 S. Joplin, Tulsa, Okla. 74114**

**Filed Sept. 4, 1973, Ser. No. 393,932**
**Term of patent 14 years**
**Int. Cl. D20—***02*
**U.S. Cl. D6—23**



238,319
**DISPLAY STAND**
Betty G. Stephenson, 125 Sue Lane, Independence, Mo. 64050
Filed May 28, 1974, Ser. No. 473,578
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—29



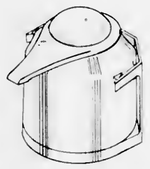
238,320
**FOLDING STEPSTOOL**
Dale D. Smith, Irvine, and James P. Sullivan, Tustin, Calif., assignors to Samsonite Corporation, Denver, Colo.
Filed May 20, 1974, Ser. No. 471,250
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—35



238,321
**CHAIR**
Jon Gustav Borge Lindau and Bo Kristoffer Lindekrantz, Helsingborg, Sweden, assignors to West Norway Factories, Ltd., A/S, Orsta, Norway
Filed May 14, 1973, Ser. No. 360,184
Claims priority, application Norway Nov. 15, 1972
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—70



238,322
**COMBINED LIQUID DISPENSER AND BRACKET**
Ronald D. Kulhanjian, Oradell, N.J. (226 Prospect Ave., Hackensack, N.J. 07601)
Filed July 12, 1974, Ser. No. 488,159
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—95



238,323
**DIAPER HOLDER**
Phyllis A. Jackson, 8410 Silver Star, San Antonio, Tex. 78218
Filed Sept. 19, 1974, Ser. No. 507,529
Term of patent 14 years
Int. Cl. D6—*04;* D7—*07*
U.S. Cl. D6—131

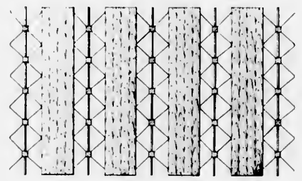


238,324
**DIAPER HOLDER**
Phyllis A. Jackson, 8410 Silver Star, San Antonio, Tex. 78218
Filed Sept. 24, 1974, Ser. No. 508,750
Term of patent 14 years
Int. Cl. D6—*04;* D7—*07*
U.S. Cl. D6—131

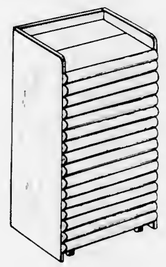




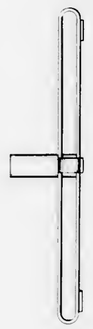
238,325
**ROOM DIVIDER**
Nick J. Zorich, Jr., and Gregory B. Forsberg, both of 14625 15th Ave. NE., Seattle, Wash. 98155
Filed Feb. 11, 1974, Ser. No. 441,163
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D6—139



238,326
**CABINET**
Giovanni Offredi, Milan, Italy, assignor to Fratelli Saporiti, Besnate, Varese, Italy
Filed Mar. 18, 1974, Ser. No. 452,410
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—165



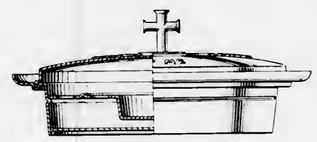
238,327
**FURNITURE BASE OR SIMILAR ARTICLE**
Robert F. George, 8 Carol Court, Crugers, N.Y. 10521
Filed June 29, 1973, Ser. No. 375,058
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—196



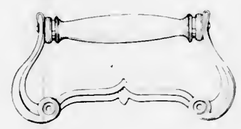
238,328
**STRAND OF BEADS FOR CURTAIN ELEMENTS OR THE LIKE**
Irving Levine, 23555 Park Belmonte, Calabasas Park, Calif. 91302
Filed July 5, 1974, Ser. No. 486,094
Term of patent 14 years
Int. Cl. D6—*10*
U.S. Cl. D6—205



238,329
**COMMUNION CUP TRAY**
Gordon R. Davis, 8729 Orion Circle, El Paso, Tex. 79904
Filed Jan. 2, 1974, Ser. No. 429,716
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—17



238,330
**HANDLE FOR A TRAY OR THE LIKE**
Manuel S. Ziskin, Mayfield Heights, and Harold O. Wagner, Sheffield Lake, Ohio, assignors to American Trading & Production Corporation, Baltimore, Md.
Filed July 11, 1974, Ser. No. 487,601
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D7—39



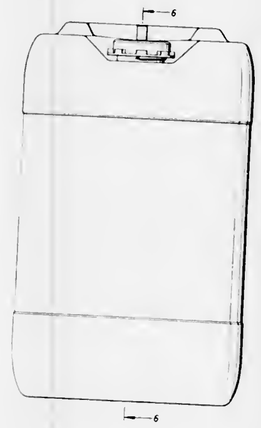
238,331
**BOTTLE**
Eugene J. Melerhoefer, Hackettstown, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed Apr. 8, 1974, Ser. No. 459,134
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—71



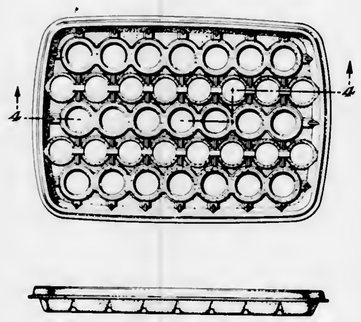
238,332
**BOTTLE**
Robert Blosser, Sausalito, Calif., assignor to Grocery Store Products Company, Oakland, Calif.
Filed Sept. 24, 1973, Ser. No. 399,935
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—127



238,333
**CONTAINER FOR LIQUIDS**
Ronald Franklin Seddon, Skelmersdale, England, assignor to Polythene Drums Limited
Filed Oct. 3, 1973, Ser. No. 403,194
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—170

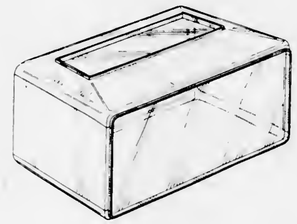



238,334
**MOLDED PACKAGING TRAY FOR MEAT OR THE LIKE**
James E. Gilley, South China, Maine, assignor to Keyes Fibre Company
Filed Apr. 18, 1974, Ser. No. 462,098
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—219

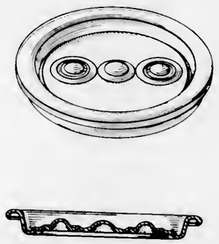




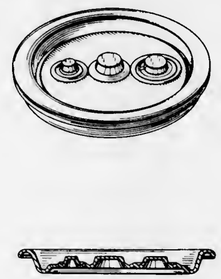
238,335
**SHOWCASE FOR MINIATURE SCENES**
Stephen J. Ocko, Brookline, and Stephen A. Rettew, Newton, Mass., assignors to Tonka Corporation, Hopkins, Minn.
Filed Feb. 28, 1974, Ser. No. 446,690
Term of patent 3½ years
Int. Cl. D9—*03*
U.S. Cl. D9—224



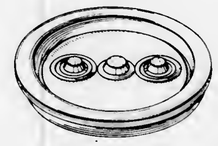
238,336
**END CLOSURE FOR A CONTAINER**
Gordon R. Gane, Pleasanton, Calif., assignor to Kaiser Aluminum & Chemical Corporation
Filed Mar. 4, 1974, Ser. No. 448,096
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—253



238,337
**END CLOSURE FOR A CONTAINER**
Gordon R. Gane, Pleasanton, Calif., assignor to Kaiser Aluminum & Chemical Corporation
Filed Mar. 4, 1974, Ser. No. 448,097
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—253

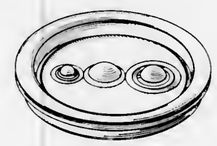


238,338
**END CLOSURE FOR A CONTAINER**
Gordon R. Gane, Pleasanton, Calif., assignor to Kaiser Aluminum & Chemical Corporation
Filed Mar. 4, 1974, Ser. No. 448,098
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—253



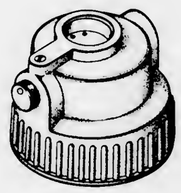


238,339
**END CLOSURE FOR A CONTAINER**
Gordon R. Gane, Pleasanton, Calif., assingor to Kaiser Aluminum & Chemical Corporation
Filed Mar. 4, 1974, Ser. No. 448,099
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—253





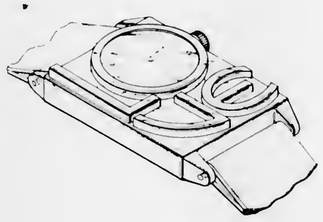
238,340
ADJUSTABLE DISPENSER CAP FOR MAGNETIZABLE PARTICLES
Phillip J. Parker, 1710 Pinehurst Road, Dunedin, Fla. 33528
Filed Mar. 13, 1974, Ser. No. 450,934
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—257



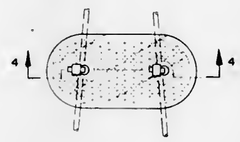
238,341
DIGITAL WRISTWATCH
Arthur Cruse, Dallas, Tex., assignor to E. Gluck Corporation, New York, N.Y.
Filed Aug. 16, 1974, Ser. No. 497,944
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—38



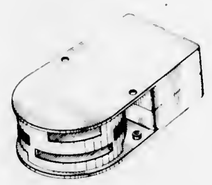
238,342
WRISTWATCH
Joseph Honig, 3 Wartburg Place, Valhalla, N.Y. 10595
Filed June 3, 1974, Ser. No. 475,362
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—39



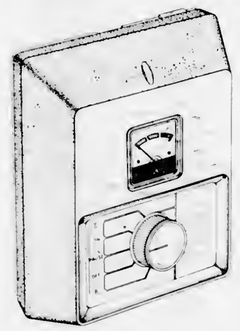
238,343
BICYCLE WHEEL REFLECTOR
Peter M. Hamborg, 547 Princeton Drive, Costa Mesa, Calif. 92626
Filed July 12, 1974, Ser. No. 487,867
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—111



238,344
SONIC SIGNAL GENERATOR
David L. Livermore, Seattle, Wash., assignor to Proctor & Associates Company, Redmond, Wash.
Filed Dec. 12, 1973, Ser. No. 424,163
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—116

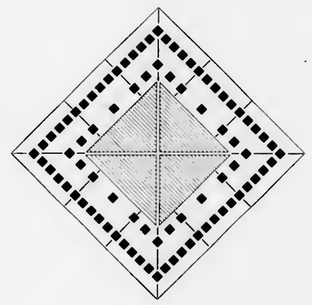


238,345
BURGLAR ALARM CONTROL HOUSING
Anthony P. Montalbano, 29 Hitching Post Lane, Glen Cove, N.Y. 11542
Filed Aug. 29, 1974, Ser. No. 501,490
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—121

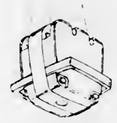




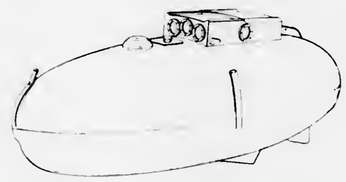
238,346
CLOCK FACE
Ronald Reginald Burgess, Phoenix, Michael Garm Coleman, Tempe, Lawrence Ames Grenon, Phoenix, and Israel Arnold Lesk, Scottsdale, Ariz., assignors to Motorola, Inc., Chicago, Ill.
Continuation-in-part of design applications Ser. No. 120,382, Ser. No. 120,383, and Ser. No. 120,384, all Mar. 2, 1971, all now abandoned. This application Jan. 22, 1973, Ser. No. 325,940
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D10—125



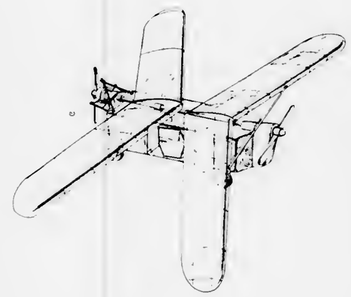
238,347
HOIST BOTTOM BLOCK
Richard C. Laatsch, Warminster, Pa., assignor to Eaton Corporation
Filed Nov. 14, 1974, Ser. No. 523,629
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—54



238,348
BOAT
Allan Chadburn, 978 Pleasant St., Somerset, Mass. 02726
Filed Jan. 3, 1975, Ser. No. 538,420
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—64



238,349
AIRCRAFT
James R. Finn, Box 374, Council, Idaho 83612
Filed Aug. 14, 1974, Ser. No. 497,541
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D12—77



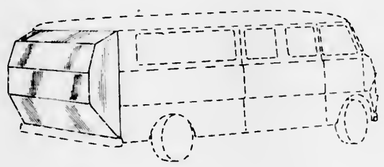
238,350
TRUCK BODY
John Riate, Lynwood, and Sheldon T. Schreiber, Palos Verdes Peninsula, Calif., assignors to SSP Truck Equipment, Inc.
Filed Jan. 23, 1975, Ser. No. 543,272
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—98



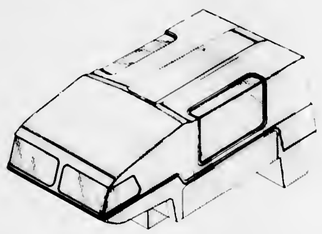
238,351
VAN STORAGE ENCLOSURE
William M. Bell, 17456 Mission Blvd., Granada Hills, Calif. 91344, and James H. Dissman, Jr., 1917 W. Mountain St., Glendale, Calif. 91201
Filed Oct. 9, 1974, Ser. No. 513,272
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—156



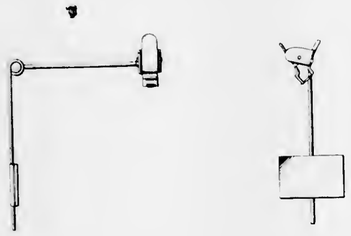
238,352
VAN STORAGE ENCLOSURE
James H. Dissman, Jr., 1917 W. Mountain St., Glendale, Calif. 91201, and William M. Bell, 17456 Mission Blvd., Granada Hills, Calif. 91344
Filed Oct. 9, 1974, Ser. No. 513,273
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—156



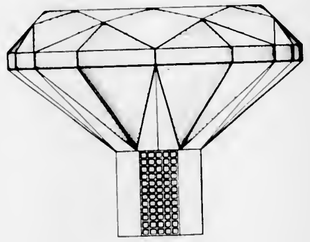
238,353
CAMPER UNIT FOR PICKUP TRUCK
Stewart E. Gardner, 2643 Vista Ornada, Newport Beach, Calif. 92660
Filed May 6, 1974, Ser. No. 467,392
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—156



238,354
REAR VIEW MIRROR ASSEMBLY FOR ATTACHMENT TO EYEGLASS FRAME
Harry J. Beethoven, P.O. Box 1829, West Palm Beach, Fla. 33402
Filed June 3, 1974, Ser. No. 475,795
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—187



238,355
BUILDING
Jerry D. Pierson, % M. J. Harwood Co., Inc., 2502 Broadway, San Antonio, Tex. 78215
Filed Dec. 27, 1973, Ser. No. 428,789
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 E



238,356
PREFOAMED EXPANSION JOINT
William J. Patterson, Burlington, Iowa, assignor to Midwest Manufacturing Corporation, Burlington, Iowa
Filed Mar. 26, 1974, Ser. No. 454,963
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—6

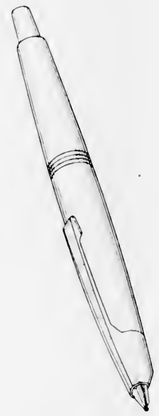


238,357
FINGER RING PEN
Constantino Di Carlo, San Pedro, Calif. (Via Colle Mastroianni, N. 55, 03030 Fontechiari, Frosinone, Italy)
Filed Aug. 29, 1973, Ser. No. 392,495
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—36

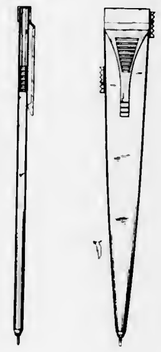




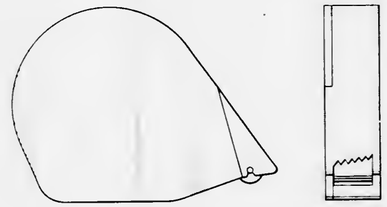
238,358
RETRACTABLE-NIB FOUNTAIN PEN
Shoichiro Itoh, Hatanoshi, Japan, assignor to The Pilot Pen Co., Ltd., Tokyo, Japan
Filed Nov. 4, 1974, Ser. No. 520,715
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—41



238,359
WRITING INSTRUMENT
Nathan A. Zepell, 1359 Santa Teresita Drive, Santa Barbara, Calif. 93105
Continuation-in-part of design application Ser. No. 281,920, Aug. 18, 1972, now Patent No. 232,267.
This application Feb. 19, 1974, Ser. No. 443,483
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—46



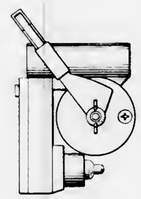
238,360
TAPE DISPENSER
David Richard Gibbs, 4 Cody St., Cannon Hill, Queensland, Australia
Filed Jan. 14, 1974, Ser. No. 433,060
Claims priority, application Australia July 16, 1973
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—69



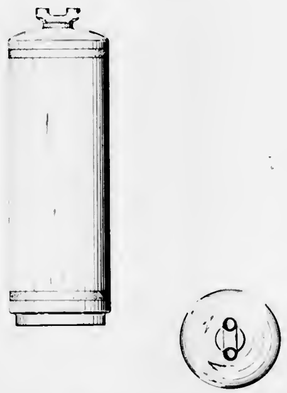
238,361
DEVICE FOR DEMONSTRATING THE PROPERTIES OF X-RAYS
Derek John Power, London, England, assignor to Teltron Limited, London, England
Filed Aug. 16, 1973, Ser. No. 388,916
Claims priority, application Great Britain Feb. 22, 1973
Term of patent 14 years
Int. Cl. D19—*08*
U.S. Cl. D19—62



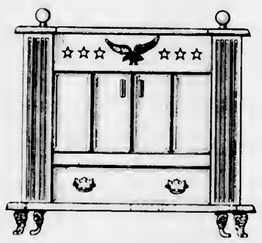
238,362
FISHING SIGNAL DEVICE
Lawrence L. Muehl and Theodore Montgomery, Frankfort, S. Dak., assignors to Dakota Cateye, Inc., Frankfort, S. Dak.
Filed July 24, 1974, Ser. No. 491,396
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—13



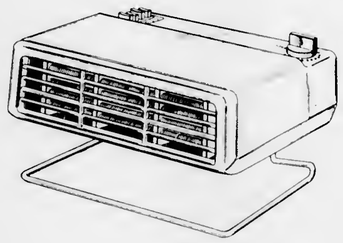
238,363
**SWIMMING POOL WATER PURIFIER TANK OR SIMILAR ARTICLE**
Walter J. Polens, 398 Broadway Drive, Pittsburgh, Pa. 15236
Filed Mar. 27, 1974, Ser. No. 455,440
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—3



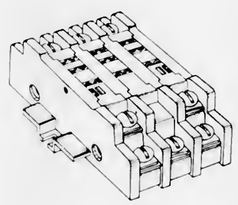
238,364
**COMBINED HEATER AND FIREPLACE**
Nick S. Kategianis, Park Ridge, Ill., assignor to Autocrat Corporation, New Athens, Ill.
Filed Mar. 10, 1975, Ser. No. 556,547
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—93



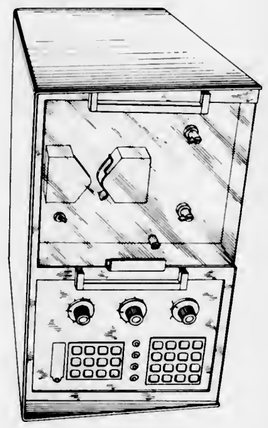
238,365
**PORTABLE HEATER**
James F. Mariol, Cincinnati, Ohio, and Amos E. Chesnut, Columbus, Ind., assignors to Arvin Industries, Inc., Columbus, Ind.
Filed Sept. 23, 1974, Ser. No. 508,541
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—122



238,366
**SOCKET FOR RELAY**
Teizo Fujita and Masao Kikuchi, Osaka, Japan, assignors to Izumi Denki Company Limited, Osaka, Japan
Filed Mar. 30, 1973, Ser. No. 346,660
Claims priority, application Japan Oct. 14, 1972
Term of patent 14 years
The term of this patent subsequent to Apr. 25, 1986, has been disclaimed
Int. Cl. D13—*03*
U.S. Cl. D26—1 E

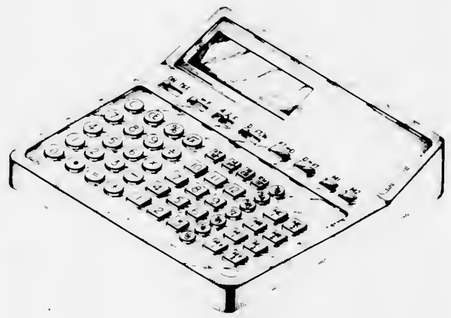


238,367
**NUMERICAL CONTROL SYSTEM CABINET**
Allen R. Perrins, Cheshire, and Paul D. Henderson, Avon, Conn., assignors to The Superior Electric Company, Bristol, Conn.
Filed Nov. 14, 1972, Ser. No. 306,396
Term of patent 14 years
Int. Cl. D14—*01, 02*
U.S. Cl. D26—5 C

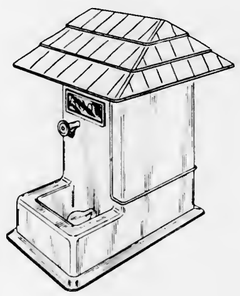


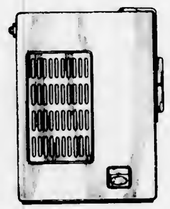


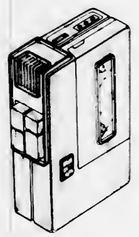
238,368
**CALCULATOR**
Alan B. Goldsamt, Banksville Road, Greenwich, Conn. 06830
Filed Sept. 19, 1974, Ser. No. 507,531
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D26—5 C



238,369
**MULTI-SERVICE MODULE FOR A MOBILE CAMPER PARK**
Robert L. Smith, Minnetonka, Minn., assignor to Roart Plastics, Inc., Hopkins, Minn.
Filed Dec. 11, 1974, Ser. No. 531,553
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—12





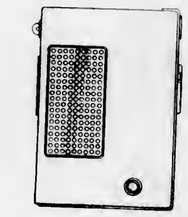


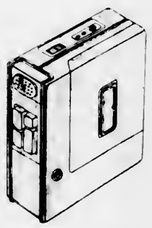
238,370
**TELEPHONE FACEPLATE**
George M. Janda, Westchester, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.
Filed May 30, 1974, Ser. No. 474,640
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A



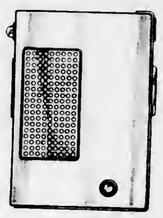
238,371
**TAPE RECORDER**
Shinobu Okamoto, 4–3 Yahatacho, 1-chome, Oyamashi, Tochigiken, Japan
Filed Apr. 17, 1974, Ser. No. 461,749
Claims priority, application Japan Apr. 10, 1974
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 B

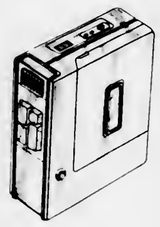
238,372
TAPE RECORDER
Shinobu Okamoto, 4–3 Yahatacho, 1-chome, Oyamashi, Tochigiken, Japan
Filed Apr. 17, 1974, Ser. No. 461,750
Claims priority, application Japan Apr. 10, 1974
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 B



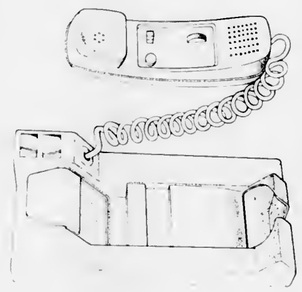


238,373
TAPE RECORDER
Shinobu Okamoto, 4–3 Yahatacho, 1-chome, Oyamashi, Tochigiken, Japan
Filed Apr. 23, 1974, Ser. No. 463,307
Claims priority, application Japan Apr. 17, 1974
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 B

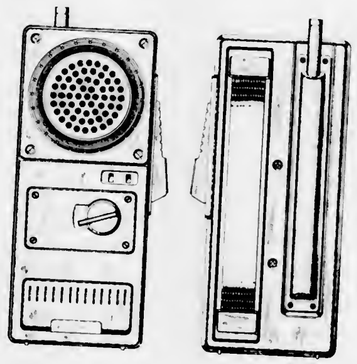




238,374
WALL MOUNTED TELEPHONE
John E. Davis, Sun Valley, and Wayne E. Bulgrin, Lone Pine, Calif., assignors to Lockheed Aircraft Corporation, Burbank, Calif.
Filed Oct. 1, 1973, Ser. No. 402,617
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 G



238,375
WALKIE TALKIE
Kenneth R. Wilkes, Marcellus, N.Y., assignor to General Electric Company, Syracuse, N.Y.
Filed June 4, 1974, Ser. No. 476,205
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 K





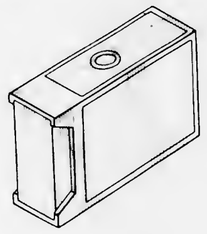
238,376
ELECTRONIC CALCULATOR
Lewis H. Herr, Lansdale, Paul W. Porter, Norristown, and John S. Kovacs, East Norriton, Pa., assignors to Sperry Univac Division, Sperry Rand Corporation, Blue Bell, Pa.
Filed Aug. 26, 1974, Ser. No. 500,402
Term of patent 7 years
Int. Cl. D18—*01*
U.S. Cl. D26—5 C



238,377
WATER PIPE
Lee Allen, 2754 Bacon St., St. Louis, Mo. 63106
Filed Aug. 23, 1974, Ser. No. 500,142
Term of patent 3½ years
Int. Cl. D27—*02*
U.S. Cl. D27—4



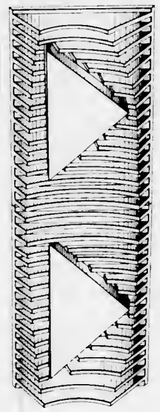
238,378
LIGHTER
Robert Hocq, Boulogne, France, assignor to Societe Franco-Hispano-Americaine (FRANCISPAM), Saint-Gratien, France
Filed June 14, 1974, Ser. No. 479,596
Claims priority, application France Dec. 18, 1973
Term of patent 14 years
Int. Cl. D27—*42*
U.S. Cl. D27—42



238,379
GAME TABLE HAVING A BUILT-IN ELECTRONIC DISPLAY
Harold R. Miller, Phoenix, Ariz., assignor to Western Woodcraft Co., Inc., Phoenix, Ariz.
Filed June 13, 1974, Ser. No. 478,882
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 J



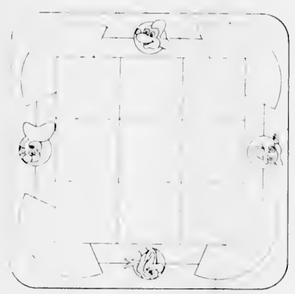
238,380
BOWLING LANE PINSPOTTTER MASK
Thomas A. Meade, Huntington, N.Y., assignor to AMF Incorporated, White Plains, N.Y.
Filed Jan. 24, 1974, Ser. No. 436,057
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 DD



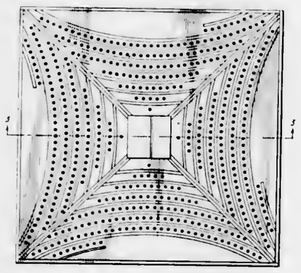
238,381
**GOLF CLUB GRIP**
Clifford A. Spencer, Akron, Ohio, assignor to Eaton Corporation
Filed Aug. 8, 1974, Ser. No. 495,744
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GS



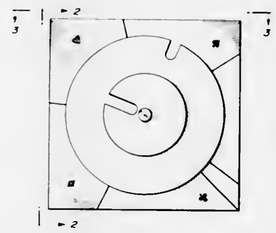
238,382
**GAME BOARD**
Benjamin Kinberg, 109 Lafayette St., New York, N.Y. 10013
Filed Dec. 1, 1972, Ser. No. 311,341
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SS



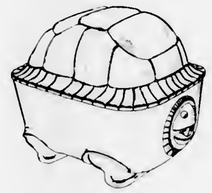
238,383
**CRIBBAGE BOARD**
George Birchall, R.R. 2, Lorette, Manitoba, Canada
Filed Oct. 26, 1973, Ser. No. 410,031
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 TT



238,384
**BRIDGE CONTRACT MINDER**
G. Phillips Mahood, 285 Buckingham Drive, Bethlehem, Pa. 18017
Filed Feb. 6, 1974, Ser. No. 439,899
Term of patent 3½ years
Int. Cl. D21—*01*
U.S. Cl. D34—13 A



238,385
**TOY BOX**
Stanley W. Widmer, Coon Rapids, Minn., assignor to Moulded Products, Inc., Maple Plain, Minn.
Filed June 18, 1973, Ser. No. 371,136
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AC



238,386
**TWO-WHEELED FIGURE SKATE**
Ralph L. Smith, 1431 Ocean Ave., Santa Monica, Calif. 90401
Continuation-in-part of design application Ser. No. 458,196, Apr. 5, 1974. This application May 6, 1974, Ser. No. 467,007
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—14 C

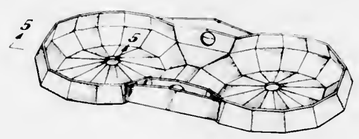




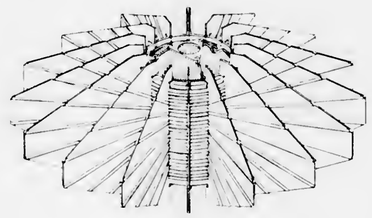
238,387
**SOUNDING TOY FOR PET ANIMAL**
Samuel Rosenberg, Brooklyn, N.Y., assignor to Excelsior Pet Products, Inc., Brooklyn, N.Y.
Filed July 18, 1973, Ser. No. 380,270
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 C



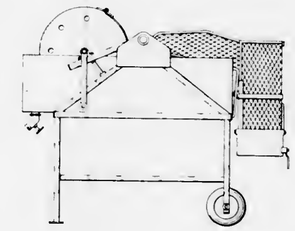
238,388
**MARBLE GAME RUNWAY**
Benjamin F. Monroe, 1545 N. Laurel Ave., Los Angeles, Calif. 90046
Filed June 24, 1974, Ser. No. 479,741
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 K

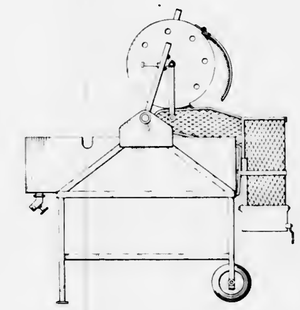


238,389
**LAMP SHADE**
Kenneth Yuhung Tongson, San Po Kong, Kowloon, Hong Kong, assignor to Star Industrial Company, Limited, San Po Kong, Kowloon, Hong Kong
Filed July 8, 1974, Ser. No. 486,459
Claims priority, application Great Britain May 30, 1974
Term of patent 7 years
Int. Cl. D26—*05*
U.S. Cl. D48—16 D

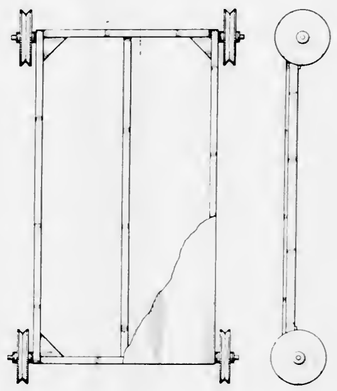


238,390
**GOLF BALL WASHING AND DISPENSING MACHINE OR THE LIKE**
Fred A. Akel, 13301 Beach Blvd., Jacksonville, Fla. 32216
Filed Jan. 24, 1974, Ser. No. 436,087
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D49—11

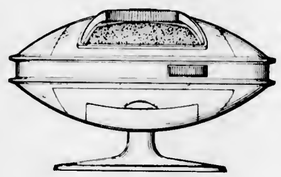




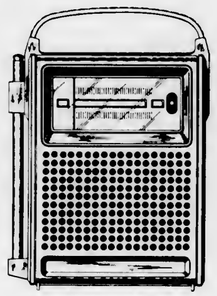
238,391
**LAYING CAGE HOUSE PERSONNEL CARRIER**
Gerald L. Kitson, 9709 Belding Road, Rockford, Mich. 49341
Filed Dec. 15, 1972, Ser. No. 315,290
Term of patent 14 years
The term of this patent subsequent to July 31, 1987, has been disclaimed
Int. Cl. D12—*02*
U.S. Cl. D55—1 C



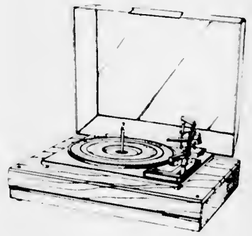
238,392
PORTABLE RADIO
George M. Buckler, Dewitt, N.Y., and Ken-ichi Fukunaga, Tokyo, Japan, assignors to General Electric Company, Syracuse, N.Y.
Filed May 17, 1973, Ser. No. 361,221
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



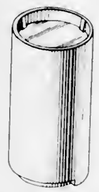
238,393
PORTABLE RADIO
John T. Houlihan and George M. Buckler, Fayetteville, N.Y., assignors to General Electric Company, Syracuse, N.Y.
Filed Mar. 21, 1974, Ser. No. 453,196
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



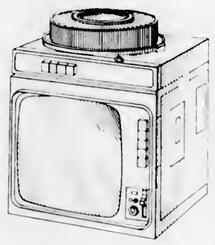
238,394
RECORD PLAYER
Toshimasa Akazawa, Yao, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed May 24, 1974, Ser. No. 473,318
Claims priority, application Japan Nov. 29, 1973
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D56—4 R



238,395
DIAGNOSTIC TEST VIEWER
Eduardo V. Miranda and Lamont J. Seltz, Huntington Beach, Calif., assignors to Baxter Laboratories, Inc., Deerfield, Ill.
Filed Oct. 3, 1973, Ser. No. 402,952
Term of patent 14 years
Int. Cl. D10—*04*; D16—*06*
U.S. Cl. D57—1 E

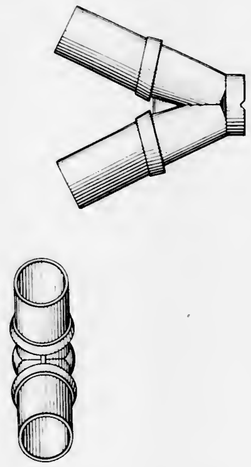


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PROJECTOR
Roy E. Hickey, Honeoye Falls, and William R. Sanderson, Rochester, N.Y., and Richard S. Hart, Batavia, Ill., assignors to The Singer Company, New York, N.Y.
Filed May 29, 1973, Ser. No. 364,472
Term of patent 14 years
Int. Cl. D16—*02*
U.S. Cl. D61—1 N

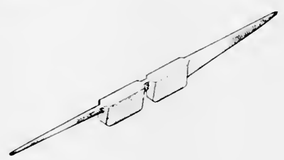




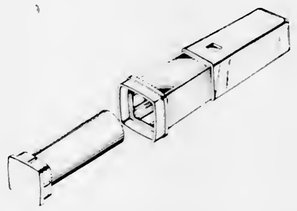
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NOZZLE ADAPTER FOR A HYDROTHERAPY UNIT
Samuel F. Peterson, Jr., Chicago, Ill., assignor to Associated Mills, Inc., Chicago, Ill.
Filed June 17, 1974, Ser. No. 479,594
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D83—1 C



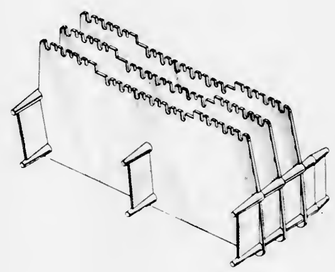
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COMBINED TOOTHPICK AND GUM MASSAGER
Hjalmar Otto Sandin, 24 Kungsgatan, 111 35 Stockholm, Sweden
Filed Dec. 17, 1973, Ser. No. 425,526
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 D



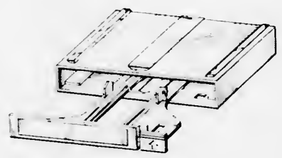
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LIPSTICK CONTAINER WITH SLIDING MIRROR
Roy S. Swenson, Danbury, Conn., assignor to The Risdon Manufacturing Company, Naugatuck, Conn.
Filed Nov. 19, 1973, Ser. No. 416,989
Term of patent 14 years
Int. Cl. D28—*02*
U.S. Cl. D86—10 G



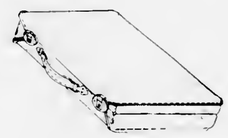
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Tim M. Uyeda, South San Gabriel, Calif., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.
Filed Feb. 25, 1974, Ser. No. 445,805
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1



238,401
CONTAINER FOR A TAPE CASSETTE
Peter Ackeret, Kusnacht, Switzerland, assignor to IDN Inventions and Development of Novelties AG, Lenzerheide, Switzerland
Filed Oct. 12, 1973, Ser. No. 406,169
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 D



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Samson Gorky, New Castle, Pa., assignor to Airway Industries Incorporated
Filed July 15, 1974, Ser. No. 488,651
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—5 F



# LIST OF PATENTEES

## TO WHOM

## PATENTS WERE ISSUED ON THE 6TH DAY OF JANUARY, 1976

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Siegle, Gert; Lutz, Hans; Adam, Helmut; and Gossl, Erhard, 3,930,975.

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Addor, Rene, to Montres Rolex S.A. Apparatus for screwing and unscrewing the bottoms of watch casings. 3,930,427, Cl. 81-6.000.

Addressograph Multigraph Corporation: *See—*
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Aisenberg, Sol; and Chang, Kuowei, to United States of America, Navy. Perforated wall hollow-cathode ion laser. 3,931,589, Cl. 331-94.5PE.

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Aitken, Thomas, to Nalco Chemical Company. Cationic starch and condensates for making the same. 3,930,877, Cl. 106-287.000.

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Akashi, Tetsuji; and Isomura, Takuji, to Nippondenso Co., Ltd. Fuel injection piston and method of its manufacture. 3,930,482, Cl. 123-139.0AR.

Akerblom, Carl-Artur, to Allmanna Svenska Elektriska Aktiebolaget. Method of treating an object of silicon steel provided with an insulating protective coating of silicate with a solution of phosphate. 3,930,897, Cl. 148-6.15R.

Akerblom, Carl-Artur, to Allmanna Svenska Elektriska Aktiebolaget. Method of manufacturing an object of silicon steel. 3,930,905, Cl. 148-113.000.

Akiyama, Hisao: *See—*
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Alais, Michel; and Stahl, Andre, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Method for manufacturing compact thermoelectric modules. 3,930,303, Cl. 29-573.000.

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Alder, Hanspeter, to Swiss Aluminium Ltd. Process for the electrolysis of a molten charge using inconsumable bi-polar electrodes. 3,930,967, Cl. 204-67.000.

Aldrich, Alfred Proctor, Jr.: *See—*
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Aleite, Werner; Klar, Erich; and Spillekothen, Hans-Gerd, to Siemens Aktiengesellschaft. Nuclear reactor. 3,930,936, Cl. 176-19.00R.

Alexander, James H. Locking means for sliding closures. 3,930,678, Cl. 292-288.000.

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Allen, John Graham: *See—*
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Allen, Richard C.; and Anderson, V. Brian, to American Hoechst Corporation. Method of treatment with and compositions containing condensed pyrroles bearing an N-phenyl substituent. 3,931,407, Cl. 424-274.000.

Allied Chemical Corporation: *See—*
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Alperin, George; DeMarco, Richard; and Feinland, Raymond, to Clairol Incorporated. Hair dyeing and conditioning compositions. 3,930,792, Cl. 8-10.100.

Alt, Hartmuth Wilhelm, deceased: *See—*
Cramer, Jurgen; Alt, Hartmuth Wilhelm, deceased; Alt, Ortwin Franz Felix, heir; and Beyer, Gudrun Anneliese, nee Alt, heir, 3,930,968.

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Arneklev, Duane R., to Stauffer Chemical Company. Substituted sulfonate antidote compounds and method of use with herbicides. 3,930,836, Cl. 71-93.000.

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ARP Instruments, Inc.: *See—*
Hill, Jeremy R., 3,930,429.

Arps, Marion T.: *See—*
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Arsura, Emilio: *See—*
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Arter, Nelson Kay; Brock, George William; Jackson, Howard Carl; and Leggate, James Warren, to International Business Machines Corporation. Transverse track location device with calibrated stepper motor. 3,931,639, Cl. 360-70.000.

Arvanitis, Konstantinos: *See—*
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Asada, Mamoru; Shiga, Akinobu; and Matsuyama, Kiyoshi, to Sumitomo Chemical Company, Limited. Process for reusing polymerization solvent by recycling. 3,931,135, Cl. 260-93.700.

Asahi Co., Ltd.: *See—*
Sakurada, Seiichi; Miyazaki, Yasuaki; Hattori, Tatsuaki; Shiraishi, Makoto; and Inoue, Taisei, 3,931,088.





Asahi Denka Kogyo K.K.: *See—*
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Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
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Asahina, Teruo: *See—*
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Asano, Mitsuru; Ohta, Minoru; and Oki, Masami, to Nippon Soken, Inc.; and Nippondenso Co., Ltd. Catalyst for purifying exhaust gas from vehicles. 3,931,050, Cl. 252-462.000.

Asea-Atom: *See—*
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ASG Industries Inc.: *See—*
Cooke, william C.; and Agett, Albert H., 3,930,820.

Ashida, Kaneyoshi; and Yagi, Takao, to Nisshin Boseki Kabushiki Kaisha. Polyurethane-modified polyisocyanurate foam and a method for the preparation thereof. 3,931,065, Cl. 260-2.5AW.

Ashigame, Yoku: *See—*
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Ashland Oil, Inc.: *See—*
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Asinger, Friedrich: *See—*
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Askam, John Fairburn, to Dunlop Limited. Clamping device. 3,930,530, Cl. 157-1.240.

Aspro, Inc.: *See—*
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Asserback, Roy: *See—*
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Astra Lakemedel Aktiebolag: *See—*
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Athenstaedt, Gernot, to M.A.N. Composite oil-cooled piston for an internal combustion engine. 3,930,472, Cl. 123-41.380.

Atlantic Fluidics, Inc.: *See—*
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Atlantic Research Corporation: *See—*
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Auchere, Daniel; and Neyret, Jean Paul Barbier, to Agence Nationale de Valorisation de la Recherche (ANVAR). Telereproduction system for documents. 3,931,461, Cl. 178-6.60A.

Auel, Theodor; Heymer, Gero; and Stephan, Hans-Werner, to Hoechst Aktiengesellschaft. Production of 2-phenyl-ethylene phosphonic acid. 3,931,294, Cl. 260-502.40R.

Auer, Siegfried O.: *See—*
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Auge, Wolfgang; Thelen, Bernd; Thiem, Karl-Werner; and Neeff, Rutger, to Bayer Aktiengesellschaft. Process for the preparation of pure 1-nitroanthraquinone. 3,931,252, Cl. 260-369.000.

Austin, Michael Charles, to Marley Tile A.G. Surface covering materials. 3,931,429, Cl. 428-158.000.

Automated Building Components, Inc.: *See—*
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Automobiles Peugeot: *See—*
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Avantek, Inc.: *See—*
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Ayres, Waldemar A.; and Holderith, William J., to Becton, Dickinson and Company. Serum/plasma separators with centrifugal valves. 3,931,010, Cl. 210-109.000.

Baatz, James C.; and Corey, Albert E., to Monsanto Company. Pressure-sensitive emulsion interpolymers containing 2-acrylamido-2-methylpropanesulfonic acid and having glass transition temperatures in the range of −15° to −75°C. 3,931,087, Cl. 260-29.65Q.

Babcock-Atlantique, S.A.: *See—*
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Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
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Bailey, Donald J., to General Motors Corporation. High strength ductile hot rolled nitrogenized steel. 3,930,907, Cl. 148-12.300.

Bailin, Richard. Method of fabricating a slipper. 3,930,275, Cl. 12-142.00S.

Baillie, Robert A.; and Fear, James Van Dyck, to Great Canadian Oil Sands Limited. Method of reducing sludge accumulation from tar sands hot water process. 3,931,006, Cl. 210-46.000.

Baker, Don R., to Stauffer Chemical Company. Schiff's base dichloroacetamides. 3,931,313, Cl. 260-561.00H.

Baksheev, Igor Petrovich: *See—*
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Ballou, David G., to Dayco Corporation. Endless power transmission belt structure and method of making same. 3,930,417, Cl. 74-231.00P.

Ban, Itsuki; and Shiraki, Manabu. System for driving a direct-current motor in synchronism with an external signal. 3,931,556, Cl. 318-330.000.

Banba, Toshio: *See—*
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Banner Board Company: *See—*
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Baram, Martin, to Escher Wyss Limited. Centrifuge. 3,930,608, Cl. 233-3.000.

Barber, William H.; Beckert, Werner F.; and Dengel, Ottmar H., to United States of America, Navy. Rocket-deployed balloon for position marker. 3,930,448, Cl. 102-34.100.

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Bardy, Andre; and Beydon, Jacqueline, to Commissariat a l'Energie Atomique. Method of preparation of a composition having a base of 99m technetium for diagnosis by scintigraphy. 3,931,396, Cl. 424-1.000.

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Barker, A. Clifford; and Zavada, Edmund S., to Navidyne Corporation. Phase comparison systems employing improved phaselock loop apparatus. 3,931,585, Cl. 331-1.00A.

Barker, Thomas D.; Mueller, Steve R.; Nickel, Clifford A.; and Sweder, Thomas A., to Ford Motor Company. Fuel flow proportioning valve. 3,931,368, Cl. 261-36.00A.

Barmag Barmer Maschinenfabrik Aktiengesellschaft: *See—*
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Barnett, Robert Leigh, to Amalgamated Wireless (Australia) Limited. Radio receiver protection arrangement. 3,931,577, Cl. 325-362.000.

Barouh, Victor; and Glenn, Robert. Dispenser for strip material. 3,930,697, Cl. 312-39.000.

Barr, Anthony J.; and Mullin, Alexander G., to National Association of Furniture Manufacturers, Inc. Apparatus and method for optimizing the yield of usable pieces from boards and the like. 3,931,501, Cl. 235-151.100.

Barraclough, Keith S., to Boots Company, Ltd., The. Portable and manually operable peristaltic pump. 3,930,761, Cl. 417-476.000.

Barras, Paul E. Locking apparatus for a gasoline filler pipe. 3,930,388, Cl. 70-159.000.

Barrett & Company: *See—*
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Barrow, John Harry Howard, to General Motors Corporation. Indicator instrument assemblies. 3,930,459, Cl. 116-2.000.

Barton, Derek Harold Richard, to Research Institute for Medicine and Chemistry Inc. Photolysis of alcohol nitrites. 3,930,970, Cl. 204-158.00R.

BASF Aktiengesellschaft: *See—*
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Basi, Jagtar Singh, to International Business Machines Corporation. Silicon polishing solution preparation. 3,930,870, Cl. 106-3.000.

Basic Computing Arts, Inc.: *See—*
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Baskett, John L. Apparatus for sizing a door to fit a selected doorway. 3,930,315, Cl. 33-194.000.

Bateman, Mark E.; and Holda, Eugene M., to Standard Oil Company. Polyester/starch paper sizing. 3,931,422, Cl. 427-424.000.

Batha, Howard D.; and Cross, Leslie E., to Carborundum Company, The. Ferroelectric apparatus for dielectrophoresis particle extraction. 3,930,982, Cl. 204-299.000.

Battista, Orlando A.: *See—*
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Batzer, Hans; Habermeier, Juerger; and Porret, Daniel, to Ciba-Geigy AG. Polyglycidyl compounds, processes for their manufacture and use. 3,931,058, Cl. 260-2.0EC.
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Baumann, Horst; Umbach, Wilfried; and Stein, Werner, to Henkel & Cie G.m.b.H. Process for the production of secondary alcohol ether sulfates. 3,931,271, Cl. 260-458.000.
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Belge, Dieter, to Carl Valentin GmbH. Printing device for imprinting selected characters on a movable record medium. 3,930,444, Cl. 101-110.000.
Belivakici, Ilie Mila; Goehring, Clifford Clayton; Wachtel, James Alan; Lahm, William Joseph; and Storms, Carl Richard, to American Can Company. Method of making nestable foamed plastic cups. 3,931,380, Cl. 264-45.500.
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Berkebile, Gary W.; Lardi, Francesco; and Podolsky, Leaman B., to Westinghouse Electric Corporation. System for operating a boiling water reactor steam turbine plant with a combined digital computer and analog control. 3,931,500, Cl. 235-151.210.





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Berlemont, Ray, to Raymond Lee Organization, Inc., The, a part interest. Skating rink assembled from a kit. 3,930,647, Cl. 272-3.000.
Berman, Robert A. Adjustable oral airway. 3,930,507, Cl. 128-345.000.
Berns, Charles; and Neuhof, Jacob, to General Signal Corporation. Control circuit for electromagnetic transducer. 3,931,549, Cl. 317-148.50R.
Bernstein, Carl; Arvanitis, Konstantinos; and Ng, Yuen, to Witco Chemical Corporation. Curable amine-terminated polyurethane-urea-epoxide lacquers. 3,931,116, Cl. 260-77.50R.
Berry, James D. Vibratory compactor attachment. 3,930,741, Cl. 404-133.000.
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Bigelow, John H., to Du Pont de Nemours, E. I., and Company. Macrocyclic polyamines as sensitizers for silver halide emulsions. 3,930,867, Cl. 96-107.000.
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Billings, Charles Alden; O'Neill, Gerald Joseph; Simons, Charles William; and Holdsworth, Robert S., to W. R. Grace & Co. Bromofluorocyclopropanes. 3,931,344, Cl. 260-648.00F.
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Binon, Fernand; and Eymard, Pierre Luc, to Labaz. Benzofuranyloxy and benzthienyloxy and certain 2,3-dihydro benzofuranyloxy and benzothienyloxy amidoximes. 3,931,240, Cl. 260-346.20R.
Binsack, Rudolf; Haupt, Heinrich; Vernaleken, Hugo; and Reese, Eckart, to Bayer Aktiengesellschaft. Process for preparing polycarbonates. 3,931,108, Cl. 260-47.0XA.
Birke, Walter; Schon, Franz; and Steckelberg, Willi, to Hoechst Aktiengesellschaft. Process for the dyeing of synthetic fibrous material from organic solvents. 3,930,791, Cl. 8-1.00B.
Birke, Walter; Schickfluss, Rudolf; Schon, Franz; and Steckelberg, Willi, to Hoechst Aktiengesellschaft. Process for the dyeing of synthetic fiber materials from organic solvents. 3,930,793, Cl. 8-41.00B.
Birke, Walter; Schickfluss, Rudolf; Schon, Franz; and Steckelberg, Willi, to Hoechst Aktiengesellschaft. Process for the dyeing of synthetic fiber materials from organic solvents. 3,930,794, Cl. 8-41.00B.
Bisarya, Satish C.: *See—*
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Bjorklund, James Axel Christer; and Helmer, Karin Ulla Elisabet, to Kemanord AB. Process for sizing cellulose fibre containing material. 3,930,932, Cl. 162-158.000.
Black, Albert David. Outrigger fishing line release clip. 3,930,330, Cl. 43-17.000.
Black, Allan; and Somerville, Ralph, to Poli-Twine Corporation Limited. Toggle for use with rope. 3,930,288, Cl. 24-129.00R.
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Bliss, George N. Retractable chain lifting device. 3,930,587, Cl. 214-730.000.
Bloch, Herman S., to Universal Oil Products Company. Biodegradable detergents. 3,931,272, Cl. 260-458.000.
Bloom, William M., to Allegheny Ludlum Industries, Inc. Apparatus for heating steel scrap. 3,930,786, Cl. 432-156.000.
Blucher, Joseph T.; and Dalrymple, Donald D., to Industrial Materials Technology, Inc. Production of metal powder. 3,931,375, Cl. 264-10.000.
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Bollag, Werner; Gutmann, Hugo; Hegedus, Balthasar; Kaiser, Ado; Langemann, Albert; Muller, Marcel; and Zeller, Paul, to Hoffmann-La Roche Inc. Methylhydrazinomethyl-substituted benzoic acid amides. 3,931,268, Cl. 260-465.00D.
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Borlinghaus, Hans J., to General Motors Corporation. Lock cylinder cover with key engagement release. 3,930,391, Cl. 70-455.000.
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Borror, Alan L.; and Garcia, Paulina P., to Polaroid Corporation. 3,3-Di-(indolin-5-yl)-phthalides and naphthalides. 3,931,227, Cl. 260-326.11R.
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Bourgau, Yolande; Berthoux, Jean; and Schwachhofer, Ghislain, to Rhone-Progil. Preparation of carboxylic acid alkyl esters. 3,931,290, Cl. 260-475.00R.
Bovey, Herbert J.; Temple, Dennis A.; and Goldswain, Basil J., to Anglo American Corporation of South Africa. Producing high purity gold powder. 3,930,845, Cl. 75-108.000.
Bowen, Willard L., to Torrington Company, The. Full complement bearing having preloaded hollow rollers. 3,930,693, Cl. 308-207.00R.
Bowker, John F., to Black Clawson Company, The. Cutoff saw. 3,931,498, Cl. 235-92.0DN.

Bowler, Jean; Mallion, Keith Blakeney; and Richardson, Dora Nellie, to Imperial Chemical Industries Limited. Prostanoic acid derivatives. 3,931,206, Cl. 260-295.00R.
Bowman, Bradshaw, to Bomanite Corporation. Tools for imprinting non-repeating stone patterns in fresh concrete. 3,930,740, Cl. 404-93.000.
Bowman, Donald W.; Doetsch, Robert C.; Lemmer, Francis S.; and Zobel, Edward C., to United States of America, Army. Flame prevention system for fuel tank fires. 3,930,541, Cl. 169-62.000.
Bowser, George C.; and Moser, James R., deceased (by Moser, Patricia Karen, administratrix), to Catalyst Research Corporation. Molten metal anode. 3,930,888, Cl. 136-120.00R.
Boyce, Meherwan P., to Howell Instruments, Inc. Velocity probe for compressor surge control. 3,930,742, Cl. 415-1.000.
Boyden, Robert E., to O'Reilly, Thomas. Power driven typewriter with flexible type head. 3,930,569, Cl. 197-16.000.
Boyles, Robert L., to General Electric Company. Alarm clock timer. 3,930,358, Cl. 58-20.000.
Boyles, Robert L., to General Electric Company. Alarm clock timer. 3,930,360, Cl. 58-21.155.
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Brady, Thomas P.; and Langer, Horst G., to Dow Chemical Company, The. Treated pentachlorophenol. 3,931,341, Cl. 260-623.000.
Brakebill, Harold G.; and Lewis, Jay L., to Robertshaw Controls Company. Humidity control system and humidity responsive control device therefor. 3,930,612, Cl. 236-44.00R.
Brand, Ronald W.; Forbes, Richard A.; Heiks, Robert L.; and Huber, Bruce A., to Industrial Nucleonics Corporation. Extruder controller. 3,930,774, Cl. 425-141.000.
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Bratzler, Karl; Dorges, Alexander; Kempf, Georg; Rudolph, Paul; and Schlauer, Johann, to Metallgesellschaft Aktiengesellschaft. Process of desulfurizing hot gases. 3,931,389, Cl. 423-232.000.
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Bremer, Harry. Boat hull construction. 3,930,455, Cl. 114-56.000.
Brennan, Walter W.; Myers, Charles R.; and Perry, Paul E., to Griffin Wellpoint Corporation. Wellpoint with adjustable valve. 3,930,538, Cl. 166-205.000.
Brenner, Kurt H., Jr., to GTE Sylvania Incorporated. Connective means for a cathode ray tube mask-panel assembly. 3,931,541, Cl. 313-407.000.
Bresson, Clarence R.; and Spaulding, Forrest D., to Phillips Petroleum Company. Modified asphalt hydraulic sealer. 3,931,439, Cl. 428-265.000.
Bretschneider, Erich; Leitner, Hermann; and Bohmer, Friedhlem, to Schloemann-Siemag Aktiengesellschaft. Rolling mill. 3,930,395, Cl. 72-228.000.
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Brode, George L., to Union Carbide Corporation. Silylated bisphenol. 3,931,267, Cl. 260-448.80R.
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Buchi, George Hermann; and Vederas, John Christopher, to Firmenich SA. Process for the preparation of alkenoyl-substituted cyclohexenes. 3,931,323, Cl. 260-586.00R.
Buckley, Ronald Peter; Edwards, John Wilmar; and Farrant, Barry William, to Imperial Chemical Industries Limited. Fluorocarbon polymer compositions, containing silicone film builder and Al, phosphate, mineral acid adhesive. 3,931,084, Cl. 260-29.60F.
Buikus, Robert. Lock and support device for fuel tank. 3,930,389, Cl. 70-164.000.
Buitar, Carlo; Mascellani, Giuseppe; and Guerra, Guido, to Alfa Farmaceutici S.p.A. Cephalosporin derivatives. 3,931,161, Cl. 260-243.00C.
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Bundschuh, Harry H. Machine for making cinnamon rolls and the like. 3,930,773, Cl. 425-133.100.
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Buzzolini, Mario Gustav, to Sandoz Inc. Bis(4-(4-hydroxybenzyl)phenyl) carbonic acid ester. 3,931,275, Cl. 260-463.000.
Byrd, Ambrose W., to United States of America, National Aeronautics and Space Administration. Thermoelectric power system. 3,931,532, Cl. 310-4.000.
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Cantarano, Marcus. Electrographic devices and apparatus for non-electrostatically producing images from an original provided with a conductivity pattern. 3,931,627, Cl. 346-74.0ES.
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Chesluk, Ralph P.; Odell, Norman R.; Kuntschik, Lawrence F.; and White, James A., to Texaco Inc. Turbine lubricant and method. 3,931,022, Cl. 252-47.500.
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Child, Ralph Grassing; Wilkinson, Raymond George; and Tomcufcik, Andrew Stephen, to American Cyanamid Company. Substituted 2-benzofuranyl propenones and method of preparation. 3,931,157, Cl. 260-240.00R.
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Chiron, Guy; and Debreuil-Monet, Louis, to Commissariat a l'Energie Atomique. Method and apparatus for measuring magnetic fields utilizing odd harmonics of an excitation signal. 3,931,572, Cl. 324-43.00R.
Cho, Frederick Y.; and Hunsinger, Bill J., to Magnavox Company, The. Apparatus and method for phase-encoded surface wave devices. 3,931,597, Cl. 333-30.00R.
Christensen, Burton G.; and Leanza, William J., to Merck & Co., Inc. Probenecidoxymethyl and 1-ethyl esters of ampicillin. 3,931,150, Cl. 260-239.100.
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Civardi, Frank Peter; and Kuenstler, Hans Georg, to Inmont Corporation. Surface treatment of microporous material. 3,931,437, Cl. 427-246.000.
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Coates, Vincent J.; and Welter, Leonard M., to American Optical Corporation. Field emission electron gun. 3,931,519, Cl. 250-310.000.
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Eikelmann, Gerd; Fahnenstich, Rudolf; Lussling, Theodor; Mannsfeld, Sven-Peter; Pohl, Gerhard; Tanner, Herbert; and Wagner, Hans, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the stabilization of methionine. 3,931,307, Cl. 260-534.00S.
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Fisher, Jay A., to Standard Oil Company. Terephthalic acid recovery by continuous flash crystallization. 3,931,305, Cl. 260-525.000.
Fisher, William Bernard; Helmer, Howard Lyle; and Pendlebury, David, to Allied Chemical Corporation. Testing and correcting metering accuracy of multihole spinnerets. 3,930,775, Cl. 425-169.000.
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Flinner, Vaughn D.; and Zody, Dana D., to Mansfield Sanitary Inc. Ballcock assembly. 3,930,516, Cl. 137-215.000.
Fluck, Rene; and Ruegg, Franz, to SIG Schweizerische Industrie-Gesellschaft. Apparatus for separating a series of objects. 3,930,572, Cl. 198-34.000.
Flumm, Paul T.; and Harris, Vernon B., to Robertshaw Controls Company. Digital cooking timer means having concentric time indicator disc and manual readout indicator. 3,930,359, Cl. 58-21.140.
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Fox, Donnell H.; and Murrell, Donald K., to Robertshaw Controls Company. Replacement thermocouple apparatus for a pilot burner. 3,930,892, Cl. 136-217.000.
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Gasser, Adolf. Process for separating oil from emulsions of oil in water. 3,931,005, Cl. 210-43.000.
Gassie, Donald V. Fluid pumps. 3,930,745, Cl. 415-141.000.
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George, Donald K.; and Angel, Joseph H., to Riegel Textile Corporation. Debonded cellulose fiber pulp sheet and method for producing same. 3,930,933, Cl. 162-179.000.
George, Harvey F.; Oppenheimer, Robert H.; and Marrara, Charles G., to Gravure Research Institute, Inc. Apparatus for measuring cell volume in a gravure printing surface. 3,931,570, Cl. 324-34.00R.
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Gessner, David M., to General Electric Company. Process for producing oxygen-enriched gas. 3,930,814, Cl. 55-16.000.
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Ghielmetti, Giuseppe; and Ferrari, Rodolfo, to Societa Prodotti Antibiotici S.p.A. Preparations containing hexoses. 3,931,402, Cl. 424-180.000.
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Giolito, Silvio L.; and Jaffe, Fred, to Stauffer Chemical Company. Color improvement of phosphate esters. 3,931,362, Cl. 260-975.000.
Giolito, Silvio L.; and Mirviss, Stanley B., to Stauffer Chemical Company. Color improvement of phosphate esters. 3,931,363, Cl. 260-975.000.
Giolito, Silvio L.; and Mirviss, Stanley B., to Stauffer Chemical Company. Color improvement of phosphate esters. 3,931,364, Cl. 260-975.000.
Giolito, Silvio L.; and Mirviss, Stanley B., to Stauffer Chemical Company. Color improvement of phosphate esters. 3,931,365, Cl. 260-975.000.



Giolito, Silvio L.; and Worster, Don Keith, to Stauffer Chemical Company. Color improvement of phosphate esters. 3,931,366, Cl. 260-975.000.
Giolito, Silvio L.; and Worster, Don Keith, to Stauffer Chemical Company. Color improvement of phosphate esters. 3,931,367, Cl. 260-975.000.
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Girard, Herbert A. Method of replacing the transfer cores of yarn packages with resilient replacement cores. 3,930,293, Cl. 28-72.00R.
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Gittinger, Norman C., to General Electric Company. Multiple frequency band receiver tuner system using single, non-bandswitched local oscillator. 3,931,578, Cl. 325-461.000.
Glaser, Hermann: *See—*
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Goehring, Clifford Clayton, to American Can Company. Foam bead bottom plastic cup and method of making same. 3,931,378, Cl. 264-45.400.
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Gomez, I. Luis, to Monsanto Company. Modifiers for high nitrile polymers. 3,931,074, Cl. 260-23.00R.
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Grand, Harry S., to Mobil Oil Corporation. Catalyst and method of preparing same. 3,930,987, Cl. 208-111.000.
Grant, Frederic F., to Ampex Corporation. Low inertia capstan. 3,930,603, Cl. 226-190.000.
Grant, Glenn D.; and Chambers, David E., to Amdahl Corporation. Program event recorder and data processing system. 3,931,611, Cl. 340-172.500.
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Gray, Kenneth R.; and Steinberg, John C., to International Telephone and Telegraph Corporation. Water-soluble derivatives of sodium mannoheptonate. 3,931,147, Cl. 260-209.00R.
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Green, Michael J.; and Bisarya, Satish C., to Schering Corporation. Process for the manufacture of 3-keto-6-azido-4,6-bis-dehydrosteroids and intermediates useful therein. 3,931,167, Cl. 260-239.55R.
Greenberg, Charles B., to PPG Industries, Inc. Q-Switching device for glass lasers. 3,931,590, Cl. 331-94.50E.
Greenberg, Charles B., to PPG Industries, Inc. Q-switching device for glass lasers. 3,931,591, Cl. 331-94.50E.
Greene, Jerome. Swing pad bearing. 3,930,691, Cl. 308-160.000.
Greenspan, George; and Leeming, Michael R. G., to American Home Products Corporation. Microbiological reduction of $PGA_2$ and 15-epi $PGA_2$. 3,930,952, Cl. 195-51.00R.
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Grethe, Guenter; and Uskokovic, Milan Radoje, to Hoffmann-La Roche Inc. Quinuclidine derivatives. 3,931,193, Cl. 260-293.530.
Greve, Heinz Gunter; and Resag, Klaus, to Cassella Farbwerke Mainkur Aktiengesellschaft. Benzophenone derivatives and process for their preparation III. 3,931,301, Cl. 260-516.000.
Greve, Heinz Gunter; and Resag, Klaus, to Cassella Farbwerke Mainkur Aktiengesellschaft. Benzophenone derivatives and process for their production. 3,931,314, Cl. 260-562.00N.
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Grisar, J. Martin; and Claxton, George P., to Richardson-Merrell Inc. Process for preparing 2-azacycloalkylmethyl ketones. 3,931,155, Cl. 260-240.00J.
Grise, Frederick G. J.; Lovell, Walter C.; Heck, Ray E.; and Prescott, Kalman. Adjustable strap. 3,930,287, Cl. 24-16.0PB.

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Grossmann, Hans-Hermann; Burg, Karlheinz; and Sextro, Gunter, to Hoechst Aktiengesellschaft. Moulding composition based on poly-(oxymethylene). 3,931,102, Cl. 260-45.8NT.

Grothe, Wolfgang; and Brill, Klaus, to Robert Bosch G.m.b.H. Electron beam vaporization apparatus. 3,931,490, Cl. 219-121.0EB.

Groves, Warren O.; and Epstein, Arnold S., to Monsanto Company. Gallium phosphide light-emitting diodes. 3,931,631, Cl. 357-17.000.

Gruner, Ronald H.; and McAndrew, Richard T., to Data General Corporation. Data processing system. 3,931,613, Cl. 340-172.500.

Gryaznov, Vladimir Mikhailovich; Smirnov, Viktor Sergeevich; Mischenko, Alexandr Petrovich; Orekhova, Natalia Vsevolodovna; Krivdin, Boris Petrovich; Polyakova, Viktoria Petrovna; and Savitsky, Evgeny Mikhailovich. Hydrogenation and hydrodealkylation process. 3,931,345, Cl. 260-667.000.

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Guilbault, Lawrence James; and Hoffstadt, Frederick Alan, to Calgon Corporation. Low fluid loss cementing compositions. 3,931,096, Cl. 260-42.130.

Guile, Donald L.; and Smith, Robert K., to Corning Glass Works. Bonded fused grain basic refractory and batch therefor. 3,930,874, Cl. 106-57.000.

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Gunn, John Battiscombe, to International Business Machines Corporation. Interferometer apparatus incorporating a spherical element of index of refraction of two. 3,930,729, Cl. 356-106.00R.

Guntert, Karl, to Von Roll AG. Piston structure, particularly for hydraulic machines. 3,930,437, Cl. 92-160.000.

Gunther, Karl, to Vereinigte Nahrungsmittelindustrie Aktiengesellschaft. Process and apparatus for producing a thin dough material. 3,930,769, Cl. 425-84.000.

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Gutman, Arnold D., to Stauffer Chemical Company. Thio and sulfonyl glyoxylnitrileoxime phosphates and phosphonates. 3,931,358, Cl. 260-940.000.

Gutmann, Hugo: *See—*
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Hache, Jean-Guy. Method and apparatus for obtaining accurately the angle of attack of an aircraft. 3,930,610, Cl. 235-150.200.

Hackman, Howard T.; Brown, Ray; Friend, William H.; Natof, Stuart L.; Reiter, Eugene A.; and Rudman, David W., to Union Camp Corporation. Method for combining partition and box blank and for making a double wall thickness box. 3,930,438, Cl. 93-37.00R.

Haensel, Vladimir, to Universal Oil Products Company. Catalytic fume control device. 3,930,796, Cl. 21-74.00R.

Hafner, Erich; and Vig, John R., to United States of America, Army. Crystal resonator housing configurations. 3,931,388, Cl. 310-9.400.

Haglund, Aldon W.: *See—*
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Halasa, Adel Farhan; and Cheng, Tai Chun, to Firestone Tire & Rubber Company, The. Cyclized copolymer from a conjugated diene and an alpha olefin, and the production thereof. 3,931,127, Cl. 260-85.30R.

Hale, Arthur Duane. Theft resistant combination lug nut apparatus. 3,930,428, Cl. 81-121.00R.

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Hall, Ernest M., Jr., to Walker, Hall, Sears, Inc. Geophone case with improved cable anchor. 3,931,453, Cl. 174-65.00R.

Hall, John B.; Vock, Manfred Hugo; Vinals, Joaquin; and Shuster, Edward J., to International Flavors & Fragrances Inc. Process for producing isomer mixtures containing high proportions of cis-2-methyl-3-pentenoic acid. 3,931,306, Cl. 260-526.00N.

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Hall, John T.; and Alves, Alexander R., to Alves Precision Engineered Products, Inc. Universal joint. 3,930,381, Cl. 64-17.00R.

Hall, Randall Brian, to Procter & Gamble Company, The. Substantially uncolored detergent products containing coloring materials. 3,931,037, Cl. 252-135.000.

Halliburton Company: *See—*
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Hamaguchi, Hachiro: *See—*
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Hamburger, Brigitte: *See—*
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Hammecke, Horst: *See—*
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Hammer, Klaus-Dieter; Heinrich, Wolfgang; Hoffmann, Dieter; and Schuierer, Erich, to Hoechst Aktiengesellschaft. Aqueous aminoplast coating composition with polymers of fluorinated ethylene imines. 3,931,080, Cl. 260-29.40R.

Hanamoto, Manabu: *See—*
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Hanyuda, Toshiaki; and Takiyama, Eiichiro, to Showa High Polymer Co., Ltd. Polymerizable cycloacetal resinous composition. 3,931,353, Cl. 260-836.000.

Harada, Masahiro: *See—*
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Hardtmann, Goetz E., to Sandoz Inc. 1-Substituted-2-iminopyrido[2,3-d]pyrimidin-4(1H)-ones. 3,931,178, Cl. 260-256.40F.

Hardtmann, Goetz E., to Sandoz Inc. 1-Substituted-2-disubstitutedamino-pyrido[2,3-D]pyrimidin-4(1H)-ones. 3,931,183, Cl. 260-256.40F.

Hardtmann, Goetz E.: *See—*
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Hardy, William Baptist, to American Cyanamid Company. Copper inhibitors for polyolefins. 3,931,103, Cl. 260-45.85B.

Harnden, Michael Raymond, to Abbott Laboratories. 2-Amino-5-spiro substituted oxazoline-4-one compounds. 3,931,198, Cl. 260-293.660.

Harnden, Michael Raymond, to Beecham Group Limited. Biologically active material. 3,931,397, Cl. 424-85.000.

Harp, Robert S.; and Stover, Harry L., to Hughes Aircraft Company. Microwave power accumulator. 3,931,587, Cl. 331-56.000.





Harrington, Wilfred Henry, to Dunlop Limited. Pneumatic tire having lubricant containing pocket integrally formed therein. 3,930,528, Cl. 152-330.00L.

Harris Corporation: *See—*
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Harris, Norman; and Fowler, Ray, to Davy Powergas Limited. Methane synthesis. 3,930,812, Cl. 48-197.00R.

Harris, Robert F.; and Dunbar, Joseph E., to Dow Chemical Company, The. Process for preparing sulfur-containing hydroxy pyrones. 3,931,235, Cl. 260-343.500.

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Hart, Jack A., to General Motors Corporation. Circular rotor side seal for rotary machines. 3,930,767, Cl. 418-113.000.

Hartmann, Jochen, to Fetok GmbH. Method for rolling out a bar-shaped pre-molding of ceramic material to form a plate. 3,931,376, Cl. 264-22.000.

Hartmann, Rainer; Dorschner, Oskar; and Gross, Hans-Werner, to Veba-Chemie AG. Process and apparatus for the separating out of coarse and/or heavy particles from a variable particle size and/or variable particle weight mixture of granular solids maintained in a vortex state. 3,931,134, Cl. 260-93.700.

Hase, Alfred Max. Inverters. 3,931,565, Cl. 321-45.00R.

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Haskins, Robert Whittemore: *See—*
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Haskins, Robert William, to Haskins, Robert Whittemore. Oscillation damping and stabilizing trailer hitch dolly. 3,930,670, Cl. 280-476.00R.

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Hatsuno, Norio; and Sekiguchi, Tooru, to Jintan Terumo Company, Ltd. Air-noncontact type blood sampling assembly. 3,930,492, Cl. 128-2.00F.

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Hawaiian Sugar Planters' Association: *See—*
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Hawerkamp, Manfred, to Troisdorfer Bau-und Kunstoff Gesellschaft mit beschrankter Haftung. Container construction. 3,930,591, Cl. 220-66.000.

Hawley Manufacturing Corporation: *See—*
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Hayashi, Isao: *See—*
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Hayashi, Masaki; Wakatsuka, Hirohisa; and Kori, Seiji. Trans-$\Delta^2$-prostaglandins. 3,931,296, Cl. 260-514.00D.

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Hebda, Edward F., to Xerox Corporation. Digital line receiver circuit. 3,931,580, Cl. 328-164.000.

Hecht, Ralph J., to United Technologies Corporation. High temperature low density cobalt alloy. 3,930,848, Cl. 75-171.000.

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Heimbach, Franz; and Schotten, Alfons, to Eberhard Hoesch & Sohne. Filter plate-and-diaphragm assemblies for a filter press. 3,931,014, Cl. 210-231.000.

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Helf, Jack C.; and Mack, Frank E., to Rockwell International Corporation. Prefabricated thermal insulation structure and method. 3,931,424, Cl. 428-33.000.

Helmer, Howard Lyle: *See—*
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Sakamaki, Hiroshi; Ishikawa, Shohei; and Maeda, Toshiyuki, 3,930,899.

Ishizaki, Koji: *See—*
Toyama, Akira; and Ishizaki, Koji, 3,931,394.

Isomura, Takuji: *See—*
Akashi, Tetsuji; and Isomura, Takuji, 3,930,482.

Ito, Akihiko; Yoshida, Masaru; Nakase, Yoshiaki; Yamauchi, Tadafumi; Iwai, Tadashi; and Hayashi, Koichiro, to Japan Atomic Energy Research Institute. Process for preparing thermally stabilized oxymethylene polymer from trioxane with thiocyanate and radiation. 3,930,972, Cl. 204-159.210.

Ito, Tadashi: *See—*
Kobayashi, Tatsumi; Ito, Tadashi; Kamei, Yoshihide; Oda, Teruhisa; and Matsuki, Toshio, 3,930,807.

Itoh, Kiyoo; Hashizume, Keisuke; and Shimohigashi, Katsuhiro, to Hitachi, Ltd. Signal detector for a semiconductor memory device. 3,931,538, Cl. 307-235.00R.

ITT Industries, Inc.: *See—*
Winter, Klaus, 3,930,760.

Iwai, Hiroshi: *See—*
Nakajima, Jun; Iwai, Hiroshi; Momiyama, Iwao; Fukushima, Tatsuo; and Takeda, Rentaro, 3,930,876.

Iwai, Tadashi: *See—*
Ito, Akihiko; Yoshida, Masaru; Nakase, Yoshiaki; Yamauchi, Tadafumi; Iwai, Tadashi; and Hayashi, Koichiro, 3,930,972.

Iwanicki, Andrzej Tomasz. Drafting machine. 3,930,314, Cl. 33-80.000.

Iwano, Haruhiko: *See—*
Shimamura, Isao; and Iwano, Haruhiko, 3,931,004.

Iwasa, Toshio: *See—*
Shichijo, Yoshihisa; Sato, Hideo; Iwasa, Toshio; and Uchida, Yasuo, 3,931,120.

Iwata, Kazushige; and Hosoya, Minoru, to Kao Soap Co., Ltd. Apparatus for orienting and accumulating containers. 3,930,574, Cl. 198-246.000.

J. Eberspacher: *See—*
Erich, Kenner; and Hintennach, Hans, 3,930,789.

J. M. Voith GmbH: *See—*
Krenkel, Bernhard, 3,930,614.

J. O. Beattie Research Company: *See—*
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Jackson, Howard Carl: *See—*
Arter, Nelson Kay; Brock, George William; Jackson, Howard Carl; and Leggate, James Warren, 3,931,639.

Jackson, John Lambert: *See—*
Archibald, John Leheup; and Jackson, John Lambert, 3,931,244.

Jackson, Joseph Monroe, to Litton Business Telephone Systems, Inc. Plural line selector apparatus for enabling selection of one of a plurality of telephone lines. 3,931,481, Cl. 179-99.000.

Jackson, Larry L.; Seifert, Walter F.; and Collins, Daniel E., to Dow Chemical Company, The. Heat transfer fluid. 3,931,028, Cl. 252-73.000.

Jackson, Winston J., Jr.; and Darnell, William R., to Eastman Kodak Company. Hot melt compositions. 3,931,073, Cl. 260-22.00D.

Jacob, Adir, to LFE Corporation. Process for manufacturing integrated circuits and metallic mesh screens. 3,930,913, Cl. 156-8.000.

Jacoby, Edward A., to Basic Computing Arts, Inc. Electronic data processing security system and method. 3,931,504, Cl. 235-153.00R.

Jaffa, David, to Precision Screen Machines, Inc. Squeegee assembly for use on a screen printing machine. 3,930,445, Cl. 101-120.000.

Jaffe, Fred; Giolito, Silvio L.; and Walsh, Edward N., to Stauffer Chemical Company. Color improvement of phosphate esters. 3,931,361, Cl. 260-975.000.

Jaffe, Fred: *See—*
Giolito, Silvio L.; and Jaffe, Fred, 3,931,362.

Jager, Gerhard; Weinzelburger, Hans-Jurgen; and Wegler, Richard, to Bayer Aktiengesellschaft. Process for the production of 2,3-dihydro-1,3-oxazinedione-(2,4)-compounds. 3,931,171, Cl. 260-244.00R.

Jager, Gerhard: *See—*
Thomas, Rudolf; Kramer, Wolfgang; Eue, Ludwig; Metzger, Carl; and Jager, Gerhard, 3,931,311.

Jahnke, Horst: *See—*
Zimmermann, Georg; Schonborn, Manfred; Magenau, Horst; Jahnke, Horst; and Becker, Brunhilde, 3,930,884.

Jakobi, Gunter: *See—*
Lohr, Albrecht; Hennemann, Manfred; and Jakobi, Gunter, 3,931,033.

Jakobs, Hans; and Juhnke, Charles J., to C. E. Niehoff & Co. Overvoltage protection circuit. 3,931,546, Cl. 317-16.000.

Jander, Horst, to Rockwell-Golde, GmbH. Window regulator, especially for automobiles, with a threaded cable moving in a guide. 3,930,339, Cl. 49-352.000.

Janin, Raymond; and Krumenacker, Leon, to Rhone-Poulenc S.A. Process for the preparation of anthraquinone. 3,931,254, Cl. 260-385.000.

Janota, Claus P.: *See—*
Kush, Louis J., Jr.; Janota, Claus P.; Koontz, Richard D.; and Sibul, Leon H., 3,931,581.

Japan Atomic Energy Research Institute: *See—*
Ito, Akihiko; Yoshida, Masaru; Nakase, Yoshiaki; Yamauchi, Tadafumi; Iwai, Tadashi; and Hayashi, Koichiro, 3,930,972.

Japan Synthetic Rubber Co., Ltd.: *See—*
Mori, Kan; Ikeda, Hiroharu; Nagaoka, Isao; Shibata, Tooru; Kawatani, Sigeo; and Kikuchi, Tatsuhiko, 3,931,136.

Jarsen, Dieter: *See—*
Mohrke, Klaus; Eggert, Heinrich; Franz, Helmut; and Jarsen, Dieter, 3,930,500.

Jelinek, Jerry G., to Parker-Hannifin Corporation. Sealed joint and gasket therefor. 3,930,656, Cl. 277-180.000.

Jenkins, Bernard M., to C. B. Kaupp & Sons, Inc. Filter vessel and filter element assembly. 3,931,015, Cl. 210-232.000.

Jensen, Richard E., to United States of America, Navy. Electro-optic modulator. 3,930,718, Cl. 350-160.00R.

Jernow, Jane Liu; and Rosen, Perry, to Hoffmann-La Roche Inc. 3,3a-Beta-4,5,6,6a,beta-hexahydro-4beta-nitromethyl-5α-hydroxyl-2-oxo-2H-cyclopenta[b]furan and its derivatives. 3,931,234, Cl. 260-343.300.

Jimbo, Yaoki: *See—*
Nishihara, Akio; Kato, Hidekastu; Jimbo, Yaoki; Tomoda, Yoshiro; and Omi, Jinichi, 3,931,340.

Jimerson, James C.: *See—*
Anderson, Daniel J.; and Jimerson, James C., 3,931,552.

Jintan Terumo Company, Ltd.: *See—*
Hatsuno, Norio; and Sekiguchi, Tooru, 3,930,492.

Jobin-Yvon: *See—*
Pieuchard, Guy; Flamand, Jean; and Passereau, Genevieve, 3,930,728.

Johansson, Benny: *See—*
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John Wyeth & Brother Limited: *See—*
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White, Alan Chapman; and Bell, Stanley Charles, 3,931,226.

Johns-Manville Corporation: *See—*
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Loeffler, Romain Eugene, 3,930,926.
Norman, Stanley William, 3,930,372.
Shepherd, Philip Bickford; and Croop, Robert William, 3,931,440.
Wise, Harry H., 3,930,348.

Johnson, Charles H., Jr.: *See—*
Bell, Thomas H.; Johnson, Charles H., Jr.; Lane, Robert L.; Martin, Bradley E.; and Tyree, William H., 3,931,520.

Johnson, Dennis E.: *See—*
Goldberg, Bruce S.; and Johnson, Dennis E., 3,931,067.

Johnson & Johnson: *See—*
Drelich, Arthur H.; and Lukacs, George J., 3,931,085.
Tritsch, Ludwig, 3,930,502.
Tritsch, Ludwig, 3,930,503.

Johnson, Marvin M., to Phillips Petroleum Company. Reclaiming used motor oil. 3,930,988, Cl. 208-182.000.

Johnston, Ervin F. Hanging apparatus for falls and hanging plant. 3,930,334, Cl. 47-35.000.

Johnston, Howard, to Dow Chemical Company, The. Substituted pyridinyloxy(thio)phenyl -acetamides, -ureas and urea derivatives. 3,931,201, Cl. 260-294.80H.

Johnston, James V., to United States of America, Army. Electronic azimuth transfer method and system. 3,930,317, Cl. 33-318.000.

Johnston, Paul R. Cigarette holder ring. 3,930,510, Cl. 131-258.000.

Jolly, Stuart Talbot, to RCA Corporation. Accurate control during vapor phase epitaxy. 3,930,908, Cl. 148-175.000.

Jones, Edgar L.; Laskin, Leonard; and Sokol, Phillip E., to DeSoto, Inc. Electrostatic copy paper containing manganous salt. 3,930,854, Cl. 96-1.800.

Jones, Edward M.; and Wayne, William C., Jr., to D. H. Baldwin Company. Photo-electric organ with chiff. 3,930,430, Cl. 84-1.240.

Jones, Hugh L.; and Van Deluyster, James W., to Xerox Corporation. Multiple sheet feeding system for electrostatographic printing machines. 3,930,725, Cl. 355-14.000.

Jones, Robert J.: *See—*
Sheppard, Clyde H.; and Jones, Robert J., 3,931,354.

Jonsson, Nils Gunnar. Couplings. 3,930,674, Cl. 285-80.000.

Jordan, Wilmer C. Electric heating means for fuel vaporization in internal combustion engines. 3,930,477, Cl. 123-122.00F.

Jorgensen, Sven Erik. Ion exchanger for the treatment of waste water. 3,931,003, Cl. 210-28.000.

Joseph Lucas (Industries) Limited: *See—*
Smith, Trevor Stanley, 3,930,365.

Jos. Schneider & Co. Optische Werke: *See—*
Himmelsbach, Paul, 3,931,629.

Jost, Ronald: *See—*
Burton, Arthur Malcolm; and Jost, Ronald, 3,930,681.

Jost, Walter R.; and Horwitz, Stuart S., to United States of America, Army. Efficient biasing scheme for microwave diodes. 3,931,568, Cl. 323-25.000.

Jouffray, Maurice, to Creusot-Loire. Balancing system for high capacity cranes. 3,930,583, Cl. 212-49.000.

Juhnke, Charles J.: *See—*
Jakobs, Hans; and Juhnke, Charles J., 3,931,546.

Julou, Bernard: *See—*
Quesnel, Marcel; and Julou, Bernard, 3,930,337.

Junge, Helmut; and Quadbeck-Seeger, Hans-Juergen, to BASF Aktiengesellschaft. Process for the production of dichlorobenzoic acids. 3,931,300, Cl. 260-515.00A.

Jungmann, Manfred, to Dual Gebruder Steidinger. Pivot hinge for an apparatus cover hood. 3,930,594, Cl. 220-335.000.

Juni, Elliot, to University of Michigan, The Regents of the. Method for the genetic detection of microorganisms. 3,930,956, Cl. 195-103.50R.

Junro, Tawara: *See—*
Oka, Satoshi; Junro, Tawara; Ohmameuda, Akira; and Uda, Kazumasa, 3,930,924.

Jurewicz, Anthony T.: *See—*
Weinstein, Benjamin; Jurewicz, Anthony T.; and Young, Lewis Brewster, 3,931,046.





Jusfin, Julian Semenovich: *See—*
Vegman, Evgeny Felixovich; Zherebin, Boris Nikolaevich; Lazutkin, Sergei Evgenievich; Pashkov, Nikolai Fomich; Pyrikov, Anatoly Nikolaevich; Pokhvisnev, Anatoly Nikolaevich; Jusfin, Julian Semenovich; Zherdev, Anatoly Vasilievich; Korobov, Valentin Vasilievich; Krivonosov, Vitaly Ivanovich; and Mischenko, Ivan Mitrofanovich, 3,930,642.

K. Zysset & Co. AG: *See—*
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Kabel-und Metallwerke Gutehoffnungshuette Aktiengesellschaft: *See—*
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Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Ueda, Shozo; and Taniguchi, Toshinori, 3,930,351.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
Komatsu, Noboru; Arai, Tohru; and Sugimoto, Yoshihiko, 3,930,575.

Kadota, Masahiro, to Toyota Jidosha Kogyo Kabushiki Kaisha. Maximum mileage indicator for vehicle. 3,930,408, Cl. 73-114.000.

Kaes, Hans-Herbert; and Staaden, Hans, to Ernst Leitz G.m.b.H. Radio-photoluminescence dosimeter glass of low energy dependence and method of manufacturing same. 3,930,873, Cl. 106-47.00R.

Kahelin, Edward W. Convertible baseball and tennis practice machine. 3,930,486, Cl. 124-11.00R.

Kahling, Joachim: *See—*
Kleemann, Manfred; Kahling, Joachim; Griss, Gerhart; and Hurnaus, Rudolf, 3,931,185.

Kahng, He Chung, to Hi-Kahng Trading Co. Golf glove. 3,930,271, Cl. 2-161.00A.

Kahrmann, Henry A., Jr.: *See—*
Gray, William R.; Kahrmann, Henry A., Jr.; and Shieh, Ming K., 3,931,534.

Kaiser, Ado: *See—*
Bollag, Werner; Gutmann, Hugo; Hegedus, Balthasar; Kaiser, Ado; Langemann, Albert; Muller, Marcel; and Zeller, Paul, 3,931,268.

Kaiser, Joachim: *See—*
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Kakiuchi, Akio: *See—*
Kawai, Noriaki; Okamoto, Hisaji; Takeda, Yosiaki; Sano, Fukuzi; Kakiuchi, Akio; Manabe, Masami; Nomura, Takashi; and Abe, Sigeya, 3,930,474.

Kalen, Stuart E., to Cogsdill Tool Products, Inc. Cylindrical surface finishing device. 3,930,294, Cl. 29-90.00R.

Kaman, Andrew J.: *See—*
Seeger, Nelson V.; and Kaman, Andrew J., 3,931,113.

Kamata, Yasuji: *See—*
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Kamei, Yoshihide: *See—*
Kobayashi, Tatsumi; Ito, Tadashi; Kamei, Yoshihide; Oda, Teruhisa; and Matsuki, Toshio, 3,930,807.

Kaminski, James J.; and Bodor, Nicolae S., to Interx Research Corporation. 3-Chloro-2-oxazolidinones. 3,931,213, Cl. 260-307.00C.

Kamiya, Yoji: *See—*
Ochiai, Yoshiki; Tsuboi, Akira; and Kamiya, Yoji, 3,930,302.

Kampe, Klaus-Dieter; Babej, Milos; and Kaiser, Joachim, to Hoechst Aktiengesellschaft. 2-Amino-2-oxazolines and process for preparing them. 3,931,214, Cl. 260-307.00F.

Kanamori, Masaru: *See—*
Sugano, Izuru; Tsuji, Toshiro; and Kanamori, Masaru, 3,931,007.

Kandler, Ludwig, to Rheinisch-Westfalisches Elektrizitalswerk Aktiengesellschaft. Zinc-containing electrode. 3,930,883, Cl. 136-31.000.

Kane, William S.; and Cardwell, Paul H., to Deepsea Ventures, Inc. Two stage selective leaching of metal values from ocean floor nodule ore. 3,930,974, Cl. 204-105.00M.

Kanon Co., Inc., The: *See—*
Imamura, Koji, 3,930,387.

Kansai Paint Company, Ltd.: *See—*
Nakajima, Jun; Iwai, Hiroshi; Momiyama, Iwao; Fukushima, Tatsuo; and Takeda, Rentaro, 3,930,876.

Kanzaki Paper Mfg. Co. Ltd.: *See—*
Tada, Tomonori; and Shiono, Akira, 3,931,430.

Kao Soap Co., Ltd.: *See—*
Iwata, Kazushige; and Hosoya, Minoru, 3,930,574.

Karl, Curtis Lee, to General Mills Chemicals, Inc. Acid compositions comprised of polymeric 2-acrylamido-2-methylpropanesulfonic acid as thickener. 3,931,089, Cl. 260-29.65Q.

Karoly, Gabriel; and Gardon, John L., to M & T Chemicals Inc. Coating compositions. 3,930,971, Cl. 204-159.110.

Karsten, Kenneth S., to R. T. Vanderbilt Company, Inc. Antibacterial and germicidal N,N-dialkylthiocarbamoyl sulfenamide detergent compositions. 3,931,032, Cl. 252-107.000.

Kaser, Karl: *See—*
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Kashirina, Galina Nikiforovna: *See—*
Kazakov, Evgeny Vasilievich; Balitsky, Igor Fedorovich; Sobolevsky, Viktor Stanislavovich; Semenov, Vladimir Petrovich; Kashirina, Galina Nikiforovna; Kruglikova, Natalya Alexandrovna; Yagodkin, Viktor Ivanovich; Shpolyansky, Mikhail Arkadievich; Ruzinsky, Sergei Ivanovich; Gorbachevich, Igor Dmitrievich; and Gergert, Ivan Emanuilovich, 3,931,053.

Kast, Hellmut; and Dunkelmann, Guenter, to BASF Aktiengesellschaft. Lactones of the diazaxanthene series, their production and their use as dye-forming components for copying methods. 3,931,182, Cl. 260-256.40F.

Katanosaka, Akisato; and Hanamoto, Manabu, to Nard Institute, Ltd. Alicyclic amino compounds and their production. 3,931,315, Cl. 260-563.00P.

Kataoka, Nobuyuki: *See—*
Fujio, Ryota; Kataoka, Nobuyuki; Kitayama, Motozumi; Fukabori, Yoshihide; and Anzai, Shiro, 3,931,097.

Katayama, Shigeru; Yokoyama, Izuru; and Tasaka, Katsuhiko, to Mitsui Petrochemical Industries, Ltd. Process for producing hydrocarbon resin and pressure-sensitive adhesives containing same. 3,931,125, Cl. 260-82.000.

Kato, Hidekastu: *See—*
Nishihara, Akio; Kato, Hidekastu; Jimbo, Yaoki; Tomoda, Yoshiro; and Omi, Jinichi, 3,931,340.

Kato, Kazuo; and Kamata, Yasuji, to Hitachi, Ltd. Isolated DC amplifier circuit. 3,931,582, Cl. 330-10.000.

Kato, Koso; and Shiosaka, Makoto, to Hayashibara Biochemical Laboratories, Incorporated. Hydrogenated pullulan. 3,931,146, Cl. 260-209.000.

Kato, Takashi: *See—*
Takahashi, Toshiro; Nagano, Toshihiro; Suzuki, Matsuo; Zuzuki, Shozo; Aoshima, Yasuo; Asahina, Teruo; Ikeda, Katsushige; Hayashi, Isao; Kato, Takashi; and Minagawa, Nobuo, 3,930,964.

Katsuyama, Harumi: *See—*
Ono, Hisatake; Watarai, Syu; and Katsuyama, Harumi, 3,930,851.

Kaugars, Girts, to Upjohn Company, The. Alkylthio benzoyl chloride phenylhydrazones. 3,931,318, Cl. 260-566.00B.

Kaul, Bansi Lal, to Sandoz Ltd., (Sandoz AG). Naphthoquinone derivatives. 3,931,163, Cl. 260-248.0CS.

Kawabata, Hidetoshi: *See—*
Tanaka, Susumu; Enoguchi, Yuji; and Kawabata, Hidetoshi, 3,930,852.

Kawai, Noriaki; Okamoto, Hisaji; Takeda, Yosiaki; Sano, Fukuzi; Kakiuchi, Akio; Manabe, Masami; Nomura, Takashi; and Abe, Sigeya, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Nippondenso Kabushiki Kaisha. Ignition system for internal combustion engines. 3,930,474, Cl. 123-117.00A.

Kawamoto, Isao: *See—*
Nara, Takashi; Takasawa, Seigo; Okachi, Ryo; Kawamoto, Isao; and Yamamoto, Mitsuyoshi, 3,931,400.

Kawamura, Takao, to Hitachi, Ltd. Shadow mask assembly. 3,931,540, Cl. 313-404.000.

Kawasaki Steel Corporation: *See—*
Irie, Toshio; Yokoyama, Yasuo; Sugiyama, Toshitomo; Shimanaka, Hiroshi; and Kobayashi, Shigeru, 3,930,906.

Kawatani, Sigeo: *See—*
Mori, Kan; Ikeda, Hiroharu; Nagaoka, Isao; Shibata, Tooru; Kawatani, Sigeo; and Kikuchi, Tatsuhiko, 3,931,136.

Kay, Ian Trevor, to Imperial Chemical Industries Limited. Heterocyclic compounds. 3,931,164, Cl. 260-249.500.

Kazakov, Evgeny Vasilievich; Balitsky, Igor Fedorovich; Sobolevsky, Viktor Stanislavovich; Semenov, Vladimir Petrovich; Kashirina, Galina Nikiforovna; Kruglikova, Natalya Alexandrovna; Yagodkin, Viktor Ivanovich; Shpolyansky, Mikhail Arkadievich; Ruzinsky, Sergei Ivanovich; Gorbachevich, Igor Dmitrievich; and Gergert, Ivan Emanuilovich. Catalyst for conversion of hydrocarbons and method of preparing same. 3,931,053, Cl. 252-466.00J.

Keel, Frederick, to Bentley Engineering Company, Limited, The. Plating feeders. 3,930,386, Cl. 66-134.000.

Kehr, Clifton L.; and Wszolek, Walter R., to W. R. Grace & Co. Polyene compounds. 3,931,287, Cl. 260-471.00C.

Kelch, Heinz, to Kienzle Apparate GmbH. Arrangement for furnishing an indication of total fare including surcharges in an electronic taximeter. 3,931,508, Cl. 235-168.000.

Kelco Company: *See—*
Starace, Charles A., 3,930,871.

Keller, Ernst. Espagnolette lock. 3,930,390, Cl. 70-224.000.

Keller, Helmut; and Seiler, Hartmut, to Robert Bosch G.m.b.H. Method and apparatus for selective burnout trimming of integrated circuit units. 3,930,304, Cl. 29-574.000.

Keller, Philip J., to Unex Corporation. Hydraulic wrench. 3,930,776, Cl. 173-163.000.

Kelly, Robert Myrick: *See—*
Ruggiero, George William; Kelly, Robert Myrick; and Mazor, Eliashiv, 3,930,889.

Kemanord AB: *See—*
Bjorklund, James Axel Christer; and Helmer, Karin Ulla Elisabet, 3,930,932.

Kemnord AB: *See—*
Lundin, Claes Olof Axel, 3,931,069.

Kemp, John E. G.: *See—*
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Kempf, Georg: *See—*
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Kennametal Inc.: *See—*
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Kennecott Copper Corporation: *See—*
Cook, Glenn M.; and Galin, Walter E., 3,930,962.

Kennedy, Billy Edward; and Sliger, Boyd Paul, to Robertshaw Controls Company. Pneumatic control system and valve construction therefor or the like. 3,930,515, Cl. 137-102.000.

Kenseido Kagaku Kogyo Kabushiki Kaisha: *See—*
Ohno, Yoshio, 3,931,030.

Kensler, Daniel L., Jr.; Kohn, Gustave K.; and Walgenbach, David D., to Chevron Research Company. Fungus and bacteria control with di-carboxylic acid esters. 3,931,412, Cl. 424-313.000.

Kent, Alan Hugh; Hennell, Geoffrey Frank; Rokos, George Hedley Storm; and Fell, Peter Howard, to Plessey Handel und Investments A.G. Line data and television transmission. 3,931,512, Cl. 250-199.000.

Kerger, Klaus: *See*—
Schulte, Wilfried; Sowa, Horst; and Kerger, Klaus, 3,931,017.

Kern, Rudolf: *See*—
Dany, Franz-Josef; Wortmann, Joachim; Munch, Peter; Braun, Gunther; and Kern, Rudolf, 3,931,081.

Kerr, Joseph H., to United States of America, National Aeronautics and Space Administration. Traffic survey system. 3,930,735, Cl. 356-167.000.

Khaustov, Georgy Iosifovich: *See*—
Orro, Pavel Ivanovich; Kovalevsky, Nikolai Grigorievich; Lobanov, Alexandr Ivanovich; Arkhangelsky, Andrei Mikhailovich; Makarov, Valentin Anatolievich; Goreslavets, Jury Georgievich; Erokhov, Nikolai Konstantinovich; Khaustov, Georgy Iosifovich; Obukh-Shvets, Ivan Mikhailovich; and Vereschagin, Alexandr Davydovich, 3,930,394.

Kibayashi, Iwao: *See*—
Fujii, Chiyuki; Kosai, Yoshio; and Kihayashi, Iwao, 3,931,241.

Kicherer, Karl Heinz, to Modicus Karl-Heinz Kicherer. Process of manufacturing tennis racket frames or the like. 3,930,920, Cl. 156-156.000.

Kicks, John C.: *See*—
Mallon, Joseph R.; Kurtz, Anthony D.; and Kicks, John C., 3,930,412.

Kienzle Apparate GmbH: *See*—
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Kikuchi, Tatsuhiko: *See*—
Mori, Kan; Ikeda, Hiroharu; Nagaoka, Isao; Shibata, Tooru; Kawatani, Sigeo; and Kikuchi, Tatsuhiko, 3,931,136.

Kilbourn, Edward E.; Peardon, David L.; and Ware, J. Edgar, to Rohm and Haas Company. 3-Pyridylmethyl aryl urea rodenticides. 3,931,203, Cl. 260-294.900.

Kilbourn, Edward E.: *See*—
Ware, J. Edgar, Jr.; Kilbourn, Edward E.; and Peardon, David L., 3,931,202.

Kilcoin, John Augustine: *See*—
Chace, Richard Lincoln; Kilcoin, John Augustine; and Semonchik, William, 3,931,484.

Kimberly-Clark Corporation: *See*—
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Kimura, Isao; and Koyama, Hiroaki, to Nippon Kynol Incorporated. Process for producing drawn or undrawn flame-resistant, anti-fusing cured phenolic continuous filaments. 3,931,386, Cl. 264-236.000.

Kinast, Norbert, to Daimler-Benz Aktiengesellschaft. Central plug connection. 3,930,703, Cl. 339-14.00R.

King, Henry L., to Monsanto Company. Fire retardant polyester fibers. 3,931,099, Cl. 260-45.70P.

King, Larry K.: *See*—
Schoener, Ronald C.; King, Larry K.; Knapp, Lester L.; and Kloap, Nicholas, 3,930,800.

King-Seeley Thermos Co.: *See*—
Utter, Robert P., 3,930,377.

Kingsnorth, Maurice Wilfrid: *See*—
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Kinoshita, Hideo: *See*—
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Kinsolving, C. Richard: *See*—
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Kipper, Theodore D.: *See*—
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Kirschmann, John D. Combined water cooler & distiller. 3,930,959, Cl. 202-181.000.

Kishi, Ikuji: *See*—
Kondo, Renichi; Nakagawa, Koji; Fukuda, Makoto; Kishi, Ikuji; and Ohtsuki, Tateki, 3,931,095.

Kishimoto, Akira: *See*—
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Kitayama, Motozumi: *See*—
Fujio, Ryota; Kataoka, Nobuyuki; Kitayama, Motozumi; Fukabori, Yoshihide; and Anzai, Shiro, 3,931,097.

Kizlauskas, Kazimieras: *See*—
Blisko, Charles M.; Denton, Ronald T.; and Kizlauskas, Kazimieras, 3,930,483.

Kizu, Ryouhei; Harada, Masahiro; and Kobayasi, Teruo, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Toyoda Gosei Co., Ltd. Steering wheel assembly. 3,930,420, Cl. 74-552.000.

Klar, Erich: *See*—
Aleite, Werner; Klar, Erich; and Spillekothen, Hans-Gerd, 3,930,936.

Klauke, Erich, to Bayer Aktiengesellschaft. 2-Chloro-trichlorobenzonitriles. 3,931,276, Cl. 260-465.00G.

Klauke, Erich; Kuhle, Engelbert; and Eue, Ludwig, to Bayer Aktiengesellschaft. Novel N(-difluoromethylmercaptophenyl) urea compounds and herbicidal compositions. 3,931,312, Cl. 260-553.00A.

Klauke, Erich: *See*—
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Klayman, Arnold I., to Monitron Industries, Inc. Low distortion pyramidal dispersion speaker. 3,930,561, Cl. 181-192.000.

Kleemann, Manfred; Kahling, Joachim; Griss, Gerhart; and Hurnaus, Rudolf, to Boehringer Ingelheim GmbH. 1-Phenyl-2,2,4,4-$C_1$-$C_2$ alkyl-3-[4-(phenyl or pyridyl)-piperazino]-cyclobutanols-(1). 3,931,185, Cl. 260-268.0PH.

Kliem, Helmut: *See*—
Bachle, Erich; Kliem, Helmut; and Rall, Bernhard, 3,931,475.

Kloap, Nicholas: *See*—
Schoener, Ronald C.; King, Larry K.; Knapp, Lester L.; and Kloap, Nicholas, 3,930,800.

Klos, Hendrik, to U.S. Philips Corporation. Storage device drive circuit. 3,931,616, Cl. 340-173.00R.

Klosky, John Patrick: *See*—
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Kluge, Frank C.: *See*—
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Klupfel, Kurt Walter: *See*—
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Kmetty, Paul J.: *See*—
Stelter, Ronald B.; Kulka, Raymond; and Kmetty, Paul J., 3,930,318.

Kmetz, Allan R., to Texas Instruments Incorporated. Equalization storage in recirculating memories. 3,931,510, Cl. 235-193.000.

Knapp, Heinrich: *See*—
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Knapp, Lester L.: *See*—
Schoener, Ronald C.; King, Larry K.; Knapp, Lester L.; and Kloap, Nicholas, 3,930,800.

Knight, John H.: *See*—
Weichman, Bernard E.; and Knight, John H., 3,930,989.

Knight, Mark Berwyn, to RCA Corporation. Junction-isolated monolithic integrated circuit device with means for preventing parasitic transistor action. 3,931,634, Cl. 357-48.000.

Knopp, Paul V.; and Gitchel, Wayne B., to Sterling Drug Inc. Wastewater treatment. 3,930,998, Cl. 210-5.000.

Knowles, Carl Harry, to Metrologic Instruments, Inc. Method of forming laser components. 3,930,824, Cl. 65-37.000.

Knuth, Eugene W. Anchor and adjustable tie-line for floatable decoys. 3,930,328, Cl. 43-3.000.

Kobayashi, Akihiro: *See*—
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Kobayashi, Shigeru: *See*—
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Kobayashi, Tatsumi; Ito, Tadashi; Kamei, Yoshihide; Oda, Teruhisa; and Matsuki, Toshio, to Canon Kabushiki Kaisha. Plastic molding having satin finish type metallic luster. 3,930,807, Cl. 29-195.000.

Kobayashi, Teruo: *See*—
Usui, Hideo; Ishige, Sadao; Kobayashi, Teruo; and Saeki, Keiso, 3,930,671.

Kobayashi, Toyoaki; and Mori, Yoshinori, to Aisin Seiki Kabushiki Kaisha. Disc brakes for vehicles. 3,930,564, Cl. 188-73.300.

Kobayashi, Tsutomu: *See*—
Uchida, Kosaku; Kobayashi, Tsutomu; and Koike, Susumu, 3,931,632.

Kobayasi, Teruo: *See*—
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Kobe Steel Ltd.: *See*—
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Koberstein, Edgar; and Muller, Klaus-Peter, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for oxidation of ammonia. 3,931,391, Cl. 423-404.000.

Koch, Christian, to Siemens Aktiengesellschaft. Internal combustion engine system. 3,930,476, Cl. 123-119.00E.

Koch, Robert B.: *See*—
Cummings, John P.; and Koch, Robert B., 3,930,957.

Kodama, Kenjiro: *See*—
Kusakabe, Hitoshi; Kodama, Kenjiro; Midorikawa, Yuichirow; Machida, Haruhiko; Kuninaka, Akira; and Yoshino, Hiroshi, 3,930,955.

Koff, Fred W.: *See*—
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Kohlas, Jurg, to BBC Brown Boveri & Company Ltd. Method and apparatus for localization of failures on electrical lines. 3,931,502, Cl. 235-151.310.

Kohman, Fred H.: *See*—
Schuermann, Kenneth W.; and Kohman, Fred H., 3,930,668.

Kohn, Gustave K.: *See*—
Kensler, Daniel L., Jr.; Kohn, Gustave K.; and Walgenbach, David D., 3,931,412.

Kohne, Harry F., Jr.; and Kurrle, Frederick L., to Westvaco Corporation. Blushed polystyrene pigment. 3,931,061, Cl. 260-2.50B.

Koike, Susumu: *See*—
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Kokusai Electric Co., Ltd.: *See*—
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Kollander, Melvin M.; Kollander, Norman A.; Wade, James B.; and Parisi, Anthony, to East Sandia Industrial Group. Steerable trailer suspension system. 3,930,669, Cl. 280-426.000.

Kollander, Norman A.: *See*—
Kollander, Melvin M.; Kollander, Norman A.; Wade, James B.; and Parisi, Anthony, 3,930,669.

Kolomiitsev, Mikhail Alexandrovich: *See*—
Ambardanishvili, Tristan Silovanovich; Kolomiitsev, Mikhail Alexandrovich; Zakharina, Tamara Yakovlevna; Dundua, Vakhtang Justinovich; and Chikhladze, Ninel Vladimirovna, 3,931,523.

Komatsu, Noboru; Arai, Tohru; and Sugimoto, Yoshihiko, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Method for a surface treatment of an iron, ferrous alloy or cemented carbide article. 3,930,575, Cl. 204-39.000.

Kometani, Yutaka; Koizumi, Shun; Suzuki, Takeshi; Furukawa, Yasuyoshi; Tomoda, Masayasu; and Kondo, Kiyoichi, to Daikin Kogyo Co., Ltd. Fluoroelastomer composition. 3,931,124, Cl. 260-80.770.

Kometani, Yutaka; Koizumi, Shun; Suzuki, Takeshi; Furukawa, Yasuyoshi; Tomoda, Masayasu; and Kondo, Kiyoichi, to Daikin Kogyo Co., Ltd. Fluoroelastomer composition. 3,931,129, Cl. 260-87.700.

Kompis, Ivan; Rey-Bellet, Gerald; and Zanetti, Guido, to Hoffmann-La Roche Inc. 2,4-Diamino-5-benzylpyrimidines. 3,931,181, Cl. 260-256.40N.

Kondo, Kiyoichi: *See*—
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Kondo, Renichi; Nakagawa, Koji; Fukuda, Makoto; Kishi, Ikuji; and Ohtsuki, Tateki, to Nippon Kayaku K.K.; and Denki Kagaku Kogyo Kabushiki Kaisha. Fire retardant thermosetting resin composition. 3,931,095, Cl. 260-38.000.

Konersmann, Erhard, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Method for application of data to a workpiece and apparatus for the performance of such method. 3,930,443, Cl. 101-18.000.

Konig, Wolfgang: *See*—
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Koninklijke Emballage Industrie van Leer B.V.: *See*—
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Konomi, Toshiaki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Apparatus for mixing fuel and air for an internal combustion. 3,930,485, Cl. 123-141.000.

Konrad, Hermann-Heinz: *See*—
Fuchs, Hermann; and Konrad, Hermann-Heinz, 3,930,795.

Konstantinov, Igor Leonidovich: *See*—
Gusman, Moisei Timofeevich; Ljubimov, Boris Georgievich; Konstantinov, Igor Leonidovich; Kuznetsova, Irina Ivanovna; Malkin, Boris Davidovich; and Nikitin, Gely Meierovich, 3,930,749.

Koontz, Carl E., to Anchor Hocking Corporation. Pry-off closure cap. 3,930,589, Cl. 215-352.000.

Koontz, Richard D.: *See*—
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Kopecek, Jindrich: *See*—
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Kopecek, Jinrich; Vacik, Jiri; and Sprincl, Ladislav, to Ceskoslovenska akadamie ved. Soluble hydrophilic polymers and process for processing the same. 3,931,111, Cl. 260-67.00R.

Kopera, John F.; Lawson, William E.; and Carr, James P., to United States of America, Army. Track tension control. 3,930,553, Cl. 180-9.280.

Koppers Company, Inc.: *See*—
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Kori, Seiji: *See*—
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Korpel, Adrianus, to Zenith Radio Corporation. Video disc. 3,931,459, Cl. 178-6.60A.

Kortick, Leonard R. Display container. 3,930,577, Cl. 206-45.130.

Kosai, Yoshio: *See*—
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Kostecki, Raymond T., to Warwick Electronics Inc. DC power supply with load current regulation. 3,931,567, Cl. 323-9.000.

Koster, Wilhelm: *See*—
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Kovacs, Odon Kalman Jozsef: *See*—
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Kovats, Ervin; Demole, Edouard; Ohloff, Gunther; and Stoll, Max, deceased (by Stoll, Suzanne, executrix), to Firmenich SA. Alkenoylcyclohexadienes. 3,931,326, Cl. 260-586.00R.

Koyama, Hiroaki: *See*—
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Koyo Sangyo Co., Ltd.: *See*—
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Kozhevnikov, Georgy Nikolaevich: *See*—
Ryss, Mark Abramovich; Zaiko, Viktor Petrovich; Belyaev, Gerald Semenovich; Golev, Anatoly Konstantinovich; Mikulinsky, Aron Semenovich; Gusarov, Vladimir Nikolaevich; Pigasov, Stepan Evgenievich; Bedov, Igor Sergeevich; Pomogaev, Valentin Nikotovich; and Kozhevnikov, Georgy Nikolaevich, 3,930,842.

Koziol, Konrad: *See*—
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Kramer, Morton, to General Electric Company. Casing for shafts and cables. 3,930,419, Cl. 74-501.00P.

Kramer, Wolfgang: *See*—
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Thomas, Rudolf; Kramer, Wolfgang; Eue, Ludwig; Metzger, Carl; and Jager, Gerhard, 3,931,311.

Krapcho, John; and Turk, Chester Frank, to E. R. Squibb & Sons, Inc. 5-Substituted-pyrazolo(4,3-c)pyridines. 3,931,169, Cl. 260-240.00R.

Krautkremer, Franz, to Schottel-Werft Josef Becker KG. Propeller support for amphibious vehicle. 3,930,458, Cl. 115-1.00R.

Krebs, Kay E.; and Arps, Marion T., to Kimberly-Clark Corporation. Surgical drape and system incorporating it. 3,930,497, Cl. 128-132.00D.

Krekeler, Hans: *See*—
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Krenkel, Bernhard, to J. M. Voith GmbH. Device for spraying a traveling paper web or the like. 3,930,614, Cl. 239-15.000.

Krenmueller, Franz; and Till, Heinrich, to Sandoz Ltd., (Sandoz AG). Process for the production of aminoanthraquinone. 3,931,253, Cl. 260-378.000.

Krenzer, John, to Velsicol Chemical Corporation. 2-Alkyl-4-thiadiazolyl-1,2,4-triazolidin-3-ones. 3,931,209, Cl. 260-306.80D.

Krivdin, Boris Petrovich: *See*—
Gryaznov, Vladimir Mikhailovich; Smirnov, Viktor Sergeevich; Mischenko, Alexandr Petrovich; Orekhova, Natalia Vsevolodovna; Krivdin, Boris Petrovich; Polyakova, Viktoria Petrovna; and Savitsky, Evgeny Mikhailovich, 3,931,345.

Krivka, Alexander. Steam-powered aircraft. 3,930,625, Cl. 244-17.210.

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Vegman, Evgeny Felixovich; Zherebin, Boris Nikolaevich; Lazutkin, Sergei Evgenievich; Pashkov, Nikolai Fomich; Pyrikov, Anatoly Nikolaevich; Pokhvisnev, Anatoly Nikolaevich; Jusfin, Julian Semenovich; Zherdev, Anatoly Vasilievich; Korobov, Valentin Vasilievich; Krivonosov, Vitaly Ivanovich; and Mischenko, Ivan Mitrofanovich, 3,930,642.

Krock, Richard H.; and Shen, Yuan-Shou, to P. R. Mallory & Co., Inc. Electrical contact material of the Ag-CdO type and method of making same. 3,930,849, Cl. 75-173.00A.

Kroh, Adolf: *See*—
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Kronogard, Sven-Olof, to United Turbine AB & Co., Kommanditbolag. Outlet diffusor for a centrifugal compressor. 3,930,746, Cl. 415-149.000.

Krossa, Kenneth D.: *See*—
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Kruglikova, Natalya Alexandrovna: *See*—
Kazakov, Evgeny Vasilievich; Balitsky, Igor Fedorovich; Sobolevsky, Viktor Stanislavovich; Semenov, Vladimir Petrovich; Kashirina, Galina Nikiforovna; Kruglikova, Natalya Alexandrovna; Yagodkin, Viktor Ivanovich; Shpolyansky, Mikhail Arkadievich; Ruzinsky, Sergei Ivanovich; Gorbachevich, Igor Dmitrievich; and Gergert, Ivan Emanuilovich, 3,931,053.

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Krusser, Boris Vasilievich: *See—*
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Krutenat, Richard C., to United Technologies Corporation. Coating ingot pretreatment. 3,930,901, Cl. 148-13.000.

Kubisch, Christian: *See—*
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Kubodera, Seiiti: *See—*
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Kuehn, Jack W., to Tote Bulk Handling, Inc. Method of preparing moldable plastic and additive agents. 3,930,640, Cl. 259-185.000.

Kuenstler, Hans Georg: *See—*
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Kugimiya, Koichi; and Hirota, Eiichi, to Matsushita Electric Industrial Co., Ltd. Magnetic head and method of making the same. 3,931,642, Cl. 360-127.000.

Kuhle, Engelbert; and Klauke, Erich, to Bayer Aktiengesellschaft. N-trifluoromethyl-N-(trihalomethylthio)-amino-benzo-imide chlorides. 3,931,317, Cl. 260-566.00D.

Kuhle, Engelbert: *See—*
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Kulite Semiconductor Products, Inc.: *See—*
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Kulka, Raymond: *See—*
Stelter, Ronald B.; Kulka, Raymond; and Kmetty, Paul J., 3,930,318.

Kulkens, John F., to Warwick Electronics Inc. Synchronizing circuit having a variable bandpass filter. 3,931,467, Cl. 178-7.30R.

Kuninaka, Akira: *See—*
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Kunkle, Calvin S.; and Little, Hugh A., to FMC Corporation. Motor vehicle battery holder. 3,930,552, Cl. 180-68.500.

Kunkle, Gerald E., to PPG Industries, Inc. Thermal control in a glass sheet forming chamber. 3,930,828, Cl. 65-65.00A.

Kuntschik, Lawrence F.: *See—*
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Kuo, James C. W., to Mobil Oil Corporation. Conversion of methanol to gasoline components. 3,931,349, Cl. 260-668.00R.

Kupsky, George A., to Owens-Illinois, Inc. Segmented gas discharge display panel device and method of manufacturing same. 3,931,436, Cl. 427-96.000.

Kuraray Co., Ltd.: *See—*
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Noziri, Hiroyuki; Sugahara, Mituaki; and Tanno, Hirotada, 3,931,131.

Kuroda, Minoru, to Nishizawa Shoji Co. Ltd; and Dimension Weld International Corporation. Simulated stained-glass article and method of making the same. 3,931,425, Cl. 428-38.000.

Kuroe, Akio, to Matsushita Electric Industrial Co., Ltd. Magnetic head cleaning tape cartridge for use in magnetic recording and reproducing apparatus of the rotary head type. 3,931,643, Cl. 360-128.000.

Kurrle, Frederick L.: *See—*
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Kurtz, Anthony D.; and Mallon, Joseph R., Jr., to Kulite Semiconductor Products, Inc. High temperature transducers and housing including fabrication methods. 3,930,823, Cl. 65-33.000.

Kurtz, Anthony D.: *See—*
Mallon, Joseph R.; Kurtz, Anthony D.; and Kicks, John C., 3,930,412.

Kurtz, Joseph M., to GTE Sylvania Incorporated. Multipack means for packaging a plurality of cathode ray tubes. 3,930,579, Cl. 206-419.000.

Kurzenberger, Richard H. Mobile home resilient frost heave compensators. 3,930,345, Cl. 52-23.000.

Kusakabe, Hitoshi; Kodama, Kenjiro; Midorikawa, Yuichirow; Machida, Haruhiko; Kuninaka, Akira; and Yoshino, Hiroshi, to Yamasa Shoyu Kabushiki Kaisha. Process for producing pterin deaminases having antitumor activity. 3,930,955, Cl. 195-66.00R.

Kush, Louis J., Jr.; Janota, Claus P.; Koontz, Richard D.; and Sibul, Leon H., to United States of America, Navy. High-efficiency, switching, power amplifier. 3,931,581, Cl. 330-10.000.

Kusuda, Takazo; and Nishiwaki, Niichi, to Osaka Gas Kabushiki Kaisha. Method of detecting leak of fluid from a long pipeline. 3,930,556, Cl. 181-.500.

Kutzbach, Carl; and Petersen, Uwe, to Bayer Aktiengesellschaft. Process for the production of 7-amino-$\Delta^2$-cephem derivatives. 3,930,949, Cl. 195-29.000.

Kuznetsova, Irina Ivanovna: *See—*
Gusman, Moisei Timofeevich; Ljubimov, Boris Georgievich; Konstantinov, Igor Leonidovich; Kuznetsova, Irina Ivanovna; Malkin, Boris Davidovich; and Nikitin, Gely Meierovich, 3,930,749.

Kyi, Roland R., to Olin Corporation. Preparation of 2-chloropyridine by hydrogenolysis. 3,931,190, Cl. 260-290.0HL.

Laarm, Sven. Mounting device particularly for ceiling or wall fittings. 3,930,631, Cl. 248-343.000.

Labaz: *See—*
Binon, Fernand; and Eymard, Pierre Luc, 3,931,240.

Labofina S.A.: *See—*
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Laboratoire S P A D: *See—*
Rimbaud, Henri, 3,930,499.

Lacey, Richard F., to Hewlett-Packard Company. Housing structure and magnetic biasing for bubble memories. 3,931,618, Cl. 340-174.00S.

Lacour, Jacques; Montier, Michel; and Suat, Jean-Pierre, to Commissariat a l'Energie Atomique. Method for manufacturing integrated circuits. 3,930,305, Cl. 29-577.000.

Lahm, William Joseph: *See—*
Belivakici, Ilie Mila; Goehring, Clifford Clayton; Wachtel, James Alan; Lahm, William Joseph; and Storms, Carl Richard, 3,931,380.

Lahr, Donald J.: *See—*
Lahr, Lawrence N.; and Lahr, Donald J., 3,930,755.

Lahr, Lawrence N.; and Lahr, Donald J. Air-pressure actuated slurry pump. 3,930,755, Cl. 417-120.000.

Laird, Richard P.; and Sills, William M., to Caterpillar Tractor Co. Quick release gauge fitting. 3,930,413, Cl. 73-421.00B.

Lake, Alan W., to Chemical Services (Proprietary) Limited. Recovery of sugar cane wax. 3,931,258, Cl. 260-412.500.

Lamson Industries Limited: *See—*
Neale, David John; and Dawney, Stanford Frederick, 3,931,443.

Landholm, Richard A.: *See—*
Eldredge, Carl H.; Haase, Jan R.; and Landholm, Richard A., 3,931,144.

Lane, Bruce Cochran: *See—*
Ray, Neil Hunter; Lane, Bruce Cochran; and Shaw, Bryan, 3,931,064.

Lane, Robert L.: *See—*
Bell, Thomas H.; Johnson, Charles H., Jr.; Lane, Robert L.; Martin, Bradley E.; and Tyree, William H., 3,931,520.

Langbein, Adolf; Merz, Herbert; Walther, Gerhard; and Stockhaus, Klaus, to Boehringer Ingelheim GmbH. N-(heteroaryl-methyl)-7α-acyl-6,14-(endoetheno or endoethano)-tetrahydro-nororipavines or-thebaines and salts thereof. 3,931,187, Cl. 260-285.000.

Langbein, Adolf; Merz, Herbert; Walther, Gerhard; and Stockhaus, Kalus, to Boehringer Ingelheim GmbH. N-(heteroaryl-methyl)-6,14-(endoethano or endoetheno)-7α-hydroxyalkyl-tetrahydro-nororipavines or-northebaines and salts thereof. 3,931,189, Cl. 260-285.000.

Langbein, Adolf: *See—*
Merz, Herbert; Langbein, Adolf; Stockhaus, Klaus; and Wick, Helmut, 3,931,194.

Langdon, William K., to BASF Wyandotte Corporation. Hydroxyalkylamino glycosides and process of preparation. 3,931,148, Cl. 260-210.00R.

Langdon, William K., to BASF Wyandotte Corporation. Multi-block polyacetal copolymer surfactants. 3,931,337, Cl. 260-615.00A.

Langemann, Albert: *See—*
Bollag, Werner; Gutmann, Hugo; Hegedus, Balthasar; Kaiser, Ado; Langemann, Albert; Muller, Marcel; and Zeller, Paul, 3,931,268.

Langer, Horst G.: *See—*
Brady, Thomas P.; and Langer, Horst G., 3,931,341.

Lanteri, Agostino, to Costruzioni Meccaniche G. Mazzoni S.p.A. Method for sulphonatizing and sulphatizing organic compounds with sulphur trioxide and apparatus therefor. 3,931,273, Cl. 260-458.000.

Lapolice, Leo, to Lawrence Peska Associates, Inc., a part interest. Portable lawn playing checker apparatus. 3,930,652, Cl. 273-136.00K.

Lapp, John: *See—*
Sadler, Fred S.; and Lapp, John, 3,931,027.

Lardi, Francesco: *See—*
Berkebile, Gary W.; Lardi, Francesco; and Podolsky, Leaman B., 3,931,500.
Berkebile, Gary W.; Lardi, Francesco; and Podolsky, Leaman B., 3,931,503.

Larkin, William A.; and Bouchoux, Jean W., to M & T Chemicals Inc. Method for recovering solubilized organotin halides. 3,931,264, Cl. 260-429.700.

Larsen, Lars T.; and Morse, Robert M. Raw fish bait product and method of making same. 3,931,415, Cl. 426-1.000.

Larson, Jay Michael: *See—*
Volin, Timothy Earl; Benjamin, John Stanwood; Larson, Jay Michael; and Cairns, Robert Lacock, 3,930,841.

Larsson, Folke J.; and Larsson, Rune H. Manhole frame with adjustment screws. 3,930,739, Cl. 404-26.000.

Larsson, Rune H.: *See—*
Larsson, Folke J.; and Larsson, Rune H., 3,930,739.

Lasch, Cecil A., Jr.; Sipos, Laszlo; and Ursprung, Karl. Automatic wafer feeding and pre-alignment apparatus and method. 3,930,684, Cl. 302-2.00R.

Laskin, Leonard: *See—*
Jones, Edgar L.; Laskin, Leonard; and Sokol, Phillip E., 3,930,854.

La Spina, Andrea; Dietrich, Werner; and Schliebs, Reinhard, to Bayer Aktiengesellschaft. Process for preparing polycarbodiimide foams in the presence of phosphetane oxide or sulfide adducts. 3,931,059, Cl. 260-2.5BF.

Lasson, Gerald A.: *See—*
Donoghue, John Francis; Forney, Dan Edward; Heiks, Robert Lee; Lasson, Gerald A.; McCall, Robert Eugene; and Rich, Charles Ray, 3,930,922.



Lassy, Carl O.; and Lassy, William A. Fireplace heater. 3,930,490, Cl. 126-121.000.

Lassy, William A.: *See—*
Lassy, Carl O.; and Lassy, William A., 3,930,490.

Laurens, Albert Adelin Suffrein; Christy, Jean-Paul; and Durand, Jean-Pierre, to Republic of France. Interferometric device for measurement of variations in length of a sample under the influence of temperature. 3,930,730, Cl. 356-106.00R.

Lawrence Peska Associates, Inc.: *See—*
Lapolice, Leo, 3,930,652.

Lawson, William E.: *See—*
Kopera, John F.; Lawson, William E.; and Carr, James P., 3,930,553.

Lazutkin, Sergei Evgenievich: *See—*
Vegman, Evgeny Felixovich; Zherebin, Boris Nikolaevich; Lazutkin, Sergei Evgenievich; Pashkov, Nikolai Fomich; Pyrikov, Anatoly Nikolaevich; Pokhvisnev, Anatoly Nikolaevich; Jusfin, Julian Semenovich; Zherdev, Anatoly Vasilievich; Korobov, Valentin Vasilievich; Krivonosov, Vitaly Ivanovich; and Mischenko, Ivan Mitrofanovich, 3,930,642.

Le Bouchage Mecanique: *See—*
Coursaut, Henri, 3,930,588.

Leanza, William J.: *See—*
Christensen, Burton G.; and Leanza, William J., 3,931,150.

Leblanc, Jean-Claude, to Rhone-Poulenc S.A. Aromatic carboxamide-sulphonamide polycondensates. 3,931,119, Cl. 260-78.00R.

Lee, David Q.: *See—*
McLaughlin, Donald W.; and Lee, David Q., 3,931,474.

Leech, Edward J.: *See—*
Polichette, Joseph; and Leech, Edward J., 3,930,963.

Leeming, Michael R. G.: *See—*
Greenspan, George; and Leeming, Michael R. G., 3,930,952.

Leesona Corporation: *See—*
Mesiti, Edward C.; and Rosenblatt, Solomon, 3,930,886.
Walden, Richard I., 3,930,623.

Leggate, James Warren: *See—*
Arter, Nelson Kay; Brock, George William; Jackson, Howard Carl; and Leggate, James Warren, 3,931,639.

Leghorn, George R. Continuous centrifugal tube casting apparatus with dry mold and gas pressure differential. 3,930,532, Cl. 164-273.00R.

Lehmann, Werner: *See—*
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Leimgruber, Willy: *See—*
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Leitner, Hermann: *See—*
Bretschneider, Erich; Leitner, Hermann; and Bohmer, Friedhlem, 3,930,395.

Leland Stanford Jr. University, The Board of Trustees of: *See—*
Otto, Oberdan W., 3,931,509.

Lemahieu, Raymond Gerard: *See—*
Libeer, Marcel Jan; Depoorter, Henri; Van Mierlo, Gerrit Godfried; and Lemahieu, Raymond Gérard, 3,931,156.

Le Martret, Odile: *See—*
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Lemke, James U.: *See—*
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Lemmer, Francis S.: *See—*
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Lenac-Lukacevic, Nada: *See—*
Schieber, Franz; Husnjak, Petar; Paro, Frane; Koziol, Konrad; Zenk, Baptist; Lenac-Lukacevic, Nada; Zollner, Dieter; Walser, Peter; and Rittmann, Friedrich, 3,930,985.

Lenk, Erich: *See—*
Schippers, Heinz; and Lenk, Erich, 3,930,292.

Lenoir, John; Tschopp, Paul; Loeffel, Hansrolf; and de Montmollin: Rene, to Ciba-Geigy AG. Heterocyclic containing disazo compounds. 3,931,142, Cl. 260-156.000.

Lentz, Robert A.; and Lemke, James U., to Eastman Technology, Inc. Apparatus for modifying the time base of signals. 3,931,638, Cl. 360-36.000.

Leonard, David P., to Cook Paint and Varnish Company. Coating powders for protective films based on ϵ-caprolactam-blocked isocyanates. 3,931,117, Cl. 260-77.5TB.

Leonard, Henry J.; Mitchell, Boris J.; and Turner, Charles H., to General Motors Corporation. Internal combustion engine. 3,930,471, Cl. 123-32.0SP.

Lepper, Herbert; and Stein, Werner, to Henkel & Cie G.m.b.H. Process for the preparation of carboxylic acids. 3,931,259, Cl. 260-413.000.

Lester, George R., to Universal Oil Products Company. Method of catalyst manufacture. 3,931,054, Cl. 252-466.0PT.

Levey, Cyril D., to BTI Company. Bar stock silencer tube. 3,930,568, Cl. 193-38.000.

Levey, Gustave S.; and Moser, Edward, to Levey, Gustave S. Adjustable orifice spray gun. 3,930,619, Cl. 239-526.000.

Levina, Tatyana Abramovna; Serkh, Mikhail Borisovich; and Guzynin, Ivan Georgievich. Device for continuous temperature measurement of dew point of flue gases. 3,930,398, Cl. 73-17.00A.

Levine, Peter Alan, to RCA Corporation. Scene brightness compensation system with charge transfer imager. 3,931,463, Cl. 178-7.100.

Levine, Peter Alan, to RCA Corporation. Blooming control for charge coupled imager. 3,931,465, Cl. 178-7.100.

Levine, Stanley R.: *See—*
Grisaffe, Salvatore J.; and Levine, Stanley R., 3,931,447.

Lewis, Donald J.: *See—*
Schotthoefer, Jerome W.; and Lewis, Donald J., 3,930,307.

Lewis, Jay L.: *See—*
Brakebill, Harold G.; and Lewis, Jay L., 3,930,612.

Lewis, John A.; and Marshall, John R., to Ford Motor Company. Engine exhaust gas recirculating control. 3,930,475, Cl. 123-119.00A.

Lewis, L. James, to Abbott Laboratories. Urokinase production. 3,930,945, Cl. 195-1.700.

Lex, Charles George, to Abbott Laboratories. Purification method for prolyl-leucylglycinamide. 3,931,184, Cl. 260-112.50R.

LFE Corporation: *See—*
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Libeer, Marcel Jan; Depoorter, Henri; Van Mierlo, Gerrit Godfried; and Lemahieu, Raymond Gerard, to Agfa-Gevaert N.V. Methine dyes. 3,931,156, Cl. 260-240.400.

Licencia Talalmanyokat Ertekesito Vallalat: *See—*
Wallis, Janos; and Hammecke, Horst, 3,930,488.

Licentia Patent-Verwaltungs-GmbH: *See—*
Bachle, Erich; Kliem, Helmut; and Rall, Bernhard, 3,931,475.

Limburg, William W.; and Teuscher, Leon A., to Xerox Corporation. Heat development process utilizing a photosensitive composition containing a halogenated polymer and a strong organic electron acceptor. 3,930,858, Cl. 96-48.0HD.

Lindberg, Charles D., to General Tire & Rubber Company, The. Mold release method for polyurethane integral-skin foam. 3,931,381, Cl. 264-45.500.

Linde Aktiengesellschaft: *See—*
Abels, Theodor, 3,930,563.
Beeker, Christoph; Melzer, Wolfgang; Romer, Rudiger; and Schieferstein, Gerhard, 3,930,411.
Hofmann, Albert, 3,930,375.

Lindemann, Martin K., to Chas. S. Tanner Co. Thermosetting acrylic emulsions based on N-methylol allyl carbamates. 3,931,086, Cl. 260-29.6TA.

Lingertat, Helmut: *See—*
Palilla, Frank C.; Gaudet, Gary G.; and Lingertat, Helmut, 3,931,390.

Lingl Corporation: *See—*
Lingl, Hans, 3,930,929.

Lingl, Hans, to Lingl Corporation. Apparatus to construct wall panels having openings for doors and windows. 3,930,929, Cl. 156-558.000.

Little, Hugh A.: *See—*
Kunkle, Calvin S.; and Little, Hugh A., 3,930,552.

Littlefield, Roger L. Modular structures for enclosing a vehicle load or passenger receiving space. 3,930,680, Cl. 296-10.000.

Litton Business Telephone Systems, Inc.: *See—*
Jackson, Joseph Monroe, 3,931,481.

Litton Industrial Products, Inc.: *See—*
Orlomoski, Roger W., 3,930,425.

Liu, Shih K., to Monsanto Company. Surfactant compositions. 3,931,057, Cl. 252-551.000.

Ljubimov, Boris Georgievich: *See—*
Gusman, Moisei Timofeevich; Ljubimov, Boris Georgievich; Konstantinov, Igor Leonidovich; Kuznetsova, Irina Ivanovna; Malkin, Boris Davidovich; and Nikitin, Gely Meierovich, 3,930,749.

Lobanov, Alexandr Ivanovich: *See—*
Orro, Pavel Ivanovich; Kovalevsky, Nikolai Grigorievich; Lobanov, Alexandr Ivanovich; Arkhangelsky, Andrei Mikhailovich; Makarov, Valentin Anatolievich; Goreslavets, Jury Georgievich; Erokhov, Nikolai Konstantinovich; Khaustov, Georgy Iosifovich; Obukh-Shvets, Ivan Mikhailovich; and Vereschagin, Alexandr Davydovich, 3,930,394.

Lockwood, George. Balanced sprinkler impact drive. 3,930,618, Cl. 239-230.000.

Loeffel, Hansrolf: *See—*
Lenoir, John; Tschopp, Paul; Loeffel, Hansrolf; and de Montmollin: Rene, 3,931,142.

Loeffler, Romain Eugene, to Johns-Manville Corporation. Apparatus for forming tubular fibrous insulatory articles. 3,930,926, Cl. 156-446.000.

Loev, Bernard: *See—*
Bender, Paul E.; and Loev, Bernard, 3,931,232.
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Lohaus, Gerhard; and Mildenberger, Hilmar, to Hoechst Aktiengesellschaft. Novel isocyanates and processes for their preparation. 3,931,277, Cl. 260-465.00D.

Lohr, Albrecht; Hennemann, Manfred; and Jakobi, Gunter, to Henkel & Cie G.m.b.H. Liquid foam-regulated nonionic detergent compositions. 3,931,033, Cl. 252-122.000.

Longyear Company: *See—*
Anderson, Ronald B.; and Svendsen, Walter W., 3,930,679.

Lorenz, Hans Joachim: *See—*
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Losco, Giuseppe: *See—*
Pellegrini, Giovanni; Losco, Giuseppe; Quattrini, Antonio; and Arsura, Emilio, 3,930,838.

Lovejoy, Walter R., to Beatrice Foods Co. Injection molding apparatus for partitioned containers. 3,930,780, Cl. 425-249.000.

Lovelady, Grady R. Self-cleaning fluid filter. 3,931,016, Cl. 210-297.000.

Loveless, Stanley M., to General Gas Light Company. Safety control for valve. 3,930,634, Cl. 251-96.000.

Lovell, Walter C.: *See—*
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Lucas Electrical Company Limited, The: *See—*
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Luders, Walter; and Fischer, Edgar, to Hoechst Aktiengesellschaft. Plastics stabilized against ultraviolet radiation. 3,931,104, Cl. 260-45.85R.

Ludvigsson, Lennart. Ship's afterbody, especially for a full-form ship fitted with more than one propeller. 3,930,456, Cl. 114-57.000.

Luginbuhl, Pierre: *See—*
Svensson, Lars H.; and Luginbuhl, Pierre, 3,930,571.

Lukacs, George J.: *See—*
Drelich, Arthur H.; and Lukacs, George J., 3,931,085.

Lulenski, Robert S.: *See—*
Osuchowski, Andrew J.; and Lulenski, Robert S., 3,930,667.

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Lummus Company, The: *See—*
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Lummus Industries, Inc.: *See—*
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Lundberg, Robert D., to Exxon Research and Engineering Company. Method for controlling viscosity of lubricating oils. 3,931,021, Cl. 252-32.500.

Lundin, Claes Olof Axel, to Kemnord AB. Dispersion for sizing cellulose fibres and use thereof. 3,931,069, Cl. 260-17.00R.

Lussling, Theodor: *See—*
Eikelmann, Gerd; Fahnenstich, Rudolf; Lussling, Theodor; Mannsfeld, Sven-Peter; Pohl, Gerhard; Tanner, Herbert; and Wagner, Hans, 3,931,307.

Lutz, Hans: *See—*
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Luwa AG: *See—*
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Lynch, Jack M. Coil lifting apparatus and method. 3,930,585, Cl. 214-620.000.

Lynch, Robert W.; and Catanzarite, Vincent O., to Specialty Products Development Corporation. Hybrid gas system for automobile passenger restraint system. 3,930,666, Cl. 280-150.0AB.

M.A.N.: *See—*
Athenstaedt, Gernot, 3,930,472.

M & T Chemicals Inc.: *See—*
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Larkin, William A.; and Bouchoux, Jean W., 3,931,264.

Ma, John; and Tanaka, Akio, to Zenith Radio Corporation. Digital signal seeking tuning system. 3,931,579, Cl. 325-464.000.

Machida, Haruhiko: *See—*
Kusakabe, Hitoshi; Kodama, Kenjiro; Midorikawa, Yuichirow; Machida, Haruhiko; Kuninaka, Akira; and Yoshino, Hiroshi, 3,930,955.

Mack, Frank E.: *See—*
Helf, Jack C.; and Mack, Frank E., 3,931,424.

MacKeown, Graeme J. Demountable pneumatic tire rim assembly. 3,930,683, Cl. 301-11.00R.

MacLeay, Ronald Edward; and Sheppard, Chester Stephen, to Pennwalt Corporation. Unsymmetrical aliphatic monoazo compounds. 3,931,143, Cl. 260-192.000.

Madrid, Robert W.; and Wysocki, Joseph J., to Xerox Corporation. Edge brightness display and method using a material exhibiting dielectric anisotropy. 3,930,719, Cl. 350-160.0LC.

Maeda, Toshiyuki: *See—*
Sakamaki, Hiroshi; Ishikawa, Shohei; and Maeda, Toshiyuki, 3,930,899.

Maeder, Arthur: *See—*
Nachbur, Hermann; and Maeder, Arthur, 3,931,310.

Maekawa, Yukio; Satomura, Masato; and Umehara, Akira, to Fuji Photo Film Co., Ltd. Reactive high polymer compound. 3,931,248, Cl. 260-347.500.

Magadini, Peter C. Mechanism for operating a bass drum. 3,930,431, Cl. 84-422.000.

Magenau, Horst: *See—*
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Magnavox Company, The: *See—*
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Mahan, John E.: *See—*
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Mair, William Norman: *See—*
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Makarov, Valentin Anatolievich: *See—*
Orro, Pavel Ivanovich; Kovalevsky, Nikolai Grigorievich; Lobanov, Alexandr Ivanovich; Arkhangelsky, Andrei Mikhailovich; Makarov, Valentin Anatolievich; Goreslavets, Jury Georgievich; Erokhov, Nikolai Konstantinovich; Khaustov, Georgy Iosifovich; Obukh-Shvets, Ivan Mikhailovich; and Vereschagin, Alexandr Davydovich, 3,930,394.

Maki, Kenneth A., to Arctic Enterprises, Inc. Drive belt assembly for snowmobiles. 3,930,689, Cl. 305-35.0EB.

Maldonado, Paul; Desmarquest, Jean-Pierre; Gaillardin, Claude; and Binet, Daniel, to Institut Francaise du Petrole, des Carburants et Lubrifiants; and Institut Francais du Petrole. Yeasts. 3,930,946, Cl. 195-28.00R.

Malkin, Boris Davidovich: *See—*
Gusman, Moisei Timofeevich; Ljubimov, Boris Georgievich; Konstantinov, Igor Leonidovich; Kuznetsova, Irina Ivanovna; Malkin, Boris Davidovich; and Nikitin, Gely Meierovich, 3,930,749.

Mallion, Keith Blakeney: *See—*
Bowler, Jean; Mallion, Keith Blakeney; and Richardson, Dora Nellie, 3,931,206.

Mallon, Joseph R.; Kurtz, Anthony D.; and Kicks, John C., to Kulite Semiconductor Products, Inc. Electrically scanned pressure transducer configurations. 3,930,412, Cl. 73-398.0AR.

Mallon, Joseph R., Jr.: *See—*
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Mamuzic, Rastko I.: *See—*
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Manabe, Masami: *See—*
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Mangels, Theodore F. Snap-shackle. 3,930,290, Cl. 24-241.0SB.

Manner, Thomas D. Chair and hand truck combination. 3,930,662, Cl. 280-36.00C.

Mannesmann Aktiengesellschaft: *See—*
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Mannesmann-Meer Aktiengesellschaft: *See—*
Hiersig, Heinz M.; and Koster, Wilhelm, 3,930,379.

Mannini, Aurelio: *See—*
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Mannsfeld, Sven-Peter: *See—*
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Manowitz, Bernard: *See—*
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Mansfield Sanitary Inc.: *See—*
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Marcona Corporation: *See—*
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Marconi Company Limited, The: *See—*
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Marcussen, Hans Wilhelm, Jr.: *See—*
Gaffar, Abdul; and Marcussen, Hans Wilhelm, Jr., 3,931,398.

Marin, Robert E.; and Simonson, Roger K., to Teletype Corporation. Capacitive keyswitch sensor and method. 3,931,610, Cl. 340-172.500.

Marino, Francis C., to Redactron Corporation. Horizontal deflection circuit. 3,931,545, Cl. 315-384.000.

Marino, Michael, Jr. Invalid exercising device. 3,930,495, Cl. 128-25.00R.

Mark, Victor, to General Electric Company. Flame retardant polycarbonate composition. 3,931,100, Cl. 260-45.70S.

Marker, Hannes. Safety ski-binding. 3,930,661, Cl. 280-11.35K.

Markes & Co. KG.: *See—*
Seefluth, Uwe C., 3,930,332.

Markowski, Stanley J.; and Reilly, Richard S., to United Technologies Corporation. Turbofan engine with augmented combustion chamber using vorbix principle. 3,930,370, Cl. 60-261.000.

Marlasca Garcia, D. Francisco. Control mechanism for automatically operated warp beams with automatic setting. 3,930,523, Cl. 139-108.000.

Marley Tile A.G.: *See—*
Austin, Michael Charles, 3,931,429.

Marold, Frank C.; and Cinadr, James J., to General Motors Corporation. Chain tensioning mechanism for scraper elevator device. 3,930,323, Cl. 37-8.000.

Marrara, Charles G.: *See—*
George, Harvey F.; Oppenheimer, Robert H.; and Marrara, Charles G., 3,931,570.

Marrs, Oren L.; and Doss, Richard C., to Phillips Petroleum Company. Sealant and coating compositions from poly(oxyalkylene)-polyester-poly(monosulfide)-polythiols, coal tar, and fillers. 3,931,078, Cl. 260-28.000.

Marshall, H. Laurance, to GTE Sylvania Incorporated. Laser beam control device. 3,931,593, Cl. 331-94.50D.

Marshall, John R.: *See—*
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Martin, Bradley E.: *See—*
Bell, Thomas H.; Johnson, Charles H., Jr.; Lane, Robert L.; Martin, Bradley E.; and Tyree, William H., 3,931,520.

Martin, Eugene G.; and Risser, Dale M., to Victor F. Weaver, Inc. Machine for processing the backs of poultry. 3,930,282, Cl. 17-11.000.

Martin, Eugene G., to Victor F. Weaver, Inc. Machine for removing skin from pieces of poultry. 3,930,283, Cl. 17-11.000.

Martin, John, to Fabrication de Maquinas, S.A. Press molded hot glassware handling apparatus. 3,930,819, Cl. 65-25.00R.

Martin, Patrick Henry, to Dow Chemical Company, The. Process for coating substrates with high molecular weight epoxy resins. 3,931,109, Cl. 260-47.0EP.

Martinez, Everly, to Reynolds Metals Company. Die system for can body press. 3,930,396, Cl. 72-347.000.

Maruichi, Nobuo, to Zeoplant Co., Ltd. Desalination apparatus. 3,930,958, Cl. 202-174.000.

Mascellani, Giuseppe: *See—*
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Mascitti, Albert A.: *See—*
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Massie, Stephen N., to Universal Oil Products Company. Hydroxylation of aromatic compounds. 3,931,295, Cl. 260-502.40R.

Masuda, Senichi. Electrostatic apparatus for removing entrained particulate material from a gas stream. 3,930,815, Cl. 55-123.000.

Masuda, Yoshihisa, to Centronics Data Computer Corporation. Sheet material pin feed tractor mechanism. 3,930,601, Cl. 226-74.000.

Matej, Ronald J., to Prutton Corporation. Straightening machine. 3,930,392, Cl. 72-92.000.

Mathew, Chempolil Thomas; and Ulmer, Harry Edwards, to Allied Chemical Corporation. Process of preparing $\alpha$-formyl sulfides and 2-hydrocarbylthioaldoximes therefrom. 3,931,331, Cl. 260-601.00R.

Matilo, Charles: *See—*
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Matsuda, Keizo: *See—*
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Matsuki, Toshio: *See—*
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Matsumoto, Shoji; Nishihama, Hitoshi; and Aizawa, Tatsuo, to Mita Industrial Company, Ltd. Process for electrophotographic copying by transfer of electrostatic images. 3,930,850, Cl. 96-1.0TE.

Matsunaga, Mitsushi: *See—*
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Matsuoka, Hideto: *See—*
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Matsushima, Takeo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Device for driving a power window. 3,930,566, Cl. 192-8.00C.

Matsushita Electric Corporation of America: *See—*
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Matsushita Electric Industrial Co., Ltd.: *See—*
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Matsushita Electric Works, Ltd.: *See—*
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Matsuyama, Kiyoshi: *See—*
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Mattel, Inc.: *See—*
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Matthews, Gordon H., to Action Communication Systems, Inc. Method and system for automatically controlling the connection of inter-city telephone calls at a users facility. 3,931,476, Cl. 179-18.0AD.

Maurer, Alan H.; Swana, John J.; and Vanderpool, Richard F., to General Electric Company. Method and apparatus for the indirect measurement of blood pressure. 3,930,494, Cl. 128-2.05A.

Maurer, Erich; and Fangrat, Herbert, to Babcock & Wilcox Limited. Attemperator. 3,931,371, Cl. 261-116.000.

Maurer, Richard G. Tractor attachment. 3,930,543, Cl. 172-273.000.

Maurin, Jean, to Compagnie Francaise de Raffinage. Method for recovering molybdenum catalyst values and use of said values in the recycling of said catalyst. 3,931,044, Cl. 252-414.000.

Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V.: *See—*
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Maynard, James Lucian: *See—*
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McCall, Robert Eugene: *See—*
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McCaully, Ronald J.: *See—*
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McClelland, Ronald O.: *See—*
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McDermott, Michael John; and Allen, John Graham, to Imperial Chemical Industries Limited. Variable light transmission device containing ferrous ammonium sulfate as an auxiliary redox system. 3,930,717, Cl. 350-160.00R.

McDonnell, Bernard P.: *See—*
Best, Howard S.; Bustraan, Daniel J.; and McDonnell, Bernard P., 3,930,993.

McDougall, Redford W. Air cleaner. 3,930,818, Cl. 55-414.000.

McFarland, James D., Jr., to Edelbrock Equipment Company. Manifold for internal combustion engines having steps in the walls of the manifold runners. 3,930,473, Cl. 123-52.00M.

McFarland, James W., to Pfizer Inc. Alkylmercaptomethylquinoxaline-1,4-dioxides and oxidized derivatives thereof. 3,931,174, Cl. 260-250.00Q.

McGean Chemical Company, Inc.: *See—*
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McGowen, Inez Madeleine, to United Vintners, Inc. Flexible container having valve with puncturing plunger. 3,930,286, Cl. 222-83.000.

McGraw-Edison Company: *See—*
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McKain, Rodger W.: *See—*
Beckert, Werner F.; Dengel, Ottmar H.; and McKain, Rodger W., 3,931,395.

McKee, Fount E., to Delta-X Corporation. Malfunction detector circuit for the use with a pump-off control circuit. 3,931,559, Cl. 318-455.000.

McKenna, Lawrence W.; and Gardner, Donald M., to Monsanto Company. Backing sheet coated with catalyst and self curing interpolymer adhesive. 3,931,444, Cl. 428-355.000.

McKenney, John D.: *See—*
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McLaughlin, Donald W.; and Lee, David Q., to GTE Automatic Electric Laboratories Incorporated. Tone injection circuit. 3,931,474, Cl. 179-16.0AA.

McMaster, Harold A.; and Nitschke, Norman C. Furnace for heat treating glass sheet material. 3,930,831, Cl. 65-348.000.

McVeigh, James H., to Xerox Corporation. Masking apparatus for a multi-color electrophotographic printing machine. 3,930,724, Cl. 355-7.000.

Mead Johnson & Company: *See—*
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Medical Products Corporation: *See—*
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Meerwald, Ekkehard; and Donne, Mario Dalle, to Gesellschaft fur Kernforschung m.b.H. Fuel element for a reactor. 3,930,941, Cl. 176-81.000.

Megumi, Naomitsu, to Megumi, Naomitsu; and Tokyo Plywood Kabushiki Kaisha. Structural unit body having a pipe incorporated therein. 3,930,347, Cl. 52-221.000.

Meidert, Helmut: *See—*
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Meier, Ernst; Glockner, Hans; Kuffner, Karl; Boie, Immo; and Nittel, Fritz, to Agfa-Gevaert Aktiengesellschaft. Process for preparing 3-anilino-pyrazolones-(5). 3,931,221, Cl. 260-310.00A.

Meier, Jean; and Le Martret, Odile, to Roussel-UCLAF. Novel benzoylphenylacetic acid derivatives. 3,931,286, Cl. 260-469.000.

Meier, Jean: *See—*
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Mendelsohn, Morris A.; and Smith, James D. B., to Westinghouse Electric Corporation. Method of making an electrical article. 3,930,915, Cl. 156-53.000.

Mendoza, Fausto Celorio. Method and apparatus for reducing starch-containing material to flour. 3,930,878, Cl. 127-67.000.

Menzel, Waldemar, to Ireks Arkady GmbH. Apparatus for the preparation and dispensing of soft ice-cream. 3,930,535, Cl. 165-27.000.

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Merrill, Peter S.; and Mueller, Richard S., to International Harvester Company. Method of fabricating a conformable sandwich structure. 3,930,605, Cl. 228-190.000.

Merz, Herbert; Langbein, Adolf; Stockhaus, Klaus; and Wick, Helmut, to Boehringer Ingelheim GmbH. 2-Heteroaryl-methyl)-5,9$\beta$-dialkyl-6,7-benzomorphans and salts thereof. 3,931,194, Cl. 260-293.540.

Merz, Herbert: *See—*
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Mesiti, Edward C.; and Rosenblatt, Solomon, to Leesona Corporation. Porous fluoro-carbon polymer matrices. 3,930,886, Cl. 136-146.000.

Messing, Ralph A., to Corning Glass Works. Bonding enzymes to porous inorganic carriers. 3,930,951, Cl. 195-63.000.

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Meyn, John E., to Microdot Inc. Apparatus for manufacturing a dual seal insulator. 3,930,771, Cl. 425-129.00R.
Michel, Eberhard; Ruf, Richard; and Dorner, Heinrich, to Siemens Aktiengesellschaft. Nuclear power plant component protection. 3,930,943, Cl. 176-87.000.
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Mikulinsky, Aron Semenovich: *See—*
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Miller, Robert B., to Raymond Lee Organization Inc., a part interest. Combination fireplace and space heater. 3,930,491, Cl. 126-121.000.
Miller, Robert C., to Summa Corporation. Radiation shielding and gas diffusion apparatus. 3,930,627, Cl. 244-121.000.
Miller, Stewart Edward, to Bell Telephone Laboratories, Incorporated. Optical fiber power taps employing mode coupling means. 3,931,518, Cl. 250-227.000.
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Morozowich, Walter, to Upjohn Company, The. Substituted tolyl esters of $PGE_1$. 3,931,285, Cl. 260-468.00D.
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Mose, Luciano: *See—*
Strewe, Wolfgang; Mose, Luciano; Kramer, Wolfgang; and Strasser, Bernd, 3,930,978.
Moser, Clarence J.; and Stephens, Wilbur E., to Amax Aluminum Company, Inc. Special magnesium-manganese aluminum alloy. 3,930,895, Cl. 148-2.000.
Moser, Edward: *See—*
Levey, Gustave S.; and Moser, Edward, 3,930,619.
Moser, James R., deceased: *See—*
Bowser, George C.; and Moser, James R., deceased, 3,930,888.
Moser, Patricia Karen, administratrix: *See—*
Bowser, George C.; and Moser, James R., deceased, 3,930,888.
Mostardo, August F., Jr.: *See—*
Carlson, Elmer V.; and Mostardo, August F., Jr., 3,930,560.
Motley, David M.; and Cheng, King Y., to Hycom Incorporated. Automatic gain control. 3,931,584, Cl. 330-129.000.
Moutet nee Layrisse, Helene Denise; Pugibet, Maurice J.; and Schercheh, Jean-Jacques, to Office National d'Etudes et de Recherches Aerospatiales (O.N.E.R.A.). Processes for the manufacture of fuel blocks containing a metallic powder and in the corresponding blocks. 3,931,374, Cl. 264-3.00C.
Muchowski, Joseph M.; and Guzman, Angel, to Syntex (U.S.A.) Inc. 11α-Hydroxymethyl prostaglandins. 3,931,282, Cl. 260-468.00D.
Mueller, Richard S.: *See—*
Merrill, Peter S.; and Mueller, Richard S., 3,930,605.
Mueller, Steve R.: *See—*
Barker, Thomas D.; Mueller, Steve R.; Nickel, Clifford A.; and Sweder, Thomas A., 3,931,368.
Muhle, Herbert; Milzner, Karlheinz; and Reisser, Fritz, to Sandoz Ltd. (Sandoz AG). Substituted 6-hydroxy pyrimidines. 3,931,180, Cl. 260-256.40C.
Mulder, Cornelis: *See—*
Schmitz, Albert; Mulder, Cornelis; and Slob, Arie, 3,930,909.
Muller, Alfred: *See—*
Fulberth, Werner; Hiller, Dietrich; Muller, Alfred; and Ross, Gerhard, 3,931,404.
Muller, Hans Jurgen: *See—*
Wagner, Kuno; and Muller, Hans Jurgen, 3,931,112.
Muller, Klaus-Peter: *See—*
Koberstein, Edgar; and Muller, Klaus-Peter, 3,931,391.
Muller, Marcel: *See—*
Bollag, Werner; Gutmann, Hugo; Hegedus, Balthasar; Kaiser, Ado; Langemann, Albert; Muller, Marcel; and Zeller, Paul, 3,931,268.
Muller, Paul Adolf; and Muster, Hans, to Celfil Company Establishment. Apparatus for making webs of filtering material for tobacco product filters, particularly cigarette filters. 3,930,935, Cl. 162-361.000.
Muller, Reinhard, to Agfa-Gevaert Aktiengesellschaft. Process for the photographic production of given transparency or density distributions. 3,930,855, Cl. 96-27.00R.
Muller, Werner, to Hoechst Aktiengesellschaft. Process for preparing 5-oxohexane-nitrile. 3,931,278, Cl. 260-465.100.
Mullin, Alexander G.: *See—*
Barr, Anthony J.; and Mullin, Alexander G., 3,931,501.
Munch, Peter: *See—*
Dany, Franz-Josef; Wortmann, Joachim; Munch, Peter; Braun, Gunther; and Kern, Rudolf, 3,931,081.
Dany, Franz-Josef; Wortmann, Joachim; Munch, Peter; and Braun, Gunther, 3,931,101.
Munk, Miner N., to Varian Associates. Viscosity detection apparatus and method. 3,930,399, Cl. 73-55.000.
Munro, Geoffrey Hector James, to AMP Incorporated. Substrate connectors. 3,930,308, Cl. 29-630.00R.
Murai, Hiroshi, to Nagatanien Honpo Co., Ltd. Method of manufacturing dehydrated fruit used as an additive to powdered instant food. 3,931,434, Cl. 426-295.000.
Murakami, Hisakazu: *See—*
Shigeta, Masahiko; Miyoshi, Gonshiro; Murakami, Hisakazu; and Ogata, Shoji, 3,930,632.
Murase, Katsuo, to Ricoh Co., Ltd. Line skip system for facsimile device. 3,931,464, Cl. 178-7.100.
Murayama, Naohiro; and Oikawa, Takao, to Kureha Kagaku Kogyo Kabushiki Kaisha. Process for producing polymeric piezoelectric elements and the article formed thereby. 3,931,446, Cl. 428-421.000.
Murdoch, Andrew M.: *See—*
Wise, Louis M.; Murdoch, Andrew M.; and Paszek, Leon E., 3,931,079.
Murphy, Declan S., to Atara Corporation. Double funnel with baffle cascade aeration unit. 3,931,370, Cl. 261-77.000.
Murphy, John Philip: *See—*
de Moira, Peter Pinot; and Murphy, John Philip, 3,930,856.
Murphy, John R.: *See—*
Ramlow, Gerhard G.; Pizzini, Louis C.; Patton, John T., Jr.; and Murphy, John R., 3,931,092.
Murray, James E., to Harris Corporation. Dual purpose display for printing presses. 3,930,447, Cl. 101-365.000.
Murrell, Donald K.: *See—*
Fox, Donnell H.; and Murrell, Donald K., 3,930,892.
Muster, Hans: *See—*
Muller, Paul Adolf; and Muster, Hans, 3,930,935.
Muzyczko, Thaddeus M.; and Fieder, Donald W., to Richardson Company, The. Light sensitive arylglyoxyacrylate compositions. 3,930,868, Cl. 96-115.00P.
Myers, Albert F., Sr., to Aspro, Inc. Multi-shell limited slip differential. 3,930,424, Cl. 74-711.000.
Myers, Charles R.: *See—*
Brennan, Walter W.; Myers, Charles R.; and Perry, Paul E., 3,930,538.
Myles, Thomas A.; and Zimmer, Curtis E., to Carborundum Company, The. Solid diffusion sources for phosphorus doping containing silicon and zirconium pyrophosphates. 3,931,056, Cl. 252-520.000.
Nachbur, Hermann; and Maeder, Arthur, to Ciba-Geigy AG. Phosphorus-containing condensation products. 3,931,310, Cl. 260-551.00P.

Nagano, Toshihiro: *See*—
Takahashi, Toshiro; Nagano, Toshihiro; Suzuki, Matsuo; Zuzuki, Shozo; Aoshima, Yasuo; Asahina, Teruo; Ikeda, Katsushige; Hayashi, Isao; Kato, Takashi; and Minagawa, Nobuo, 3,930,964.
Takahashi, Toshiro; Nagano, Toshihiro; Wada, Kenji; and Suzuki, Yasushi, 3,930,966.

Nagaoka, Isao: *See*—
Mori, Kan; Ikeda, Hiroharu; Nagaoka, Isao; Shibata, Tooru; Kawatani, Sigeo; and Kikuchi, Tatsuhiko, 3,931,136.

Nagase, Tsuneyuki; Suzukamo, Gohu; Fukao, Masami; and Yoshioka, Hirosuke, to Sumitomo Chemical Company, Limited. Process for preparing alkyl trans-chrysanthemate. 3,931,280, Cl. 260-468.00H.

Nagashima, Toshio; Imaguchi, Ichiro; and Igarashi, Shigeo, to Kokusai Electric Co., Ltd. Mechanical filter. 3,931,600, Cl. 333-71.000.

Nagatanien Honpo Co., Ltd.: *See*—
Murai, Hiroshi, 3,931,434.

Nagel, Ernst, to Luwa AG. Method and apparatus for influencing the ambient conditions during open-end spinning. 3,930,356, Cl. 57-58.950.

Nakagawa, Koji: *See*—
Kondo, Renichi; Nakagawa, Koji; Fukuda, Makoto; Kishi, Ikuji; and Ohtsuki, Tateki, 3,931,095.

Nakajima, Jun; Iwai, Hiroshi; Momiyama, Iwao; Fukushima, Tatsuo; and Takeda, Rentaro, to Matsushita Electric Works, Ltd.; and Kansai Paint Company, Ltd. Inorganic coating composition. 3,930,876, Cl. 106-74.000.

Nakanishi, Michio; Oe, Takanori; and Tsuruda, Mineo, to Yoshitomi Pharmaceutical Industries, Ltd. Benzopyrano and benzothiopyrano [2,3-6] pyridines. 3,931,199, Cl. 260-294.80B.

Nakanishi, Michio; Oe, Takanori; and Tsuruda, Mineo, to Yoshitomi Pharmaceutical Industries, Ltd. Substituted alkanoic acids and derivatives. 3,931,205, Cl. 260-295.00T.

Nakase, Yoshiaki: *See*—
Ito, Akihiko; Yoshida, Masaru; Nakase, Yoshiaki; Yamauchi, Tadafumi; Iwai, Tadashi; and Hayashi, Koichiro, 3,930,972.

Nakaya, Shigehisa: *See*—
Takano, Rikuo; Matsunaga, Mitsushi; Yoshida, Akira; Nawata, Kiyoshi; and Nakaya, Shigehisa, 3,931,492.

Nakazawa, Hidetsugu: *See*—
Sano, Konosuke; Matsuda, Keizo; Nakazawa, Hidetsugu; and Mitsugi, Koji, 3,930,948.

Nalco Chemical Company: *See*—
Aitken, Thomas, 3,930,877.
Mochi-Bartolani, Francesca; Minervini, Mauro; and Mannini, Aurelio, 3,931,038.

Namigata, Fujio: *See*—
Sasaki, Isamu; Kojima, Iwao; Namigata, Fujio; Ashigame, Yoku; and Mihara, Hiroshi, 3,931,083.

Nanba, Yasuhiro; and Sahara, Masayoshi, to Minolta Camera Kabushiki Kaisha. Exposure time control device for an electric shutter in a single reflex camera with through the lens measuring system. 3,931,628, Cl. 354-24.000.

Nara, Takashi; Takasawa, Seigo; Okachi, Ryo; Kawamoto, Isao; and Yamamoto, Mitsuyoshi, to Abbott Laboratories. Fortimicin B and process for production thereof. 3,931,400, Cl. 424-118.000.

Nard Institute, Ltd.: *See*—
Katanosaka, Akisato; and Hanamoto, Manabu, 3,931,315.

Nasca, Richard A. Paintbrush and guard attachment for edging. 3,930,278, Cl. 15-166.000.

National Association of Furniture Manufacturers, Inc.: *See*—
Barr, Anthony J.; and Mullin, Alexander G., 3,931,501.

National Forge Company: *See*—
Witkin, Donald E., 3,931,382.

National Research Development Corporation: *See*—
Davis, Rex Mountford; and Downing, Brian Robert, 3,931,530.
Frick, Eric Lionel; and Burchill, Roy Terry, 3,931,413.

Natof, Stuart L.: *See*—
Hackman, Howard T.; Brown, Ray; Friend, William H.; Natof, Stuart L.; Reiter, Eugene A.; and Rudman, David W., 3,930,438.

Navidyne Corporation: *See*—
Barker, A. Clifford; and Zavada, Edmund S., 3,931,585.

Nawata, Kiyoshi: *See*—
Santa, Toshihiro; Aito, Yuzo; Watanabe, Katsuhisa; Tsunawaki, Kiyokazu; Mitani, Yuji; and Nawata, Kiyoshi, 3,931,224.
Takano, Rikuo; Matsunaga, Mitsushi; Yoshida, Akira; Nawata, Kiyoshi; and Nakaya, Shigehisa, 3,931,492.

Naylor, Floyd E., to Phillips Petroleum Company. Modification of conjugated diene polymers by treatment with organolithium and N,N,N',N'-tetramethylalkylenediamine compounds. 3,931,126, Cl. 260-83.700.

Neale, David John; and Dawney, Stanford Frederick, to Lamson Industries Limited. Duplicating systems. 3,931,443, Cl. 428-341.000.

Necchi, Societa per Azioni: *See*—
Perlino, Silvano, 3,930,454.

Nedelec, Lucien; Guillaume, Jacques; and Allais, Andre, to Roussel-UCLAF. Dibenzo (b,f) azepines. 3,931,151, Cl. 260-239.00D.

Need, Omar U., III: *See*—
Gipstein, Edward; Moreau, Wayne M.; and Need, Omar U., III, 3,931,435.

Neeff, Rutger: *See*—
Auge, Wolfgang; Thelen, Bernd; Thiem, Karl-Werner; and Neeff, Rutger, 3,931,252.

Nehen, Ulrich: *See*—
Schubart, Rudiger; Nehen, Ulrich; Roos, Ernst; and Dahm, Manfred, 3,931,060.

Nelson, Kurt, to De Laval Separator Company, The. Centrifuge preventing air admission during sludge discharge. 3,930,609, Cl. 233-20.00A.

Nelson, Norman A., to Upjohn Company, The. 5-Oxa prostaglandin $F_2$ analogs. 3,931,279, Cl. 260-468.00D.

Nelson, Robert E., to General Motors Corporation. Helicopter power plant control. 3,930,366, Cl. 60-39.150.

Nerenberg, Samuel T. Electrophoretic process. 3,930,973, Cl. 204-180.00S.

Nessel, Jiri M., to Richards, Victor. Sound track unit for audio-visual apparatus. 3,930,654, Cl. 274-42.00R.

Nesvizhsky, Valery Iosifovich: *See*—
Vorobiev, Alexandr Kupriyanovich; Goldin, Vladimir Anatolievich; Severin, Adolf Sergeevich; Scherbakova, Ljudmila Sergeevna; Orlov, Nikolai Alexandrovich; Novitsky, Vsevolod Grigorievich; Tryaskin, Oleg Vladimirovich; Olenin, Dmitry Pavlovich; Nesvizhsky, Valery Iosifovich; Mogilevsky, Evsei Moiseevich; Baksheev, Igor Petrovich; Finger, Georgy Georgievich; Shimko, Ivan Gavrilovich; and Golubev, Gleb Alexandrovich, 3,930,602.

Neuhof, Jacob: *See*—
Berns, Charles; and Neuhof, Jacob, 3,931,549.

Neumaier, Hubert; Finke, Manfred; and Schuller, Richard, to Hoechst Aktiengesellschaft. Production of halogen-containing tertiary phosphine oxides. 3,931,333, Cl. 260-606.50P.

Neuman, Marcel. Universal vertical grinding machine. 3,930,341, Cl. 51-89.000.

Newbury, Frank T.: *See*—
Dale, Dennis L. E.; Dedman, Anthony S. D.; Donnelly, John G.; and Newbury, Frank T., 3,931,369.

Newclean Engineering Limited: *See*—
Stevenson, Kenneth Thomas; Wesson, George Alfred; and Newell, George Armine, 3,930,817.

Newell, George Armine: *See*—
Stevenson, Kenneth Thomas; Wesson, George Alfred; and Newell, George Armine, 3,930,817.

Neyret, Jean Paul Barbier: *See*—
Auchere, Daniel; and Neyret, Jean Paul Barbier, 3,931,461.

Ng, Yuen: *See*—
Bernstein, Carl; Arvanitis, Konstantinos; and Ng, Yuen, 3,931,116.

Nickel, Ardie R.; Rosenberg, Franklin J.; and Ackerman, James H., to Sterling Drug Inc. Composition and method for treatment of hyperuricemia. 3,931,409, Cl. 424-309.000.

Nickel, Clifford A.: *See*—
Barker, Thomas D.; Mueller, Steve R.; Nickel, Clifford A.; and Sweder, Thomas A., 3,931,368.

Nickell, Louis G., to Hawaiian Sugar Planters' Association. Ripening of sugarcane by use of certain alcoholic and ethoxylated compounds. 3,930,840, Cl. 71-122.000.

Nicol, Evelyn Carmon, to Abbott Laboratories. Urokinase production. 3,930,944, Cl. 195-1.700.

Nicolay, Hugh Crawford, to Harris Corporation. Junction field effect transistor. 3,930,300, Cl. 29-571.000.

Niegisch, Walter D.: *See*—
Clendinning, Robert A.; Potts, James E.; and Niegisch, Walter D., 3,931,068.

Nikitin, Gely Meierovich: *See*—
Gusman, Moisei Timofeevich; Ljubimov, Boris Georgievich; Konstantinov, Igor Leonidovich; Kuznetsova, Irina Ivanovna; Malkin, Boris Davidovich; and Nikitin, Gely Meierovich, 3,930,749.

Nikles, Erwin, to Ciba-Geigy AG. Pesticidal compositions and methods of killing pests using 2-alkinyloxyphenylcarbamates. 3,931,408, Cl. 424-300.000.

Nilsson, Agne Lars Harry. Device for attachment of ceiling-supended equipment. 3,931,452, Cl. 174-48.000.

Nippon Electric Company Limited: *See*—
Nishida, Kazunori; and Inomata, Isao, 3,931,537.
Sugano, Izuru; Tsuji, Toshiro; and Kanamori, Masaru, 3,931,007.

Nippon Electric Glass Company, Limited: *See*—
Yoshikawa, Naohiro; and Yamaoka, Takashi, 3,930,830.

Nippon Kayaku K.K.: *See*—
Kondo, Renichi; Nakagawa, Koji; Fukuda, Makoto; Kishi, Ikuji; and Ohtsuki, Tateki, 3,931,095.

Nippon Kynol Incorporated: *See*—
Kimura, Isao; and Koyama, Hiroaki, 3,931,386.

Nippon Piston Ring Co., Ltd.: *See*—
Hiraoka, Takeshi; and Urano, Shigeru, 3,930,902.
Sakamaki, Hiroshi; Ishikawa, Shohei; and Maeda, Toshiyuki, 3,930,899.

Nippon Soken, Inc.: *See*—
Asano, Mitsuru; Ohta, Minoru; and Oki, Masami, 3,931,050.
Oishi, Kazuo; Sasaya, Hideaki; Kobayashi, Akihiro; and Yamada, Takashi, 3,931,527.

Nippon Telegraph and Telephone Public Corporation: *See*—
Takano, Rikuo; Matsunaga, Mitsushi; Yoshida, Akira; Nawata, Kiyoshi; and Nakaya, Shigehisa, 3,931,492.

Nippondenso Co., Ltd.: *See*—
Akashi, Tetsuji; and Isomura, Takuji, 3,930,482.
Asano, Mitsuru; Ohta, Minoru; and Oki, Masami, 3,931,050.

Nippondenso Kabushiki Kaisha: *See*—
Kawai, Noriaki; Okamoto, Hisaji; Takeda, Yosiaki; Sano, Fukuzi; Kakiuchi, Akio; Manabe, Masami; Nomura, Takashi; and Abe, Sigeya, 3,930,474.

Nishida, Kazunori; and Inomata, Isao, to Nippon Electric Company Limited. Matrix electrode gas discharge display panel having terminals spaced wider than electrodes. 3,931,537, Cl. 313-188.000.





Nishihama, Hitoshi: *See*—
Matsumoto, Shoji; Nishihama, Hitoshi; and Aizawa, Tatsuo, 3,930,850.

Nishihara, Akio; Kato, Hidekastu; Jimbo, Yaoki; Tomoda, Yoshiro; and Omi, Jinichi, to Asahi Denka Kogyo K.K. Chlorination of aromatic compounds. 3,931,340, Cl. 260-623.00H.

Nishimura, Tokio: *See*—
Oishi, Yasushi; Yamada, Minoru; Amano, Hiroyuki; and Nishimura, Tokio, 3,930,866.

Nishioka, Matsuo: *See*—
Oka, Shunzo; and Nishioka, Matsuo, 3,931,606.

Nishiwaki, Niichi: *See*—
Kusuda, Takazo; and Nishiwaki, Niichi, 3,930,556.

Nishizawa Shoji Co. Ltd: *See*—
Kuroda, Minoru, 3,931,425.

Nissan Motor Company Limited: *See*—
Iijima, Tetsuya, 3,930,555.
Ikawa, Kazuo, 3,930,665.
Shigeta, Masahiko; Miyoshi, Gonshiro; Murakami, Hisakazu; and Ogata, Shoji, 3,930,632.

Nisshin Boseki Kabushiki Kaisha: *See*—
Ashida, Kaneyoshi; and Yagi, Takao, 3,931,065.

Nitschke, Norman C.: *See*—
McMaster, Harold A.; and Nitschke, Norman C., 3,930,831.

Nittel, Fritz: *See*—
Meier, Ernst; Glockner, Hans; Kuffner, Karl; Boie, Immo; and Nittel, Fritz, 3,931,221.

Nivas, Yogesh: *See*—
DeHollander, William R.; and Nivas, Yogesh, 3,930,787.

NL Industries, Inc.: *See*—
Cestaro, John P.; and Crosby, Linda J., 3,930,881.

Nomura, Takashi: *See*—
Kawai, Noriaki; Okamoto, Hisaji; Takeda, Yosiaki; Sano, Fukuzi; Kakiuchi, Akio; Manabe, Masami; Nomura, Takashi; and Abe, Sigeya, 3,930,474.

Nordmann, Gert: *See*—
Roderburg, Harold; and Nordmann, Gert, 3,931,489.

Norman, Stanley William, to Johns-Manville Corporation. Method and arrangement for controlling the position of an underground manhole assembly. 3,930,372, Cl. 61-46.000.

North, Howard, Jr., to Becton, Dickinson and Company. Assembly for collection, separation and filtration of blood. 3,931,018, Cl. 210-359.000.

Northern Electric Company Limited: *See*—
Pask, Geoffrey John; and Moschopoulos, Anastasios, 3,931,566.

Norwesco, Inc.: *See*—
Fier, Edward J., Jr., 3,930,467.

Novitsky, Vsevolod Grigorievich: *See*—
Vorobiev, Alexandr Kupriyanovich; Goldin, Vladimir Anatolievich; Severin, Adolf Sergeevich; Scherbakova, Ljudmila Sergeevna; Orlov, Nikolai Alexandrovich; Novitsky, Vsevolod Grigorievich; Tryaskin, Oleg Vladimirovich; Olenin, Dmitry Pavlovich; Nesvizhsky, Valery Iosifovich; Mogilevsky, Evsei Moiseevich; Baksheev, Igor Petrovich; Finger, Georgy Georgievich; Shimko, Ivan Gavrilovich; and Golubev, Gleb Alexandrovich, 3,930,602.

Novotny, Joseph: *See*—
Sansing, James Earl, Jr.; and Novotny, Joseph, 3,930,832.

Noziri, Hiroyuki; Sugahara, Mituaki; and Tanno, Hirotada, to Kureha Kagaku Kogyo Kabushiki Kaisha. Process and apparatus for suspension polymerization. 3,931,131, Cl. 260-91.700.

Nuber, Otto, to Fouquet-Werk Frauz & Planck, Firma. Circular knitting machine. 3,930,383, Cl. 66-25.000.

Nuckolls, Joe A., to General Electric Company. Starting and operating circuit for gaseous discharge lamps. 3,931,543, Cl. 315-177.000.

Nulton, Edmund W.: *See*—
Crissy, Robert J., 3,930,446.

Obayashi, Mikihio: *See*—
Fujino, Masahiko; Kobayashi, Shigeru; Obayashi, Mikihio; Shinagawa, Susumu; and Fukuda, Tsunehiko, 3,931,138.

Obergfell, Allen R.: *See*—
Potucek, Frank R.; and Obergfell, Allen R., 3,930,297.

Obuch, Edward A.; and Waddington, William T., to Amerace Corporation. Circuit panel connector. 3,930,706, Cl. 339-64.00M.

Obukh-Shvets, Ivan Mikhailovich: *See*—
Orro, Pavel Ivanovich; Kovalevsky, Nikolai Grigorievich; Lobanov, Alexandr Ivanovich; Arkhangelsky, Andrei Mikhailovich; Makarov, Valentin Anatolievich; Goreslavets, Jury Georgievich; Erokhov, Nikolai Konstantinovich; Khaustov, Georgy Iosifovich; Obukh-Shvets, Ivan Mikhailovich; and Vereschagin, Alexandr Davydovich, 3,930,394.

Ochiai, Toshihiko; Hirano, Mitsutoshi; and Inoue, Hiroshi, to Tokyo Shibaura Electric Co., Ltd. Pump member for molten metal. 3,930,875, Cl. 106-65.000.

Ochiai, Yoshiki; Tsuboi, Akira; and Kamiya, Yoji, to Toyoda Machine Works, Ltd. Machine tool with guard cover apparatus. 3,930,302, Cl. 29-568.000.

Oda, Teruhisa: *See*—
Kobayashi, Tatsumi; Ito, Tadashi; Kamei, Yoshihide; Oda, Teruhisa; and Matsuki, Toshio, 3,930,807.

Odell, Norman R.: *See*—
Chesluk, Ralph P.; Odell, Norman R.; Kuntschik, Lawrence F.; and White, James A., 3,931,022.

Oe, Takanori: *See*—
Nakanishi, Michio; Oe, Takanori; and Tsuruda, Mineo, 3,931,199.
Nakanishi, Michio; Oe, Takanori; and Tsuruda, Mineo, 3,931,205.

Oesterreichische National Bank: *See*—
Gartner, Fritz; and Berger, Erich, 3,930,582.

Offermanns, Heribert; Asinger, Friedrich; Pfeifer, Wolf-Dieter; Scherberich, Paul; and Schreyer, Gerd, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the production of thiazolines-(3). 3,931,208, Cl. 260-306.70R.

Office National d'Etudes et de Recherches Aerospatiales (O.N.E.R.A.): *See*—
Moutet nee Layrisse, Helene Denise; Pugibet, Maurice J.; and Scherchen, Jean-Jacques, 3,931,374.

Ogata, Shoji: *See*—
Shigeta, Masahiko; Miyoshi, Gonshiro; Murakami, Hisakazu; and Ogata, Shoji, 3,930,632.

Ohi, Reiichi: *See*—
Shiba, Keisuke; Hirose, Takeshi; Aono, Toshiaki; Ohi, Reiichi; and Shishido, Tadao, 3,930,863.

Ohio State University Research Foundation, The: *See*—
Royer, Garfield P., 3,930,950.

Ohkawa, Nobuyoshi, to Daieigiken, Inc. Device for wrapping sheets around food. 3,930,439, Cl. 99-450.100.

Ohkawa, Nobuyoshi, to Daieigiken, Inc. Device for conveying rolled food. 3,930,440, Cl. 99-450.600.

Ohkawa, Nobuyoshi, to Daieigiken, Inc. Device for processing dough. 3,930,441, Cl. 99-450.600.

Ohloff, Gunther: *See*—
Kovats, Ervin; Demole, Edouard; Ohloff, Gunther; and Stoll, Max, deceased, 3,931,326.
Strickler, Hugo; Becker, Joseph J.; and Ohloff, Gunther, 3,931,327.

Ohmameuda, Akira: *See*—
Oka, Satoshi; Junro, Tawara; Ohmameuda, Akira; and Uda, Kazumasa, 3,930,924.

Ohno, Yoshio, to Kenseido Kagaku Kogyo Kabushiki Kaisha. Etching composition for etching nickel screen rolls or plates. 3,931,030, Cl. 252-79.400.

Ohsawa, Kazuya; Hirasa, Katsuyoshi; and Kinoshita, Hideo, to Furukawa Electric Co., Ltd., The; and Furukawa Battery Co., Ltd., The. Rechargeable galvanic cell. 3,930,882, Cl. 136-30.000.

Ohta, Minoru: *See*—
Asano, Mitsuru; Ohta, Minoru; and Oki, Masami, 3,931,050.

Ohtsuki, Tateki: *See*—
Kondo, Renichi; Nakagawa, Koji; Fukuda, Makoto; Kishi, Ikuji; and Ohtsuki, Tateki, 3,931,095.

Oikawa, Takao: *See*—
Murayama, Naohiro; and Oikawa, Takao, 3,931,446.

Oishi, Kazuo; Sasaya, Hideaki; Kobayashi, Akihiro; and Yamada, Takashi, to Nippon Soken, Inc. Ignition circuit for vehicle occupant protecting system. 3,931,527, Cl. 307-10.00R.

Oishi, Yasushi; Yamada, Minoru; Amano, Hiroyuki; and Nishimura, Tokio, to Fuji Photo Film Co., Ltd. Silver halide color photographic materials containing 3-anilino-5-pyrazolone couplers. 3,930,866, Cl. 96-100.000.

Oizumi, Hiroshi: *See*—
Yamashita, Mitsuo; Mikogami, Akio; Hasegawa, Masashi; and Oizumi, Hiroshi, 3,931,039.

Oka, Satoshi; Junro, Tawara; Ohmameuda, Akira; and Uda, Kazumasa. Process for making identification cards. 3,930,924, Cl. 156-268.000.

Oka, Shoji: *See*—
Tanaka, Akira; Horii, Shoichi; Ebato, Seigo; Sekido, Mamoru; and Oka, Shoji, 3,930,869.

Oka, Shunzo; and Nishioka, Matsuo, to Matsushita Electric Industrial Co., Ltd. Device for simultaneously controlling a plurality of variable resistors. 3,931,606, Cl. 338-128.000.

Okachi, Ryo: *See*—
Nara, Takashi; Takasawa, Seigo; Okachi, Ryo; Kawamoto, Isao; and Yamamoto, Mitsuyoshi, 3,931,400.

Okamasa, Makoto: *See*—
Sugimoto, Yukio; Okamasa, Makoto; and Fukumura, Toyoshi, 3,931,482.

Okamoto, Hisaji: *See*—
Kawai, Noriaki; Okamoto, Hisaji; Takeda, Yosiaki; Sano, Fukuzi; Kakiuchi, Akio; Manabe, Masami; Nomura, Takashi; and Abe, Sigeya, 3,930,474.

Okamura, Masataka: *See*—
Uchigaki, Taku; Omori, Kenichi; and Okamura, Masataka, 3,931,077.

Okano, Shigeru: *See*—
Aoki, Yasuhiko; Suzuki, Hiroyuki; Akiyama, Hisao; and Okano, Shigeru, 3,931,219.

Oki, Masami: *See*—
Asano, Mitsuru; Ohta, Minoru; and Oki, Masami, 3,931,050.

Oleck, Stephen M.; Stein, Thomas R.; Sherry, Howard S.; and Milstein, Donald, to Mobil Oil Corporation. Alumina-supported catalyst for residua demetalation and desulfurization. 3,931,052, Cl. 252-465.000.

Olenin, Dmitry Pavlovich: *See*—
Vorobiev, Alexandr Kupriyanovich; Goldin, Vladimir Anatolievich; Severin, Adolf Sergeevich; Scherbakova, Ljudmila Sergeevna; Orlov, Nikolai Alexandrovich; Novitsky, Vsevolod Grigorievich; Tryaskin, Oleg Vladimirovich; Olenin, Dmitry Pavlovich; Nesvizhsky, Valery Iosifovich; Mogilevsky, Evsei Moiseevich; Baksheev, Igor Petrovich; Finger, Georgy Georgievich; Shimko, Ivan Gavrilovich; and Golubev, Gleb Alexandrovich, 3,930,602.

Olin Corporation: *See*—
Ford, James A.; and Butt, Sheldon H., 3,931,049.

Kyi, Roland R., 3,931,190.
Puig, John E.; and van Leuwen, Bruce G., 3,931,066.
Shapiro, Stanley; Pryor, Michael J.; and Caron, Ronald N., 3,930,894.

Oliver, Glenn A.; Krossa, Kenneth D.; and Earl, Douglas B., to Scientific Micro Systems. Controller for digital devices. 3,931,615, Cl. 340-172.500.

Omi, Jinichi: *See*—
Nishihara, Akio; Kato, Hidekastu; Jimbo, Yaoki; Tomoda, Yoshiro; and Omi, Jinichi, 3,931,340.

Omori, Kenichi: *See*—
Uchigaki, Taku; Omori, Kenichi; and Okamura, Masataka, 3,931,077.

O'Neill, Gerald Joseph: *See*—
Billings, Charles Alden; O'Neill, Gerald Joseph; Simons, Charles William; and Holdsworth, Robert S., 3,931,344.

Ono, Hisatake; Watarai, Syu; and Katsuyama, Harumi, to Fuji Photo Film Co., Ltd. Electrophotographic process using methylene indoline photoconductive derivatives. 3,930,851, Cl. 96-1.00R.

Oppenheimer, Robert H.: *See*—
George, Harvey F.; Oppenheimer, Robert H.; and Marrara, Charles G., 3,931,570.

O'Reilly, Thomas: *See*—
Boyden, Robert E., 3,930,569.

Orekhova, Natalia Vsevolodovna: *See*—
Gryaznov, Vladimir Mikhailovich; Smirnov, Viktor Sergeevich; Mischenko, Alexandr Petrovich; Orekhova, Natalia Vsevolodovna; Krivdin, Boris Petrovich; Polyakova, Viktoria Petrovna; and Savitsky, Evgeny Mikhailovich, 3,931,345.

Orlomoski, Roger W., to Litton Industrial Products, Inc. Method for manufacturing contoured thread rolling dies. 3,930,425, Cl. 76-107.00R.

Orlov, Nikolai Alexandrovich: *See*—
Vorobiev, Alexandr Kupriyanovich; Goldin, Vladimir Anatolievich; Severin, Adolf Sergeevich; Scherbakova, Ljudmila Sergeevna; Orlov, Nikolai Alexandrovich; Novitsky, Vsevolod Grigorievich; Tryaskin, Oleg Vladimirovich; Olenin, Dmitry Pavlovich; Nesvizhsky, Valery Iosifovich; Mogilevsky, Evsei Moiseevich; Baksheev, Igor Petrovich; Finger, Georgy Georgievich; Shimko, Ivan Gavrilovich; and Golubev, Gleb Alexandrovich, 3,930,602.

Oronzio De Nora Impianti Elettrochimici S.p.A.: *See*—
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De Nora, Oronzio; and De Nora, Vittorio, 3,930,981.

Orozovich, George Emil: *See*—
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Orro, Pavel Ivanovich; Kovalevsky, Nikolai Grigorievich; Lobanov, Alexandr Ivanovich; Arkhangelsky, Andrei Mikhailovich; Makarov, Valentin Anatolievich; Goreslavets, Jury Georgievich; Erokhov, Nikolai Konstantinovich; Khaustov, Georgy Iosifovich; Obukhshvets, Ivan Mikhailovich; and Vereschagin, Alexandr Davydovich. Mill for plugging tubes and taking them off plug. 3,930,394, Cl. 72-209.000.

Orven, Jean: *See*—
Spielfiedel, Anatole; and Orven, Jean, 3,931,485.

Orzel, Edward S., to Weatherhead Company, The. Air brake blend back proportioning valve. 3,930,686, Cl. 303-6.00C.

Osaka Gas Kabushiki Kaisha: *See*—
Kusuda, Takazo; and Nishiwaki, Niichi, 3,930,556.

Osburn, David W., to General Motors Corporation. DC Motor stall protection circuit. 3,931,557, Cl. 318-434.000.

Ostradyne, Inc.: *See*—
Ostrander, Robert F.; and Houck, James W., 3,930,409.

Ostrander, Robert F.; and Houck, James W., to Ostradyne, Inc. Horsepower computing network for chassis dynamometers. 3,930,409, Cl. 73-117.000.

Osuchowski, Andrew J.; and Lulenski, Robert S. Inflatable garment for crash protection. 3,930,667, Cl. 280-150.0AB.

Otakie, Daniel A. Portable television cabinet surface extender. 3,930,701, Cl. 312-244.000.

Ottenheym, Johannes H.; and Dassen, Bernardus H. N., to Stamicarbon B.V. Process for removing heavy metals from solutions. 3,931,002, Cl. 210-24.000.

Otto, Oberdan W., to Leland Stanford Jr. University, The Board of Trustees of. Apparatus for obtaining the convolution and/or correlation of signals utilizing acoustic waves. 3,931,509, Cl. 235-181.000.

Oude Alink, Bernardus A., to Petrolite Corporation. Conversion of tetrahydropyrimidines to pyridines. 3,931,191, Cl. 260-290.00P.

Overend, Thomas F. Disposable phlebotomist's tourniquet. 3,930,506, Cl. 128-327.000.

Overmyer, Robert C.; and Brumett, Billy M., to Hawley Manufacturing Corporation. Furnace hood structure. 3,930,641, Cl. 266-16.000.

Owen, John Cadwaladr, to George Kent Limited. Glass electrode assembly. 3,930,976, Cl. 204-195.00G.

Owens-Corning Fiberglas Corporation: *See*—
Foley, Kevin M.; and Vigo, Francesco M., 3,931,260.
Foley, Kevin M.; and Vigo, Francesco M., 3,931,266.

Owens-Illinois, Inc.: *See*—
Kupsky, George A., 3,931,436.

Ozalid Company Limited: *See*—
de Moira, Peter Pinot; and Murphy, John Philip, 3,930,856.

Ozretich, Thomas M., to Dow Chemical Company, The. Pesticidal compositions and methods employing substituted oxirane compounds. 3,930,835, Cl. 71-88.000.

Ozutsumi, Minoru; Miyazawa, Yoshihide; Suzuka, Susumu; Ishige, Sadao; Saeki, Keiso; and Watanabe, Akio, to Hodogaya Chemical Co., Ltd.; and Fuji Photo Film Co., Ltd. Pressure-sensitive copying paper containing lactone compounds derived from pyridinecarboxylic acid. 3,930,672, Cl. 282-27.500.

P. R. Mallory & Co., Inc.: *See*—
Anderson, Daniel J.; and Jimerson, James C., 3,931,552.
Dey, Arabinda N., 3,930,885.
Krock, Richard H.; and Shen, Yuan-Shou, 3,930,849.

Paddock, Paul F.; and Cramer, Jerry W., to Sunkist Growers, Inc. Grade distributing apparatus. 3,930,995, Cl. 209-74.000.

Paddock, Paul F.: *See*—
Conway, Tim D.; and Paddock, Paul F., 3,930,994.

Page, Jean-Claude; Rappaz, Armand; and Frauchiger, Ulrich, to Ciba-Geigy AG. Apparatus for the treatment of liquid wastes. 3,931,008, Cl. 210-104.000.

Palilla, Frank C.; Gaudet, Gary G.; and Lingertat, Helmut, to GTE Laboratories Incorporated. Catalytic process for removing sulfur dioxide from gas streams. 3,931,390, Cl. 423-244.000.

Palilla, Frank C., to GTE Laboratories Incorporated. Catalytic process for removing sulfur dioxide from gas streams. 3,931,393, Cl. 423-570.000.

Paluka, Charles F.: *See*—
Moore, Manuel S.; and Paluka, Charles F., 3,931,619.

Panhandle Eastern Pipe Line Co.: *See*—
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Parisi, Anthony: *See*—
Kollander, Melvin M.; Kollander, Norman A.; Wade, James B.; and Parisi, Anthony, 3,930,669.

Park, Kwang H., to General Motors Corporation. Means for lubricating swash plate air conditioning compressor. 3,930,758, Cl. 417-269.000.

Parker-Hannifin Corporation: *See*—
Adams, Cecil L., 3,930,676.
Jelinek, Jerry G., 3,930,656.

Parker, Roger Alan; and Wenstrup, David Lawrence, to Richardson-Merrell Inc. Dioxocin carboxamide derivatives. 3,931,173, Cl. 260-247.70T.

Parkin, William J., to Sanders Associates, Inc. Radiant energy detection apparatus. 3,931,515, Cl. 250-216.000.

Parkinson, Robert E., to United States Steel Corporation. Coated articles. 3,931,448, Cl. 428-451.000.

Paro, Frane: *See*—
Schieber, Franz; Husnjak, Petar; Paro, Frane; Koziol, Konrad; Zenk, Baptist; Lenac-Lukacevic, Nada; Zollner, Dieter; Walser, Peter; and Rittmann, Friedrich, 3,930,985.

Parr, Ben C.; and Savage, Carl M., Jr., to General Motors Corporation. Occupant restraint system. 3,930,664, Cl. 280-150.0AB.

Parrish, Clyde F.; Short, James E., Jr.; and Whorrall, Karen S., to United States of America, Navy. Method for disposal of pyrotechnic waste. 3,930,844, Cl. 75-101.00R.

Pashkov, Nikolai Fomich: *See*—
Vegman, Evgeny Felixovich; Zherebin, Boris Nikolaevich; Lazutkin, Sergei Evgenievich; Pashkov, Nikolai Fomich; Pyrikov, Anatoly Nikolaevich; Pokhvisnev, Anatoly Nikolaevich; Jusfin, Julian Semenovich; Zherdev, Anatoly Vasilievich; Korobov, Valentin Vasilievich; Krivonosov, Vitaly Ivanovich; and Mischenko, Ivan Mitrofanovich, 3,930,642.

Pask, Geoffrey John; and Moschopoulos, Anastasios, to Northern Electric Company Limited. Temperature compensated current sensing circuit for a power supply. 3,931,566, Cl. 323-4.000.

Passereau, Genevieve: *See*—
Pieuchard, Guy; Flamand, Jean; and Passereau, Genevieve, 3,930,728.

Paszek, Leon E.: *See*—
Wise, Louis M.; Murdoch, Andrew M.; and Paszek, Leon E., 3,931,079.

Paton, Robert Michael: *See*—
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Patterson, David Ross, to RCA Corporation. Optical switching system. 3,931,514, Cl. 250-206.000.

Patton, John T., Jr.; Pizzini, Louis C.; Demou, John G.; and Ramlow, Gerhard G., to BASF Wyandotte Corporation. Polyurethane foam composite. 3,931,450, Cl. 428-315.000.

Patton, John T., Jr.: *See*—
Ramlow, Gerhard G.; Pizzini, Louis C.; Patton, John T., Jr.; and Murphy, John R., 3,931,092.

Paulson, Rueben E.: *See*—
Mogg, Joe L.; and Paulson, Rueben E., 3,930,754.

Paustian, John E.; and Gelbein, Abraham P., to Lummus Company, The. Production of phthalic anhydride. 3,931,243, Cl. 260-346.700.

Pautrat, Rene: *See*—
Brun, Jean-Pierre; Bulvestre, Gerard; Guillou, Michel; Thirion, Pierre; and Pautrat, Rene, 3,930,990.

Pawson, Beverly Ann, to Hoffmann-La Roche Inc. Polyene compounds. 3,931,257, Cl. 260-408.000.

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Peardon, David L.: *See*—
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Ware, J. Edgar, Jr.; Kilbourn, Edward E.; and Peardon, David L., 3,931,202.



Pellegrini, Giovanni; Losco, Giuseppe; Quattrini, Antonio; and Arsura, Emilio, to Montecatini Edison S.p.A. S-benzyl-N,N-disec-butylthiocarbamate and its use as a rice field herbicide and a rice growth stimulant. 3,930,838, Cl. 71-100.000.

Pelosi, Stanford S., Jr., to Morton-Norwich Products, Inc. 5-(Substituted)phenylfurfuryl alcohols. 3,931,247, Cl. 260-347.200.

Penders, Josef M.: *See*—
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Pendlebury, David: *See*—
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Pennwalt Corporation: *See*—
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Perkin-Elmer Corporation: *See*—
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Perlino, Silvano, to Necchi, Societa per Azioni. Small cloth vise for a sewing machine. 3,930,454, Cl. 112-121.120.

Perronnet, Jacques; and Taliani, Laurent, to Roussel-UCLAF. Imidazo(1,2b)pyridazinyl esters, process and insecticidal compositions. 3,931,175, Cl. 260-250.0AC.

Perry, Paul E.: *See*—
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Persson, Sture Valter: *See*—
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Petersen, Siegfried: *See*—
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Petersen, Uwe; Petersen, Siegfried; Scheinpflug, Hans; and Hamburger, Brigitte, to Bayer Aktiengesellschaft. β-Phenyl-β-azolylnitroethanes. 3,931,220, Cl. 260-310.00R.

Petersen, Uwe: *See*—
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Petro-Tex Chemical Corporation: *See*—
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Petrolite Corporation: *See*—
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Petrovich, Vojislav. Univalent metal double cyanide as reducing agents in froth flotation of mineral. 3,930,997, Cl. 209-166.000.

Pezzi, Giovanni, to AMF Incorporated. Cigarette ends firmness detector. 3,930,406, Cl. 73-78.000.

Pezzulich, Alan G.: *See*—
Curtis, Ralph W., Jr.; Byrne, William P.; and Pezzulich, Alan G., 3,931,574.

Pfaff Industriemaschinen GmbH: *See*—
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Pfeifer, Wolf-Dieter: *See*—
Offermanns, Heribert; Asinger, Friedrich; Pfeifer, Wolf-Dieter; Scherberich, Paul; and Schreyer, Gerd, 3,931,208.

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Philadelphia Quartz Company: *See*—
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Philippson, Rainer, to Schering Aktiengesellschaft. Process for the preparation of steroid oxiranes. 3,931,154, Cl. 260-239.55R.

Phillips Petroleum Company: *See*—
Blackwell, Jennings P., 3,931,419.
Bresson, Clarence R.; and Spaulding, Forrest D., 3,931,439.
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Photocircuits Division of Kollmorgen Corporation: *See*—
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Pichowicz, John R. Hang-it-all jewelry cabinet. 3,930,702, Cl. 312-245.000.

Pierce, Richard H., to Philadelphia Quartz Company. Compacted alkali metal silicate. 3,931,036, Cl. 252-135.000.

Pierlot, Michel Eugene, to Societe Industrielle de Brevets et d'Etudes S.I.B.E. Carburettors for internal combustion engines. 3,931,372, Cl. 261-41.00D.

Pieuchard, Guy; Flamand, Jean; and Passereau, Genevieve, to Jobin-Yvon. Monochromator with concave grating. 3,930,728, Cl. 356-99.000.

Pigasov, Stepan Evgenievich: *See*—
Ryss, Mark Abramovich; Zaiko, Viktor Petrovich; Belyaev, Gerald Semenovich; Golev, Anatoly Konstantinovich; Mikulinsky, Aron Semenovich; Gusarov, Vladimir Nikolaevich; Pigasov, Stepan Evgenievich; Bedov, Igor Sergeevich; Pomogaev, Valentin Nikotovich; and Kozhevnikov, Georgy Nikolaevich, 3,930,842.

Pike, John E.; and Schneider, William P., to Upjohn Company, The. 11β-$PGF_2$ compounds. 3,931,283, Cl. 260-468.00D.

Pike, John E.; and Schneider, William P., to Upjohn Company, The. 11β-$PGE_2$ compounds. 3,931,284, Cl. 260-468.00D.

Pinet, Charles Henri Jules, to "Raffinerie tirlemontoise". Apparatus for liquid extracting of products which are part of solid materials. 3,930,801, Cl. 23-269.000.

Pisanchyn, John; Sifniades, Stylianos; Fuhrmann, Robert; and Koff, Fred W., to Allied Chemical Corporation. Nitrosochlorination of cyclo-olefins. 3,931,343, Cl. 260-647.000.

Pitchford, Armin C., to Phillips Petroleum Company. Coal-anthracene oil slurry liquefied with carbon monoxide and barium-promoted catalysts. 3,930,984, Cl. 208-10.000.

Pitel, Ira Jay, to GTE Sylvania Incorporated. Fast warm up electronic ballast circuit for a high pressure discharge lamp. 3,931,544, Cl. 315-273.000.

Pitkin, Roy S., Jr.; and Pitkin, Timothy A. Walking stick and staple fastening tool. 3,930,604, Cl. 227-8.000.

Pitkin, Timothy A.: *See*—
Pitkin, Roy S., Jr.; and Pitkin, Timothy A., 3,930,604.

Pizzini, Louis C.: *See*—
Patton, John T., Jr.; Pizzini, Louis C.; Demou, John G.; and Ramlow, Gerhard G., 3,931,450.
Ramlow, Gerhard G.; Pizzini, Louis C.; Patton, John T., Jr.; and Murphy, John R., 3,931,092.

Place, Donald E., to Therm-O-Disc Incorporated. Check valve having temperature response. 3,930,613, Cl. 236-48.00R.

Planker, Siegfried; and Baessler, Konrad, to Hoechst Aktiengesellschaft. Process for the preparation of O-aminothiophenols. 3,931,321, Cl. 260-580.000.

Plasko, Emil Robert, to Micro Devices Corporation. Thermal limiter for one or more electrical circuits and method of making the same. 3,931,602, Cl. 337-163.000.

Plegat, Alain Edouard, to Societe Anonyme des Usines Chausson. Self-operating machine for dry test of hollow bodies of the heat exchanger type and the like. 3,930,400, Cl. 73-45.200.

Plessey Handel und Investments A.G.: *See*—
Kent, Alan Hugh; Hennell, Geoffrey Frank; Rokos, George Hedley Storm; and Fell, Peter Howard, 3,931,512.

Plexowood, Inc.: *See*—
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Berkebile, Gary W.; Lardi, Francesco; and Podolsky, Leaman B., 3,931,503.

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Polaroid Corporation: *See*—
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Borror, Alan L., 3,931,228.

Poli-Twine Corporation Limited: *See*—
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Polichette, Joseph; and Leech, Edward J., to Photocircuits Division of Kollmorgen Corporation. Method for the production of radiant energy imaged printed circuit boards. 3,930,963, Cl. 204-15.000.

Pollack, Louis: *See*—
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Pollock, E. Kears, to PPG Industries, Inc. Method and apparatus for stabilizing movement of glass during its advance along a molten metal surface. 3,930,827, Cl. 65-65.00A.

Polyakova, Viktoria Petrovna: *See*—
Gryaznov, Vladimir Mikhailovich; Smirnov, Viktor Sergeevich; Mischenko, Alexandr Petrovich; Orekhova, Natalia Vsevolodovna; Krivdin, Boris Petrovich; Polyakova, Viktoria Petrovna; and Savitsky, Evgeny Mikhailovich, 3,931,345.

Pomogaev, Valentin Nikotovich: *See*—
Ryss, Mark Abramovich; Zaiko, Viktor Petrovich; Belyaev, Gerald Semenovich; Golev, Anatoly Konstantinovich; Mikulinsky, Aron Semenovich; Gusarov, Vladimir Nikolaevich; Pigasov, Stepan Evgenievich; Bedov, Igor Sergeevich; Pomogaev, Valentin Nikotovich; and Kozhevnikov, Georgy Nikolaevich, 3,930,842.

Pont, James Duncan: *See*—
Butters, Alan James; Peace, Walter; and Pont, James Duncan, 3,931,432.

Poole, Margaret A., to GTE Sylvania Incorporated. Time compression receiver. 3,931,480, Cl. 179-84.0VF.

Popeil Bros., Inc.: *See*—
Popeil, Samuel J., 3,931,414.

Popeil, Samuel J., to Popeil Bros., Inc. Fish bait composition. 3,931,414, Cl. 426-1.000.

Porret, Daniel: *See*—
Batzer, Hans; Habermeier, Juerger; and Porret, Daniel, 3,931,058.

Post, John R. Blasting composition containing an alkanol. 3,930,910, Cl. 149-21.000.

Post Office, The: *See*—
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Potoski, John R.: *See—*
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Potts, James E.: *See—*
Clendinning, Robert A.; Potts, James E.; and Niegisch, Walter D., 3,931,068.
Potts, Walter Joseph, to G. D. Searle & Co. Method for tranquilization without general depression. 3,931,411, Cl. 424-312.000.
Potucek, Frank R.; and Obergfell, Allen R., to Duo-Fast Corporation. Fastener feed apparatus and method. 3,930,297, Cl. 29-431.000.
Powell, Charles W. Special effects lens. 3,930,711, Cl. 350-4.000.
PPG Industries, Inc.: *See—*
Greenberg, Charles B., 3,931,590.
Greenberg, Charles B., 3,931,591.
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Robert, Jacques, to Commissariat a l'Energie Atomique. Method of collecting orientation of the molecules of a liquid crystal and a liquid-crystal cell for carrying out said method. 3,930,716, Cl. 350-160.0LC.
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Roncelli, Paul E. Molding ejector device for interchangeable molds. 3,930,778, Cl. 425-192.000.
Roney, Joe L. Dual hair pin. 3,930,511, Cl. 132-50.00R.
Rood, Ronald A., to Arelco, Incorporated. Access door. 3,930,338, Cl. 49-465.000.
Roos, Ernst; Wagner, Klaus; and Scheinpflug, Hans, to Bayer Aktiengesellschaft. 4,5,6,7-Tetrachloro-2-thio-phthalide. 3,931,231, Cl. 260-330.500.
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Rose, Heinz, to VEMAG Verdener Maschinen-und Apparatebau GmbH. Rotary cell pump for the conveying of sausage stuffing and the like. 3,930,763, Cl. 418-6.000.
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Rupilius, Wolfgang, to Henkel & Cie G.m.b.H. Method for production of hydroxyalkylglycol ethers. 3,931,338, Cl. 260-615.00R.

Rusch, Gordon K., to United States of America, Energy Research and Development Administration. Period meter for reactors. 3,931,522, Cl. 250-390.000.

Rush, Elton E., to Phillips Petroleum Company. Catalyst activation. 3,931,045, Cl. 252-416.000.

Russell, Jolly T., to Panhandle Eastern Pipe Line Co. Method and apparatus for obtaining a representative sample of fluid flowing through a conduit. 3,930,414, Cl. 73-422.00R.

Russell, Lewis K., to Signetics Corporation. Collector-up dynamic memory cell. 3,931,617, Cl. 340-173.00R.

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Sakurada, Seiichi; Miyazaki, Yasuaki; Hattori, Tatsuaki; Shiraishi, Makoto; and Inoue, Taisei, to Kuraray Co., Ltd.; Asahi Co., Ltd.; and Koyo Sangyo Co., Ltd. Adhesive composition consisting of polyvinylalcohol solution or polyvinylacetate latex modified with hydrophobic solution of isocyanate compound. 3,931,088, Cl. 260-29.6RB.

Salo, Eric A. Pressure equalizing pump. 3,930,757; Cl. 417-203.000.

Salomon, Georges Pierre Joseph, to S.A. Francois Salomon & Fils. Ski brake. 3,930,659, Cl. 280-11.13B.

Saltzman, William H., to Intellectual Property Development Corporation. Chemical process for production of bile acids. 3,931,256, Cl. 260-397.100.

Saltzman, William H., to Intellectual Property Development Corporation. Antimicrobial compositions. 3,931,403, Cl. 424-238.000.

Salzberg, Edward. Hybrid phase inverter. 3,931,599, Cl. 333-31.00R.

Sanden, Stig Emil. Lottery ticket. 3,930,673, Cl. 283-6.000.

Sanders Associates, Inc.: *See*—
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Sano, Konosuke; Matsuda, Keizo; Nakazawa, Hidetsugu; and Mitsugi, Koji, to Ajinomoto Co., Inc. Enzymatic method for producing aromatic ethylamines. 3,930,948, Cl. 195-29.000.

Sansing, James Earl, Jr.; and Novotny, Joseph, to Allied Chemical Corporation. Inhibition of corrosive action of zinc-containing fertilizer solutions. 3,930,832, Cl. 71-30.000.

Santa, Toshihiro; Aito, Yuzo; Watanabe, Katsuhisa; Tsunawaki, Kiyokazu; Mitani, Yuji; and Nawata, Kiyoshi, to Teijin Limited. Aromatic imidodicarboxylic acid diallyl esters, prepolymers thereof, cured resins thereof, and processes for producing these. 3,931,224, Cl. 260-326.00A.

Santilli, Ermanno. Stable power ring tool. 3,930,310, Cl. 30-389.000.

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Sarantakis, Dimitrios, to American Home Products Corporation. (H-gly-gly-tyr-ala)$^1$-somatostatin. 3,931,140, Cl. 260-112.50R.

Sasaki, Isamu; Kojima, Iwao; Namigata, Fujio; Ashigame, Yoku; and Mihara, Hiroshi, to Showa Denko Kabushiki Kaisha. Water-reducing admixtures for ceramic pastes. 3,931,083, Cl. 260-29.300.

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Saunders Valve Company Limited: *See*—
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Sautereau, Lucien Emile. Drawing apparatus. 3,930,313, Cl. 33-79.00R.

Savage, Carl M., Jr.: *See*—
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Schaar, Charles H., to Colgate-Palmolive Company. Disposable diaper with end flap means and method. 3,930,501, Cl. 128-287.000.

Schabert, Hans-Peter, to Siemens Aktiengesellschaft. Nuclear power plant. 3,930,371, Cl. 60-644.000.





Schaeffer, Robert L.; and Toft, Kaj, to General Electric Company. Steam iron soleplate construction. 3,930,325, Cl. 38-77.830.

Schafer, Fritz Peter, to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V. Transverse-flow laser cell and laser arrangement including the cell. 3,931,594, Cl. 331-94.50L.

Schank, Richard L.: *See*—
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Schieber, Franz; Husnjak, Petar; Paro, Frane; Koziol, Konrad; Zenk, Baptist; Lenac-Lukacevic, Nada; Zollner, Dieter; Walser, Peter; and Rittmann, Friedrich. Method of producing special cokes. 3,930,985, Cl. 208-46.000.

Schieferstein, Gerhard: *See*—
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Schierjott, Gunter; and Bleier, Herbert A. Method and apparatus for testing aqueous samples. 3,930,798, Cl. 23-230.00R.

Schiess Aktiengesellschaft: *See*—
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Schindele, Alfred, to Sohne, C. Terrot. Compound needle for circular knitting machine. 3,930,384, Cl. 66-50.00R.

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Schlauer, Johann: *See*—
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Schmermund, Alfred. Curve milling or curve grinding machines. 3,931,561, Cl. 318-571.000.

Schmid, Leopold F. Axially-displaceable and angularly-movable universal coupling. 3,930,378, Cl. 64-8.000.

Schmidt, Gunter; and Metzger, Karl Georg, to Bayer Aktiengesellschaft. Penicillins. 3,931,153, Cl. 260-239.100.

Schmidt, Karl-Julius; Homeyer, Bernhard; Hammann, Ingeborg; and Stendel, Wilhelm, to Bayer Aktiengesellschaft. O-(4-iodophenyl) thiono (phosphonic acid esters and ester amides. 3,931,359, Cl. 260-959.000.

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Schmitz, Albert; Mulder, Cornelis; and Slob, Arie, to U.S. Philips Corporation. Method of manufacturing a semiconductor device utilizing simultaneous outdiffusion during epitaxial growth. 3,930,909, Cl 148-175.000.

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Schneider, Kurt, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of oxyalkylated $\alpha$-hydroxy acetylenic compounds. 3,931,336, Cl. 260-615.00R.

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Schnell, Albert C.; Arends, Craig W.; and Zwikel, Dean N., to Continental Can Company, Inc. Noise reduction kit for can closing machine. 3,930,557, Cl. 181-33.00K.

Schnell, Albert C.; Arends, Craig W.; and Zwikel, Dean N., to Continental Can Company, Inc. Noise reduction kit for can closing machine. 3,930,558, Cl. 181-33.00K.

Schnizlein, John G., Jr., to Schnizlein, Rosemary. Stackable and nestable container units. 3,930,699, Cl. 312-108.000.

Schnizlein, Rosemary: *See*—
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Schoener, Ronald C.; King, Larry K.; Knapp, Lester L.; and Kloap, Nicholas, to Aluminum Company of America. Fluidized bed desubliming apparatus for recovery of aluminum chloride. 3,930,800, Cl. 23-264.000.

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Schubart, Rudiger; Nehen, Ulrich; Roos, Ernst; and Dahm, Manfred, to Bayer Aktiengesellschaft. Polyurethane foam free from internal discoloration. 3,931,060, Cl. 260-2.5BB.

Schuermann, Kenneth W.; and Kohman, Fred H., to Charles Machine Works, Inc., The. Stabilizer foot for backhoes and the like. 3,930,668, Cl. 280-150.500.

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Schuierer, Manfred, to Bruckner Apparatebau GmbH. Apparatus for applying a film of liquid to a web of material. 3,930,465, Cl. 118-325.000.

Schuil, Roelof Egbert, to U.S. Philips Corporation. Cathodochromic sodalite. 3,931,042, Cl. 252-300.000.

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Schultz, Wilderich C. Wind power plant. 3,930,750, Cl. 416-197.000.

Schulz, Manfred B.; and Holland, Melvin G., to Raytheon Company. Temperature compensated acoustic surface wave device. 3,931,420, Cl. 427-100.000.

Schurb, Joseph N., to Minnesota Mining and Manufacturing Company. Precoated large-diameter monofilaments for prepreg tape. 3,931,445, Cl. 428-366.000.

Schwachhofer, Ghislain: *See*—
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Scripter, Robert D. Collapsible carrier for equestrian saddle. 3,930,663, Cl. 280-36.00C.

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Siegle, Gert; Lutz, Hans; Adam, Helmut; and Gossl, Erhard, to Robert Bosch G.m.b.H. Sputtering method for producing solder-fast copper layers. 3,930,975, Cl. 204-192.000.
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Smith, Robert A., to General Electric Company. Catalyst composition for room temperature vulcanizing silicone compositions and catalyzed compositions therefrom. 3,931,105, Cl. 260-46.50G.
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Stanley, Lester N.; and Farris, Russell E., to GAF Corporation. Ketoamido containing phenylazophenyl dyestuffs. 3,931,145, Cl. 260-207.000.
Starace, Charles A., to Kelco Company. Thickening compositions. 3,930,871, Cl. 106-35.000.
Stark, Josef, to Behringwerke Aktiengesellschaft. Glucose oxidase poor in catalase and process for obtaining it. 3,930,953, Cl. 195-62.000.
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Stelter, Ronald B.; Kulka, Raymond; and Kmetty, Paul J., to Continental Can Company, Inc. Ultraviolet curing machine. 3,930,318, Cl. 34-4.000.
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Stich, Frederick A.; and Schwantes, Glenn W., to Allis-Chalmers Corporation. Electronic commutation system having motor stator windings in push-pull. 3,931,553, Cl. 318-138.000.
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Strickler, Hugo; Becker, Joseph J.; and Ohloff, Gunther, to Firmenich SA. Process for the preparation of a diketone derivative. 3,931,327, Cl. 260-586.00P.
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Svensson, Lars H.; and Luginbuhl, Pierre, to SIG Schweizerische Industrie Gesellschaft. Apparatus for aligning elongated articles. 3,930,571, Cl. 198-25.000.
Swan, John Melvin, to Monash University. Phosphinolines and phosphindolines. 3,931,196, Cl. 260-293.620.
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Tabaczynski, Rodney J., to General Motors Corporation. Carbureted prechamber rotary combustion engine. 3,930,469, Cl. 123-8.130.
Tada, Tomonori; and Shiono, Akira, to Kanzaki Paper Mfg. Co. Ltd. Method of desensitizing a pressure sensitive recording sheet and the product thereof. 3,931,430, Cl. 428-195.000.
Taitel, Charles M., to Compensating Tension Controls Inc. Turret rewinder. 3,930,620, Cl. 242-56.00A.
Takahama, Hiroshi; and Hamaguchi, Hachiro, to Tatsuta Densen Kabushiki Kaisha. Method for producing metal film resistor by electroless plating. 3,930,896, Cl. 148-6.300.
Takahara, Ichiro; Yabu, Tadahiko; and Miwa, Takashi, to Sanyo Electric Company, Ltd. Automatic flexible record feeding device. 3,931,640, Cl. 360-86.000.
Takahashi, Toshiro; Nagano, Toshihiro; Suzuki, Matsuo; Zuzuki, Shozo; Aoshima, Yasuo; Asahina, Teruo; Ikeda, Katsushige; Hayashi, Isao; Kato, Takashi; and Minagawa, Nobuo. Method for painting aluminum or aluminum-based alloy material. 3,930,964, Cl. 204-37.00R.
Takahashi, Toshiro; Nagano, Toshihiro; Wada, Kenji; and Suzuki, Yasushi, to Riken Light Metal Industries Company, Ltd. Method of forming colored oxide film on aluminum or aluminum alloy. 3,930,966, Cl. 204-58.000.
Takano, Rikuo; Matsunaga, Mitsushi; Yoshida, Akira; Nawata, Kiyoshi; and Nakaya, Shigehisa, to Nippon Telegraph and Telephone Public Corporation. Thermal print head. 3,931,492, Cl. 219-216.000.
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Tanaka, Susumu; Enoguchi, Yuji; and Kawabata, Hidetoshi, to Minolta Camera Kabushiki Kaisha. Electrophotographic sensitive member with attaching means. 3,930,852, Cl. 96-1.500.
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Tarbox, John W. Harness making apparatus. 3,930,524, Cl. 140-93.00R.

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Thomas, Robert M.; and Mamuzic, Rastko I., to Great Lakes Chemical Corporation. Bis(2,3-dibromopropyl carbonates) of tetrahalobisphenol A. 3,931,274, Cl. 260-463.000.

Thomas, Rudolf; Kramer, Wolfgang; Eue, Ludwig; Metzger, Carl; and Jager, Gerhard, to Bayer Aktiengesellschaft. N,N,N-trisubstituted N-halogenomethylurea and thiourea compounds and process for their preparation. 3,931,311, Cl. 260-552.000.

Thome, Paul, to Babcock-Atlantique, S.A. Industrial technique. 3,930,942, Cl. 176-87.000.

Thompson, Dorman N.; and Haglund, Aldon W., to Minnesota Mining and Manufacturing Company. Tape dispenser for double-coated tape. 3,930,927, Cl. 156-530.000.

Thompson, Paige W., to General Electric Company. Multiple circuit control switch having articulated cascaded operating mechanism. 3,931,483, Cl. 200-1.00R.

Thompson, Richard R. Aircraft. 3,930,624, Cl. 244-13.000.

Thuss, David T.; Stein, Mitchell L.; Gurniak, John; and Stefanski, Michael C., to Swiss Aluminium Ltd. Adjustable window frame anchor clip. 3,930,738, Cl. 403-406.000.

Tieszen, Dale O.; and Edmonds, James T., Jr., to Phillips Petroleum Company. Coating with a dispersion of an arylene sulfide polymer containing high molecular weight fluorocarbon polymer. 3,931,421, Cl. 427-385.000.

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Trecker, David John; Borden, George Wayne; and Smith, Oliver Wendell, to Union Carbide Corporation. Acrylated epoxidized soybean oil amine compositions and method. 3,931,075, Cl. 260-23.0EP.

Trepka, William J., to Phillips Petroleum Company. Polyalkoxy monovinylaromatic compound in copolymerization of a conjugated diene with a monovinyl-substituted aromatic compound. 3,931,107, Cl. 260-47.0UA.

Treuner, Uwe D.; and Breuer, Hermann, to E. R. Squibb & Sons, Inc. 3-Heterothio derivatives of (carbamoylthioacetyl)cephalosporins. 3,931,170, Cl. 260-243.00C.

Treynor, Paul E. Sampling automatic equalizer. 3,931,604, Cl. 333-18.000.

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Tritsch, Ludwig, to Johnson & Johnson. Disposable diaper with a tape closure system having a double-folded tab. 3,930,502, Cl. 128-287.000.

Tritsch, Ludwig, to Johnson & Johnson. Disposable diaper with tab fastener means having an integral release surface. 3,930,503, Cl. 128-287.000.

Troisdorfer Bau-und Kunstoff Gesellschaft mit beschrankter Haftung: *See—*
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Uchiyama, Yoshio, to Toyo Kogyo Co., Ltd. Exhaust gas cleaning means for a rotary piston type engine. 3,930,468, Cl. 123-8.050.

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Ueda, Shozo; and Taniguchi, Toshinori, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho; and Daiwa Boseki Kabushiki Kaisha. Method and apparatus for transferring yarn packages doffed from a textile machine to a container. 3,930,351, Cl. 53-35.000.

Uesugi, Kyozo, to Minolta Camera Kabushiki Kaisha. Control device for a zoom lens system. 3,930,720, Cl. 350-187.000.

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Auer, Siegfried O. Moving particle composition analyzer. 3,931,516, Cl. 250-281.000.

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Toy, Madeline S. Utilization of oxygen difluoride for syntheses of fluoropolymers. 3,931,132, Cl. 260-92.100.

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Warman, Bloomfield James, to GTE International Incorporated. Telephone intercommunication system provided with a common communication line to which access is guarded. 3,931,478, Cl. 179-37.000.
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Winter, Karl, to CEAG Concordia Elektrizitats-Aktiengesellschaft. Anti-pollution apparatus. 3,930,803, Cl. 23-277.00R.
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**Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.**

Achorn, Frank P., and J. S. Lewis, Jr. Granular ammonium phosphate sulfate using common pipe-cross-type reactor. T942,006, 1-6-76, Cl. 423—310.

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Roman, Walter G., and H. G. Sutton, Jr. Control rod for a nuclear reactor. T942,002, 1-6-76, Cl. 176—36.

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Stinson, John M., H. C. Mann, Jr., and D. H. Johnson. Removal of carbonaceous matter from ammonium polyphosphate liquids. T942,007, 1-6-76, Cl. 423—305.

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Tuttle, Winifred T. Intravenous catheter attachment device having a removable, resealable injection element. T942,001, 1-6-76, Cl. 128—214.

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# LIST OF REISSUE PATENTEES

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## PATENTS WERE ISSUED ON THE 6TH DAY OF JANUARY, 1976

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Esty, Joseph J., to U. C. San Diego Foundation. Method of preserving perishable products. Re. 28,673, Cl. 53-22.00B.

Guyette, Linda S. Catamenial device. Re. 28,674, Cl. 128-285.000.

Hobbensiefken, Dean. Removable vehicle chassis sub-frame with engine. Re. 28,675, Cl. 180-11.000.

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**CLASS 148**
1.5 3,930,893
2 3,930,894
3,930,895
6.15R 3,930,897
6.24 3,930,898
6.27 3,930,899
6.3 3,930,896
12B 3,930,900
12.3 3,930,907
13 3,930,901
31.5 3,930,902
32 3,930,903
38 3,930,904
113 3,930,905
3,930,906
175 3,930,908
3,930,909

**CLASS 149**
21 3,930,910
46 3,930,911

**CLASS 152**
330RF 3,930,527
330L 3,930,526
3,930,528

**CLASS 156**
3 3,930,912
8 3,930,913
16 3,930,914
53 3,930,915
71 3,930,916
78 3,930,917
110R 3,930,918
155 3,930,919
156 3,930,920
234 3,930,921
243 3,930,922
244 3,930,923
268 3,930,924
345 3,930,925
446 3,930,926
530 3,930,927
556 3,930,928
558 3,930,929
578 3,930,930

**CLASS 157**
1.24 3,930,530
13 3,930,529

**CLASS 159**
4ST 3,930,931

**CLASS 162**
158 3,930,932
179 3,930,933
198 3,930,934
361 3,930,935

**CLASS 164**
52 3,930,531
273R 3,930,532
274 3,930,533

282 3,930,534
**CLASS 165**
27 3,930,535
143 3,930,536
158 3,930,537
**CLASS 166**
205 3,930,538
300 3,930,539
315 3,930,540
**CLASS 169**
62 3,930,541
**CLASS 172**
59 3,930,542
273 3,930,543
375 3,930,544
**CLASS 173**
163 3,930,776
**CLASS 174**
11R 3,931,451
48 3,931,452
65R 3,931,453
68.5 3,931,454
135 3,931,455
145 3,931,456
**CLASS 175**
45 3,930,545
**CLASS 176**
19R 3,930,936
20 3,930,937
36C 3,930,938
38 3,930,939
78 3,930,940
81 3,930,941
87 3,930,942
3,930,943
**CLASS 177**
168 3,930,546
**CLASS 178**
6.6DD 3,931,457
6.6A 3,931,459
3,931,460
3,931,461
6.6B 3,931,458
6.8 3,931,462
7.1 3,931,463
3,931,464
3,931,465
7.2 3,931,466
7.3R 3,931,467
69.5R 3,931,468
**CLASS 179**
1D 3,931,469
6R 3,931,470
7MM 3,931,471
15AF 3,931,473
15BA 3,931,472
16AA 3,931,474
18AD 3,931,476
18GF 3,931,475
37 3,931,477
3,931,478
3,931,479
84VF 3,931,480
99 3,931,481
100.4ST 3,931,482
**CLASS 180**
5R 3,930,547
6.5 3,930,548
9.28 3,930,553
9.48 3,930,549
11 Re.28,675
24.08 3,930,550
65R 3,930,551
68.5 3,930,552
79.2R 3,930,554
82A 3,930,555
**CLASS 181**
.5 3,930,556
33K 3,930,557
3,930,558
3,930,559
160 3,930,560
192 3,930,561
**CLASS 182**
92 3,930,562
**CLASS 187**
9E 3,930,563
**CLASS 188**
73.3 3,930,564
300 3,930,565
**CLASS 192**
8C 3,930,566
**CLASS 193**
10 3,930,567
38 3,930,568
**CLASS 195**
1.7 3,930,944
3,930,945
28R 3,930,946
3,930,947

29 3,930,948
3,930,949
51R 3,930,952
62 3,930,953
3,930,954
63 3,930,950
3,930,951
66R 3,930,955
103.5R 3,930,956
3,930,957
**CLASS 197**
16 3,930,569
19 3,930,570
**CLASS 198**
25 3,930,571
34 3,930,572
37 3,930,573
246 3,930,574
**CLASS 200**
1R 3,931,483
47 3,931,484
84R 3,931,485
157 3,931,486
159R 3,931,487
331 3,931,488
**CLASS 202**
174 3,930,958
181 3,930,959
185R 3,930,960
227 3,930,961
**CLASS 204**
13 3,930,962
15 3,930,963
37R 3,930,964
39 3,930,575
44 3,930,965
58 3,930,966
67 3,930,967
74 3,930,968
105M 3,930,974
105R 3,930,969
158R 3,930,970
159.11 3,930,971
159.21 3,930,972
180S 3,930,973
192 3,930,975
195G 3,930,976
196 3,930,977
228 3,930,978
252 3,930,979
256 3,930,980
3,930,981
299 3,930,982
3,930,983
**CLASS 206**
45.11 3,930,576
45.13 3,930,577
150 3,930,578
419 3,930,579
439 3,930,580
**CLASS 208**
10 3,930,984
46 3,930,985
60 3,930,986
111 3,930,987
182 3,930,988
230 3,930,989
308 3,930,990
**CLASS 209**
3 3,930,991
73 3,930,581
3,930,992
3,930,993
74M 3,930,994
74 3,930,995
88 3,930,582
139R 3,930,996
166 3,930,997
**CLASS 210**
5 3,930,998
19 3,930,999
22 3,931,000
3,931,001
24 3,931,002
28 3,931,003
32 3,931,004
43 3,931,005
46 3,931,006
50 3,931,007
104 3,931,008
108 3,931,009
109 3,931,010
136 3,931,011
152 3,931,012
3,931,013
231 3,931,014
232 3,931,015
297 3,931,016
330 3,931,017
359 3,931,018
485 3,931,019
**CLASS 212**
49 3,930,583

**CLASS 214**
450 3,930,584
620 3,930,585
730 3,930,587
778 3,930,586
**CLASS 215**
230 3,930,588
352 3,930,589
**CLASS 219**
60R 3,931,489
121EB 3,931,490
121L 3,931,491
216 3,931,492
274 3,931,493
441 3,931,494
463 3,931,495
543 3,931,496
**CLASS 220**
9LG 3,930,590
66 3,930,591
270 3,930,592
276 3,930,593
335 3,930,594
**CLASS 221**
212 3,930,595
242 3,930,596
**CLASS 222**
83 3,930,286
83.5 3,930,597
129.4 3,930,598
143 3,930,599
334 3,930,600
**CLASS 226**
74 3,930,601
91 3,930,487
3,930,602
190 3,930,603
**CLASS 227**
8 3,930,604
**CLASS 228**
190 3,930,605
232 3,930,606
**CLASS 229**
5.5 3,930,607
**CLASS 233**
3 3,930,608
20A 3,930,609
**CLASS 235**
61.7B 3,931,497
92DN 3,931,498
92GA 3,931,499
150.2 3,930,610
151.1 3,931,501
151.21 3,931,500
3,931,503
151.31 3,931,502
153AC 3,931,506
153AE 3,931,505
153R 3,931,504
156 3,931,507
168 3,931,508
181 3,931,509
193 3,931,510
**CLASS 236**
1B 3,930,611
44R 3,930,612
48R 3,930,613
**CLASS 239**
15 3,930,614
230 3,930,617
3,930,618
419.5 3,930,615
525 3,930,616
526 3,930,619
**CLASS 240**
41.3 3,931,511
**CLASS 242**
56A 3,930,620
67.1D 3,930,621
107.4 3,930,622
131 3,930,623
**CLASS 244**
13 3,930,624
17.21 3,930,625
44 3,930,626
121 3,930,627
139 3,930,628
**CLASS 246**
169A 3,930,629
**CLASS 248**
129 3,930,630
343 3,930,631
429 3,930,632
**CLASS 249**
1 3,930,633
**CLASS 250**
199 3,931,512
205 3,931,513
206 3,931,514
216 3,931,515

227 3,931,518
281 3,931,516
310 3,931,517
3,931,519
328 3,931,520
339 3,931,521
390 3,931,522
3,931,523
566 3,931,524
572 3,931,525
575 3,931,526
**CLASS 251**
96 3,930,634
214 3,930,635
315 3,930,636
**CLASS 252**
30 3,931,020
32.5 3,931,021
47.5 3,931,022
49.8 3,931,023
51.5R 3,931,024
62.62 3,931,025
63.2 3,931,026
63.7 3,931,027
73 3,931,028
76 3,931,029
79.4 3,931,030
99 3,931,031
107 3,931,032
122 3,931,033
132 3,931,034
134 3,931,035
135 3,931,036
3,931,037
181 3,931,038
184 3,931,039
188.3R 3,931,040
299 3,931,041
300 3,931,042
392 3,931,043
414 3,931,044
416 3,931,045
429R 3,931,046
431C 3,931,047
455R 3,931,048
3,931,049
462 3,931,050
465 3,931,051
3,931,052
466PT 3,931,054
466J 3,931,053
503 3,931,055
520 3,931,056
551 3,931,057
**CLASS 256**
32 3,930,637
39 3,930,638
**CLASS 259**
4 3,930,639
185 3,930,640
**CLASS 260**
2EC 3,931,058
2.5AC 3,931,062
2.5AK 3,931,064
2.5AS 3,931,066
2.5AW 3,931,065
2.5BB 3,931,060
2.5BF 3,931,059
2.5B 3,931,061
2.5F 3,931,063
2.5M 3,931,067
7.5 3,931,068
17R 3,931,069
17.5 3,931,070
3,931,072
18PF 3,931,071
22D 3,931,073
23EP 3,931,075
23XA 3,931,076
23R 3,931,074
23.7M 3,931,090
26 3,931,077
28 3,931,078
28.5 3,931,079
29.1SB 3,931,081
29.2N 3,931,082
29.3 3,931,083
29.4R 3,931,080
29.6RB 3,931,088
29.6TA 3,931,086
29.6F 3,931,084
29.6M 3,931,085
29.65Q 3,931,087
3,931,089
30.6R 3,931,091
33.4R 3,931,092
33.6UA 3,931,093
37N 3,931,094
38 3,931,095
42.13 3,931,096
42.21 3,931,097
45.7P 3,931,099
45.7S 3,931,100
45.8NT 3,931,101
3,931,102

45.85B 3,931,103
45.85R 3,931,104
46.5UA 3,931,106
46.5G 3,931,105
47EP 3,931,109
47UA 3,931,107
47XA 3,931,108
64 3,931,110
67R 3,931,111
72B 3,931,112
75NH 3,931,115
75NT 3,931,113
75T 3,931,114
77.5TB 3,931,117
77.5R 3,931,116
78SC 3,931,118
78R 3,931,119
79.3MU 3,931,120
79.3R 3,931,121
80.3N 3,931,122
80.73 3,931,123
80.77 3,931,124
82 3,931,125
83.7 3,931,126
85.3R 3,931,127
85.5HC 3,931,128
87.7 3,931,129
88.2S 3,931,130
91.7 3,931,131
92.1 3,931,132
93.5W 3,931,133
93.7 3,931,134
3,931,135
94.3 3,931,136
96.5R 3,931,137
112.5TR 3,931,138
3,931,139
112.5R 3,931,140
3,931,141
3,931,184
156 3,931,142
192 3,931,143
197 3,931,144
207 3,931,145
209R 3,931,147
209 3,931,146
210R 3,931,148
3,931,149
239BC 3,931,152
239D 3,931,151
239.1 3,931,150
3,931,153
239.55R 3,931,154
3,931,167
240TC 3,931,158
240J 3,931,155
3,931,159
3,931,168
240R 3,931,157
3,931,169
240.4 3,931,156
243C 3,931,160
3,931,161
3,931,170
244R 3,931,171
247.1M 3,931,162
247.5EP 3,931,172
247.7T 3,931,173
248CS 3,931,163
249.5 3,931,164
249.8 3,931,165
250AC 3,931,175
250A 3,931,176
3,931,177
250B 3,931,166
250Q 3,931,174
256.4C 3,931,180
256.4F 3,931,178
3,931,182
3,931,183
256.4N 3,931,181
256.4Q 3,931,179
268PH 3,931,185
282 3,931,186
285 3,931,187
3,931,188
3,931,189
290HL 3,931,190
290P 3,931,191
293.52 3,931,192
293.53 3,931,193
293.54 3,931,194
293.58 3,931,195
293.62 3,931,196
3,931,197
293.66 3,931,198
294.8B 3,931,199
294.8D 3,931,204
294.8E 3,931,200
294.8F 3,931,202
294.8H 3,931,201
294.9 3,931,203
295R 3,931,206
295T 3,931,205
295.5R 3,931,207
306.7R 3,931,208

306.8D 3,931,209
307FA 3,931,212
307C 3,931,213
307D 3,931,211
307F 3,931,214
309.2 3,931,215
309.6 3,931,216
3,931,217
3,931,218
309.7 3,931,219
310A 3,931,221
310R 3,931,220
315 3,931,222
3,931,223
326A 3,931,224
326N 3,931,225
326.11R 3,931,227
326.12R 3,931,228
3,931,229
326.15 3,931,230
326.5B 3,931,226
330.5 3,931,231
335 3,931,232
340.7 3,931,233
343.3 3,931,234
343.5 3,931,235
3,931,236
343.9 3,931,237
346.1M 3,931,242
346.1R 3,931,238
346.2M 3,931,239
346.2R 3,931,240
346.7 3,931,243
346.8R 3,931,241
347.2 3,931,244
3,931,245
3,931,246
347.5 3,931,248
347.8 3,931,250
348.5L 3,931,249
369 3,931,251
3,931,252
378 3,931,253
385 3,931,254
396R 3,931,255
397.1 3,931,256
408 3,931,257
412.5 3,931,258
413 3,931,259
429.3 3,931,260
429.7 3,931,262
3,931,263
3,931,264
429.9 3,931,261
440 3,931,265
448.8A 3,931,266
448.8R 3,931,267
455R 3,931,269
3,931,270
458 3,931,271
3,931,272
3,931,273
463 3,931,274
3,931,275
465D 3,931,268
3,931,277
465G 3,931,276
465.1 3,931,278
468D 3,931,279
3,931,281
3,931,282
3,931,283
3,931,284
3,931,285
468H 3,931,280
469 3,931,286
471C 3,931,287
473A 3,931,289
473G 3,931,288
475N 3,931,291
475R 3,931,290
482R 3,931,292
486R 3,931,293
502.4R 3,931,294
3,931,295
514D 3,931,296
3,931,297
3,931,299
515A 3,931,300
516 3,931,301
517 3,931,302
518A 3,931,303
518R 3,931,210
524R 3,931,304
525 3,931,305
526N 3,931,306
534L 3,931,308
534S 3,931,307
544K 3,931,309
551P 3,931,310
552 3,931,311
553A 3,931,312
561H 3,931,313
562N 3,931,314
563P 3,931,315



564E 3,931,316
566B 3,931,318
566D 3,931,317
567.6P 3,931,319
570D 3,931,320
580 3,931,321
581 3,931,298
586C 3,931,322
586P 3,931,327
586R 3,931,323
3,931,324
3,931,325
3,931,326
590B 3,931,328
592 3,931,329
599 3,931,330
601R 3,931,331
604HF 3,931,332
606.5P 3,931,333
609E 3,931,334
609F 3,931,335
615A 3,931,337
615R 3,931,336
3,931,338
621A 3,931,339
623H 3,931,340
623 3,931,341
635E 3,931,346
637R 3,931,342
645 3,931,347
647 3,931,343
648F 3,931,344
667 3,931,345
668F 3,931,348
668R 3,931,349
671B 3,931,350
680D 3,931,351
683.49 3,931,352
836 3,931,353
3,931,354
865 3,931,355
876R 3,931,356
889 3,931,357
940 3,931,358
959 3,931,359
975 3,931,360
3,931,361
3,931,362
3,931,363
3,931,364
3,931,365
3,931,366
3,931,367
**CLASS 261**
36A 3,931,368
41D 3,931,369
3,931,372
77 3,931,370
116 3,931,371
**CLASS 264**
1 3,931,373
3C 3,931,374
10 3,931,375
22 3,931,376
40 3,931,377
45.3 3,931,098
45.4 3,931,378
45.5 3,931,379
3,931,380
3,931,381
88 3,931,382
92 3,931,383
120 3,931,384
154 3,931,385
236 3,931,386
328 3,931,387
**CLASS 266**
16 3,930,641
21 3,930,642
**CLASS 269**
58 3,930,643

118 3,930,644
289 3,930,645
**CLASS 272**
1R 3,930,646
3 3,930,647
**CLASS 273**
73D 3,930,648
101 3,930,649
106R 3,930,650
135D 3,930,651
136K 3,930,652
**CLASS 274**
1R 3,930,653
42R 3,930,654
**CLASS 277**
134 3,930,655
180 3,930,656
188A 3,930,657
**CLASS 280**
11.13B 3,930,659
11.13L 3,930,658
11.35K 3,930,660
3,930,661
36C 3,930,662
3,930,663
150AB 3,930,664
3,930,666
3,930,667
150B 3,930,665
150.5 3,930,668
426 3,930,669
476R 3,930,670
**CLASS 282**
27.5 3,930,671
3,930,672
**CLASS 283**
6 3,930,673
**CLASS 285**
80 3,930,674
114 3,930,675
253 3,930,676
**CLASS 292**
169.13 3,930,677
288 3,930,678
**CLASS 294**
86.34 3,930,679
**CLASS 296**
10 3,930,680
35R 3,930,681
**CLASS 297**
388 3,930,682
**CLASS 301**
11R 3,930,683
**CLASS 302**
2R 3,930,684
15 3,930,685
**CLASS 303**
6C 3,930,686
21AF 3,930,687
21P 3,930,688
**CLASS 305**
35EB 3,930,689
**CLASS 307**
10R 3,931,527
108 3,931,528
119 3,931,529
133 3,931,530
220R 3,931,531
235R 3,931,538
**CLASS 308**
36.1 3,930,690
160 3,930,691
174 3,930,692
207R 3,930,693
227 3,930,694
236 3,930,695

**CLASS 310**
4 3,931,532
8.1 3,931,533
9.4 3,931,388
29 3,931,534
113 3,931,535
**CLASS 312**
39 3,930,696
3,930,697
43 3,930,698
108 3,930,699
183 3,930,700
244 3,930,701
245 3,930,702
**CLASS 313**
113 3,931,536
188 3,931,537
377 3,931,539
404 3,931,540
407 3,931,541
**CLASS 315**
111.2 3,931,542
177 3,931,543
273 3,931,544
384 3,931,545
**CLASS 317**
16 3,931,546
31 3,931,547
33VR 3,931,548
148.5R 3,931,549
3,931,550
151 3,931,551
230 3,931,552
**CLASS 318**
122 3,931,554
138 3,931,553
314 3,931,555
330 3,931,556
345 3,931,558
434 3,931,557
455 3,931,559
481 3,931,560
571 3,931,561
685 3,931,562
**CLASS 321**
7 3,931,563
27R 3,931,564
45R 3,931,565
**CLASS 323**
4 3,931,566
9 3,931,567
25 3,931,568
**CLASS 324**
.5A 3,931,569
34R 3,931,570
37 3,931,571
43R 3,931,572
106 3,931,573
158F 3,931,574
**CLASS 325**
17 3,931,575
362 3,931,577
409 3,931,576
461 3,931,578
464 3,931,579
**CLASS 328**
164 3,931,580
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| | | 238,324 | | | 238,339 | | 187 | 238,354 | | | 238,376 | | 13A | 238,384 | D86— | 10D | 238,398 |
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| | 196 | 238,327 | | 39 | 238,342 | D19— | 36 | 238,357 | | | 238,374 | | C | 238,387 | | | 238,400 |
| | 205 | 238,328 | | 111 | 238,343 | | 41 | 238,358 | | B | 238,371 | | K | 238,388 | | 5F | 238,402 |
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## DEFENSIVE PUBLICATIONS APPLICATIONS

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| | 3,930,363 | | 3,930,740 | | 3,931,593 | | 3,931,626 | | 3,930,877 | | 3,931,412 |
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| | 3,930,290 | | 3,930,892 | | 3,930,418 | | 3,930,744 | | 3,931,304 | | 3,930,832 |
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## DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

1 : T942,006
1 : T942,007

36 : T942,001
T942,005

39 : T942,004
42 : T942,002

T942,008

T942,010

47 : T942,003

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Vol. 942 Number 2

# OFFICIAL GAZETTE

of the

## UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

January 13, 1976

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

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DEPARTMENT
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Office

OFFICIAL GAZETTE of the
UNITED STATES PATENT and TRADEMARK OFFICE

January 13, 1976 Volume 942 Number 2

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# PATENT AND TRADEMARK OFFICE NOTICES

## Second Trial Voluntary Protest Program

A Second Trial Voluntary Protest Program will be conducted during the coming months. It will be increased in scale and somewhat modified in procedure from the first such program. Announcement of and description of the rules for the first program appeared in 923 O.G. 2 on June 4, 1974.

As before, the objective is to gain experience in carrying out such a program and to determine the extent of interest by the public in participating and in supplying pertinent references. To the extent there is participation, the program should be beneficial by bringing new art to the attention of the Office, preventing inadvertent issuance of invalid patents, and increasing confidence in the strength of those patents which survive the protest proceedings.

The first Trial Voluntary Protest Program showed a considerable interest by applicants and the public in taking part in protest proceedings. A summary of the results will be published soon in this Gazette. The second Trial Voluntary Protest Program is designed to gain additional information as to public participation and also to follow more closely the procedures which would be required in a continuing, permanent protest program.

*Applications Involved*

In the second Trial Voluntary Protest Program, a Request to Participate and Waiver of Confidentiality form (PTOL–224 Temp.) will be sent to each applicant to whom a Notice of Allowance is mailed during a selected three week period, probably in October, 1975. The total number of requests mailed will be about 4,500. Applications for plant patents will be excluded from the program. The reason for this exclusion is the high cost of printing colored drawings and the relatively limited prior art available. No other applications will be excluded from the trial program, regardless of subject matter, type of application or earlier proceedings.

*Waiver of Confidentiality*

Two copies of the form letter requesting voluntary waiver of confidentiality (form PTOL–224 Temp.) will be mailed in the same envelope along with the Notice of Allowance. An additional copy of the form letter will be made of record in each application at the time of mailing. The applicant will have three months from the notice of allowance date in which to either (1) elect to participate in the Trial Voluntary Protest Program by filing a signed waiver of confidentiality, or (2) elect not to participate in the program by paying the issue fee. If he does neither, the application will become abandoned, as provided in 37 C.F.R. 1.316. The waiver of confidentiality is a part of form PTOL–224 Temp. This procedure will avoid any increase in pendency time for those applications in which an election is made not to participate in the program. An early filing of a waiver of confidentiality by the applicant will result in early publication of the application.

*Publication*

If the applicant decides not to participate in the protest program and payment of the issue fee is timely made, the patent will issue routinely without delay.

If the applicant elects to participate in the protest program and a signed waiver of confidentiality is filed in the Office within 3 months of the notice of allowance date, the Notice of Allowance will be vacated. In such a case the issue fee should not be filed, as it will not be accepted and applied if filed with a signed waiver of confidentiality. An additional Notice of Allowance will be issued after the protest proceedings have been completed if only allowable claims remain in the application.

After a signed waiver has been filed, the application will be printed in the form of a patent and be available for sale as in the first Trial Voluntary Protest Program. At least one claim and a drawing figure, if any, will be printed in the OFFICIAL GAZETTE. These published applications will appear in about 6 to 9 issues of the OFFICIAL GAZETTE early in 1976. Advance notice will be given in the OFFICIAL GAZETTE of the dates on which applications will be published under this program.

*Inspection of Files*

The Patent and Trademark Office files of the published applications will be available for inspection by the public for a period of three months after publication. The application files will be retained in a single location in the Patent Issue Division during the protest period. This single location will be staffed with personnel to process papers directed to these files, supervise inspection of the files by the public, provide copies of file contents when ordered, and perform other related duties. A coin operated copying machine will also be available at this location.

*Filing of Protests*

Protests relating to the patentability of any published application must be filed in writing in the Patent and Trademark Office no later than three months after publication of the application. No extension of the three month protest period will be granted. Each protest must be filed in duplicate (one copy will be forwarded to the applicant and the other copy will be placed in the application file) and must indicate the grounds for protesting the allowance of any claim contained in the published application. If the protest involves prior art not of record in the application, two copies of the alleged prior art, together with an explanation of the relevance of such prior art to the allowed claims, should be included. The protester may also comment on the prior art record in the application and the manner in which it was applied.

In those applications where prima facie evidence of prior public use or sale the claimed invention is presented in accordance with 37 C.F.R. 1.292, public use proceedings will give the protester an opportunity to present evidence.

Should claims be copied from a published application for interference purposes, the applicant copying claims must also file a notice of such copying in the file of the published application to avoid the possibility of inadvertent issuance of the published application as a patent before conclusion of any interference proceedings.

For easy identification, all protests should be headed, "Protest Under Trial Voluntary Protest Program" and be addressed to:

Commissioner of Patents and Trademarks
Box TVPP
Washington, D.C. 20231

The protester should fully identify himself and include his mailing address so that communications may be addressed to him. In view of administrative problems encountered in the first Trial Voluntary Protest Program in protecting the confidentiality of the identity of protesters, no attempt will be made by the Office to maintain the confidentiality of any protester under the new program.

If no protests are received during the protest period, the application file will be rerouted for the mailing of a new Notice of Allowance. The file will not be returned to the examining group except for consideration of matters which normally require return of an allowed file.

If one or more protests are filed in an application, the application file and the protest(s) will be returned to the examing group for consideration.

*Consideration of Protest*

The examining group will acknowledge receipt of all protests. The authority for deciding whether or not the evidence submitted constitutes a prima facie showing of unpatentability of any allowed claim will reside with the Group Director. If the Group Director decides that no such showing has been made, the application will be forwarded to the Patent Issue Division for mailing of a new Notice of Allowance. Protesters will be notified in such cases that prosecution has not been reopened, and the applicant will be sent a duplicate copy of all protests. The decision of the Group Director will be final and will not be subject to petition by a protester.





If the Group Director decides that the submitted evidence constitutes a prima facie showing of unpatentability of any allowed claim, prosecution of the application will be reopened. The decision to reopen prosecution will be communicated to the applicant by means of an Office action, signed by a primary examiner, rejecting any claim considered unpatentable. The duplicate copy of each protest will be mailed to the applicant with the Office action. Protesters who submitted evidence on which the rejection is based will be identified in the Office action and will also receive copies of this and subsequent Office actions. Other protesters will be notified that prosecution has been reopened, but based on evidence and for reasons other than those submitted by them and that, consequently, no further correspondence will be directed to them. The applicant will normally be given a three month shortened statutory period to respond to the Office action.

*Response by the Applicant to Subsequent Office Actions*

During this period, the applicant may present amended or new claims which will be subject to further consideration by the primary examiner. In order to allow protesters who submitted evidence on which a rejection in the Office action is based to participate in later prosecution and to comment upon further proceedings, applicant will be required to serve by mail upon each protester identified in the Office action, a copy of any response filed, including any appeal brief. Indication of such service will be a required component of a complete response. Applicant need only reply to the rejections and objections made in the Office action. There need be no specific response to any other points raised by the protesters.

*Comment on Applicant's Response by the Protester*

Each protester served will be allowed one month, running from the date applicant's response or brief is received in the Patent and Trademark Office, to file comments relating thereto. All communications from protesters must be in writing. Examiner interviews with the protesters will not be permitted. No extensions of the one month period will be granted.

Any appeal by the applicant to the Board of Appeals in a protested application will be made special and will be taken up out of order.

*Conclusion of Prosecution*

If, after further prosecution, the application is found to be allowable, all protesters still participating at that time will be notified and the application will be forwarded to the Patent Issue Division for mailing of a new Notice of Allowance. A decision of the primary examiner to allow an application will not be subject to petition or appeal by any protester.

C. MARSHALL DANN,
*Commissioner of Patents and Trademarks.*

Sept. 16, 1975.

[938 O.G. 945]

## Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

**2,802,760,** Derick and Frosch, OXIDATION OF SEMICONDUCTIVE SURFACES FOR CONTROLLED DIFFUSION, filed Sept. 19, 1975, D.C.,N.D. Calif. (San Francisco), Doc. C–75–1966–RFP, *Western Electric Company, Incorporated* v. *Intel Corp.;* filed Sept. 19, 1975, D.C. Del. (Wilmington), Doc. 75–307, *Western Electric Company* v. *Teledyne, Inc.;* filed Sept. 19, 1975, D.C. Del. (Wilmington), Doc. 75–308, *Western Electric Company* v. *Intersil, Inc.;* filed Sept. 19, 1975, D.C. Del. (Wilmington), Doc. 75–309, *Western Electric Company, Inc.* v. *Solid State Scientific, Inc.*

**3,056,224,** Almy and Zentmyer, TESSELLATED SURFACE COVERING; **3,170,808,** same, A METHOD OF FABRICATING A TESSELLATED SURFACE COVERING, filed June 4, 1968, D.C.N.J. (Newark), Doc. 564–68 *Armstrong Cork Co. v. Congoleum-Nairn, Inc.* Order of dismissal of action, Sept. 23, 1975.

**3,170,808.** (See 3,056,224.)

**3,175,256,** R. C. Horton, WEATHER STRIP; **3,745,053,** Johnson and Newton, WEATHERSTRIP, filed Sept. 25, 1975, United States Court of Appeals, Sixth Circuit, Ohio (Cincinnati), Doc. 74–2256, *The Schlegel Manufacturing Company* v. *USM Corporation.* The judgment of the District Court is affirmed and the cause is remanded for an accounting and other relief to which the plaintiff may be entitled, Sept. 25, 1975.

**3,317,642,** R. L. Bailey, VOLUME STABILIZATION OF MOLDED PLASTIC CONTAINERS BY HEATING AFTER MOLDING, filed Oct. 6, 1975, D.C., N.D. Ohio (Cleveland), Doc. C75–876, *Graham Engineering Corporation* v. *Kemp Products, Ltd., Kemp Products, Inc.* and *Carlisle Corporation.*

**3,458,414,** Crane and Stevens, SWIMMING POOL WATER CONDITIONER, filed Feb. 11, 1975, D.C., N.D. Calif. (San Francisco), Doc. C–75–0304, *Geni-Chlor International, Inc.* v. *Multisonics Development Corp.*

**3,478,341,** A. J. DePietro, HINGE JOINT FOR DENTAL ARTICULATOR, filed Aug. 16, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71–1918–LTL, *Anthony J. DePietro* v. *Denar Corporation, August Belmont, Miles Guichet* and *Emily Guichet.* Filed consent judgment and order thereon dismissing complaint and counterclaim without prejudice as to defendants August Belmont, Dr. Niles Guichet and Emily Guichet, that defendant Denar Corp. has infringed on plaintiff's patent, said defendant are enjoined from further use of plaintiff's patent, entered July 8, 1975.

**3,565,454,** R. L. Stevenson, SKATEBOARD WITH INCLINED FOOT-DEPRESSIBLE LEVER, filed Sept. 24, 1975, D.C., C.D. Calif. (Los Angeles), Doc. CV–75–3233–ALS. *Richard Lawrence Stevenson* v. *Grentec, Inc.*

**3,585,352,** A. J. Zvanut, ARC WELDING PROCESS AND ELECTRODE FOR STAINLESS STEEL; **3,848,109,** same, **Re. 28,326,** same, ARC WELDING ELECTRODE AND PROCESS FOR STAINLESS STEEL, filed June 26, 1975, D.C., C.D. Calif. (Los Angeles), Doc. CV–75–2218–R, *Stoody Co.* v. *Teledyne, Inc., doing business as Teledyne McKay;* filed Sept. 30, 1975, D.C., C.D. Calif. (Los Angeles), Doc. 75–3303–WMB, *Teledyne Mid-America, Inc.* v. *Stoody Company.*

**3,645,026,** L. G. Lorch, ARTICULATED FLAG CONSTRUCTION, filed Oct. 2, 1975, D.C., N.D. Calif. (San Francisco), Doc. C–75–2082–SW, *Leonard G. Lorch* v. *Michael G. Oldham.*

**3,659,284,** W. T. Rusch, TELEVISION GAMING APPARATUS; **3,659,285,** Baer, Rusch and Harrison, TELEVISION GAMING APPARATUS AND METHOD, filed Sept. 22, 1975, D.C., N.D. Ill. (Chicago), Doc. 75c3153, *The Magnavox Co., et al.* v. *Sears, Roebuck & Co.*

**3,659,285.** (See 3,659,284.)

**3,678,542,** E. Prete, Jr., CAM BUCKLE, filed June 25, 1975, D.C., C.D. Calif. (Los Angeles), Doc. CV–75–2202–AAH, *Ancra Corporation* v. *Circle Industries, Inc.* Filed stipulation and order dismissing action without prejudice, entered Sept. 23, 1975.

**3,711,806,** R. W. Flentge, POWER PACK; **Re. 28,499,** same, filed Oct. 3, 1975, D.C., N.D. Ill. (Chicago), Doc. 75c3312, *A. F. Dormeyer Manufacturing Co., Inc.* v. *Coils, Inc.*

**3,736,930,** H. W. Georgi, PARENTERAL ADMINISTRATION FLUID FLOW CONTROL SYSTEM, filed Dec. 10, 1974, D.C., C.D. Calif. (Los Angeles), Doc. CV–74–3609–R. *Ivac Corp.* v. *LaBarge Incorp., Tekmar S.A.* and *Tekmar Medical Ltd.* Filed final consent judgment and order thereon enjoining defendants from further use, etc. of plaintiff's patent, entered Sept. 3, 1975.

**3,745,053.** (See 3,175,256.)

**3,838,568,** Zurcher and Merles, ELECTRONIC WATCH MOVEMENT MOUNTING AND CONNECTION, filed Nov. 27, 1974, D.C., C.D. Calif. (Los Angeles), Doc. 74–3478–LTL, *Hughes Aircraft Company* v. *Frontier, Inc.* Filed consent judgment and order thereon that patent is valid, that defendants be permanently enjoined from making or selling said patent, entered Sept. 16, 1975.

**3,848,109.** (See 3,585,352.)

**Re. 28,326,** (See 3,585,352.)

**Re. 28,499.** (See 3,711,806.)

**D–221,833,** R. S. Haydock, CASTER WHEEL, filed Oct. 1, 1975, D.C., N.D. Ill. (Chicago), Doc. 75c3270, *Mildred Rose Haydock* v. *Radio Steel & Mfg. Co.*

**D–228,939,** R. Bannwart, Sr., WRISTWATCH, filed Sept. 29, 1975, D.C., S.D.N.Y. (New York), Doc. 75–C–4767 LWP, *Corum Watch Corporation* v. *Sutton Time Ltd.*

# PATENT NOTICES

## Certificates of Correction for the Week of Jan. 13, 1976

| | | | |
|---|---|---|---|
| D. 232,762 | 3,779,144 | 3,887,244 | 3,905,484 |
| D. 234,217 | 3,788,213 | 3,889,227 | 3,905,543 |
| 3,449,310 | 3,789,101 | 3,889,974 | 3,905,797 |
| 3,575,734 | 3,802,828 | 3,891,779 | 3,908,614 |
| 3,676,389 | 3,806,027 | 3,892,850 | 3,908,850 |
| 3,682,388 | 3,834,808 | 3,893,843 | 3,908,893 |
| 3,688,711 | 3,836,329 | 3,894,625 | 3,909,487 |
| 3,690,737 | 3,846,462 | 3,894,939 | 3,909,775 |
| 3,691,192 | 3,855,684 | 3,895,216 | 3,910,096 |
| 3,691,476 | 3,860,086 | 3,895,553 | 3,910,108 |
| 3,696,118 | 3,861,369 | 3,897,723 | 3,910,232 |
| 3,714,191 | 3,862,253 | 3,899,453 | 3,910,799 |
| 3,715,683 | 3,864,035 | 3,901,590 | 3,911,597 |
| 3,718,796 | 3,865,550 | 3,902,026 | 3,912,060 |
| 3,721,043 | 3,866,201 | 3,902,993 | 3,912,254 |
| 3,725,781 | 3,869,936 | 3,904,566 | 3,912,483 |
| 3,739,720 | 3,872,057 | 3,904,634 | 3,912,869 |
| 3,763,692 | 3,879,375 | 3,905,028 | 3,913,031 |
| 3,769,302 | 3,883,478 | 3,905,254 | |

## Dedication

3,866,283.—David E. Gould, Oxford, Mass. MULTI-GROOVE ROLL MOUNTING. Patent dated Feb. 18, 1975. Dedication filed Nov. 20, 1975, by the assignee, Morgan Construction Company.

Hereby dedicates the remaining term of said patent to the Public.

## Adverse Decisions in Interferences

In the designated interference involving the indicated claims of the following patents, final decisions have been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,342,250, H. Treppschuh and R. L. Hentrich, METHOD OF AND APPARATUS FOR VACUUM MELTING AND TEEMING STEEL AND STEEL-LIKE ALLOYS, Interference No. 96,657, decided October 16, 1975, claims 8, 10, 11, 12, 17, 18, 20, 22, and 23.

Patent No. 3,524,876, J. E. Gregson, Jr., N,N-DIMETHYLOLCARBAMATES OF ETHER ALCOHOLS, Interference No. 98,037, decided June 23, 1975, claim 3.

Patent No. 3,590,472, J. R. Nix, M. R. Sargent and W. T. Kaarlela, COMPOSITE MATERIAL FOR MAKING CUTTING AND ABRADING TOOLS, Interference No. 98,064, decided December 9, 1974, claim 1.

Patent No .3,635,957, G. R. Genta, STYRYL DYES, Interference No. 98,174, decided August 13, 1975, claim 2.

Patent No. 3,658,846, E. M. Chamberlin, E. E. Harris and J. L. Zabriskie, Jr. INTERMEDIATES FOR SYNTHESIS OF VITAMIN $B_6$ AND RELATED COMPOUNDS, Interference No. 98,640, decided August 25, 1975, claims 1 and 2.

Patent No. 3,665,032, H. A. Burch and T. J. Schwan, RESOLUTION OF L-DOPA INTERMEDIATE, Interference No. 98,244, decided August 7, 1975. Claim 1.

Patent No. 3,816,536, U. Eder and G. Sauer, 2,2-DISUBSTITUTED CYCLOALKANE-1,3-DIONES, Interference No. 98,992, decided August 12, 1975, claims 1, 2 and 8.

Patent No. 3,822, 496. D. V. Minder, DISPLAY PLATE FOR OPENERS OF PRE-SCORED CANS, Interference No. 98,940, decided September 19, 1975, claims 1, 2, 3, 8, 9, and 10.

## Disclaimers

3,549,070.—John W. Frost, Appleton, Roy E. Downham and Jack F. Eckelaert, Neenah, Wis. FLOTATION OF SHEET MATERIALS. Patent dated Dec. 22, 1970. Disclaimer filed Nov. 12, 1975, by the assignee TEC Systems, Inc.

Hereby enters this disclaimer to claims 1, 2, 7, 8, 9, 10, 13, 14 and 15 of said patent.

3,712,764.—Raymond S. Shearwood, Norwalk, Conn. ADJUSTABLE CONSTRUCTION FOR MATING SURFACES OF THE ROTOR AND PORT MEMBER OF A LIQUID RING PUMP. Patent dated Jan. 23, 1973. Disclaimer filed Nov. 18, 1975, by the assignee, Nash Engineering Company.

Hereby enters this disclaimer to all claims of said patent.

3,796,365.—Hugh N. Downing, Marysville, Wash. NAILING GUN CARRIAGE. Patent dated March 12, 1974. Disclaimer filed Nov. 7, 1975, by the assignee, Glen D. Johnson.

Hereby enters this disclaimer to claims 16 and 26 of said patent.

3,841,846.—Earl I. Larsen, Indianapolis, Ind. and Richard H. Krock, Weston, Mass. LIQUID PHASE SINTERED MOLYBDENUM BASE ALLOYS HAVING ADDITIVES AND SHAPING MEMBERS MADE THEREFROM. Patent dated Oct. 15, 1974. Disclaimer filed Nov. 5, 1975, by the assignee, P. R. Mallory & Co. Inc.

The term of this patent subsequent to March 19, 1990, has been disclaimed.

3,848,109.—Albert J. Zvanut, Whittier, Calif. ARC WELDING PROCESS AND ELECTRODE FOR STAINLESS STEEL. Patent dated Nov. 12, 1974. Disclaimer filed Oct. 31, 1975, by the assignee, Stoody Company.

The term of this patent subsequent to June 15, 1988, has been disclaimed.

3,904,303.—H. Allen Becht, Williamsville, James Campbell, Kenmore, James J. Kerschner, Boston, N.Y., and Edward J. Krollman, Hamilton, Ontario, Canada. COMPOSITE EXPANSION JOINT ASSEMBLY. Patent dated Sept. 9, 1975. Disclaimer filed Nov. 7, 1975, by assignee, Acme Highway Products Corporation.

The term of this patent subsequent to Aug. 20, 1991, has been disclaimed.

3,912,642.—Robert J. Stirwold and Fred O. Barrett, Cincinnati, Ohio. ESTER LUBRICANTS SUITABLE FOR USE IN AQUEOUS SYSTEMS. Patent dated Oct. 14, 1975. Disclaimer filed Nov. 3, 1975, by the assignee, Emery Industries, Inc.

Hereby enters this disclaimer to claims 1, 2, 3 and 4 of said patent.

3,914,376.—George E. Barker, St. Louis, Mo. LAYERED RHODIUM AND NICKEL CATALYST FOR NO$_x$ REDUCTION. Patent dated Oct. 21, 1975. Disclaimer filed Aug. 6, 1975, by the assignee, Monsanto Company.

The term of this patent subsequent to Aug. 5, 1992, has been disclaimed.

## Patents Available for Licensing or Sale

3,807,095. ROCK SAW. A. C. Harding, (deceased) Ella M. Fry, Administratrix, 3601 E. Funston, Wichita, Kans., 67218.

3,826,391. BOAT TRAILER. Amos C. Prince, P.O. Box 894, Goldsboro, N.C., 27530.

3,916,357. DEVICE FOR REDUCING TARNISH AND CORROSION BUILD-UP IN TELEVISION TUNERS. Harold W. Jones, 829 Ridgecrest Drive, Bowling Green, Ky., 42101.

3,840,968. HYDRAULIC SLIP JOINT PIPE PULLER. Pauline E. Mason, 833 E. Fountain Blvd., Colorado Springs, Colo., 80903.

3,921,649. DENTAL CARE KIT. Mrs. Mary G. Milbrath, 2310 Edna Ave., Park Ridge, Ill., 60068.

3,882,824. GROOMING AID FOR HAIRY ANIMALS. Gwendolyn Kay Acquaviva, 936 Ledge Road, Medina, Ohio, 44256.

3,907,243. ARTICLE HOLDER. John P. Gidos, P.O. Box 205, Ludlow, Pa., 16333.





3,764,930. HIGH FIDELITY AUDIO AMPLIFIER. Ronald J. Bakken, 3918 31st Ave. S., Minneapolis, Minn., 55406.

3,832,498. ADAPTER ENABLING TELEPHONE SWITCHING EQUIPMENT TERMINALS TO BE WIRE WRAPPED. Edward L. Lawson, 538 N. Fifth St., Bayport, Minn., 55003.

3,875,557. HEADLIGHT WARNING SYSTEM FOR VEHICLES. Stuart R. Peterson, 790 Southgate Office Plaza, Minneapolis, Minn., 55437.

3,826,717. QUANTITATIVE ANTIBIOTIC TEST CONTAINER. Dr. Verne E. Gilbert, 301 Blount Professional Building, Knoxville, Tenn., 37920.

3,908,924. WINDING MACHINES. Wilhelm Schulze, Germany, Assignor to Maschinenbau Greene GmbH & Company, Ky. Krelensen, Germany. Correspondence to: Fidler, Patnaude & Batz 1211 W. 22nd St., Oak Brook, Ill., 60521.

3,916,924. APPARATUS FOR EMPTYING AND RINSING CONTAINERS. Francis E. McGowan, 2773 Curtis Way, Sacramento, Calif., 95818.

3,900,646. METHOD OF PLATING METAL UNIFORMLY ON AND THROUGHOUT POROUS STRUCTURES. Robert A. Clyde, P.O. Box 430820, South Miami, Fla., 33142.

3,895,646. SELF-REGULATING VANE TYPE VALVE FOR CONTROLLING FLUID FLOW. Manuel G. Howat, 24 Douglas St., Victoria, Columbia, Canada.

3,180,128. CRIMPING TOOL. Ottis V. Faulkner, Houston, Tex. Correspondence to: Lester L. Hewitt, 600 Jefferson, Suite 2010, Houston, Tex., 77002.

3,914,894. AUTOMATIC FISH HOOK SETTER. Julius J. Kobza, P.O. Box 584, Sonoma, Calif., 95476.

3,910,146. GUIDE FOR SABER SAW. William L. Earl, 439 Church Road E., King of Prussia, Pa., 19406.

3,295,562. METHOD AND APPARATUS FOR ROUTING AND LAYING WIRES. William Concannon, 30 Dewey Road, Cheltenham, Pa., 19012.

3,803,701. METHOD OF EXTRUDING LIFE OF COPPER ANODE MOULDS. Robert H. Peterson, 54 Abbot Road, Wellesley Hills, Mass., 02181.

3,847,766. PROCESSES FOR TREATMENT OF CRUDE CALCIUM SULFATE TO RENDER IT SUITABLE FOR CONVERSION TO PLASTER OF PARIS. Fels-Werke Peine-Salzgitter, GmbH, Germany. Correspondence to: Michael J. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,912,360. MICROSCOPIC FIELD MARKER. Frank L. Becke, Box 836, Eastville, Va., 23347.

3,834,003. FRAMING TEMPLATE. Richard L. Pinkard, 316 Ferndale Drive, Collinsville, Va.

General Electric Company is prepared to grant non-exclusive licenses under the following patents on reasonable terms to domestic manufacturers.

Applications for licenses under the following patents may be addressed to: Division Patent Counsel, Switchegear Equipment Bus. Div., General Electric Company, 6901 Elmwood Ave., Philadelphia, Pa., 19142.

3,913,459. RING LATCH FOR RELEASABLY RESTRAINING A PISTON WITHIN A CYLINDER.

Application for license under the following 1 patent may be addressed to: Division Patent Counsel, Space Division, General Electric Company, P.O. Box 8555, Philadelphia, Pa., 19101.

3,906,120. METHOD FOR PREPARING SLIDES FOR BLOOD EVAULATION.

Application for license under the following 1 patent may be addressed to: General Electric Company, Division Patent Counsel, Housewares and Audio Business Division, 1285 Boston Ave., Bridgeport, Conn., 06602.

3,890,985. APPLIANCE ACCESSORY ATTACHMENT MEANS.

Application for license under the following 2 patents may be addressed to: Patent Counsel, Speed Variator Products Section, General Electric Company, 1501 Roanoke Blvd., Salem, Virginia, 24153.

3,453,524. INVERTER COMMUNICATION CIRCUIT.

3,471,716. POWER SEMICONDUCTOR GATING CIRCUIT.

The RCA Corporation offers to grant non-exclusive licenses on reasonable terms and conditions under the following 80 patents.

Inquires respecting licenses under these patents should be addressed to: RCA Corporation, Staff Vice President, Domestic Licensing, 30 Rockefeller Plaza, New York, N.Y., 10036.

3,911,176. METHOD FOR VAPOR-PHASE GROWTH OF THIN FILMS OF LITHIUM NIOBATE.

3,911,295. WAVEFORM GENERATING CIRCUIT.

3,911,377. RELAXATION OSCILLATOR HAVING STABLE PULSE WIDTH.

3,911,453. TWO COLOR INFORMATION RECORD.

3,911,467. INTERLACED READOUT OF CHARGE STORED IN CHARGE-COUPLED IMAGE SENSING ARRAY.

3,911,476. COLOR PICTURE/SOUND RECORD.

3,912,283. TURNTABLE SPEED LOCK SYSTEM.

3,912,363. OPTICAL FIBER TO PLANAR WAVEGUIDE COUPLER.

3,912,370. AC DEFORMABLE MIRROR LIGHT VALVE.

3,912,386. COLOR IMAGE INTENSIFICATION AND PROJECTION USING DEFORMABLE MIRROR LIGHT VALVE.

3,912,849. COMPOSITE PRINTED CIRCUIT BOARD.

3,912,857. STYLUS ARM PIVOT.

3,912,867. FOUR-WIRE CONFERENCE CIRCUIT.

3,912,942. SIGNAL COMPARISON CIRCUIT.

3,912,977. DIRECT CURRENT PROTECTION CIRCUIT.

3,913,006. VOLTAGE REGULATOR CIRCUIT WITH RELATIVELY LOW POWER CONSUMPTION.

3,913,028. PHASE LOCKED LOOP INCLUDING AN ARITHMETIC UNIT.

3,913,038. ELECTROSTATIC RADIATION FILTER FOR COAXIALLY FED HOT CHASSIS TELEVISION RECEIVER.

3,913,040. MICROSTRIP CARRIER FOR HIGH SPEED SEMICONDUCTOR DEVICES.

3,913,359. DYEING STATION IN AN APPARATUS FOR CONTINUOUSLY DYEING FIBROUS MATERIAL.

3,914,136. METHOD OF MAKING A TRANSMISSION PHOTOCATHODE DEVICE.

3,914,515. PROCESS FOR FORMING TRANSITION METAL OXIDE FILMS ON A SUBSTRATE AND PHOTOMASKS THEREFROM.

3,914,542. TIMING SIGNALS FOR VELOCITY ERROR CORRECTION.

3,914,653. VOLTAGE REGULATOR FOR DEFLECTION CIRCUIT.

3,914,684. CURRENT PROPORTIONING CIRCUIT.

3,914,696. CONTROLLABLE REFERENCE SUPPLY FOR TELEVISION TUNERS.

3,914,702. COMPLEMENTARY FIELD-EFFECT TRANSISTOR AMPLIFIER.

3,914,704. FEEDBACK AMPLIFIER.

3,914,711. GATED OSCILLATOR HAVING CONSTANT AVERAGE DC OUTPUT VOLTAGE DURING ON AND OFF TIMES.

3,914,762. ELECTRONIC IDENTIFICATION SYSTEM.

3,915,533. DEVICE AND METHOD FOR RESTORING CATHODE EMISSION IN A THERMIONIC ELECTRON TUBE.

3,915,549. CRYSTALS FOR RECORDING PHASE HOLOGRAMS.

3,915,565. SIGNAL SENSING FOR FILM PROJECTORS.

3,915,566. AUTOMATIC SIGNAL PLAYBACK FOR FILM PROJECTORS.

3,915,574. METHOD FOR DETERMINING AN ACCURATE ALIGNMENT OF A LASER BEAM.

3,915,717. STABILIZED AUTOCATALYTIC METAL DEPOSITION BATHS.

3,916,056. PHOTOMASK BEARING A PATTERN OF METAL PLATED AREAS.

3,916,244. PLURAL-BEAM COLOR PICTURE TUBE WITH IMPROVED MAGNETIC CONVERGENCE.

3,916,333. DIFFERENTIAL AMPLIFIER.

3,916,336. RADIANT ENERGY DEVICE MOUNT.

3,916,339. ASYMMETRICALLY EXCITED SEMICONDUCTOR INJECTION LASER.

3,916,346. MODULATOR.

3,916,348. TEMPERATURE-COMPENSATED SURFACE-PROPAGATED WAVE ENERGY DEVICE.

3,916,415. ANTENNA SCANNING.

3,916,430. SYSTEM FOR ELIMINATING SUBSTRATE BIAS EFFECT IN FIELD EFFECT TRANSISTOR CIRCUITS.

3,916,431. BIPOLAR INTEGRATED CIRCUIT TRANSISTOR WITH LIGHTLY DOPED SUBCOLLECTOR CORE.

3,916,437. PURITY ADJUSTMENT FOR COLOR DISPLAY SYSTEM.

## Patents Withdrawn From Register

General Electric Company hereby withdraws the following patent from the Register Patents Available for licensing or Sale. The patent was listed as being available in the "OFFICIAL GAZETTE" as indicated below.

3,136,001. MOLD FOR MOLDING DYNAMICALLY BALANCED FANS, February 1, 1966.

## PATENT EXAMINING CORPS

**RENE D. TEGTMEYER, Assistant Commissioner**
**WILLIAM FELDMAN, Deputy Assistant Commissioner**

### CONDITION OF PATENT APPLICATIONS AS OF DECEMBER 20, 1975

| PATENT EXAMINING GROUPS | Actual Filing Date of Oldest New Case Awaiting Action |
|---|---|
| **CHEMICAL EXAMINING GROUPS** | |
| GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices. | 3-19-75 |
| GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides. | 1-2-75 |
| HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes. | 1-13-75 |
| COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography. | 2-3-75 |
| SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes. | 1-21-75 |
| **ELECTRICAL EXAMINING GROUPS** | |
| INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales. | 12-23-74 |
| SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material. | 2-13-75 |
| INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts. | 5-1-75 |
| RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating. | 6-20-75 |
| ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring. | 12-17-74 |
| DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts. | 7-18-74 |
| **MECHANICAL EXAMINING GROUPS** | |
| HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment. | 3-3-75 |
| MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks. | 4-1-75 |
| AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination. | 6-2-75 |
| HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication. | 2-19-75 |
| GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines. | 5-27-75 |

**Expiration of patents:** The patents within the range of numbers indicated below expire during January 1976, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,866,973 to 2,871,478 inclusive
Plant Patents..... Numbers 1,792 to 1,804 inclusive



# PATENT APPLICATIONS

## PUBLISHED JANUARY 13, 1976
## UNDER THE SECOND TRIAL VOLUNTARY PROTEST PROGRAM

NOTE- A copy of the notice setting forth the details of the Second Trial Voluntary Protest Program may be found in the Patent and Trademark Notices section of this issue.

Any protests relating to the patentability of these published applications must be filed in writing before April 13, 1976. These applications are available for inspection in the Allowed Files Branch, Crystal Plaza, Room 2-10C28. All correspondence should be addressed to:

Commissioner of Patents and Trademarks
Box TVPP
Washington, D.C. 20231

Printed copies of the published applications may be purchased from the Patent and Trademark Office at 50 cents each.

An "Index of Applicants and Assignees of Published Applications" and a concordance entitled "Classification of Published Patent Applications" are located in the back of this issue.

## GENERAL AND MECHANICAL APPLICATIONS

**B 405,726**

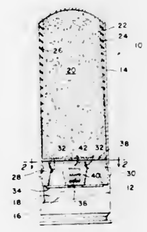
### SELF-LEVITATING SIGNAL CARTRIDGE

**Leonard R. Ambrosini, Churchville, Md., and Raymond S. Isenson, Vandenberg AFB, Calif., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.**

**Filed Oct. 11, 1973, Ser. No. 405,726**
**Int. Cl.[2] F42B** *4/06, 4/26*
**U.S. Cl. 102—32** **2 Claims**

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| 2,489,953 | 11/1949 | Burney | 102/49.7 |
| 2,644,364 | 7/1953 | Nass | 102/49.7 X |
| 3,023,570 | 3/1962 | Crouch | 102/103 X |
| 3,245,350 | 4/1966 | Kelly | 102/65.2 X |
| 3,750,574 | 8/1973 | Lohkamp | 102/32 |



1. In a pyrotechnic signal cartridge comprising:
a. a cartridge case,
b. a projectile case detachably secured to said cartridge case,
c. a projectile initial propulsion charge in said cartridge case for launching said projectile case,
d. a rocket motor means, including a plurality of rocket nozzle ports, closure means for said ports positioned within said projectile case, a solid pyrotechnic signal composition, and a solid rocket motor propellant composition,
e. ignition means including an ignition composition and a delay column for said solid pyrotechnic signal composition and said solid rocket motor propellant composition, wherein the improvement comprises, said solid rocket motor propellant composition and said solid pyrotechnic signal composition present in admixture in said projectile case and wherein said compositions present in admixture have a conical configuration with diameter gradually decreasing with distance from said rocket nozzle parts such that burning of said compositions in admixture after launching of said projectile case balances the thrust of the rocket motor means against the mass of the cartridge providing a thrust-to-weight ratio of approximately unity which effect causes a self levitating display.

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**B 412,068**

### PYRAMID PROJECTILE PAYLOAD EJECTION DEVICE

**Louis J. Adimari, Lake Hiawatha, and George D. Dusoe, Oak Ridge, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.**

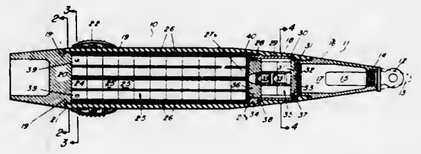
**Continuation-in-part of Ser. No. 229,847, Feb. 28, 1972, abandoned. This application Nov. 2, 1973, Ser. No. 412,068**
**Int. Cl.[2] F42B** *13/50*
**U.S. Cl. 102—69** **9 Claims**

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| 3,404,630 | 10/1968 | Grandy | 102/90 |
| 3,460,507 | 8/1969 | Little et al. | 102/65 |
| 3,677,182 | 7/1972 | Peterson | 102/90 |

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| 859,382 | 6/1940 | France | 102/35.6 |



1. A projectile for dispensing a payload at a selected point along its trajectory, comprising:
a housing including a forward ogive portion, a rear separatable base plug portion, and an intermediate hollow cylindrical portion filled with a first payload,
an elongated hollow cylindrical pusher assembly means adjacent to said first payload and slidingly disposed substantially entirely within said ogive portion for movement rearwardly in said housing, with at least an annular portion of its peripheral wall in bearing contact with the inner wall of said housing, said pusher assembly means being open at its rear end and closed at the other end and filled with an additional payload,
an expulsion charge means disposed within said ogive portion forward of said pusher assembly means for explosively generating an expanding gas, and
fuze means for selectively activating said charge means;

whereby, upon activation of said charge means, said gas and said pusher assembly means will eject both of said payloads rearwardly from said housing.

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**B 425,588**
**ARTICLE FOR DEFINING AN AUXILIARY COMPARTMENT FOR AN ENGINE COMBUSTION CHAMBER**

**Michael C. Turkish, Lyndhurst, Ohio, assignor to Eaton Corporation, Cleveland, Ohio**

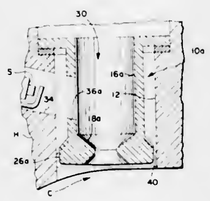
**Filed Dec. 17, 1973, Ser. No. 425,588**
**Int. Cl.² F02B 19/10**
**U.S. Cl. 123—325 T** **26 Claims**

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| 1,926,499 | 9/1933 | Ricardo | 123/75 B |
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| 2,983,268 | 5/1961 | Heintz | 123/30 C |
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1. An article for use in defining an auxiliary compartment of the combustion chamber of an internal combustion engine, said article comprising:

a. a tubular central heat receiving portion with one end open and the opposite end cupped;

b. a mounting portion disposed adjacent said open end and extending in a direction generally outwardly from the wall of said central portion;

c. at least one aperture formed in said cupped end for communicating the interior region of said central portion with the engine combustion chamber; and

d. a heat output portion adjacent said cupped end and extending in a direction generally outwardly from the outer periphery of said central portion, said heat output portion having predetermined dimensions such that, upon attachment of said article in an engine combustion chamber by said mounting portion, said article expands during initial engine warm-up and said heat output portion contacts, initially spaced adjacent walls of the engine combustion chamber at a predetermined temperature with said central portion spaced from said adjacent chamber walls and said heat output portion remains in such contact at temperatures greater than said predetermined value for conducting heat only from the heat output portion of the cupped end of said article to the walls of the combustion chamber.

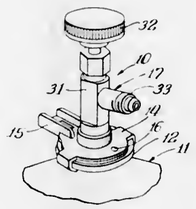
**B 430,172**
**CLAMP-ON VALVE STRUCTURE**

**Leonard J. Kowal, Prospect Heights, and Robert C. Gibson, Chicago, both of Ill., assignors to Imperial-Eastman Corporation, Chicago, Ill.**

**Filed Jan. 2, 1974, Ser. No. 430,172**
**Int. Cl.² B67B 7/24**
**U.S. Cl. 137—798** **21 Claims**

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| | | | |
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| 2,981,439 | 4/1961 | Huffman | 220/85 R |
| 3,092,291 | 6/1963 | Franck | 222/89 X |
| 3,777,789 | 12/1973 | Corlet | 285/320 X |
| 3,850,452 | 11/1974 | Strybel | 285/38 |




1. A clamp-on valve structure for use with a can of pressurized fluid having an annular, projecting lip encircling a connecting portion of the can, said valve structure comprising: a mounting plate having a central opening defined by an internally threaded, annular valve mounting portion, lug means defining first and second lip engagement portions equiangularly spaced from a diametric centerline bisecting said annular portion to extend rearwardly of a diameter of said annular portion perpendicular to said centerline, and means defining a stop; a lever defining a pivot portion, a manipulating portion, a third lip engagement lug means, and means defining a shoulder; means pivotally connecting said pivot portion to said mounting plate rearwardly of said perpendicular diameter; and a valve having a threaded mounting means removably mounted to said threaded annular portion of the mounting plate and including a portion extending into the path of pivotal movement of said lever, said lever being arranged to urge said pivot forwardly to force said first and second lug means clampingly against the container lip as an incident of said lever being swung to a clamping position wherein said third lug means is forced against said lip adjacent the forward end of said centerline, said lever shoulder abutting said mounting plate stop to positively prevent pivotal movement beyond said clamping position, said lever extending between said mounting plate stop and said valve portion to positively prevent pivotal movement of the lever forwardly from said clamping position when said lever is swung to said clamping position and said valve is threadedly mounted to said mounting plate.



**B 452,672**
**VEHICLE RETARDATION**

**Dennis H. Ogden, Wolverhampton, England, assignor to British Industrial Plastics Limited, Manchester, England**

**Filed Mar. 19, 1974, Ser. No. 452,672**
**Claims priority, application United Kingdom, Mar. 23, 1973, 14107/73**
**Int. Cl.² E01C 7/00; C08J 9/00**
**U.S. Cl. 404—71** **9 Claims**

**References Cited**
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|---|---|---|---|
| 3,511,689 | 5/1970 | Winkler | 117/70 |

FOREIGN PATENTS OR APPLICATIONS

| | | |
|---|---|---|
| 1,282,103 | 7/1972 | United Kingdom |
| 1,313,103 | 4/1973 | United Kingdom |

1. A vehicle deceleration bed comprising at least two layers of a non-resilient cured foam of an aminoplast resin material laid on a vehicle trackway, the layers being coextensive and in superposed relation to one another, the density and compressive strength properties of the foam in each layer being sensibly constant throughout said layer, but different from the density and compression strength properties of any other layer.

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**B 461,257**
**PACKING CONTAINER**

**Goran Larsson, Dalby, and Lars Carlsson, Staffanstorp, both of Sweden, assignors to AB Ziristor, Lund, Sweden**

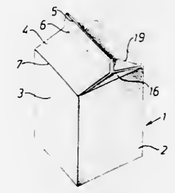
**Filed Apr. 15, 1974, Ser. No. 461,257**
**Claims priority, application Sweden, Apr. 24, 1973, 7305711**
**Int. Cl.² B65D 5/72**
**U.S. Cl. 229—17 R** **2 Claims**

**References Cited**
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| 2,523,246 | 9/1950 | Elliott et al. | 229/17 R X |
| 2,959,336 | 11/1960 | Mosse et al. | 229/17 G |
| 3,083,890 | 4/1963 | Ignell | 229/17 R X |
| 3,232,514 | 2/1966 | Swede et al. | 229/17 R |
| 3,498,524 | 3/1970 | Braum | 219/17 G X |
| 3,549,080 | 12/1970 | Gill | 229/17 R |
| 3,795,359 | 3/1974 | Rausing | 229/17 R X |
| 3,797,726 | 3/1974 | Reil | 229/17 R |

FOREIGN PATENTS OR APPLICATIONS

| | | | |
|---|---|---|---|
| 1,247,747 | 10/1960 | France | 229/17 |




1. In a rectangular package composed of a packaging material coated on both sides with at least one layer of a thermoplastic coating material, said package being of the type having a top closure including a fin formed by a face to face seal of the outer portions of two opposed top closure flaps of opposed walls and triangular folds of the two closure flaps of the other opposed walls, said top closure being capable under a load to lie flat in a substantially plane end face, the improvement comprising crease lines between the outer portions of the two opposed top closure flaps of the opposed walls which form the fin and the inner portions of said flaps, one of said crease lines having a harder crease than the other of said crease lines so that said sealed fin will normally lean at an acute angle to the vertical in a direction toward the harder crease line so as to facilitate forming the substantially plane end face when subjected to a load.

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**B 463,671**
**TRACTOR CAB MOUNTING APPARATUS**

**Robert B. Kennicutt, Morton, and William T. Mounts, Chillicothe, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.**

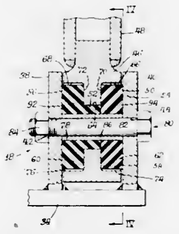
**Division of Ser. No. 278,731, Aug. 8, 1972, Pat. No. 3,847,492.**
**This application Apr. 24, 1974, Ser. No. 463,671**
**Int. Cl.² B62D 27/04**
**U.S. Cl. 296—35 R** **7 Claims**

**References Cited**
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|---|---|---|---|
| 2,126,707 | 8/1938 | Schmidt | 403/228 X |
| 2,171,947 | 9/1939 | Parker | 296/35 R |
| 2,386,463 | 10/1945 | Hile | 248/10 X |
| 2,730,356 | 1/1956 | Hunter | 248/22 X |
| 3,042,394 | 7/1962 | Bliss | 403/220 X |
| 3,215,384 | 11/1965 | Chambers | 403/224 X |
| 3,350,042 | 10/1967 | Stewart et al. | 248/9 X |
| 3,527,474 | 9/1970 | Boersma | 296/102 X |
| 3,560,019 | 2/1971 | Moore | 296/102 X |
| 3,781,058 | 12/1973 | Ziolko | 296/35 R |

FOREIGN PATENTS OR APPLICATIONS

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|---|---|---|---|
| 467,962 | 6/1937 | United Kingdom | 296/102 |
| 1,066,743 | 1/1954 | France | 296/35 R |



1. In combination with a tractor and a tractor cab, a plurality of mounting means for mounting said cab to said tractor at a plurality of points, each mounting means comprising:

a. a pair of spaced, generally parallel plates extending outwardly from one of the tractor or cab, the plates defining axially aligned apertures;

b. an annular lug member extending outwardly from the other of the tractor and cab and defining a lug aperture having (i) a first cylindrical portion of a first radius, (ii) a second cylindrical portion of a second radius greater than said first radius, and (iii) a radial portion interconnecting the first and second lug member aperture cylindrical portions;

c. annular resilient means having (i) a first external cylindrical portion of a certain radius sized to fit within the lug member first cylindrical portion, (ii) a second external cylindrical portion of a second radius greater than said first resilient means radius to fit within the lug member second cylindrical portion, and (iii) a radial portion interconnecting the first and second resilient means cylindrical portions, one of the lug member aperture cylindrical portions being sized to continuously contact the external resilient means cylindrical portion fitted therein, while the other lug member aperture cylindrical portion is sized to be continuously spaced from the external resilient means cylindrical portion fitted therein, to form an annular gap therebetween, and (iv) defining a bore the axis of

which is aligned with the axes of the plate apertures; and,
(Claim 1 continued)

d. shaft means disposed through the plate apertures and resilient means bore and in contact with such resilient means bore, so that the lug member is movable in directions generally perpendicularly to the axis of the shaft means against the resiliency of one cylindrical portion only of the resilient means for a certain amount of travel, and against the resiliency of both cylindrical portions of the resilient means for additional travel.

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**B 467,412**

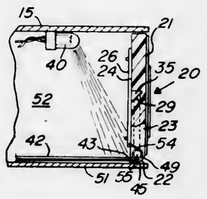
## COMBINED DIAL SCALE AND STATION INDICATOR

**Paul B. Gilbert, Chicago, Ill., assignor to Motorola, Inc., Chicago, Ill.**

**Filed May 6, 1974, Ser. No. 467,412**
**Int. Cl.² G11B *31/60*; H03J *01/04***
**U.S. Cl. 116—124.4** **14 Claims**

**References Cited**
UNITED STATES PATENTS

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|---|---|---|---|
| 1,869,221 | 7/1932 | Latzko et al. | 350/114 X |
| 1,894,111 | 1/1933 | Marcellus | 350/113 X |
| 2,215,310 | 9/1940 | Zupanec | 350/113 |
| 2,328,485 | 8/1943 | Ott | 116/129 L |
| 2,402,856 | 6/1946 | Turrettini | 350/114 X |
| 2,428,792 | 10/1947 | Evans | 116/129 P |
| 2,520,028 | 8/1950 | Biskind | 116/129 L |
| 2,711,711 | 6/1955 | Harman | 116/124.4 |
| 2,823,639 | 2/1958 | Vistain, Jr. et al. | 116/124.4 |
| 2,885,992 | 5/1959 | Roberts et al. | 116/124.4 |
| 2,972,283 | 2/1961 | Karnow | 350/114 X |
| 3,344,700 | 10/1967 | Brake | 350/112 X |
| 3,513,805 | 5/1970 | Sizer | 116/124.4 |
| 3,536,859 | 10/1970 | Tolar | 179/100.11 |
| 3,692,383 | 9/1972 | Herod et al. | 350/96 R |
| 3,761,704 | 9/1973 | Takeiche et al. | 116/124.4 X |
| 3,800,328 | 3/1974 | Harlan et al. | 360/137 |
| 3,821,489 | 6/1974 | Kocubej | 179/100.11 |




1. In a radio receiver and magnetic tape player combination having a radio tuning control mechanism for controlling the frequency to which the radio receiver is tuned, and a housing provided with an opening to receive a magnetic tape cartridge, the combination including:

a door having indicia thereon to indicate the frequency to which the radio receiver is tuned, said door being mounted in the housing and movable between a first position wherein the opening is closed and a second position clear of the opening to prevent entry of a cartridge;

a pointer movably mounted in the housing and operatively connected to the radio control mechanism, said pointer having a reflecting surface thereon;

reflection means including an angled reflecting surface provided in said door in position adjacent said indicia on said door for cooperating with the reflecting surface on said pointer; and

illumination means mounted in the housing for illuminating the reflecting surface on said pointer such that the reflection therefrom impinges upon said reflection means to illuminate said indicia on said door when said door is in the first position to indicate the frequency to which the radio receiver is tuned.

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**B 470,170**

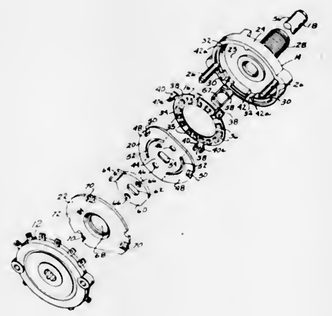
## INDEXING MECHANISM

**James H. Robinson, Elkhart, Ind., assignor to CTS Corporation, Elkhart, Ind.**

**Filed May 15, 1974, Ser. No. 470,170**
**Int. Cl.² G05G *5/06***
**U.S. Cl. 74—527** **12 Claims**

**References Cited**
UNITED STATES PATENTS

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|---|---|---|---|
| 2,130,219 | 9/1938 | Allison et al. | 74/527 |
| 2,292,717 | 8/1942 | Rubinstein | 74/527 |
| 2,770,982 | 11/1956 | Mastney et al. | 74/527 |
| 2,840,672 | 6/1958 | Martin | 74/527 |
| 3,230,793 | 1/1966 | Allison | 74/511 |
| 3,584,163 | 6/1971 | White | 200/291 |



1. An indexing mechanism comprising a front plate with an annular flange, said flange being provided with a plurality of lug receiving notches and a plurality of ear receiving notches, a hill and valley insert disposed against the front plate, a plurality of ears extending radially from the insert, a pair of spaced arms perpendicularly extending from each of said ears, each of said ears and spaced arms engaging a respective one of said ear receiving notches and securing the hill and valley insert to the front plate, a rear plate having a plurality of lugs, each of the lugs engaging a respective one of said lug receiving notches and aligning the rear plate to the front plate, a shaft rotatably supported by the front plate, a detent spring biased between the front and rear plates and constrained to rotate with the shaft, said detent spring having at least one nubbin receiving opening, a spherical detent integral with the detent spring and engaging the hill and valley insert, a stop element constrained to rotate with the shaft, a nubbin projecting from the stop element and engaging the nubbin receiving opening of the detent spring, the nubbin reinforcing movement of the detent spring during rotation of the shaft and a stop projection integral with the rear plate, said stop element engageable with the stop projection for halting rotation of the shaft.



**B 473,972**

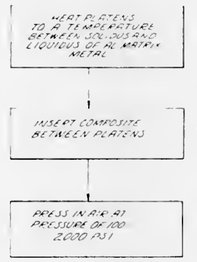
## METHOD FOR BONDING COMPOSITE MATERIALS

**Kenneth G. Kreider, Glastonbury, Conn., and Roy Fanti, Springfield, Mass., assignors to United Technologies Corporation, Hartford, Conn.**

**Continuation of Ser. No. 270,124, July 10, 1972, abandoned. This application May 24, 1974, Ser. No. 473,972**
**Int. Cl.² B23K *31/02***
**U.S. Cl. 228—190** **7 Claims**

**References Cited**
UNITED STATES PATENTS

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|---|---|---|---|
| 3,481,023 | 12/1969 | Jost | 29/504 |
| 3,606,667 | 9/1971 | Kreider | 29/423 |
| 3,615,277 | 10/1971 | Kreider et al. | 29/472.3 |




1. A process for rapidly densifying and diffusion bonding plasma sprayed aluminum matrix composites reinforced with a plurality of filaments comprising placing at least one composite tape having a plurality of unidirectional filaments selected from the group consisting of boron, silicon carbide, silicon carbide coated boron, boron carbide, alumina and carbon embedded in a plasma sprayed aluminum matrix between platens heated to a predetermined temperature, pressing said composite in air for 2–40 minutes between said heated platens at a pressure of 100–10,000 psi to densify said aluminum matrix, said temperature being at or below the solidus temperature of said aluminum matrix when said pressure is 2,000–10,000 psi and between the solidus and the liquidus temperature of said aluminum matrix when said pressure is 100–2,000 psi, said temperature and pressing time being sufficiently high, in combination with said pressure, to cause bonding of the aluminum matrix to said filaments without degradation.

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**B 480,604**

## METHOD FOR HANDLING WORKPIECES

**Joseph R. Reilly, Naugatuck, Conn., assignor to Monsanto Company, St. Louis, Mo.**

**Division of Ser. No. 424,866, Dec. 14, 1973, Pat. No. 3,880,301. This application June 19, 1974, Ser. No. 480,604**
**Int. Cl.² B65G *47/38***
**U.S. Cl. 214—152** **4 Claims**

**References Cited**
UNITED STATES PATENTS

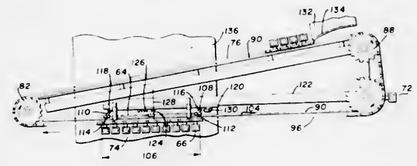
| | | | |
|---|---|---|---|
| 1,718,607 | 6/1929 | Soubier | 198/26 X |
| 2,599,721 | 6/1952 | Remington et al. | 198/131 X |
| 2,783,869 | 3/1957 | Thurman | 198/179 |
| 3,528,572 | 9/1970 | Mosterd | 214/60 |

1. A process for handling workpieces comprising:

A. sequentially loading workpieces into holders of individual carrier assemblies;

B. continuously moving said loaded carrier assemblies along a longitudinal path toward a discharge station,

C. simultaneously abruptly shifting a plurality of said holders at said discharge station to release positions while in said longitudinal path to discharge said workpieces from said carrier assemblies without stopping movement thereof;




D. continuing movement of the carrier assemblies away from the discharge station toward the loading station to receive additional workpieces; and

E. resetting said holders before arriving at said loading station.

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**B 491,501**

## ORAL IMPLANT

**Robert Schwartz, 1271 Westfield Ave., Rahway, N.J. 07065**

**Filed July 24, 1974, Ser. No. 491,501**
**Int. Cl.² A61C *13/00***
**U.S. Cl. 32—10 A** **10 Claims**

**References Cited**
UNITED STATES PATENTS

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| 3,729,825 | 5/1973 | Linkow et al. | 32/10 A |
| 3,787,900 | 1/1974 | McGee | 3/1.9 |
| 3,789,029 | 1/1974 | Hodosh | 128/92 C |

1. An improved dental implant comprising an implant element fabricated from a biologically inert material, said implant element having an upper abutment and an interconnected lower substructure that is adapted to be placed upon or inserted within the alveolar bone of the maxillae or mandible, said substructure being provided with a reservoir or adherent coating of a calcium compound selected from the group consisting of calcium hydroxide, calcium oxide, calcium alcoholate, calcium salts of aliphatic monocarboxylic acids, calcium salts of aliphatic hydroxymonocarboxylic acids, calcium salts of aliphatic hydroxypolycarboxylic acids and mixtures thereof.

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**B 492,301**

## LATERAL SEMICONDUCTIVE DEVICE AND METHOD OF MAKING SAME

**Joseph H. Dully, Cupertino, Calif., assignor to Varian Associates, Palo Alto, Calif.**

**Division of Ser. No. 372,464, June 21, 1973, abandoned. This application July 26, 1974, Ser. No. 492,301**
**Int. Cl.² B01J *17/00***
**U.S. Cl. 29—580** **9 Claims**

**References Cited**
UNITED STATES PATENTS

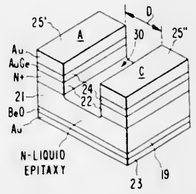
| | | | |
|---|---|---|---|
| 2,748,041 | 5/1956 | Leverenz | 29/580 |
| 3,381,182 | 4/1968 | Thornton | 29/576 E |
| 3,820,236 | 6/1974 | Haitz | 29/580 |

1. In a method for fabricating a lateral type semiconductive device the steps of:

on an N+ type semiconductive wafer of sufficient thickness to be self-supporting, growing a thin N− type epitaxial layer of semiconductive material having a substantially lower N− type carrier concentration than said wafer,

depositing a barrier layer of electrically insulative material on said epitaxial material,

removing a layer of the wafer material from the side opposite said barrier layer, leaving a substantially thinned wafer, the composite of said thinned wafer, said epitaxial layer and said barrier layer being of sufficient thickness to be self-supporting depositing a layer of electrode material overlaying said wafer layer for making ohmic contact thereto; and



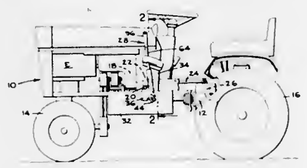

selectively removing areas of said layers of said electrode material and wafer material to define a pair of laterally spaced electrodes each making electrical connection to said epitaxially grown layer via an intervening layer of said wafer material.

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**B 497,021**
**TRANSMISSION CONTROL BRAKE**
**Joseph A. Federspiel, Port Washington, Wis., assignor to FMC Corporation, San Jose, Calif.**
**Filed Aug. 13, 1974, Ser. No. 497,021**
**Int. Cl.² G05G** *11/00, 5/06, 9/00*
**U.S. Cl. 74—481** **14 Claims**

**References Cited**
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| 2,427,103 | 9/1947 | Hettinger | 74/531 |
| 2,867,133 | 1/1959 | Ewing | 74/531 |
| 2,971,397 | 2/1961 | Bunting | 74/531 X |
| 3,505,896 | 4/1970 | Phillips | 74/481 |
| 3,727,482 | 4/1972 | Geer | 74/531 |
| 3,837,235 | 9/1974 | Peterson | 74/531 |



**1.** In a control mechanism for the hydrostatic transmission of a tractor of the type including a rocking foot pedal and a pedal support shaft rotatable by actuation of said pedal to indirectly alter the output torque, driving direction and speed of said transmission, the improvement comprising:

a. a quadrant fixed to said support shaft;

b. a locking rod pivotally connected to said support shaft and releasably connected to said quadrant for movement therewith;

c. a friction pad carried by said locking rod; and

d. a fixed braking surface slidably engaged by said friction pad for braking said support shaft to retain a given rotative position of said shaft when said foot pedal is released, said shaft being movable by pressure on said foot pedal.

**13.** A control mechanism for a driven hydrostatic transmission having an output member comprising: a rockable shaft having a neutral position; means connecting said shaft to the transmission for driving the output member at varying speeds in a first direction when the shaft is rotated different amounts in one direction past neutral, and for driving the output member at varying speeds in a second direction when the shaft is rotated different amounts past neutral in the opposite direction; a pedal connected to said shaft for rocking the shaft in either direction; a control lever journaled on said shaft; means for selectively latching or unlatching said lever from said shaft; friction means secured to the free end of said lever; means defining a friction braking surface adjacent said friction means; and resilient means for urging said friction means against said friction surface to maintain said shaft in any one of an infinite number of positions when said lever is latched to said shaft and said shaft has been rotated past neutral in one of said direction, said friction surface and said friction means preventing movement of said shaft unless pressure is applied to said foot pedal.

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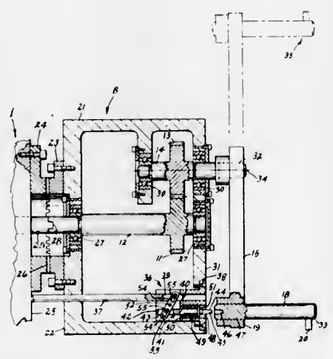
**B 501,993**
**MACHINE BORING TOOL**
**Robert Wilfred Nashold, New Richmond, Ohio, assignor to Cincinnati Milacron, Inc., Cincinnati, Ohio**
**Filed Aug. 30, 1974, Ser. No. 501,993**
**Int. Cl.² B23B** *43/00*
**U.S. Cl. 408—124** **5 Claims**

**References Cited**
UNITED STATES PATENTS

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| 3,555,963 | 1/1971 | Evans | 29/26 A X |

FOREIGN PATENTS OR APPLICATIONS

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| 1,947,630 | 4/1971 | Germany | 408/213 |
| 625,468 | 9/1961 | Italy | 408/124 |



**1.** In a machine tool utilizing interchangeable tool heads, the boring tool head comprising:

a. a housing, having an input face adapted to be received on a machine tool, and further having an output face disposed away from said input face on said housing;

b. an input shaft passing through said input face, rotatably mounted and centrally located within said housing;

c. an output shaft, passing through said output face, rotatably carried in said housing and displaced from said output shaft and drivingly connected thereto;

d. a boring arm, having one end connected to said output shaft and having the other end supporting a boring tool such that rotation of said output shaft causes said boring tool to swing in an arcuate path, wherein said arcuate path extends beyond the perimeter of said housing when viewed along the axis of said arcuate path; and

e. a latching mechanism affixed to said housing and operable to maintain said boring arm in a predetermined angular position while transporting said tool head to and from a tool head storage matrix, and further operable to automatically release said boring arm for free rotation when said tool head is employed for use at a machining site.

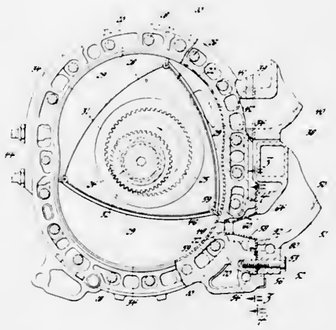
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**B 502,540**
**INTERNAL COMBUSTION ROTARY ENGINE OXIDIZING FLUID INJECTION ARRANGEMENT**
**Ronald F. Gillham, Huntington Woods, and Paul D. Stevenson, Ann Arbor, both of Mich., assignors to General Motors Corporation, Detroit, Mich.**
**Filed Sept. 3, 1974, Ser. No. 502,540**
**Int. Cl.² F02B** *75/10*
**U.S. Cl. 60—304** **2 Claims**

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| 2,295,436 | 9/1942 | Tendler | 60/305 |
| 3,468,124 | 9/1969 | Hraboweckyj | 60/305 |
| 3,635,031 | 1/1972 | Haddad | 60/282 |
| 3,710,575 | 1/1973 | Lamm | 60/901 |
| 3,817,220 | 6/1974 | Brumm | 60/901 |



**1.** An internal combustion rotary engine having a stationary body comprising a rotor housing having a mutli-lobed internal peripheral wall and a pair of end wall housings having oppositely facing internal end walls cooperatively defining a cavity, a crankshaft rotatably mounted in said stationary body having an eccentric located in said cavity, a multi-lobed rotor rotatably mounted on said eccentric having sides opposite said end walls and a plurality of peripheral faces opposite said peripheral wall, means for causing said rotor and said crankshaft to turn in a fixed speed relationship while said rotor planetates with a fixed relationship to said rotor housing, said rotor faces and housing walls cooperating to provide a plurality of working chambers that are spaced about and move with said rotor within said rotor housing while varying in volume as said rotor planetates, said stationary body having an intake passage that is opened by said rotor to said chambers as they expand to deliver gas thereto, said rotor housing having an exhaust passage with a port at one end at said peripheral wall that is opened by said rotor to said working chambers during their contraction to receive exhaust gas therefrom and at the other end terminates at an external interface on said rotor housing, an exhaust manifold secured to said stationary body with an interface opposite said rotor housing interface, said exhaust manifold having a manifold passage registering with said exhaust passage in said rotor housing, a gasket arranged between said exhaust manifold and said rotor housing having an opening aligning with said manifold passage and said exhaust passage, means for securing said exhaust manifold to said rotor housing while clamping said gasket between said interfaces to seal the juncture of said manifold passage and said exhaust passage, said exhaust passage having a liner recess extending through said rotor housing interface and about said exhaust passage from an outer end at said other end of said exhaust passage to an inner end at an intermediate point along the length of said exhaust passage, a sheet metal exhaust passage liner having a gas passage section received in said recess that conforms in shape to the normal configuration of said exhaust passage, said gas passage section having an inner end that is spaced with a predetermined end clearance from said rotor housing at said inner end of recess and having an external surface that is spaced with a predetermined annular clearance thereabout from said rotor housing to provide an annular chamber between said liner and said rotor housing, said liner further having an annular flange at an outer end that is located in the opening of said gasket and is clamped directly between said interfaces of said rotor housing and said manifold to hold said liner in place while accurately determining said end clearance, said flange having outwardly located fingers that engage said rotor housing in said recess to accurately determine said annular clearance, said gas passage section of said liner having a throat portion adjacent said inner end of said recess, said throat portion having a plurality of peripherally spaced injection ports therethrough downstream of said end clearance, an oxidizing fluid supply passage in said exhaust manifold open through said opening in said gasket to said liner recess at said interfaces of said rotor housing and said exhaust manifold for delivering oxidizing fluid to said annular chamber whereby oxidizing fluid is delivered through said injection ports and also said end clearance to the exhaust gas flowing through said exhaust passage in directions transverse to the flow thereof while said liner also provides for warming of the oxidizing fluid prior to its injection into the exhaust gas and acts as a heat barrier between the exhaust gas and the rotor housing.

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**B 504,169**
**PRACTICE VIOLIN AND BOW**
**Robert H. Johns, 1555 Terwood Road, Huntingdon Valley, Pa. 19006**
**Filed Sept. 9, 1974, Ser. No. 504,169**
**Int. Cl.² G10D** *1/02*
**U.S. Cl. 84—275** **7 Claims**

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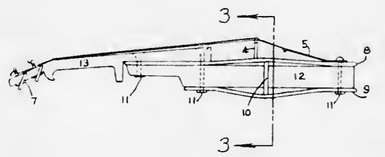
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| 8,338 | 9/1851 | Tilton | 84/275 |
| 906,612 | 12/1908 | Cayton | 84/275 |
| 2,457,629 | 12/1948 | Beckman | 84/275 |
| 2,466,168 | 4/1949 | Graydon | 84/282 |
| 2,741,937 | 4/1956 | Auville et al. | 84/277 X |
| 2,977,835 | 4/1961 | Hornseth | 84/275 |

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| 6,340 | 4/1887 | United Kingdom | 84/275 |
| 506,835 | 6/1939 | United Kingdom | 84/282 |

OTHER PUBLICATIONS

The Music Trades, Feb. 1966, p. 94.




**1.** For introductory or practice purposes, a body for a violin-type stringed instrument having a neck and a tailpiece, comprising a pair of arched panels spaced approximately parallel to one another to form the top and bottom surfaces of the

body, a longitudinal rib separating the body panels, a pair of clamping means for securing at spaced localized areas said neck and said rib in longitudinal alignment, said top panel being fastened at one end by said pair of clamping means between said neck and said rib, said bottom panel being fastened at one end to said rib by at least one of said pair of clamping means, a third clamping means fastening said tailpiece and the other ends of said top panel, said rib, and said bottom panel, respectively, at a third localized area, said panels being otherwise unsupported and free at their peripheries, and a sound post positioned between the panels, the length of said post being sufficient to arch and separate the central portions of the panels from said rib.

4. A bow for a violin-type stringed instrument comprising a shaft having string retaining guide means at its extremities, bow strings wound around the shaft through the string retaining guide means in loops extending lengthwise of the shaft, and a spacer or frog slidably positioned between the shaft and the playing strings on one side of the shaft.

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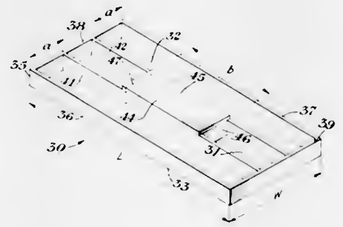
**B 505,813**
**PLASTIC INJECTION MOLDING**

**Kenneth J. Pukl, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.**

**Filed Sept. 13, 1974, Ser. No. 505,813**
**Int. Cl.² E06B** *3/20*
**U.S. Cl. 160—229 R** **7 Claims**

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| 2,272,227 | 2/1942 | Thomas | 52/619 X |
| 2,952,313 | 9/1960 | Stroup | 160/229 R X |
| 2,975,616 | 3/1961 | Saunders | 49/501 X |
| 3,184,263 | 5/1965 | Plegat | 49/501 |
| 3,546,841 | 12/1970 | Smith et al. | 52/309 |
| 3,554,267 | 1/1971 | Brinker | 160/206 X |
| 3,714,739 | 2/1973 | Dolan | 49/501 |
| 3,815,657 | 6/1974 | Malek et al. | 160/229 R |
| 3,835,609 | 9/1974 | Oscar | 52/619 X |



1. A foamed synthetic resinous plastic door, the foam plastic door having a generally rectangular configuration, the door having a finished or exposed surface and a nonexposed or hidden surface, the door having a peripheral flange portion of generally rectangular configuration extending away from and generally normal to the exposed surface, the door having first and second major edges generally oppositely disposed, the major edges being in generally parallel relationship, the door having first and second end portions generally oppositely disposed, at least first and second reinforcing members affixed to the hidden surface, the first and second reinforcing members being in generally parallel relationship, the first and second reinforcing members extending between flange portions at the first end portion and the second end portion, the reinforcing members being affixed to the nonexposed surface and adjacent flange portions, a plate-like member is disposed generally adjacent the nonexposed side and remote from the exposed side, the plate-like member affixed to and terminating at said reinforcing members at locations remote from nonexposed side and the plate-like planar member extending at least half the distance that the ribs extend, the plate-like member being generally centrally located relative to the door.

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**B 506,744**
**DUAL FREQUENCY ACOUSTIC GAS COMPOSITION ANALYZER**

**John E. Jacobs, Evanston, Ill., assignor to The United States of America as represented by the Secretary of the Department of Health, Education and Welfare, Washington, D.C.**

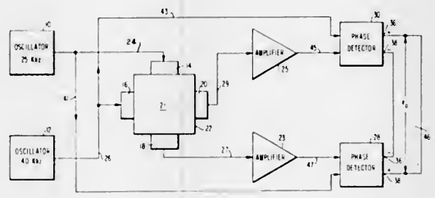
**Filed Sept. 16, 1974, Ser. No. 506,744**
**Int. Cl.² G01N** *29/02*
**U.S. Cl. 73—24** **4 Claims**

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| 3,429,177 | 2/1969 | Webb | 73/24 |
| 3,468,157 | 9/1969 | Burk et al. | 73/24 |
| 3,789,655 | 2/1974 | Passeri | 73/24 |

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Stott, *Review of Scientific Instr.*, "*Sonic Gas Analyzer for Measurement of* $CO_2$ in Expired Air.", Vol. 28 No. 11, pp. 914–915, Nov. 1957.
"National Bureau of Standards Tech. News Bulletin, "Propagation of Sound in Monatomic Gases," Vol. 40, No. 9, Sept, 1956, pp. 121–124.
Staffin, *Control Engineering*, "*6 Ways to Measure Phase Angle*", *Oct., 1965, pp. 78–83.*



1. An apparatus for measuring the composition of a gas comprising:
a fixed length acoustical column containing the gas to be tested;
first and second variable frequency oscillator means for simultaneously generating respectively first and second different oscillating signals;
first and second transmitting transducer means, disposed on said column, for converting said first and second oscillating signals into mechanical energy;
first and second receiving transducer means disposed on said column for converting the mechanical energy produced by said transmitting transducer means into first and second electrical energy output signals, wherein said first transmitting transducer means is disposed on said acoustical column opposite said first receiving means, and said second transmitting transducer means is disposed on said acoustical column opposite said second receiving transducer means, and wherein said first and second transmitting means and said first and second receiving transducer means are disposed on said acoustical column in order to pass both acoustic beams across the same gap;
first phase detector means, connected to said first transmitting transducer and said first receiving transducer means, for measuring the phase shift in said first oscillating signal and generating a first phase shift output signal;
second phase detector means, connected to said second transmitting transducer and said second receiving transducer, for measuring the phase shift in said second oscillating signal and generating a second phase shift output signal; and



output means, connected to said first and second phase detector means, for summing said first and second phase shifts output signals.

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**B 512,547**
**RADIAL-FLOW TURBOMACHINE**

**Mason K. Yu, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.**

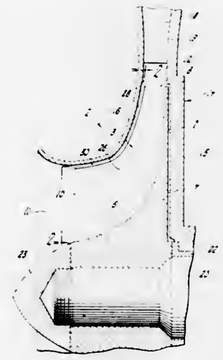
**Filed Oct. 7, 1974, Ser. No. 512,547**
**Int. Cl.² F04D** *17/00*
**U.S. Cl. 415—213 R** **3 Claims**

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| 929,230 | 7/1909 | Landrum et al. | 415/213 R |
| 1,149,904 | 8/1915 | Foster | 415/213 R |
| 1,604,448 | 10/1926 | Hosch | 415/213 R |
| 2,568,536 | 9/1951 | Beech | 415/213 R |
| 2,819,012 | 1/1958 | Atkinson | 415/213 R |
| 3,130,678 | 4/1964 | Chenault | 415/213 R |
| 3,155,046 | 11/1964 | Vaughan | 415/213 R |
| 3,246,605 | 4/1966 | Fisher | 415/213 R |
| 3,610,590 | 10/1971 | Kaelin | 416/185 |

FOREIGN PATENTS OR APPLICATIONS

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| 189,315 | 12/1966 | U.S.S.R. | 416/185 |



1. A radial-flow turbomachine including a rotor comprising a rotatably mounted body of circular cross-section having a hub portion and a disk portion extending radially from the hub portion, the disk and hub portions defining the inner boundary of an annular gas flow path through the rotor, the rotor also comprising an annular array of circumferentially spaced blades extending outwardly from the hub portion and forwardly from the disk portion, the blades extending from an annular gas inlet to an annular gas outlet and defining gas flow passages between them and being effective to transfer energy between the rotor and gas flowing through the passages, the blades each having a pressure face and a suction face in operation of the rotor, each blade having a free bounding edge remote from the rotor body extending along a course trending from near axial at one end of the gas flow passages to near radial at the other end of the gas flow passages, the turbomachine also including a stator enclosing the rotor and defining the gas inlet to and outlet from the rotor, the stator including a fixed rotor shroud extending continuously around the rotor closely adjacent to the free edges of the blades providing the outer boundary of the flow path through the rotor and acting to minimize leakage over the said free edges of the blades; wherein the improvement comprises a lip extending circumferentially of the rotor from the pressure face of each blade along the free edge of the blade with the outer surface of the lip extending closely parallel to the adjacent rotor shroud adapted to deflect gas flowing over the pressure face toward the said edge away from the pressure face toward the suction face of the blade at the opposite side of the passage and to obstruct leakage flow between the said edge of the blade and the rotor shroud into the adjoining passage.

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**B 512,745**
**ALL GLASS COMPOSITE BUILDING PANELS**

**Czeslaw Deminet, Kent, and Roger B. Gillette, Auburn, both of Wash., assignors to The Boeing Company, Seattle, Wash.**

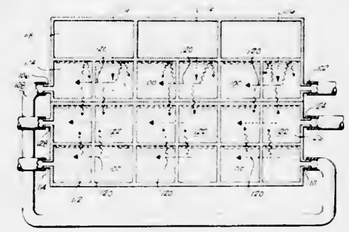
**Continuation-in-part of Ser. No. 416,539, Nov. 16, 1973, abandoned. This application Oct. 7, 1974, Ser. No. 512,745**
**Int. Cl.² F24J** *3/02*
**U.S. Cl. 126—271** **2 Claims**

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| 504,544 | 9/1893 | Van der Heyden | 126/270 X |
| 991,161 | 5/1911 | McHenry | 126/271 X |
| 1,124,778 | 1/1915 | Meuler | 52/616 |
| 1,575,309 | 3/1926 | Anderson | 126/271 |
| 2,608,968 | 9/1952 | Moseley | 126/271 |
| 2,783,682 | 3/1957 | Swenson | 126/271 UX |
| 2,998,005 | 8/1961 | Johnston | 126/270 |
| 3,102,532 | 9/1963 | Shoemaker | 126/270 |
| 3,107,052 | 10/1963 | Garrison | 126/271 X |
| 3,192,575 | 7/1965 | Rosenau et al. | 52/171 |

FOREIGN PATENTS OR APPLICATIONS

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| 1,138,992 | 1/1969 | United Kingdom | 52/616 |



1. An all glass building panel having a first enclosed space layer and a second enclosed space layer wherein:
a. the portion of said all glass building panel containing said first enclosed space layer comprises contiguous evacuated cells being comprised of;
a first outer glass plate,
first external glass walls fused to said first outer glass plate, one edge of said first external glass walls being fused to the circumferal edge of said first outer glass plate, said first external glass walls forming the closed external boundaries of said first enclosed space layer,
first internal glass walls fused to said first outer glass plate, one edge of said first internal glass walls being fused to said first outer glass plate within the boundaries of said first external glass walls to define the internal structure of said first enclosed space layer, and
a middle glass plate fused along its circumferal edge to the edge of said first external glass walls opposite the edge of said first external glass walls fused to said first outer glass plate and fused to the edge of said first internal glass walls opposite the edge of said first internal glass walls fused to said first outer glass plate; and,
b. the portion of said all glass building panel containing said second enclosed space layer comprises a serpentine path for liquid flow therethrough, said serpentine path having integral means for ingress and egress of liquid thereto and therefrom, said serpentine path having a membrane disposed therein for absorbing solar energy and transmitting said absorbed solar energy to the liquid disposed therein, said second enclosed space layer being comprised of;

second external glass walls fused to said middle glass plate, one edge of said second external glass walls being fused to the circumferal edge of said middle glass plate, said second external glass walls forming the closed external boundaries of said second enclosed space layer,

second internal glass walls fused to said middle glass plate, one edge of said second internal glass walls being fused to said middle glass plate within the boundaries of said second internal glass walls to define the internal structure of said second enclosed space layer, and

a second outer glass plate fused along its circumferal edge to the edge of said second external glass walls opposite the edge of said second external glass walls fused to said middle glass plate and fused to the edge of said second internal glass walls opposite the edge of said second internal glass walls fused to said middle glass plate.

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**B 520,928**

## SHEET METAL PISTON FOR TRANSMISSIONS AND METHOD OF MAKING A PISTON ASSEMBLY

**James R. Martin, Ypsilanti, Mich., assignor to General Motors Corporation, Detroit, Mich.**

**Division of Ser. No. 394,140, Sept. 4, 1973, Pat. No. 3,914,849, which is a division of Ser. No. 288,905, Sept. 14, 1972, Pat. No. 3,848,518. This application Nov. 5, 1974, Ser. No. 520,928**

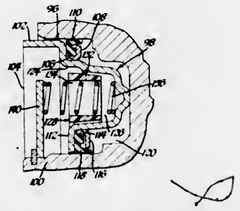
**Int. Cl.² B23P** *15/00*

**U.S. Cl. 29—428** **3 Claims**

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| 1,494,338 | 5/1924 | Buckwalter | 277/47 |
| 1,854,455 | 4/1932 | Day | 29/156.5 R |
| 2,053,720 | 9/1936 | Huck | 92/130 |
| 2,549,818 | 4/1951 | Joy | 92/244 |
| 2,578,308 | 12/1951 | Iavelli | 92/107 |
| 2,766,864 | 10/1956 | Schilling et al. | 192/85 AA |
| 2,815,684 | 12/1957 | Roche | 74/645 |
| 3,120,156 | 2/1964 | Ayers, Jr. | 92/108 |
| 3,321,056 | 5/1967 | Winchell et al. | 192/85 R |
| 3,338,584 | 8/1967 | Nakanishi et al. | 277/186 |
| 3,370,682 | 2/1968 | McFarland | 192/85 AA |
| 3,378,111 | 4/1968 | Greer et al. | 192/85 AA |
| 3,532,030 | 10/1970 | Margetts | 29/156.5 R |
| 3,733,920 | 5/1973 | Annis | 74/763 |
| 3,782,251 | 1/1974 | LeMarchand | 92/130 |



1. A method of making a sheet metal piston assembly for a friction drive establishing device comprising the steps of stamping a thin walled annular shell of substantially uniform thickness from sheet metal stock, forming inner and outer rims on said shell, seating annular elastomeric seal means on said shell adjacent to said rims for hydraulically sealing said shell in a piston bore, forming an annular axially extending channel in said shell between said rims, offsetting spaced portions of the bottom wall of said channel axially to provide pockets for piston return springs, forming a washer-like ring with spaced annular openings therein, inserting said ring into said channel, aligning said openings in said ring with said pockets in said channel, loading helical piston return springs through said openings of said ring into said spring pockets so that said springs are retained in said shell, and providing said outer rim of said shell with a contact surface for directly engaging the friction drive establishing device.

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**B 521,480**

## OUT-FLOW METERING DEVICE

**Hans Frenken; Georg Schindler, both of Leverkusen, and Josef Friedsam, Langenfeld, all of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Germany**

**Filed Nov. 6, 1974, Ser. No. 521,480**

**Claims priority, application Germany, Nov. 9, 1973, 2356010**

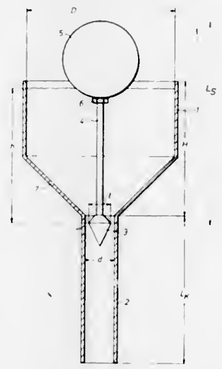
**Int. Cl.² B67D** *5/08*

**U.S. Cl. 222—67** **11 Claims**

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| 421,559 | 2/1890 | Cumberbatch | 137/398 X |
| 3,025,880 | 3/1962 | Anderson | 137/398 X |



1. An outflow-metering device for a storage vessel for dispensing a constant stream of liquid per unit of time, comprising an outflow tube connected to the bottom of the storage vessel, a float and a metering element rigidly connected thereto which has a smaller diameter than the internal diameter of the outflow tube, the float being disposed in the storage vessel with the metering element disposed in the outflow tube, whereby the vertical position of the metering element in the outflow tube changes with the liquid level in the storage vessel and remains at a constant distance from the float to provide a substantially constant volume of flow of liquid from the outflow tube while sufficient liquid remains in the storage vessel to support the float.



**B 529,156**

## SELF-DRAINING SAUCER

**John Florian, Bakersfield, Calif., assignor to Mobil Oil Corporation, New York, N.Y.**

**Filed Dec. 3, 1974, Ser. No. 529,156**

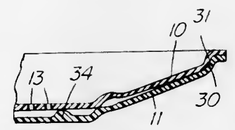
**Int. Cl.² A47G** *19/00*

**U.S. Cl. 220—23.83** **3 Claims**

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| 2,650,485 | 9/1953 | La Greca | 220/23.83 |
| 3,018,014 | 1/1962 | Opolion | 220/23.83 X |
| 3,037,660 | 6/1962 | Roehrig | 220/23.83 |




1. A self-draining saucer or the like composed of two discs of like upwardly concave shape 1 of substantially equal diameter and coacting to form a unitary structure having an internal reservoir to receive liquid and means to drain liquid from the upper surface thereof into said reservoir, said saucer comprising the combination of:

a. an upper disc having a concentric wall on the bottom surface thereof and at least one perforation through the bottom of said disc; and

b. a lower disc having a circular concentric well defined by a bottom surface spaced downwardly from the concave surface of said lower disc and a circular wall on the upper face of said lower disc, said circular wall having an internal diameter substantially equal to the external diameter of said wall on the bottom of said upper disc and adapted to engage therewith, whereby the frictional engagement of said circular walls retains the combination.

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**B 533,056**

## DISC BRAKE CALIPER AND FRICTION PAD MOUNTING

**James J. Colpaert, and William J. Kestermeier, both of 401 Bendix Drive, South Bend, Ind. 46634**

**Filed Dec. 16, 1974, Ser. No. 533,056**

**Int. Cl.² F16D** *55/224, 65/02*

**U.S. Cl. 188—73.6** **1 Claim**

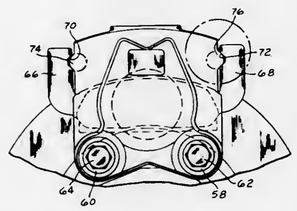
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| 3,261,430 | 7/1966 | Wilson et al. | 188/73.6 |
| 3,384,203 | 5/1968 | Walther et al. | 188/73.6 |
| 3,495,689 | 2/1970 | Peach | 188/72.4 |
| 3,525,420 | 8/1970 | Honick et al. | 188/72.4 |
| 3,800,923 | 4/1974 | Rike | 188/73.6 |

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| 967,408 | 8/1964 | United Kingdom | 188/18 A |




1. In a disc brake:

a rotor having a pair of friction faces;

a fixed support disposed adjacent said rotor;

a caliper slidably mounted on said fixed support for movement generally parallel to the axis of rotation of said rotor, said caliper including a fluid motor portion disposed adjacent one of said friction faces, an integral bridge member extending from said fluid motor portion and traversing the periphery of said rotor, and an inwardly extending portion extending from said bridge portion substantially parallel to the other friction face;

a pair of friction elements disposed adjacent each of said friction faces, each of said friction elements including a backing plate having a pair of circumferentially spaced edges, and a pair of radially separated edges interconnecting said circumferentially spaced edges, said bridge portion defining a pair of circumferentially spaced edges located radially outwardly from the circumferentially spaced edges of said friction elements;

said circumferentially spaced edges of said bridge portion defining torque receiving surfaces, one of said friction elements being disposed between said fluid motor portion and said one face of the rotor and having a pair of arms extending radially outwardly from the circumferentially spaced edges of said one friction element, said arms including a pair of facing edges defining a recess therebetween receiving said bridge portion, said arms further including torque transmitting surfaces cooperating with the torque receiving edges on said bridge portion to transmit braking torque generated by engagement of said friction element with said one friction face to said torque receiving surfaces carried by said bridge portion, said one friction element being otherwise free of restraint by said caliper and said torque member so that all of the braking torque generated by engagement of said one friction element with said one friction face is transmitted through a corresponding one of said arms to a corresponding torque receiving surface;

said other friction element being carried by said inwardly extending portion;

said torque transmitting and receiving surfaces comprising cooperating sets of splines and grooves;

said splines terminating short of the connection between the bridge member and the inwardly extending portion to define a gap between the end of each spline and said inwardly extending portion;

said other friction element when installed on said inwardly extending portion being adapted to engage said one friction element upon movement of the arm members toward their corresponding gaps to prevent movement of the arms into said gaps to thereby assure retention of said one friction element on said caliper.

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**B 535,386**

## DUAL HYDRAULIC MOTOR DRIVE SYSTEM

**Larry G. Eftefield, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.**

**Filed Dec. 23, 1974, Ser. No. 535,386**

**Int. Cl.² F15B** *11/16*

**U.S. Cl. 60—425** **7 Claims**

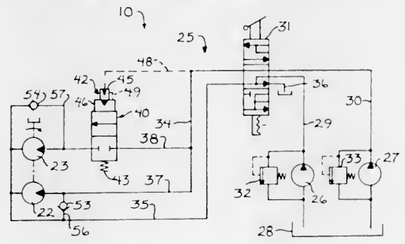
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| 2,370,526 | 2/1945 | Doran | 60/425 |
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| 2,643,516 | 6/1953 | Carlson | 60/486 X |
| 3,129,781 | 4/1964 | Stein | 60/426 X |
| R27,334 | 4/1972 | Zimmerman | 60/486 X |

4. A dual hydraulic motor drive system for driving a material loading elevator for a self-loading scraper vehicle, comprising:

a source of fluid pressure;
first and second hydraulic motors drivingly connected to said elevator;
a fluid circuit for selectively communicating said source of fluid pressure to said motors including a blocker valve movable between a first position for blocking fluid to one of said motors so that said elevator is operatively driven solely by the other of said motors at a high speed, low torque setting and a second position for directing fluid to both of said motors to operatively drive said motor at a low speed, high torque setting; and



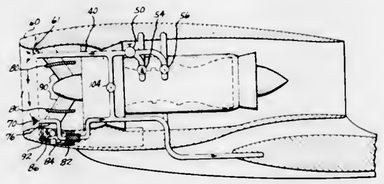
means for automatically shifting said blocker valve between its first and second positions including a pair of actuators for shifting said blocker valve towards its second position, with one of said actuators being continually responsive to loading resistance on the elevator to shift said blocker valve to its second position when the loading resistance increases to a predetermined relatively high level, and the other of said actuators being responsive to loading resistance only when said blocker valve is in its second position to assist said one actuator so that the blocker valve is held in its second position until such time that the loading resistance subsides to a level substantially lower than said high level.

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**B 535,928**
**INTEGRATED THERMAL ANTI-ICING AND ENVIRONMENTAL CONTROL SYSTEM**
**Anil D. Shah, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.**
**Filed Dec. 23, 1974, Ser. No. 535,928**
**Int. Cl.² B64D** *15/02, 13/08*
**U.S. Cl. 244—134 R** **3 Claims**

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| 2,594,118 | 4/1952 | Boyd | 415/178 X |
| 2,712,727 | 7/1955 | Morley et al. | 244/134 R X |
| 2,777,301 | 1/1957 | Kuhn | 244/59 X |
| 3,341,114 | 9/1967 | Larson | 60/39.09 D |



1. An integrated thermal anti-icing and environmental control system for use on aircraft having a wing, a passenger cabin, a gas turbine powerplant, an inlet supplying air to the powerplant and an acoustic ring mounted with said inlet comprising:
a source of hot, compressed air;
first means connected to the source for distributing a portion of the air within the wing for anti-icing purposes;
second means connected to said source for distributing a second portion of the air within the inlet for anti-icing purposes and for cooling that portion of the air to a predetermined maximum temperature;
a heat exchanger connected to the second means;
a liquid;
closed-loop means for circulating the liquid through the heat exchanger and the acoustic ring;
environmental control means connected to said heat exchanger for conditioning and pressurizing air for the passenger cabin.

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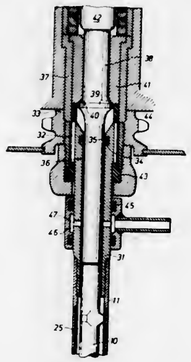
**B 537,709**
**COUPLING MEANS IN A DRILLING MACHINE**
**Hans Per Olof Lundstrom, and Ernst Lennart Johansson, both of Sandviken, Sweden, assignors to Sandvik Aktiebolag, Sandviken, Sweden**
**Filed Dec. 31, 1974, Ser. No. 537,709**
**Int. Cl.² B25D** *9/00*
**U.S. Cl. 173—104** **5 Claims**

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| 1,203,860 | 11/1916 | Dunbar | 175/173 |
| 1,869,892 | 8/1932 | Grove et al. | 175/173 |
| 3,416,615 | 12/1968 | Grospas | 175/173 |

FOREIGN PATENTS OR APPLICATIONS

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1. A rock drilling equipment of the character having an impact and rotary force-transmitting device for use with a percussive type drill motor having a reciprocal piston delivering percussive force, said equipment comprising:
a rotatable tube (**11**), said tube being composed of a plurality of sections connected in end to end relation, one end section of which is connected to said drill motor and the other end section being connected to a drill bit;
a rod (**10**) being in sections connected in end to end relation, said rod being slidable within said tube, one end of said rod having a force-receiving surface and the other end having a force-transmitting surface to transmit only longitudinal forces to said bit;
a tubular adapter (**31**) in interlocking connection with said tube, the uppermost part of said adapter being received in a tubular casing and enclosing an uppermost rod section (**36**), the latter being adapted to transmit percussion force from said reciprocal piston (**42**) to said drill bit,
said adapter being provided with longitudinally extending connection means (**32**) around its circumference; and
a coupling member (**33**), rotatable by said drill motor, said coupling member being provided with corresponding connection means to mate circumferentially with said adapter within said casing for transmitting only rotary motion to said tube and said bit,
said mating being effected with clearance such that said tube is able to take angular positions relative to said casing.

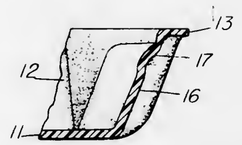


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**B 537,990**
**MEAT TRAY**
**John Florian, Bakersfield, Calif., assignor to Mobil Oil Corporation, New York, N.Y.**
**Filed Jan. 2, 1975, Ser. No. 537,990**
**Int. Cl.² B65D** *1/36, 81/26*
**U.S. Cl. 229—2.5** **6 Claims**

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| 3,337,110 | 8/1967 | Commisso et al. | 229/29 M |
| 3,346,400 | 10/1967 | Roesmer | 229/2.5 |
| 3,420,431 | 1/1969 | Donovan | 229/2.5 |
| 3,485,434 | 12/1969 | Donovan et al. | 229/2.5 |
| 3,778,516 | 12/1973 | Cornelius | 229/2.5 X |
| 3,834,606 | 9/1974 | Andersson | 229/2.5 |



1. A tray particularly suited to packaging of cut meats comprising a flat rectangular bottom wall having rounded corners, side walls integral with said bottom wall disposed upwardly and flared outwardly of said bottom wall, each of said side walls being integral with adjacent side walls at the curved corners of said tray, an integral flange extending outwardly of said side walls at the upper edges thereof, said side walls being formed with flutes transversely of said walls from the bottom wall to said flange, the curved corner surfaces at joinder of said side walls being formed as an upper portion adjacent said flange in a smooth curve to which said side walls are tangent and a lower portion in a smooth curve of curvature reverse to that of said upper portion to thereby provide a fluted corner terminating at a shoulder between said portions.

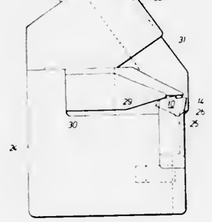
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**B 540,632**
**KEY RETAINING DEVICE**
**Charles F. A. Laitner, Jr., Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.**
**Filed Jan. 13, 1975, Ser. No. 540,632**
**Int. Cl.² F16B** *3/00*
**U.S. Cl. 403—318** **3 Claims**

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| 164,609 | 6/1875 | Thomas | 403/318 |
| 368,744 | 8/1887 | Woodruff | 403/358 |
| 476,911 | 6/1892 | Westwood | 403/358 |
| 661,079 | 11/1900 | Rohrbeck | 403/344 X |
| 3,009,719 | 11/1961 | Otto et al. | 403/252 |
| 3,376,064 | 4/1968 | Jackson | 297/391 |

1. A key retaining device comprising,
an elongated shaft with a notch formed therein,
a tubular member fully encirclingly journalled on said shaft and having a radial slot extending through the outer periphery thereof with closing end walls formed therethrough alignable with said notch,
a pair of ears secured to the outer periphery of said tubular member in radially outwardly extending relation on opposite sides of said slot,



a key insertable in said notch and in said slot to lock said shaft and said tubular member together,
a key retaining plate radially inwardly disposable against said key, and
fastener means operatively associated with said ears to deflectably bias them together for clamping the key retaining plate therebetween, maintaining said key in its locked condition and for transferring force across said slot in said tubular member.

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**B 546,911**
**CUTTING INSERT AND CUTTING TOOL**
**Axel Sven Olof Roos; Kurt Heinrich Albert Erich Faber, and Sven Axel Olof Wirfelt, all of Sandviken, Sweden, assignors to Sandvik Aktiebolag, Sandviken, Sweden**
**Filed Feb. 4, 1975, Ser. No. 546,911**
**Claims priority, application Sweden, Feb. 8, 1974, 74016791**
**Int. Cl.² B26D** *1/00*
**U.S. Cl. 29—96** **9 Claims**

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| 3,156,031 | 11/1964 | Lundgren | 29/96 |
| 3,220,088 | 11/1965 | Brundin et al. | 29/96 |
| 3,611,525 | 10/1971 | Cochran | 29/95 |
| 3,754,309 | 8/1973 | Jones et al. | 29/96 |
| 3,775,818 | 12/1973 | Sirola | 29/96 |

FOREIGN PATENTS OR APPLICATIONS

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| 2,213,741 | 3/1972 | Germany | 29/96 |



1. A tool holder and cutting insert combination consisting of a tool holder (**24**) and a cutting insert (**10**), said insert having a main cutting edge (**12**) and a secondary cutting edge (**13**) with a curved cutting tip portion (**11**) therebetween, the

insert having around its circumference several edge surfaces extending parallel to the main cutting edge two of which edge surfaces, (15) and (16), being angularly interrelated and constituting bottom supporting surfaces, said surfaces forming an angle of 90° – 130°, preferably 100° – 120°, with each other, a third said edge surface constituting a clearance face for the main cutting edge, the insert having two opposite end surfaces, (18) and (19), one of which constituting the clearance face of the secondary cutting edge and the other constituting an end abutment surface, the top surface (20) being located opposite said angularly related edge surfaces (15, 16) and being provided with a bevel surface (23), said holder having an insert site at one of its ends, said insert site having bottom supporting surfaces (25, 26), angularly related at an angle of 90° – 130°, preferably 100° – 120°, and a side support, provided on an axially displaceable means in the holder, engaged by said angularly relates edge surfaces and said end abutment surface respectively of said cutting insert positioned therein, a movable clamping plate (29) being arranged for the clamping of the insert in said site, a movable arm (30) being secured to said clamping plate, said clamping plate being positioned over said insert and engageable with the bevel surface (23) thereof for pressing the insert against said bottom surfaces (25, 26) upon actuation of said arm by said axially displaceable means in the holder.

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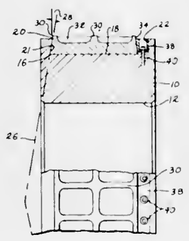
**B 548,155**
**DIE SEGMENT FOR BRIQUETTING ROLL**

**William D. Armbrust, Greensburg; Dennis J. Shallenberger, Latrobe, and Charles E. Hill, Whitney, all of Pa., assignors to Kennametal Inc., Latrobe, Pa.**

**Division of Ser. No. 455,518, March 28, 1974, Pat. No. 3,883,282. This application Feb. 7, 1975, Ser. No. 548,155**
**Int. Cl.² B29C** *3/02*
**U.S. Cl. 249—135** **9 Claims**

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| 1,775,277 | 9/1930 | Gahn | 425/237 X |
| 2,945,259 | 7/1960 | Decker et al. | 425/237 X |
| 3,077,634 | 2/1963 | Komarek et al. | 425/237 |
| 3,829,267 | 8/1974 | Woodward | 425/237 |



1. A die segment for a briquetting roll comprising; a body of hard wear resistant material having end edges and side edges and oppositely facing first and second major surfaces, one major surface having pocket means formed therein, the other major surface being disposed in a first flat plane, one side edge being disposed in a second flat plane at an angle to said first plane, and the other said side edge being in the form of an angular segment of an annular section of a cone.

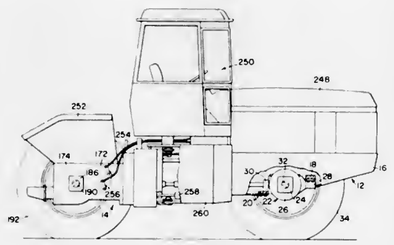
**B 551,527**
**TRACTOR HAVING TRANSMISSION-DRIVEN POWER TAKE-OFF**

**Saul Herscovici, Waterloo, and Lawrence Vernon Anderson, Cedar Falls, both of Iowa, assignors to Deere & Company, Moline, Ill.**

**Filed Feb. 21, 1975, Ser. No. 551,527**
**Int. Cl.² B60K** *17/28*
**U.S. Cl. 180—53 R** **8 Claims**

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| 3,701,393 | 10/1972 | Lemons et al. | 180/51 |
| 3,774,460 | 11/1973 | Browning et al. | 74/740 X |
| 3,774,474 | 11/1973 | Recker et al. | 74/740 |
| 3,774,475 | 11/1973 | Meysenburg et al. | 74/740 |



1. A tractor including a wheel supported chassis, an engine supported on the chassis, variable ratio transmission means supported on the chassis and coupling the engine to at least a pair of wheels, operator control means for varying the ratio of the transmission means, a PTO shaft supported on the chassis, and means including clutch means coupling the PTO shaft to the engine, characterized in that the variable ratio transmission means includes a first section having first and second ratio conditions and a second section having a plurality of ratio conditions, the means coupling the PTO shaft to the engine is coupled to the transmission means between the first and second sections, and the tractor further includes means responsive to engagement of the clutch means to override the operator control means and shift the first section to and/or hold the first section in its first ratio condition.

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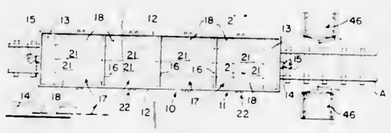
**B 555,772**
**HOPPER CAR DOOR ACTUATING MECHANISM**

**Roy W. Miller, 2545 Lincoln St., Highland, Ind. 46322**

**Filed Mar. 6, 1975, Ser. No. 555,772**
**Int. Cl.² B65G** *67/24*
**U.S. Cl. 214—58** **8 Claims**

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|---|---|---|---|
| 3,314,558 | 4/1967 | Dorey | 214/63 |
| 3,459,317 | 8/1969 | Shaver | 214/63 |



1. For a railway hopper car having a body structure and a hopper, bottom door dump means for discharging material from said hopper in an open position,



door actuating mechanism for moving said door between open and closed positions including a bell shaped crank arm pivotally mounted on said structure and having an arm position pivotally connected to said door, cam follower means on said arm, the improvement comprising;

a cam structure positioned adjacent a railway track on which said car is travelling, said structure including a base having an upright pedestal,

a horizontal cam member supported on said pedestal and including a vertical cam surface,

said cam follower means during movement of said car engaging said vertical cam surface whereby said arm is pivotally moved and said door is opened,

a second auxiliary cam supported on said pedestal, and including a second vertical cam surface and second follower means on said arm engaging said second cam during engagement between said first cam follower and said first cam whereby an additional force is initiated to pivot said arm to said open position of said door means.

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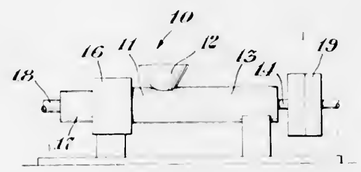
**B 556,057**
**INJECTION MOLDING MACHINE AND METHOD OF OPERATION THEREOF**

**Robert H. Ritzie, Mystic, Conn., assignor to The Dow Chemical Company, Midland, Mich.**

**Filed Mar. 6, 1975, Ser. No. 556,057**
**Int. Cl.² B29B** *1/06*
**U.S. Cl. 259—191** **5 Claims**

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| 3,175,248 | 3/1965 | Swenson | 259/191 |
| 3,712,594 | 1/1973 | Hensen | 259/9 |
| 3,737,151 | 6/1973 | Schaeffer | 259/191 |
| 3,746,318 | 7/1973 | Schippers | 259/191 |



1. In a reciprocating screw injection molding machine, the molding machine comprising a barrel having a rotating forwarding extruder screw therein the screw having at least one forwarding flight, means to reciprocately position the screw within the barrel and means to heat plastify synthetic resinous thermoplastic materials within the barrel, the improvement which comprises the screw having a feed zone adjacent the feed end, a first compression zone adjacent the feed zone and disposed toward a discharge end of the screw, a decompression zone disposed adjacent the first compression zone and remote from the feed zone, a second compression zone disposed at the discharge end of the screw and adjacent the decompression zone, at least one passage defined within the screw providing a path between the decompression zone and the discharge end of the screw, a valving means to selectively open or close the passage within the screw.

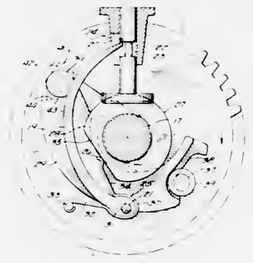
**B 558,251**
**AUTOMATIC COMPRESSION RELIEF MECHANISM FOR INTERNAL COMBUSTION ENGINES**

**Joseph R. Harkness, Germantown, Wis., assignor to Briggs & Stratton Corporation, Wauwatosa, Wis.**

**Filed Mar. 14, 1975, Ser. No. 558,251**
**Int. Cl.² F01L** *13/08*
**U.S. Cl. 123—182** **9 Claims**

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| 3,314,408 | 4/1967 | Fenton | 123/182 |
| 3,362,390 | 1/1968 | Esty | 123/182 |
| 3,469,922 | 2/1970 | Campen | 123/182 |
| 3,511,219 | 5/1970 | Esty | 123/182 |
| 3,620,203 | 11/1971 | Harkness | 123/182 |
| 3,897,768 | 8/1975 | Thiel | 123/182 |
| 3,901,199 | 8/1975 | Smith | 123/182 |



1. In an internal combustion engine having a valve which controls flow of gas through a port communicable with the engine combustion chamber, and valve actuating means by which the valve is moved axially between its seat and an open position, and wherein said valve actuating means comprises a valve spring biasing the valve for closing motion towards its seat, a camshaft rotatable in timed relation to the engine cycle, and means comprising an axially movable part connected with the valve and a cam constrained to rotate with the camshaft for cyclically moving the valve in the opening direction, automatic compression relief mechanism whereby the valve is prevented from getting nearer to its seat than a predetermined small distance therefrom at engine cranking speeds but is permitted to engage its seat normally at engine running speeds, said mechanism comprising:

A. a latch member;

B. mounting means confining the latch member to motion substantially transverse to the direction of movement of said part, between defined latching and inoperative positions;

C. cooperating abutment means on the latch member and on said part, engageable when the latch member is in its latching position to restrain the valve against movement through said distance to its seat, said abutment means cooperating with the valve spring and the mounting means to confine the latch member against movement out of its latching position whenever the valve actuating means tends to dispose the valve at less than said distance from its seat;

D. a cam follower movable between defined latch enabling and latch disabling positions;

E. means providing a resilient lost motion connection between the cam follower and the latch member whereby movement of the cam follower from its latch enabling position to its latch disabling position biases the latch member away from its latching position and motion of the cam follower from its latch disabling position to its latch

enabling position biases the latch member away from its inoperative position; and

F. cam means cooperable with the cam follower to dispose the same in its latch enabling position only when the engine is at cranking speeds, and then only during a minor portion of the engine cycle that begins during closing motion of the valve and at a time when the valve is more than said distance from its seat, and to dispose the cam follower in its latch disabling position at all other times, said cam means comprising

1. a first cam element constrained to rotate with the camshaft and which is arranged to engage the cam follower through all but said minor portion of every engine cycle, and
2. a centrifugally responsive second cam element which is complementary to the first cam element and which is carried by the camshaft for rotation therewith and for motion relative thereto between a pair of defined positions, towards one of which it is biased and towards the other of which it is centrifugally propelled, said second cam element being arranged to engage the cam follower during said minor portion of the engine cycle, but only when said second cam element is in one of its said positions.

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**B 558,818**

## SPROCKET WHEEL FOR SCRAPER ELEVATOR DEVICE

**Raymond P. Dellner, Strongsville, Ohio, assignor to General Motors Corporation, Detroit, Mich.**

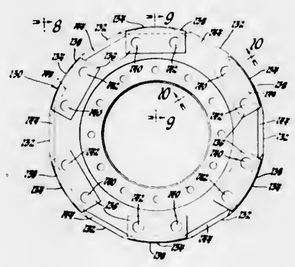
**Filed Mar. 17, 1975, Ser. No. 558,818**
**Int. Cl.² F16H** *1/00;* **B60P** *1/36*
**U.S. Cl. 74—243 C** **3 Claims**

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| 2,322,967 | 6/1943 | Perry | 74/231 C |
| 2,803,504 | 8/1957 | Lynch | 74/231 C |
| 2,984,120 | 5/1961 | Hurry | 74/229 |
| 3,161,280 | 12/1964 | Creighton | 198/174 |
| 3,206,876 | 9/1965 | Penote et al. | 74/243 R |
| 3,416,385 | 12/1968 | Schenk | 74/243 R |
| 3,758,966 | 9/1973 | Miller | 37/8 |
| 3,831,358 | 8/1974 | Marsh et al. | 74/231 J |
| 3,899,219 | 8/1975 | Boggs | 74/243 R |

FOREIGN PATENTS OR APPLICATIONS

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| 2,011,781 | 9/1971 | Germany | 74/243 R |



1. A sprocket wheel for an elevator device adapted to be mounted in the open front end of a scraper bowl and including a flexible endless belt member having a plurality of teeth rigidly connected to the inner surface of the belt member, said sprocket wheel comprising a disc having a plurality of planar surfaces and arcuate surfaces alternately formed along the periphery thereof, the planar surfaces being of equal longitudinal length and said arcuate surfaces having chords of equal length, a pair of driver members spaced laterally from the disc and located adjacent to and on opposite sides of each of said arcuate surfaces, and means rigidly connecting said driver members to said disc whereby said driver members transmit drive to the teeth of the belt member when the sprocket wheel is driven.

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**B 562,698**

## FRICTION DISC APPARATUS

**Warren D. Chambers, 717 Bendix Drive, South Bend, Ind. 46620**

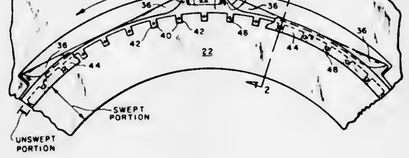
**Filed Mar. 27, 1975, Ser. No. 562,698**
**Int. Cl.² F16D** *65/12*
**U.S. Cl. 188—218 XL** **13 Claims**

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| 2,989,153 | 6/1961 | Boulet | 188/218 XL |
| 3,465,860 | 9/1969 | Gingery | 192/70.16 |
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| 3,478,850 | 11/1969 | Abu-Akeel | 192/107 R X |
| 3,650,357 | 3/1972 | Nelson et al. | 188/71.5 |
| 3,747,712 | 7/1973 | Stout | 188/73.2 |
| 3,891,066 | 6/1975 | Anderson | 188/218 XL X |
| 3,892,293 | 7/1975 | Dowell | 188/73.2 X |

FOREIGN PATENTS OR APPLICATIONS

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| 1,140,969 | 8/1957 | France | 188/218 XL |




1. Friction disc apparatus particularly adapted for a brake used in retarding rotation of a wheel comprising:

an annular carbon or carbon based friction disc having frictionally swept and unswept annular areas;

an annular metal ring concentric with said annular friction disc and arranged contiguous to one of the two radially spaced apart peripheral edge portions thereof;

a plurality of circumferentially spaced apart lug members formed on said ring and extending radially therefrom into engagement with a plurality of mating circumferentially spaced apart slots in said one peripheral edge portion;

a plurality of circumferentially spaced apart force transmitting members formed on said ring and extending radially therefrom in opposition to said lug members;

first and second axially spaced apart annular metal plate members fixedly secured to said ring and extending therefrom to overlay the major portion of said unswept annular area;

said annular metal ring and said first and second annular plate members providing a force distributing medium for said friction disc as well as a shield to minimize oxidation of said unswept annular areas.



**B 567,058**

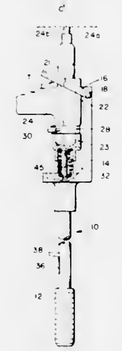
## EXTENSION ATTACHMENT DEVICE FOR A POWER TOOL

**Vernon P. Steele, 22 Fairview Terrace, Glenville, Conn. 06830**

**Filed Apr. 11, 1975, Ser. No. 567,058**
**Int. Cl.² B23B** *45/00*
**U.S. Cl. 173—170** **9 Claims**

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| 2,643,088 | 6/1953 | Hornack | 173/170 X |
| 2,730,803 | 1/1956 | Kimball | 30/296 X |
| 3,086,574 | 4/1963 | Ustin | 173/170 X |
| 3,272,267 | 9/1966 | Langas | 173/170 |
| 3,805,385 | 4/1974 | Ritums et al. | 30/DIG. 1 |



1. An extension attachment device for a power tool having an operating means and comprising an elongated pole provided with a handle at one end and an element at the other end having a pivotable member, a stationary support member provided with means for removably securing a power tool thereon, resilient means positioned between said pole and said stationary support and operatively connecting said pole and said stationary support whereby said pole is capable of linear movement upon the application of force in a predetermined direction and said pivotable member pivots to a position in which the operating means of said power tool is actuated.

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**B 569,646**

## METHOD OF FEEDING MATERIAL TO A CONVEYOR BELT

**Richard H. Kressly, Red Hill, Pa., assignor to FMC Corporation, San Jose, Calif.**

**Continuation-in-part of Ser. No. 391,422, Aug. 24, 1973, abandoned. This application Apr. 21, 1975, Ser. No. 569,646**
**Int. Cl.² B65G** *15/00*
**U.S. Cl. 198—129** **4 Claims**

**References Cited**
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|---|---|---|---|
| 2,326,098 | 8/1943 | Kimmich | 198/203 |
| 2,917,207 | 12/1959 | Prowse et al. | 198/39 X |



1. The method of feeding material onto a conveyor belt of substantial length traversing irregular terrain and having a motor to drive the belt, said belt having vertical concave curves because of undulations and dips in the terrain, the method comprising the steps of starting the belt, feeding the material at a feed point to the belt at a reduced rate to deposit on the belt a reduced layer of material having a leading edge, increasing the feed of material to the belt to deposit a full load of material on the belt after the leading edge of the reduced layer of material has entered the extreme downstream vertical curve of the belt.

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**B 580,921**

## NOZZLE

**Alain Frochaux, Boston, Mass., assignor to Barry Wright Corporation, Watertown, Mass.**

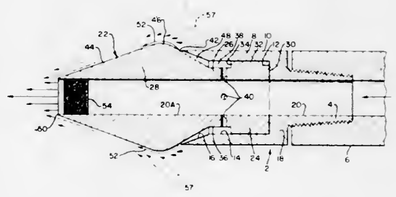
**Continuation-in-part of Ser. No. 500,647, Aug. 26, 1974, abandoned. This application May 27, 1975, Ser. No. 580,921**
**Int. Cl.² B05B** *7/08;* **F01N** *1/10, 1/14*
**U.S. Cl. 239—424** **23 Claims**

**References Cited**
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| 2,293,181 | 8/1942 | Terman | 181/71 X |
| 2,334,263 | 11/1943 | Hartwell | 181/42 X |
| 2,797,964 | 7/1957 | Alexander | 239/422 X |
| 3,117,726 | 1/1964 | Schoberg | 239/291 |
| 3,318,534 | 5/1967 | Stolteben | 239/291 |
| 3,589,383 | 6/1971 | Garnier | 239/DIG. 7 |
| 3,628,737 | 12/1971 | Norton | 239/DIG. 7 |
| 3,735,778 | 5/1973 | Garnier | 239/DIG. 7 |
| 3,794,137 | 2/1974 | Teodorescu et al. | 239/DIG. 7 |
| 3,795,288 | 3/1974 | Pall | 181/71 X |
| 3,859,205 | 1/1975 | Reba et al. | 239/DIG. 7 |

FOREIGN PATENTS OR APPLICATIONS

| | | | |
|---|---|---|---|
| 1,408,538 | 7/1965 | France | 239/291 |



1. A high-thrust low-noise nozzle adapted to effect movement of a secondary fluid by a pressurized primary fluid comprising, tubular means forming a passageway having an entrance and an exit orifice, said entrance being adapted for connection to a source of pressurized primary fluid, at least one port communicating with the passageway between said entrance and exit orifice, means cooperating with said port for directing flow of primary fluid from said port in a direction so as to induce flow of a secondary fluid along the outside of said tubular means toward said exit, and noise-reducing means positioned in said passageway between said exit orifice and said port, said noise-reducing means creating sufficient back pressure to force some of the pressurized pirmary fluid to flow out of said passageway via said port.

# CHEMICAL APPLICATIONS

**B 160,099**
**METHOD FOR PREPARING RECEPTOR SHEET FOR USE IN PHOTOGRAPHIC DIFFUSION PROCESS**

**Terence William Baldock, Harlow, England, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.**

**Filed July 6, 1971, Ser. No. 160,099**
**Claims priority, application United Kingdom, July 7, 1970, 32975/70**
**Int. Cl.² B44D** *1/44*; **C08H** *19/00*
**U.S. Cl. 427—343** **3 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 3,532,497 | 10/1970 | Goffe | 96/29 |
| 3,647,440 | 3/1972 | Rasch | 96/29 |


1. A method for preparing a receptor sheet for use in the photographic silver salt diffusion process, said method comprising preparing a silver halide photographic emulsion of controlled silver halide grain size, coating said emulsion as a layer on a substrate, and converting said silver halide to silver sulfide by treatment with a sulfiding agent.

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**B 208,916**
**MANUFACTURE OF ACETALDEHYDE**

**William D. Schaeffer, Pomona, and Kenneth L. Olivier, Placentia, both of Calif., assignors to Union Oil Company of California, Brea, Calif.**

**Continuation of Ser. No. 572,899, Aug. 17, 1955, abandoned. This application Dec. 16, 1971, Ser. No. 208,916**
**Int. Cl.² C07C** *47/06*
**U.S. Cl. 260—601 R** **5 Claims**

**References Cited**
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| 3,119,874 | 1/1964 | Paszthory et al. | 260/597 |

OTHER PUBLICATIONS

Bobtelsky et al., J. Am. Chem. Soc. Vol. 64, pp. 1462–1468 (1942).
Jones et al., J. Chem. Soc. pp. 4757–4761 (1961).
Marette et al., "Chem. Abst." 48, p. 4941g (1954).
Bhargova et al., "Chem. Abst." 63, p. 11291b (1965).


1. A process for the selective oxidation of oxalic acid in the presence of acetaldehyde that comprises contacting a liquid phase comprising water, acetaldehyde, a strong mineral acid and oxalic acid with oxygen and catalytic amounts of a vanadium compound soluble in said liquid phase at a temperature of 30° to 300°C. and a pH of about 0.5 to 3.

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**B 359,901**
**PHOTOGRAPHIC METHOD EMPLOYING ORGANIC LIGHT-SCATTERING PARTICLES FOR PRODUCING A VIEWING-SCREEN STRUCTURE**

**Theodore Alexander Saulnier, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.**

**Filed May 14, 1973, Ser. No. 359,901**
**Int. Cl.² G03C** *5/00*
**U.S. Cl. 96—36.1** **3 Claims**

**References Cited**
UNITED STATES PATENTS

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|---|---|---|---|
| 3,589,907 | 6/1971 | Dijkstra | 96/36.1 |
| 3,623,867 | 11/1971 | Saulnier | 96/36.1 |
| 3,661,580 | 5/1972 | Mayaud | 96/36.1 |


1. A method for producing a luminescent screen structure including the steps of
   a. coating a supporting surface with a film consisting essentially of (i) organic polymeric binder material whose solubility in a given solvent is altered when it is exposed to radiant energy, said binder material being volatilized when heated in air below about 500°C and (ii) about 10 to 80 weight percent with respect to the weight of said binder material of particles of an organic material that is insoluble in said binder material and selected from the group consisting of acrylic and polystyrene polymers, said particles being volatilized when heated in air at temperatures below about 500°C and being about 0.3 to 1.0 micron median size, said organic particles being adapted to scatter said radiant energy in said film,
   b. exposing said film to an image in the form of said radiant energy until the solubility of the irradiated portions thereof is selectively altered, thereby producing in said film regions of greater solubility and regions of lesser solubility,
   c. removing those regions of said film with greater solubility with a liquid solvent therefor while retaining said regions with lesser solubility, thereby baring the areas of said supporting surface underlying said regions of greater solubility, while retaining those regions of said film of lesser solubility,
   d. then, while said retained film regions are wet with said solvent, adhering dry particles of screen-structure material to said film regions of lesser solubility,
   e. and then baking said retained film regions with said adhered particles thereon in air at temperatures below about 500°C until said binder material and said organic particles are substantially entirely volatilized.

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**B 381,709**
**CHEMICAL VAPOR DEPOSITION OF LUMINESCENT FILMS**

**Steven Alan Lipp, Cranbury, N.J., assignor to RCA Corporation, New York, N.Y.**

**Filed July 23, 1973, Ser. No. 381,709**
**Int. Cl.² B05D** *5/12*
**U.S. Cl. 427—70** **10 Claims**

**References Cited**
UNITED STATES PATENTS

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| 3,018,194 | 1/1962 | Norman et al. | 117/107 |
| 3,113,040 | 12/1963 | Winston | 117/33.5 E |
| 3,178,308 | 4/1965 | Oxley et al. | 117/106 |
| 3,297,414 | 1/1967 | Mazdiyasni et al. | 23/345 |
| 3,356,527 | 12/1967 | Mashier et al. | 117/107.2 R |
| 3,356,703 | 12/1967 | Mazdiyasni et al. | 260/429.2 |
| 3,372,297 | 3/1968 | Pearsall et al. | 313/317 |
| 3,434,863 | 3/1969 | Hansen et al. | 117/33.5 E |
| 3,449,148 | 6/1969 | Shortes | 117/106 R |
| 3,485,666 | 12/1969 | Sterling | 117/106 R |
| 3,518,115 | 6/1970 | Pammer et al. | 117/106 R |
| 3,567,505 | 3/1971 | Harrington | 117/33.5 E |
| 3,594,216 | 7/1971 | Charles et al. | 117/107.2 R |
| 3,634,477 | 1/1972 | Chattoraj et al. | 117/107.2 R |
| 3,647,525 | 3/1972 | Naber | 117/106 R |
| 3,894,164 | 7/1975 | Dismukes et al. | 427/248 |

FOREIGN PATENTS OR APPLICATIONS

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|---|---|---|---|
| 1,104,448 | 2/1968 | United Kingdom | 313/467 |
| 702,575 | 1/1954 | United Kingdom | 427/70 |


1. A method for depositing a luminescent film upon a nonreactive substrate comprising
   a. vaporizing into a nonreactive carrier gas (1) at least one member of a first group consisting of hydrides and alkyls of $M^1$, wherein $M^1$ is at least one of silicon, germanium, boron, phosphorus and aluminum, (2) at least one volatile $M^2$-containing organo-metallic compound of a second group, wherein $M^2$ is at least one of zinc, cadmium, magnesium, calcium, beryllium, strontium, and barium, and (3) at least one volatile $M^3$-containing organo-metallic compound of a third group wherein $M^3$ is at least one activator for said film,
   b. heating said substrate to temperatures in the range of about **300°** to **700°C**,
   c. contacting the vapor-laden carrier gas and an oxidizing gas with said heated substrate,
   d. and continuing steps (a), (b) and (c) for a time interval sufficient to cause the substrate to be coated with a luminescent film consisting essentially of a phosphor having the formula

$$M^1{}_aM^2{}_bO_c{:}dM^3$$

wherein $M^1$, $M^2$, and $M^3$ are as defined above, *a*, *b* and *c* are values in moles normally used to provide the desired host crystal for the phosphor and *d* is an activator proportion generally in the range of 0.001 to 0.1 mole per mole host crystal.





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**B 388,521**
**METHOD FOR PRODUCING HALOPHENOXY 2-NITROBENZOATE ESTERS**

**Clifford E. Hunt, Somerset, N.J., assignor to Mobil Oil Corporation, New York, N.Y.**

**Continuation-in-part of Ser. No. 287,950, Sept. 11, 1972, abandoned. This application Aug. 15, 1973, Ser. No. 388,521**
**Int. Cl.² C07C** *101/54*
**U.S. Cl. 260—471 R** **16 Claims**

**References Cited**
UNITED STATES PATENTS

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|---|---|---|---|
| 3,703,546 | 11/1972 | Leaper et al. | 260/471 R |
| 3,784,635 | 1/1974 | Theissen | 260/471 R |


1. A method for producing an alkylhalophenoxynitrobenzoate which comprises nitrating an alkylhalobenzoate in the presence of sulfuric acid and substantially stoichiometric amounts of nitric acid at a temperature of from about −20° to about +30°C. to obtain an alkylhalonitrobenzoate in improved yield and reacting same with an alkali metal phenate in the presence of from about 4 to about 16 moles of dimethylformamide to about one mole of alkylhalonitrobenzoate at from about 50° to about 150°C. to produce said alkylhalophenoxynitrobenzoate.

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**B 390,031**
**2-FLUORO-6-TRIFLUOROMETHYLBENZOIC ACID**

**William J. Houlihan, Mountain Lakes, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.**

**Continuation-in-part of Ser. No. 107,455, Jan. 18, 1971, abandoned, which is a continuation-in-part of Ser. No. 95,405, Dec. 4, 1970, abandoned, which is a continuation-in-part of Ser. No. 12,864, Feb. 19, 1970, abandoned, Continuation-in-art of Ser. No. 884,011, Dec. 10, 1969, abandoned. This application Aug. 20, 1973, Ser. No. 390,031**
**Int. Cl.² C07C** *63/12*
**U.S. Cl. 260—515 A** **1 Claim**

**References Cited**
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|---|---|---|---|
| 3,592,842 | 7/1971 | Houlihan | 260/515 |
| 3,624,087 | 11/1971 | Beck | 260/515 |

FOREIGN PATENTS OR APPLICATIONS

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| 817,173 | 7/1959 | United Kingdom | 260/515 |
| 1,112,509 | 8/1961 | Germany | 260/515 |

OTHER PUBLICATIONS

Houlihan I, Chem. Abstracts, Vol. 72 (1970), p. 401.
Houlihan II, Chem. Abstracts, Vol. 75 (1971), p. 422.


1. The compound which is 2-fluoro-6-trifluoromethyl benzoic acid.

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**B 417,014**
**PRIMER COMPOSITIONS**

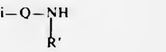
**Edwin P. Plueddemann, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.**

**Division of Ser. No. 216,769, Jan. 10, 1972, Pat. No. 3,808,018. This application Nov. 19, 1973, Ser. No. 417,014**
**Int. Cl.² C08F** *212/08*
**U.S. Cl. 260—88.2 C** **8 Claims**

**References Cited**
UNITED STATES PATENTS

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|---|---|---|---|
| 2,952,576 | 9/1960 | Wheelock | 260/827 |
| 3,232,895 | 2/1966 | Klein | 260/28.5 AV |
| 3,285,802 | 11/1966 | Smith et al. | 161/185 |
| 3,644,141 | 2/1972 | Preston | 260/827 |
| 3,644,245 | 2/1972 | Flanagan | 260/824 R |
| 3,808,018 | 4/1974 | Plueddeman | 106/237 |


1. A composition consisting essentially of
   a. 80 to 99.99 weight percent of a tackifier component consisting essentially of a resin having a molecular weight of no more than 12,000, said resin being selected from the group consisting of polyterpenes, coumarone-indene resins and modified coumarone-indene resins, polycyclopentadiene, aliphatic hydrocarbon resins and chlorinated aliphatic hydrocarbon resins having a ring and ball softening temperature of from 50° to 120°C., said aliphatic resins being derived from olefinic monomers having 3 to 5 inclusive carbon atoms; polystyrene and copolymers of styrene with at least one ethylenically unsaturated aromatic monomer, phenolic and modified phenolic resins and chlorinated terphenyl or diphenyl resins having a chlorine content of about 42 to 65 weight percent; and
   b. 0.01 to 20 weight percent of an organosilicon compound of the general formula



water-soluble partial condensates thereof and hydrochloride salts thereof in which
X is the hydroxyl group or a hydrolyzable radical;
Q is a divalent hydrocarbon radical or a substituted divalent hydrocarbon radical containing nitrogen in the form of



groups wherein R is a hydrogen atom, a lower alkyl group containing from 1 to 6 inclusive carbon atoms or a phenyl radical; and
R′ is selected from the group consisting of the hydrogen atom, monovalent hydrocarbon radicals containing from 1 to 18 inclusive carbon atoms and substituted monovalent hydrocarbon radicals containing oxygen in the form of —COC or



and having from 1 to 18 inclusive carbon atoms.

**B 418,489**
**WATER-SOLUBLE POLYMERS AND UTILIZATION THEREOF**

**Richard Irwin Leavitt, Lower Makefield Township, Pa., assignor to Mobil Oil Corporation, New York, N.Y.**

**Filed Nov. 23, 1973, Ser. No. 418,489**
**Int. Cl.² C12D** *13/06*
**U.S. Cl. 195—29** **11 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 3,761,353 | 9/1973 | Noe | 195/29 |


1. A process for manufacturing watersoluble polymers that thicken reversibly in aqueous solution on adjustment of the degree of alkalinity, which comprises contacting, under conversion conditions, an aqueous suspension of a water-dispersible protein with the extracellular enzymes formed by the microorganism *Pseudomonas fabricans* No. 492 (A.T.C.C. No.21984), said enzymes being in an amount effective to produce said reversible thickening.

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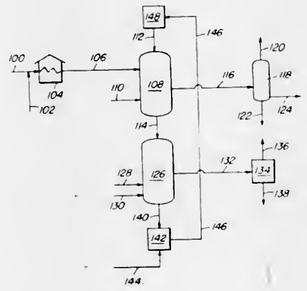
**B 438,916**
**COMBINATION PROCESS FOR RESIDUA DEMETALATION, DESULFURIZATION AND RESULTING COKE GASIFICATION**

**Michael P. Rosynek, Bryan, Tex.; George F. Shipman, and Tsoung-Yuan Yan, both of Trenton, N.J., assignors to Mobil Oil Corporation, New York, N.Y.**

**Filed Feb. 1, 1974, Ser. No. 438,916**
**Int. Cl.² C10J** *3/00*; **C10G** *9/30*; **C10B** *55/00*; **B01D** *15/06*
**U.S. Cl. 208—253** **13 Claims**

**References Cited**
UNITED STATES PATENTS

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|---|---|---|---|
| 3,691,063 | 9/1972 | Kirk | 208/91 |
| 3,726,791 | 4/1973 | Kimberlin et al. | 208/127 |
| 3,813,331 | 5/1974 | Weisz et al. | 208/251 |
| 3,825,486 | 7/1974 | Miale | 208/110 |


1. A process for residual oil demetalation and desulfurization and resulting coke gasification which comprises contacting said residual oil with a porous refractory oxide in the absence of added hydrogen, at a temperature of from greater than 700°F to about 1100°F and a porous refractory oxide to oil weight ratio of from about 0.1 to about 5, recovering from said residual oil contacting step upgraded residual oil of cracking feed quality and coke-deposited refractory oxide, contacting said coke-deposited refractory oxide with steam and a free oxygen containing gas at a temperature of from about 1000°F to about 1500°F and a mole ratio of steam to oxygen of from about 3 to about 5, and recovering from said coke-deposited refractory oxide contacting step producer gas and regenerated coke-free refractory oxide.

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**B 450,967**
**SYNTHETIC AMORPHOUS SILICAS OF PREDETERMINED PORE DISTRIBUTION METHOD OF PRODUCING SAME**

**Thomas O. Mitchell, West Trenton, and Darrell Duayne Whitehurst, Titusville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.**

**Filed Mar. 14, 1974, Ser. No. 450,967**
**Int. Cl.² B01J** *29/00, 29/06*; **C01B** *33/12*
**U.S. Cl. 252—454** **21 Claims**

**References Cited**
UNITED STATES PATENTS

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|---|---|---|---|
| 2,715,060 | 8/1955 | Barry | 423/336 |
| 3,210,273 | 10/1965 | Taulli et al. | 423/335 X |
| 3,236,594 | 2/1966 | Ray | 423/336 |
| 3,709,833 | 1/1973 | Thomas | 252/454 X |


1. A synthetic amorphous solid having shape selective properties prepared by the steps of (1) hydrolyzing and (2) polymerizing at up to 200°C. in water a silane having the formula $R[Si]X_3$ wherein X is a hydrolyzable group R is a nonhydrolyzable group and [Si] is selected from the group consisting of $-Si\leqslant$ and $-Si(R)_2-O-Si\leqslant$ and (3) calcining the polymerized product wherein there is also present in the final calcined product in addition to silicon at least one member selected from the group consisting of groups IIIA, IVA, IVB, VA, VB, VIB VIIB and VIII of the Periodic Table the source of said member being present in the initial hydrolyzing step.

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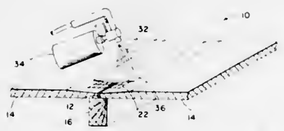
**B 456,148**
**ACCELERATED DRYWALL JOINT TREATMENT**

**Joseph W. Schneller, Williamsville, and Richard E. Smith, Tonawanda, both of N.Y., assignors to National Gypsum Company, Buffalo, N.Y.**

**Filed Mar. 29, 1974, Ser. No. 456,148**
**Int. Cl.² E04B** *2/72, 2/00*
**U.S. Cl. 156—71** **1 Claim**

**References Cited**
UNITED STATES PATENTS

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| 3,035,940 | 5/1962 | Hobson | 117/169 R |
| 3,116,195 | 12/1963 | Lathrop et al. | 156/71 |
| 3,284,227 | 11/1966 | Gerton | 117/70 D |
| 3,383,271 | 5/1968 | Roberts et al. | 117/70 R |
| 3,576,091 | 4/1971 | Shull et al. | 156/71 |


1. The method of treating joints in drywall construction comprising the steps of saturating a narrow reinforcing tape with a set accelerator for settable gypsum, adhering said narrow reinforcing tape over a joint between a pair of wallboards, coating a narrow area of the face of said pair of wallboards along each side of said joint between the said wallboards with a set accelerator for settable gypsum with said coating covering said tape, applying a thin layer of a joint compound having a settable gypsum binder over the area of said coating of set accelerator, and applying a second coating of said set accelerator over the top of said thin layer of joint compound, whereby said thin layer of joint compound hardens rapidly and subsequently steps in the erection of a finished wall therefrom may proceed substantially sooner thereafter.



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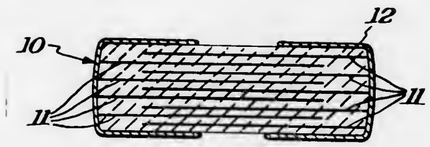
**B 457,886**
**LOW TEMPERATURE FIRED ELECTRICAL COMPONENTS AND METHOD OF MAKING SAME**

**Galeb H. Maher, Adams, Mass., assignor to Sprague Electric Company, North Adams, Mass.**

**Continuation-in-part of Ser. No. 206,402, Dec. 9, 1971, Pat. No. 3,811,937. This application Apr. 4, 1974, Ser. No. 457,886**
**The portion of the term of this patent subsequent to May 21, 1991, has been disclaimed.**
**Int. Cl.² B05D** *5/12*
**U.S. Cl. 428—434** **10 Claims**

**References Cited**
UNITED STATES PATENTS

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| 2,889,952 | 6/1959 | Claypoole | 106/53 |
| 3,331,777 | 7/1967 | Hoffman | 106/53 |
| 3,365,631 | 1/1968 | Delaney et al. | 317/258 |
| 3,400,001 | 9/1968 | Hasumi et al. | 317/258 |
| 3,495,996 | 2/1970 | Delaney et al. | 317/258 |
| 3,600,652 | 8/1971 | Riley | 317/258 |
| 3,638,084 | 1/1972 | Burn | 317/258 |
| 3,653,933 | 4/1972 | Tsunekawa | 106/54 |
| 3,682,840 | 8/1972 | Van Loan | 106/53 |
| 3,784,887 | 1/1974 | Sheard | 317/258 |
| 3,799,754 | 3/1974 | Thomas | 106/54 |
| 3,811,937 | 5/1974 | Maher | 117/217 |


1. An electrical component comprising a low temperature fired ceramic body of a fired blend containing 70 to 92% by weight of a calcined high temperature ceramic mixture and 8–30% by weight of a low firing temperature glass formulation having a melting temperature less than 1,600°F, said calcined ceramic mixture containing from 0–30 mole percent baria, 45–95 mole percent titania and 5–50 mole percent of a rare earth oxide selected from the group consisting of neodymium, lanthanum and mixtures thereof, said glass formulation consisting in weight percent essentially of 5–30% of the glass former oxides selected from the group consisting of $B_2O_3$ and $SiO_2$, 0–5% $Al_2O_3$, 0–15% ZnO, 0–20% CdO, and at least 35% of an oxide selected from the group consisting of $Bi_2O_3$ and PbO; and at least one metallic film located within said ceramic body, said metallic film having a melting point not substantially greater than the firing temperature of said body.

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**B 458,060**
**PROCESS FOR THE CONTINUOUS DYEING OF THREADS AND SLIVERS OF DRY SPUN ACRYLONITRILE POLYMERS**

**Ulrich Reinehr; Alfred Nogaj, both of Dormagen, and Günther Hölzing, Dormagen-Dellhofen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

**Filed Apr. 4, 1974, Ser. No. 458,060**
**Claims priority, application Germany, Apr. 5, 1973, 2317132**
**Int. Cl.² D06P** *5/00, 3/70*; **D01F** *6/18*
**U.S. Cl. 8—17** **11 Claims**

**References Cited**
UNITED STATES PATENTS

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| 2,615,198 | 10/1952 | Flannagan | 264/206 |
| 3,018,157 | 1/1962 | Kovarik et al. | 8/177 R |
| 3,111,357 | 11/1963 | Wirth et al. | 264/78 |
| 3,113,827 | 12/1963 | Moore | 264/78 |
| 3,242,243 | 3/1966 | Knudsen | 264/78 |
| 3,296,341 | 1/1967 | Briar et al. | 264/78 |
| 3,310,456 | 3/1967 | Fujita et al. | 264/78 |
| 3,402,014 | 9/1968 | Ucci | 264/78 |
| 3,543,409 | 12/1970 | Fuhs et al. | 8/177 R |
| 3,545,914 | 12/1970 | Hayashi et al. | 8/177 R |
| 3,787,182 | 1/1974 | Eigenmann et al. | 8/177 R |


1. A process for the continuous and rapid dyeing of dry-spun acrylonitrile copolymer comprising at least 150 milliquivalents of acidic groups per kg of acrylonitrile copolymer, said process comprising passing the dry-spun copolymer through a bath of water at room temperature, and through squeezing rollers and thereafter removing up to 70% but at least 30% of the moisture content from the copolymer by pressing and then heating and drying the copolymer to a residual moisture content of from 3 to 10%, dyeing in a dye-bath at temperatures of from room temperature to 100°C with a dyeing time of from fractions of a second to 60 seconds, then fixing, stretching at a ratio of from 1:2.5 to 1:6.5, washing, brightening, drying and crimping.

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**B 460,441**
**FLEXIBLE CELLULAR POLYURETHANE FOAM COMPOSITIONS HAVING INCREASED FLAME RETARDANCE**

**John G. Demou, Lincoln Park; Louis C. Pizzini, Trenton, and John T. Patton, Jr., Wyandotte, all of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.**

**Continuation-in-part of Ser. No. 264,157, June 19, 1972, Pat. No. 3,804,782. This application Apr. 12, 1974, Ser. No. 460,441**
**Int. Cl.² C08G** *18/14, 18/18, 18/20*
**U.S. Cl. 260—2.5 AC** **8 Claims**

**References Cited**
UNITED STATES PATENTS

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|---|---|---|---|
| 2,939,851 | 6/1960 | Orchin | 260/2.5 AC |
| 3,030,951 | 4/1962 | Mandarino | 260/2.5 AC |
| 3,226,345 | 12/1965 | Saunders | 260/2.5 AC |
| 3,471,416 | 10/1969 | Fijal | 260/2.5 AP |
| 3,728,291 | 4/1973 | Carroll et al. | 260/2.5 AC |
| 3,736,272 | 5/1973 | Mosso et al. | 260/2.5 AP |
| 3,741,917 | 6/1973 | Morenouse | 260/2.5 BG |
| 3,803,064 | 4/1974 | Fishbein | 260/2.5 AM |

FOREIGN PATENTS OR APPLICATIONS

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|---|---|---|---|
| 908,337 | 10/1967 | United Kingdom | 260/2.5 DW |
| 1,162,517 | 8/1969 | United Kingdom | 260/2.5 BG |

OTHER PUBLICATIONS

Patten, "Highly Resilient, Cold Molded Urethane Flexible Foam," Journal of Cellular Plastics, May/June, 1972, pp. 134–143.


1. A flexible polyurethane foam prepared in the presence of water by the reaction of:

a. a polyalkylene polyether polyol having an average equiv-

alent weight of from 200 to 2500 with

b. an organic polyisocyanate employing an isocyanate index of from 130 to 225 in the presence of from 0.05 part to 10 parts by weight per 100 parts of weight of said polyalkylene polyether polyol of an isocyanate trimerization catalyst selected from the group consisting of triethylene diamine, alkylene oxide-water adducts of triethylene diamine, triethylene diamine diformate, and N-benzyltrialkyl ammonium alkoxides and hydroxides.

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**B 461,352**
**DEPILATORY FORMULATION**

**Mario J. de la Guardia, Savannah, Ga., assignor to Carson Chemical Company, Savannah, Ga.**

**Filed Apr. 16, 1974, Ser. No. 461,352**
**Int. Cl.² A61K 7/155**
**U.S. Cl. 8—161** **13 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 3,271,258 | 9/1966 | Zviak et al. | 8/94.16 |
| 3,384,548 | 5/1968 | Zviak et al. | 8/160 |

FOREIGN PATENTS OR APPLICATIONS

| | | |
|---|---|---|
| 1,956,002 | 5/1970 | Germany |

OTHER PUBLICATIONS

Chemical Abstracts, Vol. 72: 124997m, (1970).

1. A stable aqueous depilatory composition having a pH of about 11.5 to about 12.7 comprising, as the essential active ingredients,

a. one part of at least one alkali metal silicate, wherein the amount of said alkali metal silicate is about 0.1 to 1.0 weight percent, based on the total weight of said composition,

b. 5 to 200 parts of at least one alkaline earth metal acid salt, wherein the acid is selected from the group consisting of thioglycolic acid and thiolactic acid, and

c. 1 to 50 parts of thiourea, wherein the composition has a shelf stability under ambient conditions of at least three months.

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**B 462,386**
**DIMENSIONALLY STABLE, FLEXIBLE HYDRAULIC HOSE HAVING IMPROVED CHEMICAL AND TEMPERATURE RESISTANCE**

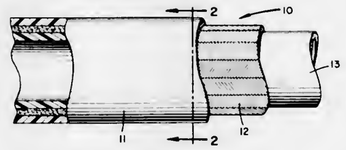
**Hans A. Johansen, Mantua, and David D. Russell, Atwater, both of Ohio, assignors to Samuel Moore & Company, Aurora, Ohio**

**Division of Ser. No. 328,367, Jan. 3, 1973, Pat. No. 3,881,521. This application Apr. 19, 1974, Ser. No. 462,386**
**Int. Cl.² B29D 23/12, 23/04**
**U.S. Cl. 156—143** **16 Claims**

**References Cited**
UNITED STATES PATENTS

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|---|---|---|---|
| 2,076,729 | 4/1937 | Kennedy | 138/126 |
| 3,116,760 | 1/1964 | Matthews | 138/125 |
| 3,159,183 | 12/1964 | Brumbach | 138/125 |
| 3,221,774 | 12/1965 | Fritz et al. | 138/125 |
| 3,253,618 | 5/1966 | Cook | 159/149 |
| 3,253,619 | 5/1966 | Cook et al. | 156/149 |
| 3,334,165 | 8/1967 | Koch | 156/149 |
| 3,750,712 | 8/1973 | Brand | 138/124 |
| 3,790,419 | 2/1974 | Atwell et al. | 156/149 |

1. In a method for making a flexible, dimensionally stable hydraulic hose which comprises extruding a self-supporting elastomeric core tube, surrounding the core tube with reinforcing fibers and extruding an elastomeric sheath over the fibers, the improvement which comprises tautly winding biased overlapping reinforcing fibers uniformly over the surface of the core tube to provide a reinforcing layer which covers at least about 85% thereof, with the fibers wound about the core




tube in each direction forming an angle of from about 50° to about 65° with the longitudinal axis of the core tube whereby substantial expansion of the core tube under pressure at elevated temperatures is prevented, and irradiating the core tube with ionizing electrons until it is no longer thermoplastic and has improved solvent, chemical and heat resistance.

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**B 468,350**
**DI-OLEFINIC KETONES**

**Clive A. Henrick, Palo Alto, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.**

**Continuation-in-part of Ser. No. 201,167, Nov. 22, 1971, abandoned, which is a continuation-in-part of Ser. No. 187,898, Oct. 8, 1971, Pat. No. 3,752,843, which is a continuation-in-part of Ser. No. 111,701, Feb. 1, 1971, abandoned. This application May 9, 1974, Ser. No. 468,350**
**Int. Cl.² C07C 49/20**
**U.S. Cl. 260—593 R** **3 Claims**

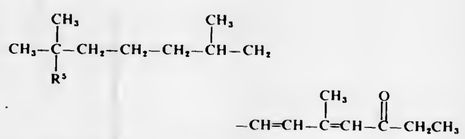
**References Cited**
UNITED STATES PATENTS

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|---|---|---|---|
| 3,712,922 | 1/1973 | Henrick et al. | 260/593 R |
| 3,729,486 | 4/1973 | Siddall | 260/DIG. 44 |
| 3,816,484 | 6/1974 | Henrick | 260/593 R |

OTHER PUBLICATIONS

Slama et al., Proceeding of the National Academy of Science, Vol. 54, pp. 411–414, (1965).
Sarmiento et al., Science, Vol. 179, pp. 1342–1343.

1. A compound of the formula:




in which $R^5$ is hydrogen or methyl.



**B 470,348**
**METHOD OF SEPARATING METHYLOLPHENOLS FROM SOLUTIONS**

**Robert Elliott Davis, Oklahoma City, Okla., and Friedrich Josef Weck, Hacienda Heights, Calif., assignors to Kerr-McGee Chemical Corporation, Oklahoma City, Okla.**

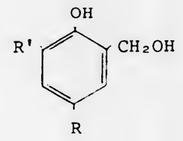
**Continuation-in-part of Ser. Nos. 716,337, March 27, 1968, abandoned, and Ser. No. 321,046, Jan. 4, 1973, abandoned. This application May 16, 1974, Ser. No. 470,348**
**Int. Cl.² C07C 39/06, 39/27**
**U.S. Cl. 260—621 K** **9 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 2,260,337 | 10/1941 | Prescott et al. | 260/624 A |
| 2,260,338 | 10/1941 | Prescott et al. | 260/624 A |
| 2,587,753 | 4/1952 | O'Conner | 260/621 A |
| 2,899,470 | 8/1959 | Goldstein et al. | 260/624 A |
| 3,479,294 | 11/1967 | Week | 252/182 |

1. A method of separating methylolphenol from a phenolic impurity which comprises:

contacting (A) an organic solution containing (1) an organic solvent; (2) at least one phenolic impurity and (3) about 1% to about 20% by weight of the methylolphenol having the formula

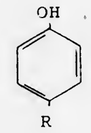



in which R is selected from the group consisting of hydrogen, phenyl, bromine, chlorine and alkyl radicals having from 3 to 8 carbon atoms and R′ is selected from the group consisting of hydrogen, phenyl, chloro, $CH_2OH$ and alkyl radicals having from 1 to 9 carbon atoms

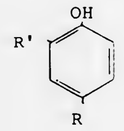
with (B) an aqueous alkaline borate solution containing lithium ions and being free of substantial amounts of other alkali metal ions, for a period of time sufficient for a solid complex of lithium and boron to form with said methylolphenol, the organic solution being contacted with said aqueous alkaline borate solution for at least about 0.5 hour at a temperature of between about 20° and about 40°C. and thereafter contacting said solid complex with a dilute inorganic acid and an organic solvent for said methylolphenol to dissolve said complex and provide an aqueous phase containing the lithium and boron values of said complex and an organic phase containing the methylolphenol portion of said complex and separating said phases, the concentration of lithium and boron ions in the alkaline borate solution being sufficient to provide at least about one lithium ion and one boron ion for every two moles of said methylolphenol in said organic solution;

said organic solvent being selected from the group consisting of benzene, toluene, xylenes, alkyl benzene, hexane, heptane, octane, nonane, kerosene, mineral spirits, petroleum ether, butyl ether, isopropyl ether, hexyl ethers, chloroform, carbon tetrachloride, chlorobenzene, monohydric alcohols having from 8 to 17 carbon atoms per molecule and mixtures thereof and said phenolic impurity being at least one member of the group consisting of

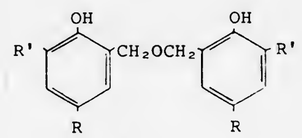
a. unreacted starting materials having the formula




b. partially reacted starting materials having the formula

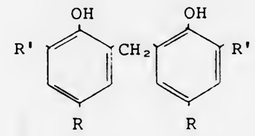



c. degradation products of the methylolphenol having the formula




and

d. degradation products of the methylolphenol having the formula



in which R and R' in each instance are as hereinbefore defined for the methylolphenol.

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**B 471,221**
**METHOD FOR PRODUCING AN ALKALI METAL PYROPHOSPHATE**

**Peter Coad, Midwest City; Edward Conley Murray, Oklahoma City, both of Okla., and Homer Charles Reed, Newport Beach, Calif., assignors to Kerr-McGee Chemical Corporation, Oklahoma City, Okla.**

**Filed May 20, 1974, Ser. No. 471,221**
**Int. Cl.² C01B** *15/16, 25/26*
**U.S. Cl. 423—315** **12 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 3,473,889 | 10/1969 | Shen | 423/315 |

1. A method for producing an alkali metal pyrophosphate comprising: admixing an alkali metal nitrate with aqueous phosphoric acid, heating said admixture to a temperature of at least about 700°C in the presence of a catalytic amount of at least one metal oxide selected from the group consisting of oxides of iron, vanadium, manganese and chromium for a period of time sufficient to produce said alkali metal pyrophosphate and gaseous reaction products and recovering said alkali metal pyrophosphate.

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**B 471,579**
**SORBENT FOAM MATERIAL**

**Alan N. Ferguson, Harlow, England, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.**

**Filed May 20, 1974, Ser. No. 471,579**
**Claims priority, application United Kingdom, May 25, 1973, 25182/73**
**Int. Cl.² C08G** *69/46, 73/06*
**U.S. Cl. 260—2.5 R** **14 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 2,950,295 | 8/1960 | Zimmer | 260/397.7 |
| 3,306,862 | 2/1967 | Mageli et al. | 260/2.5 |
| 3,493,522 | 2/1970 | Webb | 260/2 |

1. A black sorbent thermoset foam which has been prepared by the pyrolysis of a composition, liquid at the pyrolysis temperature, comprising at least one Lewis acid metallic salt and at least one aromatic nitrogen-containing compound having the general formula:

$$X-Ar-Y$$

in which Ar represents an aromatic nucleus on which X and Y are substituents directly attached to the nucleus, X represents a substituent having a negative Hammett sigma constant and attached to the aromatic nucleus by a nitrogen, oxygen or sulphur atom, and Y represents a substituent having a positive Hammett sigma constant and attached to the aromatice nucleus by a nitrogen atoms, the substituents X and/or Y optionally forming part of a ring fused onto the aromatic nucleus,

the thermoset foam having a specific surface area of at least 50 $m^2/g$, and said pyrolysis comprising heating said composition to a temperature below 300°C to initiate reaction of said composition.

**B 472,256**
**CARBAMIC ACID ESTERS**

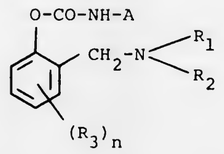
**Jürgen Hocker, Schildgen; Hans-Joachim Diehr, Wuppertal, and Rudolf Merten, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

**Filed May 22, 1974, Ser. No. 472,256**
**Claims priority, application Germany, May 22, 1973, 2325927**
**Int. Cl.² C07C** *125/06*
**U.S. Cl. 260—472** **2 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 3,803,062 | 4/1974 | Rodia et al. | 260/472 |

1. A compound of the general formula



wherein

*n* represents an integer of from 1 to 4,

A represents an aromatic hydrocarbon group obtained by removing the NCO group from a monomeric aromatic monoisocyanate containing 6–14 carbon atoms,

$R_1$ and $R_2$ may be the same or different and each represent a $C_1$-$C_6$ alkyl group, and

$R_3$ represents hydrogen, chlorine, bromine, or a $C_1$-$C_{18}$ alkyl group.

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**B 477,252**
**PROCESS FOR PREPARING 2-AMINO-5-CHLOROPYRIDINE**

**Thomas J. Kress, 215 E. Brunswick Ave., Indianapolis, Ind. 46227, and Larry L. Moore, Rte. 1, Box 209, Bargersville, Ind. 46106**

**Filed June 7, 1974, Ser. No. 477,252**
**Int. Cl.² C07D** *213/02*
**U.S. Cl. 260—296 R** **5 Claims**

**References Cited**
UNITED STATES PATENTS

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| 3,579,528 | 5/1971 | Haszeldine et al. | 260/296 X |
| 3,849,429 | 11/1974 | Boudakian | 260/296 R |

OTHER PUBLICATIONS

Friedrich et al., Pharmazie, Vol. 19, pp. 677 to 678, (1964).
Van Zweiten et al., Rec. Trav. Chim., Vol. 80, pp. 1066 to 1074, (1961).
Klingsberg, Pyridine and its Derivatives, Part Two, frontis page and p. 308, (1961).
English et al., J. Am. Chem. Soc., Vol. 68, pp. 453 to 458, (1946).

1. A process for preparing 2-amino-5-chloropyridine which comprises reacting 2-aminopyridine with no more than two equivalents of a chlorinating agent selected from the group consisting of chlorine gas, hypochlorous acid, thionyl chloride, and sulfuryl chloride in a strongly acidic medium having a Hammett acidity function less than −3.5.



**B 481,737**
**PAPER HONEYCOMB CUSHIONING PAD**

**William R. Briggs, Bowie, Md., and Eugene A. Ripperger, Austin, Tex., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.**

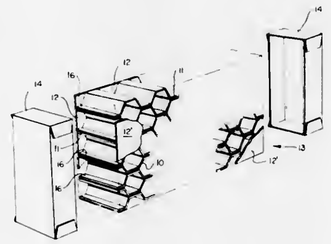
**Filed June 21, 1974, Ser. No. 481,737**
**Int. Cl.² B32B** *3/12*
**U.S. Cl. 428—73** **3 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 2,428,979 | 10/1947 | May | 156/197 |
| 2,477,852 | 8/1949 | Bacon | 161/68 |
| 2,768,924 | 10/1956 | Wright | 161/43 |
| 2,889,297 | 6/1959 | Brandner et al. | 156/332 X |
| 2,937,956 | 5/1960 | Fendius et al. | 117/76 |
| 3,035,961 | 5/1962 | Jones et al. | 156/197 |
| 3,247,039 | 4/1966 | Schultheiss | 156/167 |
| 3,587,479 | 6/1971 | Geschwender | 108/51 |
| 3,756,894 | 9/1973 | Shugart | 156/443 |

FOREIGN PATENTS OR APPLICATIONS

| | | | |
|---|---|---|---|
| 129,793 | 11/1948 | Australia | 161/68 |



1. In a double faced expanded paper honeycomb cushioning pad adapted for preventing blowouts through the ends of said double faced expanded paper honeycomb cushioning pad upon impact, said double faced expanded paper honeycomb cushioning pad comprising a plurality of sheets of Kraft paper adhered together along parallel spaced apart glue lines, expanded to form air cells hexagonally shaped in cross section and bounded by portions of said sheets of Kraft paper, and double faced by facing sheets of Kraft paper adhered over the top and bottom of the expanded paper honeycomb cushioning pad, thereby forming in said double faced expanded paper honeycomb cushioning pad a plurality of adjacent closed air cells hexagonally shaped in cross section, said double faced expanded paper honeycomb cushioning pad having a pair of ends each comprising a row of vertically sliced air cells, the glue lines of said vertically sliced air cells being normal to said ends, the improvement which comprises means for preventing blowouts through said ends of said double faced expanded paper honeycomb cushioning pad, said blowout preventing means comprising two end caps, each of said two end caps being adhered to the exterior surfaces of said double faced expanded paper honeycomb cushioning pad adjacent to one of said two ends so as to close and seal each of said two ends, said end caps being constructed of 70 to 80 lb. Kraft paper tape, said Kraft paper tape being folded over said facing sheets and over the side surfaces of said double faced expanded paper honeycomb cushioning pad to a sufficient extent and adhered sufficiently tightly to said facing sheets and said side surfaces to prevent a blowout from occurring through either of said two ends of said double faced expanded paper honeycomb cushioning pad upon impact.

**B 483,865**
**POLYVINYL CHLORIDE POLYBLEND MOLDING COMPOSITION**

**Thor J. G. Lonning, Suffield, Conn., assignor to Monsanto Company, St. Louis, Mo.**

**Filed June 27, 1974, Ser. No. 483,865**
**Int. Cl.² C08F** *19/08*
**U.S. Cl. 260—23 XA** **20 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 2,802,808 | 8/1937 | Hayes | 260/876 R |
| 3,636,138 | 1/1972 | Beer | 260/29.7 UP |

1. A polymer composition comprising:

A. from about 50 to 80 parts by weight of a polyvinyl chloride polymer being characterized by having an inherent viscosity of from about 0.7 to 1.5 in a 0.2 weight percent cyclohexanone solution at about 25° to 30°C., said polyvinyl chloride polymer comprising a polymer selected from the group consisting of homopolyvinyl chloride and polyvinyl chloride copolymers having up to 25 weight percent of another ethylenically unsaturated comonomer polymerizable therewith,

B. a butadiene-styrene rubbery substrate having a butadiene content of 68 to 95 percent by weight and a styrene content of 5 to 32 percent by weight based on the total weight of the butadiene-styrene rubbery substrate which rubbery substrate is further characterized as having a particle size in the range of from 0.06 to 0.2 micron, a gel content in the range of from 40 to 95 percent, a swelling index in the range of from 10 to 40, and a second order transition temperature (Tg) less than −40°C.,

C. A superstrate grafted onto the rubber substrate which superstrate comprises:

1. the polymerization product of a first polymerizable monomer composition comprising:
   a. from 0.1 to 2 percent by weight of a nonconjugated diolefin monomer,
   b. from 20 to 30 percent by weight of an ethylenically unsaturated nitrile selected from the group consisting of acrylonitrile, and mixtures of acrylonitrile and methacrylonitrile which contain up to 20 percent by weight of methacrylonitrile,
   c. from 40 to 60 percent by weight of a vinylidene aromatic hydrocarbon monomer selected from the group consisting of styrene and alpha methyl styrene,
   d. from 20 to 50 percent by weight of methyl methacrylate, and
2. the polymerization product of a second polymerizable monomer composition comprising from 55 to 85 percent by weight of an ethylenically unsaturated nitrile monomer selected from the group consisting of acrylonitrile and mixtures of acrylonitrile and methacrylonitrile which contains up to 20 percent by weight of methacrylonitrile based on the total weight of acrylonitrile and methacrylonitrile and from 15 to 45 percent by weight of a monovinylidene aromatic hydrocarbon monomer wherein the percent by weight is based on the total weight of the monomers in the second polymerizable monomer mixture;

wherein the grafted superstrate contains a total of at least 40 percent by weight ethylenically unsaturated nitrile monomer and wherein the ratio of grafted superstrate to substrate is in the range of from 15–200:100 wherein (B) plus (C) are present in from about 20 to 50 parts by weight, the total parts by weight of (A), (B) and (C) being 100 parts,

D. a plasticizer system for said polymer composition, said plasticizer system being present in a sufficient amount to produce in said polymer composition after such is heat fused at a temperature of from about 120° to 215°C., a Shore A hardness value in the range of from about 45 to 95 at about 23°C.,

E. a stabilizer system for said polymeric composition, said stabilizer system being present in such amounts as to substantially prevent the thermal degradation of said polymeric composition during heat fusion for 5 to 15 minutes at temperatures in the range of from about 120° to 215°C., and

F. a lubricant system present in such amounts as to permit the release of said polymeric composition from a heated solid surface after said polymeric composition has been heat fused at temperatures in the range of from about 120° to 215°C.

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**B 488,111**
**PHENYL- AND (SUBSTITUTED)-PHENYL-1,2,3-TRIAZOLE-ALKANOIC AND -ALKENOIC ACIDS**

**Robert Thomas Buckler, Edwardsburg, Mich.; Harold Eugene Hartzler, Elkhart, Ind., and Shin Hayao, Tokyo, Japan, assignors to Miles Laboratories, Inc., Elkhart, Ind.**

**Division of Ser. No. 364,609, May 29, 1973, Pat. No. 3,900,942. This application July 12, 1974, Ser. No. 488,111**
**Int. Cl.² C07D** *249/06*
**U.S. Cl. 260—308 A** **3 Claims**

**References Cited**
OTHER PUBLICATIONS

Tanaka et al., J. Organic Chemistry, Vol. 38, pp. 2708-2712 (1973).

**1.** 3-[4-(m-Bromo)-phenyl-1,2,3,(1H)-triazole-1]-propionic acid.

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**B 496,431**
**METHOD OF CONTROLLING RICE BLAST WITH N-(ALKYLTHIOPHENYL)MALEIMIDES**

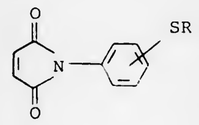
**Donald E. Bublitz, 1592 Hoytt Drive, Concord, Calif. 94521**

**Division of Ser. No. 307,608, Nov. 17, 1972, Pat. No. 3,853,912. This application Aug. 9, 1974, Ser. No. 496,431**
**Int. Cl.² A01N** *9/22*
**U.S. Cl. 424—274** **11 Claims**

**References Cited**
UNITED STATES PATENTS

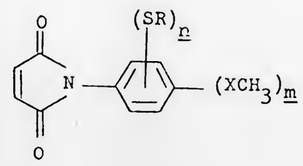

| | | | |
|---|---|---|---|
| 2,205,558 | 6/1940 | Flett | 424/274 X |
| 3,129,225 | 4/1964 | Shapiro et al. | 424/274 X |


**1.** A composition comprising an inert agriculturally acceptable carrier and a rice-blast controlling amount of a compound of the formula:



wherein SR is in the ortho- or meta- position and R is methyl.

**4.** A method for controlling rice blast on a rice plant comprising applying to the plant to be protected a rice blast controlling amount of a compound having the formula:



wherein $-(SR)_n$ is in the ortho or meta position; $n$ is 0 or 1; $m$ is 0 or 1, with the proviso that the sum of $n + m$ is always 1; R is an alkyl group of from 1 to 6 carbon atoms; and X is oxygen or sulfur.

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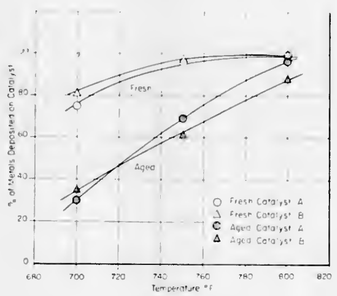
**B 501,317**
**DEMETALATION AND DESULFURIZATION OF OIL IN SEPARATE CATALYTIC ZONES**

**Donald Milstein, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.**

**Continuation-in-part of Ser. No. 393,092, Aug. 30, 1973, abandoned. This application Aug. 28, 1974, Ser. No. 501,317**
**Int. Cl.² C10G** *23/00*
**U.S. Cl. 208—210** **7 Claims**

**References Cited**
UNITED STATES PATENTS


| | | | |
|---|---|---|---|
| 2,174,510 | 10/1939 | Gwynn | 208/210 |
| 3,291,721 | 12/1966 | Schuman | 208/210 |
| 3,607,725 | 9/1971 | Irvine et al. | 208/251 H |
| 3,809,644 | 5/1974 | Johnson et al. | 208/210 |


**1.** In a process for hydrodesulfurizing a petroleum oil that contains residual hydrocarbon components including metals, wherein said oil and hydrogen are passed serially through two separate catalytic zones at a space velocity of about 0.1 to 5.0 L.H.S.V., a pressure of about 500 to 3,000 p.s.i.g., and with a hydrogen circulation rate of about 1,000 to 15,000 s.c.f./bbl., and at a temperature progressively increased in both catalytic zones from a start-of-run temperature of about 650°F to an end-of-run temperature of about 800°F at which temperature the active hydrodesulfurization catalyst in the second catalytic zone becomes spent, the improvement comprising taking advantage of said spent catalyst's demetalation activity by

passing said oil that contains residual hydrocarbon components, and hydrogen, at a start-of-run temperature of at least about 770°F, through said first catalytic zone containing catalyst consisting essentially of said spent catalyst from said second reaction zone, thereby forming demetallized oil; and passing said demetallized oil and hydrogen, at a start-of-run temperature of about 650°F through said second reaction zone containing active hydrodesulfurization catalyst comprisisng a Group VIB and a Group VIII metal on alumina.



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**B 501,415**
**BACKSIZING CARPET WITH HOT MELT COMPOSITION OF ETHYLENE COPOLYMER, ATACTIC POLYPROPYLENE AND VULCANIZED RUBBER**

**David D. Taft, Columbus, Ohio, and Terry H. Shepler, St. Paul, Minn., assignors to Ashland Oil, Inc., Ashland, Ky.**

**Division of Ser. No. 216,242, Jan. 7, 1972, Pat. No. 3,849,353. This application Aug. 28, 1974, Ser. No. 501,415**
**Int. Cl.² B05D** *5/10*
**U.S. Cl. 427—207** **15 Claims**

**References Cited**
UNITED STATES PATENTS


| | | | |
|---|---|---|---|
| 3,577,372 | 5/1971 | Flanagan et al. | 117/122 H |
| 3,619,270 | 11/1971 | Tesch | 117/122 H |
| 3,753,769 | 8/1973 | Steiner | 117/122 H |
| 3,849,353 | 11/1974 | Taft et al. | 161/247 X |


**1.** A process for backsizing a tufted carpet having a primary textile backing and non-woven tufts of synthetic fibers protruding therefrom which comprises:

a. heating to a temperature of about 160°F to 375°F, a hot melt coating composition, said hot melt composition consisting essentially of:

1. copolymer of ethylene and unsaturated ester monomer selected from the group consisting of vinyl acetate; alkyl acrylate wherein the alkyl group contains 1-18 carbon atoms; and mixtures thereof; containing from about 40 to 85% by weight of ethylene and from about 15 to about 60% by weight of unsaturated ester monomer;
2. atactic polypropylene; and
3. vulcanized rubber; said composition based upon the combined weight of (1), (2), and (3) containing from about 5% to about 50% by weight of (1); about 10 to about 85% by weight of (2) and about 10 to about 50% of (3);

b. applying a uniform coating in an amount from about 10 to 40 ounces per square yard of said composition in a molten state to the backside of said carpet at a coating station while moving said carpet past said station at a speed of from about 20 to 60 feet per minute; and

c. thereafter solidifying said carpet by cooling it below its melting point.

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**B 501,540**
**ASPHALTIC COMPOSITIONS CONTAINING SYNTHETIC TERPENIC RESIN AND AN INTERPOLYMER OF ETHYLENE, VINYL ACETATE AND AN ORGANIC ACID**

**Richard J. Petrucco, Laurel Springs, and Charles A. Pagen, Woodbury, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.**

**Filed Aug. 29, 1974, Ser. No. 501,540**
**Int. Cl.² C08L** *91/00*
**U.S. Cl. 260—28.5 AS** **8 Claims**

**References Cited**
UNITED STATES PATENTS


| | | | |
|---|---|---|---|
| 3,215,657 | 11/1965 | Beresniewicz et al. | 260/78.5 HC |
| 3,414,533 | 12/1968 | Trieschmann et al. | 260/28.5 AS |
| 3,442,841 | 5/1969 | Adelman | 260/28.5 AS |
| 3,629,164 | 12/1971 | Smith et al. | 260/28.5 AS |
| 3,645,947 | 2/1972 | Quigg et al. | 260/28.5 AS |
| 3,821,144 | 6/1974 | Goyer et al. | 260/28.5 AS |


**1.** An asphaltic composition comprising a major amount of asphalt, a minor amount of a synthetic terpenic resin, and a minor amount of an interpolymer of ethylene, vinyl acetate, and an organic acid selected from the group consisting of acrylic, methacrylic, itaconic, maleic and fumaric acids; the alkyl hydrogen maleates and the alkyl hydrogen fumarates.

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**B 502,773**
**ALUMINA-CHROMIA-METAL (IV) OXIDE REFRACTORY FIBERS HAVING A MICROCRYSTALLINE PHASE**

**Harold G. Sowman, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.**

**Continuation-in-part of Ser. No. 376,628, July 5, 1973, abandoned. This application Sept. 3, 1974, Ser. No. 502,773**
**Int. Cl.² C04B** *35/10, 35/12, 35/18*
**U.S. Cl. 106—57** **14 Claims**

**References Cited**
UNITED STATES PATENTS


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|---|---|---|---|
| 3,311,481 | 3/1967 | Sterry et al. | 106/65 |
| 3,311,689 | 3/1967 | Kelsey | 106/73.33 |
| 3,503,765 | 3/1970 | Blaze | 106/69 |
| 3,585,153 | 6/1971 | Kiehl et al. | 106/66 |
| 3,632,709 | 1/1972 | Hayes et al. | 106/65 |
| 3,652,749 | 3/1972 | Sobel et al. | 106/66 |
| 3,808,015 | 4/1974 | Seufert | 106/65 |
| 3,814,782 | 6/1974 | Hayes et al. | 106/65 |
| 3,849,181 | 11/1974 | Green | 106/65 |


**1.** A shaped, fired, transparent refractory fiber having at least one microcrystalline phase, the fiber comprising a composition of 10–75% $Al_2O_3$, 1–30% $Cr_2O_3$ and 10–75% $RO_2$ wherein R is selected from silicon, titanium, zirconium or tin wherein the fibers having more than 60% $Al_2O_3$ have a specific surface area of less than 30 $m^2/g$.

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**B 503,817**
**SOLID PHASE SYNTHESIS OF PEPTIDES WITH CARBOXYL-TERMINAL AMIDES**

**Erhard Gross, Bethesda, Md., assignor to The United States of America as represented by the Department of Health, Education and Welfare, Washington, D.C.**

**Filed Sept. 6, 1974, Ser. No. 503,817**
**Int. Cl.² C07C** *103/52*; **C07G** *7/00*
**U.S. Cl. 260—112.5 R** **10 Claims**

**References Cited**
UNITED STATES PATENTS


| | | | |
|---|---|---|---|
| 3,732,199 | 5/1973 | Schwarz | 260/112.5 |
| 3,743,628 | 7/1973 | Bodanszky et al. | 260/112.5 |
| 3,775,378 | 11/1973 | Dahlmans et al. | 260/112.5 |
| 3,819,607 | 6/1974 | Heuser et al. | 260/112.5 |


**1.** A method of synthesizing peptides by solid phase procedure which comprises attaching an $\alpha,\beta$-unsaturated amino acid through the teriminal carboxyl group to a solid insoluble support with the $\alpha$-nitrogen blocked by a protecting group and subsequently unblocking the $\alpha$-nitrogen by removing said protecting group and growing the peptide chain on said support by sequentially adding amino acids conforming to the desired peptide sequence and adding an acidic aqueous release solution to said peptide and support to convert the $\alpha,\beta$-unsaturated amino acid to a carboxyl terminal amide and releasing said amide from said solid support.

**B 508,369**

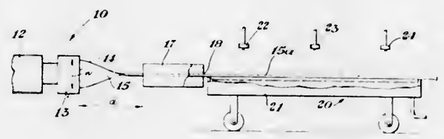
## METHOD FOR THE EXTRUSION OF FOAM SHAPES

**Kun Sup Hyun, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.**

**Filed Sept. 23, 1974, Ser. No. 508,369**
**Int. Cl.² B29D** *27/00*; **B29F** *3/00*
**U.S. Cl. 264—51** **4 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 3,258,515 | 6/1966 | Brown | 264/167 |
| 3,426,111 | 2/1969 | Simpson | 264/51 |
| 3,795,729 | 3/1974 | Asakura et al. | 264/46.1 |



1. In a method for the preparation of an elongate synthetic resinous thermoplastic extruded foamed article wherein a heat-plastified synthetic resinous extrudable foamable composition is passed under pressure through a die, the die having an orifice, the orifice having an elongate cross-sectional configuration having a major axis wherein the ratio of the major dimension of the cross-sectional configuration of the die orifice to the minor dimension thereof is at least 2 to 1 and the foamable composition is extruded from the orifice to form a heat-plastified unsupported extrudate which foams to provide a plurality of closed gas filled cells and passing the foamed extrudate through a reshaping die having an extrudate receiving and shaping channel therein wherein the channel has a cross-section which is elongate and has a major to minor axes ratio of at least 2, cooling the extrudate within the channel to a generally self-supporting shape and subsequently cooling the resultant extrudate to about ambient temperature, the improvement which comprises extruding the extrudate with the major axis of the cross-section of the extrudate in a generally vertical plane and rotating the major axis of the extrudate to a generally horizontal plane at an entrance to the shaping channel.

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**B 520,256**

## 5-ALKYL-10-(AMINOCARBONYL/AMINOMETHYL/-CYANO)-10,11-DIHYDRO-5H-DIBENZ[B,F]AZEPINE-10-LKANAMINES

**John W. Custic, Skokie, and Charles R. Ellefson, Chicago, both of Ill., assignors to G. D. Searle & Co., Chicago, Ill.**

**Filed Nov. 4, 1974, Ser. No. 520,256**
**Int. Cl.² C07D** *223/22*
**U.S. Cl. 260—239 D** **15 Claims**

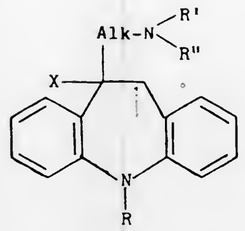
**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| R27,622 | 4/1973 | Schindler et al. | 260/239 D |

FOREIGN PATENTS OR APPLICATIONS

| | | | |
|---|---|---|---|
| 1,355,948 | 4/1972 | France | 260/239 D |

1. A compound of the formula



wherein X represents aminocarbonyl aminomethyl, or cyano; Alk represents alkylene containing two or three carbons; R and R′ each represent alkyl containing fewer than eight carbons; and R″ represents hydrogen, alkyl containing fewer than eight carbons, or benzyl.

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**B 524,179**

## DIHYDRO-A204

**James W. Chamberlin, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.**

**Filed Nov. 15, 1974, Ser. No. 524,179**
**Int. Cl.² A61K** *35/00*
**U.S. Cl. 424—122** **1 Claim**

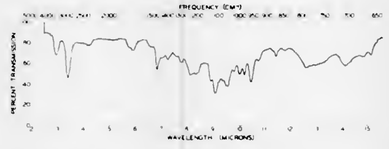
**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 3,705,238 | 12/1972 | Hamill et al. | 260/345.9 |

OTHER PUBLICATIONS

Jones et al., J. Amer. Chem. Soc., 95, 3399 (1973).

INFRARED ABSORPTION SPECTRUM OF DIHYDRO-A204



1. Dihydro-A204, which is a white amorphous solid, soluble in diethyl ether, dimethylformamide, dimethyl sulfoxide, methyl acetate, ethyl acetate, amyl acetate; sulfoxide, acetone, methyl ethyl ketone, methyl isobutyl ketone; chloroform, carbon tetrachloride, dichloroethylene; benzene, toluene, xylene, methanol, ethanol, isopropanol and tert-butanol; and insoluble in water; and which has:
   a. a molecular weight, as determined by the osmometric method, of 944;
   b. an approximate elemental composition of 63.64% carbon, 9.11% hydrogen and 27.25% oxygen;
   c. an empirical formula of $C_{56}H_{88}O_{16}$;
   d. an infrared absorption spectrum in chloroform with distinguishable absorption maxima at 2.96, 3.40, 5.78 (strong), 5.95, 6.87, 7.30, 7.83, 9.00 (strong), 9.13, 9.42, 9.58, 9.87, 10.10, 10.25, 10.53 and 10.80 microns;
   e. a nuclear magnetic resonance spectrum with the following characteristics: ($CDCl_3$) $\delta$ 3.30, 3.36, 3.43, 3.46 ($CH_3O$), 4.80 (-CH-O-) ppm;
   f. in 66 percent aqueous dimethylformamide, one titratable group having a pKa of about 5.45; and
   g. Rf values of 0.26 and 0.33 on silica-gel thin-layer chromatography in ethyl acetate-methanol (9:1); and which forms cationic salts, the sodium salt thereof having an infrared absorption spectrum in chloroform with absorption maxima at 3.0 (OH), 5.8, and 6.3 ($CO_2^-$) microns; or the physiologically-acceptable cationic salts thereof.



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**B 525,961**

## METHOD OF PRODUCING A HIGH STRENGTH COMPOSITE OF ZIRCON

**Robert N. Sanders, 1875 N. Vega Drive, Baton Rouge, La. 70815**

**Continuation of Ser. No. 349,228, April 9, 1973, abandoned, which is a division of Ser. No. 210,127, Dec. 20, 1971, abandoned. This application Nov. 21, 1974, Ser. No. 525,961**
**Int. Cl.² C22C** *1/10, 21/00*
**U.S. Cl. 75—135** **6 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 2,793,949 | 5/1957 | Imich | 75/135 |
| 2,949,358 | 8/1960 | Alexander | 75/176 |
| 3,468,658 | 9/1969 | Herald | 75/122 |

1. A method for producing a high-strength aluminum composite product containing aluminum as the principal metal and a dispersion therein of a non-metal particulated filler substantially insoluble in the aluminum, which method comprises the following steps: bringing together with stirring a) a quantity of molten aluminum heated to a temperature of about 800 to about 850°C to achieve good fluidity, b) about 5 to about 80 percent zircon by weight of the composite, the zircon having a particle size of about 60 mesh to about 400 mesh U.S. Sieve Series, and c) about 2 to about 10 percent alkaline earth metal by weight of the metallic phase of the composite, continuing the stirring to cause the alkaline earth metal to reduce only the surfaces of the zircon particles and because of such reduction to cause the zircon particles to become substantially stably dispersed throughout the molten metallic phase, and casting the resulting dispersion in a mold to solidify the molten portion and give the composite the desired configuration.

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**B 526,997**

## WATER REDUCIBLE EPOXY ESTER COATING COMPOSITION

**Michael A. Tobias, Somerville, N.J., and Richard A. Lamanna, Jefferson Borough, Pa., assignors to Mobil Oil Corporation, New York, N.Y.**

**Filed Nov. 25, 1974, Ser. No. 526,997**
**Int. Cl.² C08G** *51/24*
**U.S. Cl. 260—29.2 EP** **11 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 2,857,354 | 10/1958 | Fang | 260/33.2 |
| 3,649,583 | 3/1972 | Guthrie | 260/30.4 EP |
| 3,844,998 | 10/1974 | Jeffery et al. | 260/47 EP |

OTHER PUBLICATIONS

Handbook of Epoxy Resins Lee et al., 1967, (pp. 11–18; 12–22; 23; 13–9; 10; 24–29)

1. An epoxy ester comprising an ester adduct of a polyfunctional epoxy resin containing more than one 1,2-epoxy group and a monofunctional 1,2-epoxy with a saturated dibasic acid the ratio of said polyfunctional epoxy resin to said monofunctional epoxy being 3–5 based upon epoxide equivalent weight, the ratio of equivalents of said dibasic acid to total epoxide being 1.0–1.2 and trimellitic anhydride, the ratio of anhydride equivalents in said trimellitic anhydride to total epoxide being 0.1–0.3; the reaction between said epoxy resin, said monofunctional epoxy, and said dibasic acid being carried out in a solvent at elevated temperature until the alcoholic acid number is 3–22 and the epoxy content is 0.025–0.035 meq./g to obtain an initial ester and reacting said initial ester with trimellitic anhydride at a lower elevated temperature until the alcoholic acid number and the aqueous acid number are substantially equal.

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**B 530,318**

## 6-METHYL-8-(SUBSTITUTED) METHYLERGOLINES

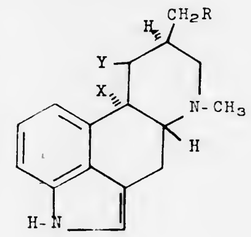
**Edmund C. Kornfeld, and Nicholas J. Bach, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.**

**Filed Dec. 6, 1974, Ser. No. 530,318**
**Int. Cl.² C07D** *519/02*
**U.S. Cl. 260—285.5** **7 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 3,557,118 | 1/1971 | Arcamone et al. | 260/285.5 |
| 3,732,231 | 5/1973 | Temonsky et al. | 260/285.5 |

1. A compound of the formula



wherein:
X and Y each are hydrogen or, taken together, form a double bond;
R is nitro, isocyano, or $CH_2R_1$;
wherein:
$R_1$ is methylsulfinyl;
and the non-toxic pharmaceutically-acceptable acid addition salts thereof.

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**B 532,901**

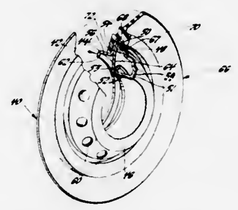
## LIQUID FILTER VALVE MEANS

**Louis A. Bumb, Toledo, Ohio, assignor to General Motors Corporation, Detroit, Mich.**

**Filed Dec. 16, 1974, Ser. No. 532,901**
**Int. Cl.² B01D** *35/14*
**U.S. Cl. 210—130** **3 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 3,083,832 | 4/1963 | Hathaway et al. | 210/DIG. 17 |
| 3,231,089 | 1/1966 | Thornton | 210/130 |
| 3,262,567 | 7/1966 | Pall et al. | 210/130 |
| 3,332,554 | 7/1967 | Humbert, Jr. | 210/DIG. 17 |



1. A liquid filter comprising a canister having an open end, a filter cartridge inserted through said open end into said canister, a closure member closing said open end of said

canister having an inlet for delivering liquid to said filter cartridge and an outlet for receiving filtered liquid from said filter cartridge, and a subassembly mounted as a unit in said canister between said filter cartridge and said closure member just prior to assembly of said closure member comprising a pair of joined collars for supporting said filter cartridge in proper position in said canister relative to said inlet and said outlet, said collars having a bypass passage therein between said inlet and said outlet bypassing said filter cartridge, one of said collars further having a bypass valve seat in said bypass passage, an annular metal spring bypass valve member clamped between said collars for normally seating on said bypass valve seat to close said bypass passage below a predetermined pressure differential across said filter cartridge and lifting off said bypass valve seat above said predetermined pressure differential to open said bypass passage to bypass liquid from said inlet past said filter cartridge directly to said outlet, and a rubber or rubberlike anti-drainback valve member mounted on said collars and seating on said closure member to prevent liquid in said canister from draining to said outlet in the absense of pressure at said inlet and lifting off of said closure member in response to pressure build-up at said inlet to permit flow from said inlet to said filter cartridge during normal flow operation.

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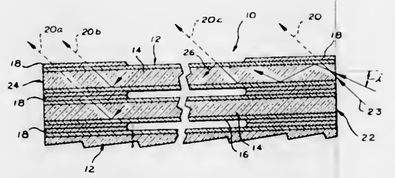
**B 532,969**
**METHOD FOR MAKING FLEXIBLE COLORED FIBER OPTIC DEVICE**

**Richard R. Strack, Southbridge, Mass., assignor to American Optical Corporation, Southbridge, Mass.**

**Division of Ser. No. 354,600, April 26, 1973, abandoned. This application Dec. 16, 1974, Ser. No. 532,969**
**Int. Cl.² C03C** *25/02, 23/20, 15/00*
**U.S. Cl. 65—3 A** **5 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 3,247,756 | 4/1966 | Siegmund | 65/DIG. 7 |
| 3,387,959 | 11/1968 | Cole | 65/4 |
| 3,554,721 | 1/1971 | Gardner | 65/31 |
| 3,624,816 | 11/1971 | Strack | 65/31 |
| 3,690,853 | 9/1972 | Law | 65/31 |
| 3,830,667 | 8/1974 | Carpenter | 65/4 |




1. The method of forming a flexible fiber optic image-transmitting conduit comprising the steps of:
preparing a composition of leachable glass containing a light-absorbing colorant;
overcladding each of a multiplicity of long and thin glass clad glass optical fibers with said colored leachable glass, said overcladding in each case of each fiber comprising a second fiber cladding;
arranging said overclad optical fibers in intimately juxtaposed relationships with each other;
heating and fusing said overcladdings together as a matrix between said optical fibers;
leaching said matrix away from said optical fibers throughout a substantial portion of their lengths intermediately of corresponding opposite ends thereof while leaving an appreciable amount of said matrix adjacent each of said opposite ends of said fibers as fiber interconnecting and stray light-absorbing means.

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**B 535,944**
**PROCESS FOR PREPARING A HEAT COAGULABLE VISCOUS PROTEIN PRODUCT**

**Michael Shemer, Worthington, Ohio, assignor to Miles Laboratories, Inc., Elkhart, Ind.**

**Filed Dec. 23, 1974, Ser. No. 535,944**
**Int. Cl.² A23J** *3/00, 1/14*
**U.S. Cl. 426—276** **16 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 2,670,291 | 2/1954 | Melnick | 426/431 X |
| 2,785,155 | 3/1957 | Anson et al. | 426/431 X |
| 3,579,496 | 5/1971 | Martinez et al. | 426/431 X |
| 3,870,801 | 3/1975 | Tombs | 426/276 X |

1. A process for producing a heat coagulable viscous protein product substantially free of added salts which comprises:
a. forming an aqueous slurry of an oleaginous seed material present at a solids concentration of less than about 15 percent (weight/volume basis) based upon the total volume, said slurry having a pH of about 5.1 to about 5.9;
b. separating the liquid from the solids portion of said slurry; and
c. recovering said protein product from said separated liquid.

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**B 536,935**
**SUBSTITUTED 7,12-METHANO DIBENZAZOCINES**

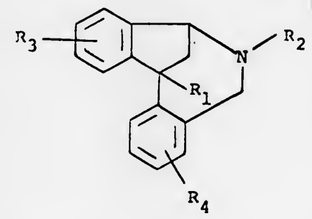
**William H. Houlihan, Mountain Lakes, and Jeffrey Nadelson, Lake Parsippany, both of N.J., assignors to Sandoz, Inc., Hanover, N.J.**

**Filed Dec. 23, 1974, Ser. No. 536,935**
**Int. Cl.² C07D** *225/04*
**U.S. Cl. 260—239 D** **15 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 3,496,165 | 2/1970 | Houlihan et al. | 260/239 D |
| 3,642,777 | 2/1972 | Houlihan et al. | 260/239 D |

1. A compound of the formula:




where
$R_1$ is straight chain lower alkyl
$R_2$ is hydrogen or lower alkyl and
$R_3$ and $R_4$ each independently is hydrogen, halo having an atomic weight of about 19 to 35, lower alkyl or lower alkoxy and pharmaceutically acceptable acid addition salts thereof.



**B 537,102**
**PROCESS FOR THE PREPARATION OF CARBODIIMIDE-ISOCYANURATE FOAMS**

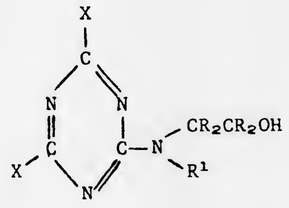
**Moses Cenker, Trenton; Thirumurti L. Narayan, Riverview, and Peter T. Kan, Plymouth, all of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.**

**Filed Dec. 30, 1974, Ser. No. 537,102**
**Int. Cl.² C08G** *18/14, 18/20*
**U.S. Cl. 260—2.5 AC** **9 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 3,573,301 | 3/1971 | Winter | 260/2.5 AW |
| 3,620,986 | 11/1971 | Djehr et al. | 260/2.5 AW |
| 3,644,168 | 2/1972 | Bonk et al. | 260/2.5 AW |
| 3,645,923 | 2/1972 | Kan | 260/2.5 BF |
| 3,725,319 | 4/1973 | Frisch | 260/2.5 AJ |
| 3,748,289 | 7/1973 | Cenker et al. | 260/2.5 BF |
| 3,803,064 | 4/1974 | Fishbein et al. | 260/2.5 AW |
| 3,806,475 | 4/1974 | Narayan et al. | 260/2.5 BF |

1. A process for the preparation of a foam characterized by carbodiimide and isocyanurate linkages which comprises condensing an organic polyisocyanate in the presence of a catalyst system comprising based on 100 parts by weight of organic polyisocyanate
a. from 0.1 part to 10 parts by weight of an s-triazine compound selected from the group consisting of 2,4,6-tris(-diethanolamino)-s-triazine, 2,4,6-tris(diisopropanolamino)-s-triazine, 2,4,6-tris(dibutanolamino)-s-triazine, 2,4,6-tris(N-methylethanolamino)-s-triazine, and unsymmetrically substituted triazines of the formula:




wherein R is hydrogen or lower alkyl of from 1 to 10 carbon atoms, $R^1$ is $CR_2CR_2OH$ or lower alkyl of from 1 to 12 carbon atoms, X is $NR_2$, alkoxy of from 1 to 12 carbon atoms, phenoxy, alkyl of from 1 to 12 carbon atoms, phenyl, hydroxyl, halogen, aziridyl, pyrrolidyl, piperidyl, or N-alkylpiperazyl,
b. from 1 part to 6 parts by weight of a 1,3,5-tris(N,N-dialkylaminoalkyl)-s-hexahydrotriazine or the alkylene oxide and water adducts thereof, and
c. from 0.01 part to 5 parts by weight of a phenolic compound selected from the group consisting of phenol, methylphenols and halophenols.

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**B 537,711**
**ISOCYANURATE COMPOUNDS**

**William J. Kauffman, 20 Pfautz Ave., Lititz, Pa. 17543**

**Filed Dec. 31, 1974, Ser. No. 537,711**
**Int. Cl.² C07D** *251/30*
**U.S. Cl. 260—248 NS** **2 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 3,235,553 | 2/1966 | Sadle | 260/248 |
| 3,249,607 | 5/1966 | Taub et al. | 260/248 |

1. 1,3-bis(3-carbethoxypropyl)-5-phenylisocyanurate.

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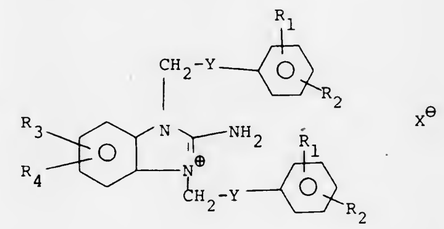
**B 542,158**
**AMINO-BENZIMIDAZOLE DERIVATIVES**

**Harry L. Yale, New Brunswick, and James A. Bristol, Boonton, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.**

**Filed Jan. 20, 1975, Ser. No. 542,158**
**Int. Cl.² C07D** *235/30*
**U.S. Cl. 260—309.2** **12 Claims**

**References Cited**
OTHER PUBLICATIONS
Berg et al., Chem. Abst. 1962, Vol. 56, columns 11582–11584.
Reddy et al., Chem. Abst. 1970, Vol. 72, No. 31695w.
Shelepin et al., Chem. Abst. 1970, Vol. 73, No. 76345u.
Yutilov et al., Chem. Abst. 1965, Vol. 63, column 16335.

1. A compound of the structure




wherein
Y is oxygen or sulfur;
$R_1$ and $R_2$ are the same or different and are selected from the group consisting of hydrogen, halo, lower alkyl, lower alkoxy, trifluoromethyl or N,N-dimethylsulfonamido;
$R_3$ and $R_4$ are the same or different and are selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, halo, phenyl, naphthyl, phenyl lower alkyl, naphthyl lower alkyl, or phenyl or naphthyl substituted with an $R_1$ or $R_2$ group; and
X is selected from the group consisting of Cl, Br or I.

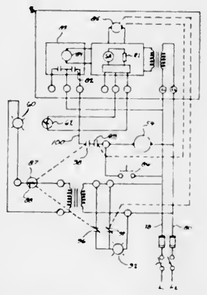
**B 543,941**

## CONTROL MEANS AND AUTOMATIC ROLL-TYPE FILTER

**Alan E. Revell, Louisville, Ky., assignor to American Air Filter Company, Inc., Louisville, Ky.**

**Continuation-in-part of Ser. No. 376,672, July 5, 1973, abandoned. This application Jan. 24, 1975, Ser. No. 543,941**
**Int. Cl.² B01D** *46/18*
**U.S. Cl. 55—352** **3 Claims**

**References Cited**
UNITED STATES PATENTS
3,324,633 6/1967 Revell ..... 55/354



**1.** An air filtering apparatus comprising: a filter media supply roll to receive a roll of filter media; a filter media take-up roll to receive filter media from said supply roll; an air filtering zone disposed between said supply roll and said take-up roll; filter media extending from said media supply roll through said air filtering zone to said filter media take-up roll, so air can be treated passes through said filter media in said air filter zone; and an adjustable, fail-safe air filter media advanced control system responsive to a reduction in the light transmitting quality of said media, said filter media advanced control system comprising:

an electric light source of controlled intensity disposed on one side of said filter media and electrically connected to a source of electrical energy, and a photocell disposed on the opposite side of said filter media from said light source and connected to a source of electrical energy;

an electric motor drivingly connected to said take-up roll to effect the advance of said media;

an energizing circuit to energize said motor to drive said take-up roll, said energizing circuit including normally open first switch means, normally open second switch means, and normally open third switch means, said first, second and third switch means and said motor being electrically connected in series to a source of electrical energy, and said second switch means being also connected in electrical series to said light source;

a warning light electrically connected to a source of electrical energy;

fourth switch means electrically connected in series with said warning light to the source of electrical energy;

fifth switch means electrically connected to said warning light and parallel to said fourth switch means;

a rheostat electrically connected in series with said photocell and in parallel to said first switch means, said rheostat enables a resistance value to be preselected which when exceeded by the resistance of said photocell initiates activation of said first switch means to energize said motor to drive said take-up roll;

a resistor electrically connected in series with said rheostat and said photocell, said resistor being of sufficient value to prevent said rheostat from being adjusted to such a low resistance value that said first switch means is activated to advance said media when clean media is present in said air filtering zone;

first relay means electrically connected to said first switch means for activating said first switch means, said first relay means being electrically connected to said photocell and parallel with said rheostat and said resistor to close said first switch means when the resistance of said photocell exceeds the resistance of said rheostat due to the quantity of light received by said photocell falling below a first predetermined value;

second relay means electrically connected to said second and fifth switch means for activating said second and fifth switch means, said second relay means being electrically connected in series with said light source to close said second switch means and open said fifth switch means when said light source is energized; and,

third relay means electrically connected to said third and fourth switch means, said third relay means being electrically connected to said photocell in series with said rheostat and said resistor and in parallel with said first relay means, said third relay means has less resistance than said first relay means, said third relay means to close said third switch means and open said fourth switch means when the resistance of said photocell exceeds the resistance of said third switch means and is less than the resistance of said rheostat and said resistor due to the quantity of light received by said photocell falling below a second predetermined value, said second predetermined value being higher than said first predetermined value,

whereby said motor is energized when said first, second and third switch means are each in a closed position, said warning light is energized and said motor de-energized when said fifth switch means is closed and said second switch means is open indicating the light source is de-energized, and said warning light is energized and said motor de-energized when said fourth switch means is closed and said third switch means is open indicating that the filter media has been exhausted from said air filtering zone.

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**B 549,198**

## PREPARATION OF ANHYDROUS NITRIC ACID

**Clifford L. Coon, Menlo Park, Calif., assignor to Koppers Company, Inc., Pittsburgh, Pa.**

**Continuation of Ser. No. 369,309, June 12, 1973, abandoned. This application Feb. 12, 1975, Ser. No. 549,198**
**Int. Cl.² C01B** *21/46;* **C07C** *79/12*
**U.S. Cl. 423—390** **9 Claims**

**References Cited**
OTHER PUBLICATIONS
Genich et al., "Izv. Akad. Nauk. Ser. Khim.," USSR, 1966, pp. 66-69, Abst. "Chemical Abst." Vol. 64. p. 15183.
Plesch et al., "Chemistry & Industry" Sept. 1971, pp. 1043-1044.

**1.** A method for preparing a solution of anhydrous nitric acid in methylene chloride comprising extracting an aqueous mixture of nitric acid and sulfuric acid with methylene chloride.

**4.** A method for preparing anhydrous nitric acid comprising:

a. preparing an aqueous solution of nitric acid and sulfuric acid;

b. extracting the aqueous acid mixture with methylene chloride;

c. separating the anhydrous nitric acid from the methylene chloride raffinate.



**B 552,498**

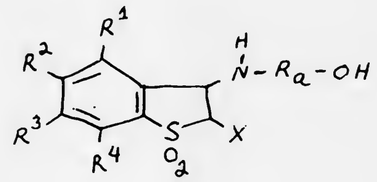
## 3-(HYDROXYHYDROCARBYLSECONDARYAMINO)THIOPHENE 1,1-DIOXIDES AND POLYURETHANES CHAIN EXTENDED THEREWITH

**Chung-Ling Mao, Sandy Hook, Conn., assignor to Uniroyal Inc., New York, N.Y.**

**Division of Ser. No. 434,470, Jan. 18, 1974, Pat. No. 3,887,503. This application Feb. 24, 1975, Ser. No. 552,498**
**Int. Cl.² C07D** *333/66*
**U.S. Cl. 260—330.5** **7 Claims**

**References Cited**
UNITED STATES PATENTS
2,553,495 5/1950 Avakian et al. ..... 260/330.5
3,887,503 6/1975 Mao ..... 260/2.5 AM

**1.** A 3-(hydroxyhydrocarbylsecondary-amino)-2,3-dihydrobenzo(b) thiophene 1, 1-dioxide of the following formula



wherein

X may be hydrogen, an alkyl group having 1 to 5 carbon atoms or a halogen atom,

$R_a$ may be (1) an open chain alkylene group having 2 to 10 carbon atoms (2) an open chain alkylene group having 2 to 10 carbon atoms substituted with one or more phenyl groups, or (3) a cycloalkylene group having 4 to 8 carbon atoms,

the hydroxyl group being attached to a carbon atom of $R_a$ that is separated from the secondary amino nitrogen atom by at least one carbon atom, and

$R^1$, $R^2$, $R^3$ and $R^4$ are the same or different and are hydrogen, an alkyl group having 1 to 5 carbon atoms, or halogen.

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**B 562,462**

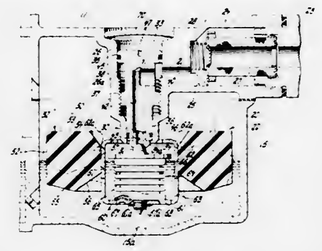
## ALTITUDE COMPENSATED CARBURETOR FLOAT VALVE

**Earl R. Fischer, Rochester, N.Y., assignor to General Motors Corporation, Detroit, Mich.**

**Filed Mar. 27, 1975, Ser. No. 562,462**
**Int. Cl.² F02M** *5/06*
**U.S. Cl. 261—39 A** **3 Claims**

**References Cited**
UNITED STATES PATENTS
1,103,803 7/1914 Meissner ..... 137/426
1,290,883 1/1919 Blanning ..... 137/426
1,532,291 4/1925 Woolson ..... 261/39 A
1,814,804 7/1931 Heftler ..... 137/432
2,111,855 3/1938 Groh ..... 261/39 A
2,619,959 12/1952 Holmes ..... 137/81
3,051,193 8/1962 Griffen ..... 261/70

**1.** In a carburetor having body means arranged to provide a fuel reservoir chamber, a vertical bore through said body means opening into said chamber, a substantially horizontal inlet passage in said body means extending to said vertical bore, a cylindrical inlet seat member adjustably secured in said vertical bore in sealed relation thereto, passage means in said inlet seat member in communication with said vertical bore and said inlet passage, said passage means including a tubular valve seat member having an annular valve seat open to said fuel reservoir chamber and, a float aneroid assembly positioned in said fuel reservoir chamber, said float aneroid assembly including a float of toroidal configuration and an aneroid mounted concentrically therein with one end of said



aneroid fixed relative to said float and with its opposite end free for axial movement relative to said float and a semi-spherical valve fixed to said opposite end of said aneroid in position to co-act with said valve seat to control flow of fuel into said fuel reservoir chamber.

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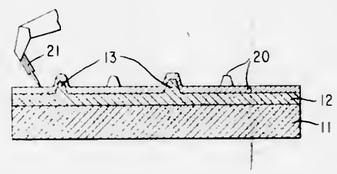
**B 563,722**

## REMOVAL OF PROJECTIONS ON EPITAXIAL LAYERS

**William Charles Erdman, deceased, late of Danielsville, Pa. (by Charlotte Erdman, executrix), and Lewis Emanuel Katz, Allentown, Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**

**Filed Mar. 31, 1975, Ser. No. 563,722**
**Int. Cl.² H01L** *21/304*
**U.S. Cl. 156—3** **5 Claims**

**References Cited**
UNITED STATES PATENTS
3,699,644 10/1972 Cocca ..... 29/583
3,718,514 2/1973 Erdman et al. ..... 156/17
3,738,881 6/1973 Erdman et al. ..... 156/17
3,783,044 1/1974 Cheskis et al. ..... 156/17
3,838,501 10/1974 Umbaugh et al. ..... 29/583




**1.** The method of removing projections from the surface of a semiconductor layer epitaxially deposited onto a substrate comprising

a. forming on said surface a coating of an inorganic dielectric material having a thickness less than the height of at least a portion of the projections,

b. traversing tool means across said coated surface to fracture at least the coating on all the projections,

c. treating said coated surface with an etchant which selectively attacks the semiconductor projections to thereby remove said underlying projections.

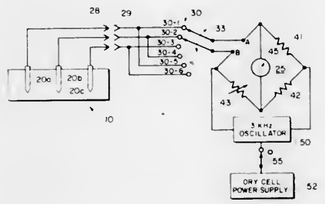
**B 079,099**
**SOIL SAMPLE CONDUCTIVITY MEASUREMENT UTILIZING A BRIDGE CIRCUIT AND PLURAL ELECTRODE CELL**

**John W. Walker, Belmar, and Douglas C. Pearce, Sea Girt, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.**

**Filed Oct. 8, 1970, Ser. No. 79,099**
**Int. Cl.² G01V *3/06*; G01N *27/04*; G01R *27/00***
**U.S. Cl. 324—13** **2 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 2,583,284 | 1/1952 | Wyllie et al. | 324/13 X |
| 2,613,250 | 10/1952 | Bilhartz et al. | 324/13 X |
| 2,875,401 | 2/1959 | Owen | 324/13 |
| 2,914,725 | 11/1959 | Carter et al. | 324/30 |




2. Apparatus for determining the conductivity of a soil sample comprising a calibrated fluid-tight cell filled with a sample of soil to be analyzed, a pair of electrodes chemically inert to salts and acids within said soil, said electrodes projecting into a soil containing portion within said cell and connectable externally of said cell, a resistance measuring bridge circuit, and means for connecting said soil electrodes into a portion of said bridge circuit, said bridge circuit including a current supply of unknown magnitude and a frequency between 1.5 kHz and 10 kHz.

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**B 160,045**
**GRIDDED CONVERGENT FLOW ELECTRON GUN FOR LINEAR BEAM TUBES**

**George V. Miram, San Mateo County, and Gerhard B. Kuehne, Santa Clara County, both of Calif., assignors to Varian Associates, Palo Alto, Calif.**

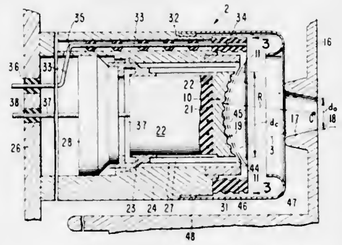
**Filed July 6, 1971, Ser. No. 160,045**
**Int. Cl.² H01J *29/02, 29/46***
**U.S. Cl. 313—452** **5 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 2,861,213 | 11/1959 | Dalman | 313/82 R X |
| 3,185,882 | 5/1965 | Dryden et al. | 313/83 |
| 3,255,374 | 6/1966 | Drees et al. | 313/292 X |
| 3,484,642 | 12/1969 | Kreuchen | 313/292 X |
| 3,484,645 | 12/1969 | Drees | 313/296 X |
| 3,558,967 | 1/1971 | Miram | 313/3.5 |
| 3,651,360 | 3/1972 | Sommeria | 313/82 R |

FOREIGN PATENTS OR APPLICATIONS

| | | | |
|---|---|---|---|
| 1,919,451 | 11/1969 | Germany | 313/82 R |




1. In an electron gun; an evacuable envelope structure; thermionic cathode emitter means having a concave emitting surface generally approximating a figure of revolution for emitting a stream of electrons; an accelerating anode means spaced from said cathode emitter and having a central aperture of substantially smaller diameter than the diameter of the concave emitting surface of said cathode emitter, such anode central aperture being disposed in axial alignment with the axis of revolution of said concave emitting surface of said cathode emitter for accelerating and converging a stream of electrons through said aperture into a linear beam of electrons; a multi-apertured concave control grid means disposed overlaying said concave emitting surface of said cathode emitter in spaced relation therefrom for controlling the beam current drawn from said cathode through the apertures in said control grid means; control grid support means for supporting said control grid from the periphery thereof and disposed in electrically insulative and substantially thermally insulative relation relative to said cathode emitter means; said control grid support means being connected in heat exchanging relation with said control grid and including, a thermally conductive support structure surrounding said cathode emitter in thermally insulative relation thereto and thermally communicating through the evacuable envelope of the gun to the surrounds for conducting heat from said control grid to the surrounds of the electron gun and having an electrically insulative thermally conductive first portion interposed within said evacuable envelope in heat exchanging relation between the periphery of said control grid means and an electrically conductive second portion of said grid support structure, said second portion being in physical contact with a portion of said evacuable envelope, said second portion of said grid support structure includes a tubular metallic member surrounding said cathode emitter, and said first portion includes an annular ceramic member joined at one end to said tubular metallic second portion and at the other end to the periphery of said control grid means, a multi-apertured concave focus grid means interposed between said cathode emitter and said multi-apertured control grid means in thermally insulative relation relative to said cathode emitter for focusing the electrons drawn from said cathode emitter through the apertures in said multi-apertured control grid means, the apertures in said focus grid means being aligned along the direction of the convergent beam path with the apertures in said control grid means, a third portion of said grid support means being interposed in heat exchanging relation between the periphery of said focus grid and said second portion of said grid support structure for supporting said focus grid means, and wherein said second portion of said grid support structure is common to said control grid means and said focus grid means for defining a unitary support structure portion providing common support to both of said grid means.





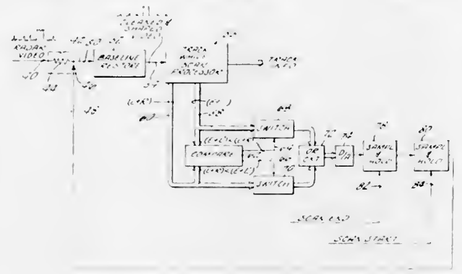
**B 248,240**
**RADAR VIDEO CLIPPING LEVEL DERIVED FROM TARGET SIGNAL**

**Paul M. Danzer, Norwalk, and Giles E. Rae, Ridgefield, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.**

**Filed Apr. 27, 1972, Ser. No. 248,240**
**Int. Cl.² G01S *7/28***
**U.S. Cl. 343—7 A** **5 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 3,603,994 | 9/1971 | Williams et al. | 343/7.3 |
| 3,611,369 | 10/1971 | Maguire | 343/7 A |
| 3,701,149 | 10/1972 | Patton et al. | 343/7 A X |



1. In a scanning pulse radar system having processing means providing signals representing the summation of early and late target return signal voltages and the summation of right and left target return signal voltages in response to target return signal voltage levels in a multi-phase target window, and having a radar video clipper responsive to a reference voltage for cleaning and shaping radar video prior to application to the processing means, the improvement comprising:
means for developing a clipping level voltage proportional to at least one of the signals included in the group of the left and right summation signals and the early and late summation signals in one scan; and
means for applying said clipping level voltage in a next succeeding scan as the reference voltage of the radar video clipper.

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**B 279,969**
**LUMINESCENT SCREEN OF A COLOUR TELEVISION TUBE**

**Hans Dignus Duinker, and Gerardus Antonius Wilhelmus Vermeulen, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.**

**Filed Aug. 11, 1972, Ser. No. 279,969**
**Claims priority, application Netherlands, Aug. 18, 1971, 7111362**
**Int. Cl.² H01J *31/12, 29/18***
**U.S. Cl. 313—477** **1 Claim**

**References Cited**
UNITED STATES PATENTS

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|---|---|---|---|
| 3,569,761 | 5/1971 | Lange | 117/33.5 CM |
| 3,615,460 | 10/1971 | Lange | 117/33.5 CM |
| 3,632,339 | 1/1972 | Khan | 117/33.5 CM |
| 3,661,581 | 5/1972 | Feldstein | 117/33.5 CM |
| 3,677,757 | 7/1972 | Nishizawa | 117/33.5 CM |
| 3,681,111 | 8/1972 | Kaplan | 117/33.5 CM |
| 3,695,871 | 10/1972 | Lange | 117/33.5 CM |
| 3,708,336 | 1/1973 | Nishizawa et al. | 117/33.5 CM |
| 3,734,728 | 5/1973 | Kachel | 117/33.5 CM |

1. A cathode-ray tube for displaying color pictures, comprising: a transparent window having an undulated inner surface including undulations with a wavelength between 0.2 and 0.02 cm; a luminescent screen provided on said inner surface and including a plurality of luminescent areas which upon excitation by electrons luminesce in different colors, said areas being separated by light absorbing material, a shadow mask having a plurality of apertures, said apertures exceeding at least one dimension of assigned luminescent areas, said surface undulations with wavelengths between 0.2 cm and 0.02 cm having a depth less than 1 micron.

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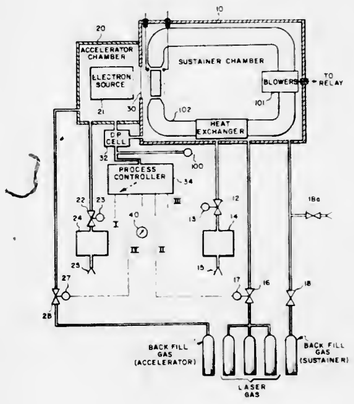
**B 394,350**
**ELECTRON BEAM GAS DISCHARGE LASER PRESSURE CONTROL**

**Ethan D. Hoag, Boston, and Henry E. Pease, Malden, both of Mass., assignors to Avco Everett Research Laboratory, Inc., Everett, Mass.**

**Filed Sept. 4, 1973, Ser. No. 394,350**
**Int. Cl. H01s *3/22***
**U.S. Cl. 331—94.5 P** **9 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 3,789,321 | 1/1974 | Krawetz | 331/94.5 |




1. Method of operating a two chamber gas laser of the type having an accelerator chamber and a sustainer chamber separated from each other by a thin diaphragm comprising:
continuously sampling pressures from each of said chambers during simultaneous pumpdown thereof and generating continuously a pressure differential signal and applying said signal to modulate the rate of accelerator chamber pumpdown during initial pumpdown of said two chambers,
continuing said continuous generation of a pressure differential signal and applying said signal to modulate the rate of backfill of the sustainer chamber,
then during laser operation continuing said continuous generation of a pressure differential signal and modulating sustainer chamber pressure thereby,
and maintaining the pressure differential across said diaphragm within 2/10 of an atmosphere throughout said operations.

**B 399,908**

## FULL-DUPLEX DIGITAL TRANSMISSION LINE SYSTEM

**Ernest S. Griffith, St. Louis, and William W. Davis, Minneapolis, both of Minn., assignors to Sperry Rand Corporation, New York, N.Y.**

**Filed Sept. 24, 1973, Ser. No. 399,908**

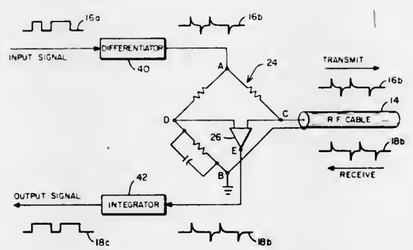
**Int. Cl.² H04L *5/14*; H04B *3/50***

**U.S. Cl. 178—58 R** **6 Claims**

**References Cited**

UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 1,619,041 | 3/1927 | Salinger | 178/60 |
| 3,566,031 | 2/1971 | Carbone | 178/59 |
| 3,704,346 | 11/1972 | Smith | 179/18 BE |
| 3,730,993 | 5/1973 | Moriyasu | 178/59 |
| 3,775,561 | 11/1973 | Guckel | 178/58 R |
| 3,812,292 | 5/1974 | Tink | 179/2 DP |




5. The transmission line system of claim 4 in which:

said node B is coupled directly to ground;

said impedances that form the legs CA, AD and DB include resistors that are chosen so the $V_{DC} = 0$ when said power amplified differentiated input signal is coupled by said driver to said node A;

said impedances that form the legs CA, AD and DB include resistors that are chosen so that $V_{DC} \neq 0$ when said differentiated received signal is coupled by said transmission line between said nodes B, C.

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**B 451,534**

## SWITCHING DEVICE FOR AN X-RAY GENERATOR COMPRISING A TIME SWITCH

**Heinz Mester, and Gerd Vogler, both of Hamburg, Germany, assignors to U.S. Philips Corporation, New York, N.Y.**

**Filed Mar. 15, 1974, Ser. No. 451,534**

**Claims priority, application Germany, Mar. 22, 1973, 2314267**

**Int. Cl.² H05G *1/30***

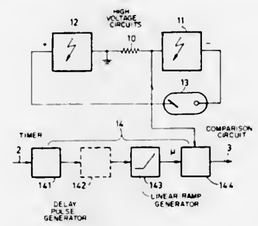
**U.S. Cl. 250—402** **12 Claims**

**References Cited**

UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 2,668,909 | 2/1954 | Johnston | 250/415 |

1. In a switching device for an x-ray generator of the type including a high voltage transformer for supplying current to the x-ray tube and a switching element connected in the transformer primary circuit, the improvement comprising a time switch for controlling the actuation time of the switching element wherein the actuation time of the switching element is longer than the exposure time, and means coupled to the




time switch for prolonging the switching element actuation time as a function of the x-ray tube current.

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**B 467,971**

## SWITCHABLE CONSTANT CURRENT SINK

**Vernal M. Benrud, Minneapolis, Minn., assignor to Sperry Rand Corporation, New York, N.Y.**

**Filed May 8, 1974, Ser. No. 467,971**

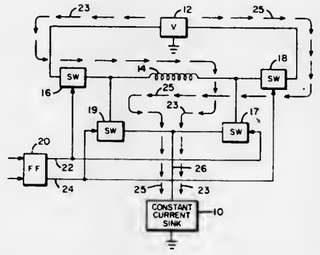
**Int. Cl.² H01J *29/70*, *29/76***

**U.S. Cl. 315—399** **6 Claims**

**References Cited**

UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 3,431,457 | 3/1969 | Hinkein et al. | 315/367 |
| 3,435,278 | 3/1969 | Carlock et al. | 315/367 |
| 3,582,705 | 6/1971 | Waller | 315/367 |




1. A switchable constant current sink for a CRT display system comprising:

a first transistor T1 having collector, emitter and base electrodes;

a first resistor R1;

a first diode D1 having an anode and a cathode;

means directly intercoupling the collector electrode of said first transistor T1 and the cathode of said first diode D1 for forming a first node;

means coupling the emitter electrode of said first transistor T1 directly to a first terminal of said first resistor R1 the second terminal of which is coupled directly to ground;

$V_{REFX}$ reference voltage source means coupled to said transistor T1 constantly forward biasing the base emitter junction of said first transistor T1 for controlling a current $I_{T1}$ to constantly flow from said first node, through said first transistor T1 and then through said first resistor R1 to ground;

a second transistor T3 having collector, emitter and base electrodes;

means coupling the emitter electrode of said third transistor T3 to said first node;



a first voltage source V;

an inductive load formed by the X deflection coil of said CRT coupled intermediate said first voltage source V and the anode of said first diode D1;

a second voltage source V +ΔV coupled to the collector electrode of said third transistor T3;

logic means coupled to said second transistor T3 controlling said second transistor T3 to be either conducting ON or nonconducting OFF, respectively, said ON second transistor T3 coupling said second voltage source V +ΔV to said first node and reverse biasing said first diode D1 for drawing said current $I_{T1}$ through said second transistor T3 from said second voltage source V +ΔV, or, alternatively, said OFF second transistor T3 decoupling said second voltage source V +ΔV from said first node and forward biasing said first diode D1 for drawing said current $I_{T1}$ through said inductive load from said first voltage source V.

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**B 472,284**

## LINE MATCHING CIRCUIT FOR USE IN A TONE PUSHBUTTON DIALLING SUBSCRIBER'S SET PROVIDED WITH A TONE GENERATOR

**Daniel Johannes Gerardus Janssen, and Cornelis Maria Hart, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.**

**Filed May 22, 1974, Ser. No. 472,284**

**Claims priority, application Netherlands, May 25, 1973, 7307296**

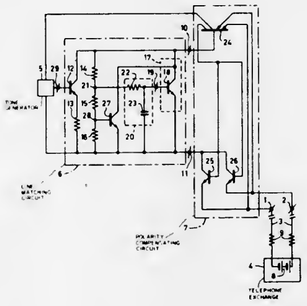
**Int. Cl.² H04M *1/50*, *1/00***

**U.S. Cl. 179—81 R** **5 Claims**

**References Cited**

UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 3,731,004 | 5/1973 | Coupland | 179/84 T |
| 3,823,272 | 7/1974 | Tabalba | 179/81 A |



1. Line matching circuit for matching the impedance of a tone generator in a subscriber's pushbutton dialling set with a transmission line connected thereto, comprising two terminals, means for coupling said two terminals to said transmission line, a signal controlled alternating-current source means coupling the tone generator to said two terminals for supplying alternating currents at tone signal frequencies thereto, a potentiometer connected between said terminals, a low-pass filter having its input connected to a first tap on said potentiometer and its output connected to the input of an amplifier, the output of said amplifier being connected between the terminals to control the amplitude of slowly varying DC currents flowing through said transmission line in order to maintain a constant DC voltage across said terminals.

**B 476,681**

## METHOD OF AND DEVICE FOR DETECTING CYLINDRICAL MAGNETIC DOMAINS BY MEANS OF FERRIMAGNETIC RESONANCE

**Horst Dötsch, Pinneberg; Jürgen Müller, Hamburg, and Hans-Jürgen Schmitt, Pinneberg, all of Germany, assignors to U.S. Philips Corporation, New York, N.Y.**

**Filed June 5, 1974, Ser. No. 476,681**

**Claims priority, application Germany, June 18, 1973, 2330963**

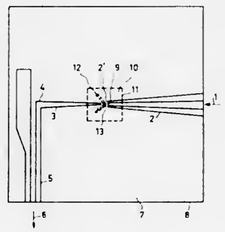
**Int. Cl.² G11C *11/14***

**U.S. Cl. 340—174 TF** **6 Claims**

**References Cited**

UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 3,824,573 | 7/1974 | Scarzello | 340/174 TF |
| 3,836,897 | 9/1974 | Marsh | 340/174 TF |




1. A device for detecting movable cylindrical magnetic domains produced in a magnetic crystal film supported on one side of a substrate, comprising a coplanar conductor disposed on and shortcircuited in a restricted transfer region of the film to feed-in a microwave signal, and a slot conductor shortcircuited in the transfer region and transformed into a wide band coplanar conductor to feed out signal variation in the region.

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**B 501,482**

## DICED SUBSTRATE S.A.W. DEVICE FOR BULK WAVE ATTENUATION

**Ronald George Pratt, Reigate; Richard Stevens, Copthorne, and Alojzy Karr, Shoreham by-sea, all of England, assignors to U.S. Philips Corporation, New York, N.Y.**

**Filed Aug. 29, 1974, Ser. No. 501,482**

**Claims priority, application United Kingdom, Sept. 4, 1973, 41479/73**

**Int. Cl.² H01L *41/04***

**U.S. Cl. 310—9.6** **13 Claims**

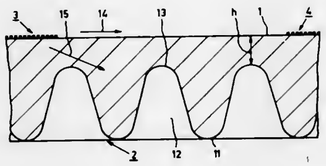
**References Cited**

UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 3,283,264 | 11/1966 | Papadakis | 310/9.6 X |
| 3,353,120 | 11/1967 | Tournois | 333/30 R |
| 3,435,381 | 3/1969 | Tournois | 333/30 R |
| 3,458,831 | 7/1969 | Velex | 310/9.8 X |
| 3,464,033 | 8/1969 | Tournois | 333/30 R |
| 3,573,673 | 4/1971 | De Vries | 333/30 R X |
| 3,678,304 | 7/1972 | Humphryes | 310/9.8 X |
| 3,887,887 | 6/1975 | Wagers et al. | 310/9.5 X |

1. An acoustic surface-wave device comprising a body in the form of a wafer having a layer extending under a first major surface and made of a piezoelectric material, which first major surface serves as a propagation surface for the acoustic surface waves, a transducer coupled to said first major surface for converting an electric signal into a surface wave or conversely, and a plurality of discrete recesses being formed in and distributed over at least a portion of the second major surface of the wafer, which recesses extend into the wafer to a distance from the first major surface such that propagation

of the acoustic surface waves is substantially unaffected whereas propagation of bulk waves is significantly affected in an attenuating and/or scattering sense, the said recesses to-




gether with the surrounding intermediate areas being arranged in a configuration such that any straight line which joins any two edges of said second surface intersects at least one intermediate area.

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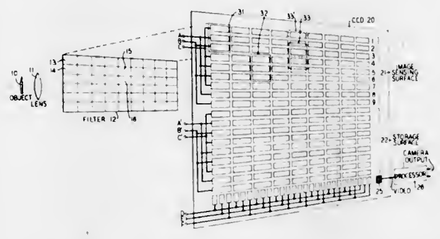
**B 502,289**
**COLOR CODING FILTER FOR CHARGE-COUPLED-DEVICE CAMERA**

**Sooyoung Chai, Madison Township, Middlesex County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**

**Filed Sept. 3, 1974, Ser. No. 502,289**
**Int. Cl.² H04N** *9/04, 3/16*
**U.S. Cl. 358—41** **21 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 3,647,948 | 3/1972 | Eto et al. | 358/5 |
| 3,801,884 | 4/1974 | Sequin | 307/221 |
| 3,811,055 | 6/1974 | Weimer | 357/24 |




1. A color coding filter for use with an imaging device for converting light into electrical signals using a multiple-field format, the imaging device having a sensing surface being divided into an array of rectilinear resolution cells distinctive for each field, the cells defining a grid-pattern in each field and the cell boundaries in successive fields being displaced in at least one dimension to form overlapping grid patterns in the successive fields,

the filter comprising a plurality of rectilinear zones which are arranged in direct correspondence to the cell array of the sensing surface so that all light from a scene impinging on any cell of the sensing surface passes through a corresponding zone in the filter,

a plurality of discrete color areas being contained within each filter zone and being arranged so that the zone boundaries may be redefined with the change of cell boundaries during successive fields,

the transmissivity characteristic of each color filter area being selected to produce a desired color coding for each zone.

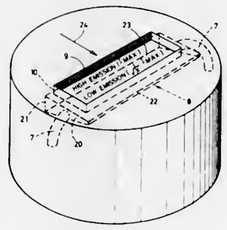
**B 513,706**
**ROTARY-ANODE X-RAY TUBE**

**Wijbe Johannes Oosterkamp, Eindhoven, Netherlands, and Dieter Marschall, Hamburg, Germany, assignors to U.S. Philips Corporation, New York, N.Y.**

**Filed Oct. 10, 1974, Ser. No. 513,706**
**Claims priority, application Netherlands, Oct. 15, 1973, 7314131**
**Int. Cl.² H01J** *35/04*
**U.S. Cl. 313—60** **4 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 3,801,846 | 4/1974 | Haberrecker | 313/60 |




1. An X-ray tube having a cathode for emitting an electron beam and a rotary anode to be irradiated in a focal spot by said electron beam, comprising means for producing a current density distribution, measured along a dimension $x$ of said spot in the direction of rotation of the anode, that decreases from a maximum value at least substantially according to $1/\sqrt{x}$.

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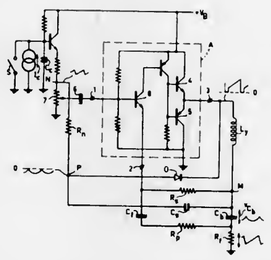
**B 516,002**
**CIRCUIT ARRANGEMENT FOR GENERATING A FIELD DEFLECTION CURRENT**

**Antonius Hendrikus Hubertus Jozef Nillesen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.**

**Filed Oct. 18, 1974, Ser. No. 516,002**
**Claims priority, application Netherlands, Oct. 31, 1973, 7314926**
**Int. Cl.² H01J** *29/70, 29/72*
**U.S. Cl. 315—388** **6 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 3,147,397 | 9/1964 | Michaelson | 315/387 |
| 3,515,933 | 6/1970 | Myers | 315/387 |
| 3,544,811 | 12/1970 | McDonald et al. | 315/388 |
| 3,553,478 | 1/1968 | Steinbacher et al. | 315/387 |



1. A circuit arrangement for generating a sawtooth deflection current in a field deflection coil, said circuit comprising



means for generating a sawtooth-shaped control signal; an amplifier having a first input terminal coupled to said generating means, a second input terminal, and an output means for coupling to said coil; low and high frequency feedback paths coupled to said second input terminal; a capacitor adapted to be coupled to said coil, whereby a parabolic voltage is developed thereacross; means for feeding back at least a portion of said parabolic voltage to said second terminal; and means for substantially eliminating overshoots and very low frequency oscillations in the mean value of said deflection current comprising an alternating current conducting field frequency clamping path means coupled between said output terminal and one of said input terminals for applying said parabolic voltage thereto.

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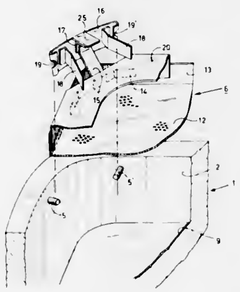
**B 523,696**
**RESILIENT CLAMPING MEMBERS FOR COLOR SELECTION ELECTRODE**

**Theodorus Cornelis Groot, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.**

**Filed Nov. 14, 1974, Ser. No. 523,696**
**Claims priority, application Netherlands, Nov. 30, 1973, 7316388**
**Int. Cl.² H01J** *29/06, 29/02*
**U.S. Cl. 313—404** **2 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 2,939,981 | 6/1960 | Hoagland | 313/407 |
| 3,548,235 | 12/1970 | Driedijk et al. | 313/404 |




1. A color cathode ray tube including an evacuated envelope having a dish-shaped, substantially rectangular display screen and, within said envelope, a substantially rectangular color selection electrode disposed within and spaced apart from said screen, means for supporting said electrode comprising suspension members each connected at one end thereof to said electrode, elongate clamping members of resilient material each connected at its center to the free end of a corresponding suspension member and extending in a substantially transverse direction thereto, and pairs of metal supporting members sealed partly in the upright wall of said screen opposite the end portions of said clamping members and constituting two by two a clamping fit for each clamping member, said clamping members being adjusted for bearing upon and resiliently engaging the projecting ends of assigned pairs of said supporting members and abutting against the inner wall of said screen, each clamping member having at its free ends a notch which cooperates with the said supporting members.

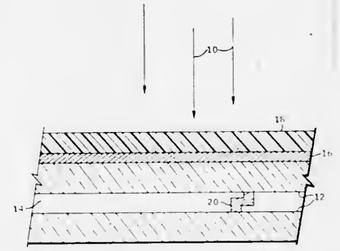
**B 527,669**
**SYSTEM FOR PROTECTION FROM LASER RADIATION**

**Peter D. Poulsen, Huntsville, Ala., assignor to General Dynamics Corporation, San Diego, Calif.**

**Division of Ser. No. 280,312, Aug. 14, 1972, Pat. No. 3,871,739. This application Nov. 27, 1974, Ser. No. 527,669**
**Int. Cl.² H01S** *3/02*
**U.S. Cl. 331—94.5 T** **10 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 3,301,624 | 1/1967 | Morriss, Jr. | 350/160 R |
| 3,455,627 | 7/1969 | Letter | 350/160 R |
| 3,734,592 | 5/1973 | Sztankay et al. | 350/160 R |




1. A protective cover window for use with high energy infrared lasers which comprises:

a plate which is substantially transparent to infrared radiation, positioned in the path of radiation from an infrared laser, and

a coating on at least one surface of said plate, said coating comprises a fluorinated ethylene-propylene polymer which rapidly vaporizes without leaving a residue when subjected to intense infrared radiation,

whereby any surface contamination on said coating is carried away with the vaporizing material.

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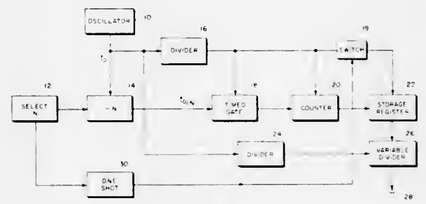
**B 538,686**
**DIGITAL FREQUENCY SYNTHESIZER**

**Norman Green, Baltimore, Md., assignor to The Bendix Corporation, Southfield, Mich.**

**Filed Jan. 6, 1975, Ser. No. 538,686**
**Int. Cl.² H03K** *29/00*
**U.S. Cl. 331—51** **10 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 3,464,018 | 8/1969 | Cliff | 328/14 |




1. A digital frequency synthesizer comprising:

a source of a reference frequency signal;

a variable digital frequency divider means for dividing said reference frequency signal by a selected integer N;

a counter for accumulating a count related to the number of cycles of a frequency signal applied thereto;

gate means for applying, when open, the reference frequency as divided by said variable digital frequency divider means to said counter, said gate means being open for a predetermined time period;

programmable variable digital frequency divider means responsive to the count accumulated in said counter for setting the divisor thereof in proportion thereto and for dividing a frequency signal applied thereto by said divisor; and,

means for applying said reference frequency signal to said programmable variable digital frequency divider.

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**B 540,078**

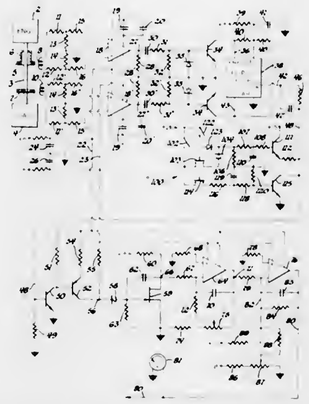
## TORQUEMETER CIRCUIT

**Keith A. Pieper, Brownsburg, Ind., assignor to General Motors Corporation, Detroit, Mich.**

**Filed Jan. 10, 1975, Ser. No. 540,078**
**Int. Cl.² H03K** *5/20*
**U.S. Cl. 307—232** **4 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 2,933,722 | 4/1960 | Steinman | 324/83 D |
| 3,657,659 | 4/1972 | Johnson | 307/232 |

**1.** A relative phase angle measuring circuit comprising, in combination, means effective to receive two AC input signals of equal variable frequency and of variable relative phase angle; a high-gain amplifier responsive to each said input signal operative to generate a square wave signal in phase correspondence with the input signal, at least one amplifier including impedance means adjustable to balance the phase shifts between the input signal and the square wave signal; a bistable flip-flop circuit; means responsive to corresponding current reversals of the square wave signals connected to the flip-flop circuit to set and clear the circuit, respectively, so that the duty cycle of the flip-flop circuit output varies with the relative phase angle of the input signals; a first averaging circuit including an operational amplifier having a constant-current input and having capacitive feedback; a driver circuit connecting the flip-flop circuit output to the first averaging circuit input including an FET turned on and off in response to the output of the flip-flop circuit, the FET being connected to disable the constant-current input to the averaging circuit when turned on and to enable the constant-current input to the averaging circuit when turned off; a second averaging circuit responsive to the output of the first averaging circuit including an operational amplifier with capacitive feedback, the second averaging circuit providing an output emf varying linearly with relative phase angle of the input signals; first calibrating means including means effective to provide an input to the driver circuit indicative of zero input signal relative phase angle and means for adjusting the bias of the second averaging circuit; and second calibrating means including means effective to provide an input to the driver circuit indicative of a predetermined substantial input signal relative phase angle and means for adjusting the feedback of the first averaging circuit.

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**B 541,517**

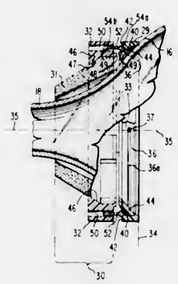
## YOKE MOUNT ASSEMBLY

**Bradford Knox Smith, Lititz, Pa., assignor to RCA Corporation, New York, N.Y.**

**Filed Jan. 16, 1975, Ser. No. 541,517**
**Int. Cl.² H01F** *7/00*
**U.S. Cl. 335—210** **10 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 3,629,751 | 12/1971 | Massa | 335/212 |
| 3,633,137 | 1/1972 | Thurnell | 335/212 |
| 3,697,909 | 10/1972 | Christensen et al. | 335/210 |

**1.** A yoke mount assembly for a television picture tube of the type having a magnetic deflection yoke in operational relationship with the tube, a platform positioned on the external surface of the tube, and a yoke combination which includes a housing which encloses at least a portion of the yoke, wherein the improvement comprises:

a plurality of rigid members disposed between and connecting said yoke combination and said platform, said connecting members permitting adjustment of the position of said yoke combination with respect to said platform, said adjustment including rotational translation of said yoke combination with respect to said platform, each of said connecting members having a pair of end portions shaped such that substantially constant physical contact is maintained between one of said end portions of said connecting member and said yoke combination and the other of said end portions and said platform while said yoke position is adjusted.



**B 544,961**

## FREQUENCY SCAN AND LOCK CIRCUIT FOR MOBILE RADIO CHANNEL SELECTION

**Reed Edward Fisher, Parsippany-Troy Hills Township, Morris County, N.J., and Robert William Humes, Martinsville, Ind., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**

**Filed Jan. 29, 1975, Ser. No. 544,961**
**Int. Cl.² H04B** *1/32*
**U.S. Cl. 325—468** **5 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 3,443,228 | 5/1969 | Brenner et al. | 325/56 |
| 3,532,988 | 10/1970 | Magnuski | 325/63 |


**1.** A mobile radio telecommunication unit having a tunable receiver and a circuit for ascertaining which one of predetermined receivable frequency channels is strongest, said circuit comprising

first and second analog signal sample and hold circuits,

controllable means for steering an output, which is indicative of received signal strength in one of said channels, of said receiver to one or the other of said sample and hold circuits,

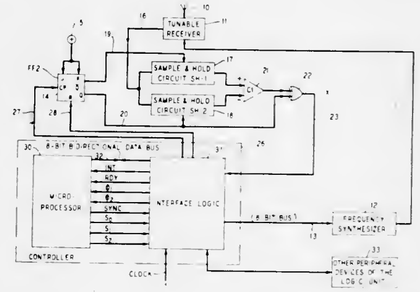
means for comparing outputs of said sample and hold circuits,

means, responsive to an output of said comparing means, for producing a signal pulse state when a new channel sample is the larger of two compared samples and a signal no-pulse state when the new sample is the smaller of the two compared samples, and

control means comprising

means for sequentially tuning said receiver to each of said channels,

means, responsive to said pulse state, for storing the name in said sequence of said channel having said large sample, and




means for controlling said steering means to steer each sequential channel sample from said receiving means to the one of said sample and hold circuits that held said smaller sample of two previously compared samples.

# REISSUES

## JANUARY 13, 1976

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

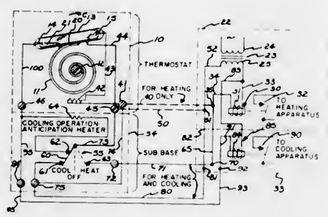
### Re. 28,676
### CONTROL APPARATUS

**Walter E. Edelman, San Marcos, Calif., and David J. Sutton, Minneapolis, Minn., assignors to Honeywell Inc., Minneapolis, Minn.**

**Original No. 3,284,002, dated Nov. 8, 1966, Ser. No. 406,397, Oct. 26, 1964. Application for reissue Jan. 31, 1974, Ser. No. 438,487**

**Int. Cl.² G05D** *23/30*

**U.S. Cl. 236—1 C** **6 Claims**




1. In a thermostat for controlling heating [and cooling] apparatus, *and being adaptable for controlling cooling apparatus by adding a subbase*, a main unit having a base, temperature responsive switch means mounted on said base, a first heater mounted *on said base* in thermal relation to said temperature responsive switch means, and connection means adapted to connect said heater and said switch means in a circuit for controlling the heating apparatus, a subbase unit having a second heater, *and* means for mounting said main unit on said subbase unit to thermally connect said second heater to said temperature responsive switch means and electrically connect said *first and* second [heater] *heaters* to said switch means and *adapted to connect* said switch means to control the *heating and the* cooling [apparatus.] *apparatuses*.

### Re. 28,677
### WASTE TREATMENT SYSTEM

**Earl T. Blakley, Cincinnati; David E. Chupka, Middletown; David L. Harbron, Jr., Wisconsin Rapids; Paul G. Marsh, Hamilton, and Peter Seifert, Middletown, all of Ohio, assignors to Black Clawson Fibreclaim, Inc., Middletown, Ohio**

**Original No. 3,713,594, dated Jan. 30, 1973, Ser. No. 151,762, June 10, 1971. Division of Ser. No. 6,041, Jan. 26, 1970, Pat. No. 3,549,092 and Ser. No. 861,778, Sept. 28, 1969, Pat. No. 3,595,488. Application for reissue June 21, 1974, Ser. No. 481,882**

**Int. Cl.² B02C** *13/16*

**U.S. Cl. 241—46.08** **16 Claims**

1. A waste treatment system comprising:

a. a vessel *adapted to receive relatively frangible and infrangible material therein for treatment, said vessel* including an upstanding side wall portion,

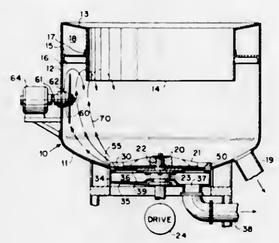
b. a rotor mounted in said vessel,

c. means defining a discontinuous attrition surface mounted in said vessel intermediate said side wall portion and said rotor,

d. said side wall portion being of appreciably greater extent in a direction parallel to the axis of rotation of said rotor than said attrition means,

e. said discontinuous attrition surface being spaced from said side wall portion to accommodate material flow through and over said attrition surface into [said space] *the space between said attrition surface and said side wall portion* and upwardly along said side wall in a vortical pattern,

f. flail means mounted on said rotor and projecting outwardly therefrom,



g. said flail means being mounted on said rotor for movement with respect thereto and engagement with said attrition means.

### Re. 28,678
### ELECTRIC EXPOSURE METER

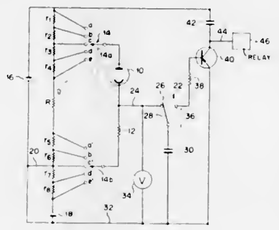
**Akio Yanagi, Komae, and Shoichiro Kakuta, Tokyo, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Azuchi, Japan**

**Original No. 3,652,168, dated Mar. 28, 1972, Ser. No. 48,903, June 16, 1970. Continuation of Ser. No. 634,320, April 27, 1967, abandoned. Application for reissue Nov. 16, 1973, Ser. No. 416,705**

**Claims priority, application Japan, Apr. 29, 1966, 41-27268**

**Int. Cl.² G01J** *1/46*

**U.S. Cl. 356—215** **9 Claims**



*8. An exposure measuring system comprising:*

*means including a voltage divider having a series connected network of a resistor and a photoconductive means, said photoconductive means being exposed to light, for producing a potential at the junction point of said resistor and photoconductive means, said potential varying relative to a predetermined point in a linear relation to the BV value of the brightness of the light incident on said photoconductive means;*

*means including a variable resistor device having a resistor portion connected in parallel with said series connected network and adjustable in accordance with a light unrelated photographing parameter in a manner to vary the potentials at both end terminals of said voltage divider equally and in the same direction and vary said potential at the said junction point with changes in said last-mentioned potential for each increment of adjustment of said parameter corresponding to changes of potential effected by unit changes in the brightness of said incident light; and storage means connectable with said means for producing a potential for storing said potential in said storage means.*





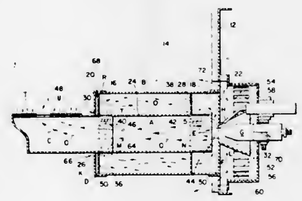
### Re. 28,679
### BURNERS

**Edgar Clarence Robinson, North Vancouver, Canada, assignor to International Industries Ltd., Burnaby, Canada**

**Original No. 3,620,657, dated Nov. 16, 1971, Ser. No. 36,987, May 13, 1970. Application for reissue Nov. 16, 1972, Ser. No. 307,199**

**Int. Cl.² F23L** *7/00*

**U.S. Cl. 431—9** **34 Claims**



1. In the art of combusting flammable fluid fuel for creating heated gas, the method steps which are characterized by:

i. initially projecting a relatively long tongue of ignited fuel longitudinally from a source to a principal burning zone remote from said source,

ii. causing an opposite, counterflow of a part of said tongue back towards said source, the originating location of said counterflow being between said source and said principal burning zone,

iii. reintroducing said counterflow back into said tongue near said source,

iv. causing the flame of said tongue to be extinguished when a sufficient rise in ambient temperature has supervened, and substantially simultaneously therewith

v. causing the generation of a blue flame at the said originating location of counterflow, and at said principal burning zone, and

vi. introducing sufficient air to [meet the requirements aforesaid, said burning zone being further from said source than said original location of counterflow.] *said burner to support combustion*.

### Re. 28,680
### APERTURED NONWOVEN FABRICS AND METHODS OF MAKING THE SAME

**Carlyle Harmon, Provo, Utah, assignor to Johnson & Johnson, New Brunswick, N.J.**

**Original No. 3,741,724, dated June 26, 1973, Ser. No. 104,174, Jan. 5, 1971. Application for reissue June 12, 1974, Ser. No. 478,664**

**Int. Cl.² B29C** *23/00;* **D04H** *11/00*

**U.S. Cl. 8—115.5** **3 Claims**

1. A method of making an apertured nonwoven textile fabric having a predetermined pattern of fabric apertures and fiber bundles created by applied fluid forces which comprises: (1) chemically treating and modifying heat-sensitive water-soluble polyvinyl alcohol fibers by (a) a heat treatment in the range of from about 200° C. to about 250° C. to raise their wet softening temperature whereby they are essentially wet heat-insensitive up to a temperature [of at least about 150° C.] *in the range of from about 60° C. to about 100° C.* and by (b) insolubilizing or cross-linking treatment with an aldehyde to give them an average degree of acetalization of from about 20 mol percent to about 35 mol percent and a moisture regain at 40°C. and a relative humidity of 90% down to about 10% but not to as low as 7½% whereby they develop the necessary balance of hydrophobic-hydrophilic properties and are sufficiently heat-insensitive and water-insoluble *as not to dissolve in hot water at a temperature of about 110°* C. and as to be capable of controlled movement and manipulation by applied fluid forces; (2) crimping said relatively heat-insensitive, water-insoluble polyvinyl alcohol fibers so that they possess from about six to about 16 crimps per inch; (3) forming a cohesive fibrous web from said crimped, heat-insensitive, water-insoluble fibers; and (4) applying fluid forces to said fibrous web to move and rearrange said crimped, heat-insensitive, water-insoluble fibers into a predetermined pattern of fabric apertures and fiber bundles constituting an apertured nonwoven fabric.

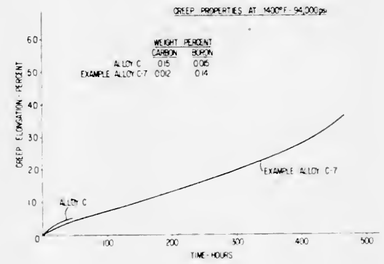
### Re. 28,681
### HIGH TEMPERATURE ALLOYS

**James French Baldwin, Delray Beach, Fla.**

**Original No. 3,869,284, dated Mar. 4, 1975, Ser. No. 346,815, Apr. 2, 1973. Application for reissue July 29, 1975, Ser. No. 598,111**

**Int. Cl.² C22C** *19/05*

**U.S. Cl. 75—134 F** **57 Claims**




50. A nickel base alloy for use at relatively high temperatures consisting essentially of the following elements in the weight percent ranges set forth:

| ELEMENTS | PERCENT |
|---|---|
| Chromium | 5-22 |
| Aluminum | 0.2-8 |
| Titanium | 0.5-7 |
| Boron | 0.05-0.3 |
| Carbon | less than 0.05 |
| Cobalt | 2-17 |
| Columbium | 0.00-3 |
| Molybdenum | 0.00-8 |
| Tantalum | 0.00-10 |
| Vanadium | 0.00-2 |
| Tungsten | 0.00-20 |
| Rhenium | 0.00-2 |
| Zirconium | 0.00-1.00 |

the balance of the alloy being essentially nickel and minor amounts of impurities and incidental elements which do not detrimentally affect the basic characteristics of the alloy, said nickel being present in an amount of from about 35% to 85% by weight.

**Re. 28,682**
**DECORATIVE LAMINATE**

**Charles E. Hoey, Marlton, N.J., assignor to Rohm & Haas Company, Philadelphia, Pa.**

**Original No. 3,804,700, dated Apr. 16, 1974, Ser. No. 255,879, May 10, 1972. Application for reissue June 9, 1975, Ser. No. 585,154**

**Int. Cl.² B32B** *3/26*

**U.S. Cl. 428—196** **4 Claims**

1. A laminate consisting of
a. a transparent plastic surface film of a thermoset emulsion polymer *transferred from a release surface and* adhered to
b. a crushed, crosslinked thermoset resilient foam of a thermoset emulsion polymer adhered to
c. a textile fabric substrate, with
d. a decorative layer between (a) and (b) the crushed foam layer (b) being self-bonded to the substrate (c) and the surface film.

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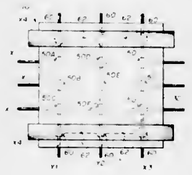
**Re. 28,683**
**GASEOUS DISCHARGE DISPLAY PANEL WITH AUXILIARY EXCITATION CELLS**

**George A. Kupsky, State College, Pa., assignor to Burroughs Corporation, Detroit, Mich.**

**Original No. 3,644,925, dated Feb. 22, 1972, Ser. No. 791,208, Jan. 7, 1969. Application for reissue Feb. 15, 1974, Ser. No. 443,067**

**Int. Cl.² H01J** *17/30*

**U.S. Cl. 340—378 R** **32 Claims**



1. A flat panel display device comprising
a gas-filled envelope including an insulating center plate and top and bottom insulating plates all sealed together vacuumtight along their adjacent peripheries,
said center plate comprising a solid sheet having a plurality of discrete apertures, each forming a gaseous display cell, said cells being arrayed in rows and columns,
the walls of said display cells being free of material which can generate excited particles and in the same physical state as other portions of the surface of said center plate,
a row electrode aligned with each row of display cells and a column electrode aligned with each column of display cells,
said display cells being adapted to be fired by the application of operating potentials to selected ones of said row and column electrodes,
*conductive means attached to said column electrodes for scanning said display cells one column after the next, while potentials are selectively applied to said row electrodes,*
a plurality of auxiliary discrete gas-filled cells adapted to glow at a low level, not for viewing, but to provide excited particles for firing said [first] *display* cells,
the walls of said auxiliary cells being free of material which can generate excited particles and in the same physical state as other portions of the surface of said center plate,
each auxiliary cell being aligned with and in operative relation with a column of said [first] *display* cells, each column electrode also being in operative relation with one of said auxiliary cells, and
an auxiliary row electrode in operative relation with each of said auxiliary cells,
said auxiliary electrode and said column electrodes being usable to fire each of said auxiliary cells to cause the gas therein to glow and to generate excited particles, said excited particles diffusing to adjacent display cells and energizing the gas therein to facilitate the firing of said display cells when operating potentials are applied thereto.

*12. A flat display panel, comprising*
*a gas-filled envelope including a face plate and a base plate closely spaced to one another and hermetically sealed together along a predetermined perimeter,*
*a plurality of groups of localized glow discharge regions, said groups being disposed side-by-side along a common plane within said envelope and each region being capable of sustaining a glow discharge which is visible through said face plate,*
*at least first and second electrodes adjacent each such visible glow discharge region, said electrodes being selectively energizable to initiate glow discharges in selective ones of said regions, and*
*a plurality of auxiliary glow discharge regions disposed in succession coplanar with said visible glow discharge regions but hidden from view through said face plate, each being adjacent and associated with one of said groups of visible glow regions to supply excited particles to the visible glow regions of the group and facilitate the initiation of glow discharge therein*
*at least two electrodes adjacent each of said auxiliary glow discharge regions to initiate glow discharges in said auxiliary regions,*
*means for sequentially energizing the electrodes of said auxiliary glow regions from the first in the succession to the last, for supplying excited particles sequentially to said visible glow region groups, and*
*means for energizing said groups of visible glow regions sequentially, one such group after another, in synchronism with the energization of said auxiliary glow discharge regions, to initiate glow in selective ones of the visible glow regions in each such group.*

# PATENTS

## GRANTED JANUARY 13, 1976

### ERRATA

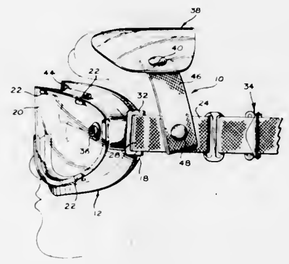
| For CLASS | See PATENT NO. |
|---|---|
| 126-041 R | 3,931,805 |
| 126-400 | 3,931,806 |
| 241-296 | 3,931,900 |
| 260-309.5 | 3,932,176 |
| 148-112 | 3,932,234 |
| 148-113 | 3,932,235 |
| 148-113 | 3,932,236 |
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| 156-213 | 3,932,250 |
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| 156-245 | 3,932,252 |
| 156-249 | 3,932,253 |
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| 156-417 | 3,932,256 |
| 156-497 | 3,932,257 |
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| 156-510 | 3,932,259 |
| 156-583 | 3,932,260 |
| 209-309 | 3,932,442 |
| 428-296 | 3,932,682 |
| 424-346 | 3,932,684 |
| 191-012 R | 3,932,714 |
| 323-102 | 3,932,808 |
| 240-041.6 | 3,932,837 |
| 444-001 | 3,932,885 |

# PATENTS

GRANTED JANUARY 13, 1976

## GENERAL AND MECHANICAL

**3,931,646**
**DOUBLE LENS GOGGLE**
**Larry Gordon Loughner, Andover, Mass., assignor to American Optical Corporation, Southbridge, Mass.**
**Filed June 26, 1974, Ser. No. 483,206**
**Int. Cl.² A61F 9/02**
**U.S. Cl. 2—14 V** **5 Claims**



1. In a goggle system including a facepiece having a forwardly disposed main goggle lens and an elastic headband connected to opposite sides of said facepiece for supporting the whole goggle system upon the head of a wearer, the improvement of an auxiliary lens adapted to be used forwardly of said main goggle lens in combination with attachment means therefor comprising:

a pair of elastic straps, one end of each strap being attached to said auxiliary lens adjacent one of each of its opposite sides;

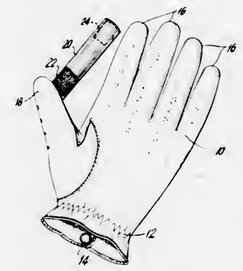
pivotable fastening means connecting the opposite ends of said straps directly to said headband at points one adjacent to each of said opposite sides of said facepiece; and

said elastic straps being compliant with stretching and retraction of said elastic headband whereby interference with the function of said headband is avoided and said straps further being independently stretchable whereby said auxiliary lens is permitted to be selectively moved forwardly of said main goggle lens and swung about said pivotable fastening means from a position of use forwardly of said main lens to positions of storage above and below said facepiece all without disconnection from said elastic headband.

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**3,931,647**
**GOLF GLOVE IMPROVEMENT**
**Sam Dien, 156 Rockwood Place, Englewood, N.J. 07631**
**Filed Apr. 3, 1975, Ser. No. 564,667**
**Int. Cl.² A11D 19/00**
**U.S. Cl. 2—161 A** **3 Claims**

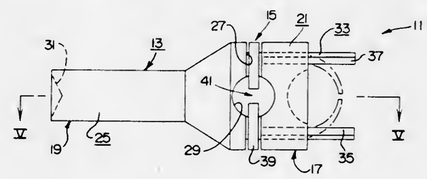
1. In a golf glove of conventional design, the improvement comprising an elongated webbing fixedly attached at one end to the thumb-stall substantially perpendicular thereto, said webbing including variable mating means at the opposite ends and sides thereof, wherein said webbing may be wrapped



circumferentially about the thumb-stall to a degree of snugness suitable to the user.

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**3,931,648**
**STAPEDIAL PROSTHESIS**
**John J. Shea, Jr., Memphis, Tenn., assignor to Richards Manufacturing Company, Memphis, Tenn.**
**Filed Jan. 8, 1975, Ser. No. 539,509**
**Int. Cl.² A61F 1/24, 1/18**
**U.S. Cl. 3—1.9** **9 Claims**

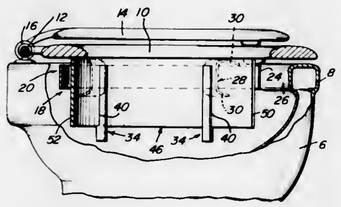


1. A prosthesis for replacing the stapes of the middle ear, said prosthesis comprising:

a. piston means for transmitting sound vibrations from the incus to the oval window of the middle ear, said piston means including a first end for engagement with the incus and including a second end for association with the oval window, said first end of said piston means including a socket for receiving a portion of the incus;

b. anchor means securely attached to said first end of said piston means for anchoring said piston means to the incus, said anchor means including a clamp member for extending substantially around the incus to fixedly attach said piston means to the incus, said clamp member being capable of being easily bent to securely grasp the incus and being capable of maintaining that bent shape after the force causing it to be bent is removed, said clamp member including a first clasp portion for extending around a first section of the long process of the incus and a second clasp portion for extending around a second section of the long process of the incus, said first and second clasp portions being movable by force between a first position substantially away from each other for allowing said clamp member to be inserted around the long process of the incus by way of the space between said first and second clasp portions and a second position substantially adjacent each other for causing said clamp member to securely grasp the long process of the incus.

**3,931,649**
**TOILET ANTI-SPLASH GUARD**
**Ollie F. Jankowski, 17738 W. Rogers Drive, New Berlin, Wis. 53151**
**Filed Nov. 30, 1973, Ser. No. 420,687**
**Int. Cl.² A47K *17/02***
**U.S. Cl. 4—1** **4 Claims**

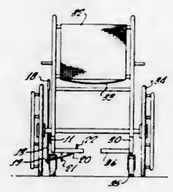


1. In combination, a water closet including a toilet bowl having an upper open portion wholly surrounded by a conventional-type overhanging flush water circulating and distributing rim, a hingedly mounted liftable and lowerable seat ring positionable atop said rim, and a hingedly mounted lid-type cover for said seat ring, adapter means mounted on said rim, and an anti-splash guard carried by said adapter means and interposed between said rim and seat ring, said adapter means being relatively stationary and including resilient means contacting the guard for permitting retraction of the guard, said guard being vertically projectable and retractable and automatically projected to an upstanding anti-splash position by the resilient means when the seat ring and companion cover are elevated and being adapted to retract to a down out-of-the-way position when the seat ring is lowered to an in-use position atop said flush rim, said adapter means including fixedly mounted guides, and the resident means being tensioned coil springs arranged in the guides, and said guard comprising an anti-splash shield having portions therein slidingly mounted in said guides and coacting with and acted upon and automatically biased upwardly by said springs, and said adapter means comprising a first soil and rust resisting strap member which is substantially C-shaped in plan, said strap member having rigidly mounted rim gripping and clamping spring clips, said guides comprising vertical socket members closed at their lower ends, open at their upper ends, the upper half-portion of each socket member having guide slots in which a lower edge portion of said guard is retentively but slidingly keyed, and the lower socket portion of each socket member having one of said tensioned coil springs housed therein and operatively engaging the coordinating portion of said guard.

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**3,931,650**
**DISPOSAL DEVICE FOR WHEELCHAIRS**
**Kent A. Miller, 7775 La Costa Circle, Buena Park, Calif. 90620**
**Continuation-in-part of Ser. No. 382,580, July 25, 1973, abandoned. This application Mar. 24, 1975, Ser. No. 561,258**
**Int. Cl.² A47K *11/02, 7/02***
**U.S. Cl. 4—134** **6 Claims**

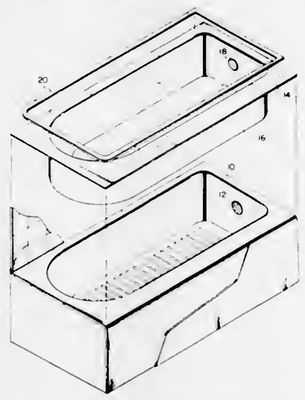
1. Apparatus for controlling the disposal of urinary waste from a collection receptacle carried by a wheelchair occupant, said receptacle including a drain tube, comprising:
a valve rigidly connected to said wheelchair and selectively positionable to an open or closed configuration;
an inlet conduit for said valve connected to said drain tube;
an outlet conduit for said valve, said outlet conduit extending from said valve to a location beneath said wheelchair; and
means connected to said valve and extending to a position remote from said valve and proximate said occupant for selectively positioning said valve to said open configuration to permit flow of said waste from said receptacle,



through said valve and outlet conduit, onto the floor beneath said wheelchair.

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**3,931,651**
**DISPOSABLE BATHTUB LINER**
**Francis X. Weir, Seattle, Wash., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest**
**Filed Jan. 6, 1975, Ser. No. 538,550**
**Int. Cl.² A47K *3/00***
**U.S. Cl. 4—173** **2 Claims**



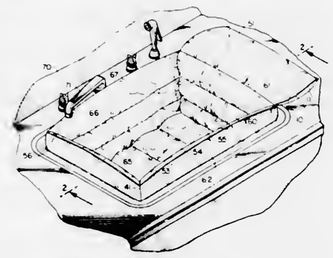
1. In combination with a magnetic bathtub, a thin flexible plastic liner having a horizontal flange overlying the top surface to the bathtub and having a central oval opening with a vertical peripheral wall extending downward and overlying the inner wall surface of the bathtub, the bottom of the bathtub being exposed, the inner wall surface of the bathtub having an overflow outlet, the wall of the liner having a slotted opening overlying the outlet, and means with form of a flat magnet overlying said flange to detachably secure the flange to the top surface of the bathtub.

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**3,931,652**
**INFANT BATHING APPARATUS**
**Barry A. Navarra, c/o Port-O-Tub Inc., 214 Old Nyack Turnpike, Spring Valley, N.Y. 10977**
**Filed Mar. 20, 1975, Ser. No. 560,167**
**Int. Cl.² A47K *3/064, 3/06***
**U.S. Cl. 4—177** **2 Claims**

1. Baby bathing apparatus for use with a standard kitchen sink comprising, in combination, upper and lower layers of flexible material, cruciform shapes cut from said upper and lower layers of material with said cruciform shapes each having a bottom portion and sides and ends extending therefrom, extensions from one end of each cruciform shape, peripheral welds joining the peripheries of said cruciform shapes, transverse spaced apart line welds joining said layers together within said bottom portions and said ends of said cruciform shapes, longitudinal spaced apart line welds joining said layers together within said sides of said cruciform shapes, said line welds terminating short of the peripheries of said cruciform shapes, a mouth inflation valve in one of said extensions, said valve inflating said apparatus with said bottom portions inflating as contiguous transverse ribs forming the bottom of said

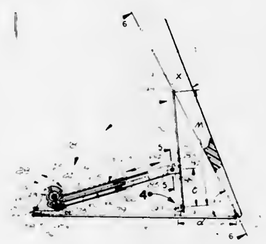




apparatus, with said sides and ends of said cruciform shapes inflating as horizontal contiguous ribs forming sides and ends of said apparatus, and with said extensions inflating as a pillow resting at the end of the sink, said bottom of said apparatus having one end opposite said pillow containing a drain, a stopper for said drain, and vertical welds joining adjacent sides and ends of said apparatus, said uppermost of said horizontal ribs extending above the sink.

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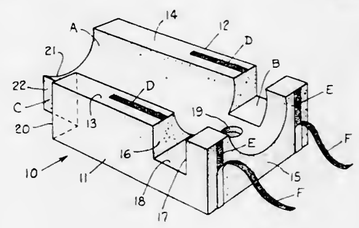
**3,931,653**
**POWER OPERATED BACK REST**
**Jack M. Bien, 356 1/2 N. Ogden Drive, Los Angeles, Calif. 90036**
**Filed Sept. 30, 1974, Ser. No. 510,381**
**Int. Cl.² A47C *21/00*; A61G *7/06***
**U.S. Cl. 5—327 B** **7 Claims**



1. An adjustable body rest assembly comprising:
a base adapted to be placed on and be supported by an upwardly facing surface of a bed or other support structure with said base in generally horizontally extending condition;
a back rest hinged to said base for pivotal movement about a first essentially horizontal axis through different inclined positions and forming a variable acute dihedral angle with said base;
an extensible screw and nut mechanism located above said base and within said dihedral angle and including a screw part and a threaded interengaged nut part one of which is actuable along a second axis relative to the other to lengthen said mechanism in response to relative rotation of the parts about said second axis;
said two parts exerting force in generally opposite directions against said base and said back rest at locations offset from said first axis to swing said back rest between said different inclined positions;
a rotary motor located above said base and within said dihedral angle and connected to said screw and nut mechanism and operable to drive one of said screw and nut parts rotatively relative to the other in a relation actuating said back rest between said different inclined positions;
a first pivotal connection attaching both said motor and said screw and nut mechanism at one end of the latter to said base for upward and downward swinging movement of both the motor and the screw and nut mechanism in unison within essentially a vertical plane disposed essentially transversely of said first axis and during actuation of said back rest about said first axis; and
a second pivotal connection at the other end of said extensible screw and nut mechanism through which force is transmitted from said mechanism to the back rest to actuate it.

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**3,931,654**
**LEG POSITIONER**
**Donald C. Spann, 5 Ferncreek Court, Greenville, S.C. 29607**
**Filed Nov. 4, 1974, Ser. No. 520,371**
**Int. Cl.² A47C *21/00***
**U.S. Cl. 5—327** **3 Claims**



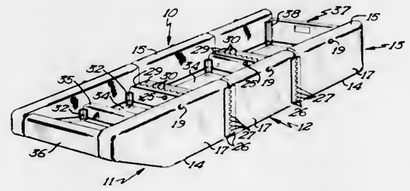
1. A device for supporting the lower thigh, leg and foot of a patient when lying on the side during prolonged periods of bed rest comprising:
a. an elongated base;
b. a plurality of sides extending upwardly from said base;
c. an open groove interposed between said sides extending the entire length of said base;
d. a pair of transverse surfaces in said sides adjacent one end of said base defining a transverse slot extending across said groove and said sides adjacent said one end thereof for receiving a foot of the patient when lying on the side; and
e. pressure sensitive fastening means carried by a top surface extending between respective sides and said slot and by a vertical surface of said one end extending across said slot for adjustably closing said slot to position said foot supported therein;
whereby the patient may be properly positioned on a side with a knee bent, the lower portion of the leg cradled in said groove, and the foot tilted and positioned as desired in the slot by fastening the pressure sensitive fastening means in a desired position.

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**3,931,655**
**INFLATABLE BOAT**
**Terry L. Luscombe, Armstrong, Iowa 50514**
**Filed Jan. 21, 1974, Ser. No. 435,301**
**Int. Cl.² B63B *7/08***
**U.S. Cl. 9—2 A** **1 Claim**

1. An inflatable boat comprising:
opposed substantially parallel elongate upright inflated side members, a plurality of similar longitudinally spaced apart elongate inflatable transverse members extending between and engaging said side members, one of said transverse members extending between said side mem-

bers adjacent the front end thereof, said transverse members having a vertical dimension substantially less than the vertical dimension of said side members, each of said side and transverse members being formed of a flexible and impervious material and when inflated, being of substantially rectangular cross-sectional configuration and including opposed, substantially parallel vertical side wall elements, opposed end wall elements, top wall elements and a lower wall element, a plurality of fibers extending between and being bonded to the inner surface area of the vertical wall elements of each side and transverse member, each side and transverse member having a valve therein to permit inflation and deflation thereof,



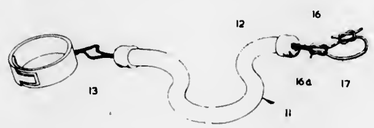
each of said side and transverse members when inflated having a vertical dimension substantially greater than the transverse dimension thereof,

means sealingly connecting the respective end portions of a transverse member, said side members having a flexible impervious panel sealingly secured to the lower portions of the transverse and side members and defining a flexible floor, a rigid substantially flat floor defining panel positioned upon said flexible floor panel and extending between said side members,

and a rigid, vertical transom extending between and sealingly secured to the side members and flexible floor member adjacent the rear ends thereof.

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**3,931,656**
**SURFBOARD LEASH**
**Derek Vincent Thomson, Escalls Cliff, Sennen, Cornwall, England**
**Filed June 13, 1974, Ser. No. 479,062**
**Int. Cl.² A63C** *15/06*
**U.S. Cl. 9—310 E** **11 Claims**



1. A leash for attaching a surfboard to a surfer, comprising:

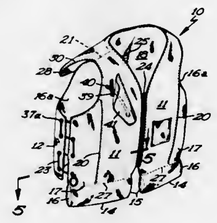
an outer tubular casing of resilient material,

at least one separate reinforcement element housed within said outer tubular casing and attached at each end thereto, said reinforcement element itself being resilient, the natural length of said inner reinforcement element being greater than the natural length of said outer tubular casing, and the maximum extended length of said reinforcement element being less than the maximum extended length of said outer tubular casing,

first attachment means on one end of said reinforcement element for attaching it to a part of the body of a person, and

second attachment means at the other end of said reinforcement element for attaching it to a surfboard.

**3,931,657**
**LIFE VEST**
**Walter C. Jones, Armstrong, Iowa, assignor to Rubber Dynamics Corporation, Armstrong, Iowa**
**Filed June 12, 1974, Ser. No. 478,740**
**Int. Cl.² B63C** *9/10, 9/16*
**U.S. Cl. 9—342** **5 Claims**



1. A personal flotation vest device comprising:

a pair of front panels and a pair of rear panels, each panel having inner and outer longitudinal edges, upper and lower edges, means securing the respective upper edges and portions of the outer longitudinal edges of a front panel and back panel together to define an armhole therebetween, means securing the inner longitudinal edges of the back panels together, and releasable closure means for releasably securing the inner longitudinal edges of the front panels together,

each panel including a flexible fabric liner covering the interior surface thereof and a flexible cover covering the exterior surface thereof and secured at its periphery to the periphery of the associated fabric liner,

each panel including a vertically extending sheet of buoyant material extending from adjacent the lower edge of each panel to a point adjacent the upper edge thereof and interposed between the associated liner and cover,

a collar secured to said panels and including a pair of sheets of flexible fabric secured together at peripheral portions thereof,

a generally U-shaped inflatable bladder formed of an elastic gas impervious material and including a pair of elongate sections and a bight portion extending between such sections said bight portion of the bladder being positioned between the sheets of said collar, each elongate section of said bladder having means thereon adjacent one longitudinal edge portion thereof attached to said closure means, and each section having means thereon adjacent its other longitudinal edge portion secured to said cover and liner.

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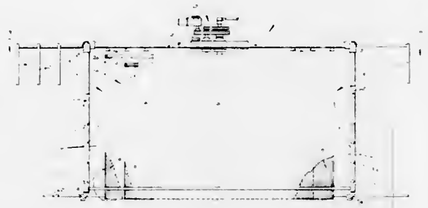
**3,931,658**
**WASHING APPARATUS FOR VEHICLES**
**Lyle B. Evans, 3520 SW. 108th Ave., Beaverton, Oreg. 97005**
**Continuation-in-part of Ser. No. 475,103, May 31, 1974, abandoned, which is a continuation-in-part of Ser. No. 386,976, Aug. 9, 1973, abandoned. This application Nov. 11, 1974, Ser. No. 522,935**
**Int. Cl.² B60S** *3/06*
**U.S. Cl. 15—4** **25 Claims**

1. An apparatus for use in the washing of vehicles and the like, said apparatus comprising,

a support structure,

a drive mechanism including a prime mover on said support structure,

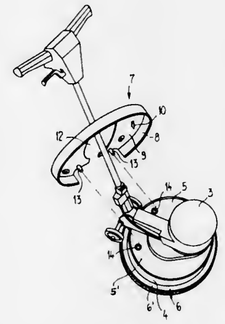
curtain assemblies supported by said structure with each assembly including a circular curtain support adapted for independent rotational movement about a common axis and from which are suspended curtains of strip-like elements, said strip-like elements of each curtain assembly being in radial spaced relationship to those of the other assembly when the curtain assemblies are at rest, said strip-like elements of one curtain assembly being interengageable with strip-like elements of another curtain assembly upon their displacement resulting from automobile contact, and



said drive mechanism imparting opposite rotational movement to the curtain supports whereby oppositely moving strip-like elements of each curtain assembly will be trailed across the automobile body in opposite directions with said strip-like elements of the different curtain assemblies randomly engaging each other as they pass in opposite directions to enhance cleaning action of the strips.

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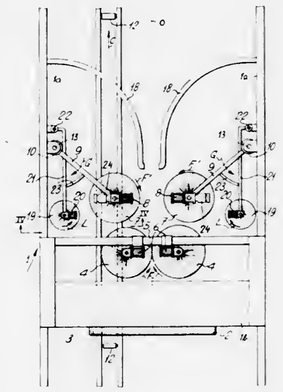
**3,931,659**
**FLOOR TREATING MACHINE**
**Kurt Pfefferkorn, Wallisellen, Zurich, and Charles Sérou, Opfikon-Glattbrugg, Zurich both of Switzerland, assignors to Diethelm AG, Zurich, Switzerland**
**Filed June 24, 1974, Ser. No. 482,096**
**Claims priority, application Austria, June 28, 1973, 5705/73**
**Int. Cl.² A47L** *11/162*
**U.S. Cl. 15—49 R** **7 Claims**



1. A floor treating machine capable of being supported at the floor to be treated by means of a work disk, said work disk being arranged adjacent a substantially ring-shaped stop, the improvement comprising: said machine possessing a machine housing, said machine being provided with two work disks of different diameter which are selectively insertable at least partially into the machine housing, one of said work disks defining a smaller diameter work disk and the other of said work disks defining a larger diameter work disk, a separate substantially ring-shaped stop provided for each such different diameter work disk, the ring-shaped stop provided for the smaller diameter work disk defining a smaller ring-shaped stop relative to the other ring-shaped stop provided for the larger diameter work disk defining a larger ring-shaped stop, and at least the ring-shaped stop provided for the smaller diameter work disk being fixedly secured to said machine housing.



**3,931,660**
**SCRUBBING APPARATUS FOR VEHICLE-WASHING STATION**
**Uberto Capra, Alte Ceccato (Vicenza), Italy**
**Filed Oct. 2, 1974, Ser. No. 511,183**
**Claims priority, application Italy, Oct. 3, 1973, 29664/73; Jan. 11, 1974, 19305/74; Feb. 8, 1974, 20339/74**
**Int. Cl.² B60S** *3/06*
**U.S. Cl. 15—53 AB** **10 Claims**



1. A scrubbing apparatus for a vehicle-washing station, comprising:

a guide structure straddling a path for a wheeled vehicle movable relatively thereto along a straight line;

horizontal rotary brush means mounted on said structure above said path for up-and-down movement to scrub front, top and rear surfaces of said vehicle;

a pair of first vertical rotary brushes symmetrically mounted on said structure for oscillatory movement in a first transverse plane perpendicular to said line to scrub front, side and rear surfaces of respective halves of said vehicle;

a pair of horizontally swingable supporting arms symmetrically fulcrumed on said structure above said path with pivotal axes located in a second transverse plane perpendicular to said line downstream of said first transverse plane with reference to the apparent vehicular motion and with free ends extending inwardly from said pivotal axes toward the centerline of said path;

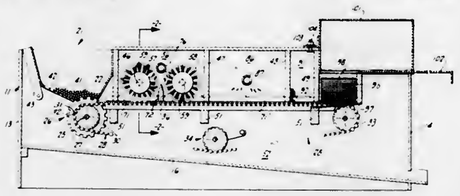
a pair of second vertical rotary brushes suspended from said free ends for supplementing the scrubbing action of said first vertical brushes; and

biasing means urging said supporting arms into a normal position in which said second vertical brushes lie upstream of said second transverse plane and are separated from each other by a distance less than the width of said horizontal brush means, said biasing means being sufficiently yieldable to enable said second vertical brushes to move under the thrust of the oncoming vehicle past said second transverse plane into an alternate position in which they are again separated after closely approaching each other in an intermediate position coinciding with said second transverse plane.

## 3,931,661
## APPARATUS FOR CLEANING AND DISINFECTING INSEMINATION STRAWS

**Albertus G. Horsting, and Samuel Luzaich, both of Santa Rosa, Calif., assignors to Tur-Colossus, Inc., Santa Rosa, Calif.**

**Filed Aug. 8, 1974, Ser. No. 495,585**
**Int. Cl.² A46B** *13/02*
**U.S. Cl. 15—308** **7 Claims**

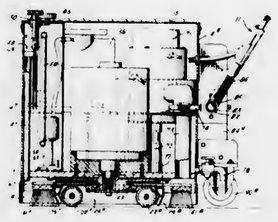


1. Apparatus for cleaning and disinfecting small straws employed for artificial poultry inseminations comprising
a pair of parallel endless chains having spaced depressions thereon for receiving straws to be carried thereby and extending over first and second rotatably mounted cylinders with one cylinder being driven to thus move said chains together for transporting straws,
means holding straws on said chains,
at least one rotary mounted brush disposed at a first station above said chains in position to scrub straws carried by said chains past the brush,
means directing cleaning disinfecting fluid onto said straws and through said straws at said first station,
means defining a second station through which said chains pass and including means directing a rinse fluid onto and through straws carried by said chains, and
straw drying means directing a jet of air through rinsed straws on said chains and directing air onto the exterior of said straws.

## 3,931,662
## FLOOR CLEANING MACHINE WITH VACUUM PICKUP

**James E. Nayfa, 5015 Sharp St., Dallas, Tex. 75247, and Andrew D. Stanley, 2306 Cedar Way Drive, Dallas, Tex. 75241**

**Division of Ser. No. 147,866, May 28, 1971, Pat. No. 3,761,987. This application Aug. 20, 1973, Ser. No. 390,023**
**Int. Cl.² A47L** *7/00*
**U.S. Cl. 15—320** **8 Claims**

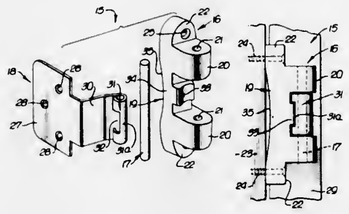


7. A machine for treating floor surfaces comprising
a housing having front and rear ends in relation to normal movement over a floor surface in one direction, and having a generally horizontal floor;
means mounted on said housing for supporting said housing for movement along the floor surface;
supply means in said housing for supplying a cleaning medium, including dispensing means disposed at the front end thereof; brush means mounted under said housing behind and adjacent to said dispensing means; power means in said housing for producing movement of said brush means in said floor plane relative to said housing;
said cleaning medium supply means including a sealed supply tank in said housing for containing a liquid solution, a source of compressed air communicating with said tank for pressurizing said tank and for producing a foam of the solution therein, means in said supply tank for agitating and mixing the solution therein, elongated transverse trough means in said tank defining the dispensing means, and adjustable gate means for regulating the flow of solution foam from said supply tank into said trough;
a collection system including a collection tank associated with said housing, an air pump having its suction side communicating with said tank, an elongated suction nozzle disposed under said housing floor behind and adjacent to said elongated brush means, and a manifold communicating said suction nozzle with said collection tank.
8. A machine as set forth in claim 7
said elongated transverse trough means being disposed in the upper portion of said supply tank; a plurality of vertical conduits defining said dispensing means for directing foam from said trough means to the floor surface at the front of said housing; and said adjustable gate means comprising an adjustable weir gate for controlling the flow of solution foam from the main supply tank chamber into said trough.

## 3,931,663
## SPRINGLESS SELF-LATCHING HINGE HAVING A RESILIENT HINGE MEMBER

**Frank A. Holmes, Buena Park, and Benjamin H. Stansbury, Jr., Beverly Hills, both of Calif., assignors to Jaybee Manufacturing Corporation, Los Angeles, Calif.**

**Continuation of Ser. No. 296,938, Oct. 12, 1972, abandoned. This application Dec. 6, 1974, Ser. No. 530,192**
**Int. Cl.² E05D** *11/08*
**U.S. Cl. 16—142** **12 Claims**



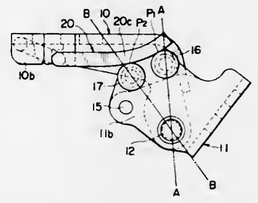
1. In a self-latching hinge structure for a cabinet:
a. a pair of hinge members connected together for angular movement about a hinge axis;
b. means determining a limited closed position of said hinge members;
c. one of said hinge members being made of relatively flexible, resilient molded plastic material;
d. means relatively rigidly securing spaced portions of said one hinge member to a relatively rigid cabinet to limit flexure between said spaced portions;
e. said hinge members having interacting parts developing stress in said one hinge member as a function of angular movement therebetween, said parts being positioned to maximize said stress just prior to arrival of said hinge members at said closed position;
f. said stress acting in a direction to impose a stress on said cabinet at said securing means.



## 3,931,664
## DOOR HINGE UNIT

**Ryuzo Nakano, Aichi; Ryoichi Fukumoto, Nagoya, and Kenichi Fukura, Chiryu, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Asahi, Japan**

**Filed Aug. 11, 1972, Ser. No. 279,893**
**Claims priority, application Japan, Aug. 11, 1971, 46-60918**
**Int. Cl.² E05D** *11/10*
**U.S. Cl. 16—145** **1 Claim**

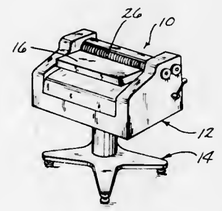


1. A door hinge unit comprising a first base plate adapted to be mounted on a supporting structure, a second base plate adapted to be mounted on a door, vertically extending hinge pin means pivotedly connecting base plates together, a pair of rollers mounted for rotation about parallel vertically disposed axes on one of said base plates, and resilient means mounted on the other of said base plates, said resilient means having a horizontally extending portion disposed in constant pressure contact with at least of one of said rollers at all times and a vertically extending portion supported by the other of said base plates under torsional stress so as to provide a rotational moment acting between said base plates, both of said rollers being disposed on the same side of said horizontally extending portion and in contact therewith at an intermediate door opening position to eliminate said rotational moment, only one of said rollers contacting said resilient means as the door is moved toward the door-closed position so that the resilient means will provide a door-closing moment and only the other of said rollers contacting said resilient means as the door is moved toward the fully opened door position so that the resilient means will provide a door opening moment.

## 3,931,665
## STRIPPER MEANS FOR MEAT SKINNING MACHINES

**Ray T. Townsend, Des Moines, Iowa, assignor to Townsend Engineering Company, Des Moines, Iowa**

**Filed Aug. 23, 1974, Ser. No. 500,130**
**Int. Cl.² A22B** *5/16*
**U.S. Cl. 17—21** **12 Claims**

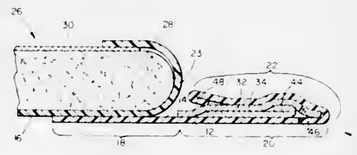


1. In a device of the class described, a frame means,
a driven roll rotatably mounted on said frame means, said driven roll having a plurality of spaced apart annular grooves formed therein which extend inwardly into the peripheral surface thereof,
a skinning blade means on said frame means and positioned adjacent said driven roll for severing the skin from the product being skinned, the severed skin being gripped by said driven roll and being passed between the periphery of said driven roll and said skinning blade means,
a stripper shaft on said frame means below said driven roll,
a plurality of stripper elements detachably secured to said stripper shaft in a spaced apart relationship, each of said stripper elements having an arcuate hook portion which is received in one of said grooves in said roll so as to extend around a portion of said driven roll whereby said stripper elements will strip the severed skin from said driven roll,
said stripper elements each having a base portion with an opening in one of the margins thereof, said opening having inner margins which slidably embrace said shaft,
said shaft and said inner margins of said opening in said base portions each having complementary surfaces which engage one another to hold said stripper elements against rotation with respect to said shaft while at the same time permitting sliding movement of said stripper element radially outwardly from said shaft.

## 3,931,666
## REUSABLE ADHESIVE DIAPER FASTENER

**Hamzeh Karami, Crystal Lake, Ill., assignor to Colgate-Palmolive Company, New York, N.Y.**

**Filed Feb. 4, 1974, Ser. No. 438,991**
**Int. Cl.² A41B** *13/02*; **B32B** *3/04*
**U.S. Cl. 24—73 VA** **6 Claims**



1. A diaper fastener comprising a strip of tape having a pressure sensitive adhesive disposed over a surface thereof, a unit removably secured to said strip in a longitudinally central portion thereof, said unit providing an exposed surface facing away from said strip surface and having limited affinity for said adhesive, an end portion of said strip folded over and in contact with said exposed unit surface, said unit comprising outer and inner layers of web each of which has a surface which has limited affinity for said adhesive and which faces away from the other layer, said outer layer including tabs projecting longitudinally beyond the ends of the inner layer, said tabs secured to said strip surface, whereby said unit remains in said central strip portion when said end strip portion is removed from said exposed surface of said unit.

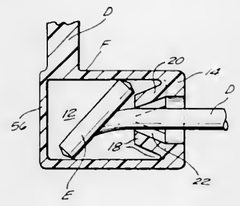
## 3,931,667
## INTERLOCKING ATTACHMENT DEVICE

**Francis G. Merser, Framingham Center, and Philip A. Kooistra, Northbridge, both of Mass., assignors to Dennison Manufacturing Company, Framingham, Mass.**

**Filed May 8, 1974, Ser. No. 467,918**
**Int. Cl.² B65D** *55/06*; **A44B** *9/00*
**U.S. Cl. 24—150 FP** **14 Claims**

1. An attaching device comprising a filament having a normally laterally oriented bar at one end and a hollow body member at its other end, at least one wall of said body member having an opening therethrough leading into the hollow interior of said member, said hollow interior having a greater width than said opening, an abutment defined therebetween, said filament being passable through said opening and said bar having a length greater than the maximum width of said opening and a thickness such that it is passable through said opening when said bar is oriented in a direction generally parallel to said filament, said bar when in a direction other than generally parallel to said filament being receivable in said hollow interior and engageable with said abutment, said body mem-

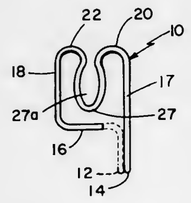
ber comprising a two piece assembly wherein said pieces are secured to one another, one of said pieces being integrally



connected to said filament, with one piece being an open-ended tube and the other piece being a closed-ended tube.

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**3,931,668**
**HOLDER FOR A KITCHEN UTENSIL**
**Carl J. Hombach, P.O. Box 22, West Hartford, Vt. 05084**
**Continuation-in-part of Ser. No. 437,488, Jan. 28, 1974, abandoned. This application Mar. 28, 1975, Ser. No. 562,977**
**Int. Cl.² A44B *21/00***
**U.S. Cl. 24—261 A** **11 Claims**



1. Apparatus comprising a kitchen utensil holder in combination with a clamp for mounting the holder to a pan or other container, said holder comprising first and second outer loops spaced laterally from one another, a third inner loop having an opening that is greater than the space between said first and second outer loops and connected to said outer loops by first and second connecting members, a support member attached to one of said outer loops, said support member having a portion defining an opening;

said clamp comprising two jaws and spring means normally holding said jaws in closed position, said spring means embodying a spring member that extends between and laterally of said jaws and has an opening extending therethrough;

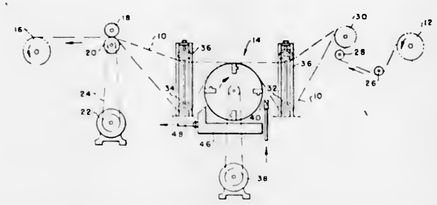
a bolt extending through said opening and the opening in said spring member; and

fastening means for fastening said bolt so as to secure said holder to said clamp in a selected position.

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**3,931,669**
**LOOP PILE FABRIC CUTTING MODULE**
**Michael William Gilpatrick, Chesnee, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.**
**Filed Mar. 3, 1975, Ser. No. 554,740**
**Int. Cl.² D06C *13/08***
**U.S. Cl. 26—9** **2 Claims**

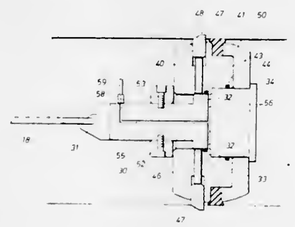
1. A module for a loop pile fabric cutting machine comprising: a plurality of upwardly projecting cutting blade members, a plurality of cutting blade guard members adjacent said cutting blade members and projecting upwardly beyond said cutting blade members, a base member molded around said blade and guard members holding them in position, a pin member projecting through said base member and said guard members and a plurality of grooves in the base of said base member substantially parallel to said guard members to allow



said guard members to be pivoted to allow said blade members to be exposed.

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**3,931,670**
**APPARATUS AND METHOD FOR CONNECTING TWO AXIALLY SPACED APART PIPES**
**James F. Arnold, Houston, Tex., assignor to HydroTech International, Inc., Houston, Tex.**
**Filed Apr. 25, 1974, Ser. No. 464,105**
**Int. Cl.² F16L *1/04***
**U.S. Cl. 29—157 R** **16 Claims**



1. In apparatus of drawing together the ends of two generally axially spaced apart conduits, the combination comprising:

a releasable pull plug arranged for mounting inside the end of one of said conduits, said plug having means for disengageably engaging the internal surface of said one conduit and locking said plug against axial movement relative thereto;

a line attached to said plug and extendable through said other conduit for exerting a pulling force thereon, whereby said two conduit ends may be drawn together by pulling on said line;

fluid actuated release means provided in said plug for disengaging said locking means from said conduit upon actuation thereof;

means operable in response to the actuation of said release means for holding said locking means in the disengaged position independently of said fluid pressure;

and means for applying pressurized fluid to said release means to thereby release said plug, whereby said plug after release thereof, and with said locking means held in said disengaged position, may be withdrawn through said other conduit by pulling on said line.

15. In a method of drawing together the ends of two generally axially spaced apart conduits, the combination comprising:

installing a releasable pull plug inside the end of one of said conduits, said plug being releasable in response to the application of fluid pressure thereto;

attaching a line to said plug and extending said line through said other conduit;

applying a tension force on said line to thereby draw said two conduit ends together;



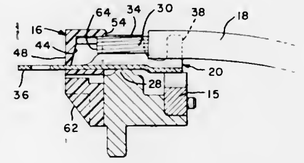
applying fluid pressure to said plug to thereby release said plug;

relieving said fluid pressure, with said plug remaining in said released condition;

and withdrawing said released plug from said conduits by pulling on said line, while said fluid pressure is relieved.

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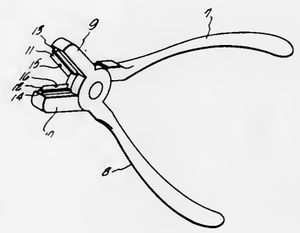
**3,931,671**
**TERMINAL LOCATOR AND RETAINER DEVICE**
**Larry Eugene Dittmann, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.**
**Filed Sept. 30, 1974, Ser. No. 510,338**
**Int. Cl.² H01R *43/04***
**U.S. Cl. 29—203 DT** **6 Claims**



1. A terminal locator and retainer device for locating and retaining a terminal having a projecting tongue or the like in crimping means comprising: a block of deformable material having retaining means for removably receiving and frictionally retaining the tongue of a terminal and locating means for locating and positioning the terminal to a position on top of a bar-containing-anvil in the crimping means and further having wire retaining means for removably receiving and retaining a wire which may be terminated in the terminal.

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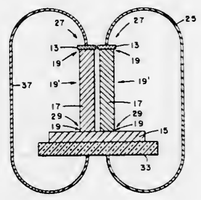
**3,931,672**
**DEFORMABLE WIRE STRIPPER**
**Dennis Siden, Portola Valley, Calif., assignor to Raychem Corporation, Menlo Park, Calif.**
**Filed June 19, 1974, Ser. No. 480,821**
**Int. Cl.² H02G *1/12***
**U.S. Cl. 29—427** **6 Claims**



1. A process for stripping insulation from wire comprising contacting the insulation with a material exhibiting plastic or elastic deformation greater than that of a conductor with a force sufficient to cause substantial deformation of the insulation via penetration by the material into the insulation; pulling the insulation substantially along the wire axis while maintaining the penetration force, the pull force being sufficient to cause the insulation to sever at the point of penetration whereby the insulation may be stripped without deformation of the conductor.

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**3,931,673**
**ALUMINUM FOR BONDING SI-GE ALLOYS TO GRAPHITE**
**Robert V. Eggemann, Warren, N.J., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.**
**Filed Oct. 8, 1969, Ser. No. 866,113**
**Int. Cl.² B01J *17/00***
**U.S. Cl. 29—573** **1 Claim**



1. Method for producing a thermoelectric device having a graphite contact for a silicon-germanium thermoelectric element, comprising the steps of:

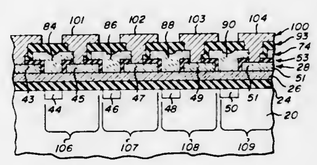
a. cleaning an aluminum shim by sequentially vibrating said aluminum shim in dilute NaOH, de-ionized water, strong $HNO_3$, deionized water and acetone, and a gentle flow of warm air;

b. sandwiching said shim between said graphite contact and said silicon-germanium thermoelectric element; and

c. bonding said graphite contact and silicon-germanium thermoelectric element with said aluminum shim sandwiched there between in a vacuum at a temperature above the solidus temperature for the silicon-germanium thermoelectric element.

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**3,931,674**
**SELF-ALIGNED CCD ELEMENT INCLUDING TWO LEVELS OF ELECTRODES AND METHOD OF MANUFACTURE THEREFOR**
**Gilbert F. Amelio, Saratoga, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.**
**Filed Feb. 8, 1974, Ser. No. 440,930**
**Int. Cl.² B01J *17/00***
**U.S. Cl. 29—578** **9 Claims**



1. A process for fabricating a charge coupled device structure in a semiconductor substrate, comprising the steps of

selectively applying at least one layer of insulation material to said semiconductor substrate;

selectively forming a plurality of spaced-apart first gate electrodes on the uppermost surface of said at least one layer of insulation material;

forming a first insulation layer over said plurality of first gate electrodes;

forming implanted barrier regions in said semiconductor substrate in the intervals between said plurality of spaced-apart first gate electrodes, the edges of said implanted barrier regions being aligned with the vertical edges of the insulation layer on the respective first gate electrodes;

selectively forming a plurality of second gate electrodes on said uppermost surface of said at least one insulating layer between said plurality of spaced-apart first gate electrodes, each of said second gate electrodes substantially occupying the space between adjacent first gate electrode; and

connecting each of said second gate electrodes to an individual adjacent first gate electrode to form a composite electrode for a charge coupled element.

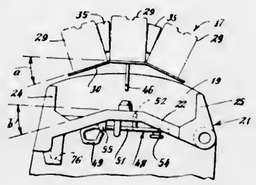
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**3,931,675**

## ELECTRIC DRY SHAVER WITH RELEASABLE CUTTER HEAD

**Peter A. Czerner, Trumbull; John F. Daniels, Bridgeport; Maurice A. Melito, Jr., Milford, and Edward Szymansky, Fairfield, all of Conn., assignors to Sperry Rand Corporation, Bridgeport, Conn.**

**Filed June 12, 1974, Ser. No. 478,715**
**Int. Cl.² B26B** *19/04*
**U.S. Cl. 30—41.6** **12 Claims**



7. In an electric dry shaver having a casing and a cutter head receptacle in said casing,

a. said receptacle including a bottom wall between a pair of opposed side walls,

b. a cutter head assembly including a plurality of cutter head units secured to a mounting plate,

c. said cutter head assembly disposed in said cutter head receptacle on one side of said bottom wall thereof,

d. latch means on said mounting plate extending through said bottom wall,

e. detent means on the opposite side of said bottom wall and including means in engagement with said latch means for releasably securing said cutter head assembly within the receptacle, and

f. means for releasing said bottom wall from the casing whereat said detent means are manually operable to unlatch said cutter head assembly.

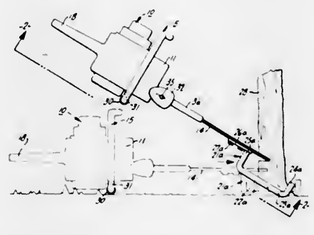
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**3,931,676**

## PORTABLE POWER SAW APPARATUS

**William E. Merle, 15400 Bancroft Road, Auburn, Calif. 95602**

**Filed Feb. 11, 1974, Ser. No. 441,559**
**Int. Cl.² B27B** *17/02*
**U.S. Cl. 30—371** **5 Claims**



1. A portable power saw apparatus having in combination a casing assembly, a chain guide extending longitudinally therefrom and transversed along the edges thereof by an endless power driven saw chain, and a handle structure enabling said apparatus to be hand-held and manipulated the improvement comprising: a pair of legs secured to the chain adjacent the outer end-portion thereof remote from the casing assembly and extending laterally from the guide, said legs disposed in transversely spaced relation to define a size guage determinative of the largest diameter object accepted between said legs for severance by the chain saw, said legs' end portions forming a wide mouth to facilitate movement of severable objects through the spaces defined between said legs and into engagement with said saw chain, said legs providing a ground-engageable abutment in at least one operative position to support the outer end portion of the chain guide and saw chain and protect the same from groundengagement during certain cutting operations.

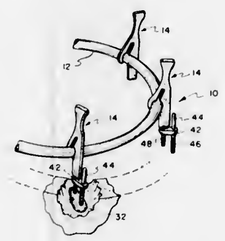
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**3,931,677**

## DIE STONE CASTING FOR DENTAL RESTORATION

**Lawrence E. Tinder, 2900 Sawmill Gulch Road, Pebble Beach, Calif. 93953**

**Continuation-in-part of Ser. No. 340,937, March 13, 1973, Pat. No. 3,832,777. This application Feb. 6, 1974, Ser. No. 440,208**
**Int. Cl.² A61C** *13/00*
**U.S. Cl. 32—11** **8 Claims**



1. A die pin holder comprising an elongated clip having a major axis and three ends, the clip comprising:

means at one end of the clip along said axis for releasably receiving in depending generally axial relation at least one die pin;

a body disposed central of the three ends comprising a bifurcated section defining an inverted Y, the apex region of which defines a downwardly directed opening adapted to be force fit over die pin setter means;

a free normally upwardly directed second end along said axis comprising a handle for manually gripping the clip to cause the clip to be placed downwardly in and removed upwardly from said force fit relation with the die pin setter means;

said third end projecting at an acute angle in respect to said axis, with said downwardly directed opening at said apex region being sized to initially slightly under match the cross sectional size of the die pin setter means over which the die pin holder is force fit to enlarge the size of said opening equal to the size of the die pin setter means.

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**3,931,678**

## DENTAL FILLING METHOD AND COMPOSITION FORMED THEREBY

**Denis J. O'Sullivan, and T. Eisirt Casey, both of Dublin, Ireland, assignors to Loctite (Ireland) Limited, Dublin, Ireland**

**Filed Sept. 24, 1974, Ser. No. 503,992**
**Int. Cl.² A61K** *5/02*
**U.S. Cl. 32—15** **7 Claims**

1. A process for repairing dental caries which comprises:



a. Removing decayed tooth structure to form a dental cavity;

b. Filling said cavity with a dental filling composition comprising

1. a urethane-acrylate monomer formed by the reaction of an organic polyisocyanate with a polymerizable acrylate ester having a hydroxy or amino group in the alcoholic moiety thereof;

2. a free-radical polymerization initiator; and

3. an inorganic filler;

c. Applying an aqueous solution of about 25 percent to about 60 percent by weight waterglass to the surface of the composition and allowing the water to evaporate to leave a solid, essentially oxygen-impermeable coating of waterglass;

d. Permitting said composition to harden to form a restored dental surface; and

e. Washing off the waterglass coating with water.

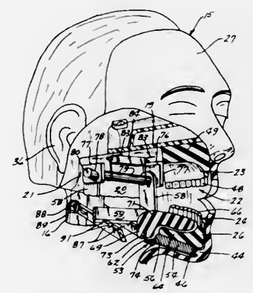
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**3,931,679**

## DENTAL PATIENT SIMULATOR

**Donald F. Carter, South Pasadena, Calif., assignor to Den-Tal-Ez Mfg., Co., West Des Moines, Iowa**

**Filed Nov. 5, 1973, Ser. No. 413,051**
**Int. Cl.² G09B** *19/00*
**U.S. Cl. 32—71** **5 Claims**



1. A dental practice device for simulating dental conditions of a dental patient, said device comprising:

a. a simulated human head including a skull having an upper jaw fixed thereto,

b. a movable lower jaw,

c. means movably supporting the lower jaw on the skull for up and down pivotal movement toward and away from the upper jaw and for transverse movement relative to the upper jaw including means for releasably holding the lower jaw in a pivotally moved position and means providing for a transverse movement of the lower jaw in all pivotally moved positions thereof,

d. practice dentures corresponding to and releasably secured to said upper and lower jaws, and

e. a covering skin for said skull, upper jaw and lower jaw simulating the human skin and including a mouth portion, said skin forming with said jaws a mouth cavity to which access is had only through said mouth portion.

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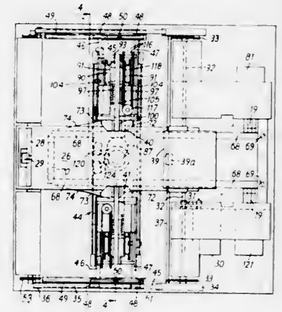
**3,931,680**

## FOOT MEASURING MACHINES

**Christopher John Greensides, Waltham on the Wolds, near Melton Mowbray, England, assignor to Clarks Limited, Somerset, England**

**Filed Jan. 23, 1974, Ser. No. 435,946**
**Int. Cl.² A43D** *1/00*
**U.S. Cl. 33—3 B** **14 Claims**

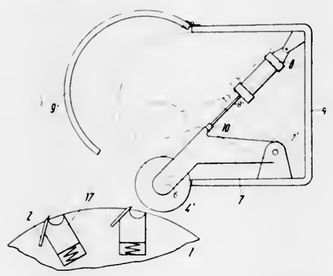
1. A foot measuring machine comprising a chassis, a platform for supporting a foot, said platform being mounted on the chassis, a heel stop and a toe stop for respectively engaging the heel and toe of the foot, said stops being spaced apart lengthwise of the platform, a main carriage mounted on the chassis for guided movement lengthwise of the platform, cam means extending lengthwise of the platform and providing laterally oppositely facing cam surfaces, said cam means being mounted on the chassis for free sideways movement with respect to the platform, trolleys mounted on the carriage at opposite sides of the platform for guided movement relative to the carriage in a direction at right angles to the lengthwise dimension of the platform for engaging opposite sides of the foot, cam followers secured to the respective trolleys and respectively engaging said cam surfaces, means connected to urge the trolleys resiliently towards each other, a pair of width probes each of which is mounted on a separate said trolley to engage opposite sides of the foot, one of said width probes being fixed on its respective trolley and the other of said width probes being mounted for guided movement relative to its trolley in a direction at right angles to the lengthwise dimension of the platform, means for relatively moving the heel stop, toe stop and carriage in a direction lengthwise of the platform and maintaining the distance between the width probes and the heel stop at substantially three-quarters of the distance between the toe stop and the heel stop, first measuring means providing a measure of the distance between the toe and heel stops thereby to provide a measure of the length of the foot, means for moving said other width probe relative to its trolley



in a direction at right angles to the lengthwise dimension of the platform, and second measuring means providing a measure of the distance travelled by said other width probe relative to its trolley in moving from an initial position into a position in which the two width probes are in engagement with opposite sides of the foot thereby to provide a measure of the width of the foot.

14. A foot measuring machine comprising a platform for supporting a foot, a heel stop and a toe stop mounted above said platform for respectively engaging the heel and toe of the foot, which stops are spaced apart lengthwise of the platform, a main carriage mounted for guided movement lengthwise of the platform, means for moving the heel stop, toe stop and carriage relative to each other in a direction lengthwise of the platform and maintaining the distance between a point on the carriage and the heel stop at substantially three-quarters of the distance between the heel and toe stops, and at least one girth probe mounted on the carriage, first and second tape anchorages on the carriage, a flexible tape having its ends attached to said anchorages and extending in a direction normal to said lengthwise direction around the probe between said anchorages, means for moving the probe across the instep of a foot on the platform thereby to lay said tape across the instep of the foot and means for indicating a measure of the length of tape so laid thereby to provide a measure of the girth of the foot.

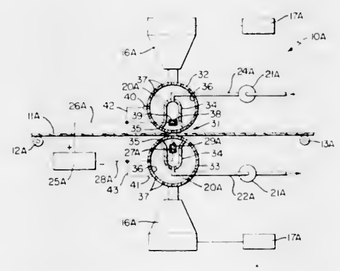
**3,931,681**
**SYSTEM FOR SETTING BLADES OF A CUTTER DRUM OF A WOOD CHIPPER**
**Ferdinand Sybertz, Bienenweg, 6551 Hargesheim, Germany**
**Filed Sept. 7, 1973, Ser. No. 395,362**
**Claims priority, application Germany, Sept. 8, 1972, 2244077**
**Int. Cl.² B27G** *23/00*
**U.S. Cl. 33—185 R** **3 Claims**



1. An apparatus for setting a straight-edged blade on a cylindrical cutter drum rotatable abut an axis, said apparatus comprising:
means on said drum for holding said blade on said drum and permitting displacement of said blade relative to said drum;
means including an abutment engageable with said blade for displacing same into a position with said edge lying on a circular orbit centered on said axis; and
means for locking said blade to said drum, said abutment including a cylindrical roll having a periphery osculating said orbit, said means engageable with said blade including means for pivoting said roll into and out of a position with said periphery osculating said orbit.
said apparatus further comprising a housing spaced from said drum and receiving said roll in a retracted position thereof.

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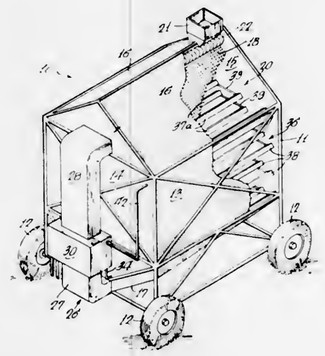
**3,931,682**
**LIQUID REMOVING METHOD AND APPARATUS**
**James T. Candor, 5440 Cynthia Lane, Dayton, Ohio 45429**
**Filed May 14, 1974, Ser. No. 469,820**
**Int. Cl.² B01K** *5/00*
**U.S. Cl. 34—1** **20 Claims**



1. Apparatus for removing moisture from moisture bearing material comprising means for supporting said material, vibrating means for vibrating said supported material, and electrostatic means for electrostatically removing moisture from said vibrating material, said vibrating means and said electrostatic means being in aligned relation substantially transverse to said supported material to respectively and substantially act in unison thereon, said vibrating means including part of said electrostatic means.

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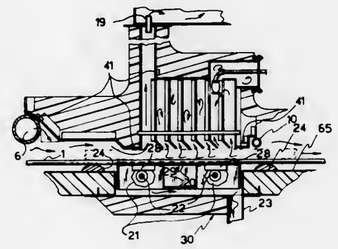
**3,931,683**
**DRYER FOR PARTICULATE MATERIAL**
**Ray D. Crites, 4324 Westbrook Drive; David A. Block, 318 Hilltop St., and Paul H. Sidles, 1506 Wilson St., all of Ames, Iowa 50010**
**Filed Nov. 18, 1974, Ser. No. 524,761**
**Int. Cl.² F26B** *17/12*
**U.S. Cl. 34—169** **13 Claims**



1. A dryer for particulate material comprising, in combination:
a drying chamber through which particulate material flows by gravity;
first air lock means for admitting particulate material to the upper end of said drying chamber;
second air lock means for removing particulate material from the lower end of the drying chamber;
a thermal pump system including a compressor having a low pressure side and a high pressure side, radiator means in the drying chamber which is directly contacted by said particulate material as it passes through said chamber, said radiator means having an inlet and an outlet, a condenser, a hot fluid conduit connecting the high pressure side of the compressor to the radiator inlet, a cool fluid conduit connecting the radiator outlet to the condenser, and a fluid return conduit from the condenser to the low pressure side of the compressor;
a closed duct system which includes the drying chamber, and blower means in the duct system to circulate gas through said drying chamber in countercurrent to the flow of particulate material so as to absorb moisture vaporized from the material;
means for heating said gas in the duct system before it enters the drying chamber, the condenser of the thermal pump system being positioned in the duct system upstream from the heating means where it condenses moisture from the gas which has left the drying chamber;
and condensate discharge means for removing condensed moisture from the duct system.



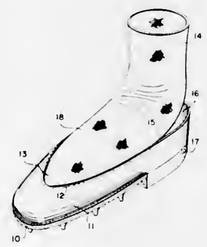
**3,931,684**
**VAPOR CHAMBER FOR DRYING**
**James O'Hara Turnbull; William Lipscomb Merritt, both of Cowansville, and Ivan Patrick McLaughlin, Sutton, all of Canada, assignors to J. J. Baker Company Limited, Cowansville, Canada**
**Division of Ser. No. 406,626, Oct. 15, 1973, Pat. No. 3,851,402. This application Oct. 7, 1974, Ser. No. 512,459**
**Int. Cl.² F26B** *25/00*
**U.S. Cl. 34—242** **3 Claims**



1. A curing chamber having entry and exit ports for passing articles therethrough, air curtain means at said inlet and exit ports to prevent entry of air into the curing chamber, communicating means connecting the air curtain means at said inlet and outlet ports to maintain a pressure equilibrium at the air curtains, means for supplying from outside the air curtain means in a direction inwardly of the curing chamber a controlled heated moist vapor providing predetermined moisture to the air curtains thereby reducing the escape of volatile gases from within the curing chamber.

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**3,931,685**
**LACELESS ELASTIC-TOPPED ATHLETIC SHOE**
**Hubert T. Laukaitis, P.O. Box 2406, Arlington, Va. 22202**
**Filed Nov. 15, 1974, Ser. No. 524,125**
**Int. Cl.² A43B** *11/00*
**U.S. Cl. 36—2.5 A** **4 Claims**



1. A laceless athletic shoe comprising a sole, a narrow strip attached to the entire edge of said sole and upstanding therefrom; an elasticized panel connected to the forward portion of said narrow strip, said elasticized panel encompassing the instep, and an elasticized ankle-encompassing member integral with and being a continuation of said elasticized panel; the rearward portion of the lower edge of said ankle-encompassing member being free rearwardly of the heel breast line, from connection to said narrow upstanding strip.



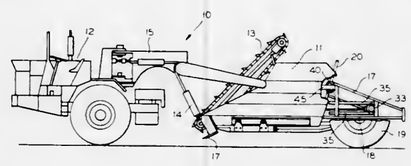
**3,931,686**
**ELASTIC LACE AND HOOK FASTENER**
**Archie B. Rathbun, P.O. Box 237, Sommers, Mont. 59932**
**Filed Feb. 25, 1974, Ser. No. 445,779**
**Int. Cl.² A43B** *11/00*
**U.S. Cl. 36—51** **3 Claims**



1. A fastening device for a lace-type closure having adjacent opposed fastening flaps with plural eyelets spaced inwardly adjacent each opposed edge of the flaps, and comprising, in combination:
paired, elongate elastic laces configured to allow insertion through the eyelets in each fastening flap but be bindable in the said eyelets when stressed away therefrom, each of said laces being laced through adjacent eyelets in each of the fastening flaps to form plural opposed loops on the fastening side of the flaps, and
plural fastening members releasably fastening paired opposed fastening loops to each other to cause a releaseable fastening of the laceable closure.

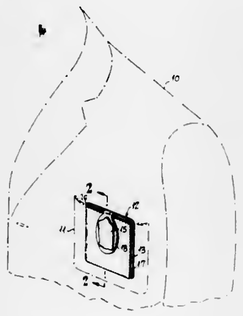
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**3,931,687**
**REAR EJECTOR ROLLER AND GUIDE FOR SCRAPER**
**Robert C. Johns, Jr., Lubbock, Tex., assignor to Clark Equipment Company, Buchanan, Mich.**
**Filed Nov. 13, 1974, Ser. No. 523,309**
**Int. Cl.² B60P** *1/36;* **E02F** *9/28*
**U.S. Cl. 37—8** **3 Claims**



1. An earth moving scraper having sidewalls, a fixed floor portion extending between the sidewalls, an ejector extending between the sidewalls and movable into and out of the space between the sidewalls over the fixed floor portion, a rigid frame structure attached to the scraper at the rear, an ejector frame secured to and movable with the ejector and projecting rearwardly into the rigid frame structure, a pair of beveled rollers, one on each side of the ejector frame, a pair of parallel tracks, one on each side of the rigid frame structure having spaced, inclined surfaces on which the beveled edges of said rollers travel, a pair of rollers having intersecting axes of rotation mounted on each side of the ejector and spaced forwardly of said beveled rollers, a separate track on each side wall of the scraper having upper and lower inclined surfaces on which said pairs of rollers travel which together with said beveled rollers cooperate for maintaining the ejector in proper alignment while moving into and out of the space between the side wall of the scraper.

**3,931,688**
**POCKET-SIZE COMBINATION STORAGE AND DISPLAY CASES FOR INSIGNIA MEMBERS**
**John C. Owens, 1611 17th St., Bedford, Ind. 47421**
**Filed July 16, 1974, Ser. No. 488,973**
**Int. Cl.² A44C** *3/00*
**U.S. Cl. 40—1.5** **4 Claims**

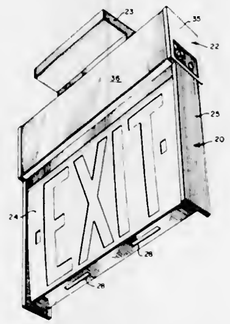


1. A unitary insignia storage and display case (12) for use on an upright garment pocket (11) having a front and a back panel, the upper marginal edge of the front panel being substantially horizontal and cooperating with the back panel to form a pocket opening, said case comprising:
a pair of integral rectangular sections (13, 17) foldable to parallel positions in which at least two of the side edges of the respective sections sunstantially coincide;
said folded sections (13, 17) being insertable through said opening and into said pocket with said coinciding side edges uppermost and adjacent said upper marginal pocket edge;
the inner face of one of said folded sections (13, 17) being recessed to form a storage compartment (14) for said insignia (15);
a flexible suspension strap (18);
means (30) for securing one end of said strap (18) to said recessed section (13);
said strap (18) extending laterally from said securing means (30), across said upper marginal edge of said pocket (11), and then downwardly alongside the exterior of the front panel of said pocket, and
means for securing said insignia (15) to said downwardly extending strap portion, the strap length between said securing means (30) and said insignia (15) being at least equal to the distance between the securing means and said compartment (14) whereby said insignia while connected to the case may be selectively displayed in suspended position on the exterior of said pocket front panel or stored within said compartment.

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**3,931,689**
**ILLUMINATED SIGN HOUSING CONSTRUCTION**
**William P. Shine, Monroe, Conn., assignor to Dual-Lite Company, Newtown, Conn.**
**Filed June 12, 1974, Ser. No. 478,521**
**Int. Cl.² G09F** *13/06*
**U.S. Cl. 40—132 R** **23 Claims**

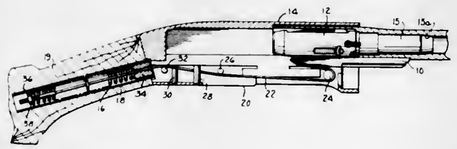
1. A sign housing comprising:
A. a frame member incorporating
a. a bottom portion,
b. a top portion and
c. two side portions interconnecting said top and bottom portions;
B. a rear panel removably mounted to said frame member and engageable with said top and bottom portions of said frame member; and
C. a flexible front panel
a. removably mounted to said frame member,
b. vertically slidingly engaged with said frame member along a substantial portion of the side portions thereof in substantially the same vertical plane from a first latched position to a second opened, retained position with said front panel vertically extending below said bottom portion and




c. dimensioned for flexible latched cooperation with said frame member to secure said front panel in said first latched position,
whereby access to the interior of the sign housing can be made while said front panel is retainingly suspended in its second position, vertically below the sign housing.

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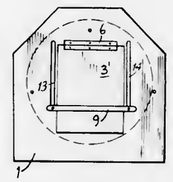
**3,931,690**
**ACTION BAR-ACTION SPRING LINK USING FLEXIBLE WIRE**
**Kenneth Wilfred Soucy, Richfield Springs; Thomas James Plunkett, Ilion, and Kenneth Charles Rowlands, Utica, all of N.Y., assignors to Remington Arms Company, Inc., Bridgeport, Conn.**
**Filed Mar. 8, 1974, Ser. No. 449,226**
**Int. Cl.² F41C** *11/00*; **F41D** *11/12*
**U.S. Cl. 42—16** **10 Claims**



1. In a firearm having a barrel, a chamber in said barrel for receiving a cartridge, a receiver frame attached to said barrel and a gun stock attached to said frame, a breech bolt means mounted in said frame for reciprocable movement between a forward breech closing position and a rearward breech open position, action spring means mounted in said gun stock, and flexible wire means connected at one end to said action spring means and at the other end to said bolt means, a stationary guide means mounted on said frame for guiding said wire means so that upon rearward movement of said bolt means into breech open position, said spring means is biased to resist the rearward movement of said bolt means and to urge the bolt means forwardly into breech closed position.



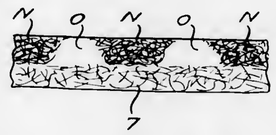
**3,931,691**
**DOOR DEVICE**
**Thomas J. McCord, Harrisonville, Mo., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest**
**Filed Jan. 11, 1974, Ser. No. 432,761**
**Int. Cl.² A01M** *23/18*
**U.S. Cl. 43—61** **3 Claims**



1. A door device for a door hingedly affixed to a housing for covering an opening thereof, said door being affixed to the housing at the top of the door, said door device comprising door locking means on the housing at the door, said door locking means comprising a pair of substantially parallel guide slots formed through the housing on opposite sides of the opening and a pair of substantially parallel slide rods slidably mounted for movement up and down on opposite sides of the door, said slide rods being affixed to each other at the slots and extending across the opening whereby when the door is open it supports the slide rods and when it closes, the slide rods slide down and bar the door.

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**3,931,692**
**INSECT EXTERMINATOR PAD**
**William A. Hermanson, 3700 Galt Ocean Drive, Fort Lauderdale, Fla. 33308**
**Filed Sept. 20, 1974, Ser. No. 507,776**
**Int. Cl.² A01M** *1/20*
**U.S. Cl. 43—131** **11 Claims**

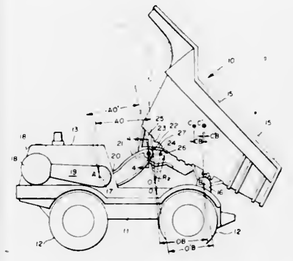


1. An insecticidal pad having a quantity of poison food particles covered by a paper web having openings on the inside which are substantially larger than the feelers and mouth parts of *Blatella germanica* cockroach nymphs, said web on the outside having dispersed fibers which overlie and cross over said openings in random fashion over substantially the complete cross-sectional area of said openings and which the feelers and mouth parts of said nymphs can readily displace laterally and penetrate between to reach the poison food through said openings.

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**3,931,693**
**DUMP MECHANISM FOR TOY TRUCK**
**James C. Alexander, Orchard Park, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.**
**Filed Mar. 17, 1975, Ser. No. 558,678**
**Int. Cl.² A63H** *17/06*
**U.S. Cl. 46—214** **10 Claims**

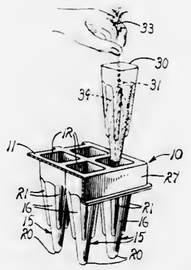
1. In a toy truck having a chassis, a dump body mounted on a rear region of said chassis to pivot between a load position and a full-dump position, a simulated cab in a forward region of said chassis, and a dump lever pivotally mounted on said chassis near said simulated cab, an improved dump mechanism comprising:
a. said dump lever having an upper surface curving downward toward a lifting end of said dump lever;
b. said dump body having an undersurface engaged by said curved surface of said dump lever; and



c. said curved surface of said dump lever and said body undersurface being shaped for pivoting said dump body in pivotal increments that increase successively relative to corresponding successively equal pivotal increments of said dump lever throughout at least the initial half of the motion of said dump body from said load position to said full-dump position.

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**3,931,694**
**PLANTING FLAT**
**Peter K. Krikorian, Fresno, Calif., assignor to Haig K. Krikorian, Fresno**
**Filed June 13, 1974, Ser. No. 478,951**
**Int. Cl.² A01G** *9/02*, *9/10*
**U.S. Cl. 47—34.13** **2 Claims**

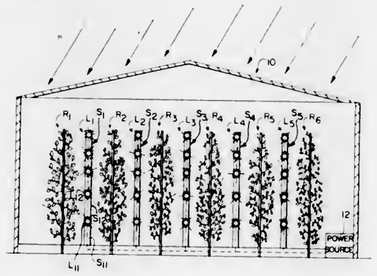


1. A planting flat comprising a unitary body of sheet material having a plurality of downwardly tapering cells of a common vertical length having open upper ends and closed lower ends disposed in respective upper and lower substantially parallel planes, an upper panel interconnecting the upper ends of said cells into rows that are of substantially parallel adjacent relationship, each unitary cell having a transversely substantially square upper portion defined by vertically substantially parallel, right angularly related pairs of oppositely disposed walls, and having substantially frusto-conical unitary central and lower portions continuous with the walls of said upper portion and tapering uniformly downwardly along a common longitudinal axis from the upper square portion to a closed lower end, the central portion being defined by a plurality of unitary longitudinally extending concave reinforcing ribs extending downwardly from each corner of said square upper portion to said lower portion to enhance the rigidity of said central portion, said ribs extending radially beyond the taper of said central portion and defining openings at their lower ends spaced outwardly from the remaining tapered lower portion whereby excess water can drain from said cell, said openings being upwardly spaced in relation to said lower

portion of the cell, the tapered lower portion below the openings being inperforate to define a reservoir therein.

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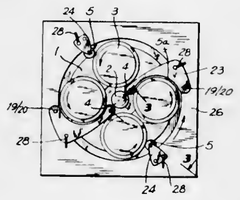
**3,931,695**
**PLANT GROWTH METHOD AND APPARATUS**
**Don Frederick Widmayer, Bethesda, Md., assignor to Controlled Environment Systems Inc., Rockville, Md.**
**Filed Jan. 9, 1975, Ser. No. 539,866**
**Int. Cl.² A01G 31/02**
**U.S. Cl. 47—58** **14 Claims**




**1.** A method for growing higher order plants, said method comprising locating at least one fluoroescent lamp in close proximity to the plants to be grown at a level lower than the tops thereof and pulsing the lamp on a limited duty-cycle so as to keep the bulb wall temperature of the lamp below a value that would damage the plant, said method further comprising providing a growing medium for at least one of the plants including a liquid nutrient solution and pulling the stem of said at least one of the plants into the growing medium at a selected time in the growth cycle thereof to enable further rooting of the plant to take place at the portion of the stem pulled into the growing medium.

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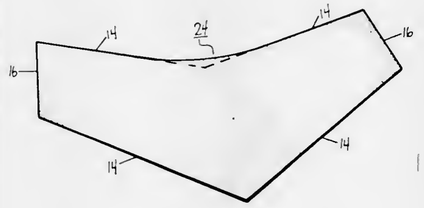
**3,931,696**
**DEVICE FOR MAKING SECTIONS FOR SPECIMENS AND SPECIMEN SUPPORTS THEREFOR**
**Wolfgang Lorenz, and Heinz Strubig, both of Rathenow, Germany, assignors to VEB Rathenower Optische Werke, Rathenow, Germany**
**Filed Mar. 4, 1974, Ser. No. 447,655**
**Int. Cl.² B24B 37/04**
**U.S. Cl. 51—131** **13 Claims**



**1.** A device for making sections for specimens, for thin sections and ground surfaces of metallographic specimens for microscopic analyses, comprising a housing; a rotatable polishing wheel therein; frictional drive means disposed centrally on said wheel and rotating therewith; at least two specimen supports symmetrically carried above said wheel in a freely rotatable, removable and interchangeable manner; at least one intermediate roller pivotally supported adjacent the peripheries of a pair of adjacent ones of said supports for transmitting to the latter rotation from said drive means in a direction identical with that of said wheel; said supports as well as said roller having complementary interengaging peripheral surfaces that are partly cylindrical and partly conical; and means for adjusting the location and degree of interengagement between the respective surfaces.

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**3,931,697**
**MODULAR CURVED SURFACE SPACE STRUCTURES**
**Peter J. Pearce, Studio City, Calif., assignor to Synestructics, Inc., Chatsworth, Calif.**
**Continuation of Ser. No. 216,488, Jan. 10, 1972, abandoned.**
**This application May 13, 1974, Ser. No. 469,416**
**Int. Cl.² E04B 1/32**
**U.S. Cl. 52—80** **8 Claims**

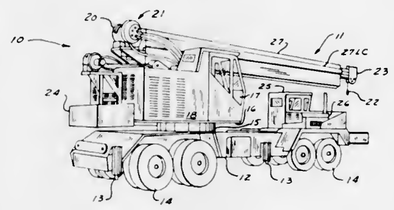


**1.** A saddle-like polygonal surface module for defining, in conjunction with other, related modules, space enclosing structures, the module comprising:

a nonplanar, skew polygonal periphery, having a substantially minimal surface membrane extending to the periphery thereof to define a saddle-like, structural module, said polygonal periphery having six edges, one pair of opposing edges and an included edge defining a first plane, a second pair of opposing edges and an included edge defining a second plane; the interior angles of the edges defining said first and second planes being 120°, said first and second planes intersecting at a dihedral angle of 125° 16′, the edges at said intersection of planes joining at 90°.

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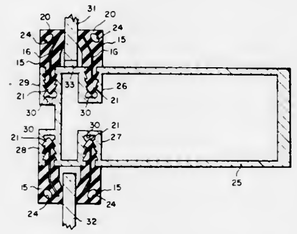
**3,931,698**
**CENTER GUIDED CRANE BOOM**
**Robert C. Ebersold, Novelty, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio**
**Filed Nov. 20, 1974, Ser. No. 525,356**
**Int. Cl.² E04H 12/18**
**U.S. Cl. 52—118** **14 Claims**



**1.** An extensible boom assembly comprising, in combination a base section, at least one additional extensible and retractible boom section telescopically received in said base section, the sections of the extensible boom assembly having a generally rectangular transverse cross section including top, bottom and side walls, said side walls having projections, said projections of contiguous boom sections being complementary to one another, and bearing means having a load bearing surface interposed between contiguous projections.



**3,931,699**
**GLAZING SYSTEM**
**J. Thomas Sarvay, Rush, N.Y., assignor to Schlegel Manufacturing Company, Rochester, N.Y.**
**Filed May 20, 1974, Ser. No. 471,323**
**Int. Cl.² E06B 3/62**
**U.S. Cl. 52—476** **14 Claims**



**1.** A glazing system for a window glass or a panel, said system comprising:

a. a structural frame having an opening slightly larger than said window glass or panel around the entire periphery of said window glass or panel;

b. an interior and an exterior glazing strip holding said window glass or panel in place in said frame;

c. each of said glazing strips having a resilient reinforcing member and an elastomeric material extruded over and covering said reinforcing member;

d. said glazing strips having a single anchorage base and laterally spaced therefrom a retainer-sealing portion, and said reinforcing member extending from said retainer-sealing portion into said anchorage base;

e. a pair of rigid receivers each having a channel shaped to interlock with said anchorage base of one of said glazing strips and extending around the periphery of said frame, lengths of said glazing strips being secured in said receivers to engage and seal opposite surfaces of said window glass or panel around said periphery of said window glass or panel;

f. the configuration and material of said reinforcing member being selected for resiliently pressing and sealing said retainer portion of said glazing strip against window glass or panel with a force of approximately 4–6 pounds per linear inch around said periphery of said window glass or panel; and

g. said anchorage base being insertable into said interlocking relation with said receiver and being removable from said receiver only by deliberate force for replacing said window glass or panel.

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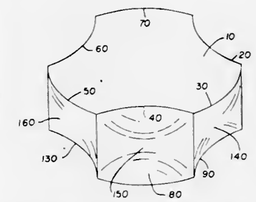
**3,931,700**
**SURFACES PRODUCED BY INTERLOCKING MEMBERS**
**Nino V. Scanni, and Iberio E. Scanni, both of Edmonton, Canada, assignors to The Raymond Lee Organization, Inc., New York, N.Y., a part interest**
**Filed Aug. 16, 1974, Ser. No. 497,924**
**Int. Cl.² E01C 5/00**
**U.S. Cl. 52—590** **1 Claim**

**1.** A member which when located in a plane in abutting relationship with a plurality of other like members defines a planar surface which will remain flat when pressure is applied along the thickness of the surface from two opposed directions, the member comprising:

a body having upper and lower flat, parallel main faces joined by six curved side faces that are connected end to end to define an endless closed path,

the upper main face having a periphery of six sections connected end to end, the sections defining congruent circular arcs that are alternately concave and convex,

the lower main face being identical to the upper main face but being rotated through 60° of arc with respect to it to vertically align the endpoints of the sections so that the endpoints of each concave section in each main face is vertically aligned with the endpoints of a corresponding convex section in the other main face,

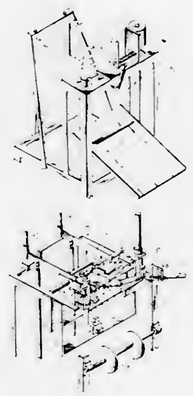


each concave section, its corresponding convex section and their vertically aligned endpoints defining the periphery of one of the curved side faces, and

each side face being further defined by the collection of straight lines of varying vertical slope which extend between corresponding points on each corresponding pair of sections, said lines having an infinite slope at the endpoints and having steadily decreasing slopes as their distance to the midpoints of the sections decreases.

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**3,931,701**
**AUTOMATIC PRODUCE-BAGGING MACHINE THAT USES FACTORY-ROLL POLYETHYLENE NET TUBING**
**Earl K. Bowman, and John C. Teele, both of Gainesville, Fla., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.**
**Continuation-in-part of Ser. No. 484,198, June 28, 1974, abandoned. This application Mar. 28, 1975, Ser. No. 563,256**
**Int. Cl.² B65B 57/10, 43/00**
**U.S. Cl. 53—59 R** **6 Claims**



**1.** An automatic produce-bagging machine that uses factory-roll polyethylene net tubing material for bag fabrication and comprising in combination:

a. a frame;

b. a polyethylene net material spreading means;

1. an actuating means for said spreading means;

c. an opening and gripping means;

1. an actuating means for said opening and gripping means;

d. a bottom gathering, closing, and cutting means comprising:
   1. a means of imparting swing movement to said closing means;
   2. a means of gathering the polyethylene net material;
   3. a means of cutting said polyethylene material;
   4. a stapling device to staple the polyethylene material and form substantially a closed bottom of a polyethylene net bag;
   5. an actuating means to impart energy to said bottom gathering, closing, and cutting means;
e. a top gathering and closing means comprising:
   1. a gathering means to gather the top of the polyethylene bag;
   2. a cutting means to cut the top edge of the bag even;
   3. a stapling means to close the top edge of the polyethylene netting material and form a closed container for the produce;
   4. an actuating means to impart energy to said top gathering, closing, and cutting means;
f. an automatic counting means to count the produce into the bag; and
g. a means of supplying the polyethylene net material to the automatic bagging machine.

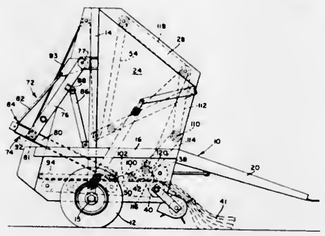
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**3,931,702**

## MACHINE FOR FORMING CYLINDRICAL HAY BALES

**Gust Soteropulos, and Gerald Franklyn Meiers, both of Ottumwa, Iowa, assignors to Deere & Company, Moline, Ill.**

**Filed July 17, 1974, Ser. No. 489,349**
**Int. Cl.² A01D** *39/00*
**U.S. Cl. 56—341** **11 Claims**



1. A machine for forming large cylindrical bales of crop material such as hay or the like comprising: a mobile main frame having opposite, upright, fore and aft sides defining a baling chamber therebetween; a crop delivery means carried by the frame and adapted to remove the crop from the field as the machine advances and delivers it rearwardly to the baling chamber in a mat; a bale forming mechanism disposed between the opposite sides and including a lower conveyor means generally below the path of crop material when it is delivered from the delivery means and adapted to support the underside of the mat of crop material and the bale formed in the baling chamber above the ground and an upper endless conveyor means spanning the baling chamber, the upper conveyor means having a portion opposite the lower conveyor means to form a baling zone therebetween wherein the mat of material is rolled into a cylindrical bale; and a rear gate assembly including a first pair of interconnected parallel arms pivotally connected to the opposite sides of the machine for swinging in unison in vertical arcs about a common transverse axes, a second pair of parallel arms respectively pivotally connected to the first arms for swinging in vertical arcs about a transverse axis, a first transverse roller extending between the second arms parallel to the pivot axis of the second arms and defining the rearward end of the baling zone, the first and second pairs of arms swinging rearwardly so that the roller moves rearwardly as a bale grows in the baling zone, the upper conveyor means being trained around said roller, a linkage means connecting the second pair of arms to the frame so that the first roller moves in a path generally parallel and adjacent to the lower conveyor means as the bale grows, and power means selectively operative to swing the gate assembly arms upwardly and rearwardly so that the first roller is spaced above the lower conveyor means to permit the rearward discharge of a formed bale.

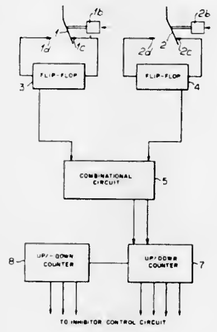
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**3,931,703**

## CORRECTING DEVICE FOR AN ELECTRONIC WATCH

**Igor Scherrer, Colombier; Fernand Chetelat, Cortaillot, and Pierre Hersberger, Neuchatel, all of Switzerland, assignors to Ebauches S.A., Switzerland**

**Filed Jan. 18, 1974, Ser. No. 434,666**
**Claims priority, application Switzerland, Feb. 27, 1973, 2800/73**
**Int. Cl.² G04C** *3/00;* **G04B** *27/08*
**U.S. Cl. 58—23 R** **4 Claims**




1. A time setting circuit for correcting the time setting of an electric timepiece of the type having a pulse generator having an output frequency set to a predetermined nominal value, a divider circuit receptive of the pulse generator output for developing a time signal having a frequency determined by the divider circuit, a controllable inhibitor circuit for blocking selected pulse generator output pulses from the divider circuit, and a time indicating mechanism driven by the time signal, wherein the time setting circuit comprises:
   a. two bistable circuits each having an output representative of a conductive state of the respective bistable circuit;
   b. two switches each connected to control the conductive state of a respective one of said two bistable circuits;
   c. an up/down counter for counting pulses;
   d. means for applying the count stored in said up/down counter to the controllable inhibitor circuit to control the number of pulses blocked by said inhibitor circuit and thereby control the time indicating mechanism; and
   e. a combinatorial circuit receptive of the outputs of said two bistable circuits for applying pulses to said up/down counter for increasing the count stored therein in response to actuation of a first of said two switches and for applying pulses for decreasing the count stored therein in response to actuation of a second of said two switches.

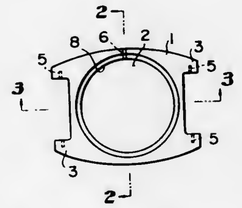


**3,931,704**

## WATCH CASE AND METHOD FOR MANUFACTURING THE SAME

**Hiroshi Tominaga, and Masanobu Takamatsu, both of Yokohama, Japan, assignors to Tokyo Sharyo Seizo Kabushiki Kaisha, Japan**

**Filed Oct. 23, 1973, Ser. No. 408,870**
**Claims priority, application Japan, Oct. 24, 1972, 47-106576**
**Int. Cl.² G04B** *37/00;* **B23P** *13/00;* **B22F** *5/00*
**U.S. Cl. 58—88 R** **10 Claims**



1. For use in a watch, a one-piece case having a back wall and a side wall projecting forwardly from said back wall and surrounding a space which is closed at one end of said side wall by said back wall and which is open at an opposed end of said side wall, said side wall having a pair of opposed regions each of which carries a pair of laterally extending lugs for supporting a watch-band holding rod, said lugs forming an integral part of said one-piece case and said one-piece case being formed in its entirety of sintered diamond particles, the thickness of said back wall and the dimension of said side wall between said ends thereof being less than the thickness of the side wall and back cover of a metal watch case of comparable strength.

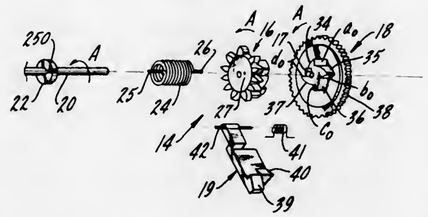
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**3,931,705**

## COUNTER FEED MECHANISM AS USED IN DIGITAL CLOCK

**Koichi Iwaki, Hino; Atsushi Wakabayashi, Gyoda; Yukihiro Nagahori, and Shiro Nakagawa, both of Tokyo, all of Japan, assignors to Jeco Kabushiki Kaisha, Japan**

**Filed June 24, 1974, Ser. No. 482,421**
**Claims priority, application Japan, June 26, 1973, 48-75097[U]; June 26, 1973, 48-75098[U]; June 26, 1973, 48-75099[U]**
**Int. Cl.² G04B** *19/02*
**U.S. Cl. 58—125 C** **8 Claims**



1. A counter feed mechanism for use in a digital clock comprising in combination, a first cam member adapted for advanced rotation, a second cam member adapted for delayed rotation with respect to said first cam member, both of said cam members being arranged on a common rotational axis, a rotary clock mechanism, means coupling said clock mechanism to said first cam member for rotation of same, spring means coupled to said second cam member and arranged to be charged by rotation of said clock mechanism, lock means engaging said second cam member for preventing rotation thereof, said first cam member including means for releasing said lock means after a predetermined amount of rotation of said first cam member thereby to allow said spring means to advance said second cam member, and a rotary wheel coupled to said second cam member, whereby energizing of said clock mechanism causes said rotary wheel to advance in step by step fashion.

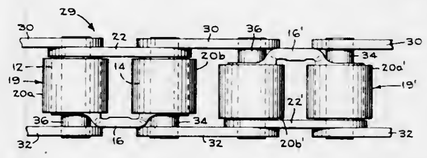
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**3,931,706**

## METHOD OF MAKING A BUSHING LINK CHAIN

**John F. McKeon, Carmel, and Roy E. Lambert, Indianapolis, both of Ind., assignors to FMC Corporation, San Jose, Calif.**

**Filed Dec. 20, 1974, Ser. No. 535,070**
**Int. Cl.² B21L** *9/04*
**U.S. Cl. 59—4** **5 Claims**



1. In a method of making a chain, the steps of forming a blank that includes a pair of parallel bushing forming strips connected intermediately by a web, bending the web to position the strips perpendicular to the original plane of the web and parallel with each other, and curling each strip outwardly from the other strip to form a bushing link having a pair of bushings integral with the web that serves as an inside plate.

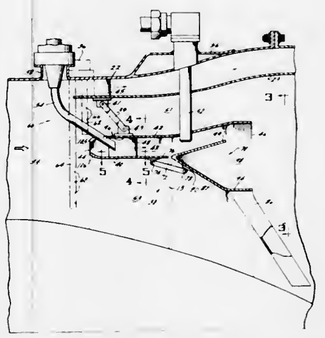
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**3,931,707**

## AUGMENTOR FLAMEHOLDING APPARATUS

**John William Vdoviak, Marblehead, Mass., assignor to General Electric Company, Lynn, Mass.**

**Filed Jan. 8, 1975, Ser. No. 539,315**
**Int. Cl.² F02C** *3/00;* **F02K** *3/10*
**U.S. Cl. 60—39.72 R** **11 Claims**



1. A flameholder for the afterburner of a gas turbine engine comprising:
   an inner ring,
   an outer ring spaced radially outward from and concentric to the inner ring to form an annular flow passage therebetween for receipt of the hot gases exhausted from the engine turbine,
   means for introducing pilot fuel into the flow passage to mix with the hot gases therein,
   means within the flow passage for imparting a circumferential swirl to the fuel gas mixture flowing therethrough,
   means for igniting the swirled fuel gas mixture to generate a pilot flame, and

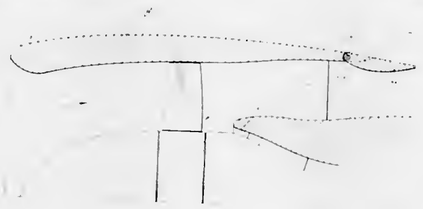
annular V-gutter means secured to the downstream end of the inner ring for providing a surface to which the pilot flame may attach.

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**3,931,708**
**VARIABLE FLAP FOR A VARIABLE PITCH DUCTED FAN PROPULSOR**

**David L. Motycka, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.**

**Filed Oct. 11, 1973, Ser. No. 405,606**
**Int. Cl.² F02K** *1/12, 3/06*
**U.S. Cl. 60—226 A** **4 Claims**



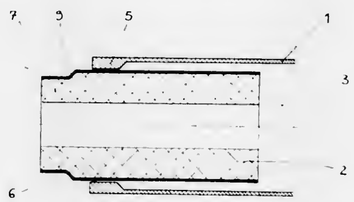
1. For a variable pitch ducted fan driven by a turbine type of power plant in which the duct surrounds and extends beyond the inlet of the power plant and the fan is movable from a positive to a negative pitch to reverse the flow of air in the duct, a variable flap at the exit end of the duct pivotally mounted aft of said inlet, said variable flap having an inwardly convex inner wall protruding into the duct to define a reduced diameter of the duct and a nozzle when said flap is in the normal positive pitch position and defining a substantially aerodynamically smooth surface for directing air from outside of said duct through the exit end into said inlet and said fan when in the reverse position.

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**3,931,709**
**METHOD OF LOADING A SOLID FUEL ROCKET ENGINE**

**Bernard Jean Felix Victor Doin; Robert Omer Emmanuel Grebert, and Yves Pierre Jouhaud, all of Saint Medard en Jalles, France, assignors to Societe Nationale des Poudres et Explosifs, France**

**Division of Ser. No. 335,766, Feb. 26, 1973, abandoned. This application Oct. 29, 1974, Ser. No. 518,578**
**Claims priority, application France, Mar. 3, 1972, 72.07377**
**Int. Cl.² F02K** *9/04;* **C06B** *21/00*
**U.S. Cl. 60—255** **3 Claims**



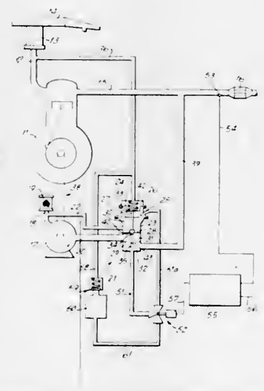

1. A method of introducing a block of solid propellant fuel into the combustion chamber of the body of a solid fuel rocket engine, said rocket engine being of uniform outer diameter, and comprising a cylindrical body portion, at least one cylindrical block of propellant fuel within said body portion, said body portion defining a cylindrical combustion chamber, means for attaching mechanical parts located within said body portion, said chamber comprising at least one portion of increased internal wall thickness at one end of said body portion, whereby said chamber has reduced cross section in the end of increased internal wall thickness, and an opening at the end of said reduced cross section for insertion of said cylindrical block of propellant fuel, said block having an end portion of reduced cross section, which comprises cooling the block of propellant fuel to such a temperature that its maximum cross-sectional dimension is less than the minimum dimension of said end of the chamber of reduced cross-section and rapidly introducing at this temperature, the block into the combustion chamber through said end of reduced cross-section.

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**3,931,710**
**METHOD AND INSTALLATION FOR THE PREDETERMINED ADDITION OF SECONDARY AIR FOR THE OPTIMUM COMBUSTION OF EXHAUST GASES OF INTERNAL COMBUSTION ENGINES**

**Günter Härtel, Rosellen, Germany, assignor to Deutsche Vergaser GmbH & Co. Kommanditgesellschaft, Neuss, Germany**

**Filed May 1, 1973, Ser. No. 356,193**
**Claims priority, application Germany, Nov. 10, 1972, 2254961**
**Int. Cl.² F02B** *75/10*
**U.S. Cl. 60—276** **2 Claims**



1. An installation for the proportionate addition of secondary air employed in the optimum combustion and after-burning of the exhaust gases of an internal combustion engine, comprising: an engine-driven air pump control means for introducing predetermined quantities of said secondary air; means located externally of said control means being responsive to at least one of a plurality of engine operating conditions consisting of the pressure of the engine suction side, the engine exhaust gas back-pressure, engine rotational speed, exhaust gas oxygen content, and exhaust gas carbon monoxide content for regulating said control means; said control means including means for the withdrawal of a portion of the secondary air conveyed through said control means and conducting said withdrawn secondary air to the suction side of said air pump, said air pump returning said secondary air from the pressure side of said air pump to said control means; means for determining the rate of feed of the secondary air and the quantity of the air portion withdrawn from said control means to said air pump, said means including two spaced conical valve means controlling flow passages through said control means, said valve means being mounted on a common actuating control rod and being positioned so that, during an increase of the fed quantity of secondary air, the quantity of the withdrawn air portion is reduced, said actuating control rod for said conical valve means being rigidly connected to two spaced upper and lower membranes having unequal operative surfaces, said membranes defining therebetween a first control pressure chamber communicating with the exhaust gas back-pressure of said engine, and a second control pressure chamber located above the upper membrane communicating with the suction side pressure of said engine.

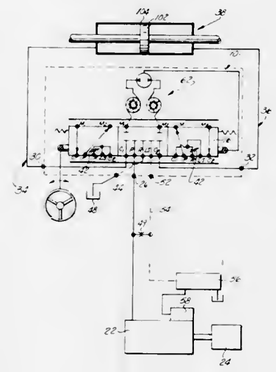


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**3,931,711**
**CONTROLLER ASSEMBLY**

**Jim Lee Rau, Lafayette, and Laurence L. Miller, West Lafayette, both of Ind., assignors to TRW Inc., Cleveland, Ohio**

**Filed Nov. 6, 1974, Ser. No. 521,209**
**Int. Cl.² F16H** *39/46*
**U.S. Cl. 60—445** **15 Claims**



1. A mechanism for effecting actuation of a vehicle steering motor to turn vehicle wheels, said mechanism being constructed to be in fluid communication with the steering motor and with a variable delivery fluid source having pressure-responsive means for effecting variations in the delivery of fluid from the source and the steering motor, said mechanism comprising,

a housing defining a valve chamber,

a valve member located in said valve chamber, said valve member having a neutral position and being movable therefrom to port fluid to said steering motor,

said housing having a control port for fluid connection to said pressure-responsive means,

a variable orifice formed between said valve member and said housing and communicating with said control port, and

means for positioning said valve member as a function of variations in the rate of movement of the input member and variations in the steering load to thereby vary the size of said orifice and the control pressure ported to said pressure-responsive means.

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**3,931,712**
**INTERNAL COMBUSTION ENGINE TURBOCHARGER PRESSURE CONTROL REGULATORS**

**Robert A. Keller, Huntington Beach, Calif., assignor to The Echlin Manufacturing Company, Branford, Conn.**

**Filed Oct. 15, 1974, Ser. No. 514,412**
**Int. Cl.² F02D** *23/00*
**U.S. Cl. 60—602** **15 Claims**

5. A differential pressure-control system, having remotely controllable biasing means, the control system being designed and adapted for controlling the output pressure for a supercharger by varying the amounts of the power source supplied to the supercharger, the control system comprising:

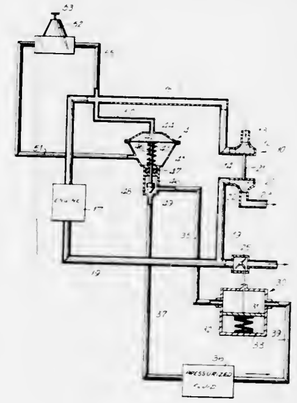
differential pressure-responsive means, comprising a displaceable member having opposing pressure surfaces, a first surface and a reference pressure surface, the member being displaceable when the pressure applied to the opposing surfaces differs by a predetermined differential value;

control means for regulating the amount of power source supplied to the supercharger;

linkage means, operatively connecting the displaceable member and the control means;

first pressure conducting means designed and adapted to place in fluid pressure connection, the first surface and the outlet from a supercharger, so as to apply against the first surface the pressure at the supercharger outlet;

reference pressure conducting means in fluid pressure connection with the reference pressure surface; and



an externally controllable pressure regulating means in fluid pressure connection with the reference pressure conducting means and designed and adapted to be in fluid pressure connection with the outlet from the supercharger, the regulating means being further designed and adapted to limit the maximum value of the pressure transmitted from the supercharger outlet via the regulator and the reference pressure conducting means to the reference pressure surface, whereby there is substantially no differential pressure between the opposing surfaces of the displaceable member until the aforesaid maximum reference pressure is reached, at which point a pressure differential develops, the control means receives a signal from the pressure-responsive means when the pressure differential exceeds the predetermined value;

thus, the absolute pressure at which the control means is activated is controlled by the pressure regulating means.

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**3,931,713**
**TURBINE WITH REGENERATION**

**Michael Eskeli, 7994-41 Locke Lee, Houston, Tex. 77042**

**Continuation-in-part of Ser. No. 405,628, Oct. 11, 1973. This application Dec. 30, 1974, Ser. No. 537,067**
**Int. Cl.² F01K** *25/02;* **F02C** *1/04;* **F02G** *1/00*
**U.S. Cl. 60—650** **6 Claims**

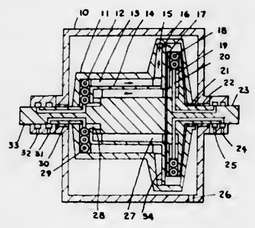
1. A turbine for generating power and comprising:

a. means for rotatably supporting first and second rotors;

b. First and second rotor shafts journalled in said support means for rotation;

c. first rotor means provided said first shaft for rotation therewith, said first rotor means having a first passageway for an outward bound first fluid, with said first passageway communicating at its downstream end with means for accelerating said first fluid forwardly in the direction of rotation of said first rotor means and for passing said first

fluid into said second rotor means, said first rotor means further having a second passageway for inbound first fluid in close proximity to said first passageway and in communication therewith near the downstream end of said second passageway, and heat exchanger means intermediate said first and second passageways for adding heat to said outward bound first fluid from said inward bound first fluid;



d. second rotor means mounted on said second shaft for rotation therewith, said second rotor having further passageway means for said first fluid, said further passageway means being in fluid communication at its upstream end with said first rotor accelerating means, and in fluid communication at its downstream end with said first rotor second passageway.

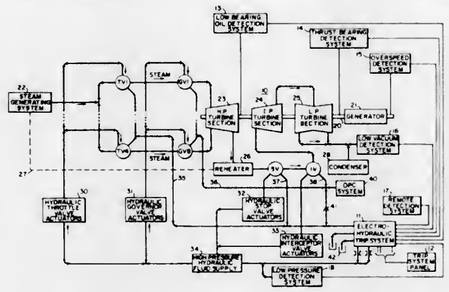
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**3,931,714**

## ELECTROHYDRAULIC EMERGENCY TRIP SYSTEM AND METHOD FOR A TURBINE POWER PLATE

**Karl O. Jaegtnes, Chester, and Millard F. Smith, West Chester, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**Filed June 6, 1974, Ser. No. 477,114**
**Int. Cl. F01k** *13/02*
**U.S. Cl. 60—660** **12 Claims**



1. An electro-hydraulic emergency trip system for a turbine power plant to close rapidly the steam inlet valves to the turbine in response to a predetermined contingency, comprising:

a plurality of steam inlet valves,

an operating mechanism for each steam inlet valve operative to close its associated valve in response to a predetermined decrease of fluid pressure in communication with such operating mechanism,

a source of fluid under pressure,

a first hydraulic means including a drain connecting operatively the source of fluid under pressure to the operating mechanism of each steam inlet valve to pressurize each operating mechanism sufficiently to render the steam inlet valves controllable to an open position at times when the drain is blocked,

first and second trip valve means each having a main portion and a pilot portion, said main portion having a movable member to block the flow of fluid through the valve at times when the main member is subjected at one side to a predetermined fluid pressure, said pilot portion having a movable pilot member electrically operable to one condition to decrease the fluid pressure at said one side of the movable main member to render such decrease effective to open the valve and electrically operable to another condition to maintain the predetermined fluid pressure,

second hydraulic means interconnecting the main portions of the first and second trip valve means to the first hydraulic means in parallel relationship to block the drain of the first hydraulic means at times only when the movable main members of both the first and second trip valve means is subjected to the predetermined fluid pressure,

third hydraulic means interconnecting the one side of the main movable members of both first and second trip valve means to the pilot movable members of both the first and second trip valve means between the source of fluid under pressure and the drain to decrease the pressure against the one side of the main movable member of both trip valve means in response to the operation of the pilot movable member of either the first or second trip valve means,

and circuit means including a voltage source responsive to the occurrence of a predetermined contingency to operate the electrically movable pilot members of both the first and second valve means to their one condition,

whereby the emergency trip system operates to close the steam inlet valves in response to the operation of the main portion of either the first or second trip valve means and said either main portion operates to open its associated trip valve means in response to the electrical operation of the pilot movable members of either the first and second trip valve means.

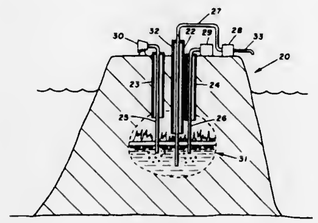
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**3,931,715**

## METHOD OF TRANSPORTING ICE STRUCTURE

**John L. Fitch, and Lloyd G. Jones, both of Dallas, Tex., assignors to Mobil Oil Corporation, New York, N.Y.**

**Filed July 5, 1974, Ser. No. 486,251**
**Int. Cl.² E02D** *19/04*; **F25C** *1/02*
**U.S. Cl. 61—46.5** **8 Claims**



1. A method of transporting an ice island from a first offshore location to a second offshore location, said method comprising:

forming an internal cavity within said ice island of a size sufficient to provide the buoyancy necessary for said island to float on the water at said first offshore location, said internal cavity being formed within said structure by melting ice from the interior of said structure and removing the resulting water; and

moving said island on the water from said first offshore location to said second offshore location.



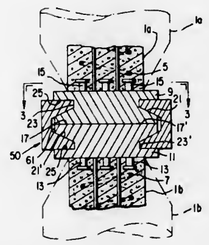
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**3,931,716**

## PILE SPLICE FOR CONCRETE AND STEEL PILES OF VARIOUS CONFIGURATION

**Donald Payne, 53 O. K. Ave., Harahan, La. 70123**

**Filed June 7, 1974, Ser. No. 477,278**
**Int. Cl.² E02D** *5/34*, *5/22*
**U.S. Cl. 61—53** **19 Claims**



1. The method of forming a plurality of pile sections into an integrated piling assembly comprising the steps of casting an elongated pile section matrix having abutment plates of identical configuration and outwardly extending, sloping flange areas integrated in the matrix; manipulating said plates to dispose the outer surfaces thereof in a plane precisely normal to the longitudinal axis of the pile section; thereafter while on site, placing at least a pair of pile sections in end-to-end aligment with the abutment plates at one end of a pile section in abutment throughout its entire end face area with the abutment plate of the other of said pile sections; surrounding the outwardly extending, sloping flange areas of said abutment plates with a clamping collar having at least one discontinuous portion; closing said collar against the edges of said abutment plates by compression to reduce the span of the discontinuous portion by drawing the collar ends into closely adjacent but non-abutting relation and thereafter welding only said collar to close said discontinuous portion, without welding said abutment plates to each other or to said collar.

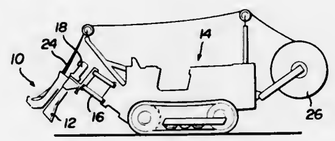
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**3,931,717**

## MULTIPLE CABLE CHUTE

**Paul R. Schuck, Davenport, Iowa, assignor to J. I. Case Company, Racine, Wis.**

**Filed Sept. 16, 1974, Ser. No. 506,669**
**Int. Cl.² E02F** *5/02*
**U.S. Cl. 61—72.6** **9 Claims**



1. In a cable guiding chute assembly including a pair of spaced, generally parallel vertical sidewalls; a set of spaced end walls between and generally perpendicular to said sidewalls, said end walls defining a passageway to receive generally vertically oriented cables and to guide said cables into a generally horizontal orientation for placement in the ground; and a plurality of dividers positioned between said set of end walls and being generally perpendicular to said sidewalls to define a plurality of cable guiding conduits within said passageway, said dividers having arcuate sections for guiding and dispensing a plurality of cables into said horizontal orientation, the improvement of one of said end walls including a flange adjacent to one of said sidewalls, said flange extending generally parallel to said one sidewall, a plurality of connector clips carried by said one sidewall and receiving said flange for releaseably interconnecting said one side wall to said one end wall, and a locking means carried by the other of said end walls for releaseably engaging a latch carried by said one sidewall, wherein said one sidewall may be removed from the chute assembly to expose the conduits to enable lateral removal, insertion or replacement of a plurality of cables.

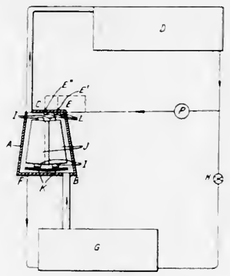
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**3,931,718**

## REFRIGERANT SCREW COMPRESSION WITH LIQUID REFRIGERANT INJECTION

**Geoffrey Gordon Haselden, Leeds, England, assignor to Hall-Thermotank Products Ltd., London, England**

**Continuation of Ser. No. 134,591, April 16, 1971, abandoned. This application July 17, 1973, Ser. No. 380,115**
**Claims priority, application United Kingdom, Apr. 16, 1970, 18289/70**
**Int. Cl.² F25B** *1/10*
**U.S. Cl. 62—505** **12 Claims**



11. A refrigeration system according to claim 1, wherein the inside of the compressor casing is roughened to retain liquid refrigerant.

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**3,931,719**

## JEWELRY COMPONENT HAVING MOUNTED STONES CONNECTED BY DEFORMABLE WEBS

**Kurt Schwab, Innsbruck, Austria, assignor to D. Swarovski & Co., Glasschleiferei, Austria**

**Filed Apr. 27, 1973, Ser. No. 355,361**
**Claims priority, application Austria, May 3, 1972, 3852/72; Mar. 29, 1973, 2781/73**
**Int. Cl.² A44C** *15/00*, *27/00*
**U.S. Cl. 63—28** **1 Claim**



1. Jewel-studded components comprising a thin screen-like planar holder, said holder comprising at least two rows of rings, said rows being disposed in laterally spaced relation to one another, each said row having a plurality of rings disposed in spaced relation longitudinally of said row, and connecting means consisting of webs integrally interconnecting each said ring with at least one other of said rings, stones each having a separating plane with a front surface extending outwardly from one side of the separating plane and a back surface extending outwardly from the opposite side of the separating plane beyond said rings, and the back surface of each stone being secured in one of said rings, the thickness of said holder being only a samll fraction of the height of the back surface of each said stone measured outwardly from the separating plane, and the size and shape of said rings being adapted to the

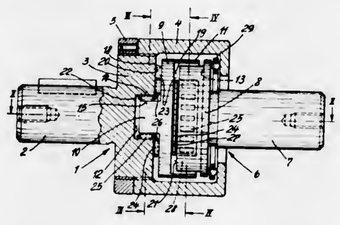
size and shape of said stones, said webs comprising first webs each connecting adjacent said rings of each of said respective rows, said first webs disposed in longitudinal alignment with each other in the respective row, and second webs extending obliquely of the longitudinal direction of said first webs and interconnecting adjacent said rings of different said rows so that one said first web and one said second web each connected to one said ring extend therefrom each to a said ring in a different said row, said webs being permanently deformable whereby the dimension of said component can be increased or decreased in a direction transverse to said longitudinal direction.

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**3,931,720**
**SELF-ALIGNING COUPLING**

**Rolf Bühler, Seestrasse 192/194, 8810 Horgen (Kt. Zurich), Switzerland**

**Filed Dec. 5, 1973, Ser. No. 422,101**
**Claims priority, application Switzerland, Feb. 7, 1973, 1851/73**
**Int. Cl.² F16D** *3/04*
**U.S. Cl. 64—31** **6 Claims**



1. A self-aligning coupling comprising a driving part and a driven part, said parts having grooves oriented at right angles to one another with planar flanks parallel to the axis of the respective part and planar faces perpendicular to said axes;

a cross-disk member received between said parts and having a pair of prismatic ledges oriented at right angles to one another and respectively received in said grooves, said ledges having planar flanks each parallel to and spacedly juxtaposed with a flank of the respective groove, said member having planar faces adjoining said ledges and spacedly juxtaposed with and parallel to a respective face of one of said parts whereby each flank of a groove and an adjoining face of one of said parts is paired with a juxtaposed flank of a respective ledge and an adjoining face of said member;

and a respective bearing element comprising a linearly extending L-profile and linearly movable cage, with legs lying between the paired faces and flanks, disposed between said parts and said members, each of said bearing elements being formed with an array of a multiplicity of thrust needle bearings in each leg engaging the paired surfaces and paired flanks with the axes of the needle bearings of one leg of each element orthogonal to the axes of the needle bearings of the other leg thereof.

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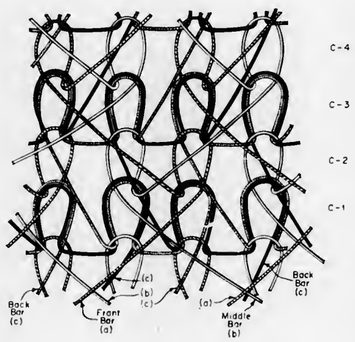
**3,931,721**
**WARP KNITTED ELASTIC FABRIC**

**Thomas E. Adamson, Shillington, Pa., assignor to VF Corporation, Reading, Pa.**

**Filed July 22, 1974, Ser. No. 490,342**
**Int. Cl.² D04B** *21/00*
**U.S. Cl. 66—195** **5 Claims**

1. A warp knitted elastic fabric having a soft hand, lightweight opacity, streak-free uniforming and low-modulus human figure-control type stretch in one direction and high-modulus form-fitting comfort stretch in the other direction at right angles to said first direction comprising

a. a plurality of elastic threads and a plurality of non-elastic threads forming alternate elastic courses and intervening non-elastic courses,




b. a plurality of elastic threads arranged in a solid warp of elastic threads and formed into a plurality of adjacent connected wales in alternate elastic courses only, when at least half of the non-elastic threads are floating, and

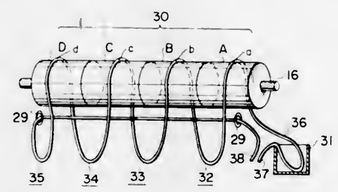
c. wherein on the alternate elastic courses when the elastic threads are knitting each thread forms two stitches which are components of two adjacent wales in the same course.

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**3,931,722**
**APPARATUS FOR LIQUID TREATMENT OF A CLOTH BAND OF AN ENDLESS FORM**

**Narihiro Isoda, Fukui, Japan, assignor to Suntex Limited, Fukui, Japan**

**Filed May 14, 1973, Ser. No. 360,302**
**Claims priority, application Japan, May 31, 1972, 47-54192**
**Int. Cl.² D06B** *3/24*
**U.S. Cl. 68—176** **2 Claims**




1. An apparatus for liquid treatment of a lengthy woven or knitted cloth band for scouring, dyeing and desizing of cloths, comprising a plurality of drums rotatably mounted on a common shaft about which drums said cloth band is helically wound, a treating tub beneath said drums for said treatment, means for rotating said drums at progressively reduced peripheral speeds from one end to the other in order to depend each helical part of the cloth band downwardly from the drums at a uniform length and means for rotating drums at an equal speed thereby circulating the cloth band through the treating liquid in said tub to apply the desired treatment, said means for rotating the drums at an equal speed having a relationship with the means for rotating the drums such that the equal speed takes place after the results of the reduced peripheral speeds are achieved.

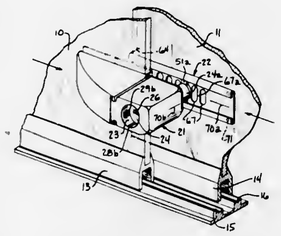


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**3,931,723**
**LOCK FOR SLIDING CLOSURE PANELS**

**Thomas D. Kurtz, 1101 First Ave., Rock Falls, Ill. 61071**

**Filed Apr. 3, 1975, Ser. No. 564,612**
**Int. Cl.² E05B** *65/08*
**U.S. Cl. 70—14** **28 Claims**



1. A lock for use on outer and inner by-passing type closure panels respectively slidable endwise on outer and inner parallel tracks into and out of a closed position with one end of each the outer and inner panels in spaced overlapping relation, said lock being adapted to lock the panels in a closed position and comprising a lock housing having a lock plug mounted therein for axial sliding and rotary movement, a mounting plate rigid with the housing and extending laterally therefrom with a flat attaching face on one side of the mounting plate disposed in a plane perpendicular to the plug axis, adhesive means on said attaching face for adhesively securing said mounting plate to the inner side of the outer panel with the plug offset from said one end of the outer panel and extending perpendicular to the plane of the outer panel, a keeper plate having a flat attaching face on one side and adhesive means on said flat attaching face for adhesively securing the keeper plate to the outer side of the inner panel adjacent said one end thereof, said plug having a keyway and key operated means controlling rotation of said plug, said plug being axially movable from a retracted position in which the forward end of the plug is adjacent the housing to an extended position in which the forward end of the plug is adjacent said keeper plate and said plug being angularly movable between first and second angular positions under the control of said key, and latch means on the forward end of said plug and keeper means on the keeper plate operative to engage said latch means when the plug is extended and rotated to said second position to lock the plug against retraction to said first position and to lock said keeper plate against movement in the direction crosswise of the plug.

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**3,931,724**
**PLUG-RETAINING DEVICE FOR USE IN PIERCING AND PLUGGING MILLS**

**Mark Grigorievich Berdyansky, ulitsa Dzerzhinskogo, 24, kv. 17; Zarislav Zakharovich Khodak, ulitsa Dzerzhinskogo, 24, kv. 22; Vladimir Fomich Veevnik, ulitsa Orlovskaya, 24-a, kv. 21; Vladimir Semenovich Dovgan, ulitsa Vozdukhoflotskaya, 1, kv. 8; Vladimir Porfirievich Bashkatov, ulitsa Kosiora, 12, kv. 40; Vladimir Khrisanfovich Kasyan, ulitsa Naberezhnaya, 1, kv. 132; Konstantin Fedorovich Bezkrovny, prospekt Pushkina, 25/27, kv. 39, and Lev Izrailevich Tsekhnovich, ulitsa Kirova, 8, kv. 8, all of Dnepropetrovsk, U.S.S.R.**

**Filed Aug. 14, 1974, Ser. No. 497,498**
**Int. Cl.² B21B** *25/02*
**U.S. Cl. 72—97** **1 Claim**

1. A plug-retaining device for use in a piercing and plugging mill for producing hollow cylindrical pipe billets, comprising, in combination: a rod with a plug, said rod being set up along the rolling axis of the mill, reciprocable therealong, and having axial slots about its circumference; a gear arranged on the rolling axis, through which gear said rod and said plug pass, for keeping said rod from axial displacements under the effect of the load arising during the piercing and plugging of the billets; said gear including a fixed thrust bearing, a revolving casing enclosed within said bearing, with a portion of the internal surface of said casing forming a working cone that faces said plug with its base, a lock for securing said rod with said plug in said cone at the moment of the piercing and plugging, said lock being set up on said rod in the rolling direction behind said bearing and provided with a wedge longitudinally spring-biased to said rod and made as a cone facing said plug with its apex, and cams arranged in said slots, floating in radial direc-



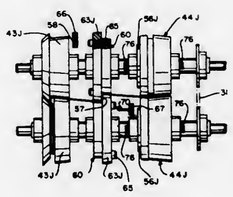
tions, positively encompassing said cone, to fix said rod in its working position, to preclude the axial displacements with respect to said casing; said gear being fitted with means for shifting said rod with said plug, and with a retainer disposed within said casing, said retainer being made as a spring-biased bush for engaging said lock; whereby, as said wedge is displaced in relation to said rod in the direction opposite to the rolling direction, at the moment said rod interacts with said retainer, said cams mate with their external surfaces with said cone, thereby blocking said rod within said casing; while, as said wedge moves in the rolling direction, said external surfaces are brought out of engagement with said cone, thereby enabling said rod with said plug to return to its initial position.

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**3,931,725**
**MOBILE MACHINE FOR PRODUCING METAL SIDING**

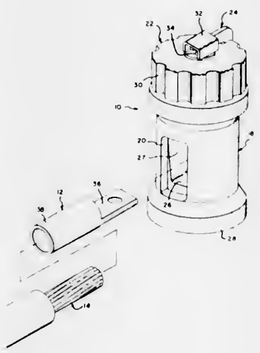
**Robert E. Yon, Middletown, Pa., assignor to Specialty Design & Mfg. Co., Reading, Pa.**

**Filed Apr. 16, 1975, Ser. No. 568,696**
**Int. Cl.² B21D** *5/08*
**U.S. Cl. 72—181** **8 Claims**



1. A machine for forming a strip of metallic stock into a siding strip of either a first or a second cross sectional configuration, with the siding strips of both configurations having first and second marginal portions, with the first marginal portion shaped to define a butt, and both marginal portions shaped to define siding strip interconnecting means, and said siding strip of said second configuration additionally having an intermediate butt, said machine comprising a succession of pairs of opposed strip-shaping means, shafts supporting said strip-shaping means for rotation therewith, and means for rotating said shafts, said pairs of opposed strip-shaping means each comprising first and second spaced-apart roller means having shaping elements for forming said above-defined shapes of said first and second marginal portions, and certain of said succession of pairs of opposed strip-shaping means each including additional roller means having readily attachable and detachable shaping elements for forming, when attached, said intermediate butt.

**3,931,726**
**PROPELLANT-DRIVEN DEVICE FOR CRIMPING LARGE SIZE WIRE AND TERMINALS**
**Daniel Baker Grubb, Hummelstown, Pa., assignor to AMP Incorporated, Harrisburg, Pa.**
**Filed Jan. 21, 1975, Ser. No. 542,731**
**Int. Cl.² B21J** *15/24*
**U.S. Cl. 72—430** **1 Claim**

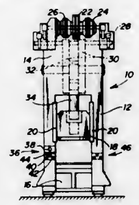


1. A propellant-driven device for crimping a terminal into encompassing engagement with a wire, which comprises:
a. a housing having an elongated chamber with a first and a second end;
b. a fixed die positioned at the first end of the chamber;
c. a movable die slidingly positioned in the chamber which cooperates with the fixed die;
d. a lateral opening into the chamber for allowing the positioning of a terminal between the fixed and movable dies;
e. propellant means positioned at the second end for propelling the movable die toward the fixed die;
f. removable closure means for closing the second end of the chamber;
g. detonating means for detonating the propellant means, said detonating means positioned in the closure means;
h. a passage extending from the chamber adjacent the second end with a gas release pin slidingly positioned therein and adapted to removably seal the passage; and
i. safety means pivotally connected to the closure means so that as it is pivoted outwardly it forces the gas release pin into sealing engagement in the passage.

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**3,931,727**
**METHOD AND SYSTEM FOR DETECTING BRAKE WEAR IN A METAL FORMING MACHINE**
**Kurt K. Luenser, De Soto, Tex., assignor to Verson Allsteel Press Company, Dallas, Tex.**
**Filed Sept. 9, 1974, Ser. No. 504,363**
**Int. Cl.² B21J** *7/46*
**U.S. Cl. 72—444** **20 Claims**

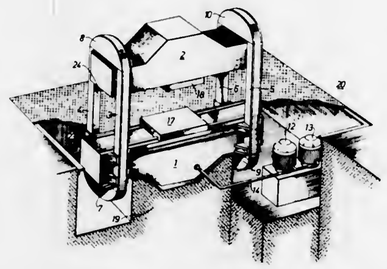
1. A safety system for a machine having a work producing member which is movable by a drive system and which is stopped by a brake comprising:
means responsive to the drive system for detecting the time interval between the time of energization of the brake and the time that the work producing member stops,
means for comparing said time interval with a predetermined magnitude, and



alarm means operable if said time interval exceeds the predetermined magnitude.

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**3,931,728**
**PORTAL PRESS**
**Sten Trolle, Ystad, Sweden, assignor to AB Carbox, Ystad, Sweden**
**Filed Feb. 14, 1974, Ser. No. 442,416**
**Claims priority, application Sweden, Feb. 27, 1973, 7302712**
**Int. Cl.² B21J** *13/04*
**U.S. Cl. 72—455** **4 Claims**



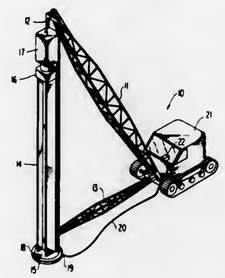
1. An hydraulic press for heavy workpieces, comprising:
a frame including two spaced yokes (1, 2); and frame units, each frame unit including a pair of columns (3, 4 and 5, 6) disposed at the ends of the yoke and spacing the yokes apart, said pairs of columns (3, 4 and 5, 6) straddling the ends of the yokes (1, 2); and upper and lower cross-beams (7-10) interconnecting the columns of a pair of columns; and
hydraulic cylinders (15, 16) carried by the frame and operatively coupled to at least one of the yokes (1, 2) to effect a working stroke of the press by relatively moving the yokes (1, 2) towards and away from each other;
at least one of the yokes (2) being provided with tool carrying means to carry a tool which is displaceable beyond the yoke in the longitudinal direction of the at least one yoke (2) so that said press is usable as a gap press.

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**3,931,729**
**DYNAMIC FORCE MEASURING INSTRUMENT FOR FOUNDATION PILE AND CASING**
**Leonard L. Frederick, 15 Crestview Terrace, Whippany, N.J. 07981**
**Continuation of Ser. No. 233,651, March 10, 1972, abandoned. This application Dec. 27, 1973, Ser. No. 428,675**
**Int. Cl. G01L** *1/12*
**U.S. Cl. 73—11** **6 Claims**

1. In a pile driving apparatus having a hammer for driving a pile formed at least in part of magnetostrictive material, the improvement comprising: sensing means positioned in close proximity to said pile, proximate said magnetostrictive material, supported independently of said pile and spaced therefrom for sensing magnetostrictive effect in said pile as a measure of the force of longitudinal blows applied to the top of

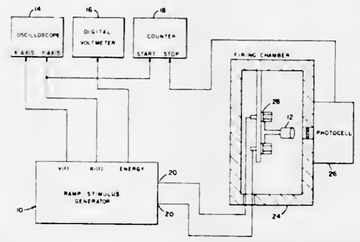




said pile; and means coupled to said sensing means for receiving a signal therefrom and for indicating the force of said blows to said pile.

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**3,931,730**
**RAMP CURRENT APPARATUS AND METHOD OF SENSITIVITY TESTING**
**David R. Dreitzler, Huntsville, and Charles R. Moore, Hazel Green, both of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.**
**Filed Dec. 23, 1974, Ser. No. 535,324**
**Int. Cl.² G01N** *33/22*
**U.S. Cl. 73—35** **6 Claims**

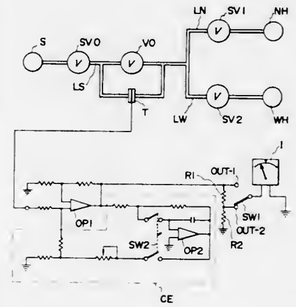


1. Apparatus for sensitivity testing electroexplosive devices, comprising: a ramp stimulus generator for providing a variable ramp current output for coupling to said electroexplosive device; an oscilloscope coupled to said ramp stimulus generator and responsive to the voltage and current coupled to said electroexplosive device to provide an x-y plot thereof; a counter coupled to said ramp stimulus generator for activation when current is applied to said electroexplosive device and for indicating the time in which current is supplied to said electroexplosive device; and a light sensor adjacent said electroexplosive device having an output coupled to said counter for stopping said counter when said electroexplosive fires.

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**3,931,731**
**FLUX METER**
**Akira Fukuda, 2-22-8 Kasuga-cho, Nerima, Tokyo, Japan**
**Filed May 22, 1974, Ser. No. 472,399**
**Claims priority, application Japan, May 25, 1973, 48-59097**
**Int. Cl.² G01M** *3/16*
**U.S. Cl. 73—40** **1 Claim**

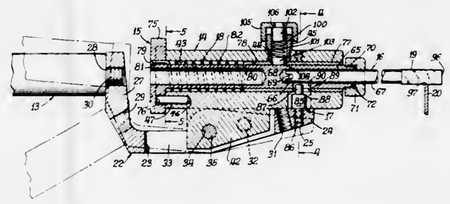
1. A flux meter which comprises a main pipe line having an end connected to a hydraulic pressure source and extending through an orifice valve, another end of said main pipe line branching off to a first branch line extending through a first electromagnetic valve and having an end for connecting to a work to be tested, a differential pressure transducer having two inlets for connecting to differential pressure means, a said inlet of said transducer being connected to said main pipe line orifice valve inlet side and another inlet of said transducer being connected to said main line orifice valve outlet side, a DC amplifier, an input terminal of said DC amplifier being connected to said differential pressure transducer output terminal, an output elimination circuit connected to said DC amplifier for the elimination of said DC amplifier outputs, a



first output terminal for supplying a relatively large value with respect to said DC amplifier output, a second output terminal for supplying a relatively small value with respect to said DC amplifier output, said last-mentioned output being of a value equal to said first-mentioned output, an indicator having a scale indicating from a negative to a positive value, and a change-over switch for changing said indicator input terminal over from said first and second output terminals.

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**3,931,732**
**SHARP EDGE TESTER**
**Eugene von Heitlinger, Chicago, Ill., assignor to Schwinn Bicycle Company, Chicago, Ill.**
**Filed Oct. 24, 1974, Ser. No. 517,464**
**Int. Cl.² G01N** *19/00*
**U.S. Cl. 73—104** **12 Claims**



1. A tool for testing edge sharpness by moving standard test material over a test edge under predetermined velocity and engagement forces comprising: rotatably supported barrel means, means driven by said barrel means having a portion for supporting the test material in engagement with the test edge, motor means for driving said barrel and driven means at predetermined velocity, latch means holding said barrel means against rotation, and means operably responsive to predetermined engagement force between the test material and test edge for automatically operating said latch means to release said barrel means to the driving action of said motor means whereby cutting of said test material by said test edge establishes the presence of edge sharpness exceeding a predetermined safe value.

**3,931,733**

## METHOD AND MEANS OF ACCELERATING REMOVAL OF BACKGROUND ENTRAPMENTS IN THE INSPECTION PENETRANT PROCESS

**James R. Alburger, 5007 Hillard Ave., La Canada, Calif. 91011**

**Filed Dec. 16, 1974, Ser. No. 532,830**
**Int. Cl.² G01N *19/08***
**U.S. Cl. 73—104** **5 Claims**

1. In an inspection penetrant process including the steps of (1) applying a dyed liquid water-removable penetrant to test parts so as to allow said penetrant liquid to penetrate into any surface flaws which are present, (2) washing said test parts in an initial wash to remove surface penetrant, (3) continuing the washing operation in a finish wash to deplete penetrant entrapments in surface micro-flaws, (4) drying said test parts, (5) developing indications of penetrant entrapments in surface flaws, and (6) inspecting said test parts for visual indications of dyed penetrant entrapments, the improvement consisting of the introduction of at least one step of interim-drying of said test parts following said initial wash and prior to said finish wash.

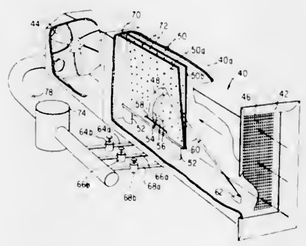
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**3,931,734**

## PARACHUTE CANOPY TESTING APPARATUS

**Viggo G. Dereng, 702 Juniper Drive, Newport News, Va. 23601**

**Filed Feb. 6, 1974, Ser. No. 440,004**
**Int. Cl.² G01M *9/00***
**U.S. Cl. 73—147** **9 Claims**



1. A parachute canopy testing apparatus for investigating the dynamic behavior of parachute canopies comprising at least one parachute gore, means for directing a fluid flow past said gore, means comprising first and second spaced splitter plates, positioned parallel to said flow and between which said flow passes, for receiving said gore therebetween, and means for suspending said gore between said plates so that said gore can be filled by said fluid flow, the spacing between said plates being such that the edges of said gore form a seal with the sidewalls of the plates.

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**3,931,735**

## METHODS AND APPARATUS FOR MEASURING THE RATE OF PENETRATION IN WELL DRILLING FROM FLOATING PLATFORMS

**Jean Hubert Guigmard, Sainte Mesme, France, assignor to Schlumberger Technology Corporation, New York, N.Y.**

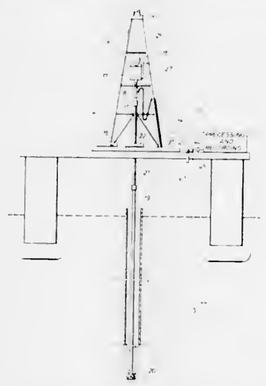
**Filed Dec. 9, 1974, Ser. No. 530,886**
**Claims priority, application France, Jan. 23, 1974, 74.02180**
**Int. Cl.² E21B *47/00***
**U.S. Cl. 73—151.5** **22 Claims**

1. A method for determining at least one function representative of the penetration into earth formations of a drill bit suspended from a drill string carried by a floating platform and disposed in a borehole, comprising the steps of:

successively determining the incremental lengths of said drill string moved into said borehole from said platform while said drill bit is drilling into said earth formations for deriving a first signal proportional to successive increases in the overall length of said drill string in relation to said platform;

successively determining the incremental changes in the overall length of said drill string due to variations in tensional forces acting thereon for alternatively deriving either a second signal or a third signal respectively proportional to successive elongational increases or contractional decreases in said overall drill string length;

successively determining the positional changes of said platform in relation to the earth for alternatively deriving either a fourth signal or a fifth signal respectively representative of incremental upward and downward movements of said platform; and



alternatively combining said first, second and fifth signals with one another for deriving an output signal representative of overall increases in said overall drill string length upon further advancement of said drill bit into said earth formations and combining said first, second and fifth signals with said third and fourth signals upon each occurrence of either said third signals or said fourth signals for selectively discontinuing further transmission of said output signal and then algebraically summing said combined signals only so long as the summation of further length increases respectively represented by subsequently occurring first, second and fifth signals is less than the summation of further length decreases represented by subsequently-occurring third and fourth signals.

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**3,931,736**

## IMPROVED FLUID FLOW SENSOR CONFIGURATION

**John Aaron Olmstead, Somerville, N.J., assignor to RCA Corporation, New York, N.Y.**

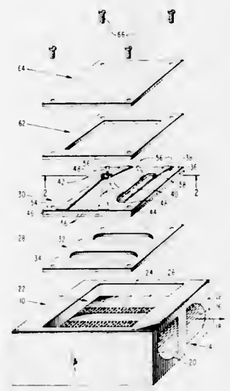
**Filed June 28, 1974, Ser. No. 484,092**
**Int. Cl.² G01F *1/68***
**U.S. Cl. 73—204** **7 Claims**

1. A fluid flow sensor configuration comprising:

a conduit adapted to contain a fluid, said conduit including a live-flow channel and a dead-flow channel,

a first electrical element and a second electrical element positioned to be adjacent to and in thermal contact with said fluid respectively in said dead-flow channel and said live-flow channel of said conduit, said first and said second electrical elements, in combination with additional circuitry, adapted to sense the flow of said fluid in said live-flow channel,

a thin membrane of thermally conductive material positioned to be between said fluid and said electrical elements and having a first surface thereof adjacent to and in thermal contact with both of said electrical elements, said membrane having a thickness of approximately 250 micrometers or less and a thermal conductivity of approximately 0.08 cal/cm—sec°C or less in order to minimize the lateral transfer of heat throughout said membrane



while keeping said electrical elements thermally coupled to said fluid, and

means for supporting a second surface of said membrane adjacent to and as a portion of the boundary of said conduit whereby said membrane is disposed between said fluid and said electrical elements.



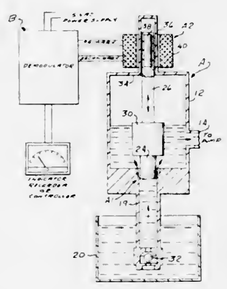
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**3,931,737**

## PULSATING LIQUID FLOW TRANSMITTER

**William Collins Conkling, Essex Fells, and Joseph Thomas Weber, Jr., Clark, both of N.J., assignors to Pennwalt Corporation, Philadelphia, Pa.**

**Filed July 12, 1974, Ser. No. 488,098**
**Int. Cl.² G01F *1/24***
**U.S. Cl. 73—209** **11 Claims**



1. A pulsating liquid flow transmitter comprising:

a. a housing for coupling to a line through which liquid is pumped, said housing including a tapered tubular orifice therein and a float axially displaceable in said tapered orifice in response to the rate of flow of liquid therethrough;

b. sensing means for monitoring the displacement of said float and electrically delivering an A.C. output signal proportional to the displacement, said sensing means comprising a linear variable differential transformer having an armature moveable with said float and having a primary winding thereof coupled to an oscillator;

c. means for demodulating said A.C. output signal and having a D.C. milliampere output which can be transmitted as a continuous non-inferential measurement proportional to flow, said means for demodulating said A.C. output signal further comprising:

i. an A.C. amplifier;

ii. a rectifier for providing a pulsed D.C. output;

iii. a large time constant RC network for averaging out the pulsed response; and

iv. a voltage to current converter including a Darlington circuit and a current sensing resistor; and

d. a light emitting diode in the base of said Darlington circuit for simultaneously preventing the output signal from exceeding the flow proportional capacity of any chosen output loop instrumentation and providing local indication of overload conditions from light emitted by the diode;

wherein said current sensing resistor is an emitter resistor.

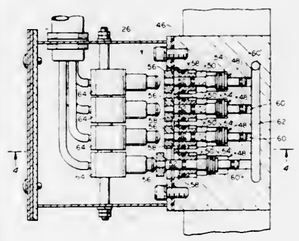
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**3,931,738**

## DEVICE FOR MONITORING FLUID PRESSURE IN MECHANISMS SUCH AS HYDROSTATIC FLUID BEARINGS

**Elpidifor Paramonoff, Los Angeles, and Frederick C. Olsen, Huntington Beach, both of Calif., assignors to Standun, Inc., Compton, Calif.**

**Division of Ser. No. 397,613, Sept. 17, 1973. This application Sept. 26, 1974, Ser. No. 509,650**
**Int. Cl.² G01L *7/16***
**U.S. Cl. 73—389** **6 Claims**

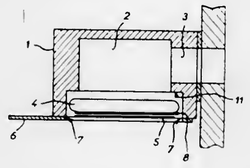


1. In a fluid pressure monitoring device for monitoring pressure of operating fluid of a machine and the like, the combination of: a housing; a main fluid chamber formed in said housing; a plunger in said main fluid chamber reciprocal between frist and second positions; operating fluid supply means communicating into said main fluid chamber and directing operating fluid against said plunger tending to urge said plunger toward said first position, said operating fluid normally being under a pressure above a predetermined minimum operating pressure exerting at least a part of a minimum total pressure force against said plunger retaining said plunger in said first position; monitoring pressure means operably connected into said housing and to said plunger exerting a monitoring total pressure force against said plunger slightly less than said minimum total pressure force tending to urge said plunger toward said second position, said monitoring pressure means moving said plunger toward said second position when said pressure of said operating fluid drops below said predetermined minimum operating pressure; said monitoring pressure means including monitoring fluid under pressure operably connected into said housing exerting a certain part of said monitoring total pressure force against said plunger tending to urge said plunger toward said second position, a monitoring fluid outlet sealed off by said plunger when said plunger is in said first position and opened into communication with said monitoring fluid during movement of said

plunger from said first toward said second position, said monitoring fluid outlet when opened permitting flow of monitoring fluid therethrough; sensing means for sensing said plunger movement from said first toward said second position including detecting means operably connected to said monitoring fluid and detecting opening of said monitoring fluid outlet; by-pass means operably connected to said main fluid chamber for directing a certain portion of said operating fluid from said main fluid chamber when open, said by-pass means being closed when said plunger is in said first position and being opened during movement of said plunger from said first position toward said second position.

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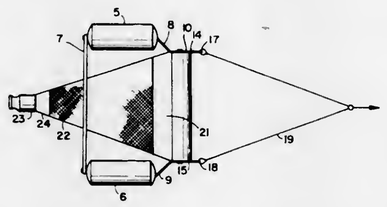
**3,931,739**
**NEGATIVE PRESSURE DETECTOR**
**Jean Mourier, Savigny-sur-Orge, France, assignor to Benson, Creteil Val-de-Marne, France**
**Filed Aug. 13, 1974, Ser. No. 495,892**
**Int. Cl.² G01L 9/12**
**U.S. Cl. 73—398 C** **5 Claims**



1. A negative detector comprising an element floating in air which forms at the same time a detection element and the moving plate or disc of an air capacitor, a chamber having its lower end vented and its upper end communicating with a negative pressure source, a fixed disc or plate of said capacitor being located at the lower end of said chamber and said floating element being contained in said chamber and providing a leakage section between said floating element and a chamber wall.

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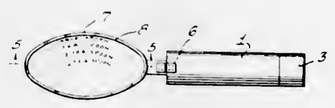
**3,931,740**
**APPARATUS FOR COLLECTING SURFACE PARTICLE ON BODY OF WATER**
**Lyle Carter, 1903 33rd Ave., Oakland, Calif. 94601**
**Continuation-in-part of Ser. No. 302,215, Oct. 30, 1972, Pat. No. 3,811,325. This application Feb. 6, 1974, Ser. No. 440,171. The portion of the term of this patent subsequent to May 21, 1991, has been disclaimed.**
**Int. Cl.² G01N 1/12**
**U.S. Cl. 73—425.4 R** **19 Claims**



1. A water-quality sampling device for collecting surface floatage from a body of water comprising:
towing means for moving said device on said body of water in a predetermined direction;
laterally-spaced tracking means for maintaining said device in alignment in said predetermined direction; and
collecting means for removing said surface floatage from said surface water, said collecting means comprising intake opening means opening toward said predetermined direction for receiving oncoming surface water and a net having a forward opening extending for substantially the width of said device and disposed between said tracking means and having a smaller rear opening terminating in a sampler means, said sampler means being disposed rearwardly of said tracking means.

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**3,931,741**
**COMBINED MEASURING SPOON AND RECEPTACLE**
**Jovanna Ceccarelli, F.D.R. Station, P.O. Box 1564, New York, N.Y. 10022**
**Filed Nov. 2, 1973, Ser. No. 412,201**
**Int. Cl.² G01F 19/00**
**U.S. Cl. 73—427** **1 Claim**



1. An accurate liquid measuring spoon device for medicine dosing and the like comprising a bowl and a handle, said bowl being narrow and elongated and said bowl comprises a spoon having a measuring portion impressed with indicating lines substantially concentric to each other, said measuring portion delimiting the quantity of a medicine dose at one fourth teaspoon, one-half teaspoon, 1 teaspoon and 1 tablespoon, an additional margin is provided between the tablespoon indicating line and the terminal edge of the bowl, to function as a safety zone to prevent spillage,
said bowl of said spoon connected to said handle by a stem at the end opposite the closure end of said handle, said handle consisting of a hollow elongated member having the same depth as said bowl, the bottom center portions of the bowl and handle of said spoon being polished to prevent rocking, said hollow handle serving as a horizontal leveling device for said bowl of said spoon when lying in a plane on a flat surface in an open condition, the closure end of said handle openable by means of a screw cap permitting access to said hollow member,
a tight fitting friction hinge fastened to said stem of said spoon connecting said bowl and said handle to permit said handle to fold over;
said bowl for carrying, thereby providing a compact unit, that can be easily stored and transported,
said hollow container handle and said screw cap serving to enclose a permanently made, removeable, transparent, graduated measuring vial therein, or which alternatively could be used, selectively contain liquids, medicated or otherwise, or such items as capsules, pills, lozenges, thermometer and any other suitable item for storage, for carrying or both.

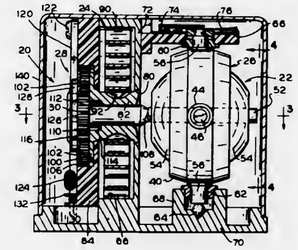
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**3,931,742**
**GYROSCOPE**
**Orie W. Shirley, Estacada, Oreg., assignor to Datron Systems, Inc., Thomaston, Conn.**
**Filed Aug. 13, 1973, Ser. No. 387,691**
**Int. Cl.² G01C 19/26**
**U.S. Cl. 74—5.7** **21 Claims**

1. In a gyroscope,
gyroscopic rotor means of a predetermined light weight,
gimbal means mounting the rotor means for rotational movement,
spring motor drive means including a spring adapted to be wound,



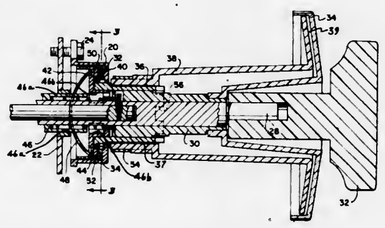
and coupling means for releasably coupling said spring motor drive means in driving relation to said rotor means for bringing said rotor means up to a desired speed,
said coupling means including step-up gearing means for rotating said rotor means at a speed greater than the



unwinding speed of said spring so that the rotor means has a high angular momentum despite its lightness in weight, the weight of said rotor means being lighter than would be required to attain a given angular momentum without said step-up gearing.

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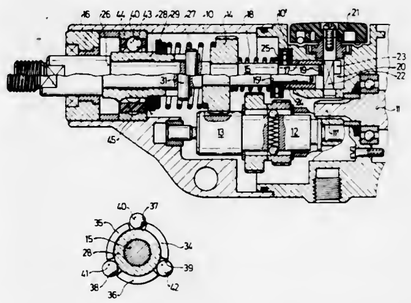
**3,931,743**
**COMPACT SPEED REDUCTION MECHANISM FOR A UHF INDICATOR DIAL**
**Alarico A. Valdettaro, Bloomington, Ind., assignor to Sarkes Tarzian, Inc., Bloomington, Ind.**
**Filed Nov. 20, 1974, Ser. No. 525,354**
**Int. Cl.² F16H 35/18**
**U.S. Cl. 74—10.54** **11 Claims**



1. A tuning system comprising:
a tuner having a selector shaft, rotation of which is effective to tune said tuner over a predetermined band of frequencies, a plurality of revolutions of said selector shaft being required to tune said tuner over said predetermined band;
a rotatable tuning indicator;
means interconnecting said selector shaft and said tuning indicator, said interconnecting means including
a circular rigid spline member fixedly attached to said tuner, said rigid spline member having a first plurality of teeth circularly disposed on a radially extending surface of said rigid spline member,
a circular flexible spline member having a second plurality of teeth greater in number than said first plurality of teeth circularly disposed on a radially extending surface of said flexible spline member and opposing said first plurality of teeth,
a wave generating member engaging said flexible spline member, said wave generating member being biased to urge at least one of said second plurality of teeth into engagement with one of said first plurality of teeth, said wave generating member being affixed to said selector shaft for rotation therewith to thereby successively bring different ones of said first and second pluralities of teeth into engagement thereby causing said flexible spline member to rotate at a predetermined rate slower than the rotation of said selector shaft, and
means mechanically coupling said flexible spline member to said tuning indicator dial for causing said tuning indicator dial to rotate in synchronism with said flexible spline member.

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**3,931,744**
**HAMMER-DRILL**
**Steffen Wünsch, Dettenhausen, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany**
**Filed June 3, 1974, Ser. No. 476,139**
**Claims priority, application Germany, June 5, 1973, 2328462**
**Int. Cl.² F16H 21/00**
**U.S. Cl. 74—22** **12 Claims**



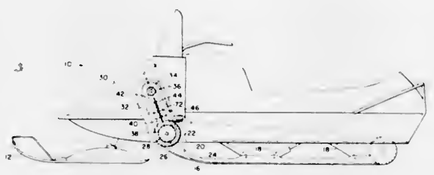
1. A hammer drill, comprising a housing; a spindle mounted in said housing for rotation and axial reciprocation with respect thereto; first biasing means urging said spindle in one axial direction outwardly of said housing; an impact member mounted on said spindle for rotation with and limited axial displacement relative to the same and having an outer circumferential surface coaxial with said spindle; second biasing means urging said impact member also in said one axial direction; cam means connected to said impact member and projecting outwardly from said circumferential surface thereof, and including a plurality of cams which are inclined axially and circumferentially of said impact member and separated from one another in the circumferential direction by interruptions extending all the way to said circumferential surface of said impact member; a fixedly mounted guide ring surrounding said impact member and having a race; a number of roller bodies which corresponds to the number of said cams and each in rolling contact with said race, said circumferential surface and a respective of said cams; and a cage for maintaining said roller bodies at equi-angular distances about said circumferential surface.

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**3,931,745**
**TENSIONING DEVICE FOR A FLEXIBLE DRIVE ELEMENT**
**Dale Rudolph Dobberpuhl, Horicon, Wis., assignor to Deere & Company, Moline, Ill.**
**Filed Oct. 29, 1974, Ser. No. 518,586**
**Int. Cl.² F16H 7/12, 7/10**
**U.S. Cl. 74—242.11 S** **6 Claims**

1. In combination with a drive of a type including a support on which generally cylindrical drive and driven members of different diameters are mounted for rotation about parallel axes and a flexible drive element trained over the drive and driven members so as to form first and second runs located at opposite sides of a line of centers passing through said axes, a tensioning device comprising: a tensioning member located between said drive and driven members and including a center portion located between the first and second runs and joining first and second abutment surface means, which are respec-

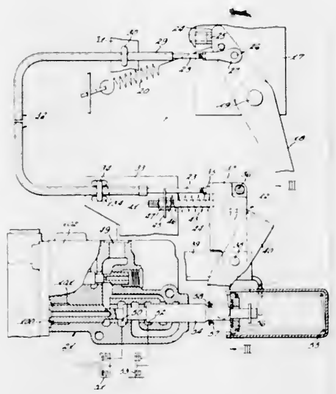
tively engaged with outer periphery locations of said first and second runs of the flexible drive element; said first and second abutment surface means being spaced apart by a distance no greater than the diameter of the larger of said drive and driven



members and biasing means operatively connected to said support and said tensioning member and biasing said tensioning member toward the larger of said drive and driven members and against said flexible drive element.

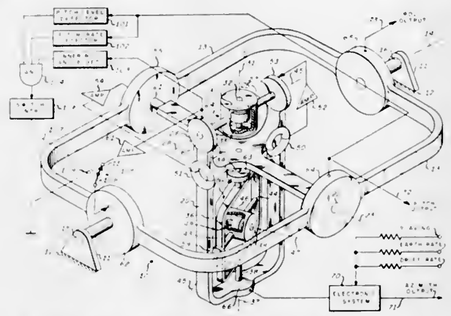
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**3,931,746**
**CABLE ACTUATED CLUTCH CONTROL**
**Kenneth N. Hansen, Waukesha, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.**
**Filed Dec. 17, 1973, Ser. No. 425,315**
**Int. Cl.² F16C *1/10***
**U.S. Cl. 74—501 R** **10 Claims**



1. A cable actuated control mechanism on a vehicle including, a vehicle chassis, an operator control station including a platform and control console resiliently mounted on said chassis permitting relative movement between said operator station and said chassis, a control lever mounted on said control console, a servomechanism mounted on said vehicle chassis, a resilient overload linkage connected to said servomechanism, a flexible control mechanism to accommodate relative movement between said operator station and said chassis, including a sheathed cable comprising a sheath and means connecting one end of said sheath to said control console and means connecting the other end of said sheath to said chassis, a cable connected between said control lever and said resilient overload linkage to operate said servomechanism, said resilient overload linkage including resilient force transmitting means for limiting the peak load transmitted from said cable to said servomechanism when said control lever is actuated.

**3,931,747**
**GYROSCOPIC STABLE REFERENCE DEVICE**
**James R. Erspamer, Phoenix, Ariz., assignor to Sperry Rand Corporation, New York, N.Y.**
**Filed Feb. 6, 1974, Ser. No. 440,119**
**Int. Cl.² G01C *19/02***
**U.S. Cl. 74—5.34** **8 Claims**

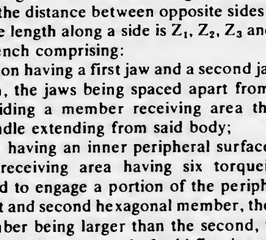


1. A three axis gyroscopic stable reference apparatus for navigable craft comprising:
first gimbal means pivotally mounted for rotation about a roll axis,
second gimbal means pivotally mounted on said first gimbal means for rotation about a pitch axis,
vertical gyroscope means for which said second gimbal means forms the outer gimbal means and further having inner gimbal means pivotally mounted on said second gimbal means for rotation about an inner roll axis,
directional gyroscope means pivotally mounted on said second gimbal means for providing an azimuthal reference,
control means including accelerometer means for providing signals representative of tilt in pitch and roll to maintain the spin axis of said vertical gyroscope means aligned with the gravity vertical,
inner gimbal pick off means responsive to said rotation of said inner gimbal means about said inner roll axis,
servo means responsive to said gimbal pick off means for rotating said first gimbal means to maintain said pitch axis perpendicular to said vertical gyroscope means spin axis,
pitch, roll, and azimuth pick off means coupled to said stable reference apparatus for providing attitude information about mutually perpendicular reference axes, and
circuit means for disabling said servo means jointly responsive to said pitch pick-off means and to said inner gimbal pick-off means for preventing unstable operation of said servo means.

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**3,931,748**
**ADJUSTABLE GEAR ENCLOSURE FOR MIXER PINION AND BULL GEARS**
**Christian T. Tertinek, 3301 Cheshire Road, Canandaigua, N.Y. 14424, and Alan J. Stone, P.O. Box 354, Honeoye, N.Y. 14471**
**Filed June 24, 1974, Ser. No. 482,652**
**Int. Cl.² F16H *57/02***
**U.S. Cl. 74—606 R** **2 Claims**

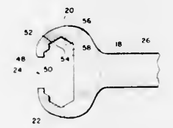
1. In a portable mixing device including a wheeled support frame, a mixing chamber supported from said frame and having a horizontally disposed paddle shaft projecting therefrom with a bull gear connected thereto, a power device supported from said frame and having a drive shaft drivingly connected thereto, said drive shaft having a drive pinion gear thereon in meshing engagement with the bull gear for driving the paddle shaft from the power device, that improvement comprising an enclosure for said pinion gear and bull gear comprising a pair of vertical, spaced front and rear walls rigidly interconnected by vertical side walls and horizontal top and bottom walls with the front wall disposed adjacent the power device, a bearing assembly mounted on each of said front and rear walls adjacent their juncture with the bottom wall and one of the side walls, said drive shaft extending through and being journaled by said bearing units with the pinion gear disposed between the front and rear walls, said bearing units being fixedly, non-adjustably and detachably mounted on the front and rear walls, a spacer on said drive shaft between the pinion gear and one of said bearing units to orient the pinion gear between the front and rear walls, said rear wall having a centrally disposed slot receiving said paddle



shaft, a seal unit encircling said paddle shaft, said seal unit including slot means therein for adjustable mounting of the seal means on the rear wall to enable the enclosure to be shifted laterally of the rotational axis of the paddle shaft, said enclosure including laterally extending slotted mounting brackets receiving fastening members for mounting the enclosure on the frame for lateral adjustment thereby enabling the rotational axis of the drive shaft, the pinion gear mounted thereon and the enclosure which journals the drive shaft to be laterally adjusted in relation to the stationary axis of the paddle shaft and bull gear thereon to provide alignment and backlash adjustment between the gears.

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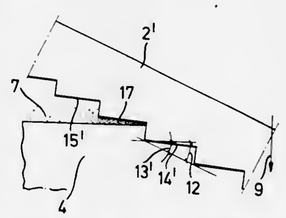
**3,931,749**
**REVERSIBLE SELF-RETAINING RATCHETING WRENCH**
**James P. Evans, 3233 SW. 23 St., Oklahoma City, Okla. 73108**
**Division of Ser. No. 351,254, April 16, 1973, abandoned. This application Nov. 5, 1974, Ser. No. 521,088**
**Int. Cl. B25b *13/08***
**U.S. Cl. 81—119** **7 Claims**



1. A ratcheting wrench for ratcheting four hexagonal members in which the distance between opposite sides is $X_1$, $X_2$, $X_3$ and $X_4$ and the length along a side is $Z_1$, $Z_2$, $Z_3$ and $Z_4$, respectively, the wrench comprising:
a body portion having a first jaw and a second jaw extending therefrom, the jaws being spaced apart from each other and providing a member receiving area therebetween, and a handle extending from said body;
the first jaw having an inner peripheral surface facing said member receiving area having six torqueing surfaces configured to engage a portion of the peripheral surface of the first and second hexagonal member, the first hexagonal member being larger than the second, the first surface being at the outer end of said first jaw and having a length less than one-half $Z_1$ the second surface intersecting the first surface at an angle of 120°, the third surface being contiguous to the second surface at the end thereof opposite the end intersected by the first surface, the length of the third surface being less than one-half $Z_2$, a fourth surface intersecting the third surface at an angle of 120°, a fifth surface intersecting the fourth surface at an angle of 120°, the length of the fourth and fifth surfaces each being at least equal to $Z_2$, and a sixth surface intersecting the fifth surface at an angle of 120°, the length of the sixth surface being greater than $Z_1$, the first surface being parallel to the sixth surface and spaced from it a distance at least equal to $X_1$ the third surface being parallel to the sixth surface and spaced from it a distance at least equal to $X_2$, the first, second and sixth surfaces snugly receiving and engaging three sides of the first hexagonal member, the third, fourth, fifth and sixth surfaces snugly receiving and engaging four sides of the second hexagonal member;
the second jaw having an inner peripheral surface facing said member receiving area having six torqueing surfaces configured to engage a portion of the peripheral surfaces of the third and fourth hexagonal member, the third hexagonal member being larger than the fourth, the first surface being at the outer end of said second surface intersecting the first surface at an angle of 120°, the third surface intersecting the second surface at an angle of 240° at the end thereof opposite the end intersected by the first surface, the length less than one-half $Z_3$, a fourth surface intersecting the third surface at an angle of 120°, a fifth surface intersecting the fourth surface at an angle of 120°, the length of the fourth and fifth surfaces each being at least equal to $Z_4$, and a sixth surface intersecting the fifth at an angle of 120°, the length of the sixth surface being greater than $Z_3$, the first surface being parallel to the sixth surface and spaced from it a distance at least equal to $X_3$, the third surface being parallel to the sixth surface and spaced from it a distance at least equal to $X_4$, the first, second and sixth surfaces snugly receiving and engaging three sides of the third hexagonal member, the third, fourth, fifth and sixth surfaces snugly receiving and engaging four sides of the fourth hexagonal member.

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**3,931,750**
**HELICAL SHEAR BLADE**
**Hartmut Jabs, Verlautenheide, Germany, and Minny Wiemers, 05, Dusseldorf-Gerresheim, all of Germany, assignors to Severin Heusch; Ida Plankermann; Anneliese Gattersleben; Hermann Gattersleben, all of Aachen and Finny Thoennissen, Rott, Aachen**
**Filed Jan. 24, 1975, Ser. No. 543,869**
**Claims priority, application Germany, Feb. 1, 1974, 2404837**
**Int. Cl.² D06C *13/00***
**U.S. Cl. 83—672** **5 Claims**

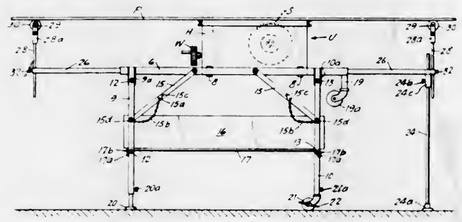


1. Helical shear blade cutter cooperable with a straight-edge bed plate for trimming fibers projecting from an article, comprising a shaft, and a blade in the form of a helical band wound edgewise on and about said shaft, said helical blade having a free edge forming a cutting edge from which a cutting face of

said blade extends inwardly toward said shaft, said cutting face being formed with a serration to limit lateral yielding of the fibers as the fibers are being sheared by said cutting edge and the straight edge of the bed plate, said serration comprising saw-like teeth, respectively, having a short and a long flank, said long flank, in a condition wherein said shaft is disposed parallel to the straight-edge bed plate, forming a first angle with respect to the straight edge of the bed plate that is equal to the difference between a second angle formed by the cutting face of a blade without serrations formed therein and the straight edge of the bed plate and a third angle formed by said long flank and the cutting face of the blade without serrations formed therein.

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**3,931,751**
**COLLAPSIBLE MOUNTING FOR POWER SAW UNITS**
**Paul A. Simonson, Roseglen, N. Dak. 58775**
**Filed Nov. 13, 1974, Ser. No. 523,444**
**Int. Cl.² B27B** *5/22*
**U.S. Cl. 83—859** **6 Claims**

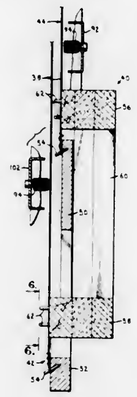


1. A portable and collapsible mounting for conventional power saw units having in combination:
a rectangular rigid table top having front and rear ends and longitudinal sides,
means adjustably secured to said table top for supporting a power saw unit with its planar, material-supporting surface disposed above said table top,
a plurality of legs connected at their upper ends for rigid relation with said table top, said legs being collapsible for compactness and portability of said assembly,
bracing means between said table top and said legs and also between said legs for rigidifing said structure in use,
horizontal support means slidably mounted in said table top and extensible longitudinally of said top,
said support means near the outer end thereof carrying upstanding elements upon which are mounted support and guide means for slidably supporting work material at an elevation substantially aligned with the work-supporting surface of said saw unit.

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**3,931,752**
**PIANO WITH FLOATING BRIDGE**
**Charles E. Mussulman, 2 E. Main, Chanute, Kans. 66720**
**Filed June 7, 1974, Ser. No. 477,295**
**Int. Cl.² G10C** *3/04*; **G10H** *3/08*
**U.S. Cl. 84—1.16** **16 Claims**

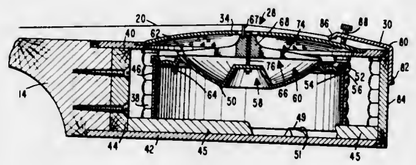
1. In a piano:
frame means;
a bank of strings supported by said frame means under tension and having predetermined frequencies of vibration;
means for striking the strings as the piano is played;
a floating bridge in engagement with said strings and spanning the latter for placing the strings in a mechanical environment which causes the strings to react and deliver the proper piano wave form when each is struck, each string having an active length defined by said bridge and a supported end of the string;
means securing said bridge exclusively to said strings in said engagement therewith for support thereby, whereby the bridge is supported solely by the strings and transfer of vibrational energy from the bridge is precluded;
a plurality of pickup devices adjacent corresponding strings for sensing vibration thereof and converting detected vibration into electrical signals;



means mounting said devices at positions along the active lengths of the corresponding strings, said positions being selected to control the harmonic characteristics of said signals; and
electrical means coupled with said devices and responsive to said signals therefrom for producing an audible output characteristic of piano tones.

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**3,931,753**
**STRINGED MUSICAL INSTRUMENTS**
**Rudolph Dopera, 1410 Gaylord, Long Beach, Calif. 90813**
**Filed Aug. 5, 1974, Ser. No. 495,024**
**Int. Cl.² G10D** *3/02*
**U.S. Cl. 84—296** **27 Claims**



1. A stringed muscial instrument of the ampliphonic type which includes:
a body portion having a top board and a bottom board, said top board having a central opening;
a neck portion attached to and extending from said body portion;
a string holder mounted on said body portion;
a plurality of strings each adjustably secured at one end to said neck, extending therealong and across said body portion, and affixed at the other end to said string holder;
an imperforate resonant diaphragm having a central vibratory portion and an edge portion incorporating a flange which defines a downwardly facing peripheral channel;
mounting means secured to said body portion for mounting said diaphragm within said body, said mounting means including a resonant cylinder having an upper edge



adapted to engage said peripheral channel whereby said diaphragm is held firmly in place with said central portion being free to vibrate, the upper end of said cylinder being closed by said diaphragm and the lower end of said cylinder being open and spaced from said bottom board; and
a bridge assembly mounted on said central portion of said diaphragm, said bridge assembly extending through said central opening in said top board and engaging said strings, whereby said strings rest on said bridge assembly to transfer sound vibrations to said diaphragm.

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**3,931,754**
**SKIVING CUTTER DEVICE FOR USE IN CUTTING INTERNAL SPUR GEAR**
**Komio Nishijima, Komatsu, and Masakazu Kojima, Kanazawa, both of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Japan**
**Filed Nov. 12, 1974, Ser. No. 523,136**
**Int. Cl.² B23F** *1/06*; **B26D** *1/12*
**U.S. Cl. 90—7** **2 Claims**

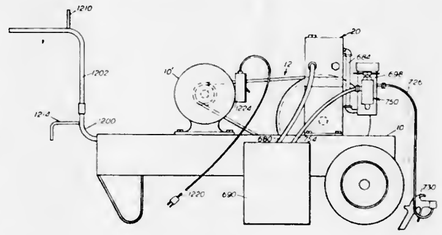



1. A skiving cutter device for use in cutting an internal spur gear comprising a spindle mounted on a cutter head, finish and rough skiving cutters having thereon cutter blades, each formed in a gear tooth, and mounted in vertical alignment on the spindle of said device and spacers adapted to compensate respective distances between said cutters and a reference plane on said spindle, wherein respective cutter blades of said cutters are located in the same phase and each cutter blade profile of said cutters is designed such that the contacting point between the respective cutter blades and each gear tooth formed on a workpiece to be cut is located within a contacting or acting region encompassed by respective interference lines at the root and bottom of the tooth formed on said workpiece to be cut and an interference line at the addendum of each cutter blade of said cutters, a key way located at least partially longitudinally of said spindle, wherein the cutters are adapted to operate upon said workpiece while mounted upon a receiving means and the longitudinal axis of said receiving means is offset from that of the spindle.

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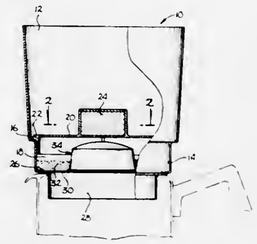
**3,931,755**
**PUMP**
**Frank J. Hatridge, 5115 N. 16th St., Omaha, Nebr. 68110**
**Filed May 28, 1971, Ser. No. 148,155**
**Int. Cl. F01b** *31/10*; **F16j** *15/18*
**U.S. Cl. 92—155** **5 Claims**

1. A paint spraying assembly comprising: a paint spraying gun having an outlet orifice of a size for causing a paint flow to spread out into a spray, a pump having an inlet and an outlet, a conduit means interconnecting said gun and said pump outlet, a source of paint containing abrasive particles, conduit means connecting said source of paint with said pump inlet, a block having a pumping chamber therein having a chamber wall having a piston rod opening therethrough, an elongated piston rod means partly disposed in said chamber and extending through said piston rod opening and reciprocating along an axis, a teflon sealing assembly substantially sealing and filling the area between the walls of said piston rod opening and said piston rod means, that portion of said rod means which lies inwardly of said sealing assembly having a portion of maximum cross-sectional area as taken transversely of said piston rod means, said rod means portion having a sufficiently loose fit with respect to adjacent portions of said chamber wall as to substantially prolong the life of said portion of said rod means by reducing the abrasion of the rod means portion by abrasive particles disposed between said rod means portion and said chamber wall, said looseness of fit between said rod means portion and said chamber wall resulting in a by-passing of said rod means portion by paint, said fit being sufficiently close, however, as to provide substantial and effective pump pressure, said looseness of fit assuring a long working life before abrasion of said rod means portion causes need for its replacement, whereby said pump is free of any means therein allowing lubricating fluid to mix with paint therein in quantities such that said paint when it leaves said pump is substantially damaged in its drying characteristics.



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**3,931,756**
**FILTER AREA LIMITING DEVICE FOR DRIP COFFEE MAKERS WITH MICROPORE FILTER**
**George H. Van Brunt, 1149 El Monte Drive, Thousand Oaks, Calif. 91360**
**Continuation-in-part of Ser. No. 286,098, Sept. 5, 1972, abandoned, which is a continuation-in-part of Ser. No. 48,028, June 2, 1970, Pat. No. 3,695,168. This application Apr. 18, 1974, Ser. No. 461,943**
**Int. Cl.² A47J** *31/10*, *31/06*
**U.S. Cl. 99—306** **9 Claims**



1. A drip coffee maker for the brewing of a coffee infusion in quantity less than the nominal capacity of the drip coffee maker from coffee ground to at least as fine as drip grind coffee standards comprising:
a coffee-brewing chamber for the containment of coffee ground to at least as drip grind coffee standards;
an opening in the bottom of said coffee-brewing chamber, said opening being closed by an unsupported flexible micropore outlet filter, said filter having outlet openings of about 25 microns so as to substantially prevent passage of visible coffee sediment from said brewing chamber but to permit the passage of water-extracted coffee infusion therethrough;
water inlet flow control means in the top of said chamber, said flow control means having a plurlaity of inlet opening

of such size and quantity as both to direct and control the inflow of water into said brewing chamber so that the water flow to the grounds in said chamber is controlled to prevent turbulent lifting of all the grounds from said outlet filter, thus preventing fine sediment from settling on and plugging the micropore outlet openings as the coffee infusion passes through the filter so that the length of coffee-brewing time is consistent and uniform.

said flow control means being so positioned relative to the grounds in said chamber, and said inlet openings being of said size and quantity, also to control the upward venting outflow of gases therethrough in such a manner as to limit inflow of water until the coffee grounds are wetted and then to prevent entrapment of gases by freely venting such gases therethrough to ensure steady inflow of water into said brewing chamber with respect to the outflow of water-extracted coffee infusion through said micropore outlet filter during brewing; and

a filter area limiting device selectively positionable on said micropore filter to seal off a portion of said filter so as to limit the effective usable area of said filter so that the remaining area of said micropore filter exposed in said coffee-brewing chamber is appropriate for brewing a lesser amount of the drip coffee maker in the same total time of liquid flow.

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**3,931,757**

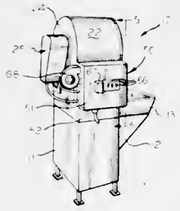
**ELECTRICALLY HEATED DRY CEREAL GRAIN EXPANDER**

**Raymond A. Goode, Elgin, Ill., assignor to Dunbar Manufacturing Co., Inc., South Elgin, Ill.**

**Filed Sept. 25, 1972, Ser. No. 292,264**

**Int. Cl.² A23L** *1/18*

**U.S. Cl. 99—323.11** **5 Claims**



1. An electrically heated corn popper or like grain expander for dry expansion of cereal grain, comprising:

a multi-perforate expansion chamber for receiving and retaining a supply of cereal grain for expansion, the expansion chamber having a main outlet for expanded grain and an auxiliary outlet for unexpanded grain and other waste;

agitation means for agitating the contents of the expansion chamber;

discharge means for initiating a discharge of unexpanded grain and other waste at a given location relative to the expansion chamber;

an electrically powered source of radiant heat energy, positioned adjacent to but spaced from the expansion chamber at a heater position displaced from the waste discharge location;

reflector means, at the heater position, for directing radiant heat energy from the heat source into the expansion chamber to heat the chamber and expand a supply of cereal grain contained therein;

a popper housing enclosing the expansion chamber, the popper housing having a radiant heat admission aperture aligned with the heater position;

a heater housing, enclosing the radiant heat source and heater position;

and forced air cooling means for cooling the heat source without appreciable cooling of the expansion chamber.

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**3,931,758**

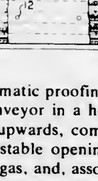
**SPIT**

**Donald Arthur Blake, Burnaby, Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest**

**Filed June 28, 1974, Ser. No. 483,961**

**Int. Cl.² A47J** *37/04*

**U.S. Cl. 99—419** **1 Claim**




1. A spit, comprising:

a handle constructed from a plurality of elongated tubular telescopic sections;

a threaded bolt located at an end of the handle;

a head having a tapped hole and a plurality of elongated prongs upon which frankfurters and other foods may be impaled, the prongs being located at regular intervals along a straight line so as to be parallel to the axis of the handle when the bolt is threaded into the tapped hole and the head is thereby detachably secured to the handle; and

a rectangular wire mesh member having a turned in bent over peripheral lip around three adjacent sides, including two long sides, said member being detachably secured to the outer prongs by sliding the long sides of the member thereover, said outer prongs engaging the lip of said long sides, thus forming a flat perforated grill.

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**3,931,759**

**AUTOMATIC DEVICE FOR FINAL PROOFING**

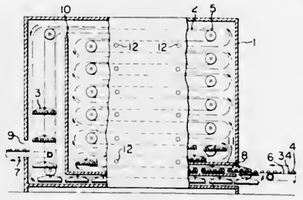
**Torahiko Hayashi, 2-3 Nozawa-cho, Utsunomiya, Japan**

**Continuation-in-part of Ser. No. 137,397, April 26, 1971, abandoned. This application Feb. 13, 1974, Ser. No. 441,982**

**Claims priority, application Japan, Nov. 25, 1970, 45-103911**

**Int. Cl. A21c** *13/02*

**U.S. Cl. 99—468** **5 Claims**



1. A device for the automatic proofing of preformed dough materials placed on a conveyor in a housing, said conveyor being arranged to move upwards, comprising a plurality of vertically distributed adjustable openings in the wall of the housing for the supply of gas, and, associated with each of a plurality of the openings, a temperature detector, a first group of motor operated valves, and a temperature regulator, wherein the first motor operated valves are controlled by the said temperature regulators; and associated with each of a plurality of the openings, a humidity detector, a second group of motor valves, and a humidity regulator, wherein the second motor operated valves are controlled by the said humidity regulators, a separate means to supply heated gas and separate means to supply humid gas, first means to convey said heated gas to a plurality of said openings, second means to convey said humid gas to a plurality of said openings, wherein said motor-operated valves are in each of said first and second conveyance means, each said temperature regulator associated with each of the first conveyance means, each said humidity regulator associated with each of the second conveyance means, and means to compare the humidity and temperature detected by said detectors at each opening with the humidity and temperature selected by said regulators and to transmit signals to the motor-operated valves to adjust the said openings.



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**3,931,760**

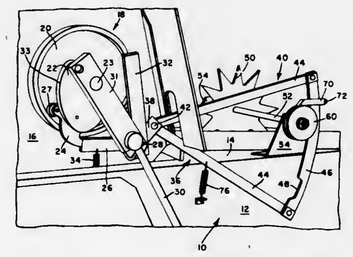
**BALE LENGTH CONTROL MECHANISM**

**Leo George Cheatum, Ottumwa, Iowa, assignor to Deere & Company, Moline, Ill.**

**Filed Mar. 3, 1975, Ser. No. 554,637**

**Int. Cl.² B65B** *13/18*

**U.S. Cl. 100—4** **4 Claims**



1. In a baler having a tying mechanism actuated by a trip device that includes a rotary bale engaging element adapted to rotate a shaft in response to increasing bale length, a trip arm swingable between a lower stop position and an upper trip position wherein it actuates the tying mechanism, and including an arcuate track, having a stop mounted thereon to establish the stop position, and a wheel means operatively connected to the shaft and rotated thereby and engageable with the track to swing the trip arm upwardly to its trip position and disengagable therefrom to permit the trip arm to drop to its stop position, the improvement comprising: latching means operatively associated with the arm for releasable holding the arm in its stop position until the wheel engages the track to prevent the arm from bouncing away from its stop position when the arm initially drops to said position.

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**3,931,761**

**METHOD OF CONTINUOUS PRINTING OF DOCUMENTS**

**Andrè Carrus; Pierre A. Carrus, and Jacques H. Carrus, all of 30 rue des Petits Hotels, 75010 Paris, France**

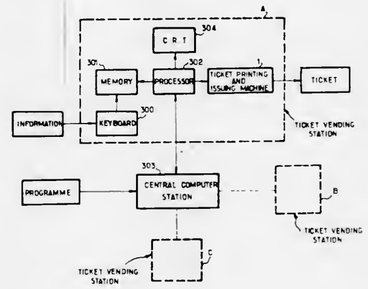
**Continuation-in-part of Ser. No. 186,676, Oct. 5, 1971, abandoned. This application Aug. 30, 1973, Ser. No. 392,933**

**Claims priority, application France, Oct. 9, 1970, 70.36558; Apr. 14, 1971, 71.13063; May 5, 1971, 71.16136**

**Int. Cl.² B41L** *45/00*

**U.S. Cl. 101—66** **5 Claims**

1. In an electronic system which handles input data representing the particulars of transactions such as wager transactions according to a corresponding transaction program and which is of the type comprising a plurality of ticket vending stations at different locations with each of the vending stations storing the input data, processing the input data in the form of coded characters, and printing and issuing a ticket under control of a computer provided at a central station which incorporates the program and receives the coded characters from the vending stations, the improvement wherein: processor means are provided at each vending station for writing said coded characters in a dot matrix having a predetermined number of writing elements arranged in mutually perpendicular scan and sweep lines; and wherein each vending station is further provided with a controllable means for feeding electrosensitive tape in a continuous manner past a printing head through each successive cycle of printing operation, the duration of each cycle of printing operation and the length of the electrosensitive tape so fed being dependent upon the number of coded characters to be printed and thus the complexity of




a transaction; an assembly of printing electrodes representing said sweep lines of said matrix and being disposed at the printing head across the direction of feed of said tape, said electrodes being operable through said matrix as the tape is fed past the printing head to print the successive matrix characters on the tape in the form of legible characters representative of the particular transaction; and means operable at the end of each printing cycle for severing that length portion of the tape which has been printed from the unprinted part thereof to thereby provide a printed ticket serving as a valid voucher for a properly registered transaction.

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**3,931,762**

**METHOD FOR PREPARING A PLASTIC RELIEF PRINTING PLATE**

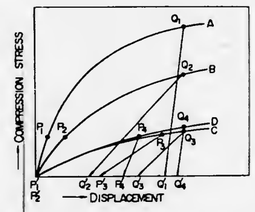
**Nobuo Fukushima; Masakazu Inoue, both of Ibaragi; Ryouzo Takai, Takatsuki, and Kozo Hotta, Kokubunji, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka and The Yomiuri Shimbun, Tokyo, both of, Japan**

**Filed Dec. 14, 1973, Ser. No. 424,765**

**Claims priority, application Japan, Dec. 18, 1972, 47-127452**

**Int. Cl.² B41D** *3/04*

**U.S. Cl. 101—401.1** **13 Claims**




1. In a method for producing synthetic resin relief plate by pressing a synthetic resin sheet onto a matrix, the improvement which comprises putting on the matrix a thermoplastic synthetic resin sheet which contains 0 - 80% by weight of inorganic filler and has a foaming ratio of 1 or $1 < a \leqq 4$ and in which the amount of the inorganic filler (% by weight) and the foaming ratio satisfy the formula $130 \geqq 20a + b \geqq 30$ wherein $a$ represents a foaming ratio and $b$ represents the

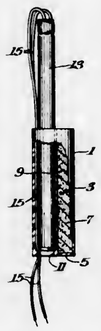
amount of the inorganic filler and then pressing the sheet in solid state and the matrix so that the thickness of the synthetic resin sheet before being pressed is larger than the thickness of the convex portions of the synthetic resin relief plate.

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**3,931,763**
**EXPLOSIVE PRIMING DEVICE**

**Harold Frederick Bluhm, Allentown, Pa., assignor to Atlas Powder Company, Wilmington, Del.**

**Filed Sept. 24, 1974, Ser. No. 508,872**
**Int. Cl.² F42B *3/10***
**U.S. Cl. 102—28 R** **9 Claims**



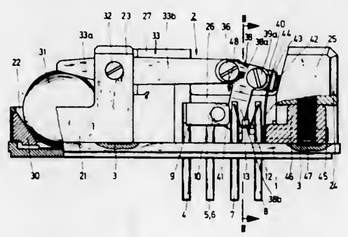
1. A primer unit for explosive materials comprising an elongated shell having a top and a bottom end, a compartment within said shell for housing explosive material, said compartment being walled off at the bottom end of the shell, a walled passageway which accommodates therein a No. 6 electric blasting cap and its lead wires when threaded through said passageway, said passageway extending completely through the shell structure endwise thereof, and an inwardly extending shoulder within the passageway which reduces the inner diameter of the passageway to a dimension which will allow said No. 6 cap by itself to pass through the reduced diameter opening but which prohibits the cap from passing through when the cap and its lead wires threaded completely through the passageway occupy the passageway.

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**3,931,764**
**ACCELERATOR SWITCH**

**Roman Malisch, Neubiberg; Otmar Titus, Taufkirchen, and Dietmar Puttinger, Munich, all of Germany, assignors to Messerschmitt-Bolkow-Blohm GmbH, Germany**

**Filed June 21, 1974, Ser. No. 481,919**
**Claims priority, application Germany, June 28, 1973, 2332901**
**Int. Cl.² F42C *11/00, 1/10***
**U.S. Cl. 102—70.2 R** **12 Claims**



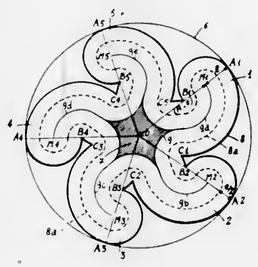
1. Acceleration switch, particularly for use in actuating an impact detonator having an ignition circuit, comprising a ball, a member forming a support surface for said ball, a switch actuating member positioned in contact with said ball so that said ball is held between the support surface of said member and said switch actuating member, wherein the improvement comprises a lever assembly displaceable between a first position preventing actuation of the impact detonator and a second position affording actuation of the impact detonator, said lever assembly comprises said switch actuating member and a second member pivotally connected to said switch actuating member at a position spaced from the position on said switch actuating member in contact with said ball, said second member forming a diaphragm at a position spaced from its point of pivotal connection to said switch actuating member, means forming a path of light rays arranged in the ignition circuit for effecting the closure of the ignition circuit, said diaphragm arranged to interrupt the path of the light rays when said lever assembly is in the first position and to be spaced from the path of the light rays when said lever assembly is in the second position so that the ignition circuit can be closed.

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**3,931,765**
**SOLID PROPELLANT DESIGNED TO BURN CENTRIPETALLY AND ITS USE IN ROCKET ENGINES OR OTHER MOTORS**

**Pierre Louis Portalier, Sevres, France, assignor to Societe Nationale des Poudres et Explosifs, France**

**Filed Sept. 7, 1973, Ser. No. 395,059**
**Claims priority, application France, Sept. 26, 1972, 72.33943**
**Int. Cl.² F42B *1/00***
**U.S. Cl. 102—99** **7 Claims**



1. A solid cylindrical externally burning propellant element adapted to be fixed in a propulsion device, having substantially constant burning surface, said element having a cross section such that it may be inscribed in a cylinder of radius R, and longitudinal axis O, the cross section of said element exhibiting rotational symmetry of order *n* about said longitudinal axis of the element, wherein *n* is an integer number greater than or equal to 2, the cross section of the element having a contour consisting of identical and convoluted lobes, wherein *n* is as defined hereinabove, each of said lobes being connected to its adjacent lobes, the portions of the lobes which are the farthest from the axis O of said cylinder of radius R being curved and consisting of semicircular arcs of radius *e*, wherein *e* is the combustion thickness of the element, each of said semicircular arcs being tangential to said cylinder of radius R at a point which coincides with one end of the said semi-circular arcs, each of said semicircular arcs being extended by a convex arc of a circle of radius at least equal to 2*e*, each of said convex arcs being tangential to said cylinder of radius R, at the same point at which each of said semicircular arcs is tangential to said cylinder of radius R, said propellant element giving a single residue of polygonal shape, on combustion, said element being anchored in said propulsion device through attachment means set in the location of said residue, the external contour of said residue being situated at a distance *e* from the external contour of each lobe, *e* being as defined hereinabove.

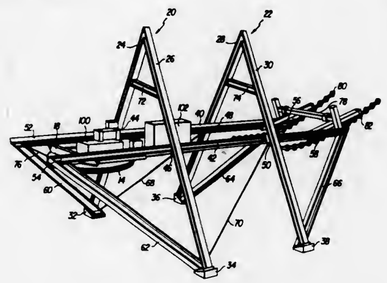


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**3,931,766**
**CHAIRLIFT TERMINAL**

**Gaston Cathiard, Uriage, France, assignor to Pomagalski S.A., Fontaine, France**

**Filed Dec. 19, 1974, Ser. No. 534,470**
**Claims priority, application France, Dec. 20, 1973, 73.46437**
**Int. Cl.² B61B *11/00***
**U.S. Cl. 104—117** **7 Claims**



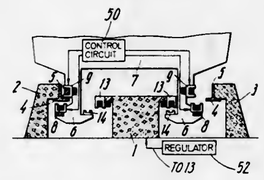
1. Terminal of an aerial cable transporter with a continuously moving cable, comprising:
a cable return sheave with vertical axle,
two triangular piers, each with legs in steel sections assembled in the form of an inverted V, with fixed bases, the piers standing in two spaced transversal planes perpendicular to the cable,
two bracing and supporting girders symmetrically arranged on each side of the said cable and which rigidly interconnect the legs of the said piers and extend beyond at least one of the said piers to form a pair of projections,
one train of compression sheaves carried by each of the said projections,
and a means of suspension of the said return sheave from the said girders.

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**3,931,767**
**MAGNETIC SUSPENSION RAILWAY**

**Ludwig Karch, deceased, late of Munich, Germany, by Hermine Karch, administratrix, assignor to Messerschmitt-Bolkow-Blohm GmbH, Germany**

**Filed Feb. 28, 1974, Ser. No. 446,759**
**Claims priority, application Germany, Mar. 3, 1973, 2310718**
**Int. Cl.² E01B *25/06***
**U.S. Cl. 104—130** **13 Claims**



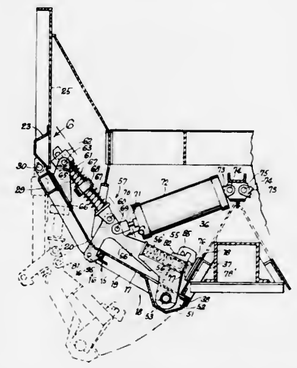

1. A magnetic suspension railway, comprising a car having a horizontal longitudinal axis, a plurality of electrically controlled car carrier magnets, a plurality of electrically-controlled car guide magnets, a plurality of fixed magnetizable track rails, holding means mounted under the car and spaced interiorly of the track rails relative to the axis for holding said car carrier magnets in a suspended position vertically relative to the rails and holding the guide magnets in positions laterally between the rails, said rails branching into two paths at a branch section, said car guide magnets being distributed on opposite sides of the axis, circuit means in the car coupled to said magnets for energizing the magnets to suspend the car and guide the car over the rails and for deenergizing the guide magnets on one side of the car relative to the guide magnets on the other side of the car within the switch section so as to guide the car in the switch section onto one path and away from the other, two switch rails mounted on said holding means at a portion away from the track rails and in the direction of the axis and on opposite sides of the axis, two rows of electrically controlled switch magnets stationarily mounted in the switch area, one of said rows following one of the paths and the other of said rows following the other of the paths, said switch rails and said rows being positioned so that when the car passes through the switch section one of said switch rails and said switch magnets in one row are magnetically coupled sufficiently to support magnetically at least one side of the car while the carrier-magnets on that side are disengaged from the track rails in the switch area, said one switch rail and said one row being sufficiently offset horizontally from a magnetic symmetry so that said switch magnets impart a lateral force upon the switch rail to compensate for the magnetic disengagement of the carrier magnets on the one side of the car from the track rail on the one side of the car.

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**3,931,768**
**HOPPER VEHICLE**

**Albert E. Price, Brookfield, and Erling Mowatt-Larssen, Warren, both of Ohio, assignors to General American Transportation Corporation, Chicago, Ill.**

**Filed Dec. 4, 1974, Ser. No. 529,499**
**Int. Cl.² B61D *3/00***
**U.S. Cl. 105—240** **18 Claims**



1. A hopper vehicle having a pair of bottom hoppers extending lengthwise of the vehicle on opposite sides of the vertical central plane of the vehicle, which comprises:
a supporting structure including support means extending from about one end of the vehicle to about the other end of the vehicle and located at the bottom portion of the vehicle for mounting on wheeled assemblies of the vehicle;
a body structure including: end walls; side walls;
an inverted generally V-shaped panel mounted on said support means and extending lengthwise of the vehicle and providing a part of said hoppers; and
a door assembly hingedly mounted at its upper margin on each of said side walls to swing outwardly and constructed to provide one side of one of said two hoppers of the vehicle;
a door-operating mechanism for each of said door assemblies and located intermediate the length of the door

assembly, each of said door-operating mechanisms including:

a lever pivotally mounted at its bottom end on the bottom margin of said door assembly and movable between a first position abutting the inside of said door assembly when the door is unlocked and a second position spaced from the inside of said door assembly when the door is closed and locked;

latching means mounted on said door assembly and including a latching lug, said latching means and said lever being constructed and arranged to provide movement of said latching lug of said latching means when said lever is pivotally moved from said second position to said first position; and

power means mounted on said support means and operatively connected to said lever to provide a force in one direction for movement of said lever from said second position to said first position and to provide a force in the opposite direction on said lever for return movement of said door assembly to its closed position and movement of said lever from said first position to said second position;

locking means, including a locking lug, mounted on said supporting structure in alignment with each of said latching lugs of said latching means to have said locking lugs engaged in a locking manner by said latching lugs after said door assemblies are closed and said levers have been moved to their second positions; and

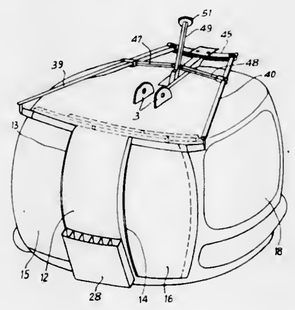
one of said latching means and of said locking means, for each side of said hopper vehicle, has a construction, including spring means that engages said lug of that one means having said spring means, so that this engaged lug is movable in the event that said latching means abuts said locking means during a closing of said door assembly and is returned by said spring means to its normal position when the door assembly is closed.

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**3,931,769**
**AUTOMATIC OPENING AND CLOSING CABIN FOR ROPEWAYS**

**Francis Tauzin, Veyrins, France, assignor to Pomagalski S.A., Grenoble and Sigma Plastique, Veyrins, both of, France**

**Filed Aug. 2, 1974, Ser. No. 494,181**
**Claims priority, application France, Aug. 7, 1973, 73.28795**
**Int. Cl.² B60N *1/04***
**U.S. Cl. 105—329 S** **7 Claims**



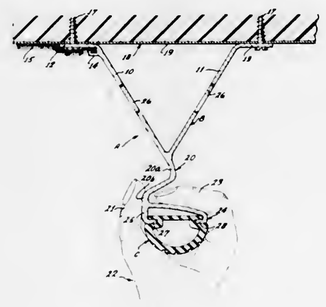
1. Cabin with automatic door opening and closing mechanism, for ropeways, comprising a carrier frame structure, a cabin housing supported by said carrier frame structure, said cabin housing comprising a pair of shells of plastic material and assembled together along a transverse vertical median joint plane, two lateral apertures provided on a same side of cabin housing, on either side of said joint plane and spaced the one from the other by a solid wall portion, a sliding door associated with each one of said two apertures, said sliding doors being adapted to pass from a closed position to an open position by moving towards each other against an inner face of said solid wall portion, and a pair of bench-forming seats disposed transversely and back to back, very close to each other, in a transverse space extending normally to said solid wall portion whereby transverse spaces extending normally to said apertures remain substantially unobstructed.

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**3,931,770**
**PASSENGER HAND ASSIST RAIL FOR TRANSIT VEHICLE**

**Keith W. Tantlinger, Coronado, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.**

**Filed Sept. 26, 1974, Ser. No. 509,329**
**Int. Cl.² B60N *5/00***
**U.S. Cl. 105—354** **12 Claims**



1. An elongate hand assist rail secured to, and extending lengthwise along an upper portion of a transportation vehicle having a floor, side walls and ceiling, said rail being of substantially uniform cross sectional size and shape throughout its length, and comprising:

a pair of diverging web portions intersecting and joined along their converging edges;

means for mounting the free edges of the diverging web portions to such upper portion of the vehicle;

a third web portion extending from the intersection of the diverging web portions; and

a hand grip portion of bulbous cross sectional shape substantially integral with, and extending along, the free edge of the third web portion.

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**3,931,771**
**EXTENDABLE EDUCATIONAL MODULE**

**Edward J. Kramer, Rte. 1, Box 846, Clinton, Wash. 98236**

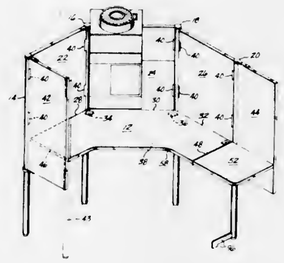
**Filed Mar. 6, 1974, Ser. No. 448,706**
**Int. Cl.² A47B *17/03, 37/00***
**U.S. Cl. 108—77** **12 Claims**

1. An educational module comprising:

a generally horizontally positioned writing panel having a near edge presented adjacent a seated user, a rear edge, and two end edges connecting said near and rear edges, wherein intersections of said two end edges and said rear edge define first and second writing panel corners;

supporting means for said module, including at least two upright support members which extend from a support surface to a point above said writing panel, said two support members being positioned adjacent said first and second writing panel corners;

vertical panel means partially enclosing said writing panel, said vertical panel means being supported adjacent said end edges and said rear edge of said writing panel, said vertical panel means extending from a point below said writing panel to a point above said writing panel at least to head level of the seated user, said vertical panel means including two end panels supported adjacent said end edges, at least one of said two end panels being movable between two spaced operative positions without disturbing the structural integrity of the module, one of said two spaced positions being adjacent one end edge of said writing panel, the other of said two spaced positions being



relatively away from said one end edge of said writing panel; and

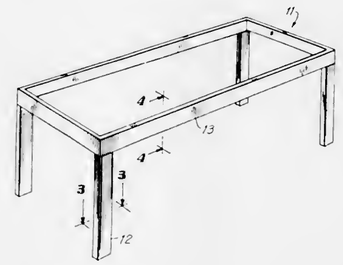
means securing said vertical panel means to said supporting means, inlcuding first means movably securing said one end panel to one of said two support members, permitting movement of said one end panel between said two spaced positions.

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**3,931,772**
**ARTICLE OF FURNITURE AND METHOD OF MANUFACTURE**

**Paul Puccio, and John Puccio, both of 54 Nassau Blvd., Garden City, N.Y. 11530**

**Filed Mar. 28, 1973, Ser. No. 345,809**
**Int. Cl.² A47B *13/00***
**U.S. Cl. 108—161** **6 Claims**



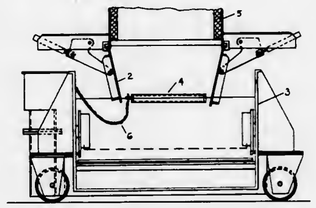
1. A stone covered article of furniture comprising in combination substantially elongated stone members, each of said substantially elongated stone members defining a part of said article of furniture, each said substantially elongated part having a cavity therein, each said cavity having a substantially elongated reinforcing member therein which is spaced from the interior wall thereof; and epoxy means within the space between each said reinforcing member and the associated interior wall of each said stone member defining each said cavity, said reinforcing member being completely surrounded by said epoxy means.



**3,931,773**
**ASH REMOVAL APPARATUS FOR COAL-DUST FIRING EQUIPMENT**

**Eberhard Reimann, Bunde, Germany, assignor to EVT Energie-und Verfahrenstechik GmbH, Stuttgart, Germany**

**Filed Dec. 13, 1974, Ser. No. 532,738**
**Claims priority, application Germany, Dec. 22, 1973, 2364366**
**Int. Cl.² F23J *1/00***
**U.S. Cl. 110—165 R** **6 Claims**



1. An improved ash removal apparatus for coal-dust firing equipment including a firebox having an ash outlet, comprising:

a scraper-chain conveyor including a water trough disposed below an said ash outlet of said firebox;

a hood, coupled to and communicative with said firebox outlet, disposed over and extending into said conveyor trough; and

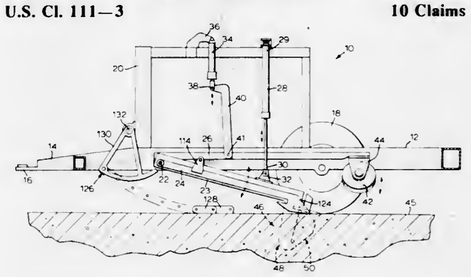
a plurality of spaced apart floatable members, disposed within said hood and rotatable about their own longitudinal axes, for floating on the surface of the water contained in said trough within said hood and catching ashes falling from said firebox outlet on the surfaces thereof.

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**3,931,774**
**SEEDLING PLANTER APPARATUS**

**Edmund G. Bradley, Gormley, Canada, assignor to Her Majesty the Queen in right of Ontario, as represented by the Minister of Natural Resources, Toronto, Canada**

**Filed June 21, 1974, Ser. No. 481,668**
**Int. Cl.² A01C *11/00***
**U.S. Cl. 111—3** **10 Claims**



1. Planting apparatus, comprising:

a mobile frame adapted to travel forwardly over the ground,

an arm swingably mounted to the frame and extending generally rearwardly from the mounting location,

dibble means carried by the arm remote from said mounting location and adapted to cut into the ground when the arm swings toward the ground during forward travel of the frame,

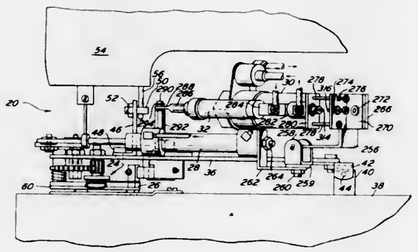
planter means carried by the arm rearwardly of said dibble means and adapted to support a seedling for planting in the cut made by said dibble means,

dislodging means adapted selectively to dislodge a seedling from said planter means into said cut,

detection means for detecting when the dibble means has cut to a pre-determined depth into the ground and for activating said dislodging means whenever such pre-determined depth is reached,
and means for regularly swinging the arm toward and away from the ground,
whereby said dislodging means fails to operate if the dibble means fails to achieve said pre-determined depth due to an obstacle.

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**3,931,775**
**AUTOMATIC BUTTON FEEDER**
**Wenzel Zaruba, Totowa Borough, N.J., assignor to Textol Systems, Inc., Carlstadt, N.J.**
**Filed Sept. 6, 1974, Ser. No. 503,574**
**Int. Cl.² D05B 3/22**
**U.S. Cl. 112—113** **26 Claims**

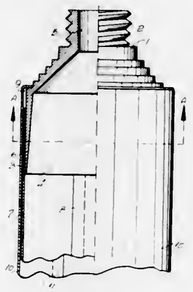


1. An automatic button feeder comprising a first station for receiving buttons in sequence and including orientation means, a second station at which a button is sewn and an injection member for moving the button from said orientation station to the sewing station, said injection member including alignment pins which are used in combination with orientation means which align the openings of the buttons with the alignment pins, said feeder also including means for moving the injection member which draws the pins of the member under said first station, the openings of said button are aligned with the pins by said orientation means, said member remains stationary after the button has been aligned until a button at said second station has been removed therefrom.

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**3,931,776**
**METHOD OF MAKING A DOUBLE-WALLED TUBULAR CONTAINER**
**Oscar Barberia, Mariano Pelliza, 2831, Olivos, Buenos Aires, and Angel Rogelio Testi, Jose Maria Moreno, 321, Haedo, Buenos Aires, both of Argentina**
**Filed July 1, 1974, Ser. No. 484,884**
**Claims priority, application Argentina, July 11, 1973, 249023**
**Int. Cl.² B21D 51/36**
**U.S. Cl. 113—120 XY** **3 Claims**

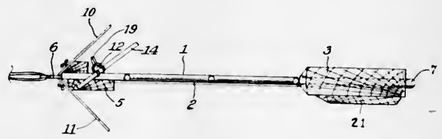
1. A method of making a double-walled tubular container, comprising:
a. providing a container top having an outlet passage and a skirt portion extending longitudinally of the container top, a plastic sheet having a pair of opposed longitudinal edges, and a metallic sheet having a pair of opposed longitudinal edges;
b. winding said plastic sheet on a cylindrical mandrel to form a tubular plastic sleeve with said pair of opposed longitudinal edges of said plastic sleeve overlapping to define a longitudinally extending seam of the tubular plastic sleeve;
c. inserting said container top skirt within said tubular plastic sleeve;
d. heating said tubular plastic sleeve to simultaneously seal said tubular plastic sleeve to said container top skirt and seal the longitudinally extending seam of said tubular plastic sleeve;
e. winding said metallic sheet on said tubular plastic sleeve to form a tubular metallic sheath overlying said tubular plastic sleeve with said pair of opposed longitudinal edges



of said metallic sheet overlapping to define a longitudinally extending seam of the tubular metallic sheath, said metallic sheath overlying a portion of said tubular plastic sleeve sealed to said container top skirt; and
f. heating said tubular metallic sheath to simultaneously seal said tubular metallic sheath to said tubular plastic sleeve and seal the longitudinally extending seam of said tubular metallic sheath.

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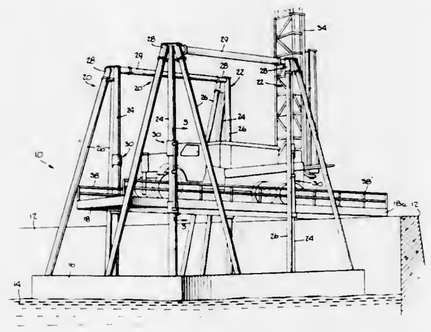
**3,931,777**
**AQUA SLED**
**William B. Colgan, Shalimar, Fla., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest**
**Filed Mar. 12, 1975, Ser. No. 557,508**
**Int. Cl.² A63C 15/00**
**U.S. Cl. 114—16 A** **3 Claims**



1. An aqua sled for carrying people on and under water, comprising
a frame of aluminum tubing having a substantially rigid substantially planar section of transparent material to enable users to see beneath the sled and buoyant material affixed thereto to float the sled, the frame having a front, a back and sides;
a pair of sheets of substantially rigid transparent material affixed to the front of the frame and forming a dihedral of approximately 90° with each other, each extending at an angle of approximately 45° with a corresponding side of the planar section of transparent material; and
control means affixed to the frame and manually controllable to control the movement of the sled.



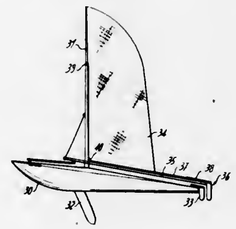
**3,931,778**
**SUPPORT BARGE METHOD AND APPARATUS**
**Edward E. Miller, and Eberhard V. Ranft, both of Houston, Tex., assignors to Raymond International, Inc., Houston, Tex.**
**Filed Aug. 8, 1974, Ser. No. 495,909**
**Int. Cl.² B63B 35/28; E02B 7/08**
**U.S. Cl. 114—26** **4 Claims**



1. A device for use in the repair of dam walls, said device comprising a barge, means for mooring said barge with one edge lying adjacent a dam wall, a platform carried by said barge, said platform having a portion thereof extending but from said barge past said one edge, forward and rearward platform lifting means positioned on said barge near to and back from said edge respectively, said platform lifting means being arranged to lift said platform off from the upper surface of said barge and above the dam wall prior to mooring and to lower the platform down onto said dam wall after mooring, means for engaging and disengaging said forward platform lifting means with the platform after the platform is so lowered and means pivotally interconnecting said platform to said rear lifting means to permit pivoting of said platform with respect to said barge, whereby after said platform is lowered onto the dam wall, the detachable engaging and disengaging means is disengaged so that the weight of the platform is carried by the dam wall and the rearward lifting means and wherein minor fluctuations in water level are compensated for by the pivotal connection.

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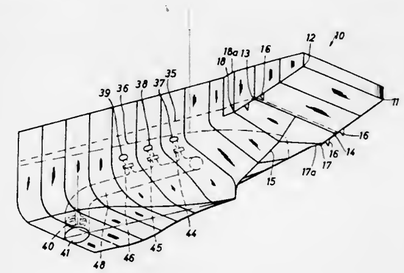
**3,931,779**
**SAILING BOAT**
**Sten Kreuger, Chateau de Malvande, Chambesy-Geneva, Switzerland**
**Filed May 1, 1972, Ser. No. 249,154**
**Claims priority, application Switzerland, Apr. 30, 1971, 6382/71; Mar. 8, 1972, 3434/72**
**Int. Cl.² B63H 9/00**
**U.S. Cl. 114—39** **8 Claims**



1. A boat comprising:
a. a hull having a direction of elongation and a waterline,
b. a mast mounted on said hull,
c. a boom pivotally mounted on said mast,
d. a mainsail supported by said mast and said boom, said boom attached to and extending the foot of the mainsail,
e. a blade mounted on the free end of said boom and pivotal about an axis perpendicular to the direction of elongation of said hull,
f. said blade protruding downward below the waterline of said hull so as to act as a rudder for steering said boom when said boat is moving through a body of water, and
g. means for setting the angular position of said blade about said pivotal axis.

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**3,931,780**
**ICEBREAKER VESSEL**
**Heinrich Was, Bramfelder Strasse 164, 2000 Hamburg 33, Germany**
**Filed July 18, 1974, Ser. No. 489,488**
**Claims priority, application Germany, Aug. 30, 1973, 2343719; June 14, 1974, 2428801**
**Int. Cl.² B63B 35/08**
**U.S. Cl. 114—41** **6 Claims**



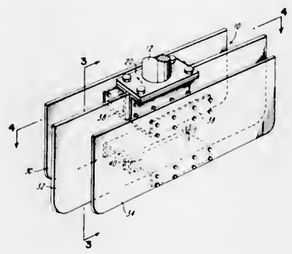
1. An ice breaker vessel including a ship's hull having a forecastle comprising:
a bow of said vessel extending in a generally linear configuration across said forecastle from port to starboard substantially at the upper most portion of said forecastle;
a substantially planar section extending downwardly and astern of said bow in a generally quadrilateral configuration contiguously with said bow and substantially across said entire vessel from port to starboard; and
a keel portion having an acuminated configuration directed forwardly of said vessel located astern of said planar section and having a configuration extending contiguously therewith.

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**3,931,781**
**STABILIZER UNIT FOR MARINE VESSELS**
**Everett P. Larsh, 1001 E. Ridge Lane, Miami, Fla. 33157**
**Filed Nov. 18, 1974, Ser. No. 524,634**
**Int. Cl.² B63B 39/06**
**U.S. Cl. 114—126** **7 Claims**

3. An anti-roll stabilizer for a marine vessel having a rotatable shaft with an outer end portion projecting outwardly from the hull of the vessel, comprising:
a plurality of fin elements disposed in substantially parallel spaced relation with each set of adjacent fin elements defining a fluid channel therebetween,
means for rigidly connecting said fin elements to maintain said parallel spaced relation and to form a rigid multiple-fin stabilizing unit, and
means for rigidly securing generally the center portion of

said multiple-fin stabilizing unit to said outer end portion of said shaft with said fins extending substantially parallel



to said shaft and to effect rotation of said unit on the axis of said shaft.

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**3,931,782**
**MOORING METHOD FOR DEPLOYMENT AND RETRIEVING OF MOORING LINES**

**Mark A. childers, and Enoch L. Dawkins, both of New Orleans, La., assignors to Ocean Drilling & Exploration Company, New Orleans, La.**

**Filed Sept. 26, 1974, Ser. No. 509,581**
**Int. Cl.² B63B** *21/50*
**U.S. Cl. 114—206 R** **7 Claims**



1. The method of employing a service ship having anchor-deploying equipment for assisting in the mooring to the seabottom of a structure floating in a body of water,

said structure having mooring means including a mooring line attached to an anchor,

said ship being on the surface of said body of water and having a service line,

a hook attached to the service line,

said method being characterized by utilizing the following steps:

moving the service ship near said structure,

coupling the hook to said mooring means;

progressively releasing the mooring means from the structure into the body of water;

supporting the mooring means with the service line;

moving the ship away from said structure to a desired location;

progressively lowering the service line through the body of water;

burying the anchor in the seabottom;

detaching the hook from the mooring means;

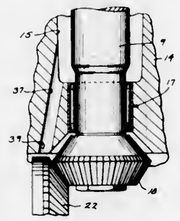
taking in the service line onto the ship; and

mooring said structure to said mooring means.

**3,931,783**
**OIL CIRCULATING SYSTEM FOR MARINE PROPULSION GEAR CASE**

**Elmer E. Croisant, Oshkosh, Wis., assignor to Brunswick Corporation, Skokie, Ill.**

**Filed Oct. 3, 1973, Ser. No. 403,317**
**Int. Cl.² B63H** *5/12*
**U.S. Cl. 115—34 R** **9 Claims**



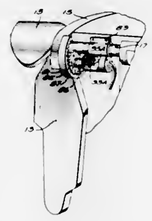
1. In a marine propulsion drive apparatus adapted to be secured to a boat with a pendant submerged drive unit including a generally horizontal driven propeller shaft means and an offset generally vertical drive shaft means coupled by relatively fixed drive positioned rotating bevel gear meshes within said unit, said bevel gear means including a pair of meshing bevel gears defining a pocket at the engaging surfaces of the gears, said unit being essentially liquid tight and containing a liquid lubricant, said bevel gear means being in essentially open communication with said liquid lubricant in said unit, an improved lubricant circulating means comprising a circulation passageway means having an inlet means located immediately adjacent the bevel gear means to pick-up forced lubricant from the periphery of the rotating gear means, said inlet means being limited to alignment with said pocket and adjacent to the periphery and offset from the position of maximum bevel gear engagement and located in close spaced relation to the engaging side of the bevel gear means, and a return flow path located in a low pressure area for return flow of the forced lubricant within said unit.

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**3,931,784**
**TILT POSITION INDICATOR**

**Raymond D. Collis, Round Lake, and Martin H. Meyer, Libertyville, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.**

**Division of Ser. No. 321,049, Jan. 4, 1973, Pat. No. 3,844,247.**
**This application Aug. 26, 1974, Ser. No. 500,328**
**Int. Cl.² B63H** *5/12*
**U.S. Cl. 115—41 R** **2 Claims**



1. A marine propulsion device comprising means for attachment to the hull of a boat, a propulsion unit pivotally connected to said attachment means about a tilt axis for vertical swinging movement of said propulsion unit relative to said attachment means, and means for indicating the position of said propulsion unit relative to said attachment means comprising a gauge including an indicator movable in response to variation in electrical current, and means physically connected between said propulsion unit and said attachment means and electrically connected to said gauge for varying the electrical current supplied to said gauge in response to vertical swinging movement of said propulsion unit, said means for varying said electrical current comprising a circular rack physically connected to one of said propulsion unit and said attachment means and including a plurality of teeth extending in an arcuate series at a uniform distance from said tilt axis with said teeth individually extending parallel to said tilt axis, a rotatably mounted pinion physically connected to the other of said attachment means and said propulsion unit and enmeshed with said rack for rotation of said pinion in response to vertical swinging movement of said propulsion unit relative to said attachment means, and a variable resistance electrically connected in series to said gauge and including a resistance coil mounted on one of said propulsion unit and said attachment means and a wiper movably electrically connected to said coil for varying the current flow to said gauge in response to relative movement between said wiper and said coil, said wiper also being connected to said pinion for rotation of said wiper in response to rotation of said pinion incident to vertical swinging movement of said propulsion unit.

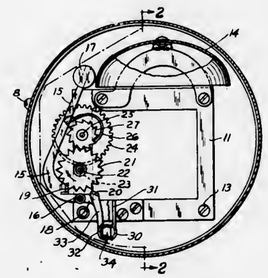


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**3,931,785**
**AUTOMATIC FIRE ALARM**

**James R. Keeley, 10627 25th S.W., Seattle, Wash. 98146, and Russell Everson, 2041 S. 320th No. 160, Federalway, Wash. 98002**

**Filed Nov. 18, 1974, Ser. No. 524,662**
**Int. Cl.² G08B** *17/00*
**U.S. Cl. 116—106** **4 Claims**



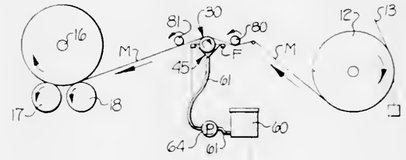
1. In fire alarm means, a frame; a sound producing device; a pivotally mounted arm capable, when oscillated, of sounding said sound producing device; spring actuated arm oscillating means connected with said arm; a cup shaped member rigidly supported from said frame; another cup shaped member rigidly supported by said arm, said two cup shaped members being formed of material having good heat conducting characteristics and being positioned close together with their concave sides in opposed relation; and a body of heat responsive material which is firm at normal room temperatures and has a melting temperature substantially in excess of normal room temperature, interposed between and filling said cup shaped members, said body holding said cup shaped members apart at normal room temperatures and softening and bringing about oscillation of said arm and sounding of said sound producing devices when subjected to a temperature substantially in excess of normal room temperature.

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**3,931,786**
**APPARATUS FOR COATING A WEB OF MATERIAL WITH A LIQUID**

**Richard K. Teed, Greenwood, S.C., assignor to Riegel Textile Corporation, New York, N.Y.**

**Filed Feb. 13, 1974, Ser. No. 442,086**
**Int. Cl.² B05C** *11/00*
**U.S. Cl. 118—6** **11 Claims**



1. Apparatus for continuously applying and evenly coating a moving web of material with a predetermined amount of a liquid and characterized by simplicity of design, uniformity of application of the liquid and accurate control of the amount of liquid applied; said apparatus comprising:

driven means for feeding the web of material in a longitudinal path of travel at a predetermined constant speed;

elongate, open top, pan means for continuously receiving the coating liquid therein and extending transversely of the traveling web;

driven means for continuously metering coating liquid to said pan means in the predetermined amount to be continuously applied to the moving web of material;

driven, elongate, rotating coating roll means positioned in the path of travel of the web of material and extending generally transversely of the web for rotating contact with one surface of the moving web at a predetermined constant speed and including a covering of soft, uniformly and highly absorbent material disposed around the circumference thereof and having a capacity for receiving and continuously uniformly absorbing the predetermined amount of coating liquid being continuously metered and for transferring and uniformly coating the traveling web with the liquid, said coating roll means being positioned partially within said pan so that a portion thereof not in contact with the web rotates within said pan through the open top thereof for contacting and continuously absorbing an amount of the coating liquid within said pan above the level of said roll means corresponding to the amount being metered into said pan by said metering means; and

means operatively connected with said web feeding means, said metering means and said coating roll means for continuously driving same in predetermined relation to each other for applying and evenly coating the moving web of material with a predetermined amount of the liquid.

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**3,931,787**
**APPARATUS FOR APPLYING SOLID PARTICLE MATERIAL TO A STRIP**

**Ralph Kuttner, Fullerton, and Wallace T. Morrison, Whittier, both of Calif., assignors to Stoody Company, Santa Fe Springs, Calif.**

**Filed June 20, 1973, Ser. No. 371,801**
**Int. Cl.² B05C** *11/10, 19/00*
**U.S. Cl. 118—8** **8 Claims**

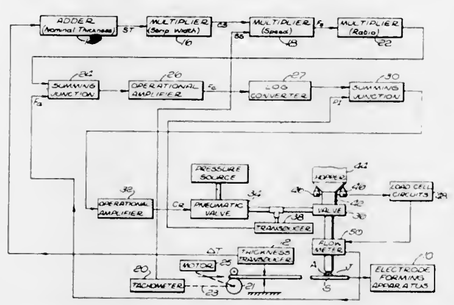
1. A system for joining solid particle material with solid strip material at a junction, in accordance with a predetermined weight ratio, comprising:

means for moving said strip material to flow relative to said junction;

means for indicating the flow rate of said strip material relative to said junction in terms of weight per unit of time;

means for flowing said solid particle material onto said strip material at said junction;

means for sensing the flow rate of said particle material in terms of weight per unit of time and including an impeller for forcefully propelling said material and means for



sensing the reactive force on said impeller as an indication of said flow rate of said particle material;

means for comparing the flow rates of said strip material and said particle material with said predetermined weight ratio to provide a control signal; and

means for controlling the relationship between said means for moving and said means for flowing in accordance with said control signal.

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**3,931,788**

**ADHESIVE EXTRUDING NOZZLE-GUIDANCE ARRANGEMENTS**

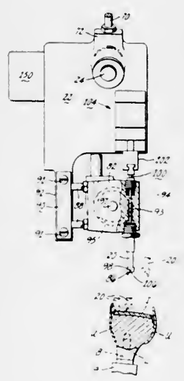
**Ronald O. C. Gadd, Leicester; Robert C. Quarmby, Groby, and Frank R. Smith, Leicester, all of England, assignors to USM Corporation, Boston, Mass.**

**Filed Jan. 13, 1975, Ser. No. 540,411**

**Claims priority, application United Kingdom, Jan. 31, 1974, 4455/74**

**Int. Cl.² B05C** *3/02*

**U.S. Cl. 118—8** **7 Claims**



1. A machine for manufacturing shoes, said machine having a shoe support, and lasting elements which are relatively movable generally lengthwise with respect to a shoe on said support, for securing a shoe upper to a shoe bottom, including:

means for applying adhesive progressively to the margin of said shoe bottom, said means comprising at least one nozzle through which adhesive is extruded;

means for moving said nozzle from an inoperative position outwardly widthwise of the shoe to a location limited by an adjustable stop means, said nozzle having a shoe bottom engaging portion and a heightwise extending guide portion adapted to engage the peripheral edge of the shoe bottom;

means for biasing said nozzle inwardly toward the middle of said shoe bottom to maintain engagement between said guide portion of said nozzle and the edge of said shoe bottom during the relative movement therebetween, said stop means being ineffective during said relative movement to permit said guide portion to follow the peripheral contour of the shoe bottom.

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**3,931,789**

**VAPOR DEPOSITION APPARATUS**

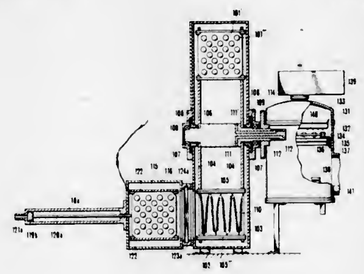
**Mitsuo Kakei, Tokyo; Keijiro Nishida, Kanagawa; Tadayoshi Kasahara, Hino; Masao Shimabayashi, Kawasaki; Ryozo Hiraga; Tomomasa Nakano, both of Yokohama, and Ichiro Komatsubara, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Japan**

**Filed Apr. 19, 1974, Ser. No. 462,504**

**Claims priority, application Japan, Apr. 28, 1973, 48-48674**

**Int. Cl.² C23C** *13/08*

**U.S. Cl. 118—49** **8 Claims**



1. A vacuum deposition apparatus for treating articles comprising an annular chamber including means for heating said articles, article holder means rotatably mounted within the chamber for orbiting said articles within said annular chamber, sealable chamber means for passing articles into and out of said annular chamber including means for continuously maintaining said annular chamber sealed from its external environment, deposition chamber means for treating articles disposed therein, means defining sealable path means through which said articles may be transferred in both directions between said annular chamber and said deposition chamber means, and means to effect said transfer.

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**3,931,790**

**ANGLED CROSSFIRE RINSES**

**Helmut Franz, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.**

**Division of Ser. No. 159,746, July 6, 1971, Pat. No. 3,793,054. This application Aug. 9, 1973, Ser. No. 386,919**

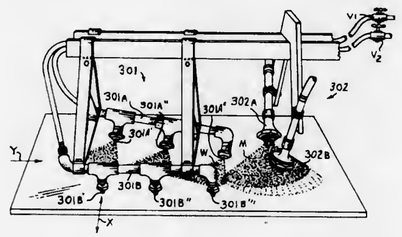
**Int. Cl.² B05C** *5/00*

**U.S. Cl. 118—73** **14 Claims**

1. In the combination of a crossfire rinse set and a spray gun means for coating the surface of an article wherein the combination is of the type having means for moving the article in a downstream direction along an article movement path lying in a generally horizontal plane and the crossfire rinse set is of the type having a first rinse pipe means; a second rinse pipe means, means for mounting the first and second rinse pipe means in spaced relation above the article movement path and upstream of the spray gun means so that the article moves past the crossfire rinse set and thereafter past the spray gun means; at least one nozzle mounted on each of the first and second rinse pipe means wherein each of the at least one nozzle directs a spray of rinsing medium downward toward the article movement path; and means for providing relative motion between the crossfire rinse set and the article moving means, the improvement comprising:

first means for mounting the at least one nozzle on the first rinse pipe means to apply the spray of rinsing medium (1) as a fan-shaped spray having an apex angle S and a centroidal axis, (2) at a first oblique angle to a first imaginary plane that is perpendicular to and transverse to the horizontal plane of the article movement path to define a first angle A that is measured between the first imaginary plane and the centroidal axis of the spray of the at least one nozzle mounted on the first rinse pipe means and is 90° plus one-half of the apex angle S of the spray of the at least one nozzle mounted on the first rinse pipe means to direct the rinsing medium away from the spray gun means in a generally upstream direction, and (3) at a second oblique angle measured between the centroidal





axis of the spray of the at least one nozzle mounted on the first rinse pipe means and a second imaginary plane that is perpendicular to the first imaginary plane and parallel to the horizontal plane of the article movement path to direct the rinsing medium spray toward a first side of the article movement path; and

second means for mounting the at least one nozzle on the second rinse pipe means to apply the spray of rinsing medium (1) as a fanshaped spray having an apex angle S and a centroidal axis, (2) at a third oblique angle to the first imaginary plane to define a second angle A that is measured between the first imaginary plane and the centroidal axis of the spray of the at least one nozzle mounted on the second rinse pipe means and is 90° plus one-half of the apex angle S of the spray of the at least one nozzle mounted on the second rinse pipe means to direct the rinsing medium away from the spray gun means in a generally upstream direction, and (3) at a fourth oblique angle measured between the centroidal axis of the spray of the at least one nozzle mounted on the second rinse pipe means and the second imaginary plane to direct the rinsing medium spray toward a second side of the article movement path opposite to the first side.

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**3,931,791**

**MECHANISM FOR APPLYING LACQUERS AND THE LIKE ON A PRINTING PRESS**

**Friedrich Preuss, Sprendlingen, and Kurt Difflipp, Dietzenbach, both of Germany, assignors to Roland Offsetmaschinenfabrik Faber & Schleicher AG, Germany**

**Filed Sept. 5, 1974, Ser. No. 503,475**

**Claims priority, application Germany, Sept. 7, 1973, 2345183**

**Int. Cl.² B05C** *1/02*

**U.S. Cl. 118—236** **5 Claims**



1. For use with a sheet-fed printing press, means for applying a liquid coating material to a sheet following the printing thereof which comprises a main frame, a back-up cylinder journaled in the main frame, means including grippers for transferring a sheet to the back-up cylinder for transport thereon and for removing the sheet therefrom for delivery, a form cylinder journaled in the main frame in rolling engagement with the back-up cylinder, means for driving the cylinders and gripper means in unison, a fountain assembly including a fountain for the coating material, a fountain roller rotating therein adjacent the form cylinder, a first form roller adjacent the form cylinder, a dosing roller communicatingly interposed between the fountain roller and the first form roller, and a second form roller interposed between the fountain roller and the back-up cylinder, and means for selectively shifting the fountain roller and form rollers with respect to the main frame to (a) bring the fountain roller into exclusive liquid transmitting contact with the form cylinder, to (b) bring the first form roller into exclusive liquid transmitting contact with the form cylinder and to (c) bring the second form roller into exclusive liquid transmitting contact with the back-up cylinder thereby to change the length of the liquid transference path from the fountain to the sheet in accordance with the drying speed of the coating material and to insure evenly distributed liquid application of the coating material to the sheet.

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**3,931,792**

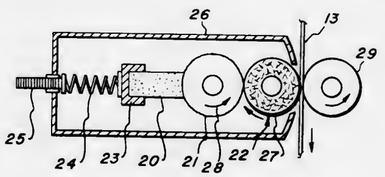
**ABRASIVE LIQUID DEVELOPING APPARATUS**

**Masamichi Sato, Tokyo, Japan, assignor to Rank Xerox Ltd., London, England**

**Filed Feb. 1, 1974, Ser. No. 438,893**

**Int. Cl.² G03G** *15/10*

**U.S. Cl. 118—637** **7 Claims**

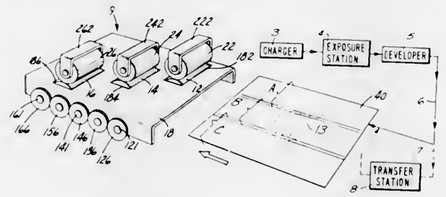


1. A developing apparatus for making visible electrostatic latent images comprising a means for bringing a solid material comprising toner particles into contact with a coarse surface

member, means for abrading said solid material, means for collecting said toner particles on the surface of a roller, means for contacting said surface with a carrier liquid, and means for bringing said carrier liquid containing toner particles into contact with a latent image bearing surface.

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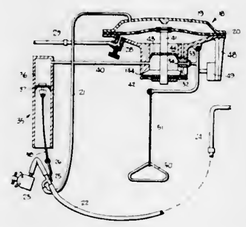
**3,931,793**
**PRESSURE FIXING OF TONER POWDER IMAGES**
**James A. Kolibas, Broadview Heights, Ohio, assignor to Addressograph Multigraph Corporation, Cleveland, Ohio**
**Filed Feb. 4, 1974, Ser. No. 439,270**
**Int. Cl.² B05B** *5/02*
**U.S. Cl. 118—637** **3 Claims**




1. Apparatus for providing a permanent image on a substrate of substantial width, wherein the image is a fixed powder image of electroscopic toner powder, comprising means for fixing the toner powder image to said substrate, which means consists essentially of means establishing a feed path for the workpiece, a plurality of pairs of unheated pressure rollers disposed on parallel axes along said feed path and each having a contact nip, in which the contact nip of each pair of rollers is no more than about three inches in length, and thereby establishes a treatment track of its own width substantially narrower than the width of a workpiece to be treated, in which each roller pair is individually loaded, in which the pairs are offset and so disposed as to produce overlap between the treatment tracks of the roller pairs, and in which the pairs are sufficient in number and so arranged as to produce a complete uninterrupted pressure treatment area of the desired width as the workpiece is fed between the rollers.

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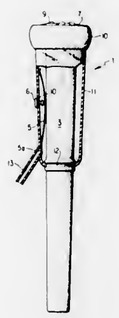
**3,931,794**
**MILKING MACHINES**
**Colin Andrew Chillingworth, Oaklands Park, Australia, assignor to Joan Mary Perkins and Glyn Andrew Frank Chillingworth, both of, Australia**
**Filed June 10, 1974, Ser. No. 477,838**
**Int. Cl.² A01J** *05/04, 07/00*
**U.S. Cl. 119—14.08** **4 Claims**



1. Pressure controlled milking termination means for use in conjunction with a milking machine of the kind having a vacuum pump coupled to both a vacuum air line and a vacuum milk line and a claw coupled to the milk line, by a flexible hose, comprising:
a diaphragm housing containing a diaphram sealably secured around its periphery to the housing,
a milk line vacuum communication conduit coupled to the milk line and terminating in the housing on one side of the diaphragm,
an air line conduit coupled to the air line and terminating in the housing on the other side of the diaphragm,
an air bleed aperture opening to atmosphere and in air flow communication with said other side of the diaphragm, the aperture being of sufficient dimension to reduce the vacuum effective on said other side,
a piston and cylinder assembly, a vacuum conduit extending between the cylinder and the diaphragm housing, and a flexible line depending from the piston coupled to the claw so that actuation of the piston within the cylinder lifts the claw,
and a diaphragm operated valve coupled to the diaphragm and operable to place said vacuum conduit into air flow communication with one of said vacuum lines upon reduction of air pressure on said one side of the diaphragm thereby effecting said actuation of the piston within the cylinder.

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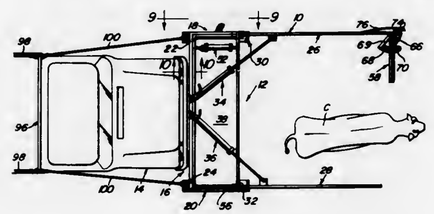
**3,931,795**
**PULSATING TEAT CUPS**
**Lloyd P. Duncan, 814 Rainbow Drive, Washington, Mo. 65802**
**Filed July 11, 1974, Ser. No. 487,781**
**Int. Cl.² A01J** *5/16*
**U.S. Cl. 119—14.38** **17 Claims**



1. A teat cup comprising an outer substantially rigid shell of hollow construction and an inner resilient inflation, said inflation extending through said shell and the interior of said inflation being adapted to communicate with a source of reduced pressure, said shell being hermetically sealable at each end with respect to said inflation, said inflation being housed within the shell in spaced apart relationship, entrance means leading through said shell to the space between the shell and said inflation, said entrance means being connectable to a constant source of vacuum to reduce the pressure in said space, an aperture in said shell leading to a source of air and movable valve means within said space being associated with said inflation, said valve means being movable in one direction by the inflation in its flattened and collapsing condition to admit air through the aperture to said space, and said valve means being movable in a second direction to expose said entrance means whereby vacuum is established within said space permitting said inflation to return generally round shape and close said aperture, said valve means being periodically movable to vary the degree of vacuum within said space.



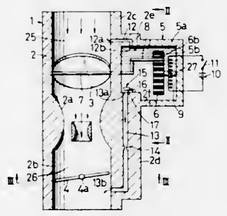
**3,931,796**
**HYDRAULIC COW CATCH-CARRIER**
**Herbert F. Hoffman, Platte, S. Dak. 57369**
**Filed Dec. 31, 1974, Ser. No. 537,662**
**Int. Cl.² A01K** *29/00*
**U.S. Cl. 119—151** **16 Claims**



1. An animal catch-carrier, comprising, in combination:
a. a frame mountable on a vehicle, the frame including a back wall arrangeable adjacent to and transverse of the vehicle and spaced, substantially parallel side walls extending substantially perpendicularly from transverse ends of the back wall;
b. a pair of gates pivotally mounted each on a respective one of the side walls at points thereof spaced from the back wall, the gates arranged for swinging into planes substantially parallel to one another and to the back wall for forming an enclosure with the side walls and back wall; and
c. motor means mounted on the frame and connected to the gates for selectively swinging the gates into and out of the substantially parallel planes.

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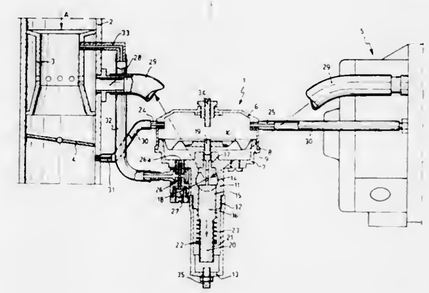
**3,931,797**
**AUTOMOBILE ENGINE CARBURETORS**
**Toshiro Yoshida, Toyoda, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan**
**Filed Nov. 21, 1974, Ser. No. 525,812**
**Claims priority, application Japan, Dec. 29, 1973, 49-4170[U]**
**Int. Cl.² F02M** *1/12*
**U.S. Cl. 123—119 F** **7 Claims**



1. In an automobile engine carburetor comprising,
a main housing,
a choke valve provided in said main housing,
a venturi throat formed in said main housing and spaced below said choke valve,
a throttle valve provided in said main housing and spaced below said venturi throat,
an auxiliary housing connected to said main housing adjacent to said choke valve,
a coiled bimetallic strip provided in said auxiliary housing and associated with said choke valve to control the position of said choke valve automatically in response to variation in the temperature of the air in said auxiliary housing, and
means provided in said auxiliary housing for electrically heating said bimetallic strip,
the improvement which comprises,
a first air passageway having an inlet open into said main housing upstream of said venturi throat and an outlet open into said auxiliary housing,
a second air passageway having an inlet open into said auxiliary housing and an outlet open into said main housing downstream of said inlet of said first air passageway, the static pressure of said main housing being lower at said outlet of said second air passageway than at said inlet of said first air passageway, and
valve means provided in said auxiliary housing and adapted to close one of said first and second air passageways to stop the flow of fresh air into said auxiliary housing when said temperature is below a predetermined level, while opening said one air passageway upon elevation of said temperature to said predetermined level to resume said flow of fresh air through said auxiliary housing.

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**3,931,798**
**CONTROL DEVICE**
**Adrianus Johannes Theodorus Hoogeboom, Harmelen, Netherlands, assignor to Landi Den Hartog B.V., Groenekan, Netherlands**
**Filed Nov. 12, 1973, Ser. No. 415,271**
**Claims priority, application Netherlands, Nov. 10, 1972, 7215280**
**Int. Cl.² F02M** *21/02*
**U.S. Cl. 123—120** **11 Claims**

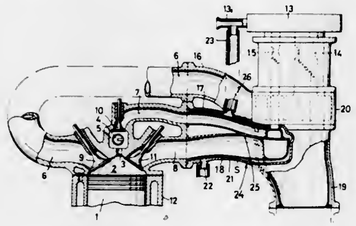


1. A control device for controlling the amount of gaseous fuel delivered from a source of fuel to an air suction conduit wherein said fuel is mixed with air, said conduit having a venturi tube and a throttle plate therein, comprising:
a. a housing, having a passage therethrough, said passage having one end connected to said source of fuel and the other end connected to said air suction conduit;
b. valve means disposed in said housing so as to selectively block said passage;
c. a flexible diaphragm affixed to and located with said housing so as to define a first chamber on one side of said diaphragm and a second chamber on an opposite side of said diaphragm;
d. means connecting said diaphragm to said valve means such that movement of said diaphragm causes said valve to open and close said passage;
e. first means connecting said first chamber to said air suction conduit downstream of said throttle plate such that when said throttle plate is closed or partially opened, a vacuum in said first vacuum chamber causes said valve means to partially close said passage so as to restrict the flow of fluel therethrough; and
f. second means connected to said housing to cause said valve means to open said passage when said throttle plate is fully opened.

## 3,931,799
## ADIABATIC INTEGRAL INTAKE AND EXHAUST CONDUIT FOR INTERNAL COMBUSTION ENGINE

**Hisashi Tamai, Tokyo, and Soichi Nakano, Kawagoe, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan**

**Filed June 22, 1973, Ser. No. 372,747**
**Claims priority, application Japan, June 28, 1972, 47-76210**
**Int. Cl. F02b** *19/10, 19/16*
**U.S. Cl. 123—122 AB** **1 Claim**

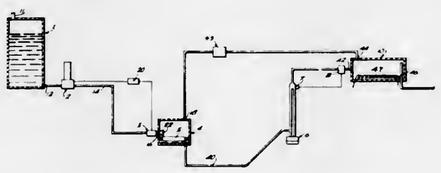


1. In an integral intake and exhaust conduit for an internal combustion engine of the type having a main and auxiliary combustion chamber, which conduit contains an intake passage and an exhaust passage wherein a portion of said exhaust passage is integrally formed with a portion of said intake passage to define a partition therebetween, an improvement comprising: a shell disposed about said intake passage and said exhaust passage forming an air gap between said shell and said intake and exhaust passages, said shell having a first and second aperture therein, said first aperture communicating with said air gap to allow air flow therein and said second aperture communicating with said air gap to allow air flow therefrom whereby air is continually drawn into said air gap over said exhaust and intake passages and out said second aperture thereby maintaining said integral conduit in a controlled temperature state as heat is transferred from said exhaust passage to said intake passage, said first aperture being disposed within said shell below said exhaust passage and said second aperture being disposed within said shell above said intake passage and a conduit communicating said second aperture with the air intake of the internal combustion engine thereby accelerating the heating of the air entering said engine.

## 3,931,800
## SYSTEM TO CONVERT LIQUID FUEL TO GAS

**Normond Gendron, 641 53rd St., West Palm Beach, Fla. 33407**

**Filed Nov. 27, 1974, Ser. No. 527,517**
**Int. Cl.² F02M** *31/00*
**U.S. Cl. 123—133** **4 Claims**

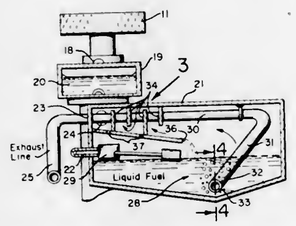


1. A fuel preheating system to convert liquid fuel to a gaseous state prior to injection into a combustion chamber comprising,
a fuel reservoir with an inlet and an outlet,
a surge tank with an inlet and an outlet,
first conduit means interconnecting the outlet of the fuel reservoir and the inlet of the surge tank,
a fuel pump in said first conduit means,
said surge tank including a one-way, normally closed check valve means to control the liquid level therein,
operator means for the check valve and fuel pump comprising,
a float in the surge tank constrained to vertical movement in a predetermined path, and
a member in said path of movement of the float responsive to the liquid level in the surge tank to open and close the valve means,
signal means interconnecting the check valve and the fuel pump to limit the amount of fuel in said tank;
operator means to operate the fuel pump to maintain a normal predetermined liquid level in said surge tank,
a conduit circuit interconnecting the surge tank and the combustion chamber, and including, in series,
a first heater means to convert the liquid fuel to a gas, said first heater means being in heat exchanging relation adjacent the exhaust of the combustion chamber,
a storage tank with an inlet and an outlet,
a normally closed gate valve intermediate the first heater means and the inlet of the storage tank, and
temperature responsive operator means to operate the gate valve, said temperature responsive operator means being affixed to said first heater means to sense the temperature at said first heater means.

## 3,931,801
## FUEL VAPORIZER AND CONTROL SYSTEM

**William L. Rose, 2114 Rhonda St., and Herbert J. Johnson, 1250 Bluebell St., both of Oxnard, Calif. 93030**

**Filed Feb. 21, 1974, Ser. No. 444,361**
**Int. Cl.² F02M** *17/22*
**U.S. Cl. 123—134** **7 Claims**



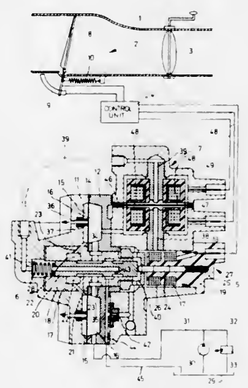

1. A fuel vaporizer and control system comprising, in combination:
a. a pipe section arranged to be inserted between the air intake and input manifold of an internal combustion engine, said pipe section including an air inlet valve means for controlling inlet air flow and a fuel vapor inlet;
b. a vaporizer unit including a closed chamber having a liquid fuel inlet connected to receive liquid fuel for said engine, an exhaust gas inlet and a fuel vapor outlet;
c. exhaust branch pipe means connected to pass exhaust gases from said engine to said exhaust gas inlet;
d. a liquid fuel reservoir in said chamber;
e. control means within said chamber to maintain the level of liquid fuel in said chamber at a given level;
f. exhaust pipe connecting means passing from said exhaust gas inlet through a portion of said chamber and thence extending into said liquid fuel to terminate beneath the surface of said liquid fuel, the terminal end of said connecting means beneath said liquid level including outlet means so that exhaust gases can only escape into said chamber by bubbling up through said liquid fuel;
g. separating means in said chamber, said fuel vapor outlet passing from said chamber at a point following the separating means and connecting into said fuel vapor inlet in said pipe section;
h. a throttle valve for controlling the flow of vaporized fuel into said fuel vapor inlet; and
i. control means connected to said throttle valve and air inlet valve means for controlling the flow of fuel and air respectively therethrough to provide a desired ratio of fuel vapor to air whereby hot exhaust gases pass through said exhaust pipe connecting means and bubble through said liquid fuel to vaporize the same, the vaporized fuel passing through the separating means to thereby remove any liquid droplets not vaporized so that substantially only vaporized fuel passes through said throttle valve into said fuel in said pipe section to then mix with air passing through said air inlet valve means and provide an explosive fuel and air mixture at said desired ratio for said engine.



## 3,931,802
## FUEL INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINES

**Konrad Eckert, Stuttgart, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany**

**Filed Sept. 12, 1973, Ser. No. 396,417**
**Claims priority, application Germany, Sept. 22, 1972, 2246546**
**Int. Cl.² F02M** *39/00*
**U.S. Cl. 123—139 AW** **22 Claims**

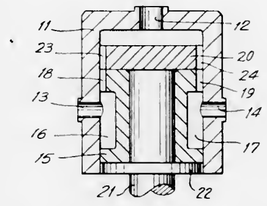


1. A fuel metering and injection system for regulating fuel flow so as to maintain a desired fuel-air mixture in a mixture compressing, externally ignited internal combustion engine, the system comprising, in combination;
a. an air intake suction tube of the internal combustion engine;
b. electro-mechanical means for measuring the quantity of air passing through said air intake suction tube;
c. pressure control means, responsive at least mediately to output from said electro-mechanical means for measuring, for generating as its output a variable fluid pressure head;
d. at least one fuel metering valve responsive to output from said pressure control means and having a movable member for metering out fuel, in desired proportion, to the quantity of air streaming through said suction tube in desired proportion, said movable member being actuated in two control directions.

## 3,931,803
## FUEL QUANTITY MANIFOLD FOR MULTI-CYLINDER INTERNAL COMBUSTION ENGINES

**Asoke Chattopadhayay, Ulmenallee 134, 4041 Norf, and Wolfgang Müller, 4044 Kaarst, both of Germany**

**Filed Jan. 17, 1975, Ser. No. 541,920**
**Claims priority, application Germany, Jan. 18, 1974, 2363726**
**Int. Cl.² F02M** *69/00*
**U.S. Cl. 123—139 AW** **11 Claims**

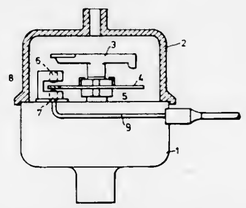


1. In a fuel quantity manifold for multi-cylinder internal combustion engines, a cylindrically bored housing; two cylindrical dosing elements supported within said housing, said dosing elements each having end surfaces thereof in superimposed and mutual relative rotatable relationship; and metering passageways formed in each of said dosing elements having the end surfaced edges thereof in overlapping positions so as to provide a more or less large flow passage cross-section, the improvement comprising: said metering passageways each having, in the plane of the flow passage cross-section between said dosing elements, an approximately constant ratio of the wetted periphery to the diameter of an inscribed circle within the idling operating condition to at least the part-load operating condition of the engines in which one-third of the maximum flow passage cross-section is opened, said ratio being within the value of 6.0.

## 3,931,804
## IGNITION CIRCUITS FOR INTERNAL COMBUSTION ENGINES

**Dennis Dawes Bowen, Wilmslow, England, assignor to Bowpark Developments Limited, Wilmslow, England**

**Filed June 21, 1973, Ser. No. 372,174**
**Claims priority, application United Kingdom, June 22, 1972, 29223/72**
**Int. Cl.² F02P** *1/00*
**U.S. Cl. 123—148 E** **6 Claims**

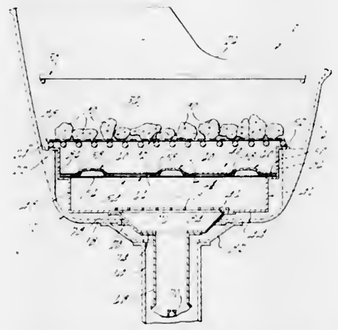


1. An internal combustion engine ignition system comprising a light source, a photo-electric pickup, a shutter moved at a rate proportional to the engine speed to periodically pass and interrupt light from said source to said pickup, amplifier means actuated by said pickup, means connecting said amplifier output to an ignition coil, a pulse-producing stage in said amplifier connected to said light source so as to momentarily increase the light output thereof to at least two times greater than normal each time light commences to fall on said pickup, and means for interrupting the amplifier output during said

momentary light increase to thereby switch ignition coil current off with increasing light output.

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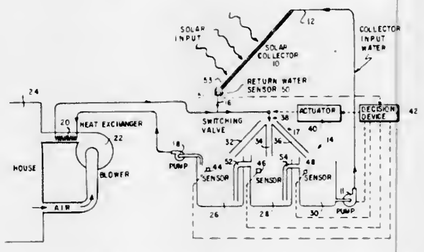
**3,931,805**
**BARBEQUE GRILL**
**David M. Nelson, Freeport, Ill., assignor to King-Seeley Thermos Co., Ann Arbor, Mich.**
**Filed Aug. 21, 1974, Ser. No. 499,289**
**Int. Cl.² A47J** *37/07*
**U.S. Cl. 126—41 R** **2 Claims**



1. A pedestal mounted gas fueled barbeque grill comprising,
an open upper-ended housing having means defined by a first imaginary horizontal plane for supporting a cooking grate,
a burner enclosure disposed within said housing,
said enclosure including a bottom wall portion and a peripheral side wall
means within said housing defined in part by a second imaginary horizontal plane spaced vertically below said first mentioned plane engageable with said enclosure for supporting said enclosure within said housing,
said burner enclosure being provided with support means defined by a third imaginary horizontal plane spaced vertically below said second mentioned plane,
a burner assembly supported upon said support means,
means defining a fuel-air mixture inlet opening in said bottom wall portion of said burner enclosure and baffle means interposed between said opening and said burner assembly, whereby an air-fuel mixture supplied through a pedestal supporting said grill and introduced through said opening will be dispersed in a uniform manner towards the underside of said burner assembly,
said burner assembly comprising a generally horizontally disposed partition supported at said third mentioned imaginary plane by said support means,
said partition being formed with a plurality of spaced apart openings,
a plurality of open lower sided, generally cup-shaped burner units associated one with each of said openings,
said units being fabricated of a porous screen material and being complementary in shape to said openings and extending upwardly therethrough from the underside of said partition,
each of said burner units including a peripheral flange portion engaged with and secured to the underside of said partition around the periphery of the associated of said openings,
a layer of a porous wire screen of a smaller mesh size than said burner units disposed below said partition and being generally co-extensive therewith between said support means, and
a support grate supported in a position generally coplanar of said second mentioned imaginary plane and having a layer of rock-like material supported thereon for catching any excess food drippings or the like which may be produced when food is being cooked on said first mentioned grate and thereby minimize the transfer of such drippings toward said burner assembly.

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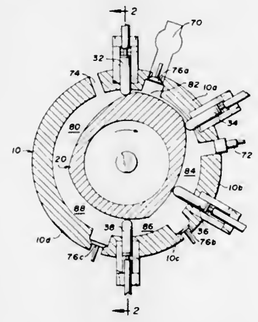
**3,931,806**
**METHOD AND APPARATUS FOR STORING A MEDIUM HEATED BY SOLAR ENERGY**
**Thomas Edward Hayes, Goshen, Ind., assignor to Johnson Service Company, Milwaukee, Wis.**
**Filed May 6, 1974, Ser. No. 467,400**
**Int. Cl.² F24J** *3/02*
**U.S. Cl. 126—400** **18 Claims**




17. In a heating system having a medium for storing heat and heating means for heating the medium, a method of storing heat in the medium comprising storing portions of the medium at different temperatures to permit heating of the portions independently of one another, supplying medium stored at the lowest temperature to said heating means for heating the medium, sensing the temperatures of the portions of the stored medium and the heated medium, causing the heated medium to be stored with a first portion of the medium which is stored at the highest temperature whenever the temperature of the first portion of the medium is nearest below the temperature of the heated medium, and causing the heated medium to be stored with a second portion of the medium which is stored at a lower temperature whenever the temperature of the second portion of the medium is nearest below the temperature of the heated medium.

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**3,931,807**
**ROTARY INTERNAL ENGINES**
**Abraham Bloom, 721 Arlington Ave., Plainfield, N.J. 07060**
**Filed Dec. 3, 1973, Ser. No. 421,100**
**Int. Cl.² F02B** *53/00*
**U.S. Cl. 123—8.05** **8 Claims**



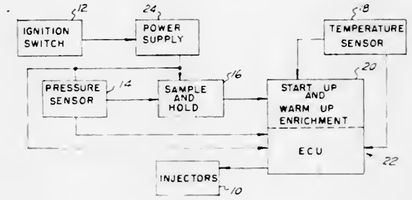
1. A rotary internal combustion engine designed to operate on a six-phase cycle which includes intake, compression, combustion, after burn, adiabatic expansion, and exhaust phases; said engine comprising a stator, a rotor mounted for rotation within said stator and defining a space therebetween, said rotor having a substantially semi-elliptical cross section, a shaft on which said rotor is mounted for rotation of said rotor relative to said stator, said shaft being mounted for concentric rotation relative to said stator, four spring-loaded, sliding abutments dividing said space into four working chambers, the volume of said four working chambers varying between a predetermined minimum and a predetermined maximum as said rotor rotates, said four working chambers including:
a. a first working chamber serving as an intake chamber and including a fuel-air mixture intake port and an associated check valve, a first one of said spring-loaded, sliding abutments mounted for continuous sealing engagement with said rotor and being located at the leading end of said first working chamber;
b. a second working chamber serving as a combustion chamber and including an opening adapted to receive a spark plug, a second one of said spring-loaded, sliding abutments being arranged to separate said first and second working chambers;
c. a third working chamber serving as an after burn chamber and including an air-intake port and an associated check valve, a third one of said spring-loaded, sliding abutments being arranged to separate said second and third working chambers;
d. a fourth working chamber serving as an adiabatic expansion chamber and including an air-intake port and an associated check valve, and an exhaust port adapted to act as a common exhaust port for said second, third and fourth chambers, a fourth one of said spring-loaded, sliding abutments arranged to separate said third and fourth working chambers;
e. said second, third and fourth spring-loaded, sliding abutments each having associated therewith an automatic hold-release mechanism operative to automatically hold the associated sliding abutment in a hold position out of engagement with said rotor on alternate revolutions of said rotor and to automatically release the associated sliding abutment into a release position in sealing engagement with said rotor on alternate revolutions of said rotor, said second sliding abutment arranged to be in said hold position when said third and fourth sliding abutments are in said release position during one revolution of said rotor, and said second sliding abutment arranged to be in said release position when said third and fourth sliding abutments are in said hold position during the next revolution of said rotor.



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**3,931,808**
**ALTITUDE COMPENSATION SYSTEM FOR A FUEL MANAGEMENT SYSTEM**
**Todd Leonard Rachel, Yorktown, Va., assignor to The Bendix Corporation, Southfield, Mich.**
**Filed Dec. 23, 1974, Ser. No. 535,399**
**Int. Cl.² F02D** *1/04;* **F02B** *3/00*
**U.S. Cl. 123—32 EA** **10 Claims**

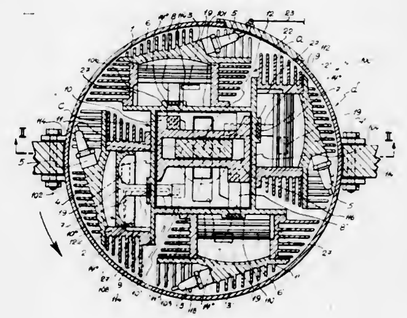
1. In a fuel management system for an internal combustion engine an altitude compensation system for adjusting the amount of fuel supplied to the engine for a period of time dependent upon engine temperature, said altitude compensation system comprises:
ignition switch means for initiating the starting of the engine;
a temperature sensing means for sensing the operating temperature of the engine and generating an electrical signal in response thereto;
air pressure sensing means responsive to the ambient air pressure of the engine and responsive to said ignition switch means for generating an electrical signal representing the ambient air pressure when said switch means is actuated;
fuel enrichment means responsive to said electrical signal from said temperature sensing means for increasing the amount of fuel supplied to the engine until said engine temperature reaches a predetermined value; and




control circuit means responsive to said ignition switch means for receiving and storing said electrical pressure signal from said air pressure sensing means and operative to apply said electrical pressure signal to said fuel enrichment means for modifying the amount of fuel supplied to said engine in accordance with ambient air pressure until said engine temperature reaches a predetermined value.

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**3,931,809**
**ROTARY INTERNAL COMBUSTION ENGINE**
**Francisco Barcelloni Corte, Corrientes 2021, and Pablo Bianco, Av. Pte. Julio A. Roca 610, both of Buenos Aires, Argentina**
**Filed Oct. 3, 1973, Ser. No. 402,978**
**Int. Cl.² F02B** *57/00, 57/06*
**U.S. Cl. 123—43 R** **4 Claims**



1. In a rotary internal combustion engine of the type which includes a fixed engine frame, a block rotatable about a block axis, an output shaft rotatable about a shaft axis, said shaft axis being offset from said block axis to define an eccentricity, at least one cylinder means including a cylinder housing, a piston and a drive rod, said piston having an edge surface slidably engaging said cylinder housing, said drive rod being connected to said piston, said cylinder means having a cycle including a power stroke, means for supplying a combustible mixture to said cylinder means, and ignition means for igniting said combustible mixture in said cylinder means, an improved means for driving said output shaft comprising, in combination:
a housing within said block and rotatable about said one block axis, said housing having at least a pair of opposing walls and substantially enclosing said output shaft, said housing defining a lubricant reservoir for said rotary engine;

a key member rigidly secured to said output shaft;
a yoke member slidably engaging said opposing walls of said housing, said key member slidably engaging said yoke member, said yoke member being rotatable substantially about said shaft axis; and
means for connecting said drive rod and said yoke member to define a connection point, said connection point being radially offset from said block axis throughout said cycle of said cylinder means;
said housing, yoke member, key member, connecting means and eccentricity cooperatively defining variable moment arm means for rotating said block and output shaft in response to said cylinder means, said variable moment arm means having a predetermined length at initiation of said power stroke and a maximum length during said power stroke.

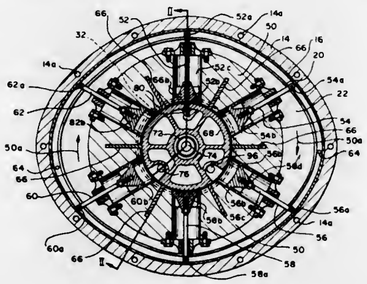
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**3,931,810**

## ROTARY-PISTON INTERNAL COMBUSTION ENGINE

**Wendell H. McGathey, 374 George St., P.O. Box 745, Fredericton, New Brunswick, Canada**

**Filed Sept. 27, 1973, Ser. No. 401,457**
**Claims priority, application Canada, July 6, 1973, 175899**
**Int. Cl.² F02B** *57/00*
**U.S. Cl. 123—44 E** **6 Claims**



1. A rotary-piston internal combustion engine comprising:
an elliptical engine casing having an inner wall and a central, cylindrical hub;
a retaining ring affixed to said hub;
a circular block centrally mounted within said casing for rotation therein and around said hub, and having at least one radial cylinder adapted to receive a piston for reciprocation therein;
at least one sealing vane on each side of said cylinder;
first spring means abutting each of said sealing vanes for urging each of said sealing vanes towards said hub to ride thereon;
second spring means within each of said sealing means for urging each of said sealing vanes towards said retaining ring to ride thereon;
a first pair of sealing rings mounted in said block adjacent to each of said vanes, each pair of sealing rings being spring urged to ride against said retainer ring and the wall of said elliptical casing respectively, said vanes and sealing rings preventing leakage of fuel vapor and combustion gases from said cylinder;
a vent in said cylinder block between said cylinders communicating at one end with the space between adjacent sealing vanes and at its other end with means connected to an intake manifold associated with said engine;
a second pair of sealing rings on each side of said port, mounted in said block and being spring urged against the wall of the elliptical casing;
a piston, disposed within said radial cylinder, having an associated push rod projecting therefrom toward said casing, said push rod terminating in a bearing adapted to be restrained against the inner wall of said casing;
an igniting means provided in said hub in radial alignment at or near the conjugate axis of said elliptical casing;
a fuel intake port and an exhaust port provided in said hub substantially opposite said igniting means, said fuel intake port and said exhaust port being approximately equidistant from the conjugate axis of said elliptical casing; and
central drive shaft means within said hub on which said cylinder block is mounted, for rotation therewith.

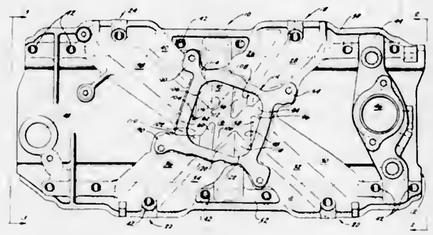
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**3,931,811**

## INDEPENDENT RUNNER INTAKE MANIFOLD FOR A V-INTERNAL COMBUSTION ENGINE HAVING EACH RUNNER IN A DIRECT PATH WITH A THROAT OF A FOUR-THROAT CARBURETOR

**James D. McFarland, Jr., Chatsworth, Calif., assignor to Edelbrock Equipment Co., El Segundo, Calif.**

**Continuation-in-part of Ser. No. 130,329, April 2, 1971, Pat. No. 3,744,463, which is a division of Ser. No. 280,295, Aug. 14, 1972, abandoned. This application Dec. 23, 1974, Ser. No. 535,284**
**Int. Cl.² F02B** *75/18*
**U.S. Cl. 123—52 M** **14 Claims**



6. An improvement in a manifold for use in a carbureted internal combustion engine, the improved manifold comprising:
a. a base;
b. a plenum body above the base defining a plenum chamber with a generally rectangular entrance, the plenum chamber being oriented at an acute angle to a bisecting plane through the longitudinal centerline of the manifold and with the sides of the entrance at an acute angle to the bisecting vertical plane; and
c. independent runners leading from the plenum chamber to exits from the runners in the base disposed for communicating the runners with the inlet ports of the engine, each runner having a quadrilateral flow cross section, and each runner being laid over from its entrance and along a length thereof with the roof of the runner further from the bisecting plane than the floor in any flow cross section in the laid over portion of the runner.

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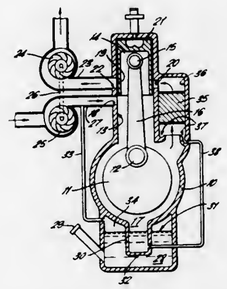
**3,931,812**

## INTERNAL COMBUSTION ENGINES

**Herbert Edward Ashfield, and Charles Hartley Hull, both of Huddersfield, England, assignors to David Brown Tractors Limited, Huddersfield, England**

**Filed Aug. 13, 1973, Ser. No. 387,738**
**Claims priority, application United Kingdom, Sept. 6, 1972, 41233/72**
**Int. Cl.² F02B** *33/04*
**U.S. Cl. 123—73 S** **6 Claims**

1. A multi-cylinder 2-stroke injection engine of the crankcase compression type comprising inlet, transfer and exhaust ports in each cyliner; a scavenge compressor including a turbine connected to the engine's exhaust ports and an impeller connected to the engine's inlet ports; a pressurized lubrication system including a sump containing oil under a pressure greater than atmospheric for forcing oil from the sump to lubricate the moving parts of the engine; means defining a separate crank chamber for each cylinder projecting below the level of oil in the sump; a transfer passage connecting each crank chamber to the transfer port in the associated cylinder;



and means on each chamber defining means providing an opening communicating each of said chambers with said sump for permitting oil to return from each crank chamber to the sump below said level.



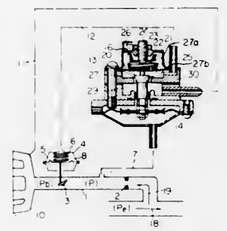
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**3,931,813**

## EXHAUST GAS RECIRCULATION CONTROL DEVICE

**Masakazu Horie, Tokyo; Takao Fukuhara, and Tetsuya Harada, both of Yokohama, all of Japan, assignors to Nissan Motor Company Limited, Yokohama, Japan**

**Filed July 25, 1973, Ser. No. 382,291**
**Claims priority, application Japan, July 26, 1972, 47-74798**
**Int. Cl.² F02M** *25/06*
**U.S. Cl. 123—119 A** **4 Claims**



1. An exhaust gas recirculation control device for use in an internal combustion engine having an intake manifold, an exhaust pipe and an exhaust gas recirculation pipe connecting said intake manifold to said exhaust pipe, said control device being operatively connected to said recirculation pipe and comprising:
an exhaust gas flow restrictor in said recirculation pipe;
an exhaust gas flow control valve mounted downstream of said restrictor;
a pressure responsive membrane arranged to communicate with said recirculation pipe between said restrictor and said flow control valve to respond to pressure generated therebetween;
a housing divides into a first chamber having an air bleed hole and a second chamber by a wall having a valve seat;
a valve normally seated on said valve seat to block communication between the first and second chambers, and fixedly connected to said pressure responsive membrane, said valve being biased by a spring, the stiffness of said spring being selected such that when a predetermined pressure is reached to act on said pressure responsive membrane, said spring yields and said valve begins to open, and when the pressure acting on said pressure responsive membrane gradually increases above and beyond said predetermined pressure, the degree of opening of said valve is gradually increased;
a diaphragm having a hole, disposed within the first chamber and dividing the first chamber into an atmospheric chamber communicating with the atmosphere through the air bleed hole and a vacuum chamber communicating with said atmospheric chamber through the hole, said diaphragm being engaged with said valve, said diaphragm preventing transmission of oscillations in the level of intake manifold vacuum to a vacuum responsive membrane and said flow control valve by dampening said oscillations;
a said vacuum responsive membrane communicated with said vacuum chamber of said first chamber and linked with said flow control valve;
the arrangement being such that when said predetermined pressure and pressures above and beyond said predetermined pressure act on said pressure responsive membrane, said valve leaves said valve seat causing intake manifold vacuum to communicate through said valve with said vacuum chamber of said first chamber and said air bleed hole and when air sucked through said air bleed hole reaches a predetermined maximum flow level, said intake manifold vacuum acts on said vacuum responsive membrane to open said flow control valve in dependence on the pressure level acting on said pressure responsive membrane.

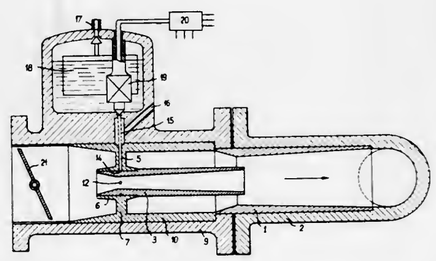
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**3,931,814**

## CYLINDER-INDUCTION RESPONSIVE ELECTRONIC FUEL FEED CONTROL CARBURETORS

**Jean-Pierre Rivere, Billancourt, France, assignor to Regie Nationale des Usines Renault, Billancourt and Automobiles Peugeot, Paris, both of, France**

**Filed Aug. 27, 1973, Ser. No. 391,796**
**Claims priority, application France, Sept. 28, 1972, 72.34360**
**Int. Cl.² F02B** *33/00*
**U.S. Cl. 123—119 R** **6 Claims**

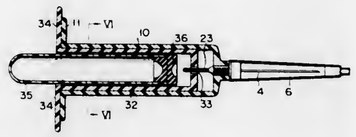


1. An electronically controlled carburetor for supplying fuel to cylinders of an internal combustion engine, said carburetor comprising:
a float chamber having a single outlet passage,
a doubled venturi including a central venturi having a neck,
an electromagnetic valve, disposed within the float chamber, for selectively opening and closing the outlet passage,
an emulsion tube defining a passage fluidly connecting said outlet passage to the neck of said central venturi,
a passage for air connected to said emulsion tube passage, and
an electronic computer for opening said electromagnetic valve in synchronism with the induction phase of the cylinders of an internal combustion engine.

### 3,931,815
### ASSEMBLY HAVING AN ADAPTER AND A HOLDER WITH A DOUBLE ENDED NEEDLE

**Nobuyuki Takatsuki, Tokyo, Japan, assignor to Jintan Terumo Company, Ltd., Tokyo, Japan**

**Continuation of Ser. No. 392,565, Aug. 29, 1973, abandoned. This application Jan. 2, 1975, Ser. No. 538,152**
**Int. Cl.² A61B 5/14**
**U.S. Cl. 128—2 F** **1 Claim**




1. A multiple sampling assembly comprising:
a tubular container having a closed end and an open end to which a stopper is sealingly attached;
a tubular container holder having an open end receiving said container, and a closed end to which a double-ended needle is fitted, one end of the needle being projected into the interior of the holder for piercing through the stopper into the interior of the container and the other end projected outside the holder;
a self-recoverable elastic sheath enveloping said one end of the needle and serving as a seal against the passage of a liquid from a vein, but being pierceable by the one end of the needle when the container is positioned for injection or sampling; and
a substantially cylindrical adapter detachably and slidably inserted in the holder receiving and keeping said tubular container substantially coaxial with said holder, said adapter having open and restricted ends, a plurality of circumferentially spaced ribs on the outer periphery thereof, an opening extending centrally through said restricted end and dimensioned to freely receive said one end of the needle and the elastic sheath therethrough, and means limiting the insertion of the adapter into the holder to a predetermined position relative to the holder, whereby to ensure between the closed end of the holder and the restricted end of the adapter a clearance sufficient to allow collapsing of the elastic sheath on piercing of said container by said one end of the needle, the inner diameter of the adapter being slightly larger than the outer diameter of the tubular container and the outer diameter of the adapter being slightly smaller than the inner diameter of the holder thereby to ensure the insertion of the tubular container into the holder in a position substantially coaxial with the holder, said adapter and container being removable from said holder to permit the holder to receive another tubular container of larger diameter.

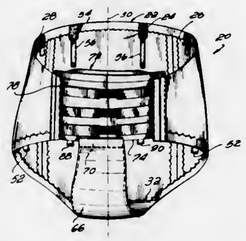
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### 3,931,816
### ADJUSTABLE ANTIPTOSIS CORSET

**Jacobo Waldmann, 77 Espejo St., Mendoza, Argentina**

**Filed Jan. 7, 1975, Ser. No. 539,104**
**Int. Cl.² A61F 5/02**
**U.S. Cl. 128—78** **6 Claims**

1. An adjustable antiptosis corset to support viscera in general, to compensate distention, lowering, as well as slackness of muscles, tendons and ligaments supporting the stomach, intestine, kidney, womb and the like organs of the human being, in order to correct fallen stomachs and the like, comprising a resilient fabric member to cover the rear and sides of part of the trunk of the wearer, and having a central portion and two side portions, said central portion being resilient in a generally vertical direction and said side portions being resilient in a generally horizontal direction with regard to the longitudinal axis of the human being, upon the corset being worn by the wearer, each side portion defining an outer substantial vertical edge, parallel clasp tape members projecting away at right angles from said outer edges, said central portion having a horizontal lower edge substantially perpendicular to said outer edges, a substantially trapezoidal ventral pocket member, having parallel larger and smaller edges, said pocket member including an outer non-resilient fabric wall member and an inner non-resilient fabric wall member linked together



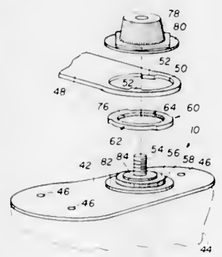

by their edges with the exception of the smaller edges which define top access opening to the pocket formed by said fabric wall members, the said outer fabric wall member having an outer face provided with clasp linking means for said clasp tapes, and an inner face on which a pair of spaced apart, from bottom to top diverging whale-bone-like reinforcing members are mounted, said whale-bone-like reinforcing members diverging towards said top access opening, said inner non-resilient fabric wall member having parallel whale-bone-like reinforcing members which are parallel to said parallel edges.

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### 3,931,817
### PEDIATRIC CORRECTIVE DEVICE

**Leonard Infranca, 222 Front St., Mineola, N.Y. 11501**

**Filed Jan. 27, 1975, Ser. No. 544,410**
**Int. Cl.² A61F 3/00**
**U.S. Cl. 128—80 A** **4 Claims**




1. A pediatric corrective device adapted to be attached to the soles of a patient's shoes so as to confine twisting traverses of said patient's legs to within selected limits, said device comprising a bar having an operative position connected in spanning relation between said shoes and having adjacent each end an opening therein with a stop projection on a wall bounding each said opening, a plate for attachment to each said shoe, a threaded member extending perpendicularly of each said plate defining the axis for said permissible twisting traverses of said shoe, each said threaded member having an operative position projected centrally through one of said end openings, respectively of said bar, a circular member fixedly mounted to each said plate at the base of said threaded member having teeth along its perimeter in encircling relation about said threaded member, and ring-like traverse-limiting members having inner and outer wall surfaces positionable in the clearance between each said circular member and said wall bounding said bar end opening, each of said traverse-limiting members having at least one traversing slot of a selected length in said outer wall surface for receiving said stop projection in projected position therein to thereby allow traversing movement until abutment by said bar stop with the opposite end walls bounding said traversing slot, and teeth along said inner wall surface of said traverse-limiting member to provide meshing engagement with said peripheral teeth of said circular member, whereby said meshing engagement holds said traversing slot in any selected traverse-limiting relation to said bar stop and enables adjustments therein merely by changing said teeth that establish said meshing engagement.

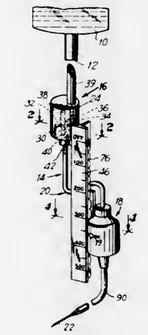


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### 3,931,818
### LIQUID ADMINISTRATION APPARATUS

**Michael Goldowsky, 222 Marthling Ave., Tarrytown, N.Y. 10591**

**Filed July 22, 1974, Ser. No. 490,777**
**Int. Cl.² A61M 5/14**
**U.S. Cl. 128—214 C** **11 Claims**



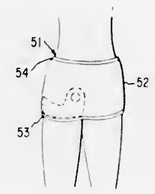

1. An administration set for the infusion of a supply liquid in a supply container into a separate liquid system comprising means for forming an access for liquid flow from the container, sump means having an air space and for providing an intermediate reservoir and flow of liquid, float chamber means for controlling liquid flow from said sump means, metering flow means for providing a conduit for said liquid from said sump means to said float chamber means and moveable support means for said float chamber means for maintaining a substantially constant head of fluid between said sump means and said float chamber means, infusion tubing for conducting liquid from said float chamber means to said separate liquid system, said metering flow means including first and second fluid passages for simultaneous liquid and air flow respectively at an air pressure other than atmospheric to eliminate substantial pressure differentials between said sump means and said float chamber means during delivery of said liquid to said separate liquid system and said second fluid passage extending into said sump means in communication with said air space, whereby as said supply container empties, the flow rate through said metering flow means remains substantially constant.

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### 3,931,819
### DRAINAGE BAG FOR HUMAN BODY

**Rosemary B. Weedle, Grafton, Va., assignor to Phillip M. Weddle, Grafton and Auzville Jackson, Jr., Richmond, both of, Va., a part interest to each**

**Continuation of Ser. No. 398,382, Sept. 18, 1973, abandoned. This application Jan. 30, 1975, Ser. No. 545,352**
**Int. Cl.² A61F 5/44**
**U.S. Cl. 128—283** **10 Claims**



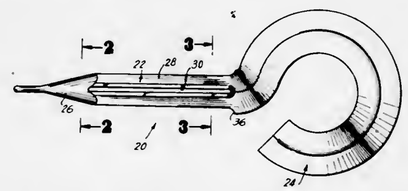

1. A drainage bag for attaching around a drainage opening in the human body and to be worn adjacent the skin comprising:
a soft layer of the peripheral dimensions of the drainage bag and having an opening therein,
a back plastic layer of the peripheral dimensions of the drainage bag and having an opening therein affixed to said soft layer to be coextensive therewith and having its opening coaxial with said soft layer opening,
a front plastic layer of the peripheral dimensions of the drainage bag and sealed about its periphery to said back plastic layer on the side of said back plastic layer not laminated to said soft layer,
a sealing washer on the back side of said drainage bag having an opening therein, and
a seal between the area surrounding said seal washer opening and the area surrounding said back plastic layer opening.

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### 3,931,820
### LUMEN REAMER

**Louis Bucalo, Holbrook, N.Y., assignor to Investors in Ventures, Inc., New York, N.Y.**

**Continuation-in-part of Ser. No. 359,429, May 11, 1973, Pat. No. 3,815,578. This application Apr. 18, 1974, Ser. No. 461,981**
**Int. Cl.² A61B 17/22**
**U.S. Cl. 128—304** **7 Claims**



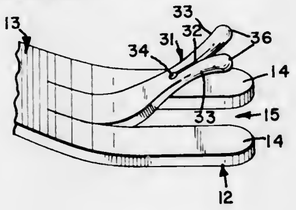

1. A reamer, particularly for removing mucosa from the lumen of a tubular body organ, comprising an elongated hollow, substantially rigid reaming portion and handle means fixed to and extending from said reaming portion at a rear end region thereof, said reaming portion having a free front end region distant from said rear end region thereof, having a central axis, being of a polygonal cross section, and including a plurality of substantially rigid, flat walls distributed about and extending parallel to said axis, said walls being stationary with respect to each other and being integral with said front free end portion, said reaming portion being formed with a

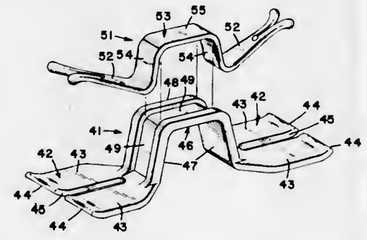
plurality of slots extending parallel to said axis rearwardly of said front free end portion at locations where said walls would intersect if said slots were not present, and said walls having at said slots reaming edges which remove a material such as mucosa with the material entering through the slots into the interior of the reaming portion.

## 3,931,821
## SUTURE BRIDGES

**Harold D. Kletschka, and Edson H. Rafferty, both of Minneapolis, Minn., assignors to Bio-Medicus, Inc., Minnetonka, Minn.**

**Continuation-in-part of Ser. No. 309,466, Nov. 24, 1972, Pat. No. 3,831,608. This application Aug. 26, 1974, Ser. No. 500,689**
**Int. Cl.² A61B *17/04***
**U.S. Cl. 128—335** **24 Claims**



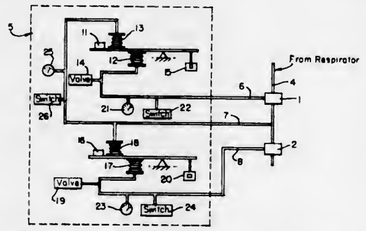

1. A surgical bridge for supporting incision sutures under tension comprising:
   a. an elongated lower bridge member having first and second foot portions joined by a bridge portion constructed to bridge an incision, the foot portions being constructed to engage the surface of a patient's skin on opposite sides of the incision;
   b. an elongated upper bridge member having first and second arm portions joined by a connecting portion;
   c. and means associated with at least one of said lower and upper bridge members for mateably interlocking the upper bridge member with the lower bridge member;
   d. each of said arm members extending from the connecting portion in cantilever fashion with the extreme end of the arm members defining an elevated suture support point which overlies and is spaced from said opening in the associated foot portion.

14. A surgical bridge for supporting incision sutures under tension comprising:
   a. an elongated bridge member having first and second foot portions joined by a bridge portion constructed to bridge an incision, the foot portions being constructed to engage the surface of a patient's skin on opposite sides of the incision;
   b. each of said foot portions having an opening through which a suture may pass;
   c. first and second arm members for the first and second foot portions, respectively, each arm member extending longitudinally from the bridge portion in cantilever fashion with its extreme end defining an elevated suture support point which overlies and is spaced from said opening in the associated foot portion;
   d. at least one of said arm members defining a suture tying device, comprising
      1. a bifurcating slot extending longitudinally from the end of the arm member to an inner point thereof to define a pair of leg members, the leg members being resiliently movable relative to each other and capable of being squeezed together;
      2. an aperture formed through the arm member at said inner point and communicating with the bifurcating slot, the aperture having a lateral dimension greater than the smallest lateral dimension of the slot, whereby the aperture remains open with the resilient leg members squeezed together;
      3. and said leg members defining a region of laterally reduced outer dimension between said inner point and said end, whereby said suture length can be wrapped around the leg members as said reduced area to squeeze the leg members together.

## 3,931,822
## AUTOMATIC ALTERNATING CUFF ENDO TRACHEAL TUBE INFLATOR

**Frank N. Marici, 2 Mineola Ave., Roslyn, N.Y. 11576**

**Filed Feb. 26, 1974, Ser. No. 446,057**
**Int. Cl.² A61M *16/00***
**U.S. Cl. 128—351** **11 Claims**




1. An alternating cuff endo-tracheal tube including,
an endo-tracheal tube,
at least two cuffs surrounding said endo-tracheal tube,
each of said cuffs capable of forming an air tight seal against the trachea when inflated, and
a control unit sensing pressure in each of said cuffs and in said endo-tracheal tube and controlling the pressure in both said cuffs, said control unit including, for each of said cuffs,
a moveable member urged in one direction to pressurize the associated cuff,
means responsive to pressurization of said endo-tracheal tube to further urge said moveable member in said one direction to increase pressure in said associated cuff,
and deflating means, when energized, to urge said moveable member in said other direction to deflate said associate cuff, and
timing means, when activated to energize and deenergize both said deflating means alternately and in sequence.

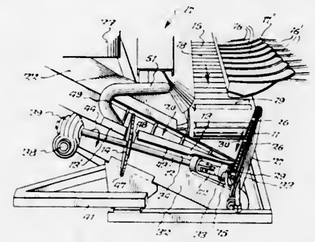
## 3,931,823
## CANE SEPARATOR FOR HARVESTING MACHINE

**Charles G. Burton, Lewiston, N.Y., assignor to Chisholm-Ryder Company, Inc., Niagara Falls, N.Y.**

**Filed Jan. 17, 1973, Ser. No. 324,545**
**Int. Cl.² A01D *46/00***
**U.S. Cl. 130—30 R** **9 Claims**

1. A cane separator for a grape harvesting machine comprising a first conveyor for receiving harvested material including grapes and cane, said first conveyor having first and second opposite sides, a second conveyor oriented transversely to said first conveyor to provide a junction therewith, said second conveyor having third and fourth opposite sides, said first conveyor terminating proximate said third side and being above said second conveyor at said junction so as to cause said second conveyor to receive grapes dropped on it from said first conveyor, and cane removing means positioned beyond said junction and above said second conveyor for engaging and removing cane which passes beyond said junction, said cane removing means including first and second cane engaging means, said first cane engaging means being located proximate said fourth side, and said second cane





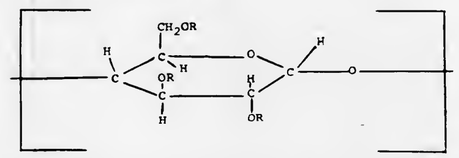
engaging means extending across said second conveyor and being oriented substantially lengthwise of said second side, said second side being located upstream of said first side in relation to the direction of movement of said second conveyor, and driving means for driving said cane engaging means.

## 3,931,824
## SMOKING MATERIALS

**Ralph R. Miano, and Charles H. Keith, both of Charlotte, N.C., assignors to Celanese Corporation, New York, N.Y.**

**Continuation of Ser. No. 395,500, Sept. 10, 1973, abandoned, which is a continuation of Ser. No. 52,725, July 6, 1970, abandoned, which is a continuation-in-part of Ser. No. 774,834, Nov. 1, 1968, abandoned, which is a continuation-in-part of Ser. No. 696,699, Jan. 10, 1968, abandoned. This application Feb. 14, 1975, Ser. No. 550,081**
**Int. Cl.² A24B *15/00*; A24D *1/18***
**U.S. Cl. 131—2** **19 Claims**

**10.** A smoking material comprising a combustible organic material and a particulate inorganic filler, said combustible organic material consisting essentially of one or more cellulose derivatives, their salts and mixtures thereof having the recurring anhydroglucose unit:



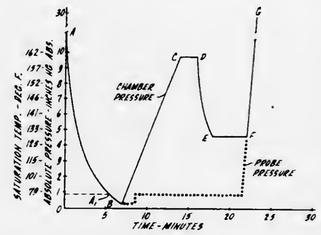

wherein at least one R is selected from the group consisting of lower alkyl, carboxy lower alkyl, hydroxy lower alkyl groups and mixtures thereof; and the remaining Rs are hydrogen and the average degree of substitution is from about 0.2 to 3.0; said combustible organic material and said particulate inorganic filler being present in a weight to weight ratio of from about 85:15 to about 15:85.

## 3,931,825
## METHOD FOR TREATING TOBACCO

**Leonard T. DeCoursey, Hardinsburg, Ky., assignor to John Mohr & Sons, Chicago, Ill.**

**Filed Dec. 19, 1973, Ser. No. 426,112**
**Int. Cl.² A24B *1/02, 3/02, 3/04, 3/12***
**U.S. Cl. 131—140 A** **9 Claims**

1. In a method of moistening compressed tobacco the steps of:
   subjecting compressed tobacco containing substantial quantities of non-condensibles to an absolute pressure below the flash point of the non-condensibles,
   thereafter, and commencing at a time when said tobacco is subjected to a first low absolute pressure, passing steam generally radially inwardly only through the tobacco throughout substantially the entire height of the tobacco and simultaneously withdrawing unused steam and non-condensibles from the central zone of said tobacco,
   controlling the steam flow to the tobacco in such fashion that the temperature of the tobacco does not exceed a pre-determined maximum, the tobacco being maintained at a substantially constant pressure for a period of time at the end portion of the aforesaid controlled steam flow,
   terminating the steam flow after substantially the entire mass of tobacco has attained the pre-determined maximum temperature and the absolute pressure of the system has increased to a level substantially corresponding to said temperature but below atmospheric,
   lowering the absolute pressure from the pressure existing while the mass of tobacco was subjected to the pre-determined maximum temperature to an absolute pressure above the initial low absolute pressure,

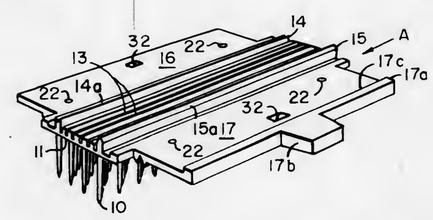



   subjecting the tobacco at the last mentioned pressure to steam which is passed generally radially inwardly only through the tobacco throughout substantially the entire height thereof and simultaneously withdrawing unused steam and non-condensibles from the central zone of said tobacco, the tobacco being maintained at a substantially constant pressure for a period of time near the end portion of the last mentioned subjection to steam, and, upon conclusion of the subjection of the tobacco to the last mentioned steaming,
   thereafter raising the pressure to which the interior and exterior of the mass of tobacco is subjected to atmospheric pressure.

## 3,931,826
## BRUSH AND METHODS FOR MANUFACTURING SAME

**Howard R. Moon, Fort Atkinson, Wis., assignor to Wahl Clipper Corporation, Sterling, Ill.**

**Filed July 26, 1974, Ser. No. 492,234**
**Int. Cl.² A45D *1/00***
**U.S. Cl. 132—9** **19 Claims**

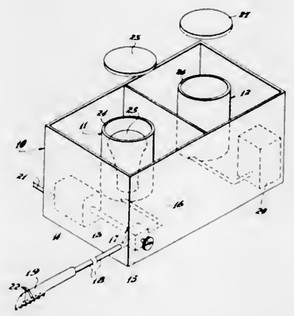



1. A brush element comprising a center section having an arcuate cross section, a plurality of spaced teeth extending from the outside of said section, and means for holding the side edges of said section together to maintain said section in arcuate form.

3,931,827
## METHOD AND APPARATUS FOR STYLING SYNTHETIC WIGS

Edward H. Coleman, 2226 Fulton Ave., Cincinnati, Ohio 45206

Filed Sept. 17, 1973, Ser. No. 397,677
Int. Cl.[2] A41G 3/00
U.S. Cl. 132—56 2 Claims

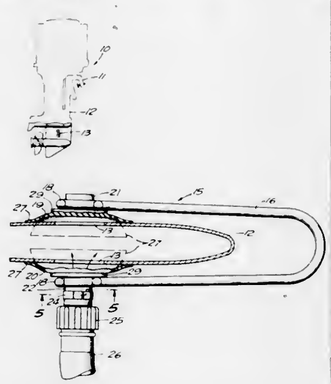


1. A method of styling synthetic wigs having synthetic fibers, the method comprising the steps of:
steaming and stroking said wig fibers and thereby disentangling the fibers, straightening and softening said fibers and relaxing fiber memory of any prior set,
putting the wig fibers up into the desired style,
subjecting the put up fibers to steam to further relax fiber memory of any prior set, and
thereafter cooling said fibers by subjecting the fibers to a temperature of approximately 32°F. for approximately 5 minutes, while the fibers are put up, in order to set them in the put up style.

3,931,828
## FLUSHING ACCESSORY FOR OUTBOARD MOTORS

Roger J. Lawler, Lakewood, Calif., assignor to Quik-N-Easy Products, Inc., Monrovia, Calif.

Filed Jan. 2, 1975, Ser. No. 538,039
Int. Cl.[2] B08B 3/02, 9/00
U.S. Cl. 134—167 R 6 Claims

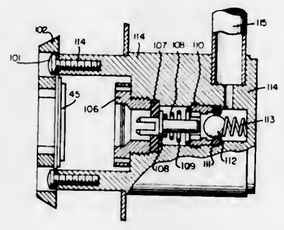


1. A self-gripping flushing accessory quickly attachable to and detachable from the cooling water intake openings of an outboard marine engine without need for tools or fasteners while flushing the engine cooling passages, said accessory having a U-shaped main body equipped between the free ends of the legs thereof with resilient sealing means facing toward one another, at least one of said resilient sealing means being provided with a water flow passage readily connectable to a source of water, said U-shaped main body being sized to straddle the engine drive shaft housing with the legs of said main body holding said resilient sealing means seated over a respective one of said cooling water inlets with a snug substantially water-tight self-gripping fit whereby the engine water circulating pump is operable to circulate cooling and flushing water through the engine cooling passages without need for submerging said engine cooling water inlets in a body of water.

3,931,829
## VALVED SERVICE OUTLET

David A. McWhinnie, Jr.; Laurence G. Viero, and Donald J. Freeburg, all of Chicago, Ill., assignors to Oxequip Health Industries, Chicago, Ill.

Continuation of Ser. No. 375,302, June 29, 1973, abandoned. This application Nov. 26, 1974, Ser. No. 527,387
Int. Cl.[2] F16L 29/00
U.S. Cl. 137—329.1 5 Claims



1. In the known type of valved service outlet for oxygen administration and the like comprising:
a. a valve body having a longitudinal passage open at one end, closed at the other and having a transverse supply port extending outwardly from the closed end of said passage,
b. longitudinally displaceable valve means located intermediate the ends of said longitudinal passageway, which valve means in one position is adapted to permit gas flow through said longitudinal passageway and in the other position block gas flow through said passageway,
c. a cover plate secured to the valve body and overlying the open end of the passageway and having an opening for insertion of a connecting tube which is adapted to engage said valve means and to move it longitudinally from one position to another,
d. guiding and locking means interiorly of the cover plate for guiding and locking a connecting tube into an inserted position, and
e. a door interiorly of the cover plate and overlying the opening therein and swingable inwardly therefrom upon insertion of said connecting tube,
the improvement which comprises:
said guiding and locking means comprising at least one hemispherical cam surface composed of very hard metal.

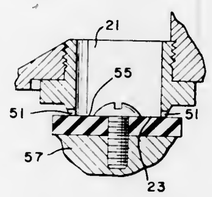
3,931,830
## PUMP SYSTEMS FOR LIQUIDS

Darrell D. Gritz, Little Rock, Ark., assignor to Jacuzzi Bros. Incorporated, Little Rock, Ark.

Division of Ser. No. 327,955, Jan. 30, 1973, Pat. No. 3,814,543. This application Mar. 20, 1974, Ser. No. 452,745
Int. Cl.[2] F16K 31/12, 15/00; F04B 49/00
U.S. Cl. 137—505.45 2 Claims

1. A pressure regulating valve assembly comprising a housing having an input opening for receiving liquid under pressure, an outlet opening for discharging such liquid at a reduced pressure, and a valve component and associated valve seat component intermediate said inlet and outlet openings and in the flow path between them, one of said components having a notch in a surface facing the other component, and said other component including a disc of compressible material and a solid backing for said disc to preclude flexing thereof while enabling compression of said disc upon closing of said valve component upon said seat component, said notch being of a depth such that upon closing of said valve upon said valve seat, said disc material will compress into and fill said notch to block flow therethrough.

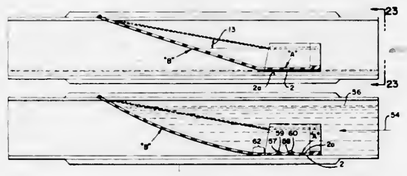




3,931,831
## ELASTIC CHECK VALVE AND METHOD OF CONSTRUCTION

George F. French, 4009 Linden St., Oakland, Calif. 94608

Filed May 2, 1974, Ser. No. 466,288
Int. Cl.[2] F16K 15/14
U.S. Cl. 137—525 8 Claims

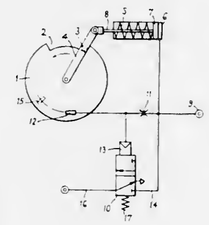


1. An article of manufacture for a check valve in an enclosed curvilinear conduit comprising:
a. an elastic, flexible semi-circular elongated "foot" portion of curvilinear cross section dimensioned for non-sealing and registered sealing engagement with approximately one half the cross sectional surface of an elongated portion of said matching curvilinear conduit and having an upstream end and a downstream end;
b. said foot portion having means for attaching its upper edges to the side walls of said conduit;
c. an elastic, flexible elongated "bowsprit" portion having that shape resulting from a curvilinear tube intersecting said conduit at an angle wherein said "bowsprit" is that portion of said curvilinear tube lying below the intersection line of said curvilinear tube and said conduit;
d. said "bowsprit" portion having a width at its downstream end substantially equal to the inside diameter of said conduit and said "foot" portion and tapering to a blunt circular point at its upstream end;
e. said downstream end of said "bowsprit" portion is connected to said upstream end of said "foot" portion;
f. said "bowsprit" portion having edges which lie in a substantially flat plane corresponding to said intersection line of said curvilinear tube and said conduit;
g. said "bowsprit" portion having means adapted for attachment of said edges to the side walls of said conduit wherein said edges are adapted for attachment to said conduit along a line lying in a single flat plane which extends from a point on the top edge of said conduit to points lying on approximately the mid point of said conduit; and
h. said "foot" portion and said "bowsprit" portion are capable of flexing in a reverse curved direction upon application of external pressure and have a "memory" for automatically returning to their original curvatures upon the removal of such external pressure.

3,931,832
## TIMING DEVICE FOR PNEUMATIC CONTROL SYSTEMS

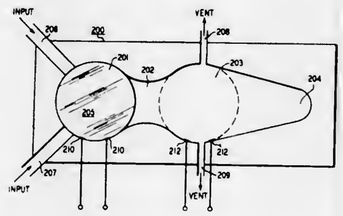
Karl Hodler, 119 Brunishalde, CH 5611 Buttikon AG, Switzerland, and Erich Walter, 124 Harksheider Weg, D 2085 Quickborn, Germany

Continuation of Ser. No. 344,064, March 23, 1973, abandoned, which is a continuation of Ser. No. 112,596, Feb. 4, 1971, abandoned, which is a continuation-in-part of Ser. No. 774,824, Nov. 12, 1968, abandoned. This application June 27, 1974, Ser. No. 483,518
Claims priority, application Germany, Dec. 8, 1967, 1650450
Int. Cl.[2] F15B 21/10
U.S. Cl. 137—624.11 6 Claims



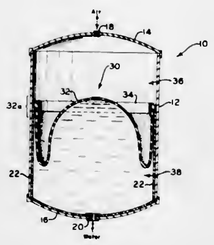
1. A timing device for a pneumatic control system of the type comprising a conduit (9) for the passage of successive pneumatic signals said signals being constituted by changes in pneumatic pressure in said conduit, and a valve (10) controlling the passage of said signals through said conduit, said timing device comprising,
a control element (15) movable over a predetermined path,
a control spring (26) coupled to said control element for moving said control element over said path from a first position to a second position,
a housing (6) connected to said conduit, said housing containing pressure-responsive means (7) movable in response to pneumatic pressure,
coupling means (1, 3) coupling said pressure-responsive means to said control element so that when said pressure-responsive means is supplied with energy by a signal received through said conduit, energy is stored in said control spring,
a return spring (5) against which said pressure-responsive means operates,
a balance wheel (25) coupled to said control element to maintain the movement of said control element at a constant speed,
means (12) connected between said valve and control element and through which said valve is actuated by said control element to permit passage of the signal, when said control element is moved from the first position to the second position, said coupling means comprising a locking member (3) for releasing or locking said control element in response to the pneumatic signal received through said conduit.

### 3,931,833
### FLUIDIC DEVICE
**Donald Lee DeGregory, Reynoldsburg, Ohio, assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**
**Filed Oct. 2, 1974, Ser. No. 511,435**
**Int. Cl.² F15C 3/06**
**U.S. Cl. 137—829** **6 Claims**



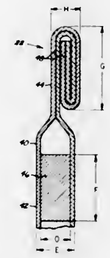

1. A fluidic device comprising:
a housing having operate and release compartments separated by an interconnecting restrictive passage having a cross-sectional area smaller than the cross-sectional area of either compartment, the release compartment having a deformation chamber connecting thereto;
a deformable moving element disposed in the housing, the element having sufficient size with respect to the cross-section of the passage and sufficiently high surface tension to prevent free movement of the element through the passage; and
pressure means connecting with the operate and release compartments for forcing the element into the deformation chamber and increasing potential energy of the element by an amount which is sufficient to effect the element's movement from the deformation chamber through the restrictive passage to the operate compartment upon termination of the pressure.

### 3,931,834
### EXPANSION TANK DIAPHRAGM ASSEMBLY
**Eugene Caillet, St Marys, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio**
**Filed June 26, 1974, Ser. No. 483,188**
**Int. Cl.² F16L 55/04**
**U.S. Cl. 138—30** **10 Claims**




1. In combination with an expansion tank as used in pressurized water systems wherein one portion of the tank is occupied by water while the other portion is occupied by a gas, said tank having a liner mounted within the tank covering the walls of the tank that are in contact with the water, an assembly for separating the two portions of the tank at the wall/ liner interface into non-communicating chambers comprising:
a a substantially flexible elastomeric diaphragm mounted within the tank at the wall/liner interface, said diaphragm having at least two annular, outward projecting, wedge-shaped fins positioned around the outward facing peripheral surface thereof such that one of the fins is in contact with the tank wall at the interface while the other of said fins is in contact with the liner, and
b a continuous and substantially rigid backup ring positioned on the inward facing peripheral surface of the diaphragm and having a diameter less than the diameter of the liner but greater than the relaxed diameter of the diaphragm such that the fins are in compression and in sealing engagement with said tank and liner respectively when the assembly is inserted into the tank.

### 3,931,835
### LONG TERM VENT STRUCTURE
**Joseph C. McGuire, Kennewick, Wash., assignor to McDonnell Douglas Corporation, Long Beach, Calif.**
**Division of Ser. No. 296,680, Oct. 11, 1972. This application Jan. 28, 1974, Ser. No. 436,900**
**Int. Cl.² F15D 1/02**
**U.S. Cl. 138—42** **5 Claims**




1. A vent structure comprising:
a tubing of predetermined length and size, said tubing including an undeformed normally lower portion and a formed normally upper portion, and said upper portion being flattened and folded against itself; and
means provided in said upper tubing portion for separating its opposing proximate faces to prevent sintering and similar closures thereof whereby proper venting of fluid flow can be maintained through said vent structure to produce a reliable, long term operation, vent structure.

### 3,931,836
### LAMINATED POLYMERIC ARTICLES AND PROCESS FOR THE PRODUCTION THEREOF
**William Charles Thiele, Somerville, N.J., assignor to Johns-Manville Corporation, Denver, Colo.**
**Continuation-in-part of Ser. No. 225,662, Feb. 11, 1972. This application Oct. 15, 1973, Ser. No. 406,750**
**Int. Cl.² F16L 9/16, 9/12; B32B 31/06, 27/12**
**U.S. Cl. 138—141** **21 Claims**

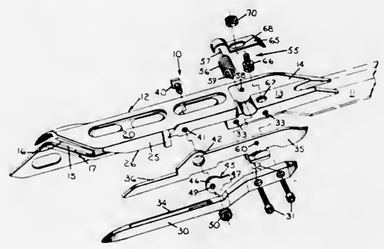
1. In a process for bonding together a first resinous layer containing as a major component a first polymeric resin, said first polymeric resin being selected from the group consisting of poly(vinyl acetate), poly(methyl methacrylate), polystyrene, polybutene, poly(vinyl butyral) and the polymeric olefinic chlorides, and a second resinous layer containing as a major component a second polymeric resin, said second polymeric resin being thermosetting, dissimilar to and substantially chemically unbondable directly to said first polymeric resin and selected from the group consisting of epoxy resins, polyester resins and phenolic resins; which process comprises forming a surface solution, on the surface of said first resinous layer, of said first polymeric resin and a coating comprising a butadiene resin and a mutual solvent for said first polymeric resin and said butadiene resin, where said butadiene resin is substantially curable to said second polymeric resin and substantially chemically unbondable directly to and substantially incompatible with said first polymeric resin other than in a solvated state; at least partially fusing said surface solution; applying to said coating said second resinous layer containing said second polymeric resin in a substantially uncured form; and curing said second polymeric resin and simultaneously bonding said second resinous layer to said coating:
the improvement which comprises incorporating into said coating said second polymeric resin and a curing agent for said second polymeric resin, and during the curing step bonding said second polymeric resin in said coating to said second polymeric resin in said second resinous layer.

13. A laminated article having improved bonding between the laminae comprising a first resinous layer containing as the principal component a polymeric olefinic chloride resin selected from the group consisting of polyvinyl chloride and copolymers of vinyl chloride and vinylidene chloride, and a second resinous layer containing as the principal component an epoxy resin, said first and second polymeric resins being bonded into a laminate by a coating therebetween and in intimate contact therewith, said coating initially comprising:
a a butadiene resin, which is thermoplastic, substantially curable to said epoxy resin and substantially chemically unbondable directly to and substantially incompatible with said polymeric olefinic chloride resin other than in a solvated state:
b said epoxy polymeric resin:
c a mutual solvent for at least said polymeric olefinic chloride resin and said butadiene resin: and
d a curing agent for said epoxy resin;
said coating and said polymeric olefinic chloride resin forming a fused surface solution on the surface of said first resinous layer and said coating and said second resinous layer being chemically bonded; and
said epoxy resin and said butadiene resin being present in said coating in a weight ratio of epoxy resin to butadiene resin in the range of 0.175:1 to 0.70:1.

18. The laminated article of claim 16 wherein said laminae comprise a poly(vinyl chloride) hollow inner cylinder and an outer layer thereupon of epoxy resin matrix reinforced with glass fiber, and said coating bonding said inner cylinder and said outer layer comprises acrylonitrile-butadienestyrene resin, epoxy resin, methyl ethyl ketone, and a curing agent comprising an equimolar complex of diacetoneacrylamide and diethylenetriamine.

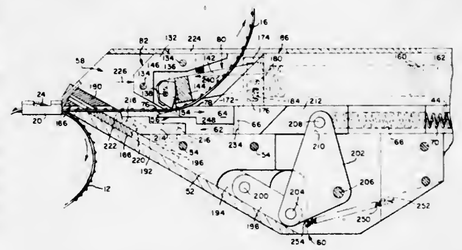


### 3,931,837
### CARRIER FOR SHUTTLELESS LOOM
**Richard L. Volpe, Hopedale, Mass., assignor to Rockwell International Corporation, Pittsburgh, Pa.**
**Filed Mar. 5, 1975, Ser. No. 555,548**
**Int. Cl.² D03D 47/22**
**U.S. Cl. 139—122 N** **11 Claims**




1. An improved carrier for inserting weft yarn into the shed formed between warp yarns on a loom of the type in which the weft yarn is supplied from a source located outside of the warp and is inserted into the shed by a carrier which is attached to a reciprocating inserter, said improved carrier, comprising:
1. a main body portion which includes:
a. a shank portion for attachment to the reciprocating inserter,
b. a back wall extending outwardly from said shank portion, said back wall including means defining a yarn guide,
c. a top wall extending forwardly from said back wall,
d. a front wall extending downwardly from said top wall a distance less than the height of said back wall, and
e. a yarn gripping surface on the bottom surface of said front wall,
2. a yarn guide finger secured at one end to said shank portion and extending outwardly therefrom in the same direction as said front wall and located in underlying relationship with respect to said gripping surface thereon;
3. a gripper finger having a gripping surface for cooperation with said yarn gripping surface on said front wall,
4. means mounting said gripper finger on said front wall for rotation about a pivot axis wherein said means provides for variation in the spatial location of the pivot axis, and
5. a biasing means for urging said gripper finger into gripping contact with said yarn gripping surface.

### 3,931,838
### BUNDLE STRAPPING TOOL
**Johannes Cornelis Wilhelmus Bakermans, Etters, Pa., assignor to AMP Incorporated, Harrisburg, Pa.**
**Filed Nov. 25, 1974, Ser. No. 526,550**
**Int. Cl.² B21F 9/02**
**U.S. Cl. 140—123.6** **18 Claims**

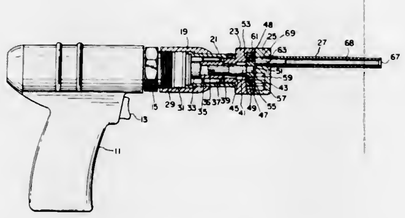


1. A tool adapted to receive the free end of a self-locking bundle tie which has a loop disposed about a bundle, to tighten said loop by applying tension to the free end of the bundle tie, to discontinue tightening said loop when the desired tension is achieved within the loop by relaxing the tension applied to the free end of the bundle tie, and to cut the free end of the bundle tie after the tension has been relaxed; said tool comprising;
plate means;
tensioning means including
a bell crank lever mechanism having pawl means mounted on one end, said free end of the bundle tie extending between said pawl means and said plate means,
mounting means for mounting the bell crank lever mechanism for reciprocal movement and also for swinging shifting movement between a first tension applying position and a second position, and
reciprocal means interconnected with the mounting means and operable to reciprocate the mounting means and the bell crank lever mechanism, said tensioning means being operable when the bell crank lever mechanism is in its first position to exert tension on the free end of the bundle tie during reciprocation of the bell crank lever mechanism in one direction to tighten said loop disposed about said bundle, and, when the bell crank lever mechanism is in its second position being unable to tighten said loop about said bundle during reciprocation of the bell crank lever mechanism in said one direction; and

cutting means operable to cut the free end of the bundle tie during reciprocation of the bell crank lever mechanism in said one direction only after said bell crank lever mechanism has shifted to the second position.

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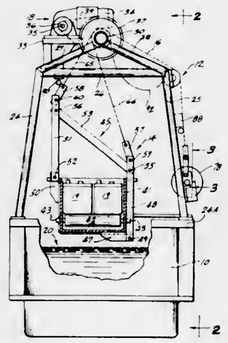
**3,931,839**
**MULTIPLE BIT WIRE WRAP TOOL**
**Per Aron Burman, Temple City, Calif., assignor to Burroughs Corporation, Detroit, Mich.**
**Filed Mar. 4, 1975, Ser. No. 555,237**
**Int. Cl.² B21F** *3/00*; **B65H** *81/06*
**U.S. Cl. 140—124** **19 Claims**



1. In a multiple bit wire wrap tool:
an axially rotatable driveshaft;
a swivel block having opposite planar surfaces;
an eccentric means connecting said driveshaft to one planar surface of said swivel block for circumferentially rotating said swivel block about the axis of said rotatable driveshaft and for maintaining said swivel block in a predetermined, constant spatial orientation;
a plurality of eccentric members each connected at one end to the opposite planar surface of said swivel block for rotation of each of said one ends about the respective axis of each of said eccentric members upon circumferential rotation of said swivel block thereby effecting axial rotation of respective other ends of said eccentric members; said respective other ends being adapted to receive respective ones of a plurality of wire wrapping bits for eccentric rotation therewith.

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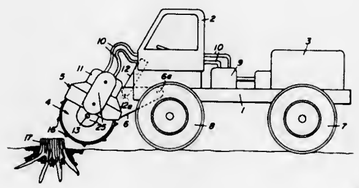
**3,931,840**
**ACID FILLING APPARATUS FOR STORAGE BATTERIES**
**Helmut Kurt Rinnert, Yurba Linda, Calif., assignor to Globe-Union Inc., Milwaukee, Wis.**
**Filed Nov. 14, 1974, Ser. No. 523,692**
**Int. Cl.² B65B** *3/04*
**U.S. Cl. 141—1** **18 Claims**



17. A method of simultaneously filling a plurality of storage batteries having filling ports with acid, comprising:
positioning said batteries over an open topped tank of acid with said filling ports facing upwardly;
inclining said batteries at a predetermined angle of inclination to determine the level of acid which remains in the batteries after filling;
immersing batteries into said tank for a preselected amount of time to fill said batteries with acid;
raising said batteries out of said tank while maintaining said batteries in an inclined position.

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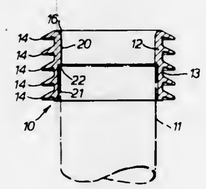
**3,931,841**
**METHOD OF COMMINUTING TREE STUMPS**
**Hans Blum, Siegfriedstrasse 14, 6841 Bobstadt, Germany**
**Division of Ser. No. 313,067, Dec. 7, 1972, Pat. No. 3,868,980.**
**This application Aug. 9, 1974, Ser. No. 496,440**
**Claims priority, application Germany, Mar. 21, 1972, 2213667**
**Int. Cl.² B27M** *1/00*; **A01G** *23/08*; **B27C** *9/01*; **B27G** *13/04*
**U.S. Cl. 144—309 R** **14 Claims**



1. A method of comminuting a tree stump employing a heavy cylindical cutting roller having a plurality of spaced cutting knives projecting throughout its peripheral surface; the steps comprising, rotating the roller at high speed and moving it forwardly against the side of the stump with the knives moving from an upper portion of the stump to a lower portion of the stump to cut chips from the stump generally along the grain of the stump.

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**3,931,842**
**GOLF TUBE COLLAR**
**David John White, 8 Birches Close, Crowborough Sussex, England**
**Filed June 18, 1974, Ser. No. 480,321**
**Claims priority, application United Kingdom, June 20, 1973, 29281/73**
**Int. Cl.² A63B** *55/00*
**U.S. Cl. 150—1.5 R** **3 Claims**

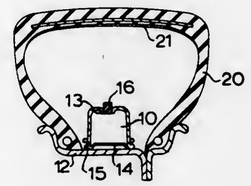


1. A collar for a golf bag tube comprising:
a plastic annular member having a first and second open end and including axially directed inner and outer surfaces;
said outer surface including a plurality of axially spaced projections thereon, said projections comprising circumferential flanges which slope away from said first open end of said plastic member; and,
said inner surface including a first part and a second part of lesser diameter, the first and second part including a radially extending step therebetween for engaging the end of said golf bag tube.

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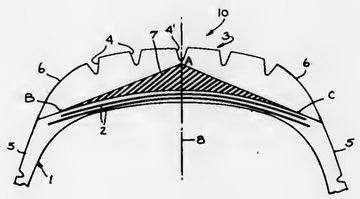
**3,931,843**
**PNEUMATIC TIRES**
**Reginald Harold Edwards; Geoffrey Lionel Coulter, both of Sutton Coldfield, and Alan Michael Dodd, Walsall, all of England, assignors to Dunlop Limited, London, England**
**Continuation of Ser. No. 353,938, April 24, 1973, abandoned.**
**This application Dec. 23, 1974, Ser. No. 536,972**
**Claims priority, application United Kingdom, May 3, 1972, 20502/72**
**Int. Cl.² B60C** *17/00*, *17/04*
**U.S. Cl. 152—330 L** **15 Claims**



1. A pneumatic tire and rim assembly capable of being run in a deflated condition comprising:
a. a pneumatic tire having an interior surface and mounted upon a rim to define an inflation chamber, said assembly having means to prevent the tire beads from becoming dislodged from the rim when operated in a deflated condition;
b. means at least for lubricating contacting interior surfaces of the tire when operated in a deflated condition comprising a composition having a plurality of ingredients at least one of said ingredients being a lubricating material;
c. said composition being carried in the assembly in at least two parts, said parts containing different ingredients or combination of ingredients;
d. enclosing means for enclosing at least one of said parts of the composition separately from the other;
e. the other part being carried on the interior surface of the assembly;
f. said enclosing means being adapted to release its part of the composition into said inflation chamber upon deflation or substantial loss of inflation pressure to permit the parts of the composition to mix to bring all the ingredients of the composition together.

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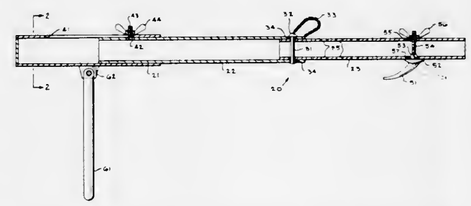
**3,931,844**
**CUSHIONED TREAD TIRE**
**Henri J. Mirtain, Compiegne, France, assignor to Uniroyal, S.A., Clairox, France**
**Filed May 14, 1973, Ser. No. 359,936**
**Int. Cl.² B60C** *9/18*
**U.S. Cl. 152—360** **8 Claims**



1. A pneumatic vehicle tire comprising:
a radial ply carcass;
first and second sidewalls overlying the lateral portions of said carcass;
a tread constituted by a rubber compound overlying the crown region of said carcass;
a breaker interposed between said tread and said crown region of said carcass in circumferentially surrounding relation to the latter; and
a cushion constituted by a rubber compoung interposed between said breaker and said tread and extending symmetrically about the median equatorial plane of the tire,
the radial thickness of said cushion being a maximum in the area of the median equatorial plane of the tire and tapering to a minimum in the shoulder region of said tread,
the rubber of said cushion being softer than the rubber of said tread material, thereby providing a more pliable support in the central portion of the tread than in the shoulder region thereof.

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**3,931,845**
**TIRE CHANGING DEVICE**
**Tracy W. Dixon, 3007 Topham Circle, Houston, Tex. 77018**
**Filed Aug. 12, 1974, Ser. No. 496,572**
**Int. Cl.² B60C** *25/04*
**U.S. Cl. 157—1.22** **1 Claim**



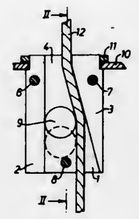
1. A device for removing and affixing a tire from and on a wheel rim, comprising:
A housing having a plurality of telescoping sections;
means for adjusting the overall length of said housing;
means connected to one of said sections for pivotally supporting said housing within said wheel; and
Combination mounting and demounting means movably linked to one of said sections, said combination means comprising;
a. tool having a tang portion adapted to be inserted intermediate said tire and rim,
b. means for permitting said tang to assume a plurality of positions relative to said linked section, such means comprising a male portion of said tool having a polygonal cross-section and an aperture in said linked section of a configuration correlative to said cross-section, and
c. means for releasably fixing said tank in any selective one of said positions.

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**3,931,846**
**BRAKES FOR CORDS**
**Edwin Zilver, Doorwerth, Netherlands, assignor to Silverflex Internationaal N.V.**
**Filed Apr. 26, 1974, Ser. No. 464,303**
**Int. Cl.² E06B** *3/92*
**U.S. Cl. 160—178** **2 Claims**

1. A brake for a cord comprising a movable clamping body surface and a relatively fixed braking surface between which surfaces the cord is fed and selectively clamped, characterized in that the braking surface is the inner wall of an open ended housing of frusto-conical shape and the clamping body is a sphere that is loosely mounted within the housing and is of a diameter which is smaller than the widest part of the housing

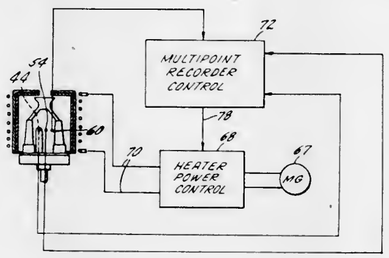
and greater than the narrowest part of said housing reduced by the thickness of the cord, and a stop member mounted in



the widest part of said housing to prevent the sphere from leaving the housing.

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**3,931,847**
**METHOD AND APPARATUS FOR PRODUCTION OF DIRECTIONALLY SOLIDIFIED COMPONENTS**
**Bruce E. Terkelsen, Cheshire, Conn., assignor to United Technologies Corporation, Hartford, Conn.**
**Filed Sept. 23, 1974, Ser. No. 508,303**
**Int. Cl.² B22D** *25/06*
**U.S. Cl. 164—4** **20 Claims**




1. In the manufacture of columnar grained articles the steps of

providing a ceramic mold in which the article is to be cast, said mold including a mold cavity other than the article cavity to receive a thermocouple,

positioning the mold on a chill plate with the mold in a furnace,

positioning another thermocouple externally of the mold and adjacent to the thermocouple cavity of the mold,

placing a second thermocouple in said therocouple cavity,

providing a third thermocouple in said furnace for controlling the furnace temperature,

heating the furnace for heating the mold therein with the third thermocouple limiting the maximum temperature to a selected temperature,

continuing heating of the mold until the second thermocouple indicates that the interior of the mold has reached the desired temperature for pouring,

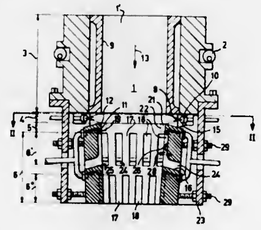
pouring the alloy in the mold,

withdrawing the mold slowly in a controlled manner from the furnace to cause an upward movement of a thermal gradient along the mold for solidifying the alloy,

maintaining the heat within the furnace under control of the third thermocouple, and

rapidly completing the mold withdrawal when the first thermocouple indicates a temperature below the melting point of the alloy.

**3,931,848**
**METHOD AND APPARATUS FOR COOLING A STRAND CAST IN AN OSCILLATING MOLD DURING CONTINUOUS CASTING OF METALS, ESPECIALLY STEEL**
**Markus Schmid, Zurich, Switzerland, assignor to Concast AG, Zurich, Switzerland**
**Filed May 28, 1974, Ser. No. 474,009**
**Claims priority, application Switzerland, June 4, 1973, 8009/73**
**Int. Cl.² B22D** *11/04, 11/124*
**U.S. Cl. 164—83** **17 Claims**



1. A method of cooling a strand in an oscillating continuous casting mold during the continuous casting of metals, especially steel, comprising the steps of:

a. forming a cast strand in the continuous casting mold and which strand travels through the mold;

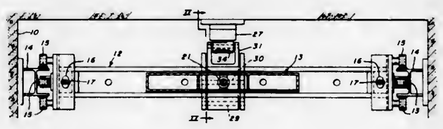
b. indirectly cooling the cast strand as well as guiding the cast strand at all sides in a first zone during passage of the strand through the mold;

c. after the indirect cooling of the strand of step (b) spraying water onto the cast strand to directly cool the cast strand in an intermediate zone which is open at all sides; and

d. in a last cooling zone guiding the strand by means of substantially strip-shaped support surfaces extending essentially in the direction of travel of the strand and between these support surfaces directly cooling the strand by water guided in substantially strip-shaped water channels in a substantially strip-shaped configuration along the strand.

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**3,931,849**
**MECHANISM FOR OPERATING THE LOCKING MEANS FOR THE CHILL PLATE OF A RIGID STARTER BAR**
**Thomas A. Morris, Jefferson Borough, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.**
**Filed Aug. 20, 1974, Ser. No. 498,910**
**Int. Cl.² B22D** *11/08*
**U.S. Cl. 164—274** **4 Claims**



1. In a combination which includes a rigid starter bar, a chill plate, a vertically movable hoist for carrying said bar, and means for receiving said hoist and bar when lowered, said bar having locking means for said plate movable between released and locked positions, an improved mechanism for operating said locking means, said mechanism comprising actuating means carried by said hoist and engaging said locking means, a first means on said receiving means cooperable with said actuating means for moving said locking means to its locked position when said bar and hoist ascend from their lowermost position, and a second means on said receiving means spaced above the first-named means thereon cooperable with said actuating means for moving said locking means to its released position when said hoist and said bar descend to disconnect said bar from said plate, said actuating means clearing the second-named means on said receiving means during ascent of said hoist without changing the position of said locking means.



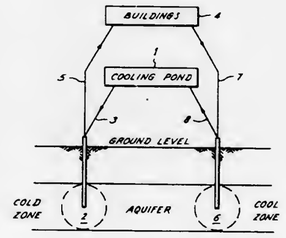
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**3,931,850**
**APPARATUS FOR FEEDING AND DISTRIBUTING STEEL MELTS**
**Helmut Landgraf, Rumeln-Kaldenhausen, and Herbert Forster, Dusseldorf, both of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Germany**
**Filed Jan. 23, 1975, Ser. No. 543,294**
**Claims priority, application Germany, Mar. 11, 1974, 2412053**
**Int. Cl.² B22D** *11/10*
**U.S. Cl. 164—281** **10 Claims**



1. Apparatus for feeding and distributing a steel melt in a continuous casting mould for slabs, comprising a pouring vessel with outlet apertures arranged in its bottom portion and with immersion outlet elements which are arranged below the said apertures and include lateral outflow apertures, characterized in that below the outlet apertures (4) of the pouring vessel (1) there are arranged for each slab mould (3) a pair of immersion outlet elements (2) with a larger internal cross-section than the cross-section of the outlet apertures, the bottom ends of the said outlet elements being closed, each of said immersion outlet elements (2) having a pair of outflow apertures (5, 6) of different cross-sectional size, both situated below the bath surface level (7) in the mould (3), said outflow apertures (5, 6) being located opposite one another in the walls of the immersion outlet elements (2) but are offset relatively to one another in the vertical sense, and the outflow apertures (5) having the larger cross-section form the lower outflow apertures and are directed towards the center of the mould.

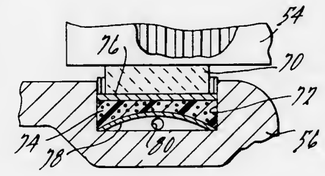
**3,931,851**
**LIQUID AQUIFER ENERGY STORAGE METHOD**
**William B. Harris, and Richard R. Davison, both of Bryan, Tex., assignors to William D. Morse, Jr., Houston, Tex., a part interest**
**Filed Feb. 1, 1974, Ser. No. 438,685**
**Int. Cl.² F24D** *11/00*
**U.S. Cl. 165—2** **14 Claims**




5. The method of claim 2 wherein the water in step (a) is heated by a solar heater.

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**3,931,852**
**GAS TURBINE GENERATOR SEAL SYSTEM**
**V. Durga Nageswar Rao, Woodhaven, Mich., assignor to Ford Motor Company, Dearborn, Mich.**
**Filed Nov. 12, 1973, Ser. No. 415,057**
**Int. Cl. F28d** *19/00*
**U.S. Cl. 165—9** **6 Claims**

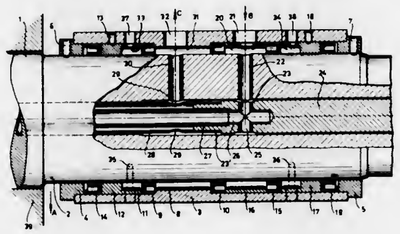


1. A monolithic rubbing seal assembly for sealing a rotary regenerator in a gas turbine engine environment, said seal assembly having at least one generally semicircular, monolithic seal element, a crossarm seal element joining the ends of said semicircular seal element thereby defining a gas flow region, a housing base for said seal assembly with a general semicircular cavity and a cavity conforming generally in shape to the shape of said crossarm seal element, said cavities receiving said seal elements whereby said seal elements, together with said base, define an integral assembly, said seal elements being formed of ceramic material and each having a surface adapted to sealingy engage the adjacent surface of said regenerator, clearance between the transverse sides of said seal and the adjacent wall of said cavities and a heat resistant resilient material located between the seal elements and the base of the respective seal cavities, said resilient material engaging the transverse sides of said cavities and defining with said cavities a cooling air flow chamber in communication with a high pressure, low temperature gas region for accommodating air flow in the direction of the principal axis of said seal whereby said resilient material is cooled as said seal elements are urged pneumatically into sealing engagement with respect to said regenerator core.

## 3,931,853
## DEVICE FOR THE SUPPLY AND DISCHARGE OF COOLING LIQUID IN THE WORMS OF AN EXTRUDER PRESS

Warner Jan de Putter, Hardenberg, Netherlands, assignor to Wavin B.V., Zwolle, Netherlands

Filed Oct. 16, 1973, Ser. No. 406,924
Claims priority, application Netherlands, Oct. 17, 1972, 7214008
Int. Cl.² F28F 5/06
U.S. Cl. 165—87 8 Claims



1. An assembly to circulating a cooling liquid in the shaft of an extruder press, comprising, in combination:

a shaft having an axial bore portion, radially extending, axially-spaced inlet and outlet passages communicating with the bore portion and the outer surface of the shaft;

conduit means in said bore portion, said conduit means comprising individual conduit portions respectively communicating with the inlet and outlet passage for conducting the liquid through the shaft;

three axially-spaced seals circumposed about the shaft in flanking relation to the inlet and outlet passages, an intermediate one of said seals cooperating with the respective remaining seals and defining annular liquid inlet and outlet chambers about said shaft, separated by said intermediate seal;

spacer means circumposed about said shaft and engaged with the seals for retaining them in axially-spaced relation on the shaft, said spacer means being spaced radially from the outer surface of said shaft and said seals having portions projecting radially inwardly beyond said spacer means and into engagement with the outer surface of the shaft;

a tubular sleeve circumposed about the outer periphery of said seals and spacer means and including openings communicating with the respective inlet and outlet chambers;

centering rings circumposed about said shaft, abutting the outermost of said seals for retaining the seals in a relative fixed relation;

means retaining the sleeve in fixed relation to said centering rings;

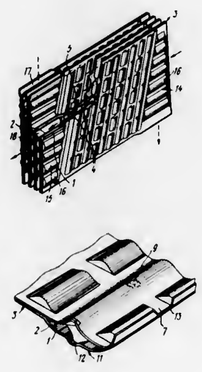
retention collar means circumposed about said shaft at opposite ends of the sleeve; and

means retaining the collar means in fixed relation on the shaft, said retention collar means comprising a ring member including an axial annulus projecting into the sleeve ends for orienting the sleeve on the shaft, said means retaining the collars comprising fasteners adjustably retaining the assembly on the shaft, annular lubricating chambers outwardly of the outermost annular seals and within said centering rings, and further annular seals circumposed about said shaft between said centering rings and retention collar means outwardly of said lubricating chambers.

## 3,931,854
## PLATE-TYPE HEAT-EXCHANGE APPARATUS

Viktor Vasilievich Ivakhnenko, ulitsa Sedova 14, kv. 8; Evgeny Fedorovich Kuznetsov, ulitsa Krasnoputilovskaya 71, kv. 27; Anatoly Vladimirovich Sudarev, Georgievskaya ulitsa 2, kv. 57, all of Leningrad, U.S.S.R.; Jury Grigorievich Akodes, deceased, late of Leningrad, U.S.S.R., and by Zoya Ivanovna Akodes, administrator, Piskarevsky prospekt 15, kv. 67, Leningrad, U.S.S.R.

Filed Aug. 24, 1973, Ser. No. 391,276
Int. Cl.² F28F 3/00
U.S. Cl. 165—166 3 Claims



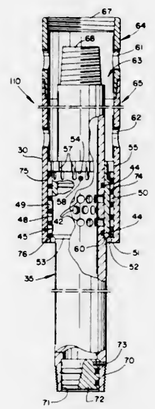
1. A plate-type heat-exchange apparatus in which two heat exchanging media flow counter-current, comprising a stack of rectangular plates which, when joined together in pairs, define an element having an internal channel for the flow of one heat-exchanging media and when a second similar element is joined together with the first element, the first and second elements coact to provide a channel therebetween for the other heat-exchanging media, each plate having end parts and a middle part therebetween, the middle part having alternate crests and troughs extending transversely thereof, every other crest of one plate having a plurality of plane surfaces at spaced intervals along said crest providing passageways across said crest leading to the troughs on each side of said crest, the crest on each side of said troughs having a row of spaced outwardly extending projections, every other trough of the other plate having a row of spaced outwardly extending projections, so that when said plates are stacked together to define the element, the plane surfaces of one plate adjoin the crests of the other plate to provide the internal channel with a corrugated shape in longitudinal section and a substantially slotted shape in cross-section, and upon said second similar element being positioned on the first element, the projections of said one plate of the first element adjoin the projections of said other plate to provide the channel therebetween of corrugated shape in longitudinal section and substantially slotted shape in cross-section, a distributing zone at each end part for the heat exchanging media, means providing communication between one distributing zone and one of the channels, and further means providing communication between the other distributing zone and the other channel.



## 3,931,855
## DOWNHOLE PACKER ACTUATED VENT ASSEMBLY

Roy R. Vann, Artesia, N. Mex., and Flint R. George, Artesia, N. Mex., assignors to Vann Tool Company, Inc., Artesia, N. Mex.

Continuation-in-part of Ser. No. 382,958, July 26, 1973, Pat. No. 3,871,448. This application Oct. 23, 1974, Ser. No. 517,390
Int. Cl.² E21B 33/12
U.S. Cl. 166—128 7 Claims



1. In a packer actuated vent assembly having a packer device which includes a body, a packer element, a hollow mandrel through which fluid can flow axially, and means by which the device can be anchored downhole in a well bore; said mandrel being movable relative to the packer body for setting the packer element to preclude fluid flow across the packer device; the improvement comprising:

a barrel attached to and extending from said body, a hollow mandrel extension spaced from and received within said barrel, said mandrel extension being attached to and extending from said hollow mandrel in series flow relationship therewith, a lateral flow port formed in said mandrel extension; an annular valve means slidably received about said mandrel extension and movable axially from a flow preventing to a flow permitting position for causing a fluid flow path to be formed through said port when said valve means is moved from a flow preventing to a flow permitting position;

a shoulder formed on said annular valve means, a shoulder formed on said barrel in underlying relationship respective to the first recited shoulder; and,

biasing means for moving said valve means from said flow preventing to said flow permitting position in response to relative movement between said barrel and mandrel extension.

## 3,931,856
## METHOD OF HEATING A SUBTERRANEAN FORMATION

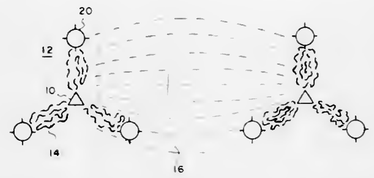
Allen L. Barnes, Allen, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 23, 1974, Ser. No. 535,162
Int. Cl.² E21B 43/20, 43/24
U.S. Cl. 166—245 4 Claims

1. In a method of recovering an in situ fluid from a subterranean formation containing viscous oil via heating with electrical conduction between a plurality of electrode wells completed therein, in order to improve the conductivity between said electrode wells, the improvement comprises:

drilling and completing a satellite well in said formation and adjacent an electrode well,

injecting water containing dissolved electrolyte into said formation via an electrode well having an adjacent satellite well,



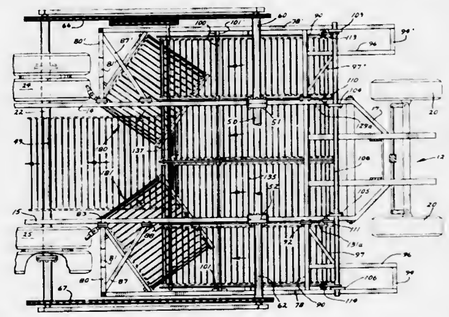
establishing fluid communication between said electrode well and said satellite well by repeated steps of heating and producing mobilized in situ fluid situated therebetween, and

circulating said water containing dissolved electrolyte between said electrode well and adjacent satellite well.

## 3,931,857
## DEMOUNTABLE MULTI-ROW POTATO COMBINE

Edward C. O'Hare, Cambridge, and Wallace J. DeVries, Sr., Braham, both of Minn., assignors to Dahlman, Inc., Braham, Minn.

Filed Dec. 9, 1974, Ser. No. 530,953
Int. Cl.² A01D 17/00
U.S. Cl. 171—14 8 Claims



1. a demountable multi-row potato combine, having in combination

a potato combine frame structure including power means and elevating and related conveyor supersturcture,

an outboard frame structure removably secured to each side of said frame structure,

a pivot support member removably carried by said frame structure,

yielding suspension means carried by said frame and outboard frame structures forwardly thereof,

a digger apron member mounted onto said pivot support member, said digger apron member having at least three endless conveyors thereon,

means connecting the forward portion of said digger apron member to said yielding means,

a drive shaft,

means operatively connecting said drive shaft and said digger apron member,

a pair of angularly disposed endless conveyors in converging relation with each other underlying and extending partially beyond the rearward side portions of said digger apron member,

means removably mounting said angularly disposed conveyors in operating position in connection with said frame and outboard structures, and

means driving said drive shaft and said angularly disposed conveyors.

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**3,931,858**

## CULTIVATING MACHINE

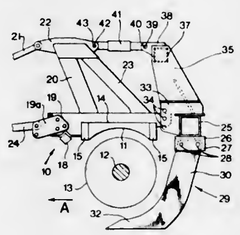
**Bernard C. North, Earsham, near Bungay, England, assignor to Howard Machinery Limited, Saxham, Bury St. Edmunds, England**

**Filed Mar. 14, 1974, Ser. No. 450,977**

**Claims priority, application United Kingdom, Mar. 20, 1973, 13209/73**

**Int. Cl.² A01B *33/16*, *49/02***

**U.S. Cl. 172—63** **8 Claims**



1. A cultivating machine comprising, in combination:

a rotary cultivator including a rotor frame and a rotor on said frame which carries rotary cultivating tools;

first attachment means surmounting the rotor frame, said first attachment means including a first upper attachment device which attaches to the upper link of a tractor three point linkage, and first lower attachment devices which attach to the lower links of said three point linkage, said first lower attachment devices including fixed horizontal beams which extend rearwardly of the rotor frame;

a fixed cultivator which includes a tool frame and fixed cultivating tools supported on said tool frame;

and second attachment means mounted upon and extending forwardly from the tool frame, said second attachment means including a second upper attachment device which is detachably connected to said first upper attachment device in substantially the same horizontal plane as the latter, and said second attachment means also including second lower attachment devices which are detachably connected to the rear extremities of said horizontal beams in substantially the same horizontal plane as said first lower attachment devices;

said second lower attachment means including means by which they may be attached to the rear extremities of the beams at a plurality of selected heights relative to said beams.

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**3,931,859**

## CONVERTIBLE AGRICULTURAL IMPLEMENTS AND MACHINES

**Cornelis van der Lely, 7, Bruschenrain, Zug, Switzerland**

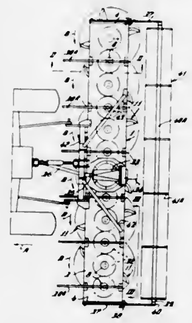
**Filed Mar. 13, 1974, Ser. No. 450,670**

**Claims priority, application Netherlands, Mar. 14, 1973, 7303531**

**Int. Cl.² A01B *63/00*; A01D *49/00***

**U.S. Cl. 172—247** **23 Claims**

1. A convertible agricultural implement comprising a frame movable over the ground and a plurality of substantially horizontal tool supports being positioned side-by-side in a row that extends transverse to the normal direction of travel, each of said supports being rotatable about a corresponding upwardly extending shaft and driving means connected to the shafts to rotate adjacent shafts in opposite directions, the opposite ends of each of said supports having sleeve-like holders that are releasably connectable to downwardly extending soil-working tools, horizontally extending cutting blades being secured to the holders of alternate ones of said supports to convert the implement from a soil-working implement with all supports having tools that work overlapping strips of soil to a cutting implement, at least one of said alternate supports having at least two sets of cutting blades that are vertically spaced apart



from another so that the blades of one set project at different horizontal levels than the blades of a second set, the length of said cutting blades exceeding at least half the distance between those shafts about which said alternate supports are rotatable and the outer tips of said blades tracing circles that substantially overlap the circles traced by the outer tips of those blades on neighboring alternate supports, the blades on neighboring alternate supports being positioned to intersect and cooperate with one another during cutting operation.

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**3,931,860**

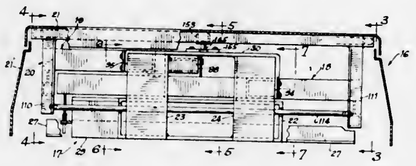
## LOW-PROFILE PLATFORM SCALE

**Chester S. Czyryk, Silver Lake, Wis., assignor to Mangood Corporation, Chicago, Ill.**

**Continuation-in-part of Ser. No. 511,426, Oct. 2, 1974, Pat. No. 3,894,595. This application Apr. 7, 1975, Ser. No. 565,681**

**Int. Cl.² G01G *21/08***

**U.S. Cl. 177—257** **8 Claims**



1. A platform scale comprising

a horizontal base including in a unitary construction:

a horizontal shallow rectangular tubing at the central portion of the scale, said shallow tubing having its longitudinal axis transverse to the longitudinal axis of said scale and of said base with the ends of said shallow tubing being at the front and rear portions of the base;

a front spaced pair of vertical mounting members having for each a first vertical flange abutting and secured to the front end of said shallow tubing and a second flange normal to said first flange and having its bottom end abutting and secured to the front end portion of the top wall of said shallow tubing, said first and second flanges having their top ends at a horizontal plane;



a rear spaced pair of vertical mounting members having for each a first vertical flange abutting and secured to the rear end of said shallow tubing and a second flange normal to said first flange and having its bottom end abutting and secured to the rear end of portion of the top wall of said shallow tubing, said first and second flanges having their top ends at a horizontal plane and said second flanges of said second pair of said vertical mounting members being at the transverse vertical planes of the scale at which are located said second flanges of said first pair of said vertical mounting members;

a horizontal load cell mounting member secured to the central portion of one side wall of said shallow tubing and extending toward one end of said scale;

a front short inverted channel member fixedly mounted on the top ends of said flanges of said front pair of vertical mounting members having a short vertical flange with at least its bottom portion at an upper elevation having a flat vertical outer surface facing one end of said base at a vertical plane normal to the longitudinal axis of said base and a long flange with its bottom portion at a lower elevation having a vertical flat outer surface facing the other end of said base at a vertical plane normal to the longitudinal axis of said base; and

a rear short inverted channel member fixedly mounted on top ends of said flanges of said rear pair of vertical mounting members, said rear inverted channel member having a short vertical flange with at least its bottom portion at an upper elevation having a flat vertical outer surface facing said one end of said base at a vertical plane normal to the longitudinal axis of said base and a long flange with its bottom portion at a lower elevation having a vertical flat outer surface facing the other end of said base at a vertical plane normal to the longitudinal axis of said base and said vertical flat outer surfaces of said short and long flanges of said rear channel member being coplanar with and at the same elevations of said vertical flat surfaces of said short and rear flanges of said front channel member, respectively;

a primary U-shaped lever having in a unitary construction:

a horizontal mounting rectangular tube having at its end portions only the bottom wall and the bottom portion of the side walls of the tube;

a pair of rectangular tubes, as lever arms, spaced from each other and extending horizontally from the same one side wall of said mounting tube adjacent its end portions; and

an intermediate rectangular tube extending horizontally from said mounting tube in a direction that is normal to the longitudinal axis of said mounting tube and from the other side wall of said mounting tube, said end portions of said mounting tube of said primary lever extending axially beyond said pair of lever tubes and having coplanar vertical flat surface portions on their side walls facing in the general direction that said lever tubes extend;

a secondary U-shaped lever having in a unitary construction:

a horizontal mounting rectangular tube having at its end portions only the bottom wall and the bottom portion of the side walls of the tube;

a pair of rectangular tubes, as lever arms, spaced from each other and extending horizontally from the same one side wall of said mounting tube adjacent its end portions; and

a short member normal to the longitudinal axis of said mounting tube extending horizontally from an intermediate portion of its other side wall; said end portions of said mounting tube of said secondary lever extending axially beyond said pair of lever tubes and having coplanar vertical flat surface portions on their side walls facing in the general direction that said lever tubes extend;

means, including a first pair of flexure plates, pivotally mounting said primary lever on said long flanges of said front and rear inverted channel members of said base with said pair of lever tubes of said primary lever to positions above front and rear corner portions of said other end of said scale, said mounting means connecting said primary lever at its said coplanar vertical flat surface portions of said end portions of its said mounting tube to the lower horizontal marginal portions of said first pair of flexture plates and connecting said long flanges of said front and rear inverted channel members at their said vertical flat surfaces to said first pair of flexure plates at the upper marginal portions of said first pair of flexure plates to provide a common horizontal flexure axis transverse to the longitudinal axis of said scale and to provide the end portions of said mounting tube of said primary lever vertically spaced from said long flanges of said front and rear inverted channel members;

means, including a second pair of flexure plates, pivotally mounting said secondary lever on said short flanges of said front and rear inverted channel members of said base with said pair of lever tubes of said secondary lever to positions above front and rear corner portions of said one end of said scale, said mounting means connecting said secondary lever at its said coplanar vertical flat surface portions of said end portions of its said mounting tube to the lower horizontal marginal portions of said second pair of flexure plates and connecting said short flanges of said front and rear inverted channel members at their said vertical flat surfaces to said second pair of flexure plates at the upper marginal portions of said second pair of flexure plates to provide a common horizontal flexure axis transverse to the longitudinal axis of said scale and to provide the end portions of said mounting tube of said secondary lever vertically spaced from said short flanges of said front and rear inverted channel members;

a platform including in a unitary construction:

a horizontal rectangular ring having front and rear portions, a first end portion at said one end of said scale, and a second end portion at said other end of said scale, said ring having front and rear corner portions;

a first pair of downwardly extending vertical legs connected to said tubular ring at its front and rear corner portions at said one end of said scale;

a second pair of downwardly extending vertical legs connected to said tubular ring at its front and rear corner portions at said other end of said scale;

a front horizontal rod connecting the bottom end portions of said front legs of said pairs of legs;

a rear horizontal rod connecting said rear legs of said pairs of legs;

a first horizontal member connected at its ends to said front and rear legs of said pairs of legs at said one end of said scale, said connecting member being at an upper elevation below said pair of lever tubes of said secondary lever; and

a second horizontal member connected at its ends to said front and rear legs of said pairs of legs at said other end of said scale, said connecting member being at a lower elevation below said pair of lever tubes of said primary lever;

means connected to the distal end portions of said lever tubes of said primary lever to intermediate portions of said second horizontal member of said platform to provide a part of support of said platform by said lever arms;

means connected to the distal end portions of said lever tubes of said secondary lever to intermediate portions of said first horizontal member of said platform to provide a part of support of said platform by said lever arms;

means connected to said short member extending horizontally from said intermediate portion of said side wall of said mounting member of said secondary lever and to said

intermediate tube of said primary lever at a location spaced from distal end portion of said intermediate tube and spaced from said mounting tube of said primary lever, said short member of said secondary lever and said intermcdiate tube of said primary lever being located on said lever so that said short member is directly above said intermediate tube;

load cell means mounted on said load cell mounting member of said base below the distal end portion of said intermediate tube of said primary lever; and

means connected to said distal end portion of said intermediate tube and to said load cell means to provide a stress in said load cell means when said intermediate tube is raised.

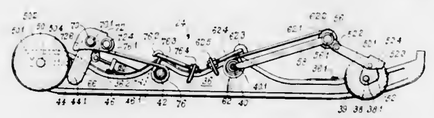
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**3,931,861**

**SNOWMOBILE SUSPENSION SYSTEM**

**Gary A. Olson, Brillion, Wis., assignor to Arctic Enterprises, Inc., Thief River Falls, Minn.**

**Filed May 28, 1974, Ser. No. 473,880**
**Int. Cl.² B62D** *55/10*
**U.S. Cl. 180—5 R** **7 Claims**



1. In a snowmobile having a body, a tread, a tread supporting frame suspended beneath the body, and a suspension system for interconnecting said frame to said body for providing significant freedom of relative movement therebetween, said suspension system including laterally spaced first and second suspension means, an improved first suspension means comprising in combination, a rigid arm having first and second ends, said first end being pivotally interconnected to said frame at a first pivot position, a rigid lever having one end and another end, said one end being pivotally interconnected to said body at a second pivot position, said second pivot position being spaced above and laterally of said first pivot position, said second end of said arm being pivotally interconnected to said another end of said lever at a third pivot position moveable relative to both said first and second pivot positions, said first and second pivot positions being moveable between a first vertically spaced apart position and a second vertically spaced apart position less than said first vertically spaced position, said third pivot position being spaced substantially horizontally from said second pivot position at said first vertically spaced position, and being substantially vertically spaced below said second pivot position at said second vertically spaced position, and means for normally biasing said arm and said lever into said first vertically spaced position, whereby the snowmobile body traverses a greater distance with respect to said frame than the distance traversed by said second end of said arm when said frame is forced upwardly toward said body.

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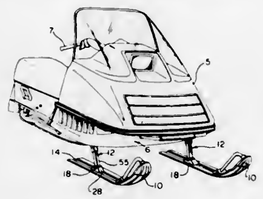
**3,931,862**

**SKI SUSPENSION FOR FRONT OF SNOWMOBILE**

**Yvon Cote, Valcourt, Canada, assignor to Bombarider Limited, Valcourt, Canada**

**Filed Dec. 5, 1974, Ser. No. 529,832**
**Int. Cl.² B62B** *17/04*
**U.S. Cl. 180—5 R** **24 Claims**

1. A suspension and steering assembly for a snowmobile ski, said assembly comprising telescoping strut members for connecting said ski to said body, said strut members including a first strut member having a bottom end suitable for connection with said ski and a second strut member slidingly connected to said first strut member and adapted to telescopically receive the latter member, means for preventing relative rotation between said first and second strut member, means for rotatably mounting said second strut member in a snowmobile, a coil spring, and shock absorbing means disposed within



said strut members wherein one end of said coil spring resiliently engages said first strut member in such a manner that said first strut member is biased towards a position out of said second strut member.

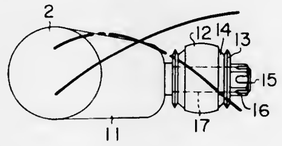
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**3,931,863**

**NOISE REDUCTION DEVICE FOR AUTOMOTIVE VEHICLES**

**Yukio Sugiyama, and Tsuyoshi Sumi, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan**

**Filed Aug. 1, 1974, Ser. No. 493,845**
**Claims priority, application Japan, Dec. 3, 1973, 48-134269**
**Int. Cl.² B60K** *23/04*
**U.S. Cl. 180—71** **5 Claims**



1. In a noise reduction device for an automotive vehicle having a body-frame, a rear axle housing with a differential carrier, a mounting pin extending from said housing and a lateral control rod connected between said body-frame and said pin, the improvement wherein said noise reduction device comprises a weight fixedly mounted at the connection point between said lateral control rod and said pin.

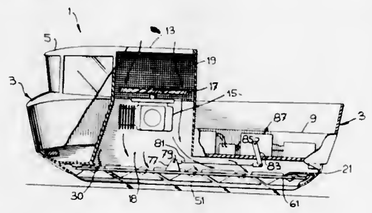
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**3,931,864**

**AIR SUSTENSION PROPULSION**

**William Edouard Desbarats, 1577 Watts St., Chambly, Quebec, J3l 2Z3, Canada**

**Filed Jan. 27, 1975, Ser. No. 544,552**
**Int. Cl.² B60V** *1/14*
**U.S. Cl. 180—116** **11 Claims**



1. A vehicle having a body, means carried by the body providing a source of pressurized air, at least one nozzle means in the bottom of the vehicle body for directing a stream of the pressurized air from the body to support and propel the vehicle, the stream directed from the body at an acute angle, to the bottom, and at least one deflecting surface on the bottom of the body, located relative to the nozzle means to receive the stream, when deflected off the surface being traversed by the vehicle, and to deflect it back toward the traversed surface.

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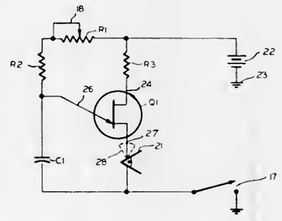


**3,931,865**

**MOSQUITO REPELLANT APPARATUS**

**Robert Levitt, 5733 N. Sheridan, Chicago, Ill. 60660**

**Continuation of Ser. No. 291,747, Sept. 25, 1972, abandoned. This application Mar. 18, 1974, Ser. No. 452,043**
**Int. Cl.² A01N** *23/00*
**U.S. Cl. 181—.5** **3 Claims**



1. Electronic apparatus for repelling mosquitos that tend to bit humans,

said apparatus comprising:

attracting means not in conjunction with killing means for attracting male mosquitos, said attracting means comprising

relaxation oscillator means for generating a frequency signal;

non-directional means for broadcasting said generated frequency signal;

said frequency attracting male mosquitos;

resistor capacitor network means for varying said frequency by varying the resistance in said resistor capacitor network means to thereby obtain the optimum frequency for attracting male mosquitos;

battery means for energizing said oscillator means, whereby said apparatus is completely portable;

means for selectively connecting said oscillator means to said battery means;

plastic case means enclosing said apparatus; and

means for attaching said case to the clothing of the user; whereby the user has hands-free apparatus acting to repel mosquitos that tend to bite humans.

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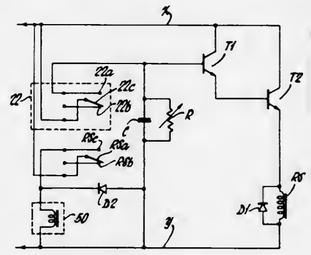
**3,931,866**

**MOTOR VEHICLE SAFETY DEVICES**

**Takezo Takada, Hikone, Japan, assignor to Takata Kojyo Co., Ltd., Tokyo, Japan**

**Division of Ser. No. 260,872, June 8, 1972, Pat. No. 3,825,205, which is a continuation-in-part of Ser. No. 157,562, June 28, 1971. This application Feb. 15, 1974, Ser. No. 442,935**
**Claims priority, application Japan, July 14, 1970, 45-069730; Aug. 27, 1970, 45-084724; Oct. 6, 1970, 45-087139; Oct. 14, 1970, 45-090684**
**Int. Cl.² B60R** *21/10*
**U.S. Cl. 180—82 C** **8 Claims**

1. An automatic locking safety belt mechanism comprising a safety belt movable between withdrawn and retracted positions, belt retraction means normally urging said belt toward its retracted position, braking means for alternatively releasing or locking said safety belt against withdrawal, an inertia switch, an RC timing circuit including a timing capacitor and a resistor, brake activating means including a braking solenoid operatively connected to said braking means and having a normal first position in which it deactivates said braking means for withdrawal of said safety belt, and a second position in which it activates said braking means to a safety belt locking position, a relay solenoid responsive to the voltage on said capacitor being within a predetermined range for bringing said braking solenoid to its second position, whereby to lock said safety belt through said braking means, and means responsive



to the actuation of said inertia switch for imparting a voltage to said capacitor within said predetermined range, the charge on said capacitor changing through said resistor upon deactuation of said inertia switch to change said voltage to a value outside said predetermined range, said capacitor and resistor being operative to provide a selectively-controlled predetermined timing interval following the deactuation of said inertia switch and prior to deactivating of said braking means by said braking solenoid.

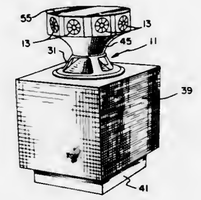
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**3,931,867**

**WIDE RANGE SPEAKER SYSTEM**

**Arthur A. Janszen, Belmont, Mass., assignor to Electrostatic Research Corporation, Beverly, Mass.**

**Filed Feb. 12, 1975, Ser. No. 549,393**
**Int. Cl.² H05K** *5/00*
**U.S. Cl. 181—155** **8 Claims**



1. A wide range speaker system comprising:

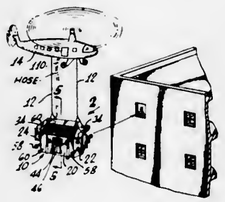
a base member defining an air chamber which is acoustically sealed except for an upwardly facing opening;

mounted over said opening, a cone type woofer having a downwardly facing cone with attached cylindrical voice coil, a magnetic structure forming a cylindrical magnetic gap providing a radial polarizing field for said voice coil and a relatively open basket structure extending upwardly from said opening for supporting said magnetic structure, said cone being flexibly connected to said basket structure around the periphery of said cone;

supported by said basket structure, diffuser means providing a reflecting surface for midrange acoustic components radiated from the back side of said cone, said surface being generally in the shape of an inverted cone which curves outwardly in radial section as it rises from said woofer; and

a circular array of outwardly facing tweeter elements mounted around the periphery of said diffuser just above said reflecting surface.

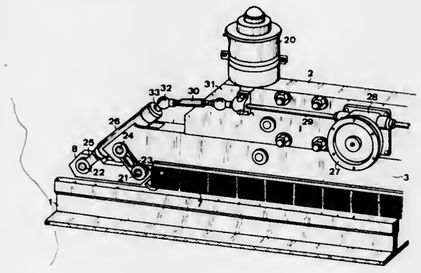
**3,931,868**
**EMERGENCY RESCUE DEVICE**
**Charles P. Smith, Jr., 336 N. Palm Drive, Beverly Hills, Calif. 90210**
**Filed Aug. 12, 1974, Ser. No. 496,335**
**Int. Cl.² A62B** *1/02*
**U.S. Cl. 182—63** **8 Claims**



1. A rescue gondola of the class described which includes:
a framework defining a passenger-carrying compartment capable of holding a plurality of people;
a covering for said framework;
means connected to said framework for suspending said compartment beneath an aircraft that directs a large flow of air downwardly; and
movable vanes mounted on said compartment to intercept said downwardly directed flow of air, said vanes being adjustable from inside said compartment to apply a horizontally directed force to said compartment, whereby said compartment may be aligned with an opening in a vertical wall of a building.

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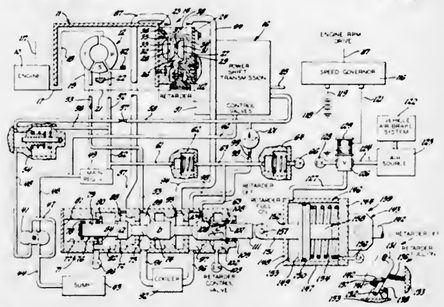
**3,931,869**
**BRAKING DEVICE FOR RAILROAD BOGIE RUNNING AT HIGH SPEED**
**Roger Fagel, Marcinelle, Belgium, assignor to Ateliers de Constructions Electriques de Charleroi (ACEC), Belgium**
**Filed June 7, 1974, Ser. No. 477,288**
**Claims priority, application Belgium, June 12, 1973, 5147; Nov. 29, 1973, 5545**
**Int. Cl.² B61H** *7/00;* **F16D** *65/34*
**U.S. Cl. 188—41** **2 Claims**



1. A braking device for a railroad bogie which supports a vehicle above a rail comprising:
a. a fixed part integrally connected with the bogie;
b. a movable part suspended from said fixed part, said movable part having a lower side;
c. a series of electromagnets suspended from said lower side of said movable part and being movable with said movable part;
d. a pair of friction brake shoes, one of said pair of friction brake shoes being disposed adjacent to one end of said series of electromagnets the other of said pair of friction brake shoes being disposed adjacent to the other end of said series of electromagnets, said friction brake shoes also being suspended from said lower side of said movable part and being movable therewith, said friction brake shoes extending a greater distance from said lower side and extending closer to the rail than said electromagnets;
e. means for moving said movable part from a position adjacent to said fixed part and spaced from the rail to a position spaced from said fixed part and adjacent said rail such that said friction brake shoes contact said rail but such that a small air gap exists between the electromagnets and the rail;
f. plural means on said movable part displaceably mounting said friction brake shoes for displacement relative to said movable part, each of said plural mounting means mounting one of said friction brake shoes;
g. motive means on said fixed part;
h. means for transmitting motive force from said motive means to said mounting means said transmitting means extending between said motive means and said mounting means;
i. whereby said motive means is actuated upon wear of the friction brake shoes to move said friction brake shoes in a direction toward the rail to maintain said small air gap regardless of wear on the friction brake shoes.

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**3,931,870**
**ENGINE OVERSPEED CONTROL OF RETARDER**
**James A. Memmer, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.**
**Filed June 12, 1974, Ser. No. 478,455**
**Int. Cl.² F16D** *57/02*
**U.S. Cl. 188—296** **6 Claims**

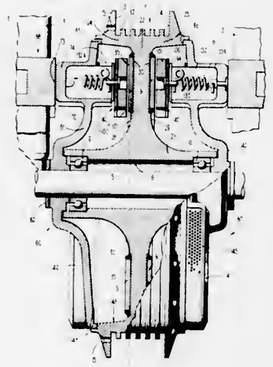


1. In a hydrodynamic retarder; a drive member; hydrodynamic retarder means having a stator and a rotor operatively connected to said drive member in a retarder chamber operative on the supply of fluid to said chamber to retard said rotor; control valve means having a valve member movable between a retarder off position and a retarder full on position operative respectively to empty said retarder chamber and to fill said retarder chamber; speed governor means operatively connected to said drive member operative in response to a predetermined overspeed to provide an overspeed signal; control means having a manual actuator member movable between a manual retarder off position and a manual retarder on position and linkage means connecting said manual actuator member to said valve member and including motor means having a pair of relatively movable motor members movable between an automatic retarder off position and an automatic retarder on position and having normal biasing means to normally apply a force to position said motor members in one of said automatic retarder on position and said automatic retarder off position and signal biasing means connected to said governor means for operation in response to said overspeed signal to move said motor members to the other of said automatic retarder on position and said automatic retarder off position with a force and positive stop means to limit movement of said motor members in said automatic retarder off position, one motor member connected to said manual actuator member for conjoint movement of said one motor member and said manual actuator, the other motor member connected to said valve member for conjoint movement of said other motor member and said valve member, linkage biasing means biasing said manual actuator member to said manual retarder off position with less force than the force moving said motor means to said automatic retarder off position and actuator stop means to limit movement of said manual actuator member in said manual retarder off position and said control means operative when said motor means is biased by one of said normal and signal biasing means to said automatic retarder off position, in response to manual force moving said manual actuator member from said manual retarder off position to said manual retarder on position against said linkage biasing means to act through said linkage means with said motor means positive stop means engaged to positively manually move said valve member from said retarder off position to said retarder full on position and on relaxation of said manual force to permit said linkage biasing means to return said manual actuator member from said retarder full on position to said retarder off position under the force of said linkage biasing means transmitted by said linkage means through one of said normal and signal biasing means to move said valve member to retarder off position and operative when said motor means is moved by one of said normal and signal biasing means in response to said overspeed signal to said automatic retarder on position to move said valve member to said retarder full on position against the reaction of said manual actuator member in its manual retarder off position against said actuator stop means or other manually held position to provide the reaction for the motor means to move said valve member from retarder off to the full retarder on position.



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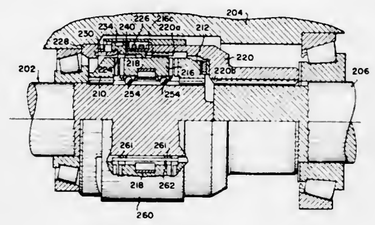
**3,931,871**
**DISC BRAKE, HUB AND WHEEL ASSEMBLY**
**Thomas C. Martin, 54 Fayette St., Boston, Mass. 02171**
**Continuation of Ser. No. 297,347, Aug. 10, 1972, Pat. No. 3,825,179, which is a continuation of Ser. No. 61,258, Aug. 5, 1970, which is a continuation-in-part of Ser. No. 849,312, Aug. 12, 1969, abandoned. This application July 15, 1974, Ser. No. 488,314**
**Int. Cl.² F16D** *55/228*
**U.S. Cl. 188—344** **19 Claims**



1. A disc brake and wheel assembly for a vehicle having a fork with legs interconnected at the free end by an axle comprising:
a wheel having a hub with an aperture for receiving the axle and positioning the hub intermediate the legs of the fork;
a radially extending annular rotatable web having a cylindrical center coaxial with said axle;
means supporting said web for rotation relative to said axle;
a pair of face plates having their outer periphery terminating adjacent and movable relative to the web, and defining an enclosed space with a part of the web;
said web having a flanged outer end including tire support means;
a pair of annular bearing surfaces within said space;
said web having opposite faces for supporting respective bearing surfaces normal to, radially and at a fixed distance from the axis of said wheel;
a pair of brake shoe means with associated brake pad means, each said brake shoe means disposed adjacent a respective bearing surface;
each said brake shoe means including at least one hydraulic means for moving said brake pad means to and from braking engagement with said bearing surface;
and biasing means for normally urging said brake pad means away from said bearing surface;
said pair of face plates each including restraining means for supporting each said brake shoe means against rotation with said web;
said brake shoe means and restraining means aligned with said bearing surface, said brake shoe means positioned between said bearing surface and said restraining means.

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**3,931,872**
**REVERSIBLE OVERRUNNING CLUTCH WITH AUTOMATIC SHIFT CONTROL AND FRICTION REDUCING MEANS**
**Walter L. Dissett, Southfield, Mich., assignor to Aspro, Inc., Westport, Conn.**
**Filed June 13, 1974, Ser. No. 478,933**
**Int. Cl.² F16D** *41/00, 11/04;* **F16C** *17/02*
**U.S. Cl. 192—43** **8 Claims**



1. In a reversible overrunning clutch means for driving an overrunning first motor vehicle axle when the rotational speed thereof fails to exceed the speed of a second axle by a predetermined slight amount, said clutch means including a housing (**204**); an output shaft (**202**) journalled in said housing, said output shaft being adapted for connection with one of said axles; a rotary input shaft (**206**) arranged for rotation adjacent said output shaft; reversible overrunning clutch means operable to connect said input shaft with said output shaft, including forward and reverse annular clutch members (**210, 212**) secured to said output shaft in axially spaced relation, an annular central driver member (**216**) rotatably mounted on said output shaft in spaced relation relative to, and axially slidable between, said annular clutch members, said central driver member having at opposite ends thereof clutch teeth of the self-disengaging overrunning type adapted to engage corresponding clutch teeth on said annular clutch members, respectively, friction drag spring means (**218**) connected between said output shaft and said central driver member for resisting rotational movement of said output shaft, and direction-responsive operating means (**216c, 220a**) connected between said input shaft and said central driver

member for axially shifting said central driver member in a direction corresponding with the direction of rotation of said driving means; and automatic shift control means (228, 230, 224) responsive to the direction of rotation of said driving means for positioning said central driver member in a readiness position immediately adjacent the corresponding one of said annular clutch members to insure the correct directional operation of said clutch means; the improvement which comprises means for reducing the axial friction between said friction drag spring means and said output shaft including

a. a sleeve arranged concentrically between said central driver member and said output shaft, said friction drag spring means being arranged for radially directed frictional engagement between the inner peripheral surface of said central driver member and the outer peripheral surface of said sleeve;

b. means connecting said sleeve for non-rotatable axial sliding movement relative to said output shaft; and

c. friction reducing means connected with, and constrained against axial displacement relative to, said sleeve for reducing the axial component of friction between said sleeve and said output shaft.

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## 3,931,873
## SYNCHRONIZATION MECHANISM FOR CHANGE-SPEED TRANSMISSIONS

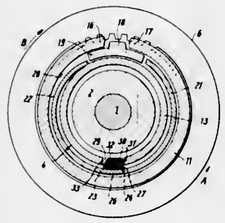
**Gerhard Koch, Oberboihingen, and Hans Heinemann, Weissach, both of Germany, assignors to Dr. -Ing. H.c.F. Porsche Aktiengesellschaft, Germany**

**Filed Apr. 4, 1974, Ser. No. 458,031**

**Claims priority, application Germany, Sept. 28, 1973, 2348795**

**Int. Cl.² P16D** *11/00*

**U.S. Cl. 192—53 C** **11 Claims**



1. A synchronization mechanism, especially for change-speed transmissions of motor vehicles, in which a shifting sleeve provided with shifting teeth means is retained at a shifting sleeve carrier means fixedly arranged on a transmission shaft and is operable to be coupled against the action of at least one friction means producing synchronism, with a coupling member of the gear to be engaged, which is provided with shifting teeth means, the friction means including a slotted and spring synchronizing ring means cooperating directly with the shifting teeth means of the shifting sleeve, characterized in that the end surfaces of the shifting teeth means of the shifting sleeve are so constructed that the friction means become again ineffectual, after the synchronization operation is completed, before the shifting teeth means of the shifting sleeve come into engagement with the shifting teeth means of the coupling member.

## 3,931,874
## SELF-ACTUATING FRICTION-CLUTCH ASSEMBLY

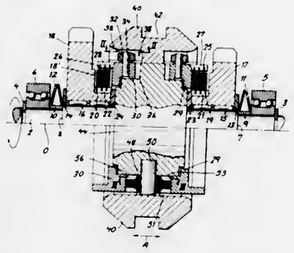
**Siegfried Braun, Friedrichshafen, and Fritz Herbst, Bermatingen, both of Germany, assignors to Zahnradfabrik Friedrichshafen AG, Friedrichshafen, Germany**

**Filed Oct. 29, 1974, Ser. No. 519,001**

**Claims priority, application Germany, Oct. 27, 1973, 2353983**

**Int. Cl.² F16D** *7/00*

**U.S. Cl. 192—54** **10 Claims**



1. A self-actuating friction-clutch assembly for temporarily interconnecting two coaxial members for joint rotation, comprising:

a body rigid with one of said members axially spaced from the other of said members;

a transverse pressure plate on said body confronting said other of said members across an intervening gap, said pressure plate being mounted on said body with freedom of limited relative axial and angular displacement;

first and second friction means in said gap respectively connected with said pressure plate and with said other of said members for operative interengagement upon an axial shift of said pressure plate toward said other of said members from a normal position in which said first and second friction means are spaced apart;

an axially shiftable control member mounted on said body in fixed relative angular position;

coupling means linking said control member with said pressure plate for shifting the latter toward said other of said members upon a displacement of said control member from a neutral position, with resulting interengagement of said first and second friction means sufficient to translate relative rotation of said members into a rotary disalignment of said pressure plate and said body from a normal relative rotary position;

first coacting cam means on said body and on said pressure plate for continuing the axial shift of said pressure plate in response to said rotary disalignment at a progressively increasing rate with reference to the rate of relative rotation, thereby intensifying the interengagement of said first and second friction means; and

second coacting cam means in said coupling means for accelerating a reversal of said rotary disalignment upon separation of said first and second friction means by a return of said control means to said neutral position.

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## 3,931,875
## SELF-ALIGNING CLUTCH BEARING ASSEMBLY

**Eli M. Ladin, Ann Arbor, Mich., assignor to Federal-Mogul Corporation, Southfield, Mich.**

**Filed Dec. 26, 1973, Ser. No. 427,486**

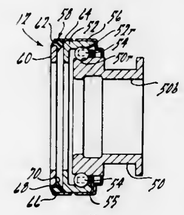
**Int. Cl.² F16D** *23/14*

**U.S. Cl. 192—98** **32 Claims**

1. In a clutch having input and output members normally operatively coupled to rotate together about the clutch axis and means for operatively uncoupling said two members comprising a plurality of pivotally mounted release levers on the clutch, said release levers having actuating portions thereof



arranged to lie approximately on a circle which is at least approximately perpendicular to and at least approximately coaxial with the axis of the clutch, a clutch release bearing shiftable axially of the clutch to engage the actuating portions of said release levers and operate said levers so as to operatively uncouple said two members, said clutch release bearing comprising: an inner race means comprising a raceway; an outer race means comprising a raceway; a plurality of antifriction bearing elements constrained between said two race means and riding in the raceways thereof; annular wear plate means disposed in a plane perpendicular to the axis of said bearing and arranged to engage the actuating portions of said release levers for operating the latter; and means for supporting said wear plate means on said outer race means comprising an annular axially-extending portion affixed to said outer race means having a free end and a resilient annular element interposed between and affixed to said free end of said annular axially-extending portion and to said wear plate means; said wear plate means, said outer race means and said resilient annular element being arranged and constructed such that the bulk of said resilient annular element is disposed axially intermediate the location at which it engages said wear plate means and the location at which it engages said annular axially-extending portion, the bulk of said resilient annular element being radially offset from the point of contact between said wear plate means and the actuating portions of said release levers.



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## 3,931,876
## CLUTCH DISK FOR MOTOR VEHICLE MAIN CLUTCHES

**Bruno Beeskow, Bietigheim; Günter Wörner, Rommelshausen, and Peter Schrape, Stuttgart, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany**

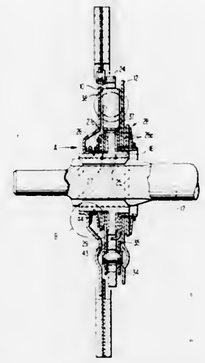
**Filed Nov. 11, 1974, Ser. No. 522,980**

**Claims priority, application Germany, Nov. 13, 1973, 2356559**

**Int. Cl.² F16D** *3/14*

**U.S. Cl. 192—106.2** **20 Claims**

1. A clutch disk for motor vehicle main clutches which comprises a disk means carrying friction linings and torsionally elastically arranged with respect to a hub means, several spring means with different characteristics being provided in window means of one of the two parts consisting of a hub flange forming part of the hub means, on the one hand, and of the disk means and a lateral member rigidly connected therewith, on the other, which cooperate with corresponding larger window means provided in the respective other of said two parts, a friction damping means coordinated to said spring means whose start of operation is determined by control means, characterized in that for a multi-stage damping within the operating range in which only the friction of the friction damping means is effective which has been engaged last, two friction damping means are provided each including friction disk means, the first friction damping means being operatively connected with the hub flange by means of its control spring means arranged in a window means of the hub flange and by means of the coordinated friction disk means provided with its control means, and the second friction damping means being coupled to the lateral members by means of its control spring means arranged in a window means of the lateral members



and by means of the coordinated friction disk means provided with its control means.

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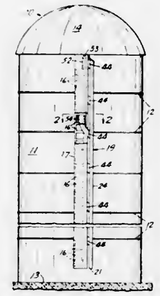
## 3,931,877
## MATERIAL DIVERTER STRUCTURE

**LeMar L. Albaugh, Anamosa, Iowa, assignor to Anamosa Farm Systems, Inc., Anamosa, Iowa**

**Filed Apr. 15, 1974, Ser. No. 460,728**

**Int. Cl.² B65G** *11/02, 65/38*

**U.S. Cl. 193—15** **14 Claims**



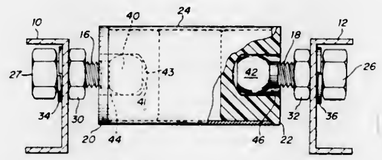
1. A material carrying means for a structure having a plurality of vertically spaced doorways and enclosure means covering the doorways with the enclosure means providing a passageway to the doorways comprising: means having a passage for carrying material to a location, material diverter means located within said enclosure means for receiving material and directing the material from said structure through one of said doorways to said passage of the means for carrying material to a location whereby the material moves through the one of said doorways, the diverter means and the means having a passage to the location, upright track means located in the passageway and mounted on the enclosure means, carriage means cooperating with the track means to guide the carriage means along the track means, and means mounting the material diverter means on the carriage means whereby the material diverter means moves with the carriage means to a position aligned with a selected doorway, said means mounting the material diverter means including upright pivot means mounting the material diverter means on the carriage means to allow pivotal movement of the material diverter means away from the se-

lected doorway into the passageway whereby the material diverter means is free to be moved along the passageway.

### 3,931,878
### SANITARY ROLLER CONVEYOR

**Ralph Payne, Irving, Tex., assignor to FEI, Inc., Dallas, Tex.**

**Continuation of Ser. No. 334,469, Feb. 21, 1973, abandoned.**
**This application Apr. 4, 1974, Ser. No. 457,859**
**Int. Cl.² B65G *39/09***
**U.S. Cl. 193—37** **6 Claims**



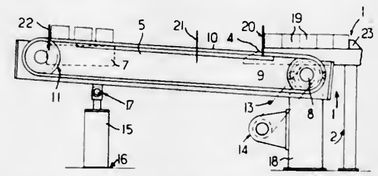
1. A roller conveyor system comprising:
a pair of spaced apart rails,
a plurality of opposed metal stub shafts connected at spaced apart locations along the interior sides of said rails,
hollow cylindrical rollers disposed between said rails,
low friction plastic bearing members rigidly mounted in the ends of said hollow rollers,
said bearing further comprising means for preventing foreign liquid and solid substances from entering the hollow cylindrical rollers,
blind right circular cylindrical sockets formed in the center of the outer ends of each of said low friction plastic bearing members, and spaced a predetermined distance apart,
the blind sockets of each roller having inner end surfaces extending concavely from within, and
generally spherical bearing portions integrally formed on the ends of said stub shafts for being received within said blind sockets, said bearing portions being dimensioned to bear directly against the interior plastic walls of said blind sockets of the low friction plastic bearing members to rotatably suspend said bearing members and the hollow rollers carried thereby between said rails while preventing the accumulation of debris within said blind sockets,
said bearing portions having truncated inner end surfaces positioned more than the predetermined distance apart so that the end surface of each of the bearing portions and the end surface of its respective blind socket to define a space therebetween.

### 3,931,879
### AUTOMATIC DEVICE FOR SYSTEMATICALLY PLACING ELONGATED PRODUCTS ON A CONVEYOR

**Alex Javerzat, St Nazaire, and Fernand Delplanque, Nice, both of France, assignors to Mecaval International, Saint Chamond, France**

**Filed Nov. 9, 1973, Ser. No. 414,296**
**Claims priority, application France, Mar. 30, 1973, 73.19951, Aug. 11, 1972, 72.29386**
**Int. Cl.² B65G *47/08***
**U.S. Cl. 198—21** **12 Claims**

1. In a device for placing elongated products, such as pieces of sectional iron, bars or the like, on a conveyor formed of longitudinally spaced rollers, said device having storage means for a plurality of such elongated products remote from the roller conveyor and a feeding device intermediate the roller conveyor and the storage means for advancing the products to the roller conveyor, said feeding device having a longitudinal axis transverse to the longitudinal axis of the roller conveyor and at least two transversely spaced longitudinally extending product transfer means,
a. a pusher for advancing the products from storage to the feeding device, said pusher being operable to advance the products in a direction transverse to their longitudinal axes at a selected rate of speed,
b. drive means for advancing the product transfer means of the feeding device at the same selected rate of speed at which the pusher advances the products from storage,
c. means for depositing the elongated products transversely on the feeding device transfer means one at a time at uniformly spaced time intervals, to provide on the transfer means as it advances a transverse layer of elongated products disposed in uniformly spaced parallel relation,
d. means automatically operable for transferring periodically selected quantities of the elongated products from the layer of products on the transfer means to the roller conveyor, while maintaining the uniformly spaced parallel relation of the elongated products, said automatic means including

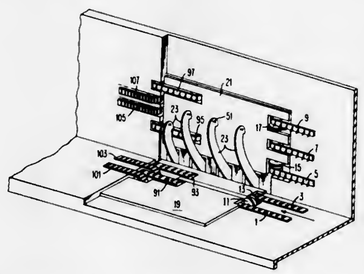


i. actuating means for raising the feeding device to a position above the upper plane of the roller conveyor and for lowering the feeding device to a position below the upper plane of the roller conveyor and
ii. detector means on the feeding device to cause the actuating means to raise and lower the feeding device in response to the advancement of the layer of elongated products, said detector means being operable to cause the feeding device to be moved to its lower position to deposit elongated products on the roller conveyor, and to cause the feeding device to be moved to its upper position subsequent to the deposit of elongated products on the roller conveyor.

### 3,931,880
### DOCUMENT HANDLING APPARATUS

**Thad E. Ayer, Endicott, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.**

**Filed May 13, 1974, Ser. No. 469,132**
**Int. Cl.² B65G *47/22***
**U.S. Cl. 198—29** **10 Claims**



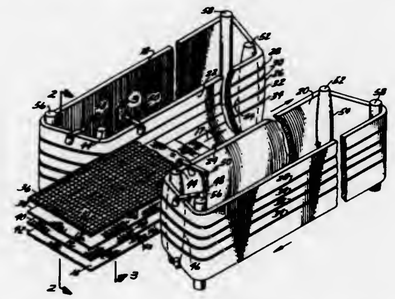
1. Document handling apparatus comprising
a first plurality of endless belts moving in synchronism and with a first velocity upon which the documents are loaded in bulk and are disposed substantially vertical,
fluffing means to which the documents are delivered by said belts for accelerating the documents to a second velocity greater than said first velocity to thereby decompact the documents,
a plurality of separate document stabilizing blades insertable one at a time between groups of said documents for stabilizing the motion of said decompacted documents, moving with said documents at said second velocity, and removable one at a time from between said groups of documents,
actuating means for cyclically inserting and removing said stabilizing elements from said documents,
jogging means for jogging said documents to align at least one edge of the documents, while being stabilized by said stabilizing elements,
and a second plurality of endless belts moving in synchronism and with said first velocity for receiving and recompacting the jogged documents.



### 3,931,881
### CONTINUOUS BELT SYSTEM HOLDING MULTIPLE LAYERS

**Frederic W. Bickel, Burbank, and Richard L. Long, Manhattan Beach, both of Calif., assignors to McDonnell Douglas Corporation, Long Beach, Calif.**

**Filed Oct. 2, 1973, Ser. No. 402,794**
**Int. Cl.² B65G *15/14***
**U.S. Cl. 198—165** **3 Claims**



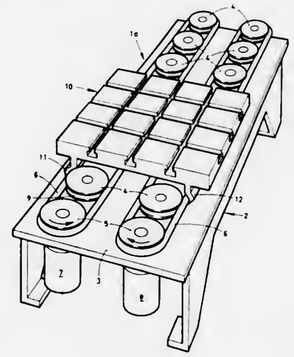
1. A continuous belt systems for holding multiple layers, said system comprising:
a pair of endless belts having vertical parallel spaced surfaces defining a path of travel;
said surfaces having gripping means thereon to retain multiple stacked and spaced layers therebetween;
said gripping means comprising closed slits in said surfaces;
means applying said gripping means to said layers at the start of said path of travel by opening said slits to permit insertion therein of edges of said layers and closing said slits after said edges are inserted;
said means for opening said slits comprising a convex bulge device for flexing the midportions of each belt inwardly toward each other including rollers on the top and bottom inside edges of said belts and rollers at the midsection of said belts on the outside surface thereof; and
means releasing said layers from said gripping means at the end of said path.

### 3,931,882
### MODULAR ARTICLE CONVEYOR

**Carl Gilbert Richard Ossbahr, Risbrinksvagen 36, Linkoping, Sweden**

**Filed Apr. 30, 1974, Ser. No. 465,629**
**Claims priority, application Sweden, May 4, 1973, 7306328**
**Int. Cl.² B65G *15/14***
**U.S. Cl. 198—165** **3 Claims**

1. A conveyor which can have its driving apparatus mounted wholly beneath a structure that defines a supporting surface such as a floor or a table top and by which articles can be transported over and along said surface, said conveyor being characterized by:
A. a pair of elongated, endless belt elements;
B. two pairs of pulley-like members, one pair for each of said belt elements and around which the belt element is trained;
C. means constraining the pulley-like members to rotation on spaced apart axes normal to said surface and fixing the locations of the pulley-like members in such relation to one another that
1. all of said pulley-like members are located beneath said structure and are disposed in a common plane that is parallel to said surface,
2. each of said belt elements has straight inner and outer stretches extending lengthwise between its pulley-like members, the inner stretches of the two belt elements being adjacent to one another and their outer stretches being remote from one another, and
3. at least one stretch of each belt element is parallel to its corresponding stretch of the other belt element;



D. means for rotatably driving one of the pulley-like members of each pair thereof, said means constraining said driven pulley-like members to rotate at substantially equal circumferential speeds but in opposite directions so that said parallel stretches of the two belt elements move lengthwise in the same direction; and
E. a carriage having
1. an article carrying portion adapted to overlie a portion of said surface of said structure and
2. belt engaging members fixed to said article carrying portion and projecting downwardly therefrom to extend through elongated slots in said structure, said belt engaging members having bottom portions that define elongated, laterally oppositely opening grooves in which said parallel stretches of the two belt elements are receivable to support the carriage and frictionally drive it in the direction of movement of said parallel stretches.

### 3,931,883
### HORIZONTAL CONVEYOR LOAD MOVING APPARATUS

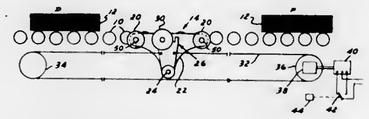
**Edwin J. Willard, East Longmeadow, and Leslie E. Carpenter, Jr., Southwick, both of Mass., assignors to Longview Fibre Company, Longview, Wash.**

**Filed June 21, 1974, Ser. No. 481,762**
**Int. Cl.² B65G *25/04***
**U.S. Cl. 198—218** **9 Claims**

1. Apparatus for moving a rigid faced load along a load supporting surface comprising
a carriage member,
tracking means supporting the carriage for guided movement back and forth along a predetermined path of travel below the plane of said surface,
a load propelling member having an upstanding lever arm pivoted at its lower end on said carriage and a contact roll

carried at the upper end of the arm for engaging a load, said roll having means for rotation only during carriage movement in an opposite direction to that of intended load travel,

means normally maintaining said arm in a vertical position and yieldably holding said roll elevated above the pivotal axis of the arm with the uppermost roll surface closely adjacent to and above the plane of said load supporting surface and the roll axis adjacent to and offset, in the intended direction of load travel, forwardly of a plane extending radially from the pivotal axis of said arm in substantially perpendicular relation to the load supporting surface.



said arm being swingable forwardly and rearwardly of its said normal position, said yieldable means resisting pivotal swing of said arm in a direction opposite that of the carriage movement when said roll engages a load on said supporting surface, and in a load driving engagement of the roll and load being yieldable in response to variations in resistance during carriage movement for a shifting of said roll position back and forth between a forwardly offset and leading relation of roll axis to arm axis and a rearwardy offset and trailing relation thereof, said roll between leading and trailing axis positions rising and failing and exerting varying degrees of upward tilting pressure against the load to assist continued movement thereof in the desired direction.

and means to move said cariage back and forth along said path of travel.

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**3,931,884**

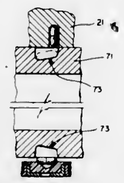
**APPARATUS FOR TRANSPORTING AND ORIENTING CAPSULES**

**Edward M. Ackley, Stone Harbor, N.J., assignor to R. W. Hartnett Company, Philadelphia, Pa.**

**Filed Sept. 24, 1973, Ser. No. 399,817**

**Int. Cl.² B65G** *47/14*

**U.S. Cl. 198—287** **1 Claim**



1. In a capsule turning apparatus, the combination which comprises: a continuously rotatable capsule transporting cylinder having a plurality of elongated upstanding spaced-apart pockets having radially extending portions arranged to receive the capsules in upstanding positions therein, means for rotating said cylinder, means providing a plurality of elongated transverse pocket portions which extend in a direction arranged generally transversely of the path of movement of said capsules, each said transverse pocket portion intercommunicating with one of said upstanding pockets by way of a shaped transfer surface, means for causing tilting movement of said capsules out of said upstanding pockets and into said transverse pocket portions and thereby transferring said capsules, while said cylinder is rotating, from said upstanding pocket portions to said transverse pocket portions, a pair of separate transporting cylinders rotating tangent to each other, said upstanding pockets being carried in one of said cylinders and said transverse pocket portions being carried in the other, and said pockets and pocket portions intercommunicating with one another by coming together incident to rotation of said cylinders.

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**3,931,885**

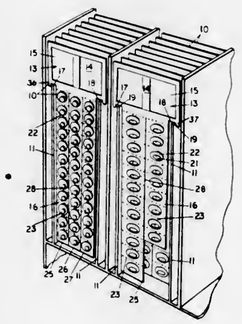
**MEDICINE DISPENSING SYSTEM**

**Edmond P. Nahill, 56 Pleasant St.; James C. Nahill, 9 Sunset Ave.; William A. Nahill, 10 Glen Ave., and Arthur Nahill, 51 East St., all of, Methuen, Mass. 01844**

**Filed Apr. 30, 1973, Ser. No. 355,960**

**Int. Cl.² B65D** *5/52, 73/00*

**U.S. Cl. 206—44 R** **1 Claim**



1. In combination:

a portable cart having side and end walls, at least one compartment formed therein, each compartment having at least two parallel upright support members, extending vertically therein, and having parallel horizontal upper edges spaced a predetermined width apart,

and a plurality of compartmentalized medicine-holding packages, each package comprising a generally T-shaped body having

a lower, medicine-carrying portion of flexible, low-cost, non self-supporting materials having bubbles therealong, for containing a pill, separated by the tear lines, for permitting each successive lowermost bubble to be separated therefrom, said sheet being of less width than the width between said supports to hang therebetween and

an upper index card portion of relatively rigid, self-supporting, material of predetermined greater width than the width of said lower portion and than the width between said supports; said card having a pair of oppositely disposed, downward facing bottom edges each forming a bearing surface extending beyond the said horizontal edges of said supports and supported thereon and having a pair of integral downward projecting ears, each outside one of the bearing surfaces of said bottom edges;

said bearing surfaces supporting said card portion in visible, upright, readable position; supporting said lower portion in limp, depending position between said supports and supporting said packages for individual free removal from said cart in a vertical path and

said ears preventing inadvertent twisting and dropping of said packages to the bottom of said cart.



**3,931,886**

**INNER BAG FOR CONTAINERS**

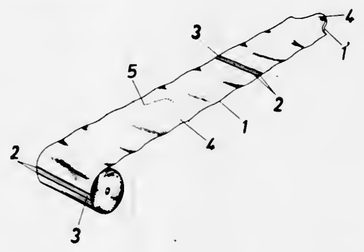
**Akira Yamauchi, 121, Tatsumachi, Sasayamo-cho, Taki, Hyogo, Japan**

**Continuation of Ser. No. 358,282, May 8, 1973, abandoned, which is a continuation of Ser. No. 125,188, March 17, 1971, abandoned. This application Dec. 16, 1974, Ser. No. 532,857**

**Claims priority, application Japan, Mar. 17, 1970, 45-25737**

**Int. Cl.² B65D** *33/14, 85/67;* **A61J** *9/00*

**U.S. Cl. 206—390** **4 Claims**



1. An inner bag for a container such as a nursing bottle formed in pairs, said pairs of inner bags being continuous in the shape of an elongated flexible plastic tube and defined by a plurality of sealing lines formed transversely of said tube and spaced apart by a predetermined distance longitudinally of said tube, a discontinuous cut line formed in the middle of each of said sealing lines transversely of said tube and a discontinuous cut line in the shape of a continuous wave-like curve formed transversely of said tube at the middle of the portion defined by each two adjacent spaced apart sealing lines, so as to provide at least two crest portions at the opening of each of said pair of inner bags to be formed on the opposite sides of said wave-like cut line, said inner bags thus being adapted to be separated from each other when torn off along the cut lines, wherein the crests are substantially large with an elongated periphery with an effective peripheral length for folding and, wherein the length of each crest portion in the longitudinal direction of the tube is at least equal to the distance between the troughs defining two crest portions.

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**3,931,887**

**PACKAGING STRUCTURE FOR ITEMS PROVIDED ON WIRES OR CORDS**

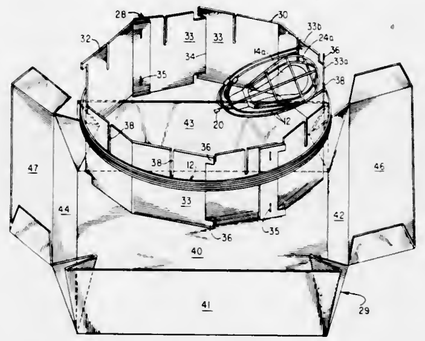
**Frederick R. Beck, Valparaiso, Ind., assignor to McGill Manufacturing Company, Inc., Valparaiso, Ind.**

**Filed July 22, 1974, Ser. No. 490,582**

**Int. Cl.² B65D** *5/50, 85/42*

**U.S. Cl. 206—419** **3 Claims**

1. In a package including a walled container which can be opened at the top and has a closed bottom for packaging therein a string-of-lights product having elongated wire conductor means therewith and a plurality of electric lamp sockets electrically connected thereto, the combination including a removable liner positionable within said container comprising a wall of generally cylindrical shape with a top edge and standing upright in said container and spaced away from but within the wall of said container, a string-of-lights product comprising wire conductor means and a plurality of assemblies, each assembly electrically connected to said wire conductor means at predetermined positions over the length thereof, with each assembly including a lamp socket, electrical connector means, and means associated with the socket, said liner having therewith means for maintaining said elongated wire conductor means on the outside of said liner intermediate the top edge and the bottom of the wall of said liner, and said liner having a plurality of slots therein, with each slot extending from the top edge of said liner downwardly a predetermined distance into the wall of said liner and corresponding at least in number to said assemblies for said product, with said wire conductor means insertable into and positioned in a slot while said product is packaged in said container, and with each said assembly being positioned inside said liner and resting on the bottom of the container, said product being removable from said container by unwrapping the wire conductor means from around the liner and removing said assemblies from the container by withdrawing each assembly upwardly out of the container to in turn withdraw the wire conductor means upwardly and out of a corresponding slot, with said upward movement of said wire conductor means and the assemblies being accomplished without impeding the wire conductor means on the outside of said liner as the total product is being removed from said container.



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**3,931,888**

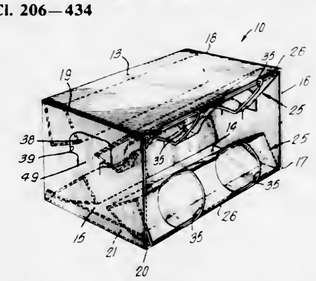
**ARTICLE CARRIER**

**Wesley Samuel Fogel, Quebec, Canada, assignor to Dominion Glass Company Limited, Montreal, Canada**

**Filed Oct. 31, 1974, Ser. No. 519,743**

**Int. Cl.² B65D** *65/10*

**U.S. Cl. 206—434** **10 Claims**

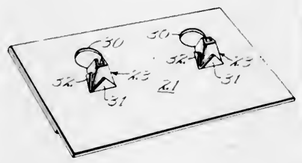


1. An article carrier blank comprising a single sheet of paper stock of other foldable material defining a series of walls having parallel end edges and fold lines formed along a common axis on each side thereof, said series of walls comprising a first transverse wall, a top wall, a second transverse wall, a bottom wall and an attachment panel, all in series; an article retaining panel adjacent each side edge of said bottom wall and said top wall, each said article retaining panel having an article retaining panel section connected to and extending adjacent said side edge and a pressure applying panel section outwardly of said article retaining panel section and integrally formed therewith, an outer securing end margin integrally formed with said pressure applying panel section and extending outwardly thereof, said article retaining panel section being formed of a first and second section, spaced apart openings in said article retaining panel sections constituting article

retaining cavities; said wall panels, section and securing end margins being defined by substantially parallel and transverse edges or fold lines.

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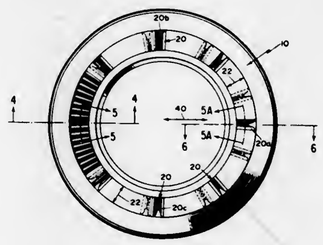
**3,931,889**
**TAPE CASSETTE HUB RETAINERS**
**Harry I. Roccaforte, Western Springs, Ill., assignor to Hoerner Waldorf Corporation, St. Paul, Minn.**
**Filed Nov. 29, 1974, Ser. No. 528,270**
**Int. Cl.² B65D** *85/67*
**U.S. Cl. 206—493** **3 Claims**



1. A tape cassette hub retainer adapted to be made from foldable paperboard or similar sheet-like material and used in conjunction with a cassette shipping and storage container, said hub retainer comprising:
a flat base panel;
at least one die cut, hinged post means formed in said base panel and spaced in said base panel to underlie at least one of the hubs in a tape cassette, said post means foldable outwardly from the plane of said base panel for engaging and retaining said hub of said tape cassette when in said container;
said post means comprising a generally rectangular shape having three sections formed as a part thereof including a center section of generally triangular shape having as its base a hinge line connecting said post means to said base panel; and
said three sections including a side flap hingedly connected to each of the remaining sides of said center section, said three sections folded outwardly from the plane of said base panel into at least a frustrum of a pyramid to engage and retain said hub of said tape cassette when in said container.

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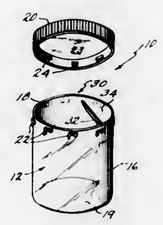
**3,931,890**
**STACKABLE LID**
**Paul Davis, Swampscott, Mass., assignor to Sweetheart Plastics, Inc., Wilmington, Mass.**
**Filed June 27, 1974, Ser. No. 483,644**
**Int. Cl.² B65D** *21/02*
**U.S. Cl. 206—508** **12 Claims**



1. A thin walled thermoformed plastic container lid comprising
a generally circular closure wall having upper and lower surfaces and an integral skirt extending generally downwardly from said closure wall,
a plurality of downwardly extending projections integral with said closure wall, said projections being angularly spaced about the center of said closure wall and lying within a generally annular region of said closure wall; and
means in the upper surface of said annular region defining an uninterrupted series of regularly spaced projection-receiving sockets between the projections, the angle between said projections in said annular space being an integer multiple of the angle between adjacent sockets so that a pair of said lids may be stacked with the outer ends of the projections of one of said lids engaging the sockets in the other of said lids.

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**3,931,891**
**PILL CONTAINER WITH POCKET**
**Stanley R. K. Peppler, Rte. 5, Paris, Tex. 75460**
**Filed Oct. 11, 1974, Ser. No. 514,316**
**Int. Cl.² B65D** *83/04, 41/06*
**U.S. Cl. 206—538** **7 Claims**

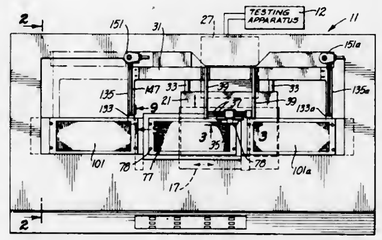


1. A container for holding a plurality of discrete elements of predetermined dimensions therein, said container comprising
a. a main body member, said member having closed side and bottom portions and an open top and holding a plurality of said discrete elements therein,
b. a cap for closing the open top of said main body member,
c. a pocket member formed in said main body member, said pocket member having closed bottom and side portions and an open top and holding a plurality of said discrete elements therein separate from said plurality of said discrete elements held by said main body member, said pocket member being so located within said main body member that the open top of said pocket member is spaced from said cap when said cap closes the top of said main body member a distance less than said predetermined dimensions of said discrete elements so that elements from said pocket may not mix with elements in said main body member and vice-versa.

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**3,931,892**
**COMPONENT HANDLER WITH FLUID CONTROLLED MEMORY**
**Martin L. Sklena, Costa Mesa; Russell P. Balent, Balboa Island, and Phillip E. Greer, Tustin, all of Calif., assignors to GTI Corporation, Costa Mesa, Calif.**
**Filed May 24, 1974, Ser. No. 472,978**
**Int. Cl.² B07C** *5/08*
**U.S. Cl. 209—74 M** **21 Claims**

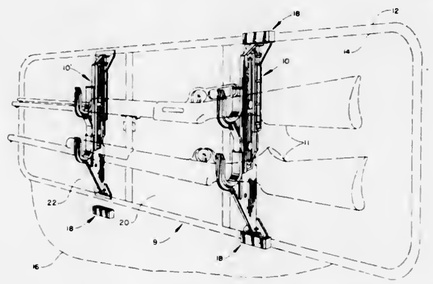
1. A component handler for use with an apparatus which is adapted to perform an electrical test operation on an electrical component and to provide a signal which is related to such test operation, said component handler comprising:
holding means for holding the electrical component on which the electrical test operation is to be performed;
said holding means including means to establish electrical contact with the component being tested;
means to provide a signal related to the electrical test operation;
a body having a surface defining at least one passage in said body;



at least one member movable in said passage of said body from a first position to a second position; and
first means responsive to the signal for providing fluid under pressure for moving said movable member from said first position to said second position whereby the position of said at least one movable member is correlated with the test operation performed on the electrical component.

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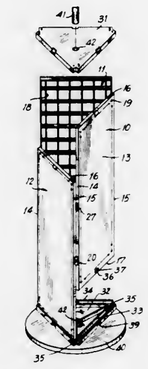
**3,931,893**
**RIFLE MOUNTING RACK FOR SLIDING WINDOW ASSEMBLIES**
**Johnny C. Elkins, 1909½ Pulliam St., and Marvin C. Hanz, 423 S. Irving, both of San Angelo, Tex. 76901**
**Continuation-in-part of Ser. No. 256,509, May 24, 1972, and a continuation-in-part of Ser. No. 401,983, Oct. 1, 1973, Pat. No. 3,876,079. This application Feb. 24, 1975, Ser. No. 552,302**
**Int. Cl.² A47F** *5/08, 7/00*
**U.S. Cl. 211—64** **13 Claims**



1. In combination with a vehicle sliding window assembly having at least two window panes with at least one said pane being slidable respective to the other, wherein the glass is slidably captured within spaced opposed channels formed within a window frame of the assembly, a mounting rack for rifles comprising a pair of support members having means by which they are removably and slidably secured solely to the window frame in laterally space relationship to one another;
each support member comprising a first and second slide member; each slide member having a slidable surface formed thereon and an insert means which is inserted in captured relationship within one of the opposed channels of the window frame assembly;
cradle means outwardly disposed from and attached to one of said slide members for contributing to the support of a rifle;
guide means formed on said first and second slide members so that one said slide member can be guidably moved in aligned relationship respective to the other of said slide members;
each said insert means being arranged on each said slide member so that when one slide member is moved relative to the other, the insert means are moved towards and away from one another; said insert means being arranged in a common plane, with said cradle means being normally disposed relative to the plane;
and a fastener means connected to each of said slide member for increasing the friction of said slidable surfaces to effectively lock the slide members together;
said insert means being placed within the channel which receives the window glass by sliding the first member relative to the second member, after which the members may be locked together by the fastener means to support a gun placed in the cradle solely by the insert means.

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**3,931,894**
**DISPLAY PANEL AND ASSEMBLY**
**Thomas V. Murphy, P.O. Box 156, Oradell, N.J. 07649**
**Filed Jan. 16, 1974, Ser. No. 433,743**
**Int. Cl.² A47F** *5/02*
**U.S. Cl. 211—177** **7 Claims**



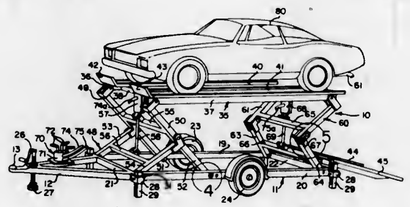
1. A display assembly comprising
a a plurality of closed display assemblies arranged in vertically stacked relation,
b a plurality of display panels disposed in a predetermined closed geometric configuration; each of said display panels comprising
1 a flat panel provided with apertures for the reception of display fixtures,
2 at least one male hinge element of generally cylindrical configuration being provided along at least one side edge of said panel,
3 said male hinge element being integrally molded with said panel and connected thereto at one or more spaced areas,
4 said panel being recessed from said hinge element between said areas, and
5 at least one female hinge element of generally semicylindrical configuration provided along at least an opposite side edge of said panel and embracing an arc of at least slightly more than **180°** and accepted for snap-together attachment to a male hinge element of an adjacent display panel,
6 the axes of said hinge elements being substantially coincident with the outer back edge extremities of said panel to accommodate 180° hinged folding of a pair of connected adjacent display panels between abutted back-to-back and abutted edge-to-edge positions,

c a plurality of end cap members,
d said end cap members being formed to provide socket means having a geometric configuration corresponding to that of said plurality of panels and adapted for the endwise reception of said connected panels to receive said panels in said geometric configuration, and
e at least certain of said end cap members including means for maintaining alignment of corresponding panels of vertically adjacent display structures.

## 3,931,895
## COLLAPSIBLE TRAILER HOIST

**Samuel Grimaldo, 776 W. Sandoval, Thousand Oaks, Calif. 91360**

**Filed Nov. 1, 1974, Ser. No. 519,988**
**Int. Cl.² B67G 67/30; B60P 1/04**
**U.S. Cl. 214—1 A** **16 Claims**



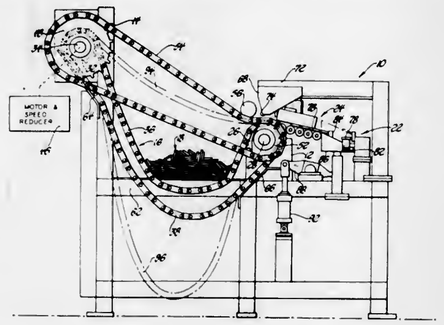
1. A collapsible trailer hoist comprising:
a. a main support;
b. a movable support movable between a lower position adjacent the main support and a raised position above the main support;
c. a collapsible front end frame interconnecting front portions of the main support and movable support and including,
c.1 a pair of laterally spaced elongated beams pivotally coupled to the movable support and having a set of normally free ends,
c.2 a pair of laterally spaced short beams coupled to the main support and pivotally coupled to intermediate portions of corresponding elongatged beams, and
c.3 an upper cross beam interconnecting the elongated beams and a lower cross beam interconnecting the short beams.
d. a collapsible rear end frame interconnecting rear portions of the main support and movable support; and,
e. control means operable to sequentially expand the front end frame and rear end frame to lift the movable support to its raised position, the control including a mechanical expander connected to and extending between the upper and lower cross beams of the front end frame, wherein when the front end frame is alternately collapsed and expanded, the elongated and short beams are generally parallel and mutually angled respectively.

## 3,931,896
## BAR UNSCRAMBLER

**Leonard Novis, Linden, Mich., assignor to Atlas Automation, Inc., Fenton, Mich.**

**Filed Jan. 24, 1975, Ser. No. 543,726**
**Int. Cl.² B65G 65/02**
**U.S. Cl. 214—1 P** **5 Claims**

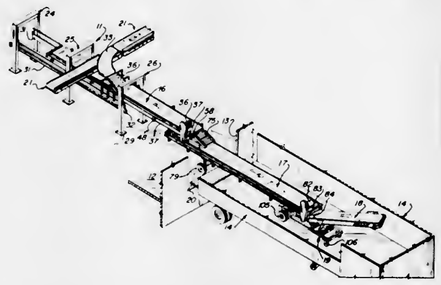
1. In a bar unscrambling and feeding apparatus of the type including a frame having longitudinally extending front and rear members spaced apart laterally and adapted to receive a bundle of unoriented bars, a plurality of flexible slings each having a front portion supported on said front member and a rear portion supported on said rear member and forming a festoon therebetween, said rear portion being at a higher position than the front portion, said slings being spaced apart longitudinally and adapted to support said bundle with the bundle extending in a generally longitudinal direction, transfer means adjacent the front member and adapted to transport a bar in a lateral direction from the front of the slings, reversible drive means for moving said slings to alternately shorten and lengthen the respective festoons and thereby raise and lower said bundle to orient said bars and feed a bar to the front of the slings, the improvement comprising: a front movable support means mounted on said front member with said front portion of the slings connected thereto, a rear movable support means mounted on said rear member with said rear portion of the slings connected thereto, said reversible drive means being connected with both of said movable support means for moving the front portion of the slings at a higher lineal speed than the rear portion of said slings whereby the slings tend to advance and retract the bundle toward and away from the transfer means when the festoons are alternately shortened and lengthened.



## 3,931,897
## LOAD-OUT CONVEYOR APPARATUS

**Duane D. Bacon, 6099 Brigadoon Drive, Longmont, Colo. 80501, and Edward J. Rutt, 2609 50th Ave., Greeley, Colo. 80631**

**Filed Aug. 19, 1974, Ser. No. 498,417**
**Int. Cl.² B65G 57/112**
**U.S. Cl. 214—6 G** **14 Claims**



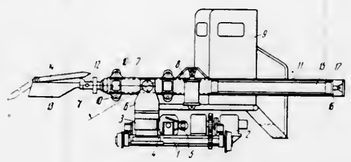
1. In loading apparatus for stacking a plurality of articles from a storage area to a receiving area, the combination comprising:
a reference frame adapted to be positioned between the storage area and a selected distance from the receiving area;
conveyor means for moving articles delivered thereto over a selected distance, said conveyor means including a transfer section movable in and out of and guided by the frame and a discharge section in receiving relation to the transfer section and pivotally mounted at its intake end to swing up and down about a horizontal axis and to swing from side to side about a vertical axis to discharge articles at a selected point in the receiving area, said transfer section including an upper conveyor supported for guided movement on said frame and a lower conveyor supported for guided movement by said frame and for movement under the upper conveyor in a stacked relation in a retracted position in the frame and an end-to-end relation in an extended position projecting beyond the end of the frame; and
a self-propelled vehicle including a rigid, unitary box-shaped vehicle frame movable on wheel means, said vehicle being movable relative to said reference frame, said vehicle being coupled to the transfer section and supporting the pivoted intake end of said discharge section and supporting said discharge section for moving said transfer section relative to said reference frame and positioning said discharge section in the receiving area, said vehicle having control means operable at the discharge end of said discharge section to regulate the direction, starting and stopping of said vehicle.



## 3,931,898
## MACHINE FOR CONDITIONING ORE HEAT-TREATING FURNACE THROAT

**Eduard Konstantinovich Karnobatsky, ulitsa Pobedy, 8b, kv. 26; Dmitry Grigorievich Linnik, Prospekt Lenina, 212, kv. 70, and Ivan Yakovlevich Stovbur, ulitsa Patrioticheskaya, 74, kv, 27, all of Zaporozhie, U.S.S.R.**

**Continuation of Ser. No. 435,017, Jan. 21, 1974, abandoned, which is a continuation of Ser. No. 323,400, Jan. 15, 1973, abandoned. This application Mar. 6, 1975, Ser. No. 555,721**
**Int. Cl.² F27B 3/18**
**U.S. Cl. 214—32** **2 Claims**



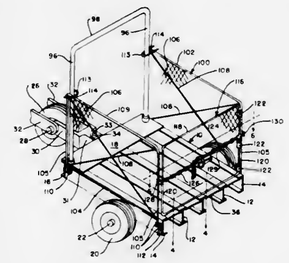
1. A machine for conditioning an ore heat-treating furnace throat comprising: a self-propelled truck; a column; means mounting said column on said selfpropelled truck to be free to swing about a vertical axis; a tubular guide bar articulated to said column to be free to rotate about a horizontal axis; a hollow beam incorporated in said tubular guide bar; an actuating mechanism articulated on said hollow beam and constituting a scraper provided with two side edges and one front edge; a rod hinged on said front edge for movement about a horizontal axis; an air cylinder arranged in the interior of said beam and serving to transverse said actuating mechanism, said cylinder having a movable member and a stationary member; the cylinder movable member being articulated with said beam and the stationary member being articulated with said tubular guide bar.

## 3,931,899
## BALE-HANDLING EQUIPMENT

**Norman E. McAlhaney, Rte. 3, Box 383, Orangeburg, S.C. 29115**

**Filed July 22, 1974, Ser. No. 490,242**
**Int. Cl.² B65G 67/02**
**U.S. Cl. 214—38 CC** **14 Claims**

1. A moble unit for the accumulation of items such as hay bales in the form of a stack for the removal of said items as a stack by an independent fork lift apparatus having tines, said unit comprising a platform including spaced stack-supporting members defining elongated gaps therebetween, said members being constructed and arranged to permit the insertion of said tines of said fork lift apparatus below said gaps and the movement of said tines therethrough, and said platform additionally including closure means mounted for movement between positions in which they close said gaps and positions in

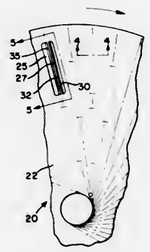


which they expose said gaps for said movement of said tines therethrough and there is means for moving said closure means between said positions.

## 3,931,900
## PEELER AND GRATER APPARATUS

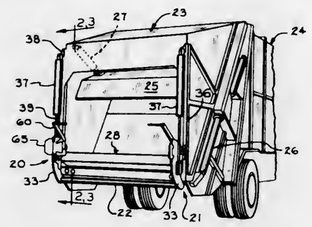
**Gerard A. Tiby, Ivry-sur-Seine, France, assignor to Hobart Corporation, Troy, Ohio**

**Filed Dec. 18, 1972, Ser. No. 316,280**
**Claims priority, application France, Oct. 23, 1972, 72.37486**
**Int. Cl.² A47J 43/25; B02C 18/18**
**U.S. Cl. 241—296** **4 Claims**



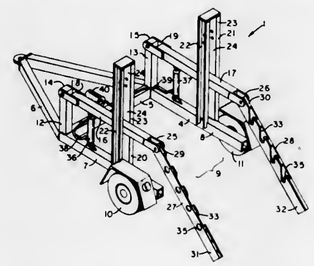
1. A peeler and grater disc for a vegetable peeling machine comprising:
a. a rotatable disc,
b. knife means formed from the surface of said disc and integral therewith, said knife means having at least one knife edge for cutting thin slices from the surfaces of vegetables moved thereagainst during rotation of said disc, and
c. lip means adjacent and slightly below the cutting edge of said knife means and formed from said disc and integral therewith to shield the knife means and limit the exposure thereof, to prevent excessive wear thereof, and to define the cutting depth of the knife means as the vegetables are moved thereagainst.

3,931,901
## APPARATUS FOR DUMPING OPEN-TOPPED TRASH CONTAINERS
Norman E. Jones, Saratoga, Calif., assignor to Peabody Galion Corporation, Galion, Ohio
Filed Dec. 16, 1974, Ser. No. 532,909
Int. Cl.² B65F 3/02
U.S. Cl. 214—302 13 Claims



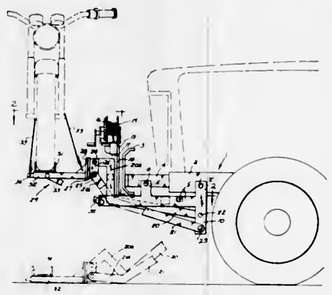
1. Apparatus for dumping an open-topped trash container having outwardly extending co-axial trunnions at its upper front corner, said apparatus comprising, in combination,
a. two laterally spaced mechanisms mounted on a structure which remains stationary while a container is being inverted therebetween for dumping, each of said mechanisms comprising
1. a main lever that is pivoted on said structure,
2. opposed co-acting trunnion lock members adapted to close around one of said trunnions,
3. lost motion connecting means between one of said trunnion lock members and said lever, and
4. an hydraulic cylinder and piston rod pivotally connected at its upper end to said structure and at its lower end to said one of said trunnion lock members and, through said lost motion connection, to said lever, and
b. a cross member extending between and connected to the lower ends of said levers and adopted to engage the container at a level below the trunnions when said levers are swung upwardly relative to said structure.

3,931,902
## CABLE REEL TRANSPORT VEHICLE
Joseph W. Love, Jr., Bonner Springs, Kans., assignor to B. H. Mfg., Inc., Kansas City, Kans.
Filed July 24, 1974, Ser. No. 491,285
Int. Cl.² B60P 1/48
U.S. Cl. 214—390 9 Claims



1. A wheeled carrier for transporting reels and the like comprising:
a. a frame having a laterally extending main cross bar and a pair of laterally spaced beams secured to and extending rearwardly from said cross bar, said beams defining a rearwardly open space therebetween,
b. a pair of laterally spaced uprights secured to said beams near said cross bar and having upper ends projecting above said beams,
c. a pair of elongated arms respectively extending over said beams and having rear ends and forward ends, said forward ends being pivotally connected to said upright upper ends for arcuate movement of said arms in vertical planes,
d. a pair of elongated, rigid support bars respectively having upper ends hinged to said arm rear ends and lower ends, said support bars being movable from a lower position to an upper position in response to the arcuate movement of said arms, said support bars angling downwardly and rearwardly from said arm rear ends and being movably supported near said bar lower ends by said frame when said support bars are in said upper position,
e. Means associated with said support bars to receive and support opposite ends of a cable reel axle shift, and
f. means selectively urging said arms through said arcuate movement.

3,931,903
## MOTORCYCLE RACK FOR VEHICLES
McVoy Johnson, Star Rte. 2, Box 314, LaPine, Oreg. 97739
Filed May 3, 1974, Ser. No. 466,706
Int. Cl.² B60R 9/00
U.S. Cl. 214—450 3 Claims

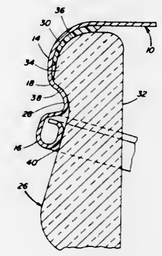


1. A motorcycle rack for attachment to the frame members of a supporting vehicle in a load distributing manner, said rack comprising in combination,
a base frame including a pair of spaced parallel rails supported at fore and aft spaced apart points by the vehicle frame to impart loads to the frame at points therealong, said rails including upwardly directed projections for frame attachment purposes,
upper and lower pairs of arms located at each side of the base frame each of said arms pivotally mounted at its innermost end to said base frame below the vehicle frame and adapted for travel along a vertical path to constitute a parallelogram linkage, each upper and lower pair of arms at each side of the base frame terminating outwardly in pivotal attachment to a plate member with a transverse face,
a motorcycle support structure located forwardly adjacent a vehicle bumper in its raised travel position and including elongate means for the reception of motorcycle wheels,
means for imparting a lifting force to the motorcycle support structure, and
said motorcycle support structure including a pair of transverse plate members each in juxtaposition with the first mentioned plate members, means readily detachably mounting the plate members of the motorcycle support structure to the first mentioned plate members whereby said motorcycle support structure may be easily attached to and detached from said first mentioned plate members,



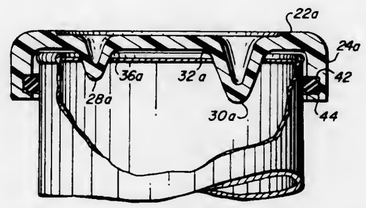
such that when the rack is not being used to support a motorcycle, the resulting combined length of the vehicle and motorcycle rack with the motorcycle support structure removed, is only slightly greater than the vehicle length alone.

3,931,904
## TEAR-OFF CLOSURE
Jackie Allen Coop, P.O. Box 94, New Lisbon, Ind. 47366
Filed Dec. 11, 1974, Ser. No. 531,627
Int. Cl.² B65D 41/42
U.S. Cl. 215—254 14 Claims



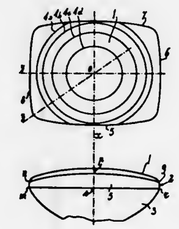
1. A sheet metal closure adapted to be secured on a container and comprising a top panel, a depending skirt around the periphery of the top panel with a pair of weakening lines in the skirt defining a tear strip across the skirt, and a substantially rigid pull ring disposed generally beneath the bottom edge of said skirt substantially concentric with the skirt and integrally connected to said tear strip, said pull ring comprising a bead curled inwardly from the connection of the ring to said tear strip and adapted to be cammed against the neck of a container below the connection to the tear strip when the ring is lifted to partially wrap the end of said tear strip around a portion of the curled bead and initiate severance of said weakening lines.

3,931,905
## BEVERAGE CONTAINER OPENER AND SEALING DEVICE
Roger R. Shumway, and Donald C. Bortel, both of Glendale, Ariz., assignors to Donald C. Bortel, Glendale, Ariz.
Filed Dec. 16, 1974, Ser. No. 532,780
Int. Cl.² B65D 41/02
U.S. Cl. 220—278 3 Claims



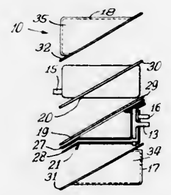
I. A device for opening containers of the type having a lid with weakened closure portions therein adapted to be inwardly depressed, said device comprising:
a. a generally circular body member adapted to extend across the lid of the container having an inner planar surface;
b. a peripheral lip depending from said body member;
c. projection means depending from the inner surface of said body member arranged to align with said weakened closure points in the container lid, said projection means having a general V-shaped cross section extending uniformly from said inner surface;
d. whereby the device may be snugly engaged with the container with the projection means in alignment with the weakened closure portions and whereby said device can be manually depressed to open said closure portions to bring said planar surface proximate or in contact with said lid to prevent spraying of the container contents upon opening.

3,931,906
## BULBS FOR CATHODE TUBES, PARTICULARLY FOR TELEVISION TUBES
Georges Bradu, Nemours, France, assignor to Societe des Verreries Industrielles Reunies du Loing, Paris, France
Filed Feb. 24, 1966, Ser. No. 529,747
Claims priority, application France, Mar. 4, 1965, 65.7895
Int. Cl.² B29C 23/00
U.S. Cl. 425—505 3 Claims



1. A bulb for a cathode tube comprising a cone having a narrow end and a wide substantially rectangular base end, a screen having a curved viewing portion having a substantially rectangular peripheral contour complementary to the contour of the base end of said cone, said viewing portion being so curved that sections therethrough parallel to said base cone end define curves which are substantially parallel to said cone base end contour, and means securing together said cone base end and said screen at their respective edges.

3,931,907
## COMBINATION WATER SUPPLY AND WASTE HOLDING TANK
George A. Henle, 920 Penfield St., Beecher, Ill. 60401
Filed Jan. 15, 1975, Ser. No. 541,225
Int. Cl.² B65D 87/16, 25/04
U.S. Cl. 220—22 14 Claims



1. A combination fresh water supply and liquid waste holding tank for use in mobile vehicles, comprising:
a bottom half shell defined by a bottom wall, an upright end wall at one end of the bottom wall, and opposed side walls extending downwardly from the top of said end wall to the opposite end of the bottom wall;
an upper half shell defined by a top wall, a depending end wall at one end of the top wall, and opposed side walls

extending upwardly from the bottom of said end wall to the opposite end of the top wall;

means for securing said half shells together with the lower edge of the upper half shell side walls juxtaposed to the upper edge of the lower half shell side walls to define a parallelepiped shell;

an extensible divider wall sealingly secured between said half shells and being extensible selectively fully upwardly into said upper half shell and fully downwardly into said lower half shell;

first flexible holding means for holding fresh water disposed within the shell above said divider wall;

second flexible holding means for holding waste disposed within the shell below said divider wall;

first port means for passing fresh water through said shell into and from said first flexible holding means; and

second port means for passing waste through said shell into and from said second flexible holding means.

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**3,931,908**

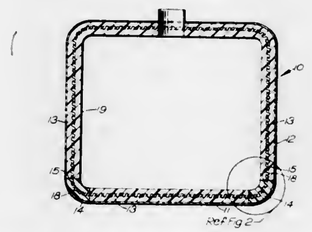
**INSULATED TANK**

**Dan R. Cheyney, Piedmont, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.**

**Filed Aug. 2, 1973, Ser. No. 386,459**

**Int. Cl.² B65D** *25/18*

**U.S. Cl. 220—71** **5 Claims**



**1.** In a metallic tank capable of storing or transporting large volumes of liquid at temperatures from about −70° to −400°F., said tank having a generally rectilinear cross section, wherein the internal surface of said tank is lined with a foamed insulation on at least the upstanding walls and the floor thereof, an improved corner joint construction between the wall insulation and the floor insulation comprising a layer of foam in the corner, abutting the wall insulation and the floor insulation and having a density of at least one pound per cubic foot greater than the wall and floor foam insulation and having incorporated in said denser foam an interlayer consisting of flexible webbing of generally retiform construction, said flexible webbing extending beyond said denser foam and incorporated into the abutting layers of lower-density foam affixed to the wall and floor of said tank.

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**3,931,909**

**PUSH-IN EASY-OPENING CLOSURES**

**Alan George Dalli, Warrandyte; Michael Debenham, Frankston, and Ralph Edward Shackleford, Ferntree Gully, all of Australia, assignors to The Broken Hill Proprietary Company, Ltd., Melbourne, Australia**

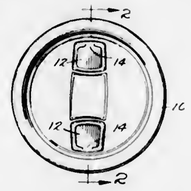
**Division of Ser. No. 180,785, Sept. 15, 1971, Pat. No. 3,759,206. This application June 29, 1973, Ser. No. 375,066**

**Claims priority, application Australia, Sept. 16, 1970, 2556/70**

**Int. Cl.² B65D** *41/32*

**U.S. Cl. 220—268** **26 Claims**

**1.** A push-in easy-opening closure in a sheet metal container member for use in a container suitable for containing carbonated beverages, comprising an opening in the container member, said opening at least partially defined by a free edge of metal having a thickness substantially corresponding to the entire thickness of the sheet metal and extending from one side of the metal to the other side thereof and surrounded by a marginal portion radially outward thereof, and an integral closure member for said opening, said closure member severed from said container member around a substantial portion of the periphery of the closure member and having a central



portion and a free edge portion defined by the line of severance and having a thickness corresponding to substantially the thickness of said sheet metal and extending from one side of the metal to the other side thereof, the said marginal portion of said free edge having been cold worked to decrease the size of said opening by displacing the free edge radially inwardly into overlapping relationship over said free edge portion, said marginal portion being more worked than said central portion.

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**3,931,910**

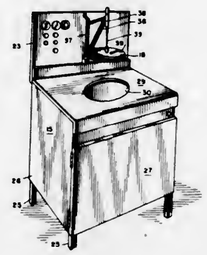
**CLOSURE LID FOR CLOSING THE OPENING OF A FOOD COOKING RECEPTACLE**

**Charles Jere Albright, Chicago; Clifford E. Fitch, Sr., and Clifford E. Fitch, Jr., both of Chicago Heights, all of Ill., assignors to Chemetron Corporation, Chicago, Ill.**

**Division of Ser. No. 184,892, Sept. 29, 1971, Pat. No. 3,778,524, which is a continuation-in-part of Ser. No. 793,392, Jan. 23, 1969, abandoned. This application June 7, 1973, Ser. No. 367,724**

**Int. Cl.² A47J** *36/06, 36/10, 36/12*

**U.S. Cl. 220—329** **7 Claims**



**1.** A closure lid for closing and sealing against the rim of an opening to a cooking chamber of a pressurized cooking receptacle for cooking food under pressure in high temperature non-aqueous liquid, said opening having a peripheral sealing rim therearound within the receptacle, said closure lid having a peripheral sealing surface and being insertable in and removable through said opening for selective closing and opening relationship relative thereto, a support mounted to the receptacle, a swingable bracket means mounted to the support for swinging movement relative to the receptacle, a closure lid support arm, means pivotally mounting the support arm to the bracket means for swinging movement of the arm with the bracket means and for pivotal movement of the arm relative to the bracket means, said closure lid carried by the support arm for movement with the support arm, and resilient means connected with the support arm for urging the support arm upwardly and thus urging the closure lid upwardly against the sealing rim into operative position until pressure in the receptacle increases to an amount sufficient to urge the closure lid into tight, sealing relationship relative to the rim, and said resilient means resiliently biasing the support arm and closure lid up and away from the opening when the closure lid is removed therethrough.



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**3,931,911**

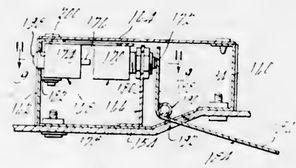
**ICE DISPENSING MACHINE**

**Vance L. Kohl, Albert Lea, Minn., assignor to King-Seeley Thermos Co., Ann Arbor, Mich.**

**Continuation-in-part of Ser. No. 205,215, Dec. 6, 1971, Pat. No. 3,796,351. This application Dec. 17, 1973, Ser. No. 425,103**

**Int. Cl.² B67D** *5/14*

**U.S. Cl. 222—56** **7 Claims**



**1.** In an apparatus for storing and dispensing ice in particulate form that is produced by an associated ice making machine, a generally cylindrical particulate ice storage compartment, a bottom closure for said compartment and means defining a discharge opening in said closure, means for moving ice within said compartments towards said opening, an electrical control circuit communicating a source of electrical energy with said ice making machine, a first switch connected to said circuit and having a switch body and an actuator, said actuator normally being disposed in a first position closing said circuit and movable relative to said body to a second position opening said circuit, a second switch normally disposed directly adjacent said first switch and connected to said circuit, said second switch having an actuator normally disposed in a first position closing said circuit and movable to a second position opening said circuit solely under the influence of said first switch body moving from said normal position to an actuated position, an ice engaging element pivotably mounted adjacent the upper end of said compartment and having a portion engageable with ice in said compartment and adapted to apply a force of a predetermined magnitude upon engagement of said ice therewith, a yieldable support member supporting said first switch at said normal position adjacent said second switch and permitting movement of said first switch from said normal position to said actuated position under the application of said force from said ice engaging element against said first switch actuator and under conditions when said first switch actuator is predeterminately inoperative, whereby when said predetermined inoperative condition exists and said element is engaged by ice within said container, said second switch actuator will be moved by said first switch to said second position opening said circuit to prevent operation of said ice making machine, and wherein said first switch is operatively supported by said body upon said yieldable support which comprises a relatively resilient member permitting movement of said first switch body toward and into engagement with said actuator of said second switch under the influence of said force being exerted against said first switch.

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**3,931,912**

**TWO-PART HAIR DYE OR HAIR BLEACH PACKAGE**

**Du Yung Hsiung, Park Forest, Ill., assignor to The Gillette Company, Boston, Mass.**

**Continuation of Ser. No. 171,398, Aug. 12, 1971, abandoned, which is a continuation-in-part of Ser. No. 846,580, July 31, 1969, abandoned. This application Oct. 7, 1974, Ser. No. 512,844**

**Int. Cl.² B65D** *35/22*

**U.S. Cl. 222—94** **17 Claims**

**1.** A dispensing container having two compartments providing separate storage of two parts of a hair treating composition selected from the group consisting of aqueous hydrogen peroxide hair bleach and aqueous oxidative hair dye compositions and means including a pressure propellant for dispensing the contents of both compartments simultaneously with mixing thereof, the contents of one compartment comprising an aqueous medium containing an alkalizing agent sufficient to provide a pH from 7.0 to 12 in the mixed composition and a control compound which is a member of the group consisting of o-aminophenol, p-aminophenol, methyl-p-aminophenol, 4-amino-3-methylphenol, 2,4-diaminophenol, N-(p-hydroxyphenyl) glycine, p-phenylenediamine, p-tolylenediamine, 1,2,4,5-tetrahydroxybenzene, betanaphthol, 2,5-dihydroxybenzoic acid, 3,4 -dihydroxybenzoic acid, gallic acid, propyl gallate, 2,7-naphthalenediol, 2,2′,4,4′-tetrahydroxybiphenyl, hydroquinone monosulfonic acid, 3,4,5-trihydroxyacetophenone, 3-(N,N,-dimethylamino) phenol, 8-hydroxyquinoline, pyrocatechol, resorcinol, hydroquinone, pyrogallol, 1,3,5-trihydroxybenzene, 4-t-butyl catechol, 1,5-naphthalenediol, 3-hydroxydiphenylamine, m-phenylene diamine, 2,4-diaminoanisol, and mixtures thereof, and the contents of the other compartment comprising an aqueous hydrogen peroxide solution, the amount of hydrogen peroxide being from 0.1 to 6% by weight of the total contents of the container excluding pressure propellant, the amount of total control compound being from 10 to 500% by weight of the hydrogen peroxide and sufficient to prevent liberation of oxygen gas in an amount to produce total pressure in the package greater than 150 p.s.i.g. if mixing of the two parts within the package occurs.

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**3,931,913**

**SLIDE GATE NOZZLE**

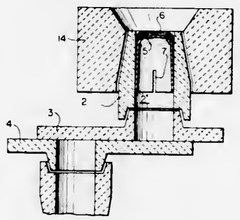
**Ernst Meier, Adliswil, Zurich, Switzerland, assignor to Stopinc Aktiengesellschaft, Zug, Switzerland**

**Filed Nov. 18, 1974, Ser. No. 524,944**

**Claims priority, application United Kingdom, Nov. 16, 1973, 53356/73**

**Int. Cl.² B22D** *37/00, 41/08*

**U.S. Cl. 222—146 C** **7 Claims**



**1.** A slide gate nozzle for the spout of a metallurgical vessel said slide gate nozzle comprising:

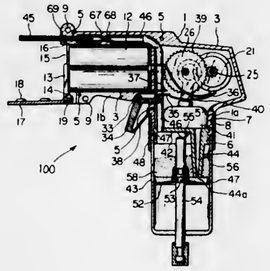
a pair of plates arranged on the opening of a pouring channel of said spout, said pair of plates including a fixed bottom plate and a displaceable sliding plate; and

a metal element positioned in said pouring channel of said spout, said element closing the cross section of said channel, said metal element, on the side thereof turned toward the interior of said vessel, being provided with an insulat-

ing layer of refractory material, the other side of said metal element being free for radiation of heat.

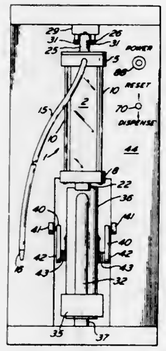
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**3,931,914**
**POWDER EJECTOR**
**Hideo Hosaka, Takasaki, and Yasuo Kawamata, Gunma, both of Japan, assignors to Max Kabushiki Kaisha, Tokyo, Japan**
**Filed June 3, 1974, Ser. No. 475,836**
**Claims priority, application Japan, July 13, 1973, 48-83203[U]; July 13, 1973, 48-83202[U]; July 13, 1973, 48-83201[U]; July 11, 1973, 48-82811[U]; July 11, 1973, 48-83810[U]; July 10, 1973, 48-81705[U]; July 10, 1973, 48-81707[U]; July 10, 1973, 48-81706[U]; July 11, 1973, 48-82809[U]; July 11, 1973, 48-82808[U]**
**Int. Cl.² B67D** *5/54*
**U.S. Cl. 222—193** **9 Claims**



1. In a portable hand-held powder dispensing device, comprising in combination:
portable housing means defining therein a substantially closed equipment chamber and a battery containment space, said housing means having an opening formed therein for communication with said space;
a powder storage container fixedly attached to said housing means and defining therein a compartment adapted to contain a quantity of powder;
pump means mounted on said housing means and positioned within said chamber for supplying air into said compartment, said pump means having a discharge port connected so as to communicate with said compartment;
electrical motor means for driving said pump means, said motor means being mounted on said housing means and disposed within said chamber;
battery means disposed within said space for energizing said motor means;
cover means swingably mounted on said housing means for closing said opening, said cover means being hingedly connected along one edge thereof to said housing means, the opposite edge of said cover means cooperating with said housing means to create a pressure fit therebetween when in a closed position, the cover means also having electroconductive metal contact means positioned on the inner surface thereof for contact with terminals on the battery means when the cover means is closed;
conduit means providing communication between said compartment and a location disposed externally thereof for permitting discharge of powder from said compartment, said conduit means having the inlet end thereof positioned in communication with said compartment and having a discharge member on the outlet end thereof;
electrical switch means mounted on said housing means for electrically connecting said battery means and said motor means together to permit energization of said motor means when said switch means is closed; and
manually actuated means movably supported on said housing means and coacting with said switch means for permitting selected actuation of said switch means.

**3,931,915**
**LIQUID-CONTAINING CARTRIDGE AND A DEVICE FOR DISPENSING MEASURED AMOUNT OF LIQUID FROM SUCH A CARTRIDGE**
**Harvey T. Downings, and Byron E. Sturgis, both of Huntsville, Ala., assignors to Micromedic Systems, Inc., Horsham, Pa.**
**Filed Oct. 10, 1973, Ser. No. 405,226**
**Int. Cl.² G01F** *11/02*
**U.S. Cl. 222—327** **17 Claims**



13. A device for dispensing a liquid in one or more aliquots of measured amount from a package unit having a liquid-containing tube, a port at one end of the tube in communication with the liquid in the tube, a piston within the tube, said piston having a forward wall, a back wall, and an outer cylindrical surface provided with an annular sealing means and fitting slidably within the inside wall of the tube whereby the piston is movable axially back and forth within the tube to force liquid within the tube through the port, and access means adapted to receive a ramrod in engagement with the back wall of the piston, said device comprising:
a. a ramrod having a retracted position and an advanced position,
b. means for releasably mounting the package unit with its access means in alignment with the ramrod in retracted position,
c. means for incrementally advancing the ramrod lengthwise against the back wall of the piston, and thereby pushing the piston axially ahead of it in one or more increments toward said advanced position, comprising:
1. a rotatable screw shaft mounted with its axis offset from and parallel to the ramrod,
2. means comprising a reversible motor for rotating the screw shaft on its axis,
3. means for interrupting rotation of the screw shaft at a predetermined angular position at the end of each revolution of the screw shaft whereby the size of each aliquot for a given piston depends on the pitch of the screw, and
4. means for reversing the motor to move the ramrod to retracted position.

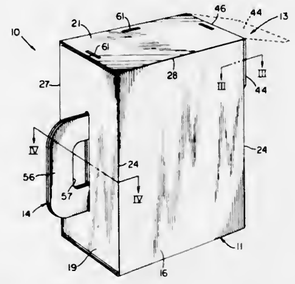
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**3,931,916**
**DISPENSING-TYPE BOX**
**Maurice R. Blue, South Bend, and Glen Younker, Dyer, both of Ind., assignors to Slip-Not Corporation, Dyer, Ind.**
**Filed Aug. 15, 1974, Ser. No. 497,825**
**Int. Cl.² B65D** *5/46*
**U.S. Cl. 222—465** **1 Claim**

1. A dispensing-type receptacle, comprising:
wall means defining a substantially closed box having a substantially closed compartment in the interior thereof adapted for the storing of a particle material;



said wall means including (1) a pair of opposed and substantially parallel sidewalls, (2) opposed and substantially parallel front and rear walls extending between and connected to the edges of said sidewalls for defining a tubular member of substantially rectangular cross section, said rear wall having a vertically elongated slot formed centrally thereof, and (3) opposed and substantially parallel top and bottom walls extending between the upper and lower edges, respectively, of said tubular member for closing the upper and lower ends thereof;
dispensing means associated with said front wall for permitting the material within said compartment to be poured from said box, said dispensing means including a plurality of preformed openings within said front wall adjacent the upper end thereof, said openings being disposed within at least two horizontally extending rows which are spaced one above the other, each row containing therein a plurality of openings with the openings in one row being horizontally staggered relative to the openings in the other row;
said dispensing means also including a closing flap fixedly but releasably coupled to said front wall for overlying said openings, said closing flap being integrally connected to said top wall and separated therefrom by a fold line which permits said flap to be folded downwardly to overlie the upper portion of said front wall, and securing means for securing said flap to said front wall at a location disposed below said openings, said securing means being spaced upwardly from the lower free edge of said flap so that the



lower edge portion of said flap is free of connection to said front wall; and
handle means associated with said rear wall for permitting gripping of said receptacle, said handle means comprising a separate sheetlike member positioned within the interior of said box and disposed so as to overlie said rear wall, said sheetlike member having a center portion of rectangular size substantially similar to said rear wall, said sheetlike member also having a pair of rectangular end portions integrally connected to the opposite ends of said center portion, said end portions having a width substantially one-half the width of said center portion and being hingedly connected to said center portion so that said end portions are folded inwardly to overlap said center portion to form a double thickness;
said handle means further including a substantially C-shaped loop integrally but hingedly connected to the free edge of each of said end portions and extending substantially perpendicular thereto whereby the C-shaped loops as connected to said end portions are disposed directly adjacent one another in side-by-side relationship and form a C-shaped handle which projects outwardly through said slot so as to be accessible from the exterior of said box, each of said C-shaped loops being foldable downwardly away from one another so as to overlie the exterior surface of said rear wall in substantially parallel relationship therewith, and said end portions of said sheetlike member being abuttingly engaged with and fixedly secured to the inner surface of said rear wall.

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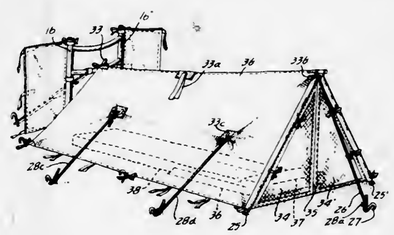
**3,931,917**
**PERSONAL MATERIALS CARRIER**
**Donal R. Zellmer, USA Aero Services DETE, APO New York, N.Y.**
**Filed Mar. 12, 1973, Ser. No. 340,394**
**Int. Cl.² A45F** *5/00;* **F42B** *39/02*
**U.S. Cl. 224—5 R** **10 Claims**



1. Shoulder-mounted personal materials carrier apparatus comprising a curved band for positioning on a body of a wearer, the carrier band having a diagonal chest-overlying portion for extending from a lateral waist area to a position adjacent an opposite shoulder area, a shoulder-overlying portion connected to an upper end of the diagonal chest-overlying portion, the shoulder-overlying portion being configured for lying flat upon a shoulder, and wherein the shoulder-overlying portion and the chest-overlying portion are connected at obtuse angles to make the carrier band lie flat against the body, a back portion connected to the shoulder-overlying portion remote from the diagonal chest-overlying portion and extended downward, a partial waist-encircling portion connected to the back portion remote from the shoulder-overlying portion and extended forward to a lateral waist area, where the partial waist-encircling portion is connected to a lower end of the diagonal chest-overlying portion at a generally perpendicular angle, and a plurality of varied pockets in the carrier band, the pockets having openings in varied directions.

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**3,931,918**
**CONVERTIBLE PACK FRAME WITH COMPRESSOR FLAPS FOR SUPPORTING A TENT IN DIFFERENT MODES**
**George N. Smith, Deerhaven Road, Bedminister, N.J. 07921, and John J. Marshall, 5 W. Riding Drive, Bel Air, Md. 21014**
**Filed Feb. 2, 1972, Ser. No. 222,918**
**Int. Cl.² A45F** *4/04*
**U.S. Cl. 224—10** **20 Claims**

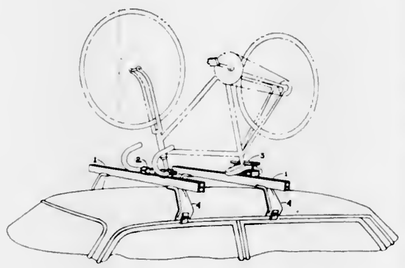


1. A pack comprising in combination: container means for retaining articles during transport thereof by harness attachment during enclosure in association with a folded tent by a compressor; a collapsible portable tent means for intermittent attachment in a folded state in association with the container

means during compressor enclosure, by a harness attachment; flap compressor means for intermittent at-least partially enclosing and releasably securing together said container means and said tent means by harness attachment during transport thereof while enclosed by a compressor thereof; harness means for attachably harnessing together and during a harnessed state transporting said container means, said tent means in a collapsed folded state, and said compressor means in a state of enclosing the container means and the tent means; and a pack frame means for mounting of the harness means during said transporting, said pack frame means including transportable and harness-frame-attachable substantially rigid support elements anchoring securably the harness means during said transporting, the pack frame means including as a part of said support elements structure such that the support elements are coordinated one with the other in association with and mounted in the tent means in an unfolded state to result in a rigid tent-erection support holding the tent in an erected raised state.

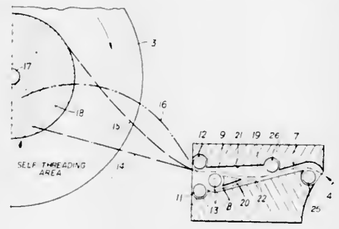
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**3,931,919**
**BICYCLE CARRIER FOR AUTOMOBILES**
**Gary A. Gerber, 15 White Birch Ridge, Weston, Conn. 06880, and Kenneth R. Benson, 80 University Ave., Bridgeport, Conn. 06604**
**Filed Mar. 12, 1974, Ser. No. 450,363**
**Int. Cl.² B60R 9/10**
**U.S. Cl. 224—42.1 F** **7 Claims**



1. A carrier for removably mounting at least one bicycle on an automobile comprising first and second spaced generally parallel rails, means for mounting said rails in selected positions on an automobile, a seat support bracket mounted on said first rail in a position to receive the seat of an inverted bicycle, seat clamp means for selectively positively clamping the bicycle seat on said seat support bracket, at least one handle bar clamp means adjustably mounted on said second rail, said handle bar clamp means including a lower clamp and an upper clamp member, said lower clamp member having an arcuate portion for receiving and supporting the handle bar of the bicycle, means for securing said lower clamp member in fixed adjusted position, said upper clamp member having a portion adapted to overlie the bicycle handle bar, and means for removably securing said upper clamp member in fixed position overlying the handle bar when the bicycle is in position, whereby the bicycle seat and handle bars are removably clamped to said first and second rails.

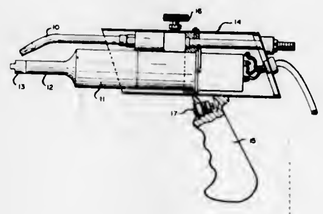
**3,931,920**
**STRIP-GUIDING STRUCTURE FOR RECORDING OR REPRODUCING APPARATUS**
**Otto Hellinger, Vienna, Austria, assignor to Karl Vockenhuber and Raimund Hauser, both of Vienna, Austria**
**Filed Mar. 21, 1974, Ser. No. 453,298**
**Claims priority, application Austria, Apr. 6, 1973, 3023/73**
**Int. Cl.² G03B 1/56**
**U.S. Cl. 226—91** **4 Claims**




1. In motion-picture equipment, in combination:
a take-up reel provided with film-threading means for engaging the leading end of an oncoming film strip of indeterminate initial curvature;
a guide structure for directing said film strip regardless of its curvature toward said film-threading means across an intervening gap, said guide structure having an inlet for said film strip and an outlet forming a plurality of differently oriented paths leading to said film-threading means;
feed means for transporting said film strip through said guide structure across said gap toward said filmthreading means; and
directional discriminating means in said guide structure between said inlet and said outlet for delivering the leading end of said film strip to one of said paths, depending upon the direction taken by the film strip according to its curvature inside said guide structure.

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**3,931,921**
**ULTRASONIC FLAME SOLDERING TOOL**
**John N. Antonevich, Jamestown, N.Y., assignor to Blackstone Corporation, Jamestown, N.Y.**
**Filed Sept. 27, 1974, Ser. No. 509,948**
**Int. Cl.² B23K 1/06**
**U.S. Cl. 228—1** **6 Claims**

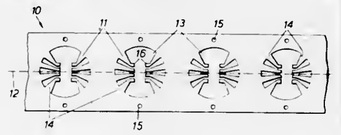


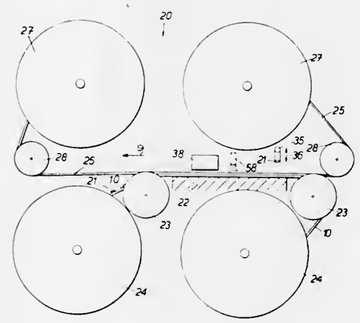
1. An ultrasonic flame soldering tool comprising, a flame heat source means, and transducer means, spaced from the heat source means and connected thereto, said transducer means having tip means fixably attached thereto and extending forward of said flame heat source means and generally outside said flame source means to contact a work piece being soldered whereby the work piece is separately heated and subject to ultrasonic vibrations at solder temperature to cause molten solder on the work piece to wet and adhere to work piece.

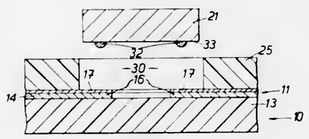


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**3,931,922**
**APPARATUS FOR MOUNTING SEMICONDUCTOR DEVICES**
**Sydney Jackson, Hayfield, and Alan Arthur Shepherd, Bramhall, both of England, assignors to Ferranti, Limited, Hollinwood, England**
**Continuation-in-part of Ser. No. 307,374, Nov. 17, 1972. This application Jan. 29, 1973, Ser. No. 327,638**
**Claims priority, application United Kingdom, Jan. 29, 1972, 4259/72; Aug. 30, 1972, 40169/72**
**Int. Cl.² H01L 21/58**
**U.S. Cl. 228—6** **30 Claims**

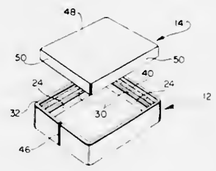






1. Apparatus for mounting semiconductor devices each of which are rectangular-shaped in plan and having contacts thereon comprising a continuous strip including a plurality of lead frames, the lead frames being uniformly spaced along the longitudinal axis of the strip, each lead frame having a matrix of conductors, the end portions of which are adapted for connection to contacts of a corresponding semiconductor device, a masking member defining at least one rectangular-shaped aperture for accurately locating a semiconductor device, means for feeding the lead frame strip and masking member longitudinally between a first and a second station with the aperture defined in the masking member being in a desired registration on a lead frame of the lead frame strip such that the conductor end portions of that lead frame are exposed through the aperture, means at one of said stations for precisely positioning the lead frame and the masking member with respect to each other such that when a corresponding semiconductor device is inserted in the required orientation into the aperture each device contact is exclusively opposite to a co-operating conductor end portion, and bonding means disposed between said first and said second station and adjacent the paths of travel of said lead frame strip and masking member for bonding the device contacts to the cooperating conductor end portions.

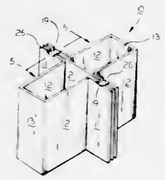
**3,931,923**
**BOX SECTION COVER MEMBER**
**Benjamin L. Thurston, 783 Great Road, Lincoln, R.I. 02865**
**Filed Jan. 21, 1975, Ser. No. 542,855**
**Int. Cl.² B65D 13/04**
**U.S. Cl. 229—23 R** **10 Claims**



1. A box section comprising a rim portion constructed of an elongated flat strip having its ends in abutting relation, said strip being formed to assume the desired configuration of the box section and defining the side walls thereof, said strip having flange means reversely bent along a longitudinal edge thereof, said flange means abutting the inner surface of said rim portion and terminating in spaced relation to the opposite longitudinal strip edge so as to define a shoulder on said inner side wall surface, and a separate cover member comprising a wall having the same configuration as that defined by said rim portion, said wall having a marginal flange extending into said rim portion from said opposite edge and being snugly received therein, the free edge of said marginal flange abutting against said shoulder, the depth of said marginal flange being substantially equal to the spacing between said shoulder and said opposite edge, whereby said wall is located adjacent said opposite edge and closes the adjacent end of said rim portion, and means securing said cover member to said rim portion.

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**3,931,924**
**ERECTABLE PARTITION**
**Jeffrey M. Gardner, Wheaton, Ill., and William M. Pilz, III, Eldridge, Iowa, assignors to Container Corporation of America, Chicago, Ill.**
**Filed Oct. 9, 1974, Ser. No. 513,459**
**Int. Cl.² B65D 5/48**
**U.S. Cl. 229—28 R** **3 Claims**



1. A partition for dividing a walled container into compartments, said partition being characterized by being stable both within and without the container and being formed from cut and scored paperboard or the like, said partition comprising;
a. pairs of end, side and confronting panel elements foldably connected along parallel score lines;
b. said foldably connected end, side and confronting elements defining two sets of parallel and spaced side panel elements, two sets of coplanar confronting panel elements and two end panel elements, each of said panel elements being parallel to said coplanar confronting panel elements and spaced therefrom and also connected to two of said confronting panel elements by two of said side panel elements;

c. hinge means connecting each set of confronting panel elements;

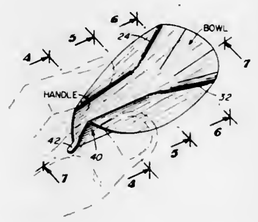
d. a separating panel element foldably connected to one of said confronting panel elements and positioned between each set of confronting panel elements.

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**3,931,925**
**PAPERBOARD CONTAINER LID CONVERTIBLE INTO A SPOON**

**Stanley L. Ruff, 9 Arbor Drive, New Rochelle, N.Y. 10804**

**Filed Apr. 5, 1974, Ser. No. 458,317**
**Int. Cl.² B65D 3/16**
**U.S. Cl. 229—43** **3 Claims**




1. For an open-top food container, a flat lid formed to cooperate with the container as a detachable closure therefor, said lid comprising: a flat panel the periphery of which is shaped to cooperate with the container so as to form a detachable cover therefor, said flat panel having formed therein a plurality of weakened zones so arranged with respect to one another and the panel that the panel is convertible by folding about said zones into a spoon having a handle portion and a bowl portion joined at a throat, the so-formed handle constituting a pleated arrangement extending diametrically of the panel from a perimeter of the panel to the throat of the spoon, and the so-formed bowl constituting a scoop-shaped portion extending from the handle at the throat to the opposite perimeter of the panel, the weakened zones in the handle portion including three zones substantially parallel to one another with the intermediate zone lying substantially on a diameter of the panel, the remaining two zones being outer zones, and the weakened zones of the bowl portion including two outer zones extending away from the inner ends of the outer zones of the handle portion and flaring away from one another, and at least one intermediate zone, the portions of the panel outwardly of the outer zones in the so-formed spoon constituting downwardly extending lips.

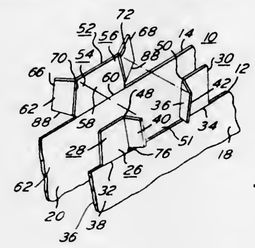
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**3,931,926**
**LATCHING MEANS**

**Richard E. Bensen, 18 Springfield Ave., Apt. 3G, Cranford, N.J. 07016**

**Filed Apr. 18, 1974, Ser. No. 461,961**
**Int. Cl.² B65D 45/00**
**U.S. Cl. 229—45 R** **29 Claims**

1. A latching means for securing together a pair of members comprising a first member and a second member, said first member having a first pair of elements extending substantially along the plane of the first member while said second member has a second pair of elements extending substantially along the plane of the second member, each of said elements having first and second sides, each of said first elements being positionable with its first side opposite to the first side of a respective one of said second elements for assuming its disengaged condition and alternatively with its second side opposite to the second side of its respective second element to assume its engaged condition, said first elements being spaced apart and extending in the directions toward each other while the second elements extend in the directions away from each other, at least one of said first elements having a hinged portion movable about an axis substantially perpendicular to said extending directions of said first elements while at least one of said second elements has a hinged portion movable about an axis substantially parallel to the axis of the hinged portion of said first elements which is positioned opposite to said first



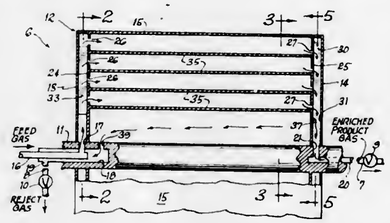
element with the hinged portion, said first and second elements being movable with respect to each other and by actuation of the hinged portions of said elements about their said axes the second elements pass substantially between and beyond the first elements and thereby being positionable to have the second sides of said elements opposite to each other to place the latching means in its engaged condition.

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**3,931,927**
**CENTRIFUGE**

**Robert J. Hengstebeck, Valparaiso, Ind., assignor to Standard Oil Company, Chicago, Ill.**

**Continuation-in-part of Ser. No. 323,212, Jan. 12, 1973, Pat. No. 3,814,307. This application Mar. 15, 1974, Ser. No. 451,431**
**Int. Cl.² B04B 5/08, 11/06**
**U.S. Cl. 233—19 R** **23 Claims**




1. A centrifuge for separation of a fluid containing two compounds of different density into a fluid product enriched in one of the compounds and a fluid having a reduced concentration of that compound, which includes:

a rotor comprising:

a rotor shaft;

a rotor housing to enclose an elongated intermediate portion of said shaft so as to provide around said intermediate portion of said shaft an elongated working space of annular cross section;

a set of partition wall means in said working space of said housing, and concentric with and extending generally parallel to the longitudinal axis of said shaft from one end part of said intermediate portion to the other end part of said intermediate portion providing a number of elongated annular chambers about said axis for major flow of fluid in said working space across a centrifugal force field and generally parallel to said axis;

distributor means extending radially outward from said shaft within one end part of said housing and having concentric sets of openings at different bands of radial distances from said axis to furnish feed fluid separately to said chambers;

first collector means extending radially outward from said shaft within the other end part of said housing and having concentric sets of openings at different bands of radial distances from said axis that are for each band offset in one radial direction with respect to the average radius of that elongated annular chamber communicating with said first collector means by that band of set of openings to receive one of the separated fluids; and

second collector means located at said other end part of said housing or between said end parts of said housing but adjacent said other end part of said housing and having concentric sets of openings at different bands of radial distances from said axis that are for each band offset in the other radial direction with respect to the average radius of that elongated annular chamber communicating with said second collector means by that band of set of openings to receive the other separated fluid,

said rotor shaft having:

a longitudinal inlet passageway extending inwardly to said one end part of said intermediate portion of the shaft;

a radial passageway communicating said inner end of said inlet passageway with said distributor means;

a first longitudinal outlet passageway extending inwardly to said other end part of said intermediate portion of the shaft;

a radial passageway communicating said inner end of said first outlet passageway with said first collector means;

a second longitudinal outlet passageway extending inwardly to said intermediate portion of the shaft; and

a radial passageway communicating said inner end of said second outlet passageway with said second collector means;

a first outlet pipe connected to said rotor to receive from one of said first and second outlet passageways one of the separated fluids;

a second outlet pipe connected to said rotor to receive from the other outlet passageway the other separated fluid; and

valved means mounted on said first outlet pipe to control the rate of removal of the separated fluid by said first outlet pipe,

the total area of said openings at each band of radial distance from said axis for one of said distributor means for feed fluid and said first and second collector means to receive separated fluids being proportional to a value between about the third power and about the fourth power of the average radius of the elongated annular chamber with which the set of openings is in alignment.

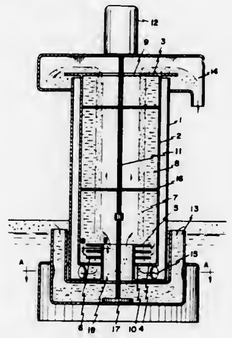
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**3,931,928**
**APPARATUS FOR SEPARATING A MIXED LIQUID CONTAINING COMPONENTS OF DIFFERENT SPECIFIC GRAVITIES**

**Jitsuo Kido, 6-23, 1 chome Kiyota-cho, Yahata, Kitakyushu, Fukuoka, Japan**

**Filed Jan. 16, 1974, Ser. No. 433,896**
**Claims priority, application Japan, Jan. 20, 1973, 48-9027; Jan. 23, 1973, 48-10128; Feb. 9, 1973, 48-16269; Mar. 28, 1973, 48-35371; June 12, 1973, 48-66006; Aug. 13, 1973, 48-90757; Sept. 10, 1973, 48-101856**
**Int. Cl.² B04B 11/06**
**U.S. Cl. 233—21** **8 Claims**

1. Apparatus for separating a mixed liquid containing components of different specific gravities, comprising an outer cylinder means having a discharge opening at a lower portion thereof through which separated components of higher specific gravity are discharged, an inner cylinder means disposed in said outer cylinder means, drive means for rotating said inner cylinder means, inlet means for introducing said mixed liquid to said inner cylinder means, said inner cylinder means having a concentric opening at the upper longitudinal end thereof through which separated components of lesser specific gravity pass, receiving means mounted on said outer cylinder means for receiving said separated components of lesser specific gravity from said concentric opening, disk means mounted within said inner cylinder means, said disk means being disposed at the lower end portion of said inner cylinder



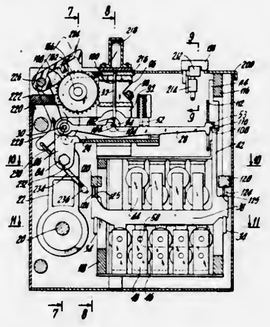
means and being arranged such that generally inner and outer concentric columns of separated components of lesser and greater specific gravities respectively extend between said disk means and said upper longitudinal end of said inner cylinder means, said outer concentric column of separated components of higher specific gravity passing to said discharge opening in said outer cylinder means.

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**3,931,929**
**TAPE PERFORATOR**

**Leon N. Canick, 6700 192 St., Fresh Meadows, N.Y. 11365, and Charles S. Aldrich, R.F.D. 1, Stillwater Road, St. James, N.Y. 111780**

**Filed Mar. 10, 1975, Ser. No. 557,230**
**Int. Cl.² G06K 11/02**
**U.S. Cl. 234—110** **7 Claims**



1. In a high speed tape perforator that includes:

a. a cradle pivotally mounted on a fixed support for oscillating movement about a first transverse axis:

b. drive means for oscillating the cradle about said first axis;

c. a first plurality of elongated lift levers pivotally mounted proximate one end thereof in the cradle for selective oscillating movement about a second, transverse axis that is substantially parallel to and spaced from the first axis;

d. an elongated punch mounted at one end on each of the first lift levers proximate the first axis, the longitudinal axis of each punch being substantially perpendicular to the first axis, the axes of the punches being in a plane that is approximately coincidental with the first axis;

e. means for advancing the tape along a plane that traverses the plane of the longitudinal axes of the punches;

f. a second plurality of elongated fulcrum levers equal in number to the first plurality of lift levers, the second plurality of levers being pivotable about axes that are substantially parallel to the planes of the first levers and movable between a first, non-punching mode position and a second, punching mode position whereby, in the first position of the second levers, the cradle and the first levers oscillate as a unit about the first axis and the punches are substantially devoid of movement in directions along the longitudinal axis thereof so that the punches do not perforate the tape and whereby, in the second position, the second levers interfere with the movement of the first levers so that the cradle continues to oscillate about the first axis but the first levers oscillate about the second axis to cause the punches to move longitudinally above the plane of and through the tape; and

g. means for selectively moving the second levers from the first position to the second position, the improvement comprising:

a. means for slowing down the movement of the first plurality of lift levers and the punches mounted thereon during the periods of time that the second plurality of fulcrum levers travel between the first and second positions thereof.

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**3,931,930**

**VARIABLE SPRAY APPARATUS AND METHOD**

**John E. Waldrum, Ambler, Pa., assignor to Amchem Products, Inc., Ambler, Pa.**

**Filed Mar. 6, 1975, Ser. No. 555,909**
**Int. Cl.² B05B** *1/02, 3/06, 1/34*
**U.S. Cl. 239—7** **27 Claims**




1. Apparatus for spraying a liquid in an adjustable pattern comprising a spray head rotatable about a central axis and having at least one nozzle including an orifice for providing a liquid stream therefrom, said nozzle being mounted on a radial axis extending normally from said central axis and means for readily adjusting the angular orientation of said nozzle with respect to said central axis, without stopping the liquid stream to enable the nozzle's orifice to extend at any predetermined angle within the range of parallel to the central axis up to an angle of approximately 45° with respect thereto, whereupon when said nozzle is adjusted by said adjustment means to the orientation wherein its orifice is parallel to said central axis the apparatus provides a liquid stream in a relatively straight line parallel to said central axis and when said nozzle is adjusted by said adjustment means to the orientation wherein its orifice is at some other angle with respect to said central axis the liquid stream from said nozzle creates a reaction force having a component at said nozzle which is tangential to said radial axis to effect the rotation of the nozzle about said axis, thereby creating a helical spray pattern about the axis, with the diameter of said pattern being a function of the angular orientation of said nozzle.

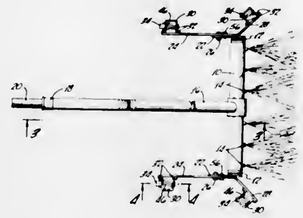
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**3,931,931**

**SURFACE WASHER**

**George A. Otis, 715 E. Los Angeles Drive, Vista, Calif. 92083**

**Filed Feb. 20, 1975, Ser. No. 551,246**
**Int. Cl.² B05B** *1/20, 15/06*
**U.S. Cl. 239—287** **10 Claims**



1. A surface washer comprising a horizontal pipe fitted with a plurality of spaced apart nozzles, casters for moving said pipe over a surface to be washed, a hollow handle attached to said pipe for rotating said nozzles at various angles to said surface and for supplying water under elevated pressure to the interior of said pipe; in which the improvement comprises:

a. said horizontal pipe being supported by a plurality of at least three casters to obtain a horizontally stable support, a caster assembly comprising at least one caster supporting each end of said pipe; and,

b. said horizontal pipe being rotatably attached to said caster assembly supporting each of its ends by a link having one of its ends fixedly attached to one of said caster assembly and said end of said horizontal pipe, and having its other end rotatably attached to the other of said caster assembly and said end of said horizontal pipe.

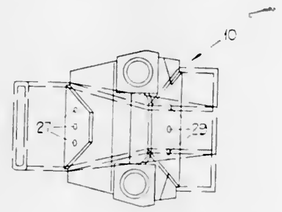
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**3,931,932**

**LIQUID SPRAYER**

**John Frederick Stratton, Great Harwood; Thomas Haddow, Burnley, and Eric Gates, Barrowford, all of England, assignors to Lucas Aerospace Limited, Birmingham, England**

**Filed July 5, 1974, Ser. No. 485,974**
**Claims priority, application United Kingdom, July 12, 1973, 33338/73**
**Int. Cl.² B05B** *7/00*
**U.S. Cl. 239—431** **5 Claims**




1. A liquid sprayer comprising a first passage through which, in use, gaseous fluid passes, and a second passage through which, in use, liquid passes, said first passage having a cross-sectional area which decreases from an inlet plane thereof to a throat and increases from said throat to an outlet plane thereof, and said second passage opening into the first passage at a point in the region of said throat where the cross-sectional area is less than the cross-sectional area at said outlet plane, the cross-sectional shape of said first passage in said region of said throat changing from one dimension thereof being smaller than the other dimension to said one dimension being greater than said other dimension.



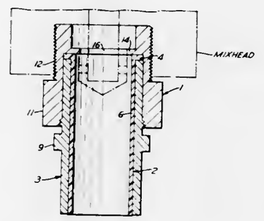
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**3,931,933**

**METHOD OF AND APPARATUS FOR THE POURING OF FAST FOAMING REACTANTS**

**John G. Cairns, McMurray; John L. McPherson, Bethel Park, and James D. Orefice, Coraopolis, all of Pa., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.**

**Filed June 27, 1974, Ser. No. 483,585**
**Int. Cl.² B05B** *15/02;* **F16L** *57/00*
**U.S. Cl. 239—591** **4 Claims**




1. A nozzle assembly for use with fast forming reactants comprising:

a generally tubular nozzle having a smooth internal bore and having a connecting means on its external surface, a generally tubular nozzle housing having a connecting means on a portion of its exterior surface adapted to engage a mixhead and having a first internal bore separated from a second internal bore by a traverse wall having a centrally located aperture, said first bore containing a portion of said nozzle and having connecting means in engagement with the connecting means of said nozzle and said second bore being adapted to mate with said mixhead, and a disposable nozzle liner disposed within the bore of said nozzle having a generally smooth internal bore and a radially outwardly directed annular flange disposed between the traverse wall of said nozzle housing and the end of said nozzle disposed within said nozzle housing and forming a sealing relationship with said nozzle and said traverse wall.

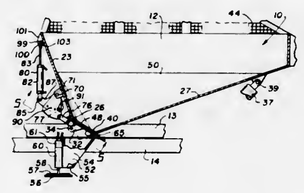
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**3,931,934**

**PARTICULATE MATERIAL SPREADING APPARATUS**

**Francis V. Smith, 3931 198 St., Langley, British Columbia, Canada (V3A 1C9)**

**Filed Nov. 6, 1974, Ser. No. 521,279**
**Claims priority, application Canada, Nov. 30, 1973, 187073**
**Int. Cl.² E01C** *19/20;* **B60P** *1/16;* **F16K** *29/02*
**U.S. Cl. 239—657** **12 Claims**



1. Spreading apparatus comprising a dump body for holding particulate material and adapted to be hingedly mounted on a vehicle so as to be tipped upwardly towards and end of the body, an outlet in the body near said end thereof, a plate valve slidably mounted to move back and forth in a longitudinal direction across the outlet to close and open siad outlet, operating means connected to the plate valve for moving said valve back and forth between positions fully opening and closing said outlet, and oscillating means connected to the valve plate for oscillating said plate in said longitudinal direction when the valve is in an outlet opening position.

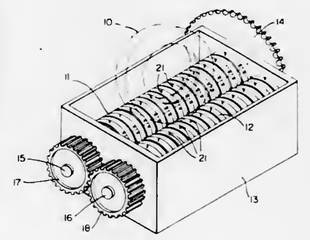
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**3,931,935**

**METHOD OF AND APPARATUS FOR CUTTING VEHICLE TIRES**

**Merle A. Holman, 8873 Warnerville Road, Oakdale, Calif. 95361**

**Filed June 24, 1974, Ser. No. 482,378**
**Int. Cl.² B02C** *7/04*
**U.S. Cl. 241—24** **19 Claims**



17. The method of cutting fiber reinforced resilient material such as vehicle tires and the like into smaller parts by passing said materials between a pair of generally cylindrical rolls, said method comprising the steps of:

a. providing both said rolls with a plurality of axially spaced radially extending ribs having opposed planar surfaces with radial dimensions greater than the thickness of said resilient material;

b. positioning said rolls with their axes parallel to each other and with said ribs of each roll meshing with said planar surfaces of said ribs of one roll substantially in contact with and overlapping said planar surfaces of said ribs of said other roll by an amount which is less than the maximum thickness of said resilient material;

c. counter-rotating said rolls with respect to each other about their respective axes;

d. feeding said resilient material between said rolls; and

e. forcing the cut parts of said resilient material from between said ribs of each of said rolls.

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**3,931,936**

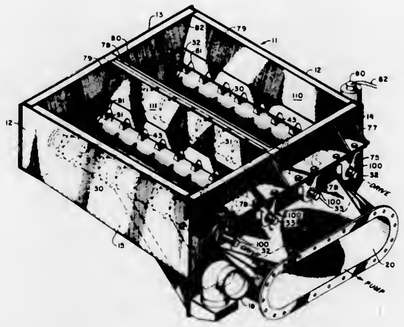
**APPARATUS FOR CRUSHING SOLIDS IN A LIQUID MEDIUM**

**Eston F. Petry, McMurray, Pa., and Ronald W. Umphrey, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.**

**Filed June 5, 1974, Ser. No. 476,349**
**Int. Cl.² B02C** *23/36*
**U.S. Cl. 241—46.15** **6 Claims**

1. In a slurry hopper having sidewalls, first and second endwalls, and a bottom wherein said bottom slopes from said first endwall to said second endwall, a water inlet means at said first endwall for partially filling said slurry hopper with water, an outlet in said second endwall, an improvement comprising a product sizing unit having a plurality of cylindrical rolls journaled substantially parallel with the surface of the water in said slurry hopper, said cylindrical rolls including a plurality of spaced peripheral teeth along the length of said cylindrical rolls, means for counter-rotating adjacent rolls of

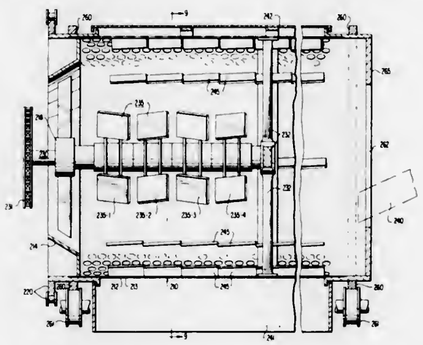
said plurality of cylindrical rolls, and means for maintaining the level of said water in said slurry hopper between the upper



surface and the lower surface of said plurality of cylindrical rolls.

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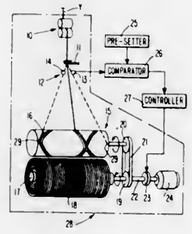
**3,931,937**
**BREAKER/CRUSHER**
**William F. Hahn, Devon; Carl R. Graf, Whitehall, both of Pa., and George H. Hart, Newcastle, Maine, assignors to Pennsylvania Crusher Corporation, Broomall, Pa.**
**Continuation-in-part of Ser. No. 267,936, June 30, 1972, abandoned. This application Nov. 19, 1973, Ser. No. 417,335**
**Int. Cl.[2] B02C** *13/06*
**U.S. Cl. 241—74** **19 Claims**



1. In apparatus for reducing coal and other materials, said apparatus including a hollow rotatable drum having an opening therin to receive feed material and wall means including screening openings to discharge material of desired size, lifter shelves positioned on the inner surface of said wall means for lifting and dropping material within the drum as the drum is rotated, rotor means including a rotor shaft and shaft-mounted material impacting means positioned within at least a portion of the length of the drum for impacting material dropped from said shelves, drum drive means for rotating said drum, and rotor drive means for rotating the rotor, the improvement which comprises:
   a. said drum drive means is connected to said drum for driving said drum at a speed in the range of about 70 to about 95% of critical speed;
   b. said lifter shelves are positioned on the drum at predetermined angle of inclination, ranging from 0° up to 70° in a direction opposite to the direction of drum rotation, which angle will cause said material to drop from said shelves into contact with said impacting means at or near the crest of the orbit of the impacting means when said drum is rotated at said speed, and which will direct the material from above one side of the rotor shaft to the other side of the rotor shaft in the direction of the downrunning side of said rotor shaft; and
   c. said drum drive means and rotor drive means being connected to said drum and rotor respectively for driving said drum and rotor in the same direction of rotation, whereby material struck by said rotor is flung against the downrunning wall of said drum.

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**3,931,938**
**METHOD AND APPARATUS FOR WINDING YARN INTO YARN PACKAGE**
**Katsumi Hasegawa, Otsu; Ichiro Kumo, Shiga; Chikayasu Yamazaki; Minoru Okabayashi, both of Kyoto; Takao Nakayama, Otsu, and Masahiro Oshiyama, Shizuoka, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan**
**Filed Mar. 18, 1974, Ser. No. 451,914**
**Int. Cl.[2] B65H** *59/38*
**U.S. Cl. 242—45** **18 Claims**




1. A method for winding a yarn into a yarn package by use of a winding apparatus which comprises the steps of:
   1. supplying the yarn to the winding apparatus at a substantially constant speed,
   2. setting a desired value of the tension,
   3. reciprocally traversing the yarn longitudinally along said package,
   4. contacting the yarn with a force transducer at each extremety of the yarn traverse stroke and disengaging the yarn from the force transducer when the yarn is between the extreme ends of the traverse stroke.
   5. detecting the tension of the yarn with the force transducer at each extremity of the yarn traverse stroke during the time the yarn is contacting said transducer,
   6. comparing the magnitude of the detected tension with that of the desired value,
   7. obtaining the difference in magnitude between the detected tension and the desired value as a controlling value, and
   8. controlling the circumferential speed of the yarn package according to the controlling value.

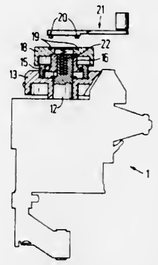
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**3,931,939**
**THREAD SUPPLY DEVICE FOR TEXTILE MACHINES**
**Karl Isac Joel Rosén, Hjo, Sweden, assignor to Aktiebolaget IRO, Ulricehamn, Sweden**
**Filed Mar. 8, 1974, Ser. No. 449,260**
**Claims priority, application Germany, Mar. 15, 1973, 2312933**
**Int. Cl.[2] B65H** *51/20*
**U.S. Cl. 242—47.01** **7 Claims**

1. In a positive thread supply device for a textile machine, particularly a knitting machine, having thread drum means upon which a thread issuing from a thread bobbin can be wound to form an intermediate thread supply and from which the thread can be unwound at an unwinding speed substantially equal to the winding speed to permit positive thread



supply to a textile machine, rotatable winding shaft means for causing thread to be wound on said drum means when said shaft means is rotated, and drive means drivingly interconnected to said shaft means for causing rotation thereof, comprising the improvement wherein clutch means drivingly connects said drive means to said shaft means to permit positive thread supply, said clutch means being maintained in an engaged position when said drive means is activated to permit thread to be wound on said drum means at a speed substantially equal to the speed at which the thread is also being unwound from said drum means, said clutch means being releasable to disconnect said winding shaft means from said drive means when the latter is at a standstill, said clutch means including a first clutch part drivingly connected to said drive

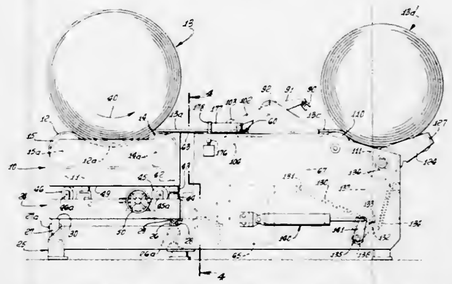


means and a second clutch part drivingly connected to said winding shaft means, said first and second clutch parts being normally maintained in engagement but being relatively movable away from one another to permit clutch disengagement, and connecting means adapted for engagement with an auxiliary driving means to permit selective rotation of said shaft means when said clutch means is disengaged so that the intermediate thread supply on said drum means can be replenished, said connecting means including means associated with said clutch means and engageable with said auxiliary driving means for causing (1) relative movement between said clutch parts into a position of clutch disengagement and (2) rotation of said second clutch part independently of said first clutch part to selectively rotate said shaft means upon rotation of said auxiliary driving means.

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**3,931,940**
**CARPET FEEDING, MEASURING AND ROLLING APPARATUS**
**Edwin H. Raighn, Los Alamitos; Robert B. Eglinton, South Pasadena; Lorne L. Frazier, Torrance; Robert R. Naylor, Granada Hills, and William R. Morris, Newport Beach, all of Calif., assignors to Chromalloy American Corporation, New York, N.Y.**
**Filed May 10, 1974, Ser. No. 468,660**
**Int. Cl. B65h** *19/20;* **B61h** *17/08*
**U.S. Cl. 242—56 R** **32 Claims**

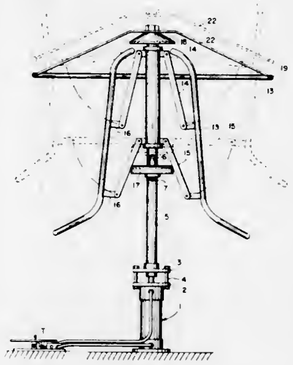
1. In pliable sheet handling apparatus,
   a. first means to rotate a sheet supply roll at a first station and in an unrolling direction to advance unrolled sheet extent in a generally longitudinally forward direction, and to sever unrolled sheet extent laterally crosswise thereof at a selected longitudinal location to free a section of the unrolled sheet from the supply roll,
   b. other means to receive the severed section at a subsequent station located generally forwardly of the first station, and to re-roll said section forming a final roll, and
   c. support means located generally between said first and other means to receive and support the advancing unrolled sheet extent in position for said severing, said support means including a table having an upper surface, there being multiple ports proximate said surface to underlie said unrolled sheet extent, and means to supply gas to discharge from said ports for exerting upward pressure



on said unrolled sheet extent and tending to float said sheet extent as it advanced forwardly.

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**3,931,941**
**PNEUMATICALLY OPERATED SWIFT FOR HOLDING SKEINS OF YARN TO BE UNWOUND VERTICALLY**
**Hal E. Hornbuckle, Mount Holly, N.C., assignor to Belmont Textile Machinery Co., Inc., Mount Holly, N.C.**
**Filed Sept. 30, 1974, Ser. No. 510,457**
**Int. Cl.[2] B65H** *75/24*
**U.S. Cl. 242—110** **2 Claims**

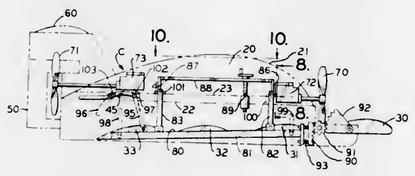


1. A pneumatically operated swift for holding skeins of yarn to be unwound vertically comprising a base, a tubular center post extending upwardly therefrom, a series of skein supporting arms spaced around said center post, a sleeve carried by said center post for turning movement thereabout, upper and lower sets of linkage means connecting said arms to said sleeve so that said arms can expand and retract relative to said center post, pneumatically operated pressure applying means cooperably related with said lower set of linkage means for moving the same to expand said arms, said pressure applying means including a pressure applying ring slidably mounted on said center post beneath the connection of said lower set of links with said sleeve, said center post having oppositely arranged guide slots therein, a plunger within said center post, a cross pin on said plunger having end portions extending through said slots and engaging said pressure applying ring and air actuated cylinder and piston means operably related with said plunger to lift the same to cause said pressure applying ring to engage said lower set of links to move the same outwards and upwards to expand said skein supporting arms.

### 3,931,942
### AIR CAR

Martin Aaron Alpert, 3207 Meadowbrook Blvd., Apt. 9, Cleveland Heights, Ohio 44118

Filed June 10, 1974, Ser. No. 477,788
Int. Cl.² B64C 29/00; B60V 3/08
U.S. Cl. 244—12 R 16 Claims



3. A vehicle of the character described capable of flight as an aircraft in the flight mode and movement along the ground in the ground effect mode comprising:

a fuselage, said fuselage being streamlined and having a curved convex upper surface and a lower surface, said upper surface having a greater surface area than said lower surface and being shaped to enable said fuselage to experience aerodynamic lift when moved relative to air,

a plurality of laterally extending airfoils of smaller size disposed under said fuselage, said smaller airfoils being arranged in tandem and having chord lengths that are shorter than the chord length of said fuselage, said airfoils being adapted to provide said vehicle with aerodynamic lift as it is moved relative to air,

said fuselage and said airfoils providing means for lifting the vehicle off the ground in the flight mode, whereby the vehicle functions as an aircraft at substantial altitudes,

means including a pair of sidewalls depending from said fuselage and extending below said lower surface near the terminal end of said smaller airfoils for trapping a cushion of compressed air between the vehicle and the ground to provide said vehicle with lift when operating in the ground effect mode,

means for lowering said airfoils to increase the gap between the airfoils and the lower surface of the fuselage for operation in the flight mode,

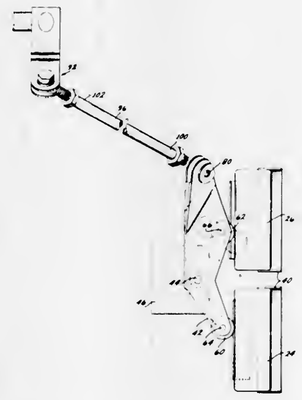
propelling means for displacing air to propel said vehicle in excess of flight speed during the flight mode, and airfoil means for steering said vehicle.

11. A process of operating a vehicle having a fuselage shaped like an airfoil, airfoil means for steering the vehicle, and a power plant for imparting forward thrust to the vehicle, said fuselage being streamlined and having a curved convex upper surface with greater surface area than its lower surface to enable the fuselage to provide aerodynamic lift, said process comprising the steps of providing a plurality of horizontally spaced spaced airfoils of smaller size having chord lengths that are shorter than the chord length of said fuselage, said airfoils extending laterally and being of a size and shape to provide said vehicle with aerodynamic lift as it is moved relative to air, positioning said airfoils in tandem and away from said fuselage to cause them to impart maximum lift to the vehicle and to enable the vehicle to maneuver as an aircraft in a flight mode at substantial altitude remote from the ground, thereafter causing said airfoils to move bodily in a vertical direction relative to said fuselage to reduce the lift imparted to the vehicle while providing a plenum chamber below said fuselage and blowing air into said plenum chamber to provide a cushion of compressed air under the fuselage, whereby said vehicle travels proximate to the ground in a ground mode with insufficient lift for flight.

### 3,931,943
### AIRPLANE RUDDER AND CONTROLS

Don M. Westergren, La Mesa, and Walter E. Mooney, San Diego, both of Calif., assignors to Rohr Industries, Inc., Chula Vista, Calif.

Filed Aug. 30, 1974, Ser. No. 502,057
Int. Cl.² B64C 19/02
U.S. Cl. 244—86 6 Claims

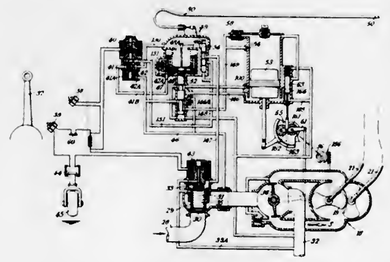


1. A rudder actuator which comprises a pair of actuator pedals pivoted to the interior of the cabin, pivotal crank means comprising a pair of crank plates joined along adjacent edges thereof, follower means comprising rollers journalled in said crank plates adjacent said actuator pedals cooperating with said actuator pedals to pivot said crank means between its extreme positions, a connecting rod movably connected to said crank means and effective to transfer the movement of said crank means to said rudder.

### 3,931,944
### THRUST REVERSAL SYSTEM FOR JET AIRCRAFT ENGINES

Terence John Capewell, Brewood; Arthur Leslie Lloyd, and David Marshall, both of Wolverhampton, all of England, assignors to Lucas Aerospace Limited, Wolverhampton, England

Filed Mar. 21, 1974, Ser. No. 453,411
Claims priority, application United Kingdom, Mar. 21, 1973, 13697/73
Int. Cl.² B64D 33/04
U.S. Cl. 244—110 B 7 Claims



1. A thrust reversal system for a jet aircraft engine comprising:



thrust reverser buckets movable between a stowed and a deployed position;

an air motor capable of rotation in opposite directions and connected to impart movement to the buckets;

a pilot's control operative to select movement of the buckets to the stowed position and to the deployed position;

a flow control valve controlling the direction of flow of operating air to the motor;

locking mechanism operative, when the buckets are in the stowed position, to lock the buckets positively against movement to the deploy position without impeding movement of the buckets towards the stowed position;

means maintaining the flow control valve, when the buckets are in the stowed position, in a position corresponding to movement of the motor in the direction to stow the buckets;

means responsive to selection of movement of the buckets to the deploy position for admitting operating air to the motor through the flow control valve, releasing the locking mechanism and thereafter moving the flow control valve to its alternative position to enable the motor to move the buckets to the deploy position;

a shut off valve which normally prevents the flow of air from the compressor of the engine through the flow control valve to the air motor;

first valve means;

means responsive to ground contact by wheels of the aircraft following selection of thrust reversal by said pilot's control for operating said first valve means and thereby permitting said shut off valve to open;

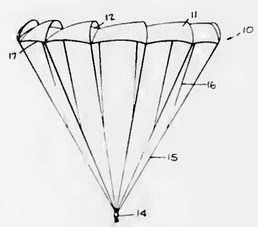
a second valve means for maintaining said shut off valve open when ground contact by the wheels is lost; and

means for automatically decelerating the motor when the buckets approach both the stowed position and the deployed position.

### 3,931,945
### ROTATING PARACHUTE

Oscar W. Sepp, Glen Cove, N.Y., assignor to ILC-Steinthal, Inc., Roxboro, N.C.

Continuation of Ser. No. 225,535, Feb. 11, 1972, abandoned, which is a continuation-in-part of Ser. No. 20,331, March 17, 1970, abandoned. This application Aug. 7, 1974, Ser. No. 495,397
Int. Cl.² B64D 17/18
U.S. Cl. 244—145 16 Claims

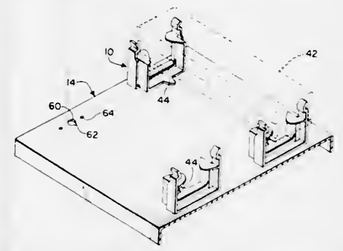


10. A rotating parachute comprising a plurality of air foil-like fabric panels arranged leading edge towards trailing edge in a ring with an opening between the leading and trailing edges of adjacent panels, and means for forming each of said panels into a vane which acts as an independently inflatable rotating decelerator on its own, said means comprising suspension means secured along the radially inward and radially outward edges of said panels and coming together below said panels to form an individually inflatable rotating decelerator of each panel.

### 3,931,946
### TERMINAL BLOCK MOUNTING BRACKET

Edmund John Soltysik, Chicago, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Jan. 23, 1975, Ser. No. 543,609
Int. Cl.² H02B 1/02; F16L 3/22
U.S. Cl. 248—68 R 16 Claims

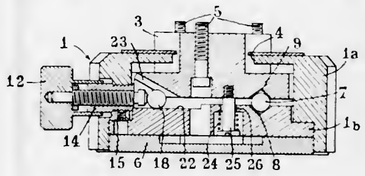


1. A bracket for retaining a rectilinear terminal block or the like at a stand-off position above a support panel, said bracket including a base adapted to abut said panel, fastening means extending downwardly from said base for retention of the bracket on said panel, a pair of substantially rigid walls extending upwardly from opposite ends of said base, angularly disposed flange means extending from each wall toward the other wall in diverging relationship to the base, relatively short stiffly resilient arm means extending upwardly from the free ends of each of said walls, each arm including a cam lead-in surface terminating in a shoulder intermediate the ends of said arm, said angularly disposed flanges serving the dual function of accepting terminal blocks having varying grip tolerances, as well as to stress said shoulders and walls inwardly into more positive engagement with said terminal blocks when said flanges are depressed.

### 3,931,947
### ADJUSTABLE BASE, NOTABLY FOR TOPOMETRY APPARATUS

Luc Andre Tagnon, Saint Mande, France, assignor to Essilor International (Compagnie Generale d'Optique), Joinville-le-Pont, France

Filed Mar. 28, 1975, Ser. No. 562,890
Claims priority, application France, Apr. 11, 1974, 74.12808
Int. Cl.² F16M 11/12
U.S. Cl. 248—180 6 Claims



1. An adjustable base for topometric and similar apparatus, which comprises a case opening upwards and comprising a bottom having a substantially flat and horizontal inner face with a recess within said face, a movable member in said case having a substantially vertical axis, adapted to be secured to the topometric apparatus and comprising a lower, substantially flat face opposite said flat inner face of the case bottom and having a recess formed within said lower flat face which registers with the recess of said case bottom, a first ball received in said registering recesses and constituting a swivel point for said movable member in relation to said case, a pair of passages located in substantially vertical planes and perpen-

dicular to each other, said planes intersecting each other along a straight line passing through the centre of said first ball, each passage being formed partly in the inner face of said case bottom and partly in the opposite lower face of said movable member, a first one of said passages being defined by a flat surface and by a V-sectioned groove converging toward each other in the direction of said first ball, the second passage being defined by two other V-sectioned grooves converging toward each other in the direction of said first ball, two other balls disposed in said first and second passages respectively for supporting said movable member on the case bottom, a pair of screws for adjusting the verticality of the axis of said movable member, said adjustment screws being disposed in said perpendicular planes respectively and each adjustment screw being adapted to push a respective one of said two other balls in the relevant passage towards said first ball in order to cause said movable member to pivot about an axis defined by said first ball and the other, one of said two other balls, and spring means for urging said movable members towards the bottom of said case to bear thereagainst through said three balls.

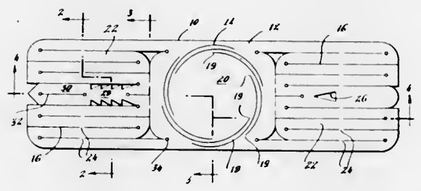
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**3,931,948**

**SUSPENSION HOLDERS FOR CONTAINERS AND OTHER ARTICLES AND BLANKS FOR FORMING THE SAME**

**Stanley I. Mason, Jr., Weston, Conn., assignor to Simco, Inc., Weston, Conn.**

**Filed Sept. 26, 1974, Ser. No. 509,560**
**Int. Cl.² A61B 19/00**
**U.S. Cl. 248—318** **7 Claims**



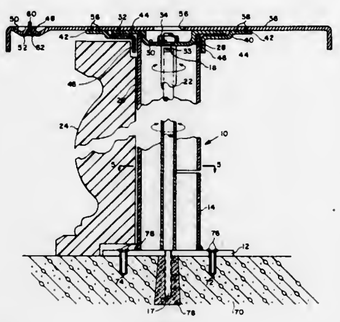
1. An integral substantially flat, cut sheet article holder capable of supporting at least one or more articles in balanced vertical suspension upon separation and extension of cut portions, comprising an integral flat flexible sheet, a center portion of the sheet having a plurality of arcuate cuts, the arcuate cuts being located in an area which defines generally an annular circumferential region, the arcuate cuts being offset from one another within the annular region in the plane of the flat sheet, cuts of each arcuate cut overlapping at least two other arcuate cuts so as to define upon separation of cut portions and extension from the flat sheet a receptacle-like portion having a bottom support means, a peripheral collar-like portion and upright side support portions secured through one of their respective ends to the bottom support means and through the other of their respective ends to the collar-like portion, the flat sheet material surrounding the annular circumferential region being further cut with a plurality of a series of cuts offset from one another in the plane of the flat material but partially overlapping in an alternate reverse cut manner to define, upon separation of the material at the cuts and extension thereof, a plurality of post-like extension portions integral with the receptacle-like portion, the portions of the sheet defined by the cuts being substantially contiguous when the flexible sheet is in flat condition so that essentially all the material of the sheet is utilized in the holder.

**3,931,949**

**SECURITY PEDESTAL BASE**

**Gordon J. Waligorski, 4713 Nottinghamshire Drive, Louisville, Ky. 40299, and Roy F. McMahan, Sr., 2950 Breckinridge Lane, Louisville, Ky. 40220**

**Filed Oct. 2, 1974, Ser. No. 511,177**
**Int. Cl.² F16M 13/00**
**U.S. Cl. 248—418** **9 Claims**



1. A high security pedestal base for supporting a variety of apparatus there atop, comprising in combination,
a base,
an upstanding support mounted on said base,
said upstanding support having at least a partial hollow interiorly thereof,
a support shaft positioned interiorly of said upstanding support within said hollow and mounted on said base,
support platform means for supporting said apparatus mounted on said support shaft and extending outwardly beyond the periphery of said upstanding support, with
a cup plate having an outwardly extending circumferential flange and having a central aperture positioned in the cup portion thereof, said cup plate being engageably mounted on said support shaft, said support platform means being rotatably mounted on said cup plate and adapted to carry a variety of apparatus thereon,
and said support platform means further including a circumferential shield mounted on the lower surface thereof and extending downwardly therefrom along the outer surface of said upstanding support to conceal access to said cup plate when said support platform is mounted in position atop said support shaft,
said circumferential shield including a recessed portion entrapping said circumferential flange of said cup plate between the lower surface of said support platform means and said recessed portion thereby to securely engage said support platform means to said upstanding support and support shaft,
and a sleeve member carried about the outer periphery of said support shaft and freely rotatable thereabout,
whereby said rotatable sleeve member inhibits the unauthorized cutting through said base by freely rotating in response to the reciprocating action of any cutting member making contact therewith.

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**3,931,950**

**TOOTHPASTE TUBE SUPPORTING DEVICE**

**Michael A. Javillonar, Danbury, Conn., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest**

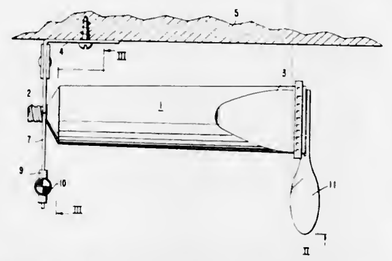
**Filed Oct. 4, 1974, Ser. No. 512,023**
**Int. Cl.² B65D 35/56**
**U.S. Cl. 248—108** **1 Claim**

1. A toothpaste tube supporting device for supporting a substantially flexible toothpaste tube having an open neck part through which toothpaste in the tube is ejected and an opposite end part, said toothpaste tube supporting device comprising

a substantially plate like support member having a first part affixed to a supporting surface and a second part extending substantially perpendicularly from the first part and the supporting surface, said support member having a substantially semicircular groove formed in an edge thereof;

a clamp member pivotally affixed to the second part of the support member for movement in the plane of said second part and having a substantially semicircular groove





formed in an edge thereof and forming a circular groove with the groove formed in the support member when the clamp member is in closed position with the support member with the grooved edges of the members in juxtaposition for accommodating the neck part of a toothpaste tube; and

a holding device for releasably maintaining the clamp member and the support member in closed substantially coplanar relation with each other and forming a substantially circular groove between them consisting of the semicircular grooves of the members for accommodating the neck part of a toothpaste tube secure between said members to enable the tube to be emptied.

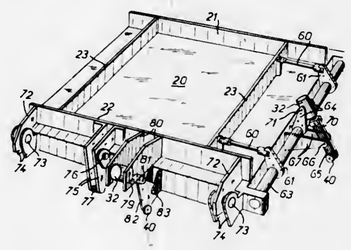
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**3,931,951**

**MOBILE PALLET FOR AN INSTALLATION FOR PRODUCTION OF PRE-FABRICATED ELEMENTS OF CONCRETE**

**Edouard Marie Fougea, Paris, France, assignor to Constructions Edmond Coignet, Paris, France**

**Filed Nov. 6, 1972, Ser. No. 303,867**
**Claims priority, application France, Nov. 23, 1971, 71.41790**
**Int. Cl.² B28B 7/04**
**U.S. Cl. 249—158** **10 Claims**



1. In an installation for the manufacture of prefabricated elements, of plain or reinforced concrete, a mobile pallet comprising: a pouring table, a plurality of molding cheeks continuously coupled to said table and movably mounted individually with respect to said table between a closure position adapted to form with said table a cavity for molding said concrete elements, and an open position permitting de-molding of said elements; and means mounted on said table and associated with each said cheek for actuating the opening and closure of said cheeks and for locking said cheeks in the closed position, said molding cheeks include a high cheek and a low cheek, means mounting said high cheek and said low cheek for pivotal movement about fixed shafts disposed parallel to one another, said molding cheeks further including two side cheeks, and means slidably mounting said side cheeks for movmement between said high cheek and said low cheek independently thereof, said means slidably mounting said side cheeks including a rotatably mounted shaft having crank elements, and means coupling said crank elements to an adjacent one of said side cheeks for effecting sliding thereof in response to rotation of said rotatably mounted shaft.

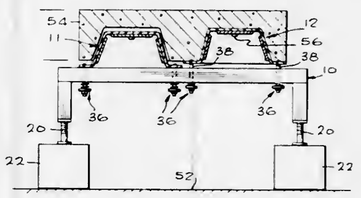
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**3,931,952**

**MULTIPLE CONCRETE FORM APPARATUS**

**Stephen S. Dashew, Palos Verdes Estates, Calif., assignor to Interform, Inc., Compton, Calif.**

**Division of Ser. No. 219,060, Jan. 19, 1972, Pat. No. 3,804,930. This application June 11, 1973, Ser. No. 368,716**
**Int. Cl.² B28B 7/28**
**U.S. Cl. 249—177** **6 Claims**



1. Apparatus for forming concrete comprising:
a subform;
a plurality of forms with lower portions resting on said subform, each form having a base wall and at least two side walls extending with vertical directional components from the base wall for supporting concrete poured thereon; and
a plurality of spaced fastener means for confining each of said forms to a predetermined lateral position with respect to said subform and preventing rotational movement of the form with respect to the subform, while permitting relative vertical movement of each of said forms and their lower portions with respect to said subform form independently of relative vertical movement of other forms to the subform within a limited distance of at least one inch of vertical movement, whereby to prevent loss of a stuck form from the subform while permitting sufficient vertical movement to allow the subform and unstuck forms thereon to strip away from set concrete.

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**3,931,953**

**ULTRA HIGH VACUUM VALVE**

**William Arthur Allen, Clarksburg, Md., assignor to Communications Satellite Corporation (Comsat), Washington, D.C.**

**Filed May 9, 1974, Ser. No. 468,792**
**Int. Cl.² F16K 31/143**
**U.S. Cl. 251—62** **4 Claims**

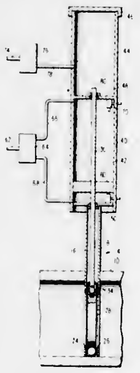
1. A vacuum valve for a conduit having a slot transverse to the primary direction of flow comprising:
a. a chamber means adaptable to being placed in the slot in said conduit, a first portion of said chamber means having an orifice permitting flow through the conduit and being adapted to extend into the conduit through said trans-

verse slot and be sealingly connected to the conduit and a second portion thereof extending out of said conduit;

b. a valve disc movably mounted within said chamber for transverse movement relative to the conduit between an operative-conduit position within the conduit, wherein said orificie is covered, and an inoperative-conduit position outside the conduit, wherein said orifice is uncovered;

c. an inflatable sealing means disposed about the periphery of said disc;

d. a hollow valve stem secured to said disc in fluid communication with said inflatable means and extending outwardly of said chamber means;



e. operating means operatively connected to said valve stem externally of said chamber means for moving said disc within said chamber; and

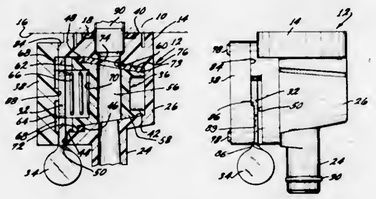
f. pressure means operatively connected to said hollow valve stem for supplying a pressurized medium to said inflatable means in both said operative position and said inoperative position of said disc to expand said inflatable means into air tight sealing engagement with said chamber means, whereby leakage past the valve disc in the operative-conduit position and about the disc from the chamber in the inoperative-conduit position is prevented.

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**3,931,954**
**PETCOCK**

**Matthew P. Guzzetta, 10425 Loma Rancho Road, La Mesa, Calif. 92077**

**Filed Sept. 3, 1974, Ser. No. 502,390**
**Int. Cl.² F16K** *35/04*
**U.S. Cl. 251—109** **9 Claims**



1. An improved petcock for liquid flow control comprising:

a housing having a mounting flange for mating with a container having a supply of liquid therein and an orifice through one wall, an inlet passage leading from said orifice to a frusto-conic valve chamber within said housing, said chamber having its larger end portion terminating at a co-axial tubular passageway through one wall of said housing, said passageway having a greater diameter than said larger end portion of said chamber forming a shoulder therebetween the wall of the outer end of said passageway having a cut out along a portion thereof and an outlet passage leading from said chamber and terminating external of said housing, said outlet passage being co-axial with said inlet passage and perpendicular to the axis of said chamber;

a valve member positioned within said chamber and said passageway and conforming thereto for rotational sliding engagement therewith, said valve member having a bore through its longitudinal axis perpendicular to said chamber axis, a recess in the end surface of said passageway conforming end portion of said valve member and an open slot thereon, said slot having its axis parallel with the axis of said bore;

a first sealing means positioned between at least a portion of said chamber and said valve member said first sealing means having an aperture therethrough aligned with the axis of said passages for allowing said liquid to flow therethrough while preventing liquid seepage between said chamber and said valve member;

a second sealing means positioned between said valve means and said shoulder and confined thereby providing a liquid seal therebetween;

an operating lever having a portion positioned and confined within said slot covering said recess with a portion extending through said cut out portion terminating external of said housing for manually rotating said valve member from a first position wherein said bore of said valve member is co-axial with said passages allowing said liquid to flow therethrough to a second position wherein said axis of said bore is rotated out of alignment with said axis of said passages restricting the flow of said liquid into said chamber;

a compressible bias means positioned within said recess and confined and compressed therein by said lever; and

a housing cover attached to said housing, said cover closing said tubular opening and thereby confining said lever, both of said sealing means and said valve member within said housing and said passageway and compressing said bias means wherein said first seal is partially compressed between the wall of said chamber and said valve member, said second sealing means is forced against said shoulder by said valve member sealing said valve chamber and said lever is forced against the inside surface of said cover wherein locking means carried by said cover and positioned adjacent said cut out selectively locking said lever in one of said positions of said valve member.

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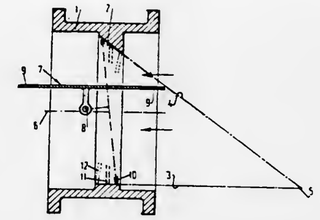
**3,931,955**
**BUTTERFLY VALVE**

**Christianus Jacobs, Bergen op Zoom, Netherlands, assignor to B.V. Machinefabriek en Ijzergieterij Holland-Bergen op Zoom, Bergen op Zoom, Netherlands**

**Filed Mar. 25, 1974, Ser. No. 454,427**
**Claims priority, application Netherlands, Apr. 12, 1973, 7305162**
**Int. Cl.² F16K** *1/276, 25/00*
**U.S. Cl. 251—305** **14 Claims**

1. A butterfly valve comprising a housing in which a flat flap having an elastic rim is adapted to turn between a position in which the plane of the flap is parallel to the axis of the flow passage across the housing and a position in which the elastic rim is in sealing relationship to a seat arranged all around the axis of the passage across the housing, said seat having the shape of a cone surface, the apex of the cone being located outside the axis of the flow passage across the housing, characterised in that the sealing surface of the seat lies on the peripheral surface of the base of an oblique circular cone, the circular base of said cone being at right angles to the axis of the flow passage of the seat.



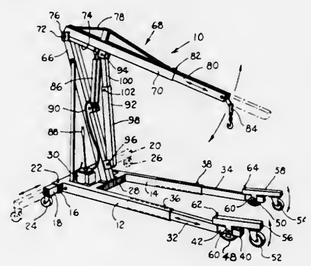


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**3,931,956**
**HOIST**

**Wallace H. Hawkins, Rte. 7, Old Buncombe Rd., Greenville, S.C. 29611**

**Continuation of Ser. No. 373,606, June 25, 1973, abandoned. This application Nov. 21, 1974, Ser. No. 525,839**
**Int. Cl.² B60P** *1/48*
**U.S. Cl. 254—8 B** **3 Claims**



1. An apparatus including a hoist for lifting and transporting heavy objects on a surface comprising:

a base structure having a pair of spaced outwardly extending horizontal legs;

at least one wheel carried adjacent an inner end of said base structure for aiding in supporting said structure,

a primary supporting wheel carried adjacent an outer end of each of said outwardly extending legs journaled for rotation about a fixed axis;

an auxiliary wheel carried adjacent each of said primary supporting wheels;

an adjustable means for pivotally supporting said auxiliary wheels so that said auxiliary wheels can be shifted from a first position out of contact with said surface to a second position wherein said auxiliary wheels engage said surface lifting said primary wheels out of contact with said surface;

swivel means for journaling said auxiliary wheels so that said auxiliary wheels can swivel for adding maneuverability to said apparatus when in said second position;

said adjustable means including a support member carried by an outer end of each of said legs with a portion extending outwardly beyond said legs;

means for pivotally mounting said support members relative to said outwardly extending legs;

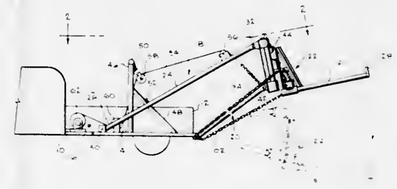
said swivel means for journaling said auxiliary wheels being attached to an outer end of a respective support member, and means carried adjacent an inner end of said support members for selectively raising and lowering said outer ends for causing said auxiliary wheels to assume said first and second position.

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**3,931,957**
**LIFTING APPARATUS**

**John D. Thibodeaux, 4309 Los Angeles, Houston, Tex. 77026**

**Filed Apr. 25, 1975, Ser. No. 571,504**
**Int. Cl.² B66F** *3/00;* **B60P** *1/48*
**U.S. Cl. 254—127** **28 Claims**



1. Lifting apparatus for mounting on a supporting structure having an end, said lifting apparatus comprising:

a first guide assembly having an anchor end pivotally anchorable to said support structure at a location spaced substnatially inwardly from the end of said support structure for vertical pivotal movement and a movable end disposed to extend outwardly beyond the end of said support structure;

a second guide assembly disposed below said first guide assembly and having an anchor end pivotally anchorable to said support structure at a location closer to the end of said support structure than the location of the anchor end of said first guide assembly for vertical pivotal movement and a movable end disposed to extend outwardly beyond the end of said support structure;

a rigid base assembly pivotally connected to the movable ends of said guide assemblies at vertically spaced points for relative vertical pivotal movement between said base assembly and each of said guide assemblies whereby said base assembly and said guide assemblies comprise a liftable assembly;

bulkhead means mounted on said base assembly and including engagement means for engaging an object;

and elevating means mountable on said support structure and connected to said liftable assembly for raising said liftable assembly with respect to said support structure.

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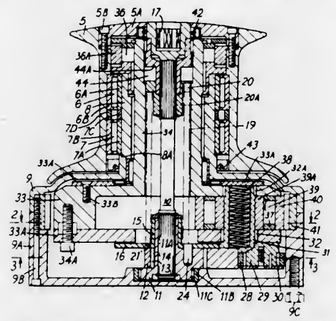
**3,931,958**
**LOAD MOVING APPARATUS**

**Howard Frederick Hobbs, Napton-on-the-Hill, near Rugby, England, assignor to Variable Kinetic Drives, Ltd., England**

**Filed June 18, 1974, Ser. No. 480,428**
**Claims priority, application United Kingdom, July 3, 1973, 31668/73**
**Int. Cl.² B66D** *1/30*
**U.S. Cl. 254—150 R** **6 Claims**

1. A load moving device comprising an input member (10), an inner eccentric (11) connected to the input member, an outer eccentric (12) surrounding the inner eccentric so that the two eccentrics combine to form a variable throw device, spring means (19) connected to the input member and to the outer eccentric and pretensioned to hold the eccentrics in about maximum throw position, contact elements (28) engaging the outer eccentric, a contact elements carrier (34) which serves as an output member, arms (29) pivotally carried by the carrier (34) and each carrying one of said contact ele-

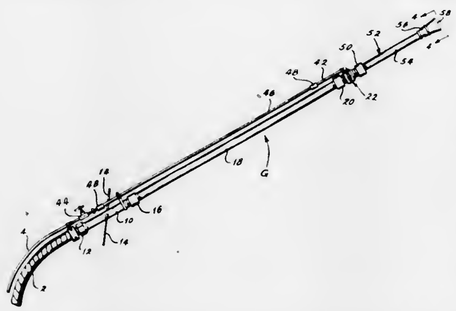
ments, a reaction member (9), unidirectional clutches (39) connected with said arms respectively and gears (40) operatively connected between said clutches (39) and said reaction member (9).



## 3,931,959
## GUN FOR APPLYING REFRACTORY MATERIAL

George H. Truman, South Bend, Ind., assignor to A. P. Green Refractories Co., Mexico, Mo.

Filed Oct. 29, 1974, Ser. No. 518,274
Int. Cl.² B28C 5/06
U.S. Cl. 259—151 12 Claims

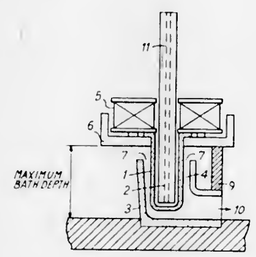


1. A gun for applying a refractory material to a surface, said gun comprising: a rigid tube into which an airstream having dry granular refractory material entrained in it is introduced so that the airstream flows through the tube, the tube having apertures therein arranged in at least one circumferential row; a closure on the tube and defining an annular chamber surrounding the tube at the apertures in the tube so that the chamber communicates with the interior of the tube through the apertures; means connected to a source of water and to the closure for directing water to the chamber, whereby the water will flow into the interior of the tube and mix with the refractory material entrained in the airstream; a straight nozzle extension extended beyond the closure on the tube so that the airstream containing the moistened refractory material passes into the material; extension where the water further mixes with the refractory material; and a nozzle tip on the nozzle extension, the nozzle tip having a discharge opening of non-circular cross-section so as to change the shape of the flow and effect a back pressure in the nozzle extension the nozzle tip containing a passage which communicates with the interior of the nozzle extension and has a turn therein so as to change the direction of the moistened refractory material passing through the nozzle tip, the nozzle tip further having a pocket along the backside of the turn therein so that some refractory material will accumulate in the pocket, whereby the refractory material will not impinge against and wear out the nozzle tip at the turn.

## 3,931,960
## APPARATUS FOR CIRCULATING MOLTEN METAL

Pervez Jal Bamji, Banbury, England, assignor to Alcan Research and Development Limited, Montreal, Canada

Filed Apr. 7, 1975, Ser. No. 565,725
Int. Cl.² C21C 7/00
U.S. Cl. 266—34 A 11 Claims

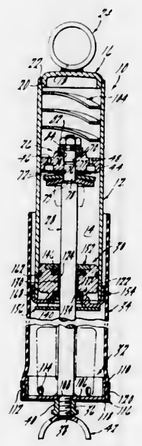



1. Apparatus for circulating molten metal in a furnace, comprising an induction coil adapted for energisation from an alternating current source, an elongate core having the coil disposed about it and projecting from both ends of the coil, said core being so disposed in relation to the coil that 25–50% of the length of the core is at one axial side of the mid-point of the coil, a refractory casing or coating protecting the part of the core projecting at said one axial side of the coil, and a heat-resistant shield protecting the coil at least at its side nearer said part of the core.

## 3,931,961
## SHOCK ABSORBER

John H. Fader; Johan H. Keijzer, both of Hasselt; Marcel J. R. Graulus, and Roland H. C. Beets, both of St. Truiden, all of Belgium, assignors to Monroe Belgium N.V., Saint-Truiden, Belgium

Continuation of Ser. No. 307,783, Nov. 20, 1972, abandoned.
This application June 6, 1974, Ser. No. 477,475
Int. Cl.² F16F 3/07
U.S. Cl. 267—64 R 4 Claims



1. A pressurized shock absorber assembly comprising an elongated pressure cylinder adapted to contain preselected quantities of hydraulic fluid and a compressible gas,



a piston reciprocably mounted within said pressure cylinder and including valve means,

a volume of hydraulic damping fluid within said cylinder cooperable with said valve means for damping reciprocable movement of said piston,

a quantity of gas within one end of said cylinder and defining a gas-fluid interface with said fluid,

a piston rod connected to and reciprocable with said piston, and

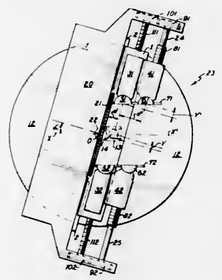
a helical baffle member within the same end of said cylinder as said quantity of gas,

said baffle member extending through said gas-fluid interface so that a portion of said member is disposed within said quantity of fluid and the remaining portion of said member is disposed within said quantity of gas, said baffle member extending radially of said cylinder so as to have the outer periphery of the convolutions thereof engageable in a slight interference fit with the inner periphery of said cylinder, with said member comprising the sole element between said piston and said end of said cylinder within which said quantity of gas is located, whereby said member will act to minimize aeration of said fluid upon reciprocal movement of said piston and piston rod.

## 3,931,962
## VISE FOR BIAS-CUTTING SAWING MACHINES

Fernand Delplanque, Nice, France, assignor to Mecaval International, Saint Chamond, France

Filed Apr. 26, 1974, Ser. No. 464,483
Claims priority, application France, May 10, 1973, 37.17601
Int. Cl.² B25B 1/22
U.S. Cl. 269—55 10 Claims



1. A vise for a bias-cutting sawing machine for the miter cutting of elongated metallic sections, in which the saw is pivotable relative to the longitudinal axis of the section to be cut, said vise including

a. a pivotal support frame for the saw,

b. a pair of axially spaced main jaws,

c. means connecting the main jaws to the frame and operative to permit the main jaws to move axially relative to each other when the frame is pivoted preparatory to miter cutting,

d. a pair of spaced auxiliary jaws, said auxiliary jaws being movable relative to the main jaws,

e. means slidably connecting each auxiliary jaw to one of the main jaws,

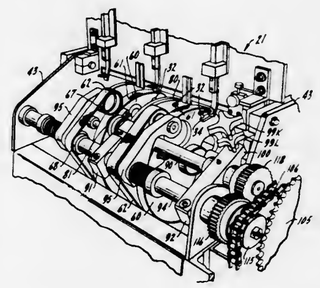
f. spaced parallel jaw caps mounted on the main and auxiliary jaws for holding a metallic section during cutting, each jaw cap interconnecting a main jaw to its slidably connected auxiliary jaw, and

g. means automatically operative to maintain the jaw caps parallel to each other and to the longitudinal axis of the section to be cut when the frame is pivoted preparatory to miter cutting.

## 3,931,963
## FOLDING MACHINES

Elmer D. Bewersdorf, Downers Grove, Ill., assignor to McCain Manufacturing Corporation, Chicago, Ill.

Continuation of Ser. No. 385,970, Aug. 6, 1973, abandoned.
This application Mar. 5, 1975, Ser. No. 555,698
Int. Cl.² B65H 45/00
U.S. Cl. 270—61 15 Claims

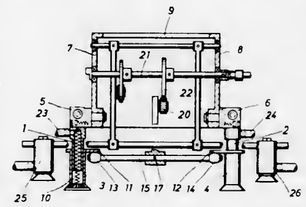


1. A machine for folding the cover of a magazine or the like and feeding the cover to a conveyor located therebeneath, comprising: a supply hopper for supplying sheets constituting the covers to be folded, an opposed pair of rotatable discs presenting a bight between which is fed the sheet to be folded; one of said discs having an unyieldable annulus and the other of said discs having a yieldable annulus opposed thereto whereby the two annuli impart a score line to a sheet fed therebetween; means to feed the sheets one by one to said bight; opposed flights of folder elements beneath the discs for progressively folding the sheet on the score line to form a folded sheet having a backbone; means to invert the scored sheet and deliver it to said opposed flights; and means to crease the backbone along its length to impart a finish fold and to feed the folded sheet to said conveyor.

## 3,931,964
## SHEET FEEDER APPARATUS

Adolf Schwebel, Offenbach am Main, Germany, assignor to Mabeg Maschinenbau GmbH, Offenbach, Germany

Filed Feb. 19, 1974, Ser. No. 443,820
Claims priority, application Germany, Feb. 23, 1973, 2309013
Int. Cl.² B65H 3/40
U.S. Cl. 271—93 9 Claims



1. A sheet feeder apparatus comprising a frame structure, hollow telescoping suction head means including a stationary support means secured to said frame structure and suction nozzle means movable relative to said support means, first spring means operatively arranged between said support means and nozzle means for normally relatively urging said support means and nozzle means apart, suction means connected to said head means for evacuating said head means while lifting a sheet, said movable nozzle means comprising a guide surface, said apparatus further comprising guide means

pivotally mounted in said frame structure cam means arranged for actuating said guide means, and second spring means urging said guide means simultaneously into cooperating relationship with said cam means and with said guide surface of the nozzle means, whereby said first spring means urges said guide means away from said cam means, and wherein said suction head means comprises two suction heads, the support means of each head comprising a stationary member, the nozzle means of each head comprising a telescoping suction nozzle member, said guide surface comprising a collar guide surface on each said suction nozzle member, said guide means comprising a substantially horizontally arranged guide bar having free ends in contact with the collar guide surfaces of said suction nozzle members, pivotally mounted lever means, means securing said guide bar intermediate its free end to said pivotally mounted lever means, cam follower means secured to said lever means for cooperating with said cam means, and means for securing said second spring means between said frame structure and said lever means.

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**3,931,965**

## NET POST RETENTION DEVICE

**Marshall D. Grant, Drawer No. 3128, El Paso, Tex. 79923**

**Filed Aug. 13, 1974, Ser. No. 497,059**
**Int. Cl.² A63B** *61/00*
**U.S. Cl. 273—29 BF** **6 Claims**



1. A device for positioning and tensioning over a playing surface a vertically hanging game net having at least a top cable having at least one of its ends attached to a stationary point, said device comprising an upright post having a lower portion adapted to fit in a hole and an upper portion extending vertically upward for a height sufficient to accommodate the net; said upper portion of the upright post having means affixed thereto at about the upper and lower extremity thereof for attaching the net; the upper end of said post having disposed therein a recessed trough means for accommodating the top cable of the net to be attached; said trough means extending slightly beyond the top of the post and curving in an arc downward along the side of the post a short distance; turnbuckle means for tensioning the top cable of the net to be attached disposed vertically along the upper portion of said post on the same side thereof as the downward projecting trough means; said turnbuckle means being attached at its lower end to said post and having its upper end adapted for attachment to the top cable of the net to be attached; cover means removably fitted to the upper end and side of said post and adapted to enclose said turnbuckle and trough means to protect players from contact with said turnbuckle and trough means; and stop means affixed to said upright post for maintaining the post at the proper height above ground level.

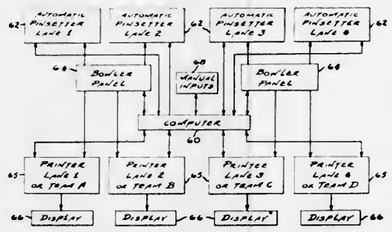
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**3,931,966**

## ELECTRONIC SCORER FOR BOWLING GAMES

**Jerome F. Walker, Shaker Heights, Ohio, assignor to Brunswick Corporation, Skokie, Ill.**

**Division of Ser. No. 48,427, June 22, 1970, Pat. No. 3,700,236, which is a division of Ser. No. 612,665, Jan. 30, 1967, Pat. No. 3,550,939. This application Nov. 5, 1971, Ser. No. 196,173**
**Int. Cl.² A63D** *5/04*
**U.S. Cl. 273—54 C** **10 Claims**




5. In a bowling scoring apparatus for computing the score of a bowler, the combination of: means for detecting pinfall information; means for receiving pinfall information and for computing a bowling score in accordance with the pinfall information; and means connected to said computing means for correcting an inaccurate bowling score computed by said computing means, said correcting means comprising means for entering frame information in said computing means, means for entering cumulative score information in said computing means, means for entering pinfall information in said computing means and means connected to said computing means for initiating an error correction procedure and operable to cause successive corrections to a bowler's score after an initial correction thereto by use of said pinfall entering means and without use of said entry means for frame and cumulative score information.

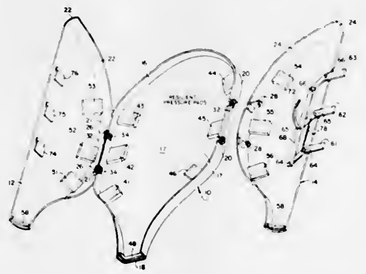
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**3,931,967**

## RACKET COVER AND SUPPORT PRESS

**Dianne D. Lyons, Pelican Rock on Cotton Valley Shores, Christiansted, St. Croix, V.I. 00820, and William R. Chandler, 57A Salt River, Christiansted, St. Croix, V.I.**

**Filed Oct. 7, 1974, Ser. No. 512,728**
**Int. Cl.² A63B** *49/16, 49/18*
**U.S. Cl. 273—74** **5 Claims**



1. A combination protective cover and support press for tennis rackets or the like comprising a bottom frame portion having a substantially oval shape with a throat at one end with an upstanding wall except at the end of said throat and being adapted to receive the head of a tennis racket, a pair of top half frame portions, hinge means connecting said pair of top frame portions to said bottom frame portion for movement between a closed position overlying said bottom frame portion and an open position exposing said bottom frame portion to permit the insertion of a tennis racket or the like therein and having a substantially half-oval shape with a throat at one end and with an upstanding wall except at the end of said throat and being adapted to contain the head of a tennis racket or the like when said top half frame portions are in said closed position to thereby protect the tennis racket, all of said frame portions being made of a lightweight stiff material, the outer and inner wall surfaces of said top and bottom frames portions being smooth, continuous surfaces unmarred by indentations, resilient means mounted on said inner wall surfaces of said top and bottom frame portions in paired opposed relationship and adapted to exert opposing forces on the frame of a tennis racket positioned therebetween, and means for locking the top half frame portions in closed position, said resilient means including a plurality of resilient pressure pads mounted on said bottom frame portion in spaced-apart relationship near its periphery and on said top half frame portions in an arrangement such that corresponding bottom and top frame pads oppose each other, said pressure pads being distinct entities from said top and bottom frame portions and extending and projecting from their associated frame portions, whereby opposing pads apply a pressing force against each side of the frame of a tennis racket or the like when placed therein to thereby restrict warping.



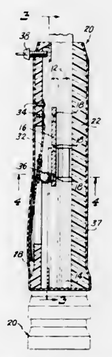
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**3,931,968**

## ADJUSTABLE TENNIS RACKET HANDLE

**John K. Hedberg, 4970 Lowell Blvd., Denver, Colo. 80221**

**Filed May 13, 1974, Ser. No. 469,705**
**Int. Cl.² A63B** *49/08*
**U.S. Cl. 273—75** **4 Claims**



1. A tennis racket having a head and a shank fixed thereto;
a handle slidably mounted on said shank for sliding movement thereon toward and from said head and having a hand-grip portion;
interengageable means on said shank and on said handle for releasably latching said handle in each of a plurality of positions along said shank;
said interengageable means on said handle being movably carried thereby for movement thereon toward and from said shank;
resilient means urging said interengageable means on said handle in a direction outwardly of said handle;
manually interengageable means on said hand-grip portion, adjacent the outer surface thereof, positioned to be engageable by the hand of a player gripping said hand-grip portion and being movable to move said interengageable means on said handle against the urging of said resilient means whereby a player may, by manipulating the hand holding the racket, selectively latch or release said handle relative to said shank; and said interengageable means on said shank comprising a plurality of longitudinally spaced depressions therein and wherein said interengageable means on said handle comprises a ball engageable in said depressions to latch said handle against movement, said resilient means being an outwardly biased leaf spring secured at one end thereof to said handle and extending adjacent the outer surface thereof, said ball being fixedly mounted on the other end of said spring whereby a firm grip by the player's hand engages said ball into one of said depressions and thereby holds said handle latched to said shank and whereby relaxation of said grip permits said leaf spring to spring outwardly and withdraw said ball from the depression.

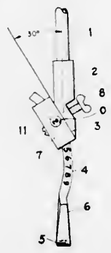
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**3,931,969**

## ADJUSTABLE GOLF CLUB

**Arthur Townhill, 739 Alma Real Drive, Pacific Palisades, Calif. 90272**

**Filed Apr. 17, 1974, Ser. No. 461,639**
**Int. Cl.² A63B** *53/06*
**U.S. Cl. 273—79** **6 Claims**



1. An adjustable golf club for simultaneously adjusting the length, loft, and lie angles of the club thereby being adapted to serve the functions of a set of successively numbered golf clubs wherein these clubs decrease in length and increase in loft and lie angles from the lowest numbered club to the highest numbered club, said adjustable golf club comprising an elongated shaft, a hand grip on one end of the shaft, a fitting on the other end of the shaft having a curved passage therethrough substantially coplanar with the shaft axis and rearwardly directed relative to the shaft, a club head having a striking face, a rear surface, a top surface, a sole surface, a toe end and a heel end, an elongated curved hosel extending from the heel end of the club head upwardly and rearwardly therefrom and defining an acute lie angle and with its curvature being in a plane of curvature inclined relative to a vertical plane perpendicular to the plane of the striking face of the club head, said hosel being slidably mounted in said curved passage of the fitting, means on the fitting for locking the hosel in fixed position in said passage, said hosel length and said curvature of the hosel being such as to simultaneously change the effective length of the club, the lie angle of the sole relative to the axis of the shaft and the loft angle of the striking face of the club head to reproduce the club lengths, lie angles, and loft angles of said set of golf clubs when said fitting is locked to the hosel in the appropriate position.

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**3,931,970**

## PLASTIC GAME BOARD HAVING A UNITARY FRAME

**Claudio Cecchetti, Milan, Italy, assignor to Arco Falc srl, Milan, Italy**

**Continuation of Ser. No. 432,864, Jan. 14, 1974, abandoned. This application Apr. 23, 1975, Ser. No. 570,594**
**Int. Cl.² A63F** *7/06*
**U.S. Cl. 273—85 D** **8 Claims**

1. A game board adapted for use with a movable game piece comprising a playing surface board, a generally rectangular

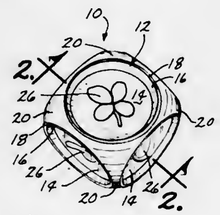
unitary plastic frame having opposed side sections and opposed end sections providing a walled element around said playing field board for substantially confining the game piece thereon, said plastic frame having a generally inverted U-shaped cross-section and comprising downwardly spaced inner and outer walls connected by a top surface, the base of said inner wall generally defining a rectangle and being connected adjacent the base to said playing field board whereby said inner wall extends above said playing field board to provide a walled element around said playing field board for substantially confining the game piece thereon, and the base of said outer wall extending below the base of said inner wall and generally defining a larger rectangle and being connected adjacent the base to a base board which extends on a plane



beneath the playing field board and serves as the bottom cover for the game board, the base of the inner wall of each of said side sections being longitudinally inclined from each end section downwardly to the center of each side section whereby the attachment of said playing field board adjacent the base of said inner wall causes said playing field board to be inclined downwardly from each end section to the center of each side section, such inclination adapted to cause a free moving game piece to move to the center of the surface of the playing field board and said inner wall being downwardly and inwardly inclined, adjacent its base, to the surface of the playing field board in order to increase the area of contact playing field board and to provide means for deflecting the game piece during play.

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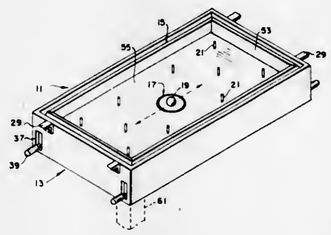
**3,931,971**
**PROJECTILE HAVING INDENTED SURFACE AREAS**
**Bobbie S. Harvey, R.R. 1 on Island, Tracy, Iowa**
**Filed May 10, 1974, Ser. No. 468,912**
**Int. Cl.² A63F 3/00**
**U.S. Cl. 273—106 R** **6 Claims**



1. An amusement device comprising:
a body member having a substantially spherical shape with six equally-sized indentations formed thereon;
each of said indentations comprising an annular rim, tapered side walls extending inwardly from said annular rim and a flat circular surface positioned radially inwardly from said annular rim,
said body member having a spherical surface between said annular rims;
a plurality of raised indicia being on said flat circular surfaces, said raised indicia having a height less than the distance between said rims and said flat circular surfaces whereby said rims prevent said indicia from interfering with rolling of said body member on a flat surface;
a dimple formed in said spherical surface, said dimple being concave and being substantially smaller than said indentations so that the statistical chances of said body coming to rest on said dimple are smaller than the chances of coming to rest on one of said indentations.

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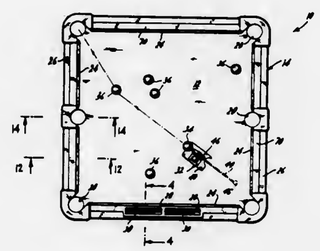
**3,931,972**
**TILTABLE SURFACE GAME TOY**
**James M. Fabian, St. Clair Shores, Mich., assignor to Victor M. Fabian and Leo Garr, both of Detroit, Mich., part interest to each**
**Filed Apr. 2, 1975, Ser. No. 564,281**
**Int. Cl.² A63F 7/16**
**U.S. Cl. 273—110** **10 Claims**



1. In a tiltable surface game toy, an open top housing assembly mountable upon a support and including side, end and bottom walls;
a universally tiltable open top insert assembly loosely disposed within the said housing assembly and including side, end and bottom walls;
a pair of upright spaced corner guides secured adjacent each of the internal corners of said housing assembly to its respective side and end walls;
a vertically adjustable lift means guidably mounted between said corners and guides respectively;
outwardly extending arm means secured to each said lift means projecting outwardly through a coresponding upright slot in the end walls of the housing assembly and terminating in a handle;
said lift means supportably engaging the undersurface of said insert assembly at the corners thereof, whereby selective manual vertical adjustments of one or more of said lift means are adapted to angularly tilt the bottom wall of the insert assembly to any resultant angle with respect to a horizontal plane throughout 360°, selectively;
there being game board indicia upon said insert assembly bottom wall;
a series of variably spaced targets or obstacles mounted on said indicia;
and a ball initially disposed on said indicia, movably thereover in various directions relative to the insert assembly walls, depending upon the resultant tilt of said insert assembly bottom wall, so as to strike or not strike said targets.



**3,931,973**
**POCKETED GAME BOARD WITH MOVABLE BALL-PROPELLING MECHANISM**
**Walter Moe, Huntington, N.Y., assignor to Aurora Products Corporation, West Hempstead, N.Y.**
**Filed Jan. 23, 1974, Ser. No. 435,961**
**Int. Cl.² A63F 7/10; A63D 3/02**
**U.S. Cl. 273—123 R** **4 Claims**

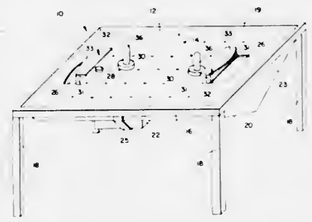


1. A game of skill comprising a plurality of playing balls, a game board having ball-receiving pockets formed therein adapted to receive said playing balls, a ball-propelling mechanism including a movable stand movable about said game board for propelling said playing balls into said ball-receiving pockets, said movable stand including a base, an upstanding support and an impact member, said impact member being pivotally mounted at one end thereof to said upstanding support, the other end of said impact member being free to swing through an arc having its axis formed by the axis of the pivotal mounting of said one end of said impact member with said upstanding support, said impact member being so mounted to said support as to pivot in one predetermined plane only, relative to said support, said base including at least one ball-receiving recess formed in said base, said recess being formed as an indentation in the edge of said base, said indentation being so structured that one of said playing balls when resting on the game board may be inserted therein by moving said indentation thereagainst, said one of said playing balls, when so inserted, being positioned for impact by said impact member, and when so inserted, being free of contact with said impact member except at the moment of said impact, said recess being so aligned with said impact member such that whenever said one of said playing balls is received therein, the center line of said one of said playing balls is in alignment with said predetermined plane, whereby said playing ball is projected in a direction parallel to, and coincident to, said predetermined plane.

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**3,931,974**
**AIR TABLE GAME APPARATUS**
**Adolph E. Goldfarb, 4614 Monarca Drive, Tarzana, Calif. 91356, and Erwin Benkoe, 17965 Medley Drive, Encino, Calif. 91316**
**Filed Feb. 15, 1974, Ser. No. 443,110**
**Int. Cl.² A63F 3/00**
**U.S. Cl. 273—126 R** **15 Claims**

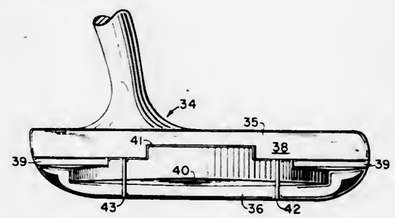
1. A game apparatus capable of generating an air bearing surface for supporting a movable playing piece thereon by an air cushion, said apparatus comprising:
a. generally flat, relatively rigid, relatively horizontally disposed member having an upper surface defining a playing surface,
b. means defining a plurality of apertures in said relatively horizontally disposed member capable of emitting air under pressure therethrough,
c. a supporting structure retaining said relatively horizontally disposed member in upwardly spaced relationship to a floor or other supporting surface,
d. an upstanding lip extending upwardly from said playing surface and around the periphery of said relatively horizontally disposed member,
e. a flexible plastic member of substantially greater pliability than said relatively rigid member located beneath said relatively horizontally disposed member and extending across the entire lower surface of said relatively horizontally disposed member and being secured with respect thereto to form an air chamber between said flexible member and said relatively horizontally disposed member so that air may be emitted through said apertures,



f. an air pump operatively retained on said apparatus for pumping air into said air chamber and is supported in upwardly spaced relationship to a floor or other supporting surface,
g. a flexible strap means secured to said supporting structure and engaging an underside of said air pump to hold said air pump in said upwardly spaced relationship to said floor or other supporting structure and so that vibrational forces are not transmitted to said flexible plastic member,
h. a fitting secured to said plastic member, and
i. a tube connected to said air pump and to said fitting for delivery of air under pressure from said pump to said air chamber.

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**3,931,975**
**GOLF CLUB**
**Raymon W. Cook, 406 Top Hill, San Antonio, Tex. 78209**
**Division of Ser. No. 867,107, Sept. 10, 1969, Pat. No. 3,884,468. This application Aug. 12, 1974, Ser. No. 496,451**
**Int. Cl.² A63B 53/04**
**U.S. Cl. 273—164** **12 Claims**



1. In a golf club head consisting of an upstanding blade having a front face and a rear face with a flange extending rearwardly of the said blade, said flange having a top, a rear face and sole, a longitudinally and horizontally extending groove in the rear face of said blade extending completely across the rear face thereof, a flange groove extending downwardly into the top of said flange to an approximate uniform depth and terminating rearwardly substantially across the entire rear face of said flange, said flange groove communicating with said longitudinally and horizontally extending groove, first and second spaced and parallel alignment grooves in said flange groove, said alignment grooves being disposed transverse to the longitudinal axis of said club head and extending upwardly into said blade.

3,931,976

## MAGNETICALLY CONTROLLED OBTURATOR

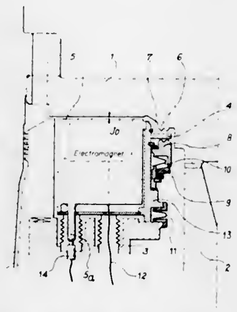
Claude Duquenne, La Garenne, France, assignor to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, Paris, France

Filed Oct. 15, 1974, Ser. No. 514,996

Claims priority, application France, Oct. 19, 1973, 73.37308

Int. Cl.² F16J 9/00

U.S. Cl. 277—80 7 Claims



1. An obturator for the rotor of a rotating machine which conveys a noxious fluid, said obturator being constituted by an annular seal located in a plane at right angles to the axis of rotation of the machine, said seal being clamped in the active position between on the one hand stationary knife-edge elements provided for this purpose on the rotor and on the other hand movable knife-edge elements carried by an annular supporting member which is capable of moving along the axis of the machine under the action of magnetic means between an active position in which said supporting member is held at a distance from the rotor and an active position in which said member is coupled with said rotor by means of magnetic attraction forces, wherein the movable knife-edge elements are connected to the movable support member by resilient means whereby an obturation force of lower value than the magnetic attraction force is exerted in the direction of the stationary knife-edge elements.

3,931,977

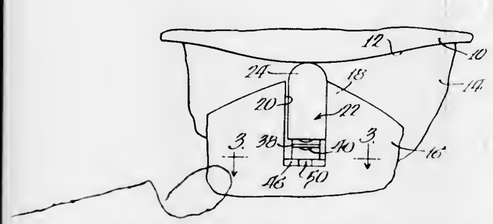
## SEAL ASSEMBLY FOR ROTARY MECHANISMS

Alexander Goloff, East Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed May 1, 1975, Ser. No. 573,681

Int. Cl.² F01C 19/02; F16J 15/24

U.S. Cl. 277—81 P 8 Claims



1. In a rotary mechanism having means defining an operating chamber, a rotor within said chamber, at least one seal receiving groove in said rotor, and sealing means in said groove; the improvement wherein said sealing means comprises a unitized seal assembly disposed within said groove and including a seal extending partially out of said groove to sealingly engage a wall of said operating chamber, spring means secured to said seal for biasing said seal into said sealing engagement, and a carrier element in said groove and secured to said spring means, said carrier element including resilient means having an unstressed width slightly greater than the width of said groove, whereby when said carrier element is disposed within said groove, said resilient means will grip said groove to positively retain said unitized seal assembly within said groove.

3,931,978

## MECHANICAL SEALS

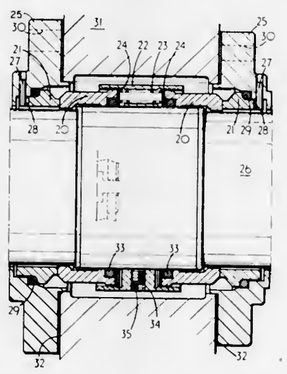
Roger Anthony Grimston, Cheshire, England, assignor to Burmah Engineering Company Limited, Manchester, England

Filed July 30, 1974, Ser. No. 492,995

Claims priority, application United Kingdom, Sept. 26, 1973, 45053/73

Int. Cl.² F16J 15/34

U.S. Cl. 277—93 5 Claims



1. A mechanical seal comprising:

a. at least one stationary seal member;

b. a rotatable spring carrier ring having a plurality of angularly spaced, T-shaped dimples about its inner surface adjacent at least one edge;

c. at least one rotatable annular seal member having a plurality of angularly spaced, peripheral flange segments defining slots therebetween, said slots dimensioned so as to pass over said T-shaped dimples of said spring carrier ring while angular displacement of the rotatable seal member with respect to the spring carrier ring causes the flange segments to engage the T-shaped dimples thereby attaching said at least one rotatable seal member to said spring carrier ring;

d. at least one pressure plate disposed within said spring carrier ring and bearing against the rotatable seal member; and

e. at least one spring means disposed within said spring carrier ring and bearing against the at least one pressure plate so as to urge the rotatable seal member against the stationary seal member.

3,931,979

## DEVICE FOR CLAMPING TOGETHER TWO MACHINE MEMBERS HAVING MATING CENTERING MEANS

Rene Poincenot, 32 Avenue Bosquet, Paris, France (75007)

Filed Apr. 26, 1974, Ser. No. 465,170

Claims priority, application France, May 17, 1973, 73.17851

Int. Cl.² B23B 5/22, 31/12

U.S. Cl. 279—107 2 Claims

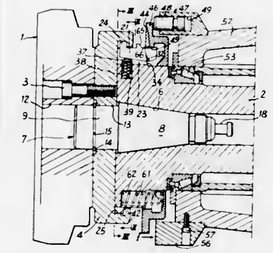
1. In an assembly of two coaxial members having mutual mating centering means, a clamping device comprising:



a plurality of dogs arranged on a first of said two members, each said dog having a hook-portion and being T-shaped with a middle leg having a distal end and with a transverse branch having two short faces, said middle leg assuming a position in a direction substantially axial, said hook portion being located at the distal end of said middle leg,

means mounting said dogs for rocking movement in radial planes on said first member,

a transverse groove in the second of said members, said groove having a front face, said dogs being adapted to assume through said rocking movement either an operative position in which said hook-portions of said dogs are engaged against said front face of said groove or an inoperative position in which they are positioned out of said groove,



axial retaining means carried by each dog and constituted by said short faces of said transverse branch,

mating axial retaining means carried by said first member and adapted to cooperate with said axial retaining means carried by said dogs, said mating axial retaining means being constituted by front supporting faces mating with said short faces,

cam portions carried by said dogs,

an annular operating part axially shiftable on one of said two members,

and mating cam portions carried by said annular operating part and mating with said cam portions carried by said dogs for cooperating therewith so as to actuate said dogs upon axial shifting movement of said annular operating part.

3,931,980

## SAFETY SKI BINDING SYSTEM

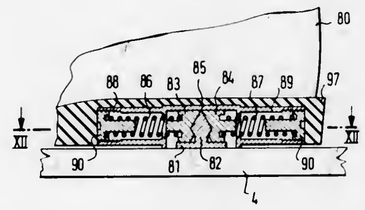
Hannes Marker, Garmisch-Partenkirchen, Germany

Division of Ser. No. 142,144, May 11, 1971, Pat. No. 3,785,668. This application June 28, 1973, Ser. No. 374,498

Claims priority, application Germany, May 12, 1970, 2023169; Nov. 11, 1970, 2055499

Int. Cl.² A03C 9/08

U.S. Cl. 280—11.35 R 4 Claims



1. A safety ski binding system comprising a disc-shaped abutment mounted on a ski in a position adapted to be approximately coaxial to the tibia of the skier, a skiing boot having a recess in a sole thereof, a hood including at least one resilient clamp member, said hood and abutment being adapted to extend into said recess in the sole of said skiing boot, said abutment carrying an upstanding detent pin adapted to interlock with said at least one resilient clamp member, and locking means for securing said hood to said skiing boot so that said hood can be only arbitrarily unlocked, said hood adapted to cooperate with the sole of said skiing boot to force said sole against said abutment and to release said boot in response to a predetermined overload force.

3,931,981

## ADJUSTABLE JAW, ESPECIALLY FRONT JAW, FOR SKI BINDINGS

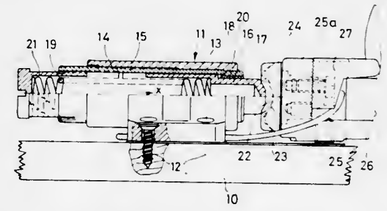
Brigitte Sittmann, Stuttgart, Germany, assignor to Vereinigte Baubeschlagfabriken Gretsch & Co. GmbH, Leonberg, Germany

Filed May 20, 1974, Ser. No. 471,544

Claims priority, application Germany, May 25, 1973, 2326636

Int. Cl.² A63C 9/08

U.S. Cl. 280—11.35 T 29 Claims



1. An adjustable retaining jaw for releasably connecting first and second relatively movable ski binding parts to one another, comprising:

a housing,

housing connecting means for connecting said housing to said first part,

a detent unit carried by said housing, said detent unit including a detent means engageable with counter-detent means at said second part and detent biasing means for biasing said detent means against said counter-detent means,

and detent unit adjusting means for adjusting the position of said detent unit with respect to said counter-detent means, said detent unit adjusting means being separate from said housing connecting means,

wherein said detent unit adjusting means includes a threaded sleeve which carries said detent unit, said threaded sleeve being threadably adjustable in a threaded longitudinal bore of said housing.

3,931,982

## RELEASE BINDING FOR SKIS

Axel Kubelka, Vienna, Austria, assignor to Gertsch AG, Zug, Switzerland

Filed June 6, 1974, Ser. No. 476,878

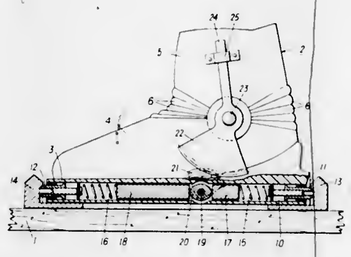
Claims priority, application Austria, June 7, 1973, 4999/73

Int. Cl.² A63C 9/086

U.S. Cl. 280—11.35 D 13 Claims

1. A release ski binding, comprising: holding means for one of the heel and the toe of the ski boot, said holding means including a holding spring and a locking member operatively associated with said ski boot and biased by said holding spring into a releasable engagement with an abutment means mounted on a ski, the engagement of said locking member with said abutment means holding said ski boot to said ski, transfer means pivotally connected to said ski boot, the leg of the skier being operatively connected to move said transfer means, said transfer means including control means coupled

with at least one of said abutment means and said holding spring for varying the magnitude of force required to effect a release of said ski binding in response to a movement of said leg relative to said pivot connection to thereby control the



force at which a release of said ski binding will occur, whereby a movement of said leg relative to said pivot connection on said ski boot will control the magnitude of the release force required to effect a release of said ski binding.

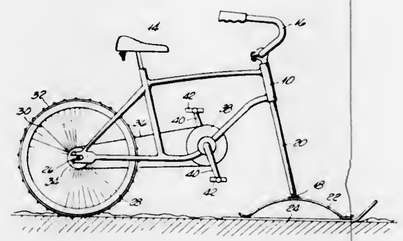
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**3,931,983**

## SNOW CYCLE

**Roy E. Kanouse, and Wayne F. Kanouse, both of Ludington, Mich., assignors to The Raymond Lee Organization, Inc., New York, N.Y., a part interest**

**Filed Aug. 28, 1972, Ser. No. 284,438**
**Int. Cl.² B62B *19/04***
**U.S. Cl. 280—12.14** **1 Claim**



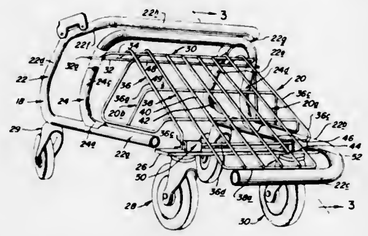
1. A snow cycle comprising:
a tricycle frame with seat, handle bar steering, and foot pedal operated chain drive, said bar steering employing a downwardly inclined shaft;
a leaf spring secured to the bottom of said shaft;
a ski;
said spring being secured to the top surface of said ski;
a horizontal axle extending rotatably through the rear of the frame at right angles thereto;
means connecting said drive to said axle to cause rotation of the same; and
drum means disposed around said axle as a horizontal axis, said drum means rotating with said axle;
said drum means including like cylinders disposed end to end in spaced position and having said axis in common;
each of said cylinders having cleats on the outer surface for preventing slippage in snow and ice; and
said cylinders being hollow and open at both ends and secured to said axis by spokes.

**3,931,984**

## ANTI-LOADING TRAY FOR SHOPPING CARTS

**Norman Young, Okalahoma City, Okla., assignor to Unarco Industries, Inc., Chicago, Ill.**

**Filed July 15, 1974, Ser. No. 488,730**
**Int. Cl.² B62B *11/00***
**U.S. Cl. 280—33.99 C** **5 Claims**



1. In a wheeled nestable shopping cart of the type which includes a lower cart frame having toe and rear ends joined by side portions, a basket spaced thereabove, upright brace means spaced rearwardly of the lower cart frame's toe end and extending upwardly between the lower cart frame and basket, and means operatively associated with the lower cart frame to prevent loading of merchandise thereon, the improvement comprising, in combination, the upright brace means having a portion inclining forwardly and upwardly from said lower frame toward said basket, the lower cart frame including a transverse member adjacent the toe end of the cart, said means to prevent loading including a lower tray sub-assembly arranged to be selectively and nonpermanently attached to the cart and providing an upper surface extending substantially between said lower cart frame and said basket at an angle relative to the horizontal such as to prevent storage of articles thereon, the lower tray sub-assembly having rearward and forward elements arranged respectively to lie above and against the forwardly inclined portion of the brace means and said transverse member of the lower cart frame, and hook means adjacent the toe end of the lower cart frame arranged for restraining a portion of the lower tray sub-assembly for limiting rearward and upward movement of said lower tray, the hook means restraining an intermediate portion of the lower tray between said rearward and forward elements to maintain said rearward and forward elements against their respective supports.

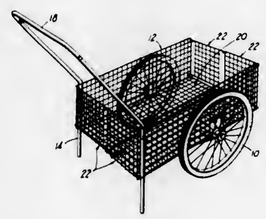
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**3,931,985**

## COLLAPSIBLE CART

**Eric Knebel, 5147 Burlingame Drive, Atlanta, Ga. 30340**

**Filed Dec. 2, 1974, Ser. No. 528,771**
**Int. Cl.² B62B *11/00***
**U.S. Cl. 280—42** **13 Claims**



1. A collapsible cart comprising, in combination, a pair of side panels; a pair of wheels rotatably mounted to said pair of side panels; a pair of bottom panels hinged together and to said pair of side panels; a first pair of end panels hinged together and to first adjacent ends of said pair of side panels; and a second pair of end panels hinged together and to second adjacent ends of said pair of side panels opposite said first adjacent ends.



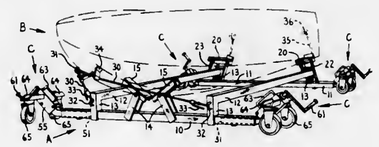
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**3,931,986**

## REMOVABLE JACKING WHEEL UNIT

**Louis A. Hunziker, 783 Commerce Ave., Longview, Wash. 98632**

**Division of Ser. No. 407,988, Oct. 19, 1973, Pat. No. 3,880,310. This application Dec. 13, 1974, Ser. No. 532,369**
**Int. Cl.² B60P *1/02***
**U.S. Cl. 280—43.2** **5 Claims**



1. A wheel unit for detachable connection with a frame structure having outwardly directed horizontal tubular sockets, said unit comprising a rigid angular arm having a horizontal end portion and an upwardly extending opposite end portion, said horizontal end portion being adapted to slide into and out of said sockets, a jack housing surrounding and slidable upward and downward on said upwardly extending end portion of said arm, caster wheels on said jack housing for supporting said unit on a floor, and jack means in said housing for moving said upwardly extending portion of said arm relative to said housing for raising and lowering said horizontal end portion of said arm in a range of movement between substantially floor level and an elevated position.

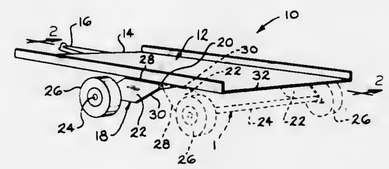
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**3,931,987**

## TRAILER WITH MOVEABLE AXLE ASSEMBLY

**Robert G. Holliday, 4517 S. Zeeb Road, Ann Arbor, Mich. 48103**

**Filed Mar. 24, 1975, Ser. No. 561,497**
**Int. Cl.² B62D *27/04***
**U.S. Cl. 280—80 B** **10 Claims**



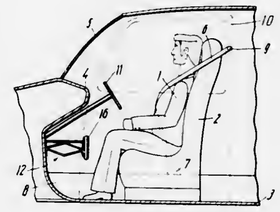
1. A trailer comprising a trailer bed, an axle assembly having an axle shaft and wheels journaled at each end of the axle shaft, said axle assembly being pivotally mounted about a transverse axis on said trailer bed for movement between a first position wherein the axle assembly is forward of the pivotal mounting so that the wheels are located under and substantially midway of the length of the trailer bed and a second position wherein the axle assembly is rearward of the pivotal mounting so that the wheels are located under and adjacent to the rear end of the trailer bed.

**3,931,988**

## VEHICLE SAFETY DEVICE

**Klaus Oehm, Wolfsburg; Ulrich Seiffert, Braunschweig; Burckhard Strüwe, Fallersleben; Ernst Fiala, Wolfsburg; Andreas Bauer; Ruediger Weissner, both of Fallersleben, and Wilfried Schwanz, Ahnsen, all of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany**

**Filed Sept. 28, 1973, Ser. No. 401,680**
**Claims priority, application Germany, Sept. 28, 1972, 2248003**
**Int. Cl.² B60R *21/10***
**U.S. Cl. 280—150 B** **2 Claims**



1. A safety device for protecting a passenger seated in a vehicle from injury during an abrupt deceleration of the vehicle, comprising:
a. a shoulder belt extending diagonally across the upper portion of the passenger's body for restraining only the upper portion of the passenger's body against a vehicle seat, whereby the lower portion of the passenger's body is left free to slide forward; and
b. energy absorbing means disposed on the vehicle in a zone in the passenger compartment forward of the knees of the seated passenger for restraining the lower portion of the passenger's body sliding forward during abrupt deceleration of the vehicle, by means of the passenger's knees impacting against said energy absorbing means, in conjunction with the operation of said shoulder belt restraining the upper portion of the passenger's body.

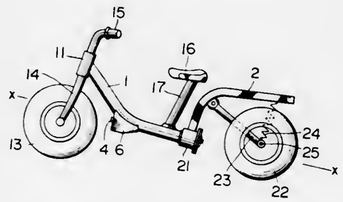
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**3,931,989**

## CONNECTING DEVICE FOR FRONT AND REAR FRAME OF TRICYCLE

**Toshiaki Nagamitsu, Ikeda, Japan, assignor to Daihatsu Motor Company Limited, Osaka, Japan**

**Filed June 10, 1974, Ser. No. 478,087**
**Claims priority, application Japan, June 18, 1973, 48-68916; June 18, 1973, 48-72516**
**Int. Cl.² B62K *5/06***
**U.S. Cl. 280—283** **11 Claims**

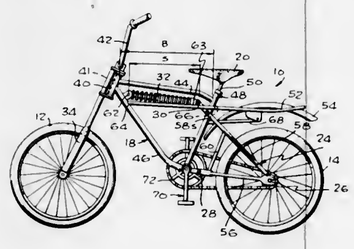


1. A connecting device for a front and a rear frame of a tricycle wherein the front frame has a front wheel, a handle bar for steering said wheel and a saddle for a rider, and the rear frame has two rear wheels, said connecting device comprising

a tubular shaft fixed to one of opposite ends of said front and rear frames;
a boss member, of cylindrical shape, fixed to the other of said opposite ends;
radial bearings insertably mounted within said boss member so as to hold said tubular shaft therewith,
said tubular shaft, radial bearing and boss member similarly having an axis extending longitudinally of the tricycle body,
said front frame being inclined around the axis to one side or the other enabling a rider to lean when a turn is made; and
a torsion bar extending through said tubular shaft at the center thereof and positioned coincident with said axis, said torsion bar being insertably mounted between said front and rear frames so as to be fixed at the lengthwise fore end of the bar to the front frame and at the lengthwise rear end of the bar to the rear frame.

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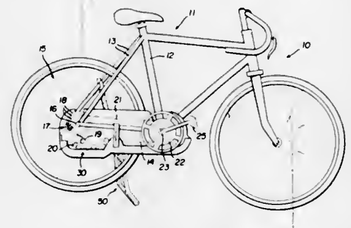
**3,931,990**
**BICYCLE**
**Ronald Ralph Knapp, Hacienda Heights, Calif., assignor to Yamaha International Corporation, Buena Park, Calif.**
**Filed Sept. 16, 1974, Ser. No. 506,447**
**Int. Cl.² B62K** *25/04*
**U.S. Cl. 280—283** **7 Claims**



1. A bicycle comprising:
front and rear wheels;
a front frame having a forward end forming a steering tube, a substantially horizontal upper member extending rearwardly from said steering tube, a diagonal member extending rearwardly and downwardly from said steering tube, and a tubular seat-support member coupling rearward portions of said upper and diagonal members;
a seat assembly including a seat shaft received in said tubular seat-supported member and a seat at the top of said seat shaft;
a pedal assembly rotatably connected to said front frame near the rearward end of said diagonal member thereof;
a steering assembly coupling said front frame to said front wheel, including a steering shaft extending through said steering tube;
a rear frame having a rear end coupled to said rear wheel, a lower front end pivotally coupled to said front frame, and an upper front end which includes a pair of shock-support members extending on either side of said tubular seat-support member; and
a shock absorber lying below said horizontal upper member of said front frame and having a rearward end lying in front of said tubular seat-support member and coupled to the forward ends of said shock-support members, said shock absorber extending substantially horizontally and parallel to said upper member and having a front end lying immediately behind said steering tube so that the length of the shock absorber is at least two-thirds the maximum length of space between said steering tube and seat-support member of said front frame;
the front and rear ends of said shock absorber being pivotally connected respectively to said front frame and to said shock-support members of said rear frame, and said shock absorber being free of confinement by either of said frames between the pivotally connected ends of said shock absorber.

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**3,931,991**
**BICYCLE CHAIN CLEANING TRAY**
**John L. Marchello, Box 100, 57751 Grand River Ave., New Hudson, Mich. 48165**
**Filed May 9, 1975, Ser. No. 576,039**
**Int. Cl.² B62J** *31/00;* **B62H** *3/10;* **B25H** *1/00;* **F16H** *57/05*
**U.S. Cl. 280—295** **11 Claims**



1. A cleaning tray for use in cleaning a drive chain of a bicycle of the type having a frame carrying a rear wheel with a hub upon which at least one sprocket-type gear is mounted at one side of the wheel and having a pedal crank mounted upon the frame at a distance forwardly of the wheel hub, with at least one sprocket type drive gear mounted upon the pedal crank and generally aligned with the wheel hub gear, and an endless flexible drive chain normally passing around and interconnecting the drive gear with the hub gear, said tray comprising:
a narrow, horizontally extending bottom and roughly vertical rear and front walls and opposite end closure portions all joined together to form a horizontally elongated, narrow, open top, box-like shape, but with the rear wall being considerably higher than the front wall;
a pair of spaced apart, vertically elongated, open upper end slots formed in the rear wall and shaped to respectively receive the hub portion adjacent the bicycle hub gear and the crank portion adjacent the drive gear so that said gears fit within the tray between the planes of the tray front and rear walls, and the bicycle chain is arranged within the tray, i.e., in a plane located between the tray front and rear walls;
and means for removably fastening the tray upon the bicycle frame, with the tray rear wall arranged between the chain and the bicycle rear wheel;
whereby cleaning and lubricating fluids may be applied upon the chain as it is moved relative to the tray, and the rear wall of the tray additionally shields the rear wheel against spraying of the fluids.

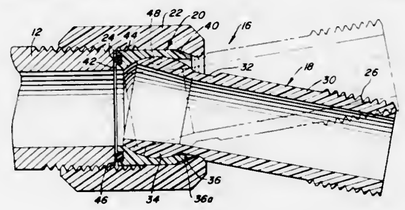
7. A bicycle support stand for supporting a conventional type bicycle in an upright position with the bicycle front wheel rested upon and the rear wheel elevated above the support floor, comprising:
a pair of thin, narrow, elongated, substantially rigid strips having adjacent edge portions overlapped and secured together face-to-face to form an upper end portion;
and the strips diverging downwardly from said upper end portion in a roughly inverted V-shape configuration to form diverging legs;
with the strips at the lower ends of said legs extending horizontally in the same direction to form horizontal portions, with one of the strip horizontal portions closing the space between the lower ends of the legs and being overlapped by the other strip horizontal portion and



secured thereto to form a horizontal floor engaging extension portion;
and releasable clamp means mounted upon said upper end portion for manual clamping upon an adjacent bicycle frame element, so that the legs are positioned adjacent one side of the bicycle, and the horizontal extension portion is rested upon the support floor and extends transversely beneath the bicycle.

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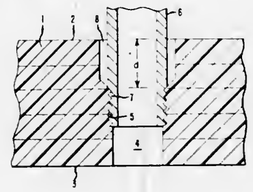
**3,931,992**
**UNIVERSAL JOINT CONNECTOR**
**Joseph B. Coel, Menomonee Falls, Wis., assignor to Badger Meter, Inc., Milwaukee, Wis.**
**Filed Nov. 30, 1973, Ser. No. 420,619**
**Int. Cl.² F16L** *27/06*
**U.S. Cl. 285—30** **18 Claims**



1. A plumbing connector assembly for providing a sealed universal joint connection with one end of a fluid conduit, comprising: a tubular tail piece having an end section formed with a rounded exterior surface, and a further portion of substantially lesser diameter than said end section and which extends from said end section; a socket member formed with an internal passage therethrough and which is of a configuration to receive said rounded end section of said tail piece within said socket member through one end of said passage; said socket member including means for preventing passage of said rounded end section through the other end of said member, an annular end disposed axially outward of said means at said other end thereof, and a body portion extending from said annular end and including an annular flexible sealing portion axially located to be circumjacent a portion of said rounded section between the outermost diameter portion of said rounded section and said further portion of said tail piece when said rounded section is seated in said socket member against said means, said body portion being of sufficient rigidity to transmit axial compressive forces from said sealing portion to said annular end; sealing means on said annular end of said socket member for sealing abutment engagement with the end surface of such a fluid conduit; and a connector element adapted to encompass and be moved axially of said socket member toward said other end and to engage an adjacent end portion of such a fluid conduit; said connector and said socket member being of internal diameters at said one end of said socket member substantially greater than the diameter of said further portion of said tail piece; said connector including a radially inwardly extending portion positioned to engage said socket member over said sealing portion as said connector is moved axially along said socket member toward said other end, and said engaging portions of said connector and said socket member being of configurations providing a cam engagement therebetween oriented to urge said socket member axially toward a connected fluid conduit at said other end and thereby to effect sealing engagement of said sealing means with such a fluid conduit and simultaneously to compress said annular sealing portion of said socket member radially inward into sealing engagement with said rounded section in the course of engagement of said connector on such a fluid conduit, whereby sealed joints are formed between said socket member and both said fluid conduit and said rounded section to provide a fluid-tight connection between said tail piece and said conduit in any of various angular positions of said tail piece relative to such a connected conduit and said connector member does not engage said rounded end section in forming said sealed joint.

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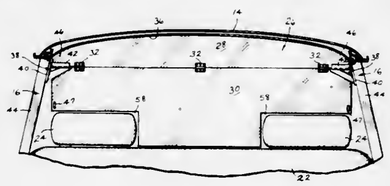
**3,931,993**
**FORCE RESISTANT ASSEMBLY**
**Steven Andrew Cope, Wilmington, Del., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.**
**Filed May 31, 1974, Ser. No. 476,136**
**Int. Cl.² F16L** *5/00*
**U.S. Cl. 285—200** **4 Claims**



1. In the combination of (a) a sheet of organic polymeric material having a first and second side and reinforced therebetween with layered fibrous material aligned substantially parallel to the sides of the sheet, the sheet having a passageway formed therein, all the walls of the passageway being integral with and of the same composition as the remainder of the sheet material and formed directly in the sheet and having female threads formed therein extending less than the thickness of the sheet, and (b) a male-threaded element secured in the passageway from the first side of the sheet by engagement of the male threads with the female threads in the passageway, the improvement wherein the engaged male and female threads nearest to the first side are a distance from the first side which is at least equal to 10 percent of the depth of engaged threads and not less than 2 millimeters.

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**3,931,994**
**DIVIDER FOR USE IN THE OCCUPANT COMPARTMENT OF VEHICLE**
**James A. Palmiter, 520 N. Bluff St., Berrien Springs, Mich. 49103**
**Filed Sept. 16, 1974, Ser. No. 505,975**
**Int. Cl.² B62D** *33/06*
**U.S. Cl. 296—24 R** **5 Claims**



1. A divider for use in the occupant compartment of a vehicle having a roof, spaced sides and an occupant seat with a back rest located between said sides and under said roof, said divider having a lower planar panel portion and an upper planar panel portion, hinge means pivotally connecting said lower portion to said upper portion wherein said lower portion is shiftable about the hinge means between a closed position in general alignment with said upper portion and an open position extending generally normally to the upper portion, said divider adapted to extend transversely of said vehicle from one side to the other side above the back rest of said seat, said upper portion and said lower portion when in its closed

position adapted to extend between said vehicle roof and seat back rest, and means for securing said upper portion to said vehicle to enable said lower portion to shift between its closed position in which said upper and lower portions will extend extensively between said roof and seat back rest and its open position in which an open space will exist between said upper portion and seat back rest, said lower portion including means for securing said lower portion in its upper position to said vehicle, said upper portion including integral planar extensions, each extension having an upper edge and a lower edge, each upper edge generally conforming to the inside configuration of said roof and defining opposite end parts, said upper portion securing means including a pair of brackets each having a channel part cradling the lower edge of an end part of said upper portion.

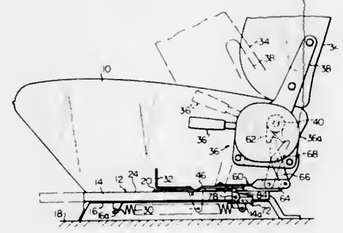
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**3,931,995**

## TEMPORARY LATCH RELEASING MECHANISM FOR TWO DOOR VEHICLE FRONT SEAT

**Tomiji Arai, Tokorozawa, Japan, assignor to Nissan Motor Company Limited, Yokohama, Japan**

**Filed July 19, 1974, Ser. No. 489,895**
**Claims priority, application Japan, July 23, 1973, 48-80981**
**Int. Cl.² B60N *1/04***
**U.S. Cl. 297—341** **7 Claims**



1. A temporary latch releasing mechanism for a springurged latch pivotally mounted on an upper channel member adapted for forward and rearward movement along a lower channel member of an adjuster mechanism of a seat having a back pivotally mounted for tilting, comprising:
- a latch release blade pivotally mounted on the upper channel member for movement toward and away from a predetermined position at which the latch release blade releases the springurged latch;
- a bell-crank detent pivotally mounted on the upper channel member, the bell-crank detent having a trigger arm;
- operating means for moving, upon movement of the back when the back is tilted forward, the latch release blade to the predetermined position;
- means biasing the bell-crank detent in a predetermined direction to lock the latch release blade in the predetermined position when the latch release blade is moved to the predetermined position and the latch release blade away from the predetermined position; and
- detent release means for moving the trigger arm in an opposite direction to the predetermined direction to unlock the latch release blade when the trigger arm is moved by the detent release as a result of rearward movement of the upper channel member relative to the lower channel member.

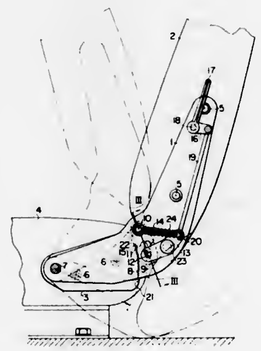
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**3,931,996**

## ADJUSTABLE HINGE FITTING FOR A SEAT WITH A MOVABLE BACK

**Noboru Yoshimura, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Japan**

**Continuation-in-part of Ser. No. 212,960, Dec. 28, 1971, abandoned. This application Nov. 19, 1973, Ser. No. 417,048**
**Claims priority, application Japan, Dec. 28, 1970, 45-127941**
**Int. Cl.² A47C *1/00***
**U.S. Cl. 297—366** **7 Claims**



1. A two-part hinge fitting for adjustably connecting a seat and a back rest, especially for motor vehicles, comprising, in combination:
- a first arm provided with an arcuate series of teeth at one edge and being secured to either one of the seat and back rest;
- a second arm pivoted at one end to said first arm and being secured to the other one of the seat and back rest;
- a pawl pivoted to said second arm and having a cam groove therein and being provided with a series of teeth for engaging the arcuate series of teeth on said first arm;
- a control means operatively connected to the pawl through a pin freely slidable in said cam groove thereof for governing engagement thereof with the arcuate series of teeth on said first arm;
- manually operative handle means pivoted on said second arm and being operatively connected to said control means; and
- spring means anchored at one end thereof to a pin which pivotally connects said pawl to said second arm and at the other end to said control means;
- said first arm being formed with non-toothed portions at both ends of the arcuate series of teeth thereon and being of a radius of curvature concentric to the center of rotation of said second arm, said radius of curvature being slightly greater than the distance from the center of rotation of said second arm to the apex of any one tooth of the series of teeth on said first arm, whereby the pawl may be smoothly and safely disengaged from the series of teeth on said first arm with at least the outermost one of the teeth of said pawl riding over one of said non-toothed portions, and hence, the back rest may be tilted through a large angle forwardly and backwardly beyond the normal range of adjustment to a folded down position and a fully reclined position, respectively; and
- characterized by the fact that said second arm is so pivoted to the first arm that the pivoting pin thereof is positioned away from the rear edge of said seat.



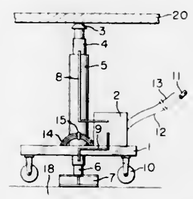
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**3,931,997**

## METHOD FOR BREAKING CONCRETE STRUCTURES

**Akira Enami, Tokyo, Japan, assignor to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan**

**Continuation of Ser. No. 395,157, Sept. 7, 1973, abandoned. This application May 28, 1975, Ser. No. 581,440**
**Claims priority, application Japan, Sept. 8, 1972, 47-90154**
**Int. Cl.² E21C *37/04***
**U.S. Cl. 299—10** **3 Claims**



1. A method of breaking a two sided concrete structure having reinforcing members designed to withstand stress from a first side and characterized by having adjacent to the second side of said two sided structure an independent concrete structure comprising
- placing a hydraulic jack between said two adjacent concrete structures with one end of said jack having a loading member placed in contact with said second side of said two sided concrete structure and placing the other end of said jack having a reaction force supporting means in engagement with said independent concrete structure, and
- applying hydraulic pressure to said hydraulic jack to apply a bending stress to said two sided concrete structure whereby said two sided concrete structure is broken.

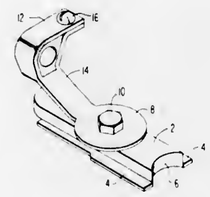
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**3,931,998**

## BLOWOUT PREVENTING DEVICE FOR VEHICLE WHEELS

**William H. Carson, Helenwood, Tenn. 37755**

**Filed Oct. 23, 1974, Ser. No. 517,349**
**Int. Cl.² B60B *1/06***
**U.S. Cl. 301—63 R** **4 Claims**



1. A vehicle wheel assembly comprising,
- a wheel having a rim provided with an axially elongated slot,
- an inner tube provided with an axially elongated inflation stem which is movable through the slot during placement of the inner tube on the wheel,
- a rigid filler piece positioned in the slot, said filler piece having an outer retainer portion and a central portion lying within the slot,
- said central portion having an abutment surface at one end thereof for confronting the stem of the inner tube in the plane of the rim,
- said abutment surface being open-ended with no obstructions lying axially thereof whereby the filler piece may be moved into position against a stationary inflation stem,
- said outer retainer portion being integral with the central portion and extending beyond the slot in a circumferential direction to lie against the wheel and prevent displacement of the filler piece from the rim in a radially inward direction, and
- inner retainer means for clamping the central portion to the inner face of the rim to prevent separation of the filler piece from the wheel upon deflation of the inner tube.

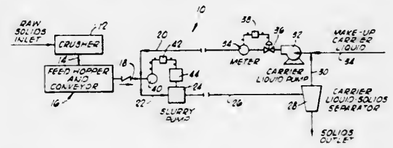
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**3,931,999**

## APPARATUS FOR HYDRAULICALLY TRANSPORTING SOLIDS

**David L. McCain, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.**

**Filed Nov. 4, 1974, Ser. No. 520,390**
**Int. Cl.² B65G *53/30*, *53/66***
**U.S. Cl. 302—14** **3 Claims**



1. Apparatus for forming and transporting a particulated solids-carrier liquid slurry between first and second locations in a closed carrier liquid-slurry circuit comprising:
- a hopper for receiving said particulated solids at said first location having an inlet and and outlet;
- at least one screw conveyor attached to the outlet of said hopper for receiving particulated solids therefrom, said screw conveyor including a solids discharge connection;
- check valve means sealingly attached to said solids discharge connection of said screw conveyor for allowing the passage of particulated solids from said conveyor therethrough, but preventing the backflow of particulated solids and carrier liquid into said conveyor;
- a closed solids carrier-liquid slurry mixing chamber having a solids inlet connection sealingly connected to said check valve means, a carrier liquid inlet connection and a solids-carrier liquid slurry outlet connection;
- first conduit means connected to said carrier liquid inlet connection of said mixing chamber for conducting a continuous stream of carrier liquid thereinto;
- a solids-carrier liquid slurry pump having suction and discharge connections;
- second conduit means connected between the solids-carrier liquid slurry outlet connection of said mixing chamber and the suction connection of said pump;
- third conduit means for conducting said solids-carrier liquid slurry to said second location connected to the discharge connection of said pump; and
- means attached to said pump for controlling the flow rate at which said solids-carrier liquid slurry is pumped through said third conduit means in direct proportion to changes in the pressure of said stream of carrier liquid upstream of said pump so that said pressure is controlled at a predetermined level.

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**3,932,000**

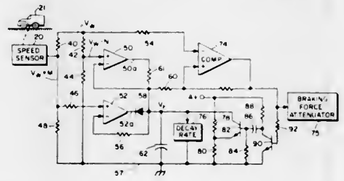
## ADAPTIVE BRAKING SYSTEM REFERENCE PULL DOWN

**James M. Needham, South Bend, Ind., and Robert E. Weber, Newport News, Va., assignors to The Bendix Corporation, Southfield, Mich.**

**Filed Sept. 11, 1974, Ser. No. 504,944**
**Int. Cl.² B60T *8/10***
**U.S. Cl. 303—21 BE** **20 Claims**

1. In a wheeled vehicle having first means in contact with a road bed and braked by a braking force, an adaptive system comprising means for attenuating said braking force when energized into a first state and for restoring braking force

when energized into a second state and control means for energizing said means for attenuating into at least said first and second states, said control means including means responsive to motion of said first means for generating performance signals correlated to the dynamic preformance of said first means, said control means energizing said means for attenuating into said first state when said performance signals satisfy first predetermined performance criteria having a normal level, satisfaction of the first performance criteria by said performance signals being indicative of wheel skid imminence and subsequently energizing said means for attenuating into said second state when said performance signals satisfy second




predetermined performance criteria, and, means for altering said first predetermined criteria in a direction away from satisfaction of said performance criteria by said preformance signals to a level indicative of more imminent wheel skid than normal and in response to the energizing of said means for attenuating into said second state and including means responsive to the alteration of said first predetermined criteria for subsequently and relatively slowly restoring said first predetermined criteria to the normal level whereby during the time that said first predetermined criteria is being restored the performance signals must be indicative of more imminent wheel skid than normal in order to satisfy the altered criteria.

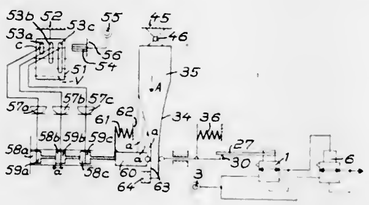
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**3,932,001**

## PNEUMATIC CONTROL DEVICE WITH PROGRAMMED CHARACTERISTIC PARTICULARLY FOR A VEHICLE BRAKING DEVICE

**Simeon Lekarski, St.-Cloud; Pierre Hardy, and Leon Hardy, both of Paris, all of France, assignors to Simeon Lekarski, Saint-Cloud; Pierre Hardy and Leon Hardy, both of Paris, all of, France**

**Division of Ser. No. 103,682, Jan. 4, 1971, Pat. No. 3,796,135. This application Aug. 29, 1973, Ser. No. 392,446**
**Claims priority, application France, Jan. 8, 1970, 70.00644**
**Int. Cl.² B60T** *8/18*
**U.S. Cl. 303—22 R** **3 Claims**



1. A pneumatic control device with programmed characteristics, particularly for a vehicle braking device, the vehicle having a bodywork, a brake pedal, and at least one axle, a pilot reducing valve connected respectively to a source of compressed fluid supply, to the atmosphere and to a fluid outlet conduit terminating in a pneumatic control member for the brakes on the respective axles, said reducing valve having members controlling the passage of fluid in dependence on the relative positions thereof, a programming means associated with at least one of said members and moving that member, said programming means comprising a plate having oppositely contoured faces, one of said faces being in slidable contact with said at least one of said members of said reducing valve, the other of said contoured faces being in slidable contact with a piston means, said piston means being urged against said plate by fluid pressure applied to a plurality of connected cylinders associated with said piston means, means for applying a varying fluid pressure to respective cylinders in dependence on the position of the bodywork relative to the axle, said means being effective to apply more pressure when the vehicle is loaded then when the vehicle is not loaded, said plate being operatively connected to the brake pedal and being progressively movable between said piston means and said at least one of said members.

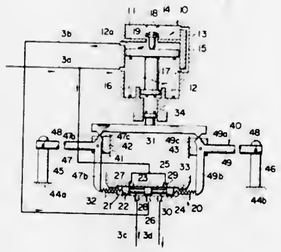
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**3,932,002**

## BRAKE CONTROL APPARATUS

**Norio Komoda, and Zensaku Murakami, both of Susono, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan**

**Filed Sept. 27, 1974, Ser. No. 510,030**
**Claims priority, application Japan, Sept. 28, 1973, 48-108555**
**Int. Cl.² B60T** *8/24*
**U.S. Cl. 303—22 R** **9 Claims**



1. Apparatus for controlling application of braking fluid pressure to the wheels of a vehicle, said vehicle having left and right wheels, a hydraulic fluid system for individually applying braking pressure to said wheels, and suspension springs resiliently supporting said vehicle upon said wheels, said apparatus comprising a pressure reducing valve connected in said hydraulic system and adapted to emit a reduced level of fluid pressure, a directional control valve for selectively directing application of said reduced fluid pressure to either said right or said left wheels of said vehicle, load sensitive means including lever means responsive to movement of portions of said vehicle body located below said suspension springs, said load sensitive means being repsonvie to changes in load produced when said vehicle is turned simultaneously with application of braking force to said wheels to cause pivoting of said lever means, a connecting member operatively interposed between said lever means and said pressure reducing valve for adjusting the degree of pressure reduction effected by said valve in response to movement of said lever means, and actuator arm means mounted for pivotal motion together with said lever means and engaging said directional control valve to control the application of pressure therethrough to said wheels during turning of said vehicle to transmit said reduced fluid pressure from said pressure reducing valve to said vehicle wheels located inwardly of the turning curve of said vehicle.

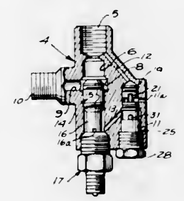


**3,932,003**

## RELEASE DEVICE FOR EMERGENCY BRAKE ACTUATORS

**Donald T. McGregor, 8067 Monroe Ave., Stanton, Calif. 90680**

**Filed Nov. 22, 1974, Ser. No. 526,239**
**Int. Cl.² B60T** *15/02*
**U.S. Cl. 303—68** **8 Claims**



5. A release device for an emergency brake actuators which is held in its brake releasing position by air pressure supplied through an air supply line and is urged to a brake setting position by a spring upon loss of air pressure in the air supply line, the release device utilizing an auxiliary source of air pressure, said release device comprising:

a. valve means interposed in the air supply line including a primary and secondary inlet and an outlet, the valve means including a valve element having a first position responsive to pressure in the air supply line connecting the primary inlet and outlet to provide primary communication between the air supply line and the actuator for moving the actuator to its brake releasing position, and a second position closing the primary inlet and providing a secondary communication between said auxiliary source of air pressure and the outlet said valve element being responsive to pressure at said secondary inlet for maintaining the actuator in its brake releasing position in the absence of adequate pressure in the air supply line;

b. and a shut-off valve normally closing the secondary inlet on removal of the auxiliary source of air pressure thereby to maintain brake releasing air pressure in the actuator.

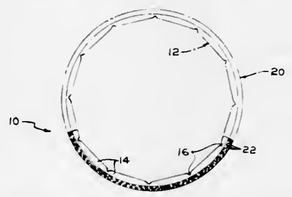
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**3,932,004**

## RUBBER BEARING WITH NON-METALLIC SUPPORT MEMBER

**Roy L. Orndorff, Jr., Kent, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio**

**Filed Feb. 6, 1975, Ser. No. 547,586**
**Int. Cl.² F16C** *33/20*
**U.S. Cl. 308—238** **7 Claims**



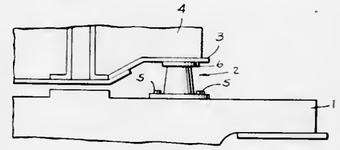
1. In a generally cylindrical water-lubricated bearing comprising a plurality of bearing portions of resilient elastomeric material separated by longitudinally extending lubricant passages, each bearing portion secured to a rigid non-metallic supporting member, the improvement wherein said non-metallic supporting member is a composite structure consisting essentially of a non-corrosive, non-shrinkable, non-conductive fibrous component embedded in and distributed substantially evenly throughout a vulcanized synthetic rubber component.

**3,932,005**

## ELASTOMERIC RAILWAY CAR WITH SIDE BEARING

**Henry F. Miller, Clifton, N.J., assignor to Uniroyal Inc., New York, N.Y.**

**Filed May 10, 1974, Ser. No. 468,848**
**Int. Cl.² B61F** *5/14*, *5/24*; **F16C** *17/04*, *27/02*
**U.S. Cl. 308—138** **12 Claims**



1. A side bearing for railroad vehicles comprising an upstanding body portion of approximately frusto-conical shape and having a vertical axis, the upper bearing surface of said body portion being outwardly convex between said vertical axis and the perimeter of said body portion when the bearing is unloaded, the bearing having a vertical cross section with an upper surface convexity having a vertical center line positioned on each side of said vertical axis and between said vertical axis of the bearing and said perimeter of said body portion when the bearing is unloaded, a flanged base portion integrally formed on the lower end of said body portion, said body portion and said base portion being formed of an elastomeric material.

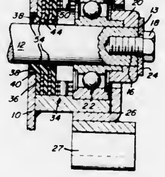
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**3,932,006**

## PADDLE SHAFT SEAL ASSEMBLY

**Christian T. Tertinek, 3301 Cheshire Road, Canandaigua, and Alan J. Stone, P.O. Box 354, Honeoye, both of N.Y. 14471**

**Filed May 22, 1974, Ser. No. 472,466**
**Int. Cl.² F16C** *33/78*
**U.S. Cl. 308—187** **5 Claims**



1. A triple seal and bearing assembly for receiving and supporting one end portion of a driven rotary shaft, said assembly including a housing adapted to be secured to an end wall of a receptacle through which the driven shaft passes, a bearing unit surrounding said shaft and supporting the shaft from the housing, adjacent the extremity of the shaft, a trunnion member surrounding and journaling said housing from a support, means lubricating the interior of the trunnion member, said assembly including a plurality of alternating, annular, seals and spacer means partially filling the space between said end wall and said bearing unit, a further lubrication means in communication with the space containing said seals and spacer means, the first seal immediately adjacent said end wall being a urethane seal followed by a single spacer, a first of two synthetic rubber seals, a second single spacer, a second synthetic rubber seal, a third single spacer, and a double spacer filling the space between said second seal and said bearing unit, the inner edges of the annular seals being bent toward said end wall, during assembly, so that any foreign material which may have entered during rotation of said shaft will be

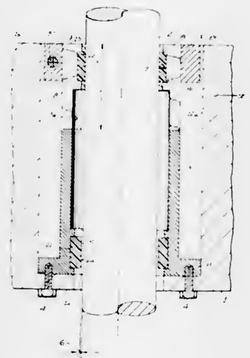
forced back toward the end wall when pressurized lubricant is forced into the space receiving the seals and spacer means.

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**3,932,007**
**SLIDING-JOINT ASSEMBLY FOR TEST FRAME OR THE LIKE**

**Burkhard Schnell, Ulm, Danube, Germany, assignor to Zwick & Co. Kommanditgesellschaft, Einsingen, Germany**

**Filed Aug. 1, 1973, Ser. No. 384,573**
**Claims priority, application Germany, Aug. 11, 1972, 2239555**
**Int. Cl.² F16C** *27/00, 33/00*
**U.S. Cl. 308—238** **7 Claims**



1. A guide assembly comprising:
a machine element adapted to be displaced;
a rod extending through said element and slidably guiding same;
a tubular and elongated bushing spacedly surrounding said rod and formed adjacent one end with at least one longitudinally extending open slot;
means for securing the other end of said bushing to said element;
a first guide ring carried in said bushing at said other end and having an inner periphery spaced from said rod by a predetermined distance;
a second guide ring carried in said bushing at said one end and having an inner periphery snugly surrounding said rod; and
means for urging said one end inwardly toward said rod thereby pressing said second ring against said rod.

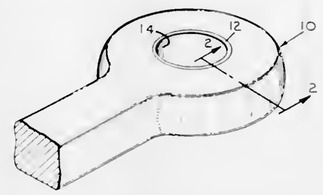
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**3,932,008**
**BEARING HAVING A SELF-LUBRICATING LINER AND METHOD OF MAKING**

**Albert R. McCloskey, Fairfield, and Gordon T. Williams, Newtown, both of Conn., assignors to Rockwell International Corporation, Pittsburgh, Pa.**

**Division of Ser. No. 441,479, Feb. 11, 1974. This application Dec. 11, 1974, Ser. No. 531,524**
**Int. Cl.² F16C** *17/00*
**U.S. Cl. 308—238** **4 Claims**

1. A spherical bearing having a low-friction bearing surface comprising:
a support structure;
a liner secured to said support structure;
said liner including a layer to provide said bearing surface remote from said support structure, a backing material to which said layer is attached, and an adhesive means between said backing material and said support structure;
said layer containing a resin matrix including therein a random dispersion of self-lubricating particles;
a first of said particles being fluorocarbon; and



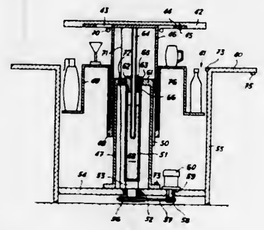

a second of said particles being graphite fibers which are high modulus, non-circular fibers having a maximum width of about 14.0 microns and a length substantially greater than said maximum width to cause said fibers to lie in a general stacked configuration within said layer.

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**3,932,009**
**TABLE**

**Hansrudolf Zollinger, Zuercherstr. 72, Oberengstringen, Switzerland**

**Continuation-in-part of Ser. No. 322,616, Jan. 11, 1973, abandoned. This application Mar. 1, 1974, Ser. No. 447,374**
**Claims priority, application Switzerland, Jan. 11, 1972, 356/72; Oct. 18, 1973, 14737/73**
**Int. Cl.² A47B** *9/04, 9/20, 51/00, 77/18*
**U.S. Cl. 312—312** **3 Claims**



1. A table particularly of the type known as a club table, comprising the combination of
first and second top surface portions;
means for supporting said first surface portion including upstanding support walls and a horizontal member extending between said walls;
means for supporting and moving said second surface portion between a normal position in which said first and second portions are flush and a second position in which said second surface portion is elevated above said first surface portion;
shelf means supported beneath said second surface portion, said means for supporting and moving being effective to elevate said second surface portion to a position in which said shelf means has a major surface flush with said first surface portion;
said means for supporting and moving said second surface comprising
first and second telescoping guide tubes, said first tube depending from said second portion and surrounding said second tube, said shelf means being supported on said first tube;
means for preventing relative rotation between said guide tubes; and
vertically extendible telescoping guide and drive means, substantially surrounded by said second tube, and having one end connected to said second surface and the other



end connected to said means for supporting said first surface portion for elevating said second surface portion,
said telescoping guide and drive means further comprising
a tube mounted for rotation in said horizontal member, said tube comprising a lubricant reservoir substantially filled with lubricant;
a spindle nut mounted on said tube for rotation therewith, said nut having an internally threaded central opening;
an externally threaded spindle depending from said second surface portion and engaging said opening in said spindle nut; and
means for rotating said tube.

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**3,932,010**
**FLUSH PULL ARRANGEMENT FOR OFFICE FURNITURE**

**Max H. Kenworthy, Montgomery, Ill., assignor to All-Steel, Inc., Aurora, Ill.**

**Filed Jan. 23, 1975, Ser. No. 543,359**
**Int. Cl.² A47B** *88/00*
**U.S. Cl. 312—320** **8 Claims**



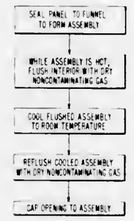
1. A pull arrangement comprising:
a plate member having a planar portion defining a front surface on one side of same and a rear surface on the other side of same,
an aperture formed in said planar portion,
an open centered planar trim piece seated in said aperture and having a front portion on the front side of said plate member and a rear portion on said trim piece defining a flange portion along each of two diametrically opposed segments of said trim piece projecting in the plane of said trim piece and outwardly of same that are in abutting relation with said plate member front surface and are at the front side of said trim piece,
said trim piece further defining along each of said segments thereof a ridge projecting outwardly of said trim piece and in the plane thereof, with said ridges being on the rear side of said trim piece,
said ridges and flange portions of the respective trim piece segments being separated therealong to define a slot along the respective trim piece segments,
said ridges being proportioned in the plane of said trim piece for making the rear portion of said trim piece movable through said aperture from the front side of said plate member when one of the opposed marginal portions of said plate member defining said aperture is lodged in one of said slots with the rear side of the trim piece facing rearwardly of said plate member,
means for centering said trim piece within said aperture,
and a cover member on the other side of said plate member and defining opposed edge portions respectively frictionally received in said trim piece grooves,
said cover member edge portions each defining a tab at either end of same and disposed to one side of said trim piece,
with said tabs of each cover member edge portion being compressed against said plate member rear surface in straddling relation to said trim piece for holding said trim piece and cover to said plate member against rattle.

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**3,932,011**
**CONDITIONING PARTIALLY-COMPLETED CRT BULB ASSEMBLY FOR STORAGE AND/OR TRANSIT**

**Joseph John Piascinski, Leola, Pa., assignor to RCA Corporation, New York, N.Y.**

**Filed June 5, 1974, Ser. No. 476,441**
**Int. Cl.² H01J** *9/00, 9/38*
**U.S. Cl. 316—17** **7 Claims**



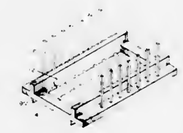

1. In the method of making a cathode-ray tube including the steps of
i. producing a luminescent viewing-screen structure comprising an aluminum metal layer in contact with a layer of carbon particles, said structure being supported on the inner surface of a faceplate panel,
ii. heat sealing said panel to the large opening of a funnel,
iii. and then heat sealing a mount assembly to the small opening of said funnel, the steps just subsequent to step (ii) and prior to step (iii) comprising:
a. while said panel and funnel assembly is still hot from heat sealing, flushing the interior of said assembly with a dry, noncontaminating gas,
b. cooling said flushed assembly to room temperature,
c. reflushing said cooled assembly with a dry noncontaminating gas,
d. and then capping the small opening of said funnel with a temporary closure.

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**3,932,012**
**COMPONENT TERMINAL SYSTEM**

**William A. Reimer, Wheaton, and Elmer L. Scheuerman, Des Plaines, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.**

**Filed Sept. 27, 1974, Ser. No. 509,878**
**Int. Cl.² H05K** *1/00;* **H01R** *11/20*
**U.S. Cl. 339—17 CF** **6 Claims**



1. Apparatus for terminating integrated circuits and discrete components, said apparatus comprising:
an electrically insulative frame;
a plurality of electrically conductive terminals, said terminals passing through said insulative frame and extending from a first face thereof to form circuit terminals and from the adjacent inside face thereof to form component terminals, said component terminals comprised of a rectangular shaped conductive strip, said strip containing a

V-shaped trough passing through its length to provide component terminal lead alignment, said circuit terminals comprise a metal bar to which wrapped-wire and other types of circuit connections may be made, said component terminal comprise an extension of said circuit terminal, wherein said extension is flattened to form a flat strap and forms a short section perpendicular to said circuit terminal, whereafter said strap extends beyond the inside edge of said frame in a downward and inward direction toward the center of said frame, said terminals being adapted to receive integrated components and discrete components interchangeably and at the same time, said circuit terminals form parallel first and second rows projecting from said first face of said frame, said second row of said circuit terminals being directly opposite said first row, said component terminals forming a first and second row projecting inward and downward from the respective adjacent faces of said first and second rows of said circuit terminals, and

a mounting panel, said mounting panel comprising dual slots for the projection of the component terminals below said frame and said mounting panel, said mounting panel constructed of insulative material and including at least one locating notch positioned on the edge of said slots to provide proper alignment of said frame on said mounting panel.

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**3,932,013**

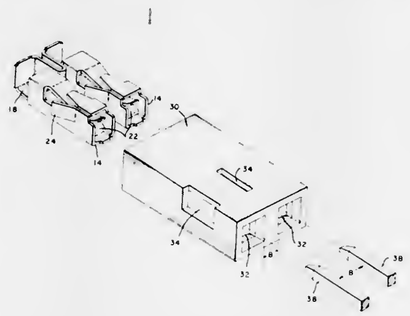
## SHUNT ASSEMBLY

**Marvin Leo Yeager, and Homer Ernst Henschen, both of Carlisle, Pa., assignors to AMP Incorporated, Harrisburg, Pa.**

**Filed Apr. 8, 1974, Ser. No. 458,915**

**Int. Cl.² H01R** *9/12, 31/08*

**U.S. Cl. 339—19** **2 Claims**



1. A shunt assembly comprising:

a housing having a plurality of closely spaced passageways therein and a recess between adjacent passageways;

a contact array including a plurality of electrical contacts and an integral common bus bar interconnecting adjacent contacts, said contact array being stamped and formed from a single continuous strip of conductive material with said contacts extending normal to the plane of said bus bar, said bus bar having at least one fold formed therein, said at least one bus bar fold comprising at least one fold extending normal to the plane of said bus bar and parallel to the axes of said contacts so as to lie between adjacent pairs of contacts and within the overall length thereof, and extending into said recess, whereby said contacts assume a closely spaced parallel arrangement and are received in said passageways with said folded bus bar lying in said recesses.

**3,932,014**

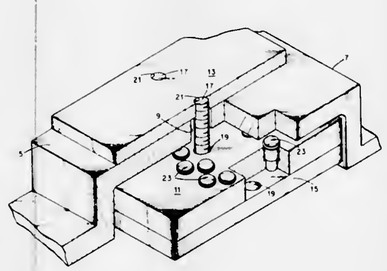
## HIGH CURRENT CAPACITY ELECTRICAL CONNECTOR

**Edward S. Bettis, Oak Ridge, and Harry L. Watts, Lake City, both of Tenn., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.**

**Filed Mar. 20, 1975, Ser. No. 560,428**

**Int. Cl.² H01R** *7/08*

**U.S. Cl. 339—22 B** **3 Claims**



1. A high current capacity electrical connector for connecting a plurality of terminals, comprising:

a pair of backing plates;

a current-conducting plate disposed on one side of one of said backing plates, said backing plates disposed to receive said plurality of terminals in a sandwiched arrangement therebetween with a major surface of each of said plurality of terminals adjacent said conductor plate;

a plurality of smooth-surfaced contact buttons resiliently mounted in said conductive plate in a spaced array to provide electrical contact with said major surface of each of said plurality of terminals above said adjacent surface of said conductor plate; and

means for applying a clamping force to said backing plates so that the contacting surface of said buttons is forced against said terminals to provide electrical connection therebetween through said connector plate.

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**3,932,015**

## SUPPORT MEANS FOR AN ELECTRICALLY OPERATED TOOL

**Peter George Ware, Rugby, and George Kenneth Mercer, Bedworth, both of England, assignors to Dunlop Limited, London, England**

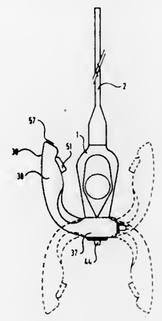
**Filed Sept. 23, 1974, Ser. No. 508,618**

**Claims priority, application United Kingdom, Sept. 27, 1973, 45261/73**

**Int. Cl.² H01R** *11/02*; **B26B** *19/02*

**U.S. Cl. 339—58** **8 Claims**

1. Support means for an electrically operated tool having terminal means, which support means includes a tool engaging body, means on said body whereby it may be detachably assembled with the tool in any chosen one of a plurality of different attitudes relative to the tool, and terminal means on said body arranged to form an electrical circuit for energizing the tool with said terminal means on the tool in each of said attitudes of the body, wherein the terminal means on said body includes terminal elements which extend through the body and are exposed therefrom at their opposite ends at opposite faces of the body, each of said terminal elements



being adapted for electrical connection to a respective wire intermediate the exposed ends of the terminal elements.

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**3,932,016**

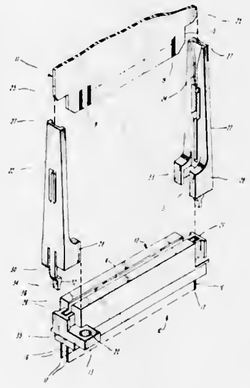
## PRINTED CIRCUIT CARD RECEPTACLE

**Herbert H. Ammenheuser, Henrietta, N.Y., assignor to Stromberg-Carlson Corporation, Rochester, N.Y.**

**Continuation-in-part of Ser. No. 347,273, April 2, 1973, abandoned. This application Feb. 4, 1974, Ser. No. 439,493**

**Int. Cl.² H01R** *13/62, 13/54*

**U.S. Cl. 339—65** **3 Claims**



1. A receptacle for receiving a planar pluggable element and electrically connecting said element with other elements, said receptacle comprising:

a mountable connector for receiving said pluggable element;

a channel member formed at either end of said connector;

a pair of guides each having a sleeve portion at one end thereof and an arm portion, said sleeve portion slideably engageable along a common axis with said channel member to affix said guides to said connector;

a locking means for preventing slideable disengagement of said channel member and said sleeve portion along their common axis, said locking means including a resilient member, deflected by said slideable engagement to an open position, having a detent for locking against a surface of the connector normal to said common axis in a closed position and a finger tab for releasing the locking engagement;



said guides when affixed to said connector having said arm portions mutually opposed for receiving said pluggable element therebetween and guiding said pluggable element to said connector, and spaced apart at ends thereof opposite said one end a distance less than the width of said pluggable element received, said guides formed of a material allowing resilient flexure of said arm portions to grip said pluggable element; and

a second locking means for holding said pluggable element in said receptacle formed integrally with said guides including a spring member flexed by said pluggable element received between said arm portions, and a catch engageable with said pluggable element received in said connector.

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**3,932,017**

## ELECTRICAL TERMINAL ASSEMBLY AND TERMINAL THEREFOR

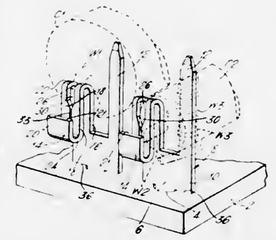
**Helen Dechelette, Saint Cloud, France, assignor to AMP Incorporated, Harrisburg, Pa.**

**Filed May 15, 1974, Ser. No. 469,998**

**Claims priority, application France, May 30, 1973, 73.19918**

**Int. Cl.² H01R** *13/32*

**U.S. Cl. 339—97 P** **1 Claim**



1. An electrical terminal comprising a base in the form of a flat plate, a lug projecting from one edge of the plate, an external lead connecting post projecting from the opposite edge of the plate and an electrical component supporting and connecting member also projecting from the opposite edge of the plate, the connecting member comprising a pair of parallel plates connected by a bight of the terminal material, the bight having a lead wire guiding mouth communicating with a lead wire receiving slot in each of the parallel plates, the slot of one of the parallel plates being narrower than the slot of the other parallel plate, the other parallel plate being directly connected to the opposite edge of the base plate and being coplanar therewith, the post being coplanar with the other parallel plate, the one parallel plate being connected by a bight to a wire severing plate parallel thereto and having a wire severing edge extending across the slot of the one parallel plate.

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**3,932,018**

## ELECTRICAL CONNECTIONS FOR CLOSELY SPACED CONDUCTORS AND APPARATUS FOR FORMING SUCH CONNECTIONS

**Stuart L. Parsons, Belleair Beach, and Henry George Wasserlein, Jr., Seminole, both of Fla., assignors to AMP Incorporated, Harrisburg, Pa.**

**Continuation of Ser. No. 288,199, Sept. 11, 1972, abandoned. This application Nov. 21, 1974, Ser. No. 525,898**

**Int. Cl.² H01R** *13/38*

**U.S. Cl. 339—99 R** **2 Claims**

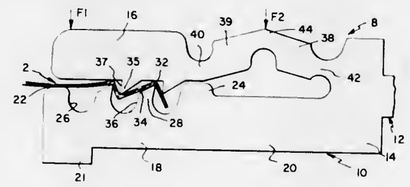
1. An electrical connection between an elongated conductor and a connecting device,

said connecting advice comprising a relatively thin sheet metal one-piece plate-like connecting member having a

yoke portion and first and second jaws, said jaws having free ends and having fixed ends, said fixed ends being spaced from and connected to, said yoke portion, said jaws and said yoke portion being co-planar,

said jaws being closed onto said conductor with said conductor extending into said jaws between said free ends and towards said yoke portion, said jaws having interdigitated contact portions comprising teeth extending from said jaws, said contact portions engaging said conductor, said contact portions comprising surface portions on said teeth on said first jaw facing generally towards said free ends and surface portions on said teeth on said second jaw facing generally towards said yoke portion, said conductor having portions extending between said contact portions,

said first jaw being connected to said yoke portion by a compressively stressed link means




a web integral with, and extending between, said first and second jaws, said web being located between said teeth and said compressively stressed link means,

one of said jaws having an elongated opening therein whereby said one jaw comprises a pair of coextensive strap sections, said teeth on said one jaw being integral with one of said strap sections, said one strap section being stressed in the manner of a beam fixed at each end thereby to provide added stored energy urging said teeth on said one strap section against said conductor and against said teeth on said other jaw whereby,

said first jaw is resiliently biased outwardly from said yoke portion by said compressively stressed link means, and said contact portions of said first jaw are thereby urged against said portions of said conductor and against said contact portions of said second jaw thereby to establish electrical contact with said conductor.

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**3,932,019**

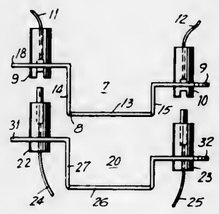
**JACK TYPE ADAPTOR**

**John Fallotico, 39 Yahara Ave., Rutherford, N.J. 07070**

**Filed July 18, 1974, Ser. No. 489,784**

**Int. Cl.² H01R** *13/50*

**U.S. Cl. 339—176 M** **3 Claims**




1. A jack type adaptor for electrically connecting an electric light fixture to an electric box, the light fixture having electrically conductive leads for energizing said light fixture and the electric box having electrically conductive leads therein, said adaptor comprising

a jack type connecting member for mechanical connection to an electric box, said jack type connecting member comprising a first substantially U-shaped bracket device and a pair of jack type connecting devices affixed to the bracket device in spaced substantially parallel relation and electrically connected to the electrically conductive leads in the electric box, the jack type connecting member comprising a first substantially planar bracket plate, a first pair of side members extending substantially perpendicularly from the first bracket plate along part of opposite edges thereof, a first pair of head members each extending substantially perpendicularly from a corresponding one of the first pair of side members at the free edge thereof and substantially parallel to the first bracket plate, each of the head members of the first pair of head members extending away from the side member of the other head member, and a pair of jack type connecting devices each affixed to and extending substantially perpendicularly from a corresponding one of the head members of the first pair of head members, each of the jack type connecting devices extending toward the first bracket plate, each of the head members of the first pair of head members having a hole formed therethrough for accommodating the corresponding one of the jack type connecting devices affixed thereto; and

a plug type connecting member for mechanical connection to a light fixture, said plug type connecting member comprising a second substantially U-shaped device and a pair of plug type connecting devices affixed to the second device in spaced substantially parallel relation and electrically connected to the electrically conductive leads of the light fixture, the plug type connecting member being of the same general configuration as the jack type connecting member but of larger dimensions to permit the juxtaposition of the plug type connecting member on the jack type connecting member with the plug type connecting devices in electrical contact with the corresponding jack type connecting devices thereby electrically connecting the light fixture to the leads in the box.

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**3,932,020**

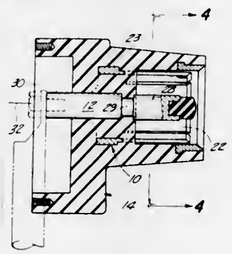
**ELECTRICAL CONNECTORS**

**Robert L. Gilbert, Jr., Warren, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.**

**Filed Mar. 29, 1974, Ser. No. 456,407**

**Int. Cl.² H01R** *17/06*

**U.S. Cl. 339—177 R** **1 Claim**




1. An electrical connector assembly comprising a first conductive element formed as a one piece metal casting; said casting including a main annular body portion having a first post-like extension off-set from but parallel to the body portion axis, the end area of the annular body portion remote from the post-like extension having a number of slits machined therein parallel to the body portion axis, said slits separating the end area of the annular body portion into an equivalent number of stiff resilient cantilever arms, said slits extending only part way along the axial dimension of the annular body portion whereby the unslit area of said body portion defines an uninterrupted ring-like annulus; said electrical connector assembly further comprising a second one piece conductive element having a pin-like body portion located on the axis of the aforementioned annular body portion and within the space circumscribed by the resilient cantilever arms; said second conductive element further including a second post-like extension off-set from but parallel to the body portion axis, and a transition portion integrally joining the pin-like body portion and the second post-like extension; said electrical connector assembly further comprising a dielectric body molded around selected portions of the first and second conductive elements to anchor them in spaced-apart relationship; said dielectric body comprising a central dielectric section surrounding and embedding therein the ring-like annulus area of the first element and the circumscribed portion of the second element; said dielectric body further comprising an annular shroud portion surrounding but spaced outwardly from the cantilever arms to permit limited deflection movements of said arms about their connections with the aforementioned ring-like annulus; the aforementioned post-like extensions projecting axially through the dielectric body to provide exposed post end faces, said post-like extensions having threaded openings in their exposed end faces for reception of lead wire-attachment screws; the aforementioned dielectric body having lead wire openings in its side surface so that the lead wires are enabled to extend into the dielectric body normal to the post-like extensions; the aforementioned conductive elements having circular contours taken around the aforementioned axis, thus permitting the defined electrical connector assembly to swivel around the aforementioned axis for accommodation of different lead wire directions; the post-like extensions being widely spaced on a diammetrical line passing through said axis.

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**3,932,021**

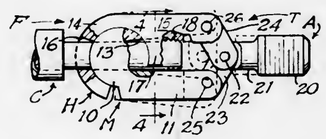
**TENSION ENERGIZED CABLE CLAMP**

**Paul V. Cornell, Amherst, Mass., and Robert E. Lawlor, Huntington Beach, Calif., assignors to Electro Clamp Corporation, Beverly Hills, Calif.**

**Filed Apr. 10, 1974, Ser. No. 459,578**

**Int. Cl.² H01R** *7/08*

**U.S. Cl. 339—266 R** **9 Claims**




1. In a cable clamp:

a male jaw having at one end a transverse trunnion provided with a diametrical cable-receiving bore;

a female jaw having at one end a transverse socket receiving said trunnion to provide a hinge connectiong said one ends for opening and closing movements of said jaws;

said jaws having respective opposed cable-gripping surfaces spaced from said hinge toward the other end of said jaws;

said socket having at one end an opening adapted to register with said trunnion bore in an open position of said jaws so that a cable may be passed through said opening and said bore and received between said gripping surfaces;

an anchor part for attachment to an anchor body; and

tension responsive means connecting said anchor part to the other ends of said jaws for developing gripping engagement of said gripping surfaces against said cable in response to increased cable tension.



**3,932,022**

**LIGHT GUIDE ARRANGEMENT WITH SCANNING TIP TO RESIST UNEVEN WEAR**

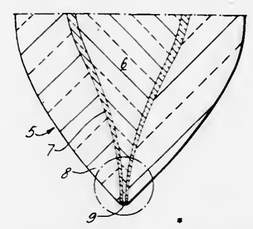
**Wolfram Henning, and Michael Gettwart, both of Allersberg, Germany, assignors to The Rank Organisation Limited, London, England**

**Filed Nov. 19, 1973, Ser. No. 417,283**

**Claims priority, application Germany, Nov. 17, 1972, 2256425**

**Int. Cl.² G02B** *5/14*

**U.S. Cl. 350—96 R** **12 Claims**




1. In a light guide arrangement of the type having:

at least two light guides having first and second ends respectively, and

an optical integrator having an input end adjacent said first ends of said at least two light guides and a tapered scanning end, and being operative to intermix light paths of light from said first ends of said at least two light guides to provide substantially the same field of view from said second end of each of said at least two light guides even when said scanning end of said optical integrator is in contact with a surface being scanned,

the improvement wherein:

said optical integrator includes a light guiding element, and a cladding of light impermeable nonmetallic material surrounding said light guiding element and extending from said input end to said tapered scanning end of said integrator said cladding being bonded to said light guiding element without the use of a bonding material whereby to avoid differential wear between the bonding material and said components of said optical integrator at said scanning end thereof.

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**3,932,023**

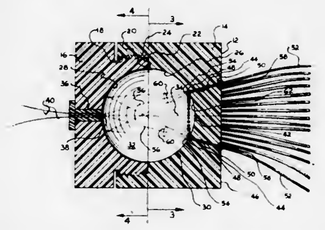
**OPTICAL COUPLER FOR TRANSMITTING LIGHT LINEARLY BETWEEN A SINGLE POINT AND PLURAL POINTS**

**Donald D. Humer, Dover, Pa., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.**

**Filed Nov. 18, 1974, Ser. No. 524,524**

**Int. Cl.² G02B** *27/14*

**U.S. Cl. 350—96 C** **14 Claims**



14. An optical coupler comprising a surface surrounding an interior volume and having a circular cross section in planes

perpendicular to an axis extending across the volume, the interior side of the surface being light reflective, a first photo element on the surface at one end of the axis, a plurality of second photo elements on the surface, each second photo element being located equidistant from the other end of the axis, the optical axis of each second photo element being aimed at said first photo element, and either said first photo element being a photoreceptor and said second photo elements being photoemitters or said first photo element being a photoemitter and said second photo elements being photoreceptors, whereby light is linearly transmitted between said first photo element and said second photo element.

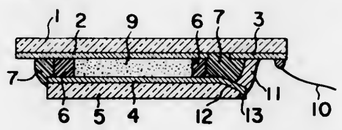
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**3,932,024**

## ELECTRO-OPTICAL DEVICES

**Masachika Yaguchi, Yokohama, and Shigetaro Furuta, Fujisawa, both of Japan, assignors to Dai Nippon Toryo Kabushiki Kaisha, Osaka, Japan**

**Division of Ser. No. 281,093, Aug. 16, 1972, abandoned. This application Aug. 16, 1973, Ser. No. 389,072**
**Int. Cl.² G02F 1/13**
**U.S. Cl. 350—160 LC** **2 Claims**




1. An optical display device comprising first and second transparent transposed plates, first and second electrodes mounted on the facing surfaces of said first and second plates, respectively, an insulating spacer interposed between said plates, a nematic liquid crystal filled between said first and second plates and within said insulating spacer, said first electrode being transparent and said second electrode being partially reflective having a light transmittance in the range of 30% to 70%, said second electrode being composed of an opaque reflective material with a plurality of fine holes formed therein, the number of holes being determined by the light transmittance desired, said optical display device being adapted to be energized by a D.C. source and wherein said first and second electrodes are a positive electrode and a negative electrode, respectively, said negative electrode comprising as an essential component titanium.

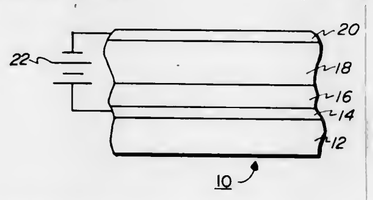
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**3,932,025**

## IMAGING SYSTEM

**Andras I. Lakatos, Penfield, and John B. Flannery, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.**

**Filed Oct. 25, 1974, Ser. No. 518,005**
**Int. Cl.² G02F 1/29; G02B 5/23; G03G 17/00**
**U.S. Cl. 350—160 R** **37 Claims**




1. An imaging method comprising
providing an imaging member comprising a voltage or current-sensitive light modulating layer overlying a layer of photoconductive material which exhibits persistent photoconduction which overlies a layer of a metal capable of generating photoinjection currents in response to radiation which it absorbs;
applying an electrical field across said imaging member;
exposing said photoconductive layer to a first image pattern of activating electromagnetic radiation; and
exposing said photoinjection current generating metal layer to a second imagewise pattern comprising wavelengths of radiation which are absorbed by said layer whereby images corresponding to said first and second imagewise patterns are formed in said imaging member.

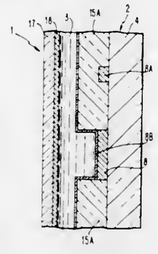
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**3,932,026**

## LIQUID CRYSTAL DISPLAY ASSEMBLY HAVING DIELECTRIC COATED ELECTRODES

**Gerard J. Sprokel, Fishkill, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.**

**Continuation of Ser. No. 303,555, Nov. 3, 1972, abandoned. This application May 27, 1975, Ser. No. 580,635**
**Int. Cl.² G02F 1/13**
**U.S. Cl. 350—160 LC** **18 Claims**




1. A liquid crystal cell comprising:
A. first and second spaced electrodes;
B. a dielectric coating on the inner face of said first electrode;
C. a nematic liquid crystal material between said coating and the said second electrode, with said coating separating said liquid crystal material from said first electrode; and
D. means for applying a voltage of predetermined magnitude and frequency across said first and second electrodes to cause dynamic scattering of said liquid crystal material;
wherein
E. said dielectric coating is of at least two different thicknesses characterized with a corresponding number of breakdown voltages therefor; and
F. said voltage applying means controllably supplies a voltage with a frequency of zero and at magnitudes above selected ones of said breakdown voltages.

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**3,932,027**

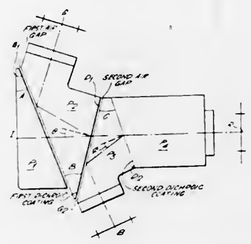
## BEAM SPLITTING PRISM ASSEMBLY

**Gordon Henry Cook, and John Anthony Fawcett, both of Leicester, England, assignors to The Rank Organisation Limited, London, England**

**Filed Dec. 11, 1974, Ser. No. 531,781**
**Claims priority, application United Kingdom, Dec. 11, 1973, 57285/73**
**Int. Cl.² G02B 27/10**
**U.S. Cl. 350—173** **5 Claims**

1. A beam splitting prism assembly comprising first, second, third and fourth prism elements arranged consecutively to separate incident light spatially into three different spectral components wherein the first component lies spectrally between the other two components wherein the improvement consists in said first and second prism elements considered in the direction of incident light having adjacent parallel and spectrally substantially non-selective surfaces defining a first air gap, said second and third prism elements being separated by a second air gap, a spectrally selective dichroic coated surface and a spectrally substantially non-selective surface, parallel to said coated surface, bounding said second air gap, one of the adjacent surfaces of the third and fourth prism






elements carrying a spectrally selective second dichroic coating, wherein the surfaces defining the first and second air gaps are inclined to the direction of incident light to transmit said incident light and to totally internally reflect the light which has been selectively reflected from the corresponding dichroic surface, and wherein the apex angles of the said first, second and third prism elements lie within the following limits:

$$\frac{6\left[\sin^{-1}\left(\frac{1}{N}\right)+\sin^{-1}\left(\frac{1}{2f_oN}\right)\right]}{5} > (2B-A) \geq \left[\sin^{-1}\left(\frac{1}{N}\right)+\sin^{-1}\left(\frac{1}{2f_oN}\right)\right]$$

$$\frac{6\left[\sin^{-1}\left(\frac{1}{N}\right)+\sin^{-1}\left(\frac{1}{2f_oN}\right)\right]}{5} > (2C-B+A) \geq \left[\sin^{-1}\left(\frac{1}{N}\right)+\sin^{-1}\left(\frac{1}{2f_oN}\right)\right]$$

$$\frac{5\left[\sin^{-1}\left(\frac{1}{N}\right)-\sin^{-1}\left(\frac{1}{2f_oN}\right)\right]}{6} > A > \frac{\left[\sin^{-1}\left(\frac{1}{N}\right)+\sin^{-1}\left(\frac{1}{2f_oN}\right)\right]}{3}$$

$$\frac{4\left[\sin^{-1}\left(\frac{1}{N}\right)-\sin^{-1}\left(\frac{1}{2f_oN}\right)\right]}{3} \geq B > \frac{2\left[\sin^{-1}\left(\frac{1}{N}\right)+\sin^{-1}\left(\frac{1}{2f_oN}\right)\right]}{3}$$

$$\frac{5\left[\sin^{-1}\left(\frac{1}{N}\right)-\sin^{-1}\left(\frac{1}{2f_oN}\right)\right]}{4} \geq C > \frac{5\left[\sin^{-1}\left(\frac{1}{N}\right)+\sin^{-1}\left(\frac{1}{2f_oN}\right)\right]}{8}$$

where:
A is the apex angle of the first prism element;
B is the apex angle of the second prism element;
C is the apex angle of the third prism element;
N is the refractive index of the prism glass at the wavelength appropriate to the colour being selected, and
$f_o$ is the widest relative aperture of camera objective with which the assembly is optically compatible.

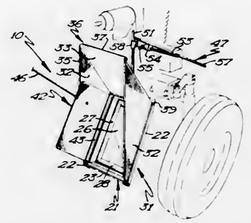
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**3,932,028**

## MIRROR AND GUIDE DEVICE FOR A TRACTOR

**Jerome J. Klingler, P.O. Box 442, New Ulm, Minn. 56073**

**Filed July 22, 1974, Ser. No. 490,905**
**Int. Cl.² G02B 5/08**
**U.S. Cl. 350—307** **4 Claims**




1. A mirror and guide attachment device for a tractor having a trailing cultivator implement towed thereby, said device comprising:
a mounting bracket adapted to be attachably mounted on the tractor adjacent one of the front wheels thereof,
a rigid generally rectangular mirror frame, means connecting the mirror frame with said bracket for spacing the frame laterally of the tractor body and rearwardly and adjacent one of the front tractor wheels,
a rearwardly facing generally rectangularly shaped mirror mounted on said frame, yieldable means interposed between said mirror and the frame to dampen and absorb vibrations thereto, said mirror being disposed in angulated relation and extending downwardly and rearwardly with respect to the surface of the ground, said mirror being disposed at approximately the same height as the upper portion of the adjacent front tractor wheel,
a peripheral shield structure secured to said frame and including a pair of substantially flat rearwardly projecting side plates positioned on opposite sides of the mirror and a top plate secured to said side plates and projecting rearwardly from adjacent the top portion of said mirror to reduce glare and protect the mirror from flying objects,
a substantially flat cover plate shiftably connected with said mirror frame and being swingable between open and closed positions, said cover plate when in the closed position, overlying and covering said mirror, and when in the open position, being disposed in unobstructing relation with respect to the mirror.

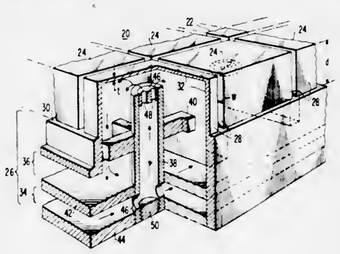
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**3,932,029**

## OPTICAL REFLECTOR FOR LASERS

**Manfred Weiss, Moorestown, N.J., assignor to RCA Corporation, New York, N.Y.**

**Filed May 13, 1974, Ser. No. 469,327**
**Int. Cl.² G02B 5/08**
**U.S. Cl. 350—310** **4 Claims**




1. A laser beam reflector comprising:
a base,

a plurality of adjacent hollow cells, each cell having a hollow core defined by an enclosure mounted on said base, said enclosure being formed by a plurality of walls supporting a laser beam radiant energy reflecting surface spaced from said base, each of said surfaces having an edge closely spaced from an edge of an adjacent surface, said surfaces being formed into an array to provide a substantially continuous reflecting surface for radiant energy incident thereon; and

cooling means disposed in said base for providing a fluid coolant to the core of each of said hollow cells for cooling said surface,

said cooling means including coolant manifold means disposed in said base and further including coolant feed means disposed inside each core of said cell in communication with said manifold means for dispersing said fluid coolant against said walls and surface,

said edges being spaced from each other a distance arranged to dissipate negligible radiant energy from said beam between said walls.

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**3,932,030**

## ILLUMINATING DEVICE IN AN OPHTHALMOMETER

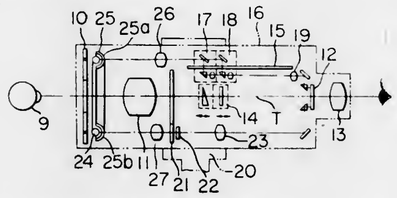
**Hiroshi Hasegawa, Kawasaki, and Toru Sato, Tokyo, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan**

**Filed May 16, 1974, Ser. No. 470,561**

**Claims priority, application Japan, May 22, 1973, 48-59456[U]**

**Int. Cl.² A61B *3/00***

**U.S. Cl. 351—6** **2 Claims**




1. An ophthalmometer in which a chart plate is projected on the cornea of an eye to be examined, and by the image reflected thereby the curvature radius of the cornea of an eye and the angle of astigmatism axis are measured, comprising

an optical system (**11, 12, 13**) for viewing the chart image reflected by the cornea,

a light source (**24**) formed to surround the optical path of the viewing optical system for projecting the chart plate onto the cornea,

displaceable measuring means (**14, 20**) for measuring the curvature radius of the cornea and the astigmatism axis,

scale means (**15, 21**) for indicating each amount of displacement of the measuring means as the curvature radius and the angle of rotation, and

means (**25, 25a, 25b, 26, 27, 17, 18**) for dividing light from the light source and illuminating the scale means.

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**3,932,031**

## SIDE AND CORNER GLARE EYE SHADE

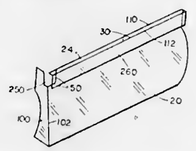
**William V. Johnston, Omaha, Nebr.**

**Continuation of Ser. No. 136,913, April 23, 1971, abandoned. This application Oct. 9, 1973, Ser. No. 404,138**

**Int. Cl.² G02C *9/04***

**U.S. Cl. 351—47** **7 Claims**

1. A spectacle and side shade assembly for glare protection comprising a side shade in further combination with a pair of conventional spectacles having a horizontally extending bow and a lens-supporting forward frame portion, said side shade having a main side shade portion having forward and rearward ends and right and left sides and hanging substantially beneath said bow, attaching means connected to said main side shade portion and attaching in an easily removable way said main side shade portion to said bow whereby without using tools a user can manually remove said side shade from said bow and attach said side shade to said bow, a transverse shade portion extending transversely of and to one side of said main side shade portion, said transverse shade portion substantially




lapping the outer side edge of an adjacent part of said lenssupporting forward frame portion of said spectacles, said side shade main and transverse portions both being adapted to substantially shade the eyes from glare, except by means of said spectacles said side shade being free of any connection to any other side shade.

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**3,932,032**

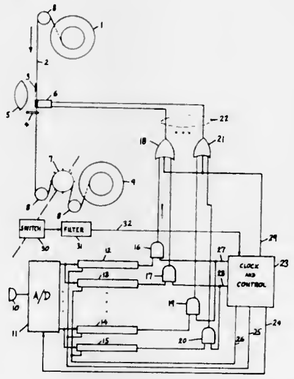
## MOTION PICTURE SOUND SYNCHRONIZATION

**Stephen B. Weinstein, 20 Algonquin Road, Holmdel, N.J. 07733**

**Filed Apr. 3, 1974, Ser. No. 457,625**

**Int. Cl.² G03B *31/02***

**U.S. Cl. 352—11** **12 Claims**




1. A system for producing motion pictures and digital photographic sound records concurrently and in synchronism, said system comprising:

a. film transport means for intermittently moving a photographic film,

b. means for recording a plurality of visual images on said photographic film,

c. means for producing a continuous analog sound waveform,

d. means for periodically sampling said waveform and producing a sequence of analog values, each proportional to the analog value of said waveform during respective samplings,

e. an analog to digital converter for converting said sequence of analog values into a sequence of digital values functionally related to said analog values,

f. means for storing and buffering said sequence of digital values,

g. means for optically imprinting digital indicia on said photographic film adjacent to said visual images, said indicia corresponding to said sequence of digital values,

h. means for gating said sequence of digital values connected between said means for storing and buffering and said means for optically imprinting,

i. means for controlling said means for storing and buffering and said means for gating such that said digital indicia are optically imprinted on said film, said digital indicia imprinted corresponding to the analog sound waveform produced during recording of the adjacent visual image.



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**3,932,033**

## CINEMATOGRAPH PROJECTORS

**Leroy Gordon Osborn, Mill Hill, and George Hunnam Brownlee, Harrow, both of England, assignors to Westrex Company Limited, London, England**

**Filed June 21, 1974, Ser. No. 481,721**

**Claims priority, application United Kingdom, June 25, 1973, 30015/73**

**Int. Cl.² G03B *1/48***

**U.S. Cl. 352—228** **9 Claims**




1. Cinematographic film projection apparatus at each side of a projection aperture including a projection gate having film marginal support surfaces convexly curved toward a light source, comprising in combination:

a. a plurality of flexible bands, at least one band extending respectively over each of said marginal support surfaces and pressure biased toward said marginal support surfaces whereby film passing between said flexible band and said film marginal support surfaces is pressed onto the said support surfaces;

b. means feeding film to said aperture at a first side thereof, and taking up said film at a second side thereof; and

c. each of said flexible bands positioned anchored on said first aperture side, and tensioned on said second aperture side.

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**3,932,034**

## DEVELOPER CONCENTRATION DETECTING AND REPLENISHMENT DEVICE

**Toru Takahashi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan**

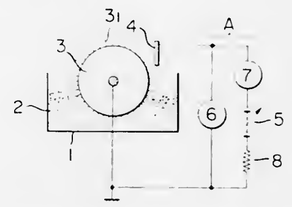
**Filed June 11, 1974, Ser. No. 478,451**

**Claims priority, application Japan, June 20, 1973, 48-69335**

**Int. Cl.² G03G *15/00***

**U.S. Cl. 355—3 DD** **16 Claims**

1. A developer replenishment device comprising means for detecting the concentration of toner in a developer, and adjusting the toner to a proper concentration in a developer; said detector means being effective to detect the concentration of toner in said developer by detecting the dielectric breakdown voltage of the developer, and said adjusting means being operable in response to a signal from said detector means,




thereby maintaining the optimum mixture of carrier and toner of the developer.

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**3,932,035**

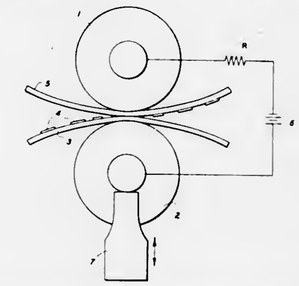
## APPARATUS FOR TRANSFERRING A TONER IMAGE

**Masamichi Sato, Tucson, Ariz., and Osamu Fukushima, Tokyo, Japan, assignors to Rank Xerox Ltd., London, England**

**Division of Ser. No. 333,825, Feb. 20, 1973, Pat. No. 3,854,974. This application Aug. 29, 1974, Ser. No. 502,250**

**Int. Cl.² G03G *15/16***

**U.S. Cl. 355—3 R** **9 Claims**



1. An apparatus for transferring a toner image from a toner substrate to a transfer sheet which comprises, contact means for bringing the toner substrate and the transfer sheet into face to face contact with each other, and vibrating means associated with said contact means for producing a vibration at the area of contact between said toner substrate and transfer sheet.

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**3,932,036**

## CARD PRINTER

**Hiroyuki Ueda; Yukio Sawano, and Shingo Ooue, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan**

**Filed Jan. 31, 1974, Ser. No. 438,517**

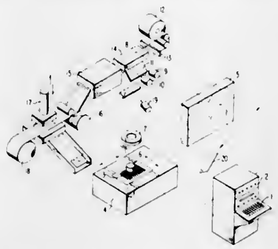
**Claims priority, application Japan, Jan. 31, 1973, 48-12590; Feb. 19, 1973, 48-19911**

**Int. Cl.² G03B *27/52***

**U.S. Cl. 355—40** **6 Claims**

1. A card dispenser comprising: a sheet-like optical information recording member bearing a number of ordered indicia recorded thereon, positioning means for moving said recording member in the coordinate axes of the plane thereof, a first optical system for projecting portions of the ordered indicia recorded on said recording member onto a photographic photosensitive paper at descrete locations thereon, a second optical system for projecting a signature, or other random identifying indicia onto said photographic photosensitive paper at a location separate from said descrete locations, means for feeding the photographic photosensitive paper through the focusing position of said first and second optical

means, means for the development processing of said photosensitive paper, means for controlling said positioning means to selectively position said recording member relative to said first optical system for projection at the optical focusing posi-



tion of said first optical system, and input means for providing a signal to said controlling means for positioning the recording member in a selected pattern to define the locations for said ordered indicia and said random indicia to be recorded on said photographic photosensitive paper.

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**3,932,037**

## ORIGINAL HOLDER PLATE FOR COPYING MACHINE

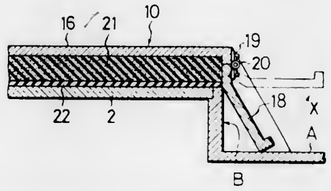
**Hiroshi Ikeda, Aichi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan**

**Filed Oct. 29, 1974, Ser. No. 516,307**

**Claims priority, application Japan, Nov. 17, 1974, 49-132976**

**Int. Cl.² G03B** *27/62, 27/04*

**U.S. Cl. 355—76** **8 Claims**




**1.** In an instantaneous exposure type electrophotographic reproducing apparatus having a flash lamp below a transparent support plate for illuminating an original document located thereon, said support plate having a plurality of edges, and a light-tight, box-like cover overlying the support plate and enclosing all edges thereof, said cover having a plurality of side panels; the improvement comprising means mounting at least one said side panel of the cover for movement relative thereto, said one side panel being positionable to form a gap between said one side panel and a respective one edge of the support plate when an original document larger than the support plate is located thereon with a part of the document extending beyond said one edge of the support plate, the one side panel resting on said extending part of the document to stop light rays from the flash lamp from passing to the outside of the cover.

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**3,932,038**

## APPARATUS FOR THE CONTINUOUS MEASUREMENT OF THE DENSITY OF A LIQUID BY UTILIZATION OF THE LAW OF REFRACTION

**Walter Schweizer, Berlin, and Martin-Ulrich Reissland, Gummersbach, both of Germany, assignors to VDO Adolf Schindling AG, Frankfurt am Main, Germany**

**Filed July 2, 1974, Ser. No. 485,226**

**Claims priority, application Germany, July 4, 1973, 2333945**

**Int. Cl.² G01N** *21/46*

**U.S. Cl. 356—133** **9 Claims**

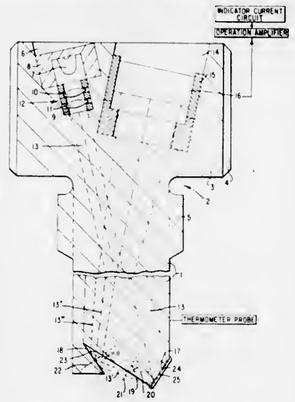
**1.** Apparatus for the continuous measurement of the density of a liquid within prespecified limits by utilization of the law of refraction, particularly for the continuous measurement of the acid density of a storage battery of a motor vehicle for the purpose of determining the state of charge of the battery, comprising:

an elongated light-transducing rod mounted for immersion into the liquid;

a measuring surface located at the immersion end of said rod;

a light source mounted to emit a pencil of rays which is at least nearly parallel into said rod toward said measuring surface;

said measuring surface being positioned on said rod to direct said pencil of rays at an angle taken with respect to




a normal to the said measuring surface that equals at most the total reflection angle occurring at the lower density limit of said liquid;

a deflecting surface **18** arranged in the path of said pencil of rays for deflecting rays refracted into the liquid by the measuring surface;

a photosensitive element located in the path of said pencil of rays refracted by the said measuring surface into the said liquid and subsequently deflected by the deflecting surface;

a plane (**22**) normal to the said deflecting surface being positioned to enclose with the said pencil or rays the Brewster angle ($\alpha B$) occurring at the greatest density of the liquid.

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**3,932,039**

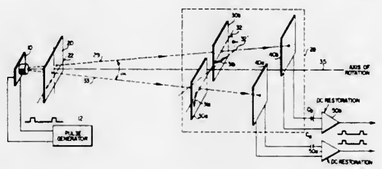
## PULSED POLARIZATION DEVICE FOR MEASURING ANGLE OF ROTATION

**Donald G. Frey, Ellicott City, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**Filed Aug. 8, 1974, Ser. No. 495,757**

**Int. Cl.² G01C** *1/00;* **G01J** *4/00*

**U.S. Cl. 356—138** **20 Claims**




**20.** In a device for measuring rotational angle wherein plane polarized light is directed to be received by rotatable polarization analyzer means operatively connected to a remote rotary body for which rotational angle relative to a reference position is measured, the improvement which comprises:



a plurality of polarization analyzers mounted side-by-side transverse to plane polarized light received by said analyzer means, each of said analyzers having a directional axis of linear polarization;

means for holding said analyzers to maintain a substantially fixed axial angle between said analyzers about an axis of rotation;

photosensor means for receiving light independently through each of said analyzers and generating time pulsed electrical signals with amplitude representative of modulated light intensity for each analyzer; and

means for determining equality between the amplitude ratio of said time pulses electrical signals and a reference value adjacent photosensor signals and generating an output signal representative of rotational angle when said equality occurs.

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**3,932,040**

## SELF-EQUALIZING INDUSTRIAL PHOTOMETER

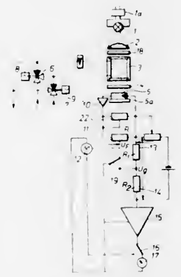
**Heinz Warncke, Cologne, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany**

**Filed June 20, 1973, Ser. No. 371,903**

**Claims priority, application Germany, June 23, 1972, 2230731**

**Int. Cl.² G01N** *21/26*

**U.S. Cl. 356—201** **11 Claims**



**1.** A photometer for the continuous automatic analysis of gaseous or liquid process streams, comprising an optical single-beam measuring arrangement incorporating a light source, a measuring cell through which the process stream flows, a spectral filtering means and a photoelectric receiver whose electrical signal, in the absence of luminous flux, is zero and which shows adequate linearity between luminous flux and photocurrent for the measuring wavelength and measuring light intensity selected, and further comprising

a. a working resistor having a remote-controlled voltage tap, the tapped voltage being proportional to the luminous flux, connected to said photoelectric receiver,

b. means for producing a highly constant counter voltage connected in series with the tapped voltage and a differential circuit for forming the difference between the tapped voltage and the counter voltage,

c. said measuring cell being adapted to be connected at preselected time intervals to a zero substance source so that the process stream in the measuring cell is automatically replaced for a fixed time interval by a zero substance which does not have any absorption at the measuring wavelength, and

d. a regulating device for automatically equalizing the tapped voltage and the counter voltage at the end of this time interval by varying the tapped voltage.

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**3,932,041**

## CONSTRUCTION UNIT FOR TWO BEAM PHOTOMETERS

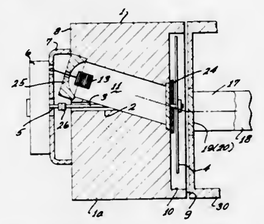
**Joachim Staab; Willy Apel, both of Frankfurt am Main; Achim Dräger, Eschborn; Wilhelm-Rüdiger Haberditz, Steinbach/Ts., and Walter Fabinksi, Hattersheim, all of Germany, assignors to Hartmann & Braun Aktiengesellschaft, Frankfurt, Germany**

**Filed Jan. 6, 1975, Ser. No. 538,768**

**Claims priority, application Germany, Jan. 16, 1974, 7401319**

**Int. Cl.² G01J** *1/10*

**U.S. Cl. 356—229** **8 Claims**



**1.** Unit for two beam photometers using a block, there being a bore traversing the block from one end to the other; shaft means traversing said bore; a motor mounted to said block and connected to said shaft means; a shutter connected to said shaft means, the improvement comprising:

a pair of ducts in the block arranged in V-shaped configuration and having one end each terminating in two windows arranged symmetrically to termination of the bore at the one end of the block, the shutter rotating in front of said windows; and

the ducts of the V being inclined to avoid said bore, the duct ends at the bottom of the V being offset from the bore at the other block end, there being a source for radiation disposed in the bottom end of the V as formed by the ducts.

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**3,932,042**

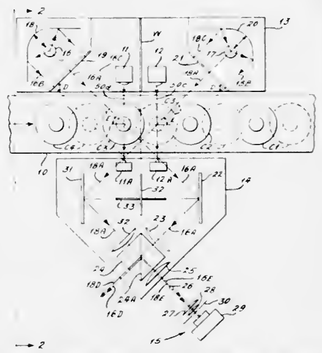
## CONTAINER INSPECTION APPARATUS AND METHOD OF INSPECTION

**Siamac Faani, and Ralph M. Chambers, Jr., both of Ferguson, Mo., assignors to Barry-Wehmiller Company, St. Louis, Mo.**

**Filed May 20, 1974, Ser. No. 471,453**

**Int. Cl.² G01N** *21/24;* **B07C** *5/342*

**U.S. Cl. 356—240** **22 Claims**



**1.** In container inspection apparatus, the improvement which comprises: means to move light transparent containers along a predetermined path having spaced apart container inspection stations, said moving means positioning each con-

tainer in a predetermined position free of rotation during inspection, a source of illumination for each inspection station to project a light beam along a path through an inspection station, the light beam for one inspection station illuminating a side of the container thereat from an angle different from the angle of the beam of light for illuminating a different side of the container in another inspection station, such that each container is illuminated from two different sides, sensing means at each inspection station to sense the arrival of a container and activate the source of illumination for that station, said inspection stations being separated a distance such that when one sensing means activates its source of illumination the other sensing means is inactive, photo-electronic scanning means to scan container images illuminated by said sources of illumination, mirror means positioned in the light beam paths beyond the containers from said source of illumination, said mirror means being set to direct the light beam passing through each container toward a common point, light beam directing means at said common point to arrange the light beams for travel along a common path directed at said photo-electronic scanning means, and means responsive to said scanning means to compare the level of illumination in each light beam with a predetermined standard level of illumination.

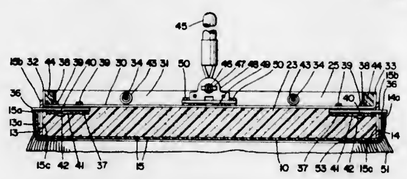
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**3,932,043**

## APPLICATOR ESPECIALLY ADAPTED FOR APPLYING FLUIDS TO BOWLING LANES AND THE LIKE

**Robert L. Joffre, 247 Nineteenth Ave., N.W., Barberton, Ohio 44203**

**Filed Feb. 12, 1975, Ser. No. 549,463**
**Int. Cl.² A47L 1/08, 13/22**
**U.S. Cl. 401—137** **9 Claims**



1. In an applicator of the character described a pan-like member having perforations in the bottom thereof for passage of a fluid therefrom, a pad of porous, compressible material disposed in said member and adapted to hold fluid in the pores thereof, a pan-like reservoir resiliently supported by said pad and adapted to contain a quantity of said fluid, and a handle, said pan-like reservoir being responsive to downward pressure of said handle to cause fluid in said pad to be discharged through said perforations by compression of the pad.

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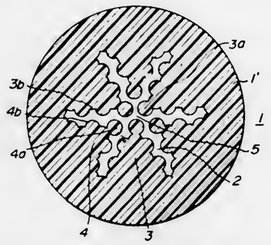
**3,932,044**

## PEN POINT FOR WRITING INSTRUMENTS

**Nobuyuki Otake; Yukinori Sato, both of Tokyo, and Kozo Ando, Chiba, all of Japan, assignors to Tokyo Boshi Kabushiki Kaisha, Tokyo, Japan**

**Filed Nov. 29, 1974, Ser. No. 528,277**
**Claims priority, application Japan, Dec. 6, 1973, 48-136549**
**Int. Cl.² B43K 1/06**
**U.S. Cl. 401—265** **6 Claims**

1. Pen point for writing instruments comprising a cylindrical article formed by uniting together a large number of molten thermoplastic synthetic resin monofilaments, said cylindrical article having a conical portion at least at one end, which is provided with radial curved narrow slots extending toward the center of the cylindrical article from the inside of the outer periphery of the article in the transverse section, said radial curved narrow slots being defined by an even number of at least 4 of triangular projected segments, each top portion of said triangular projected segments being circular, said triangular projected segments having two different heights, the segment having a larger height and the segment having a smaller height being arranged in an adjacent relation, said segments having the larger height being converged in the center portion to form a space bore and side walls of each radial slot being



formed by a plurality of semicircles and said semicircles in opposite side walls being arranged so as to engage with each other under writing pressure, and further said radial curved narrow slots and the center space bore being axially extended from one end of the cylindrical article to the other end.

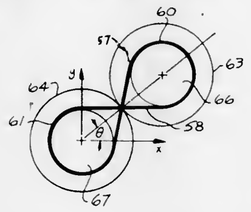
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**3,932,045**

## ROLLING CONTACT JOINT

**Benny M. Hillberry, and Allen S. Hall, Jr., both of West Lafayette, Ind., assignors to Purdue Research Foundation, Lafayette, Ind.**

**Filed Mar. 5, 1973, Ser. No. 337,868**
**Int. Cl.² F16C 11/00, 32/02; F16D 1/12, 3/00**
**U.S. Cl. 403—121** **22 Claims**



1. A rolling contact joint, comprising: a first body member having a curved external surface portion; a second body member movable relative to said first body member and having an external surface portion frictionally engaging said external surface portion of said first body member to establish a non-slipping relationship therebetween during normal operation; and flexible strap means fixed to said first and second body members to maintain said external surface portions of said body members in engagement with one another and constrained to rolling contact therebetween during said normal operation.

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**3,932,046**

## PIPE-CONNECTING DEVICE AND PIPES

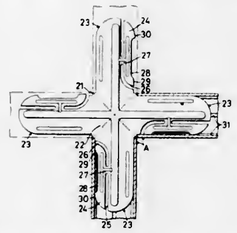
**Takashi Kawazu, No. 10-4, 5-chome, Nakano-cho, Miyakojima, Osaka, Osaka, Japan**

**Filed Oct. 29, 1974, Ser. No. 518,462**
**Int. Cl.² F16B 7/00**
**U.S. Cl. 403—172** **3 Claims**

1. A pipe-connecting device with an elongated insert for connecting pipes by inserting the insert so the longitudinal edges thereof enter corresponding grooves (31) in the pipes, comprising in combination: an elongated flat inserting member (23) having a straight edge with an inner base (22) and a rounded far end; a flat pressing portion (24) separated therefrom but linked thereto by a bridge (27), said bridge forming a straight elongated notch (25) towards said rounded far end



and an outwardly curved notch (26); a longitudinal recessed groove (28) towards the rounded far end, towards the inner base, and in the intermediate portion of said pressing portion (24) forming an outer projection (30) and an inner projection (29) of slightly arcuate shape towards the outer tip thereof disposed next to said base (22), said member (23) being widest at the portion having said tip; and a reinforcing rib extending from said base along said inserting member,



whereby, said inserting member (23) can be forcefully inserted into a pipe of slightly smaller diameter, by sliding the straight edge on one side and the inner and outer projections (29, 30) on the other side into the corresponding grooves (31) in the pipe, said bridge (27) and notches (25, 26) providing resiliency to the inserting member (23) firmly engaging said pipe, said inner and outer projections (29, 30) preventing the engaged pipe from sliding off said member (23).

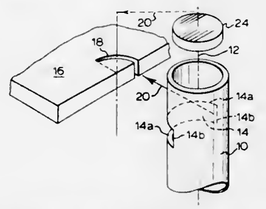
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**3,932,047**

## CONNECTING SYSTEMS

**James Crossan, 512 Indian Road, Burlington, Ontario, Canada**

**Filed Mar. 3, 1975, Ser. No. 554,799**
**Int. Cl.² F16B 9/02**
**U.S. Cl. 403—186** **16 Claims**



1. A connecting system for connecting together a first hollow tubular member having a longitudinal axis and a second member, wherein the first member has in the circumferential wall thereof a circumferentially-extending slot of a longitudinal extent to receive the second member therein, and the second member has therein an arcuate slot of a width to receive the first member side wall therein upon reception of the second member in the first member slot, the first member side wall being engagable in the second member arcuate slot by rotation of the first member about the said longitudinal axis.

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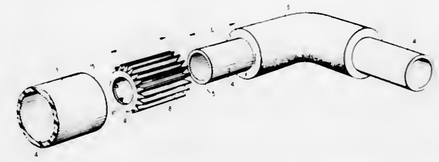
**3,932,048**

## FURNITURE JOINTING ARRANGEMENT

**Paul R. DuPont, Gillette, N.J., assignor to Thermoplastic Processes, Inc., Stirling, N.J.**

**Filed Jan. 17, 1975, Ser. No. 541,885**
**Int. Cl.² F16B 12/40**
**U.S. Cl. 403—225** **6 Claims**

1. A furniture joint comprising a connector having at least one spud arm, a splined collar of elastomeric material adapted to fit snuggly over said spud arm, said splined collar having a flange at one end thereof partially enclosing said one end and a plurality of bumper elements extending inwardly and axially from said flange, said bumper elements being located so as to contact an end surface of said spud arm, and a hollow-ended member having an internal diameter dimensioned to fit over



and helically squeegee and elongate the splines of said collar during assembly.

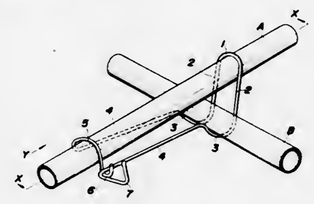
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**3,932,049**

## PIPE CLASPER

**Motohide Hirato, 2-13-18 Hase, Kamakura, Kanagawa, Japan**

**Filed Oct. 18, 1974, Ser. No. 515,884**
**Claims priority, application Japan, May 21, 1974, 49-57011[U]**
**Int. Cl.² F16B 7/04**
**U.S. Cl. 403—397** **1 Claim**



1. A pipe clasper made of an elastic steel wire comprising a first retaining portion bent in a semi-circular shape with two defined lower ends at substantially the central part of the wire for holding a first pipe, a pair of straight portions extending slantwise in parallel to each other from both said lower ends of said first retaining portion, a second retaining portion bent in a semi-circular shape at the lower ends of said pair of straight portions for holding a second pipe, and a pair of straight portions horizontally extending from the both ends of said second retaining portion, the end of one of said pair of horizontal straight portions being bent in a semi-circular shape to provide an engaging portion for said first pipe and a U-shaped reception portion at the end thereof and the end of the other horizontal straight portion having its end horizontally turned in a triangular shape to provide a hook portion adapted to engage with said U-shaped reception portions.

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**3,932,050**

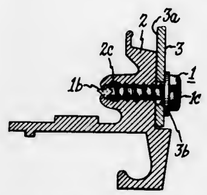
## JOINT STRUCTURE

**Theodor G. Yahraus, Hendersonville, N.C., assignor to General Electric Company, N.Y.**

**Filed Feb. 3, 1975, Ser. No. 546,806**
**Int. Cl.² F16B 5/02**
**U.S. Cl. 403—11** **8 Claims**

1. Joint structure comprising, in combination, first and second juxtaposed members having mating adjacent surfaces, and a screw passing through and fastening said juxtaposed members together, said screw comprising a shank having a head at one end adjacent said first member, a drilling portion at the other end, and a tapping portion between said head and said drilling portion, said screw extending through a hole in said second member formed by said drilling portion of said screw, said mating surface of said second member adjacent said first member being formed with an elongated recess intersecting said hole, said tapping portion of said screw being in threaded engagement with said second member adjacent

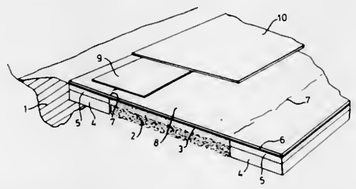
said recess, whereby chips formed by action of said drilling portion of said screw collect in said elongated recess and said




mating adjacent surfaces of said juxtaposed members are in close mating engagement.

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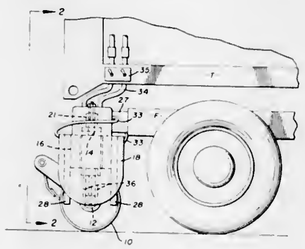
**3,932,051**
**HIGHWAY CONSTRUCTION**
**Michael Cleary, Maidstone, England, assignor to Sumaspcae Limited, Croydon, England**
**Filed Sept. 3, 1974, Ser. No. 502,863**
**Int. Cl.² E01C** *19/00*
**U.S. Cl. 404—82** **12 Claims**




1. A method of constructing, repairing or strengthening a highway or other load-bearing pavement which includes the step of incorporating therein a layer comprising an alkali-resistant glass fibre-reinforced Portland cement.

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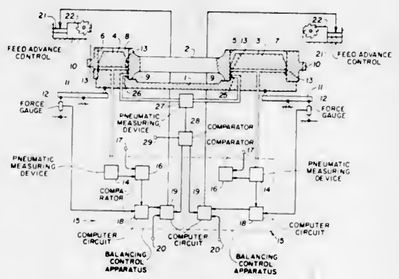
**3,932,052**
**ROLLER ATTACHMENT FOR TRUCKS**
**Robert Fink, Youngstown, Ohio, assignor to Inglis Nurseries Inc., Youngstown, Ohio**
**Continuation-in-part of Ser. No. 388,480, Aug. 15, 1973, Pat. No. 3,895,880. This application Jan. 9, 1975, Ser. No. 539,931**
**Int. Cl.² E01C** *19/26*
**U.S. Cl. 404—128** **4 Claims**




1. In a hydraulically operated roller attachment for mounting on a dump truck having a main frame and a hydraulically operated dump body thereon and a hydraulic fluid power system therefor, said roller attachment comprising the combination of a transverse hollow beam detachably secured to the truck main frame at a point below the rear end of the dump body, end plates secured to the ends of the transverse hollow beam for closing the same, vertically positioned hydraulic cylinder and piston assemblies secured to said transverse beam adjacent said end plates, vertical guide members on said end plates, movable means engaging said guide members, a roller positioned between said end plates in spaced, parallel relation to said transverse beam, axles on said roller engaging said movable means, piston rods of said piston and cylinder assemblies engaging said movable means for moving said roller toward and away from said transverse hollow beam.

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**3,932,053**
**METHOD FOR CONTROLLING THE WEIGHT CORRECTION OF WORKPIECES PRIOR TO FINISH-MACHINING**
**Heinrich Hack, Spachbruecken, Germany, assignor to Firma Carl Schenck AG, Darmstadt, Germany**
**Continuation-in-part of Ser. No. 342,780, March 19, 1973, Pat. No. 3,847,055. This application Sept. 3, 1974, Ser. No. 502,870**
**Claims priority, application Germany, Apr. 19, 1972, 2218904**
**Int. Cl.² B23D** *81/00*
**U.S. Cl. 408—1** **5 Claims**




1. In a method for correcting the weight of a connecting rod to produce a close tolerance finished weight of said rod which has a bore in each rod end, wherein a preliminary machining permitting wide tolerances and a finish operation are performed to vary the weight of the connecting rod to produce said finished weight, the improvement comprising boring said bores to a wide preliminary tolerance, weighing said connecting rod after said preliminary boring but prior to said finish operation to produce a measured weight representing signal, measuring the diameter of said preliminarily bored end bore to produce a measured bore diameter signal, comparing said measured bore diameter representing signal with a rated bore diameter signal to provide a diameter difference signal, producing a correction signal by combining said measured weight representing signal and said diameter difference signal, producing a control signal modified in response to said correction signal and performing said finish operation in response to said modified control signal whereby said finished weight is independent of any variations in said wide preliminary tolerance.

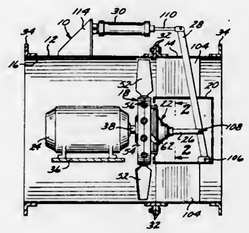
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**3,932,054**
**VARIABLE PITCH AXIAL FAN**
**Wilfred G. McKelvey, Palos Verdes, Calif., assignor to Western Engineering & Mfg. Co., Marina del Rey, Calif.**
**Filed July 17, 1974, Ser. No. 489,077**
**Int. Cl.² F01D** *7/00*
**U.S. Cl. 415—130** **3 Claims**

1. A variable pitch axial fan apparatus comprising: housing means having an inner wall defining a cylindrical air conduit;
a fan centrally mounted in said air conduit for rotation about the axis of said conduit, said fan including a hub, a plurality of elongated blades radially extending from

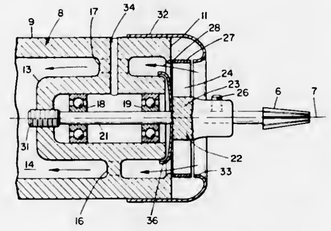


and carried at their roots by said hub for pivotal movement about their axes, respectively, to vary the pitch of said blades, said hub including a plurality of openings adjacent the roots of said blades, respectively;
a cylindrical central fairing located in said air conduit and including an actuator coaxial with and carried by said hub for axial movement, a plurality of linkages extending between said actuator and said blades, said actuator including means defining circumferentially arranged seats adjacent said plurality of openings, and a plurality of elements pivotally carried in said seats, respectively, and said linkages including arms coupled to said blades, extending through said openings, and coupled to said elements, respectively, whereby said blades are pivoted upon said axial movement of said actuator;
fan drive means coupled to said fan for rotation thereof;
an actuator shaft extending axially of said actuator and axially movable to effect said axial movement of said actuator;
an operating lever extending generally transversely of said actuator shaft and externally of said air conduit; and
operating means located externally of said air conduit and actuable to pivot said operating lever to axially move said actuator shaft.




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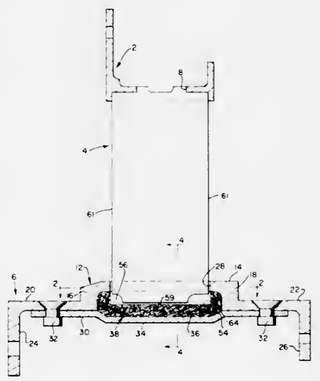
**3,932,055**
**VACUUM TURBINE FOR A DRILL**
**Lloyd P. Flatland, 15 Quisisana Drive, Kentfield, Calif. 94904**
**Filed Aug. 5, 1974, Ser. No. 494,543**
**Int. Cl.² B23B** *47/00*
**U.S. Cl. 415—131** **3 Claims**




1. A vacuum turbine for a dental drill or the like comprising a housing of tubular configuration about an axis and having an end face normal to said axis, a sleeve within said housing and of tubular configuration about said axis, said sleeve being intergral with said housing and closed at one end and open at the other end and being spaced from said housing to provide an annular air passage therebetween, a pair of bearings within said sleeve and disposed adjacent the respective ends thereof, a turbine shaft mounted in said bearings and rotatable about said axis, said shaft at one end terminating within said sleeve adjacent the closed end thereof, a turbine runner on said shaft adjacent the other end of said sleeve and including blades extending radially across said air passage at the open end of said sleeve, and a circumferential shroud on said runner at the periphery of said blades and having a rim face normal to said axis in close axial spacing from said housing end face.

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**3,932,056**
**VANE DAMPING**
**Harold Tai, Riverside, Calif., assignor to Barry Wright Corporation, Watertown, Mass.**
**Continuation of Ser. No. 401,358, Sept. 27, 1973, abandoned. This application Dec. 9, 1974, Ser. No. 534,293**
**Int. Cl.² F01D** *11/08, 5/10*
**U.S. Cl. 415—174** **9 Claims**



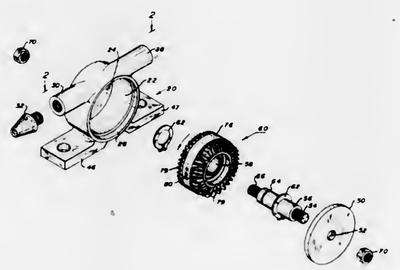

1. A turbine vane or compressor assembly including:
a plurality of turbine vanes arranged about an axis with each vane extending in a generally radial direction relative to said axis, each of said vanes having an inner end and an outer end;
an inner shroud to which the inner ends of the vanes are secured;
an outer shroud having openings therein through which the outer ends of the vanes project;
a plurality of compressible pads made of metal wire surrounding the outer shroud, each of said pads comprising at least one slot in one surface thereof with the outer end of one of said vanes extending into said slot; and
means surrounding and secured to said outer shroud for holding said pads in position relative to said outer shroud;
said slots being shaped and sized so that the opposite sides of each outer vane end is engaged by said pad and the side edges and the end edge of each outer vane end are in non-engaging relation with said pad.

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**3,932,057**
**NOISELESS AIR-ACTUATED TURBINE-TYPE VIBRATOR WITH BLADES ARRANGED IN A SIDEWARDLY EXTENDING ANNULAR PATTERN**
**Theodore S. Wadensten, P.O. Box 8 - Stilson Road, Wyoming, R.I. 02898**
**Filed May 8, 1974, Ser. No. 467,915. The portion of the term of this patent subsequent to Mar. 11, 1992, has been disclaimed.**
**Int. Cl.² B06B** *1/16*
**U.S. Cl. 415—53 T** **12 Claims**

1. A relatively silent, compressed gas-actuated, turbine-type vibrator having a rotor of not less than 1¼ inches and not more than 5½ inches diameter and when operated within a speed range of 6,000 to 10,000 rpms having a noise level not greater than 85 decibels hz., the vibrator including: (a) a substantially closed housing having a cylindrical chamber therein; (b) a dynamically unbalanced rotor freely rotatable in

the cylindrical bore of the chamber, the diameter and length of the rotor being established so that not less than one thirty-second of an inch clearance is provided between the rotor and ends and bore of the chamber, the rotor having a plurality of tooth-like configurations formed on its outer periphery, the tooth-like configuration further having a radial depth which corresponds to a distance not exceeding 7 percent and not less than 1½ percent of the diameter of the rotor, these tooth-like configurations form blades of substantially identical configurations disposed on at least one of the two sides of the rotor and arranged in an annular pattern and extending from its outer periphery a short distance inwardly to terminate short of the other side of the rotor, these teeth disposed at substantially right angles to the plane or rotation of the rotor; (c) an air outlet formed in the housing and extending from the rotor



chamber to the outside of the housing, and (d) an air inlet formed in the housing and extending from the outside of the housing to the rotor chamber, the air inlet arranged to carry this air to at least one side of the rotor chamber and to direct the incoming pressurized air tangentially against the teeth of the mounted rotor and with the tooth-like configuration so formed that in a plane normal to the axis of the rotor the face of the tooth-like configuration against which the incoming air impinges defining an angle of intersection with a theoretical radial line of said rotor, said defined angle being as little as zero and as great as 30° as measured from said point of intersection and inclined in such a direction that the circumferential thickness of the tooth-like configurations tend to decrease as the radial distance from the axis increases, the cross-sectional area of the inlet being 30 to 55 percent of the area of the outlet.

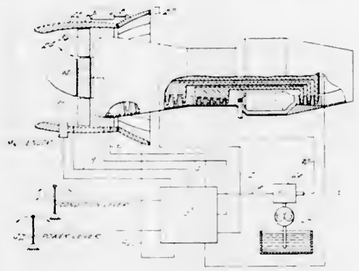
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**3,932,058**
**CONTROL SYSTEM FOR VARIABLE PITCH FAN PROPULSOR**

**Kermit I. Harner, Windsor, and Roy W. Schneider, Ellington, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.**

**Filed June 7, 1974, Ser. No. 477,532**
**Int. Cl.² B63H *3/10*; F02C *9/02*; B64C *11/44***
**U.S. Cl. 416—28** **11 Claims**

1. A control system for a turbine type of power plant powering a variable pitch propulsor of the type that is closely coupled to the power plant and is supported in a duct bypassing the power plant, said control system including coordinating means for controlling the pitch of the propulsor and the flow of fuel to the power plant, said coordinating means being responsive to a scheduled value of speed derived as a function of flight Mach. No., power plant inlet temperature, power lever position and actual power plant rotational speed for controlling fuel flow to the power plant and being responsive



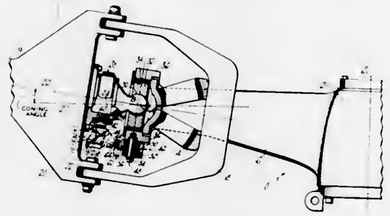
to said flight Mach. No. and said power lever position to synchronously control the pitch of the propulsor.

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**3,932,059**
**DROOP STOPS FOR HELICOPTER ROTOR HAVING ELASTOMERIC BEARINGS**

**Robert C. Rybicki, Trumbull, Conn., assignor to United Technologies Corporation, Hartford, Conn.**

**Filed Jan. 10, 1975, Ser. No. 540,309**
**Int. Cl.² B64C *27/38***
**U.S. Cl. 416—140** **11 Claims**



1. Droop stop mechanism for a helicopter rotor head of the type wherein each blade is supported for motion about intersecting pitch, lead-lag, and flapping axes by an elastomeric type bearing mounted between the rotor hub and the blade root attachment comprising:

A. a first support member rotatably mounted to the blade root attachment by bearing means concentric to the pitch axis, including a first flat abutment surface in radial alignment with the pivot of the blade,

B. a second support member rotatably mounted to the rotor hub by bearing means concentric to the rotor head lead-lag axis so as to be engaged by the first support member, including a second flat abutment surface in radial alignment with the pivot of the blade, and

C. alignment means connecting said first and second support members.

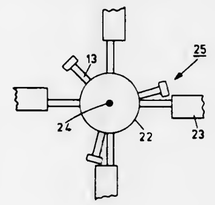
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**3,932,060**
**BIFILAR VIBRATION DAMPERS**

**Alan Henry Vincent, and Ronald William Lewis Cure, Yeovil, both of England, assignors to Westland Aircraft Limited, Yeovil, England**

**Filed Sept. 20, 1974, Ser. No. 507,933**
**Claims priority, application United Kingdom, Oct. 9, 1973, 47164/73**
**Int. Cl.² B64C *27/32***
**U.S. Cl. 416—145** **8 Claims**

1. A bifilar vibration damper comprising, in combination, a support arm arranged to extend radially from and to be rotated in a plane about an axis of rotation and having two generally semi-circular shaped apertures extending therethrough, said aperture including a radiussed section and a straight section, the radiussed section of each aperture being concentric about parallel axes which are parallel to and equidistant from the axis of rotation, the apertures being located with their radiussed surface furthest from the axis of rotation, a pendulous member of U-shaped cross-section having substantially parallel side portions arranged to be positioned on opposite sides of the support member and spaced so as to define a spacing distance from said support member, each side portion having two generally semi-circular shaped apertures extending therethrough, said apertures including a radiussed section and a straight section, the radiussed section of each aperture being concentric about parallel axes which are parallel to the axis of rotation and being of substantially similar dimension as the support member apertures, the apertures in each side portion being aligned respectively with the apertures of the other side portion and located with their radiussed sections closest to the axis of rotation, said pendulous member being capable of pendulous movement relative to the support arm, a pin member extending through each of the apertures of the support member and the aligned apertures of the side portions to connect the pendulous member to the support member, the pin member being of substantially circular cross-section, a spacer member positioned in each spacing distance, each spacer member having two holes through which the pin members are rotatably positioned so as to support the pin members in operative position, an end plate secured on an outer surface of each side portion over the apertures to retain the pin members in an operative position.



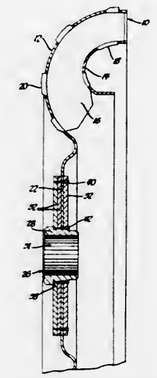

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**3,932,061**
**FLUID UNIT ROTOR**

**William B. Scott, Plymouth, Mich., assignor to General Motors Corporation, Detroit, Mich.**

**Division of Ser. No. 286,159, Sept. 5, 1972. This application Sept. 24, 1973, Ser. No. 399,793**
**Int. Cl. F01d *5/04***
**U.S. Cl. 416—180** **2 Claims**

1. A rotor assembly for a hydrodynamic unit comprising a metallic hub member having an enlarged head portion and having an elongated cylindrical shank portion extending medially from said head portion, an annular channel-like shell of sheet metal, a plurality of spaced fluid directing blades, positioned within said shell, fastener means securing said blades to said shell, a flat metal flange integral with said shell and extending radially inwardly therefrom, said flange having a central circular opening which is smaller than said head portion of said hub and which has a diameter slightly greater than the diameter of said shank portion, a plurality of annular metallic connector plates, each of said plates being entirely flat and each having a central circular opening smaller than said head portion and having a diameter slightly greater than the diameter of said shank portion, said flange being mounted on said shank portion sandwiched between said connector plates mounted on said shank portion, first annular electron beam weld means disposed radially outwardly from said head portion and concentric with said shank portion, said first weld means extending completely through said plates and said flange to rigidly secure said flange and said plates together, second annular electron beam weld means to secure said flange and said plates to said shank portion, said second weld



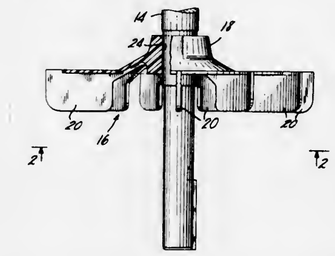
means having a diameter substantially equal to the diameter of said circular openings and extending completely through said flange and said connector plates and through a peripheral portion of said shank portion of said hub.

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**3,932,062**
**BLOWER BLADE FOR ELECTRIC MOTORS**

**Hollis D. Sisk, Chesterfield, Mo., assignor to Wagner Electric Corporation, Parsippany, N.J.**

**Filed Jan. 3, 1975, Ser. No. 538,304**
**Int. Cl.² F04D *29/28***
**U.S. Cl. 416—230** **4 Claims**




1. A blower blade for electric motors comprising from about 50 to about 75% by weight polypropylene, from about 5 to about 10% by weight glass fibers, and from about 15 to about 45% inert filler.

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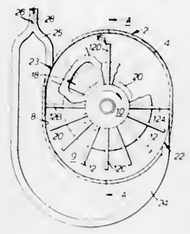
**3,932,063**
**LIQUID RING PUMPS**

**Denis Victor Butler, Fareham, England, assignor to Plessey Handel und Investments A.G., Zug, Switzerland**

**Filed May 8, 1974, Ser. No. 468,166**
**Claims priority, application United Kingdom, May 11, 1973, 22511/73**
**Int. Cl.² F04C *19/00*; B01D *45/00***
**U.S. Cl. 417—68** **3 Claims**

1. A liquid ring pump for separating a gas/liquid mixture into gas and liquid comprising, in combination, a housing having a pair of end plates and a sidewall defining a substantially oval chamber within said housing, a rotatable hub disposed within said chamber, a plurality of vanes mounted on said hub and projecting radially outward from said hub, a blocking mass having a pair of side faces disposed in the

interstices between said vanes for partially blocking said interstices, one of said side faces being disposed in spaced-apart relationship with one of said housing end plates to define a radially extending first axial space forming a radially outward flow path for the gas/liquid mixture, a gas/liquid inlet port in said one housing end plate disposed opposite said blocking mass one side face for introducing a gas/liquid mixture into said chamber in an axial direction against said one side face, the other of said side faces being disposed in spaced-apart relationship with the other of said end plates to define a radially extending second axial space forming a radially inward flow path for the gas separated from said gas/liquid mixture,



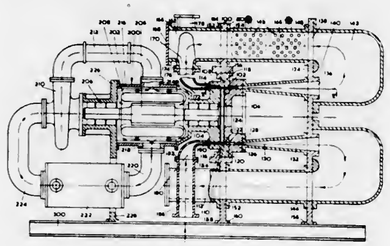
a gas outlet port in said other housing end plate disposed opposite said blocking mass other side face for discharging gas flowing radially inward in said second axial space, at least one liquid outlet on said housing for receiving separated liquid from said gas/liquid mixture, said liquid passing to said liquid outlet from a liquid ring formed in said chamber during operation of said pump, said blocking mass being effective to raise the stall pressure ratio of said pump thereby increasing its efficiency and to form a wc r for preventing the axial migration of liquid from said inlet port to said outlet port thereby increasing the amount of liquid separated from said gas/liquid mixture..

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**3,932,064**
**ROTARY BLADED FLUID FLOW MACHINE**

**Colin Andrew Millar Tayler, Bristol, England, assignor to The Secretary of State for Defense in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England**

**Continuation-in-part of Ser. No. 335,162, Feb. 23, 1973, Pat. No. 3,869,220. This application Oct. 8, 1974, Ser. No. 513,159**
**Claims priority, application United Kingdom, Feb. 23, 1972, 8278/72; Jan. 5, 1973, 726/73; Oct. 10, 1973, 47422/73; Oct. 10, 1973, 47423/73**
**Int. Cl.² F04B** *23/00*
**U.S. Cl. 417—243** **12 Claims**



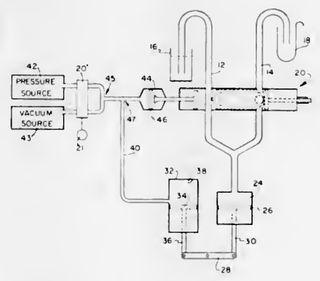
**1.** A compressor comprising:
a. a rotor;
b. an annular aperture coaxial with said rotor and surrounding the periphery of said rotor;
c. at least one row of rotor blades circumferentially distributed on the periphery of the rotor and projecting into said annular aperture dividing the annular aperture into an upstream side and a downstream side,
d. a rotor blade passage wherein said row of rotor blades operates and intersecting said annular aperture;
e. a row of downstream stator blades radially directed and circumferentially distributed around the interior of said aperture, disposed adjacent to and downstream of said rotor blades;
f. partitions provided in the annular aperture both upstream and downstream of the rotor blades, each partition downstream of the rotor blades being substantially opposed by a corresponding partition upstream of the rotor blades;
g. a plurality of arcuate segmented flowpaths arranged around the periphery of the rotor intersecting said row of rotor blades in a direction substantially normal to the direction of travel of the rotor blades, each of said arcuate segmented flowpaths being formed between corresponding partitions upstream and downstream of said rotor blades the arcuate segmented flowpaths being arranged successively from a first arcuate segmented flowpath to a last arcuate segmented flowpath;
h. a plurality of confined return flowpaths, each of said return flowpaths being associated with an arcuate segmented flowpath except the last arcuate segmented flowpath, wherein each of the return flowpaths runs from the downstream side of its associated segmented flowpath to the upstream side of the next following arcuate segmented flowpath;
i. an inlet to the first arcuate segmented flowpath;
j. an outlet from the last segmented flowpath;
k. at least one heat exchanger surface provided in at least one of the confined return flowpaths.

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**3,932,065**
**PNEUMATICALLY CONTROLLED LIQUID TRANSFER SYSTEM**

**Guenter Ginsberg, Miami; Thomas John Godin, Hollywood, and Ronald Olin Simpson, Miami, all of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.**

**Division of Ser. No. 382,741, July 26, 1973, Pat. No. 3,882,899. This application Nov. 8, 1974, Ser. No. 522,012**
**Int. Cl.² F04B** *9/00, 9/12, 17/00*
**U.S. Cl. 417—317** **10 Claims**




**10.** A pneumatically controlled liquid transfer system comprising a source of vacuum and pressure, a cylinder including a port and a plunger reciprocable within said cylinder, first and second flexible conduit paths connected to said port and communicatively coupling said port to a source of liquid and to a delivery location respectively, means operably connected to said source of vacuum and pressure for drivingly reciprocating said plunger within said cylinder alternately for drawing of liquid from said source to said cylinder and delivery of liquid to said delivery location, a make-before-break pinch valve including actuating means therefor, interposed in both said flexible conduit paths for sequentially controlling liquid flow in said paths, means coupling said source of vacuum and pressure to said actuating means for said pinch valve for operation thereof, said pinch valve comprising a pair of pistons sequentially operable within a housing, said pair of flexible conduit paths being disposed respectively in the path of said pistons, one of said conduit paths being normally opened and the other of said conduit paths being normally closed, said actuating means moving in a first direction causing one of said pistons to move in a first direction, and means biasing the other of said pistons in a second direction opposed to the first direction, pressure being applied from said source of vacuum and pressure to said actuating means driving said one piston in said first direction whereby to close the open one of said conduit paths while maintaining the other of said conduit paths in its normally closed condition, thereafter further to move said actuating means in said first direction counteracting the bias on said other piston to open said normally closed other of said conduit paths.

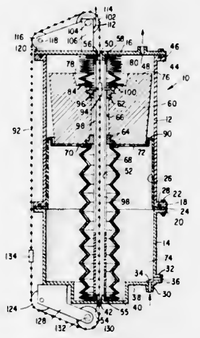


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**3,932,066**
**BREATHING GAS DELIVERY CYLINDER FOR RESPIRATORS**

**Theodore B. Eyrick, Reading, and Allen C. Brown, Acton, both of Mass., assignors to Chemetron Corporation, Chicago, Ill.**

**Filed Oct. 2, 1973, Ser. No. 402,679**
**Int. Cl.² F04B** *17/00, 43/06, 45/02*
**U.S. Cl. 417—328** **23 Claims**



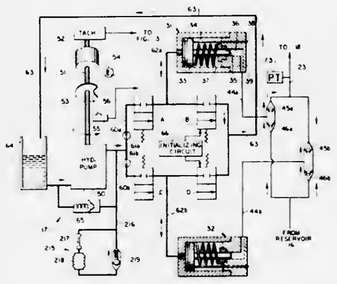
**1.** In a fluid delivery cylinder for delivering at limited positive pressures a selectable, limited volume of fluid at a selectable, limited flowrate:
housing means;
diaphragm means dividing said housing into an upper control chamber and a lower delivery chamber;
guide means extending vertically through and secured to said housing;
fluid delivery drive means within said housing including a weight slidably mounted on said guide means and secured to said diaphragm means for movement therewith;
bellows means connected between said fluid delivery drive means and said guide means to isolate said control chamber from said delivery chamber,
means for producing a vacuum in said control chamber for lifting said drive means to contract said control chamber and expand said delivery chamber to a preselectable volume;
inlet means for admitting fluid into said delivery chamber when said drive means is lifted;
means for releasing said vacuum to lower said drive means and thereby compress said delivery chamber; and
outlet means for discharging fluid from said delivery chamber when said drive means is lowered.

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**3,932,067**
**LIQUID CHROMATOGRAPHY APPARATUS AND METHOD**

**Dean M. Ball; Ronnie W. Camp, both of Norcross; Warren P. Hendrix, Lawrenceville, and Clyde Orr, Jr., Atlanta, all of Ga., assignors to Micromeritics Instrument Corporation, Norcross, Ga.**

**Filed Feb. 27, 1974, Ser. No. 446,293**
**Int. Cl.² F04B** *17/00*
**U.S. Cl. 417—339** **28 Claims**



**1.** Apparatus for delivering a substantially pulseless flow of liquid, comprising:
first means selectively operative to deliver a certain amount of liquid at either a certain constant rate of flow or at a constant pressure;
second means selectively operative to deliver a certain amount of liquid at either a certain constant rate of flow or at a constant pressure;
passage means connected to receive the liquid delivered by each of said first and second means;
control means operatively coupled to operate said first means to deliver liquid at a certain constant rate of flow, and responsive to the delivery of a predetermined amount of liquid by said first means to commence operation of said first means to deliver liquid at a constant pressure; and
said control means operatively coupled to operate said second means and operative to commence operation of said second means to deliver liquid at said constant pressure while said first means is delivering liquid at constant pressure.

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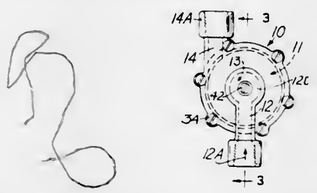
**3,932,068**
**MAGNETICALLY-COUPLED PUMP**

**Frederick N. Zimmermann, Deerfield, Ill., assignor to March Manufacturing Company, Glenview, Ill.**

**Continuation of Ser. No. 584,171, Oct. 4, 1966, abandoned. This application July 7, 1969, Ser. No. 845,634**
**Int. Cl. F04b** *17/00, 35/04*
**U.S. Cl. 417—420** **13 Claims**

**1.** In a centrifugal pump of the magnetically-coupled type including a pump housing with inlet and outlet passages for an impeller having a coupling magnet rotatable therewith and adapted to be driven by an annular circumambient driving magnet disposed exteriorly of the housing, a housing structure adapted for fabrication by molding from either metallic or non-metallic moldable materials and comprising first and second body members joinable to form a closed pump housing including an impeller chamber and a magnet well opening only into said chamber and extending away therefrom in axial

alignment with the axis of rotation of the impeller; impeller means having a hub portion adapted to be disposed in said well and impeller formations adapted to rotate in said chamber; a driven magnet affixed to said hub portion and rotatable therewith in the well; shaft means for the impeller means and



comprising an integral projection of the material of one of said body members extending from a point of conjunction therewith a substantial distance into said impeller chamber and magnet well to support the impeller means for rotation as aforesaid.

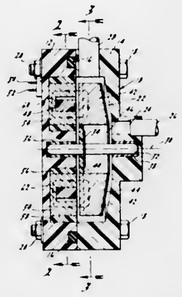
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**3,932,069**

## VARIABLE RELUCTANCE MOTOR PUMP

**Dante S. Giardini, Dearborn Heights, and Lewis E. Unnewehr, Birmingham, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.**

**Filed Dec. 19, 1974, Ser. No. 534,512**
**Int. Cl.² F04D** *13/02*
**U.S. Cl. 417—420** **1 Claim**



1. A motor pump comprising, in combination:
a housing defining a substantially cylindrical enclosed chamber, the axis of said cylindrical chamber being the axis of rotation of said motor pump, said housing having a fluid inlet passage and a fluid outlet passage, said outlet passage being located at or near the radially outer portion of said chamber;
a shaft journalled for rotation in said housing;
a stator for said motor pump, said stator being mounted in said housing and comprising an electrical coil having a plurality of turns, said axis of said chamber also being the axis of said coil, a plurality of U-shaped stator elements made from a ferromagnetic material, said U-shaped elements being equally spaced from one another and each having one of its legs located on the radially inner side of said coil and its other leg located on the radially outer side of said coil, said coil and said U-shaped elements being supported in said housing; and
a rotor assembly attached to said shaft for rotation therewith in a position axially adjacent to, and on one side of said stator, said rotor assembly comprising a support structure made from a nonmagnetic material and a plurality of rotor ferromagnetic elements, said support structure including a disc and a washer-shaped member spaced from one another along the axis of said shaft, said disc being secured to said shaft and said rotor ferromagnetic element being located between said disc and said member, said rotor ferromagnetic elements being positioned in equally-spaced locations in said support structure to permit them alternately to come into and go out of axial alignment with said U-shaped stator ferromagnetic elements when said shaft and rotor assembly are rotated, said rotor assembly having radially extending passages between said rotor ferromagnetic elements, each of said radially extending passages being bounded by said disc, by said member and by two of said rotor ferrromagnetic elements, said passages permitting fluid flow therethrough from said housing inlet passage to said housing outlet passage upon the application of suitable electrical current to said electrical coil.

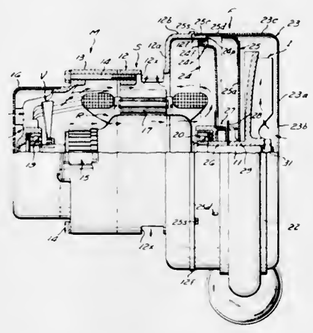
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**3,932,070**

## ELECTRIC MOTOR FAN UNIT FOR WET WORKING AIR

**John H. Porter, Talmadge, and Robert O. Swift, Stow, both of Ohio, assignors to Ametek, Inc., New York, N.Y.**

**Filed Feb. 26, 1974, Ser. No. 445,989**
**Int. Cl.² F04B** *17/00*
**U.S. Cl. 417—423 A** **14 Claims**



1. In an electric motor fan unit, including an electric motor section having motor frame structure, supporting and enclosing rotor and stator structure, a ventilating fan on the rotor shaft, with motor ventilating air passages defined therethrough between motor frame portions open near one end and at the other end respectively for discharge and intake of ventilating air,
said frame structure at said one end including a motor end bracket member
having a central structure providing a socket with a bearing therein for the rotor shaft extending therethrough and
having an end rim portion,
and said unit further including
a fan section having therein a main working air impeller clamped outboard on a shaft portion extending through said bearing and a fan housing structure including housing shell means providing an outer end wall centrally apertured to form an axial working air inlet to said main impeller and a further wall circumferentially surrounding the said main impeller,
said housing shell means having therein main air outlet means and having an open end supported on said end rim portion,
that improvement comprising:
partition means mounted to said end bracket member and forming an inmost end wall and an intermediate wall of said housing structure,



said inmost end wall centrally apertured and fitted to an outboard portion of said central structure and providing an end closure for the motor frame structure, said intermediate wall having a central aperture with said shaft extended therethrough and defining with said outer and inmost end walls respectively an outer, main impeller chamber and an inner chamber;
a centrifugal slinger disk secured on said shaft in said inner chamber;
said inner chamber as a slinger chamber having vent openings in a circumferential wall portion thereof; and
bearing shielding tubular flange means in coaxially spaced relation to the extending shaft portion, and projecting from said central structure, beyond the centrally apertured portion of the inmost end wall, and into close running end clearance with said slinger disk;
whereby water and other material entrained in working air entering the impeller chamber
is inhibited from entering the inner chamber, and any such material entering the inner chamber along the shaft structure is prevented from access to the bearing by the cooperating bearing shielding flange and slinger disk, and
the region of the motor section including said bearing is thermally insulated by said inner chamber from warm humid working air in the outer chamber.

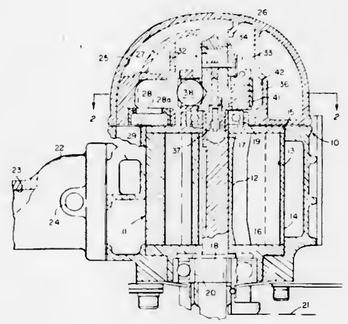
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**3,932,071**

## OVERSPEED SAFTEY CONTROL MECHANISM FOR ROTARY TOOLS

**Raymond J. Schaedler, New Hartford, N.Y., assignor to Chicago Pneumatic Tool Company, New York, N.Y.**

**Filed Aug. 28, 1974, Ser. No. 501,464**
**Int. Cl.² F01C** *21/12*; **G05D** *13/10*
**U.S. Cl. 418—43** **6 Claims**



1. In a tool including a rotary air motor having a rotor shaft, an inlet port for admitting operating air to drive the rotor, a circular body axially mounted to the shaft for rotation with the latter, said body member having a radial hole in its periphery, a ball valve slidably received in the hole and adapted to be centrifugally expelled from the hole upon the motor developing centrifugal force of a certain value, track means for receiving the expelled ball valve and guiding it into closing relation with the inlet port, and means fitted in the inlet port for retaining the ball valve in said closing relation.

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**3,932,072**

## MOINEAU PUMP WITH ROTATING OUTER MEMBER

**Wallace Clark, 1830 S. German Church Road, Indianapolis, Ind. 46239**

**Continuation-in-part of Ser. No. 411,162, Oct. 30, 1973, abandoned. This application Sept. 9, 1974, Ser. No. 504,354**
**Int. Cl.² F01C** *1/10*; **F04C** *1/06*; **F16C** *25/00, 3/14*
**U.S. Cl. 418—48** **4 Claims**



1. A pump constituted of a gear pair made up of an inner member having at least one external helical thread, and an outer member having internal helical threads, there being one more internal helical thread in the outer member than the number of external helical threads on the inner member, a radial arm non-rotatably secured at one of its ends to said inner member, and fixed means limiting the other end of said radial arm to reciprocatory and oscillatory motion, said outer member being free to rotate on its true axis, said outer member being fixed in a tubular casing extending beyond said inner and outer members and constituting a drive shaft, said casing having at least one aperture for the passage of fluid being pumped, and being disposed within a housing, said casing being supported for rotation within said housing in bearings, said housing having a port at each end of said gear pair, whereby the direction of pumping may be reversed by reversing the direction of rotation of said drive shaft.

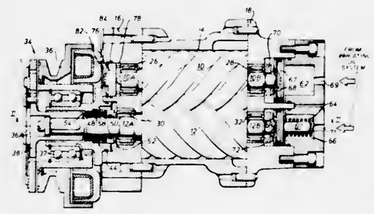
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**3,932,073**

## SCREW ROTOR MACHINE WITH SPRING AND FLUID BIASED BALANCING PISTONS

**Hjalmar Schibbye, Saltsjo-Boo, and Arnold Englund, Vallingby, both of Sweden, assignors to Svenska Rotor Maskiner Aktiebolag, Nacka, Sweden**

**Filed July 1, 1974, Ser. No. 484,983**
**Claims priority, application United Kingdom, July 5, 1973, 32126/73**
**Int. Cl.² F01C** *1/16*; **F04C** *17/12*; **F01C** *21/04*
**U.S. Cl. 418—97** **8 Claims**



1. A screw rotor machine comprising a housing structure including a barrel portion having intersecting bores with coplanar axes forming a working space extending longitudinally of the barrel portion which has a high pressure end wall, the structure having a low pressure port communicating with one end of the working space the major portion of which port is located at one side of the plane of the axes of the intersecting bores and a high pressure port communicating with the other and high pressure end of the working space the major portion of which port is located at the oppsoite side of said plane, and male and female rotors rotatably mounted in the respective

bores and having meshing helical lands and grooves with an effective wrap angle of less than 360°, the lands of the male rotor having substantially convexly curved flanks and intervening grooves the major portions of which are outside the pitch circle of the male rotor and the lands of the female rotor having substantially concavely curved flanks and intervening grooves the major portions of which lie inside the pitch circle of the female rotor, the lands and grooves of the rotors intermeshing to form with confronting portions of said housing structure chevron-shaped closed chambers each comprising a portion of the male rotor groove and a portion of the communicating female rotor groove, the chambers being defined at their base ends by the high pressure end wall of the working space and at their apex ends by the places of intermesh between the lands of the rotors, characterized by

a plurality of stationary cavities in the housing structure;

a plurality of substantially non-rotatable balancing pistons slideably mounted to respective ones of said stationary cavities in the housing structure and each balancing piston being associated with a respective rotor;

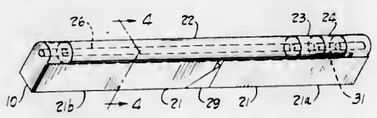
pressure fluid means coupled to said stationary cavities for biassing said balancing pistons so as to impose a biassing force on their respective rotors to bias the respective rotors in a direction towards the high pressure end wall of the housing structure, at least a part of the said end wall comrpising a thrust bearing surface for the rotor;

at least one spring mechanically biassing at least one of said balancing pistons in the same direction as said pressure fluid means; and

a plurality of axial bearings, each connecting a respective rotor to its associated balancing piston, said bearings each including a non-rotatable part coupled to a respective balancing piston and supporting sealing means slideably engaging the inner wall of the respective stationary cavity.

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**3,932,074**
**SEAL FOR ROTARY FLUID-HANDLING APPARATUS**
**James C. Morris, 105 Beedle Circle, Pleasant Hills, Pa. 15236**
**Filed May 14, 1973, Ser. No. 359,785**
**Int. Cl.² F16J** *15/54*
**U.S. Cl. 418—113** **8 Claims**



1. A seal for fluid-handling apparatus, said seal comprising a holder, and roller means rotatably disposed in said holder, said holder being adapted to vary automatically in effective length, and said roller means including at least one extension cam disposed to rotate less than 360° with respect to its most fully extended position to vary the effective length of said roller means.

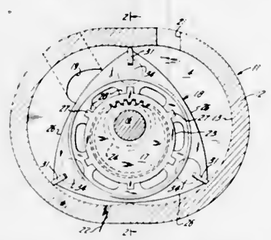
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**3,932,075**
**ROTOR AND SEALING GRID FOR ROTARY ENGINES**
**Charles Jones, Hillsdale, N.J., assignor to Curtiss-Wright Corporation, Wood-Ridge, N.J.**
**Filed Mar. 21, 1975, Ser. No. 560,870**
**Int. Cl.² F01C** *19/08, 19/02*
**U.S. Cl. 418—121** **7 Claims**

1. A rotary mechanism having a housing with a peripheral wall having a multilobed inner surface and a pair of axially spaced side walls defining an inner cavity having a longitudinal axis, a generally polygonal rotor with a plurality of apex portions and having axially spaced side faces mounted within the cavity for rotation about a rotor axis parallel to and spaced apart from the housing axis, the rotor axis planetating about the housing axis, the rotor having a working face between each adjacent pair of apex portions and forming with the housing walls a plurality of working chambers of variable volume, wherein the improvement comprises:

a. the rotor having a slot therein at each apex portion extending axially from one side face to the other, and an apex sealing bar disposed in each apex slot and projecting radially therefrom and in sealing engagement with the inner surface of the peripheral housing walls and having its ends in sealing engagement with the adjacent side walls;

b. each rotor side face having a blind bore therein at each apex portion, each blind bore having disposed therein a cylindrical pin having a slot in its outermost periphery in



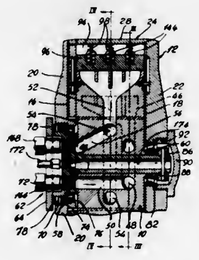
the axial direction, the slot in the pin being aligned with the apex slot in the rotor and receiving a portion of the sealing bar;

c. each side face of the rotor having a circular groove therein coaxial with the rotor, and a circular side sealing member disposed in the circular groove and in sealing relation with the adjacent side wall and with an inner portion of said cylindrical pin;

d. the apex sealing bars and cylindrical pins and circular side seals all coacting and comprising a sealing grid isolating and sealing all the working chambers from one another said inner portion of said cylindrical pin and the innermost end of said apex seal being radially spaced and said cylindrical pin forming a portion of said sealing grid therebetween.

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**3,932,076**
**HYDRAULIC WHEEL**
**Olida Thibault, 390 De La Briquade, Plainville, Terrebonne County, Province of Quebec, Canada**
**Filed June 25, 1974, Ser. No. 482,991**
**Int. Cl.² B60K** *7/00;* **F04C** *1/00*
**U.S. Cl. 418—177** **15 Claims**

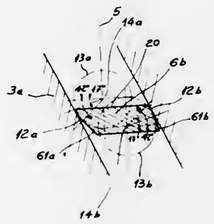


1. A hydraulic energy converting device comprising: a stator and a rotor, said rotor enclosing said stator; said stator having flat side surfaces and a peripheral camming surface; said rotor comprising a pair of cover plates having flat inner surfaces located adjacent to said stator side surfaces, and a guide ring means extending between and joining said cover plates at the periphery thereof; a power ring having a cylindrical inner surface facing said stator camming surface and defining therewith a plurality of successive working chambers; means in said stator to feed pressure fluid at one end of each chamber and further means in said stator to exhaust said fluid from an opposite end of each chamber; a plurality of vanes mounted in said rotor power ring radially with respect to said stator and resilient means biassing said vanes into said working chambers and against said stator camming surface, said vanes separating said working chambers into at least two sections whereby pressure fluid entering said chambers through said inlets engages said vanes successively and impart rotary motion to said rotor and then exhausts through said outlets; sealing means to hinder pressure fluid from said chambers to flow between said rotor and stator flat surfaces, said sealing means comprising: means defining first annular grooves, one in each of said cover plate inner surfaces, said grooves being located to overlap adjacent side surfaces of said power ring and stator; annular sealing pistons in said grooves sealingly closing said grooves and defining therewith and with said cover plates enclosed pressure chambers; means defining second annular grooves, one in each of said stator side surfaces; said second grooves being narrower than, and facing, said first grooves; and communication means between said enclosed chambers, said second grooves and said working chambers whereby pressure fluid from said working chambers creates pressure forces in each of said enclosed chambers greater than those in the opposed second grooves thereby resulting in pressure differentials pressing said sealing pistons against said stator side surfaces and said power ring.



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**3,932,077**
**ROTARY INTERENGAGING WORM AND WORM WHEEL WITH SPECIFIC TOOTH SHAPE**
**Bernard Zimmern, 27, rue Delabordere, Neuilly-sur-Seine (Hauts de Seine), France (92200)**
**Continuation of Ser. No. 341,791, March 15, 1973, abandoned. This application Sept. 18, 1974, Ser. No. 507,052**
**Int. Cl.² F01C** *1/08;* **F04C** *17/04*
**U.S. Cl. 418—195** **7 Claims**



1. A machine for the compression or expansion of a fluid comprising a rotor mounted for rotation about an axis and provided with at least one thread disposed in a helix and forming a projection, the crest of said thread being disposed on a surface of revolution with respect to the axis of the rotor and so arranged as to cooperate with substantially fluid-tight manner with a stationary casing which surrounds the rotor at least to a partial extent, at least one sealing worm-wheel mounted to rotate about an axis which is located transversely with respect to the axis of the rotor and provided with teeth which advance into and out of root-crest meshing relation with the rotor thread within said housing thereby to establish a root-crest gap during movement of said teeth into and out of said housing, one face of each aforesaid tooth in meshing relation with the rotor thread being exposed to the high pressure fluid, wherein portions of each tooth-flank of the sealing worm-wheel are portions of surfaces of revolution, axes of which are distinct and generally parallel to said one tooth face which is exposed to the high pressure fluid, wherein said portions of flanks include those zones of the flanks which come into contact with the thread during the movement of rotation of the rotor, and wherein those zones are adjacent to the tooth-face which is exposed to the high-pressure fluid.

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**3,932,078**
**APPARATUS FOR MANUFACTURING POWER TRANSMISSION BELTING**
**Robert C. Ellis, Denver; James C. Vance, Sr., Sedalia; Sterling Van Gundy, and Donald R. Walcher, both of Denver, all of Colo., assignors to The Gates Rubber Company, Denver, Colo.**
**Filed Mar. 13, 1975, Ser. No. 558,048**
**Int. Cl.² B29H** *7/22;* **B29D** *29/00*
**U.S. Cl. 425—28 B** **3 Claims**

1. An apparatus for making power transmission belting from an uncured body comprising:

a cylindrical mold member having generally parallel open ends;

a generally cylindrically shaped bladder with inwardly curved end portions, the bladder disposed in the mold with the curved end portions generally juxtaposed the open ends of the mold member;

two disk members, each having a smoothly curved circumferential concave portion on one side that extends to near it rim, the disk members disposed near each end of the mold member with their concave portions facing each other, the concave portions defining a generally smooth transition between the mold member and disk members;

closure plates disposed over the ends of the mold;

press means for selectively holding the closure plates in position over the ends of the mold; and

means for admitting and rejecting pressurized fluid to and from the bladder.

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**3,932,079**
**PNEUMATIC TIRE VULCANIZING APPARATUS**
**Valery Leonidovich Legostaev; Oleg Eduardovich Nadzharov; Albert Vasilievich Fedorov, and Ivan Ivanovich Kruglov, all of Tambov, U.S.S.R.**
**Filed Jan. 29, 1975, Ser. No. 545,316**
**Int. Cl.² B29H** *5/02, 5/08*
**U.S. Cl. 425—32** **1 Claim**



1. Pneumatic tire vulcanizing apparatus comprising a series of tire curing presses arranged in a longitudinal row; mold assemblies of said presses, each including a top mold section and a bottom mold section; manipulator for reloading said mold assemblies; the frame of said manipulator mounted for motion longitudinally of said row of said presses; drive means for effecting motion of said frame in the longitudinal direction; a mold opening mechanism mounted on said frame; the cross beam of said mold opening mechanism; drive means for effecting motion of said cross beam vertically and transversely of said row of said presses; clamp means for clamping said top mold sections, mounted on said cross beam; mechanism for loading green tires into said bottom mold sections, mounted on said frame; the carriage of said tire loading mechanism, movable in a direction transverse of said row of said presses; a green tire holder mounted on said carriage; drive means for reciprocating said green tire holder vertically; two side jaws mounted on said carriage, each having a closed-end vertical groove; follower means mounted on said cross beam for cooperation with said vertical grooves, whereby there is provided independent motion of said cross beam with respect to said

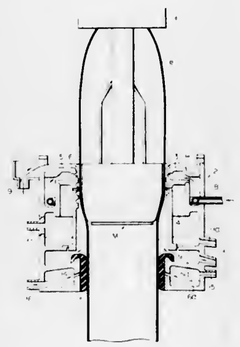
carriage in a vertical direction and joint motion of said carriage and said cross beam, as the latter is driven in a direction transverse of said row of said presses.

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**3,932,080**
**APPARATUS FOR MANUFACTURE OF TUBULAR FILM FROM THERMOPLASTIC RESIN**

**Osamu Uemura; Kiyoshi Fujita, both of Yokohama, and Takeshi Onoda, Hiratsuka, all of Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan**

**Division of Ser. No. 330,234, Feb. 7, 1973, Pat. No. 3,886,243. This application Aug. 28, 1974, Ser. No. 501,236**
**Claims priority, application Japan, Feb. 15, 1972, 47-15251; Feb. 15, 1972, 47-17955**
**Int. Cl.² B29C** *17/00*
**U.S. Cl. 425—71** **4 Claims**



1. Apparatus for manufacture of tubular film from thermoplastic resin comprising:

A. an extruder provided with an annular die for substantially downward extrusion of thermoplastic resin in the form of a tubular film;

B. means for supplying a prescribed volume of air to inflate said tubular film;

C. a cylindrical mandrel positioned below said die for internally cooling said tubular film;

D. a cylindrical water cooler, concentric with said mandrel, provided with vacuum sizing means for externally cooling and sizing said tubular film,

E. said cooler having:

a. an annular cooling water reservoir disposed at the upper part of said cooler,

b. an annular cap member covering said cooling water reservoir, the upper surface of the cap member acting as a weir to fix the level of an upward stream of water contacting the external surface of said tubular film,

c. an annular vacuum sizing chamber positioned below said cooling water reservoir and provided with a plurality of air sucking ports for sizing said tubular film,

d. a cooling water inlet into an annular passageway below said cap member and above said chamber for providing water to produce a first stream of water upwardly to said cap member and a second stream of water downwardly past said chamber with both streams contacting the external surface of said tubular film,

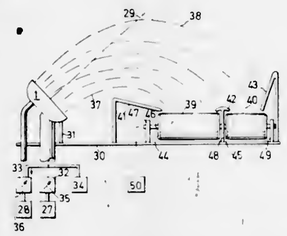
e. an annular cooling water outlet below said chamber for discharge of water flowing in said second stream of water, and

f. annular vacuum suction means for removing residual water from said tubular film below said water outlet.

**3,932,081**
**EXTRUDER NOZZLE FOR SHAPING A PULP TO FORM SMOKABLE STRANDS OR FIBERS**

**Paul Buchmann, Basel, Switzerland; Monique Beringer, Saint Louis, France, and Heinz Spörri, Birsfelden, Switzerland, assignors to Tamag/Basel AG, Basel, Switzerland**

**Filed Dec. 17, 1973, Ser. No. 425,134**
**Claims priority, application Luxemburg, Dec. 22, 1972, 66740**
**Int. Cl.² A24B** *3/14*; **B29D** *31/00*
**U.S. Cl. 425—72** **10 Claims**



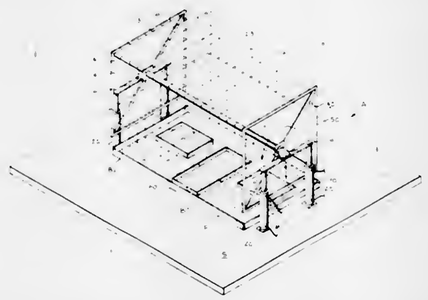

1. In an apparatus for the formation of smokeable fibers the improvement which comprises an extruder nozzle having a nozzle surface formed with a plurality of extrusion orifices and interspersed with said orifices; a multiplicity of gas-outlet openings interspersed with said orifices and coplanar therewith, a plurality of said openings surrounding each orifice; means for forcing an extrudable smokeable composition through said orifices to form discrete strands; and means for supplying a compressed gas to said openings to produce a gas flow codirectionally with and along said strands breaking the same into fibers by tearing said strands from said orifices in the direction in which the strands are extruded.

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**3,932,082**
**MEANS FOR FORMING A REINFORCED CONCRETE MODULE**

**Samuel W. Beaman, 4780 Branch, Houston, Tex. 77021**

**Filed Jan. 21, 1974, Ser. No. 434,788**
**Int. Cl.² E04G** *11/02*
**U.S. Cl. 425—125** **6 Claims**



1. An apparatus for use in forming reinforced concrete modular construction units, comprising:

a. support means;

b. a shaft mounted with said support means for rotational movement with respect thereto;

c. cage means mounted on said shaft for movement therewith for forming a plurality of concrete receiving surfaces of concrete reinforcing material about which concrete is cast, each of said surfaces with concrete cast thereon forming an integral part of a modular construction unit; and

d. a vertical positioning means mounted with said support means for moving said support means and shaft vertically to adjust the vertical position of said cage means surfaces between lower position in which concrete is cast about said surfaces and an upper position in which said shaft is rotated, so that by selective rotation and vertical positioning, said cage means surfaces are positioned for casting concrete on each of said surfaces to form a reinforced concrete modular construction unit.

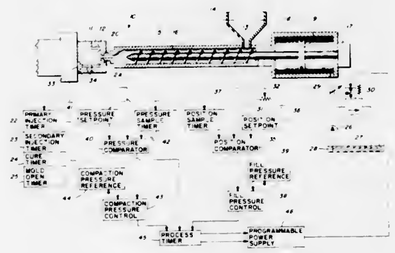


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**3,932,083**
**INJECTION MOLDING CONTROL**

**Jon E. Boettner, Owens Township, Winnebago County, Ill., assignor to Barber-Colman Company, Rockford, Ill.**

**Division of Ser. No. 421,115, Dec. 3, 1973. This application Nov. 29, 1974, Ser. No. 528,213**
**Int. Cl.² B29F** *1/02*, *1/022*, *1/06*
**U.S. Cl. 425—145** **5 Claims**



1. An automatic control system for injection molding machines having a reciprocable ram for injecting plasticized materials from an extrusion barrel into a mold cavity, said system comprising a position transducer producing a position signal varying with the position of the ram, a position setpoint means establishing a position setpoint signal, a position sample timer producing a position sample signal at a predetermined time after initiation of an injection cycle, a position comparator supplying a position deviation signal in response to deviation of said position signal from the position setpont signal upon occurrence of said position sample signal, means for adjusting a fill pressure in compliance with the position deviation signal to compensate for said position deviation, a pressure transducer producing a pressure signal varying with the pressure in said mold cavity, a pressure setpoint means establishing a pressure setpoint signal, a pressure sample timer producing a pressure sample signal at a predetermined second time after initiation of the injection cycle, a pressure comparator supplying a pressure deviation signal in response to deviation of said pressure signal from the pressure setpoint signal upon occurrence of said pressure sample signal, and means for adjusting a compaction pressure in compliance with the pressure deviation signal to compensate for said pressure deviation, said position sample signal being produced prior to completion of filling of the mold cavity, and said pressure sample signal being produced after completion of filling of the mold cavity.

**3,932,084**
**BLOW NEEDLE ASSEMBLY**

**Joseph R. Reilly, Naugatuck, Conn., assignor to Monsanto Company, St. Louis, Mo.**

**Filed Dec. 16, 1974, Ser. No. 533,238**
**Int. Cl.² B29D** *23/02*
**U.S. Cl. 425—182** **13 Claims**



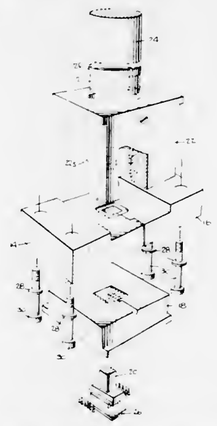
1. In a needle assembly including piston means carrying a hollow needle slidably reciprocable with respect to a cavity portion of a blow mold, the improvement which comprises, in combination, means accessible through said needle for releasably securing said needle to said piston means.

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**3,932,085**
**MOLD BASE**

**Stephen Horbach, 40 Glen Road, Mountain Lakes, N.J. 07046**

**Filed July 17, 1974, Ser. No. 489,428**
**Int. Cl.² B28B** *7/00*
**U.S. Cl. 425—186** **28 Claims**



1. In a mold base, the improvement adapting said mold base for long life use with abrasive molding material comprising:

a frame,

at least two tungsten carbide mold cavity pieces, at least a first one of said mold cavity pieces being above a parting line and at least a second one of said mold cavity pieces being below a parting line, said mold cavity pieces having

surfaces in contact with one another when the mold base is closed,

a plurality of support elements supporting said mold cavity pieces within said frame,

said support elements comprising a material substantially softer than tungsten carbide, said support elements being the sole force transmitting elements in contact with said mold cavity pieces,

a first set of said support elements receiving the energy of impact on closing the mold to absorb and dissipate said energy, said first set of said support elements having substantial resilliency,

a second set of said support elements having substantial malleability, said second set of said support elements mechanically giving on closing the mold to provide alignment of said contacting surfaces of said tungsten carbide mold cavity pieces with one another.

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**3,932,086**

## EXTRUDER

**Tadashi Kasamatsu, 6-10, Shiratori 2-chome, Katsushikaku, Tokyo, Japan**

**Filed Nov. 6, 1974, Ser. No. 521,542**

**Claims priority, application Japan, Nov. 13, 1973, 48-130414[U]**

**Int. Cl.² B29B *1/04***

**U.S. Cl. 425—208** **8 Claims**



1. An extruder comprising:

a. a cylinder which has a front tubular part, rear tubular part and an intermediate part between said front tubular part and said rear tubular part and is provided with a material supplying port for supplying a material at a periphery of said rear tubular part and a material extruding outlet at said front tubular part;

b. pulverizing means positioned at said material supply port, which pulverizes primary materials and feeds pulverized materials under pressure into said material supplying port, said means for pulverizing and feeding the materials comprising rotary blades which are edged at the blade ends;

c. a screw which is provided with a spiral ridge on its outer periphery, rotatably housed in said cylinder, said screw having a front part, rear part and intermediate part corresponding to the parts of said cylinder;

d. a material flow passage spirally formed by said spiral ridge between the outer periphery of said screw and the inner periphery of said cylinder, said passage communicating with said material supplying port and said material extruding outlet and adapted so that a capacity per turn of the spiral ridge in a front part formed by the front parts of said cylinder and screw is smaller than that of a rear part formed by the rear parts of said cylinder and screw and a capacity per turn of the spiral ridge in a passage throttle part formed by the intermediate parts of said cylinder and screw gradually decreases as said spiral ridge advances from the rear side to the front side;

e. a communicating path connecting adjacent partial sections of said material flow passage which are separated by said spiral ridge in said passage throttle part;

f. a rotary driving means which rotates said screw; and

g. a heating means provided on said cylinder to heat said material flow passage.

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**3,932,087**

## ARRANGEMENT IN MOULDING PRESSES WITH PARTED PRESS TOOLS FOR THE PRODUCTION OF HOT-PRESSED PLASTIC MATERIAL PRODUCTS, ESPECIALLY GRAMMOPHONE RECORDS

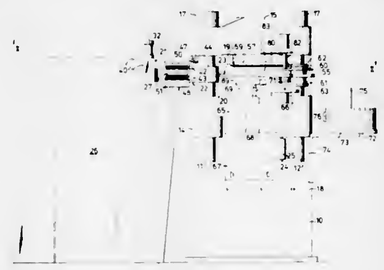
**Östen Karl Alf Nilsson, Spanga, and Curt Lindell, Taby, both of Sweden, assignors to Toolex Alpha Aktiebolag, Sundbyberg, Sweden**

**Filed Jan. 2, 1975, Ser. No. 538,208**

**Claims priority, application Sweden, Jan. 7, 1974, 7400162; Dec. 19, 1974, 7416026**

**Int. Cl.² B29D *17/00***

**U.S. Cl. 425—215** **20 Claims**



1. An arrangement in moulding presses with parted press tools for the production of hot-pressed products of plastic material, especially grammophone records, a holder for the pressed product being arranged, before starting the pressing operation to be entered into an exuding zone for the excess material from the pressing operation to assure its position in the press, and subsequent to the termination of the pressing operation, in company with the ready-pressed product attached thereto through the intermediary of the excess material exuded during the pressing operation, to be moved away to an apparatus for releasing the ready-pressed product from the holder, situated outside the pressing area, characterized in that the holder presents a ring, encircling at least the major portion of the perimeter of the pressed product, comprising a plurality of anchoring means distributed in and along the exuding zone of the excess material for attaching the pressed product to the holder by the excess material exuding onto, and solidifying in engagement with said anchoring means, and that said apparatus includes a shearing means, movable essentially transverse to the plane of the ring of anchoring means, for breaking the pressed product loose in the region of said anchoring means.

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**3,932,088**

## FLEXIBLE ANNULAR CORE USED FOR THE PRODUCTION OF HOLLOW TOROIDAL RUBBER SHELLS

**Jumei Harada; Kenji Tsukamoto, both of Higashi-Murayama; Tetsuhiko Migita, Kodaira, and Tsutomu Matsunaga, Higashi-Murayama, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan**

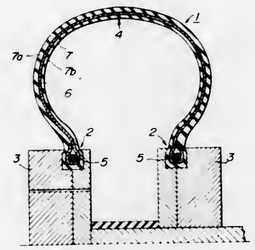
**Filed July 31, 1974, Ser. No. 493,434**

**Claims priority, application Japan, Aug. 7, 1973, 48-87972**

**Int. Cl.² B29C *1/00, 5/00*; B29F *1/00*; B29H *5/04, 5/18***

**U.S. Cl. 425—242** **9 Claims**

1. A flexible annular core used for the production of hollow toroidal rubber shells comprising, a pair of bead portions and a flexible shell portion, each of said bead portions having beads which are looped in a circumferential direction of the core in an inextensible fashion, at least one reinforcing layer reinforced with cords inextensible in the lengthwise direction thereof and folded back so as to enclose the beads, said flexible shell portion being comprised of said reinforcing layer and elastomer layers covering both sides of the reinforcing layer and extending across a pair of the bead portions, said core being fixed at its bead portions to movable ring molds which can be moved to and fro and deformed by the movable ring molds so as to deform repeatedly the flexible shell portion in a reversible manner between a cylindrical shape at the largest distance of the movable ring molds and a toroidal shape at the shortest distance of the molds, said bead portions fixed to the movable ring molds being composed of said reinforcing layers adhered with each other and said reinforcing layer and said elastomer layer adhered with each other to form an integral body, and said flexible shell portion being composed of said reinforcing layers not adhered with each other and said reinforcing layer and said elastomer layer not adhered with each other.



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**3,932,089**

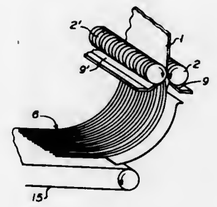
## APPARATUS FOR MANUFACTURING WAVED NOODLES

**Momofuku Ando, Osaka, Japan, assignor to Nissin Shokuhin Kaisha, Ltd., Osaka, Japan**

**Continuation-in-part of Ser. No. 128,382, March 26, 1971, abandoned. This application Feb. 8, 1974, Ser. No. 440,675**

**Int. Cl.² A21C *11/24***

**U.S. Cl. 425—294** **3 Claims**



1. An apparatus for making noodles comprising a pair of oppositely rotating rollers adapted to receive a dough strip between them, said rollers being formed with transversely spaced circumferential grooves registering with one another to form cavities of large cross section and lands between said grooves and outwardly thereof, the lands outwardly of said grooves contacting each other at the nip of the rollers and the lands between said grooves being formed with circumferentially spaced recesses interconnecting the grooves and of a smaller cross section than said grooves; means for feeding a dough strip between said rollers whereby the dough of said strip is passed into said grooves and recesses to form noodles, consisting of at least two transversely spaced large cross section portions corresponding to said grooves and transverse connecting portions corresponding to said recesses, said grooves and said recesses being of semicircular cross section and said rollers being cylindrical, each of said rollers being provided with cavities extending radially inwardly from the respective grooves; and

comb means reaching into said cavities.



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**3,932,090**

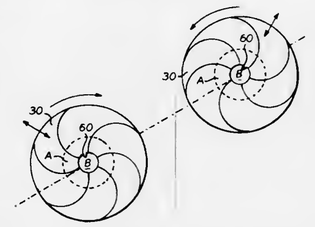
## ADJUSTABLE EXTRUSION APPARATUS FOR PRODUCING THREAD-LIKE PRODUCTS

**George C. Brumlik, Montclair, N.J., assignor to Ingrip Fasteners, Inc., New York, N.Y.**

**Filed Jan. 31, 1973, Ser. No. 328,203**

**Int. Cl.² B29F *3/04*; B29D *1/00***

**U.S. Cl. 425—381** **3 Claims**



1. Apparatus for extruding articles which comprises extrusion means having an annular extrusion opening divided into an outer extrusion zone and an inner extrusion zone contiguous with the outer zone, said extrusion means being adapted to melt a melt flowable material and force same through said extrusion opening, said inner zone being adapted to continuously extrude said material and said outer zone having means associated therewith for simultaneously forming a thread in the material being extruded in said outer zone said thread forming means including means for simultaneously forming biased means on one or more of the edge, face or trough of the thread formed in the material being extruded in said outer zone.

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**3,932,091**

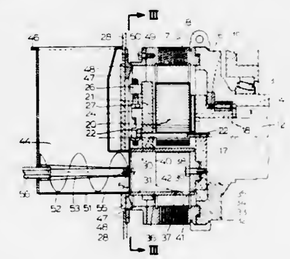
## PELLET MILL WITH SEPARATE FEE MEANS FOR EACH DIE ROLLER

**Johannes Albertus Vink, Bisschopswater 17, Breukelen, Netherlands**

**Filed Jan. 28, 1975, Ser. No. 544,699**

**Int. Cl.² A23N *17/00*; B29F *3/012***

**U.S. Cl. 425—331** **12 Claims**



1. A pellet mill for making pellets from flour products or similar material, comprising

a frame,

a first horizontally extending hollow drive shaft mounted for rotation in said frame and having two ends,

an annular die member mounted coaxially on said first drive shaft at one of said ends thereof, said annular die having an inner cylindrical surface and a plurality of radial die openings extending through the annular body of said die, said annular die enclosing an interior die space open at the side of the die removed from said drive shaft,

an extrusion roller assembly including a plurality of extrusion rollers arranged in spaced relationship in the interior of said annular die for cooperation with said cylindrical inner surface thereof, and a common roller frame supporting each of said rollers for free rotation,

a second shaft extending through said first hollow drive shaft and having two ends, said roller frame being secured to one end of said second shaft, bearing means rotatably supporting said second shaft, shear pin means connecting said second shaft to said frame for holding said second shaft stationary during normal operating conditions of the mill, and

a feed assembly for feeding the material to be pelleted to the interior of said annular die, said feed assembly including a plurality of separate feed means one associated with each of said extrusion rollers,

each of said feed means comprising conveying means for said material having a discharge end situated opposite said open side of said annular die, and a feed tube supported by said roller frame and extending axially through the interior of said die spaced from said inner cylindrical die surface, said feed tube having an open inlet end situated with a minimum clearance directly opposite said discharge end of the associated conveying means, means closing said feed tube at its end opposite of said inlet end, said feed tube further having an opening in its side wall, said side opening having an axial length corresponding to and coinciding with the axial length of said associated extrusion roller and said side opening having a circumferential width gradually increasing inwardly towards said closed feed tube end whereby the material supplied to the feed tube by said conveying means and discharged through said side opening is substantially evenly distributed over the axial length of said associated extrusion roller and over the corresponding effective width of said annular die.

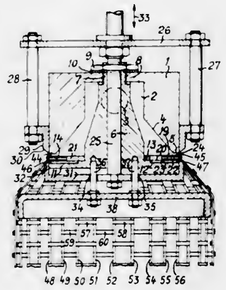
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**3,932,092**

## APPARATUS FOR MAKING PLASTICS MESH STRUCTURES AND OTHER FORMS OF OPENWORK

**Jean-Claude Hureau, Maurepas; Benjamin Rota, Noisy Le Sec, and Philippe Thomas-Castelnau, Paris, all of France, assignors to Generale Alimentaire, Neuilly-sur-Seine, France**

**Division of Ser. No. 304,818, Nov. 8, 1972, Pat. No. 3,874,969.**
**This application Aug. 21, 1974, Ser. No. 499,205**
**Claims priority, application France, Nov. 10, 1971, 71.40270; Dec. 15, 1971, 71.45140**
**Int. Cl.² B29F** *3/04*
**U.S. Cl. 425—382** **10 Claims**



1. An apparatus for making plastics mesh structures and other forms of extruded plastics openwork, characterized in that it comprises an extrusion head adapted to be fed with plastics from an appropriate source such as an extruder, the head comprising:

a. means, including a filament extruding die member having a row of continuously open extrusion orifices distributed in one plane in spaced apart relation, for extruding a plurality of continuous filaments parallel to the direction of extrusion and transversely spaced apart;

b. a strand extruding die member having a row of spaced apart extrusion slits distributed in a plane different from the plane of the extrusion orifices, each extrusion slit being in length at least as great as the spacing between two adjacent extrusion orifices but less than the entire extent across all of the extrusion orifices; and

c. means, including a blade associated with the strand extruding die member and mounted for reciprocation relative to the extrusion slits therein between a first position at which the slits are open and a second position at which the slits are closed, for separately extruding, periodically and transversely of the continuous filaments, strands that are discontinuous in a transverse direction and extend across less than all of the plurality of continuous filaments, and for urging the extruded strands into engagement with the extruded continuous filaments.

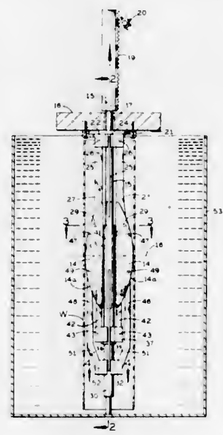
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**3,932,093**

## TUBE EXPANDER APPARATUS

**Johann H. Maier, 18584 NE. Second Ave., Miami, Fla. 33162**

**Filed Apr. 25, 1975, Ser. No. 571,640**
**Int. Cl.² B29C** *17/00;* **B29D** *23/00*
**U.S. Cl. 425—392** **10 Claims**



1. In an apparatus for expanding a tubular workpiece, said apparatus having:

an axially displaceable central shaft;

a fixed support having an opening which slidably passes said shaft;

attachment means fixed to said shaft for movement in unison therewith toward and away from said fixed support;

a plurality of expander shoes in succession circumferentially around said shaft;

and linkage arms acting between said fixed support and said expander shoes and between said attachments means and said expander shoes for moving said shoes outward from the shaft upon axial movement of the shaft in one direction and for moving said shoes inward toward the shaft upon axial movement of the shaft in the opposite direction;

the improvement wherein said linkage arms comprise:

a plurality of circumferentially spaced, first, rigid linkage arms, each pivotally connected at its inner end to said fixed support and pivotally connected at its outer end to a corresponding expander shoe at an off-center location on the latter toward said fixed support;

a plurality of circumferentially spaced, second, rigid linkage arms, each pivotally connected at its outer end to a corresponding expander shoe at an off-center location on the latter toward said fixed support but farther from said fixed support than the pivotal connection of the corresponding first linkage arm to said shoe, and each pivotally connected at its inner end to said attachment means on the shaft;

and a plurality of circumferentially spaced, third, rigid linkage arms, each pivotally connected at its outer end to a corresponding expander shoe at an off-center location on the latter away from said fixed support, and each extending outside the corresponding second linkage arm and pivotally connected at its inner end to said attachment means at a location on the latter spaced from the pivotal connection thereto of the inner end of the corresponding second linkage arm in a direction away from said fixed support.



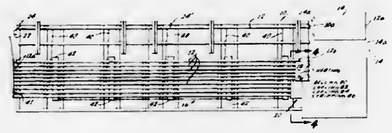
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**3,932,094**

## MULTIPLE STATION PLASTIC PIPE BELLING MACHINE

**Wolfram G. Korff, Granada Hills; Vernon V. Emery, Sun Valley; Joseph Kim Bond, North Hollywood, and Robert S. Hash, Mission Hills, all of Calif., assignors to Emery Company, Inc., Pacoima, Calif.**

**Filed June 17, 1974, Ser. No. 479,756**
**Int. Cl.² B29C** *17/00*
**U.S. Cl. 425—393** **11 Claims**



1. High speed plastic pipe belling apparatus, said apparatus comprising:

A. Endless conveyor means, one end of said conveyor means being disposed to receive lengths of pipe sequentially and transversely deposited on said end of said conveyor and to convey said lengths of pipe periodically a predetermined distance in a first substantially horizontal direction, said conveyor means including:

i. a series of receptacles about said conveyor means, each receptacle serving to receive and retain a pipe at a discrete location on said endless conveyor means as it moves periodically in said first direction;

ii. a positioning plate at one edge of the endless conveyor means;

iii. continuously moving endless belt means, the last said means extending concurrently with, for at least a part of the course of said endless conveyor means, and the upper surface of said endless belt means being in contact with the lowermost portion of each pipe disposed in each of said receptacles, said endless belt means serving continuously to rotate said pipes, the axis of said belt means being slightly canted with respect to the axis of said conveyor means thereby to cause each pipe to be moved vertically transversely to the first direction toward the positioning plate until one end of said pipe abuts said stop plate; said stop plate being so disposed in relation to each length of pipe as to project the opposite end of each said pipe beyond the edge of the conveyor opposite that adjacent the stop plate, for heating and belling;

B. A first drive shaft;

C. First chain and sprocket means, the last said means being engaged to said first drive shaft and adapted to move said endless conveyor means in predetermined increments in said first direction in accordance with the amount of rotation imparted to said first drive shaft;

D. heater means, said heater being disposed along a portion of the opposite edge of the endless conveyor means from that adjacent the stop means, and about the projecting end of each rotating pipe while said pipe is (i) disposed in a receptacle on said endless conveyor means, (ii) being rotated by said endless belt means and (iii) positioned with its distal end abutting said stop plate;

E. multiple station belling means, said belling means extending in said first direction from the end of said heater means; and comprising:

i. a first station including:

a. a pair of clamps having a pair of mating jaws, which jaws in their closed position define a cylindrical opening coaxial with the end of a pipe when it is disposed in said first station after having been moved past said heater means, and said opening being of a diameter equal to the outside diamter of the pipe, said clamps being reciprocable between a first position in which said opening is so defined and said clamps surround the pipe inwardly of the heat-softened end to be belled, and a second position in which said jaws are sufficiently separated from each other to permit a pipe to be moved in said first direction in and out of said first belling station; and

b. means to effect such reciprocation of said jaws at predetermined intervals;

ii. at least one other station adjacent said parallel to said first station, said at least one other station including an air cooling area in which a belled pipe end may be retained for a predetermined cooling period;

iii. air blower means directing cooling air into said area;

iv. a plurality of blocks from each of which extends in said second direction a bevelledended cylindrical plug, each of said blocks being movable:

a. in said first direction at said predetermined increments from said first station to the last of said other stations;

b. from said last station in said first direction a predetermined distance to a position from which the block may be further moved to pass around the other blocks while the latter are disposed to their second and other respective stations;

c. from said position around the other blocks in a fifth direction to another position in alignment with said first station for return movement therewith; and

d. from the last said position, in said fourth direction back into the first station;

v. the said plug in each block, upon the last said movement of the block back into the first station, being inserted in the pipe end then disposed in the said first station and outwardly of said cylindrical opening, to expand said pipe end to conform generally to this configuration of the outer surface of the block plug; and said this inserted plug being retained in the pipe end as its block moves from said first station progressively to the last of said other stations, whereupon, when the block is moved in the first direction, the plug is withdrawn from the pipe end, and the thus-belled pipe may thereafter be discharged from the apparatus by said endless conveyor means; and

F. Synchronized power means, said means, when triggered to commence operation, initiating a cycle which includes:

i. providing at predetermined intervals a predetermined angular rotation of said first drive shaft to move said endless conveyor a predetermined increment in said first direction;

ii. reciprocating the jaws of the pair of clamps to and apart from each other at each such predetermined interval;

iii. moving the block in the said last station in the first direction to its position from which it may be further moved to pass around the other blocks, thereby withdrawing the plug projecting from the said thus-moved block from the end of the pipe in which it has been inserted and retained, so that such pipe, as thus belled, will be discharged by the apparatus upon further incremental movement of the endless conveyor means;

iv. moving each other block in a station preceding said last station to the next station thereby vacating the first

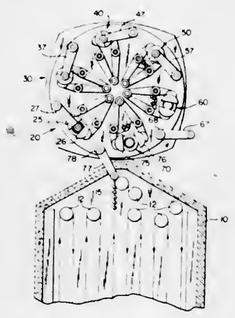
station and disposing a block in each succeeding station including said last station;

v. moving the block in its position from which it may be further moved to pass around the other blocks to its position in alignment with the first station, and, upon vacation of the first station, further in the first direction into the said vacated first station, whereupon the cylindrical plug projecting from the last moved block is forced into the pipe end which has just moved into the said first station by the endless conveyor said predetermined increment from the end of the heater area;

whereby a series of pipe ends may be sequentially and rapidly heated, belled, cooled to set the belled end, and discharged from the apparatus.

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**3,932,095**
**BLOW MOLDING APPARATUS**
**Lawrence A. Moore, Rockford, Ill., assignor to Beloit Corporation, Beloit, Wis.**
**Filed Oct. 26, 1973, Ser. No. 409,969**
**Int. Cl.² B29D** *23/03*
**U.S. Cl. 425—397** **11 Claims**



1. A blow molding apparatus comprising:

an oven, an oven support means within the oven for supporting a plurality of parisons in the oven and moving them through the oven,

a rotating frame positioned adjacent the oven, a plurality of blow molds mounted on said frame to rotate therewith, and

a separate transfer member associated with each of said plurality of blow molds and distinct from its respective blow mold, each transfer member being mounted on the rotating frame to rotate therewith and hence with its respective blow mold, and each transfer member being movable between at least a first position and a second position, the transfer member including means for engaging a parison at said first position while the parison is on said oven support means and removing the parison therefrom and carrying the parison to said second position at which it loads that removed parison into its respective blow mold.

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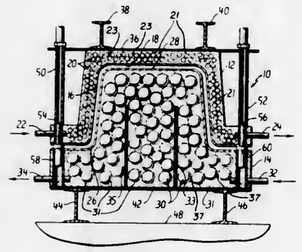
**3,932,096**
**MOLD FOR THERMOFORMING PLASTIC SHEET MATERIAL**
**Walter Kartman, 1729 Glenridge Circle, West Covina, Calif. 91792**
**Filed June 10, 1974, Ser. No. 477,688**
**Int. Cl.² B29C** *17/00*
**U.S. Cl. 425—398** **9 Claims**

1. A mold for thermoforming plastic sheet material, comprising:

upper and lower matching molding blocks, said molding blocks each comprising:

a shell having an exterior surface and an interior surface defining a closed cavity;

a pourous body of filler material contained within said closed cavity of said shell, said filler material being in surface contact with said interior surface of said closed cavity and comprising a plurality of metallic particles, said pourous body of metallic filler particles comprising



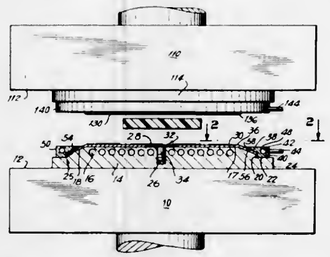
a continuous rigid mass in which said plurality of metallic filler particles are attached to each other at points of surface contact by resinous material;

inlet means for introducing coolant fluid from said molding block;

a frame work for supporting said molding blocks at a fixed distance from each other; and wherein part of said exterior surfaces of said upper and lower matching molding blocks define a die cavity.

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**3,932,097**
**RECORD MANUFACTURING EQUIPMENT**
**Lorence Press, 401 E. 86th St., New York, N.Y. 10028**
**Filed Jan. 30, 1975, Ser. No. 545,490**
**Int. Cl.² B29D** *17/00*
**U.S. Cl. 425—407** **5 Claims**

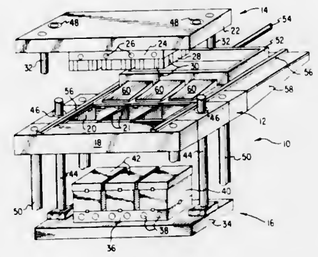


1. Machinery for manufacturing a record comprising a first record press platen, a first record mold secured to said first record press platen, a first stamper having a central portion and a periphery, a second record press platen, a second record mold, said second record mold secured to said second record press platen, a second stamper having a central portion and a periphery, means for securing a first portion of said first stamper to said first record mold, means for securing the periphery of said first stamper to said first record mold and for cooling the outer periphery of plastic that is being formed into a record between said first and second stampers during a stamping operation, means for securing a first portion of said second stamper to said second record mold, and means for securing the periphery of said second stamper to said second record mold and for cooling the outer periphery of plastic that is being formed into a record between said first and second stampers during a stamping operation.



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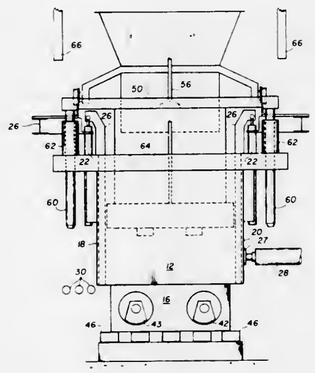
**3,932,098**
**CASE ASSEMBLY WITH TUNGSTEN CARBIDE INSERTS FOR CERAMIC TILE DIE**
**William W. Huber, North Canton; Rollin R. Shriner, Massillon, and Harry N. Shuman, East Sparta, all of Ohio, assignors to Spartek Inc., Canton, Ohio**
**Filed Dec. 18, 1974, Ser. No. 534,138**
**Int. Cl.² B28B** *3/02*; **B29C** *3/00*; **B29B** *11/00*; **B28B** *7/00*
**U.S. Cl. 425—412** **20 Claims**



1. A case assembly for defining at least one die cavity for receiving material to be compacted by at least one press member which moves into said die cavity during a pressure cycle and being operative to minimize the tensile stress to which the walls of said die cavity are subjected by said press member comprising a die cavity assembly formed to define the peripheral walls of said die cavity, a substantially rigid frame means surrounding said die cavity assembly, and mounting means to mount said die cavity assembly within said frame means to substantially preclude movement thereof relative to said frame means in the direction of movement of said press member into the die cavity while permitting limited pressure induced movement of said die cavity assembly relative to said frame means in directions normal to the direction of movement of said press member into the die cavity.

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**3,932,099**
**MOLD APPARATUS**
**Norbert Burdy; Christian Ravet, both of Givors, and Jean Lacave, Marseille, all of France, assignors to Fives Lille Cail, Paris, France**
**Filed Sept. 17, 1973, Ser. No. 398,016**
**Int. Cl.² B29C** *3/00*; **B30B** *11/02*
**U.S. Cl. 425—432** **5 Claims**



1. A molding apparatus comprising

1. a vibratory mold having an open top,

2. a beam,

3. a cover plate rigidly affixed to the beam and reciprocable through a vertical stroke into and out of the open top of the mold,

4. a frame affixed to the mold, and

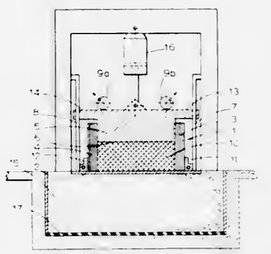
5. cooperating guide means on the mold and the cover plate, the guide means being arranged to guide the cover plate during the vertical stroke just before it enters into the mold and to prevent any but vertical movements between the mold and the cover plate when the cover plate is within the mold, the guide means comprising

a. vertical guide rods carried by the beam and having an operative length less than the length of the vertical stroke of the cover plate, and

b. vertical bushings cooperating with the guide rods, the vertical bushings being mounted on the frame and the length of the bushings being such that the guide rods enter into the bushings just before the cover plate enters into the mold.

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**3,932,100**
**VIBRATORY DEVICE**
**Rolf Blindheim, Oslo, Norway, assignor to A/S Ardal og Sunndal Verk, Oslo, Norway**
**Filed Feb. 20, 1975, Ser. No. 551,507**
**Claims priority, application Norway, Feb. 20, 1974, 564/74**
**Int. Cl.² B30B** *11/02*; **B28B** *3/04*
**U.S. Cl. 425—432** **6 Claims**



1. A device for molding green blocks or electrodes for the manufacture of anode and cathode carbons for smelting industries, particularly for the electrolytic smelting of aluminum, said device comprising:

a mold including a stationary, plane, horizontal base, and vertical walls firmly fixed to said base and extending upwardly therefrom, thereby providing a chamber for the receipt of paste to be formed into a block, at least one of said vertical walls being removable from said base to facilitate the discharge of a finished block from said mold;

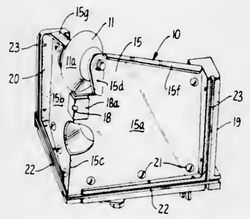
a pressure weight slidably mounted for vertical movement into said chamber, said weight having a lower downwardly facing surface of a configuration to cover substantially the entire horizontal cross-sectional area of said chamber; and

vibration generator means mounted only on said weight for imparting thereto vibratory motion for compacting paste positioned in said chamber.

### 3,932,101
### CORNER FINISHING TOOL

Eugene R. Johnson, Burlingame, and Morris F. Mower, Santa Clara, both of Calif., assignors to Bliss & Laughlin Industries, Inc., Oak Brook, Ill.

Filed Sept. 9, 1974, Ser. No. 504,253
Int. Cl.² B28B 7/08; B05C 17/10
U.S. Cl. 425—458 9 Claims



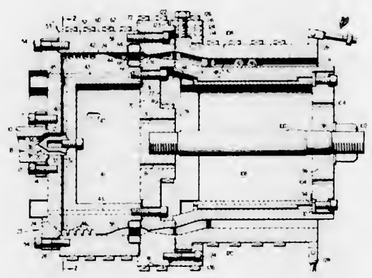
1. A corner finishing tool for applying mastic material along a wall joint comprising container means defining a cavity that is open in two convergent and substantially perpendicular planes and having surfaces in each of said planes that converge peripherally of said cavity for doctoring mastic material that flows thereunder; and a wheel having substantially conical side surfaces that converge to a center rim, said wheel being rotatably mounted from said container means to contact the walls of a wall joint with the conical side surfaces and position the cavity relative thereto.

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### 3,932,102
### SPIRAL DESIGN PIPEHEAD

Larry A. Rosenbaum, Marion, Ohio, assignor to Koehring Company, Milwaukee, Wis.

Filed Nov. 1, 1974, Ser. No. 520,357
Int. Cl.² B29D 23/00
U.S. Cl. 425—466 13 Claims



1. In an extruder pipehead for extruding thick-walled plastic pipe, said pipehead being of a type which includes a central inlet bore, a plurality of generally radial ports communicating with said bore, a plurality of helical channels communicating with said ports, a generally annular channel communicating with said helical channels and terminating in a die opening, the improvement comprising:

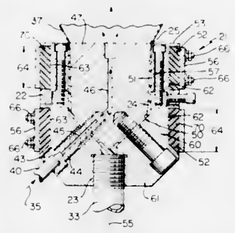
breaker means for splitting the flow of plasticized material into a multiplicity of filaments being positioned across said annular channel downstream of said helical channels; and

restricting means for creating a region of high shear stress on the filaments being provided downstream of said breaker means.

### 3,932,103
### DIE FOR EXTRUDING PLASTIC FILM

Richard M. Rice, Afton, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed Jan. 31, 1974, Ser. No. 438,185
Int. Cl.² B29F 3/08
U.S. Cl. 425—467 10 Claims



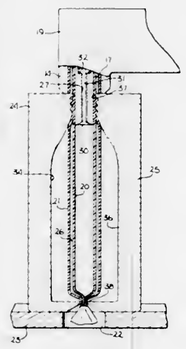
1. A die for extruding plastic film comprising, a die body, an inlet in said body, an inlet in said body for receiving a plastic melt under pressure, an annulus in said die in flow communication with said inlet and having a discharge orifice for extruding said plastic melt therefrom in tubular form, a heat conductive band having an inner portion and an outer portion with said inner portion thereof being supported against said body, said band being made solely of an elongated material wound in a plurality of closely wound adjoining turns which provide a plurality of interfaces between turns thereby assuring said band has a circumferential heat conductivity which is better than its radial heat conductivity, and a heater for heating said band, said heater being supported against said outer portion of said band and said band assuring heat is transmitted so that practically all points of an annular portion of said die body located adjacent said band are substantially at the same temperature.

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### 3,932,104
### BLOW FORMING APPARATUS FOR PRODUCING DOUBLE-WALLED VESSELS

Robert F. Schneider, 2326 Sawtelle Blvd., Los Angeles, Calif. 90064

Filed Apr. 29, 1974, Ser. No. 464,811
Int. Cl.² B29D 23/03
U.S. Cl. 425—503 1 Claim



1. An apparatus for blow forming of hollow bodies so as to produce a double-walled vessel, the combination comprising:

a mold including a pair of mated halves having an open cavity defined by the shape of opposing internal wall surfaces;



sleeve means disposed over said open cavity for separating supplied parison within said mold cavity into coaxial inner and outer tubes;

means forming a portion of said mold at its extreme opposite ends for joining the opposite ends of said coaxial inner and outer tubes to seal said circular space between said inner and outer tubes so as to constitute the double walls of said vessel;

an extrusion die for extruding the parison into said cavity;

said sleeve comprising a part of said die whereby parison is divided into a pair of downwardly depending coaxial tubes into said mold cavity;

said joining means comprises cut-off portions at opposite ends of said mold cavity for severing said parisons and engaging the terminating ends of said tubes together in an integral joint;

means for trapping air between the opposing surfaces of said inner and outer tubes comprising;

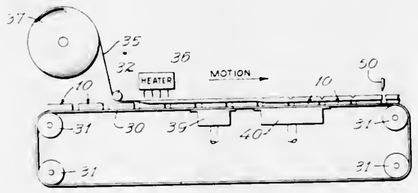
air means for introducing pressurized air into the center of said coaxial tubular parisons urging the parisons into the form of said cavity.

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### 3,932,105
### APPARATUS FOR LINING CARTONS

Lawrence H. Knoell, St. Paul, Minn., assignor to Hoerner Waldorf Corporation, St. Paul, Minn.

Division of Ser. No. 506,945, Sept. 18, 1974. This application May 30, 1975, Ser. No. 582,291
Int. Cl.² B29C 17/04; B29D 3/02
U.S. Cl. 425—504 5 Claims




1. Apparatus adapted to line a tray having a flat bottom and upright side walls made from foldable paperboard or similar sheet-like material with a continuous strip of thermo-plastic film, comprising:

continuous conveyor means for holding a plurality of said trays in close spaced relationship;

means for advancing said trays and said conveyor;

means for dispensing a continuous strip of said thermo-plastic film into juxtaposition above said trays on said conveyor;

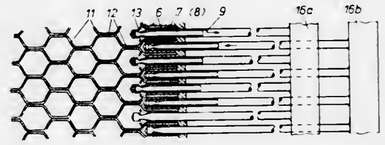
means positioned beneath said conveyor for pulling a vacuum through the bottom of said tray which can pull down that portion of said film directly above said tray into contiguous conforming relationship with the inside surfaces of said tray; and

means for separating said tray and contiguous conforming portion of said film from that film positioned between adjacent trays and not in contact therewith.

### 3,932,106
### INJECTION MOLDING HEAD FOR FORMING HONEYCOMBED THERMOPLASTIC STRUCTURES

Arnold Vogts, Krahenwinkel, Germany, assignor to Kabel-und Metallwerke Gutehoffnungshuette Aktiengesellschaft, Germany

Filed July 11, 1974, Ser. No. 487,537
Claims priority, application Germany, July 17, 1973, 2336313
Int. Cl.² B29C 23/00
U.S. Cl. 425—505 6 Claims




1. Injection molding head for forming honeycombed structures of thermoplastic materials, comprising:

a fixed mouthpiece having a plurality of apertures extending longitudinally therethrough for providing extrusion orifices each having a permanent cross-sectional configuration in an output surface of said mouthpiece, and a plurality of guide channels extending longitudinally therethrough and interposed between but spacially separated from said apertures;

strand deviation guide means including:

a plurality of elongated members each slidably mounted in one of said guide channels;

a frame means attached to one end of each of a group of said elongated members for moving in a longitudinal direction one end of each of said elongated members beyond the exit end of said fixed mouthpiece for the provision of high thrust, lateral forces only beyond said output surface but proximate to the output of said extrusion orifices, and withdrawing said ends of the said elongated members from said extended position to within said fixed mouthpiece; and

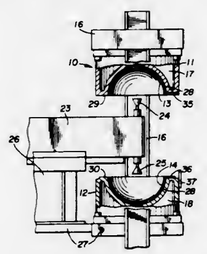
drive means coupled to said frame means for moving said frame means toward and away from said fixed mouthpiece in an oscillatory manner.

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### 3,932,107
### APPARATUS FOR FORMING COMPOSITE ARTICLES

James R. Proudfit, Youngwood, Pa., assignor to The General Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 469,987, May 15, 1974, abandoned. This application Jan. 9, 1975, Ser. No. 539,674
Int. Cl.² B29C 5/00; B29F 5/00; B29C 17/00
U.S. Cl. 425—509 22 Claims



1. Apparatus for forming an inflatable composite article including an inflatable center covered with a molded material formed under heat and pressure, said center being adapted to

retain said article in a predetermined shape after being formed, comprising:

A. molding means including interconnected complementary metal elements movable between an open position and a closed position, said elements having surfaces which define, when said elements are in closed position, a molding cavity substantially corresponding to the desired shape and surface finish of said composite article, said metal elements including means to open and close said molding means;

B. electrostatic pressure spraying means movably inserted into said molding means when said elements are in open position to respectively spray all said surfaces concurrently, while said elements remain in open position, for a selected time period with a finely divided molding material to form a substantially dried uniform layer of selected thickness of said molding material onto said surfaces, and to be movably retracted from said molding means before said elements are moved to a closed position;

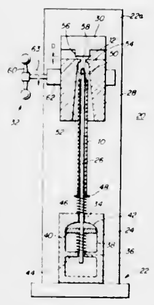
C. adjustable pressurizing means to inflate said center to a selected pressure, as said center is disposed within said molding cavity after said elements have been moved to a closed position, and thereby to compress said molding material into forceful contact with said center and with said surfaces to produce details in said molding material conforming to said surfaces;

D. heating means to heat said molding means for a selected time and at a selected temperature while said center is maintained by said pressurizing means at said selected pressure until said molding material : finally formed into a finished covering to complete said composite article; and

E. cooling means to cool said molding means before said elements are moved to open position for removal of said composite article from said molding means.

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**3,932,108**
**APPARATUS FOR MAKING PROBE COVERS FOR ELECTRONIC THERMOMETERS**
**Robert Bruce Turner, Weymouth, Mass., assignor to American Medical Electronics Corporation, Weymouth, Mass.**
**Division of Ser. No. 474,419, May 30, 1974. This application June 3, 1975, Ser. No. 583,443**
**Int. Cl.² B29B** *17/00*
**U.S. Cl. 425—515** **4 Claims**



1. Apparatus for forming an electronic thermometer probe from a piece of tube comprising:

a stop member having a first surface abutting a first end of said tube;

a die member having a hole and a second surface for receiving the second end of said tube;

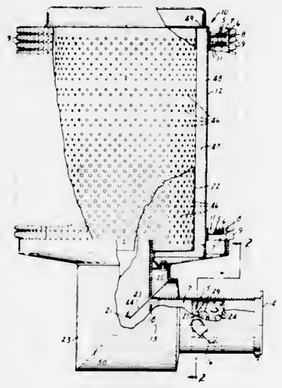
a first pin member for receiving said tube and extending from said first surface of said stop member, through the first surface, said hole, and the second surface, successively, of said die member and beyond said second surface;

said second surface of said die member and said first surface of said stop member being spaced apart a distance; and

a heater means for heating said second end of said tube extending beyond said second surface to cause said second end to turn outwardly from said first pin member and downwardly toward said second surface to flatten and form a flange.

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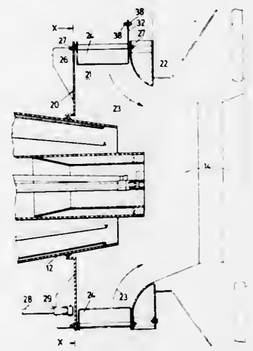
**3,932,109**
**ULTRASONIC BURNER MEANS**
**Edwin W. Pitcher, White Bear Lake, and Thomas L. Nystrom, Falcon Heights, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.**
**Division of Ser. No. 334,749, Feb. 22, 1973, Pat. No. 3,808,056. This application Mar. 11, 1974, Ser. No. 449,928. The portion of the term of this patent subsequent to Apr. 30, 1991, has been disclaimed.**
**Int. Cl.² F23C** *3/02*; **B05B** *3/14*
**U.S. Cl. 431—1** **8 Claims**



1. Burner means for achieving high-efficiency burning of liquid fuels comprising, in alignment on a central axis, (A) blower means arranged to blow an oxidizing gas along said axis; (B) an ultrasonic atomizer downstream from the blower means, connected to a source of liquid fuel, and having a vibrating horn located on said axis from which the fuel emanates downstream as a fine mist, (C) a cylindrical wall spaced radially around said horn and in line with said blower means so as to convey said oxidizing gas downstream from said blower means past said horn; and (D) baffle means disposed around said horn and consisting essentially of a set of overlapping vanes that are attached to the inside of said wall, extend radially toward said axis, and are disposed at an angle to said axis so as to form a first part of the oxidizing gas that is conveyed downstream by the cylindrical wall into a vortex; the innermost edge of the vanes being adjacent to, but spaced from, said horn so as to define an area through which a second part of said oxidizing gas passes unimpeded; and at least part of the outermost edge of the vanes being spaced from the cylindrical wall so as to permit a third part of said oxidizing gas to pass unimpeded along the wall so as to contain said vortex into a compact area, whereby the flame of fuel supplied by said ultrasonic atomizer is kept compact.



**3,932,110**
**INTERVANE BURNERS**
**Alistair Tobias Waddell, Larbert, Scotland, assignor to Foster Wheeler Energy Corporation, Livingston, N.J.**
**Filed Sept. 12, 1974, Ser. No. 505,283**
**Int. Cl.² F23M** *9/00*
**U.S. Cl. 431—184** **5 Claims**



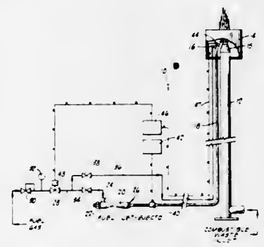
1. An apparatus for controlling the flow of gas entering an annular duct wherein a plurality of vanes are rotatably mounted between front and rear walls of the duct about an axis parallel to the axis of the annular duct to control the amount of gas entering the duct when actuated, each vane being angularly evenly spaced around the periphery of a circle whose axis is coincident with the axis of the annular duct and arranged to cause the gas which passes over them to follow a swirling path in the duct, the improvement comprising:

an arrangement of the vanes into three groups of vanes, means for mechanically interconnecting the vanes of each group to one another so that actuation of one of said vanes causes the vanes of the group to open and close in unison;

a single drive shaft connected to one vane of each group, a mechanical linkage means coupling the drive shaft of each group of vanes so as to operate same in unison, common drive means coupled to the mechanical linkage for actuating same thereby operating all the groups of vanes in unison.

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**3,932,111**
**APPARATUS FOR INCINERATING COMBUSTIBLE WASTES**
**Alvin C. Liknes, and Lyle C. Knight, both of Edmonton, Canada, assignors to Black, Sivalls & Bryson, Inc., Houston, Tex.**
**Filed Oct. 29, 1974, Ser. No. 518,280**
**Int. Cl.² F23D** *13/20*
**U.S. Cl. 431—202** **12 Claims**



1. Apparatus for incinerating combustible wastes comprising:

a flare stack connected to the source of said combustible wastes;

a pilot flame burner attached to said flare stack and positioned with respect thereto so that combustible wastes discharged therefrom are ignited by said pilot flame;

a first conduit attached to said pilot flame burner for continuously conducting fuel and air to said burner;

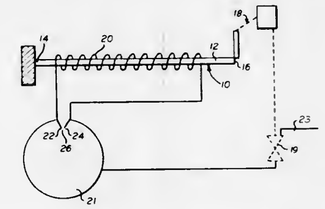
a fuel jet-ejector for producing a continuous stream of a combustible mixture of fuel and air having a fuel inlet connection, an air inlet connection and a fuel-air mixture discharge connection, said discharge connection being connected to said first conduit;

a second conduit connecting the fuel inlet connection of said fuel jet-ejector to a source of fuel; and

a third conduit connected to said second conduit and to said pilot flame burner for conducting a continuous stream of fuel to said burner separately from the fuel-air mixture conducted thereto by said first conduit.

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**3,932,112**
**MAGNETOELASTIC, REMANENT, HYSTERETIC DEVICES**
**Ivan J. Garshelis, 61 Oleander Way, Clark, N.J. 07066**
**Filed July 12, 1974, Ser. No. 488,208**
**Int. Cl.² F23Q** *3/00*
**U.S. Cl. 431—255** **14 Claims**

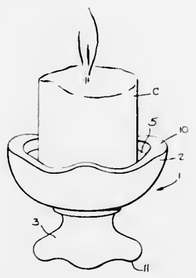


1. An electromechanical element, comprising:

a circularly magnetized, magnetostrictive rod that exhibits hysteresis in its magnetic induction vs. twist strain curve.

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**3,932,113**
**CANDLE HOLDER UNIT AND THE LIKE**
**James Lloyd Thrush, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio**
**Filed Feb. 19, 1974, Ser. No. 443,365**
**Int. Cl.² F23D** *3/16*
**U.S. Cl. 431—297** **4 Claims**

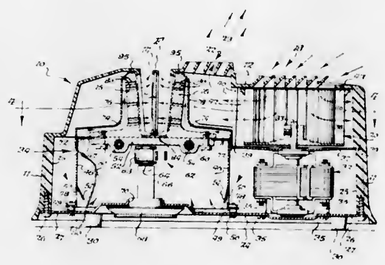


1. A bowl shaped unit comprising a bowl portion and an annular foot portion, said portions each having socket means for receiving an article and a corrugated edge, the edges of each of said portions comprising a corrugated surface which is adapted to mesh with a corrugated edge of a similar unit to permit the units to stack relative to each other and to prevent movement of the units relative to each other, said bowl portion having an interior ledge and said foot portion being of a size so as it may seat on the ledge of a similar unit.

### 3,932,114
### DEVICE FOR HEATING THERMOPLASTIC EYEGLASS FRAMES

**Edward A. Ebert, 203 Huxley Drive, Snyder, N.Y. 14226**

**Division of Ser. No. 207,086, Dec. 13, 1971, Pat. No. 3,816,705. This application June 3, 1974, Ser. No. 475,431**
**Int. Cl.² F27D** *5/00*
**U.S. Cl. 432—5** **4 Claims**

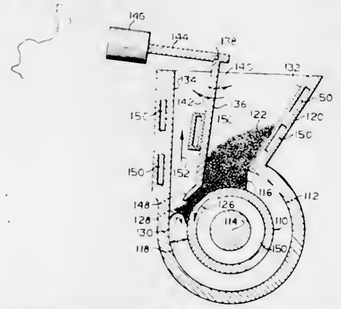


1. A method of heating a thermoplastic article to a predetermined softening temperature comprising the steps of providing opposed rays of radiation into a space having a sufficiently unobstructed portion in communication with the ambient environment so as to permit passage of said article directly into said space; placing said article into and holding it in said space for radiation of its opposite sides; and pumping heated air into said space to cause said heated air to pass around said article and out of space through said unobstructed portion to prevent entrance of cooler ambient air into said space.

### 3,932,115
### VENTED HOPPER WITH IMPROVED FEED SYSTEM

**Bryce Maxwell, 19 McCosh Circle, Princeton, N.J. 08540**

**Filed Oct. 31, 1974, Ser. No. 519,455**
**Int. Cl.² F27D** *5/00*
**U.S. Cl. 432—5** **14 Claims**



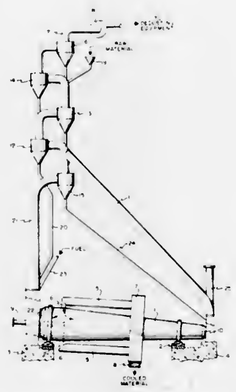
1. A hopper apparatus with an improved feed system for polymer processing comprising:
   a. a casing having a generally cylindrical inner surface;
   b. a rotatably mounted rotor having a generally cylindrical surface concentric with said inner surface of said casing and spaced inward therefrom to define an annular region therebetween;
   c. a hopper having a downwardly facing discharge opening communicating with said annular region; and
   d. a control means movably attached to said casing and positioned extending into said annular region adjacent said rotor for varying the effective area of said discharge opening, said control means being actuated by material located in said annular region.

11. A method for feeding polymeric material into processing and mixing equipment which comprises:
   a. introducing new polymeric material into a hopper;
   b. controlling the amount of new material released into the hot melt material in response to the amount of hot melt material;
   c. heating the melting material while in an annular region about a rotor; and
   d. urging the released new material into contact with an essentially cylindrical rotating rotor to facilitate movement of new material into the previously melted hot material.

### 3,932,116
### METHOD AND APPARATUS FOR BURNING PULVERULENT MATERIALS

**Dan S. Hansen, Copenhagen Valby, Denmark, assignor to F. L. Smidth & Co., Cresskill, N.J.**

**Filed July 24, 1974, Ser. No. 491,603**
**Claims priority, application United Kingdom, July 31, 1973, 36377/73**
**Int. Cl.² F27B** *15/00, 7/02*
**U.S. Cl. 432—14** **15 Claims**



1. A method of burning pulverous or granular material in a plant including a suspension preheater and a rotary kiln having a burner means positioned at one end portion and having an integrally mounted planetary cooler having a series of cooler tubes for cooling the burnt material exiting from the kiln by means of air subsequently used for combustion and preheating in the plant, comprising directing the heated cooling air from the planetary cooler tubes into the rotary kiln, dividing said cooling air into two streams, at a location adjacent the burner end portion of the kiln, directing the divided cooling air out of both ends of the kiln in its divided streams, directing at least one stream of the heated cooling air comprising a portion of the total volume of heated cooling air into the rotary kiln and utilizing said stream as combustion air in the rotary kiln and thereafter directing said stream as part of a waste gas out of one end of the kiln to the preheater for use in preheating raw material fed into said preheater, drawing the other stream of heated cooling air out of the other end of the kiln and directing said other stream of cooling air to the suspension preheater for use in preheating raw material fed into said preheater.

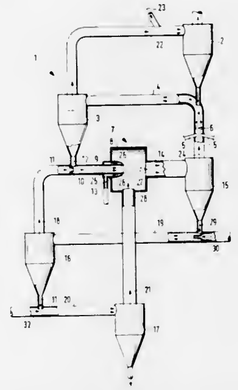
5. A rotary kiln plant for burning pulverous or granular material comprising a suspension preheater, a rotary kiln having a material inlet end portion and a material outlet end portion with a burner means positioned at the material outlet end portion and having an integral rotary cooler, the cooler including a plurality of cooler tubes mounted in planetary fashion about the kiln, means to direct the cooling air passing through the planetary cooler tubes into the kiln at a location adjacent the burner end portion so as to divide the cooling air into two streams directed to both end portions of the kiln, at least one duct means at each end portion of the rotary kiln communicating with the suspension preheater, one duct means directing the waste gas from the combustion or burning in the kiln from the waste gas outlet end portion of the kiln to the preheater, the other duct means directing part of the cooling air heated by passage through the cooler tubes to the preheater for preheating raw material, and a material discharge pipe extending from the material discharge end portion of the preheater and connected to the material inlet end portion of the kiln for charging the kiln with the material preheated in the preheater by the heated cooling air and kiln waste gas.



### 3,932,117
### METHOD OF BURNING OR SINTERING FINE-GRAIN MATERIAL

**Horst Ritzmann, Enniger, Germany, assignor to Polysius AG, Neubeckum, Germany**

**Filed Sept. 19, 1974, Ser. No. 507,410**
**Claims priority, application Germany, Oct. 10, 1973, 2350768**
**Int. Cl.² F27B** *15/00*; **F26B** *3/08*
**U.S. Cl. 432—14** **8 Claims**

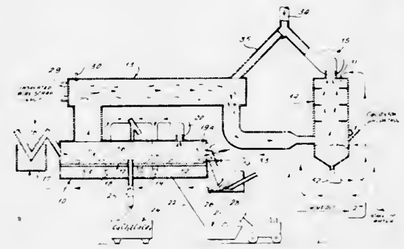


1. In a method of burning or sintering fine-grained material, such as cement raw meal, lime, dolomite, magnesite or hydrate of alumina, which agglomerates above a critical temperature wherein a gas-carried flow of material is passed successively through a preheating zone, a final heating zone wherein the material is heated to a final treatment temperature higher than said critical temperature by passing a flame, and a separation-cooling zone wherein the material is separated from the hot exhaust gases of said final heating zone and the separated hot exhaust gases are conducted to said preheating zone to preheat material therein; the improvement comprising the steps of introducing material into an elevated portion of said preheating zone to cause said introduced material to fall downwardly through said zone, and introducing the exhaust gases from said final heating zone into a lower portion of said preheating zone in an upwardly directed stream establishing an upwardly directed flow operable to carry the introduced material upwardly through said preheating zone to an elevated discharge opening, the path of said material through said preheating zone including a downwardly directed section and an upwardly directed section and supplementing the preheating of said material by said exhaust gases by adding heat to said preheating zone at a location traversed by both the upward and downward sections of said path to supply enough additional heat to said preheating zone to heat the material therein to a temperature less than said critical temperature but high enough to enable the material to be heated to said final temperature during transmit of said final heating zone.

### 3,932,118
### INSULATION REMOVAL APPARATUS

**Frank W. Eggers, III, Hermann, Mo.; Ralph O. Wigger, Yonkers, N.Y., and Richard L. Coan, Clayton, Mo., assignors to Cerro Corporation, New York, N.Y.**

**Filed Jan. 2, 1974, Ser. No. 429,967**
**Int. Cl.² F27B** *15/00, 9/18*
**U.S. Cl. 432—58** **7 Claims**

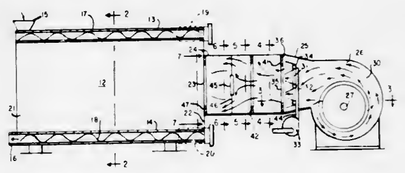


1. A device for treating material with fluidized particles comprising:
   1. a chamber provided with means for fluidizing particles.
   2. means for heating said particles,
   3. a bed in said chamber on which the material to be treated resides during treatment,
   4. means for depositing material to be treated on said bed,
   5. reciprocating means for moving said material being treated lineally on said bed, said means comprising first and and second members, said first member being movable in unison with and independently of the second member, said first member including means for engaging material to be treated and moving said material longitudinally along said bed, and means for disengaging said first member from said material to be treated by raising said engaging means above said bed, and
   6. means for removing material after treatment from said chamber.

### 3,932,119
### BAFFLES FOR GRAIN DRYER

**Erhard E. Alms, Barrington, and James E. Mitchell, Algonquin, both of Ill., assignors to AFE Industries, Inc., Lake Zurich, Ill.**

**Filed June 20, 1974, Ser. No. 481,153**
**Int. Cl.² F27D** *1/00*; **F24H** *1/00*
**U.S. Cl. 432—101** **7 Claims**



1. In combination, a grain drying bin comprising a pair of oppositely curved columnar bins having a common feed opening at the top and a common discharge opening at the bottom thereof and defining the sides, top and bottom of a plenum

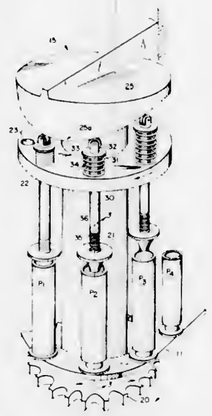
chamber, a wall closing one end of the plenum chamber, a burner, a blower adjacent the burner and having a discharge opening communicating with the burner, and a duct surrounding the burner and connecting the burner outlet with the plenum chamber at the end thereof opposite the said wall, said blower providing air in the duct at different velocities over the cross section of the duct and at an average velocity producing a temperature differential lengthwise of the plenum chamber, baffle means in the duct selectively deflecting the air in the duct to create a predetermined pattern of temperature variation over the cross section of the duct whereby to produce a predetermined and different temperature differential in the plenum chamber from the front wall to the rear wall thereof, wherein said blower is disposed on the side of the burner remote from the plenum chamber and discharges air into said duct, said burner having a rectangular configuration, said baffle means comprising a first baffle disposed in the duct adjacent the burner and reducing flow of air adjacent said burner at locations where the air flow is a maximum, a second baffle disposed downstream of the burner and adjacent the walls of the duct to deflect peripheral air inward of the duct, and a third baffle disposed centrally of the duct and downstream of the second baffle to deflect the central air stream radially outwardly, said baffles mixing the heated air from the burner with the air from the blower while retarding the flow of the mixed air whereby to provide a stream of air to the drying bin having the aforesaid predetermined and different temperature differential in the plenum chamber, wherein said blower is a centrifugal blower having a rectangular outlet, said duct is rectangular and connected to the rectangular outlet of the blower, said centrifugal blower having opposed inlet openings through which air is drawn by the blower in directions transverse to the general axis of the duct, said air, upon passing through the blower entering the duct with a maximum velocity at the outer central region of the rectangular outlet, and said first baffle reducing flow of air at said outer central region, and said first baffle comprising a substantially flat sheet extending across said duct and having a rectangular opening therein conforming in size, orientation and configuration to the size, orientation and rectangular configuration of the burner except for the outer central region of the duct corresponding to the outer central region of the rectangular blower outlet at which point the baffle extends inward to block a portion of the flow from said burner.

**3,932,120**

## DEVICE FOR POSITIVE POSITIONING OF TUBULAR WORKPIECES

**Nickolas N. Sokolow, Roscoe, Ill., assignor to Beloit Corporation, Beloit, Wis.**

**Filed May 17, 1974, Ser. No. 471,147**
**Int. Cl.² F27B** *9/00*
**U.S. Cl. 432—121** **19 Claims**



1. A device for positioning tubular workpieces comprising:
a conveyor means having a plurality of carrier members thereon, each positioned to receive a tubular workpiece and to hold the same in an upright position,
and a positive placement station along said conveyor means including a positioning cap, and means for moving the positioning cap downwardly against the top of a workpiece to positively position it on its respective carrier member,
said positioning cap having a substantially symmetrical portion engageable with an inner peripheral portion of a workpiece for the centering of a workpiece on its respective carrier member.



**3,932,121**

## PROCESS FOR THE DYEING OF MODIFIED POLYESTER FIBERS

**Kazuo Kawakami; Hiroshi Imagome; Sumio Ishizaki, and Genpei Suglyama, all of Tokyo, Japan, assignors to Hodogaya Kagaku Kogyo Kabushiki Kaisha, Japan**

**Filed Oct. 5, 1973, Ser. No. 403,977**
**Claims priority, application Japan, Oct. 12, 1972, 47-101556**
**Int. Cl.² D06P** *3/82*
**U.S. Cl. 8—21 C** **4 Claims**

1. A process for dyeing modified polyester fibers containing sulphonate groups, either alone or in the form of mixed fibers or fabrics containing them, with a cationic dyestuff selected from the group consisting of methines, azomethines, diphenylmethanes, triphenylmethanes, oxazines, thiazines, xanthenes, heterocyclic azos, anthraquinone series dyestuffs and non-conjugated type arylazo dyestuffs having an external onium group, wherein the dyeing is performed in the presence of one or more aliphatic dicarboxylic acid dialkylesters or diallylesters containing from 8 to 14 carbon atoms.

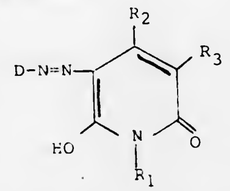
**3,932,122**

## AZO COMPOUNDS, THEIR MANUFACTURE AND USE

**Visvanathan Ramanathan, Basel, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland**

**Division of Ser. No. 190,678, Oct. 19, 1971, abandoned. This application June 12, 1973, Ser. No. 369,359**
**Claims priority, application Switzerland, Oct. 23, 1970, 15658/70; Sept. 30, 1971, 14211/71**
**Int. Cl.² C09B** *29/36*; **D06P** *3/56*
**U.S. Cl. 8—41 C** **6 Claims**

1. A process for coloring synthetic polyester textile materials which comprises applying to said materials, by a dyeing, padding or printing process, an aqueous dispersion of an azo compound of the formula



wherein
D represents the radical of a diazo component,
$R_1$ and $R_3$ each represent a hydrogen atom or a substituent and
$R_2$ represents a substituent, said compound containing at least one carboxy group, that may not, however, be bonded in the adjacent position to the azo bridge directly to the ring.

**3,932,123**

## FLAMEPROOFING OF COTTON CELLULOSE WITH HEXAMETHYL PHOSPHOROUS TRIAMIDE

**Leon H. Chance, New Orleans, and Armand B. Pepperman, Jr., Metairie, both of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.**

**Filed Mar. 16, 1973, Ser. No. 342,136**
**Int. Cl.² D06M** *1/00, 13/34*; **B27K** *3/00*; **C09K** *3/00*
**U.S. Cl. 8—116 P** **7 Claims**

1. A process for producing a flame resistant and cation exchangeable cellulosic material which process comprises crosslinking a cellulosic material by reacting said material with hexamethylphosphorus triamide and allowing the phosphorus ester crosslinking of said material to take place at a temperature ranging from room temperature to about 120°C. for a period of about 5 minutes to 90 minutes.

**3,932,124**

## PROCESS FOR SETTING TEXTILES

**William L. Wasley, Pacific Grove, and Allen G. Pittman, El Cerrito, both of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.**

**Continuation-in-part of Ser. No. 436,264, Jan. 24, 1974. This application Sept. 9, 1974, Ser. No. 504,643**
**Int. Cl.² D06M** *3/02*
**U.S. Cl. 8—127.5** **12 Claims**

1. A method for imparting a stable set to a proteinous textile, which consists of -
a. arranging the textile in a predetermined pattern,
b. while constraining it in such pattern immersing the textile in a bath consisting of ethylene glycol at a temperature in the range 120 to 180° C. and for a time governed by the limits of the equation

$$T = 175 \pm 10 - 16.7 \log t$$

wherein T is the temperature in degrees Centigrade, and t is the time in seconds,
c. while still constraining the textile in the predetermined pattern immediately arresting the treatment by cooling the textile,
d. washing the textile to remove residual ethylene glycol, and drying the textile.

**3,932,125**

## PREPARATION OF STRETCHABLE WOOL TEXTILES

**William L. Wasley, Berkeley, and Allen G. Pittman, El Cerrito, both of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.**

**Filed Jan. 24, 1974, Ser. No. 436,264**
**Int. Cl.² D06M** *3/02*
**U.S. Cl. 8—128 R** **14 Claims**

1. A process for enhancing the stretchability of a wool-containing textile, which consists of
a. immersing the textile in a bath consisting of ethylene glycol at a temperature in the range 120° and 180° C. and for a time governed by the limits of the equation

$$T = 175 \pm 10 - 16.7 \log t$$

wherein T is the temperature in degrees Centigrade, and t is the time in seconds,
b. immediately arresting the treatment by cooling the textile,
c. washing the textile to remove residual ethylene glycol, and drying the textile.

**3,932,126**

## DYEING ASSISTANT COMPOSITION CONTAINING ORGANIC AMINES AND CARBOXYLIC ACIDS FOR COLORING POLYESTER MATERIAL WITH ACID DYES

**Dara Ardeshir Jilla, Collinsville, Va., assignor to Martin Processing Co., Inc., Martinsville, Va.**

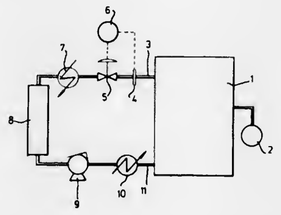
**Filed Oct. 5, 1973, Ser. No. 403,850**
**Int. Cl.² D06P** *1/645, 1/653*
**U.S. Cl. 8—172** **10 Claims**

1. A process for coloring a polyester material, which comprises impregnating the same by padding, printing or cascading with an aqueous solution or printing paste of one or more acid dyes in admixture with both (a) a separate organic nitrogen compound selected from the class consisting of diethylenetriamine, triethylenetetramine, tetraethylenepentamine, hexamethylenediamine, hexamethylenetetramine, and mono-, di- and tri-ethanolamines, and (b) a separate organic carboxylic acid, drying the impregnated polyester material and then exposing same to dry heat at a temperature between 150°C. and 250°C. for a period of 5 to 60 seconds, thereby effecting

fixation of said acid dye or dyes on the polyester material and substantially uniform distribution thereof within the polyester material.

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**3,932,127**
**DYEING TEXTILE MATERIALS OF A BASIC CHARACTER**
**Jean Marie Louis Jules D'Albignac, Creil, France, assignor to Groupement d'Interet Economique Stx, Paris, France**
**Filed Jan. 26, 1973, Ser. No. 326,909**
**Claims priority, application France, Jan. 26, 1972, 72.02512**
**Int. Cl.² D06P** *5/04*
**U.S. Cl. 8—173** **10 Claims**



**1.** A process for dyeing, by exhaustion, textile fibres of basic character with anionic dyestuffs in an organic solvent medium wherein the dyebath is a homogeneous ionizing liquid medium and the cations of the bath are replaced by $H^+$ protons by a cation exchange resin in the course of the dyeing, the dyeing being effected at a temperature equal to or less than 80°C.

**9.** In a process for the dyeing, by exhaustion, of textile fibres of basic character with anionic dyestuffs in an organic solvent medium, the improvement comprises using a homogeneous ionizing liquid medium as the dyebath and the cations of the bath are replaced by $H^+$ protons by a cation exchange resin in the course of the dyeing, the dyeing being effected at a temperature equal to or less than 80°C.

**10.** In a process for the dyeing, by exhaustion, of textile fibres of basic character with anionic dyestuffs in an organic solvent medium, the improvement which comprises using a homogeneous ionizing liquid medium as the dyebath and contacting the dyebath with cation exchange resin to replace the cations in the dyebatch with $H^+$ protons in the course of dyeing, wherein the dyeing is effected at a temperature of equal to or less than 80°C.

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**3,932,128**
**DYE CARRIERS FOR POLYAMIDE FIBERS**
**Robert J. Beaulieu, Bronx, N.Y., assignor to Millmaster Onyx Corporation, New York, N.Y.**
**Filed Jan. 29, 1975, Ser. No. 544,891**
**Int. Cl.² D06P** *5/04*
**U.S. Cl. 8—173** **16 Claims**

**1.** A carrier for a dye for polyamide fibers made by the condensation of the monomers 4,4'-diamino-dicyclohexyl methane, or alkylated derivatives thereof, and dodecanoic acid comprising a swelling agent consisting of a mixture of normal-butyl benzoate and an alkyl phenol selected from the group consisting of para-tertiary butyl phenol and para-tertiary amyl phenol, said butyl benzoate and alkyl phenol being present in a ratio to each other of between about 1:2 to about 2:1 by weight.

**6.** A dyeing composition for polyamide fibers made by the condensation of the monomers 4,4'-diamino-dicyclohexyl methane, or alkylated derivatives thereof, and dodecanoic acid a dye, a carrier for said dye and water, said carrier comprising a swelling agent consisting of a mixture of normal-butyl benzoate and an alkyl phenol selected from the group consisting of para-tertiary butyl phenol and para-tertiary amyl phenol, said butyl benzoate and alkyl phenol being present in a ratio to each other of between about 1:2 to about 2:1 by weight.

**11.** A method of dyeing polyamide fibers made by the condensation of the monomers 4,4'-diamino-dicyclohexyl methane, or alkylated derivatives thereof, and dodecanoic acid which comprises applying to said fibers a dyeing composition comprising a dye, a carrier for said dye and water, said carrier comprising a swelling agent consisting of a mixture of normal-butyl benzoate and an alkyl phenol selected from the group consisting of para-tertiary butyl phenol and para-tertiary amyl phenol, said butyl benzoate and alkyl phenol being present in a ratio to each other of between about 1:2 to about 2:1 by weight.

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**3,932,129**
**SPACE DYED YARN PRODUCTION USING DENSE FOAMS**
**Rick Anthony Porter, 2826 Dunnington Circle, Atlanta, Ga. 30341**
**Filed July 17, 1974, Ser. No. 489,265**
**Int. Cl.² D06P** *3/00*
**U.S. Cl. 8—176** **2 Claims**

**1.** The process which comprises forcing different colored foamed dye solutions or foamed dye resist solutions into yarn packages followed by microwave heating to accelerate the diffusion and reaction of the dyes in the fiber.

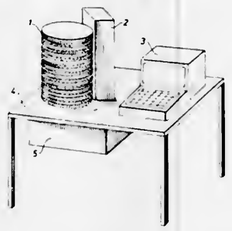
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**3,932,130**
**INHIBITION OF ALUMINUM CORROSION BY SULFURIC ACID SOLUTIONS**
**Richard H. Bennett, and James W. Brockington, both of Richmond, Va., assignors to Texaco Inc., New York, N.Y.**
**Filed July 3, 1974, Ser. No. 485,400**
**Int. Cl.² C23F** *11/04*; **C23G** *1/04*
**U.S. Cl. 21—2.7 R** **4 Claims**

**1.** A method for inhibiting corrosion of aluminum and its alloys in contact with sulfuric acid solutions comprising at least about 68 weight percent $H_2SO_4$ and from about 0 to about 20 weight percent water, which method comprises dissolving fluoride containing compounds in said sulfuric acid solution to provide a fluoride concentration of at least about 300 ppm.

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**3,932,131**
**METHOD AND DEVICE (ANALYSIS MACHINE) FOR SIMULTANEOUS PERFORMANCE OF A NUMBER OF ANALYSES, ESPECIALLY MICROANALYSES, OF STANDARD TYPE ON CHEMICAL OBJECTS**
**Gudrun Birgitta Margareta Rolfo-Fontana, Monte-Carlo, Monaco, assignor to Monega Anstalt, Vaduz, Liechtenstein**
**Filed June 27, 1974, Ser. No. 483,621**
**Claims priority, application Sweden, Feb. 7, 1974, 7401657**
**Int. Cl.² B67C** *3/00*; **G01N** *31/00, 31/18*
**U.S. Cl. 23—230 R** **14 Claims**



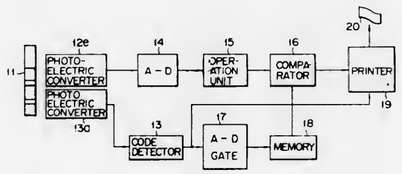
**1.** A method for the simultaneous performance of a number of analyses, comprising disposing a multiplicity of receptacles



for analysis of treated samples in a fixed relationship in vertical columns and horizontal planes to form a receptacle array in mating interfacial juxtaposition to similarly disposed arrays of operative means comprising reagent dispensing means, sample dispensing means, treatment means, analytic means, and receptacle cleaning means respectively such that individual operative means are coordinately positioned for simultaneous engagement with a multiplicity of receptacles; said receptacle array is periodically progressed laterally in stepwise manner to maintain said juxtaposed relationship in a series of spaced positions; executing steps in the analytic sequence simultaneously with said operative means, respectively upon a multiplicity of selected individual receptacles, in sequence at each of the progressive positions whereby individual receptacles are simultaneously progressed in a series of steps through a cycle of sample treatment and analysis to cleaning.

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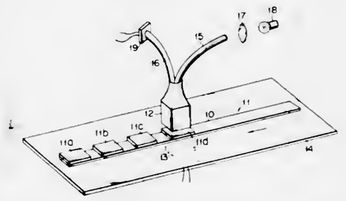
**3,932,132**
**SYSTEM FOR DETECTING THE PARTICULAR CHEMICAL CONSTITUENT OF A FLUID**
**Kazuo Hijikata, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan**
**Filed July 23, 1974, Ser. No. 490,984**
**Claims priority, application Japan, July 31, 1973, 48-86168; July 31, 1973, 48-86169; July 31, 1973, 48-86171; July 31, 1973, 48-86172**
**Int. Cl.² G01N** *33/16, 21/30*
**U.S. Cl. 23—253 R** **5 Claims**




**1.** A system for detecting the particular chemical constituent of a fluid which comprises a chemical reaction-testing piece including a plurality of absorption reagent carriers arranged on a narrow transparent substrate at a prescribed interval, such that the kinds of the respective reagents and the positions of their carriers on the substrate can be indicated by coded signals representing said arrangement and the positions of the exposed transparent portions of the substrate intervening between said reagent carriers; a memory device for storing data corresponding to reference chemical reactions used to determine the sequential positions of the degrees of cheimcal reactions between a test fluid and the reagents contained in the plural absorptive carriers mounted on the chemical reaction-testing piece; a first photoelectric conversion element for successively scanning the exposed transparent portions of the substrate of the chemical reaction-testing piece and the reagent carriers spatially arranged on the substrate to provide a coded signal distinguishing the type of said testing piece; a code detector coupled to said first photoelectric conversion element for obtaining from an output signal from said first photoelectric conversion element the data which distinguishes the type of the testing piece and the positions of the reagent carriers disposed on the substrate of said testing piece; a second photoelectric conversion element for providing electric signals denoting those optical changes occurring in the respective reagent carriers mounted on the substrate of the testing piece which correspond to the degrees of the chemical reactions between a test fluid and the reagents contained in said carriers; an analog-digital converter for converting said electric signals into digital signals denoting the measured degrees of chemical reactions; an arithmetic operation device for providing data on the measured degrees of chemical reactions from digital output signals from said analog-digital converter; a gate circuit for reading out from the memory device the data on the reference chemical reactions which correspond to the measured reagents by using said testing piece type-distinguishing data; a comparator for comparing the readout data on the reference chemical reactions with the data on the measured degrees of chemical reactions in the tested reagent carriers to determine the sequential positions of said measured degrees of chemical reactions; and a printing device for printing out the results of said determination on a recording sheet of paper according to the data on the sequential positions of the measured degrees of chemical reactions and the testing piece type-distinguishing data.

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**3,932,133**
**SYSTEM FOR DETECTING THE PARTICULAR CHEMICAL COMPONENT OF A TEST FLUID**
**Hiroshi Ishikawa, Fussa, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan**
**Filed July 23, 1974, Ser. No. 491,110**
**Claims priority, application Japan, July 31, 1973, 48-86167; July 31, 1973, 48-86170; July 31, 1973, 48-86173; Dec. 12, 1973, 48-142126; June 20, 1974, 49-72343**
**Int. Cl.² G01N** *33/16, 21/30*
**U.S. Cl. 23—253 R** **9 Claims**



**1.** A system for detecting a particular chemical component of a test fluid comprising:

a test table including thereon a chemical reaction test piece mounted thereon, said test piece having reagent carriers attached thereto, each reagent carrier containing therein a reagent for measuring the degree of chemical reaction with the test fluid;

a first photoelectric detector including means for irradiating a light onto said reagent carrier; a first photoelectric converter receiving light reflected from said reagent carrier for generating an electric signal which is a function of said light reflected from said reagent carrier; a timer having a pre-set timing period for generating measurement command signals in accordance with the respective lengths of reaction times of reagents with a test fluid; a voltage controlled oscillator coupled to said first photoelectric converter for generating pulse signals corresponding in number to outputs from said first photoelectric converter; and a gate circuit coupled to said timer and to said voltage controlled oscillator for supplying output pulse signals corresponding in number to said measurement command signals;

means for intermittently moving one of said photoelectric detector and said test table relative to the other;

type data detection means for detecting a type data indicating the type of the chemical reaction test piece mounted on the test table, which includes a second photoelectric converter for scanning a chemical reaction test piece having reagent carriers attached onto one end side of its elongate light-permeable substrate and a light-impermeable pad attached onto the other end side and permitting the type of said reagent carriers to be coded by the number of the reagent carriers and a distance between said pad and a reagent carrier adjacent the same; means for generating a coded type data from the output of said second photoelectric converter; temporary memory means for temporarily storing therein said generated

coded type data; and means for reading out the individual type data from said temporary memory means;

an operation circuit coupled to the output of said gate circuit and to said reading out means for deriving a test from said type data read out from said temporary memory means;

a memory having comparison data pre-stored therein, said comparison data indicating the respective ranks of a plurality of test items;

means coupled to said memory and to said operation circuit for comparing the stored comparison data with the test data; and

printing means for printing the test data on a recording paper as a function of the output of said comparison means and the output of said type data detection means.

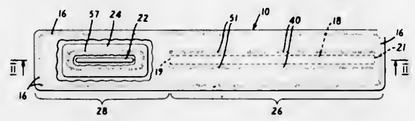
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**3,932,134**

**TIME-TEMPERATURE INTEGRATING INDICATOR DEVICE**

**Shou-Mean Fang, Lake Hiawatha, and Craig R. Hof, Boonton, both of N.J., assignors to Bio-Medical Sciences, Inc., Fairfield, N.J.**

**Filed Oct. 16, 1974, Ser. No. 515,165**
**Int. Cl.² G01N** *21/06, 21/20, 11/12*
**U.S. Cl. 23—253 TP** **7 Claims**




1. A temperature time integrating indicator device which comprises

an elongated envelope having generally co-extensive upper and lower walls each of a gas impermeable material, the walls being sealed together in a continuous course extending about the periphery of each, a first longitudinal portion of said envelope comprising a gas generation section within said envelope and a second longitudinal portion of said envelope comprising an indicating section within said envelope,

a gas generating material disposed in the gas generation section of said envelope,

an elongated wick disposed longitudinally of the envelope with one end thereof in said gas generation section, said wick extending a distance along said envelope indicating section and the other end thereof being remote from said gas generation section,

an indicator composition deposited on said wick, said indicator composition producing a color change in the presence of gas generated by said gas generating material, and

longitudinally disposed gas barrier means extending between said upper and lower walls immediately adjacent each longitudinal side margin of said wick and along substantially the full length of said wick for inhibiting gas transport at the longitudinal side margins of said wick whereby substantially all gas absorbed by said wick makes first contact with said wick at said one end thereof.

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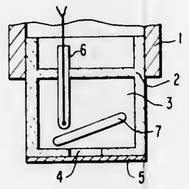
**3,932,135**

**METHOD AND APPARATUS FOR THE DETERMINATION OF THE OXYGEN CONTENT OF METALLIC BATHS**

**Vittorio Di Stefano, Rome; Rinaldo Grimaldi, Genoa, and Paolo Marini, Rome, all of Italy, assignors to Centro Sperimentale Metallurgico S.p.A., Rome, Italy**

**Filed Nov. 7, 1974, Ser. No. 521,850**
**Int. Cl.² G01N** *33/20*
**U.S. Cl. 23—253 R** **6 Claims**

1. Apparatus for the determination of the quantity of oxygen dissolved in a metallic bath, comprising a probe having at its tip a hollow body, a thermometric device in said hollow body, a substance in said hollow body that reacts exothermically with oxygen dissolved in the bath to form a stable oxide,




and a consumable shield comprising at least a portion of said hollow body to prevent contact between said substance and the metallic bath until after said thermometric device has reached thermal equilibrium with the bath.

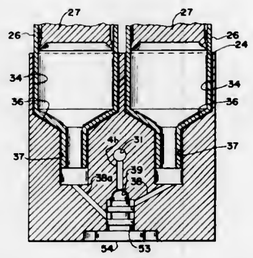
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**3,932,136**

**INTEGRATED FLOW PATH BLOCK**

**Michael E. Stickney, Burlingame, Calif., assignor to Durrum Instrument Corporation, Palo Alto, Calif.**

**Filed June 1, 1973, Ser. No. 365,970**
**Int. Cl.² B01F** *15/00*; **B67D** *5/00*; **G01N** *21/00, 27/00*
**U.S. Cl. 23—259** **11 Claims**




2. An integrated flow path block for mixing a plurality of reactants and presenting said mixer for analysis within a minimum volume, comprising a unitary block body, said block body having a plurality of reservoirs formed therein for separately storing the reactants, means forming a plurality of short reactant paths communicating with each of said plurality of reservoirs, said block body having a chamber in communication with said plurality of short reactant paths, said one end of said chamber being hemispheric and said chamber being cylindrical on the other end, a mixer insert formed to be received in said chamber, a first cylindrical collar formed on said mixer insert for disposition in said other end of said chamber opposite a first one of said means forming a plurality of short reactant paths, a second cylindrical collar formed on said mixer insert for disposition in said other end of said chamber opposite a second one of said means forming a plurality of short reactant paths, means blocking flow between said first and second collars, said mixer insert one end surface being a hemisphere formed adjacent to said first cylindrical collar and surrounded by and spaced from said hemispheric one end of said chamber, said second cylindrical collar having a channel extending from the exterior thereof to the interior of said mixer insert hemisphere, said mixer insert hemisphere having a plurality of holes extending therethrough in communication with said channel, whereby reactants introduced through said first and second ones of said plurality of short reactant paths flow into said one end of said chamber, and are mixed immediately downstream of said hemisphere solely due to flow turbulence, a syringe piston positioned in each of said reservoirs, whereby advancing said syringe piston delivers reactant from a respective reservoir to said chamber, cell means in communication with said chamber for receiving and retaining a predetermined volume of mixed reactants so that reaction characteristics may be measured therein, and means for carrying a reactant efflux in communication with said cell means, whereby said predetermined volume, thermal gradients therein, and flow impedance thereto are minimized.



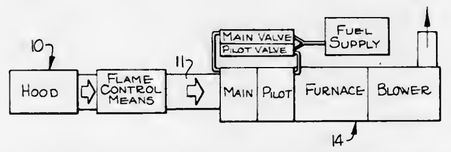
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**3,932,137**

**BURNER WITH AUTOMATIC HIGH-LOW OPERATION**

**Clifford Culpepper, Jr., Charlotte, N.C., assignor to Aero-Dyne Manufacturing, Inc., Charlotte, N.C.**

**Filed Nov. 8, 1973, Ser. No. 413,770**
**Int. Cl.² F23G** *7/00*
**U.S. Cl. 23—277 C** **5 Claims**




1. In an arrangement for incinerating combustible debris and having means for entraining combustible debris in a flowing stream of air including fan means for inducing a flow of air and duct means for guiding the flowing stream of air and the combustible debris entrained therewith, means for supplying fuel, and burner means operatively communicating with said fuel supply means for receiving fuel therefrom and operatively interposed in said duct means for passage of the flowing stream of air and entrained debris therethrough and for disposal of entrained debris by burning, an improvement which facilitates economical operation in disposal of intermittently varying quantities of debris and comprising means for distinguishing between concentrations of conveyed entrained debris in said duct means above and below a threshold concentration and including sensing means for detecting upstream of said burner means the presence in the flowing stream of air of conveyed entrained debris, and fuel control means interposed between said fuel supply means and said burner means and operatively connected with and responsive to said concentration distinguishing means for varying the quantity of fuel delivered to the burner means in response to distinguished concentrations of conveyed entrained debris whereby the fuel required to dispose of the debris is delivered only as needed and excessive fuel usage is avoided during periods when the concentration of conveyed debris is below the threshold concentration.

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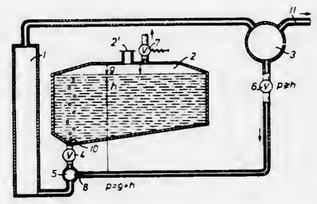
**3,932,138**

**LIQUID DECOMPOSING SYSTEM**

**Gerhard Louis, Hofheim, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany**

**Filed Feb. 6, 1974, Ser. No. 440,267**
**Claims priority, application Germany, Feb. 13, 1973, 2306896**
**Int. Cl.² B01J** *7/00, 7/02*; **H01M** *8/04*
**U.S. Cl. 23—281** **1 Claim**

1. In a liquid decomposing system including a decomposer having a liquid inlet at its bottom, said liquid inlet constituting the lowest point of the system, the decomposer further having a gas outlet, a liquid tank whose upper portion constitutes a normally hermetically sealed enclosure and having an outlet in the vicinity of its bottom, a buffer and condensate vessel having a gas inlet and a gas outlet, and conduit means connecting the decomposer gas outlet to the vessel inlet, the improvement comprising: a reservoir disposed below said tank; a shutoff valve connecting said reservoir to the outlet of said tank; a back pressure regulator, which is set to a fixed operating pressure; conduit means connecting the inlet end of said back pressure regulator to said gas outlet of said vessel; conduit means connecting the back pressure end of said regulator to said reservoir; and conduit means directly connecting said reservoir to said decomposer inlet.



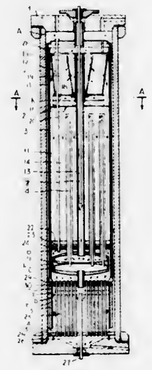

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**3,932,139**

**REACTOR FOR THE CATALYTIC AMMONIA SYNTHESIS AT HIGH TEMPERATURES AND PRESSURES**

**Marin Vilceanu, Bucharest, and Constantin Bors, Fagaras, both of Romania, assignors to Combinatul Chimic Fagaras, Fagaras, Romania**

**Continuation-in-part of Ser. No. 164,582, July 21, 1971, abandoned. This application Jan. 2, 1974, Ser. No. 429,783**
**Int. Cl.² B01J** *8/04*; **C01C** *1/04*
**U.S. Cl. 23—288 L** **12 Claims**




1. A reactor for the catalytic synthesis of ammonia from a gas mixture, comprising:

a. a tubular elongated housing formed with an inlet at one end thereof for introduction of said gas mixture;

b. a sleeve received within said housing and defining an annular space therewith communicating with said inlet;

c. at heat exchanger received within said housing and axially aligned with said sleeve while defining an extension of said space with said housing, said heat exchanger comprising a pair of axially spaced-apart sheets, a plurality of heat exchanger tubes extending parallel to the axis of said housing between said tube sheets, and a packing of metal balls between said tube sheets and within an intertubular space defined between said tubes and between said tube sheets;

d. respective metal rods extending through said tubes with clearance;

e. means in said heat exchanger proximal to the other end of said housing for communicating between said annular space and said intertubular space;

f. a distribution chamber within said sleeve and communicating with said intertubular space;
g. a porous catalyst body within said sleeve between said distribution chamber and said one end of said housing;
h. a plurality of heat-exchanger tubes extending from said distribution chamber into said porous catalyst body for conducting the gas mixture from said distributor into heatexchanging relationship with said catalyst body;
i. duct means for passing said gas mixture through said catalyst body upon traversal by said mixture of said heatexchange tubes in the direction of said heat exchanger to form a reaction gas mixture, said reaction gas mixture passing through the tubes of said heat exchanger;
j. means for conducting said reaction gas mixture from said housing at said other end thereof, said means at said heat exchanger proximal to said other end of said housing being a demister for removing oil droplets from said gas mixture prior to entry of said gas mixture into said heat exchanger; and
k. means for removing collected oil from said demister at said other end of said housing.

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**3,932,140**

## FORMING HIGHLY ABSORBENT, LOW BULK DENSITY SODIUM SILICATE BY CONTACTING WITH $H_2O_2$ AND HEATING TO ABOUT 45° TO 60°C

**Madhusudan D. Jayawant, Hockessin, and Paul C. Yates, Talleyville, both of Del., assignors to E. I. Du Pont de Nemours & Co., Wilmington, Del.**

**Division of Ser. No. 425,970, Dec. 19, 1973, which is a continuation-in-part of Ser. No. 355,498, April 30, 1973, abandoned. This application May 22, 1974, Ser. No. 472,094**
**Int. Cl.² C01B *33/32*; C08H *9/06***
**U.S. Cl. 23—293 A** **5 Claims**

1. A process for preparing spheroidal, amorphous, water soluble alkali metal silicates having a mol ratio of $SiO_2$ to alkali metal oxides of 1 to 3.75, a specific nitrogen surface area between 2.5 and 7 $m^2/g.$, a bulk density of less than 0.5 g./cc., an absorbency for nonionic surfactants of from 35 to 400 percent by weight of silicate, a maximum water content of 25 percent by weight and a maximum active oxygen content of 1.33 percent by weight which comprises contacting granules of alkali metal silicate having less than 500 ppm. of transition metal ions at a temperature of from 0° to 45°C. with from 2 to 100 percent by weight of hydrogen peroxide, based on the weight of alkali metal silicate, in an aqueous solution having a concentration of from 5 to 100 percent by weight of hydrogen peroxide, diffusing the hydrogen peroxide into the hydrated alkali metal silicate structure for from about 5 minutes to about 1 hour at a temperature of from 0° to 45°C. while maintaining the alkali metal silicate in discrete particulate form having an average aggregate particle size of a maximum of 1 cm. and having a viscosity of from 5000 to 100,000 poise, and rapidly heating the silicate to from about 45° to 60°C. to destroy substantially all of the hydrogen peroxide.

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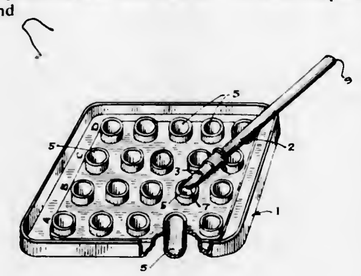
**3,932,141**

## APPARATUS FOR DETERMINING IMMUNOASSAYS OF ANTIGENS AND THEIR ANTIBODIES

**Glenn Lee Beall, Gurnee; John Dennis Dodge, Arlington Heights; Robert Francis Koschalk, Zion, and Emil Henry Soika, Lindenhurst, all of Ill., assignors to Abbott Laboratories, North Chicago, Ill.**

**Filed July 10, 1974, Ser. No. 487,350**
**Int. Cl.² G01N *33/16***
**U.S. Cl. 23—259** **10 Claims**

1. A test apparatus for use in a direct radioimmunoassay for antigens or antibodies comprising:
a receptacle tray having a plurality of wells for receiving samples;
balls coated with an immunologic composition;
a ball holder having a first end and a second end, said holder arranged to receive and hold said coated balls and to deposit the balls into said wells of said receptacle tray; and



a ball-release piece arranged to fit over the first end of said ball holder, said ball-release piece having an opening arranged to release said balls therefrom when said ball-release piece is pressed on its extended exterior surface.

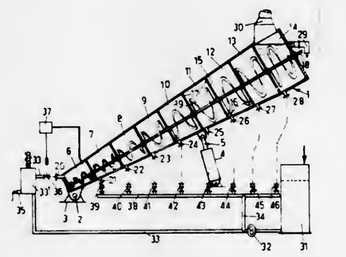
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**3,932,142**

## SERIAL FLOW CRYSTALLIZATION AT LINEARLY DECREASING PRESSURES

**Gerbertus H. de Vries, Rotterdam, Netherlands, and Gerrit C. de Bruyn, Antwerp, Belgium, assignors to Stork Werkspoor Sugar B.V., Hengelo and Suiker Unie Holding B.V., Rotterdam, both of, Netherlands**

**Continuation of Ser. No. 61,635, Aug. 6, 1970, abandoned. This application Nov. 1, 1972, Ser. No. 302,850**
**Claims priority, application Netherlands, Sept. 26, 1969, 6914625**
**Int. Cl.² B01D *9/02***
**U.S. Cl. 23—301** **5 Claims**



1. A process for continuously obtaining crystals of a particular substance from a continuously flowing solution thereof, which comprises the steps of:
a. providing a crystallizer having a number *n* of stages which are in serial flow relation, there being an initial stage at one end of the crystallizer and a final stage at the opposite end thereof;
b. continuously introducing equal volumes of at least saturated solution of said particular substance into each of said n stages with continuous stirring in each stage, the solution being at a predetermined pressure and a predetermined temperature;
c. introducing seed crystals of said particular substance into that solution flowing into said initial stage and maintaining the pressure in said initial stage and in all the other stages at values less than said predetermined pressure so that supersaturated solution containing seed crystals flows from said initial stage serially through the remaining stages;
d. maintaining the pressures in said n stages at linearly decreasing values from said initial stage to said final stage so that self evaporation occurs in each stage with continuous and substantially constant growth of said seed crystals from said initial through said final stage; and
e. continuously withdrawing said solution with size-increased seed crystals from said final stage.

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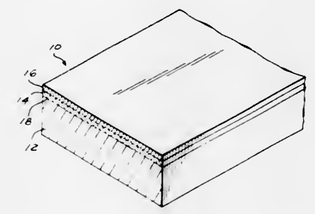


**3,932,143**

## FLAME-SPRAYED ROOFING MATERIAL

**David W. Marshall, North Reading, and William R. O'Day, Jr., Concord, both of Mass., assignors to Kennecott Copper Corporation, New York, N.Y.**

**Filed May 23, 1974, Ser. No. 472,952**
**Int. Cl.² B32B *15/04***
**U.S. Cl. 29—195** **7 Claims**



1. A building product comprising a base formed of a material selected from the group consisting of wood, mineral wool, asphalt, concrete, clay, asbestos, vermiculite, and mixtures thereof; a first flame-sprayed metal coating on at least one side of said base, said first flame-sprayed metal coating selected from the group consisting of aluminum, zinc and brass, and the second flame-sprayed coating of copper applied to said first metal coating.

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**3,932,144**

## COATED METALLIC SHEET FOR USE IN MAKING A CONTAINER

**Takashi Matsubara; Yuko Takeuchi, both of Nagoya; Tadashi Tanaka, Yokohama; Tatsuro Obi, Tokyo, and Akio Watanabe, Kawasaki, all of Japan, assignors to Nippon Steel Corporation and Toagosei Chemical Industry Co., Ltd., both of Tokyo, Japan**

**Filed Dec. 4, 1974, Ser. No. 529,555**
**Claims priority, application Japan, Dec. 7, 1973, 48-136083**
**Int. Cl.² B32B *15/08***
**U.S. Cl. 29—195** **1 Claim**

1. A coated metallic sheet adapted for use as a container or can which comprises a composition coated on a material sheet selected from the group consisting of cold-rolled steel sheet, very thin nickel-plated steel sheet, aluminium-plated steel sheet and aluminium sheet, said composition consisting of resol-type thermosetting phenol-formaldehyde resin and bisphenol A type epoxy resin at the ratio of one part by weight of said phenol-formaldehyde resin to 0.2 to 1.5 part by weight of said epoxy resin, said phenol-formaldehyde resin comprising orthocresol and phenol at the weight ratio of 60:40 to 10:90, and said epoxy resin having a mean molecular weight of 800 or more.

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**3,932,145**

## FUEL PREPARATION PROCESS

**Willing B. Foulke, 109 Greenridge Road, Wilmington, Del. 19805**

**Filed May 3, 1973, Ser. No. 356,765**
**Int. Cl.² C10L *1/32*, B02C *7/00*; C10L *9/00***
**U.S. Cl. 44—1 R** **8 Claims**

1. The method of producing a low-sulfur fuel consisting essentially of coal particles suspended in an oil comprising the steps of:
a. introducing a mixture of coal particles, and undesired particles having a higher specific gravity than coal, into a concentrator;
b. introducing oil into the concentrator;
c. cleaning said mixture in the concentrator, using oil as the cleaning medium, by effecting settling of undesired particles; and
d. removing from the concentrator a suspension of coal particles in oil for use as a fuel.

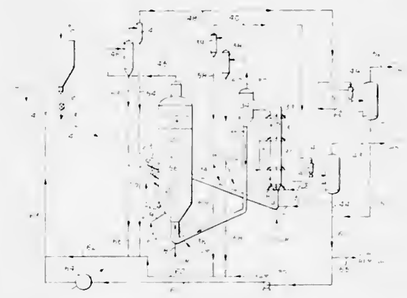
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**3,932,146**

## PROCESS FOR THE FLUID BED GASIFICATION OF AGGLOMERATING COALS

**Edward L. Wilson; Willard N. Mitchell, and Hermann E. von Rosenberg, all of Baytown, Tex., assignors to Exxon Research and Engineering Company, Linden, N.J.**

**Filed July 11, 1974, Ser. No. 487,516**
**Int. Cl.² C10J *3/54***
**U.S. Cl. 48—210** **10 Claims**



1. In a process wherein carbonaceous solids containing volatilizable hydrocarbons which solids tend to agglomerate at elevated temperatures are fed into a high temperature fluidized bed reactor and gasified to produce a synthetic gas, the improvement which comprises mixing fine particles of devolatilized carbonaceous material having an average particle diameter less than about 25% of that of said carbonaceous solids with said carbonaceous solids in a weight ratio between about 0.1:1 and about 5:1 at a temperature below the softening point of said carbonaceous solids and introducing the resulting mixture of fine particles of devolatilized carbonaceous material and carbonaceous solids at a temperature below said softening point into said fluidized bed reactor.

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**3,932,147**

## METHOD OF REFORMING HYDROCARBONS

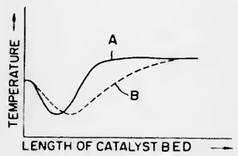
**Akio Okagami, Fuchu; Akira Horie, and Tsutomu Toida, both of Yokohama, all of Japan, assignors to Japan Gasoline Co., Ltd., Tokyo, Japan**

**Continuation of Ser. No. 264,849, June 21, 1972, abandoned. This application Sept. 9, 1974, Ser. No. 504,556**
**Claims priority, application Japan, June 28, 1971, 46-46377**
**Int. Cl.² C01B *2/14***
**U.S. Cl. 48—214** **7 Claims**

1. A process for preparing gas rich in methane by reforming hydrocarbon having an average of two or more carbon atoms per molecule, in at least two stages, which comprises;
feeding into a first reforming zone a first reactant gas consisting essentially of a mixture of steam and first hydrocarbon having a low mean molecular weight with said reactant gas containing from 1.0 to 5.0 mols of steam per one carbon atom of said first hydrocarbon, and adiabatically effecting a first reforming reaction in said first reforming zone by contacting said reactant gas, at a pressure of 0 to 100 $kg/cm^2$ gauge, with a first bed of nickel-containing reforming catalyst, effective to maintain the

gas in the first reforming zone at a temperature of 350° to 550°C, to produce a first reaction product gas consisting essentially of methane, hydrogen, carbon monoxide, carbon dioxide and steam,

feeding into a second reforming zone a second reactant gas comprising a mixture of said reaction product gas from said first zone and second hydrocarbon having a mean molecular weight higher than that of said first hydrocarbon wherein the ratio of steam per 1 carbon atom of said hydrocarbon in said second reactant gas is lower than the corresponding ratio in said first reactant gas,



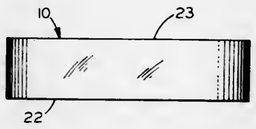

and adiabatically effecting a second reforming reaction by contacting said second reactant gas, at a pressure of 0 to 100 Kg/cm² gauge, with a second bed of nickel-containing reforming catalyst, effective to maintain the gas in said second reforming zone at a temperature of 300° to 550°C to produce a second reaction product gas which is rich in methane, the difference between the mean molecular weight of said first and second hydrocarbon and the relative amount of said first and second hydrocarbon fed to the first and second zones respectively being sufficient to substantially prolong the life of the reforming catalyst as compared to the use of a mixture of the first and second hydrocarbon as a feed for both the first and second reforming zones.

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**3,932,148**
**METHOD AND APPARATUS FOR MAKING COMPLEX ASPHERIC OPTICAL SURFACES**

**John J. Krewalk, Sr., West Hartford, Conn., assignor to Criterion Manufacturing Company, Inc., West Hartford, Conn.**

**Filed Jan. 21, 1975, Ser. No. 542,725**
**Int. Cl.² B24B *1/00, 13/00***
**U.S. Cl. 51—284 R** **10 Claims**




1. In a method for making complex aspheric optical surfaces, the steps comprising:

a. forming a thick, non-deformable integral glass block with a pair of substantially parallel flat surfaces;

b. grinding and polishing one parallel surface of said block to the desired aspheric configuration to form a thick, non-deformable integral master die block;

c. bringing into contact with said aspheric surface of said master die block an optically flat surface of a deformable glass blank;

d. drawing a vacuum through said master die block to deform said glass blank into optical contact with said aspheric surface;

e. grinding and polishing the opposite surface of said glass blank to substantially an optical flat to provide a die plate;

f. releasing said vacuum and removing said die plate from said master die block, said opposite surface of said die plate assuming a configuration substantially inverse to that of said aspheric surface of said master die block;

g. bringing said optically flat surface of said die plate into optical contact with an optically flat surface of a base die block to form a die block assembly with the aspherically configured surface of said die plate being exposed and providing a configuration substantially inverse to that of said aspheric surface of said master die block;

h. bringing into contact with said aspherically configured surface of said die block assembly an optically flat surface of a deformable glass plate;

i. drawing a vacuum through said die plate to deform said glass plate into optical contact with said aspherically configured surface;

j. grinding and polishing the opposite surface of said glass plate to the desired flatness; and

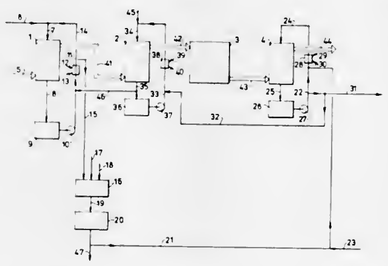
k. releasing said vacuum and removing said glass plate from said die block assembly, said opposite surface of said glass plate assuming a configuration substantially conforming to that of said aspheric surface of said master die block.

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**3,932,149**
**METHOD FOR THE PURIFICATION OF SULPHURIC ACID CONTAINING MERCURY**

**Karl-Axel Melkersson, Helsingborg, Sweden, assignor to Boliden Aktiebolag, Stockholm, Sweden**

**Filed May 13, 1974, Ser. No. 469,432**
**Claims priority, application Sweden, May 18, 1973, 7307048**
**Int. Cl.² B01D *53/14***
**U.S. Cl. 55—72** **14 Claims**



1. A method of purifying sulphuric acid containing mercury and producing a substantially mercury-free sulphuric acid in a plant for the production of sulphuric acid according to the contact process, which involves drying moist roaster gases containing sulphur dioxide in at least two drying towers, where the major part of the water content is absorbed in the first drying tower, characterized in adding the sulphuric acid containing mercury wholly or partially deriving from sulphuric acid produced in another plant to a circulating sulphuric acid in the first drying tower, the quantity suitably measured to maintain a concentration of between 70 and 85 percent by weight;

leading sulphur trioxide, oleum or sulphuric acid to a circulation circuit of sulphuric acid in the second drying tower so that the concentration can be maintained at between 95 and 103 percent by weight;

leading a partial current from the circulating sulphuric acid in the second drying tower to the circulating sulphuric acid in the first drying tower;

removing a partial current from the circulating sulphuric acid in the first drying tower;

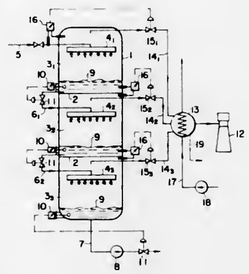
purifying said acid current by means of precipitating mercury; leading off said purified acid current as product acid or leading it to the absorber which is an integral part of a sulphuric acid plant using the contact process.



**3,932,150**
**VACUUM DEAERATOR**

**Mitsumasa Komai, Funabashi; Toshio Sawa, and Kenkichi Izumi, both of Hitachi, all of Japan, assignors to Agency of Industrial Science and Technology, Tokyo, Japan**

**Filed Oct. 29, 1974, Ser. No. 518,616**
**Claims priority, application Japan, Dec. 10, 1973, 48-136853**
**Int. Cl.² B01D *19/00***
**U.S. Cl. 55—160** **4 Claims**



1. A vacuum deaerator comprising:

a plurality of low pressure chambers having nozzles, through which is sprayed treated water therein, said chambers being disposed in a multi-stage fashion;

treated water supply pipes, each of which supplies treated water in the forward stage low pressure chamber to the nozzles in the succeeding stage low pressure chamber;

a treated water inlet pipe for supplying the treated water to nozzles in the first stage chamber;

a treated water outlet pipe for discharging treated water within the final stage low pressure chamber, to the exterior of a system;

flow rate adjusting valves, each of which attaches midway in said respective supply pipes and said outlet pipe;

a pressure reducing means for reducing the pressure in said low pressure chambers;

vent pipes, each of which communicates the respective low pressure chambers with said pressure reducing means;

vent adjusting valves, each of which attaches midway in said respective vent pipes;

temperature detecting means, each of which detects the difference between the temperature of treated water introduced by way of said nozzles into said low pressure chambers and the temperature in said low pressure chambers; and

level detecting means, each of which detects the level of treated water within said respective low pressure chambers.

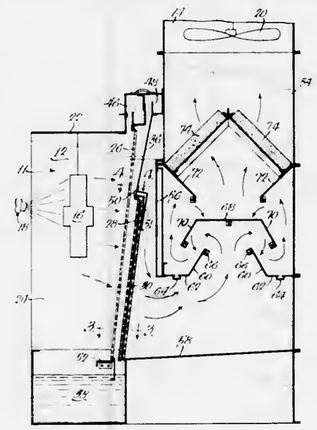
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**3,932,151**
**SPRAY BOOTH**

**George W. Lau, Blue Island, Ill., assignor to Binks Manufacturing Company, Franklin Park, Ill.**

**Continuation-in-part of Ser. No. 331,505, Feb. 12, 1973, abandoned. This application May 8, 1974, Ser. No. 467,959**
**Int. Cl.² B01D *47/00***
**U.S. Cl. 55—229** **13 Claims**

1. A paint spray booth comprising, in combination, an enclosure having side and top walls defining therein a spray painting chamber, an air inlet in one side of said chamber and an air outlet in the other side of said chamber, means for drawing air through said inlet and said chamber and discharging it through said outlet, substantially vertical wall means in said enclosure between said chamber and said outlet extending from side wall to side wall and from top to bottom thereof, said vertical wall means including a plurality of longitudinally spaced sets of vertically extending laterally spaced baffle plates, the baffles plates of the first set having broad front faces exposed to said chamber and forming a rear wall for said chamber against which spray painting operations may be performed, the baffles of said first set being mounted closely adjacent to define narrow vertical slits between said plates for escape of air from said chamber, the baffle plates of each succeeding set being staggered relative to the plates of the preceding set with each plate of each succeeding set being aligned with and laterally broader than a respective one of the spaces between the plates of the preceding set and spaced slightly rearwardly therefrom as to cause air passing through said sets of plates to be diverted into tortuous paths around the plates of each set, the sets of baffle plates succeeding said first set being shorter than the first set and suspended therebehind by an imperforate web coextensive with the upper portions of



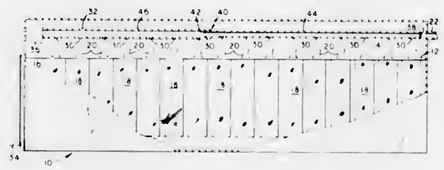
the baffle plates of the first set, said web equalizing the greater air flow over and through said first set of baffle plates and thus throughout said chamber, an oil reservoir in said enclosure beneath said baffle plates, oil in said reservoir the level in which is spaced below the lower ends of said baffle plates, means between the lower ends of said baffle plates and the oil in said reservoir for preventing passage of air below said baffle plates and for constraining the air to pass through said sets of baffle plates, means for continuously pumping oil from said reservoir to the upper ends of the baffle plates of at least the first and second sets and for gravitationally flowing a film of oil uniformly over the front faces of the baffle plates of the first and second sets, whereby particles of paint sprayed against the baffle plates of the first set and carried in the air passage through the slits between the baffle plates of the first set are entrained in the oil and flushed thereby into the reservoir, the oil flowing over said baffle plates being returned to said reservoir and having a free fall from the lower edges of said baffle plates to the level of the oil in the reservoir whereby to cause the entrained paint particles to penetrate the surface of the oil and become immersed therein and to sink to the bottom on the reservoir, the baffle plates of the first set having the side edges thereof bent rearwardly toward the baffle plates of said second set and the baffle plates of said second set having a central concave portion for catching and retaining oil and paint particles passing thereto from the preceding set of plates, the baffle plates of the last set each having the side edges thereof bent forwardly into spaced generally parallel relation with the side edges of the respective plates of the preceding set for catching and retaining oil and paint particles passing thereto from the preceding set, whereby the paint particles are entrained in the oil and deposited in the reservoir and air substantially free of paint and oil particles is delivered to said outlet, and a second baffle system in said enclosure between the last set of said baffle plates and said outlet, said

second baffle system comprising a vertical chamber rearwardly of said last set of baffle plates extending from sidewall to sidewall of said enclosure and including a vertical wall spaced rearwardly from said last set of baffle plates and terminating at its lower edge in upwardly spaced relation to the lower ends of said baffle plates to define an entrance into the lower end of said vertical chamber, a pair of laterally spaced baffles converging upwardly from the walls of said vertical chamber above said entrance, and a horizontal deflecting baffle mounted centrally in said vertical chamber above the upper ends of said converging baffles, said horizontal baffle being wider than the space between the upper ends of said converging baffles and having side edges bent downwardly into spaced generally parallel overlying relation with an adjacent one of said converging baffles, said baffles in said vertical chamber causing the air passing therethrough to strike several baffle surfaces and to travel in a tortuous path having several sharp turns therein for removing substantially all traces of paint and oil from the air, said vertical chamber having a bottom wall sloping toward said reservoir for returning to the reservoir all oil removed from the air.

## 3,932,152
## MULTI-STAGE BLOW-PIPE CONSTRUCTION

**Aldo Rotondi, North Plainfield, N.J., assignor to U.S. Filter Corporation, New York, N.Y.**

**Filed May 8, 1974, Ser. No. 468,211**
**Int. Cl.² B01D** *46/04*
**U.S. Cl. 55—302** **2 Claims**



1. In a pulse-jet dust dust collector wherein a plurality of elongate open ended filter socks are simultaneously subjected to cleaning by the abrupt emission of short duration jet pulses of cleaning gas selectively directed into the open ends thereof, the improvement comprising

terminally sealed elongate hollow blow-pipe means connected to a remote source of pressurized cleaning gas through a quick acting valve and having a plurality of selectively located apertures therein for effecting the delivery of said selectively directed pulses of said cleaning gas therefrom into the open ends of said filter socks upon actuation of said valve to effect cleaning thereof,

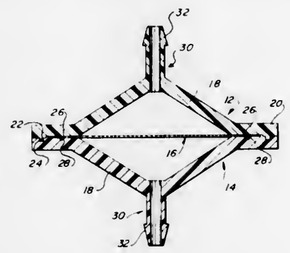
and means defining an internal gas impervious restriction at about the mid length of said blow pipe means extending inwardly from the internal defining wall of said blow pipe and disposed substantially perpendicular to the direction of flow of cleaning fluid within said blow-pipe means to abruptly reduce the cross-sectional area of said blow-pipe means available for cleaning gas flow therethrough and to increase the rate of emission of cleaning gas from said apertures disposed adjacent to said valve.

## 3,932,153
## NEBULIZER BACTERIA FILTER

**John Byrns, 7112 Kittyhawk Ave., Los Angeles, Calif. 90045**

**Continuation-in-part of Ser. No. 442,682, Feb. 14, 1974, abandoned. This application May 23, 1974, Ser. No. 473,141**
**Int. Cl.² B01D** *27/08*
**U.S. Cl. 55—511** **2 Claims**

1. A filter device comprising in combination a pair of housing sections, each section having an opening therethrough and a peripheral flange in confronting relationship with the peripheral flange of the other section to define an enclosed chamber, a continuous ridge on the peripheral flange of one section and a continuous complementary groove on the flange of the other section adapted to receive said ridge, an annular protrusion in the peripheral flange of said one section spaced from and radially outwardly of said ridge, a second groove in said flange of said other section radially spaced outwardly from said complementary groove to receive the protrusion on the flange of said one section and align said sections with respect to each other, a planar filter element disposed between said sections

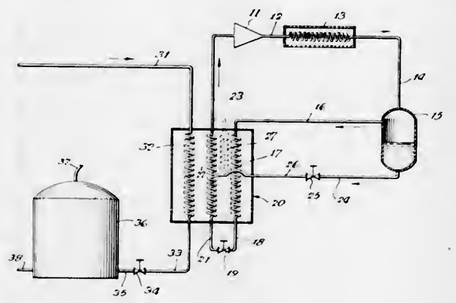


and extending radially outwardly of said flange to an extent sufficient to overlie said radially innermost groove and ridge such that the ridge on the one flange forces a portion of the filter into the groove of the flange of the other section and the protrusion on the one flange and the second groove on the flange of said other section cooperate to align said housing sections while simultaneously tensioning said filter element, and means uniting said housing sections and said filter element along the peripheral surface of said flanges to seal the filter element in said chamber.

## 3,932,154
## REFRIGERANT APPARATUS AND PROCESS USING MULTICOMPONENT REFRIGERANT

**Don Henry Coers, Salt Lake City, Utah, and Jackie Wayne Sudduth, Clarendon Hills, Ill., assignors to Chicago Bridge & Iron Company, Oak Brook, Ill.**

**Continuation-in-part of Ser. No. 260,982, June 8, 1972, abandoned. This application Jan. 17, 1975, Ser. No. 541,786**
**Int. Cl.² F25J** *1/00*
**U.S. Cl. 62—9** **2 Claims**



1. A refrigeration process consisting essentially of:

compressing a normally gaseous multicomponent refrigerant to an elevated pressure by compressor means, said refrigerant consisting essentially of about 35–55 mole percent methane, about 10–30 mole percent ethane, about 10–30 mole percent propane, and about 5–30 mole percent butane, the sum of the methane and ethane concentrations being not more than about 70 percent, and the sum of the propane and butane concentrations being not more than about 50 percent,

cooling the high pressure refrigerant to a temperature of about 50°F to 120°F by heat rejection to the ambient to produce a refrigerant having a vapor phase and a liquid phase consisting of about 10 to 40 mole percent of the refrigerant,

directly passing the two phase refrigerant to a phase separating vessel without further cooling,

withdrawing the vapor phase as a high pressure stream from the vessel and passing said high pressure stream through a heat exchanger to cool and condense said high pressure stream to a liquid,

removing the liquefied high pressure stream of condensed liquid from the heat exchanger, expanding said liquefied high pressure stream to produce a cold low pressure stream, passing said cold low pressure stream through the heat exchanger to provide low temperature refrigeration to cool the high pressure vapor stream fed through said heat exchanger and provide extra refrigeration for removing heat from a gas product, and then feeding the cold low pressure stream to the compressor means,

withdrawing the liquid phase from said vessel, expanding said liquid phase to a low pressure without cooling prior to expansion, feeding the resultant low pressure cool stream to an intermediate point in the heat exchanger, passing said resultant low pressure cool stream through the heat exchanger in the same direction as the stream formed from vapor removed from said vessel, combining said low pressure cool stream and said vapor stream from said vessel to form a single stream at a pressure below about 100 psig, and returning the combined stream to the inlet of said compressor; and

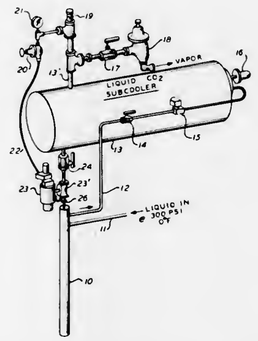
passing a gas product feed stream under pressure through the heat exchanger to cool the gas product feed stream by heat exchange with the refrigerant passed through said heat exchanger, to a temperature which can provide at least partial liquefaction of the gas product feed stream.



## 3,932,155
## METHOD FOR PRODUCING CARBON DIOXIDE SNOW

**Victor F. Pietrucha, Kearny; Michael E. Minard, Basking Ridge, and Gordon J. Ozmec, Berkeley Heights, all of N.J., assignors to Airco, Inc., Montvale, N.J.**

**Filed Nov. 13, 1974, Ser. No. 523,385**
**Int. Cl.² F25J** *1/00*
**U.S. Cl. 62—10** **8 Claims**

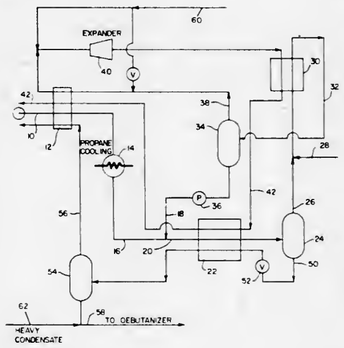


1. A method of providing refrigeration by accurately delivering carbon dioxide as soft pliable expanding snow to a point of end use comprising the steps of: introducing carbon dioxide liquid at a pressure of approximately 300 psig and at a temperature of approximately 0°F into a compartment in heat exchange relation with a tube having a plurality of different length/diameter ratios; withdrawing said carbon dioxide liquid from said compartment; sub-cooling said withdrawn liquid $CO_2$; and passing said sub-cooled carbon dioxide liquid to said tube to expand the same in stages and thereby form said soft pliable snow which is subsequently delivered to said point of end use while said introduced liquid $CO_2$ is effective to warm the walls of said tube and thereby substantial inhibit agglomeration of said snow within said tube.

## 3,932,156
## RECOVERY OF HEAVIER HYDROCARBONS FROM NATURAL GAS

**Sidney S. Stern, New York, N.Y., assignor to Hydrocarbon Research, Inc., Morristown, N.J.**

**Continuation of Ser. No. 294,225, Oct. 2, 1972, abandoned. This application Mar. 22, 1974, Ser. No. 453,842**
**Int. Cl.² F25J** *3/00*
**U.S. Cl. 62—17** **1 Claim**



1. A process for recovering $C_3$ and higher hydrocarbons from a feed stream of natural gas largely composed of methane which comprises:

a. cooling said feed stream to a temperature of about — 25°F at a pressure of about 240 psig;

b. adding a lean oil to said cooled stream and flashing said mixture to form a gasiform overhead and a condensate;

c. adding a lean oil to said gasiform overhead and cooling to about — 25°F at a pressure of about 235 psig;

d. separating the mixture of step (c) to form the lean oil of step (b) and a gaseous overhead;

e. expanding said gaseous overhead of step (d) to about 25 psig;

f. recovering the refrigeration of said expanded overhead in the prior cooling steps;

g. flashing the condensate of step (b) to separate some methane and ethane;

h. and returning the balance of the condensate of step (b) to downstream equipment from which $C_3$ and higher hydrocarbons are recovered.

## 3,932,157
## MEANS FOR MOUNTING A ROTATABLE LEVER IN A THIN WALL

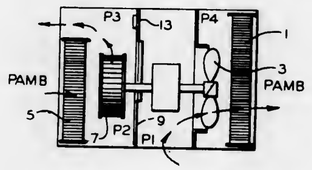
**Theodore S. Bolton, and Burton F. Hammons, both of Liverpool, N.Y., assignors to Carrier Corporation, Syracuse, N.Y.**

**Filed Oct. 25, 1974, Ser. No. 517,976**
**Int. Cl.² F25D** *17/04*
**U.S. Cl. 62—408** **2 Claims**

1. The combination comprising:

a thin wall including an orifice having a wide portion connected to a narrow slot, said wall forming a part of the housing of an air conditioner, said air conditioner including a damper door mounted for pivotal movement to open and close a port; and

a member mountable in said wall for rotation relative to said wall, said member including a shaft, and first and second collars on said shaft, said collars having opposing faces spaced to receive portions of said wall therebetween, one of said collars being resilient and bowed towards the other collar to reduce the distance between the opposed



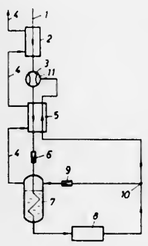

faces of said collars to an amount less than the thickness of said wall, said member further including an arm for engaging and pivoting said damper door in response to rotation of said member, said combination further including a projection to lock said member in place when the portion of said shaft between said collars is engaged with the end edge of said narrow slot.

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**3,932,158**
**SYSTEM FOR COOLING AN OBJECT WITH COOLANT CYCLE**

**Ullrich Hildebrandt, Munich, Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Germany**

**Filed Aug. 6, 1974, Ser. No. 495,238**
**Claims priority, application Germany, Aug. 10, 1973, 2340702**
**Int. Cl.² F25B 1/06**
**U.S. Cl. 62—500** **8 Claims**



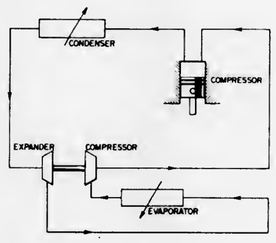

1. The system for cooling of an object comprising
a first heat exchanger traversed by a stream of compressed coolant;
a first expansion stage downstream of said first heat exchanger for expanding said coolant to an intermediate pressure;
a second heat exchanger downstream of said first stage and traversed by the fluid at intermediate pressure;
a second expansion stage downstream of said second heat exchanger for expanding the fluid traversing same to a pressure substantially equal to the fluid pressure to be maintained at the inlet to said object;
a separator-evaporator having a bath of liquefied fluid and a gas space for vapor thereof above said bath;
means for passing fluid from said second expansion stage in indirect heat exchange with the said bath and into said object;
means for feeding fluid effluent from said object through a throttle into said separator-evaporator;
means for passing gas from said space through said heat exchangers in cascade, at least one of said expansion stages being constituted by an ejector having a suction side; and
means for feeding a portion of fluid emerging from said object to said suction side.

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**3,932,159**
**REFRIGERANT EXPANDER COMPRESSOR**

**Fred L. Goldsberry, Amarillo, Tex., assignor to Enserch Corporation, Dallas, Tex.**

**Division of Ser. No. 422,759, Dec. 7, 1973, Pat. No. 3,864,065.**
**This application Sept. 20, 1974, Ser. No. 507,863**
**Int. Cl.² F25B 1/10**
**U.S. Cl. 62—510** **2 Claims**




1. A refrigeration system comprising:
a condenser adapted to receive high pressure refrigerant;
an expander unit including a housing with an axially extending shaft mounted for rotation therein, said shaft having a fluid inlet passageway formed therein communicating with the discharge from said condenser and a rotary impeller mounted on said shaft for rotation therewith, said impeller including a passageway communicating between said inlet passageway and nozzle means adapted to effect refrigerant discharge at a distance from said inlet passageway and perpendicular to a radial line between said inlet passageway and said nozzle means to impart rotation to said impeller by reaction to the refrigerant discharge from said nozzle means;
an evaporator communicating with the low pressure discharge from said expander; and
a compressor connected to the outlet of said evaporator, said compressor including a rotary member in driven engagement with said impeller whereby the energy of expansion is partially recovered in the cycle.

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**3,932,160**
**METHOD FOR FORMING LOW LOSS OPTICAL WAVEGUIDE FIBERS**

**Irfan Camlibel, Stirling; Franklin Winston Dabby, New Providence; Douglas Arthur Pinnow, Warren Township, Somerset County, and LeGrand Gerard Van Uitert, Morris Township, Morris County, all of N.J., assignors to Western Electric Company, Inc., New York, N.Y. and Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**

**Filed Aug. 9, 1974, Ser. No. 496,149**
**Int. Cl.² C03C 25/02**
**U.S. Cl. 65—3** **14 Claims**

1. A method for fabricating an optical fiber by means of drawing a preform whose manufacture comprises the deposition of borosilicate on a cylindrical member by means of a process of high temperature pyrolysis of a first reactant chosen from the group consisting of $SiH_4$, $SiCl_4$, and $SiBr_4$ and a second reactant chosen from the group consisting of $B_2H_6$, $BCl_3$, and $BBr_3$, heating said preform to the fusing temperature of said deposited borosilicate layer, further heating said preform to the drawing temperature, and drawing said preform into a fiber, characterized in that
1. said first and second reactants are used in a ratio within the range of from 2:1 to 30:1 by volume in case said second reactant is borane and from 4:1 to 60:1 otherwise, and
2. said high temperature pyrolysis is carried out at a temperature within the range of from 900°C to 1,200°C,
whereby said layer of borosilicate is deposited in the form of radially oriented needles.



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**3,932,161**
**FIBROUS INSULATING MATERIALS**

**Thomas Gordon McNish, "Silverton", 27 Silver St., Buckden, Huntingdonshire, England**

**Continuation of Ser. No. 95,374, Dec. 4, 1970, abandoned.**
**This application Apr. 9, 1973, Ser. No. 349,448. The portion of the term of this patent subsequent to Mar. 14, 1989, has been disclaimed.**
**Int. Cl.² C03C 27/00**
**U.S. Cl. 65—3** **2 Claims**

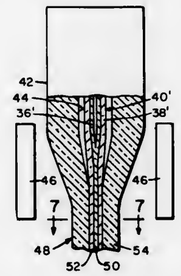
1. A method of producing an insulating body consisting of an outer hard skin covering a mass of short bound fibrous filaments which are adhered together by a binding agent and is suitable for use as the internal lining of gas turbine engine ducts, which comprises contacting a mass of short fibrous ceramic filaments with silica sol in an amount sufficient to cause the filaments to adhere to one another to form an adherent fibrous mass, shaping the adherent mass into a predetermined form, drying the shaped mass, applying a coating of silica sol to the surface of the dried shaped fibrous mass and thereafter flame heating said applied coating at a temperature and for a period of time sufficient to form a hard, highly erosion-resistant skin on the surface of said fibrous mass to thereby form the desired insulating body.

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**3,932,162**
**METHOD OF MAKING GLASS OPTICAL WAVEGUIDE**

**Michael G. Blankenship, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.**

**Filed June 21, 1974, Ser. No. 481,529**
**Int. Cl.² C03C 25/02; C03B 37/02**
**U.S. Cl. 65—3** **15 Claims**



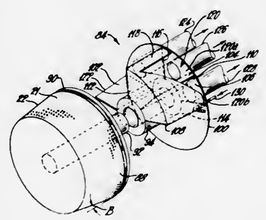

1. A method of forming a clad optical waveguide fiber comprising the steps of
providing a substantially cylindrical mandrel,
applying a first layer of glass to the outside peripheral surface of said mandrel,
applying a second layer of glass having an index of refraction less than that of the glass of said first layer over the outside peripheral surface of said first layer,
removing said mandrel,
heating the structure so formed to the drawing temperature of the materials thereof,
drawing the heated structure to reduce the cross-sectional area thereof, thereby forming an intermediate fiber,
providing a glass tube having a hole extending axially therethrough,
disposing at least a portion of said intermediate fiber within said tube,
heating the final composite structure so formed to the drawing temperature thereof, and
drawing said final composite structure to reduce the cross-sectional area thereof and to form an optical waveguide fiber having a solid cross-section, said first layer forming the core and said second layer and said tube forming the cladding of said optical waveguide fiber.

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**3,932,163**
**APPARATUS FOR PRODUCING A SLIVER-LIKE FIBROUS PRODUCT**

**Ralph M. Stream, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio**

**Continuation of Ser. No. 425,589, Dec. 17, 1973, abandoned.**
**This application Feb. 18, 1975, Ser. No. 550,384**
**Int. Cl.² C03B 37/02**
**U.S. Cl. 65—9** **9 Claims**



1. Apparatus for producing a sliver-like fibrous glass product comprising:
a porous surface upon which a coherent web of discontinuous glass fibers is formed;
means defining an elongated opening reducing in size along its lengthwise dimension;
means for moving the surface and the opening relative to each other to effect advancement of a web on the surface lengthwise across the opening in a direction from the larger end of the opening to the smaller end thereof; and
means effective to draw air through the porous surface into the opening with sufficient energy to condense a coherent web on such surface laterally into a loosely associated longitudinal coherent sliver-like fibrous glass product during advancement of the web across the opening.

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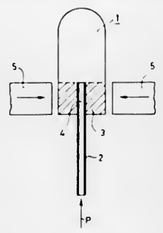
**3,932,164**
**METHOD OF MANUFACTURING MINIATURE INCANDESCENT LAMPS**

**Karl Gebhardt, Stolberg-Busbach an Kurths-Muhle, Germany, assignor to U.S. Philips Corporation, New York, N.Y.**

**Filed Aug. 8, 1974, Ser. No. 495,916**
**Claims priority, application Germany, Aug. 14, 1973, 2341028**
**Int. Cl.² C03B 5/16, 23/20**
**U.S. Cl. 65—32** **5 Claims**

1. A method of manufacturing miniature incandescent lamps having an envelope having a glass pinch and an exhaust tube extending within the cap having an inside diameter smaller than 1 mm, which comprises heating the envelope and then mechanically pinching the envelope to form a pinch and simultaneously form the seal between the exhaust tube and the heated glass cap, and blowing an inert cooling gas through the exhaust tube during the pinching operation to keep it open, the temperature and flow rate of the cooling gas being se-

lected to keep the inner wall of the exhaust tube below the transformation temperature of the glass, while the outer wall



of the exhaust tube assumes a temperature which ensures a tight seal of the exhaust tube and the envelope.

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**3,932,165**

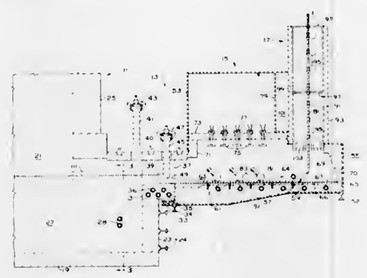
## METHOD AND APPARATUS FOR FORMING A RIBBON OF GLASS ON A BATH OF MOLTEN METAL

**Charles K. Edge, Sarver, and Gerald E. Kunkle, New Kensington, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.**

**Continuation-in-part of Ser. No. 338,497, March 6, 1973, Pat. No. 3,843,346. This application Oct. 15, 1974, Ser. No. 514,990. The portion of the term of this patent subsequent to Oct. 22, 1991, has been disclaimed.**

**Int. Cl.² C03B** *18/02*

**U.S. Cl. 65—65 A** **15 Claims**



1. In the method of continuously forming a layer of glass on a supporting pool of molten metal wherein molten glass is discharged from a region of a pool of molten glass having an upper surface and the discharged molten glass is delivered substantially horizontally from the discharge region as a layer having a first edge portion and a second edge portion onto the supporting pool of molten metal which has an upper surface at substantially the same elevation as that of the discharged layer of glass, the improvement comprising

the step of cooling the molten glass adjacent the discharge region sufficiently to cause molten glass in the layer of molten glass within the pool of molten glass to flow toward the discharge region wherein molten glass immediately subjacent the surface of the pool of molten glass being discharged as the first edge portion is cooled at a greater rate than is molten glass at the same depth subjacent the surface of the pool of molten glass which is being discharged as the second edge portion, the difference in cooling being sufficient to cause the molten glass of both edge portions to be discharged at substantially the same velocity.

4. In an apparatus for making flat glass comprising

a glass melter; a glass refiner and conditioner having side walls extending from the glass melter and an end wall joining the side walls at their ends remote from the glass melter, the glass refiner and conditioner being adapted for containing a pool of molten glass and for adjusting its temperature for discharge and delivery to a forming chamber; a forming chamber containing a pool of molten metal for supporting glass during forming connected to the glass conditioner through a delivery facility adapted for delivering a layer of molten glass having a first edge and a second edge along a substantially horizontal path onto the pool of molten metal in the forming chamber; means for advancing the delivered glass along the surface of the pool of molten metal and cooling the glass to form a continuous sheet of glass; and means for withdrawing the formed continuous sheet of glass from the forming chamber and conveying it therefrom; the improvement comprising

means for cooling the molten glass immediately subjacent the surface of the pool of molten glass and adjacent to a region in the refiner and conditioner for discharging the layer of molten glass through the delivery facility, said cooling means being adapted for cooling a portion of molten glass to be discharged and delivered as the first edge of the layer of glass to a greater extent than a portion of molten glass to be discharged and delivered as the second edge of the layer of glass and having capacity for cooling the molten glass portions sufficiently differently for causing the molten glass of both edge portions to be discharged at substantially the same velocity.

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**3,932,166**

## LANDFILL AND SOIL CONDITIONER

**Martin Vignovich, 3342 N. Senasac Ave., Long Beach, Calif. 90808, and Russell B. Sperry, 63945 Highway 97, Bend, Oreg. 97701**

**Continuation-in-part of Ser. No. 260,502, June 7, 1972, abandoned. This application May 15, 1974, Ser. No. 470,330**

**Int. Cl.² C05F** *11/00;* **C05B** *11/04, 11/16;* **C07C** *63/00*

**U.S. Cl. 71—11** **10 Claims**

6. A method for easily disposing of organic waste materials without polluting the environment, which comprises:

a. intimately admixing organic waste material with a water-soluble inorganic acid selected from the group consisting of hydrochloric acid, sulfuric acid, and sulfur trioxide, until said acid penetrates and contacts substantially all of the organic waste material, the ratio of acid to organic waste being between about 1:30 and 1:2 on a dry weight basis;

b. reacting the resulting mixture by heating under conditions which rapidly remove water from the reaction zone to a temperature above 200°F until the organic waste material is converted to as essentially dry, water-insoluble, humus-like black char which is substantially insoluble in alkaline solutions below about 240°F, said char including residual acids and water-soluble impurities therein;

c. removing said residual acid and water-soluble impurities from said char by washing said char with water.

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**3,932,167**

## SUBSTITUTED S-TRIAZINES AS HERBICIDAL AGENTS

**Barrington Cross, Rocky Hill, and Richard William Feeny, Hightstown, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.**

**Division of Ser. No. 301,561, Oct. 27, 1972, Pat. No. 3,816,419. This application Oct. 26, 1973, Ser. No. 409,841**

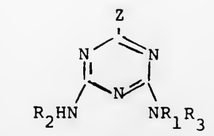
**Int. Cl.² A01N** *9/22*

**U.S. Cl. 71—93** **9 Claims**

1. A method for the control of undesirable plant species comprising,

contacting the undesirable plant species or soil containing seeds of undesirable plant species with a herbicidally effective amount of a compound of the formula:





where Z is haloalkyl $C_1$–$C_3$ or haloalkenyl $C_1$–$C_3$ containing from 1 to 5 halogen atoms; $R_1$ and $R_2$ each represent hydrogen, alkyl $C_1$–$C_4$ or cyanoalkyl wherein the alkyl group contains 1 to 4 carbon atoms; $R_3$ is phenyl, chlorophenyl, methylphenyl, cyclohexyl, methylcyclohexyl, benzyl or 2-methylbenzyl.

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**3,932,168**

## SUBSTITUTED ARYLOXYACETAMIDO NITRILE DERIVATIVES AS CARBOHYDRATE DEPOSITION AGENTS

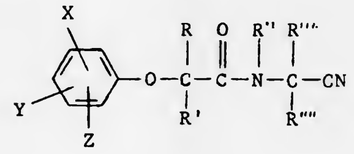
**Robert George Stein, Kenosha, Wis., and Aldo Joseph Crovetti, Lake Forest, Ill., assignors to Abbott Laboratories, North Chicago, Ill.**

**Continuation-in-part of Ser. No. 200,263, Nov. 17, 1971, abandoned. This application Sept. 14, 1973, Ser. No. 397,533**

**Int. Cl.² A01N** *9/20*

**U.S. Cl. 71—105** **3 Claims**

1. A method of increasing carbohydrate deposition in plants which comprises applying to the maturing plant 2 to 10 weeks before harvest thereof an effective amount of a compound of the formula:



wherein X, Y and Z are selected from the group consisting of hydrogen, loweralkyl and chloro, R, R′, R″, R‴ and R⁗ are selected from the group consisting of hydrogen and loweralkyl.

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**3,932,169**

## METHOD OF MAKING BRIQUETTES WITH MACHINE HAVING AN INERT GAS SEAL

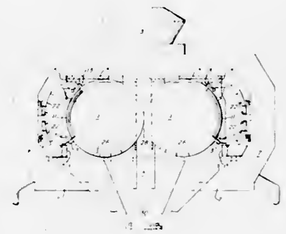
**Paul B. Anthony, Jr., Upper St. Clair Township, Allegheny County, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.**

**Filed June 28, 1973, Ser. No. 374,456**

**Int. Cl.² B30B** *11/16*

**U.S. Cl. 75—3** **6 Claims**

1. In a method of making briquettes wherein particulate matter is fed through a housing to a point between two mold rolls for compression into briquettes, and wherein the atmosphere within the housing contains a combustible dust, and wherein the escape of such dust through seal openings is a fire hazard, the improvement comprising flowing inert gas into seal openings to effect flow of said inert gas both into said machine and external of said machine thereby preventing air



from entering and containing the combustible dust within said housing.

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**3,932,170**

## USE OF SCAVENGER IN RECOVERY OF METAL VALUES

**Ishwarlal D. Shah, Edina, Minn., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.**

**Filed Aug. 19, 1974, Ser. No. 498,333**

**Int. Cl.² C22B** *1/02*

**U.S. Cl. 75—7** **4 Claims**

1. A method for the reduction of metal sulfides selected from the group consisting of copper, iron and nickel sulfides and mixtures thereof to obtain an elemental metal without production of volatile sulfur compounds which comprises:

mixing the metal sulfide with a compound reactive with sulfur, said compound selected from the group consisting of alkaline earth oxides, alkaline earth hydroxides, alkaline earth carbonates and mixtures thereof, the amount of said compound being at least sufficient to combine with all of the sulfur contained in said metal sulfide to form an alkaline earth sulfide which is stable at the reaction conditions;

contacting the mixture with a reducing gas selected from the group consisting of hydrogen, carbon monoxide and mixtures thereof at a temperature in the range of 600° to 1000°C but below the melting point of any of the components of the mixture for a time sufficient to convert substantially all of the metal content of the metal sulfides to the elemental state, and

separating elemental metal from the other components of the mixture.

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**3,932,171**

## PROCESS FOR HIGH TEMPERATURE TREATMENT OF MATERIALS

**Jozef Kazimierz Tylko, Faringdon, England, assignor to Tetronics Research and Development Company, Faringdon, England**

**Continuation of Ser. No. 399,972, Sept. 24, 1973, abandoned, which is a division of Ser. No. 225,892, Feb. 14, 1972, Pat. No. 3,783,167. This application Apr. 19, 1974, Ser. No. 462,403**

**Int. Cl.² C22B** *4/00;* **B23K** *1/10*

**U.S. Cl. 75—10 R** **31 Claims**

1. A process for high temperature treatment of particulate material, which comprises the steps of:

establishing a continuous electrical discharge arc column; moving the column continuously in a closed arcuate path in such a manner as to expand said arc in the course of its movement; passing particulate material into and through the moving column so that the particles of the material travel in substantially spiral paths while passing

through the column; and collecting the arc treated material at a point of deposit spaced from the column.

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### 3,932,172
### METHOD AND CONVERTER FOR REFINING PIG-IRON INTO STEEL

**Helmut Knuppel, Sulzbach-Rosenberg; Karl Brotzmann, Sulzbach-Rosenberg Hutte; Hans-Georg Fassbinder, Sulzbach-Rosenberg, all of Germany; Guy Savard, Vaudreuil, and Robert Lee, Montreal, both of Canada, assignors to Eisenwerk-Gesellschaft Maximilianshutte mbH, Sulzbach-Rosenberg, Germany**

**Division of Ser. No. 800,892, Feb. 20, 1969, Pat. No. 3,706,549. This application Dec. 15, 1972, Ser. No. 315,377. The portion of the term of this patent subsequent to Dec. 19, 1989, has been disclaimed.**

**Int. Cl.² C21C *5/34***

**U.S. Cl. 75—60** **19 Claims**

1. A process for refining steel comprising:
   a. adding to a refractory lined steelmaking vessel a charge comprising a mixture of hot metal and solid steel scrap, said scrap being in an amount of at least about 20% by weight of charged metal;
   b. introducing into said charge at least one stream of oxygen through at least one chromium steel injector, said injector extending through the refractory lining and terminating substantially at the surface of the refractory lining and in contact with and below the surface of the liquid metal charge; surrounding each such injector with a protective jacket fluid comprising a hydrocarbon and introducing said fluid into said charge; controlling the amount of said fluid with respect to each said oxygen stream to maintain the wear rate of each such injector substantially equal to the wear rate of the adjacent refractory lining while refining the charge to a desired extent;
   c. tapping the refined steel; and
   d. repeating the above steps for at least about 200 times.

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### 3,932,173
### INDUCTIALLY HEATED GAS LIFT PUMP ACTION METHOD FOR MELT REDUCTION

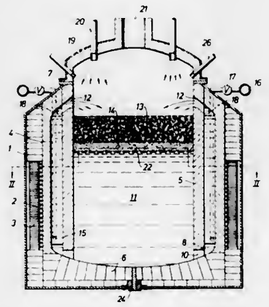
**Per Harald Collin, Falun, Sweden, and Folke Karl Evald Johansson, San Remo, Italy, assignors to Allmanna Svenska Elektriska Aktiebolaget, Sweden**

**Filed Sept. 25, 1973, Ser. No. 400,650**

**Claims priority, application Sweden, Sept. 27, 1972, 12487/72**

**Int. Cl.² C22B *9/00***

**U.S. Cl. 75—93 R** **2 Claims**



1. In a method for reducing a metal oxide by introducing a material rich in metal oxide to a reaction layer resting on a metal melt, the improvement which comprises lifting molten metal from the metal melt to a level above that of the reaction layer through vertical channels which communicate at the bottom with the metal melt and at the top with a space at a level above that of the reaction layer by supplying a non-oxidizing gas to the lower part of the channels so that the molten metal is lifted up through the channel by means of the gas lift pump action, heating said molten metal inductively to a temperature greater than the temperature of the reaction layer while it is flowing through the channels to supply additional heat to the reaction layer and then allowing the thus lifted heated molten metal to exit from the top of the channels and pass down through said reaction layer and return to the metal melt.

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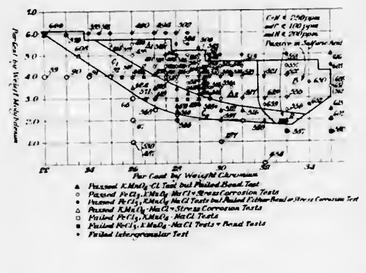
### 3,932,174
### CHROMIUM, MOLYBDENUM FERRITIC STAINLESS STEELS

**Michael A. Streicher, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.**

**Division of Ser. No. 122,529, March 9, 1971, which is a continuation-in-part of Ser. No. 46,428, June 15, 1970, abandoned. This application May 30, 1974, Ser. No. 474,542**

**Int. Cl.² C22C *35/08*, *38/22***

**U.S. Cl. 75—124** **1 Claim**



1. A corrosion-resistant ferritic iron-chromium-molybdenum alloy having good postwelding ductility consisting essentially of chromium and molybdenum in weight percentages within areas $A_2$ and $C_2$ of FIG. 1, carbon 100 ppm maximum, nitrogen 200 ppm maximum, and carbon plus nitrogen 250 ppm maximum, together with one of the following eight listed additions in the weight percent range recited:
   a. 0.006–0.30% Pt
   b. 0.015–0.10% Ir
   c. 0.020–0.10% Os
   d. 0.020–0.30% Ru
   e. 0.020–0.30% Ru plus not in excess of 0.60% Al
   f. 0.010–0.02% Ru plus 0.15–0.20% Ni
   g. 0.005–0.10% Rh
   h. 0.15–0.20% Au the balance being iron and incidental impurities.

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### 3,932,175
### CHROMIUM, MOLYBDENUM FERRITIC STAINLESS STEELS

**Michael A. Streicher, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.**

**Continuation-in-part of Ser. No. 46,428, June 15, 1970. This application Mar. 9, 1971, Ser. No. 122,529**

**Int. Cl.² C22C *38/22***

**U.S. Cl. 75—126 C** **8 Claims**

1. A corrosion-resistant ferritic iron-chromium-molybdenum alloy having good post-welding ductility consisting essentially of chromium and molybdenum in the weight percentages within areas $A_1$, $A_2$, B, $C_1$, $C_2$ and D of FIG. 1, carbon 100 ppm maximum, nitrogen 200 ppm maximum, and carbon plus nitrogen 250 ppm maximum, the balance being iron and incidental impurities.



### 3,932,176
### DIACRYLIC ACID ESTER DERIVATIVES OF BIS-HYDANTOIN COMPOUNDS

**Juergen Habermeier, Pfeffingen, and Daniel Porret, Binningen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.**

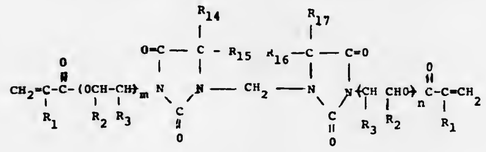
**Division of Ser. No. 241,386, April 5, 1972, Pat. No. 3,852,302. This application May 20, 1974, Ser. No. 471,407**

**Claims priority, application Switzerland, Apr. 16, 1971, 5557/71**

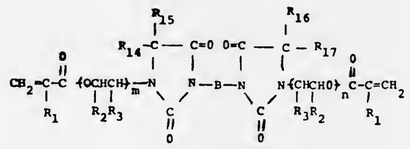
**Int. Cl.² C07D *49/32***

**U.S. Cl. 260—309.5** **3 Claims**

1. A diacrylic acid ester of a bis-hydantoin of the formula



or



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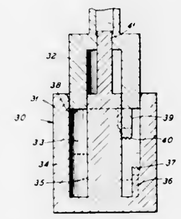
### 3,932,177
### METHOD FOR FORMING A COLLAR

**Raymond C. Coleman, Webster, N.Y., assignor to Xerox Corporation**

**Division of Ser. No. 290,445, Sept. 20, 1972, Pat. No. 3,851,985. This application Aug. 30, 1974, Ser. No. 502,081**

**Int. Cl.² B22F *5/00***

**U.S. Cl. 75—214** **4 Claims**



1. A method for forming a one-piece article having a first opening extending inwardly from an end surface and second opening extending from the first opening at an angle thereto, said second opening being defined by a plurality of threaded segments of a partial annular configuration, said segments being axially offset to each other along an axis of the second opening and coacting to provide the second opening with interrupted threads, each of said segments being on an end wall of a cavity extending axially towards an end surface of the body with adjacent cavities extending in opposite directions, the method comprising providing a plurality of forming surfaces movable into the configuration of the article, molding material with the forming surfaces to form the article in a single molding step, and subsequently retracting some of the forming surfaces to enable removal of the method article from the forming surfaces.

### 3,932,178
### METHOD OF ISOSTATIC HOT PRESSING OF POWDER

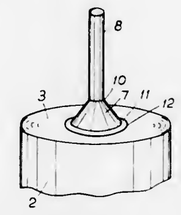
**Hans Gunnar Larsson, and Carl Bergman, both of Vasteras, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden**

**Filed Oct. 16, 1972, Ser. No. 297,648**

**Claims priority, application Sweden, Oct. 14, 1971, 13011/71**

**Int. Cl.² B22F *3/14***

**U.S. Cl. 75—226** **5 Claims**



1. Method of isostatic hot pressing of powder which comprises enclosing a body of powder within a collapsible container having at least one evacuation opening, arranging an outwardly extending support within the area of the evacuation opening and held by the container, applying a funnel-shaped member having a tube attached thereto above the opening and securing the outer edge of said funnel-shaped member of the container, said funnel-shaped member when so applied leaving the evacuation opening substantially unobstructed, applying suction to said tube to evacuate gases from the powder, sealing the funnel-shaped member, and subjecting the evacuated container to heat and pressure, the pressure being sufficient to collapse the funnel-shaped member against the support.

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### 3,932,179
### ELECTROPHOTOGRAPHIC ELEMENT CONTAINING A POLYMERIC MULTI-PHASE INTERLAYER

**Evelio A. Perez-Albuerne, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.**

**Filed May 31, 1973, Ser. No. 365,790**

**Int. Cl.² G03G *5/04***

**U.S. Cl. 96—1.5** **14 Claims**

1. In a unitary electrophotographic element comprising a conductive layer, a photoconductive layer, and a polymeric interlayer having a surface resistivity greater than about $10^{12}$ ohm/sq. between the conductive layer and the photoconductive layer, the improvement wherein said interlayer is a blend of at least two distinct solid polymeric phases comprising (a) an electrically insulating, film-forming, hydrophobic polymer as a first polymeric phase and (b) a film-forming, water- or alkali-soluble polymer having an electrical resistivity less than that of the hydrophobic polymer as a second polymeric phase.

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### 3,932,180
### DIRECT ALPHA TO X PHASE CONVERSION OF METAL-FREE PHTHALOCYANINE

**Clifford H. Griffiths, Brighton, and Michael S. Walker, Penfield, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.**

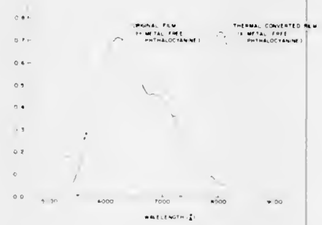
**Filed June 4, 1973, Ser. No. 366,396**

**Int. Cl. C09b *47/08***

**U.S. Cl. 96—1.5** **16 Claims**

1. A process for the direct thermal conversion of the alpha polymorph of metal free phthalocyanine to the corresponding X polymorph, said process comprising:
   a. providing a substrate having deposited thereon alpha metal free phthalocyanine, said deposit having an average thickness of up to about 1400 Angstrom units;

b. confining said deposit by placing in contact therewith physical means the geometry of said means affording maximum confinement of the deposit on the substrate thereby insuring the maintenance of a vapor pressure equilibrium between the deposit and vapors emanating from said deposit thereby precluding substantial evapora-



tion thereof during thermal conversion to the corresponding X polymorph; and

c. heating said confined deposit at a rate in excess of about 10C° per minute to a temperature in the range of from about 220° to about 450°C so as to effect direct in situ conversion of at least some of the alpha metal free phthalocyanine to its corresponding X polymorph.

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**3,932,181**

## ELECTROPHOTOGRAPHIC COATING COMPOSITIONS HAVING BROMINE-CONTAINING POLYMER BINDERS

**Dilip K. Ray-Chaudhuri, Somerville; Paul C. Georgoudis, Dunellen, and Hans H. Stockmann, Plainfield, all of N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.**

**Division of Ser. No. 169,075, Aug. 4, 1971, Pat. No. 3,793,293. This application July 1, 1974, Ser. No. 484,758**

**Int. Cl.[2] G03G** *5/04*

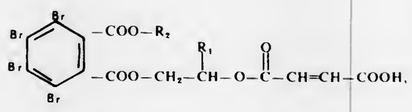
**U.S. Cl. 96—1.5** **2 Claims**

1. A photoconductive composition comprising a finely divided photoconductive pigment selected from at least one member of the group consisting of zinc oxide, titanium dioxide, selenium oxide and zinc sulfide dispersed in a bromine-containing interpolymer consisting essentially of repeating units derived from at least one bromine-containing monomer corresponding to the general formulas:

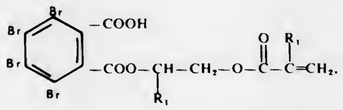
(a) $CH_2=\underset{R_1}{\underset{|}{C}}-COO-CH_2-\underset{Br}{\underset{|}{C}}=CH-Br$,

(b) $\begin{matrix}CH-COO-CH_2-\underset{Br}{\underset{|}{C}}=CH-Br,\\ \|\\ CH-COO-Y\end{matrix}$

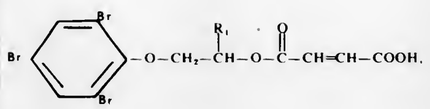
(c)



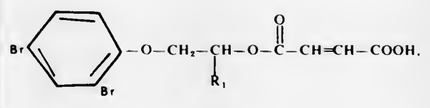
(d)



(e)

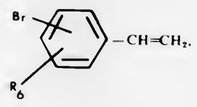


(f)



(g) $CH_2=\underset{R_3}{\underset{|}{C}}-COO-CH_2-\underset{OH}{\underset{|}{CH}}-CH_2-Br$,

(h)



(j) $CH_2=\underset{R_1}{\underset{|}{C}}-COO-CH_2-\underset{Br}{\underset{|}{CH}}-R_3$, and

(k) $\begin{matrix}CH-COO-CH_2-\underset{Br}{\underset{|}{CH}}-R_3;\\ \|\\ CH-COO-X\end{matrix}$

wherein:

$R_1$ = H, or $-CH_3$,

$R_2$ = alkyl radical having 1 to 4 carbon atoms,

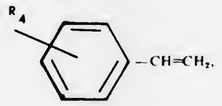
X = H or $-CH_2-\underset{Br}{\underset{|}{CH}}-R_1$

Y = H or $-CH_2-\underset{Br}{\underset{|}{C}}=CH-Br$;

$R_6$ = H or Br

and at least one monomer which does not contain bromine selected from the group consisting of compounds corresponding to the general formulas

(m)



(n) $CH_2=\underset{R_1}{\underset{|}{C}}-COO-R_5$,

(o) $\begin{matrix}R_1-\underset{}{\underset{|}{C}}-COO-R_5,\\ \|\\ CH-Z\end{matrix}$

(p) $R_1-CH=\underset{R_1}{\underset{|}{C}}-COOH$ and

(q) $CH_2=CH-O-\underset{O}{\underset{\|}{C}}-R_5$;



wherein:

$R_1$ = H or $-CH_3$,

$R_4$ = H, Cl, or t-butyl,

$R_5$ = an alkyl radical of 1 to 8 carbon atoms or a cycloalkyl radical of 3 to 8 carbon atoms, and

Z = H or — COO — $R_5$

wherein the interpolymer contains from 0.01 to 0.35 mole of bromine-containing monomer per mole of total monomers and wherein the ratio of pigment to interpolymer is in the range of from about 2:1 to 12:1 by weight.

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**3,932,182**

## AN ORGANIC PHOTOCONDUCTIVE COMPOSITION COMPRISING AN ORGANIC PHOTOCONDUCTIVE COMPOUND AND A SENSITIZING COMPOUND HAVING AN ACTIVE METHYLENE GROUP

**Kiyoshi Futaki; Hirokazu Tsukahara, and Kazuhiro Emoto, all of Kyoto, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan**

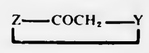
**Division of Ser. No. 151,914, June 10, 1971, abandoned. This application Jan. 17, 1974, Ser. No. 434,325**

**Claims priority, application Japan, June 10, 1970, 45-50024**

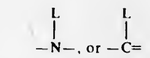
**Int. Cl.[2] G03G** *5/09*

**U.S. Cl. 96—1.6** **10 Claims**

1. An organic photoconductive composition comprising an organic photoconductive compound and a sensitizing compound having an active methylene group represented by the formula



wherein Y is a carbonyl group, oxygen, sulfur,



(wherein L is a hydrogen or an alkyl group); Z is a residue necessary to form 5- or 6-membered ring; said sensitizing compound being present in an amount of 1 to 50 parts by weight per 100 parts by weight of said organic photoconductive compound.

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**3,932,183**

## PROCESS FOR FABRICATING AN IMPROVED CATHODE RAY TUBE SCREEN STRUCTURE

**Mahlon B. Fisher, Skaneateles; Anthony V. Gallaro, Auburn, and G. Norman Williams, Seneca Falls, all of N.Y., assignors to GTE Sylvania Incorporated, Stamford, Conn.**

**Division of Ser. No. 412,143, Nov. 2, 1973. This application Oct. 15, 1974, Ser. No. 514,509**

**Int. Cl.[2] G03C** *5/00, 7/00*

**U.S. Cl. 96—36.1** **2 Claims**

1. In a color cathode ray tube viewing panel whereon a patterned cathodoluminescent screen structure formed of first, second and third pattern elements is disposed on an interior surface of said panel relative to a multiple aperture patterned mask spacedly positioned adjacent thereto, a process for forming an improved multi-windowed screen structure defined by a webbing of uniform opaque interstices disposed on the interior surface of said panel prior to the fabrication of the phosphor screen thereon, each of said window areas having a layer of selected substantially transparent optical filter material disposed therein and evidencing a peripheral shaping free of indentations similar to that of the formative aperture in said pattern mask, said process comprising the steps of:

coating the interior of said panel with a primary layer of a liquid mixture of a positive photosensitive resist material and a first organometallic luster compound;

drying said coated panel;

exposing said primary coating by directing actinic radiations from two discrete positions through the multiple apertures in said pattern mask to effect degradation of those portions of the primary positive resist coating in the areas subsequently occupied by said second and third filter pattern windows;

developing said exposed primary coating with positive photoresist developer by removing the degraded exposed coating material in said second and third filter pattern window areas;

rinsing said developed panel to remove development materials;

heating said patterned panel in a controlled oxygen atmosphere to thermally decompose said resist material and oxidize said first luster material to form and adhere a substantially continuous and transparent primary layer of said first optical filter material having second and third open filter windows therein;

coating said panel with a secondary layer of a liquid mixture of said positive photosensitive resist material and a second organometallic luster compound;

drying said coated panel;

exposing said secondary coating by directing actinic radiation from two positions through said patterned mask to effect degradation of said secondary positive resist coating in the areas subsequently occupied by said first and third filter pattern windows;

developing said exposed secondary coating with positive photoresist developer by removing the degraded exposed coating material in said first and third filter pattern window areas;

rinsing said developed panel to remove development materials;

heating said patterned panel in a controlled oxygen atmosphere to thermally decompose said resist material and oxidize said second luster material to form and adhere a substantially continuous and transparent secondary layer of said second optical filter material having an open third filter window therein and a defined first filter window displaying said first optical filter material therein;

coating said panel with a tertiary layer of a liquid mixture of said positive photosensitive resist material and a third organometallic luster compound;

drying said coated panel;

exposing said tertiary coating by directing actinic radiations from two positions through said patterned mask to effect degradation of said tertiary positive resist coating in the areas occuppied by said first, and second filter pattern windows;

developing said exposed tertiary coating with positive photoresist developer by removing the degraded exposed coating material in said first and second filter pattern window areas;

rinsing said developed panel to remove development materials; and

heating said patterned panel in a controlled oxygen atmosphere to thermally decompose said resist material and oxidize said third luster material to form and adhere a substantially continuous and transparent tertiary layer of said third optical filter material having open first and second filter windows therein displaying said first and second optical filter material respectively therein, said third filter window associated with said tertiary layer being defined by the third pattern superposed open windows in said primary and secondary filter layers; said superimposed primary, secondary and tertiary filter layers providing in combination a substantially opaque uniform interstitial webbing fully surrounding each of the respective filter windows in said screen structure whereof the uniform peripheral encompassment of each filter window is free of indentations.

## 3,932,184
## FABRICATION OF MICROLENSES

**Leonard George Cohen, Matawan, and Martin Victor Schneider, Holmdel, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**

**Filed May 29, 1973, Ser. No. 364,501**
**Int. Cl.² G03C** *5/00, 11/00*
**U.S. Cl. 96—38.3** **5 Claims**

1. A method for forming a microlens on one end surface of an optical fiber that comprises a relatively high index-of-refraction cylindrical core having a relatively low index-of-refraction cladding disposed thereabout, said method comprising the steps of:

coating the entire surface of said one end of said fiber with a negative transparent photoresist material,

exposing to radiation only a selected portion of the material coated on said end surface by directing at said material a radiant beam whose cross-sectional area approximates that of said core and is much less than the cross-sectional area of said core and cladding, said selected portion including the material that covers the entire core area of the fiber but excludes the major portion of the material that covers the cladding of the fiber,

removing the unexposed portion of said material,

and baking said remaining exposed portion to cause it to flow slightly, thereby to harden said exposed portion and to smooth the contour thereof.

## 3,932,185
## MULTI-LAYER PHOTOSENSITIVE MATERIAL FOR COLOR PHOTOGRAPHY

**Katsumi Matsuura, Hino, Japan, assignor to Konishiroku Photo Industry Co., Inc., Tokyo, Japan**

**Filed Aug. 12, 1974, Ser. No. 496,641**
**Claims priority, application Japan, Aug. 16, 1973, 48-91265**
**Int. Cl.² G03C** *1/76*
**U.S. Cl. 96—74** **9 Claims**

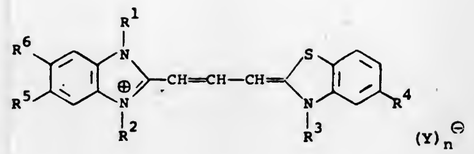
1. A multi-layer photosensitive material for color photography comprising a support and coated thereon, a first color image-forming layer unit composed of a red-sensitive silver halide emulsion, a second color image-forming layer unit composed of a green-sensitive silver halide emulsion and a third color image-forming layer unit composed of a blur-sensitive silver halide emulsion; characterized in that at least one of said color image-forming layer units has a composite layer structure including a lower layer and an upper layer which are positioned in sequence from the support, said upper layer has a higher sensitivity and a lower maximum developed color density than said lower layer, and at least one of said upper layer and lower layer contains a mercaptan type development inhibitor-releasing compound capable of reacting with an oxidation product of a primary aromatic amine to form a substantially colorless compound.

## 3,932,186
## SPECTRALLY SENSITIZED PHOTOGRAPHIC SILVER HALIDE EMULSION

**Alan L. Borror, Lexington; Ruth Linda Hill, Cambridge, and Bernard Zuckerman, Framingham, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.**

**Filed Jan. 2, 1974, Ser. No. 430,222**
**Int. Cl.² G03C** *1/40, 1/14, 1/18*
**U.S. Cl. 96—77** **14 Claims**

1. A photosensitive silver halide emulsion containing as a green sensitizer a benzimidazolo-thiacarbocyanine dye of the formula:



wherein $R^1$ and $R^2$ are lower alkyl; $R^3$ is sulfoalkyl or carboxyalkyl each having an alkylene chain of from 1 to 4 carbon atoms inclusive; $R^4$ is hydrogen, halogen, lower alkyl, lower carbalkoxy, lower alkoxy or acetamido; $R^5$ is halogen, cyano or carbalkoxy; $R^6$ is hydrogen or halogen; Y is an anion customary in the cyanine dye art; and *n* is 0 or 1.

8. A photosensitive silver halide emulsion as defined in claim 1 having associated therewith a dye which is a silver halide developing agent.

## 3,932,187
## PHOTOGRAPHIC PROJECTING STRIP FILM IN A CASSETTE

**John F. Batter, Jr., Lincoln, Mass., assignor to Polaroid Corporation, Cambridge, Mass.**

**Division of Ser. No. 277,150, Feb. 17, 1972, abandoned. This application Mar. 14, 1973, Ser. No. 341,135**
**Int. Cl.² G03C** *3/02*
**U.S. Cl. 96—78** **1 Claim**

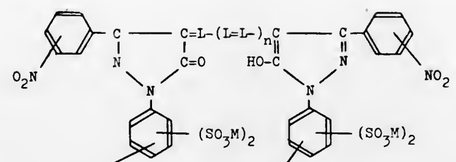
1. A photographic product for use with apparatus including a rotatable member, said product comprising an elongated strip of photographic material adapted to be operably connected to a rotatable member to effect its coiling therearound responsive to the rotation of the member, an actuating element on said strip of photographic material extending above a surface thereof, and at least one discontinuity in said strip of photographic material spaced from said actuating element a predetermined distance to receive said actuating element as the section of said strip of photographic material containing said actuating element and said discontinuity is coiled around the rotatable member, whereby said strip can be coiled smoothly around the rotatable member over said actuating element with a uniform radius.

## 3,932,188
## SILVER HALIDE PHOTOGRAPHIC LIGHTSENSITIVE MATERIAL

**Akira Tanaka; Kiyoshi Futaki, and Bunzo Ueda, all of Nagaokakyo, Japan, assignors to Mitsubishi Paper Mills, Ltd., Japan**

**Filed Feb. 24, 1975, Ser. No. 552,262**
**Claims priority, application Japan, Feb. 25, 1974, 49-21524**
**Int. Cl.² G03C** *1/84*
**U.S. Cl. 96—84 R** **7 Claims**

1. A silver halide photographic lightsensitive material having on one or both sides of a support a layer containing at least one of dyes represented by the general formula:



(wherein X is selected from the group consisting of hydrogen atom, hydroxyl group, halogen atom and lower alkyl group; L is methine group which may be substituted with lower alkyl group at meso-position; M is selected from the group consisting of hydrogen atom, alkali metal and ammonium group; and *n* is 1 or 2).



## 3,932,189
## THERMODEVELOPABLE PHOTOGRAPHIC MATERIAL CONTAINING HIGH SILVER ION CONDUCTING SUBSTANCE

**Takuji Kaneda; Makoto Nagao; Satoru Honjo, and Eiichi Mizuki, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan**

**Filed Jan. 10, 1974, Ser. No. 432,252**
**Claims priority, application Japan, Jan. 12, 1973, 48-6402**
**Int. Cl.² G03C** *1/02*
**U.S. Cl. 96—114.6** **11 Claims**

1. A thermodevelopable photographic material comprising a support having thereon a layer composed of (a) a high silver ion conducting substance having an ion conductivity at 25°C of at least $1 \times 10^{-3}$ $(\Omega\ cm)^{-1}$ or a mixture of said high silver ion conducting substance with silver, and (b) a weak reducing agent, said high silver ion conducting substance being selected from the group consisting of silver iodide phosphate, silver iodide tungstate, a double salt of silver iodide and a tetra alkylammonium iodide, and a double salt of silver iodide and a polymethonium iodide.

## 3,932,190
## PLASTER OF PARIS BANDAGES BONDED WITH MINIMAL PROPORTIONS OF HYDROLYZED POLYVINYL ESTERS

**David F. Smith, 315 Wahington Blvd., Sea Girt, N.J. 08750**

**Filed July 30, 1973, Ser. No. 383,691**
**Int. Cl.² C04B** *11/14*
**U.S. Cl. 106—111** **13 Claims**

1. A dry, bonded plaster of Paris bandage comprising a flexible, inert, porous, water absorbent backing material coated to the extent of from 40 to 50 grams per square foot with an essentially uniform mixture comprising a major proportion of settable, powdered plaster of Paris:

1. from 0.5 to 2.5 per cent of the weight of plaster of finely divided potassium sulfate; and
2. a mixture of a least two hydrolyzed polyvinyl esters selected from the group consisting of acetate, propionate and butyrate in a total amount of from 0.1 to 1 per cent of the weight of plaster and having a degree of hydrolysis of from 80 to 100 per cent and a viscosity of between 5 to 80 centipoise in a 4 per cent aqueous solution at 20°C as determined by the Hoeppler falling-ball method, where at least one of the esters is present in an amount of up to 100 per cent of the weight of the first and having a degree of hydrolysis and a viscosity respectively in the same range but substantially different in at least one of the properties of degree of hydrolysis and viscosity.

## 3,932,191
## ELECTRODEPOSITABLE COATING COMPOSITIONS CONTAINING THEREIN CELLULOSE ACETATE BUTYRATE AND HAVING IMPROVED ADHESION

**Robert D. Jerabek, Glenshaw, and William J. Geiger, New Kensington, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.**

**Division of Ser. No. 123,429, March 11, 1971, abandoned. This application Oct. 10, 1973, Ser. No. 405,240**
**Int. Cl.² C08L** *1/14, 91/00;* **C25D** *13/06*
**U.S. Cl. 106—178** **3 Claims**

1. An aqueous electrodepositable composition comprising an ionically solubilized water-dispersed vehicle selected from the class consisting of a base solubilized synthetic polycarboxylic acid resin vehicle and an acid solubilized polybasic resin vehicle and from about 0.5 to about 2 percent by weight, based on the total weight of resinous vehicle solids of cellulose acetate butyrate which has at least 25 percent by weight of the ester units substituted with the butyryl residue.

## 3,932,192
## PAPER COATING MATERIAL CONTAINING PULLULAN

**Seizo Nakashio, Nishinomiya; Noriyuki Sekine, Toyonaka; Nobuhiro Toyota, Ibaragi; Fumio Fujita, Osaka, and Masahiro Domoto, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka and Hayashibara Biochemical Laboratories, Inc., both of, Japan**

**Filed Sept. 24, 1974, Ser. No. 508,731**
**Claims priority, application Japan, Sept. 29, 1973, 48-109943**
**Int. Cl.² C08C** *5/00*
**U.S. Cl. 106—204** **3 Claims**

1. A paper-coating composition comprising pullulan and at least one pigment selected from the group consisting of clay, calcium carbonate, titanium dioxide, satin white and aluminum hydroxide.

## 3,932,193
## FORMING SIZE FOR TEXTILE GLASS FIBERS

**Roy R. Graham, Lexington, N.C., assignor to PPG Industries, Inc., Pittsburgh, Pa.**

**Filed Apr. 29, 1974, Ser. No. 464,861**
**Int. Cl.² C08L** *3/00;* **C09J** *3/06*
**U.S. Cl. 106—211** **4 Claims**

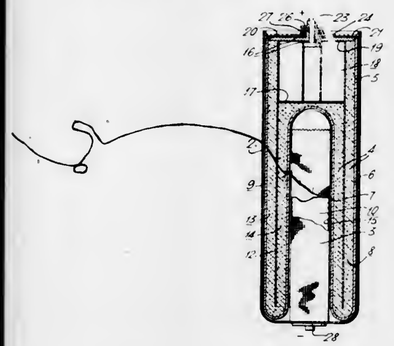
1. In an aqueous glass fiber size comprising a starch, vegetable oil as a lubricant, a textile softener, and a nonionic wetting agent, the improvement comprising said size containing 150 to 100 percent by weight of said nonionic wetting agents based on the weight of said lubricant.

3,932,194
**MILLED TALC MATERIAL AND MILLING METHOD**
**Richard Seyb Lamar, Littleton, and Norman Bach Scheffel, Parker, both of Colo., assignors to Johns-Manville Corporation, Denver, Colo.**
**Filed Feb. 11, 1974, Ser. No. 441,192**
**Int. Cl.² C09C 1/02**
**U.S. Cl. 106—306** **15 Claims**

1. A milled talc material containing about 20 to about 35 percent tremolite and having a particle size distribution such that no more than 5% of the particles are larger than 10 microns, no more than 12% of the particles are larger than 5 microns and no more than 15 percent of the particles are smaller than 0.3 micron in equivalent spherical diameter.

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3,932,195
**ELECTRIC CELLS**
**Leslie Samuel Evans, Reading, and John Richard Harbar, Wantage, both of England, assignors to Secretary of State for Industry in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England**
**Filed Apr. 29, 1975, Ser. No. 572,827**
**Claims priority, application United Kingdom, May 1, 1974, 19189/74**
**Int. Cl.² H01M 35/04, 43/00**
**U.S. Cl. 136—6 FS** **22 Claims**

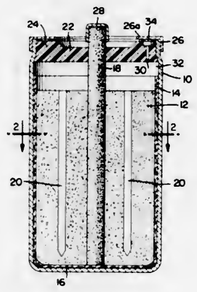


1. An electric cell for use with a liquid anode, and a liquid cathode, comprising a solid electrolyte having at least two portions disposed in contraposition so as to provide between them on one side a space for the liquid cathode, the liquid anode being arranged to lie outside the said space on the other sides of each of the said portions, and current collecting means of extended surface area disposed in the said space and substantially dividing the space into two sub-spaces, each sub-space being bounded on one side by a surface of one side of one of the portions of the solid electrolyte and on the other side by a part of the current collecting means having an extended surface area at least equal to a major proportion of the area of the said surface.

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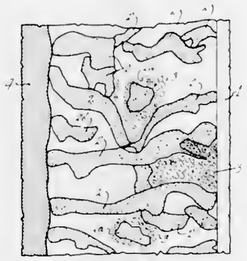
3,932,196
**PRIMARY DRY CELL WITH GAS-VENTING PASSAGEWAY THROUGH THE CATHODE MIX**
**Vicente S. Alberto, Parma, and David G. Clash, Fairview Park, both of Ohio, assignors to Union Carbide Corporation, New York, N.Y.**
**Filed Dec. 30, 1974, Ser. No. 537,595**
**Int. Cl.² H01M 6/06**
**U.S. Cl. 136—107** **10 Claims**

1. A primary dry cell comprising a metal anode cup having an open end which is gas-tightly sealed by a closure including a vent and having a cathode mix therein comprising particles of an oxidic depolarizer, finely-divided conductive material and an electrolyte, said closure and said cathode mix defining a void space therebetween, wherein a longitudinal gas-venting passageway hole extends through said cathode mix into communication with said void space to thereby enable gas normally entrapped near the bottom of said anode cup to pass freely through said cathode mix and into said void space from whence the gas can escape through said vent.



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3,932,197
**METHOD FOR CATALYZING A FUEL CELL ELECTRODE AND AN ELECTRODE SO PRODUCED**
**Murray Katz, Newington, and Arthur Kaufman, Bloomfield, both of Conn., assignors to Union Technologies Corporation, East Hartford, Conn.**
**Filed Dec. 18, 1974, Ser. No. 533,918**
**Int. Cl.² H01M 4/86, 4/88**
**U.S. Cl. 136—120 FC** **15 Claims**



1. A process for catalyzing a inert, porous conducting particle, hydrophobic bonded, substrate supported electrochemical cell electrode which comprises contacting the inert, porous conducting particle, hydrophobic-bonded portion of said electrode with the electrolyte composition applying a non-alternating electrical potential across the electrode between the substrate and the electrolyte, the electrical potential being of sufficient magnitude to increase the rate at which the electrolyte enters and fills the porous conducting particles, then causing a soluble catalyst-containing compound to enter into solution in the electrolyte within the electrode structure and depositing insoluble catalyst from said electrolyte solution onto the conducting particles.



3,932,198
**COATING SOLUTION HAVING TRIVALENT CHROMIUM AND MANGANESE FOR COATING METAL SURFACES**
**George Schneider, Trevose, Pa., assignor to Amchem Products, Inc., Ambler, Pa.**
**Filed May 24, 1974, Ser. No. 473,097**
**Int. Cl.² C23F 7/26**
**U.S. Cl. 148—6.2** **15 Claims**

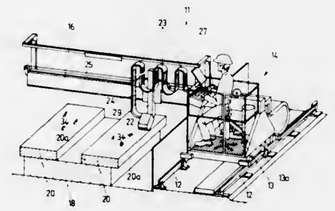
1. An aqueous acidic coating solution for forming a conversion coating on a metallic surface, consisting essentially of trivalent chromium and one or more cations selected from the group consisting of manganese, bismuth, antimony, tin, zinc and molybdenum, the trivalent chromium present in an amount of from about 0.1 g/l to about 2 g/l and the cation present in a stoichiometric equivalent amount of from about 0 2 g/l to about 1.0 g/l of manganese.

10. A process comprising contacting a metallic surface with a coating solution consisting essentially of trivalent chromium and one or more cations selected from the group consisting of manganese, bismuth, antimony, tin, zinc and molybdenum, the trivalent chromium present in an amount of from about 0.1 g/l to about 2 g/l and the cation present in a stoichiometric equivalent amount of from about 0.2 g/l to about 1.0 g/l of manganese.

12. The process of claim 10, wherein the surface is thereafter contacted with an aqueous passivating rinse solution and then dried, the rinse solution comprising a passivating agent selected from the group consisting of an amine, urea, and alkali metal nitrates.

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3,932,199
**PROCESS FOR THE FLAME-SCARFING OF FAULTY AREAS**
**Alfred Lucht, Bickenbach, and Erwin Henn, Urbach, both of Germany, assignors to Messer Griesheim GmbH, Frankfurt am Main, Germany**
**Filed July 17, 1973, Ser. No. 379,974**
**Claims priority, application Germany, Aug. 4, 1972, 2238460**
**Int. Cl.² B23K 7/00, 9/00**
**U.S. Cl. 148—9 C** **13 Claims**



1. In a process for flame-scarfing surface defects on a workpiece such as ingots, slabs or the like by means of at least one flame-scarfing torch characterized in traversing the workpiece until the torch is disposed above the workpiece at the beginning of the surface defect, halting the movement of the torch while the torch is disposed at the beginning of the surface defect, turning on various torch operating parameters including feeding gas to the torch while the torch is halted at the beginning of the surface defect, after the various torch operating parameters have been turned on setting the forward motion parameter of the torch to permit the torch to begin traversing the workpiece over the surface defect, maintaining the gas flow parameter setting unchanged throughout the time and distance that the torch traverses the surface defect, immediately prior to reaching the end of the surface defect changing at least one of the forward motion parameter and distance from workpiece parameter without changing the gas flow setting and with the change in forward motion parameter being an acceleration thereof and the change in distance from the workpiece parameter being an increase in distance thereof to diminish the affect of the flame from the torch while the torch completes its traversal over the surface defect and while the flow of gas is continued to the torch, and thereby continuing to apply the flame of the torch toward the surface defect when the at least one parameter has been changed until the torch has completely traversed the surface defect.

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3,932,200
**FLUX FOR A BUILD-UP WELDING**
**Katao Miyano; Shunichi Tomizuka; Takao Adachi, all of Muroran; Tomoo Takenouchi; Satoshi Kondo, both of Noboribetsu; Akira Hirama, and Yasuo Endo, both of Muroran, all of Japan, assignors to Japan Steel Works, Ltd., Tokyo, Japan**
**Filed Jan. 31, 1974, Ser. No. 438,349**
**Claims priority, application Japan, June 19, 1973, 48-68304**
**Int. Cl.² B23K 9/04, 35/362**
**U.S. Cl. 148—26** **4 Claims**

1. A flux for build-up horizontal electroslag welding, consisting of a flux prepared by fusing together 50–90% by weight of calcium fluoride, 10 to 40% by weight of alumina and an effective amount up to 20% by weight of one or more compounds selected from the group consisting of 0.5 to 7% by weight of an iron oxide 2 to 10% by weight of silica, 1 to 17% by weight of manganese oxide and 2 to 10% by weight of chrome oxide, and 0 to 5% by weight of zirconium dioxide.

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3,932,201
**MAGNESIUM OXIDE COATING COMPOSITION AND PROCESS**
**John F. Steger, Crystal Lake, Ill., assignor to Morton-Norwich Products, Inc., Chicago, Ill.**
**Filed Feb. 24, 1975, Ser. No. 552,041**
**Int. Cl.² B23K 35/24**
**U.S. Cl. 148—27** **9 Claims**

1. A magnesium oxide composition for coating onto silicon-containing steel sheet, said composition comprising a major proportion of magnesium oxide and a minor proportion of zinc permanganate and magnesium sulfate, wherein the concentration of zinc permanganate is from about 4 to about 16 parts per 100 parts of magnesium oxide and the concentration of magnesium sulfate is at least about 50 parts per 100 parts of zinc permanganate.

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3,932,202
**MAGNESIA COATINGS FOR FERROUS SUBSTRATES COMPRISING AMORPHOUS MAGNESIA-SILICA COMPLEXES**
**Leonard S. Lee, Daly City; Samuel W. Sopp, Foster City, and Howard M. Siegel, Pacifica, all of Calif., assignors to Merck & Co., Inc., Rahway, N.J.**
**Continuation-in-part of Ser. No. 360,257, May 14, 1973, abandoned. This application Nov. 5, 1974, Ser. No. 521,015**
**Int. Cl.² H01F 1/04**
**U.S. Cl. 148—31.5** **5 Claims**

1. A method of producing a separator and electrical insulating coating on magnetic silicon steel which comprises applying a coating composition comprising MgO, $Mg(OH)_2$ or mixtures thereof, at least one lithium compound and at least one magnesia-silica complex containing from about 0.001 to 2.0 percent by weight of an alkali metal oxide, or hydroxide, wherein the mole ratio of the $MgO:SiO_2$ is from about 1:25 to 14:1, said magnesia-silica complex being amorphous as indicated by its X-ray powder diffraction pattern and exhibiting the following differential thermal behavior characteristics: an endothermic peak at about 250°C., an exothermic peak at about 820°C. and at about 980°C.; to magnetic ferrous material and annealing said material at an elevated temperature,

wherein the annealing occurs at about 950°–1500°C. for from about 2 to 50 hours, wherein the lithium compound is selected from the group consisting of lithium carbonate, lithium hydroxide, lithium fluoride, lithium borate, lithium acetate, lithium sulfate, lithium oxide, lithium phosphate, lithium silicate, lithium dichromate, and lithium nitrate, wherein said coating composition contains from about 2 to about 200 parts by weight of magnesia-silica complex and from about 0.01 to about 30 parts by weight of lithium compound per 100 parts by weight of MgO.

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**3,932,203**

## MAGNESIA COATINGS FOR FERROUS SUBSTRATES COMPRISING AMORPHOUS MAGNESIA-SILICA COMPLEXES

**Leonard S. Lee, Daly City; Yoshio Uyeda, San Mateo, and Samuel W. Sopp, Foster City, all of Calif., assignors to Merck & Co., Inc., Rahway, N.J.**

**Continuation-in-part of Ser. No. 486,790, July 9, 1974, abandoned, which is a continuation of Ser. No. 267,276, June 29, 1972, abandoned, which is a continuation-in-part of Ser. No. 195,010, Nov. 2, 1971, abandoned. This application Oct. 7, 1974, Ser. No. 512,562**

**Int. Cl.² H01F *1/04***

**U.S. Cl. 148—31.5** **22 Claims**

1. In the process of making magnetic ferrous material wherein the magnetic ferrous material is coated with a composition comprising a material selected from the group consisting of MgO, $Mg(OH)_2$ and mixtures thereof and annealed, the improvement which comprises the addition to the MgO or $Mg(OH)_2$ coating composition of at least one magnesia-silica complex containing from about 0.001 to 2.0% by weight of an alkali metal oxide, wherein the mole ratio of the $MgO:SiO_2$ is from about 1:25 to 14:1, said magnesia-silica complex being amorphous as indicated by its X-ray powder diffraction pattern and exhibiting the following differential thermal behavior characteristics: an endothermic peak at about 250°C.; an exothermic peak at about 820°C. and at 980°C.

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**3,932,204**

## COBALT-ALUMINUM MAGNETIC MATERIALS WITH HIGH COERCIVE FORCE

**Hakaru Masumoto, and Kiyoshi Watanabe, both of Sendai, Japan, assignors to The Foundation: The Research Institute of Electric and Magnetic Alloys, Sendai, Japan**

**Division of Ser. No. 873,752, Oct. 31, 1969, abandoned, which is a continuation-in-part of Ser. No. 759,823, Sept. 10, 1968, abandoned, which is a continuation of Ser. No. 398,008, Sept. 21, 1964, abandoned. This application Sept. 7, 1971, Ser. No. 178,208**

**Int. Cl. H01f *1/02***

**U.S. Cl. 148—103** **1 Claim**

1. A method of manufacturing high coercive force permanent magnets, comprising heating an alloy consisting essentially of about 66 to 95% by weight of cobalt, 5 to 25% by weight of aluminum, and a member selected from the group consisting of about 3.8% Ti, about 5.8% Mo, about 3.8% Cr, about 4.4% V and about 10.7% W, to a temperature above the $\epsilon + \zeta$ binary region, quenching the alloy from a temperature above the solid solubility line to a temperature below the upper boundary of the $\epsilon + \zeta$ binary region at a rate to produce a substantially single-phase solid solution of $\epsilon$, heating the alloy in said binary region at a temperature above 200°C. for several minutes to several hundred hours to precipitate fine particles of ferro-magnetic $\zeta$ in a matrix of non-magnetic $\epsilon$, and magnetizing the product thus obtained in a strong magnetic field to obtain a permanent magnet having a high coercive force, said member being effective to increase the coercive force substantially above the coercive force of the same cobalt-aluminum alloy without said member.

**3,932,205**

## HEAT TREATING PROCESS FOR ACHIEVING FORCED AGEING

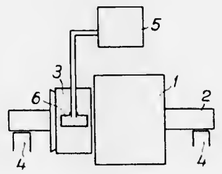
**Gosta Lindholm, and Erling Astrom, both of Vasteras, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden**

**Filed Mar. 31, 1975, Ser. No. 563,503**

**Claims priority, application Sweden, Apr. 11, 1974, 74049776**

**Int. Cl.² C21D *1/04, 1/10*; H01R *43/00***

**U.S. Cl. 148—108** **1 Claim**




1. Heat treating process for forced ageing of a commutator intended for a rotary electrical machine by supplying heat during rotation, which comprises rotating the commutator in the field of a coil intended for generating a high-frequency magnetic field arranged radially outside the commutator in such a way that said field is directed substantially perpendicular to the commutator surface, and supplying to said coil a current, the frequency of which exceeds 1,000 Hz.

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**3,932,206**

## PROCESS FOR DE-INKING PRINTED WASTE CELLULOSIC FIBROUS MATERIAL

**Robert H. Illingworth, Madison, and Frank W. Lorey, Ramsey, both of N.J., assignors to Garden State Paper Co., Inc., Garfield, N.J.**

**Continuation of Ser. No. 247,683, April 26, 1972, abandoned. This application May 28, 1974, Ser. No. 473,933**

**Int. Cl.² D21C *5/02***

**U.S. Cl. 162—5** **29 Claims**

1. A process for de-inking waste, printed cellulosic fibrous material which comprises the following steps:

a. Adding waste, printed, cellulosic fibrous material to a de-inking solution comprising (1) water, (2) a de-inking agent which is biodegradable and non-toxic to aquatic life and is selected from the group consisting of ethoxylated aliphatic di-ols having from 14 to 30 carbon atoms in the aliphatic chain and from 8 to 24 ethyleneoxy units per mole of di-ols and wherein the hydroxy groups in the di-ols are present on adjacent non-terminal carbon atoms in the aliphatic chain; and (3) a material present in sufficient quantity to maintain an alkaline pH of the de-inking solution between about 7.0 and 11.5;

b. Contacting said printed material with the de-inking solution until the ink separates from the fibers; and

c. Washing the de-inked cellulosic fibrous material.

9. A process for de-inking waste, printed cellulosic fibrous material to produce a pulp for use in making newsprint, which comprises the following steps:

a. Adding waste, printed, cellulosic fibrous material to a de-inking solution comprising (1) water, (2) a de-inking agent which is biodegradable and non-toxic to aquatic life and is selected from the group consisting of ethoxylated aliphatic mono-ols having about 14 to 15 carbon atoms in the aliphatic chain and about 8 to 12 ethyleneoxy units per mole of said mono-ol; and (3) a material present in sufficient quantity to maintain an alkaline pH of the de-inking solution between about 7.0 and 11.5;

b. Contacting said prinited cellulosic material with the de-inking solution until the ink separates from the fibers;



c. Diluting the cellulosic material in the solution by adding water in sufficient amount to reduce the solids content to between about 0.5 to 1.5 percent based upon the solution weight; and

d. Washing the de-inked diluted cellulosic material.

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**3,932,207**

## PROCESS FOR OBTAINING CELLULOSE FROM LIGNO-CELLULOSIC RAW MATERIALS

**Andre Fogarassy, Paris, France, assignor to Societe de Promotion et d'Exploitation Industrielles de Procedes de Brevets S.A., Geneva, Switzerland**

**Filed Mar. 5, 1973, Ser. No. 337,858**

**Claims priority, application Switzerland, Mar. 6, 1972, 3233/72**

**Int. Cl.² D21C *3/20, 3/26***

**U.S. Cl. 162—19** **12 Claims**

1. In a process for obtaining cellulose from ligno-cellulosic raw materials comprising the steps of cooking the raw material in contact with a solution of a reactant for converting lignin present in said raw material into a derivative which is soluble in water or in a water-miscible organic solvent, extracting the thus formed derivative in an aqueous medium, and separating cellulose from the aqueous medium, the improvement which comprises impregnating the raw material, before the cooking step, in the form of fragments, with a solution of said reactant in a solvent which has a boiling point higher than the cooking temperature and which is selected from the group consisting of ethyleneglycol, dipropylengeglycol, glycerol, aniline, diethanolamine and triethanolamine and mixtures of at least one of these substances with water, said reactant being employed in an amount sufficient to solubilize the lignin, whereby the raw material absorbs a portion of the solution, after which the impregnated material is immersed in a liquid which is substantially non-miscible with the solvent of said solution, said liquid having a boiling point higher than the cooking temperature, and which is selected from the group consisting of paraffinic mineral oils, siloxanes, n-butyl acetylricinoleate, n-butyl benzoate, diethyleneglycol monolaurate, propiophenone, dibutylether and mixtures thereof and then maintaining said liquid having the impregnated material immersed therein at the cooking temperature until the lignin has been substantially converted to said derivative.

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**3,932,208**

## METHOD OF MAKING SILICATE TREATED ASBESTOS DIAPHRAGMS FOR ELECTROLYTIC CELLS

**Franklin Strain, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.**

**Division of Ser. No. 343,600, March 21, 1973, Pat. No. 3,847,762. This application May 10, 1974, Ser. No. 468,844**

**Int. Cl.² D21D *3/00***

**U.S. Cl. 162—136** **5 Claims**

1. In a method of preparing an asbestos diaphragm where asbestos is drawn from a cell liquor slurry and deposited onto an electrolyte permeable cathode by drawing a vacuum across the cathode to form an asbestos mat, the improvement comprising coating the deposited asbestos mat with from about 0.01 to 5.0 grams per square foot of mat of a water soluble silicate having the empirical formula $(MeO)_m(SiO_2)_n$ where Me is chosen from the group consisting of lithium, sodium, and potassium, and the ratio of $m$ to $n$ is from about 1:1 to about 1:10, to a depth of at least 0.08 inch into said asbestos mat and contacting said mat with acidic anolyte liquor comprising acidic aqueous sodium chloride to convert said silicate to an amorphous chlor-alkali, anolyte resistant, hydrated silica.

**3,932,209**

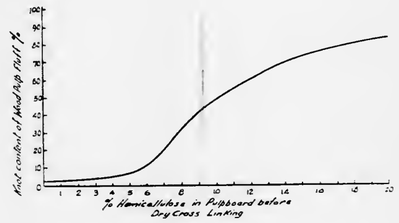
## LOW HEMICELLULOSE, DRY CROSSLINKED CELLULOSIC ABSORBENT MATERIALS

**Pronoy Kumar Chatterjee, Spotswood, N.J., assignor to Personal Products Company, Milltown, N.J.**

**Division of Ser. No. 803,525, Feb. 24, 1969, abandoned. This application Aug. 9, 1971, Ser. No. 169,957**

**Int. Cl.² D21H *5/14***

**U.S. Cl. 162—157 C** **3 Claims**




1. A method of making pulpboard for grinding into pulp fluff of improved dry and wet resilience and increased fluid absorption and retention capacity from cellulose fibers having a high hemicellulose content comprising:

treating said cellulose fibers to reduce said hemicellulose content to no more than about 7%;

forming a pulpboard from said treated cellulosic fibers; and

dry crosslinking said fibers in said pulpboard form to result in a pulpboard having a knot content of less than 15%.

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**3,932,210**

## METHOD OF DISPERSING HYDROXYMETHYL CELLULOSE XANTHATE FIBERS

**Migaku Suzuki, Ohtake, and Atushi Kawai, Hiroshima, both of Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan**

**Filed June 18, 1974, Ser. No. 480,389**

**Claims priority, application Japan, June 18, 1973, 48-68506**

**Int. Cl.² D21F *11/06*; D21H *3/12***

**U.S. Cl. 162—157 C** **6 Claims**

1. In a method for producing a non-woven fabric or a paper-like material by cutting fibers comprising hydroxymethyl cellulose xanthate, dispersing the cut fibers in an acid aqueous medium and then forming the dispersed fibers into a sheet, the improvement which comprises treating said fibers with a water soluble acid salt of aminoethylethanolamine monostearylamide under acidic conditions so as to impart good self dispersibility to said fibers.

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**3,932,211**

## METHOD OF AUTOMATICALLY MONITORING THE POWER DISTRIBUTION OF A NUCLEAR REACTOR EMPLOYING MOVABLE INCORE DETECTORS

**James J. Loving, Jr., Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**Filed July 13, 1973, Ser. No. 379,159**

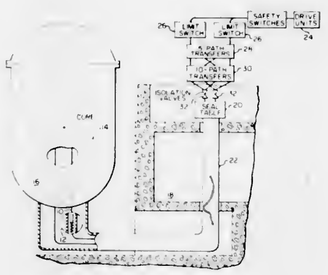
**Int. Cl.² G21C *17/00***

**U.S. Cl. 176—19 R** **11 Claims**

1. A method of on line monitoring the normal power operation of a nuclear reactor using a movable in-core neutron detector comprising the steps of:

automatically inserting and withdrawing the detector respectively into and out of the reactor core region, during normal power operation, at predetermined, staggered, intermittent, time, programmed, sequence intervals;

moving the detector, upon insertion, through the core region along a fixed predetermined path; and




recording the output of the detector as a function of core location.

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**3,932,212**

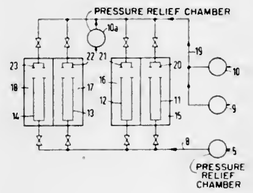
**APPARATUS AND METHOD FOR DEPRESSURIZING, DEGASSING AND AFFORDING DECAY OF THE RADIOACTIVITY OF WEAKLY RADIOACTIVE CONDENSATES IN NUCLEAR POWER PLANTS**

**Rudolf Gross, and Johann Plotz, both of Mulheim (Ruhr), Germany, assignors to Kraftwerke Union Aktiengesellschaft, Mulheim (Ruhr), Germany**

**Continuation-in-part of Ser. No. 318,436, Dec. 26, 1972, abandoned. This application Mar. 11, 1974, Ser. No. 450,062**

**Int. Cl.² G21C** *15/00*

**U.S. Cl. 176—37** **7 Claims**




1. Method for depressurizing, degassing and affording decay of weakly radioactive condensates in a steam nuclear power plant of the type having a turbine with higher and lower pressure stages and a main condenser for condensing exhaust steam from the turbine to a main condensate, and at least one feed-water preheater heatable by bleeder steam fed thereto from a higher pressure stage of the turbine, the condensate of said bleeder steam constituting a secondary condensate, which comprises the steps of: feeding the secondary condensaate at a higher temperature and higher pressure than the main condensate into the main condensate so that the secondary condensate vaporizes in the main condensate with simultaneous degassing of the main condensate by the vaporizing of the secondary condensate, and thereafter passing both main and secondary condensates through a flow path of sufficient length to permit the radioactivity to decay.

**3,932,213**

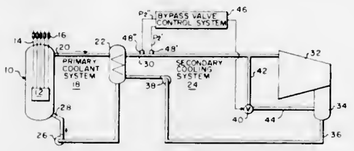
**PERMISSIVE ANALOGUE LOGIC FOR THE STEAM RELIEF VALVES OF A NUCLEAR REACTOR**

**Charles Ronald Musick, Vernon, and Jose Marcelo Torres, Simsbury, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.**

**Filed Apr. 2, 1973, Ser. No. 347,023**

**Int. Cl.² G21D** *3/10*

**U.S. Cl. 176—60** **6 Claims**




1. A system for the actuation of a plurality of actuable devices whereby the system prevents the actuation of more than one device upon the occurrence of any malfunction including operator error and apparatus failure, the system comprising:

a. first means for generating a first actuation signal;

b. second means parallel to said first means for generating a second actuation signal;

c. means responsive to said first signal for generating a multiplicity of signals for individually actuating said plurality of devices; and

d. a plurality of gate means intermediate said means for generating said first multiplicity of actuation signals and said multiplicity of actuable devices, and responsive to said second signal for selectively passing each individual signal to each device.

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**3,932,214**

**NUCLEAR REACTOR**

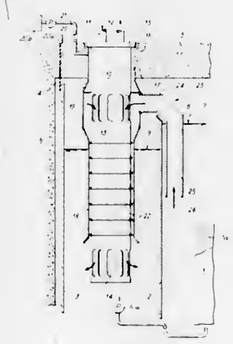
**Michel Aubert, Pierrevert; Henri Jacques Gollion, Aix-en-Provence, and Philippe Verriere, Jouques, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France**

**Filed July 19, 1973, Ser. No. 380,678**

**Claims priority, application France, Aug. 8, 1972, 72.28573**

**Int. Cl.² G21C** *15/00*

**U.S. Cl. 176—65** **4 Claims**



1. A nuclear reactor and especially a fast reactor having a core formed by a group of fuel assemblies and cooled by a liquid metal usually consisting of sodium and circulated in contact with said fuel assemblies, said coolant being confined



at least partially within a first primary tank having a vertical axis and containing the reactor core, said primary tank being in turn surrounded by a second main tank, the complete assembly formed by both tanks being placed within a thick-walled structure which constitutes an external containment vessel for providing biological protection against the effects of radioactive radiation, the main tank containing heat exchangers and pumps for removal of heat picked up by the sodium as it passes through the reactor core and circulating said sodium in continuous flow from one tank to the other, each heat exchanger being mounted with a vertical axis, provided with inlet and outlet windows respectively at the upper and lower end for the admission and discharge of sodium derived from the primary tank, and surrounded by an outer shell which penetrates together with said heat exchanger into the region located between the primary tank and the main tank, wherein said shell delimits with the heat exchanger an annular space joined at the level of the heat-exchanger inlet windows to one end of at least one elbowed duct, the other end of which extends into the sodium contained in the primary tank, said annular space being connected by means of a pipe providing a communication with a pumping source for producing a variable negative pressure within said space and thus priming the siphon formed by said primary tank, said elbowed duct and said annular space.

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**3,932,215**

**VERTICAL CONTROL ROD FOR RAPID AND SAFE SHUT-OFF OF NUCLEAR REACTORS**

**Horst Krüger, Bensberg-Herkenrath, Germany, assignor to Interatom Internationale Atomreaktorbau GmbH, Bensberg, Cologne, Germany**

**Continuation-in-part of Ser. No. 201,579, Nov. 26, 1971, abandoned. This application Mar. 14, 1973, Ser. No. 341,278**

**Claims priority, application Germany, Nov. 28, 1970, 2058619**

**Int. Cl. G21c** *7/12*

**U.S. Cl. 176—36 R** **4 Claims**




1. In a nuclear reactor of the type having an elongated tube for guiding an absorber, a control rod mechanism having raised and lowered positions for rapidly and safely shutting off the nuclear reactor comprising, a flexible absorber guided in said tube for movement between a raised shut-off and a lowered position, a connecting means suspending said absorber within said elongated tube, spring means operatively connected to said connecting means, a drive mechanism connected for compressing said spring means and lowering the absorber release means for releasably holding said spring means in said compressed condition wherein release of said spring means causes the latter to effect accelerating vertical displacement of said connecting means and absorber to the raised position of the absorber and means for disposing said spring means, drive mechanism and release above said elongated tube.

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**3,932,216**

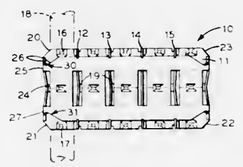
**INDUSTRIAL TECHNIQUE**

**Felix S. Jabsen, Lynchburg, Va., assignor to The Babcock & Wilcox Company, New York, N.Y.**

**Continuation of Ser. No. 207,255, Dec. 13, 1971, abandoned. This application Aug. 10, 1973, Ser. No. 387,429**

**Int. Cl.² G21C** *3/18*

**U.S. Cl. 176—78** **2 Claims**




1. A cellular grid structure for a fuel element comprising band means of generally uniform width and circumscribing the grid structure, said band means having an inner surface that engages the grid structure and an outer surface, said band means surfaces terminating in at least one generally flat surface, detents on said band means that protrude toward the cellular structure, a plurality of generally parallel flat grid plates each having transverse ends that abut said band means inner surface and having widths that are greater than said band means width, and a further plurality of generally flat grid plates having transverse ends that abut said band means inner surface and having widths that are greater than said band means width, said further plate plurality interlocking with said plurality of plates to form the cellular grid structure, the abutting edges of said interlocking plates having sloping surfaces that match the widths of said plates to the width of said band means, said sloping surfaces extending from said outer surface of said band means and across said generally flat band means surface in order to prevent an adjacent cellular grid structure from locking with said band means and said grid plates, said sloping surface extending toward the cellular structure for a distance that is approximately equal to the inward protrusion of said detents, and said band means further forming a generally rectangular structure circumscribing said interlocking plates and having vee-shaped corner edges formed thereon.

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**3,932,217**

**METHOD AND DEVICE FOR THE PASSIVE PROTECTION OF A NUCLEAR REACTOR**

**Pierre Charles Cachera, Montesson, France, assignor to Electricite de France, Paris, France**

**Filed Nov. 30, 1973, Ser. No. 420,363**

**Claims priority, application France, Dec. 20, 1972, 72.45541; Aug. 31, 1973, 73.31540**

**Int. Cl.² G21C** *3/04*

**U.S. Cl. 176—83** **10 Claims**

1. A method of passive protection of a nuclear reactor and especially a fast reactor, the steps of replacing at least part of the conventional fuel elements within the core of said reactor by a number of vertical safety fuel elements, forming each safety fuel element with an axial flow duct having a cross-section of large diameter having a ratio with respect to the diameter of the fuel element on the order of 10/15, receiving in said flow duct the portion of fuel which is capable of melting within the central portion of said element under the action of a

neutron-flux excursion and flowing the melted fuel portion under gravity from the mid-height of said element to the base




thereof thus reducing the reactivity without thereby impairing the fuel can.

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**3,932,218**

## PRODUCTION OF HETEROPOLYSACCHARIDE BY FERMENTATION OF METHANOL

**Robert K. Finn; Alex L. Tannahill, both of Ithaca, N.Y., and Joseph E. Laptewicz, Jr., Groton, Conn., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.**

**Division of Ser. No. 364,599, May 29, 1973. This application Nov. 14, 1974, Ser. No. 523,559**
**Int. Cl.² C12D *13/04***
**U.S. Cl. 195—49** **2 Claims**

1. A method of producing a heteropolysaccharide by fermentation which comprises culturing a microorganism of *Methylomonas mucosa* strain NRRL B-5696 on a culture medium containing methanol as the sole source of assimilable carbon, and recovering the heteropolysaccharide product.

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**3,932,219**

## ANTIBIOTIC A-26771 FACTORS AND PROCESS FOR PRODUCTION THEREOF

**Karl H. Michel, and Marvin M. Hoehn, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.**

**Division of Ser. No. 298,053, Oct. 16, 1972, Pat. No. 3,883,561. This application Jan. 17, 1975, Ser. No. 541,908**
**Int. Cl.² C12D *9/04***
**U.S. Cl. 195—81** **4 Claims**

1. The method for producing antibiotic A-26771 factors A, B, and C which comprises cultivating *Penicillium turbatum* NRRL 5630 in a culture medium containing assimilable sources of carbohydrate, nitrogen, and inorganic salts until a substantial amount of antibiotic activity is produced by said organism in said culture medium, and separating the A-26771 antibiotic mixtures from said culture medium.

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**3,932,220**

## METHOD FOR ISOLATING BACTERIAL COLONIES

**Lance A. Liotta, 14004 Mont Ave., East Cleveland, Ohio 44112**

**Division of Ser. No. 62,810, Aug. 11, 1970, abandoned. This application Jan. 15, 1973, Ser. No. 323,584**
**Int. Cl.² C12K *1/04***
**U.S. Cl. 195—103.5 R** **6 Claims**

1. A method of isolating bacterial colonies in a sample comprising the steps of:
   a. providing a member having a two dimensional surface which can be expanded in at least one dimension;
   b. placing a portion of said sample on said surface; and,
   c. expanding said surface in said at least one dimension an amount sufficient to cause individual bacterial colonies in said sample to be separated from one another.

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**3,932,221**

## IMMUNOLOGICAL ISOZYME DETERMINATION METHOD

**Gerhard Pfleiderer, Witten, Germany, assignor to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany**

**Filed June 9, 1972, Ser. No. 261,215**
**Claims priority, application Germany, June 9, 1971, 2128670**
**Int. Cl.² G01N *31/14***
**U.S. Cl. 195—103.5 R** **22 Claims**

1. A process for the quantitative determination of at least one diagnostically relevant isozyme form of a human enzyme occuring in a plurality of genically defined, immunologically differentiatable multiple isozyme forms, which comprises:
   a. quantitatively measuring the total enzyme activity of said multiple isozyme forms in a human body fluid, tissue extract or excretion sample;
   b. admixing a portion of said sample with a two to ten fold theoretical excess of a precipitating antibody against a homologous diagnostically relevant human isozyme form, which antibody is specific to said diagnostically relevant human isozyme form and is substantially free of immunological activity against other of said multiple isozyme forms, to produce a substantially quantitative antigen-antibody immunoprecipitin complex consisting essentially of said diagnostically relevant human isozyme form and said antibody;
   c. substantially quantitatively separating said immunoprecipitin complex from the resultant admixture so that at least 90% of the diagnostically relevant human isozyme form activity is removed therefrom; and
   d. quantitatively measuring the total enzyme activity of the remaining multiple isozyme forms substantially free of the diagnostically relevant human isozyme form, whereby the diagnostically relevant human isozyme form can be quantitatively determined.

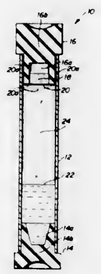
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**3,932,222**

## FOR ISOLATING PATHOGENIC MICROORGANISMS

**Gordon L. Dorn, Dallas, Tex., assignor to J. K. & Susie L. Wadley Research Institute and Blood Bank, Dallas, Tex.**

**Filed Dec. 20, 1974, Ser. No. 535,148**
**Int. Cl.² C12K *1/04***
**U.S. Cl. 195—127** **24 Claims**



1. A fluid mixing device comprising:
   a. an enclosed vessel having a first end and a second end and comprising a chamber containing an evacuated space maintained at a lower than atmospheric pressure;



   b. an injectable closure means sealably closing said first end of said enclosed vessel;
   c. an enclosed treating fluid chamber disposed in communication with said injectable closure means and separated from said evacuated chamber by an elastomeric film which will rupture when pierced by a needle; and
   d. a treating fluid disposed within said treating fluid chamber.

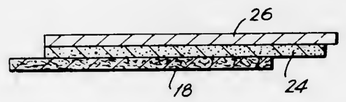
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**3,932,223**

## CULTURING MEDIUM

**Louis Bucalo, 155 Roberts St., Holbrook, N.Y. 11741**

**Division of Ser. No. 405,939, Oct. 12, 1973, Pat. No. 3,864,213. This application Jan. 7, 1975, Ser. No. 539,254**
**Int. Cl.² C12K *1/10***
**U.S. Cl. 195—139** **9 Claims**




1. In an article for testing the presence of predetermined microorganisms, a wick having one part adapted to be placed in engagement with a body fluid and an opposed part distant from said one part, a culture medium for encouraging the growth of predetermined microorganisms, said culture medium engaging the wick and extending from the region of said one part thereof toward said opposed part thereof, and means enclosing at least part of the wick and culture medium for exposing said one part of said wick so that said one part can be placed in engagement with a body fluid and for limiting the distribution of the body fluid along said wick from said one part toward said opposed part thereof in a manner providing a degree of saturation of the body fluid in the wick which is gradually reduced from said one part toward said opposed part of the wick to provide a density gradient of the body fluid extending from said one part toward said opposed part of the wick.

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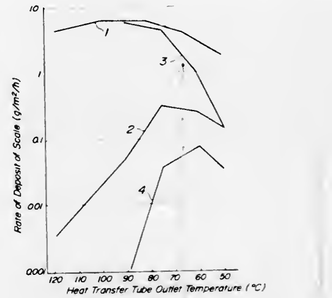
**3,932,224**

## METHOD OF PREVENTING SCALE FROM BEING DEPOSITED IN CASE OF PRODUCING FRESH WATER FROM SEA WATER

**Kunio Hirota, Hitachi; Yoshinori Takata, Tokai; Yoshijiro Arikawa, Hitachi; Kazuo Tanno, Hitachi, and Yoshiaki Okajima, Hitachi, all of Japan, assignors to Keishin Matsumoto Director-General of the Agency of Industrial Science and Technology, Tokyo, Japan**

**Continuation-in-part of Ser. No. 442,670, Feb. 14, 1974, abandoned. This application Dec. 16, 1974, Ser. No. 532,814**
**Claims priority, application Japan, Feb. 22, 1973, 48-20628**
**Int. Cl.² B01D *1/26*; C23F *1/00***
**U.S. Cl. 203—7** **6 Claims**

1. A method of preventing scale from being deposited in case of producing fresh water from sea water by heating the sea water at a temperature not higher than 120°C to obtain a concentration ratio of not larger than 2 and by condensing water vapour evolved to obtain the fresh water, comprising adding to the sea water 0.1 to 10% by weight of at least one seed crystal selected from the group consisting of magnesium hydroxide and calcium carbonate and 1 to 100 ppm of at least one surface active agent selected from the group consisting of alkyldimethylbenzyl ammonium chloride, alkenyldimethylbenzyl ammonium chloride, acyldimethylbenzyl ammonium chloride, polyoxyethylenealkylamine, polyoxyethylenealkenylamine, and polyoxyethylenacylamine, the carbon number




of the alkyl group, alkenyl group and acyl group being 10 to 20.

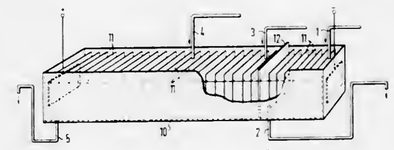
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**3,932,225**

## PROCESS FOR SEPARATELY RECOVERING URANIUM, TRANSURANIUM ELEMENTS, AND FISSION PRODUCTS OF URANIUM FROM ATOMIC REACTOR FUEL

**Abdel-Lativ Bilal; Klaus Metscher; Bernhard Muhlig; Christoph Reichmuth; Bernd Schwarz, and Karl-Erik Zimen, all of Berlin, Germany, assignors to Hahn-Meitner-Institut fur Kernforschung Berlin GmbH, Berlin, Germany**

**Filed Nov. 3, 1972, Ser. No. 303,377**
**Claims priority, application Germany, Nov. 3, 1971, 2154655**
**Int. Cl.² C01G *56/00***
**U.S. Cl. 204—1.5** **8 Claims**



1. A process for separately recovering uranium, plutonium, transplutonium elements, and fission products of said uranium and plutonium from an aqueous solution of atomic reactor fuel, said uranium and said plutonium constituting the major components of said fuel in said solution, and said transplutonium elements and fission products constituting minor constituents, which comprises:
   a. subjecting said solution to electrolysis in a zone between an anode and a cathode in the presence of a complexing agent capable of forming an electrically neutral complex with said plutonium while an aqueous carrier liquid is caused to flow through said zone in a direction from said cathode toward said anode at a rate sufficient so that said complex is carried by said carrier liquid toward said anode, while cations of said uranium, said transplutonium elements and at least a major portion of said fission products migrate toward said cathode;
   b. withdrawing said plutonium free from said uranium, said transplutonium elements, and said major portion of said fission products from said zone near said anode;
   c. withdrawing from said zone near said cathode a liquid fraction free from plutonium and containing said uranium, said transplutonium elements, and said major portion of said fission products;
   d. subjecting said liquid fraction to electrolysis in another zone between another anode and another cathode while

an aqueous carrier liquid is caused to flow through said other zone at a rate satisfying the relationship

$$Eu_t < v < Eu'$$

wherein E is the local field strength in said other zone, $u_t$ is the mobility of the ions of said uranium, and $u'$ is the mobility of all other cations present in said other zone, whereby said uranium is carried by said carrier liquid toward said other anode while said transplutonium elements and said major portion of said fission products is carried toward said other cathode by electrolysis;

e. withdrawing from said other zone near said other anode said uranium free from said transplutonium elements and said fission products; and

f. withdrawing from said other zone near said other cathode said transplutonium elements and said fission products free from said uranium.

3. A process for recovering uranium and plutonium free from one another and free from transplutonium elements and fission products of said uranium and said plutonium from an aqueous solution of atomic reactor fuel, said uranium and said plutonium constituting the major components of said fuel in said solution, and said transplutonium elements and fission products constituting minor constituents, which process comprises:

a. subjecting said solution to electrolysis in a zone between an anode and a cathode spaced from said anode in the presence of a complexing agent capable of forming an electrically neutral complex with said plutonium while an aqueous carrier liquid is caused to flow through said zone transverse to the direction of spacing of said cathode and of said anode at a rate sufficient so that said complex is carried by said carrier liquid across said zone substantially without migrating toward said cathode or said anode, while cations of said uranium, said transplutonium elements and at least a major portion of said fission products migrate toward said cathode, the rate of migration of the cations of said uranium being substantially smaller than that of the cations of said transplutonium elements and of the fission products of said major portion, whereby said plutonium and said uranium accumulate in respective portions of said zone spaced from a portion of said zone in which said transplutonium elements and said fission products accumulate; and

b. separately withdrawing three liquid fractions from said portions respectively, a first one of said fractions containing plutonium as the sole metallic solute, a second fraction containing uranium as the sole metallic solute, and a third fraction being free from uranium and plutonium and containing said transplutonium elements and said major portion of fission products.

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**3,932,226**

## METHOD OF ELECTRICALLY INTERCONNECTING SEMICONDUCTOR ELEMENTS

**Jerome Barnard Klatskin, Princeton Junction, and Arye Rosen, Cherry Hill, both of N.J., assignors to RCA Corporation, New York, N.Y.**

**Filed Dec. 6, 1974, Ser. No. 530,401**
**Int. Cl.² C25D** *5/02*
**U.S. Cl. 204—16** **10 Claims**

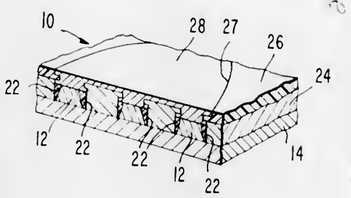
1. A method of electrically interconnecting a plurality of spaced semiconductor elements adjacent to a substrate, each element having a mesa shape with a top surface spaced apart from said substrate and a side surface, comprising the steps of:

coating the side surface of said elements with a protective material,

filling in the space above said substrate and in between said elements with a temporary support material,

depositing a continuous electrically-conductive layer on said support material and in electrical contact with the top surfaces of a plurality of said elements, and

removing said temporary support material, whereby said electrically-conductive layer forms a homogeneous air-




bridge electrically interconnecting a plurality of said elements.

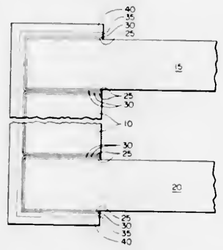
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**3,932,227**

## ELECTROFORMED HERMETIC GLASS-METAL SEAL

**Howard S. Rothenberg, Redondo Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.**

**Filed Nov. 18, 1974, Ser. No. 524,435**
**Int. Cl.² C25D** *5/02, 5/10;* **B23K** *31/02*
**U.S. Cl. 204—16** **19 Claims**




1. The method of joining a first structure, comprising a glass-like substance, to a second structure, comprising a substance selected from the group consisting of glass-like and metallic substances, comprising the following steps, each of which is performed at or near ambient temperature:

a. applying, to at least a portion of the mating surfaces of said first and second structures, a coating comprising a metallic substance capable of forming an intermolecular bond therewith;

b. covering at least a portion of said coating on each of said mating surfaces with a layer of a noble metal;

c. placing said first and second structures in juxtaposition with at least portions of their mating surfaces in contact;

d. placing a continuous overlayer of a noble metal over portions of said first and second structure, at least some of said overlayer in contact with said layers of noble metal; and

e. electrodepositing a cap over at least a portion of said overlayer, said cap comprising a metal having the property of exerting a compressive force when deposited.

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**3,932,228**

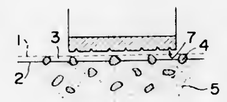
## METAL MATERIAL FOR SLIDING SURFACES

**Masashi Sugiyama, and Takumi Kunikiyo, both of Hamamatsu, Japan, assignors to Suzuki Jidosha Kogyo Kabushiki Kaisha, Japan**

**Filed Oct. 29, 1974, Ser. No. 518,508**
**Claims priority, application Japan, Nov. 1, 1973, 48-123205**
**Int. Cl.² C25D** *7/04, 5/02*
**U.S. Cl. 204—26** **4 Claims**

1. In combination, a first member containing a surface of porous hard chromium, and a second member containing a composite electroplated surface wherein silicon carbide particles project outwardly beyond a nickel matrix, said surface of porous hard chromium and said composite electroplated sur-






face being in sliding engagement, whereby lubricant may be retained both by said porous hard chromium and on said composite electroplated surface between said projecting silicon carbide particles.

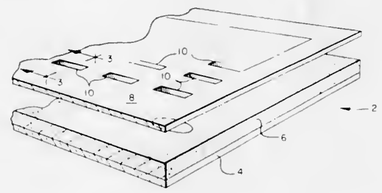
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**3,932,229**

## METHOD OF SAMPLE APPLICATION TO GEL ELECTROPHORESIS MEDIA

**Joseph D. Grandine, Acton, Mass., assignor to Millipore Corporation, Bedford, Mass.**

**Filed Nov. 15, 1974, Ser. No. 524,040**
**Int. Cl.² B01K** *5/00*
**U.S. Cl. 204—180 G** **5 Claims**




1. The method of applying a sample liquid to a gel electrophoresis medium which comprises in combination the steps of:

a. placing a cover sheet in contact with the surface of such gel medium, said sheet having a slit formed therein at the desired sample location;

b. placing an amount of sample in excess of that to be absorbed by said medium over said slit,

c. beginning measurement of a predetermined time when said excess sample is in place over said slit;

d. blotting the unabsorbed sample from said slit at the end of the measurement of said predetermined time, whereby said excess sample is in place over said slit for a fixed and determined period; and

e. removing said cover sheet from contact with the surface of said gel medium

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**3,932,230**

## METHOD OF EXTRACTING GALLIUM

**Steven William Summers, Hazlemere, England, assignor to The British Aluminium Company Limited, London, England**

**Filed July 19, 1974, Ser. No. 490,031**
**Claims priority, application United Kingdom, July 19, 1973, 34480/73**
**Int. Cl.² C25C** *1/22;* **C22B** *25/08*
**U.S. Cl. 204—105 R** **8 Claims**

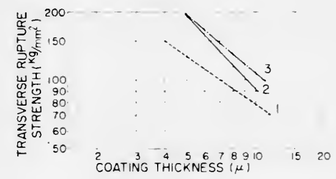
1. A method of removing gallium from a metal selected from the group consisting of tin, lead, and tin-lead alloy which comprises treating the metal in molten form with a molten flux consisting essentially of alkali metal hydroxide, and removing the flux containing gallium from the remainder of the metal.

**3,932,231**

## METHOD OF MAKING SURFACE-COATED CEMENTED CARBIDE ARTICLES

**Akio Hara, and Shuji Yazu, both of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan**

**Filed Feb. 26, 1971, Ser. No. 119,134**
**Claims priority, application Japan, Mar. 5, 1970, 45-18285; Apr. 4, 1970, 45-28739; Apr. 18, 1970, 45-33172; Apr. 18, 1970, 45-33173; Aug. 7, 1970, 45-69583; Aug. 7, 1970, 45-69584**
**Int. Cl.² C25D** *13/02*
**U.S. Cl. 204—181** **10 Claims**




1. A method of making surface-coated cemented carbide articles, which comprises providing a 3–50% by weight dispersion of fine powders of 20 microns or less containing 50% or more of titanium carbide in a liquid consisting mainly of an organic solvent, immersing a tungsten carbide base cemented carbide article containing 4–30% of a binder metal in the dispersion, applying a direct current voltage of 10–500 volts to the surface of the tungsten carbide base cemented carbide article to cause electrophoretic deposition of the fine powders of the dispersion thereon, heating the coated surface at a temperature of 1260°–1550°C in a vacuum or in a reducing or inert atmosphere and thereby forming a coating layer on the surface consisting mainly of titanium carbide of 100 microns or less on the surface of the cemented carbides.

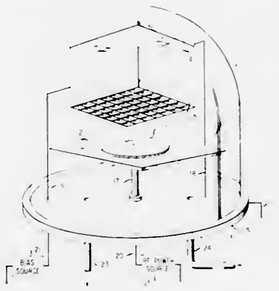
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**3,932,232**

## SUPPRESSION OF X-RAY RADIATION DURING SPUTTER-ETCHING

**Edward Franklin Labuda, Allentown, and William Dennis Ryden, Whitehall, both of Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**

**Filed Nov. 29, 1974, Ser. No. 528,038**
**Int. Cl.² C23C** *15/00*
**U.S. Cl. 204—192** **10 Claims**




1. A sputter-etching system for removing material from a workpiece which includes,

1. an evacuable chamber adapted to contain a reduced pressure ionizable gas atmosphere therein,

2. a cathode and an anode in said chamber, said cathode having means for mounting said workpiece in association therewith.

3. voltage means for applying a potential between said cathode and anode for producing a glow discharge therebetween,

4. characterized in that an X-ray attenuating member is interposed between said anode and cathode and in juxtaposition to said anode, said attenuating member comprising a plurality of passages defined by thin walls generally parallel to the direct path between said cathode and anode, said passages having a length dimension large in comparison to their maximum width dimension.

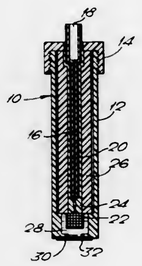
7. In a process for sputter-etching an electronic element by the formation of a glow discharge region between a pair of electrodes in a reduced pressure chamber containing an ionized gas, the method of suppressing the impingement of X-rays produced within said chamber upon the electronic element comprising mounting an X-ray attenuating member in the path between the two electrodes, said member having a plurality of passages parallel to the path between said electrodes, the passages having a length dimension at least several times their maximum width dimension.

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### 3,932,233
### CALCIUM ELECTRODE AND MEMBRANE AND COMPOSITION FOR USE THEREIN

**Jaromir Ruzicka, Naerum, and Jens Christian Tjell, Virum, both of Denmark, assignors to Radiometer A/S, Denmark**

**Filed Sept. 28, 1973, Ser. No. 401,809**
**Claims priority, application United Kingdom, Oct. 2, 1972, 45291/72**
**Int. Cl.² G01N *27/30, 27/46*; C25B *13/08***
**U.S. Cl. 204—195 M** **16 Claims**




1. An electrode for measuring the activity of calcium ions in a solution, comprising

1. an internal reference system, and

2. a calcium di(aryl)phosphate, said calcium di(aryl)phosphate being positioned in the electrode so as to be contactable with said measured solution and to be in electrical contact with said internal reference system, the aryl groups of said calcium di(aryl)phosphate each carrying at least one carbon chain containing at least three carbon atoms, the aryl groups of said calcium di(aryl)phosphate further carry electrophilic substitution, and the electrophilic substitution is nitro or halogen substitution.

2. An electrode for measuring the activity of calcium ions in a solution, comprising:

a. an internal reference system, and

b. calcium di(p-n-octylphenyl)phosphate, said calcium di(p-n-octylphenyl)phosphate being positioned in the electrode so as to be contactable with said measured solution and to be in electrical contact with said internal reference system.

### 3,932,234
### METHOD FOR MANUFACTURING SINGLE-ORIENTED ELECTRICAL STEEL SHEETS COMPRISING ANTIMONY AND HAVING A HIGH MAGNETIC INDUCTION

**Takuichi Imanaka; Takahiro Kan; Yoshio Obata, and Toru Sato, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan**

**Filed Oct. 9, 1973, Ser. No. 404,776**
**Claims priority, application Japan, Oct. 13, 1972, 47-101850**
**Int. Cl.² H01F *1/04***
**U.S. Cl. 148—112** **7 Claims**

1. A method of manufacturing single-oriented electrical steel sheet comprising:

a. hot rolling a silicon steel raw material consisting essentially of less than 0.06% of carbon, less than 4% of silicon, 0.012 to 0.045% of antimony aand 0.008 to 0.10% of at least one member of a group selected from selenium, sulphur and tellurium, and 0.02 to 0.2% of manganese, to an intermediate gauge of about 2–5mm;

b. effecting at least one cold rolling at a reduction rate of 40–85% so as to form a cold rolled steel sheet having final gauge;

c. decarburization annealing said sheet in a wet hydrogen atmosphere at 750°–850°C to minimize the amount of carbon in said sheet subsequently;

d. subjecting the sheet to a secondary recrystallization annealing at a temperature of 800°–920°C for 10 to 120 hours selected so as to grow the crystal grains having (110) (001) orientation; and thereafter;

e. subjecting the sheet to a purification anncaling at a temperature greater than 1,000°C and fluctuating in direct proportion to the silicon content so as to remove S and Se, whereby the iron loss of the final product is decreased.

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### 3,932,235
### METHOD OF IMPROVING THE CORE-LOSS CHARACTERISTICS OF CUBE-ON-EDGE ORIENTED SILICON-IRON

**Karl Foster, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**Continuation-in-part of Ser. No. 382,267, July 24, 1973, abandoned. This application May 7, 1974, Ser. No. 467,696**
**Int. Cl.² H01F *1/04***
**U.S. Cl. 148—113** **11 Claims**

1. In the method of improving the core loss characteristics at high operating inductions of iron-silicon alloy members which are to be subjected to a final heat treatment for developing a "cube-on-edge" or (110) [001] orientation, the steps comprising, cleaning the surface of the alloy member to remove all oxides and other foreign matter therefrom which alloy member is in the cold rolled finish thickness condition, applying a coating to at least one side of the alloy member which coating comprises alumina in the form of a powder having an average particle size of about 300 mesh and in no event greater than 100 mesh, is non-reactive with the alloy and which promotes decarburization, heating the coated alloy to a temperature within the range between about 1,075°C and 1,300°C for a time period of between about 6 hours and about 36 hours, while maintaining a dry hydrogen atmosphere about said alloy.



### 3,932,236
### METHOD FOR PRODUCING A SUPER LOW WATT LOSS GRAIN ORIENTED ELECTRICAL STEEL SHEET

**Toshiya Wada, Kitakyushu; Tadao Nozawa, Munakata, and Toshihiko Takata, Kitakyushu, all of Japan, assignors to Nippon Steel Corporation, Japan**

**Filed Jan. 18, 1974, Ser. No. 434,449**
**Claims priority, application Japan, Jan. 22, 1973, 48-8704**
**Int. Cl.² H01F *1/04***
**U.S. Cl. 148—113** **2 Claims**

1. In a method for producing a grain-oriented electrical steel sheet having super low watt loss wherein a silicon steel sheet ingot or slab containing 2.5 to 4.0% Si is subjected to hot rolling, annealing and at least one cold rolling to a final thickness, and the steel is subjected to decarburization annealing and a finishing annealing to complete the secondary recrystallization, and the surface of the steel is then cleaned, the improvement which comprises after said surface cleaning step, polishing the surface of the steel to a mirror finish by electrolytic or chemical polishing and applying a thin metal plating to the polished surface.

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### 3,932,237
### METHOD FOR FORMING AN INSULATING GLASS FILM ON SURFACES OF AN ORIENTED SILICON STEEL SHEET

**Toshio Irie, Kobe; Yasuo Yokoyama; Yoshihiko Kameishi, both of Ashiya; Katsuo Yamaguchi, Takarazuka, and Kazuo Hamachi, Nishinomiya, all of Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan**

**Filed Sept. 19, 1974, Ser. No. 507,277**
**Claims priority, application Japan, Oct. 30, 1973, 48-121174**
**Int. Cl.² H01F *1/04***
**U.S. Cl. 148—113** **4 Claims**

1. In a method for forming a highly adhesive uniform insulating glass film consisting mainly of forsterite on surfaces of an oriented silicon steel sheet, comprising sequential steps of:

a. cleaning surfaces of a cold rolled silicon steel strip said cleaning including a degreasing step and said steel strip having a final gauge and containing 2–4% of silicon;

b. subjecting the cleaned steel strip to a decarburizing annealing at a temperature of 700°–900°C under a wet hydrogen atmosphere to form $SiO_2$-containing oxide film on the surfaces of the steel strip; and

c. applying to the decarburized steel strip an annealing separator consisting mainly of magnesia, winding the steel strip in the form of a coil, and subjecting the coiled steel strip to a final annealing at a temperature of 1100°–1300°C under a hydrogen-containing atmosphere,

the improvement comprising pickling the cold rolled silicon steel strip following the degreasing part of the cleaning step and prior to the decarburizing annealing such that the surface layers of the steel strip are removed in an amount of at least $3g/m^2$.

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### 3,932,238
### METHOD AND APPARATUS FOR QUENCHING PIPE

**Franklin C. Safford, Philadelphia, Pa., assignor to Drever Company, Huntingdon Valley, Pa.**

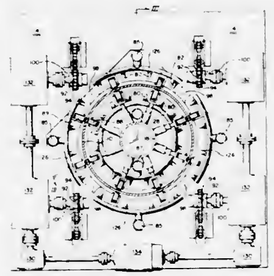
**Filed Jan. 24, 1975, Ser. No. 543,778**
**Int. Cl.² C21D *1/62***
**U.S. Cl. 148—131** **12 Claims**

1. An apparatus for vertically quenching a hot metal pipe comprising:

a. a first means shaping the hot pipe into a round configuration and restraining the pipe in the round configuration;

b. a second means applying high intensity curtains of quench fluid to the inside surface of the pipe and to the outside surface of the pipe, the quench curtains impinge the inner and outer surfaces in the form of rings; and

c. a third means supporting the pipe and continuously moving it to and through the first means then through the second means in a substantially vertical path in the direction of the longitudinal axis of the pipe.

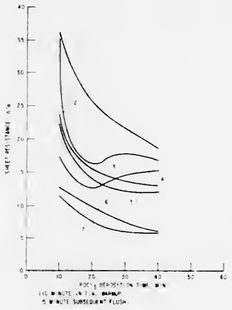


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### 3,932,239
### SEMICONDUCTOR DIFFUSION PROCESS

**William A. Brown, Wappingers Falls, N.Y., assignor to Cogar Corporation, Utica, N.Y.**

**Filed Oct. 27, 1970, Ser. No. 84,276**
**Int. Cl.² H01L *21/225***
**U.S. Cl. 148—186** **54 Claims**



1. A method for controlling the junction depth of a diffused semiconductor region having a certain sheet resistance and a PN junction located within a silicon substrate comprising the step of:

reoxidizing the silicon substrate surface for a period of time and at a temperature sufficient to reduce the junction depth of said diffused semiconductor region to a desired level.

### 3,932,240
### BURNING RATE MODIFYING BINDER FOR PROPELLANT AND METHOD

**John D. Braun; Arnold Nielsen; M. Frank Pickett; Ronald Henry, all of China Lake, and William P. Norris, Ridgecrest, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed June 4, 1973, Ser. No. 367,091**
**Int. Cl.² C06B** *45/10*
**U.S. Cl. 149—19.2** **4 Claims**

1. A binder - burn rate modifier system for solid rocket propellants comprising hydroxy terminated polybutadiene with a suitable curative as the binder and a member selected from the group consisting of 4,4-diferrocenyl-1-pentanol and 3,3-diferrocenylbutyl isocyanate as the burn-rate modifier.

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### 3,932,241
### PROPELLANTS BASED ON BIS[N-(TRINITROETHYL)NITRAMINO]ETHANE

**David C. Sayles, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.**

**Filed July 6, 1970, Ser. No. 56,017**
**Int. Cl.² C06D** *5/06*
**U.S. Cl. 149—19.3** **10 Claims**

1. A propellant composition comprising; an oxidizer including bis[N-(trinitroethyl)nitramino]ethane, an acrylate-acrylic acid binder, and a curing agent, said acrylate-acrylic acid being present in a ratio of acrylate to acrylic acid in an amount of about 90/10 to about 96/4.

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### 3,932,242
### SOLID PROPELLANT WITH BUTYL RUBBER BINDER

**Charles E. Bartley, 6520 E. Exeter Blvd., Scottsdale, Ariz. 85251, and Lawrence R. Settlemire, 2489 Ocean St., Carlsbad, Calif. 92008**

**Continuation-in-part of Ser. No. 697,789, Nov. 21, 1957, abandoned, which is a continuation-in-part of Ser. No. 355,148, May 14, 1953, abandoned, and a continuation-in-part of Ser. No. 692,147, Aug. 21, 1946, abandoned. This application May 8, 1961, Ser. No. 108,672**
**Int. Cl. C06d** *5/06*
**U.S. Cl. 149—19.9** **6 Claims**

1. A solid propellant charge for rocket motors consisting essentially of a formed vulcanized mixture of rubbery isobutylene-isoprene copolymer fuel binder in the proportion of 10–20% by weight and a solid inorganic strong oxidizing salt in the proportion of 80–90% by weight.

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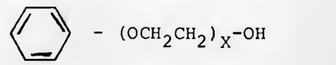
### 3,932,243
### CLEANING AND POLISHING COMPOUND FOR BARREL AND VIBRATORY FINISHING OF FERROUS AND NON-ERROUS METALS

**Edward H. Chang, and Oliver D. Nichols, both of Burnsville, Minn., assignors to Fremont Industries, Inc., Shakopee, Minn.**

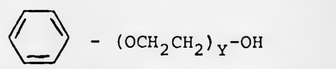
**Continuation-in-part of Ser. No. 381,359, July 20, 1973, abandoned. This application Dec. 18, 1974, Ser. No. 533,938**
**Int. Cl.² C23G** *1/36*
**U.S. Cl. 156—20** **7 Claims**

1. The method of polishing the surface of a metal article which includes immersing and agitating the article in an aqueous solution comprising:

a. the reaction product obtained from the reactant mixture of an alkylphenol selected from the group consisting of an octylphenol having the structural formula:



wherein X represents an integer having an average value of from between about 1 and 30; and a nonylphenol having the structural formula:



wherein Y represents an integer having an average value of from between about 5 and 13; and phosphoric acid based upon $P_2O_5$ in a molar ratio of between 1:3 and up to 3:4 of $P_2O_5$ to alkylphenol.

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### 3,932,244
### PRODUCTION OF CARBON LINING FOR REDUCTION CELLS

**Anfinnur Mikkelsen, Kitimat, Canada, assignor to Alcan Research and Development Limited, Montreal, Canada**

**Filed Dec. 19, 1973, Ser. No. 426,136**
**Int. Cl.² C08L** *71/06, 95/00*; **C25B** *11/12*; **C25C** *3/06*
**U.S. Cl. 156—71** **14 Claims**

1. A method of making lining bodies for aluminum reduction cells, comprising adding binder material comprising an alkaline-catalyzable furan binder to a carbonaceous aggregate comprising carbon material recovered from used, chemical-containing carbon lining of an aluminum reduction cell, said carbon material containing residual contaminant material from the used lining, for reacting said furan binder with said residual contaminant material acting as catalyst to produce a hardened carbon body, said binder material being added in a proportion equal to between about 11% and about 14% of the total weight of the aggregate and the binder, and consisting essentially of furan binder and pitch respectively present in relative proportions, by weight, between about 65:35 and about 50:50, said furan binder consisting essentially of furan binder constituents that react in the presence of an alkaline catalyst to form a resin that, in mixture with an aggregate, acts as a binder providing a hardened body, said furan binder being selected from the class consisting of a furfural plus a phenol, furfural plus a ketone, and furfuryl alcohol plus an aldehyde plus an amine, and said pitch being a high melting point pitch.

4. A method of lining an aluminum reduction cell, comprising

a. intimately mixing a minor proportion of binder material including an alkaline-catalyzable furan binder with a major proportion of a carbonaceous aggregate comprising carbon material recovered from used, chemical-containing carbon lining of an aluminum reduction cell, said carbon material containing residual contaminant material from the used lining, for reacting said furan binder with said residual contaminant material acting as catalyst; and

b. disposing a body of the mixed aggregate and binder in an aluminum reduction cell as a lining therefor;

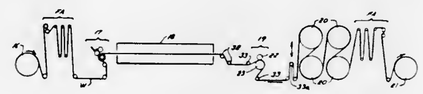
c. said binder material being added in a proportion equal to between about 11% and about 14% of the total weight of the aggregate and the binder, and consisting essentially of furan binder and a high melting point pitch respectively present in relative proportions, by weight, between about 65:35 and about 50:50, said furan binder being selected from the class consisting of furfural plus a phenol, furfural plus a ketone, and furfuryl alcohol plus an aldehyde plus an amine.



### 3,932,245
### MECHANICAL EMBOSSING OF FOAMED SHEET MATERIAL

**Edward R. Erb, East Greenville, and Richard L. Maass, Emmaus, both of Pa., assignors to GAF Corporation, New York, N.Y.**

**Division of Ser. No. 78,878, Oct. 7, 1970, Pat. No. 3,741,851, which is a continuation-in-part of Ser. No. 821,409, May 2, 1969, Pat. No. 3,655,312. This application Mar. 21, 1973, Ser. No. 343,399**
**Int. Cl.² B32B** *5/20, 31/20*
**U.S. Cl. 156—79** **11 Claims**



1. A process for producing sheet material comprising a layer of cellular or foamed resin material having a mechanically embossed relief pattern in a surface thereof and being of substantially uniform composition in both the land and valley areas of the relief pattern, and a color pattern on said surface with areas of said color pattern in registry with pattern areas of the relief pattern, comprising the steps of:

1. forming a layer of foamable resin material,
2. heating to gel said layer of foamable resin material,
3. applying a color pattern to the upper surface of the layer of gelled foamable resin material,
4. applying a layer of substantially transparent resin material of substantially uniform thickness over said upper surface and color pattern,
5. heating said layers at a sufficient temperature to foam said foamable resin material and fuse the resin material in both said layers, and
6. drawing the sheet material containing such foamed and fused resin material while said layer of foamed resin material is hot through the nip between a backing roll contacting the undersurface of said sheet material and an embossing roll contacting the upper surface of the sheet material, said backing and embossing rolls being driven by contact with said sheet material, the embossing being effected at constant roll pressure to thereby control the pressure of engagement of the sheet material in the nip between said embossing and backing rolls, said pressure and the rotational speed of said embossing roll being controlled to apply to the surface of the layer of foamed resin material bearing the color pattern a relief pattern while maintaining the uniformity of the thickness of said layer of substantially transparent resin material, areas of which relief pattern are in registry with areas of said color pattern.

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### 3,932,246
### GAS SENSOR AND METHOD OF MANUFACTURE

**Henry L. Stadler; Tseng-Ying Tien, both of Ann Arbor; Michael J. Esper, Detroit, and Donald J. Romine, Southfield, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.**

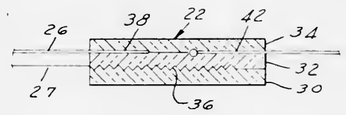
**Division of Ser. No. 393,698, Aug. 31, 1973, Pat. No. 3,886,785, which is a continuation-in-part of Ser. No. 198,515, Nov. 15, 1971, abandoned. This application Sept. 5, 1974, Ser. No. 503,590**
**Int. Cl.² C04B** *39/12*
**U.S. Cl. 156—89** **6 Claims**

1. A method of manufacturing a porous ceramic gas sensor comprising the steps of:

forming a fine powder from a transition metal oxide, said powder being at least 99% pure;

forming a slurry of said powder and an organic binder solution, the organic binder solution being capable of drying such that the binder will comprise less than about 20%, by weight, of the dried slurry;

drying the slurry in a sheet so that the organic binder constituent is less than about 20% by weight of the dried slurry;




cutting the sheet to provide a plurality of complementarily sized green ceramic wafers;

sandwiching a pair of electrodes in spaced-apart relation between a first pair of said green ceramic wafers; and

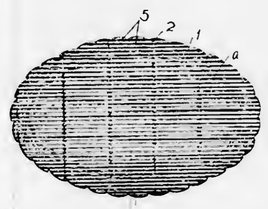
maturing the sandwiched green ceramic laminae to a density of from about 72 to about 85% of theoretical density.

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### 3,932,247
### METHOD OF MAKING THERMOPLASTIC RESIN MATTINGS

**Yasuhiro Oshima, c/o Meiwa Gravure Chemical Co., Ltd. 860, Kashida, Higashi Osaka, Osaka, Japan**

**Continuation of Ser. No. 88,693, Nov. 12, 1970, abandoned. This application Mar. 20, 1973, Ser. No. 342,933**
**Claims priority, application Japan, Sept. 25, 1970, 45-95593**
**Int. Cl.² B32B** *27/12, 31/18, 5/02*; **D03D** *25/00*
**U.S. Cl. 156—148** **5 Claims**



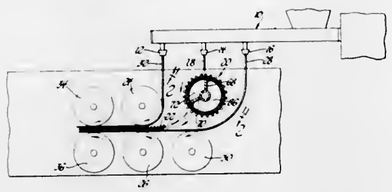

1. A method of producing thermoplastic resin mattings with contoured surfaces comprising a base material consisting of a plurality of resilient thermoplastic resin rods in closely spaced parallel relationship with each other in a single layer and a plurality of thermoplastic resin threads extending transversely of said rods and disposed at spaced intervals along the length of said rods, and a transparent synthetic thermoplastic resin sheet, said method comprising interweaving said thermoplastic resin threads with said thermoplastic resin rods so that the thermoplastic resin threads completely encircle the thermoplastic resin rods at their points of contact and thereby form said base material, superimposing said transparent synthetic thermoplastic resin sheet on said base material, applying heat and pressure at specific corresponding points on said base material and said transparent synthetic thermoplastic resin sheet for thermally adhering them together, said step of applying heat and pressure comprising forming contoured surfaces at said specific points so as to create an ornamental design thereon, and cutting those portions of the base material and thermoplastic resin sheet extending a specific distance outwardly from said specific points so as to form the outer edge of said mattings.

**3,932,248**

## METHOD AND APPARATUS FOR MAKING LAMINATED BOARD WITH A POCKETED CORE

**Clyde D. Keaton, 48 Dickinson St., Woodstown, N.J. 08098**

**Filed Sept. 28, 1973, Ser. No. 401,737**
**Int. Cl.² B31F *1/20***
**U.S. Cl. 156—210** **12 Claims**



1. The method of making a laminated board with a pocketed core comprising the steps of extruding a core sheet of thermoplastic resin at a temperature higher than the melting point thereof, feeding said core sheet through roll-forming means while it is above its plastic deformation temperature deforming portions of said core sheet by vacuum-drawing said core sheet against multiple convex forming elements protruding outwardly from cylindrical reference surface of the roll-forming means and disposed in parallel rows extending in one direction and against multiple concave forming elements receding inwardly of the cylindrical reference surface and disposed in parallel rows in a transverse direction and against said cylindrical reference surface, said forming elements being spaced apart by portions of said cylindrical reference surface, to form multiple pockets with rows of inverted pockets extending across rows of noninverted pockets with substantially flat and relatively non-deformed portions of said sheet between adjacent pockets, maintaining said forming elements at a temperature lower than said core sheet, rotating said roll-forming means to remove said core sheet therefrom after carrying it less than one revolution, extruding a pair of face sheets of thermoplastic resin at a temperature higher than the melting point thereof, joining said face sheets to the deformed core sheet by continuously advancing the extruded face sheets on opposite sides of the deformed core sheet at the same rate as the deformed core sheet, and engaging and bonding the inner surface of one face sheet with the outer extremities of the inverted pockets and engaging and bonding the inner surface of the other face sheet with the extremities of the noninverted pockets, said joining being effected after said core sheet is removed from the roll-forming means and by maintaining said face sheets at sufficiently high temperature to effect fusion of the extremities of the said pockets with said face sheets.

5. Apparatus for making a laminated board with a pocketed core comprising first extruder means for extruding a thermoplastic resin in the form of a sheet at a temperature higher than the melting point of said resin, roll-forming means adjacent said first extruder means and including a rotatable roll having a cylindrical surface portion and having multiple forming elements disposed thereon, said rotatable roll being adapted to receive said sheet and carry it in a downstream direction through less than one revolution of the roll, means for maintaining said forming elements at a temperature lower than said sheet, said multiple forming elements including a first group of elements which are convex relative to the cylindrical surface portion of said roll and including a second group of elements which are concave relative to said cylindrical surface portion, each of said forming elements being separated from adjacent forming elements by a part of said cylindrical surface portion, means for applying a partial vacuum to the region between the sheet and the surface of the roll for urging said sheet toward said roll into engagement with said convex and concave forming elements and with said cylindrical surface portion while the sheet is above its plastic deformation temperature, said forming elements being disposed in an array in which concave and convex elements occur alternately with lines of convex elements extending across lines of concave elements, whereby said sheet is formed with multiple oppositely opening pockets with substantially flat portions of said sheet between adjacent pockets, means adjacent the roll-forming means for changing the direction of advance of said sheet away from the roll-forming means to remove the sheet from said forming elements, second and third extruder means disposed relative to said first extruder means for extruding a pair of face sheets of thermoplastic resin on opposite sides of said core sheet, and means on opposite sides of said face sheets and located at a position downstream of the roll-forming means for guiding and maintaining said face sheets at a fusion bonding temperature and in engagement with the extremities of said pockets in said core sheet after the core sheet leaves the roll-forming means for effecting a joinder of each face sheet to said core sheet.

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**3,932,249**

## MESH REINFORCED ELASTOMERIC POLYMERS

**Harold Rex Jury, Norwood, and John Henry Hay, Panorama, both of Australia, assignors to Comalco (J. & S.) Pty. Limited, Victoria, Australia**

**Filed Apr. 10, 1974, Ser. No. 459,670**
**Claims priority, application Australia, Apr. 13, 1973, 2979/73**
**Int. Cl.² B29C *24/00***
**U.S. Cl. 156—213** **10 Claims**




1. A method of forming a reinforced elastomeric polymer comprising forming a reinforcing metal grid to have longitudinally extending members and joining members joining the longitudinally extending members, the surfaces of the joining members being displaced from the common tangential planes of the surfaces of adjacent said longitudinally extending members,

rendering one face of each of two sheets of elastomeric material adhesive, the length and width of each of said sheets exceeding respectively the length and width of the reinforcing grid,

interposing the reinforcing grid between said two sheets with the adhesive surfaces of the sheets contiguous and lying in planes displaced from said common tangential planes, and with the edges overlapping the edges of the metal grid on all sides, thereby forming air flow channels between and defined by the longitudinal members and said adhesive surfaces,

evacuating air through said air flow channels and from between the sheets to thereby draw said adhesive surfaces together around the periphery of the metal grid and in the areas existing between the longitudinally extending members and joining members, and

effecting adhesion between said adhesive surfaces.

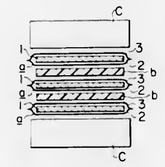


**3,932,250**

## METHOD FOR MANUFACTURING METAL FOIL- OR PLASTIC FILM-OVERLAID LAMINATE

**Shunichi Sato; Masaharu Kurata; Toshiyuki Takao; Sadao Masaki; Toru Notomi; Morio Gaku, and Takehiko Moriya, all of Tokyo, Japan, assignors to Mitsubishi Gas Chemical Co., Ltd., Tokyo, Japan**

**Filed May 30, 1974, Ser. No. 474,803**
**Claims priority, application Japan, May 30, 1973, 48-60544**
**Int. Cl.² C09J *5/00***
**U.S. Cl. 156—213** **16 Claims**



1. A method for manufacturing a metal foil- or plastic film-overlaid laminate, which comprises completly covering a cleaned press plate with at least one member selected from the group consisting of cleaned metal foils and cleaned plastic films, in such a manner that the pressing surface of the press plate comes in intimate contact with the face side of said member, partially or completely sealing the resulting covering along at least two edges of the press plate, two of the edges being opposite to each other, applying the covered press plate to one or both sides of a laminating base, subjecting the resulting assembly to a laminating apparatus with heating under pressure, taking the assembly out of the laminating apparatus, and thereafter opening the covering to remove the press plate.

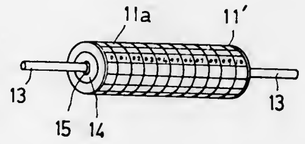
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**3,932,251**

## METHOD FOR MANUFACTURING AN INK-CONTAINABLE STAMP

**Tomoji Tanaka, No. 19-8, Takarayama-cho, Toyonaka, Osaka, Japan**

**Filed May 16, 1974, Ser. No. 470,494**
**Int. Cl.² B41C *3/00*; B41N *1/22***
**U.S. Cl. 156—245** **7 Claims**




1. A method for manufacturing an ink-containable stamp which comprises the steps of:

a. forming a mixture of synthetic resins comprising a mixture of polyvinyl acetate and polyolefin resin containing 40 to 90% polyolefin resin, with one or more fillers insoluble in glycols and extractable from the resin by the use of an acid solution containing an urea complex or an organic acid, stabilizers, pigments and solvents;

b. separately molding a number of printing types, and a drum or plate having a number of concave portions from said mixture;

c. irradiating the printing types and the drum or plate with gamma-rays;

d. immersing the printing types and the drum or plate in a pepsin solution and then in an acid solution thereby extracting the fillers to form porosity in the printing types and the drum or plate;

e. installing the printing types in the concave portions of the drum or plate by the use of a binder.

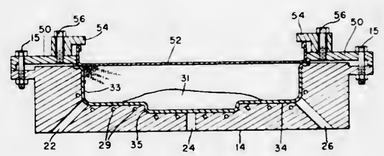
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**3,932,252**

## PROCESS FOR THE MANUFACTURE OF COMPOSITE FOAM AND FABRIC ARTICLES

**Terrill Wayne Woods, Cedar Falls, Iowa, assignor to Deere & Company, Moline, Ill.**

**Filed Oct. 18, 1974, Ser. No. 515,865**
**Int. Cl.² B29D *27/04***
**U.S. Cl. 156—245** **13 Claims**




1. A process for making composite articles having a porous cover which will breathe and having a foamed core which does not extend through the pores of the cover, the process comprising: coating one side of a porous cover with a strippable, foam impervious coating; lining a mold with the porous cover with the strippable coating facing the mold; foaming a foamable mixture in the mold to form a composite article; removing the article from the mold; and stripping off the strippable coating.

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**3,932,253**

## METHOD FOR FORMING A MAGNET PATTERN ON MAGNETIC MEMORY CIRCUIT CARDS

**Paul F. Elarde, Naperville; F. A. Klasek, LaGrange Park, and George O. McCormick, LaGrange, all of Ill., assignors to Western Electric Company, Inc., New York, N.Y.**

**Filed June 3, 1974, Ser. No. 476,118**
**Int. Cl.² B32B *31/20, 31/12*; B41M *3/08*; H05K *1/00***
**U.S. Cl. 156—249** **10 Claims**

9. In a method of forming a pattern of a first material on a surface of a second material:

pressing the pattern of the first material directly against a surface of a sheet of malleable material to deform the malleable material to secure the pattern within the surface thereof;

placing the pattern bearing surface of the malleable material over the surface of the second material;

pressing a surface of the malleable material, opposite from the pattern bearing surface, to force the pattern of the first material from the surface of the malleable material and against the surface of the second material, and

adhesively securing the pattern of the first material to the surface of the second material.

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**3,932,254**

## APPARATUS FOR SEMI-CONTINUOUS PRODUCTION OF LENGTHY HELICAL WAVE GUIDES

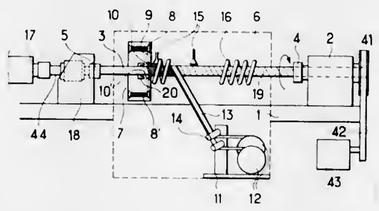
**Georges N. Comte, Saint-leu-la-Foret, France, assignor to Cables de Lyon Alsacienne, Lyon, France**

**Continuation-in-part of Ser. No. 875,685, Nov. 12, 1969, abandoned. This application Dec. 12, 1972, Ser. No. 314,478**
**Claims priority, application France, Nov. 15, 1968, 68.174027; July 24, 1969, 69.25333; July 25, 1969, 69.25588**
**Int. Cl.² B65H *81/00, 81/08***
**U.S. Cl. 156—361** **6 Claims**

1. A machine for the semi-continuous manufacture of waveguides of considerable length from a plurality of sections of wave-guides of a standard length, said machine comprising:

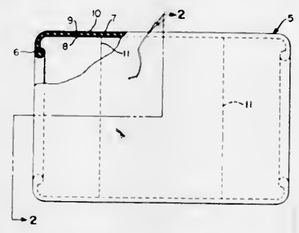
a. a cylindrical mandrel;

b. first means for rotating said cylindrical mandrel during the manufacture of each section of wave-guide;
c. a carriage movable relative to said cylindrical mandrel in the direction parallel to the axis thereof;
d. second means for displacing said carriage from a first end of said cylindrical mandrel to the second end thereof during the manufacture of each section of wave-guide in synchronism with the rotational movement of the latter;
e. third means for displacing said carriage from the second end of said cylindrical mandrel to the first end thereof in between the manufacture of each section of wave-guide;
f. fourth means for winding wire on said cylindrical mandrel, said fourth means being movable with said carriage and being mounted for rotation about said cylindrical mandrel;
g. fifth means for causing said fourth means to rotate about said cylindrical mandrel, whereby the wire is wound on said cylindrical mandrel in a helical fashion while said carriage is being displaced by said second means;
h. sixth means for continuously controlling the ratio of the rotational speeds of said first and fifth means during operation of the machine in response to the angle at which wire is wound on said cylindrical mandrel such that the winding angle relative to the axis of said cylindrical mandrel remains constant, thereby maintaining a constant winding pitch of the wire so as to obtain contiguous turns;



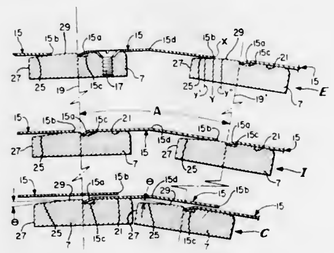
i. seventh means for distributing tape on the wire wound on said cylindrical mandrel, said seventh means being mounted on and movable with said carriage, whereby the combination of the translational motion of said carriage and the rotational motion of said mandrel causes the tape to be wound on the wire in a helical fashion;
j. eighth means for displacing said cylindrical mandrel and a section of wave-guide manufactured on said cylindrical mandrel (i) parallel to the axis of said cylindrical mandrel, (ii) in the direction of the first end of said cylindrical mandrel, and (iii) by an amount equal to the standard length of a section of wave-guide, thereby moving said cylindrical mandrel and a section of wave-guide manufactured on said cylindrical mandrel from a first position to a second position;
k. ninth means for gripping and immobilizing a section of wave-guide manufactured on said cylindrical mandrel after said cylindrical mandrel and the section of wave-guide are in the second position; and
l. 10th means for displacing said cylindrical mandrel from its second position to its first position by a motion which is (i) parallel to the axis of said cylindrical mandrel, (ii) in the direction of the second end of said cylindrical mandrel, and (iii) equal in length to the standard length of a section of wave-guide while said ninth means remains actuated, whereby said cylindrical mandrel is withdrawn from the section of wave-guide and is returned to its first position while the section of wave-guide remains in its second position.

**3,932,255**
**METHOD OF MAKING AN IMPROVED TIRE BUILDING SLEEVE AND SAID SLEEVE**
**Jeffrey W. Saracsan, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio**
**Continuation-in-part of Ser. No. 372,896, June 22, 1973, abandoned. This application July 20, 1974, Ser. No. 490,147**
**Int. Cl.² B29H** *17/16*
**U.S. Cl. 156—401** **5 Claims**



1. A sleeve for a tire building machine, including an inflatable body portion having dimensions suitable for attachment in operative relationship with a tire building machine, said body portion comprising an inner layer or core of a cured compounded elastomer selected from the class of rubber polymers consisting of natural, high cis-polybutadiene, high cis-polyisoprene, acrylonitrile-butadiene and butadiene stryene and at least one coat of a polyurethane elastomer which extends around the ends of the inner layer past at least the area that contacts the drum, said polyurethane elastomer containing 0.5 to 10 percent by weight of a silicone polycarbinol or silicone polycarbinal.

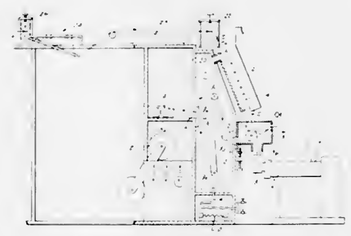
**3,932,256**
**TIRE BUILDING DRUM**
**John W. Touchette, Hartville, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio**
**Filed Aug. 19, 1974, Ser. No. 498,494**
**Int. Cl.² B29H** *17/16*
**U.S. Cl. 156—417** **5 Claims**



1. In a tire building drum having a plurality of segments in cylindrical array and movable radially toward and away from the drum axis and having in an expanded condition of such drum arcuate spaces between the segments thereof and cover plates bridging each of said spaces, which plates cooperate with the respective segments to provide a peripherally and axially continuous working surface on said drum, the improvement comprising the combination wherein each cover plate is longitudinally coextensive with its two associated segments and has a fixed longitudinal edge rigidly affixed to one of said segments and a free longitudinal edge radially outward of and overlying the other of said segments, said plate having an arched contour convex outwardly of said axis is provided with a base surface extending parallel said drum axis and normal to the radial plane of movement of such segment and a longitudinally extending support surface inclined inwardly from said base surface to underlie and to support said free edge only when a radially inward load is applied to said cover plate.



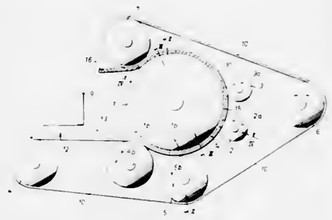
**3,932,257**
**MECHANISM FOR MAKING A FLEXIBLE CLOSURE**
**Takashi Noguchi, c/o Seisan Nippon Sha, Ltd., New Kohjimachi Building, 3, 5-chome, Kohjimachi, Chiyoda Tokyo, Japan**
**Division of Ser. No. 178,087, Sept. 7, 1971, Pat. No. 3,784,432. This application Aug. 31, 1973, Ser. No. 393,446**
**Int. Cl.² B29C** *23/00*
**U.S. Cl. 156—497** **10 Claims**



1. A mechanism for forming sheets having strip means thereon comprising in combination:
means for supplying a continuous sheet of plastic film;
means heating the sheet in a preheating chamber to a predetermined temperature sufficient to permit fusion to a plastic strip but less than the deterioration temperature of the film;
means connected for controlling the temperature in said preheating chamber so that the sheet is heated to fusion temperature;
an extruder for extruding a heated plastic strip having a small critical profile;
means defining a joining zone adjacent the extruder wherein the newly extruded strip is immediately fed onto the surface of the heated sheet while the plastic is hot so that the strip is fused to the sheet;
and air jet means of a width to limit air flow onto the strip and profile for increasing its rate of cooling while said sheet remains heated.

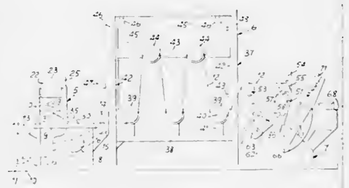
**3,932,258**
**APPARATUS FOR THE CONTINUOUS PRODUCTION OF CHIPBOARD, FIBREBOARD AND LIKE PANELS**
**Heinz Brinkman, Bennigsen; Rolf Gersbeck, Hannover, and Berndt Greten, Springe, all of Germany, assignors to Hermann Berstorff Maschinenbau GmbH, Hannover-Kleefeld and Bison-Werke Bahre & Greten GmbH & Co. KG, Springe, both of, Germany**
**Filed June 10, 1974, Ser. No. 477,981**
**Claims priority, application Germany, June 9, 1973, 2329599**
**Int. Cl.² B29J** *5/00;* **B32B** *21/00;* **B29D** *7/14*
**U.S. Cl. 156—498** **13 Claims**

1. Apparatus for the continuous production of panels of uniform weight and thickness over their entire width from compacted material, comprising a tensioned endless steel belt, drive means for moving said belt longitudinally, a plurality of rollers, a revolvable press drum, an outer shell for said drum, said belt being guided over said rollers and partially around said drum such that said rollers press said belt against said drum, heating means for said drum, and sprinkler apparatus disposed over a portion of said belt which extends horizontally before said drum in the direction of movement of said belt; said belt, said rollers, said drum, and said sprinkler apparatus being relatively so disposed that material to form said panels sprinkled onto said portion of said belt is pressed between said belt and said drum to form a web of material, at least one of said plurality of rollers having over its width a convexly



ground surface, the degree of convexity of said roller being determined by the degree of buckling deformation of said drum experienced in operation and by the inherent flexion of said roller when loaded having regard to the elasticity modulus of the material from which said roller is formed.

**3,932,259**
**METHOD AND APPARATUS FOR THE MANUFACTURE OF SHEETS FOR HOLDING POSTAGE STAMPS OR THE LIKE**
**Adriana Marini, 7, Via Tancredi Gallimberti, and Giacomo Marini, 35, Viale Quartara, both of Genoa, Italy**
**Filed June 27, 1973, Ser. No. 373,909**
**Claims priority, application Italy, July 7, 1972, 12772/72; May 25, 1973, 12639/73**
**Int. Cl.² B32B** *31/10*
**U.S. Cl. 156—510** **8 Claims**

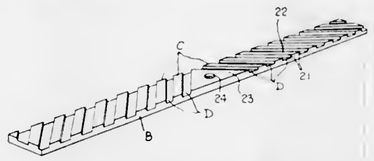


1. A machine for manufacturing mounting sheets for philatelistic use or the like, comprising, means for applying a plurality of continuous spaced apart parallel lines of glue to one side of a continuous sheet of transparent material, means for supplying said glued sheet of transparent material to a punching press, said punching press including means for receiving and supporting a support sheet, said punching press having a punching means for simultaneously punching out of said transparent sheet a plurality of selected portions thereof, each of which portions include a segment of one of said lines of glue located along one edge thereof and facing the support sheet, and for compressing said portions against the support sheet, without cutting the support sheet, so as to cause the glue to adhere the selected portions to the support sheet with an unglued remainder of each portion being separable from the surface of the support sheet.

### 3,932,260
### HEAT SPLICING APPARATUS

George H. Balentine, Jr., State Park Road, Greenville, S.C. 29609

Filed July 24, 1974, Ser. No. 491,403
Int. Cl.² B30B *15/34*
U.S. Cl. 156—583 1 Claim



1. For use in an apparatus for splicing lengths of textile fabric in end to end relation by application of heat to heat fusible bonding material at overlapping end portions of said lengths of fabric, having a narrow elongated first jaw and a complementary second jaw, at least one of said jaws being heated, each being movable toward and away from the other for such application of heat, the improvement including:
a series of alternate ridges and depressions extending along a face of one of said jaws forming a substantially herringbone configuration thereacross; and
said ridges and depressions on one side of said face converge toward said ridges and depressions on the other side of said face at a medial portion thereof;
whereby a splice formed between said jaws across said fabric offers a uniform resistance to longitudinal forces exerted on said fabric but which permits lateral stretching of the splice.

### 3,932,261
### ELECTRODE ASSEMBLY FOR AN ELECTROLYTIC CELL

Morton S. Kircher, Oakville, Canada, and Judson A. Wood, Cleveland, Tenn., assignors to Olin Corporation, New Haven, Conn.

Filed June 24, 1974, Ser. No. 482,295
Int. Cl.² C25B *11/02*
U.S. Cl. 204—288 11 Claims

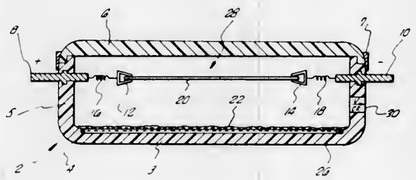


1. An electrode assembly suitable for use in a cell for the electrolysis of alkali metal chloride solution which comprises:
a. an electrode plate positioned vertically,
b. two electrode surfaces positioned in parallel and having a space between said electrode surfaces,
c. at least two conductive supports, one said conductive support separately attached to each of said electrode surfaces and positioned in said space between said electrode surfaces, and,
d. openings in said electrode plate for attachment of said conductive supports, said conductive supports being attached substantially perpendicular to said electrode plate, said conductive supports adapted to conduct current between said electrode plate and said electrode surfaces, and said conductive supports adapted to permit continuous but restricted flow of said alkali metal chloride solution up through said space between said electrode surfaces.

### 3,932,262
### PORTABLE ELECTROPHORESIS APPARATUS USING MINIMUM ELECTROLYTE

Mario R. Stevens, Glendora, and John Michael Vickers, La Canada, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Oct. 15, 1973, Ser. No. 406,296
Int. Cl. B01k *5/00*
U.S. Cl. 204—299 12 Claims



1. An electrophoresis unit that is useable for conducting electrophoretic analyses of specimens mounted on substrates that have been saturated with an electrolyte, said electrophoresis unit comprising:
a sealable container having an interior cavity defined by container walls;
means for sustaining a saturated electrolytic vapor in said cavity of said container; and
electrode means for suspending said substrate within said cavity of said container, said electrode means extending from outside said container through the walls thereof and including a pair of securing members for suspending said substrate therebetween and within said cavity, and a pair of terminal members respectively connected to said securing members for being connected to provide direct current power thereto.

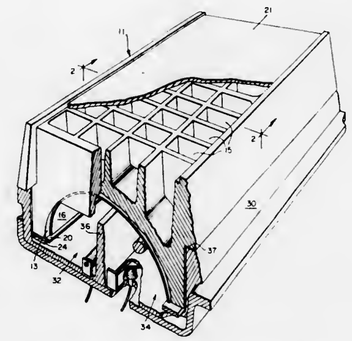
### 3,932,263
### ELECTROPHORESIS SLIDE MOUNTING MEANS

Paul E. Brefka, Southborough, Mass., assignor to Millipore Corporation, Bedford, Mass.

Filed Nov. 4, 1974, Ser. No. 520,286
Int. Cl.² B01K *5/00*
U.S. Cl. 204—299 3 Claims

1. In an electrophoresis migration apparatus having a mounting block with a concave cylindrical external surface for mounting and holding an electrophoresis slide, the improvement comprising;
a first slide retaining member fastened adjacent one edge of said concave cylindrical surface and extending in a direction substantially normal to said surface, said first retaining member being formed of a resilient soft material;
a second retaining member formed of a substantially rigid material, said second retaining member being mounted near the opposite edge of said concave cylindrical surface and extending in a direction substantially normal to said concave cylindrical surface toward said first retaining member, whereby an electrophoresis slide may be mounted and maintained compressed against said concave cylindrical surface by the resilient action of said first member compressing said slide lengthwise against said second rigid member.

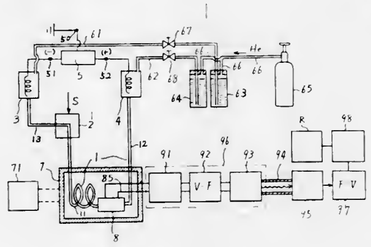




### 3,932,264
### ELECTROPHORETIC MEASUREMENT SYSTEM INCLUDING MEANS FOR DETERMINING ZONE BOUNDRIES

Tatsuro Haruki, Nishinomiya, and Junichi Akiyama, Kyoto, both of Japan, assignors to Shimadzu Seisakusho Ltd., Kyoto, Japan

Filed Nov. 12, 1973, Ser. No. 414,970
Int. Cl.² B01K *5/00*
U.S. Cl. 204—299 14 Claims



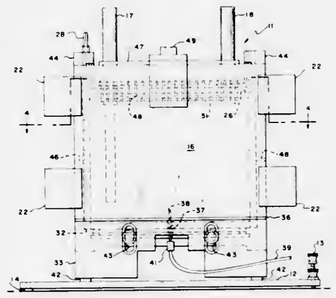
1. An electrophoretic measurement system comprising: an electrophoretic column means (11, 12, 13); sample introducing means for introducing a sample into said column means, power means (5) for generating a potential gradient along said column means; detector means (8) for sensing zone boundaries produced within said column means and providing an electrical output signal; signal transmitter means (93) for receiving the output electrical signal from said detector means and transmit it as a wave; converter means (95) disposed for receiving said wave and generating an electrical signal in response to said transmitted wave; reading means for reading the output signal from said converter means.

### 3,932,265
### VERTICAL GEL SLAB ELECTROPHORESIS APPARATUS

Stanton A. Hoefer, San Francisco, Calif., assignor to Hoefer Scientific Instruments, San Francisco, Calif.

Filed Mar. 28, 1974, Ser. No. 455,871
Int. Cl.² B01K *5/00*
U.S. Cl. 204—299 24 Claims

1. Apparatus for vertical formation and use of a gel slab in electrophoresis comprising an outer container opening upwardly forming an upper buffer chamber, an inner container shaped for placement within said outer chamber and opening upwardly forming a lower buffer chamber, first and second separable opposed vertical side walls together with first and second separable opposed vertical end walls defining a vertical gel slab chamber therebetween, said vertical gel slab chamber opening upwardly in communication with said upper buffer chamber and opening downwardly in communication with said lower buffer chamber, a sealing gasket for sealing the end of said vertical gel slab chamber opening downwardly, whereby separating gel solution may be retained therein prior to polymerization, said sealing gasket adapted to admit a filling device therethrough into said gel slab chamber for filling without turbulence, removable means for retaining said

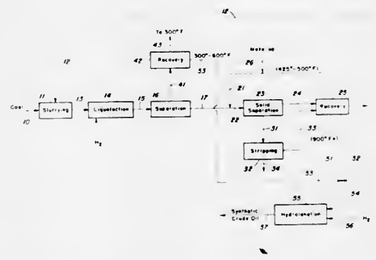


sealing gasket against the end of said gel slab chamber opening downwardly, adjustable means for securing said walls defining said vertical gel slab chamber together and to one side of said inner container, a first electrode extending into said upper buffer chamber, and a second electrode extending into said lower buffer chamber, whereby when said gel slab chamber is filled with separating gel solution through the filling device, the separating gel solution is polymerized, and said sealing gasket is removed, said upper and lower buffer chambers may be filled with buffer solution, a sample laid atop the polymerized separating gel under the buffer solution in said upper buffer chamber, and voltage applied across said first and second electrodes to cause electrophoretic separation of the sample in the gel slab.

### 3,932,266
### SYNTHETIC CRUDE FROM COAL

Morgan C. Sze, Upper Montclair, and George J. Snell, Fords, both of N.J., assignors to The Lummus Company, Bloomfield, N.J.

Filed Dec. 12, 1973, Ser. No. 423,903
Int. Cl.² C10G *1/04*
U.S. Cl. 208—10 14 Claims



1. A process for producing synthetic crude oil from coal, comprising:
a. contacting coal in admixture with a coal liquefaction solvent with hydrogen to effect hydrogenation thereof,

said hydrogenation being effected with a hydrogen consumption of from 4,000 to 12,000 SCF/ton MAF coal, a temperature of from 650°F to 900°F and a pressure of from 500 psig to 4,000 psig.

b. introducing liquefied coal, containing insoluble material and a liquid promoter into a gravity settling zone to separate insoluble material by gravity settling, said liquid promoter having a 5 volume percent distillation temperature of at least about 250°F and a 95 volume percent distillation temperature of at least about 350°F and no greater than about 750°F, said liquid having a characterization factor (K) of at least 9.75, said liquid having a characterization factor greater than said coal liquefaction solvent, said promoter liquid being added in an amount sufficient to promote and enhance gravity settling of insoluble material to produce, as overflow, liquefied coal essentially free of insoluble material;

c. recovering from the settling zone a liquefied coal essentially free of insoluble material; and

d. catalytically hydrogenating at least a portion of the liquefied coal which is essentially free of insoluble material to produce a synthetic crude oil having a hydrogen to carbon atomic ratio of from about 1.2 to about 1.8, said catalytic hydrogenation being effected at a hydrogen consumption of from about 7500 to about 20,000SCF/ton of MAF coal, a temperature of from about 500°F to about 900°F and a pressure of from about 500 to about 5000 psig.

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## 3,932,267
## PROCESS FOR PRODUCING UNINHIBITED TRANSFORMER OIL

**Robert William Lewis, Houston, and Lawrence Walker Maas, Pasadena, both of Tex., assignors to Shell Oil Company, Houston, Tex.**

**Filed Sept. 11, 1974, Ser. No. 505,129**
**Int. Cl.² C10G** *34/00*
**U.S. Cl. 208—87** **5 Claims**

1. In a method for producing an uninhibited transformer oil comprising:

A. contacting a petroleum distillate oil that is primarily naphthenic and aromatic, boiling higher than about 400°F, having a viscosity of from about 50–100 SSU at 100°F, and containing sulfur compounds of at least about 0.08%wt sulfur with a solvent selective for aromatic hydrocarbons under conditions to produce a raffinate phase containing from 15% to 30%v aromatic hydrocarbons and having a viscosity of from about 55–75 SSU at 100°F,

B. contacting the raffinate phase with hydrogen and a hydrogenation catalyst under conditions to

i. reduce the nitrogen content thereof to at most 25 PPM, and

ii. maintain the aromatic hydrocarbon content thereof greater than 15%v, and

C. recovering a transformer oil, the improvement comprising in step B contacting with catalyst is effected to maintain the sulfur content of the raffinate phase greater than 0.1%w.

## 3,932,268
## HYDROCARBON CONVERSION PROCESS

**Walter L. Haden, Jr., Westfield, and Frank J. Dzierzanowski, Somerset, both of N.J., assignors to Engelhard Minerals & Chemicals Corporation, Menlo Park, Edison, N.J.**

**Continuation-in-part of Ser. Nos. 810,325, March 25, 1969, Pat. No. 3,647,718, Ser. No. 856,458, Sept. 9, 1969, Pat. No. 3,657,154, and Ser. No. 10,005, Feb. 9, 1970, Pat. No. 3,663,165, each is a continuation-in-part of Ser. No. 738,384, June 20, 1968, Pat. No. 3,506,594. This application Nov. 16, 1971, Ser. No. 199,305. The portion of the term of this patent subsequent to Apr. 14, 1987, has been disclaimed.**
**Int. Cl.² C10G** *11/04*
**U.S. Cl. 208—120** **2 Claims**

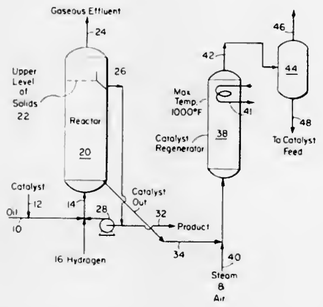
1. A method for cracking a hydrocarbon charge which comprises contacting said charge under fluid catalytic cracking conditions with a cracking catalyst in the form of attrition-resistant microspheres consisting essentially of a mixture of ion-exchanged synthetic faujasite and an amorphous alumina-silica residue of caustic leached calcined kaolin clay, said mixture having been obtained when the sodium form of faujasite was crystallized in situ by hydrothermal treatment of a suspension of amorphous silica-alumina microspheres comprising calcined clay in a dilute sodium hydroxide solution, said calcined clay having undergone the kaolin exotherm during calcination, said cracking catalyst microspheres analyzing, on a volatile-free weight basis, at least 90 percent combined $SiO_2$ and $Al_2O_3$ in a $SiO_2/Al_2O_3$ molar ratio within the range of 0.8 to 1.4/1 and less than 3 percent $Na_2O$.

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## 3,932,269
## HYDROGENATION OF HYDROCARBON RESIDUUM

**Leon M. Lehman, Miami Beach, Fla., assignor to Hydrocarbon Research, Inc., Morristown, N.J.**

**Filed July 14, 1972, Ser. No. 271,638**
**Int. Cl.² B01J** *37/14*; **C10G** *13/02*, *13/14*
**U.S. Cl. 208—157** **6 Claims**




1. In the process for the hydrocracking of a residuum oil in an ebullated bed reactor to convert at least 50 weight percent of the hydrocarbons boiling above 975°F in a reaction zone at a pressure between about 300 and 1000 psi of hydrogen when a temperature between about 750° and 850°F is used and at a pressure between about 1000–3000 psi when a temperature between about 900° and 950° is used by contacting said oil with a hydrocracking catalyst wherein coke deposits on the catalyst to reduce its activity and fresh catalyst is added to maintain a desired average catalyst activity at a rate such that between 5 and 20 barrels of oil are processed per pound of fresh catalyst and wherein the oil and hydrogen pass upwardly through the reaction zone under conditions to maintain the catalyst in random motion with substantial carryover of catalyst with liquid effluent from the reaction zone, the improvement comprising:



a. continuously removing said catalyst from said reaction zone at a rate at least twice as great as the rate of addition of fresh catalyst;

b. regenerating said catalyst to remove deposited carbon; and

c. recycling an appropriate portion of the regenerated catalyst to said reactor at a rate supplementing the rate of addition of fresh catalyst so as to maintain the desired inventory of total catalyst in the reactor and processing between 0.5 and 3.0 bbl/lb of carbon-free catalyst, both fresh and regenerated added to the reactor.

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## 3,932,270
## METHOD FOR DETERMINING HYDROCARBON HYDROTREATING ACTIVITY OF A CATALYST PRIOR TO ITS USE IN A HYDROTREATING PROCESS

**Marvin F. L. Johnson, Homewood, Ill., assignor to Atlantic Richfield Company, Philadelphia, Pa.**

**Division of Ser. No. 470,885, May 17, 1974. This application Feb. 20, 1975, Ser. No. 551,563**
**Int. Cl.² C10G** *23/02*
**U.S. Cl. 208—216** **7 Claims**

1. A hydrocarbon hydrotreating process which comprises:

1. determining the hydrocarbon hydrotreating activity of a first catalyst comprising a major amount of a porous alumina support, a minor catalytically-effective amount of nickel, at least a portion of said nickel being present in the N++ form, and a minor catalytically-effective amount of at least one additional metal selected from the group consisting of molybdenum, tungsten, and mixtures thereof, at least a portion of said one additional metal being presesnt in an oxidized state, said hydrocarbon hydrotreating activity being determined according to a method comprising:

a. determining the maximum relative reflectance of said first catalyst of light having a wave number in the range from about 16,000 $cm.^{-1}$ to about 17,000 $cm.^{-1}$;

b. determining the maximum relative reflectance of said first catalyst of light having a wave number of about 20,000 $cm^{-1}$;

c. determining an activity ratio equal to the relative reflectance determined in step (a) minus the relative reflectance determined in step (b);

d. performing steps (a), (b) and (c) to determine the activity ratio of a standard catalyst having essentially the same elemental composition as said first catalyst and acceptable hydrocarbon hydrotreating activity;

e. comparing the activity ratios obtained in steps (c) and (d), provided that (1) an increase in activity ratio from step (c) to step (d) being indicative of reduced hydrocarbon hydrotreating activity of said first catalyst relative to said standard catalyst, (2) no change in activity ratio from step (c) to step (d) being indicative of essentially equal hydrocarbon hydrotreating activity of said first catalyst relative to said standard catalyst and (3) a decrease in activity ratio from step (c) to step (d) being indicative of greater hydrocarbon hydrotreating activity of said first catalyst relative to said standard catalyst;

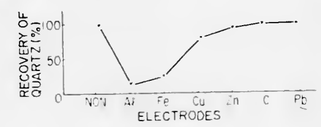
2. contacting a hydrocarbon feedstock containing at least one contaminant selected from the group consisting of sulfur, nitrogen and mixtures thereof with hydrogen in the presence of said first catalyst at conditions such that hydrogen forms compounds with at least one of said contaminants, provided that said first catalyst has a hydrocarbon hydrotreating activity at least essentially equal to that of said standard catalyst; and

3. recovering a hydrocarbon material having a reduced content of at least one of said contaminants relative to said feedstock.

## 3,932,271
## ELECTRIC PRECONDITIONING IN SELECTIVE FLOTATION OF OXIDIC TYPE ORES

**Ikuo Nagano, Hino; Kozo Saitoh, Tokyo, and Hiroshi Tanaka, Chofu, all of Japan, assignors to Mitsui Mining & Smelting Co., Ltd., Tokyo, Japan**

**Filed Jan. 9, 1974, Ser. No. 431,927**
**Claims priority, application Japan, Jan. 13, 1973, 48-006781**
**Int. Cl.² B03B** *1/00*
**U.S. Cl. 209—9** **9 Claims**



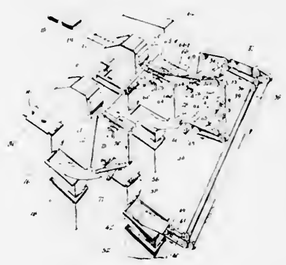

1. A method of ore separation which comprises: electrically preconditioning an ore pulp containing mixed oxide ore particles selected from the group consisting of (1) mixtures of zinc oxide and silica, (2) mixtures of zinc oxide and calcium oxide, (3) mixtures of zinc oxide and kaolin, (4) mixtures of manganese oxide and silica and (5) mixtures of silica and calcium carbonate, by applying DC current to said ore pulp from electrodes inserted in said pulp, at a current density of from 0.002 to 20 $A/dm^2$ and at a voltage of from 0.5 to 750 V, for a period of time effective to change the surface electric potentials of the ore particles to alter their flotation characteristics to improve the flotability of zinc oxide in the case of mixtures (1) and (2), to depress the flotability of zinc oxide in the case of mixture (3), to depress the flotability of manganese oxide in the case of mixture (4), and to improve the flotability of silica in the case of mixture ( 5), and to improve their separation characteristics; discontinuing application of said DC current and then subjecting said electrically preconditioned pulp to froth flotation in a flotation cell, and recovering from the flotation cell a concentrate of zinc oxide in the case of mixtures (1), (2) and (3), manganese oxide in the case of mixture (4), and silica in the case of mixture (5).

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## 3,932,272
## SCAN SYSTEM

**W. Robert Carnes, Jr., Darien, and John J. Balogh, Jr., Trumbull, both of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.**

**Filed Apr. 2, 1974, Ser. No. 457,375**
**Int. Cl.² B07C** *9/00*; **B65H** *7/12*
**U.S. Cl. 209—73** **7 Claims**



1. A currency processing system for analyzing and sorting a quantity of bills having differing fitness characteristics, comprising: means for introducing a strap of bills into said system, first strap counting means for counting each bill in said strap

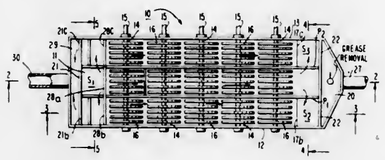
of bills introduced into said system, said first strap counting means providing a predetermined strap count, automatic conveying means for conveying each bill of said strap along a feed path within said system, said feed path including means for detecting and analyzing each bill for entry conditions and quality conditions, and accumulating means for storing said bills according to their fitness, said detecting and analyzing means providing a first signal for each bill meeting certain entry conditions, and a second signal for each bill meeting certain quality conditions, a second strap counting means operatively coupled to said detecting and analyzing means for receiving said first signal, said first signal incrementing said second strap counting means, said first strap counting means being coupled to said second strap counting means, said second strap counting means providing an incremented strap count and a third signal responsive to a coincidence between said predetermined strap count and said incremented strap count, said accumulating means including a first accumulator for accumulating bills meeting entry conditions and one of at least two quality fitness conditions, and a second accumulator for accumulating bills meeting entry conditions and the other of said two fitness quality conditions, first accumulator counting means for counting bills at said first accumulator, second accumulator counting means for counting bills at said second accumulator, and means for receiving said third signal and being responsive to said third signal for disabling said conveying means and stopping further accumulation, said first and second accumulator counting means providing a combined count for verifying said incremented strap count.

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### 3,932,273
### METHOD FOR THE PRIMARY AND SECONDARY TREATMENT OF WASTEWATER IN A UNITARY APPARATUS

**Wilbur N. Torpey, Douglaston, and Richard A. Sullivan, Woodside, both of N.Y., assignors to Autotrol Corporation, Milwaukee, Wis.**

**Continuation-in-part of Ser. No. 386,860, Aug. 9, 1973, Pat. No. 3,849,304. This application Nov. 14, 1974, Ser. No. 523,701**
**Int. Cl.² C02C *1/04***
**U.S. Cl. 210—17** **8 Claims**




1. Method for the continuous treatment of wastewater comprising

a. providing a treatment tank having a primary bay and at least one secondary bay horizontally adjacent to said primary bay,

b. each of said bays including a lower settling zone and a vertically adjacent upper biological treatment zone including means for biologically treating wastewater to oxidize pollutants,

c. introducing wastewater into the lower settling zone of said primary bay at one end of said tank,

d. creating a flow of wastewater through the settling zone of said primary bay in a direction away from said one end,

e. dividing wastewater from the settling zone of said primary bay into at least two portions

f. creating a flow of one of said portions through the biological treatment zone of said secondary bay,

g. creating a flow of another of said portions through the biological treatment zone of said primary bay,

h. said portions of wastewater flowing through said biological treatment zones in parallel and toward said one end of said tank,

i. directing wastewater from the biological treatment zone of said primary bay to the settling zone of said secondary bay,

j. directing wastewater from the biological treatment zone of said secondary bay to the settling zone of said secondary bay,

k. creating a flow of wastewater from the biological treatment zones of each of said primary and secondary bays through the settling zone of said secondary bay in a direction away from said one end of said tank and countercurrent to the direction of wastewater flow through the upper biological treatment zone of said secondary bay, and

l. removing treated wastewater from the settling zone of the secondary bay at the end of said tank opposite said one end.

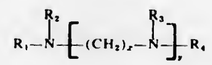
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### 3,932,274
### METHOD FOR ELIMINATING METALS FROM A SOLUTION CONTAINING A VERY SLIGHT AMOUNT OF THE METALS

**Gaku Izumi; Tetsuo Kimura; Katsuyoshi Mori, and Michiko Koizumi, all of Sendai, Japan, assignors to Director-General of the Agency of Industrial Science and Technology, Tokyo, Japan**

**Continuation of Ser. No. 283,797, Aug. 25, 1972, abandoned. This application June 11, 1974, Ser. No. 478,244**
**Claims priority, application Japan, Aug. 27, 1971, 46-66195**
**Int. Cl.² C02B *1/18***
**U.S. Cl. 210—44** **4 Claims**

1. A method for eliminating heavy metal ions from a solution containing a minute amount of heavy metal ions comprising treating said solution with a metal sequestering agent consisting essentially of a higher alkylated polyamine of the general formula:



wherein:

$R_1$ is an alkyl, hydroxyalkyl, or alkoxyalkyl group having about 8–24 carbon atoms,

$R_2$ is a hydrogen atom, the same as $R_1$, or a $+(CH_2)_x-N(R_3)\frac{}{}_y R_4$ group,

$R_3$ and $R_4$ each are a hydrogen atom or the same as $R_1$

$x$ is an integer from 1 to 4 and

$y$ is an integer from 1 to 3, or a water-soluble addition salt of said polyamine with an organic or inorganic acid;

blowing air into the treated solution to form bubbles and separating the metal sequestering agent from the solution through adsorption of said bubbles.

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### 3,932,275
### PROCESS FOR THE TREATMENT OF MINERAL SLIMES

**Arthur Raymond Mewes, Dayton, Ohio; Robert W. Styron, Atlanta, and Mark Harris Smith, Woodstock, both of Ga., assignors to AMAX Resource Recovery Systems, Inc., Dayton, Ohio**

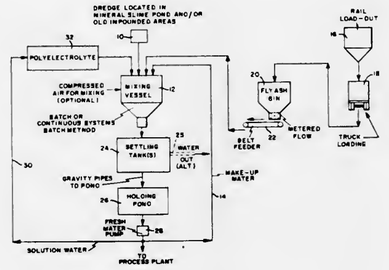
**Filed Aug. 29, 1974, Ser. No. 501,620**
**Int. Cl.² C02B *1/20***
**U.S. Cl. 210—49** **4 Claims**

1. A method of dewatering about 5% phosphate slimes comprising adding ingredients consisting essentially of fly ash slurry and a low anionic polyacrylamide solution to said slime in the following manner:

a. adding the fly ash slurry to the slime to be treated at a rate of approximately 0.2% by weight of total slime solution and thoroughly and gently mixing the resulting solution, followed relatively soon thereafter by the step of



b. adding the polyacrylamide solution to the admixed fly ash and slime solution and thoroughly and gently mixing to initiate coagulation, said polyacrylamide having a concentration of approximately 0.002% and being added at the rate of 10–25% by weight of the total slime solution,




c. allowing the coagulated solids to settle, and

d. drawing off clear water separated from the coagulated solids on settling.

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### 3,932,276
### FILTRATION AIDS IN URANIUM ORE PROCESSING

**Harold L. Ford, Arvada, Colo.; Nathan M. Levine, Stamford, Conn., and Alan Robert Risdon, S. River, N.J., assignors to Stein, Hall & Co., Inc., New York, N.Y.**

**Filed May 9, 1974, Ser. No. 468,793**
**Int. Cl.² B01D *21/01***
**U.S. Cl. 210—54** **6 Claims**

1. A process of improving the filtration efficiency and separation of uranium containing pregnant solutions from the solid tailings of uranium ore pulps obtained by carbonate leaching of uranium ore which comprises mixing said ore pulps with an aqueous solution containing 0.1 to 1 weight percent based on the total weight of the solution of hydroxyalkyl guar having a molar substitution (M.S.) of about 0.1 to 3.0 and selected from the group consisting of hydroxyethyl and hydroxypropyl guar in the amount of 0.1 to 2.0 pounds of hydroxyalkyl guar per ton of uranium ore and filtering said ore pulps and guar, said mixing and filtering taking place at a temperature of about 150° to 180°F.

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### 3,932,277
### METHOD AND APPARATUS FOR SEPARATING BLOOD FRACTIONS

**Clifton Eugene McDermott, and Franklin Dee Wareham, both of Salt Lake City, Utah, assignors to Bio-Logics Products, Inc., Salt Lake City, Utah**

**Filed Mar. 29, 1974, Ser. No. 456,168**
**Int. Cl.² B01D *33/00*; G01N *33/16***
**U.S. Cl. 210—77** **18 Claims**

1. Apparatus for permanently separating the serum fraction from the cell fraction of a spun blood sample in a sample vessel comprising

a collection tube having a small diameter orifice tube projecting from one end thereof; and

a head releasably fitted on the one end of the collection tube and having at least one sealing flange extending outwardly therefrom to sealingly engage the wall of the sample vessel and to immobilize the head as the collection tube is withdrawn therefrom, a bore hole extending through said head and having diameter smaller than the outer diameter of the orifice tube but expanding when said orifice tube is inserted thereinto to effectively seal when said orifice tube is removed therefrom and said sealing flange is compressed within the sample vessel.

18. A method of separating the serum fraction from the cell fraction of a spun blood sample in a sample vessel, comprising

moving a barrier within the sample vessel to a position between the serum and cell fractions while moving the serum fraction through a filter and the barrier into a collection tube;

removing the collection tube and blocking flow through the barrier, while leaving the barrier positioned in the sample vessel;



sealing flow between the outer surface of the collection tube and the inner surface of the sample vessel during movement of the collection tube into and out of the sample vessel; and

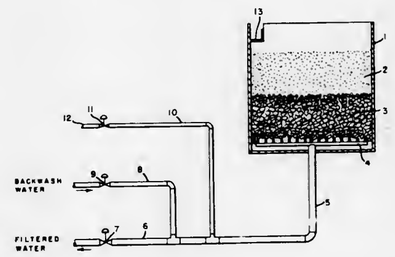
draining serum from the collection tube onto the barrier during removal of the collection tube from the sample vessel.

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### 3,932,278
### FILTER CLEANING METHOD

**John A. Meidl, and Thomas J. Vollstedt, both of Schofield, Wis., assignors to Sterling Drug Inc., New York, N.Y.**

**Filed Feb. 15, 1974, Ser. No. 442,791**
**Int. Cl.² B01D *41/02***
**U.S. Cl. 210—80** **4 Claims**




1. The method of backwashing sand or multi-media filters employed in wastewater treatment or sewage treatment plants in order to remove a coating therefrom, said coating consisting at least in part of activated carbon, which comprises contacting the filter media with water containing between about 50 and 500 ppm of chlorine for a period of between about 2 minutes and 1200 minutes, and backwashing the filter to remove the sloughed off coating.

4. The method of backwashing sand or multi-media filters employed in wastewater treatment or sewage treatment plants

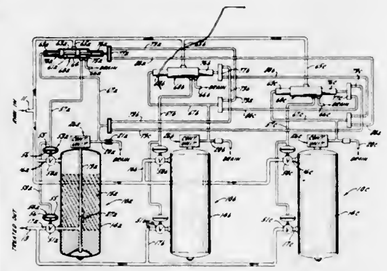
in order to remove a coating therefrom, said coating consisting at least in part of activated carbon, which comprises contacting the filter media with water containing between about 20 and 200 ppm of ozone for a period of between about 2 minutes and 1200 minutes, and backwashing the filter to remove the sloughed off coating.

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**3,932,279**
**MULTI-TANK ION EXCHANGE WATER TREATMENT SYSTEM**

**Charles H. Yocum, Roscoe, Ill., assignor to Rock Valley Water Conditioning, Inc., Rockford, Ill.**

**Division of Ser. No. 387,115, Aug. 9, 1973, Pat. No. 3,876,539.**
**This application Oct. 11, 1974, Ser. No. 514,247**
**Int. Cl.² B01D** *15/06*
**U.S. Cl. 210—96** **2 Claims**

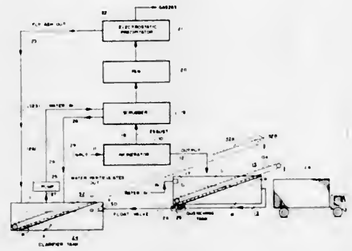


1. An ion exchange water treatment system comprising a plurality of ion exchangers adapted to be connected in parallel in a water system, an electric control circuit associated with all of said exchangers, said control circuit including a plurality of control branches and further including a plurality of energizing paths, there being one control branch and one energizing path associated individually with each exchanger, all of said control branches being connected in parallel with one another in said circuit and all of said energizing paths being connected in parallel combination with one another in said circuit, energizing means in each of said energizing paths, an electric sensing circuit associated individually with each exchanger and normally energized by the respective energizing means, each of said sensing circuits including a sensing means normally operable to produce an electric signal in said sensing circuit upon detecting that the respective exchanger needs regeneration, responding means in each of said sensing circuits and normally triggered by the signal produced by the respective sensing means when the latter detects the need for regeneration, each of said responding means being operable when triggered to produce an electric signal in the respective control branch, means associated individually with each exchanger and responsive to the signal produced in the respective control branch to cause the respective exchanger to regenerate, a switching device associated individually with each exchanger, all of said switching devices being connected in a series combination which is connected in series with the parallel combination of energizing paths, and means associated individually with each switching device for placing the respective switching device in a first condition when the exchanger begins regeneration and for placing the switching device in a second condition when the exchanger completes regeneration, the switching device of any one exchanger being operable when in said first condition to disable the energizing means for the sensing circuit of every other exchanger thereby to prevent the sensing means in every other sensing circuit from producing its signal so only one exchanger may regenerate at a time.

**3,932,280**
**CLOSED WATER SYSTEM IN MUNICIPAL INCINERATION PLANTS**

**Grant L. Anderson, Ogden, Utah, assignor to Clear Air, Inc., Ogden, Utah**

**Filed Mar. 29, 1974, Ser. No. 456,227**
**Int. Cl.² B01D** *21/24*
**U.S. Cl. 210—119** **6 Claims**



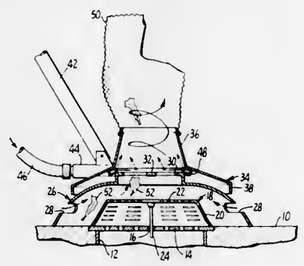
1. In the combination of an incinerator having a gases' exhaust means, a materials' input, and an incinerated materials' output, and a scrubber coupled to said exhaust means: an improvement comprising quenching tank means for receiving said output, clarifier tank means for introducing water into and receiving water and particulates from said scrubber, means for introducing water into said quenching tank means, first and second endless-belt conveyor structure means having lower ends disposed in said clarifier tank means and quenching tank means, respectively, for respectively conveying solely solids from said clarifier and quenching tank means, said first and second endless-belt conveyor structure means each including an upper flight terminating in an upper end, said upper flight of said first endless-belt conveyor structure means being constructed and arranged for discharge over said upper end thereof upon said upper flight of said second endless-belt conveyor structure means, and means for conducting water solely one way from said quenching tank means into said clarifier tank means.

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**3,932,281**
**LEAF TRAP KIT FOR SWIMMING POOLS**

**Andrew L. Pansini, 180 Los Cerros Drive, Greenbrae, Calif. 94904**

**Filed Dec. 12, 1974, Ser. No. 531,897**
**Int. Cl.² E03F** *5/06*
**U.S. Cl. 210—163** **4 Claims**



1. A swimming pool leaf trap comprising a perforate basket-shaped member placed in inverted position upon and in sealing and enclosing relation to the main drain opening plate of a pool, and a dome-shaped housing in peripheral engagement with and supported by the pool floor in enclosing, spaced relation to said member and defining therewith a leaf entrapment and leaf storage space, an inlet opening formed in the side of the housing for the passage of leaves into the storage space under the influence of selective water circulation flow along a first path defined by said inlet opening, said member, and said drain opening plate, and an outlet opening formed in the top of the housing for the passage of leaves out of the storage space under the influence of alternatively selective water circulation flow along a second path defined by said housing inlet opening and said outlet opening.

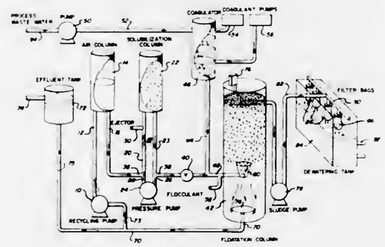


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**3,932,282**
**DISSOLVED AIR FLOATATION SYSTEM**

**Gregory A. Ettelt, Berwyn, Ill., assignor to Tenco Hydro/Aerosciences, Inc., Countryside, Ill.**

**Continuation of Ser. No. 286,220, Sept. 5, 1972, abandoned.**
**This application Aug. 6, 1974, Ser. No. 495,229**
**Int. Cl.² B01D** *17/00*; **B03D** *1/00*
**U.S. Cl. 210—195** **5 Claims**



1. In a dissolved air flotation system, including means for making air charged water and means for combining waste and the air-charged water, the improvement comprising, in combination: a flotation column having a greater vertical height than width whereby it is suitable for vertical flotation; an inlet to said flotation column for carrying the combined waste and released bubbles from said air-charged water; a release well in said flotation column, means coupling said release well to said inlet, said release well permitting upward flotation of the combined waste and bubbles and operating to slow the flow and prevent breakage of the bubbles; a clarified water outlet at the lower portion of said flotation column to draw the clarified water uniformly from about the tank without localized drawoffs and structural obstructions, said outlet comprising a pipe defining openings on its circumference for passage of clarified water; and a plate member that is generally coaxial with said vertical flotation column; means connecting said plate member to the top of said pipe whereby passage of clarified water into said pipe can only be accomplished through said openings, said plate member having a substantially greater diameter than the diameter of said pipe.

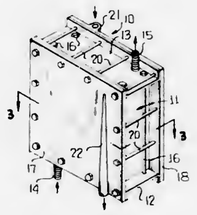
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**3,932,283**
**FLUID EXCHANGE DEVICE**

**William G. Esmond, 537 Stamford Road, Baltimore, Md. 21229**

**Filed Apr. 13, 1971, Ser. No. 133,574**
**Int. Cl.² B01D** *31/00*
**U.S. Cl. 210—321** **2 Claims**

1. A fluid exchange device comprising a stack of alternating first and second flow plates, the opposite faces of said first flow plates being contoured to define first flow paths thereacross and opposite faces of said second flow plates having planar portions, each of said second flow plates being telescoped within a membrane sleeve with each membrane sleeve having remote portions clamped between adjacent first and second flow plates and deformable outwardly by fluid under pressure within each membrane sleeve partially into said first flow paths to define second flow paths between each membrane sleeve and a respective planar second flow plate face portion, means for flowing a first fluid through said first flow paths and a second flow fluid through said second flow paths,



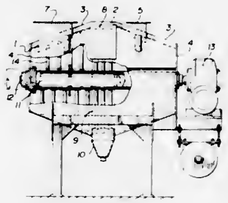
said second flow plates having remote distribution and collection channels formed in the opposite faces thereof at opposite ends of said planar face portions, said distribution and collection channels being formed adjacent ends of said flow plates with flow of said second fluid being longitudinally of said flowplates, and said first paths being disposed transversely of said flow plates.

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**3,932,284**
**BARREL SHAPED MERCURY SEPARATOR WITH SPOKED AGITATOR**

**Fred Ellsworth Howe, Kimberley, Canada, assignor to Cominco Ltd., Vancouver, Canada**

**Filed Jan. 6, 1975, Ser. No. 538,728**
**Int. Cl.² B01D** *21/01*
**U.S. Cl. 210—523** **7 Claims**



1. Apparatus for separating mercury from mercury containing material comprising a closed horizontal generally barrel-shaped vessel, having opposed conical end sections and a central cylindrical section, and provided with ports for charging the vessel, and for discharging the mercury and the treated residue, agitating means comprising a rotatable spindle coaxially extending within said vessel, and provided with a plurality of spokes, said spokes being arranged in rows, said rows of spokes being parallel to each other and equally spaced along the length of the spindle, each row having at least four spokes equiangularly positioned about the circumference of the spindle, the spokes in each row being off-set from the spokes in the next row except for those in the central cylindrical section which are not off-set, said spokes being of equal length in each row, but of different lengths in different rows, such that a constant distance exists between the free ends of each of the spokes and the inner wall of the vessel.

3,932,285

## CHROMIUM SALT COMPOSITIONS AND A PROCESS FOR THEIR PRODUCTION

**Mario Q. Ceprini, Cedarhurst, N.Y., and Roy T. Gottesman, Glen Rock, N.J., assignors to Tenneco Chemicals, Inc., Saddle Brook, N.J.**

**Filed Oct. 3, 1973, Ser. No. 403,319**
**Int. Cl.² C09K** *3/00*
**U.S. Cl. 252—1** **32 Claims**

1. A stable solution containing at least 7.5% by weight of dissolved chromium that comprises an inert, water-insoluble organic solvent and a mixture of chromium salts that contains 20 to 80 mole percent of at least one chromium (III) salt of a straight-chain aliphatic monocarboxylic acid having 5 to 10 carbon atoms and 20 to 80 mole percent of at least one chromium (III) salt of a branched-chain aliphatic monocarboxylic acid having 5 to 10 carbon atoms, said branched-chain acid having branching at one or more of the alpha and beta positions of the chain.

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3,932,286

## ANTIFRICTION POLYMERIC MATERIAL AND A COMPOSITION THEREOF

**Nikolai Ivanovich Pylaev, ulitsa Kontorskaya, 18, kv. 52, and Valery Yakovlevich Ponomarev, prospekt Metallistov, 82, kv. 82, both of, Leningrad, U.S.S.R.**

**Filed Jan. 21, 1975, Ser. No. 542,845**
**Int. Cl.² C10M** *5/00, 7/00*
**U.S. Cl. 252—12.4** **7 Claims**

1. A composition for antifriction materials, comprising the following components, parts by weight:

| | |
|---|---|
| epoxy binder | 36 – 48 |
| glass cloth or fibreglass | 42 – 44 |
| polytetrafluoroethylene of crystallinity 0.60 | 8 – 22. |

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3,932,287

## REACTIVE COLD FORMING LUBRICANT

**Horst Schneider, Frankfurt, Germany, assignor to Oxy Metal Industries Corporation, Warren, Mich.**

**Continuation-in-part of Ser. No. 216,731, Jan. 10, 1972, abandoned. This application Aug. 7, 1974, Ser. No. 495,348**
**Int. Cl.² C10M** *1/44, 3/38, 5/24, 7/24*
**U.S. Cl. 252—32.5** **14 Claims**

1. A stable organic phase coating composition useful for treating a metallic surface prior to non-cutting cold forming, consisting essentially of:

a. 5 to 60 weight % of the reaction product obtained upon mixing as reactants
   1. a salt of a multivalent metal cation,
   2. a polyphosphoric acid, and
   3. an alcohol of 10 – 36 carbon atoms, in a weight ratio of metallic cation: $P_2O_5$ equivalent: alcohol of 1: 3–60: 14–150;
b. 30 to 94 weight % of an organic lubricant of at least 12 carbon atoms; and
c. 0.5 to 10 weight % water.

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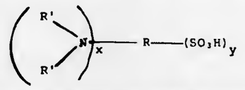
3,932,288

## AMINOSULFONIC ACID-HETEROCYCLO PROPANE-AMINE REACTION PRODUCTS AND FUELS AND LUBRICANTS CONTAINING SAME

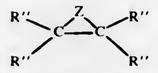
**Donald Irvin Hoke, Chagrin Falls, Ohio, assignor to The Lubrizol Corporation, Cleveland, Ohio**

**Filed July 29, 1974, Ser. No. 492,665**
**Int. Cl.² C10M** *1/40, 3/34, 5/22, 7/38*
**U.S. Cl. 252—33** **12 Claims**

1. A lubricant composition comprising a major amount of lubricant and a minor but sludge dispersing and/or corrosion inhibitive amount of an additive composition made by reacting (A) at least one acylated amino hydrocarbyl sulfonic acid or Group I or II metal salt, or ammonium salt of $C_{1\text{-}8}$ amine salt thereof, of at least (i) one amino hydrocarbyl sulfonic acid of the formula



wherein R is a hydrocarbyl group of one to about thirty carbon atoms having a valency of $x + y$, each R′ is independently a hydrogen atom or a monovalent hydrocarbyl group of one to about 18 carbon atoms, with the proviso that at least one R′ is a hydrogen atom, $x$ and $y$ are each independently 1 or 2 and $x + y$ is no more than 3, said acylated amino hydrocarbyl sulfonic acid having a (ii) carboxylic acid radical containing a substantially saturated hydrocarbyl substituent of at least about 12 carbon atoms and attached directly to an amino group of the amino hydrocarbyl sulfonic acid (i) through an acyl, acylimidoyl or acyloxy linkage; (B) at least one heterocyclic reagent selected from the group consisting of epoxides, episulfides and aziridines of the formula



wherein Z is an oxygen or sulfur atom or an —NR′— group, R′ being as defined in (A) and each R″ independently being a hydrogen atom, hydrocarbyl group containing 1 to about 18 carbon atoms or halo-substituted hydrocarbyl group of one to about 18 carbon atoms or mixtures of two or more of these; and (C) at least one (i) amino compound having one to about 400 carbon atoms or (ii) organo sulfide of the general formula $R^4SR^5$ wherein each of $R^4$ and $R^5$ is independently a hydrocarbyl group of one to about 50 carbon atoms or a hydroxyl-substituted hydrocarbyl group of 2 to about 50 carbon atoms and containing 1–6 hydroxyl groups with the proviso that $R^4$ and $R^5$ can be taken together with S to form a ring of 5 to 6 annular members.

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3,932,289

## PREPARATION OF OVERBASED CARBONATED SULFURIZED MAGNESIUM ALKYLPHENATES

**John M. King, San Rafael, and Nicolaas Bakker, Pinole, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.**

**Filed Nov. 9, 1973, Ser. No. 414,585**
**Int. Cl.² C10M** *1/54*
**U.S. Cl. 252—42.7** **6 Claims**

1. A process for preparing an overbased sulfurized magnesium phenate which comprises:

a. forming a first mixture of a $C_1$ to $C_3$ magnesium alkoxide in a lower alkanol solvent and carbonating the mixture with 1.5 to 4 weight parts of carbon dioxide per weight part of magnesium;
b. contacting said carbonated first mixture with a $C_8$ to $C_{35}$ alkylphenol at a temperature from about 20° to 150°C to form a normal magnesium phenate, the amount of alkylphenol contacted being 0.5 to 2 mols per mol of magnesium contacted;
c. contacting said normal magnesium phenate with 0.8 to 3.0 mols of sulfur per mol of alkylphenol in said normal magnesium phenate at a temperature of 130° to 250°C to form a sulfurized magnesium phenate and by-product hydrogen sulfide; and
d. contacting said sulfurized magnesium phenate with a sufficient amount of said carbonated first mixture to provide from 0.1 to 2.0 molar parts of carbonated magnesium alkoxide per molar part of alkylphenol in said sulfurized magnesium phenate, said contacting being conducted at a temperature from 20° to 120°C.



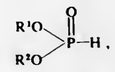
3,932,290

## PHOSPHORUS-CONTAINING FRICTION MODIFIERS FOR FUNCTIONAL FLUIDS

**Frederick William Koch, Willoughby Hills, and Jerry Lee Musser, Chardon, both of Ohio, assignors to The Lubrizol Corporation, Cleveland, Ohio**

**Filed Oct. 4, 1973, Ser. No. 403,373**
**Int. Cl.² C10M** *1/10*
**U.S. Cl. 252—49.8** **3 Claims**

1. A functional fluid composition comprising a major amount of a lubricating oil and a minor friction-reducing amount of the product obtained by reacting, at a temperature above about 100°C. and below the decomposition temperature of the reaction mixture, and in the presence of a strongly alkaline reagent, at least one phosphorus compound of the formula



wherein each of $R^1$ and $R^2$ is a lower alkyl radical, with at least one epoxide of the formula



wherein $R^3$ is an alkyl radical having 10–20 carbon atoms; about 1.0–1.5 moles of said epoxide being present per mole of said phosphorus compound.

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3,932,291

## PREPARATION AND DOPING OF SEMICONDUCTING FORMS OF $CuAlS_2$

**Paul C. Donohue, Wilmington, Del., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.**

**Filed Jan. 10, 1973, Ser. No. 322,359**
**Int. Cl.² C04B** *35/00;* **H01B** *1/10*
**U.S. Cl. 252—62.3 V** **6 Claims**

1. A semiconducting essentially colorless copper aluminum sulfide having chalcopyrite tetragonal structure having a light absorption coefficient less than $1.5 \times 10^2$ $cm^{+1}$ at 4000A consisting of copper, aluminum and sulfur wherein the ratio of aluminum to copper lies between the range 1.001 and 1.01 and the ratio of sulfur to the sum of copper and aluminum lies between 0.975 and 0.995.

2. A process for producing a semiconducting essentially colorless copper aluminum sulfide having chalcopyrite tetragonal structure and a light absorption coefficient less than $1.5 \times 10^2 cm.^{+1}$ at 4000A which comprises heating in a closed system in the absence of air at a temperature range of 900°–1250°C. for 12 hours or more a mixture of elemental copper, aluminum and sulfur all of 99.999% purity in atomic weight ratios

a. Cu=0.98–1.0, Al=1.001–1.30, S=1.95–2.0;
b. Cu=0.98–0.99, Al=1.0–1.30, S=1.95–2.0; or
c. Cu=1.00, Al=1.00, S=1.95–1.99.

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3,932,292

## PROCESS FOR THE MANUFACTURE OF DOPED SILVER HALIDES

**Pierre Junod, Fribourg, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland**

**Filed Aug. 1, 1973, Ser. No. 384,667**
**Claims priority, application Switzerland, Aug. 17, 1972, 12194/72**
**Int. Cl.² C04B** *35/00;* **H01L** *3/00*
**U.S. Cl. 252—62.3 R** **8 Claims**

1. A process for the production of a homogeneously doped silver halide which comprises reacting doped silver inside a closed reaction vessel with the vapour of chlorine, bromine or iodine, said doped silver being so positioned that neither the doped silver nor the newly formed halide comes into contact with the walls of the reaction vessel, at a temperature below the melting temperature of the doped silver and above the melting temperature of the doped silver halide, and collecting the doped silver halide thus formed on a support under conditions so adjusted and controlled, that the doped silver halide is recovered in crystalline form, and wherein the ratio of dopant to silver is 0.1 to 100 parts of dopant per million parts of silver, and wherein the dopant is selected from the group consisting of bismuth, cadmium, gallium, indium, lithium, magnesium, nickel, lead, zinc, manganese, titanium, platinum, tin, iron, sulphur, gold and rhodium.

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3,932,293

## METALLIC FERROMAGNETIC PARTICLES FOR USE IN ENVIRONMENTALLY STABLE MAGNETIC RECORDING MEDIA

**John S. Roden, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.**

**Continuation of Ser. No. 255,260, May 22, 1972, Pat. No. 3,837,912. This application Aug. 28, 1974, Ser. No. 501,264**
**Int. Cl.² C09J** *5/23*
**U.S. Cl. 252—62.55** **7 Claims**

1. Fine magnetizable particles useful in the magnetizable layer of a magnetic recording medium to provide magnetic recording characteristics of improved environmental stability, said particles comprising at least 75 weight-percent metal, at least a majority of which is iron, cobalt, or nickel, and having a thin outer layer that comprises a chromium- and oxygen-containing compound and is formed by exposing the particles under high-shear mixing conditions to a solution containing dichromate or chromate ions and having a pH of up to 7.0, the amount of chromium in said thin outer layer comprising between about 1 and 10 percent of the total weight of the particles.

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3,932,294

## FUNCTIONAL FLUID CONTAINING A HYDROLYSIS SUPPRESSOR

**Merwyn L. Burrous, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.**

**Filed Jan. 11, 1974, Ser. No. 432,712**
**Int. Cl.² C09K** *50/00;* **C10M** *1/10*
**U.S. Cl. 252—78** **5 Claims**

1. A functional fluid comprising an admixture of
1. a major portion of a base oil which is an organic ester or amide of a phosphorous acid, or mixtures thereof, and
2. a minor portion, from 0.01 to 8 weight percent of said fluid, of at least one 2-(3,4-epoxycycloalkyl)-5-5′-spiro-(3,4-epoxy)cycloalkyl-m-dioxane having from 15 to 45 carbon atoms.

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3,932,295

## DETERGENT COMPOSITION

**Takashi Fujino, Yokohama, and Riyouichi Matsui, Sakura, both of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan**

**Filed Apr. 29, 1974, Ser. No. 465,066**
**Int. Cl.² C11D** *7/54*
**U.S. Cl. 252—102** **3 Claims**

1. A bleaching detergent composition consisting essentially of an anionic or nonionic textile-washing surfactant; from 1 to 50% by weight of sodium percarbonate; and a polymer selected from the group consisting of polyethylene glycol having a molecular weight in the range of 4000 to 20000, polyvinylpyrrolidone having a molecular weight in the range of 40000 to 360000, and mixtures thereof, the amount of said polymer being from 0.01 to 10 times the amount of sodium percarbonate, whereby the composition in aqueous solution is effective to remove soil from textiles and bleach the textiles and said polymer is effective to reduce migration of dyestuffs from colored textiles to white textiles present in the same washing bath.

### 3,932,296
### CORROSION INHIBITOR

**Nancy J. Byth, Tulsa, Okla., assignor to The Dow Chemical Company, Midland, Mich.**

**Filed May 29, 1973, Ser. No. 364,385**
**Int. Cl.² C11D 7/32, 7/08; C23G 1/06; C23F 11/14**
**U.S. Cl. 252—148** **5 Claims**

1. A corrosion inhibitor comprising:

a. the reaction product of about 1 mole of an organic ammonia derivative containing at least one active hydrogen attached to the nitrogen atom per molecule; from about 1.5 to about 10 moles of a ketone having at least one hydrogen atom attached to the carbon atom alpha to the carbonyl group, from about 2 to about 10 moles of an aldehyde; from about 0.3 to about 24 parts by weight, based on the other four reactants of a fatty acid containing from 1 to about 20 carbon atoms and from about 0.005 to about 0.10 mole of a first quaternary ammonium compound, in admixture with,

b. from about 0.5 to about 10 parts by volume of a secondary quaternary ammonium which is different from the first quaternary ammonium compound.

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### 3,932,297
### SOLVENT COMPOSITIONS FOR CLEANING

**John Joseph Clementson, and Arisztid Lajos Horvath, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England**

**Filed Jan. 14, 1974, Ser. No. 433,403**
**Claims priority, application United Kingdom, Feb. 2, 1973, 5238/73**
**Int. Cl.² C11D 3/43**
**U.S. Cl. 252—171** **3 Claims**

1. An azeotropic composition consisting essentially of 1,1,1-trichloroethane and n-propanol wherein the proportion of n-propanol is 7.1% by weight of the composition, said composition having a boiling point of 72.3°C.

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### 3,932,298
### NEMATIC LIQUID CRYSTALS WITH CHARGE-TRANSFER ACCEPTORS AS DOPANTS

**Mortimer M. Labes, Philadelphia, Pa., assignor to Temple University, Philadelphia, Pa.**

**Filed July 19, 1973, Ser. No. 380,817**
**Int. Cl.² G02F 1/16**
**U.S. Cl. 252—299** **6 Claims**

1. A nematic liquid crystal composition consisting essentially of (a) a nematic liquid selected from the group consisting of azoxy, azo, ethylenic and acetylenic linked dibenzenes, substituted at the para positions with substituents selected from the group consisting of lower alkyls and lower alkoxies and (b) a nonionic charge-transfer acceptor dopant selected from the group consisting of a tetra halo-p-benzoquinone, chloranil, 2,3-dichloro-5,6-dicyano-p-benzoquinone, and 7,7,8,8-tetracyanoquinodimethane.

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### 3,932,299
### METHOD FOR THE REDUCTION OF IRON IN IRON-DOPED LITHIUM NIOBATE CRYSTALS

**William Phillips, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.**

**Continuation-in-part of Ser. No. 302,185, Oct. 30, 1972, abandoned. This application Dec. 3, 1973, Ser. No. 420,784**
**Int. Cl.² G11C 17/00**
**U.S. Cl. 252—300** **8 Claims**

1. A method of reducing over 90 percent of the trivalent iron present in an iron-doped lithium niobate crystal to divalent iron without reducing the lithium niobate which comprises surrounding an iron-doped lithium niobate crystal in a salt of lithium and heating at a temperature of at least about 400°C up to about 1000°C but below the melting point of said lithium salt in an oxygen-containing atmosphere.

### 3,932,300
### SYSTEM FOR DISPOSING OF RADIOACTIVE WATER

**Reginald L. Gotchy, Bethesda, Md., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.**

**Filed Sept. 10, 1973, Ser. No. 395,677**
**Int. Cl.² G21F 9/02**
**U.S. Cl. 252—301.1 W** **6 Claims**

1. A method for reducing the amount of radioactivity released to the biosphere in connection with the production of gas from a nuclearly stimulated natural gas reservoir created in natural gas bearing strata comprising the steps of:

a. transporting the gaseous mixture including hydrocarbons, water vapor and entrained liquid water from a nuclearly created chimney in said reservoir to the earth's surface through an annulus formed between a pair of conduits, the first of which is positioned within the second,

b. separating water from said gaseous mixture, and

c. injecting the water separated from said gaseous mixture into a nuclearly created chimney through an inner of a pair of conduits, the first of which is positioned within the second, which inner conduit extends further into the chimney than the other of said pair whereby said injected water enters the chimney at a lower level than that from which the gaseous mixture of that chimney is received by the annulus between the pair of conduits for transportation to the earth's surface and said downwardly flowing water provides precooling to said upwardly flowing gaseous mixture.

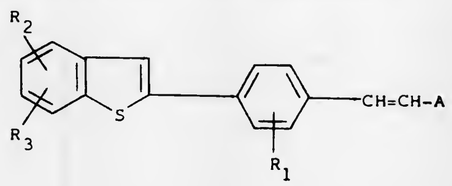
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### 3,932,301
### STILBENE OPTICAL BRIGHTENERS AND COMPOSITIONS BRIGHTENED THEREWITH

**Nathan N. Crounse, and Kantilal B. Desai, both of Cincinnati, Ohio, assignors to Sterling Drug Inc., New York, N.Y.**

**Continuation-in-part of Ser. No. 118,076, Feb. 23, 1971, Pat. No. 3,781,279. This application May 29, 1973, Ser. No. 364,248**
**Int. Cl.² D06L 3/12**
**U.S. Cl. 252—301.2 W** **4 Claims**

1. A normally solid, fiber and film-forming polyester or nylon polymeric material having incorporated therein approximately 0.005 to 0.5 percent by weight of said polymeric material of a fluorescent compound of the formula



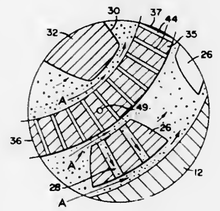

wherein $R_1$ is hydrogen, alkyl having 1 to 6 carbon atoms, alkoxy having 1 to 6 carbon atoms, or halo; $R_2$ and $R_3$ are the same or different and are members of the class consisting of H, alkyl having 1 to 6 carbon atoms, alkoxy having 1 to 6 carbon atoms, halo, dialkylamino wherein each alkyl has 1 to 6 carbon atoms, alkanoylamino having 1 to 6 carbon atoms, phenyl, phenyl substituted by alkyl having 1 to 6 carbon atoms, halo, alkoxy having 1 to 6 carbon atoms, and alkanoylamino having 1 to 6 carbon atoms; and A is a monovalent aromatic radical selected from the class consisting of 9-phenanthrenyl, 9-anthryl, 2-benzofuranyl, 2-indolyl, 2-benzothiophenyl, 3-coumarinyl, 2-indenyl, 2-quinolinyl, 3-quinolynyl, 2benzoxazolyl, 2-benzothiazolyl, 2-naphtho[2,1-b]furanyl and 2-naphtho[1,2-b]furanyl.



### 3,932,302
### FOAM GENERATOR

**Robert E. Eron, 3375 34th St. North, St. Petersburg, Fla. 33714**

**Continuation-in-part of Ser. No. 96,105, Dec. 8, 1970, Pat. No. 3,791,778, which is a continuation-in-part of Ser. No. 771,704, Oct. 30, 1968, abandoned. This application Jan. 21, 1974, Ser. No. 434,797**
**Int. Cl.² B01J 13/00**
**U.S. Cl. 252—359 E** **2 Claims**




1. A foam generator and pump constructed to produce a foamed discharge, said foam generator and pump comprising: a housing having at least one inlet for introducing fluid and for introducing a foaming solution into said housing; at least one outlet means for discharging foam; agitating means movably mounted within said housing; said agitating means comprising a pair of eccentric but co-planar rotors including one inner rotor and one outer rotor; each of said rotors having teeth formed thereon and said outer rotor arranged in cooperative substantially surrounding relation to said inner rotor, said inner and outer rotors being externally and internally geared respectively in intermeshing engagement during only a portion of their relative movement; a partition positioned between said rotors in the area where said rotors are not in intermeshing engagement; said partition including a plurality of bores formed therethrough for transmitting a foam solution between the gear pockets and the teeth of said rotors; said bores comprising at least one radial partition bore and at least one axial inlet partition bore; said radial bores being formed in cooperative relation between the gear pockets and between the teeth of said inner and outer rotors, whereby foam is generated by the interaction of fluid and foaming solution with said gear pockets, said teeth and said bores, said axial partition bore providing means for extraneous chemical input.

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### 3,932,303
### CORROSION INHIBITION WITH TRIETHANOLAMINE PHOSPHATE ESTER COMPOSITIONS

**William Robert Hollingshad, Bethel Park, Pa., assignor to Calgon Corporation, Pittsburgh, Pa.**

**Filed June 4, 1973, Ser. No. 367,079**
**Int. Cl.² C23F 11/16, 11/14**
**U.S. Cl. 252—389 A** **10 Claims**

1. A composition useful for inhibiting the corrosion of metals in a water system which comprises a triethanolamine phosphate ester and at least one member selected from the group consisting of phosphoric acid, phosphonates, and a polyacrylate having a molecular weight of from about 500 to about 10,000.

### 3,932,304
### METHOD FOR FORMING A CATALYTIC DEPOSIT

**Claude Lambert, St-Michel-sur-Orge; Pierre Bono, Morangis; Bernadette Pichon, Velizy, and Jacques Daunay, Versailles, all of France, assignors to Societe Generale de Constructions Electriques et Mecaniques Alsthom & Cie, Paris, France**

**Filed Apr. 4, 1974, Ser. No. 457,843**
**Claims priority, application France, Apr. 16, 1973, 73.13728**
**Int. Cl.² B01J 21/18; B01M 4/08, 4/96; H01B 1/04**
**U.S. Cl. 252—428** **6 Claims**

1. A method for producing a catalytic carbon deposit on a conductive support comprising

admixing (i) a suspension of between 200 and 400 grams per liter of catalytic carbon in a liquid medium from the group consisting of water and alcohol, with (ii) a solution of between 20 and 50 grams per liter of polyvinyl chloride in a cyclic ketone solvent, to form an emulsion,

depositing said emulsion on said support, and

evaporating the liquid components of said emulsion from said support to form a layer of catalytic carbon in a polyvinyl chloride binder.

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### 3,932,305
### V-P-ZR CATALYSTS AND METHOD OF PREPARATION THEREOF IN THE ABSENCE OF HYDROGEN HALIDE

**Anthony T. Jurewicz, and Lewis Brewster Young, both of Kendall Park, N.J., assignors to Mobil Oil Corporation, New York, N.Y.**

**Filed Apr. 17, 1974, Ser. No. 461,668**
**Int. Cl.² B01J 27/18**
**U.S. Cl. 252—429 R** **5 Claims**

1. A method for preparing a vanadium-phosphorus-zirconium catalyst composite that consists essentially of:

a forming an aqueous mixture of a vanadium compound selected from the group consisting of $V_2O_5$, $VOCl_3$, $VO(NO_3)_3$, $NH_4VO_3$, and $VF_5$ and a reactant selected from the group consisting of hydroxy-alkanoic acids having 2–3 carbon atoms and oxo-alkanoic acids having 2–3 carbon atoms in a ratio of said reactant to vanadium compound of between about 0.05 and about 1, refluxing said mixture for between about 0.5 hour and 5 hours;

b adding a zirconium salt selected from the group consisting of $ZrOCl_2 \cdot 4H_2O$, $ZrOCl_2 \cdot 8H_2O$, $ZrO(OAc)_2 \cdot H_2O$, $ZrCl_4$, $Zr(OAc)_4$, $Na_2ZrCl_6$, and $ZrOBr_2 \cdot xH_2O$, in a Zr/V atomic ratio of between about 0.0025 and about 0.5, continuing refluxing for between about 0.5 hour and about 5 hours;

c adding phosphoric acid or a compound hydrolyzable to phosphoric acid, in a P/V atomic ratio of between about 1.1/1 and about 1.5/1, continuing refluxing for between about 0.5 hour and about 5 hours to form a slurry; and

d drying said slurry.

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### 3,932,306
### SOLID CATALYST FOR HETEROGENEOUS REACTIONS

**Peter Rona, Haifa, Israel, assignor to IMI (TAMI) Institute for Research & Development, Haifa, Israel**

**Filed Jan. 4, 1974, Ser. No. 431,010**
**Claims priority, application Israel, Jan. 17, 1973, 41329**
**Int. Cl.² B01J 31/02**
**U.S. Cl. 252—430** **9 Claims**

1. A composite solid catalyst for heterogeneous catalytic chemical reactions, produced by a process consisting essentially of the following steps:

a. impregnating an inert carrier with carboxymethane sulfonic acid, a precursor thereof or precursors thereof which form carboxymethane sulfonic acid on heating;

b. drying the so-impregnated carrier, at a temperature not exceeding 170°C, to remove volatiles; and

c. baking the product of step (b) at a temperature within the range of 170°–330°C to constant weight.

### 3,932,307
### TETRA(NEOPHYL) ZIRCONIUM AND ITS USE IN PROCESS FOR THE POLYMERIZATION OF OLEFINS

**Robert Alton Setterquist, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.**

**Filed May 20, 1974, Ser. No. 471,813**
**Int. Cl.² B01J *31/12***
**U.S. Cl. 252—430** **8 Claims**

1. An olefin polymerization catalyst consisting essentially of the reaction product obtained by contacting a solution in hydrocarbon medium of tetra(neophyl) zirconium with a suspension in hydrocarbon medium of a hydroxylated metal oxide free from absorbed molecular $H_2O$ of a metal selected from the group consisting of the metals of Groups II(a), III(a), IV(a), and IV(b) of the Bohr Periodic Table of the Elements, the proportion of said tetra(neophyl) zirconium being at least 0.05 millimoles per gram of oxide.

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### 3,932,308
### HYDROGENATION CATALYST

**Fredrick C. Loveless, Oakland, N.J., and Don H. Miller, Warren, Mich., assignors to Uniroyal Inc., New York, N.Y.**

**Division of Ser. No. 224,977, Feb. 9, 1972, Pat. No. 3,855,185. This application Oct. 9, 1974, Ser. No. 513,373**
**Int. Cl.² C07C *5/02***
**U.S. Cl. 252—431 R** **15 Claims**

1. A method of making a hydrogenation catalyst comprising in combination the steps of:

A. forming a hydrocarbon-soluble organometallic complex by contacting, in a hydrocarbon solvent medium,

a. an organic chelate compound of a transition metal selected from the group consisting of nickel, cobalt and iron with a chelating agent selected from the group consisting of beta-diketone and beta-ketoester, with

b. a phenolic substance selected from the group consisting of phenol, 2-alkylphenol, 4-alkylphenol, 2,4-dialkylphenol and 2,6-dialkylphenol wherein each alkyl group contains 1 to 10 carbon atoms,

the amount of (a) being from ½ to 2 moles, per mole of (b); and thereafter

B. mixing the resulting solution of hydrocarbon-soluble organometallic complex provided in step (A) with

c. an organometallic reducing agent of the formula $MR_n$ where M is a metal selected from the group consisting of lithium, magnesium and aluminum, R is a hydrocarbon radical selected from the group consisting of saturated acyclic hydrocarbon radical having 5 to 12 carbon atoms and aromatic hydrocarbon radical having 6 to 12 carbon atoms, and n is the valence of the metal M,

the amount of (c) being from 1 to 5 moles per combined moles of said organic chelate compound (a) plus said phenolic substance (b), whereby the said hydrogenation catalyst is produced in highly active form.

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### 3,932,309
### AUTO EXHAUST CATALYSTS PREPARED FROM SULFITE TREATED PLATINUM AND PALLADIUM SALT SOLUTIONS

**James Richard Graham, Columbia; Michael Vance Ernest, Baltimore, and James Michael Maselli, Ellicott City, all of Md., assignors to W. R. Grace & Co., New York, N.Y.**

**Filed June 5, 1974, Ser. No. 476,505**
**Int. Cl.² B01J *27/02***
**U.S. Cl. 252—439** **6 Claims**

1. A process for preparing an auto exhaust conversion catalyst characterized by substantially improved conversion of carbon monoxide and hydrocarbons consisting essentially of the following steps:

a. preparing a solution from a platinum, palladium or platinum-palladium complex salt having the formula $M_4(X)(SO_3)_4$ or $M_2(X)(SO_3)_2$ wherein M is Na+, $NH_4$+ or H+ and X is platinum, palladium or a mixture of platinum and palladium,

b. impregnating a base selected from the group consisting of alumina, silica-alumina, mullite, cordierite and zirconia with said solution,

c. drying and activating by heating in air at a temperature of 800° to 1400°F. for 1 to 4 hours or in a reducing environment at a temperature of 600° to 800°F. for 0.5 to 2 hours, and

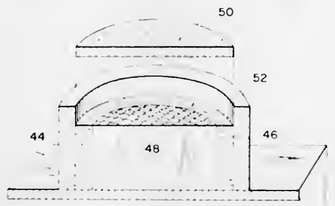
d. recovering the catalyst product.

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### 3,932,310
### REDUCTION FIRING OF CERAMICS COMPOSITED WITH ORGANIC BINDERS

**Gordon James Turner, Baltimore, Md., assignor to W. R. Grace & Co., New York, N.Y.**

**Filed Mar. 7, 1974, Ser. No. 449,113. The portion of the term of this patent subsequent to Oct. 8, 1991, has been disclaimed.**
**Int. Cl.² B01J *29/06, 35/00*; C04B *21/06***
**U.S. Cl. 252—455 R** **3 Claims**




1. In a process for preparing a porous ceramic structures by:

a. mixing a ceramic powder component with a high molecular weight polyolefin having a molecular weight of about 160,000 to 250,000 and a mineral oil plasticizer,

b. molding said composition to form a plastic sheet and impressing ribs thereon,

c. extracting the plasticizer with an organic solvent,

d. rolling said plastic sheet so that said ribs contact said sheet and fusing the contacting areas together thermoplastically,

the improvement comprising,

1. increasing the temperature of the body at a rate of about 100° to 300°C. per hour until a temperature of about 800°C. is reached, in fuel air mixture containing 0.5 to 10 volume percent excess fuel over the stoichiometric amount required for combustion, to burn off the polyolefin and,

2. increasing the temperature to about 1000°C. to 1600°C. in the presence of about 30% excess of the amount of air required for complete combustion and maintaining the temperature at 1000° to 1600°C. for abut 2 hours to sinter the ceramic component and,

3. cooling and recovering the porous ceramic structure.

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### 3,932,311
### ELECTRICALLY CONDUCTING ADHESIVE COMPOSITION

**John R. Caldwell, and James Maynard Hawkins, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.**

**Filed July 29, 1974, Ser. No. 492,794**
**Int. Cl.² H01B *1/02***
**U.S. Cl. 252—514** **8 Claims**

1. Adhesive composition comprising

a. crosslinked polymer particles having a glass transition temperature below about 30°C. selected from polymers of alkyl acrylate, alkyl methacrylate, copolymers of alkyl acrylate and alkyl methacrylate and mixtures thereof, said crosslinked polymer particles being present in the amount of about 35–55 weight percent;

b. electrically clean silver particles of 1 to 100 microns in the amount of 45–65 weight percent;

c. a suspending agent in the amount of 0.5 to 5.0 weight percent, said suspending agent being a particulate, insoluble inorganic compound having a particle size less than about 2 microns;

d. an organic solvent selected from acetone, methyl ethyl ketone, diethyl ketone, methyl butyl ketone, methyl isobutyl ketone, methylene chloride, trichloroethane, trichloroethylene, chloroform, methyl acetate, methyl formate, ethyl acetate, n-butyl acetate isobutyl acetate, benzene, toluene, chlorobenzene and mixtures thereof, and

e. said polymer particles, electrically clean silver powder, and suspending agent being disposed in said organic solvent in the amount of about 30 to 50 percent solids.

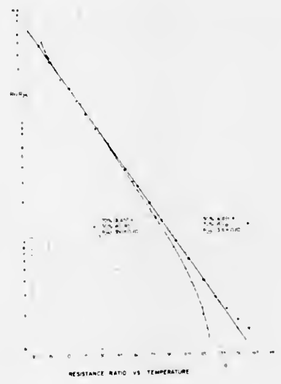


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### 3,932,312
### CONSTANT TEMPERATURE COEFFICIENT THICK FILM THERMISTOR

**Casimir W. Kazmierowicz, Mission Viejo, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.**

**Filed Apr. 1, 1974, Ser. No. 456,792**
**Int. Cl.² H01B *1/08***
**U.S. Cl. 252—518** **10 Claims**




1. A thermistor material composition comprising 30–80% by weight $VO_x$ where X varies from 1.5 to 1.9, and 70–20% by weight of glass.

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### 3,932,313
### PROCESS FOR MANUFACTURE OF POSITIVE TEMPERATURE COEFFICIENT MATERIALS

**Thomas G. Reynolds, Woodstock, N.Y., and Oscar A. Nietzel, Dedham, Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.**

**Filed Dec. 28, 1973, Ser. No. 429,441**
**Int. Cl.² H01B *1/08***
**U.S. Cl. 252—520** **14 Claims**

1. A process for preparing a positive temperature coefficient material selected from the group consisting of the titanates and zirconates of divalent cations selected from the group consisting of barium, calcium, strontium, lead, and tin comprising the steps of:

preparing a feed mixture comprising water, a compound of said divalent cation pyrolyzable in an oxidizing atmosphere to yield an oxide of said divalent cation, and an anion precursor compound selected from the group consisting of organic titanium lactate and acetate compounds and organic zirconium lactate and acetate compounds or mixtures thereof;

introducing said feed mixture into an anterior zone adjacent a reaction zone;

advancing said feed mixture from said anterior zone into said reaction zone;

heating said advancing feed material at the entrance to said reaction zone to a temperature sufficient to form at the entrance of said reaction zone a mass which swells, dehydrates and ignites;

breaking particles away from said mass at the entrance to said reaction zone to enter the reaction zone;

passing said particles through said reaction zone at a selected rate while heating said particles in an oxidizing atmosphere in the reaction zone at a temperature of

at least about 800°C. sufficient to calcine said particles as rhe particles are passed through the reaction zone thereby to produce said positive temperature coefficient material;

milling said particles and said material in said reaction zone; and

discharging the product material from the reaction zone.

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### 3,932,314
### HEXABORIDE ELECTRON EMISSIVE MATERIAL

**Ushio Kawabe, Hamura; Shigehiko Yamamoto, Tokorozawa; Toshiyuki Aita, Kokubunji, and Yukio Honda, Hachioji, all of Japan, assignors to Hitachi, Ltd., Japan**

**Filed Sept. 5, 1974, Ser. No. 503,471**
**Claims priority, application Japan, Sept. 5, 1973, 48-99231**
**Int. Cl.² H01B *1/06***
**U.S. Cl. 252—521** **6 Claims**

1. An electron emissive material which has a calcium hexaboride type crystal structure and which is represented by a general formula of $(Y_{1-x}Eu_x)B_6$ where $0<x<1$.

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### 3,932,315
### SUPERCONDUCTIVE BARIUM-LEAD-BISMUTH OXIDES

**Arthur W. Sleight, Wilmington, Del., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.**

**Filed Sept. 24, 1974, Ser. No. 508,887**
**Int. Cl.² H01B *1/06*; H01C *8/00***
**U.S. Cl. 252—521** **5 Claims**

1. Compositions of the formula $Ba_{1-x}A_xPb_{1-y}Bi_yO_3$ where

A is Na, K, Rb, Cs, Sr or Pb,

$x$ is 0 to 0.5,

$y$ is 0.05–0.3 with the proviso that $x$ is equal to or less than $y$ when A is Na, K, Rb or Cs.

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### 3,932,316
### FREE FLOWING DETERGENT COMPOSITIONS CONTAINING BENZOATE SALTS

**John A. Sagel, Mount Healthy, Ohio, and Clarence Edward Weber, Cold Spring, Ky., assignors to The Procter & Gamble Company, Cincinnati, Ohio**

**Filed Nov. 13, 1974, Ser. No. 523,391**
**Int. Cl.² C11D *3/08, 3/10, 3/20, 11/02***
**U.S. Cl. 252—532** **9 Claims**

1. A non-phosphate, non-calcium carbonate-containing spray dried granular detergent composition comprising:

a. from 5 to 90% by weight of a water-soluble detergency builder;

b. from 5 to 50% by weight of an organic watersoluble synthetic detergent selected from the group consisting of anionic, nonionic, zwitterionic, and ampholytic detergents and mixtures thereof; and

c. from about 0.10 to about 13.0% by weight of a salt of benzoic acid.

## 3,932,317
## COMPOSITIONS FOR REMOVING ACRYLIC BASED COATINGS

**Ralph P. Williams, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.**

**Filed Sept. 17, 1973, Ser. No. 398,063**
**Int. Cl.² C11D** *1/58, 1/755, 7/32*
**U.S. Cl. 252—541** **4 Claims**

**1.** A composition useful for dilution with water to remove acrylic based coating compositions which comprises from about 5–25% by weight of concentrated aqueous ammonia, from 1 to 2% by weight of an organic surface active agent, from 0–1% by weight of an inorganic alkaline salt and from about 70–93% by weight of a sulfolane compound having the formula:



wherein each R is hydrogen or alkyl of 1 to 2 carbon atoms or alkoxy of 1 to 2 carbon atoms and wherein at least five of the R groups are hydrogen.

**3.** A method of removing acrylic based coating compositions which comprises contacting said acrylic based coating compositions with an aqueous solution of a composition comprising from about 5–25% by weight of concentrated aqueous ammonia, from 1 to 2% by weight of an organic surface active agent, from 0–1% by weight of an inorganic alkaline salt and from about 70–93% by weight of a sulfolane compound having the formula:



wherein each R is hydrogen or alkyl of 1 to 2 carbon atoms or alkoxy of 1 to 2 carbon atoms and wherein at least five of the R groups are hydrogen.

## 3,932,318
## CHLORAL COPOLYMERS

**Otto F. Vogl, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.**

**Division of Ser. No. 352,387, April 18, 1973, which is a division of Ser. No. 227,684, Feb. 18, 1972, Pat. No. 3,775,371, which is a division of Ser. No. 886,739, Dec. 19, 1969, Pat. No. 3,668,184, which is a continuation-in-part of Ser. No. 731,622, May 23, 1968, abandoned, which is a continuation-in-part of Ser. Nos. 580,217, Sept. 19, 1966, abandoned, and Ser. No. 558,631, June 20, 1966, abandoned. This application Dec. 6, 1974, Ser. No. 530,438**
**Int. Cl.² C08J** *9/00;* **C08G** *6/00, 2/18*
**U.S. Cl. 260—2.5 F** **31 Claims**

**1.** An addition copolymer of chloral and at least one comonomer selected from the group consisting of

$R^3—N=C=X$ and $X=C=N—R^4—N=C=X$

wherein

X is selected from the group consisting of oxygen and sulfur;

$R^3$ is selected from the group consisting of nonsubstituted alkyl and cylcoalkyl of up to 18 carbons, aryl of 6–18 carbons, and alkaryl and aralkyl of 7–24 carbons, substitution being selected from the group consisting of nitro, cyano, phenylazo, and $—NY_2$, $—OY$, $—SY$,



in which Y is lower alkyl or phenyl; and

$R^4$ is selected from the group consisting of nonsubstituted and substituted alkylene, alkarylene, aralkylene, cycloalkylene, alkylenebis(cycloalkylene), alkylenebis(arylene), arylene, arylenebis(alkylene) of up to 18 carbons and anthraquinonylene, any substitution being selected from the group consisting of fluorine, chlorine, bromine, iodine, nitro, cyano, phenylazo, and $—NY_2$, $—OY$, $—SY$,



in which Y is lower alkyl or phenyl, the copolymer containing from 1 to 99.9 mole percent of chloral.

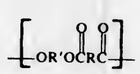
**8.** A copolymer of claim **1** in the form of a foam.

## 3,932,319
## BLENDS OF A BIODEGRADABLE THERMOPLASTIC DIALKANOYL POLYMER, A NATURALLY OCCURRING BIODEGRADABLE PRODUCT, A PLASTIC ADDITIVE AND A FILLER

**Robert A. Clendinning, New Providence; James E. Potts, Millington, and Walter D. Niegisch, Watchung, all of N.J., assignors to Union Carbide Corporation, New York, N.Y.**

**Division of Ser. No. 275,973, July 28, 1972, Pat. No. 3,850,862. This application July 15, 1974, Ser. No. 488,494**
**Int. Cl.² C08L** *67/02*
**U.S. Cl. 260—7.5** **30 Claims**

**1.** A blend comprising (i) from about 5 to about 95 weight percent of biodegradable thermoplastic dialkanoyl polymer, said polymer having a reduced viscosity value of at least about 0.1 and upwards to about 10 and being further characterized in that at least about 10 weight percent of said thermoplastic dialkanoyl polymer is attributable to recurring units of the formula



wherein R represents a divalent aliphatic hydrocarbon radical, and wherein R′ is of the group consisting of divalent aliphatic hydrocarbon radicals and divalent aliphatic oxa-hydrocarbon radicals, (ii) from about 95 to about 5 weight percent of substances of the group consisting of plastic additives, fillers, and mixtures thereof, and (iii) from 0 to about 90 weight percent of a naturally occurring biodegradable product; based on the total weight of said blend.

## 3,932,320
## POWDER PAINTS CONTAINING PARTICULATE METAL II

**Melville J. Camelon, Utica, and Rodney C. Gibeau, Mount Clemens, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.**

**Continuation-in-part of Ser. No. 422,471, Dec. 6, 1973, abandoned. This application Sept. 16, 1974, Ser. No. 506,490**
**Int. Cl.² C08K** *3/08, 9/04, 9/10*
**U.S. Cl. 260—17 R** **11 Claims**

**1.** In a powder paint which exclusive of catalysts, antistatic agents, plasticizers, and flow control agent, the same being known and optional additives to powder paints, consists essentially of aluminum flakes, non-metal pigment, and a particulate, organic, film-former, the improvement wherein

A. non-metal pigment comprises 0 to about 22 weight percent of said powder paint,

B. said aluminum flakes comprise about 0.005 to about 25 weight percent of said powder paint and are encapsulated prior to admixture with said particulate, organic, film-former with about 2 to about 200 parts by weight of a continuous coating of a thermoplastic, organic film-former per 100 parts by weight aluminum flakes, said thermoplastic, organic, film-former consisting essentially of thermoplastic, organic, film-formers selected from the group consisting of

1 polymers of alpha-beta olefinically unsaturated monomers of which about 51 to about 100 weight percent are acrylic monomers and 0 to about 49 weight percent are monovinyl hydrocarbons,

2 polyamides,

3 polyesters,

4 homopolymers of monovinyl hydrocarbons,

5 cellulose acetate,

6 cellulose butyrate, and

C. said particulate, organic film-former is selected from the group consisting of

1 a thermoplastic, particulate, film-former that is a copolymer of alpha-beta olefinically unsaturated monomers of which about 51 to about 100 weight percent are acrylic monomers and 0 to about 49 weight percent are $C_8$ - $C_{12}$ monovinyl hydrocarbons, and

2 a thermosettable, particulate, film-former consisting essentially of a copolymer having average molecular weight ($M_n$) in the range of about 1500 to about 15,000 and glass transition temperature in the range of about 40°C. to about 90°C. bearing functional groups provided by constituent monomers selected from the group consisting of glycidyl esters of a monoethylenically unsaturated carboxylic acid, $C_5$ - $C_7$ monohydroxy acrylates, $C_5$ - $C_7$ monohydroxy methacrylates and alpha-beta olefinically unsaturated amides and wherein at least above 50 weight percent of the constituent monomers are acrylic monomers and the remainder weight percent, if any, consists essentially of $C_8$ - $C_{12}$ monovinyl hydrocarbons, said copolymer being self-crosslinkable or employed with a monomeric or polymeric crosslinking agent.

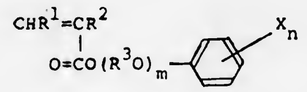


## 3,932,321
## FLAME-RETARDANT POLYMER COMPOSITION

**Hirohisa Maki, Osaka, and Yozo Kitagawa, Yokkaichi, both of Japan, assignors to Japan Synthetic Rubber Company Limited and Dai-Ichi Kogyo Seyaku Co. Ltd., both of, Japan**

**Filed June 6, 1974, Ser. No. 477,024**
**Claims priority, application Japan, June 18, 1973, 48-68461; June 18, 1973, 48-68462**
**Int. Cl.² C08L** *23/00, 33/04, 67/06*
**U.S. Cl. 260—17.4 R** **7 Claims**

**1.** A flame-retardant polymer composition comprising a flame-retardant polymer and a different kind of a polymer, the amount incorporated of the flame-retardant polymer being 2 to 50 percent by weight based on the different polymer and said flame-retardant polymer being prepared by copolymerizing 2 to 100 percent by weight of a monomer represented by the following general formula (A)



(A),

wherein $R^1$ and $R^2$ stand for H or $CH_3$, $R^3$ is a linear or branched alkylene group having 2 to 6 carbon atoms which may be substituted by a hydroxyl group, X designates BR or Cl, n is a number of from 3 to 5, and m is a number of from 0 to 1,

with 98 to 0 percent by weight of at least one unsaturated compound copolymerizable with the monomer (A) selected from the group consisting of:

halogenated olefins,

halogenated vinyl aromatic compounds,

halogenated vinyl esters of carboxylic acids,

halogenated conjugated dienes,

nitrogen containing unsaturated compounds, and phosphorous-containing unsaturated compounds, and wherein the different polymer into which the flame-retardant polymer is incorporated is at least one member selected from the group consisting of polypropylene, polystyrene, ABS resins, acrylic resins, polyester resins, polycarbonate resins, phenol resins, unsaturated polyester resins, epoxy resins, cellulose resins, styrene-butadiene rubbers, acrylonitrile-butadiene rubbers, polybutadiene rubbers, polyisoprene rubbers, ethylene-propylene rubbers, butyl rubbers, polychloroprene rubbers, acrylic rubbers and epichlorohydrin rubbers.

## 3,932,322
## WATER ABSORBING STARCH-ACRYLONITRILE GRAFT COPOLYMERS FUMED SILICA OR ALUMINA MODIFIED TO IMPROVE RATE OF ABSORPTION FOR PHYSIOLOGICAL FLUIDS

**David V. Duchane, Ann Arbor, Mich., assignor to Kimberly-Clark Corporation, Neenah, Wis.**

**Filed Mar. 7, 1975, Ser. No. 556,267**
**Int. Cl.² C08L** *3/00*
**U.S. Cl. 260—17.4 GC** **4 Claims**

**1.** An improvement in the composition of particulate, water-insoluble alkali metal carboxylate salts of starch-acrylonitrile graft copolymers of the type which are produced by saponifying a starch-acrylonitrile graft copolymer with an alkali metal base in an aqueous alcoholic medium and which particulate copolymer in its unimproved form is capable of absorbing in excess of 50 parts by weight of aqueous fluids per part of copolymer, and in which the molar ratio of the acrylonitrile to the starch in the graft copolymers is in the range of 2:1 to 30:1; said improvement comprising modifying said particulate copolymer by mixing therewith a minor quantity of a fumed oxide selected from the group consisting of fumed silica or fumed alumina in an amount sufficient to increase the rate at which said modified copolymer absorbs saline physiological fluids as compared to the rate at which said unimproved copolymer absorbs said fluids without reducing significantly the total absorbent capacity otherwise exhibited by said unimproved copolymer while minimizing the tendency of said copolymer to dust.

## 3,932,323
## SELECTIVE ADDITION OF ADDITIVES TO SOLID POLYMER

**Robert J. Perry, Houston, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.**

**Filed May 10, 1973, Ser. No. 358,891**
**Int. Cl.² C08L** *23/06*
**U.S. Cl. 260—23 H** **9 Claims**

**1.** A method of additive addition to finely divided solid polymer wherein said polymer is a polyolefin having a bulk density of from about 8 to 22 pounds per cubic foot and wherein at least one additive is softened or melted at the blending temperature and at least one additive remains solid at the blending temperature and said blending temperature is below the melting point of said solid polymer comprising:

first, adding the additives which melt or soften below said blending temperature and blending the resultant mixture; and

subsequently adding the additives which are solid at the blending temperature and blending the resultant mixture.

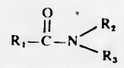
3,932,324

## LIGHT STABILIZER COMPOSITIONS FOR POLYMERS

Joseph Anthony Stretanski, Clinton, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed June 13, 1974, Ser. No. 479,017
Int. Cl.² C08G 6/00
U.S. Cl. 260—23 H 11 Claims

1. A polymer subject to degradation on exposure to ultraviolet radiation stabilized against degradation on exposure to ultraviolet radiation by an effective amount of a nickel amine, nickel aquo, or nickel bis- complex of 2,2′-thiobis(p-alkylphenol) wherein each alkyl group has up to 18 carbon atoms and further stabilized against thermal degradation of said complex on exposure to heat by an effective amount of a hydroxyalkylamide of the formula



wherein $R_1$ is alkyl or aryl; $R_2$ is hydroxyalkyl of 2 to 4 carbon atoms; and $R_3$ is hydrogen or hydroxyalkyl of 2 to 4 carbon atoms.

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3,932,325

## PROCESS FOR PREPARING 6-CHLORO-2-CHLOROMETHYL-4-PHENYLQUINAZOLINE-3-OXIDE AND INTERMEDIATES THEREFOR

Susumu Nakanishi, Niantic, and Wayne E. Barth, East Lyme, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Sept. 23, 1974, Ser. No. 508,103
Int. Cl.² C07D 239/76
U.S. Cl. 260—251 Q 1 Claim

1. A process for preparing 6-chloro-2-chloromethyl-4-phenylquinazoline-3-oxide which comprises the steps of

a. adding chloroacetyl chloride to a solution under nitrogen atmosphere of 2-amino-5-chlorobenzophenone in methylene chloride, chloroform, benzene or ethyl acetate and 3 N NaOH solution and stirring at 5°–25°C for about 1–4 hours;

b. separating and contacting the resulting 2-chloroacetamido-5-chlorobenzophenone of step (a) in methylene chloride, chloroform or benzene solvent solution with thionyl chloride, phosgene or phosphorus pentachloride in pyridine under nitrogen atmosphere and heating under reflux; and

c. contacting the resulting crude methylene chloride, chloroform or benzene solvent solution of 2-(1′-chloroimino-2′-chloromethyl)-5-chlorobenzophenone of step (b) with hydroxylamine hydrochloride and pyridine, stirring at 25°–80°C, pouring reaction mixture into ice-water solution of sodium carbonate, drying the resulting separated methylene chloride, chloroform or benzene layer, concentrating and replacing the methylene chloride, chloroform or benzene with hexane, and collecting formed crystalline 6-chloro-2-chloromethyl-4-phenylquinazoline-3-oxide.

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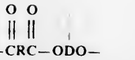
3,932,326

## SOFT THERMOPLASTIC SEGMENTED COPOLYESTERS AS PRESSURE SENSITIVE ADHESIVES

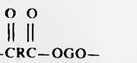
George Lok Kwong Hoh, and Joseph Edward Reardon, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. Nos. 333,519, Feb. 20, 1973, abandoned, and Ser. No. 406,650, Oct. 9, 1973, abandoned.
This application Feb. 6, 1974, Ser. No. 439,848
Int. Cl.² C08G 63/12; C08L 91/06, 93/04, 95/00
U.S. Cl. 260—26 11 Claims

1. A soft thermoplastic segmented copolyester elastomer consisting essentially of a multiplicity of recurring short chain ester units and long chain ester units joined through ester linkages, said short chain ester units amounting to 15 to less than 30 percent by weight of said copolyester and being of the formula



and said long chain ester units amounting to more than 70 to 85 percent by weight of said copolyester and being of the formula



wherein R is the divalent aromatic radical remaining after removal of the carboxyl groups from aromatic dicarboxylic acid having a molecular weight of less than 350, said aromatic dicarboxylic acid being 55 to 95 percent by weight terephthalic acid, D is the divalent radical remaining after removal of the hydroxyl groups from butanediol, and G is the divalent radical remaining after removal of the terminal hydroxyl groups from polytetramethylene ether glycol having an average molecular weight of 1,500 to 3,500, said copolyester having a melt index of less than 30 and a melting point of 90° to 130°C.

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3,932,327

## ADHESIVE COMPOSITIONS

Floyd E. Naylor, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 5, 1973, Ser. No. 329,558
Int. Cl.² C08K 5/01; C08L 93/04
U.S. Cl. 260—27 BB 8 Claims

1. An adhesive composition comprising:

a. A block copolymer selected from the group consisting of a linear block copolymer represented by the general formula:

A–B–A

and a radial block copolymer represented by the general formula:

Z(–BA)$m$

wherein A is a terminal block segment consisting essentially of polymer formed from monovinyl-substituted aromatic hydrocarbon units which comprise 20 to 40 weight percent of said block copolymer, B is a block segment consisting essentially of polymer formed from conjugated diene hydrocarbon units which comprise 60 to 80 weight percent of said block copolymer, Z is derived from a polyfunctional compound having at least three reactive sites, and m is an integer having a value of not less than 3;

b. a block copolymer selected from the group consisting of a linear block copolymer represented by the general formula:

B–A–B

and a radial block copolymer represented by the general formula:

Z(–AB)$n$

wherein B is a terminal block segment consisting essentially of polymer formed from conjugated diene hydrocarbon units which comprise 30 to 90 weight percent of said block copolymer, A is a block segment consisting essentially of polymer formed from monovinyl-substituted aromatic hydrocarbon units which comprise 10 to 70 weight percent of said block copolymer, Z is derived from a polyfunctional compound having at least three reactive sites, and n is an integer having a value of not less than 3;

c. a resinous tackifier; and,

d. an organic solvent which is inert toward each of said (a), (b) and (c); wherein the weight ratio of said first block copolymer (a) to said second block copolymer (b) is in the approximate range of 20:1 to 1.5:1 and wherein the weight ratio of the combination of said (a) and (b) to said tackifier (c) is in the approximate range of 0.05:1 to 20:1.



3,932,328

## HOT MELT ADHESIVE COMPOSITION AND TAPE

Ralf Korpman, Somerville, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Continuation of Ser. No. 195,015, Nov. 2, 1971, abandoned.
This application Oct. 17, 1973, Ser. No. 407,331
Int. Cl.² C08K 5/01; C08L 53/02, 93/04; C09J 7/04
U.S. Cl. 260—27 BB 5 Claims

1. A substantially oil-free hot melt pressure-sensitive adhesive composition comprising an elastomeric component which comprises a major amount by weight of said component of an A-B-A block copolymer wherein B is an elastomeric polymer block derived from isoprene and A is a thermoplastic polymer block derived from styrene, said A blocks constituting about 8–35 percent by weight of the block copolymer; and about 125–300 parts per one hundred parts by weight of the elastomeric component of a tackifying component consisting essentially of a blend of normally solid and liquid tackifier resins, the proportion of solid resin to liquid resin in the blend being between about 4 to 1 and 1 to 3, said solid resins being normally friable at about 25° C. and said liquid resins being in a liquid state at about 25° C., and said solid resins consisting essentially of polymerized structures derived from aliphatic dienes and mono-olefins of 5 or 6 carbon atoms, at least 40 percent by weight of said structures being derived from piperylene or from piperylene and isoprene.

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3,932,329

## ADHESIVE COMPOSITION

Pallavoor R. Lakshmanan, Allison Park, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Aug. 1, 1974, Ser. No. 493,773
Int. Cl.² C08L 93/04
U.S. Cl. 260—27 R 7 Claims

1. An adhesive composition consisting essentially of a styrene-isoprene block copolymer, a zinc salt of rosin and a microcrystalline wax wherein the components are present in the following ranges:

| Component | Weight Per Cent |
|---|---|
| Styrene-Isoprene Block Copolymer | 20–35 |
| Zinc Salt of Rosin | 20–50 |
| Microcrystalline Wax | 60–15. |

| Component | Weight Per Cent |
|---|---|
| Styrene-Isoprene Mixture of Isoprene-Piperylene Copolymer and Zinc Salt of Rosin | 70–10, |
| Microcrystalline Wax | |

wherein the styrene-isoprene block copolymer has the following general configuration:

A–B–A,

wherein A is a styrene polymer block having an average molecular weight of about 2,000 to about 100,000 and B is an isoprene polymer block having an average molecular weight of about 25,000 to about 1,000,000, wherein the total of the terminal blocks A amount to about eight to about 50 weight percent of the block copolymer, with the difference in glass transition temperature between an end block A and a center block B being greater than about 100° C.

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3,932,330

## ADHESIVE COMPOSITION

Pallavoor R. Lakshmanan, Allison Park, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Aug. 1, 1974, Ser. No. 493,774
Int. Cl.² C08L 91/00, 93/00; C09J 3/12, 3/14
U.S. Cl. 260—27 BB 6 Claims

1. An adhesive composition consisting essentially of a styrene-isoprene block copolymer, an isoprene-piperylene copolymer, a zinc salt of rosin having a zinc content of between about four and about nine percent and a melting point of between about 80° to about 190° C. and a microcrystalline wax, wherein the weight ratio of the zinc salt of rosin to the isoprene-piperylene copolymer is in the range of about 0.55:1 to about 50:1, wherein the components are present in the following ranges:

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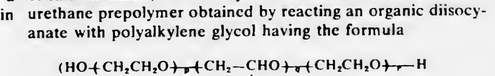
3,932,331

## METHOD FOR RAPID HARDENING OF ASPHALT EMULSIONS

Tadashi Doi, Osaka; Isao Sekido, Wakayama, and Ryoichi Tamaki, Arita, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Nov. 6, 1974, Ser. No. 521,522
Claims priority, application Japan, Nov. 9, 1973, 48-126030
Int. Cl.² C08L 91/00
U.S. Cl. 260—28 7 Claims

1. A method for rapidly hardening an aqueous, oil-in-water type, cationic or anionic, road-surfacing asphalt emulsion containing from about 55 to 65 weight percent asphalt or mixture of asphalt and synthetic rubber, emulsifier and the balance is water, which comprises incorporating into said emulsion from 1 to 35 percent by weight, based on the weight of said emulsion, on an isocyanate-terminated, water-soluble, urethane prepolymer obtained by reacting an organic diisocyanate with polyalkylene glycol having the formula



wherein $p + r \geq q$, $q \geq 0$, $p \geq 1$, $r \geq 1$, and $20 < p + q + r < 100$, at a ratio of 1.1 to 2.0 equivalents of the NCO groups of said organic diisocyanate, per one equivalent of the OH groups of said polyalkylene glycol.

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3,932,332

## COPOLYMERS OF ALPHA-METHYLSTYRENE AND STYRENE AND USES THEREOF

Paul S. Douglas, Jefferson Township, Fayette County; Anargiros Pete Patellis, Rostraver Township, Westmoreland County, and Walter A. Vredenburgh, Pleasant Hills, all of Pa., assignors to Hercules Incorporated, Wilmington, Del.

Filed Feb. 16, 1973, Ser. No. 333,215
Int. Cl.² C08F 212/08
U.S. Cl. 260—28.5 A 3 Claims

1. A hot melt composition comprising (i) a wax selected from the group consisting of paraffin wax and microcrystalline wax, (ii) ethylene vinyl acetate, and (iii) a copolymer of alpha-methylstyrene and styrene which copolymer has a softening point (ring and ball) up to about 100°C.

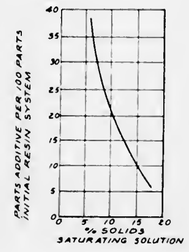
## 3,932,333
## EMULSIFIED PHENOLIC RESIN SYSTEM CONTAINING AN ANTI-MIGRATORY ADDITIVE

**Woodrow Hayes Ingram, II, Hampden, Mass., assignor to Monsanto Company, St. Louis, Mo.**

**Continuation-in-part of Ser. No. 142,905, May 13, 1971, Pat. No. 3,719,616, which is a continuation-in-part of Ser. No. 8,679, Feb. 4, 1970, abandoned. This application Jan. 15, 1973, Ser. No. 323,680**

**Int. Cl.² C08L** *61/06*

**U.S. Cl. 260—29.3** **6 Claims**




1. A composition of matter comprising in combination:

A. a stable emulsified phenol-formaldehyde resole resin having a water dilutability of from 15 percent to 2000 percent based on the resin solids, a formaldehyde to phenol combined mole ratio of from about 0.85 to 3.0 and a viscosity in methanol solution at 60 weight percent solids of not greater than about 10,000 centipoises and in the form of spherules dispersed in aqueous medium of which at least about 80 weight percent of the spherules have a maximum dimension from about 0.01 to 0.8 microns and containing:

1. a quantity of solids ranging from about 5 to 45 parts by weight;
2. a quantity of organic liquid ranging from about 0 to 20 parts by weight, and
3. a quantity of water ranging from 35 to 95 parts by weight; and

B. a water soluble polyelectrolyte selected from the group consisting of:

1. polyacrylic acid and copolymers of acrylic acid and vinyl acetate containing up to 50 mole percent of vinyl acetate and the ammonium and alkali metal salts thereof,
2. polymethacrylic acid and copolymers of methacrylic acid and vinyl acetate containing up to 50 mole percent of vinyl acetate and the ammonium and alkali metal salts thereof,
3. copolymers of maleic anhydride and a comonomer selected from the group consisting of ethylene, propylene, butylene, styrene, chlorostyrene, vinyl toluene, vinyl formate, vinyl acetate, vinyl propionate, and vinyl benzoate and the ammonium and alkali metal salts thereof,
4. copolymers of a monoalkyl maleate wherein the alkyl group is methyl, ethyl, propyl, or butyl and a comonomer selected from the group consisting of ethylene, propylene, butylene, styrene, chlorostyrene, vinyltoluene, vinyl formate, vinyl acetate, vinyl propionate, and vinyl benzoate and the ammonium and alkali metal salts thereof, and
5. copolymers of acrylic acid and 2-ethylhexyl acrylate containing 93.5 to 98.5 mole percent of acrylic and 6.5 –1.5 mole percent of 2-ethylhexyl acrylate;

wherein the amount of water soluble polyelectrolyte is in the range from 0.04 to 20 percent by weight based on the total solids weight of phenol-formaldehyde resin.

## 3,932,334
## CALCIA CATALYZED RESINS

**Hendrik H. J. Deuzeman; Norman Lumley, and Ruben A. Santos, all of P.O. Box 3005, Sarnia, Ontario, Canada**

**Continuation-in-part of Ser. No. 400,145, Sept. 24, 1973, abandoned, Continuation-in-part of Ser. No. 226,265, Feb. 14, 1972, abandoned, Continuation-in-part of Ser. No. 44,616, June 8, 1970, abandoned, Continuation-in-part of Ser. No. 226,234, Feb. 14, 1972, abandoned. This application Mar. 21, 1974, Ser. No. 453,646**

**Int. Cl. C08g** *51/24*

**U.S. Cl. 260—29.3** **22 Claims**

1. A method for making an infinitely dilutable low phenol aqueous solution of thermosettable phenol formaldehyde resin, by selectively catalyzing and controlling the methylolation of phenol with formaldehyde to increase resinification, minimize the content of monomethylol phenols and higher phenyls and maximize the content of o-p-dimethylol phenols, thus producing a resin solution component for binder formulations having low air and wash water-polluting characteristics when applied to a substrate, comprising the steps of:

a. mixing U.S.P. phenol, in the absence of other monomers, with aqueous formaldehyde, in an amount of 3.5 to 4.5 of moles of formaldehyde per mol of phenol, and correspondingly up to about 10 moles of water per mol of the reactants, at a temperature not exceeding about 85°F, and,

b. introducing calcium oxide or calcium hydroxide catalyst, with cooling in an amount of 4.9 to 7 percent as calcium (Ca) based upon the weight of phenol, (0.11 mol to 0.16 mol calcium (Ca) per mol of phenol),

c. controlling the exothermic rise in the temperature of the reactants without heat input so as to increase to not more than about 125°F during at least the first hour of reaction,

d. continuing the methylolation reaction without heat input at a suitable temperature up to 155°F, and

e. terminating said reaction by cooling when the condensation reaction product is substantially phenol-free, is still water soluble, and contains between 3 to 16% unreacted formaldehyde.

## 3,932,335
## ADHESIVE COMPOSITION OF VINYL ESTER POLYMER, POLYVINYL ALCOHOL, GLYOXAL, AND A WATER MISCIBLE ALCOHOL

**Bert Sorelle Gorton, Kennett Square, Pa., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.**

**Filed June 29, 1970, Ser. No. 50,896**

**Int. Cl.² C08L** *31/04*

**U.S. Cl. 260—29.6 WA** **8 Claims**

1. An aqueous dispersion of a water-resistant adhesive composition consisting essentially of a homo- or copolymer of a vinyl ester of aliphatic monocarboxylic acid, polyvinyl alcohol in an amount from about 2 to 10 percent by weight of the polymer, glyoxal in an amount from about 2 to 15 percent by weight of the polymer and a water-miscible alcohol having 1-3 carbon atoms in an amount from about 3.5 to 17.0 percent by weight of the polymer.

## 3,932,336
## EMULSION POLYMERIZATION OF VINYL BROMIDE WITH VINYL COMONOMER

**Edwin D. Hornbaker, and Bryan Sparks, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.**

**Continuation-in-part of Ser. No. 299,250, Oct. 20, 1972, Pat. No. 3,864,297, which is a continuation-in-part of Ser. No. 147,620, May 27, 1971, abandoned. This application Nov. 21, 1973, Ser. No. 417,887**

**Int. Cl.² C08L** *27/10*

**U.S. Cl. 260—29.6 R** **28 Claims**

1. A process for the production of poly(vinyl bromide) copolymer latexes from vinyl bromide monomer and a monomer copolymerizable therewith, said monomer copolymerizable therewith being selected from the group consisting of vinyl acetate, methyl acrylate, ethyl acrylate, propyl acrylate, acrylamide, acrylic acid, methacrylic acid, vinyl chloride and vinylidene chloride, wherein up to about 75 percent by weight of said vinyl bromide monomer is replaced with said monomer copolymerizable therewith, comprising adding an aqueous solution of a reducing agent to an emulsion of vinyl bromide monomer containing a water-soluble peroxide compound, wherein said emulsion is at a temperature of from about 0°C to about 75°C, and said aqueous solution of said reducing agent is added to said emulsion at a rate of:

a. at least about $2.8 \times 10^{-4}$ equivalent of said reducing agent per hour per hundred parts by weight of said monomer, said emulsion containing about $1.5 \times 10^{-3}$ equivalent of a peroxidic compound per hundred parts by weight of said monomer, but

b. not more than about $8.7 \times 10^{-4}$ equivalent of said reducing agent per hour per hundred parts by weight of said monomer, said emulsion containing about $4.6 \times 10^{-3}$ equivalent of a peroxidic compound per hundred parts by weight of said monomer.



## 3,932,337
## THERMOPLASTIC URETHANE COMPOUND HAVING LOW COMPRESSION SET AND HIGH MODULUS

**Kanu G. Shah, Arlington Heights, Ill., assignor to The Richardson Company, Des Plaines, Ill.**

**Filed Apr. 25, 1974, Ser. No. 464,050**

**Int. Cl.² C08G** *18/61*; **C08K** *3/34*

**U.S. Cl. 260—29.1 SB** **4 Claims**

1. A plastic molding composition exhibiting thermoplastic properties at molding temperatures and thermoset properties at room temperature which comprises

A. The reaction product of:

1. from about 7.5 to about 13 mol percent of a poly(epsilon-caprolactone) polymer having the general formula:

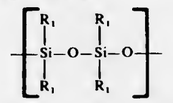
$$H[-O-(CH_2)_5-\overset{O}{\overset{\|}{C}}-]_x O-R-O[-\overset{O}{\overset{\|}{C}}-(CH_2)_5-O-]_y H$$

wherein R is alkyl, alkenyl aryl having from one to 10 OH, carbon atoms, where $x$ and $y$ can vary depending on the ratio of the reactants,

2. from about 33 to about 41 mol percent of a lower alkyl glycol, and
3. from about 48 to about 57 mol percent of an organic diisocyanate;

and having a molar ratio of isocyanate groups to isocyanate reactable hydroxy groups of from about 1.05 to 1.15; and

B. from about 0.3 to about 1.0 parts per 100 parts by weight of said reaction product of a siloxane polymer having the following general formula:



wherein $R_1$ is alkyl, alkenyl or aromatic.

## 3,932,338
## PHOTODEGRADABLE PLASTICS CONTAINING β-HALOPHENYL KETONES

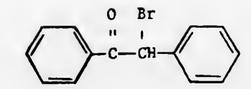
**Bernard Freedman, Berkeley, and Martin J. Diamond, Oakland, both of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.**

**Filed Aug. 22, 1974, Ser. No. 499,805**

**Int. Cl.² C08K** *5/07*

**U.S. Cl. 260—32.8 A** **1 Claim**

1. A photodegradable composition consisting of a polyolefin and about from 0.1 to 10% of an additive of the structure



## 3,932,339
## PRODUCT AND PROCESS

**Gordon D. McLeod, Adrian, Mich., assignor to G. D. McLeod & Sons, Incorporated, Adrian, Mich.**

**Continuation-in-part of Ser. No. 283,964, Aug. 28, 1972, which is a continuation-in-part of Ser. No. 107,578, Jan. 18, 1971, abandoned, which is a continuation-in-part of Ser. No. 75,306, Sept. 24, 1970, abandoned. This application Oct. 24, 1973, Ser. No. 409,067**

**Int. Cl.² C08K** *5/07*

**U.S. Cl. 260—32.8 SB** **55 Claims**

1. An essentially anhydrous polyol silicate composition consisting essentially of solvent-soluble, polyol silicate ester-exchange reaction product of (1) silicate consisting essentially of a member selected from the group consisting of (a) ortho silicates having ester-exchangeable groups of 1 to 6 carbon atoms selected from the group consisting of alkyl, hydroxyalkyl, alkoxyalkyl and hydroxyalkoxyalkyl; (b) siloxanes of (a); and (c) mixtures of (a) and (b); with the proviso that when (1) is (a), (1) has one or more groups selected from the group consisting of hydroxyalkyl, alkoxyalkyl or hydroxyalkoxyalkyl; and (2) aliphatic polyol which is esterexchangeable with (1) said reaction product being made by reacting (1) and (2) in amounts providing a ratio of hydroxyl groups of (2) of about 0.15 to 1.8 moles per mole of ester-exchangeable group of (1); and said reaction product being in a liquid organic solvent.

## 3,932,340
## NYLON COATING COMPOSITION

**Minoru Kamosaki, and Sigel Asai, both of Saitama, Japan, assignors to Daicel Ltd., Osaka, Japan**

**Filed Aug. 19, 1974, Ser. No. 498,396**

**Claims priority, application Japan, Aug. 21, 1973, 48-93569**

**Int. Cl.² C08K** *5/01, 5/02, 5/05*; **C08L** *77/02*

**U.S. Cl. 260—33.4 R** **5 Claims**

1. A coating composition comprising a solution of (1) an alcohol-soluble nylon polymer selected from the group consisting of ε-caprolactam/hexamethylenediamine adipate copolymer, ε-caprolactam/laurolactam copolymer, ε-caprolactam/hexamethylenediamine adipate/laurolactam terpolymer and ε-caprolactam/hexamethylenediamine adipate/hexamethylenedodecanedioamide terpolymer, (2) from 5 to 90 weight percent of the total of (1) and (2), calculated as an N-alkoxymethylated nylon of a degree of alkoxymethylation of 30 molar percent, of an N-alkoxymethylated nylon selected from the group consisting of methoxymethylated ε-caprolactam polymer, methoxymethylated hexamethylenediamine adipate polymer, methoxymethylated ε-caprolactam/laurolactam copolymer and propoxymethylated ε-caprolactam polymer, and (3) from 0.5 to 8 weight percent, based on the weight of the N-alkoxymethylated nylon (2), of an acid catalyst selected from the group consisting of tartaric acid, maleic acid, crotonic acid, malonic acid, succinic acid, oxalic acid, adipic acid, citric acid, o-, m- and p- hydroxybenzoic acids, 2,4-dihydroxybenzoic acid, 2-hydroxy-4-methoxybenzoic acid, hypophosphorous acid, chromic acid anhydride and p-toluenesulfonic acid, dissolved in (4) a solvent selected from the group consisting of alkanols of 1 to 6 carbon atoms, chlorinated aliphatic hydrocarbons of 1 to 6 carbon atoms, aromatic hydrocarbons and mixtures thereof.

3,932,341

## HOT MELT SEALANTS, ADHESIVES AND THE LIKE

Edward F. Kutch, Trenton, N.J.; Robert M. Meyers, Fairless Hills, Pa., and Matthew M. Sitter, Convent Station, N.J., assignors to Novagard Corporation, Trenton, N.J.

Continuation of Ser. No. 256,928, May 25, 1972, abandoned. This application Apr. 12, 1974, Ser. No. 460,332
Int. Cl.² C08K 5/01, 5/12, 5/52; C08L 95/00
U.S. Cl. 260—33.6 5 Claims

1. Solvent free hot-melt compositions adapted to be extruded as sealants, adhesives, caulking compounds, expansion joints and the like consisting essentially of an unreacted mechanical mixture of 100 parts by weight of polymerized elastomeric butyl rubber composed essentially of a copolymer of isobutylene and isoprene having a molecular weight above about 15,000; with from 1 to 400 parts by weight of tackifying resin selected from the group consisting of terpene resins, polyterpene resins, phenolic resins, hydrogenated rosin, hydrocarbon resins and mixtures thereof; from 15 to 600 parts by weight of plasticizer selected from the group consisting of polybutenes, low molecular weight polyisobutylenes, phosphate esters, dibutyl phthalate, straight chain aliphatic acid esters, parafine oils, coal tars, asphalts, chlorinated polyphenyl, chlorinated biphenyl and mixtures thereof; from about 0.5 to 60 parts by weight of adhesion promoter comprising an epoxy resin having an epoxide equivalent of from about 150 to 300; and from about 5 to 1,000 parts by weight of inert filler material, said composition being readily extrudable at temperatures above about 150°F. while hardening upon cooling without undergoing chemical change, and having a hardness of about 5 to 95 on a Shore A Durometer at room temperature.

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3,932,342

## METHYL METHACRYLATE LACQUERS CONTAINING POLYISOCYANATES

Nobuyoshi Nagata, Nara; and Ryuzo Mizuguchi, Osaka, both of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Continuation of Ser. No. 199,020, Nov. 15, 1971, abandoned, which is a continuation of Ser. No. 689,764, Dec. 2, 1967, abandoned. This application Sept. 18, 1973, Ser. No. 398,370
Claims priority, application Japan, Dec. 14, 1966, 41-81548
Int. Cl.² C08G 18/06
U.S. Cl. 260—37 N 20 Claims

1. A coating composition comprising a solvent incapable of reacting with an isocyanate group and film-forming ingredients consisting of (A) a copolymer obtained by copolymerizing 85 to 90 parts by weight of methyl methacrylate with 10 to 15 parts by weight of a polymerizable monomer having at least one hydroxyl group in the molecule selected from the group consisting of 2-hydroxalkyl acrylates, 2-hydroxyalkyl methacrylates, N-methylol acrylamide, N-methylol methacrylamide, allyl alcohol, methallyl alcohol and crotyl alcohol, the total amount of the two being 100 parts by weight and (B) at least one polyisocyanate compound having at least two isocyanate groups in the molecule added to said copolymer in an amount of 0.2 to 5.0 equivalents to the hydroxyl groups of said copolymer.

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3,932,343

## MIXED EPOXY RESIN-MIXED ANHYDRIDE ADHESIVE COMPOSITIONS

Walter P. Barie, Jr., Shaler Township, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed May 9, 1974, Ser. No. 468,553
Int. Cl.² C08G 51/04, 45/04
U.S. Cl. 260—37 EP 9 Claims

6. A new cured adhesive composition comprising

3,4,3′,4′-benzophenone tetracarboxylic dianhydride and maleic anhydride in a weight ratio of from about 4:1 to about 1:3; and

a polyglycidyl ether of a phenol-formaldehyde novolac resin having an average of two to about four epoxy groups per molecule and a diglycidyl ether of a dihydric phenol having a molecular weight between about 350 and 600 in an amount to provide an A/E ratio of between about 0.4 and about 1.5 at a weight ratio of the polyglycidyl ether of the novolac resin to the diglycidyl ether of a dihydric phenol of between about 4:1 to about 1:3;

said composition prepared at a temperature between about 100° C. and about 250° C. in the presence of about 0.1 part to about 5 parts of a metal complex of acetylacetone selected from the group consisting of zinc acetylacetonate, iron acetylacetonate, aluminum acetylacetonate, magnesium acetylacetonate, nickel acetylacetonate and zirconium acetylacetonate per 100 parts of epoxy resin.

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3,932,344

## COMPOSITE WIRE CONTAINING A MIXTURE OF PHENOLIC AND THERMOPLASTIC RESINS AS A BINDER

William R. O'Day, Jr., Concord; Norman D. Bensky, Lexington, and James D. Le Blanc, Winthrop, all of Mass., assignors to Kennecott Copper Corporation, New York, N.Y.

Filed Feb. 22, 1974, Ser. No. 444,702
Int. Cl.² C08L 61/10
U.S. Cl. 260—38 9 Claims

1. As an article of manufacture, a composite wire adapted for flame spraying consisting essentially of a particulate material selected from the group consisting of molybdenum, boron, tantalum, tungsten, tungsten carbide, silicon carbide, alumina, zirconia, oxides of chrome, titania, alloys of nickel and chromium with iron, and mixtures of these, said material having a particle size smaller than 80-mesh in an admixture with a mixture of a thermoplastic resin and a phenolic resin in a cured state wherein said material comprises from about 75 percent to about 97½ percent by weight of total composite with the balance being said phenolic resin and thermoplastic resin in a ratio to each other of 4:1 to 1:9.

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3,932,345

## METHOD FOR PREPARING PIGMENTED POLYESTERS WHEREIN THE PIGMENT GLYCOL SLURRY IS PREHEATED

Roger A. Champlin, Uniontown, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Feb. 6, 1975, Ser. No. 547,686
Int. Cl.² C08L 67/02
U.S. Cl. 260—40 P 4 Claims

1. In a process for preparing uniformly pigmented polyesters formed by reacting a mixture of at least one dicarboxylic acid and at least one glycol in a solvent consisting of preformed polyester having a molecular weight ranging from about 200 to about 3000 in a reaction vessel at a temperature ranging from above the melting point of said solvent to about 300° C. and at a pressure ranging from about 20 to about 1000 pounds per square inch gauge pressure, distilling out the water formed in the reaction at such a rate that the pressure remains constant within said range, adding a condensation polymerization catalyst and then heating and reacting the mixture at a temperature ranging from about 265° to 285° C. at a pressure of about one millimeter of mercury pressure or less until high molecular weight polyester having an intrinsic viscosity of at least 0.4 is formed and wherein during the course of said process a slurry consisting of a pigmenting agent and a glycol is added to the mixture, the improvement which comprises heating the slurry to a temperature from about 90° C. to about 1° to 2° C. below the boiling point of said slurry and adding said heated slurry to the reaction mixture of dicarboxylic acid and glycol in the preformed polyester solvent when the temperature of said reacting mixture ranges from about 210° C. to about 240° C. and the pressure in the reaction vessel ranges from about 20 to about 70 pounds per square inch gauge pressure.



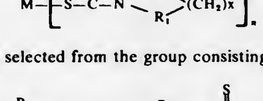
3,932,346

## PIGMENTED PHOTOPOLYMERIZABLE COMPOUNDS STABILIZED AGAINST PREMATURE GELATION WITH THIOCARBAMATES

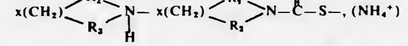
George Pasternack, Chicago, and Thor Jondahl, Oak Park, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 452,227, March 18, 1974, abandoned. This application May 29, 1975, Ser. No. 582,000
Int. Cl.² C08K 5/00
U.S. Cl. 260—42.21 17 Claims

1. A photopolymerizable composition stabilized to gel formation comprised of a metal phthalocyanine pigmented ethylenically unsaturated ester and a stabilizing amount of a thiocarbamate compound having the formula



wherein M is selected from the group consisting of



and a metal cation having a valence of 1 to 3 and each of R, $R_1$, $R_2$ and $R_3$ are selected from the group consisting of hydrogen, aryl, alkyl groups having 1 to 20 carbon atoms, aralkyl and alkaryl groups having 7 to 15 carbon atoms and amino-, sulfo-and oxy-substituted alkyl and aryl groups, *n* is an integer of 1 to 3 and *x* is an integer of 0 to 1.

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3,932,347

## POWDER PAINTS CONTAINING PARTICULATE METAL I

Melville J. Camelon, Utica, and Rodney C. Gibeau, Mt. Clemens, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 422,472, Dec. 6, 1973, abandoned. This application Sept. 16, 1974, Ser. No. 506,486
Int. Cl.² C08K 3/08, 9/04, 9/10
U.S. Cl. 260—42.14 14 Claims

1. In a powder paint which exclusive of catalysts, antistatic agents, plasticizers, and flow control agents, the same being known and optional additive to powder paints, consists essentially of aluminum flakes, non-metal pigment, and a particulate, organic, film-former, the improvement wherein

A. non-metal pigment comprises 0 to about 22 weight percent of said powder paint,

B. said aluminum flakes comprise about 0.005 to about 24 weight percent of said powder paint and are encapsulated prior to admixture with said particulate, organic, film-former with about 2 to about 200 parts by weight of a continuous coating of a thermosettable, organic, film-former per 100 parts by weight of aluminum flakes, said thermosettable, organic, film-former consisting essentially of a copolymer having average molecular weight ($M_n$) in the range of about 1500 to about 15,000 and glass transition temperature in the range of about 40°C. to about 90°C., bearing functional groups provided by constituent monomers selected from the group consisting of glycidyl esters of a monoethylenically unsaturated carboxylic acid, $C_5$ – $C_7$ monohydroxy acrylates, $C_5$ – $C_7$ monohydroxy methacrylates, and alpha-beta olefinically unsaturated amides and wherein at least above 50 weight percent of the constituent monomers are acrylic monomers and the remainder weight percent, if any, consists essentially of $C_8$–$C_{12}$ monovinyl hydrocarbons, said copolymer being self-crosslinkable or employed in combination with a monomeric or polymeric crosslinking agent that is capable of reacting with functional groups on said copolymer, and

C. said particulate, organic, film-former is selected from the group consisting of

1. a thermoplastic, particulate, film-former having average molecular weight ($M_n$) in the range of about 30,000 to about 80,000 and a glass transition temperature in the range of about 60°C. to about 110°C., said thermoplastic, particulate, film-former being a polymer of alpha-beta olefinically unsaturated monomers of which about 51 to about 100 weight percent are acrylic monomers and 0 to about 49 weight percent are $C_8$–$C_{12}$ monovinyl hydrocarbons, and
2. thermosettable, particulate, film-formers consisting essentially of a copolymer having average molecular weight ($M_n$) in the range of about 1500 to about 15,000 and glass transition temperature in the range of about 40°C. to about 90°C., bearing functional groups provided by constituent monomers selected from the group consisting of glycidyl esters of a monoethylenically unsaturated carboxylic acid, $C_5$ – $C_7$ monohydroxy acrylates, $C_5$ – $C_7$ monohydroxy methacrylates, and alpha-beta olefinically unsaturated amides and wherein at least above 50 weight percent of the constituent monomers are acrylic monomers and the remainder weight percent, if any, consists essentially of $C_8$–$C_{12}$ monovinyl hydrocarbons said copolymer being self-crosslinkable or employed with a monomeric or polymeric crosslinking agent that is capable of reacting with functional groups on said copolymer.

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3,932,348

## POWDER PAINTS HAVING ALUMINUM FLAKES ENCAPSULATED IN THERMOSETTABLE MATERIAL CONTAINING TETRAALKYLAMMONIUM HALIDES

Melville J. Camelon, Utica, and Rodney C. Gibeau, Mount Clemens, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 422,474, Dec. 6, 1973, abandoned. This application Sept. 16, 1974, Ser. No. 506,488
Int. Cl.² C08K 3/08, 9/04, 9/10
U.S. Cl. 260—42.14 22 Claims

1. In a powder paint which exclusive of catalysts, antistatic agents, plasticizers and flow control agents, the same being known and optional additives to powder paints, consists essentially of aluminum flakes, non-metal pigment and a particulate, organic, film-former, the improvement wherein

A. said non-metal pigment comprises 0 to about 22 weight percent of said powder paint,

B. said aluminum flakes comprise about 0.005 to about 25 weight percent of said powder paint and are encapsulated prior to admixture with said particulate, organic, film-former with about 2 to about 200 parts by weight of a continuous coating of a thermosettable, organic, film-former per 100 parts by weight aluminum flakes, said thermosettable, organic, film-former consisting essentially of a copolymer having average molecular weight ($M_n$) in the range of about 1500 to about 15,000 and glass transition temperature in the range of about 40°C. to about 90°C., bearing functional groups provided by constituent monomers selected from the group consisting of glycidyl esters of a monoethylenically unsaturated carboxylic acid, $C_5$ – $C_7$ monohydroxy acrylates, $C_5$ – $C_7$ monohydroxy methacrylates and alpha-beta olefinically unsaturated amides and wherein at least above 50 weight percent of the constituent monomers are selected from acrylic monomers and the remainder weight percent, if any, of the constituent monomers consists essentially of $C_8$ – $C_{12}$ monovinyl hydrocarbons said copolymer being self-crosslinkable or employed in combination with a monomeric or polymeric crosslinking agent that is capable of reacting with said functional groups on said copolymer and containing about 0.05 to about 20 parts by weight of an ammonium salt selected from the group consisting of tetraalkylammonium halides and substituted

tetraalkylammonium halides wherein at least one alkyl radical is replaced with an aryl, phenoxy or alkoxy radical per 100 parts by weight of said thermosettable, organic, film-former, and

C. said particulate, organic, film-former is selected from the group consisting of

1. a thermoplastic, particulate film-former that is a polymer of alpha-beta olefinically, unsaturated monomers of which about 51 to about 100 weight percent are acrylic monomers and 0 to about 49 weight percent are monovinyl hydrocarbons, and
2. thermosettable, particulate, film-formers consisting essentially of a copolymer having average molecular weight ($M_n$) in the range of about 1500 to about 15,000 and glass transition temperature in the range of about 40°C. to about 90°C., bearing functional groups provided by constituent monomers selected from the group consisting of glycidyl esters of a monoethylenically unsaturated carboxylic acid, $C_5 - C_7$ monohydroxy acrylates, $C_5 - C_7$ monohydroxy methacrylates and alpha-beta olefinically unsaturated amides and wherein at least about 50 weight percent of the constituent monomers are selected from acrylic monomers and the remainder weight percent, if any, of the constituent monomers consists essentially of $C_8 - C_{12}$ monovinyl hydrocarbons, said copolymer being self-crosslinkable or employed in combination with a monomeric or polymeric crosslinking agent that is capable of reacting with said functional groups on said copolymer.

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**3,932,349**

**THERMOSETTABLE POWDER PAINTS CONTAINING ENCAPSULATED ALUMINUM FLAKES II**

**Melville J. Camelon, Utica, and Rodney C. Gibeau, Mount Clemens, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.**

**Continuation-in-part of Ser. No. 422,475, Dec. 6, 1973, abandoned. This application Sept. 16, 1974, Ser. No. 506,489**

**Int. Cl.² C08K** *3/08, 9/04, 9/10*

**U.S. Cl. 260—42.14** **17 Claims**

1. In a powder paint which exclusive of catalysts, antistatic agents, plasticizers, and flow control agents, the same being known and optional additives to powder paints, consists essentially of aluminum flakes, non-metal pigment, and a particulate, organic, film-former, the improvement wherein

A. said non-metal pigment comprises 0 to about 22 weight percent of said powder point,

B. said aluminum flakes comprise about 0.005 to about 25 weight percent of said powder paint and are encapsulated prior to admixture with said particulate, organic, film-former with about 2 to about 200 parts by weight of a continuous coating of a thermoplastic, organic, film-former per 100 parts by weight aluminum flakes, said thermoplastic, organic, film-former consisting essentially of a thermoplastic, organic, film-former selected from the group consisting of

1. polymers of alpha-beta olefinically unsaturated monomers of which about 51 to 100 weight percent are acrylic monomers and 0 to about 49 weight percent are monovinyl hydrocarbons,
2. polyamides,
3. polyesters,
4. homopolymers of monovinyl hydrocarbons,
5. cellulose acetate, and
6. cellulose butyrate, and containing about 0.05 to about 20 parts by weight of an ammonium salt selected from the group consisting of tetraalkylammonium halides and substituted tetraalkylammonium halides wherein at least one alkyl radical is replaced with an aryl, phenoxy or alkoxy radical per 100 parts by weight of said thermoplastic, organic, film-former, and

C. said particulate, organic, film-former is selected from the group consisting of

1. a thermoplastic, particulate, film-former that is a copolymer of alpha-beta olefinically unsaturated monomers of which about 51 to about 100 weight percent are acrylic monomers and 0 to about 49 weight percent are monovinyl hydrocarbons, and
2. thermosettable, particulate, film-formers consisting essentially of an epoxy- functional copolymer having average molecular weight ($M_n$) in the range of about 1500 to about 15,000 and glass transition temperature in the range of about 40°C. to about 90°C. bearing functional groups provided by constituent monomers selected from the group consisting of glycidyl esters of a monoethylenically unsaturated carboxylic acid, $C_5 - C_7$ monohydroxy acrylates, $C_5 - C_7$ monohydroxy methacrylates and alphabeta olefinically unsaturated amides and wherein at least above 50 weight percent of the constituent monomers are acrylic monomers and the remainder weight percent, if any, of the constituent monomers consists essentially of $C_8 - C_{12}$ monovinyl hydrocarbons, said copolymer being self-crosslinkable or employed in combination with a monomeric or polymeric cross-linking agent that is capable of reacting with said functional groups on said copolymer,

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**3,932,350**

**METHOD OF MANUFACTURING REINFORCED RESIN MOLDINGS**

**Tadashi Yamaguchi; Takayuki Ono, both of Sendai; Hiroshi Hoshi, Narashino; Michio Hirakawa, and Isao Watanabe, both of Ichikawa, all of Japan, assignors to Lion Fat & Oil Co., Ltd., Tokyo, Japan**

**Continuation-in-part of Ser. No. 334,663, Feb. 22, 1973, abandoned. This application Nov. 4, 1974, Ser. No. 520,479**

**Claims priority, application Japan, Feb. 24, 1972, 47-19543**

**Int. Cl.² C08K** *3/34, 3/40*

**U.S. Cl. 260—42.14** **11 Claims**

1. A method of manufacturing fiber-reinforced resin moldings, which comprises the steps of:

forming an aqueous dispersion consisting essentially of from one to 100 parts by weight of the sum of the weights of the following components A and B, per 100 parts by weight of aqueous dispersing medium,

A. fibers selected from the group consisting of glass fibers, slag wool fibers and asbestos fibers,

B. one or a mixture of $\alpha,\beta$-ethylenically unsaturated, radical polymerizable monomers,

the weight ratio of A/B being such that the polymer-coated fibers obtained by the following polymerization step contain from 5 to 50 weight percent of polymer;

adding to said dispersion from 0.001 to 10 parts by weight of $SO_2$, per 100 parts by weight of said monomer B, as essentially the sole polymerization initiator made present in said dispersion, and maintaining said dispersion under polymerizing conditions effective to polymerize said monomer B, while agitating said dispersion, to form a polymer of B as a coating on the surfaces of fibers A,

recovering from the dispersion polymer-coated fibers composed of from 5 to 50 weight percent of polymer;

and then compression molding said polymer-coated fibers to form a molded object.



**3,932,351**

**METHOD OF PREPARING PHOSPHORUS-BROMINE CONTAINING FIRE RETARDANT POLYESTER FIBERS**

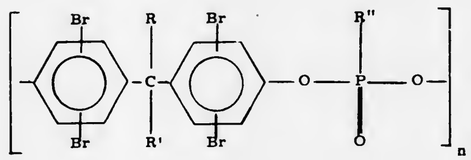
**Henry L. King, Cary, N.C., assignor to Monsanto Company, Decatur, Ala.**

**Filed Apr. 8, 1971, Ser. No. 132,369. The portion of the term of this patent subsequent to Mar. 13, 1992, has been disclaimed.**

**Int. Cl.² C08K** *5/53*

**U.S. Cl. 260—45.7 P** **6 Claims**

1. Synthetic fibers in which the fiber forming substance is any long chain synthetic polymer composed of at least 85% by weight of an ester of dihydric alcohol and terephthalic acid containing not more than 20% based on the weight of the polymer, of a compound having the general formula:



where R and R′ are radicals selected from the group consisting of hydrogen, methyl, ethyl, aryl, and brominated aryl; where R″ is a radical selected from the group consisting of alkyl, aryl, and brominated aryl; and where $n$ is an integer of from 1 to about 100.

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**3,932,352**

**PHOTODEGRADABLE PLASTIC COMPOSITION CONTAINING A N-HALO IMIDE**

**Bernard Freedman, Berkeley, and Martin J. Diamond, Oakland, both of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.**

**Filed Mar. 22, 1974, Ser. No. 453,911**

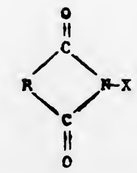
**Int. Cl.² C08K** *5/16*

**U.S. Cl. 260—45.8 N** **5 Claims**

1. A photodegradable composition consisting of

a. a polyolefin selected from the group consisting of polyethylene, polypropylene, polybutylene, polystyrene, mixtures of polyethylene and polypropylene, and vinyl acetate/ethylene copolymers, and

b. about from 0.1 to 10% of an additive of the structure



wherein X is chlorine, bromine, or iodine, and R is a divalent hydrocarbon radical selected from the group consisting of an alkylene radical containing 1 to 8 carbon atoms, and the phenylene radical.

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**3,932,353**

**STABILIZERS FOR FUNCTIONALLY TERMINATED BUTADIENE POLYMERS**

**Edmund J. Mastrolia, Sacramento, and Harry J. Michigian, Carmichael, both of Calif., assignors to Aerojet-General Corporation, El Monte, Calif.**

**Filed Sept. 28, 1970, Ser. No. 90,200**

**Int. Cl. C08f** *45/60, 45/62*

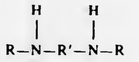
**U.S. Cl. 260—45.75 G** **9 Claims**

1. A novel composition comprising a polybutadiene polymer, said polymer bearing either pendant or terminal functional groups, a cross-linking agent reactive with said polybutadiene polymer, said cross-linking agent being selected from the group consisting of a polyisocyanate, an aziridine and an epoxide, and a stabilizer mixture including

1. a secondary amine having the formula

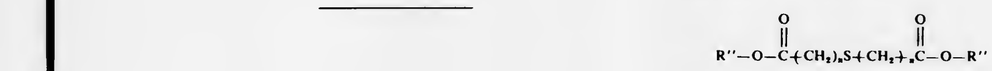


or



wherein R is a monovalent aromatic group and R′ is a divalent aromatic group; and

2. a thiodiester of the formula



wherein R″ is a monovalent organic group and $n$ is an integer from 1 to about 20.

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**3,932,354**

**STABILIZATION OF THERMOPLASTIC POLYURETHANES DERIVED FROM CYCLIC NITRILE COMPOUNDS**

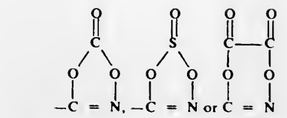
**Larry G. Wolgemuth, Cherry Hill, and Benjamin C. Wilbur, Williamstown, both of N.J., assignors to Atlantic Richfield Company, Los Angeles, Calif.**

**Filed Feb. 27, 1974, Ser. No. 445,522**

**Int. Cl.² C08L** *75/00*

**U.S. Cl. 260—45.95** **16 Claims**

1. In a process for preparing polymers containing urethane, urea or thiourethane groups from cyclic nitrile compounds containing



groups and nucleophilic compounds having active hydrogen atoms using a catalyst system comprising an organotin compound, the improvement comprising heating the polymeric product with a tertiary alcohol containing 4 to 10 carbon atoms for ¼ to 24 hours and recovering the polymer from the tertiary alcohol by insolubilizing it in the tertiary alcohol.

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**3,932,355**

## PREPARATION OF SOL CHLOROPRENE POLYMERS

**Arthur Livingston Barney, Wilmington, and Ausat Ali Khan, Newark, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.**

**Continuation-in-part of Ser. No. 481,375, June 19, 1974, abandoned. This application Dec. 5, 1974, Ser. No. 530,035**

**Int. Cl.² C08G *2/00*; C08F *214/00*, *136/16*, *220/42***

**U.S. Cl. 260—63 HA** **10 Claims**

1. In the process of polymerizing to a high monomer conversion in the presence of a $C_8$-$C_{20}$ alkyl mercaptan in aqueous emulsion at a pH of about 10–13, chloroprene in admixture with from 0 to about equal weight of a copolymerizable monomer at a temperature from the freezing point of the emulsion to about 52°C., the improvement of having present in the emulsion about 0.05–1 part by weight per 100 parts of the starting monomer, of a polyether having the following formula:

$$R^1—O(CH_2CHO)_nH$$
$$\quad\quad\quad

polyamide of a C-alkyl substituted aliphatic diamine of hexane or octane and a terephthalic acid dialkyl diester said polyamide shaped object prepared by screw injection kneading a polyamide having a viscosity number determined in accordance with Deutsche Industrie Norm 53727 employing a 0.5 weight percent solution of polyamide in m-cresol at 25°C of 130–180, said polyamide being of a C-alkyl substituted aliphatic diamine of hexane or octane and a terephthalic acid dialkyl diester, under a back pressure of between 5 and 80 kiloponds/cm² at a temperature between 240° and 320°C.

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**3,932,363**

## POLYAMINES CONTAINING ACID GROUPS

**Wolfgang Lehmann, Leverkusen; Gerhard Troemel, Pesch; Kurt Ley, and Friedhelm Müller, both of Odenthal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Germany**

**Filed Nov. 10, 1972, Ser. No. 305,320**

**Claims priority, application Germany, Nov. 12, 1971, 2156215**

**Int. Cl.² C08G *69/44***

**U.S. Cl. 260—78 SC** **3 Claims**

1. A water-soluble modified polyamine having an average molecular weight of above 1,000 prepared by reacting

a. a polyamine of the formula



wherein

$R_1$ and $R_2$ is H or $C_1$–$C_4$ alkyl,

*n* is an integer of 2–4 and

*m* is an integer of 1–4, with

b. an alkanedicarboxylic acid of 4 to 10 carbon atoms, and with

c. a compound selected from the group consisting of acrylic acid, methacrylic acid, 2-chloropropionic acid, chloroacetic acid and alkali metal salts thereof;

and thereafter reacting the product of the reaction of (a), (b) and (c) with an α,ω-dihaloalkane of 2 to 6 carbon atoms in an aqueous medium at a pH above 6 and at a temperature between 0° and 95°C until the reaction mixture in the form of a 10% aqueous solution shows a viscosity of at least 10 cP at 25°C.

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**3,932,364**

## PRODUCTION OF POLYAMIDES IN THE PRESENCE OF A PHOSPHORUS ACID ESTER AND AN ORGANIC BASE

**Noboru Yamazaki, and Fukuji Higashi, both of Tokyo, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan**

**Filed Oct. 12, 1973, Ser. No. 405,906**

**Claims priority, application Japan, Oct. 17, 1972, 47-104297; Apr. 25, 1973, 48-47383; May 17, 1973, 48-55288**

**Int. Cl.² C08G *69/28***

**U.S. Cl. 260—78 R** **11 Claims**

1. A process for producing a fiber-forming polyamide which comprises reacting a dicarboxylic acid of the formula

$$HOOC-R^1-COOH$$

wherein $R^1$ is a straight or branched-chain aliphatic hydrocarbon radical, with a diamine of the formula

$$H_2N-R^2-NH_2$$

wherein $R^2$ is an aromatic carbocyclic radical, or a radical in which two or more aromatic carbocyclic radicals are bonded through —O—, in the presence of a phosphorous acid ester of the formula, $R^3R^4HPO_3$ wherein $R^3$ and $R^4$ may be same or different and are individually an alkyl, aralkyl or aromatic group and in the presence of an organic base selected from the group consisting of pyridine, 2-methyl pyridine, 4-methyl pyridine and 2,6-dimethyl pyridine, wherein one equivalent or more of the phosphorous acid ester is used per equivalent of the carboxyl group in the dicarboxylic acid and two moles or more of the organic base per mole of the dicarboxylic acid is used.

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**3,932,365**

## PREPARATION OF HIGH MOLECULAR WEIGHT POLYMER FROM OXALIC ACID AND PARA-PHENYLENE DIISOCYANATE

**Rene Penisson, Lyon, France, assignor to Rhone-Poulenc-Textile, Paris, France**

**Filed Aug. 7, 1973, Ser. No. 386,315**

**Claims priority, application France, Aug. 9, 1972, 72.29010; May 28, 1973, 73.19614**

**Int. Cl.² C08G *18/76***

**U.S. Cl. 260—78 R** **11 Claims**

1. A process for the preparation of a high molecular weight film- and fiber-forming nitrogen-containing polymer, said process comprising reacting, in substantially stoichiometric amounts, oxalic acid and paraphenylene diisocyanate in a polar, aprotic, anhydrous, organic solvent at a temperature which is raised progressively at a rate of from about 1° to about 5°C per minute from a lower temperature of about 0° to about 30°C to a higher temperature of about 80°C to about 150°C, and in the presence, at least when the viscosity of the reaction mixture exceeds 6,000 poises, of a viscosity-reducing amount of a hydrogen bond breaking agent selected from the group consisting of lithium chloride and calcium chloride.

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**3,932,366**

## PROCESS FOR THE PRODUCTION OF BASIC MODIFIED POLYAMIDES

**Wilhelm Thoma, Berg.Neukirchen; Dietrich Hildebrand, Odenthal; Wolf-Dieter Last, and Heinrich Rinke, both of Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Germany**

**Division of Ser. No. 377,090, July 6, 1973. This application Dec. 13, 1974, Ser. No. 532,671**

**Int. Cl.² C08G *69/48***

**U.S. Cl. 260—78 L** **5 Claims**

1. Basic modified polyamides produced by the polycondensation of lactams of ω-aminocarboxylic acids together with 0.1 to 5 mol of triamines of the formula

$$H_2N-(CH_2)_n-NH-(CH_2)_n-NH_2$$

wherein *n* equals 2 to 6, per 100 mol of lactam and 2 equivalents of carboxyl groups in the form of dicarboxylic acids and monocarboxylic acids per mol of triamine, the molar ratio of said monocarboxylic acids to said dicarboxylic acids being of between 10 : 1 and 1 : 20, and said basic modified polyamides, dyed with reactive dyes.

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**3,932,367**

## POWDER PAINT WITH EPOXY AND HYDROXY COPOLYMER AND MIXTURE OF DICARBOXYLIC ACIDS AND POLYANHYDRIDES

**Santokh S. Labana, Dearborn Heights, and Ares N. Theodore, Farmington, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.**

**Continuation-in-part of Ser. No. 394,881, Sept. 6, 1973, abandoned. This application Feb. 24, 1975, Ser. No. 552,457**

**Int. Cl.² C08G *59/42, 81/02*; C08F *220/32***

**U.S. Cl. 260—78.4 D** **5 Claims**

1. In a thermosettable powder paint which exclusive of pigments, catalysts, antistatic agents, plasticizers and flow control agents, the same being conventional non-reactive additives to a thermosettable powder paint, consists essentially of a coreactive particulate mixture of

1. a qualitatively difunctional copolymer of about 5 to about 20 weight percent of a glycidyl ester of a monoethylenically unsaturated acid and about 95 to about 80 weight percent of monoethylenically unsaturated monomers and having a glass transition temperature in the range of about 40°C. to about 90°C. and a molecular weight ($M_n$) in the range of about 1500 to about 15,000, and
2. a $C_4$ – $C_{20}$ saturated, straight chain, aliphatic dicarboxylic acid,

the improvement wherein

A. said copolymer is qualitatively difunctional and said other monoethylenically unsaturated monomers consist essentially of difunctional monomers selected from the group consisting of $C_5$ – $C_7$ hydroxyalkyl acrylates and $C_5$ – $C_7$ hydroxyalkyl methacrylates in an amount comprising about 2 to about 10 weight percent of said copolymer and monofunctional monomers selected from the group consisting of esters of a $C_1$ – $C_8$ monohydric alcohol and acrylic acid, esters of a $C_1$ – $C_8$ monohydric alcohol and methacrylic acid and $C_8$ – $C_{12}$ monovinyl hydrocarbons, and

B. there is substituted for a portion of said dicarboxylic acid a polyanhydride having molecular weight in the range of about 1000 to about 5000 and the resultant mixture of said dicarboxylic acid and said polyanhydride is porportional and quantified such that said dicarboxylic acid is present in an amount that provides about 0.1 to about 0.6 carboxyl groups per epoxy group on said copolymer and said polyanhydride is present in an amount that provides about 0.2 to about 1.1 anhydride groups per epoxy group on said polymer.

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**3,932,368**

## POWDER COATING COMPOSITION COMPRISING A PARTICULATE FORM OF A CARBOXYLATED POLYOLEFIN

**Richard L. McConnell; Robert B. Taylor, and Peter M. Grant, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.**

**Filed Nov. 21, 1973, Ser. No. 418,160**

**Int. Cl.² C08F *8/46*; C25D *13/06***

**U.S. Cl. 260—78.4 D** **11 Claims**

1. A powder coating composition particularly useful in coating unprimed substrates which comprises a particulate form of a carboxylated polyolefin selected from the group consisting of carboxylated polyethylene compositions having a melt index of 5 to 75 at 190°C. and carboxylated homo- and copoly-α-olefins prepared from alpha olefin monomers containing 3 to 12 carbon atoms and copolymers of such monomers and ethylene having a melt flow rate of 15 to 175 g./10 minutes at 230°C., said polyolefin having a saponification number of about 2 to about 12, said particulate form having a particle size less than 20 mesh.

10. A substrate having thereon an electrostatically deposited coating comprising a particulate form of less than 20 mesh size of a carboxylated polyolefin selected from the group consisting of carboxylated polyethylene and carboxylated homo-and copoly-a-olefins prepared from alpha olefin monomers containing 3 to 12 carbon atoms and copolymers of such monomers and ethylene having a saponification number of about 2 to about 12, a melt flow of from about 15 to about 175 g./10 minutes at 230°C and a melt index of 5 to 75 at 190°C.

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**3,932,369**

## BLOCK COPOLYMERS CONTAINING OLEFIN SULFUR DIOXIDE SEGMENTS AND PROCESS FOR THEIR PREPARATION

**Guido Sartori, Linden, and Robert D. Lundberg, Somerville, both of N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.**

**Filed Nov. 6, 1974, Ser. No. 521,454**

**Int. Cl.² C08F *28/00*; C08G *75/22***

**U.S. Cl. 260—79.3 A** **31 Claims**

1. A process for preparing block copolymers comprising olefin-sulfur dioxide blocks which comprises subjecting a polymer, which can be converted by means of shear into radical bearing segments, to shear at conditions wherein said polymer is broken down into free radical bearing segments, in the presence of the olefin, said olefin being a cis cycloolefin having a ring strain of at least about 4 kilocalories per mole, as compared to a corresponding open chain structure, and sulfur dioxide for a time sufficient to form a block copolymer comprising one or more of said polymer segments linked to a olefin-sulfur dioxide copolymer block.

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**3,932,370**

## POWDERED RUBBER

**Vincent R. Landi, Chesire, and Richard W. Tomlinson, Watertown, both of Conn., assignors to Uniroyal Inc., New York, N.Y.**

**Filed Jan. 15, 1974, Ser. No. 433,616**

**Int. Cl.² C08D *5/02, 5/04***

**U.S. Cl. 260—83.3** **17 Claims**

1. In a method of treating rubber selected from the group consisting of butadiene-acrylonitrile copolymer rubber, styrene-butadiene copolymer rubber, polychloroprene rubber and polybutadiene rubber, wherein the rubber is chlorinated by contacting the rubber in an aqueous medium with hypochlorous acid as a chlorinating agent while agitating the mixture, the said chlorination being continued until the rubber has from 0.05 to 14 percent by weight of chlorine added thereto, the gel content of the thus-treated rubber being not greater than 95% by weight measured in methyl ethyl ketone for 24 hours at room temperature, the thus-treated rubber thereafter being separated from the aqueous medium and dried to provide friable or free-flowing rubber particles, the improvement comprising carrying out the said chlorination step while the said rubber is present as particles in the form of a slurry in the said aqueous medium, the said particles having a surface area of from 0.0022 to 0.0141 square meter per gram.

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**3,932,371**

## PROCESS FOR PREPARING LOW BULK VISCOSITY POLYMERS

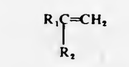
**Kenneth W. Powers, Berkeley Heights, N.J., assignor to Exxon Research and Engineering Company, Linden, N.J.**

**Continuation-in-part of Ser. No. 22,813, March 6, 1970, abandoned, which is a continuation-in-part of Ser. No. 550,649, May 17, 1966, abandoned. This application Dec. 28, 1973, Ser. No. 429,129**

**Int. Cl.² C08F *2/06, 4/14, 4/52, 36/04***

**U.S. Cl. 260—85.3 R** **9 Claims**

1. A two phase polymerization process for preparing an LM polymer which comprises reacting at polymerization conditions a $C_4$–$C_8$ conjugated diolefin with an isoolefin having the general formula:



wherein $R_1$ is H, a $C_1$–$C_{12}$ acyclic hydrocarbyl radical or a $C_1$–$C_{12}$ alicyclic hydrocarbyl radical and $R_2$ is a hydrocarbyl radical selected from the group consisting of phenyl, $C_1$–$C_{12}$ acyclic radicals, $C_1$–$C_{12}$ alicyclic radicals and mixtures thereof, in the presence of a catalyst selected from the group consisting of (1) aluminum bromide and (2) ethyl aluminum dichloride promoted with a compound selected from the group consisting of hydrogen chloride, $C_3$–$C_7$ organic halides, and mixtures thereof, said catalyst being dissolved in a $C_5$–$C_8$ alkane; said polymerization being carried out in a vehicle wherein said vehicle is (1) propane or (2) propane plus a $C_3$–$C_8$ alkane, the reaction being carried out continuously with the steady-state concentration of monomers to be polymerized plus $C_3$–$C_8$ alkane is about 4 to about 23 weight percent based on monomers plus propane, plus $C_3$–$C_8$ alkane, the polymerization being carried out at a temperature of about −30 to about −80°C. and the polymerization being carried out at a conversion rate of about 60 to about 90%.

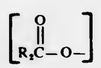
### 3,932,372
### PEROXIDE CO-INITIATOR SYSTEM FOR POLYMERIZATION

**Roger N. Lewis, Pinole, and Ronald L. Friedman, San Rafael, both of Calif., assignors to Argus Chemical Corporation, Brooklyn, N.Y.**

**Continuation of Ser. No. 56,714, July 20, 1970, abandoned. This application Nov. 15, 1973, Ser. No. 415,877**
**Int. Cl.² C08F** *114/02, 114/16*
**U.S. Cl. 260—92.8 W** **5 Claims**

1. An improved method for polymerization of addition polymerizable monomers having ethylenic unsaturation, comprising:

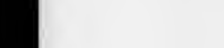
combining in an suitable liquid, said monomer, a catalytic polymerization composition consisting of a first initiator, which is a symmetrical diacyl peroxide of the formula:



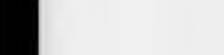
wherein:

$R_2$ is branched or straight chain alkyl, aryl, cycloalkyl, and substituted derivatives thereof;

a peracid of the formula:

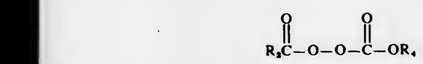


and a chloroformate of the formula:



wherein:

$R_3$ and $R_4$ are selected from branched or straight chain alkyl, cycloalkyl, and substituted derivatives thereof, and wherein $R_3$ can additionally be aromatic, in the presence of sufficient base to neutralize the hydrochloric acid generated by the reaction of said peracid and said chloroformate to form as a second initiator:



wherein:

$R_3$ and $R_4$ have been defined previously; and

maintaining the mixture at a temperature and for a sufficient time to substantially polymerize said monomer.

### 3,932,373
### POLYMERIC MATERIALS DERIVED FROM RING-OPENING POLYMERIZATION OF 1,5-CYCLOOCTADIENE

**Nissim Calderon, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio**

**Continuation-in-part of Ser. No. 272,612, July 17, 1972, abandoned, which is a continuation-in-part of Ser. No. 145,953, May 21, 1971, abandoned, which is a continuation of Ser. No. 785,032, Dec. 10, 1968, abandoned, which is a continuation of Ser. No. 477,035, Aug. 3, 1965, abandoned, which is a continuation-in-part of Ser. No. 448,872, April 16, 1965, abandoned. This application Mar. 4, 1974, Ser. No. 448,149**
**Int. Cl.² C08F** *132/06*
**U.S. Cl. 260—93.1** **4 Claims**

1. Rubbery homopolymers of 1,5-cyclooctadiene prepared by ring-opening polymerization of 1,5-cyclooctadiene, characterized by having a structure of polyalkenamers in which the double bonds are of the cis and trans vinylene type of configuration and none of the double bonds are of the 1,2 type configuration.

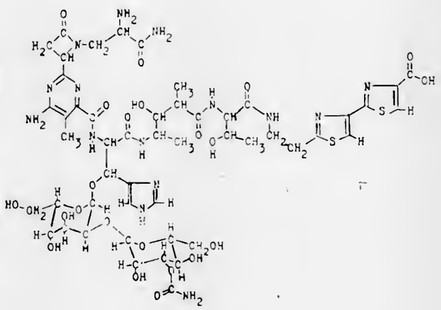
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### 3,932,374
### BLEOMYCINIC ACID AND PROCESS FOR PREPARING THEREOF

**Hamao Umezawa, Tokyo; Yasushi Takahashi, Hoya; Tadashi Shirai, Musashino, and Akio Fujii, Tokyo, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan**

**Division of Ser. No. 290,986, Sept. 21, 1972, Pat. No. 3,867,257, which is a continuation-in-part of Ser. No. 252,252, May 11, 1972, Pat. No. 3,843,448. This application June 13, 1974, Ser. No. 479,087**
**Claims priority, application Japan, May 15, 1971, 46-32232**
**Int. Cl.² C07C** *103/52*; **A61K** *37/00*
**U.S. Cl. 260—112.5 R** **2 Claims**

1. A compound having the structure of:



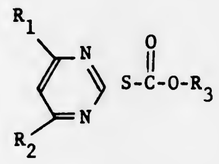


### 3,932,375
### USE OF 2-PYRIMIDINE THIOL CARBONATES AS ACYLATING AGENTS FOR AMINO OR IMINO CONTAINING COMPOUNDS

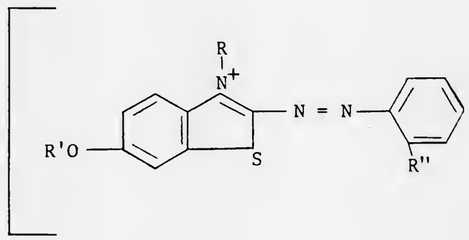
**Takeshi Nagasawa; Katumasa Kuroiwa, and Kouichi Narita, all of Korujama, Japan, assignors to Nitto Boseki Co. Ltd., Fukushima, Japan**

**Division of Ser. No. 287,410, Sept. 8, 1972, Pat. No. 3,852,290. This application June 13, 1974, Ser. No. 479,188**
**Claims priority, application Japan, Sept. 17, 1971, 46-72261; Sept. 27, 1971, 46-75306; Sept. 30, 1971, 46-76555; Jan. 10, 1972, 47-5116**
**Int. Cl.² C07C** *103/52*
**U.S. Cl. 260—112.5 R** **14 Claims**

1. A method for using a thiolcarbonate represented by the formula,



(I)



wherein $R_1$ and $R_2$ are individually a hydrogen atom or a methyl group, and $R_3$ is a straight chain or branched chain alkyl group having 1 to 5 carbon atoms, a straight chain or branched chain alkenyl group having 2 to 5 carbon atoms, or benzyl or benzhydryl group which may be nuclear substituted by a methoxy or nitro group of one or more halogen atoms,

as an acylating agent for acylating the amino or imino group of a compound having amino and/or imino groups selected from the group consisting of aliphatic, aralkyl, alicyclic, aromatic and heterocyclic primary and secondary amines; hydrazines and derivatives thereof; amino acids, and peptides obtained from two or more of the said amino acids and derivatives thereof; and saccharides and steroids having amino and/or imino groups;

in an inert organic solvent or in an aqueous solution thereof in the presence or absence of a base under mild conditions.

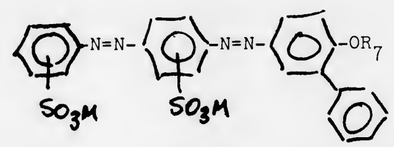
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### 3,932,376
### SULFO PHENYL-AZO-SULRO PHENYL-AZO-ALKOXY-DIPHENYL COMPOUNDS

**James F. Feeman, Wyomissing, Pa., assignor to Crompton & Knowles Corporation, Worcester, Mass.**

**Filed Oct. 6, 1971, Ser. No. 187,150**
**Int. Cl.² C09B** *43/00, 31/06*
**U.S. Cl. 260—186** **2 Claims**

1. A compound having the structure:



wherein M is H, Na, K, Li and $NH_4$; and $R_7$ is lower alkyl.

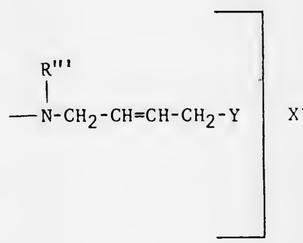
### 3,932,377
### HYDROSOLUBLE MONOAZOIC CATIONIC DYES AND PROCESS FOR PREPARING SAME

**Fabrizio Merlo, Saronno (Varese); Ruggero Battisti, Novara, and Danilo Domenis, Saronno (Varese), all of Italy, assignors to Montecatini Edison S.p.A. and Aziende Colori Nazionali Affini Acna S.p.A., both of Milan, Italy**

**Continuation of Ser. No. 203,861, Dec. 1, 1971, abandoned. This application Dec. 6, 1973, Ser. No. 422,352**
**Int. Cl.² C09B** *29/08*; **D06P** *3/76*
**U.S. Cl. 260—158** **11 Claims**

1. A water soluble, azoic, cationic dye having the formula:





wherein:

R is methyl or ethyl;

R′ is alkyl having from 1 to 4 carbon atoms;

R″ is hydrogen, alkyl having from 1 to 4 carbon atoms, or halogen;

R‴ is alkyl having from 1 to 4 carbon atoms, or $C_1$–$C_4$ alkyl substituted by a halogen, cyano or hydroxy;

Y is cyano or acetoxy; and

X is an anion.

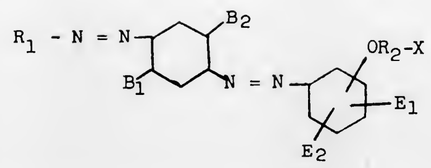
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### 3,932,378
### SULFONATED DISAZO DYESTUFFS CONTAINING AN ETHER GROUP

**Alfred Fasciati, Bottmingen, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland**

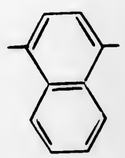
**Filed Aug. 18, 1971, Ser. No. 172,877**
**Claims priority, application Switzerland, Aug. 25, 1970, 12647/70; Aug. 11, 1971, 11798/71**
**Int. Cl.² C07C** *107/06*
**U.S. Cl. 260—174** **10 Claims**

1. A disazo compound of the formula





or



in which $R_1$ is mono- or disulfonated phenyl or naphthyl which, in addition to said sulfo groups is further unsubstituted or substituted by chlorine, lower alkyl or lower alkoxy,

$B_1$, $B_2$, $E_1$ and $E_2$ each is hydrogen, lower alkyl or lower alkoxy,

$R_2$ is low molecular alkylene, vinylene or propylene,

X is chloro hydroxyl cyano, lower alkoxy, phenoxy, carboxyl, lower alkanoyl, lower alkoxycarbonyl, benzoyl benzoyl, or 1,2 epoxyethyl or 2,3-epoxypropyl, and $-OR_2-X$ is in the ortho- or para-position to the azo bridge.

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**3,932,379**

## WATER-SOLUBLE MAROON AND RUBINE SULPHODIPHENYLAZOPHENYL- OR NAPHTHYLAZOANILINE DYES FOR POLYAMIDE FIBERS

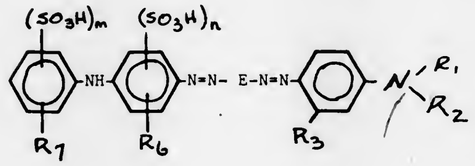
**Andre T. Brulard, Villerot, Belgium, assignor to Althouse Tertre en abrege "Atsa" societe anonyme, Brussels, Belgium**

**Filed Jan. 4, 1973, Ser. No. 320,848**

**Int. Cl.² C09B** *31/04, 31/08;* **D06P** *3/24*

**U.S. Cl. 260—191** **4 Claims**

1. A compound having the structure:



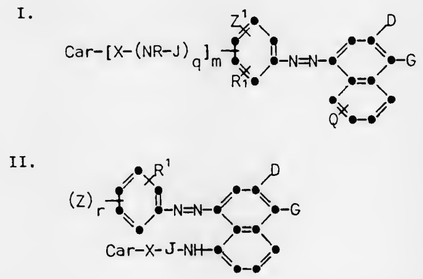
wherein

$R_1$ represents hydrogen alkyl having 1 to 4 carbon atoms, or alkyl having 1 to 4 carbon atoms substituted by cyano or hydroxy;

$R_2$ represents alkyl having 1 to 4 carbon atoms, or alkyl having 1 to 4 carbon atoms substituted by cyano, hydroxy, phenyl or phenyl substituted with a sulfonic acid group;

$R_3$ represents hydrogen, alkyl having 1 to 4 carbon atoms, or alkoxy having 1 to 4 carbon atoms;

E represents:



wherein $R_4$ and $R_5$ may be the same or different from each other and represent hydrogen, alkyl having 1 to 4 carbons or alkoxy having 1 to 4 carbon atoms;

$R_6$ represents hydrogen, alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms, $—NO_2$ or halogen;

$R_7$ represents hydrogen, alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms, $—NO_2$ or halogen;

*m* represents the integers 0 and 1;

*n* represents the integers 0 and 1; and

$m + n = 1$.

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**3,932,380**

## MAGENTA IMAGE-PROVIDING PHENYLAZO-NAPHTHYL DYES

**James J. Krutak, Sr., Kingsport, Tenn.; Jan R. Haase, and Richard A. Landholm, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.**

**Filed Feb. 5, 1974, Ser. No. 439,787**

**Int. Cl.² C09B** *29/10, 29/20;* **G03C** *5/30, 5/54*

**U.S. Cl. 260—197** **12 Claims**

1. A magenta image dye-providing compound having a formula as follows:

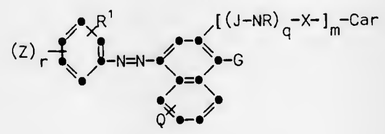
I.



II.

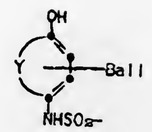


III.



wherein:

Car represents a carrier moiety which, as a function of oxidation under alkaline conditions, releases a diffusable dye from said compound and having the formula



wherein

Ball represents an organic ballasting group containing at least 8 carbon atoms which renders said compound non-diffusible in a photographic element during development in an alkaline processing composition;

Y represents the carbon atoms necessary to complete a benzene or naphthalene nucleus;

*m* and *q* each represent an integer having a value of 0 or 1;

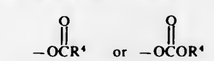
X represents a bivalent linking group of the formula $-R^2-L_n-R_p^2-$ where each $R^2$ can be the same or different and each represents alkylene having 1 to 8 carbon atoms; phenylene; or phenylene substituted with chloro, bromo, cyano, nitro, methoxy, methyl, carboxy or sulfo; L represents oxy, carbonyl, carboxamido, carbomoyl, sulfonamido, sulfamoyl sulfinyl or sulfonyl; *n* is an integer having a value of 0 to 1; *p* is 1 when *n* equals 1 and *p* is 1 or 0 when *n* equals 0 or when *q* is 0; Car-X- represents Car-alkylene-$SO_2$-, Car-$C_6H_4CH_2SO_2$-, or Carphenylene-$SO_2$-, provided that the carbon content of X does not exceed 14 carbon atoms;

R represents hydrogen or alkyl having 1 to 6 carbon atoms;

J represents sulfonyl or carbonyl;

Q is in the 5- or 8-position relative to G and represents hydroxy, $-NHCOR^3$ or $-NHSO_2R^3$ wherein $R^3$ is alkyl having 1 to 6 carbon atoms, alkyl having 1 to 6 carbon atoms substituted with hydroxy, cyano, sulfamoyl, carboxyl or sulfo; benzyl, phenyl, or phenyl substituted with carboxy, cyano, chloro, methoxy, methyl or sulfamoyl;

G represents hydroxy, an alkali metal salt thereof, a photographically inactive amine salt thereof, or a hydrolyzable acyloxy group having the formula:



wherein

$R^4$ is alkyl having 1 to 18 carbon atoms, phenyl or phenyl substituted with chloro or nitro;

*r* represents an integer having a value of 1 or 2;

Z represents cyano, trifluoromethyl, fluorosulfonyl, carboxy, $-COOR^4$ wherein $R^4$ is as described previously, nitro in the 2- or 3-position relative to the azo linkage, fluoro, chloro or bromo, alkylsulfonyl having 1 to 7 carbon atoms, alkylsulfonyl having 1 to 8 carbon atoms substituted with hydroxy, phenyl, cyano, sulfamoyl, carboxy or sulfo; phenylsulfonyl, phenylsulfonyl substituted with sulfamoyl, carboxy, fluorosulfonyl or methoxy; alkylcarbonyl having 2 to 5 carbon atoms, $-SO_2NR^5R^6$ wherein $R^5$ represents hydrogen, alkyl having 1 to 8 carbon atoms; $R^6$ represents hydrogen, alkyl having 1 to 6 carbon atoms, alkyl having 1 to 6 carbon atoms substituted with hydroxy, cyano, fluorosulfonyl, carboxy or sulfo; benzyl, phenyl, phenyl substituted with hydroxy, sulfonyl, sulfamoyl, carboxy or sulfo; alkylcarbonyl having 2 to 7 carbon atoms, phenylcarbonyl, alkylsulfonyl having 1 to 6 carbon atoms, alkylsulfonyl having 1 to 6 carbon atoms substituted with cyano or hydroxy; phenylsulfonyl or methoxyphenylsulfonyl; or Z represents $-CON(R^5)_2$ wherein each $R^5$ can be the same or different and is as described previously;

$Z^1$ represents hydrogen or Z;

$R^1$ represents hydrogen, alkyl having 1 to 4 carbon atoms, alkyl having 1 to 4 carbon atoms substituted with cyano, hydroxy or methoxy; alkoxy having 1 to 4 carbon atoms



chloro, bromo or fluoro;

D represents cyano, sulfo, fluorosulfonyl, chloro, bromo, fluoro, $-SO_3$-phenyl or $-SO_3$-phenyl substituted with hydroxy, chloro, carboxy, sulfamoyl, methyl or methoxy; alkylsulfonyl having 1 to 8 carbon atoms, alkylsulfonyl having 1 to 8 carbon atoms substituted with chloro, fluoro, hydroxy, phenyl, cyano, phenylsulfonyl or phenylsulfonyl substituted with carboxy, fluorosulfonyl or methoxy; alkylsulfinyl having 1 to 8 carbon atoms or alkylsulfinyl having 1 to 8 carbon atoms substituted with cyano, phenyl, hydroxy or sulfamoyl; phenylsulfinyl or phenylsulfinyl substituted with sulfo or fluorosulfonyl, $-SO_2NR^5R^6$, or $-CON(R^5)_2$ wherein each $R^5$ and $R^6$ is as described previously for Z,

with the proviso that there be no more than one sulfo radical and no more than one carboxy radical present in said compound.

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**3,932,381**

## MAGENTA IMAGE-PROVIDING PHENYLAZO-NAPHTHYL DYES

**Jan R. Haase; Richard A. Landholm, both of Rochester, N.Y., and James J. Krutak, Sr., Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.**

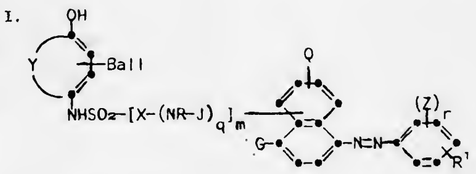
**Continuation-in-part of Ser. No. 331,729, Feb. 12, 1973, abandoned. This application Feb. 5, 1974, Ser. No. 439,810**

**Int. Cl.² C09B** *29/10, 29/20;* **G03C** *5/30, 5/54*

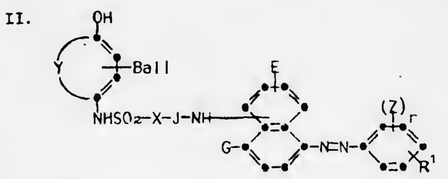
**U.S. Cl. 260—197** **20 Claims**

1. A magenta image dye-providing compound having a formula as follows:

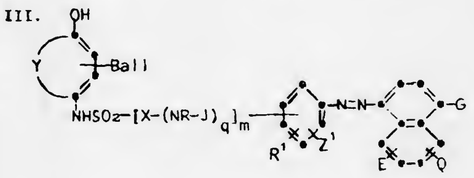
I.



II.



III.



wherein

Ball represents an organic ballasting group containing at least 8 carbon atoms which renders said compound non-diffusible in a photographic element during development in an alkaline processing composition.

Y represents the carbon atoms necessary to complete a benzene or naphthalene nucleus;

*m* and *q* each represent an integer having a value of 0 or 1;

X represents $—R^2—L_n—R^2p—$ where each $R^2$ can be the same or different and each represents alkylene having 1

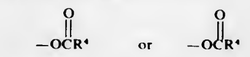
to 8 carbon atoms; phenylene; or phenylene substituted with chloro, bromo, cyano, nitro, methoxy, methyl, carboxy or sulfo; L represents oxy, carbonyl, carboxamido, carbamoyl, sulfonamido, sulfamoyl, sulfinyl or sulfonyl; n is an integer having a value of 0 or 1; $p$ is 1 when $n$ equals 1 and $p$ is 1 or 0 when $n$ equals 0 or when $q$ is 0, L is sulfonyl and $n$ is 1, then $p$ is 0, provided that when $p$ is 1 the carbon content of the sum of both $R^2$ radicals does not exceed 14 carbon atoms;

R represents hydrogen, or alkyl having 1 to 6 carbon atoms;

J represents sulfonyl or carbonyl;

Q represents hydrogen, hydroxy or $-NHCOR^3$ or $-NHSO_2R^3$ wherein $R^3$ is alkyl having 1 to 6 carbon atoms, alkyl having 1 to 4 carbon atoms substituted with hydroxy, cyano, sulfamoyl, carboxy, or sulfo; benzyl, phenyl or phenyl substituted with carboxy, chloro, methyl, methoxy or sulfamoyl;

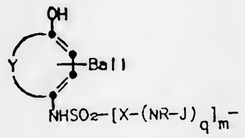
G represents hydroxy, an alkali metal salt thereof, a photographically inactive amine salt thereof or hydrolyzable acyloxy group having the formula



wherein $R^4$ is alkyl having 1 to about 18 carbon atoms, phenyl or phenyl substituted with chloro or nitro having 6 to 18 carbon atoms;

$r$ represents an integer having a value of 1 or 2;

Z represents cyano, trifluoromethyl, carboxy, $-COOR^4$ wherein $R^4$ is as described previously, nitro in the 2- or 3-position relative to the azo linkage, fluorosulfonyl, sulfo, chloro, bromo, fluoro, alkylsulfonyl having 1 to 8 carbon atoms, alkylsulfonyl having 1 to 6 carbon atoms substituted with hydroxy, phenyl, cyano, sulfamoyl, carboxy or sulfo; phenylsulfonyl or phenylsulfonyl substituted wiht hydroxy, sulfamoyl, fluorosulfonyl, carboxy or sulfo; alkylcarbonyl having 2 to 5 carbon atoms, $-SO_2NR^5R^6$ wherein $R^5$ and $R^6$ are the same or different and each represent hydrogen, alkyl having 1 to 6 carbon atoms, alkyl having 1 to 4 carbon atoms substituted with hydroxy, cyano, sulfamoyl, carboxy or sulfo; benzyl, phenyl, phenyl substituted with hydroxy, sulfamoyl, sulfonyl, carboxy or sulfo; alkylcarbonyl having 2 to 7 carbon atoms, phenylcarbonyl, alkylsulfonyl having 1 to 6 carbon atoms, phenylsulfonyl, or $R^5$ and $R^6$ taken together represent $=CH-N(CH_3)_2$ ; $-CON(R^5)_2$ wherein each $R^5$ can be the same or different and is as described previously; and, in Formulas I or II when $r$ is 1, Z represent



wherein Y, Ball, X, J, R, $q$ and $m$ are as described previously;

$R^1$ represents hydrogen, alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms, chlooro, bromo or fluoro;

E is in the 5-, 6- or 7-position relative to G and represents hydrogen, carboxy, $-COOR^4$ wherein $R^4$ is as described previously, sulfo, $-SO_2NR^5R^6$, $-CON(R^5)_2$ wherein $R^5$ and $R^6$ are as described previously, alkylsulfonyl having 1 to 8 carbon atoms, alkylsulfonyl having 1 to 8 carbon atoms substituted with cyano, hydroxy, sulfamoyl, phenyl or sulfo; phenylsulfonyl or phenylsulfonyl substituted with sulfo, carboxy, fluorosulfonyl or methoxy;

$Z^1$ represents hydrogen or Z;

with the proviso that there be no more than one carboxy present in said compound.

**3,932,382**

## DIDEOXYBUTIROSIN DERIVATIVE

**Eiji Ohki; Hiromichi Saeki, and Shinichi Sugawara, all of Tokyo, Japan, assignors to Sankyo Company Limited, Japan**

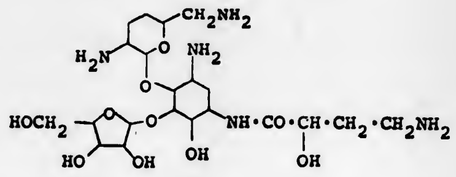
**Filed Mar. 28, 1974, Ser. No. 455,943**

**Claims priority, application Japan, Apr. 11, 1973, 48-41175**

**Int. Cl.² C07H** *15/22*

**U.S. Cl. 260—210 AB** **3 Claims**

1. 3′, 4′-Dideoxybutirosin A having the formula



and its pharmaceutically acceptable acid addition salt.

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**3,932,383**

## 9-DIHYDRONIDDAMYCIN A COMPOUNDS AND RELATED 3-(O)-ESTERS AND THE PROCESS FOR THEIR PREPARATION

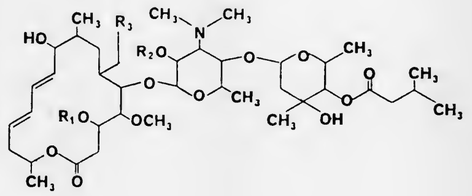
**Leslie Alan Freiberg, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.**

**Filed June 3, 1974, Ser. No. 476,015**

**Int. Cl.² C07G** *3/00*

**U.S. Cl. 260—210 AB** **24 Claims**

1. A 9-dihydroniddamycin A compound having the structural formula:



wherein $R_1$ and $R_2$ are the same or different member of the group consisting of hydrogen, HCO, $CH_3CO$, $C_2H_5CO$ or $C_3H_7CO$; and wherein $R_3$ is CHO or $CH(OCH_3)_2$.

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**3,932,384**

## DIBENZAZECINES

**Yoshiro Sawa, Ashiya; Katsumi Hirose, Nishinomiya; Shin Maeda, and Yoshinori Hamada, both of Amagasaki, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan**

**Filed July 27, 1973, Ser. No. 383,148**

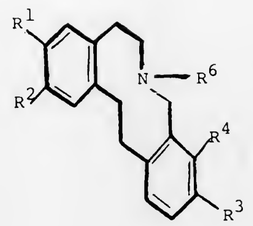
**Claims priority, application Japan, Aug. 17, 1972, 47-82399; Aug. 17, 1972, 47-82400; Sept. 26, 1972, 47-96368**

**Int. Cl.² C07D** *225/08, 491/04*

**U.S. Cl. 260—239 D** **8 Claims**

1. A compound of the formula:





wherein $R^1$ and $R^2$ are each selected from the group consisting of hydrogen, hydroxy and hydroxymethyl; one of $R^3$ and $R^4$ is selected from the group consisting of hydrogen, hydroxy and methoxy and the other is selected from the group consisting of hydroxy and methoxy and $R^6$ is selected from the group consisting of hydrogen, methyl, cyclopropylmethyl and benzyl.

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**3,932,385**

## PENICILLINS HAVING A 6β-(α-ETHERIFIED OXIMINO) ACYLAMIDO GROUP

**Martin Christopher Cook; Gordon Ian Gregory, both of Chalfont St. Peter, and Janice Bradshaw, Harrow, all of England, assignors to Glaxo Laboratories Limited, Greenford, England**

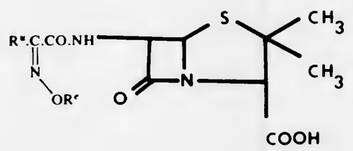
**Continuation-in-part of Ser. No. 252,846, May 12, 1972, abandoned. This application Nov. 7, 1972, Ser. No. 304,501**

**Claims priority, application United Kingdom, May 14, 1971, 15082/71**

**Int. Cl.² C07D** *501/20*

**U.S. Cl. 260—239.1** **20 Claims**

1. A penicillin antibiotic of the formula



wherein $R^a$ is naphthyl; thienyl; benzothienyl or any of these groups substituted by chlorine, bromine, iodine, fluorine, hydroxy, lower alkyl, nitro, amino, lower alkylamino, diloweralkylamino, lower alkanoyl, lower alkanoylamino, lower alkoxy, lower alkylthio or carbamoyl and $R^c$ is alkyl of 1–16 carbon atoms; alkenyl of 2–16 carbon atoms; alkynyl of 2–16 carbon atoms; cycloalkyl of 3–7 carbon atoms; cycloalkenyl of 4–7 carbon atoms; phenyl; naphthyl; a heterocyclic radical selected from the group consisting of thienyl; furyl; pyridyl; pyrimidyl; pyrrolyl; N-methylpyrrolyl; N-benzyloxymethylpyrrolyl; thiazolyl; isothiazolyl; diazolyl; triazolyl; tetrazolyl; thiadiazolyl; thiatriazolyl; oxazolyl; oxadiazolyl; 3- or 4-isoxazolyl; sydnone; benzothienyl; benzofuryl; indolyl; benzimidazolyl; benzoxazolyl and purinyl; phenyl lower alkyl; diphenylmethyl; triphenylmethyl; naphthyl lower alkyl; heterocyclic lower alkyl in which the heterocyclic moiety is derived from said heterocyclic radical, or any of these groups substituted by hydroxy, lower alkoxy, phenoxy, benzyloxy, mercapto, lower alkylthio, phenylthio, benzylthio, amino, chlorine, bromine, iodine, fluorine, nitro, azido, carboxy, lower carbalkoxy, formyl, acetyl, propionyl, benzoyl, acetoxy, propionyloxy, pivaloyloxy, cyano, phthalimido, acetamido, benzamido, lower alkoxycarbonylamino or benzyloxycarbonylamino; or a physiologically acceptable salt thereof.

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**3,932,386**

## SODIUM 6-(L-AMINOCYCLOHEXANE CARBOXAMIDO)PENICILLANIC ACID

**John J. Nescio, West Chester, Pa., assignor to American Home Products Corporation, New York, N.Y.**

**Filed June 18, 1973, Ser. No. 370,909**

**Int. Cl.² C07D** *499/44*

**U.S. Cl. 260—239.1** **11 Claims**

1. Crystalline sodium 6-(1-aminocyclohexanecarboxamido)-penicillanate.

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**3,932,387**

## PROCESS FOR THE CONVERSION OF 3-METHYL-3-HYDROXYCEPHAM COMPOUNDS

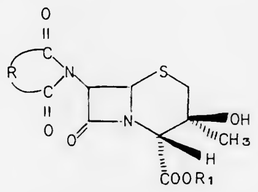
**Stjepan P. Kukolja, Indianapolis, and Steven R. Lammert, Greenwood, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.**

**Continuation-in-part of Ser. No. 267,796, June 30, 1972, abandoned. This application Mar. 27, 1974, Ser. No. 455,444**

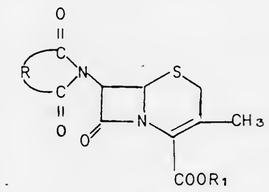
**Int. Cl.² C07D** *501/04*

**U.S. Cl. 260—239.1** **14 Claims**

1. Process for converting a 3-methyl-3-hydroxycepham compound, which comprises the step of reacting a compound of the formula

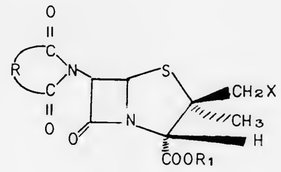


with a halogen reagent selected from the group consisting of $PX_5$ and $SOX_2$ in the presence of at least about one mole of an alkaline reagent selected from the group consisting of a tertiary amine and an inorganic alkaline salt per each mole of the 3-methyl-3-hydroxycepham compound and at a temperature within the range of from about 60°C. to about 150°C. to obtain a mixture of a compound of the formula IV



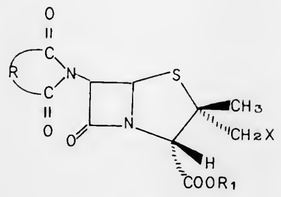
IV

a compound of the formula V



V

and a compound of the formula VI



VI

in which, in the above formulae, R is the residue of an imide derived from a dicarboxylic acid, $R_1$ is a carboxy protecting group and X is chlorine or bromine.

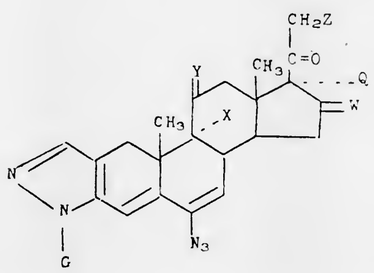
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**3,932,388**
**6-AZIDO-4,6-PREGNADIENO[3,2-C]PYRAZOLES, PROCESSES FOR THEIR PREPARATION AND INTERMEDIATES USEFUL THEREIN**

**Thomas L. Popper, West Caldwell; Richard W. Draper, East Orange; Elliot L. Shapiro, Cedar Grove, and Arthur S. Watnick, South Orange, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.**

**Filed Apr. 22, 1974, Ser. No. 462,687**
**Int. Cl.² C07J** *1/00*
**U.S. Cl. 260—239.55 R** **26 Claims**

**1.** A compound selected from the group consisting of a 6-azido-4,6-pregnadieno [3,2-c]pyrazole of the following formula:



wherein G is a member selected from the group consisting of hydrogen, lower alkyl, cycloalkyl, aralkyl, aryl and lower hydrocarbon carboxylic acyl;

Q is a member selected from the group consisting of hydroxy, OR wherein R is an acyl radical of a hydrocarbon carboxylic acid having up to 12 carbon atoms, and hydrogen provided W is a member selected from the group consisting of hydrogen and (H, lower alkyl);

W is a member selected from the group consisting of



(H, lower alkyl), (H,α-hydroxy) and (H,α-$OR_1$), wherein $R_1$ is an acyl radical of a hydrocarbon carboxylic acid having up to 12 carbon atoms, =CHT wherein T is a member selected from the group consisting of hydrogen, lower alkyl, fluorine and chlorine and W and Q taken together is 16α,17α-lower alkylidenedioxy;

X is a member selected from the group consisting of hydrogen and halogen having an atomic weight less than 100;

Y is a member selected from the group consisting of



provided X is hydrogen, oxygen, (H,βOH), (H,βOCOH), and (H,β-halogen of atomic weight less than 100) providing X is halogen;

Z is a member selected from the group consisting of hydrogen, hydroxy, halogen having an atomic weight up to 40, $OR_2$ wherein $R_2$ is an acyl radical of an acid selected from the group consisting of a hydrocarbon carboxylic acid having up to 12 carbon atoms, phosphoric acid and the mono- and di-alkali and alkaline earth metal salts thereof, and Z together with Q is a member selected from the group consisting of alkylidenedioxy and alkyl orthoalkanoate.

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**3,932,389**
**2-DESCARBOXY-2-[TETRAZOL-5-YL]-11-DESOXY-15-SUBSTITUTED-ω-PENTANORPROSTAGLANDINS**

**Michael R. Johnson, Gales Ferry; Thomas K. Schaaf, Old Lyme; Jasjit S. Bindra, Groton; Hans-Jurgen E. Hess, Old Lyme, and James F. Eggler, Stonington, all of Conn., assignors to Pfizer Inc., New York, N.Y.**

**Filed Dec. 11, 1974, Ser. No. 531,675**
**Int. Cl.² C07D** *257/06, 409/08*
**U.S. Cl. 260—240 R** **37 Claims**

**1.** 2-descarboxy-2-[tetrazol-5-yl]-11-desoxy-ω-pentanorprostaglandins and their $C_{15}$ epimers having at the 15-position a hydroxy or a keto group and one substituent of the formula:



wherein Ar is α- or β-thienyl; 5-phenyl-α- or β-thienyl; 5-lower alkyl-α- or β-thienyl; α- or β-naphthyl; tropyl, phenyl; 3,5-dimethylphenyl; 3,4-dimethoxyphenyl; 3,4-methylenedioxyphenyl; 3,4-dichlorophenyl; and monosubstituted phenyl wherein said substituent is bromo, chloro, fluoro, trifluoromethyl, phenyl, lower alkyl, or lower alkoxy; and R is hydrogen or methyl.

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**3,932,390**
**2-THIA-1,3,5-TRIAZA-7-PHOSPHAADAMANTANE 2,2-DIOXIDE**

**Donald J. Daigle, New Orleans; Armand B. Pepperman, Jr., Metairie, and Gordon J. Boudreaux, New Orleans, all of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.**

**Division of Ser. No. 471,516, May 20, 1974, Pat. No. 3,899,618. This application Apr. 29, 1975, Ser. No. 572,802**
**Int. Cl.² C07D** *285/00*
**U.S. Cl. 260—243 R** **3 Claims**

**1.** 2-Thia-1,3,5-triaza-7-phosphaadamantane 2,2-dioxide.

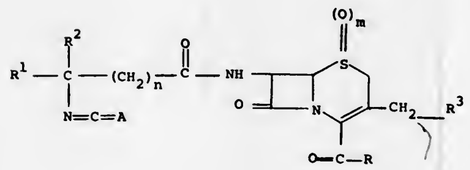


**3,932,391**
**CEPHALOSPORIN ISOCYANATES**

**Harvey E. Alburn, West Chester, and William Dvonch, Radnor, both of Pa., assignors to American Home Products Corporation, New York, N.Y.**

**Filed Oct. 2, 1972, Ser. No. 294,411**
**Int. Cl.² C07D** *501/20*
**U.S. Cl. 260—243 C** **18 Claims**

**1.** A compound selected from the group having the formula:



wherein

$R^1$ is selected from the group consisting of phenyl, substituted phenyl, naphthyl, substituted naphthyl, wherein the substituted phenyl and substituted naphthyl is substituted with a group selected from the class consisting of nitro, halogen, trifluoromethyl, (lower)alkoxy, (lower) alkyl, amino, hydroxy, sulfamyl, di(lower)alkylamino and (lower) alkanoylamino, a cycloalkyl, having from four to eight ring atoms, cycloalkenyl having from four to eight ring atoms and an alicyclic group having from six to eight carbon atoms and containing two or three conjugated or non-conjugated double bonds, a heterocyclic radical selected from the class consisting of thienyl, furyl, pyridyl and pyrimidinyl, $R^2$ is hydrogen or lower alkyl having from one to six carbon atoms

$R^3$ is selected from the class consisting of hydrogen, pyridinium and an alkanoyloxy radical derived from a hydrocarbon carboxylic acid having from one to eight carbon atoms;

A is sulfur or oxygen;

R is



wherein $R^5$, $R^6$ and $R^7$ are selected from the group consisting of lower alkyl, aryl(lower)alkyl, wherein the aryl portion is phenyl or naphthyl, cycloalkyl of 5 to 8 carbon atoms, phenyl and naphthyl;

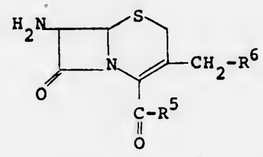
*m* is either 0 or 1, *n* is a whole number from 0 to 3.

**3,932,392**
**PROCESS FOR THE PREPARATION OF 7-AMINOCEPHALOSPORANIC ACIDS**

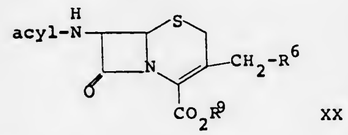
**David A. Johnson, Fayetteville; Steven P. Brundidge, Wolcott; Albert L. Vulcano, Liverpool; Chester Sapino, Jr., East Syracuse; James Mahan, and Joseph H. Grossman, both of Syracuse, all of N.Y., assignors to Bristol-Myers Company, New York, N.Y.**

**Filed Jan. 14, 1974, Ser. No. 433,336**
**Int. Cl.² C07D** *279/08, 501/18*
**U.S. Cl. 260—243 C** **11 Claims**

**1.** In the process for the preparation of a compound having the formula



in which $R^6$ is H or acetoxy and $R^5$ is OH or the residue of an acid blocking group, which process comprises treating a compound having the formula



XX

in which $R^6$ is H or acetoxy, $CO_2R^9$ is a carboxyl group blocked to convert it into a group not reacting with the acid halide used for forming the imino-halide, and acyl is the residue of a carboxylic acid; with an acid halide to form an imino-halide, converting the imino-halide into an imino-ether by means of treating the imino-halide with an alcohol and splitting the imino-ether double bond with a compound containing a hydroxy group; the improvement of which comprises using diisopropylamine or dicyclohexylamine as the acid scavenger in the imino-halide forming step.

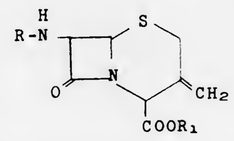
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**3,932,393**
**3-METHYLENECEPHALOSPORINS AND PROCESS FOR PRODUCTION THEREOF**

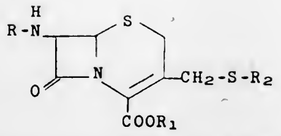
**Robert R. Chauvette, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.**

**Filed Feb. 25, 1971, Ser. No. 118,941**
**Int. Cl.² C07D** *501/18*
**U.S. Cl. 260—243 C** **19 Claims**

**1.** The process for preparing a compound of the formula



which comprises reducing a 3-substituted methyl-$\Delta^3$-cephem compound of the formula



in an inert solvent (1) in the presence of hydrogen and a nickel or cobalt hydrogenation catalyst at a temperature between 25° and 45°C. or (2) in the presence of dimethylformamide at a temperature between 0° and 60°C. with a reducing agent selected from the group consisting of

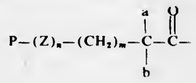
a. aluminum amalgam,
b. zinc in the presence of an acid,
c. zinc amalgam in the presence of an acid,
d. zinc-copper couple in the presence of an acid, and
e. chromium II cations in the presence of an acid,

wherein b-e, said acid is a carboxylic acid having a pK'a of pK'a 4.0 or lower or a dilute mineral acid at a concentration between 0.5 and 5 percent;

wherein in the foregoing formulae

$R_1$ is hydrogen, $C_1$–$C_4$ alkyl, benzyl, p-methoxybenzyl, benzhydryl, 4-methoxybenzhydryl and phenacyl; or a pharmaceutically acceptable cation;

R is hydrogen, $C_1$–$C_8$ alkanoyl, $C_6$–$C_{10}$ cycloalkanoyl, $C_2$–$C_8$ hydroxyalkanoyl, $C_3$–$C_8$ alkanoyl substituted by carboxy and amino or protected amino, benzoyl, $C_1$–$C_3$ alkylbenzoyl, $C_1$–$C_3$ alkoxybenzoyl, halobenzoyl, aminobenzoyl, or an acyl group represented by the formula



wherein

P is α-thienyl, β-thienyl, α-furyl, β-furyl, benzothienyl, benzofuryl, phenyl, $C_1$–$C_3$ alkylphenyl, $C_1$–$C_3$ alkoxyphenyl, hydroxyphenyl, halophenyl or aminophenyl,

Z is oxygen or sulfur,

*n* is 0 or 1,

*m* is an integer of from 0 to 3,

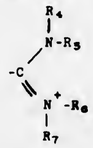
*a* is hydrogen or $C_1$–$C_3$ alkyl,

*b* is hydrogen, $C_1$–$C_3$ alkyl, hydroxy, or amino,

with the limitation that when

*n* is 1, P is phenyl, $C_1$–$C_3$ alkylphenyl, $C_1$–$C_3$ alkoxyphenyl, hydroxyphenyl, halophenyl or aminophenyl and b is hydrogen or $C_1$–$C_3$ alkyl.

$R_2$ is $C_2$–$C_4$ alkanoyl, $C_2$–$C_4$ haloalkanoyl, benzoyl, $C_1$–$C_3$ alkylbenzoyl, $C_1$–$C_3$ alkoxybenzoyl, halobenzoyl, or aminobenzoyl, $C_1$–$C_4$ alkyl, $C_1$–$C_{12}$ alkoxythionocarbonyl, an amidino group of the formula



wherein

$R_4$, $R_5$, $R_6$ and $R_7$ are the same or different, and represent hydrogen, $C_1$–$C_6$ alkyl, $C_3$–$C_7$ cycloalkyl, phenyl, phenyl substituted by $C_1$–$C_4$ lower alkyl, halogen, amino or hydroxy, naphthyl, benzyl, 2-phenethyl, 3-phenylpropyl, naphthylmethyl or 2-naphthylethyl,

a thiocarbamoyl group of the formula



wherein

$R_8$ and $R_9$ when taken separately are the same or different and are hydrogen, $C_1$ –$C_6$ alkyl, phenyl, $C_1$–$C_3$ alkylphenyl, $C_1$–$C_3$ alkoxyphenyl, halophenyl, hydroxyphenyl or aminophenyl, and $R_8$ and $R_9$ when taken together form a 4 or 5 membered alkylene, azaalkylene or oxaalkylene bridge;

a heteroaryl group selected from the group consisting of pyridyl, 2-pyrimidyl, 2-imidazolyl, 2-thiazolyl, 2-benzthiazolyl, 2-benzoxazolyl, 2-tetrazolyl, 1-methyl-2-tetrazolyl, thiadiazolyl and 2-methyl-5-thiadiazolyl; or

a group of the formula $-SO_3-M^+$

wherein

$M^+$ is an alkali or alkaline earth metal cation; such that when $R_2$ is amidino or substituted amidino group, $R_1$ is hydrogen or when $R_2$ is $-SO_3-M^+$, $R_1$ is $M^+$.

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**3,932,394**

**ANTIVIRAL COMPLEX**

**Douglas Broadbent; Harold George Hemming, and Barrie Hesp, all of Macclesfield, England, assignors to Imperial Chemical Industries Limited, London, England**

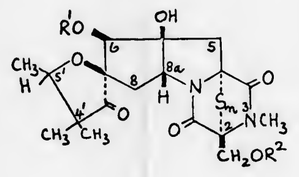
**Filed Aug. 28, 1973, Ser. No. 392,354**

**Claims priority, application United Kingdom, Sept. 14, 1972, 42694/72**

**Int. Cl.² C07D** *285/00*

**U.S. Cl. 260—243 R** **2 Claims**

1. A compound of the formula:-



I

wherein n is 2 and either $R^1$ is acetyl and $R^2$ is hydrogen or $R^1$ and $R^2$ are both hydrogen or both acetyl.

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**3,932,395**

**TRICYCLIC IMIDAZOLE DERIVATIVES**

**Kalman Hideg; Olga Hankovszky, both of Pecs; Eva Palosi; Gyorgy Hajos, both of Budapest, and Laszlo Szporny, Budapest, all of Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Hungary**

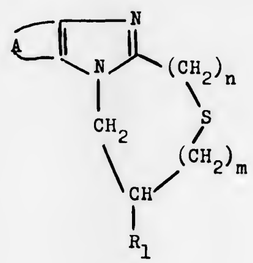
**Filed May 24, 1974, Ser. No. 473,184**

**Claims priority, application Hungary, June 20, 1973, OE 509**

**Int. Cl.² C07D** *279/08, 279/14*

**U.S. Cl. 260—243 R** **4 Claims**

1. A tricyclic fused imidazole derivative of the formula (I),



(I)

wherein

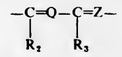
$R_1$ stands for hydrogen or hydroxy,



*n* is equal to zero or one,

*m* is equal to zero or one, *m*+*n*=1,

A stands for a group of the formula (II),



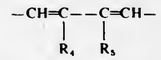
wherein

$R_2$ represents hydrogen or hydroxy,

$R_3$ represents hydrogen or amino, and

Q and Z each stand for nitrogen or a =CH— group, or

A stands for a group of the formula (III),



wherein $R_4$ and $R_5$ each represent hydrogen, methyl, chlorine or nitro, or an acid additional salt thereof.

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**3,932,396**

**CYANOMETHYLTHIOACETYLCEPHALOSPORINS**

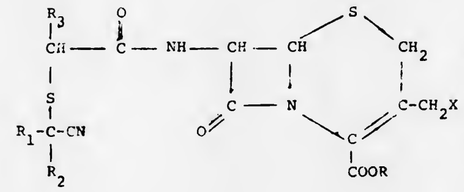
**Hermann Breuer, and Uwe Treuner, both of Regensburg, Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.**

**Division of Ser. No. 278,168, Aug. 4, 1972, Pat. No. 3,855,212. This application Oct. 10, 1974, Ser. No. 513,676**

**Int. Cl.² C07D** *501/36, 501/26*

**U.S. Cl. 260—243 C** **8 Claims**

1. A compound of the formula



wherein R is hydrogen or a salt forming ion of the group consisting of aluminum, alkali metal, alkaline earth metal, mono-lower alkylamine; dilower alkylamine, tri-lower alkylamine, dibenzylamine, N,N'-dibenzyl- ethylenediamine, procaine or lower alkylpiperidine; $R_1$ and $R_2$ each is hydrogen, lower alkyl, lower alkenyl, phenyl, hydroxyphenyl, chlorophenyl, benzyl, phenethyl or $R_1$ and $R_2$ together complete the cyclopentyl or cyclohexyl group; $R_3$ is $C_4$–$C_7$-cyclo-lower alkyl, $C_4$–$C_7$-cyclo-lower alkenyl or $C_4$–$C_7$-cyclo-lower alkadienyl; and X is hydrogen, lower alkanoyloxy, lower alkoxy or lower alkylthio; said lower alkyl, lower alkenyl, lower alkanoyloxy and lower alkoxy groups having up to seven carbon atoms.

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**3,932,397**

**CYANOMETHYLTHIOACETYLCEPHALOSPORINS**

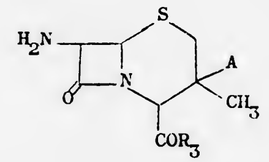
**Hermann Breuer, and Uwe Treuner, both of Regensburg, Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.**

**Division of Ser. No. 278,168, Aug. 4, 1972, Pat. No. 3,855,212. This application Oct. 10, 1974, Ser. No. 513,677**

**Int. Cl.² C07D** *501/28, 501/36*

**U.S. Cl. 260—243 C** **5 Claims**

1. A compound of the formula



in which

$R^3$ is a member selected from the group consisting of hydroxy, lower alkoxy, 2,2,2-trichloroethoxy, aryloxy of 6 to 10 carbon atoms, aralkoxy of 7 to 12 carbon atoms, alkoxyaralkoxy of 9 to 14 carbon atoms, mono- or dilower alkylamino, arylamino of 6 to 10 carbon atoms, saccarimido, phthalimido, and OM where M is an alkali metal cation, an alkaline earth metal cation or the ammonium cation;

A is a member selected from the group consisting of —Cl, —Br and —I; and

the pharmaceutically acceptable acid addition salts thereof.

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**3,932,398**

**3-HALO-CEPHAM DERIVATIVES**

**Abraham Nudelman, Bala Cynwyd, and Ronald J. McCaully, Malvern, both of Pa., assignors to American Home Products Corporation, New York, N.Y.**

**Filed Apr. 19, 1973, Ser. No. 352,850**

**Int. Cl.² C07D** *501/18, 501/10*

**U.S. Cl. 260—243 C** **2 Claims**

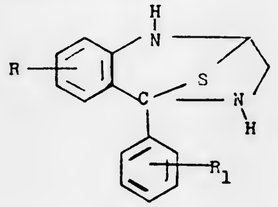
1. A compound of the formula:

## 3,932,399
## 2,5-EPITHIO-1,4-BENZODIAZEPINES

David Llewellyn Coffen, Glenridge, and Rodney I. Fryer, North Caldwell, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 383,362, July 27, 1973, Pat. No. 3,850,948. This application Aug. 28, 1974, Ser. No. 501,303
Int. Cl.² C07D *513/08*
U.S. Cl. 260—243 R 3 Claims

1. A compound of the formula



wherein R is selected from the group consisting of hydrogen, halogen, lower alkyl, trifluoromethyl, nitro, cyano, lower alkoxy and lower alkylthio; $R_1$ signifies hydrogen or halogen

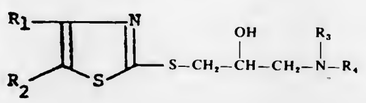
and the pharmaceutically acceptable acid addition salts thereof.

## 3,932,400
## THIAZOLE DERIVATIVES

Toshihiko Hibino, Takarazuka; Yoshio Suzuki, Itami; Shigeru Okano, Kawani; Yoichi Hara, Toyonaka, and Etsuro Sato, Takarazuka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Japan

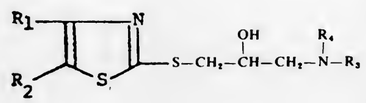
Filed Aug. 16, 1973, Ser. No. 389,517
Claims priority, application Japan, Aug. 17, 1972, 47-82574; Apr. 5, 1973, 48-39354
Int. Cl.² C07D *277/36*
U.S. Cl. 260—247.1 M 10 Claims

1. A novel thiazole derivative of the formula:



wherein $R_1$ is hydrogen, $C_1$ - $C_4$ alkyl, $C_4$ - $C_6$ cycloalkyl, naphthyl, phenyl, phenyl substituted by a member selected from the group consisting of $C_1$ - $C_4$ alkyl, $C_1$ - $C_4$ alkoxy, hydroxyl, $C_3$ - $C_5$ alkenyl, $C_3$ $C_5$ alkenyloxy, iodo, chloro, bromo, fluoro, cyano, amino, nitro, phenoxy, naphthoxy, acetamido, propionamido and benzamido or naphthyl substituted by a member selected from the group consisting of $C_1$ - $C_4$ alkyl, $C_1$ - $C_4$ alkoxy, hydroxy, fluoro, iodo, chloro or bromo, cyano, amino, nitro, acetamido, propionamido and benzamido, and $R_2$ is hydrogen and $R_3$ and $R_4$ are each hydrogen or $C_1$ - $C_4$ alkyl.

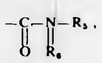
10. A thiazole derivative of the formula



wherein $R_1$ is thienyl or substituted thienyl having one or more groups selected from the group consisting of $C_1$ - $C_4$ alkyl, phenyl, bromo, iodo, nitro,



wherein Y is $C_1$ - $C_4$ alkoxy, methyl or propenyloxy or



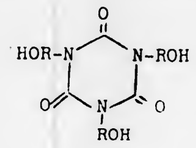
wherein $R_5$ and $R_6$ are each hydrogen, $C_1$ - $C_4$ alkyl, amino or cyclohexyl and when taken together with adjacent nitrogen are morpholinyl, piperidyl or pyrrolidinyl, $R_2$ is hydrogen and $R_3$ and $R_4$ are each are hydrogen or lower alkyl.

## 3,932,401
## MIXED ACRYLIC ACID/METHACRYLIC ACID ESTERS OF TRIS (HYDROXYALKYL) ISOCYANURATES

Carl John Berg, St. Paul, and Edward John Deviny, Roseville, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 31, 1974, Ser. No. 438,207
Int. Cl.² C07D *251/34*
U.S. Cl. 260—248 NS 2 Claims

1. The non-crystalline reaction product of 1.



where R is alkylene of one to four carbon atoms, with

2. a mixture comprising acrylic acid and methacrylic acid; the weight-ratio of acrylic acid to methacrylic acid in the reaction mixture being between about 80:20 and 20:80, and sufficient acrylic acid and methacrylic acid being included in the reaction mixture to esterify at least 80 percent of the hydroxyl groups on the isocyanurate ring.

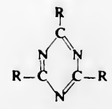
## 3,932,402
## PREPARATION OF SYM-TRIAZINES BY TRIMERIZATION OF NITRILES IN TRIFLUOROMETHANESULFONIC ACID

John R. Norell, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed June 24, 1974, Ser. No. 482,257
Int. Cl.² C07D *251/24*
U.S. Cl. 260—248 CS 16 Claims

1. A process for the preparation of a substituted triazine of the formula





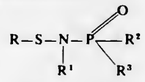
wherein R is a radical selected from the group consisting of alkyl, aryl and substituted aryl having from 2 to 9 carbon atoms per radical group, wherein said alkyl group contains an alpha-hydrogen, and wherein said substituted aryl is substituted with alkyl, halogen or alkoxy which comprises reacting a nitrile having the formula R-CN, wherein R is as defined above, under reaction conditions in the presence of trifluoromethanesulfonic acid.

## 3,932,403
## PHOSPHORUS ACID AMIDES

Stanley Ashton; Vijay Ratna Sharma, and John Anthony Taylor, all of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

Filed July 20, 1973, Ser. No. 381,223
Claims priority, application United Kingdom, July 24, 1972, 34478/72
Int. Cl.² C07F *9/22*, *9/24*, *9/26*
U.S. Cl. 260—248 R 4 Claims

1. An amide of the formula



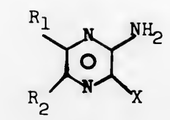
wherein R is alkyl of up to 18 carbon atoms, 2-formylprop-2-yl, alkenyl of up to 18 carbon atoms, cyclopentyl, cyclohexyl, phenyl, tolyl, butyl phenyl, naphthyl, β-methyoxyethyl, β-cyanoethyl, 4-chlorophenyl, 4-methoxyphenyl, 4-dimethylaminophenyl, 2-nitrophenyl, 4-nitrophenyl, 2,3,4,5,6-pentachlorophenyl, 2-methoxycarbonylphenyl or 4-phenylsulphonylphenyl; $R^1$ is hydrogen, alkyl of up to 18 carbon atoms, 2-formylprop2-yl, alkenyl of up to 18 carbon atoms, cyclopentyl, cyclohexyl, phenyl, tolyl, naphthyl, β-methoxyethyl, β-cyanoethyl, 4-chlorophenyl, 4-methoxyphenyl, 4-dimethylaminophenyl, 2-nitrophenyl, 4-nitrophenyl, 2,3,4,5,6-pentachlorophenyl, 2-methoxycarbonylphenyl, 4-phenylsulphonylphenyl, p-toluene sulphonyl, acetyl or N=CH-R where R has the meaning stated above; $R^2$ and $R^3$ are each a group R-S-$NR^1$ where each of R and $R^1$ have the meaning stated above, hydrogen, halogen, a value as recited for R, 2-benzothiazolylthio, 2-benzoxazolylthio, 2-benzimidazolylthio, 2-pyrimidinylthio or 2-triazinylthio groups, amino, ethylamino, diethylamino, dimethylamino, phenylamino, methylphenylamino or ethylphenylamino; or $R^2$ and $R^3$ together with the phosphorus atom joining them form 2-oxo-1,3,2-diazaphospholane, 2-oxo-4,5-benzo-1,3,2-diazaphospholane, 2-oxo-1,3,2-oxazaphospholane, 2-oxo-4,5-benzo-1,3,2-oxazaphospholane, 2-oxo-4,5-benzo-1,3-thiazaphospholane, or 2-oxo-2,3-dithiaphospholane.

## 3,932,404
## PROCESS FOR MAKING PYRAZINES FROM 2-AZA-1,3-UTADIENES

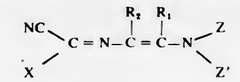
Jean-Pierre Louis Fleury, Mulhouse, France, assignor to Pechiney Ugine Kuhlmann, Paris, France

Filed Mar. 21, 1973, Ser. No. 343,590
Claims priority, application France, Jan. 20, 1972, 72.01854
Int. Cl.² C07D *241/28*
U.S. Cl. 260—250 BC 15 Claims

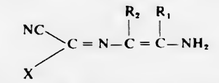
1. A process for the preparation of an aminopyrazine represented by the formula:



in which $R_1$ and $R_2$ each represent hydrogen, alkyl having from 1 to 5 carbon atoms, or phenyl, or together with the carbon atoms of the pyrazine ring to which they are linked form a cycloalkene having from 5 to 7 carbon atoms in the ring, and X represents cyano, carboxy, carbonamide or alkoxycarbonyl having from 1 to 4 carbon atoms in the alkoxy chain which consists in contacting a 1-cyano-4-N(disubstituted) amino-2-azo-1,3-butadiene of the formula:



wherein Z and Z′ together with the nitrogen atom form a morpholino, piperidino or pyrrolidino group, which may be unsubstituted or substituted by one or several lower alkyl groups, with ammonia in the presence of a solvent and reacting the 1-cyano-4-amino-2-aza-1,3-butadiene of the formula:



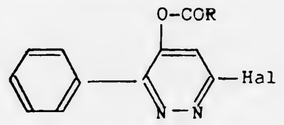
thus obtained with a basic agent selected from the group consisting of alcoholoates, ammonia, amines and quaternary ammonium hydroxides.

## 3,932,405
## PHENYLPYRIDAZINES

Rupert Schonbeck, Leonding near Linz; Engelbert Kloimstein, Eferding; Hubert Mayr, Leonding near Linz; Alfred Diskus, and Engelbert Auer, both of Linz, all of Austria, assignors to Chemie Linz Aktiengesellschaft, Linz, Austria

Filed Nov. 14, 1973, Ser. No. 415,555
Claims priority, application Germany, Nov. 16, 1972, 2256172
Int. Cl.² C07D *237/10*
U.S. Cl. 260—250 A 30 Claims

1. A phenylpyridazine having the formula



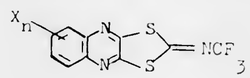
in which Hal is an atom selected from the group consisting of chlorine and bromine and R is selected from the group consisting of straight-chain or branched alkyl having 2 to 20 carbon atoms, when Hal is chlorine, and, when Hal is bromine, having 1 to 20 carbon atoms, and consisting of the group OR′, wherein R′ is selected from the group consisting of straight-chain or branched alkyl having 1 to 18 carbon atoms.

### 3,932,406
### 2-TRIFLUOROMETHYLIMINO-1,3-DITHIOLO [4,5-B]-QUINOXALINES

**Gerhard Buttner, Cologne; Klaus Sasse, Schildgen; Ingeborg Hammann, Cologne, and Helmut Kaspers, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

**Filed Apr. 23, 1974, Ser. No. 463,642**
**Claims priority, application Germany, May 4, 1973, 2322434**
**Int. Cl.² C07D *495/04***
**U.S. Cl. 260—250 Q** **7 Claims**

1. A 2-trifluoromethylimino-1,3-dithiolo -quinoxaline of the formula



in which
each X is selected independently from the group of lower alkyl of up to 4 carbon atoms, lower alkoxy, trihalogenomethyl, trihalogenomethoxy, halogen and nitro, and
*n* is 0, 1 or 2.

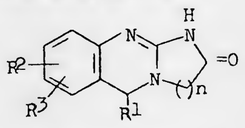
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### 3,932,407
### OPTIONALLY SUBSTITUTED 1,2,3,5-TETRAHYDROIMIDEZO(2,1-B)-QUINAZOLIN-2-NES AND 6(H)-1,2,3,4-TETRAHYDROPYIMIDO(2,1-B)QUINAZOLIN-2-ONES

**Warren Neil Beverung, Jr., Minoa, and Anthony Partyka, Liverpool, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.**

**Continuation-in-part of Ser. No. 416,891, Nov. 19, 1973, abandoned, which is a continuation-in-part of Ser. No. 396,638, Sept. 12, 1973, abandoned, which is a continuation-in-part of Ser. No. 291,450, Sept. 22, 1972, abandoned, which is a continuation-in-part of Ser. No. 223,723, Feb. 4, 1972, abandoned. This application Nov. 6, 1974, Ser. No. 521,306**
**Int. Cl.² C07D *239/84***
**U.S. Cl. 260—256.4 F** **19 Claims**

1. The compound having the formula



I

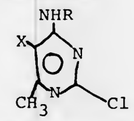
in which $R^1$ is H, phenyl or (lower)alkyl, $R^2$ and $R^3$ when different are hydrogen, chloro, bromo, fluoro, $CF_3$, $SO_3H$, hydroxy, (lower)alkyl or (lower) alkoxy, nitro, amino or phenyl, $R^2$ and $R^3$ when alike are hydrogen, bromo, chloro, fluoro, hydroxy, (lower)alkyl of 1 to 3 carbon atoms or (lower)alkoxy of 1 to 3 carbon atoms, or when taken together $R^2$ and $R^3$ are methylenedioxy or the moiety -CH=CH-CH=CH-, and n is an integer of 1 or 2; or a pharmaceutically acceptable acid addition salt thereof.

### 3,932,408
### PYRIMIDINES AND PROCESS OF MAKING THE SAME

**Herbert Eck, Burghausen Burg; Frank Muller, Siegertsbrunn, and Sven E. Wihrheim, Furstenfeldbruck, all of Germany, assignors to Wacker-Chemie GmbH, Munich, Germany**

**Filed Dec. 19, 1973, Ser. No. 426,419**
**Claims priority, application Germany, Dec. 22, 1972, 2263052**
**Int. Cl.² C07D *239/30***
**U.S. Cl. 260—256.4 N** **1 Claim**

1. A compound of the formula



wherein X is a member of the group consisting of H and Br, and R is a member of the group consisting of straight-chain and branched-chain alkyl and cycloalkyl having from 5 to 8 C-atoms.

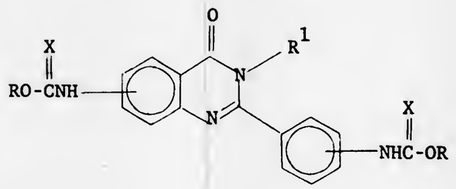
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### 3,932,409
### URETHANE DERIVATIVES OF 2-PHENYL-4(3H)-QUINAZOLONES

**Hans-Egon Kunzel; Gerhard Dieter Wolf, both of Dormagen; Robert Bierling, Wuppertal-Elberfeld; Siegfried Petersen, Leverkusen; Gunther Nischk, Dormagen, and Dieter Steinhoff, Bochum, all of Germany, assignors to Bayer Aktiengesellschaft, Germany**

**Continuation-in-part of Ser. No. 188,454, Oct. 12, 1971, abandoned. This application June 7, 1974, Ser. No. 477,442**
**Int. Cl.² C07D *239/00***
**U.S. Cl. 260—256.4 Q** **23 Claims**

1. A compound of the formula:



wherein
X is oxygen or sulfur;
$R^1$ is alkyl of 1 to 6 carbon atoms, unsubstituted phenyl or phenyl substituted with from one to three members selected from the group consisting of chloro, fluoro, bromo, alkyl of one to six carbon atoms and alkoxy of one to six carbon atoms; and
R is cycloalkyl of five or six carbon atoms, alkylcycloalkyl wherein alkyl is of one to six carbon atoms and cycloalkyl is of five or six carbon atoms, unsubstituted alkyl of one to 20 carbon atoms, or alkyl of one to six carbon atoms substituted by hydroxy, alkoxy of one to six carbon atoms, phenyl, phenoxy or cycloalkyl of five or six carbon atoms.



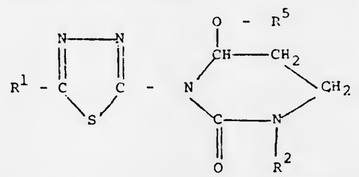
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### 3,932,410
### 1-THIADIAZOLYL-6-ALKOXYTETRAHYDROPYRIMIDINONES

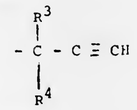
**John Krenzer, Oak Park, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.**

**Filed Nov. 1, 1974, Ser. No. 519,896**
**Int. Cl.² C07D *239/00***
**U.S. Cl. 260—256.5 R** **8 Claims**

1. A compound of the formula



wherein $R^1$ is selected from the group consisting of lower alkyl, lower alkenyl, lower chloroalkyl, lower bromoalkyl, trifluoromethyl, lower alkoxy, lower alkylthio, lower alkylsulfonyl and lower alkylsulfinyl; $R^2$ is selected from the group consisting of lower alkyl, lower alkenyl, lower chloroalkyl, lower bromoalkyl, and



wherein $R^3$ and $R^4$ are each selected from the group consisting of hydrogen and lower alkyl; and $R^5$ is lower alkyl.

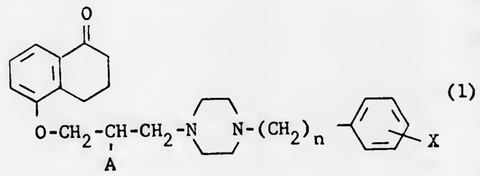
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### 3,932,411
### 3,4-DIHYDRO-2H-NAPHTHALENE-1-ONE-5-OXYPROPYL-PIPERAZINE COMPOUNDS

**Franz Braun, Rimbach; Max Thiel, Mannheim; Kurt Stach, Mannheim-Waldhof; Egon Roesch, and Androniki Roesch, both of Mannheim am Oberen Luisenpark, all of Germany, assignors to Boehringer Mannheim G.m.b.H., Mannheim, Germany**

**Filed June 25, 1974, Ser. No. 482,957**
**Claims priority, application Germany, July 12, 1973, 2335432**
**Int. Cl.² C07D *241/04***
**U.S. Cl. 260—268 BC** **14 Claims**

1. 3,4-dihydro-2H-naphthalene-1-one-5-oxypropyl-piperazine compound of the formula



(1)

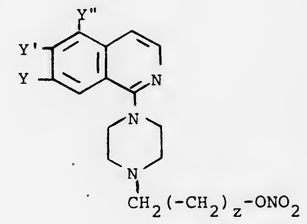
wherein
A is hydrogen or hydroxyl;
X is hydrogen, halogen, alkyl of up to 3 carbon atoms or alkoxy of up to 3 carbon atoms; and
*n* is 0, 1 or 2;
and the pharmacologically compatible salts thereof.

### 3,932,412
### 1-(4-HYDROXYALKYLPIPERAZINO)-ISOQUINOLINE NITRATES

**William R. J. Simpson, Hanover, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.**

**Division of Ser. No. 95,989, Dec. 7, 1970, Pat. No. 3,778,440. This application Aug. 6, 1973, Ser. No. 386,084**
**Int. Cl.² C07D *295/12***
**U.S. Cl. 260—268 BQ** **6 Claims**

1. A compound of the formula:



wherein *z* is 1 to 4 and each of Y, Y′ and Y″ is hydrogen, alkoxy of 1 to 3 carbon atoms or alkyl of 1 to 3 carbon atoms, or Y and Y′ together form methylenedioxy; provided that no more than 2 of Y, Y′ and Y″ are lower alkyl; or a pharmaceutically acceptable non-toxic acid addition salt thereof.

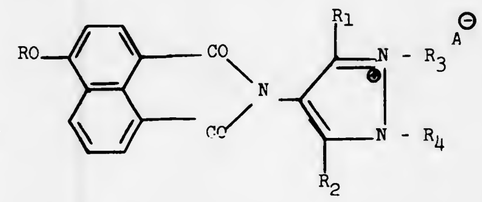
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### 3,932,413
### PROCESS FOR THE PREPARATION OF 4′-ALKOXY-4-NAPHTHALIMIDO-PYRAZOLIUM COMPOUNDS AND INTERMEDIATES THEREFOR

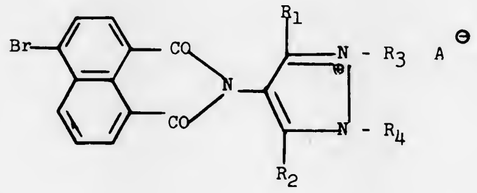
**Annick Marthe Suzanne Simone Domergue, Eaubonne; Robert Frederic Michel Sureau, Enghien-le-Bains; Jean Ernest Etienne Leboulenger, Taverny, and Jean Marie Alfred Houssin, Enghien-le-Bains, all of France, assignors to Products Chimiques Ugine Kuhlmann, Paris, France**

**Filed May 21, 1973, Ser. No. 362,555**
**Claims priority, application France, May 24, 1972, 72.18445**
**Int. Cl.² C07D *217/24, 231/40***
**U.S. Cl. 260—270 H** **5 Claims**

1. A process for the preparation of an optical brightening agent falling within the formula:



in which R represents an alkyl group of 1 to 4 carbon atoms, $R_1$ and $R_2$ each represent a hydrogen atom, an alkyl group of 1 to 4 carbon atoms or a phenyl group either unsubstituted or substituted by one or two alkyl groups of 1 to 4 carbon atoms, with the proviso that if either $R_1$ or $R_2$ are bis (t-butyl) phenyl, then the t-butyl groups are not in adjacent positions on the phenyl ring, $R_3$ and $R_4$ each represent an alkyl group of 1 to 4 carbon atoms and $A^-$ represents the monovalent anion chloride, bromide, chlorozincate or methylsulfate which consists of reacting a compound of the formula:



in which $R_1$, $R_2$, $R_4$, and $A^-$ have the meanings given above, with an alcoholate of the formula RO-Me in which R represents an alkyl group of 1 to 4 carbon atoms and Me is an alkali metal.

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**3,932,414**

**ACRIDONE COMPOUNDS**

**Rodolf Altiparmakian, Binningen, and Hans Bohler, Rheinfelden, AG, both of Switzerland, assignors to Sandoz Ltd., (Sandoz AG), Basel, Switzerland**

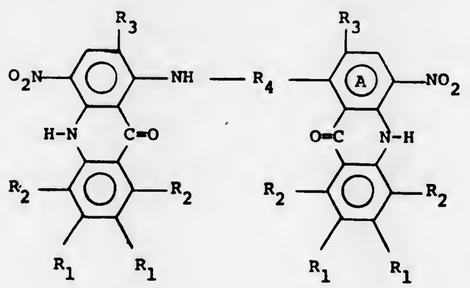
**Filed Apr. 1, 1974, Ser. No. 456,629**

**Claims priority, application Switzerland, Apr. 6, 1973, 5028/73**

**Int. Cl.² C09B *15/00*; C07D *219/08***

**U.S. Cl. 260—279 R** **16 Claims**

1. A compound of formula I,



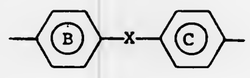
wherein the

$R_1$'s are independently hydrogen, $C_{1-4}$ alkyl, $C_{1-4}$ alkoxy, chlorine or bromine,

the $R_2$'s are independently hydrogen, methyl, chlorine or bromine,

the $R_3$'s are independently hydrogen, chlorine or bromine, and

$R_4$ is a direct bond or a group $—R_5—NH—$, in which the imino group is bound to nucleus A, and $R_5$ is a 1,3- or 1,4-phenylene radical, unsubstituted or substituted by 1 or 2 substituents selected from chlorine, bromine, methyl, $C_{1-4}$ alkoxy and nitro; or a radical



in which X is a direct bond, —O—, $—SO_2—$, —N=N—, or —NHCO— and each of rings B and C is optionally substituted by 1 or 2 substituents selected from chlorine, bromine, methyl, $C_{1-4}$ alkoxy and nitro,

or a mixture of compounds of formula I.

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**3,932,415**

**PYRYLIUM DYES HAVING A FUSED RIGIDIZED NITROGEN-CONTAINING RING**

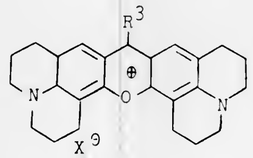
**George A. Reynolds, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.**

**Division of Ser. No. 244,916, April 17, 1972, Pat. No. 3,822,270, which is a continuation-in-part of Ser. No. 170,349, Aug. 9, 1971, abandoned. This application Aug. 20, 1973, Ser. No. 389,936**

**Int. Cl.² C07D *215/58***

**U.S. Cl. 260—286 R** **4 Claims**

1. A compound having the formula



wherein

$R^3$ represents a member selected from the group consisting of hydrogen, alkyl having 1 to 10 carbon atoms, phenyl, carboxyphenyl and ethoxycarbonyl phenyl

and X is an anion selected from the group consisting of halide, perchlorate and fluoroborate.



**3,932,416**

**N-TETRAZOLYL QUINALDAMIDES**

**David Edmund Bays; Mervyn Evan Peel; David Martin Waters, all of London, England, and Gwynn Pennant Ellis, Cardiff, Wales, assignors to Allen & Hanburys Limited, London, England**

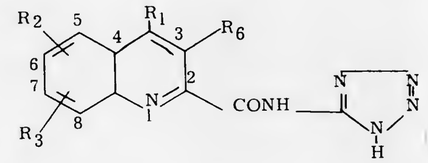
**Filed June 21, 1973, Ser. No. 372,027**

**Claims priority, application United Kingdom, July 3, 1972, 30990/72**

**Int. Cl.² C07D *215/16***

**U.S. Cl. 260—287 F** **35 Claims**

1. A compound of the formula:



in which $R_1$, $R_2$ and $R_3$ independently represent a hydrogen atom, alkyl, nitro, a halogen atom or $—NR_4R_5$ or $—OR_4$; in which $R_4$ and $R_5$ independently represent a hydrogen atom, alkenyl, cycloalkyl, alkyl, or alkyl substituted by alkoxy, hydroxy, amino, alkylamino, dialkylamino or phenyl and $R_6$ represents a hydrogen atom or a pharmaceutically acceptable ester thereof with a simple aliphatic acid; or a pharmaceutically acceptable salt thereof, any alkyl moiety being of 1 to 6 carbon atoms, any alkenyl moiety being of 2 to 6 carbon atoms, any cycloalkyl moiety being of 5 or 6 carbon atoms, $R_2$ and $R_3$, when both are vicinal and other than hydrogen, said substituents are methyl and there being present no more than one nitro substituent.

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**3,932,417**

**DIMERIC INDOLE ALKALOID PURIFICATION PROCESS**

**William E. Jones, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.**

**Filed Oct. 24, 1973, Ser. No. 409,225**

**Int. Cl.² C07D *215/00***

**U.S. Cl. 260—287 R** **2 Claims**

1. A process for the purification of the dimeric vinca alkaloids — vincristine, des-N-methylvinblastine and vinblastine — which comprises the steps of extracting a plant source of said alkaloids with aqueous acid at a pH ≈ 3, extracting the acidic solution thus obtained with a water-immiscible organic solvent, discarding the extract, adjusting the pH of the acidic solution to pH ≈ 6 by the addition of alkali metal hydroxide or ammonium hydroxide, extracting the pH ≈ 6 layer with a water-immiscible organic solvent, discarding the aqueous layer, separating and evaporating the solvent from the organic extract to obtain residual alkaloids, further purifying the residual alkaloids either (a) by subjecting them to gel exclusion chromatography in a pH = 7 aqueous buffer, extracting the dimeric indole alkaloids from aqueous buffer eluate fractions determined to contain them by standard analytical procedures with a water-immiscible organic solvent, separating the extracts, evaporating the extracting solvent therefrom, dissolving the partially purified residual alkaloids thus obtained in a lower alkanol, separating by centrifugation precipitated crystalline leurosine thus formed therefrom, adjusting the pH of the filtrate to pH ≈ 4.2 by the addition of sulfuric acid, filtering the precipitated crystalline dimeric indole alkaloid sulfate salts thus formed, treating an aqueous solution of the isolated sulfates with alkali, thus forming the corresponding free bases, chromatographing the free bases over alumina at high pressure thereby separating vincristine, des-N-methylvinblastine and vinblastine from other alkaloids and from each other, collecting eluate fractions each consisting essentially of a separated alkaloid and crystallizing vincristine, des-N-methylvinblastine and vinblastine from said collected eluate fractions in purified form or (b) by dissolving them directly in a lower alkanol, separating precipitated crystalline leurosine thus formed therefrom, adjusting the pH of the filtrate to pH ≈ 4.2 by the addition of sulfuric acid, filtering the precipitated crystalline dimeric indole alkaloid sulfate salts thus formed, treating an aqueous solution of the isolated sulfates with alkali, thus forming the corresponding free bases, chromatographing the free bases over alumina at high pressure thereby separating vincristine, des-N-mehtylvinblastine and vinblastine from other alkaloids and from each other, collecting eluate fractions each consisting essentially of a separated alkaloid and crystallizing vincristine, des-N-methylvinblastine and vinblastine from said collected eluate fractions in purified form.

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**3,932,418**

**ELECTROPHOTOGRAPHIC MATERIAL**

**Wilhelmus Janssens, Aarschot; Johannes Josephus Vanheertum, Halle-Zandhoven; Robert Joseph Pollett, Vremde; Hendrik Hubert Sneyers, Wijnegem, and Jozef Aime Dierckx, Mechelen, all of Belgium, assignors to AGFA-GEVAERT N.V., Mortsel, Belgium**

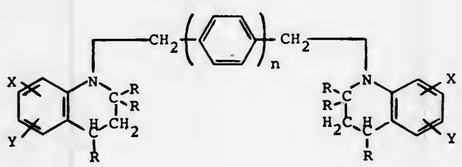
**Division of Ser. No. 304,939, Nov. 9, 1972, Pat. No. 3,798,031. This application Oct. 18, 1973, Ser. No. 407,650**

**Claims priority, application United Kingdom, Nov. 10, 1971, 52287/71**

**Int. Cl.² C07D *215/12***

**U.S. Cl. 260—288 CE** **2 Claims**

1. A chemical compound having photoconductive properties and corresponding to the formula:



where

*n* is 1,

X and Y are hydrogen,

R is hydrogen or methyl

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**3,932,419**

**QUINOPHTHALONE DYESTUFFS**

**Manfred Groll; Volker Hederich, both of Cologne, and Hans-Samuel Bien, Burscheid, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Germany**

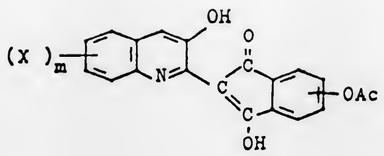
**Filed May 25, 1973, Ser. No. 363,990**

**Claims priority, application Germany, May 27, 1972, 2225960**

**Int. Cl.² C09B *215/00***

**U.S. Cl. 260—289 QP** **3 Claims**

1. Quinophthalone dyestuff of the formula



in which

Ac is phenylsulphonyl or phenylsulphonyl mono-or di-substituted by halogen, $C_1$-$C_4$-alkyl, $C_1$-$C_4$-alkoxy, nitro, or methylmercapto, provided that in the case of disubstituted nitro or disubstituted tertiary-butyl, the substituents will be on nonadjacent carbon atoms;

X is chlorine, bromine, or $C_1$-$C_4$-alkyl; and

m is 0, 1, or 2;

provided that when X is tertiary-butyl and *m* is 2 the tertiary-butyls are on nonadjacent carbon atoms.

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**3,932,420**

**PROCESS FOR THE PREPARATION OF GLAZIOVINE**

**Julien Warnant, Neuilly-sur-Seine; Andre Farcilli, Rosny-sous-Bois; Italo Medici, Bondy, and Edmond Toromanoff, Paris, all of France, assignors to Roussel-UCLAF, Paris, France**

**Filed Feb. 21, 1974, Ser. No. 444,554**

**Claims priority, application France, Feb. 28, 1973, 73.07169**

**Int. Cl.² C07D** *217/12*

**U.S. Cl. 260—289 A** **9 Claims**

1. A process for the preparation of glaziovine comprising the steps of:

a. treating N-methyl bromococlaurine of the formula: in an inert organic solvent with a tri-lower alkyl or triphenyl tin hydride, in the presence of a free radical promoter selected from the group consisting of lauroyl peroxide, benzoyl peroxide, stearoyl peroxide, and cyclohexanecarbonyl peroxide, and

b. isolating the desired glaziovine.

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**3,932,421**

**PROCESS FOR PRODUCING ALKYLPYRIDINES**

**Yoshizo Minato, Nishinomiya, and Shinichi Yasuda, Otsu, both of Japan, assignors to Koei Chemical Company, Ltd., Osaka, Japan**

**Continuation-in-part of Ser. No. 743,023, July 8, 1968, abandoned. This application July 2, 1971, Ser. No. 159,548**

**Claims priority, application Japan, July 13, 1967, 42-45158**

**Int. Cl.² C07C** *213/10*

**U.S. Cl. 260—290 P** **12 Claims**

1. A method for producing 2-picoline and 4-picoline comprising

catalytically reacting acetaldehyde

with ammonia

in the gaseous phase

in the presence of a catalyst of at least one phosphate selected from the group consisting of cobalt magnesium phosphate, cobalt aluminum phosphate and lead aluminum phosphate which has been impregnated with 1% to 30% by weight of phosphoric acid or ammonium phosphate

in state of aqueous solution,

at a temperature of from 350° C. to 500° C. and

a space velocity of 200 $Hr^{+1}$ to 2000 $Hr^{+1}$.

**3,932,422**

**8-METHYLENE-3-AZABICYCLO[3.3.1]NON-6-EN-4-ONES**

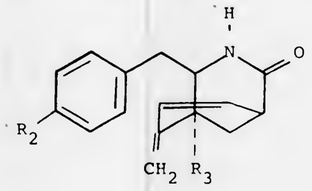
**William F. Michne, Colonie, N.Y., assignor to Sterling Drug Inc., New York, N.Y.**

**Filed May 20, 1974, Ser. No. 471,571**

**Int. Cl.² C07D** *221/22*

**U.S. Cl. 260—293.54** **3 Claims**

1. A compound having the formula



where $R_2$ is hydrogen or lower-alkoxy and $R_3$ is hydrogen or lower-alkyl.

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**3,932,423**

**IMIDAZOLIDO(1,5-C)THIAZOLIDINE-3-SPIRO-4-PIPERIDINES**

**Katsuo Arimura, and Hideki Ao, both of Nakatsu, Japan, assignors to Yoshitomi Pharmaceutical Industries, Osaka, Japan**

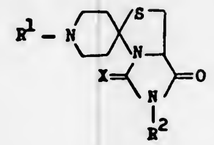
**Filed May 28, 1974, Ser. No. 473,977**

**Claims priority, application Japan, May 28, 1973, 48-59991; July 4, 1973, 48-76009; Aug. 14, 1973, 48-91595; Aug. 14, 1973, 48-91596**

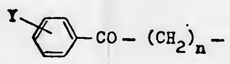
**Int. Cl.² C07D** *513/20*

**U.S. Cl. 260—293.57** **10 Claims**

1. A compound of the formula:



wherein $R^1$ represents a member selected from the group consisting of a hydrogen atom, an alkyl group of from 1 to 4 carbon atoms, a benzyl group, a p-chlorobenzyl group, a 4,5-dimethoxybenzyl group, a 4,5,6-trimethoxybenzyl group, a phenethyl group, an acetyl group, a benzoyl group, a trimethoxybenzoyl group, a methoxycarbonyl group, an ethoxycarbonyl group, a 4,4-bis(p-fluorophenyl)butyl group and a group of the formula



(in which Y represents a member selected from the group consisting of H, F and $CH_3O$, and *n* represents an integer of 1, 2 or 3); $R^2$ represents a member selected from the group consisting of a hydrogen atom, an alkyl group of from 1 to 4 carbon atoms, an allyl group, a propargyl group, a cyclohexyl group, a phenyl group, a chlorophenyl group, a dichlorophenyl group, a tolyl group, a nitrophenyl group, a naphthyl group, a benzyl group, a phenethyl group and a cinnamyl group; and X represents a member selected from the group consisting of an oxygen atom and a sulphur atom, and pharmaceutically acceptable acid addition salts thereof.



**3,932,424**

**BIS-BASIC ETHERS OF CARBAZOLE**

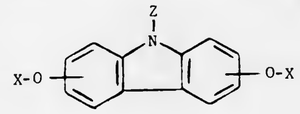
**William L. Albrecht, and Robert W. Fleming, both of Cincinnati, Ohio, assignors to Richardson-Merrell Inc., Wilton, Conn.**

**Continuation of Ser. No. 46,462, June 15, 1970, abandoned. This application July 31, 1974, Ser. No. 493,271**

**Int. Cl.² C07D** *209/88*

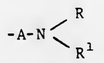
**U.S. Cl. 260—293.61** **7 Claims**

1. A compound selected from a base of the formula



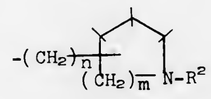
wherein Z is selected from the group consisting of hydrogen or lower alkyl; and each X is a member selected from the group consisting of

A. the group



wherein each A is a straight or branched alkylene chain having from 2 to 6 carbon atoms; R and $R^1$ are individually selected from the group consisting of hydrogen or lower alkyl having from 1 to 6 carbon atoms; or each set of R and $R^1$ taken together with the nitrogen atom to which they are attached is a saturated monocyclic heterocyclic group selected from pyrrolidino or piperidino; or

B. the group



wherein *n* is a whole integer from 0 to 2, *m* is 1 or 2, and $R^2$ is a member selected from the group consisting of hydrogen or lower alkyl having from 1 to 4 carbon atoms; or a pharmaceutically acceptable acid addition salt of said base.

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**3,932,425**

**BENZOSPIRAN DERIVATIVES**

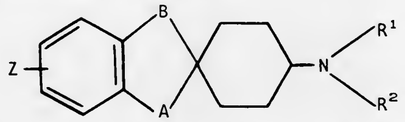
**Daniel Lednicer, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.**

**Filed Apr. 12, 1974, Ser. No. 460,449**

**Int. Cl.² C07D** *295/02*

**U.S. Cl. 260—293.62** **10 Claims**

1. A compound of the formula



wherein the sum of A and B carbon atoms is at least the integer 2; A is $-(CH_2)_n^-$ wherein *n* is 1 through 5; B is absent or $-(CH_2)_n^-$ wherein *n* is 1 through 3; $R^1$ is selected from the group consisting of hydrogen and lower alkyl of 1 through 3 carbon atoms; $R^2$ is selected from the group consisting of hydrogen, lower alkyl of 1 through 3 carbon atoms, $R^1$ and $R^2$ taken together with —N< is a saturated heterocyclic amino radical selected from the group consisting of pyrrolidino, piperidino, and hexamethylenimino; Z is selected from the group consisting of hydrogen, lower alkyl of 1 through 3 carbon atoms, lower alkoxy of 1 through 3 carbon atoms, nitro, amino, monoalkylamino of 1 through 3 carbon atoms, alkanoylamido of 1 through 4 carbon atoms, bromine, chlorine and fluorine; and a pharmacologically acceptable acid addition salt thereof.

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**3,932,426**

**3-[1-HYDROXY-2-(3- OR 4-HYDROXYPIPERIDINO)ETHYL]-5-PHENYLISOXAZOLE**

**Shiro Takahashi, Shita, Japan, assignor to Shionogi & Co., Ltd., Dosho, Japan**

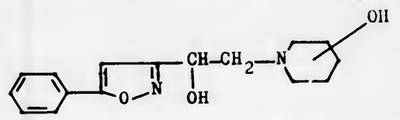
**Filed Aug. 12, 1974, Ser. No. 496,858**

**Claims priority, application Japan, Aug. 23, 1973, 48-94563; Aug. 23, 1973, 48-94565**

**Int. Cl.² C07D** *211/40*

**U.S. Cl. 260—293.67** **3 Claims**

1. A member selected from the compounds of the formula:



wherein the hydroxy group on the piperidine ring is located at its 3 or 4 position.

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**3,932,427**

**PYRIDYL SUBSTITUTED AMINOALKYL-THIOUREAS AND UREAS**

**Graham John Durant, Welwyn Garden City; John Colin Emmett, Codicote, and Charon Robin Ganellin, Welwyn Garden City, all of England, assignors to Smith Kline & French Laboratories, Inc., Welwyn Garden City, England**

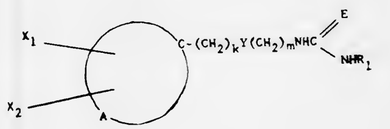
**Continuation-in-part of Ser. No. 290,584, Sept. 20, 1972, abandoned, which is a continuation-in-part of Ser. No. 230,451, Feb. 29, 1972, abandoned. This application Mar. 13, 1974, Ser. No. 450,931**

**Claims priority, application United Kingdom, Mar. 9, 1971, 6352/71; July 22, 1971, 34334/71; Ireland, Feb. 3, 1972, 136/72**

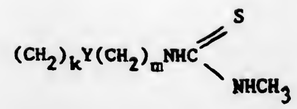
**Int. Cl.² C07D** *213/40*

**U.S. Cl. 260—294.8 H** **4 Claims**

1. A compound of the formula:



wherein A is such that there is formed together with the carbon atom shown a pyridine ring; $X_1$ is hydrogen, lower alkyl, hydroxyl, trifluoromethyl, halogen, amino or



$X_2$ is hydrogen or when $X_1$ is lower alkyl, lower alkyl or halogen; $k$ is 1 or 2 and $m$ is 2 or 3, provided that the sum of $k$ and $m$ is 3 or 4; Y is NH; E is oxygen or sulphur; $R_1$ is hydrogen, lower alkyl or dimethylaminoethyl, or a pharmaceutically acceptable acid addition salt thereof.

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**3,932,428**

**1H-IMIDAZO(4,5,-B)-PYRIDINE DERIVATIVES**

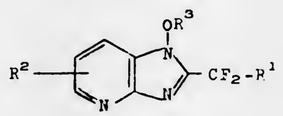
**George O. P. Doherty, Greenfield, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.**

**Division of Ser. No. 236,195, March 20, 1972, Pat. No. 3,818,022, which is a continuation-in-part of Ser. No. 181,638, Sept. 17, 1971, abandoned, which is a continuation-in-part of Ser. No. 100,410, Dec. 21, 1970, abandoned. This application Mar. 1, 1974, Ser. No. 447,116**

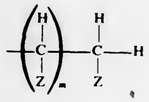
**Int. Cl.² C07D** *471/02*

**U.S. Cl. 260—295 F** **5 Claims**

1. The compounds of the formula

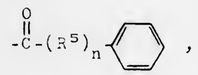


wherein $R^1$ represents hydrogen, chlorine, fluorine, difluoromethyl, perfluoroalkyl of $C_1$–$C_6$, or radical of the formula:



wherein each Z independently represents hydrogen or halogen and m represents 0 or 1; $R^2$ represents halogen, nitro, $-CF_3$, $-CF_2Cl$, $-CF_2H$, or loweralkylsulfonyl of $C_1$–$C_4$; and $R^3$ represents

1. alkanoyl of $C_2$–$C_{16}$;
2. alkenoyl of $C_3$–$C_{16}$;
3. radical of the formula



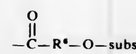
wherein $R^5$ represents methylene, ethylene, or vinylene, and $n$ represents 0 or 1; or

4. radical of the formulae



—C—substituted phenyl,

and



—C—$R^6$—O—substituted phenyl,

wherein substituted phenyl is a phenyl radical bearing from 1–3 substituents, each of which is independently amino, nitro, chloro, methyl, or methoxy, and $R^6$ represents loweralkylene of $C_1$–$C_4$, both inclusive.

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**3,932,429**

**NOVEL AZABICYCLO OCTANE DERIVATIVE AND PROCESS FOR PREPARING SAME**

**Mikio Takeda, Urawa; Hirozumi Inoue, Kawaguichi; Goro Hayashi, Toyonaka, and Seiichi Nurimoto, Toyonaka, all of Japan, assignors to Tanabe Seiyaku Co., Ltd, Osaka, Japan**

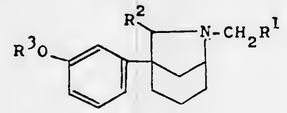
**Filed July 10, 1974, Ser. No. 486,988**

**Claims priority, application Japan, July 14, 1973, 48-79570; July 14, 1973, 48-79571; July 14, 1973, 48-79572; July 23, 1973, 48-82871; July 23, 1973, 48-82872; Mar. 29, 1974, 49-36055; July 29, 1973, 48-36056; May 20, 1974, 49-56888; May 20, 1974, 49-56889; May 20, 1974, 49-59126; May 24, 1974, 49-59129**

**Int. Cl.² C07D** *451/02, 401/06, 209/02, 209/32*

**U.S. Cl. 260—295.5 B** **24 Claims**

1. A compound of the formula:



wherein $R^1$ is hydrogen, phenyl, alkyl of one to five carbon atoms, cycloalkyl of three to four carbon atoms, or alkyl of one to five carbon atoms having a substituent selected from the group consisting of phenyl, benzoyl and 4-fluorobenzoyl, $R^2$ is hydrogen or alkyl of one to three carbon atoms, and $R^3$ is hydrogen, alkanoyl of two to six carbon atoms, benzoyl or nicotinoyl, or a pharmaceutically acceptable acid addition salt thereof.

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**3,932,430**

**SUBSTITUTED-INDENO, NAPHTHO AND CYCLOHEPTA PYRAZOLES**

**Dietmar A. Habeck, Heidelberg, Germany, and William J. Houlihan, Mountain Lakes, N.J., assignors to Sandoz, Inc., E. Hanover, N.J.**

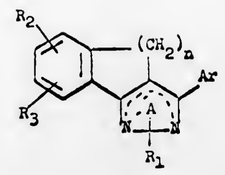
**Continuation-in-part of Ser. No. 341,392, March 15, 1973, abandoned, which is a continuation-in-part of Ser. No. 302,595, Oct. 31, 1972, abandoned, which is a continuation-in-part of Ser. No. 289,155, Sept. 14, 1972, abandoned, which is a continuation-in-part of Ser. No. 231,387, March 2, 1972, abandoned, which is a continuation-in-part of Ser. No. 259,859, June 5, 1972, abandoned, which is a continuation-in-part of Ser. No. 274,868, July 25, 1972, abandoned, which is a continuation-in-part of Ser. No. 188,938, Oct. 13, 1971, abandoned. This application Apr. 11, 1973, Ser. No. 350,140. The portion of the term of this patent subsequent to Oct. 15, 1991, has been disclaimed.**

**Int. Cl.² C07D** *213/74*

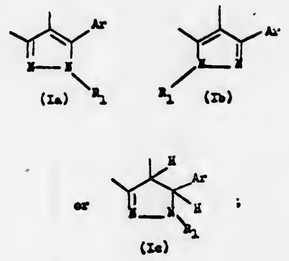
**U.S. Cl. 260—296 T** **9 Claims**

1. A compound of the formula





where ring A represents the structures



$n$ is 2;

$R_1$ represents hydrogen or lower alkyl having 1 to 4 carbon atoms excluding tertiary butyl;

Ar is



and

$R_2$ and $R_3$ each independently represent hydrogen, halo having an atomic weight of about 19 to 36, lower alkyl having 1 to 4 carbon atoms, lower alkoxy, trifluoromethyl or

$R_2$ and $R_3$ together independently represent methylenedioxy attached to adjacent carbon atoms,

provided that when $R_2$ and $R_3$ are independently trifluoromethyl or tertiary butyl they are not on adjacent carbon atoms, or a pharmaceutically acceptable acid addition salt thereof.

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**3,932,431**

**CERTAIN 2-[G2(2-PYRIDYL)-BENZYL] IMIDAZOLINES AND DERIVATIVES THEREOF**

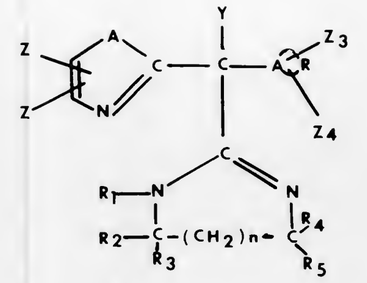
**Lewis A. Walter, Madison, N.J., assignor to Schering Corporation, Kenilworth, N.J.**

**Continuation of Ser. No. 49,578, June 24, 1970, Pat. No. 3,770,737, which is a continuation of Ser. No. 704,263, Feb. 9, 1968, abandoned. This application Nov. 5, 1973, Ser. No. 412,852**

**Int. Cl.² C07D** *213/44*

**U.S. Cl. 260—296 R** **15 Claims**

1. A compound selected from the group consisting of cyclic amidines of the structural formula:



I

and the pharmaceutically acceptable acid addition salts thereof, wherein n is an integer of the group consisting of zero and one; A is a member of the group consisting of —C=C, —C=N, and —S—; wherein A together with the ring atoms to which it is attached represents a heterocycle of the group consisting of pyridyl, pyrimidinyl, and thiazoyl each of $Z_1$, $Z_2$ and $Z_3$ is a member of the group consisting of hydrogen, lower alkyl, and trifluoromethyl, lower alkoxy and halogen and $Z_4$ is a member of the group consisting of hydrogen, lower alkyl, trifluoromethyl, lower alkoxy, halogen and diloweralkylamino;



represents a member of the group consisting of phenyl, thienyl and pyridyl; Y represents a member of the group consisting of hydroxy, lower alkoxy and lower alkanoyloxy containing 2 to 6 carbon atoms; $R_1$ represents a member of the group consisting of hydrogen, lower alkyl, aminoloweralkyl, hydroxyloweralkyl, benzyl and phenethyl; each of $R_2$, $R_3$, $R_4$ and $R_5$ are members of the group consisting of hydrogen and lower alkyl.

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**3,932,432**

**ALKYLPHENYL BENZOPYRANOPYRIDINES**

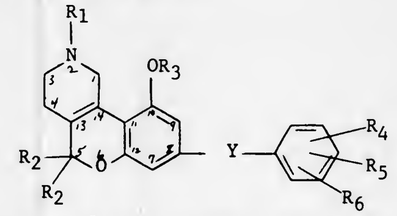
**Martin Winn, Deerfield, Ill., assignor to Abbott Laboratories, North Chicago, Ill.**

**Continuation-in-part of Ser. No. 345,942, April 2, 1973, abandoned. This application Feb. 13, 1974, Ser. No. 442,032**

**Int. Cl.² C07D** *213/30*

**U.S. Cl. 260—297 T** **8 Claims**

1. A compound of the formula



where $R_1$ is hydrogen, loweralkyl, 3-methyl-2-butenyl, 3-chloro-2-propenyl, cyclopropylmethyl, phenylloweralkyl, or 3(3,4,5-trimethoxyphenyl)-2-propenyl; $R_2$ is methyl; $R_3$ is hydrogen; Y is a radical of the formula

where n is a linear chain of 1–9 carbon atoms and $R_7$ is H or $CH_3$; and each $R_4$ and $R_5$ and $R_6$ are the same or different members of the group consisting of hydrogen, halo, trifluoromethyl or loweralkyl; and the pharmaceutically acceptable salts thereof.

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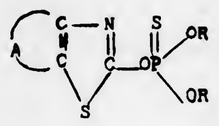
**3,932,433**

**PESTICIDAL PHOSPHOROUS-THIAZOLE COMPOUNDS**

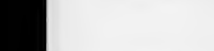
**Jacques Perronnet, Paris, and Laurent Taliani, Les Pavillons-sous-Bois, both of France, assignors to Roussel-UCLAF, Paris, France**

**Filed Dec. 26, 1974, Ser. No. 536,424**
**Claims priority, application France, Jan. 8, 1974, 74.00536**
**Int. Cl.² C07D** *277/60*
**U.S. Cl. 260—302 E** **8 Claims**

**1.** A compound of the formula



wherein A is polymethylene of 3 to 5 carbon atoms optionally substituted with a member of the group consisting of =0 and



wherein R′ is alkyl of 1 to 5 carbon atoms and R is alkyl of 2 to 3 carbon atoms.

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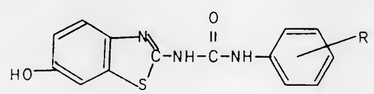
**3,932,434**

**N-2-(6-HYDROXYBENZOTHIAZOLYL)-N′-PHENYL (OR SUBSTITUTED PHENYL) UREAS**

**Charles J. Paget, Indianapolis, and James H. Wikel, Greenwood, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.**

**Filed Aug. 30, 1974, Ser. No. 502,129**
**Int. Cl.² C07D** *277/82*
**U.S. Cl. 260—305** **5 Claims**

**1.** A compound of the formula



wherein R is H, ($C_1$–$C_3$) alkyl, ($C_1$–$C_3$) alkoxy or halo.

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**3,932,435**

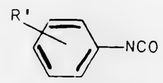
**PREPARATION OF N-2-(6-HYDROXYBENZOTHIAZOLYL)-N′-PHENYL (OR SUBSTITUTED-PHENYL) UREAS**

**Edward R. Lavagnino; Charles J. Paget, both of Indianapolis, and James H. Wikel, Greenwood, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.**

**Filed Aug. 30, 1974, Ser. No. 502,130**
**Int. Cl.² C07D** *277/82*
**U.S. Cl. 260—305** **1 Claim**

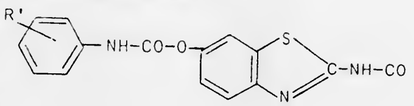
**1.** The process which comprises the essential steps

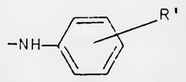
1. reacting 2-amino-6-hydroxy-benzothiazole with from 1-2 moles of a phenyl isocyanate of the formula



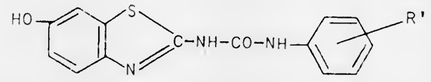
wherein R′ is H, ($C_1$–$C_3$) alkyl, ($C_1$–$C_3$) alkoxy or halo;

2. hydrolyzing any thus-obtained 6-carbamoyloxy compound of the formula





wherein R′ has the same meaning as hereinabove; with a base of the group comprising alkali metal hydroxides, and carbonates, ammonium hydroxide and ($C_1$–$C_2$) alkyl-substituted ammonium hydroxides in an inert solvent at a temperature not higher than about 100°C. until the 6-carbamoyloxy derivative is converted substantially completely to the corresponding 6-hydroxy derivative of the formula



wherein R′ has the same meaning as hereinabove; and then

3. isolating said 6-hydroxy derivative.

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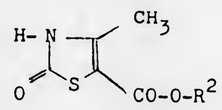
**3,932,436**

**2-THIAZOLONE-5-CARBOXYLIC ACID ESTER FUNGICIDAL AGENTS**

**Klaus Grohe, Cologne, and Paul-Ernst Frohberger, Leverkusen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

**Filed Oct. 26, 1973, Ser. No. 410,073**
**Claims priority, application Germany, Oct. 28, 1972, 2253027**
**Int. Cl.² C07D** *277/22*
**U.S. Cl. 260—306.7 R** **3 Claims**

**1.** 2-thiazolone-5-carboxylic esters of the formula



in which

$R^2$ is alkyl of four to eight carbon atoms, cyclohexyl, cyclohexylmethyl, cyclohexylethyl or phenyl ethyl.



**3,932,437**

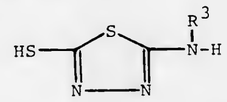
**MULTISTEP SYNTHESIS FOR CERTAIN 1,3,4-THIADIAZOLES AND INTERMEDIATE**

**William C. Doyle, Jr., Leawood, and Loren W. Hedrich, Overland Park, both of Kans., assignors to Gulf Research & Development Company, Pittsburgh, Pa.**

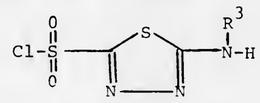
**Division of Ser. No. 177,178, Sept. 1, 1971, Pat. No. 3,824,247, which is a continuation-in-part of Ser. No. 119,417, Feb. 26, 1971. This application Aug. 13, 1973, Ser. No. 387,839**
**Int. Cl.² C07D** *277/52*
**U.S. Cl. 260—306.8 D** **3 Claims**

**1.** The method of manufacturing a herbicidal composition consisting of the following steps, performed in sequence:

a. Chlorinating under oxidizing conditions an amine having the structural formula



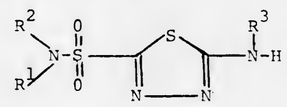
in which $R^3$ may be methyl or ethyl to yield a corresponding sulfonyl chloride having the structural formula



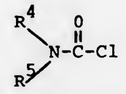
b. reacting the sulfonyl chloride produced in Step (a) with a secondary amine of the structural formula



in which $R^1$ may be hydrogen or $C_1$ to $C_4$ lower alkyl and $R^2$ may be hydrogen or $C_1$ to $C_4$ lower alkyl or $R^1$ and $R^2$ together may form a morpholino ring with the nitrogen atom to yield a sulfonamide having the structural formula



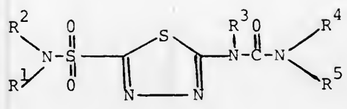
c. reacting the sulfonamide produced in step (b) with a carbamyl chloride or isocyanate having one of the structural formulae



or $R^4NCO$ or reacting the amine substituent group with phosgene in an inert solvent, followed by reacting the resulting carbamyl chloride with an amine having the structural formula



in which $R^4$ may be hydrogen, methyl or ethyl and $R^5$ may be hydrogen or $C_1$ to $C_4$ lower alkyl to yield a phytotoxic ureidothiadiazolesulfonamide having the structural formula



in which $R^3$ is methyl or ethyl.

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**3,932,438**

**1-(5-TRIFLUOROMETHYL-1,3,4-THIADIAZOL-2-YL)-3-ETHYL-5-HYDROXY-1,3-IMIDAZOLIDIN-2-ONE**

**John Krenzer, Oak Park, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.**

**Continuation-in-part of Ser. No. 375,203, June 29, 1973, abandoned. This application Feb. 11, 1974, Ser. No. 441,611. The portion of the term of this patent subsequent to Aug. 26, 1992, has been disclaimed.**
**Int. Cl.² C07D** *285/12*
**U.S. Cl. 260—306.8 D** **1 Claim**

**1.** The compound 1-(5-trifluoromethyl-1,3,4-thiadiazol-2-yl)-3-methyl-5-hydroxy-1,3-imidazolidin-2-one.

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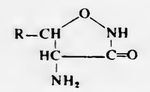
**3,932,439**

**N-SUBSTITUTED CYCLOSERINE COMPOUNDS, SALTS THEREOF, AND PROCESSES FOR PREPARING THEM**

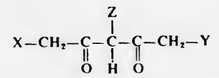
**Norman P. Jensen, Watchung, N.J., assignor to Merck & Co., Inc., Rahway, N.J.**

**Continuation-in-part of Ser. No. 384,545, Aug. 1, 1973, abandoned. This application May 28, 1974, Ser. No. 473,164**
**Int. Cl.² C07D** *261/04*
**U.S. Cl. 260—307 A** **16 Claims**

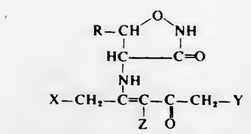
**1.** A process which comprises the step of reacting, at a temperature of about 0° to 35°C., a cycloserine compound having the formula



wherein R is hydrogen or methyl with 2,4-pentanedione, or derivatives thereof, having the formula:



wherein X, Y and Z are hydrogen or methyl thereby forming the corresponding N-substituted cycloserine compound having the formula:



wherein R, X, Y and Z have the significance above-defined.

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**3,932,440**

**P-(1H-TETRAZOL-1-YL)-PHENYLCARBAMATES**

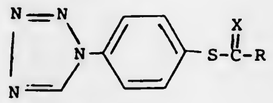
**William Vincent Curran, Pearl River, N.Y.; Andrew Stephen Tomcufcik, Old Tappan, N.J., and Adma Schneller Ross, Suffern, N.Y., assignors to American Cyanamid Company, Stamford, Conn.**

**Filed June 3, 1974, Ser. No. 475,478**

**Int. Cl.² C07D** *257/04*

**U.S. Cl. 260—308 D** **10 Claims**

**1.** A compound of the formula:



wherein R is a moiety of the formulae:

$-CH_3$, $-NHCH_3$, $-N(CH_3)_2$, $-NHC_2H_5$, $-N(C_2H_5)_2$, $-NHCH_2CH{=}CH_2$ or $-NH-C-CCl_3$

and X is divalent oxygen or divalent sulfur.

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**3,932,441**

**PROCESS FOR THE PRODUCTION OF PURE TETRAZOLE-1-ACETIC ACID**

**Günter Bison, Troisdorf; Walter Heinzelmann, Leverkusen; Norbert Linkat, St. Augustin, and Wolfgang Wolfes, Mondorf, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Germany**

**Filed Sept. 27, 1974, Ser. No. 509,858**

**Claims priority, application Germany, Sept. 28, 1973, 2348802**

**Int. Cl.² C07D** *257/04*

**U.S. Cl. 260—308 D** **5 Claims**

**1.** In a process for the production of tetrazole-1-acetic acid from a crude reaction product containing an ester of said acid, wherein the crude reaction product is treated to isolate the ester and the ester is hydrolyzed to form the acid, the improvement which comprises effecting a falling-film molecular distillation of the reaction product that contains an alkyl ester of tetrazole-1-acetic acid with 1–4 carbon atoms in the alkyl group at temperatures of below 130°C. under a vacuum of $<10^{-1}$ torr to obtain a distillate containing a purified alkyl ester which can be hydrolyzed to provide tetrazole-1-acetic acid of maximum purity.

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**3,932,442**

**PROCESS FOR SCREENING MATERIALS WITH VIBRATING SCREENS**

**John Kennedy Salmon, Glen Cove, and Richard A. Adie, Hauppauge, both of N.Y., assignors to Lundy Electronics & Systems, Inc., Glen Head, N.Y.**

**Filed Aug. 27, 1973, Ser. No. 392,012**

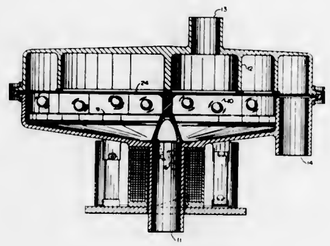
**Int. Cl.² B07H** *1/36*

**U.S. Cl. 209—309** **6 Claims**

**1.** A process for screening materials by means of a substantially planar screen having an entrance surface facing generally upwardly and an exit surface facing generally downwardly comprising the steps of:

a. feeding the materials onto the entrance surface of the screen,

b. vibrating the screen by producing a translational oscillation of the screen in directions normal to the plane of the screen and a torsional oscillation of the screen about an axis normal to the plane of the screen, so that each point of the screen moves in a helical path, the translational oscillation of the screen being such that the acceleration of the screen normal to the plane of the screen is at least 1 g (32.2 feet/second²) during some portion of each vibrational cycle,



c. utilizing the torsional oscillation of the screen to transport screen retentate to an exit port disposed generally in the plane of the screen at a location spaced from the axis of torsional oscillation,

d. collecting the screen retentate at the exit port, and

e. collecting the screened material below the exit surface of the screen.

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**3,932,443**

**SULPHOXIDES**

**George Raymond White, Harpenden, England, assignor to Smith Kline & French Laboratories, Inc., Welwyn Garden City, England**

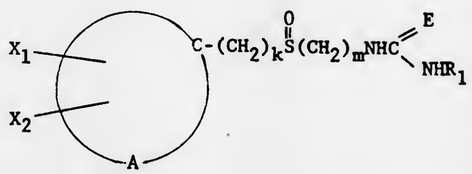
**Filed Jan. 24, 1974, Ser. No. 436,285**

**Claims priority, application United Kingdom, Feb. 8, 1973, 6153/73; Oct. 23, 1973, 49257/73**

**Int. Cl.² C07D** *233/64*

**U.S. Cl. 260—309** **8 Claims**

**1.** A compound of the formula:



wherein A is such that the heterocyclic nucleus formed is an imidazole ring; $X_1$ and $X_2$, which may be the same or different, are hydrogen, lower alkyl, trifluoromethyl, hydroxyl, halogen or amino; $k$ is 0 to 2 and $m$ is 2 or 3 provided that the sum of $k$ and $m$ is 3 or 4; E is oxygen, sulphur or $NR_2$; $R_1$ is hydrogen, lower alkyl, benzoyl or dimethylaminoethyl; and $R_2$ is hydrogen, nitro, cyano, alkanesulphonyl having 1—3 carbon atoms, benzenesulphonyl, halobenzenesulphonyl or toluenesulphonyl.



**3,932,444**

**4-IMIDAZOLYLSULFONYLIMIDAZOLES**

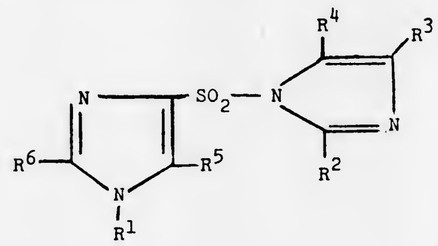
**Richard Lee Ellis, Wilmington, Del., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.**

**Continuation-in-part of Ser. No. 248,596, April 28, 1972, abandoned. This application Feb. 26, 1974, Ser. No. 445,913**

**Int. Cl.² C07D** *233/84*

**U.S. Cl. 260—309** **8 Claims**

**1.** A compound of the formula



wherein

$R^1$ is selected from the group consisting of H, alkyl of 1–3 carbons, alkenyl of 3 carbons, aminocarbonyl, methylaminocarbonyl, dimethylaminocarbonyl, benzoyl, aralkyl of 7 to 19 carbons, alkanoyl of up to 7 carbons, benzoylmethyl or cycloalkanoyl of 4 carbons;

$R^2$, $R^3$ and $R^4$ are individually selected from the group consisting of H, alkyl of up to 17 carbons; cycloalkyl of up to 6 carbons, aryl of 6–12 carbons substituted with up to two halo, nitro, amino, methoxy or alkyl groups having up to 3 carbons; alkenyl of 3 carbons; carbalkoxyalkyl and carbalkoxyalkenyl of 3–4 carbons; and thioalkyl of 1–2 carbons;

with the proviso that $R^3$ and $R^4$ together can be a divalent hydrocarbyl group of 4 chain carbons and having a total of from 4 to 8 carbons; and

$R^5$ and $R^6$ individually are H or alkyl of 1–3 carbons.

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**3,932,445**

**2-ARYL-4-(R-METHYL)-5-METHYLIMIDAZOLES**

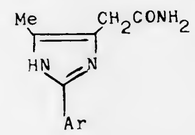
**Chris Royce Rasmussen, Ambler, Pa., assignor to McNeil Laboratories, Incorporated, Ft. Washington, Pa.**

**Filed June 26, 1974, Ser. No. 483,480**

**Int. Cl.² C07D** *233/64*

**U.S. Cl. 260—309** **2 Claims**

**1.** A compound selected from the group consisting of 2-aryl-5-methylimidazole-4-acetamide having the formula:



and mineral acid addition salts thereof, wherein Ar is a member selected from the group consisting of phenyl, methylenedioxyphenyl, loweralkanoylphenyl, loweralkylthiophenyl and phenyl substituted with 1 to 3 members selected from the group consisting of loweralkyl, loweralkoxy, halo, hydroxy, phenoxy and nitro.

**3,932,446**

**QUATERNIZED 6-DIETHYLAMINO-2-[BENZIMIDAZOLYL-(2)]BENZOFURAN**

**Klaus Grychtol, Bad Duerkheim, Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Germany**

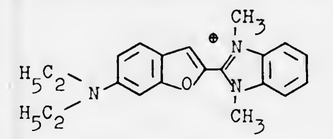
**Filed Sept. 6, 1973, Ser. No. 394,659**

**Claims priority, application Germany, Sept. 9, 1972, 2244371**

**Int. Cl.² C07D** *235/14*

**U.S. Cl. 260—309.2** **2 Claims**

**1.** A benzofuran compound of the formula



in which $X^{\ominus}$ is $HSO_4^{\ominus}$, $CH_3SO_4^{\ominus}$, $Cl^{\ominus}$, $Br^{\ominus}$, $\frac{1}{2}$ $SNCl_4^{2\ominus}$ or $CH_3COO^{\ominus}$.

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**3,932,447**

**BENZIMIDAZOLES**

**Jacques Perronnet, and Pierre Girault, both of Paris, France, assignors to Roussel-UCLAF, Paris, France**

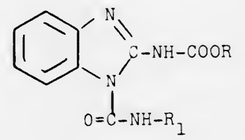
**Filed Sept. 18, 1973, Ser. No. 398,416**

**Claims priority, application France, Sept. 27, 1972, 72.34135**

**Int. Cl.² C07D** *235/26*

**U.S. Cl. 260—309.2** **5 Claims**

**1.** A benzimidazole of the formula



wherein R is alkyl of 1 to 2 carbon atoms and $R_1$ is selected from the group consisting of tetrahydrofurfuryl, pyranyl, dihydropyranyl, tetrahydrofuranyl and tetrahydropyranyl.

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**3,932,448**

**2-(ALKOXYCARBONYLAMINO)-1-BENZIMIDAZOLECARBOXYLIC ACID ESTERS WITH HYDROXYALIPHATIC ACIDS AND DERIVATIVES THEREOF**

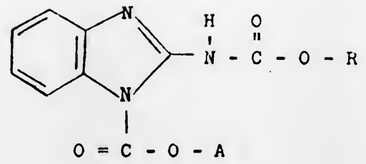
**Frederic J. Baude, Wilmington, Del., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.**

**Continuation-in-part of Ser. No. 116,247, Feb. 17, 1971, abandoned, which is a continuation-in-part of Ser. No. 776,273, Nov. 15, 1968, abandoned. This application July 19, 1973, Ser. No. 380,601**

**Int. Cl.² C07D** *235/32*

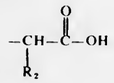
**U.S. Cl. 260—309.2** **9 Claims**

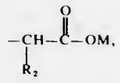
**1.** A compound having the formula:

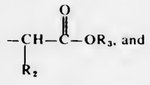


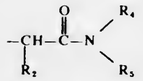
wherein:

1. R is selected from the group consisting of methyl, ethyl, isopropyl, and secondary butyl;
2. A is selected from the group consisting of:

(a) 

(b) 

(c) 

(d) 

3. $R_2$ is hydrogen, or alkyl of 1 through 14 carbon atoms;
4. $R_3$ is alkyl of 1 through 4 carbon atoms, alkenyl of 3 or 4 carbon atoms, or alkynyl of 3 or 4 carbon atoms;
5. $R_4$ and $R_5$ are hydrogen, alkyl of 1 through 4 carbon atoms, alkenyl of 3 or 4 carbon atoms or alkynyl or 3 or 4 carbon atoms
6. M is (i) an alkali metal cation, (ii) an ion selected from ammonium ion, methylammonium ion, dimethylammonium ion, trimethylammonium ion and tetramethylammonium ion;

with the proviso that A contains from 2 through 17 carbon atoms.

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**3,932,449**

**5-(P-DIMETHYLAMINOBENZYL) HYDANTOIN**

**Thomas J. Schwan, Norwich, N.Y., assignor to Morton-Norwich Products, Inc., Norwich, N.Y.**

**Filed Oct. 9, 1973, Ser. No. 404,171**
**Int. Cl.² C07D** *49/32*
**U.S. Cl. 260—309.5** **1 Claim**

1. The compound 5-(p-dimethylaminobenzyl)hydantoin.

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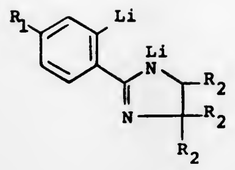
**3,932,450**

**INTERMEDIATES IN THE PREPARATION OF IMIDAZO(2,1-ALPHA)ISOINDOLES**

**William J. Houlihan, Mountain Lakes, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.**

**Filed Aug. 19, 1974, Ser. No. 498,273**
**Int. Cl.² C07D** *49/34*
**U.S. Cl. 260—309.6** **4 Claims**

1. A compound of the formula



where

$R_1$ represents H, halo having an atomic weight of 19–36, lower alkyl, lower alkoxy or trifluoromethyl, and

each

$R_2$ independently represents H or alkyl having 1–2 carbon atoms,

provided that

1. when $R_1$ is H, at least one of $R_2$ represents other than H,
2. no more than two of $R_2$ are other than H, and
3. when two $R_2$'s are alkyl, they are the same.

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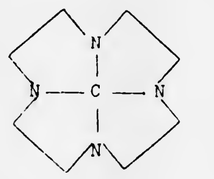
**3,932,451**

**1,4,7,10-TETRAAZATETRACYCLO[5.5.1.0$^{4,13}$.0$^{10,13}$]TRIDECANE AND ITS CONJUGATE ACIDS**

**John Howard Bigelow, Rochester, N.Y., and Jack E. Richman, Wilmington, Del., assignors to E. I. D ?ont de Nemours & Company, Wilmington, Del.**

**Filed Nov. 27, 1973, Ser. No. 419,441**
**Int. Cl.² C07D** *49/34*
**U.S. Cl. 260—309.6** **5 Claims**

1. A compound having the formula



and salts thereof with an acid selected from the group consisting of hydrochloric, sulfuric, nitric, acetic, tartaric and lactic.

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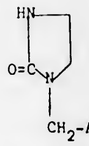
**3,932,452**

**1-ARYLMETHYL-2-IMIDAZOLIDINONES**

**Thomas J. Schwan, and Nelson J. Miles, both of Norwich, N.Y., assignors to Morton-Norwich Products, Inc., Norwich, N.Y.**

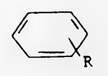
**Filed Feb. 7, 1975, Ser. No. 547,925**
**Int. Cl.² C07D** *49/34*
**U.S. Cl. 260—309.7** **12 Claims**

1. A compound of the formula:



wherein Ar is selected from the group consisting of benzhydryl, 2-naphthyl, 5-bromo-2-naphthyl,[4-pyridyl]and





wherein R is 2-fluoro, 4-bromo, 2,6-dichloro, 2,4-dichloro, 2-hydroxy-5-nitro, 4-benzyloxy, 3,4-difluoro or 4-cyano.

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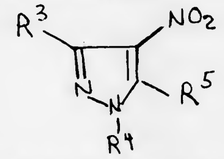
**3,932,453**

**4-NITROPYRAZOLES**

**Aldo Joseph Crovetti, Lake Forest; Donald Sykes Kenney, Northbrook; Don Murl Lynch, Waukegan, all of Ill., and Robert George Stein, Kenosha, Wis., assignors to Abbott Laboratories, North Chicago, Ill.**

**Division of Ser. No. 282,889, Aug. 21, 1972, Pat. No. 3,869,274. This application May 2, 1974, Ser. No. 466,424**
**Int. Cl.² C07D** *231/00*
**U.S. Cl. 260—310 R** **8 Claims**

1. A 4 nitropyrazole having the formula



where $R^5$ is halo, $R^4$ is hydrogen and $R^3$ is alkyl.

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**3,932,454**

**PROCESS OF MAKING HEXAGONAL ALPHA METAL-FREE PHTHALOCYANINE**

**Ray H. Luebbe, Jr., Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.**

**Continuation-in-part of Ser. No. 846,262, July 30, 1969, abandoned. This application Aug. 7, 1973, Ser. No. 386,468**
**Int. Cl.² C09B** *47/08*
**U.S. Cl. 260—314.5** **7 Claims**

1. A method for the preparation of substantially hexagonal crystals of alpha metal-free phthalocyanine, said crystals ranging in size from about 1 micron to about 75 microns which comprises mixing a phthalocyanine selected from the group consisting of unsubstituted alpha metal-free phthalocyanine, unsubstituted beta metal-free phthalocyanine, and mixtures thereof in a solution of a strong base selected from at least one member of the group consisting of alkoxides of an alkali metal, hydroxides of an alkali metal, alkoxides of a quaternary ammonium radical, and hydroxides of a quaternary ammonium radical satisfying the following formula

$(R'R_{1-3}N)+$

wherein R' may be an aromatic, heterocyclic, or aliphatic radical; and $R_{1-3}$ is an aliphatic radical

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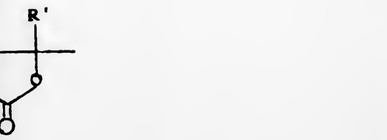
**3,932,455**

**CARBAZOLE PHTHALEINS**

**Ruth C. Bilofsky, Arlington, Mass., and Richard D. Cramer, Wallingford, Pa., assignors to Polaroid Corporation, Cambridge, Mass.**

**Continuation-in-part of Ser. No. 202,482, Nov. 26, 1971, Pat. No. 3,816,119. This application May 22, 1974, Ser. No. 472,162**
**Int. Cl.² C07D** *209/86*
**U.S. Cl. 260—315** **52 Claims**

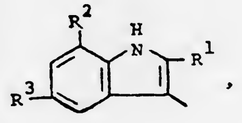
1. An indicator dye of the formula:

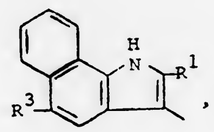


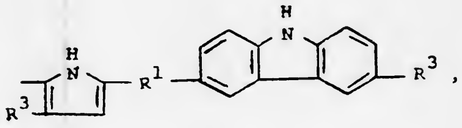
wherein B represents

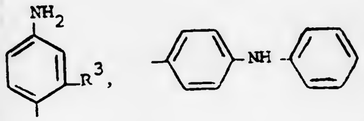


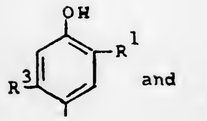
wherein R' and R'' the same are selected from



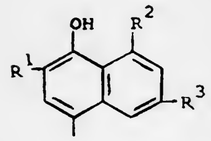








and



wherein $R^1$ is selected from hydrogen, alkyl having 1 to 20 carbon atoms, phenyl and a hydrogen-bonding group forming a 5-, 6- or 7-membered intramolecular hydrogen-bonded ring with the adjacent -NH- or -OH and selected from carboxy, hydroxy, o-hydroxyphenyl, bis trifluoromethyl carbinol, sulfonamido and sulfamoyl, $R^2$ is selected from hydrogen and a hydrogen-bonding group forming a 5-, 6- or 7-membered intramolecular hydrogen-bonded ring with the adjacent -NH or -OH and selected from carboxy, hydroxy, o-hydroxyphenyl, bis trifluoromethyl carbinol, sulfonamido and sulfamoyl, not more than one of $R^1$ and $R^2$ being a hydrogen-bonding group, and $R^3$ is selected from hydrogen, phenyl, aikyl having 1 to 20 carbon atoms and alkoxy having 1 to 20 carbon atoms.

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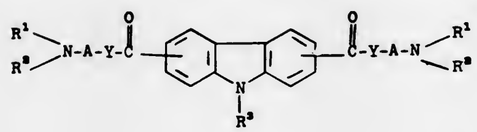
**3,932,456**

## BIS-BASIC ESTERS AND AMIDES OF CARBAZOLE

**William L. Albrecht, and Robert W. Fleming, both of Cincinnati, Ohio, assignors to Richardson-Merrell Inc., Wilton, Conn.**

**Filed June 16, 1969, Ser. No. 833,718**
**Int. Cl.² C07D** *209/88*
**U.S. Cl. 260—315** **15 Claims**

1. A compound of the formula



wherein:

A. each of $R^1$ and $R^2$ is hydrogen, (lower)alkyl, cycloalkyl of 3 to 6 ring carbon atoms, alkenyl of 3 to 6 carbon atoms having the vinyl unsaturation in other than the 1-position of the alkenyl group, or each set of $R^1$ and $R^2$ taken together with the nitrogen atom to which they are attached is pyrrolidino, piperidino, N-(lower)alkyl-piperazino, or morpholino;

B. each A is alkylene of 2 to about 8 carbon atoms and separates its adjacent Y and amino nitrogen by an alkylene chain of at least 2 carbon atoms;

C. each Y is oxygen, or N-R wherein R is hydrogen, methyl or ethyl; and

D. $R^3$ is hydrogen or (lower) primary or secondary alkyl, or an acid addition salt thereof.

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**3,932,457**

## PYROLYSIS OF N-SUBSTITUTED-1-CYCLOHEXENE-1,2-ICARBOXIMIDES

**Raymond L. Cobb, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.**

**Filed May 16, 1973, Ser. No. 360,962**
**Int. Cl.² C07D** *209/52, 209/54*
**U.S. Cl. 260—326 C** **5 Claims**

1. The process of pyrolysis wherein N-phenyl or N-alkyl substituted-1-cyclohexene-1,2-dicarboximide and N-phenyl or N-alkyl substituted-maleimide pyrolyze in substantially equimolar relationship under pyrolysis conversion conditions to the dimer of N-phenyl or N-alkyl substituted-1,3-butadiene-2,3-dicarboximide and N,N'-phenyl or N,N'-alkyl substituted-3,4,5,6-tetrhydropyromellitdiimide,

wherein said pyrolysis conversion conditions include elevated temperatures in the range of about 500° to 1000° C., reduced pressure, short contact time, effective for said process of pyrolysis.

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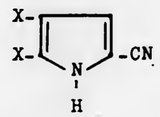
**3,932,458**

## ANTIMICROBIAL AND PLANT-ACTIVE 4,5-DIHALOPYRROLE-2-CARBONITRILES

**Denis M. Bailey, Greenbush, N.Y., assignor to Sterling Drug Inc., New York, N.Y.**

**Division of Ser. No. 195,817, Nov. 4, 1971, Pat. No. 3,864,491.**
**This application Feb. 19, 1974, Ser. No. 443,740**
**Int. Cl.² C07D** *207/46*
**U.S. Cl. 260—326.62** **4 Claims**

1. A compound having the formula



where X is chlorine, bromine or iodine.

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**3,932,459**

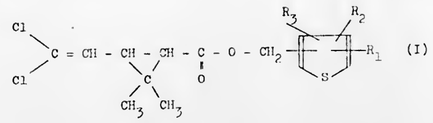
## NOVEL CYCLOPROPANECARBOXYLIC ACID ESTERS

**Yoshitoshi Okuno, Toyonaka; Masachika Hirano, Ashiya; Isao Ohno, Minoo; Hisami Takeda, Takarazuka; Osamu Magara, Osaka; Nobushige Itaya, Nishinomiya; Toshio Nishioka, Takarazuka; Toshio Mizutani; Nobuo Ohno, both of Toyonaka, and Takashi Matsuo, Nishinomiya, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan**

**Filed July 25, 1974, Ser. No. 491,636**
**Claims priority, application Japan, July 30, 1973, 48-86121**
**Int. Cl.² C07D** *333/24*
**U.S. Cl. 260—332.2 A** **3 Claims**

1. A compound of the formula,





(I)

wherein $R_1$ is alkyl having up to four carbon atoms, alkenyl having up to five carbon atoms, cycloalkenyl having up to six carbon atoms, alkynyl having up to five carbon atoms, benzyl, phenoxy or halogen; $R_2$ and $R_3$ are hydrogen, halogen or methyl; and any adjacent two of $R_1$, $R_2$ and $R_3$ may conbine to form polymethylene.

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**3,932,460**

## METHOD FOR THE PREPARATION OF A TETRAALKYL-TETRAOXA-UNDECANE

**David R. McCoy, Wappingers Falls; Terence B. Jordan, Fishkill, and Frank K. Ward, Hopewell Junction, all of N.Y., assignors to Texaco Inc., New York, N.Y.**

**Filed June 27, 1974, Ser. No. 483,600**
**Int. Cl.² C07D** *319/06*
**U.S. Cl. 260—340.7** **7 Claims**

1. A method of preparing a 3,3,9,9,-tetraalkyl- 2,4,8,10-tetraoxa [5,5] undecane wherein each alkyl group contains from one to about 14 carbon atoms therein and the total number of carbon atoms in the four alkyl groups is in the range of 18 to 30, which consists essentially of reacting from 2 to 4 moles of a $C_{10}$–$C_{16}$ aliphatic ketone per mole of pentaerythritol in the presence of para-toluene sulfonic acid catalyst in a reaction solvent selected from the group consisting of xylene and monochlorobenzene at a temperature in the range of from about 120°C. to about 150°C., for a reaction period of from avout 7 to 70 hours while removing water of formation by azeotropic distillation and thereafter recovering said formed tetraalkyl-tetraoxaundecane from the resulting reaction products.

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**3,932,461**

## N-[4-(3,4-METHYLENEDIOXYPHENYL)-BUT-2-YL]-β-(3,4-DIHYDROXYPHENYL)ETHYLAMINE, AND SALTS THEREOF

**John T. Suh, Mequon, Wis., assignor to Richardson-Merrell Inc., Wilton, Conn.**

**Filed June 28, 1974, Ser. No. 484,096**
**Int. Cl.² C07D** *317/58*
**U.S. Cl. 260—340.5** **3 Claims**

1. The compound N-(3,4-methylenedioxyphenisobutyl)-3,4-dihydroxyphenethylamine, and pharmaceutically acceptable salts thereof.

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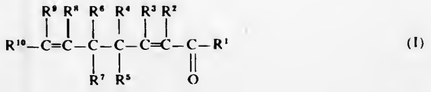
**3,932,462**

## MANUFACTURE OF UNSATURATED KETONES

**Norbert Goetz, Bobenheim-Roxheim, and Roman Fischer, Mutterstadt, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany**

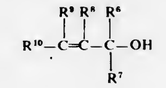
**Filed Nov. 13, 1973, Ser. No. 415,414**
**Claims priority, application Germany, Nov. 17, 1972, 2256347**
**Int. Cl.² C07D** *319/06*
**U.S. Cl. 260—340.7** **11 Claims**

1. A process for the manufacture of α,β-unsaturated ketones of the formula I:



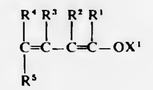
(I)

in which $R^1$ is alkyl of from 1 to 4 carbon atoms, or $R^1$, together with $R^4$ or $R^5$, forms unsubstituted or alkyl-substituted alkylene, $R^2$, $R^3$, $R^4$, $R^5$, $R^6$, $R^7$ and $R^8$ are hydrogen or alkyl of from 1 to 4 carbon atoms, $R^9$ is alkyl of 1 to 4 carbon atoms or, when $R^{10}$ is phenyl, $R^9$ is hydrogen, and $R^{10}$ is a saturated or unsaturated, branched or unbranched aliphatic, cycloaliphatic or cycloaliphatic/aliphatic hydrocarbon radical of up to 12 carbons in which C—C bonds may be interrupted by oxygen or the group —O—CO—, or unsubstituted phenyl, wherein an allyl alcohol of the formula II:



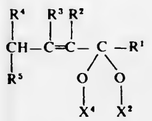
(II)

in which $R^6$ to $R^{10}$ have the meanings stated above, is reacted with a compound of the formula IIIa:

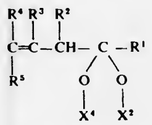


(IIIa)

in which $R^1$ to $R^5$ have the meanings stated above and $X^1$ is alkyl or acyl of from 1 to 6 carbons or cycloalkyl, or with a compound capable of forming a compound of formula IIIa under the conditions of the reactions, said compound being selected from the group consisting of a compound of the formulae

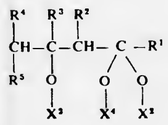


(IIIb)



(IIIc)

and



(IIId)

in which formulae IIIb, c and d $R^1$ to $R^5$ have the meanings given above and $X^2$, $X^3$ and $X^4$ may be the same or different and stand for alkyl or acyl of from 1 to 6 carbon atoms or cycloalkyl or $X^4$ and $X^2$ together form unsubstituted or alkyl-substituted alkylene at temperatures of from 120° to 350° in the presence of from 0.01 to 5% by weight of the total weight of reactants of an acid having a pK value of from 1 to 5.5 or in the presence of from 0.001 to 0.1% by weight of the total weight of reactants of an acid having a pk value of less than 1, in the liquid phase.

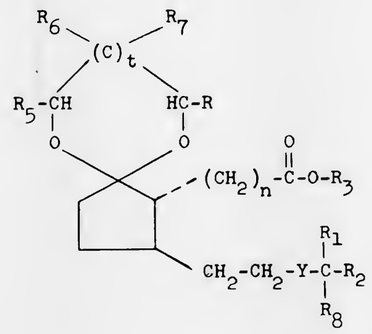
**3,932,463**

## 11-DEOXY-13-DIHYDRO-PROSTAGLANDIN-9-KETALS

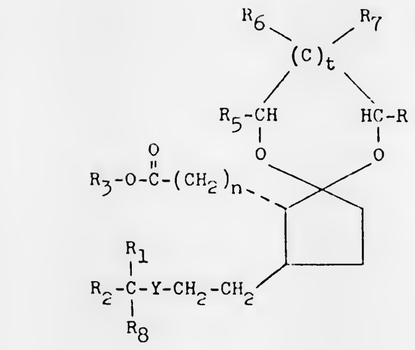
**Robert Eugene Schaub, Upper Saddle River, N.J.; Middleton Brawner Floyd, Jr., Suffern, N.Y., and Martin Joseph Weiss, Oradell, N.J., assignors to American Cyanamid Company, Stamford, Conn.**

**Filed June 3, 1974, Ser. No. 475,479**
**Int. Cl.² C07D** *317/30, 319/04*
**U.S. Cl. 260—340.7** **28 Claims**

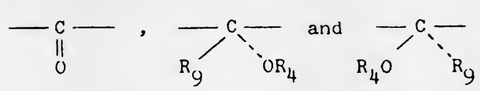
**1.** A racemate consisting of enantiomeric cyclic ketals of the formulae:



and



wherein Y is a divalent moiety selected from the group consisting of those of the formulae:



wherein $R_4$ is hydrogen or alkanoyl having from 2 to 15 carbon atoms and $R_9$ is hydrogen or alkyl having up to 4 carbon atoms with the proviso that when $R_9$ is alkyl then $R_4$ must be hydrogen; R and $R_5$ are each individually selected from the group consisting of hydrogen, alkyl having up to 4 carbon atoms and monohalo substituted alkyl having up to 4 carbon atoms; $R_6$ and $R_7$ are each individually selected from the group consisting of hydrogen and alkyl having up to 4 carbon atoms; $R_1$ and $R_8$ are each individually selected from the group consisting of hydrogen, fluoro and alkyl having up to 4 carbon atoms; $R_2$ is alkyl having from 2 to 7 carbon atoms; $R_3$ is selected from the group consisting of hydrogen and alkyl having from 1 to 12 carbon atoms; n is an integer from 4 to 8, inclusive, and t is zero or one; and the pharmacologically acceptable cationic salts thereof when $R_3$ is hydrogen.

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**3,932,464**

## SILICEOUS DIOXOLANE DERIVATIVES

**Hans-Joachim Kötzsch, Rheinfelden, and Hans-Joachim Vahlensieck, Wehr, Baden, both of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Bez. Cologne, Germany**

**Division of Ser. No. 310,495, Nov. 29, 1972, Pat. No. 3,829,567. This application May 14, 1974, Ser. No. 469,937**
**Claims priority, application Germany, Dec. 3, 1971, 2159991**
**Int. Cl.² C07F** *7/18*
**U.S. Cl. 260—340.9** **3 Claims**

**1.** A siliceous dioxolane derivative of the formula:



wherein *a* is 0 or 1 and R′ and R″ each represents lower alkyl wherein the R″ 's can be the same or different.

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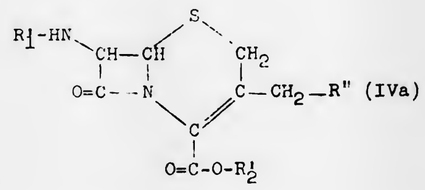
**3,932,465**

## 3-R-METHYL-7-AMINO-CEPH-EM-4-CARBOXYLIC ACID COMPOUNDS

**Heinrich Peter, Riehen, Switzerland; Herman Robert Rodriguez, New York, N.Y., and Hans Bickel, Binningen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.**

**Filed July 2, 1971, Ser. No. 159,527**
**Claims priority, application Switzerland, July 8, 1970, 10305/70**
**Int. Cl.² C07D** *501/20*
**U.S. Cl. 260—243 C** **10 Claims**

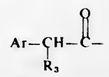
**1.** Compounds having the formula



in which R″ represents 2- or 4-hydroxy-phenyl, 2,5- or 3,4-dihydroxy-phenyl, 2- or 4-lower alkoxy-phenyl, 2,4-, 2,5- or 3,4-dimethoxy-phenyl, 2- or 4-lower alkanoyloxy-phenyl, 4-lower alkylthio-phenyl, 2-thienyl, 2-furyl, 5-carboxy-2-furyl



or 5-lower alkoxycarbonyl-2-furyl, and in which $R_1'$ represents an acyl radical of the formula



(Ic)

in which Ar represents phenyl, 3- or 4-hydroxy-phenyl, 3-chloro-4-hydroxy-phenyl, 3,5-dichloro-4-hydroxy-phenyl or thienyl, and $R_3$ represents hydrogen, amino, t-lower alkoxycarbonylamino, 2-halogenolower alkoxycarbonylamino, guanylurcido, sulphoamino, carboxyl or sulpho, and $R_2'$ represents hydrogen or tert.-lower alkyl, 2-halogenlower alkyl, phenacyl, benzhydryl, 4,4′-dimethoxy-diphenylmethyl or lower alkanoyloxymethyl, and pharmaceutically acceptable salts of such compounds having salt-forming groups.

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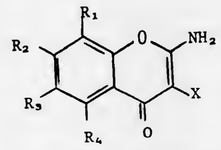
**3,932,466**

## SUBSTITUTED 2-AMINO CHROMONES AND PROCESS FOR THE PREPARATION THEREOF

**Richard E. Brown, Hanover, and David M. Lustgarten, Dover, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.**

**Filed Dec. 13, 1974, Ser. No. 532,417**
**Int. Cl.² C07D** *7/34*
**U.S. Cl. 260—345.2** **13 Claims**

**1.** A compound of the Formula I:



I

wherein $R_1$, $R_2$, $R_3$, and $R_4$ each represent hydrogen, hydroxy, lower alkyl of 1 to 6 carbon atoms, lower alkoxy of 1 to 6 carbon atoms, halogen or phenyl, with the proviso that at least three of $R_1$, $R_2$, $R_3$ and $R_4$ are hydrogen; and X represents cyano or carboxamido.

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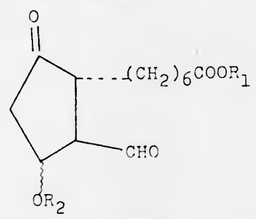
**3,932,467**

## PROCESS FOR THE PRODUCTION OF 2β-FORMYL 3α-ROTECTED HYDROXY-5-OXOCYCLOPENTANE-1α-HEPTANOIC ACIDS AND ESTERS CORRESPONDING

**Masateru Miyano, Morton Grove, Ill., assignor to G. D. Searle & Co., Chicago, Ill.**

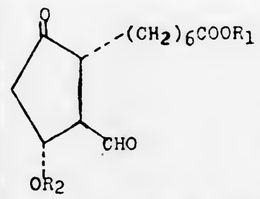
**Continuation-in-part of Ser. No. 187,853, Oct. 8, 1971, Pat. No. 3,810,936, which is a continuation-in-part of Ser. No. 799,965, Feb. 17, 1969, abandoned. This application Aug. 28, 1973, Ser. No. 392,317**
**Int. Cl.² C07F** *7/18*; **C07D** *309/06*
**U.S. Cl. 260—345.7** **5 Claims**

**1.** A compound of the formula



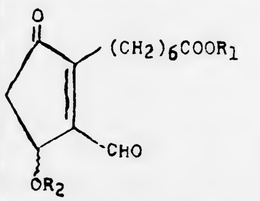
wherein $R_1$ is hydrogen or a lower alkyl, tetrahydropyran-2-yl,4-(lower alkoxy)tetrahydropyran-4-yl or tri(lower alkyl)silyl radical, $R_2$ is a tetrahydropryan-2-yl,4-(lower alkoxy)tetrahydropryan-4-yl or tri(lower alkyl)silyl radical and the wavy line represents the racemic mixture or the optically active 3(R) isomer.

**2.** A process for the production of a compound of the formula



(I)

wherein $R_1$ is hydrogen, a lower alkyl, tetrahydropyran-2-yl, 4-(lower alkoxy)tetrahydropyran-4-yl or tri(lower alkyl)silyl radical and $R_2$ is a tetrahydropyran-2-yl, 4-(lower alkoxy)tetrahydropyran-4-yl or tri(lower alkyl)silyl radical which comprises contacting a compound of the formula



(II)

wherein $R_1$ and $R_2$ are defined as above and the wavy line represents the racemic (RS) compound or the optically active R isomer, with chromous sulfate, chromous acetate or chromous perchlorate reducing agent, wherein the molar ratio of reducing agent to compound of formula II is about 2:1

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**3,932,468**

## DIHYDROFURAN PREPARATION

**Victor P. Kurkov, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.**

**Filed Feb. 8, 1974, Ser. No. 440,937**
**Int. Cl.² C07D** *307/08*
**U.S. Cl. 260—346.1 R** **10 Claims**

**1.** A process for preparing a substituted or unsubstituted dihydrofuran from a substituted or unsubstituted butadiene monoxide which comprises contacting the butadiene monoxide with a catalyst comprising a hydrogen halide selected from the group consisting of hydrogen iodide or bromide and a homogeneous transition metal compound in an inert organic solvent under liquid phase reaction conditions effective to convert the butadiene monoxide to the dihydrofuran, said reaction conditions including a temperature between 50° and 140°C, and wherein said transition metal is iron, manganese, cobalt, molybdenum, vanadium, copper or nickel, and wherein the transition metal is coordinated with suitable organic ligands to solubilize the transition metal in the organic solvent.

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**3,932,469**

## CITRACONIC ANHYDRIDE PROCESS

**Rudolph G. Berg, Groton, and Bryce E. Tate, Neantic, both of Conn., assignors to Pfizer Inc., New York, N.Y.**

**Filed June 3, 1974, Ser. No. 475,770**
**Int. Cl.² C07D** *307/60*
**U.S. Cl. 260—346.8 R** **8 Claims**

**1.** A process for preparing citraconic anhydride comprising contacting a gaseous mixture of a methyl butanol or a methyl butenol and oxygen with vanadium oxide at a temperature of from about 250° to 500°C, said methyl butanol and methyl butenol being 2-methyl-1-butanol, 2-methyl-2-butanol, 2-methyl-3-butanol, 2-methyl-4-butanol, 2-methylene-1-

butanol, 2-methyl-2-buten-1-ol, 2-methyl-3-buten-1-ol, 2-methyl-3-buten-2-ol, 3-methyl-2-buten-1-ol, 3-methyl-3-buten-1-ol, 3-methyl-3-buten-2-ol or a mixture thereof.

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**3,932,470**

## SUBSTITUTED FURFURYLESTERS OF CHRYSANTHEUMUMIC ACID

**Yoshio Katsuda, Osaka, Japan, assignor to Dainippon Jochugiku Kabushiki Kaisha, Osaka, Japan**

**Division of Ser. No. 122,061, Feb. 2, 1971, Pat. No. 3,796,730, and a continuation-in-part of Ser. Nos. 809,036, March 20, 1969, abandoned, Ser. No. 691,173, Dec. 18, 1967, abandoned, and Ser. No. 629,422, April 10, 1967, abandoned. This application Sept. 21, 1973, Ser. No. 399,418**

**Int. Cl.² C07D** *307/54*

**U.S. Cl. 260—347.4** **1 Claim**

1. 3,4-dibromo-5-cyclopentadienylfurfurylester of chrysanthemumic acid.

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**3,932,471**

## AZIDE

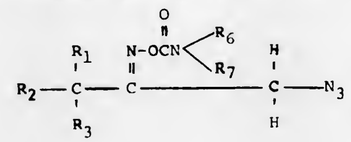
**Thomas A. Magee, Mentor, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio**

**Division of Ser. No. 229,207, Feb. 24, 1972, Pat. No. 3,875,232, which is a continuation-in-part of Ser. No. 132,584, April 8, 1971, abandoned. This application Aug. 24, 1973, Ser. No. 391,329**

**Int. Cl.² C07C** *117/00*

**U.S. Cl. 260—349** **2 Claims**

1. A composition of matter having the structural formula:



where:

a. $R_1$ is $R_2$–$R_3$ or H;

b. $R_2$–$R_3$ is lower alkyl, lower alkenyl, lower alkynl, substituted lower alkyl, alkenyl, or alkynyl, with the proviso that $R_2$ and $R_3$ may be connected to form a cycloalkyl ring of not more than 6 carbon atoms;

c. $R_6$–$R_7$ is hydrogen, lower alkyl, lower alkenyl, or lower alkynyl.

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**3,932,472**

## NOVEL 15-SUBSTITUTED PROSTANOIC ACIDS AND ESTERS

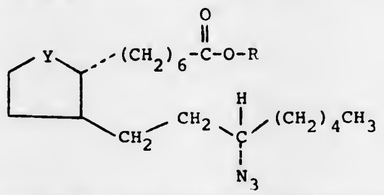
**Robert Eugene Schaub, Upper Saddle River, and Martin Joseph Weiss, Oradell, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.**

**Division of Ser. No. 274,558, July 24, 1972, Pat. No. 3,835,179. This application May 9, 1974, Ser. No. 468,795**

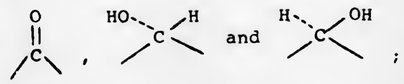
**Int. Cl.² C07C** *121/86*

**U.S. Cl. 260—349** **12 Claims**

1. An optically active compound of the formula:



or a racemic compound of that formula and the mirror image thereof wherein R is selected from the group consisting of hydrogen and an alkyl group having from one to twelve carbon atoms and Y is a divalent radical selected from the group consisting of those of the formulae:



and the pharmaceutically acceptable cationic salts thereof when R is hydrogen.

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**3,932,473**

## PROCESS FOR THE MANUFACTURE OF 1-NITRO-ANTHRAQUINONE

**Erich Klauke, Odenthal-Hahnenberg; Reinhold Schmitz, Blecher, and Hans-Samuel Bien, Burscheid, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Germany**

**Filed Apr. 20, 1973, Ser. No. 353,001**

**Claims priority, application Germany, Apr. 20, 1972, 2219216**

**Int. Cl.² C07C** *79/37*

**U.S. Cl. 260—369** **4 Claims**

1. Process for the manufacture of 1-nitro-anthraquinone by reacting anthraquinone and a nitrating agent for anthraquinone in aqueous hydrogen fluoride containing 5–30 percent water by weight at a temperature between 0°C and 150°C.

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**3,932,474**

## PREPARATION OF ANTRAQUINONE

**Gregory Gerasimos Arzoumanidis, Stamford, Conn., and Francis Clyde Rauch, Warrington, Pa., assignors to American Cyanamid Company, Stamford, Conn.**

**Filed May 28, 1974, Ser. No. 473,531**

**Int. Cl.² C07C** *49/68*

**U.S. Cl. 260—369** **8 Claims**

1. A process for preparing anthraquinone which comprises the steps of: reacting in the presence of a catalyst selected from the group consisting of a non-noble metal halide, a noble metal halide and mixtures of the same about equimolar amounts of benzene or benzophenone and carbon monoxide for from two to ten hours at a superatmospheric pressure of at least 200 pounds per square inch and at a temperature ranging from about 160°C to about 300°C, and recovering anthraquinone.

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**3,932,475**

## PROCESS FOR PRODUCING TRIMETHYL-P-BENZOQUINONE

**Tetuo Miyazaki, Nara; Sunao Munemiya, Amagasaki, and Akira Tasaka, Takatsuki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan**

**Filed June 27, 1973, Ser. No. 374,165**

**Claims priority, application Japan, June 27, 1972, 47-64715; July 12, 1972, 47-70262; July 12, 1972, 47-70263; Sept. 7, 1972, 47-90224**

**Int. Cl.² C07C** *49/64*

**U.S. Cl. 260—396 R** **10 Claims**

1. A process for producing trimethyl-p-benzoquinone, which comprises oxidizing 2,3,5-or 2,3,6-trimethyl-p-halogenophenol, wherein the halogen moiety in said trimethyl-p-halogenophenol is chlorine, bromine or iodine, by contacting with nitric acid in the presence of a solvent selected from the group consisting of water, acetic acid, hexane, heptane, chloroform, dichloromethane, methyl chloride and carbon tetrachloride.

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**3,932,476**

## PREPARATION OF FATTY ACID AMIDES

**Charles R. Bergeron, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.**

**Filed July 2, 1973, Ser. No. 375,961**

**Int. Cl.² C07C** *103/00*

**U.S. Cl. 260—404** **10 Claims**

1. A process for preparing an amide of a fatty acid having from about 8 to about 20 carbon atoms per molecule comprising reacting in a substantially anhydrous system (1) an ester of a fatty acid having from about 8 to about 20 carbon atoms per molecule and of a lower alcohol having from 1 to about 6 carbon atoms per molecule with (2) ammonia or a mono or dialkyl methyl or ethyl amine fed at a rate in excess of the rate of reaction thereof, the excess of (2) being removed from the system during the reaction to remove from the system the lower alcohol component released from the ester in the reaction.



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**3,932,477**

## CYCLOOCTATETRAENE COMPLEXES OF NIOBIUM AND TANTALUM

**Richard Royce Schrock, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.**

**Filed June 13, 1974, Ser. No. 478,966**

**Int. Cl.² C07F** *9/00*

**U.S. Cl. 260—429 CY** **18 Claims**

1. A cyclooctatetraene complex having the formula:

$Q^+M(C_8H_8)_3^-$, $RM(C_8H_8)_2$, or $(CH_3)_3Ta(C_8H_8)$, wherein M is tantalum or niobium,

R is Cl, Br, alkyl of 1 to 8 carbons or aryl of 6 to 12 carbons,

$Q^+$ is one equivalent of an alkali metal ion, an alkaline earth metal ion, $R'R''_3N^+$, $R''_4P^+$, or $R''_4As^+$, wherein R' is alkyl of 1 to 8 carbons and R'' is alkyl of 1 to 8 carbons or aryl of 6 to 12 carbons.

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**3,932,478**

## PHOSPHONIC ACID HALF-ESTERS AND THEIR DERIVATIVES

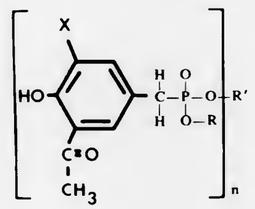
**Joseph G. E. Fenyes, and Kenneth J. Flanagan, both of Memphis, Tenn., assignors to Buckman Laboratories, Inc., Memphis, Tenn.**

**Division of Ser. No. 168,744, Aug. 3, 1971, abandoned, which is a continuation-in-part of Ser. No. 127,776, March 24, 1971, Pat. No. 3,767,735. This application Oct. 3, 1973, Ser. No. 399,023**

**Int. Cl.² C07F** *7/22*

**U.S. Cl. 260—429.7** **9 Claims**

1. A compound having the formula



wherein R is a straight or branched chain unsubstituted or substituted alkyl group containing 1 to 18 carbon atoms wherein the substituent group is a halogen, R' is a metal selected from the group consisting of Al, Ni, Sn, and Zn, n is 2 or 3, and X is bromine or hydrogen.

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**3,932,479**

## LITHIUM 3-TRIPHENYLMETHOXY-1-TRANS-ALKENYL-DIALKYL ALANATES

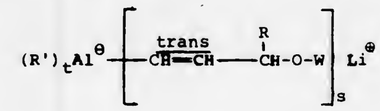
**Karel Francis Bernady; Middleton Brawner Floyd, Jr., both of Suffern; John Frank Poletto, Nanuet, all of N.Y.; Robert Eugene Schaub, Upper Saddle River, and Martin Joseph Weiss, Oradell, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.**

**Filed Apr. 27, 1973, Ser. No. 355,350**

**Int. Cl.² C07F** *5/06*

**U.S. Cl. 260—448 A** **9 Claims**

1. Compounds of the formula:



wherein R' is an alkyl group having from 1 to 10 carbon atoms which may be different when t is greater than one; R is selected from the group consisting of a straight chain alkyl group having from 2 to 10 carbon atoms, a straight chain alkyl group having from 2 to 10 carbon atoms and substituted with one or two alkyl groups having from one to three carbon atoms, a straight chain alkenylmethyl group having from 3 to 10 carbon atoms and a straight chain alkenylmethyl group having from 3 to 10 carbon atoms and substituted with one or two alkyl groups having between them 2 to 5 carbon atoms; W is selected from a group consisting of lower alkyl, triphenylmethyl, triphenylmethyl in which one or two of the phenyl rings is substituted with a lower alkoxy group, tetrahydropyranyl, α-(lower alkoxy) substituted lower alkyl and tri(lower alkyl)silyl; s is an integer having the value of one to three, inclusive, and *t* is an integer having the values of one to three, inclusive, with the proviso that the sum of *s* and *t* must be equal to four.

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**3,932,480**

## BENZYLTHIOSULFURIC ACID SALTS

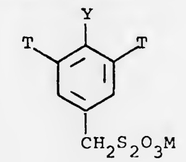
**J. Michael Grasshoff, Hudson, and Lloyd D. Taylor, Lexington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.**

**Continuation-in-part of Ser. No. 230,064, Feb. 28, 1972, abandoned, which is a division of Ser. No. 99,310, Dec. 17, 1970, Pat. No. 3,698,898. This application May 3, 1974, Ser. No. 466,630**

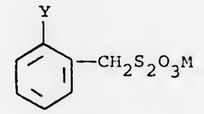
**Int. Cl.² C07C** *161/05*

**U.S. Cl. 260—453 R** **4 Claims**

1. A compound having the formula:



or



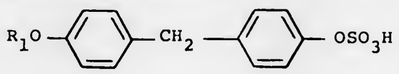
wherein Y is hydroxyl or acetoxy; both T's are the same and represent hydrogen, chloro, or lower alkyl; and M is sodium or potassium.

### 3,932,481
### SULFURIC ACID ESTERS OF BIS-(4-HYDROXYPHENYL)-METHANE

**Mario G. Buzzolini, Convent Station, and Robert E. Manning, Mountain Lakes, both of N.J., assignors to Shandoz, Inc., E. Hanover, N.J.**

**Continuation-in-part of Ser. No. 258,787, June 1, 1972, abandoned. This application Apr. 8, 1974, Ser. No. 459,013**
**Int. Cl.² C07C *141/18***
**U.S. Cl. 260—457** **2 Claims**

1. A compound of the formula



where

$R_1$ is $SO_3H$, or salts of said compound with pharmaceutically acceptable bases.

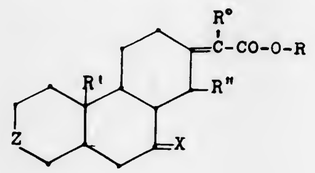
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### 3,932,482
### POLYHYDRO-2-PHENANTHRYLIDENEACETIC ACIDS AND ESTERS THEREOF

**Philip E. Shaw, Winter Haven, Fla.; Sol J. Daum, Albany, and Robert L. Clarke, Bethlehem, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.**

**Division of Ser. No. 879,921, Nov. 25, 1969, which is a continuation-in-part of Ser. No. 585,762, Oct. 11, 1966, Pat. No. 3,592,838. This application Jan. 5, 1971, Ser. No. 104,158**
**Int. Cl.² C07C *61/38, 64/74***
**U.S. Cl. 260—468.5** **10 Claims**

1. A. A compound of the formula



wherein:

R is hydrogen or lower-alkyl;

R′ is hydrogen or lower-alkyl;

R″ and R° are hydrogen or lower-alkyl;

X is $H_2$, and

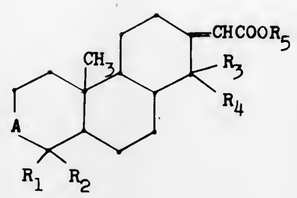
Z is O=C, (HO)CH, (acyl-O)CH, or (lower-alkyl)C(OH), acyl, each instance being selected from the group consisting of lower-alkanoyl of up to 12 carbon atoms, cycloalkyl-lower-alkanoyl wherein cycloalkyl has 5–6 ring members, benzoyl, phenyl-lower-alkanoyl, phenyl-lower-alkenoyl, phenoxy-lower-alkanoyl, carbamyl, N-lower-alkylcarbamyl, N-phenylcarbamyl, N,N-di-lower-alkylcarbamyl, alkylcarbamyl, nicotinoyl and isonicotinoyl, and wherein the phenyl group of any of the acyls can be unsubstituted or substituted by lower-alkyl, lower-alkoxy, halogen or nitro; or

B. a compound of the above formula having a double bond in the 8,8a-position or the 8a,9-position.

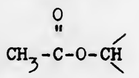
7. A mixture of the two corresponding geometric isomers chosen from compounds of formula:

wherein $R_1$ and $R_2$ are both hydrogen or both methyl, $R_3$ is hydrogen or methyl, $R_4$ is hydrogen, and $R'_5$ is alkyl of 1 to 4 carbon atoms.

10. A mixture of two corresponding geometric isomers chosen from compounds of formula:



in which A is



or



$R_1$ and $R_2$ are both hydrogen or both methyl, $R_3$ is hydrogen or methyl, $R_4$ is hydrogen, and $R_5$ is alkyl having 1 to 4 carbon atoms.

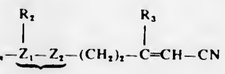
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### 3,932,483
### W-ALIPHATIC AND CYCLOALIPHATIC-HYDROCARBONOXY-2,6-ALKADIENE AND 2-ALKENE-1-NITRILES

**Hans-Peter Schelling, Oberwil, and Fritz Schaub, Basel, both of Switzerland, assignors to Sandoz, Ltd., Basel, Switzerland**

**Continuation-in-part of Ser. No. 257,671, May 30, 1972, abandoned. This application Dec. 19, 1973, Ser. No. 426,428**
**Claims priority, application Switzerland, June 2, 1971, 8036/71**
**Int. Cl.² C07C *121/30, 121/48***
**U.S. Cl. 260—465.6** **4 Claims**

1. A compound of the formula:



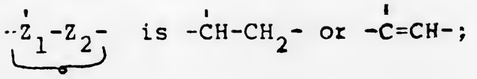
wherein

$R_1$ is alkyl of 1 to 10 carbon atoms; alkenyl of 3 to 10 carbon atoms; alkynyl of 3 to 10 carbon atoms; cycloalkyl of 3 to 6 carbon atoms; cycloalkyl of 3 to 6 carbon atoms substituted by alkyl of 1 to 4 carbon atoms; cycloalkenyl of 5 to 7 carbon atoms; cycloalkenyl of 5 to 7 carbon atoms substituted by alkyl of 1 to 4 carbon atoms; cycloalkyl(of 3 to 6 carbon atoms)alkyl (of 1 to 4 carbon atoms); cycloalkyl(of 3 to 6 carbon atoms)alkyl (of 1 to 4 carbon atoms) ring substituted by alkyl of 1 to 4 carbon atoms; cycloalkenyl(of 5 to 7 carbon atoms)alkyl (of 1 to 4 carbon atoms); or cycloalkenyl(of 5 to 7 carbon atoms-)alkyl(of 1 to 4 carbon atoms) ring substituted by alkyl of 1 to 4 carbon atoms;

$R_2$ and $R_3$, which are the same or different, are each hydrogen or alkyl of 1 to 4 carbon atoms,

Q is oxygen or sulphur;





and

*n* is an integer 1, 2 or 3.

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### 3,932,484
### PREPARATION OF MONOCARBOXYLATED CYCLODODECA DERIVATIVES

**John F. Knifton, Poughquag, N.Y., assignor to Texaco Inc., New York, N.Y.**

**Filed Apr. 22, 1974, Ser. No. 462,832**
**Int. Cl.² C07C *67/38***
**U.S. Cl. 260—468 R** **4 Claims**

1. A process for preparing monoalkyl cyclododecanecarboxylates, said monoalkyl radicals being selected from the group consisting of methyl and ethyl, from 1,5,9-cyclododecatriene, by the process of:

a. contacting each molar equivalent of 1,5,9-cyclododecatriene present with from about 0.005 to 0.02 molar equivalents of $PtCl_2[As(C_6H_5)_3]_2$-$SnCl_2$ and at least one molar equivalent of an alkanol selected from the group consisting of methanol and ethanol, in an oxygen-free inert solvent, in the presence of a pressurized carbon monoxide atmosphere of from about 2000 psig to 4000 psig, to form a pressurized carboxylation mixture,

b. heating said pressurized carboxylation mixture between about 60° to 90°C, until substantial monocarboxylation of said triene takes place, and monoalkyl cyclododecadienecarboxylate is prepared,

c. removing the carbon monoxide from the carboxylation mixture containing the monoalkyl cyclododecadienecarboxylate, and contacting each molar equivalent of said cyclododecadienecarboxylate present, in an oxygen-free inert solvent environment with about 0.005 to 0.02 molar equivalents of $PtCl_2[As(C_6H_5)_3]_2$-$SnCl_2$, under a pressurized hydrogen atmosphere ranging from about 500 psig to 2000 psig to form a pressurized hydrogenation mixture,

d. heating said pressurized hydrogenation mixture between about 60° and 90°C, until substantial hydrogenation to the monoalkyl cyclododecanecarboxylate ester takes place, and

e. isolating the monoalkyl cyclodedecanecarboxylate ester contained therein.

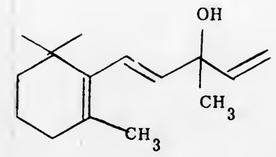
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### 3,932,485
### PREPARATION OF WITTIG SALT OF VINYL β-IONOL

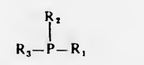
**Joseph Donald Surmatis, West Caldwell, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.**

**Filed Aug. 28, 1974, Ser. No. 501,127**
**Int. Cl.² C07C *67/00***
**U.S. Cl. 260—468 L** **6 Claims**

1. A process for preparing a phosphonium salt comprising reacting an alpha, beta-unsaturated alcohol of the formula:



with a phosphine of the formula:



wherein $R_1$ is alkyl of from 1 to 12 carbon atoms, phenyl, phenyl lower alkyl or di(lower alkyl) amino wherein lower alkyl contains from 1 to 6 carbon atoms; and $R_2$ and $R_3$ are lower alkyl, phenyl, phenyl lower alkyl or di (lower alkyl) amino wherein lower alkyl contains from 1 to 6 carbon atoms in a basic medium and in the presence of a salt of a weak organic base with a strong acid.

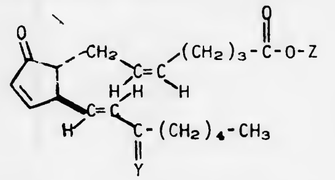
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### 3,932,486
### SUBSTITUTED TOLYL ESTERS OF $PGA_2$

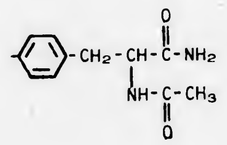
**Walter Morozowich, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.**

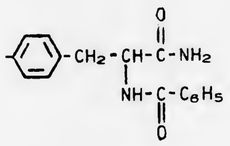
**Division of Ser. No. 431,598, Jan. 8, 1974. This application Dec. 12, 1974, Ser. No. 531,992**
**Int. Cl.² C07C *133/08, 103/82***
**U.S. Cl. 260—468 D** **11 Claims**

1. An optically active compound of the formula:

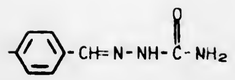


or a racemic compound of that formula and the mirror image thereof, wherein Z is

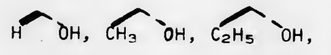


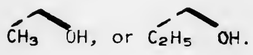


or



and wherein Y is

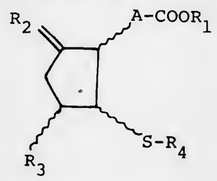




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3,932,487
13-SULFA-PROSTAGLANDINS
Josef Kramer; Hans Radunz; Dieter Orth; Manfred Baumgarth, and Jurgen Harting, all of Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany
Filed Nov. 15, 1973, Ser. No. 416,183
Claims priority, application Germany, Nov. 17, 1972, 2256537
Int. Cl.² C07C *149/26, 149/40*
U.S. Cl. 260—468 D 19 Claims

1. Compounds of the formula

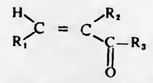


wherein $R_1$ is H or alkyl of up to 12 carbon atoms; $R_2$ is =O, (H,OH) or (H,acyloxy) wherein acyloxy is alkanoyloxy or alkanesulfonyloxy each of up to 4 carbon atoms; $R_3$ is H, OH or acyloxy as defined above; $R_4$ is alkyl, fluoroalkyl, 2-hydroxyalkyl or 2-acyloxyalkyl wherein acyloxy is as defined above, each alkyl being of 2 of 12 carbon atoms which is unsubstituted or substituted by phenyl of p-tolyl; and A is alkylene of 4 to 8 carbon atoms which is unsubstituted or substituted by F, and the physiologically acceptable salts thereof.

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3,932,488
ETHERIFICATION OF BARK EXTRACTS AND CONDENSED TANNINS
Karl David Sears, Shelton, Wash., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 282,333, Aug. 21, 1972, Pat. No. 3,856,845. This application Nov. 1, 1974, Ser. No. 520,044
Int. Cl.² C07C *69/76*
U.S. Cl. 260—473.5 12 Claims

1. Etherified polyphenolic derivatives produced by reacting at a temperature of 110° to 260°C in the presence of an alkaline catalyst a polyphenolic extract selected from the class consisting of bark polyphenolic extracts and condensed tannin wood extracts with (a) an olefin of the formula



in which $R_1$ and $R_2$ are the same or different and are selected from the group consisting of H, 1 to 3 carbon alkyl, COOH, COOM, $COR_4$ and $COOR_4$ in which M is an alkali metal and $R_4$ is a 1 to 3 carbon alkyl and $R_3$ is selected from the group consisting of H, 1 to 3 carbon alkyl, OH, OM and $OR_4$ or (b) an anhydride of the foregoing olefin; the mole/mole ratios of olefin reactant to monomeric unit in the polyphenolics ranging from about 1:1 to 10:1.

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3,932,489
PROCESS FOR T-BUTYLATING HYDROXY- OR THIOL-UBSTITUTED AMINO ACIDS
Edward L. Smithwick, Jr., Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.
Continuation of Ser. No. 196,182, Nov. 5, 1971, abandoned. This application Nov. 16, 1973, Ser. No. 416,703
Int. Cl.² C07C *125/06*
U.S. Cl. 260—482 C 8 Claims

1. A process for t-butylating a hydroxy or thiol amino acid, which comprises reacting a hydroxy or thiol amino acid, an ester thereof, or an N-protected derivative thereof, with isobutylene in the presence of a catalyst consisting essentially of boron trifluoride and anhydrous phosphoric acid.

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3,932,490
DOXYCYCLINE ACETURATE
Piedad Amezua Fernandez, Avenida del Poblado s/n - Edificio Montefresno escalera A, 1° derecha, Puerta Hierro, Madrid, Spain
Filed Dec. 4, 1972, Ser. No. 312,035
Claims priority, application Spain, Dec. 4, 1971, 397675
Int. Cl.² C07C *103/19*
U.S. Cl. 260—501.11 1 Claim

1. Doxycycline aceturate.

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3,932,491
PROCESS FOR OPTICAL RESOLUTION OF RACEMIC LYSINE SULPHANILATE
Geertrudes H. Suverkropp, Geleen, Netherlands, assignor to Stamicarbon B.V., Geleen, Netherlands
Filed Apr. 8, 1974, Ser. No. 459,237
Claims priority, application Netherlands, May 7, 1973, 7306318
Int. Cl.² C07C *143/58*
U.S. Cl. 260—501.12 3 Claims

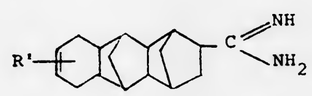
1. In a process for resolving DL-lysine sulphanilate comprising the steps of preparing a supersaturated solution of DL-lysine sulphanilate in water, seeding the supersaturated solution with crystals of the desired enantiomer of the DL-lysine sulphanilate to cause crystallization of the desired enantiomer to take place, and recovering the separated crystals,

the improvement comprising during the preparation of the supersaturated solution and prior to seeding adding a compound selected from the group consisting of DL-lysine, DL-lysine acetate, DL-lysine carbonate, amino acetic acid and glycerol, present in an amount of from about 0.01 to about 2 g. per gram of dissolved lysine sulphanilate contained in the supersaturated starting solution, which compound suppresses crystallization of racemic lysine sulphanilate during the crystallization of the desired enantiomer.



3,932,492
PROCESS FOR PREPARING NEW AMIDINE COMPOUNDS
Yoshiaki Inamoto, and Koji Aigami, both of Wakayama, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan
Filed Nov. 7, 1974, Ser. No. 521,855
Claims priority, application Japan, Nov. 14, 1973, 48-127930
Int. Cl.² C07C *123/00*
U.S. Cl. 260—501.14 2 Claims

1. An amidine compound having the formula

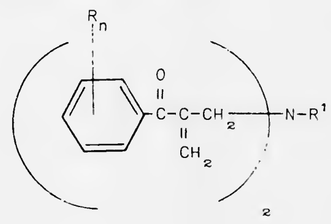


wherein R' is H or $CH_3$, or an antimicrobially effective acid addition salt thereof.

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3,932,493
3,3-(ALKYLIMINO)BIS(2-METHYLENEPROPIO-PHENONE)MICROBIOCIDES
William W. Turner, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.
Filed Jan. 9, 1975, Ser. No. 539,670
Int. Cl.² C07C *97/10*
U.S. Cl. 260—501.18 7 Claims

1. A compound of the formula



wherein:

*n* represents 0 to 3;

R represents

$C_1$–$C_3$ alkyl,

$C_1$–$C_3$ alkoxy,

fluoro, or

phenyl;

provided that when R represents phenyl, *n* represents 1; R' represents $C_1$–$C_2$ alkyl; and the nonphytotoxic acid addition salts thereof.

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3,932,494
THIOHUMIC ACID, A PROCESS FOR PREPARING SAME, AND ITS USE FOR ABSORBING HEAVY METAL IONS
Hisayoshi Yoshida; Takato Nakamura; Masanao Nakagawa; Seiji Arita, and Toshiharu Miki, all of Tosu, Japan, assignors to Director-General of the Agency of Industrial Science and Technology, Tokyo, Japan
Filed Dec. 20, 1973, Ser. No. 426,561
Claims priority, application Japan, Dec. 21, 1972, 47-128610
Int. Cl.² C07C *153/00*
U.S. Cl. 260—502.6 2 Claims

1. A thiocarboxyl derivative of humic acid prepared by (1) reacting:

a. regenerated humic acid prepared by the oxidation of coal with nitric acid,

b. humic acid prepared by the extraction of lignite with alkali,

c. regenerated humic acid prepared by the oxidation of coal tar pitch with air, or

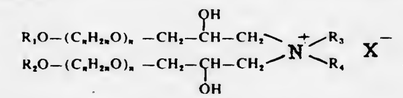
d. granular oxidized coal obtained by the oxidation of granular semi-coke with nitric acid,

with a halogenating agent of the group consisting of thionyl chloride, thionyl bromide, phosphorus trichloride, phosphorus pentachloride and phosphorus oxychloride at a temperature ranging from room temperature to the boiling point of said halogenating agent; and (2) reacting the resultant acid halide with a thiolating agent of the group consisting of hydrogen sulfide or alkali metal hydrosulfide to produce the thiocarboxyl derivative containing about 2–6 meq/g of thiocarboxyl groups.

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3,932,495
PROCESS FOR PREPARING QUATERNARY AMMONIUM COMPOUNDS
Eva Margareta Martinsson, Stenungsund, and Karl Martin Edvin Hellsten, Odsmal, both of Sweden, assignors to Modokemi Aktiebolag, Stenungsund, Sweden
Continuation-in-part of Ser. Nos. 306,251, Nov. 10, 1972, abandoned, and Ser. No. 423,592, Dec. 10, 1973. This application Aug. 27, 1974, Ser. No. 501,115
Claims priority, application Sweden, Nov. 19, 1971, 14793/71; Oct. 11, 1972, 13069/72
Int. Cl.² C07C *85/06*
U.S. Cl. 260—567.6 M 10 Claims

1. A process for the preparation of alkoxyalkylene oxy(2-hydroxy)propylene quaternary ammonium compounds having the formula:



in which

$R_1$ and $R_2$ are aliphatic hydrocarbon groups having from about eight to about twenty-two carbon atoms.

$R_3$ and $R_4$ are selected from the group consisting of methyl, ethyl and hydroxyethyl.

*n* is a number from 2 to 4, representing the number of carbon atoms in the oxyalkylene substituent,

$n_1$ and $n_2$ are numbers within the range from 0 to about 10, representing the number of oxyalkylene groups present in each substituent; and

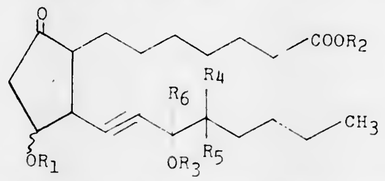
X is a salt-forming anion; which comprises reacting from zero to about ten mols of alkylene oxide with one mol of an aliphatic alcohol having from about eight to about 22 carbon atoms, in the presence of an alkaline catalyst at an elevated temperature within the range from about 25° to 150°C, reacting the resulting alkoxy glycol ether or aliphatic alcohol, if no oxyalkylene group is present, with epichlorohydrin, producing the corresponding chloroglyceryl or chlorohydroxypropylene ether, and then reacting this ether with a secondary amine having the formula $R_3R_4NH$, where $R_3$ and $R_4$ are selected from the group consisting of methyl, ethyl and hydroxyethyl in the presence of alkali and in the presence of a solvent selected from the group consisting of water and inert water-miscible organic solvents at an elevated temperature within the range from about 25° to 150°C, until there is obtained the quaternary ammonium compound of the above formula in the form of its chloride salt.

### 3,932,496
### MONO- AND DIALKYLATED PROSTYNOIC ACID DERIVATIVES

**Christopher Jung, Morton Grove, and Raphael Pappo, Skokie, both of Ill., assignors to G. D. Searle & Co., Chicago, Ill.**

**Filed Apr. 23, 1973, Ser. No. 353,216**
**Int. Cl.² C07C** *61/38, 61/74*
**U.S. Cl. 260—514 D** **7 Claims**

1. A compound of the formula



wherein $R_1$ and $R_3$ are hydrogen or a lower alkanoyl radical, $R_2$ and $R_6$ are hydrogen or a lower alkyl radical, $R_4$ and $R_5$ are lower alkyl radicals and the wavy line indicates the alternative R and S stereochemical configuration.

### 3,932,497
### PROCESS FOR PREPARING 4-AMINOMETHYL CYCLOHEXANE CARBOXYLIC ACID-1

**Hirokazu Fukumi, Ooi; Koryo Itoh; Yutaka Usubuchi, both of Tokyo, and Hirataka Itoh, Fujimi, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan**

**Filed Sept. 19, 1973, Ser. No. 398,598**
**Claims priority, application Japan, Oct. 2, 1972, 47-98020**
**Int. Cl.² C07C** *51/36*
**U.S. Cl. 260—514 J** **5 Claims**

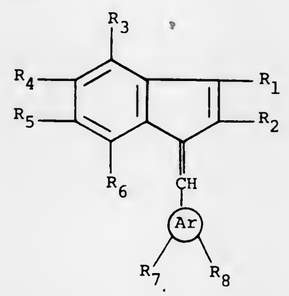
1. A process for the catalytic hydrogenation of p-aminomethyl benzoic acid to form 4-aminomethyl cyclohexane carboxylic acid-1 utilizing a ruthenium metal catalyst which is characterized by effecting the reaction in an aqueous medium at a hydrogen pressure of 50 to 200 kg/cm² in the presence of from 1 to 35 gram equivalent per mol of p-aminomethyl benzoic acid of at least one alkali metal hydroxide selected from the group consisting of sodium, potassium and calcium hydroxide, the amount of ruthenium metal in the catalyst employed being from 0.025 to 0.25% by weight based on the weight of p-aminomethyl benzoic acid.

### 3,932,498
### 3-INDENYL-γ-(KETOBUTYRIC)-ACID COMPOUNDS

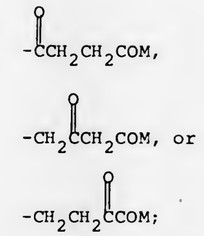
**Tsung-Ying Shen, Westfield; Howard Jones, Holmdel, and Michael W. Fordice, Cranford, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.**

**Continuation-in-part of Ser. No. 108,628, Jan. 21, 1971, abandoned. This application Feb. 23, 1973, Ser. No. 335,220**
**Int. Cl.² C07C** *149/28, 147/107, 147/14*
**U.S. Cl. 260—515 A** **7 Claims**

1. A compound of the formula



wherein
$R_1$ is



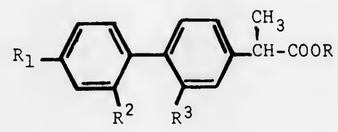
$R_2$ is hydrogen or $C_{1\text{-}15}$ alkyl;
Ar is phenyl;
$R_3$, $R_4$, $R_5$ and $R_6$ each may be hydrogen, nitro, amino, sulfamyl, mercapto, hydroxy, halogen, cyano, carboxyl, carbamido, $C_{1\text{-}5}$ alkyl, $C_{1\text{-}5}$ alkoxy, $C_{1\text{-}5}$ alkanoyl, $C_{1\text{-}5}$ alkenyloxy, $C_{1\text{-}5}$ alkanoyloxy, dimethylamino or ethynyl;
$R_7$ is $C_{1\text{-}5}$-alkylsulfinyl, $C_{1\text{-}5}$ alkylsulfonyl or methylthio;
$R_8$ is hydrogen, halogen, hydroxy, $C_{1\text{-}5}$ alkoxy or $C_{1\text{-}5}$ haloalkoxy; and
M is hydroxy, $C_{1\text{-}5}$ alkoxy, $C_{1\text{-}5}$ alkanoyloxy-$C_{1\text{-}5}$ alkoxy or OMe in which Me is a cation of a pharmaceutically acceptable salt; provided that at least one of $R_3$, $R_4$, $R_5$ and $R_6$ is not hydrogen.

### 3,932,499
### 2-(SUBSTITUTED BIPHENYLYL) PROPIONIC ACIDS

**Stewart Sanders Adams; Bernard John Armitage, and John Stuart Nicholson, all of Nittingham, England, assignors to The Boots Company Limited, Nottingham, England**

**Filed Sept. 22, 1971, Ser. No. 182,857**
**Claims priority, application United Kingdom, Oct. 12, 1970, 48405/70**
**Int. Cl.² C07C** *63/52*
**U.S. Cl. 260—515 A** **9 Claims**

1. A compound of formula I



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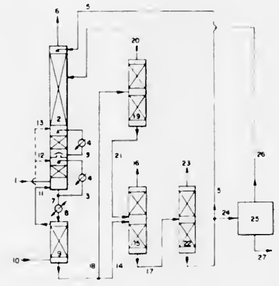
in which
$R_1$ is fluorine or bromine;
one of $R_2$ and $R_3$ is fluorine or bromine and the other is hydrogen;
and R is hydrogen or lower alkyl; (together with) or a pharmaceutically acceptable inorganic and organic salt(s) of said compound(s) when R is hydrogen.



### 3,932,500
### RECOVERING ANHYDROUS ACRYLIC ACID

**Gerd Duembgen, Dannstadt; Heinz Engelbach, Limburgerhof; Walter Frey, Mannheim; Richard Krabetz, Kirchheim; Ulrich Lebert, Ludwigshafen; Hermann Spitzl, Ludwigshafen; Fritz Thiessen, Ludwigshafen, and Carl-Heinz Willersinn, Ludwigshafen, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany**

**Filed July 17, 1972, Ser. No. 272,551**
**Claims priority, application Germany, July 21, 1971, 2136396**
**Int. Cl.² C07C** *53/00, 55/00, 57/00, 59/00*
**U.S. Cl. 260—526 N** **6 Claims**



1. A continuous process for recovering anhydrous acrylic acid from a reaction gas which has been obtained by the catalytic oxidation of a compound selected from the group consisting of propylene, acrolein and mixtures thereof which process comprises: initially scrubbing said reaction gas which contains unreacted propylene and/or acrolein and impurities including water vapor, acetic acid, and formaldehyde countercurrently in an absorption column with a high boiling inert and extremely hydrophobic solvent selected from the group consisting of a hydrocarbon having a boiling point at standard pressure above 170°C and a viscosity within the temperature range of from 30° to 80°C of less than 10 centistokes, diphenyl ether, diphenyl and mixtures of the same to absorb acrylic acid from said reaction gas and to effect direct cooling of the reaction gas with said solvent; and thereafter recovering acrylic acid from said solvent by distillation and recycling said solvent to said absorption column.

### 3,932,501
### PROCESS FOR RECOVERING BETA-ALANINE FROM SODIUM CHLORIDE SOLUTIONS

**Jon Carl Thunberg, Amherst, N.H.; Robert Wright Bragdon, Marblehead, Mass., and William Philip Moore, Hudson, N.H., assignors to W. R. Grace & Co., New York, N.Y.**

**Continuation-in-part of Ser. No. 517,469, Oct. 24, 1974, which is a continuation-in-part of Ser. No. 442,543, Feb. 14, 1974, abandoned, which is a continuation-in-part of Ser. No. 319,539, Dec. 29, 1972, Pat. No. 3,808,269. This application Mar. 25, 1975, Ser. No. 561,924**
**Int. Cl.² C07C** *99/12*
**U.S. Cl. 260—534 C** **9 Claims**

1. A process for recovering β-alanine from an aqueous starting solution consisting essentially of water, β-alanine, and sodium chloride, the aqueous starting solution having a temperature above 0°C, a pH of 4.5–8.5, and a mole ratio of β-alanine to sodium chloride of 0.7–5:1, the process comprising:
a. forming a first slurry consisting essentially of a first lot of precipitated solid sodium chloride and a first mother liquor consisting essentially of water, dissolved β-alanine, and dissolved sodium chloride by evaporating water from the aqueous starting solution;
b. separating the first mother liquor from the first lot of precipitated solid sodium chloride at a temperature effective for preventing the precipitation of solid β-alanine;
c. forming a second slurry consisting essentially of a first lot of precipitated solid β-alanine and a second mother liquor consisting essentially of water, dissolved β-alanine, and dissolved sodium chloride by adjusting the temperature of the separated first mother liquor to a temperature effective for precipitating β-alanine; and
d. separating the second mother liquor from the first lot of precipitated solid β-alanine while maintaining the temperature of the second slurry within a temperature range effective for precipitating β-alanine, and recovering the separated β-alanine.

### 3,932,502
### PROCESS FOR THE MANUFACTURE OF PHOSPHORUS-CONTAINING CONDENSATION PRODUCTS, THE PRODUCTS AND THEIR USE AS FLAMEPROOFING AGENTS

**Hermann Nachbur, Dornach, and Arthur Maeder, Therwil, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.**

**Filed Aug. 31, 1972, Ser. No. 285,172**
**Claims priority, application Switzerland, Jan. 14, 1972, 518/72**
**Int. Cl.² C07C** *127/24*
**U.S. Cl. 260—553 B** **12 Claims**

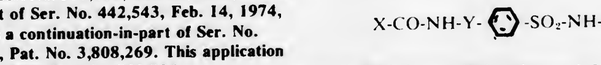
1. A process for the manufacture of a water-soluble condensation product of a hydroxymethyl-phosphonium compound and biuret, wherein 1 mol of a tetrakis-(hydroxymethyl)-phosphonium halide or tetrakis-(hydroxymethyl)-phosphonium hydroxide is mixed and heated at 40°C to 120°C with 0.02 to 0.5 mols of biuret.

### 3,932,503
### BENZENESULFONYL UREAS

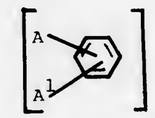
**Helmut Weber, Frankfurt am Main; Walter Aumüller; Karl Muth, both of Kelkheim, Taunus, and Rudi Weyer, Frankfurt am Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany**

**Continuation-in-part of Ser. No. 641,146, May 25, 1967, abandoned, and a continuation-in-part of Ser. No. 749,609, Aug. 2, 1968, abandoned, and a continuation-in-part of Ser. No. 10,659, Feb. 11, 1970, abandoned. This application May 25, 1970, Ser. No. 41,160**
**Int. Cl.² C07C** *127/16*
**U.S. Cl. 260—553 DA** **9 Claims**

1. Benzenesulfonyl- ureas corresponding to the formula



wherein $R^1$ is lower alkyl-cyclopentyl, X is



phenyl which is substituted in the 2-position by methoxy and in 5-position by halogen, methyl or methoxy,
Y is a saturated hydrocarbon chain of 1-3 carbon atoms, or a salt thereof of pharmaceutically acceptable bases.

**3,932,504**

## UREA MANUFACTURE

**Larry P. Chen, and Theodore O. Wentworth, both of Cincinnati, Ohio, assignors to Vulcan-Cincinnati, Inc., Cincinnati, Ohio**

**Filed May 19, 1970, Ser. No. 38,686**
**Int. Cl.² C07C** *126/00*
**U.S. Cl. 260—555 A** **4 Claims**

**1.** In a process for making urea from ammonia and carbon dioxide wherein gaseous ammonia is introduced into a stripping zone for upward flow therein into a reaction zone maintained at substantially the same pressure as the stripping zone, wherein carbon dioxide is introduced into the lower portion of the reaction zone for admixture with ammonia from the stripping zone, wherein the carbon dioxide and ammonia are flowed upwardly in the reaction zone and countercurrently to an aqueous stream containing ammonium carbamate and urea, wherein the carbon dioxide and ammonia are reacted in the reaction zone to form ammonium carbamate, urea and water, wherein the amount of ammonia introduced into the reaction zone is in excess of that stoichiometrically required to react with the carbon dioxide introduced into the reaction zone in producing urea, wherein said aqueous stream containing ammonium carbamate and urea is passed downwardly through the stripping zone countercurrently to the gaseous ammonia introduced thereinto to decompose the carbamate to carbon dioxide and ammonia for passage with the carbon dioxide fed into the reaction zone, and wherein said reaction zone is cooled by means of indirect heat exchange, the improvement which comprises passing liquid ammonia into indirect heat exchange with the reactants in said reaction zone whereby liquid ammonia is made gaseous and introducing gaseous ammonia thus formed into said stripping zone.

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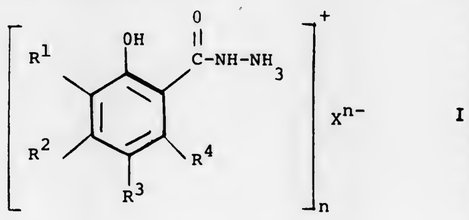
**3,932,505**

## HYDRAZIDE SALTS

**Wilfred Pickles, and Eric Keith Baylis, both of Stockport, England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.**

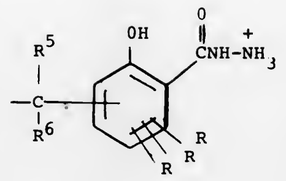
**Filed Jan. 4, 1974, Ser. No. 430,843**
**Claims priority, application United Kingdom, Jan. 6, 1973, 908/73; May 9, 1973, 22108/73**
**Int. Cl.² C07C** *103/26*
**U.S. Cl. 260—559 H** **11 Claims**

**1.** A compound having the formula I



I

in which $R^1$, $R^2$, $R^3$, and $R^4$ may be the same or different and each represent hydrogen; a straight or branched chain alkyl radical having 1 to 20 carbon atoms; an aralkyl radical having 7 to 20 carbon atoms which may be substituted by one or more alkyl groups having 1 to 4 carbon atoms; or may be



wherein $R^5$ and $R^6$ are each a hydrogen atom or a methyl group, and each R represents the others of $R^1$, $R^2$, $R^3$ and $R^4$; an alkenyl radical having 2 to 20 carbon atoms; a cycloalkyl radical having 5 to 12 carbon atoms which may be substituted by one or more alkyl groups having 1 to 4 carbon atoms; an aryl radical having 6 to 10 carbon atoms; an alkaryl radical having 7 to 12 carbon atoms; a cyclohexenyl alkyl radical in which the alkyl moiety has 2 or 3 carbon atoms and the cyclohexenyl ring may contain a methyl group as substituent; an alkenyl cyclohexyl radical in which the alkenyl moiety has 2 or 3 carbon atoms and the cyclohexyl ring may also contain a methyl group as substituent; or a group $-OR^7$ wherein $R^7$ represents an alkyl radical having 1 to 20 carbon atoms, a cycloalkyl radical having 5 to 12 carbon atoms, optionally substituted by one or more alkyl groups having 1 to 4 carbon atoms, an aryl radical having 6 to 10 carbon atoms or an alkenyl radical having 3 to 20 carbon atoms; or any two adjacent radicals $R^1$, $R^2$, $R^3$ and $R^4$ may be joined together to form an aryl ring which may be substituted by one or more alkyl groups having 1 to 20 carbon atoms; and with the proviso that the total number of carbon atoms of $R^1$, $R^2$, $R^3$ and $R^4$ are more than 8; X represents an anion; and n is the valency of X.

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**3,932,506**

## RANEY COPPER CATALYST PRODUCTION AND USE

**Wood Eugene Hunter, Lombard, and Karl H. Hoffman, Brookfield, both of Ill., assignors to Nalco Chemical Company, Chicago, Ill.**

**Filed Aug. 8, 1974, Ser. No. 495,567**
**Int. Cl.² C07C** *103/08*
**U.S. Cl. 260—561 N** **21 Claims**

**1.** In an improved process for preparing a Raney copper type catalyst, the steps comprising contacting at a temperature below about 80°C particles of an alloy comprised of an alloy comprised of aluminum and copper in a weight ratio of from about 70:30 to 30:70, said particles ranging in size from about 0.001 to 0.5 inch with an aqueous solution having dissolved therein from greater than 0 up to about 25 weight percent of at least one material selected from the group consisting of amine bases, ammonia, and alkali metal hydroxide for a time sufficient to remove from said particles at least about 25 weight percent of the aluminum present therein on a total initial particle weight basis, and further contacting such particles simultaneously and/or sequentially during said contacting with an aqueous solution having dissolved therein from greater than 0 up to about 25 weight percent of at least one polyfunctional oxygen-containing aromatic compound, for a time of at least about ½ hour, each said amine base being selected from the group consisting of alkyl amines, alkanol amines, and quaternary ammonium hydroxides, each said polyfunctional oxygen-containing aromatic compound being characterized by

A. contalning per molecule
1. at least one six membered aromatic nucleus,
2. at least two oxygen atoms, each such oxygen atom being incorporated into a different radical selected from the class consisting of hydroxyl groups and carboxyl groups,
3. at least one of said radicals being substituted on said one aromatic nucleus, and



4. not more than three repeating, condensed units per molecule,

B. having a solubility in water at a pH greater than 10 to an extent such that about a 5 weight percent solution thereof can be formed at room temperature conditions, and

C. having a molecular weight of not more than about 1000.

**19.** A process for hydrolyzing an olefinic nitrile comprising the steps of

A. Contacting at a temperature below about 80°C particles of an alloy comprised of aluminum and copper in a weight ratio of from about 70:30 to 30:70, said particles ranging in size from about 0.001 to 0.5 inch, with an aqueous solution having dissolved therein from greater than 0 up to about 25 weight percent of at least one material selected from the group consisting of amine bases, ammonia, and alkali metal hydroxide for a time sufficient to remove from said particles at least about 25 weight percent of the aluminum present therein on a total initial particle weight basis, each said amine base being selected from the group consisting of alkyl amines, alkanol amines, and quaternary ammonium hydroxides,

B. Further contacting such particles simultaneously and/or sequentially during said contacting with an aqueous solution having dissolved therein from greater than 0 up to about 25 weight percent of at least one polyfunctional oxygen-containing aromatic compound for a time of at least about ½ hour, each said polyfunctional oxygen-containing aromatic compound being characterized by

1. containing per molecule
a. at least one six membered aromatic nucleus,
b. at least two oxygen atoms, each such oxygen atom being incorporated into a different radical selected from the class consisting of hydroxyl groups and carboxyl groups,
c. at least one of said radicals, being substituted on said one aromatic nucleus, and
d. not more than three repeating, condensed units per molecule,
2. having a solubility in water at a pH greater than 10 to an extent such that about a 5 weight percent solution thereof can be formed at room temperature conditions, and
3. having a molecular weight of not more than about 1000,

C. Still further contacting the so-washed particles with a composition comprising from about 10 to 75 weight percent acrylonitrile with the remainder up to one hundred weight percent thereof being water at a temperature ranging from about 150 to 300°F for a time sufficient to convert at least some of said olefinic nitrile to the corresponding amide.

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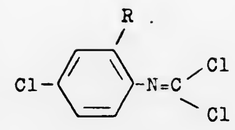
**3,932,507**

## PROCESS FOR THE CHLORINATION OF AROMATIC ISOCYANIDE DICHLORIDES

**William Wayne Brand, Hopewell, and David William Reger, Trenton, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.**

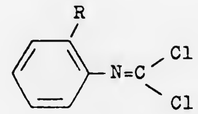
**Filed Apr. 27, 1973, Ser. No. 355,119**
**Int. Cl.² C07C** *119/00*
**U.S. Cl. 260—566 D** **10 Claims**

**1.** A method for the preparation of compounds having the formula:



wherein R represents alkyl $C_1$–$C_6$, including straight chain alkyl, branched chain alkyl and cycloalkyl comprising:

reacting an isomerically pure compound having the formula:



where R is as described above, with a chlorine source at a temperature between 20°C. and 150°C.

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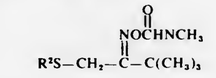
**3,932,508**

## POLYFLUOROMETHYLTHIO-SUBSTITUTED COMPOUNDS

**James R. Throckmorton, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.**

**Filed Apr. 26, 1974, Ser. No. 464,493**
**Int. Cl.² C07C** *131/00*
**U.S. Cl. 260—566 AC** **3 Claims**

**1.** A compound of the formula



wherein $R^2$ is $CF_3$— or $CF_2H$—.

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**3,932,509**

## CARBAMOYLOXIMES DERIVATIVES

**Karl Gatzi, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.**

**Division of Ser. No. 124,527, March 15, 1971, Pat. No. 3,843,724. This application June 26, 1974, Ser. No. 483,203**
**Claims priority, application Switzerland, Mar. 23, 1970, 4319/70**
**Int. Cl.² C07C** *131/02*
**U.S. Cl. 260—566 AC** **6 Claims**

**1.** O-(1,4-Menthyl(3)-carbamoyl)-cyclopentanone oxime.

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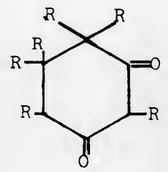
**3,932,510**

## PROCESS FOR THE PREPARATION OF CYCLOHEXANEDIONES-(1,3)

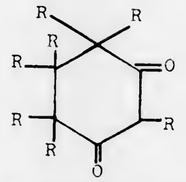
**Werner H. Müller, Kelkheim, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany**

**Filed Dec. 13, 1973, Ser. No. 424,308**
**Claims priority, application Germany, Dec. 16, 1972, 2261751**
**Int. Cl.² C07C** *45/00*
**U.S. Cl. 260—586 R** **4 Claims**

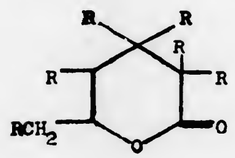
**1.** In a method for the preparation of 1,3-cyclohexanediones of the formulas



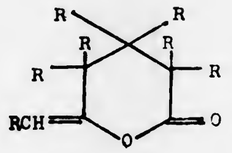
or



wherein the R's are the same or different and each represents hydrogen, alkyl, or aryl, by the isomerization, with a strong base, in the presence of a solvent, of, respectively, a δ-enol lactone having a cyclic or semi-cyclic double bond and having the formula



or



the improvement wherein said solvent comprises at least 50 percent of a member selected from the group consisting of dimethyl formamide, dimethyl acetamide, N-methyl-pyrrolidone, hexamethyl-phosphoric acid triamide, dimethyl sulfoxide, and sulfolane, the balance of said solvent being methanol, diethyl ether, acetonitrile, or benzene.

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**3,932,511**

**PREPARATION OF CYCLOHEXANE-1,3-DIONE AND OF ALKYL-SUBSTITUTED DERIVATIVES THEREOF**

**Sijbrandus E. Schaafsma, Beek; Johannes E. L. Claassens, Heerlen, and Egidius J. M. Verheijen, Sittard, all of Netherlands, assignors to Stamicarbon B.V., Geleen, Netherlands**

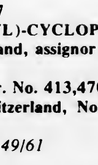
**Filed Mar. 11, 1974, Ser. No. 450,220**

**Claims priority, application Netherlands, Mar. 14, 1973, 7303536**

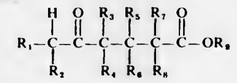
**Int. Cl.² C07C** *45/00*

**U.S. Cl. 260—586 C** **10 Claims**

1. A process for the preparation of a cyclohexane-1,3-dione of the formula



wherein $R_1$–$R_8$, which are the same or different, are each hydrogen or an alkyl group containing up to 6 carbon atoms and the total number of carbon atoms of $R_1$–$R_8$ is not more than 12 carbons which comprises contacting a delta-keto ester of the formula



wherein, $R_1$–$R_8$ are as defined above and $R_9$ is an alkyl, cycloalkyl, or monocyclic or bicyclic aryl or arylalkyl group containing up to 12 carbon atoms, in the gaseous state at a temperature from about 100°C to about 500°C with a thermally stable solid material which is active carbon, magnesium oxide, calcium oxide, barium oxide, strontium oxide or graphite and which has an internal surface area of from about 100 to 1,500 $m^2$/gm.

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**3,932,512**

**ANTIVIRAL 1,2,3,4-TETRAHYDRO-1,-ALKANO NAPHTHALENAMINE DERIVATIVES**

**Kekhusroo R. Bharucha, Toronto; Djordje Ajdukovic, Montreal; Vytautas Pavilanis, Westmount, and Angus Campbell Mackay, Toronto, all of Canada, assignors to Canada Packers Limited, Toronto, Canada**

**Filed Sept. 14, 1972, Ser. No. 289,122**

**Int. Cl.² C07C** *87/29*

**U.S. Cl. 260—570.9** **6 Claims**

1. A compound selected from the group consisting of 1,2,3,4-tetrahydro-1,4-methanonaphthalen-exo-3-dimethylaminomethyl-endo-2-amine and its pharmaceutically acceptable acid addition salts.

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**3,932,513**

**CYCLOHEXANE OXIDATION**

**Joseph L. Russell, Ridgewood, N.J., assignor to Halcon International, Inc., New York, N.Y.**

**Continuation of Ser. No. 113,081, Feb. 5, 1971, abandoned, which is a continuation of Ser. No. 650,996, July 3, 1967, abandoned. This application Feb. 22, 1973, Ser. No. 334,822**

**Int. Cl.² C07C** *27/12, 29/00, 45/02*

**U.S. Cl. 260—586 AB** **4 Claims**

1. The process of oxidizing cyclohexane which comprises

contacting cyclohexane in the liquid phase at a temperature of from about 100° to 180°C with a molecular-oxygen containing gas in each of a series of separate and interconnected oxidation zones,

passing the liquid effluent from one zone to the next zone in series,

removing vapors from each oxidation zone respectively,

condensing said vapors to form a hydrocarbon phase and an aqueous phase,

separating said aqueous phase from said hydrocarbon phase,

returning the hydrocarbon phase in liquid form to the first of the series of oxidation zones,

removing a liquid effluent mainly containing unreacted cyclohexane and also containing oxidation products from the last of the series of oxidation zones,

subjecting said liquid effluent from said last zone to vaporization of contained cyclohexane prior to recovery of the oxidation product, and



returning directly to each of said oxidation zones a portion of said vaporized cyclohexane while in vaporized form.

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**3,932,514**

**CATALYST FOR THE PREPARATION OF CYCLOHEXANONE FROM PHENOL AND PROCESS THEREFOR**

**Hermann Thelen, Krefeld-Bockum; Kurt Halcour, Leverkusen; Wulf Schwerdtel, Cologne, and Wolfgang Swodenk, Odenthal-Globusch, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

**Division of Ser. No. 180,150, Sept. 13, 1971, abandoned. This application Feb. 23, 1973, Ser. No. 335,216**

**Claims priority, application Germany, Sept. 17, 1970, 2045882**

**Int. Cl.² C07C** *45/00*

**U.S. Cl. 260—586 P** **9 Claims**

1. In a process for the preparation of cyclohexanone by the selective hydrogenation of phenol in the vapor phase, the improvement which comprises carrying out the hydrogenation in the presence of a palladium catalyst on an aluminum spinel carrier obtained by annealing alumina with compounds of monovalent or divalent spinel forming metals followed by impregnation of the thus formed spinel carrier with a palladium salt which is subsequently reduced to the metal, said catalyst containing 0.1 to 10% by weight palladium.

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**3,932,515**

**NOVEL OXYGENATED DERIVATIVES OF THUJOPSENE**

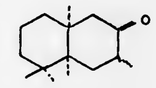
**Gary W. Shaffer; Garry C. Kitchens, both of Wayne, and Kent Kaiser, Pequannock, all of N.J., assignors to Givaudan Corporation, Clifton, N.J.**

**Division of Ser. No. 49,950, June 25, 1970. This application Oct. 19, 1973, Ser. No. 408,126**

**Int. Cl.² C07C** *49/36*

**U.S. Cl. 260—586 F** **1 Claim**

1. A compound of the formula



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**3,932,516**

**NOVEL OXYGENATED DERIVATIVES OF THUJOPSENE**

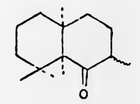
**Gary W. Shaffer; Garry C. Kitchens, both of Wayne, and Kent Kaiser, Pequannock, all of N.J., assignors to Givaudan Corporation, Clifton, N.J.**

**Division of Ser. No. 49,950, June 25, 1970. This application Oct. 19, 1973, Ser. No. 408,127**

**Int. Cl.² C07C** *49/36*

**U.S. Cl. 260—586 F** **1 Claim**

1. A compound of the formula





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**3,932,517**

**ISOPROPYL-(3-OXOPENTENYL)-CYCLOPENTENES**

**Peter Naegeli, Wettingen, Switzerland, assignor to Givaudan Corporation, Clifton, N.J.**

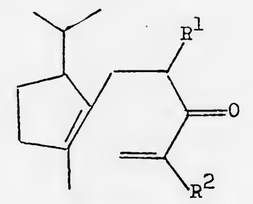
**Filed Nov. 7, 1973, Ser. No. 413,470**

**Claims priority, application Switzerland, Nov. 15, 1972, 16605/72**

**Int. Cl.² C07C** *49/61*

**U.S. Cl. 260—586 R** **5 Claims**

1. Cyclopentene derivatives of the general formula



wherein $R^1$ and $R^2$ each independently represent a hydrogen atom or a lower alkyl group.

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**3,932,518**

**METHYLATION OF CYCLOHEXANONE WITH SIMULTANEOUS DEHYDROGENATION**

**Hans-Jürgen Arpe, Fischbach, Taunus, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany**

**Filed Nov. 21, 1973, Ser. No. 417,757**

**Claims priority, application Germany, Nov. 24, 1972, 2257675; May 24, 1973, 2326406**

**Int. Cl.² C07C** *45/00*

**U.S. Cl. 260—586 R** **2 Claims**

1. A process for methylating cyclohexanone in α-position to the carbonyl group with simultaneous dehydrogenation in the gaseous phase in the presence of a catalyst consisting essentially of metallic copper supported on a carrier which comprises reacting cyclohexanone with methanol at a temperature from above 250° to 500°C with a residence time of less than 60 seconds and wherein the copper content of the catalyst is from 0.5 to 25 % by weight and the catalyst contains, as a promoter, oxides, hydroxides or alcoholates of potassium, didymium or mixtures of same in an amount from 0.01 to 10 % by weight, based on the copper catalyst.

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**3,932,519**

**7,7A-DIHYDRO-4-[2-(3-ALKOXYPHENYL)-2-HYDROXYETHYL]-7A-ALKYL-1, 5(6H)-INDANDIONES,3,4,8,8A-TETRAHYDRO-5-[2-(3-ALKOXYPHENYL)-2-HYDROXYETHYL]-8A-ALKYL-1,6(7H)-NAPHTHALENEDIONES AND PROCESSES FOR THE PREPARATION THEREOF UTILIZING ASYMMETRIC INDUCTION**

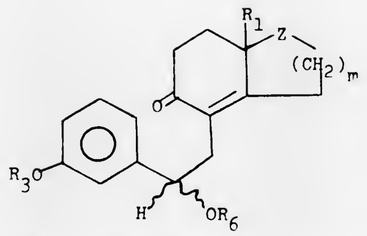
**Noal Cohen, Montclair, and Gabriel Saucy, Essex Fells, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.**

**Division of Ser. No. 100,372, Dec. 21, 1970, abandoned. This application Oct. 16, 1973, Ser. No. 406,980**

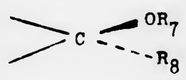
**Int. Cl.² C07C** *49/84*

**U.S. Cl. 260—590** **11 Claims**

1. The compound of the formula



where $R_1$ is a primary alkyl group of from 1 to 5 carbon atoms;
$R_3$ is a cycloalkyl group, or a primary alkyl group of from 1 to 8 carbon atoms;
$R_6$ is hydrogen;
Z is carbonyl or a group of the formula



where
$R_7$ is hydrogen, lower alkyl or aryl lower alkyl, and
$R_8$ is hydrogen or lower aliphatic hydrocarbyl; and *m* is 1 or 2.

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**3,932,520**

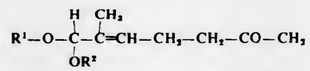
## 2-METHYL-2-HEPTEN-6-ON-1-AL ACETALS

**Werner Hoffmann, Ludwigshafen, Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen am Rhein, Germany**

**Division of Ser. No. 228,266, Feb. 22, 1972, Pat. No. 3,840,559. This application June 3, 1974, Ser. No. 476,065**
**Claims priority, application Germany, Feb. 24, 1971, 2108649**
**Int. Cl.² C07C *49/20***
**U.S. Cl. 260—594** **2 Claims**

1. A compound of the formula (I):

(I)



where $R^1$ and $R^2$ each is an alkyl group of one to eight carbon atoms.

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**3,932,521**

## PROCESS FOR MANUFACTURE OF KETONES FROM OLEFINS

**Stewart E. Gloyer, Arlington Heights, Ill., and Lawrence A. Fury, Memphis, Tenn., assignors to Kraftco Corporation, Glenview, Ill.**

**Continuation-in-part of Ser. No. 113,627, Feb. 8, 1971, abandoned. This application Mar. 8, 1974, Ser. No. 449,328**
**Int. Cl.² C07C *45/04***
**U.S. Cl. 260—597 B** **5 Claims**

1. In a process for preparing a reaction product including ketone compounds from a reaction mixture comprising water, an unsaturated hydrocarbon having from five to 20 carbon atoms per molecule wherein the unsaturation in said hydrocarbon resides solely in from one to four olefin double bounds and wherein there is at least one hydrogen atom on each carbon atom of at least one of said olefin double bonds, a catalyst comprising a water soluble salt of a metal of the platinum group, and an oxidizing agent having oxidizing potential higher than that of the platinum group metal salt, the improvement comprising including in said reaction mixture a polar solvent and a high boiling solvent, said polar solvent being selected from the group consisting of methanol, ethanol, propanol, n. butanol, sec. butanol, dimethylformamide and mixtures thereof, said high boiling solvent being selected from diethylene glycol, 1,5-pentanediol, 1-decanol, 1-nonanol, 1-dodecanol tetrahydrofurfuryl alcohol, hexylene glycol, glycerol, peracresol, 1,4-butanediol, dipropylene glycol, benzonitrile, hexanoic acid, octanoic acid, decanoic acid, polypropylene glycol, and mixtures thereof, said polar solvent being present in said reaction mixture at a level of from about 20 percent to about 60 percent by weight of said high boiling solvent, said unsaturated hydrocarbon being present in said reaction mixture at a level of from about 0.5 to about 1200 percent by weight of said high boiling solvent, effecting a substantial conversion of said unsaturated hydrocarbon to a ketone compound in the presence of an oxygen containing gas and separating a reaction product including said ketone compound from said platinum group metal salt and said high boiling solvent by distillation.

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**3,932,522**

## MANUFACTURE OF FORMALDEHYDE

**Karl Seither; Guenther Matthias, both of Ludwigshafen; Hans Diem, Mannheim; Oskar Hussy, and Hans Haas, both of Ludwigshafen, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany**

**Filed Mar. 22, 1972, Ser. No. 236,971**
**Claims priority, application Germany, Mar. 25, 1971, 2114370**
**Int. Cl.² C07C *47/04***
**U.S. Cl. 260—603 HF** **9 Claims**

1. In a process for the manufacture of formaldehyde by oxidative dehydrogenation of methanol in the presence of a silver catalyst at elevated temperature, the improvement comprising carrying out the reaction using crude methanol which is caused to impinge in vapor form against baffle plates before entering the catalyst zone, the impurities which separate at said baffle plates in solid or liquid form being collected.

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**3,932,523**

## PROCESS FOR PREVENTING THE FORMATION OF AN EMULSION WHEN WORKING UP REACTION MIXTURES CONTAINING BUTYRALDEHYDES AND COBALT

**Max Strohmeyer, Limburgerhof; Helmut Walz, Ludwigshafen; Max Appl, Dannstadt-Schaurnheim; Hans Moell, Heidelberg; Horst Kerber, Ludwigshafen, and Heinz Hohenschutz, Mannheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany**

**Filed Jan. 20, 1975, Ser. No. 542,709**
**Claims priority, application Germany, Feb. 1, 1974, 2404855**
**Int. Cl.² C07C *45/08***
**U.S. Cl. 260—604 HF** **7 Claims**

1. In a process for preventing the formation of an emulsion when working up an oxo reaction mixture containing a butyraldehyde and cobalt by treatment with a gas containing molecular oxygen in an aqueous acid medium at an elevated temperature of from 60° to 160°C, followed by separation of the aqueous phase containing cobalt, the improvement comprising using at least twice the amount of molecular oxygen stoichiometrically required for the oxidation of the cobalt per gram atom of cobalt present in the oxo reaction mixture.



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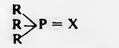
**3,932,524**

## PROCESS FOR THE PREPARATION OF PHOSPHINE OXIDES AND SULPHIDES

**Etienne Rouget De Gourcez, Paris, and Jean-Claude Mayeux, Bouchet, both of France, assignors to Societe Nationale des Poudres et Explosifs, France**

**Filed Nov. 1, 1972, Ser. No. 302,638**
**Claims priority, application France, Nov. 10, 1971, 71.40229**
**Int. Cl.² C07F *9/53***
**U.S. Cl. 260—606.5 P** **8 Claims**

1. A process for the preparation of phosphine oxides or sulphides of the formula:



in which R is a linear or branched aliphatic radical containing 5 – 12 carbon atoms, aralkyl radical selected from the group consisting of lower alkyl of 2 – 3 carbon atoms substituted by a phenyl group or R is cyclohexyl and X is an oxygen or sulphur atom which comprises reacting a halo-compound of the formula R—Hal, in which Hal is chlorine, bromine or iodine, with magnesium to form a Grignard derivative of the formula RMgHal, said reaction being carried out initially in a very small amount of diethyl ether and then in a solvent mixture containing a preponderant amount of an aliphatic or aromatic hydrocarbon, which is liquid at room temperature or triethylamine, adding phosphorus oxychloride or phosphorus sulphochloride to the reaction mixture containing the Grignard derivative, and isolating the phosphine oxide or phosphine sulphide formed by removing the solvent by steam stripping or steam distillation.

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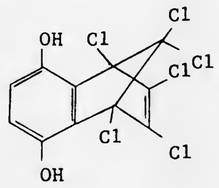
**3,932,525**

## MOLECULAR COMPLEXES OF DMSQ

**Julian R. Little, Hendersonville, N.C.; Walter Nudenberg, West Caldwell, N.J., and Yong S. Rim, Waterbury, Conn., assignors to Uniroyal Inc., New York, N.Y.**

**Division of Ser. No. 347,455, April 3, 1973, Pat. No. 3,832,422, which is a continuation-in-part of Ser. No. 80,747, Oct. 14, 1970, abandoned. This application Feb. 26, 1974, Ser. No. 445,885**
**Int. Cl.² C07C *147/10***
**U.S. Cl. 260—607 D** **1 Claim**

1. A molecular complex of the formula



wherein DMSO represents dimethylsulfoxide.

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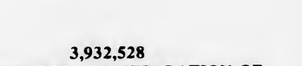
**3,932,526**

## FLUOROALIPHATICSULFONYL SUBSTITUTED ETHYLENES

**Robert J. Koshar, Mahtomedi, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.**

**Filed Oct. 25, 1972, Ser. No. 300,754**
**Int. Cl.² C07C *147/04***
**U.S. Cl. 260—607 A** **6 Claims**

1. A fluoroalkylsulfonyl ethylene compound having the formula



wherein Q is a monovalent organic radical selected from the group consisting of $Z(CR{=}CR')_n{-}$, aryl, and arylmethyl, wherein R is hydrogen, an alkyl group, or a phenyl group, R′ is the same as R with at least one being hydrogen, and *N* is an integer from 1 to 7, Z is hydrogen, alkyl, alkenyl, aryl, arylalkyl, or alkylaryl, and $R_f$ and $R'_f$ are monovalent saturated perfluoroalkyl radicals each having from 1–18 carbon atoms.

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**3,932,527**

## PREPARATION OF P-P-DISUBSTITUTED DIARYL TRICHLOROETHANES

**Robert L. Metcalf, and Asha Hirwe, both of Urbana, Ill., assignors to University of Illinois Foundation, Urbana, Ill.**

**Filed Nov. 19, 1973, Ser. No. 417,420**
**Int. Cl.² C07C *149/32***
**U.S. Cl. 260—609 F** **5 Claims**

1. A process for preparing mixtures of asymmetrical p-p′-disubstituted diphenyl trichloroethanes which comprises reacting chloral and a substituted benzene, wherein the substituents are selected from the group consisting of $-CH_3$, $-CH_3O$, $-SCH_3$, $-C_2H_5O$, $-C_3H_7O$, $-C_2H_5$ and $-CL$, together substantially all at once in the presence of an acidic condensing agent selected from the group consisting of (1) a mixture of sulfuric acid-glacial acetic acid and (2) anhydrous aluminum trichloride and at a low temperature in the range of about 0°C to about −30°C, the amount of chloral and substituted benzene being sufficient to form the said trichloroethanes.

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**3,932,528**

## PROCESS FOR THE SEPARATION OF DIHYDROPEROXIDES

**Hideaki Suda, Takaishi; Iwao Dohgane, Nishinomiya; Takashi Chinuki, Toyonaka; Kenji Tanimoto; Hirokazu Hosaka, both of Minoo; Yukimichi Nakao, Kobe; Yuji Ueda, Izumiotsu; Seiya Imada, Sakai; Hideki Yanagihara, Toyonaka, and Kunihiko Tanaka, Ibaragi, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan**

**Filed Aug. 27, 1973, Ser. No. 391,873**
**Claims priority, application Japan, Sept. 8, 1972, 47-90568**
**Int. Cl.² C07C *179/02***
**U.S. Cl. 260—610 A** **1 Claim**

1. A process for stabilizing dihydroperoxides of dialkyl aromatic hydrocarbons of the formula



wherein $R_1$ and $R_2$ represent alkyl groups of three to four carbon atoms, in the process for separating said dihydroperoxides from an aqueous alkaline solution of hydroperoxides containing the dihydroperoxides by extraction with an organic solvent, which comprises adding to said aqueous alkaline solution prior to extraction a compound selected from the group consisting of ammonia, aniline, toluidine, diphenylamine, N-methylaniline, N,N-dimethylaniline, benzylamine, α-phenylethylamine, triethylamine, pyridine and urea, the amount of said compound being 0.01 to 1% by weight based on the weight of said aqueous alkaline solution.

### 3,932,529
### HALOCYCLOPROPYL HALOMETHYL ETHERS

**Charles A. Billings, Concord; Gerald J. O'Neill, Arlington; Charles W. Simons, Bedford, and Robert S. Holdsworth, Arlington, all of Mass., assignors to W. R. Grace & Co., Cambridge, Mass.**

**Filed Dec. 26, 1974, Ser. No. 536,411**
**Int. Cl.² C07C *43/02***
**U.S. Cl. 260—611 R** **1 Claim**

1. The cyclopropyl ethers selected from the group consisting of: 1-chloro-2-dichloromethoxy-1,2,3,3-tetrafluorocyclopropane, 1-chloro-2-difluoromethoxy-1,2,3,3-tetrafluorocyclopropane, 1-chloro-2-chlorofluoromethoxy-1,2,3, 3-tetrafluorocyclopropane, 1-bromo-2-dichloromethoxy-1,2,3,3-tetrafluorocyclopropane, 1-bromo-2-difluoromethoxy-1,2,3,3-tetrafluorocyclopropane, and 1-bromo-2-chlorofluoromethoxy-1,2,3,3-tetrafluorocyclopropane.

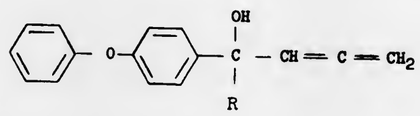
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### 3,932,530
### PHENOXYPHENYL-BUTADIENOLS

**Paul L. Anderson, Dover, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.**

**Filed Dec. 28, 1973, Ser. No. 429,402**
**Int. Cl.² C07C *43/20***
**U.S. Cl. 260—613 R** **3 Claims**

1. A compound of the formula:



wherein R is a hydrogen atom, methyl or ethyl.

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### 3,932,531
### METHOD OF MANUFACTURING ALKYLENE OXIDE ADDUCTS OF AN ALIPHATIC ALCOHOL

**Naoji Kurata, Nishinomiya; Kazuo Koshida, Ashiya; Toshihiro Fujii, Moriguchi; Koichi Matsushiro, Achiya, and Yukio Okuda, Toyonaka, all of Japan, assignors to Nippon Shokubai Kaguku Kogyo Co., Ltd., Osaka, Japan**

**Filed July 14, 1972, Ser. No. 271,685**
**Int. Cl.² C07C *41/02***
**U.S. Cl. 260—615 B** **7 Claims**

1. In a method of manufacturing alkylene oxide adducts of an aliphatic alcohol comprising;

a. subjecting a saturated aliphatic hydrocarbon having 8 to 20 carbon atoms to oxidation by contacting said hydrocarbon with a molecular oxygen containing gas in the liquid phase in the presence of a boron compound which is capable of forming a boric acid upon contact with water to form a reaction mixture containing a borate ester,

b. maintaining said reaction mixture at a temperature between 100° and 200°C to esterify free alcohol for a period of time between 10 and 100 minutes,

c. distilling the esterified reaction mixture to obtain a crude borate ester residue and a distillate consisting essentially of unreacted hydrocarbon and volatile by-product,

e. contacting said residue with water at a temperature between 20° and 200°C to form an organic layer and an aqueous layer, wherein the weight ratio of water to said residue is between about 10: 1 to 1: 10,

f. separating said layers,

g. purifying said organic layer to obtain an alcohol,

h. admixing an alkylene oxide having 2 to 4 carbon atoms with said alcohol in the presence of an acid catalyst to form an addition reaction mixture, and

j. distilling said mixture to obtain a residue essentially consisting of an alkylene oxide adduct of the alcohol and an alcoholic distillate,

the improvement comprising

k. recycling 1 to 50 % by weight of said alcoholic distillate to any of the steps (b) or (c), and

l. recycling the remainder of said alcolic distillate to combine the remainder with the alcohol from step (g) introduced to alkoxylation step (h).

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### 3,932,532
### ETHERS OF POLYGLYCEROL

**Robert H. Hunter, Mendenhall, Pa., and John David Zech, deceased, late of Wilmington, Del., by Mary Barth Zech, executrix, assignors to ICI United States, Inc., Wilmington, Del.**

**Filed June 1, 1973, Ser. No. 365,861**
**Int. Cl.² C07C *43/04*, *41/02***
**U.S. Cl. 260—615 R** **14 Claims**

1. A method of preparing an alkyl ether of polyglycerol, said method comprising reacting (1) a purified polyglycerol containing from 8 to 12 glycerol units which polyglycerol has been purified by a process comprising

a. polymerizing glycerol in the presence of an alkaline catalyst to obtain a crude polyglycerol;

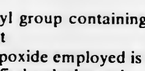
b. preparing an aqueous slurry, at a pH of from 10 to 12, of said crude polyglycerol and an inert, finely divided solid filtering aid;

c. separating a solid phase and a liquid phase of said slurry;

d. passing said liquid phase through an anionic exchange resin; and

e. subsequently passing said liquid phase through a cationic exchange resin

and (2) an alpha olefin epoxide of the general formula



wherein R is an alkyl group containing from 8 to 20 carbon atoms, provided that

i. the amount of epoxide employed is equal to at least 1 mol per mol of purified polyglycerol,

ii. the reaction is carried out under anhydrous conditions and at a temperature of 130° – 170°C, and

iii. the reaction is carried out in the presence of an alkali metal alkoxide catalyst in an amount equal to from 0.1% to 2.0% by weight based on the weight of polyglycerol employed.

8. A method, as claimed in claim 1, wherein the amount of alkali metal alkoxide is equal to from about 0.5% to about 1.0% by weight based on the weight of polyglycerol.

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### 3,932,533
### PROCESS FOR THE RECOVERY OF PURE ALPHA-BISABOLOL

**Otto Isaac, Bruchkobel, and Heribert Offermanns, Grosauheim, both of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Germany**

**Filed Apr. 8, 1974, Ser. No. 459,205**
**Claims priority, application Germany, Apr. 7, 1973, 2317583**
**Int. Cl.² C07C *29/30***
**U.S. Cl. 260—617 R** **13 Claims**

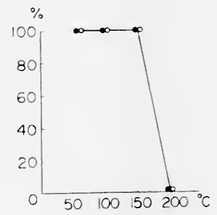
1. A process for the purification of α-bisabolol originating from plants comprising the step of subjecting the impure α-bisabolol still containing odoriferous impurities to alkali hydroxide, alkali alkanoate of 1 to 8 carbon atoms, alkali cyclopentanolate, alkali cyclohexanolate, alkali benzyl alcoholate, alkali carbonate, alkali bicarbonate, alkaline earth hydroxide, alkaline earth oxide or aluminum hydroxide at a temperature of 20° to 60°C. under alkaline conditions and recovering the purified bisabolol.



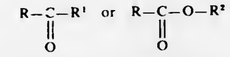
### 3,932,534
### PROCESS FOR HYDROGENATION REACTION OF UNSATURATED ORGANIC COMPOUNDS

**Yasuhisa Fukunaga, Takamatu, and Akira Okada, Takamatu, both of Japan, assignors to Kyowa Kagaku Kogyo Kabushiki Kaishi, Tokyo, Japan**

**Filed June 8, 1973, Ser. No. 368,327**
**Claims priority, application Japan, June 8, 1972, 47-56501**
**Int. Cl.² C07C *33/06*, *31/02*, *31/16***
**U.S. Cl. 260—618 H** **11 Claims**




1. A process for hydrogenation of organic compounds which comprises reducing with hydrogen an unsaturated organic compound wherein the organic compound is a carbonyl compound expressed by the following formula



wherein R is an alkyl or aralkyl group having up to 12 carbon atoms, $R^1$ stands for a hydrogen atom or the group R, and $R^2$ stands for a lower alkyl group having up to 4 carbon atoms.

in the presence of a solid catalyst for reduction, wherein the solid reduction catalyst consists essentially of a product obtained by calcining and reducing at a temperature of 350° to 700°C. in a hydrogen stream a precursor compound having a composition expressed by the following general formula

$$M_xNi_yAl_z(OH)_{2x+2y+3z-tp}(A)_p \cdot aH_2O$$

wherein A stands for an anion, M stands for at least one metal selected from the group consisting of magnesium and zinc, $t$ designates the valency of the anion A, and $x$, $y$, $z$, $p$ and $a$ are such numbers that when $z$ is 2, the following relations are established:

$x + y = 0.1$ to 20,

$x = 0$ to 19.9, and

$y = 0.1$ to 20

and the following conditions are satisfied:

$$1/6 > p/(x+y+z) > 1/20, \text{ and } a > 0$$

and having substantially the following diffraction pattern in the powder X-ray diffractiometry (Cu-Kα)

| d (A) | I/Io |
|---|---|
| 7.5 – 21.02 | 100 |
| 3.6 – 10.6 | 5 – 80 |
| 2.4 – 6.4 | 5 – 60 |

### 3,932,535
### PROCESS FOR THE PREPARATION OF 2,2-BIS-(4-HYDROXY-3-CHLOROPHENYL)-PROPANE

**Günter Zoche, Bonn-Beuel; Hermann Richtzenhain, Post Marialinden, and Roshdy Ismail, Neunkirchen, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany**

**Division of Ser. No. 261,827, June 12, 1972, Pat. No. 3,850,994, which is a continuation-in-part of Ser. No. 869,323, Oct. 24, 1969, abandoned. This application Feb. 15, 1974, Ser. No. 442,939**
**Claims priority, application Germany, Sept. 15, 1969, 1946610; Oct. 30, 1968, 1805920**
**Int. Cl.² C07C *37/22***
**U.S. Cl. 260—619 A** **15 Claims**

1. A process for the purification of 2,2-bis-(4-hydroxy-3-chlorophenyl)-propane obtained by chlorinating 2,2-bis-(4-hydroxyphenyl)-propane which comprises forming a solution of said 2,2-bis-(4-hydroxy-3-chlorophenyl)-propane by mixing the same with a solvent thereof selected from the group consisting of benzene, toluene, chlorobenzene, 1,1,2,2-tetrachloroethane, methylenechloride, methyliodide, ethylbromide, trans-1,2-dichloroethylene, 1,2-dichloroethane, 1,2-dibromoethane and 1,4-dichlorobutane, adding sufficient water thereto to form a precipitate of said 2,2-bis-(4-hydroxy-3-chlorophenyl)-propane, water and said solvent, which precipitate is insoluble in the remaining solvent, removing said precipitate from impurities which remain dissolved in the reaction mixture obtained from said chlorination and recovering 2,2-bis-(4-hydroxy-3-chlorophenyl)-propane from said precipitate.

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### 3,932,536
### PROCESS FOR PREPARING HYDROXYDIPHENYL

**Oskar Weissel, and Hans-Helmut Schwarz, both of Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

**Filed Mar. 11, 1974, Ser. No. 450,251**
**Claims priority, application Germany, Mar. 26, 1973, 2314947**
**Int. Cl.² C07C *37/06***
**U.S. Cl. 260—620** **5 Claims**

1. In the process for the production of hydroxydiphenyl which comprises dehydrogenating a starting material containing hydrogenated hydroxydiphenyls in the gaseous phase in the presence of a dehydrogenation catalyst comprising nickel, chromium, aluminum, copper and alkali metal sulfate and/or alkali metal carbonate, the improvement which comprises purifying said starting material prior to dehydrogenating so as to be free of autoxidation products less volatile than the hydrogenated hydroxydiphenyls, free of peroxide compounds, and containing only acid products to such an extent that the acid number of the starting material is less than 0.2.

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### 3,932,537
### ALKYLATION OF PHENOLS

**William H. Wetzel, Federal Way; Harold G. Nelson, and Frederic J. Shelton, both of Tacoma, all of Wash., assignors to Reichhold Chemicals, Inc., White Plains, N.Y.**

**Continuation of Ser. No. 183,887, Sept. 9, 1971, abandoned. This application Aug. 9, 1974, Ser. No. 496,312**
**Int. Cl.² C07C *39/06***
**U.S. Cl. 260—624 C** **12 Claims**

1. In a process for producing para-alkylated phenols comprising reacting at a temperature ranging from about 10° to about 185°C (A) a phenol which is at least one member selected from the group consisting ortho-tertiarybutyl phenol ertho-tertiarybutyl phenol and 2,4-ditertiarybutyl phenol and (B) an alkylating agent consisting of aliphatic olefins having from 20 to about 20 carbon atoms in the presence of (C) from about 0.05% to about 20% by weight based upon the amount of (A) used of an alkylation catalyst; the improvement consisting of using as the alkylation catalyst (C) an aryl sulfonic acid

which is at least one member selected from the class of highly acidic aryl sulfonic acids having a K value of at least $3.8 \times 10^{-3}$.

3. In a process for producing para-alkylated phenols comprising reacting at a temperature ranging from about 10° to about 185°C (A) a phenol which is at least one member selected from the group consisting of phenol ortho-tertiarybutyl phenol and 2,4-ditertiarybutyl phenol and (B) an alkylating agent consisting of aliphatic olefins having carbon to carbon linkages and from 2 to about 20 carbon atoms in the presence of (C) from about 0.5% to about 20% by weight based upon the amount of (A) used of an alkylation catalyst; the improvement consisting of using as the alkylation catalyst (C) an aryl sulfonic acid selected from the group consisting of meta-benzenedisulfonic acid, 2,4,6-trinitrobenzenesulfonic acid and trifluoromethane sulfonic acid.

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**3,932,538**

## PROCESS FOR PRODUCING PYROGALLOL AND DERIVATIVES THEREOF

**Heitaro Obara; Junichi Onodera, both of Yonezawa; Akira Matukuma, Tokyo, and Kenji Yoshida, Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries, Limited, Tokyo, Japan**

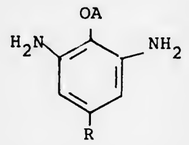
**Filed Sept. 30, 1974, Ser. No. 510,754**

**Claims priority, application Japan, Sept. 29, 1973, 48-109977**

**Int. Cl.² C07C** *39/10*

**U.S. Cl. 260—625** **10 Claims**

1. A process for producing pyrogallol, which comprises: heating an aqueous solution of 4-substituted-2,6-diamino-phenol or 4-substituted-2,6-diamino-1-alkoxy benzene having the formula:




wherein R is alkyl, cycloalkyl, or aralkyl, respectively, having from 1 to 10 carbon atoms and having a tertiary carbon atom bonded directly to the nuclear benzene carbon atom, and A is hydrogen or alkyl, having from 1 to 10 carbon atoms at a temperature of 150°–300°C in the presence of hydrochloric acid, hydrobromic acid, sulfuric acid, phosphoric acid, methane sulfonic acid or trifluoromethane sulfonic acid.

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**3,932,539**

## PROCESS FOR PREPARING UNSATURATED TERPENE ALCOHOLS

**Bernard J. Kane, Atlantic Beach, and Richard A. Von Genk, Jacksonville, both of Fla., assignors to SCM Corporation, New York, N.Y.**

**Filed Feb. 14, 1972, Ser. No. 226,325**

**Int. Cl.² C07C** *29/02, 33/02*

**U.S. Cl. 260—631.5** **10 Claims**

1. An improved process for preparing a mixture of terpene alcohols consisting essentially of myrcenol, and at least 20% cis-ocimenol and trans-ocimenol, comprising the steps of:

A. reacting an acyclic terpene allylic halide selected from the group consisting of geranyl, neryl and linalyl halides and mixtures thereof with a tertiary amine at a temperature in the range of about −20°C to about 100°C to form a corresponding quaternary ammonium halide salt, said tertiary amine being a compound represented by the formula:




wherein

a. $R_1$, $R_2$ and $R_3$ are lower alkyl groups having 1–2 carbon atoms,

b. $R_1$ and $R_2$ are lower alkyl groups having 1–2 carbon atoms and $R_3$ is a 6 or 7 carbon cycloalkyl, aralkyl or aryl hydrocarbon group:

c. or said tertiary amine is a compound selected from the group consisting of N-alkyl morpholine, N-alkyl piperidine, the alkyl group being ethyl or methyl, N-cyclohexyl morpholine, N-cyclohexyl piperidine and N-methyl dicyclohexylamine and tri-n-butylamine;

B. acidifying said salt by adding to said reaction mixture a 1.0 N to 6.0 N aqueous solution of a mineral acid of the group consisting of sulfuric acid, hydrochloric acid, and orthophosphoric acid to hydrate the 6–7 ethylenic unsaturation of said quaternary ammonium salt to form an hydroxy substituent on the seventh carbon atom;

C. neutralizing said hydroxy substituted terpene quaternary ammonium halide salt by adding to said mixture an aqueous solution of carbonate or hydroxide alkaline base to form the corresponding quaternary ammonium hydroxide; and

D. thereafter thermally decomposing in the presence of an alkaline solution having a concentration of at least 25% at a temperature above about 100°C to below about 170°C the 7-hydroxy substituted terpene quaternary ammonium hydroxide to form a mixture the major portion of which consists essentially of myrcenol, cis-ocimenol and trans-ocimenol.

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**3,932,540**

## PROCESS FOR THE PRODUCTION OF 2,3-DIBROMO-1-ROPANOL

**Henry Gould, Englishtown, N.J., assignor to Tenneco Chemicals, Inc., Saddle Brook, N.J.**

**Filed May 13, 1974, Ser. No. 469,353**

**Int. Cl.² C07C** *31/34*

**U.S. Cl. 260—633** **8 Claims**

1. The process for the production of 2,3-dibromo-1-propanol that comprises contacting allyl alcohol with an approximately equimolar amount of bromine at a temperature between −10°C. and 60°C. and in the presence of a reaction medium that comprises a saturated aliphatic hydrocarbon having 3 to 12 carbon atoms and thereafter separating 2,3-dibromo-1-propanol from said reaction medium.

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**3,932,541**

## PROCESS FOR THE PREPARATION OF BROMINATED PENTAERYTHRITOLS

**Ralph A. Davis, Midland; Ronald G. Tigner, Coleman; Joseph J. Pedjac, Mount Pleasant, and Laurence I. Peterson, Midland, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.**

**Continuation-in-part of Ser. No. 171,334, Aug. 12, 1971, abandoned. This application May 24, 1973, Ser. No. 363,687**

**Int. Cl.² C07C** *31/34*

**U.S. Cl. 260—633** **9 Claims**

1. In the process for preparing brominated pentaerythritols by contacting pentaerythritol with HBr, the improvement comprising reacting the pentaerythritol with HBr in the liquid phase at a temperature of from about 85° to about 135°C. in a solvent selected from the groups consisting of benzene, toluene, xylene, a saturated hydrocarbon solvent, a substantially nonreactive brominated or chlorinated hydrocarbon solvent, and water, containing as a catalyst an alkanoic acid of from 2 to 8 carbon atoms or its anhydride having a concentration of from about 0.8 to about 25 mole percent per mole of pentaerythritol, by feeding the HBr to the reactor containing the pentaerythritol and solvent continuously throughout the reaction to saturate the reaction mixture with HBr while retaining in the reaction mixture until completion of the reaction water formed during the reaction and any water used as solvent.



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**3,932,542**

## PROCESS FOR PREPARATION OF 2,5-DIBROMO-P-XYLENE

**Fred R. Gerns, West Lafayette, Ind., assignor to Great Lakes Chemical Corporation, West Lafayette, Ind.**

**Filed Aug. 26, 1974, Ser. No. 500,833**

**Int. Cl.² C07C** *25/08*

**U.S. Cl. 260—650 R** **12 Claims**

1. Selective bromination process for 2,5-dibromo-p-xylene which comprises contacting p-xylene with bromine at a temperature of about −20°C. to 40°C. in the presence of from about 0.25 to about 5.0 mole percent based on the bromine of a hydrated iron containing catalyst having from about two to about six molecules of water per atom of iron present in the catalyst.

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**3,932,543**

## PROCESS FOR HALOGENATION OF CONJUGATED DIENES TO DIHALOGENATED BUTENE PRODUCTS

**Richard A. Von Genk, and Carlos G. Cardenas, both of Jacksonville, Fla., assignors to SCM Corporation, New York, N.Y.**

**Filed Apr. 13, 1973, Ser. No. 350,755**

**Int. Cl.² C07C** *21/04*

**U.S. Cl. 260—654 H** **9 Claims**

1. In a process for addition halogenation of a conjugated diene with an elemental halogen of the group consisting of chlorine and bromine under halogenation conditions, the improvement for obtaining increased yield of 1,2- and 1,4-dihalogenated butene addition products comprising forming a reaction mixture comprising said conjugated diene and a dipolar aprotic solvent resistant to halogenation under such addition halogenation conditions in the proportion of about 0.1–0.6 moles dipolar aprotic solvent per mole of said diene.

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**3,932,544**

## PROCESS FOR PRODUCTION OF MESO-1,2,3,4-TETRACHLOROBUTANE

**Billy J. Lovelace, Baytown, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.**

**Filed July 1, 1974, Ser. No. 484,944**

**Int. Cl.² C07C** *17/04*

**U.S. Cl. 260—658 R** **11 Claims**

1. In a process for the production of meso-1,2,3,4-tetrachlorobutane by contacting in a reaction zone trans-1,4-dichlorobutene-2 in the liquid phase with chlorine in the substantial absence of oxygen the improvement which comprises:

effecting said contacting at a temperature in the range of from about 50° to 100° C. in the absence of a catalyst by introducing the chlorine into the reaction zone containing the trans-1,4-dichlorobutene-2 at a rate of from about 0.01 to about 2.0 mole percent per minute based on the amount of trans-1,4-dichlorobutene-2 initially present, for a period of time sufficient to effect the desired chlorination of the trans-1,4-dichlorobutene-2.

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**3,932,545**

## ALKALI METAL-CONTAINING, ORGANOMETALLIC PRODUCTS

**Constantinos G. Screttas, Athens, Greece, assignor to The National Hellenic Research Foundation, Athens, Greece**

**Filed Apr. 8, 1974, Ser. No. 458,582**

**Int. Cl.² C07F** *1/00, 3/00*

**U.S. Cl. 260—665 R** **10 Claims**

1. The hydrocarbon-soluble, alkali metal-containing, organometallic product of the reaction in an organic solvent at about −20 to −120°C. of an organo-alkali metal reactant with a di(organooxy)-alkaline earth metal reactant, wherein the organo moiety of the organo-alkali metal reactant has 1 to 20 carbon atoms and consists of one or more radicals selected from the group consisting of hydrocarbyl, ether, thioether, and pyridinyl radicals, each alkali metal atom of the organo-alkali metal reactant is directly bonded to a carbon atom of the organo moiety, the alkali metal is selected from the group consisting of sodium and lithium, the organooxy groups of the di(organooxy)-alkaline earth metal reactant are selected from the group consisting of alkoxy groups, alkoxyalkoxy groups, N,N-dialkylaminoalkoxy groups, alkylthioalkoxy groups, and P,P-diarylphosphinoalkoxy groups, each organooxy group has 1 to 18 carbon atoms, and the alkaline earth metal is selected from the group consisting of barium, calcium, strontium, and magnesium.

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**3,932,546**

## PREPARATION OF POLYENES

**George H. Buchi, and Roger M. Freidinger, both of Cambridge, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.**

**Filed Feb. 8, 1974, Ser. No. 440,853**

**Int. Cl. C07c** *13/00*

**U.S. Cl. 260—666 C** **17 Claims**

1. A method of preparing polyenic organic compounds, comprising reacting an allyl alcohol with a sulfide of the following formula

$$R'-S-R''$$

in which R′ and R″ are the same or different nitrogen-containing substituents, bound to sulfur through a nitrogen atom, the remainder of R′ and R″ being electrophilic, to produce an allylic sulfone, reacting said sulfone with an organometallic compound selected from the group of alkyllithiums and alkali metal amides and a halogen selected from the group of bromine, chlorine and iodine.

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**3,932,547**

## HYDROGENATION OF ORGANIC COMPOUNDS

**Joseph K. Mertzweiller, and Horace M. Tenney, both of Baton Rouge, La., assignors to Exxon Research and Engineering Company, Linden, N.J.**

**Division of Ser. No. 253,765, May 16, 1972, Pat. No. 3,855,324, which is a continuation-in-part of Ser. No. 880,993, Nov. 28, 1969, Pat. No. 3,711,423, which is a continuation-in-part of Ser. No. 674,098, Oct. 10, 1967, abandoned. This application Aug. 22, 1974, Ser. No. 499,793**

**Int. Cl.² C07C** *5/10*

**U.S. Cl. 260—667** **16 Claims**

1. A process for the hydrogenation of a feed containing benzene comprising the steps of:

forming a catalyst by

impregnating a support containing at least about 0.1 millimoles of hydroxyl groups per gram of support, said support comprising alumina with an aqueous solution of a transition metal salt comprising nickel acetate;

heat-treating the impregnated support at a temperature of at least about 500°F.;

activating the heat-treated impregnated support by contacting same with an organometallic compound having the formula: $QR_n$, wherein Q is selected from Group I, II or III metals of the Periodic Chart of the Elements, R is selected from the group consisting of hydride and alkyl, aryl, alkaryl, aralkyl and cycloalkyl radicals containing

from 1 to about 20 carbon atoms and wherein N ranges from 1 to 3 and satisfies the valence of Q;

treating the activated supported metal complex in the presence of hydrogen at a temperature of at least about 300°F.;

and thereafter contacting said catalyst with said feed in the presence of a hydrogen-containing gas, thereby producing a hydrogenation reaction.

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### 3,932,548
### DEHYDROGENATION METHOD AND MULTIMETALLIC CATALYTIC COMPOSITE FOR USE THEREIN

**Richard E. Rausch, Mundelein, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.**

**Continuation-in-part of Ser. No. 301,006, Oct. 26, 1972, Pat. No. 3,801,498, which is a continuation-in-part of Ser. No. 142,079, May 10, 1971, Pat. No. 3,702,294, which is a continuation-in-part of Ser. Nos. 819,114, April 24, 1969, and Ser. No. 807,910, March 17, 1969, Pat. No. 3,740,328. This application Mar. 8, 1974, Ser. No. 449,403. The portion of the term of this patent subsequent to Apr. 2, 1991, has been disclaimed.**

**Int. Cl.² C07C** *15/00, 3/28, 5/32*

**U.S. Cl. 260—668 D** **36 Claims**

1. A method for dehydrogenating a dehydrogenatable hydrocarbon comprising contacting said hydrocarbon, at dehydrogenation conditions, with a catalytic composite comprising a combination of a platinum group component, a rhenium component, a tin component and a Group IB component with a porous carrier material in amounts sufficient to result in a composite containing, on an elemental basis, about 0.01 to about 2 wt. % platinum group metal, about 0.01 to about 2 wt. % rhenium, abut 0.01 to about 5 wt. % tin, and about 0.01 to about 5 wt. % of a Group IB metal, wherein substantially all of the platinum group component, the rhenium component, and the Group IB component are present in the corresponding elemental metallic states and wherein substantially all of the tin component is present in an oxidation state above that of the elemental metal.

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### 3,932,549
### PROCESS FOR PREPARING TERT-BUTYLSTYRENE

**Naoya Kominami, Tokyo, and Nobuhiro Tamura, Oimachi, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Japan**

**Filed July 12, 1971, Ser. No. 161,886**

**Claims priority, application Japan, May 10, 1971, 46-30470**

**Int. Cl.² C07C** *3/52, 15/02*

**U.S. Cl. 260—669 R** **4 Claims**

1. A process for preparing tert. butyl styrene which comprises reacting tert. butyl benzene with 1/50 to 3 moles of ethylene and 1/500 to 300 moles of oxygen per mole of tert. butyl benzene at a temperature between 50° and 300°C. and at a pressure up to 100 kg/cm² in the presence of a catalyst prepared by treating metallic palladium or a fatty acid salt thereof with pyridine.

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### 3,932,550
### PROCESS FOR PRODUCTION OF 2,6-DIMETHYL-1,3,6-CTATRIENE

**Hiroyuki Morikawa, and Takahiro Sato, both of Ibaraki, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Japan**

**Filed Sept. 4, 1974, Ser. No. 503,162**

**Claims priority, application Japan, Sept. 8, 1973, 48-101375**

**Int. Cl.² C07C** *11/00;* **C07F** *1/02*

**U.S. Cl. 260—677 R** **12 Claims**

1. A process for producing 2,6-dimethyl-1,3,6-octatriene from isoprene which comprises dimerizing isoprene in the presence of a catalyst composition comprising: (A) a zirconium component selected from the group consisting of one or more compounds represented by the formula $Zr(OR)_nCl_{4-n}$ wherein R is a chlorinated alkyl group containing two to 20 carbon atoms or a chlorinated cycloalkyl group containing three to 20 carbon atoms, and $n$ is an integer of 1 to 4; (B) an aluminum component consisting of one or more compounds represented by the formula $AlR'_mCl_{3-m}$ wherein R' is an alkyl group containing one to 10 carbon atoms, a cycloalkyl group containing three to 10 carbon atoms or an aryl group, and $m$ is 1.5 or 2; and (C) a coordinating component selected from the group consisting of an oxygen-containing compound, a nitrogen-containing compound, a sulfur-containing compound, a phosphorus-containing compound, and mixtures thereof.

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### 3,932,551
### PROCESS FOR THE PREPARATION OF DIOLEFINS FROM OLEFINS

**Robert K. Grasselli, Chagrin Falls; Dev. D. Suresh, Warrensville Heights, and James L. Callahan, Bedford Heights, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio**

**Filed Oct. 12, 1973, Ser. No. 405,940**

**Int. Cl.² C07C** *5/48*

**U.S. Cl. 260—680 E** **7 Claims**

1. In the process for the oxidative dehydrogenation of an olefinic hydrocarbon of four to about 10 carbon atoms comprising contacting a mixture of the olefin and molecular oxygen with a catalyst at a temperature of about 200° to about 600°C., the improvement comprising

using as the catalyst a catalyst wherein the atomic ratios are described by the empirical formula

$$Te_a C_c D_d Fe_e Bi_f Mo_g O_x$$

wherein

C is an alkali metal, alkaline earth metal, Tl, In, Ag, Cu, Sn, Sb, rare earth metal or mixture thereof;

D is nickel, cobalt, magnesium, zinc, cadmium, manganese, calcium or mixture thereof;

and wherein

$a$ is greater than zero to about 4;

$c$ is 0 to about 4;

$d$ is 0.1 to about 20;

$e$ and $f$ are 0.01 to 12;

$g$ is 10 to 15; and

$x$ is the number of oxygens required by the valence states of the other elements present.

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### 3,932,552
### INTEGRATED PROCESS FOR PRODUCING $C_2$ HYDROCARBONS FROM CARBON MONOXIDE AND HYDROGEN

**Charles M. Starks, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.**

**Filed Mar. 25, 1974, Ser. No. 454,488**

**Int. Cl.² C07C** *3/40*

**U.S. Cl. 260—682** **11 Claims**

1. A process for producing ethane and/or ethylene comprising

a. introducing hydrogen and carbon monoxide to a catalytic reaction zone, the mol ratio of hydrogen to carbon monoxide being in the range of about 1/1 to about 5/1;

b. reacting said hydrogen and carbon monoxide in the catalytic reaction zone to a conversion of at least 50 percent of the carbon monoxide and thereby producing a catalytic reaction zone effluent containing hydrogen, carbon monoxide, water, hydrocarbons, and oxygenated hydrocarbons, said reaction being carried out under conditions of temperatures in the range of about 150°C to 450°C, pressures in the range of atmospheric to about 75 atmospheres and space velocities in the range of 500 to 50,000 V/V/hr STP, in the presence of a Fischer-Tropsch catalyst containing iron, cobalt, nickel or ruthenium;

c. introducing directly to a hydropyrolysis zone at least a portion of the catalytic reaction zone effluent containing hydrogen, carbon monoxide, carbon dioxide, water, hydrocarbons and oxygenated hydrocarbons, together with any necessary hydrogen required to bring the mol ratio of hydrogen to total hydrocarbons and oxygenated hydrocarbons having at least three carbon atoms to at least 1/1;

d. hydropyrolyzing said catalytic reaction zone effluent to produce a hydropyrolysis zone effluent, said hydropyrolyzing being carried out under conditions of temperatures in the range of about 600°C to 900°C, pressures of at least 5 atmospheres gauge and residence times in the range of about 0.1 sec to 60 sec;

e. and recovering $C_2$ hydrocarbons from said hydropyrolysis zone effluent.



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### 3,932,553
### OLIGOMERIZATION OF PROPYLENE

**Marcel Robert, Mont-Saint-Aignan, France, assignor to Exxon Research and Engineering Company, Linden, N.J.**

**Filed July 26, 1974, Ser. No. 491,998**

**Int. Cl.² C07C** *3/18*

**U.S. Cl. 260—683.15 B** **7 Claims**

1. In a process for oligomerizing propylene comprising oligomerizing a propylene feed in the liquid phase in the presence of a boron trifluoride catalyst and traces of water at a temperature between 0°C and 60°C to form oligomers, the improvement which comprises adding to said propylene feed an amount in the range of about 0.05 to about 1 weight percent, based upon the weight of propylene, of an olefinic diene to reduce the activity of said catalyst to thereby produce oligomers having an average number of carbon atoms per molecule of between about 15 to about 21 carbon atoms.

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### 3,932,554
### ISOMERIZATION OF SATURATED HYDROCARBONS WITH MORDENITE CATALYST CONTAINING FLUORINE AND CHLORINE

**Sinji Takase, Kawasaki; Tomonori Shioiri, Yokohama, and Masaru Ushio, Kawasaki, all of Japan, assignors to Nippon Oil Company Ltd., Nishi Shimba, Japan**

**Continuation of Ser. No. 207,523, Dec. 23, 1971, abandoned. This application July 15, 1974, Ser. No. 488,540**

**Claims priority, application Japan, Apr. 13, 1971, 46-26120**

**Int. Cl.² C07C** *5/30*

**U.S. Cl. 260—683.68** **15 Claims**

1. In a process for the branch isomerization of saturated hydrocarbons at an elevated temperature of up to about 350°C. in the presence of a catalyst,

the improvement which comprises conducting said process with a catalyst prepared by

contacting a composition consisting essentially of from 0.01 to 2 weight percent of platinum or palladium supported on a natural or synthetic mordenite which is in hydrogen or ammonium form having a $SiO_2/Al_2O_3$ molar ratio in said mordenite of from 9 to 50

with a fluorine-containing halogenated hydrocarbon

at a temperature from 0° to 600°C., to provide in

said catalyst at least about .86 weight percent fluorine and containing chlorine in an amount less than about 0.2 weight percent.

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### 3,932,555
### SILICONE ELASTOMERS

**John Eric Goodrich, and Francis Gowland Hutchinson, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England**

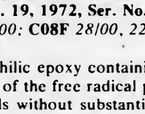
**Filed July 16, 1973, Ser. No. 379,315**

**Claims priority, application United Kingdom, July 31, 1972, 35637/72**

**Int. Cl.² C08G** *77/42, 77/38*

**U.S. Cl. 260—825** **13 Claims**

1. A reinforced silicone elastomer comprising a blend of from 95% to 20% by weight of cross-linked silicone elastomer and from 5% to 80% by weight of a polymeric material in which the reinforced silicone elastomer is formed from a composition comprising at least one cross-linkable poly(organo-siloxane) comprising repeat units having the structure



where x is an integer and the groups R and R', which may be the same or different, are hydrocarbyl radicals or substituted hydrocarbyl radicals, and at least one polymerisable ethylenically unsaturated material, and in which a substantial proportion of the cross-linking of the polyorganosiloxane is effected before a substantial proportion of the ethylenically unsaturated material is polymerised, the ethylenically unsaturated material subsequently being polymerised.

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### 3,932,556
### THERMOSETTING RESIN COMPOSITION

**Shigeru Takamori, Osaka; Eizi Morimoto, and Kahei Sakaguchi, both of Wakayama, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan**

**Filed Nov. 22, 1974, Ser. No. 526,109**

**Claims priority, application Japan, Nov. 27, 1973, 48-133214**

**Int. Cl.² C08L** *63/00*

**U.S. Cl. 260—836** **4 Claims**

1. A thermosetting resin composition consisting essentially of (1) a prepolymer having a terminal vinyl group, produced by reacting a polyepoxide compound with at least one equivalent, per epoxy group of said polyepoxide compound, of a dicarboxylic acid half ester having the formula



(I)

where R is a member of the group consisting of $-CH_2-$ and $-(CH_2-CHX-O)_{n-1}-CH_2-CHX-$, in which $n$ is 1 to 4 and X is a member of the group consisting of H and $CH_3$, and R' is a member of the group consisting of divalent aliphatic radical of 2 to 6 carbon atoms and a divalent aromatic radical of 6 to 7 carbon atoms, and (2) a vinyl monomer copolymerizable therewith or a mixture of said vinyl monomers.

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### 3,932,557
### REACTIVE HYDROPHILIC EPOXY CONTAINING POLYMER

**Joseph S. Matthews, O'Hara Township, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.**

**Filed Dec. 19, 1972, Ser. No. 316,451**

**Int. Cl.² C08L** *63/00;* **C08F** *28/00, 220/42;* **C08L** *89/00*

**U.S. Cl. 260—837 R** **6 Claims**

1. A solid, hydrophilic epoxy containing polymer which is the reaction product of the free radical polymerization at the olefinic double bonds without substantial epoxy reaction of (a) about 70 to 95 mol percent of a substituted olefin monomer having the formula

$$CH_2=C(R_1)-R_4$$

in which $R_1$ is hydrogen or methyl and $R_4$ is cyano or lower carboalkoxy with (b) about five to about 30 mol percent of an epoxy monomer containing terminal unsaturation and one 1,2-epoxy group in which the epoxy monomer is the reaction product of (1) a diepoxide with (2) a difunctional olefin at a mol ratio of diepoxide to difunctional olefin of about one to one, said difunctional olefin having an unsaturated group and a second functional group and defined by the structural formula $CH_2=C(R_1)-R_2$

in which $R_1$ is hydrogen or methyl and $R_2$ is carboxyl; hydroxymethyl; formyl; chlorocarbonyl, carbamyl; aminomethyl; mercaptocarbonyl; mercaptomethyl; lower alkyl or phenyl substituted hydroxyphenyl; or

$-CH_2NHR_3$

where $R_3$ is lower alkyl, hydroxyphenyl or lower alkyl substituted hydroxyphenyl, and said diepoxide having reacted with the difunctional olefin through an epoxy group of said diepoxide with the said second functional group of said difunctional olefin.

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**3,932,558**

## HEAT SEALABLE ADHESIVE PRODUCT AND METHOD OF MAKING THE SAME

**Donald O. Kest, 6258 Fairhaven Road, Mayfield Heights, Ohio 44124, and John M. Questel, 2829 Lakeland Parkway, Cuyahoga Falls, Ohio 44221**

**Filed July 2, 1973, Ser. No. 375,457. The portion of the term of this patent subsequent to July 3, 1990, has been disclaimed.**

**Int. Cl.² C08L** *63/00*

**U.S. Cl. 260—841** **13 Claims**

1. An elastomer-based, heat sealable adhesive composition which is essentially tack-free, as cured, and having an improved balance of physical and chemical properties characteristics including improved peel adhesion, tack and creep resistance characteristics together with the capability to selectively vary such characteristics adapted for formation in situ on a substrate by the chemical formation of an elastomer base material in the presence of a compatible resin material comprising,

I. An elastomer base material which is adapted for chemical formation in situ on said substrate and which comprises the reaction product of:

A. a reactive component having reactive functionality and which includes a liquid diene telechelic polymer material,

B. a coreactive component having coreactive functionality capable of reacting with said reactive functionality and which includes an organic coreactant material capable of coreacting with said reactive functionality of said diene telechelic polymer material, in the presence of

II. A compatible resin material, said resin material being present in the amount of at least about 100 to 200 parts by weight of resin material per 100 parts by weight of elastomer material.

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**3,932,559**

## ADHESION OF OLEFIN COPOLYMER RUBBER TO NYLON TEXTILE

**Stephen E. Cantor, Cheshire, and Arthur A. Blaskiewicz, Danbury, both of Conn., assignors to Uniroyal Inc., New York, N.Y.**

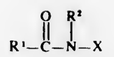
**Filed Jan. 25, 1974, Ser. No. 436,416**

**Int. Cl.² C08L** *61/06, 23/28*

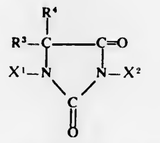
**U.S. Cl. 260—847** **8 Claims**

1. An adhesive composition, which adheres firmly to nylon fabric when vulcanized in contact therewith, comprising a mixture of

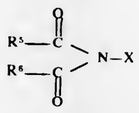
A. a reaction product of an elastomeric terpolymer consisting of ethylene, propylene and a copolymerizable nonconjugated diene with from 0.05 to 15 parts, per 100 parts by weight of the said terpolymer, of an N-haloamide selected from the group consisting of N-halomonoamides of formula I, N-halohydantoins of formula II, N-halosuccinimides of formula III, N-haloglycolurils of formula IV and trihaloisocyanuric acids of formula V, as follows:

I. 

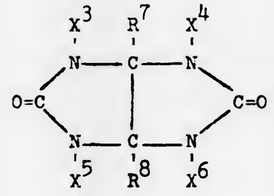
wherein $R^1$ is selected from the group consisting of alkyl having 1 to 8 carbon atoms and cycloalkyl having 5 to 8 carbon atoms, $R^2$ is selected from the group consisting of hydrogen, alkyl having 1 to 10 carbon atoms, aralkyl having 7 to 10 carbon atoms and cycloalkyl having 5 to 8 carbon atoms, and X is selected from the group consisting of chlorine, bromine and iodine;

II. 

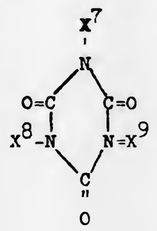
wherein $R^3$ and $R^4$ are the same or different and are as previously defined for $R^1$ in formula I, and $X^1$ and $X^2$ are the same or different and are selected from the group consisting of hydrogen and halogen provided that at least one of them is halogen, said halogen being selected from the group consisting of chlorine, bromine and iodine;

III. 

wherein $R^5$ and $R^6$ are the same or different and are as previously defined for $R^1$ in formula I, or may be alkylene having 1 to 4 carbon atoms joined directly together or through a chain of up to 4 methylene groups, and X is as previously defined for formula I;

IV. 

wherein $R^7$ and $R^8$ are the same or different and are hydrogen or as previously defined for $R^1$ in formula I, and $X^3$, $X^4$, $X^5$ and $X^6$ are the same or different and are selected from the group consisting of hydrogen and halogen provided that at least one of them is halogen, said halogen being selected from the group consisting of chlorine, bromine and iodine; and

V. 



wherein $X^7$, $X^8$ and $X^9$ are the same or different and are halogen selected from the group consisting of chlorine, bromine and iodine,

with (B) from 0.2 to 10 parts, per 100 parts by weight of the said terpolymer, of a resorcinol-alkyl aldehyde condensation product wherein the aldehyde contains from 2 to 4 carbon atoms, said condensation product being made by condensation, in alcoholic or aqueous medium in the presence of an acid catalyst at a temperature up to reflux temperature, of from ½ to 1 mole of said aldehyde per mole of resorcinol.

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**3,932,560**

## HIGH-MOLECULAR WEIGHT ACIDIC POLYMERS

**William E. Franklin, and Stanley P. Rowland, both of New Orleans, La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.**

**Filed Aug. 28, 1974, Ser. No. 501,416**

**Int. Cl.² C08F** *120/06*

**U.S. Cl. 260—851** **2 Claims**

1. A process for forming acidic polymers of high molecular weight comprising:

a. polymerizing a monomer system consisting essentially of at least 50% by weight of an acidic monomer selected from the group consisting of acrylic acid or methacrylic acid in a water solution containing a reagent selected from the group consisting of
dimethyloldihydroxyethyleneurea,
formaldehyde,
methyloltriazones, and
methylolcarbamates, the weight ratio of said reagent to acidic monomer being from 0.3 to 2.0,

using a free radical initiating system consisting of a persulfate oxidizing agent and a bisulfite reducing agent;

b. dialyzing the solution prepared in (a); and

c. drying the dialyzed solution.

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**3,932,561**

## ADHESIVES COMPRISING SOLUTIONS OF A MIXTURE OF A TERPENE URETHANE RESIN WITH THERMOPLASTIC POLYETHER POLYURETHANES CONTAINING TERTIARY AMINE GROUP

**Joseph Zamer, Paramus, N.J., assignor to Inmont Corporation, New York, N.Y.**

**Division of Ser. No. 396,237, Sept. 11, 1973, Pat. No. 3,887,755. This application Nov. 12, 1974, Ser. No. 523,086**

**Int. Cl.² C08G** *18/32*

**U.S. Cl. 260—858** **6 Claims**

1. An adhesive composition consisting essentially of a volatile, water-miscible, organic solvent solution of a mixture of a minor amount of a terpene urethane resin which is the reaction product of a terpene alcohol with a polyisocyanate, and a major amount of a water soluble salt of a substantially linear thermoplastic polyurethane containing 0.5 to 2.5% by weight of nitrogen derived from tertiary amine groups and from 2 to 8% of nitrogen derived from isocyanate groups, said polyurethane being prepared by (a) reacting an excess of an isocyanate with a mixture of diols consisting of polyether diols having a molecular weight of from 425 to 4,000 and tertiary amine diols selected from the group consisting of N-phenyl dialkanol amine and N-lower alkyl dialkanol amines to obtain a reaction product having free isocyanate groups greater than 0.1 milliequivalents of NCO per gram of solution at 50% solids, (b) chain extending the reaction product with a chain extender selected from the group consisting of alkanol amines and alkylene diamines to obtain a chain extended polyurethane polymer containing from 0.07 to 0.01 milliequivalents of NCO per gram of 50% solution, (c) reacting the free isocyanate groups with a material selected from the group consisting of water miscible alcohols, water miscible acids and water, an amount of a water miscible acid being added sufficient to form the acid salts of the tertiary amine groups present on the polyurethane.

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**3,932,562**

## RESIN PRODUCED BY GRAFT-POLYMERIZING ETHYLENICALLY UNSATURATED POLYMERIZABLE COMPOUNDS ONTO A MERCAPTO GROUP CONTAINING ALKYD RESIN

**Mitsuru Takahashi, Hirakata, Japan, assignor to Nippon Paint Co., Ltd., Osaka, Japan**

**Filed Sept. 26, 1973, Ser. No. 400,819**

**Claims priority, application Japan, Oct. 2, 1972, 47-98782**

**Int. Cl.² C08G** *39/00*

**U.S. Cl. 260—873** **20 Claims**

1. A process for producing a resin which comprises graft polymerizing one or more ethylenically unsaturated polymerizable compounds onto a mercapto group-containing alkyd resin in a weight ratio of 5:95 to 70:30 said mercapto group-containing alkyd resin having mercapto groups in an amount of $1 \times 10^{-5}$ to $1 \times 10^{-2}$ gram equivalent/g, and said ethylenically unsaturated polymerizable compound(s) being one or more members selected from the group consisting of esters of acrylic acid and methacrylic acid with alkanols having 1 to 15 carbon atoms, styrene, α-methylstyrene, vinyltoluene, p-t-butylstyrene, acrylonitrile, methacrylonitrile, ethylenically unsaturated glycidyl carboxylates, ethylenically unsaturated monomers having at least one hydroxyl group, ethylenically unsaturated carboxylic acids, ethylenically unsaturated compounds having at least one blocked isocyanate group, acrylamide, methacrylamide, N-methylolacrylamide,N-alkoxymethylacrylamide having an alkyl moiety of 1 to 14 carbon atoms, diacetone acrylamide, hydroxymethyldiacetone acrylamide, N-methlolmethacrylamide, and N-alkoxymethylmethacrylamide having an alkyl moiety of 1 to 14 carbon atoms.

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**3,932,563**

## SELF-SEALING FILMS

**Frederico Argurio, Brussels; Mario Borsatti, Overijse, and William James Busby, Tervueren, all of Belgium, assignors to Exxon Research and Engineering Company, Linden, N.J.**

**Filed Sept. 25, 1974, Ser. No. 509,228**

**Claims priority, application United Kingdom, Oct. 1, 1973, 45690/73**

**Int. Cl.² C08L** *23/08*

**U.S. Cl. 260—897 B** **21 Claims**

1. A composition suitable for fabricating into a self-sealing film comprising (i) 90–99.95 wt. % of a copolymer of ethylene and a vinyl (or hdyrocarbyl substituted vinyl) ester of a $C_1$-$C_{30}$ monocarboxylic acid, (ii) either 0.05 to 10 wt. % of a hydrocarbon resin selected from the group consisting of a polyterpene and a polymerization product of a petroleum distillate fraction, or 0.05 to 5 wt. % of the hydrocarbon resin and 0.05 to 5 wt. % of polybutylene or polyisobutylene, provided the combined weight of the hydrocarbon resin and polybutylene or polyisobutylene is not more than 10 wt. % and (iii) 0.01 to 3.0% by weight based on the combined weight of (i) and (ii) of a partial carboxylic acid ester of a polyol wherein said ester is derived from a $C_{10}$–$C_{24}$ carboxylic acid and wherein said ester contains at least one unesterified hydroxyl group.

### 3,932,564
### ELECTROCONDUCTIVE RESINS AND PROCESS OF PREPARATION

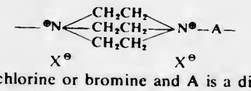
**Albert H. Markhart, Wilbraham, and James O. Santer, East Longmeadow, both of Mass., assignors to Monsanto Company, St. Louis, Mo.**

**No Drawing. Continuation-in-part of Ser. No. 253,016, May 15, 1972, Pat. No. 3,825,511. This application July 5, 1974, Ser. No. 486,040**

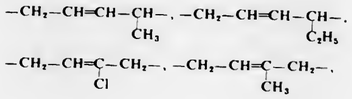
**Int. Cl.² C08F** *15/02, 3/32*

**U.S. Cl. 260—899** **14 Claims**

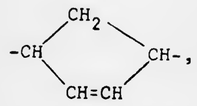
1. A resin composition comprising from 20 to 60 parts by weight of a poly(vinyl alcohol) and from 40 to 80 parts by weight of a poly(quaternary ammonium) resin, wherein the poly(vinyl alcohol) contains in the range of 1 to 40 weight percent of unhydrolyzed vinyl acetate units and has a weight average molecular weight in the range of 2000 to 500,000 and wherein the poly(quaternary ammonium) resin contains recurring units of:



wherein X is chlorine or bromine and A is a divalent radical selected from the group consisting of $-CH_2-CH=CH-CH_2-$,



and



and wherein the degree of polymerization is such that the resin has an intrinsic viscosity of at least 0.05 determined on a 2 percent aqueous sodium chloride solution at 25°C.

### 3,932,565
### POLYMERIC BROMINE-CONTAINING PHOSPHORAMIDATE POLYOLS

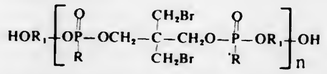
**Wadim Batorewicz, New Haven, Conn., assignor to Uniroyal Inc., New York, N.Y.**

**Filed Dec. 26, 1973, Ser. No. 430,995**

**Int. Cl.² C07F** *9/24*; **C08G** *18/83*

**U.S. Cl. 260—928** **4 Claims**

1. A polymeric bromine-containing phosphoramidate polyol having the structure



wherein R is a radical having the formula $-NR_2R_3$ wherein $R_2$ and $R_3$ can be the same or different and are alkyl radicals having from 1 to 6 carbon atoms, phenyl or aralkyl or alkaryl radicals having from seven to twelve carbons atoms; $R_1$ is a diradical selected from $-CH_2CH_2-$, $-CH(CH_3)CH_2-$, $-CH(CH_3)CH_2CH_2-$, $-CH_2CH=CHCH_2-$ $-CH_2C$ $CH_2-$, $-CH(CH_2Br)CH_2-$, $-CH(CH_2Cl)CH_2-$, $-CH_2C(CH_2Br)_2CH_2-$, $-CH_2C(CH_2Cl)_2-$, $-CH_2CH_2-O-CH_2CH_2-$, $-CH_2CH_2-O-CH_2CH_2-O-CH_2CH_2-$ and $-CH(CH_3)CH_2-O-CH_2CH(CH_3)-$; and *n* is an integer of from 1 to 5.

### 3,932,566
### PHOSPHONATE POLYMERS

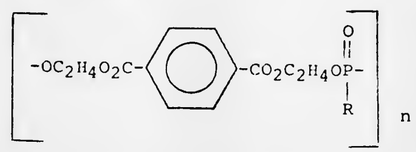
**Arthur M. Reader, Waynesboro, Va., assignor to Celanese Corporation, New York, N.Y.**

**Filed Sept. 16, 1974, Ser. No. 506,065**

**Int. Cl.² C07F** *9/40*

**U.S. Cl. 260—930** **3 Claims**

1. A class of phosphonate polymers characterized by the structural formula:



wherein R is selected from alkyl and substituted alkyl radicals containing between 1 and about 6 carbon atoms, the substituents being selected from halogen, alkenyl, alkoxyl and nitro groups, and aryl and substituted aryl radicals containing between 6 and about 10 carbon atoms, the substituents being selected from halogen, alkoxyl and nitro groups; and *n* is an integer between 5 and about 5,000.

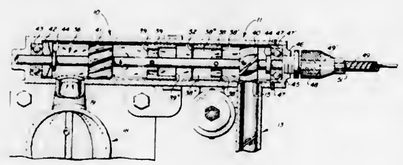
### 3,932,567
### GAS AERATING CARBURETOR

**Paul E. Skidmore, 2941 E. McDowell Road, Phoenix, Ariz. 85008**

**Filed July 5, 1974, Ser. No. 485,973**

**Int. Cl.² F02M** *17/16*

**U.S. Cl. 261—30** **4 Claims**



1. A fuel aerating carburetor for internal combustion engines comprising:

an elongated hollow cylindrical housing for rotatably receiving a driven shaft suitably journaled along its longitudinal axis,

a driven shaft rotatably journaled along the longitudinal axis of said housing,

at least one pair of aerating members mounted on said shaft for rotation therewith,

said aerating members being spacedly mounted on said shaft and each comprising a cylindrical casing having a plurality of spacedly arranged bores in one end thereof and a plurality of radial fins arranged in the other end thereof,

said fins of the first aerating member in the direction of air-fuel mixture through said housing being juxtapositioned to the bores in said second aerating member,

said radial fins receiving an air-fuel mixture on one side thereof and thoroughly mixing and atomizing said mixture as it passes therethrough,

an inlet port for receiving and mixture at one end of said housing and an outlet port at the other end of said housing,

said inlet port being connected to a first air-horn which furnishes an air-fuel mixture to said carburetor,

said outlet port being connected to a second air-horn of a second carburetor of an internal combustion engine for



transmitting thereto said thoroughly mixed air-fuel mixture, and

means connected to said shaft for rotation thereof.

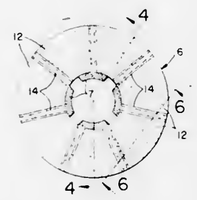
### 3,932,568
### HIGH-ENERGY BRAKE AND BRAKE COMPONENTS

**Willie H. Watts, Massillon; Francis J. Lowey, deceased, late of Medina County, Ohio, by Old Phoenix National Bank, executor, Medina, Ohio, assignors to Friction Products Inc., Medina, Ohio**

**Filed June 26, 1973, Ser. No. 373,802**

**Int. Cl.² B29C** *25/00*

**U.S. Cl. 264—29** **17 Claims**



1. A method of making a friction element suitable for receiving the rapidly dissipated energy produced in stopping jet aeroplanes, said method comprising (a) coating a finely powdered graphite, graphite fibers, and an abrasive powder that is stable at graphitizing temperatures with a heat-setting, resole phenol-aldehyde resin, said resin being heat-setting to the infusible, insoluble state, removing volatiles therefrom while in the powdery state and at a temperature maintained below resin-curing temperatures; (b) preparing an intimate mixture of 1 to 10 percent by weight of said fibers, 40 to 70 percent by weight of said graphite powder, 1 to 10 percent by weight of said abrasive powder, and 20 to 45 percent by weight of said resin; (c) compressing said intimate mixture to form a preform at a pressure of 10 to 25 TSI but at a pressure below that which forms an impervious skin over the surface of said preform; (d) curing said preform to complete condensation of said resin binder while allowing vapors evolved to escape without rupturing said preform; (e) carbonizing said cured preform by slowly raising the temperature thereof to carbonize said resin while permitting gas or vapors formed to escape without rupture of said preform; and (f) graphitizing the carbonized preform by raising the temperature thereof at a controlled rate to between 1800° C. and 2500° C.

### 3,932,569
### METHOD FOR PRODUCING FREE-FLOW INTERLOCKING FOAMED PACKING MATERIAL

**Gunter G. Fuss, Daly City, Calif., assignor to Free-Flow Packaging Corporation, Redwood City, Calif.**

**Division of Ser. No. 321,657, Jan. 8, 1973, Pat. No. 3,855,053, which is a continuation-in-part of Ser. No. 221,974, Jan. 31, 1972, abandoned. This application July 12, 1974, Ser. No. 487,901**

**Int. Cl.² B29D** *23/04, 27/00*

**U.S. Cl. 264—51** **7 Claims**



1. In a method for the continuous manufacture of free-flow interlocking foamed expanded plastic material, the steps of extruding expanded plastic material to form at least one elongate hollow tube, continuously engaging outer surfaces thereof while still in a heat-softened state due to the heat of extrusion to cause adjacent tube wall surfaces to engage and adhere to one another only in a central zone as respects the cross section thereof so as to provide a cross-sectional configuration wherein central portions of the tube walls are adhered to one another at said central zone and outer portions are in the form of contiguous open hollow loops extending outwardly from said central zone, cooling said adhered portions and successively slicing through the tube walls substantially laterally to the tube axis at intervals to sever shallow lengths of partially expanded plastic material having substantially the configuration of a shallow bow.

### 3,932,570
### METHOD OF SEALING FIBERS IN APERTURES

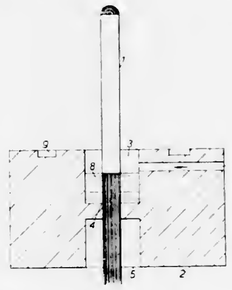
**David Lloyd Cox, and Neil Patrick Hugh McDonnell, both of Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England**

**Filed Mar. 21, 1972, Ser. No. 236,635**

**Claims priority, application United Kingdom, Mar. 26, 1971, 7911/71**

**Int. Cl.² B29D** *3/00, 31/00*

**U.S. Cl. 264—69** **10 Claims**



1. A process of sealing a bundle of substantially parallel fibres into a gap defined by at least one holding member, said gap having a cross-sectional size and shape substantially the same as the cross-sectional size and shape of said bundle, said process comprising:

introducing the bundle of fibres into said gap, contacting a pool of curable liquid sealing material with the fibres at their position of entry into said gap, said pool lying outside said gap, said pool being confined adjacent said gap and working sealing material between the fibres in the gap by vibrating the bundle longitudinally and causing said fibers to flex in the pool intermediate a point at which vibration is applied and said gap and curing said sealing material.

### 3,932,571
### PROCESS FOR DYEING UNDRAWN ACRYLONITRILE POLYMER FILAMENTS

**Lee Oleh Dworjanyn, Camden, S.C., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.**

**Continuation-in-part of Ser. No. 310,955, Nov. 30, 1972, abandoned. This application Oct. 17, 1973, Ser. No. 407,264**

**Int. Cl.² D01F** *6/18*

**U.S. Cl. 264—78** **7 Claims**

1. A continuous process for dyeing dry-spun acrylonitrile polymer filaments which are substantially undrawn and contain in excess of 10% spinning solvent, by weight of the filaments, which comprises the following steps:

1. passing a bundle of said filaments through an aqueous extraction bath having a temperature below about 80°C., so that any imposed draw is nominal and at a rate of at least about 10 yards per minute, until the spinning solvent

content of the filaments is below about 10% by weight of the filaments;

2. squeezing the bundle of filaments under pressure sufficiently heavy to remove most of the extraction bath liquid therefrom;
3. passing the bundle of filaments into contact with a liquid dye mixture at a temperature below about 80°C. at nearly zero stretch;



4. drawing the filaments between about 1.5× and 4.5× at a temperature between about 60° and 80°C. while the filaments are still in contact with the liquid dye mixture; and
5. removing excessive liquid by squeezing the bundle of filaments under pressure sufficiently light to retain upon the filaments an amount of liquid substantially greater than the amount present prior to their contact with the liquid dye mixture, so that there is a net pick-up of liquid dye mixture on the filaments and they remain in contact with the liquid dye mixture.

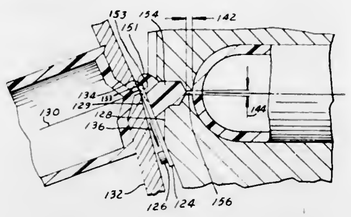
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3,932,572

## METHODS OF SEVERING PLASTIC BETWEEN BLOW MOLDS IN A ROTARY BLOW MOLDING MACHINE

**Michael J. Avery, Forrestville, and Lawrence A. Martino, East Hartford, both of Conn., assignors to Monsanto Company, St. Louis, Mo.**

**Filed June 19, 1974, Ser. No. 480,605**
**Int. Cl.² B29C *17/07, 17/14***
**U.S. Cl. 264—99** **1 Claim**



1. In a method of blowing molding hollow articles from thermoplastic material by radially moving one mold section toward another mold section to capture successive lengths of a continuously extruding thermoplastic parison in adjacent blow molds circumferentially spaced from each other as said molds traverse a rotary path about a horizontal axis, holding said sections closed while expanding the parison lengths to form the articles with portions of said continuous parison between said circumferentially spaced molds connecting blown articles in adjacent molds and incrementally moving the inner section of each mold substantially perpendicular to the horizontal axis while the next adjacent mold is still closed to at least partially sever a parison portion intermediate the opening and still-closed mold, the improvement in said method whereby the reliability of completeness of severing of each parison portion is improved, which improvement comprises the step of:

advancing a blade on the back face of the inner section of the opening mold along the front face across the parting line of said still-closed mold to shear the thermoplastic material of said each parison portion between said face and blade as a result of said incremental movement.

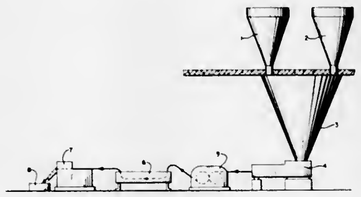
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3,932,573

## PROCESS FOR PRODUCING GLASS FIBER REINFORCED INJECTION MOLDING COMPOUNDS

**Michael E. Kucsma; Gary J. Babcock, and Berlin C. Harris, Jr., all of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.**

**Continuation-in-part of Ser. No. 444,099, Feb. 20, 1974, abandoned, which is a continuation of Ser. No. 7,128, Jan. 30, 1970, abandoned. This application May 2, 1974, Ser. No. 466,279**
**Int. Cl.² B29F *3/00***
**U.S. Cl. 264—118** **17 Claims**



1. A process for the production of a thermoplastic composition comprising:

a. feeding a stream of glass fibers and a separate stream of organic plastic resin to a common hopper, said hopper being adapted to allow said glass fibers and said resin to free-fall into a screw extruder;
b. mixing and heating said resin and said glass fibers in said extruder until said resin is plastified;
c. extruding said mixture of said resin and said fibers;
d. milling said mixture to a sheet on a roll mill having rollers heated sufficiently hot to soften said mixture;
e. cooling said sheet to a rigid state; and
f. dicing said sheet into pellets.

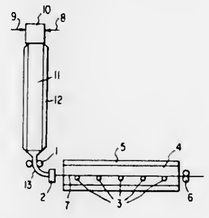
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3,932,574

## PROCESS FOR PREPARING FIBROUS POLYVINYL ALCOHOL

**Makoto Shiraishi; Sigetaka Iwata, and Masao Oura, all of Toyama, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan**

**Filed July 11, 1973, Ser. No. 378,213**
**Claims priority, application Japan, July 11, 1972, 47-69790**
**Int. Cl.² D01F *6/14*; B29H *7/18***
**U.S. Cl. 264—147** **23 Claims**



1. A process for the preparation of shaped articles of polyvinyl alcohol, comprising saponifying a liquid feed of a polyvinyl ester as same downwardly cascades through a horizontal hollow cylindrical reactor, and thence taking-up from the reactor outlet the fibrous, shaped article of oriented, solid polyvinyl alcohol thus formed at a rate of from 50 to 1,500 cm/minute in the form of a continuous bar, wetting said bar with a non- or poor solvent for polyvinyl alcohol until same contains at least 25% by weight of volatile components and wet-stretching said bar at a temperature of from 50° to 200°C. whereby said bar is transformed into fibrous polyvinyl alcohol.

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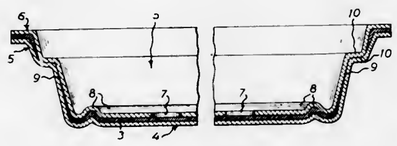


3,932,575

## METHOD OF MAKING A MULTILAYERED PACKAGING TRAY BY DEEP-DRAWING

**Sven Ingemar Andersson, Hollandaregatan 16, 271 00 Ystad, Sweden**

**Division of Ser. No. 241,574, April 6, 1972, Pat. No. 3,834,606. This application Mar. 19, 1974, Ser. No. 452,538**
**Int. Cl.² B29C *17/03*; B65D *81/26***
**U.S. Cl. 264—154** **2 Claims**



1. A method of making a packaging tray of a multilayered wall material including an intermediate layer of a substantially non-stretchable liquid-absorbing material and, on each side of said intermediate layer, one cover layer of a synthetic plastic material which is moldable and stretchable when heat softened, said tray having a bottom, side walls and a flange extending outwardly from said side walls around the periphery of the tray, said method comprising the steps of forming the inside cover layer with perforations, heating the multilayered wall material to soften the cover layers of synthetic plastic material, clamping the wall material in the area of the flange to be produced, deep-drawing the non-clamped parts of the heated wall material inwardly of said clamped flange forming wall material area for forming the bottom and side walls of the tray with the bottom not being subject to appreciable stretching and the cover layers being compressed and bonded due to their tacky condition, forming in the tray side walls during said deep-drawing an offset extending around the tray and being substantially plane parallel with the bottom of the tray and, during said deep-drawing and offset-forming steps, stretching the wall material in the offset area of the tray to an extent sufficient to at least partially rupture the intermediate wall layer and to bring together the cover layers and heat seal said layers to each other.

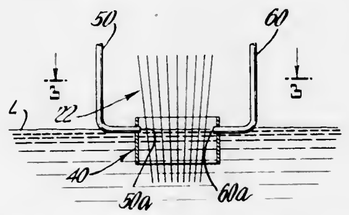
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3,932,576

## APPARATUS FOR AND METHOD OF MELT SPINNING

**Pravin Patel, Columbia, Md., assignor to Concorde Fibers, Inc., Columbia, Md.**

**Filed Dec. 23, 1974, Ser. No. 535,459**
**Int. Cl.² D01D *3/00, 5/00***
**U.S. Cl. 264—178 F** **6 Claims**



1. In an apparatus for the melt spinning of a plurality of thermoplastic filaments, the apparatus comprising a vessel for containing a quench liquid and a spinneret arranged above the level to which the vessel is to be filled with the quench liquid so that molten filaments extruded through the spinneret enter the quench liquid wherein the filaments are solidified, the improvement comprising baffle means partially surrounding an area at the surface of the quench liquid at which the molten filaments enter the quench liquid said baffle means surrounding said area sufficiently to essentially eliminate vortexing and minimize random turbulence, and means for conducting a wetting agent to said area, said means comprising conduits having outlets at least approximately at the periphery of said area, the outlets being at least two in number and being at least approximately symmetrically located about said area.

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3,932,577

## METHOD FOR MAKING VOID-FREE ACRYLIC FIBERS

**George Palethorpe, Durham, and Edwin W. Folk, Cary, both of N.C., assignors to Monsanto Company, St. Louis, Mo.**

**Filed May 21, 1973, Ser. No. 362,632**
**Int. Cl.² D01F *6/18***
**U.S. Cl. 264—182** **4 Claims**

1. A process for wet spinning abrasion-resistant acrylonitrile-containing filaments having essentially void-free structures, comprising forming a spinning dope by dissolving (A) from about 20 to about 28 weight percent of a dry polymeric material containing about 35 to about 98 weight percent acrylonitrile and 65 to 2 weight percent of at least one other mono-olefinic monomer copolymerized with said acrylonitrile in (B) a mixture of about 1 to 8 weight percent water and about 62 to about 79 weight percent of a solvent selected from the group consisting of dimethylacetamide, dimethylformamide and dimethylsulfoxide, the weights being based on the weight of the dope, and extruding the dope at a temperature within the range of 40° C to 75° C into an aqueous solution of about 40 to 64 weight percent of said solvent at a coagulation temperature of from about 30° C to about 65° C.

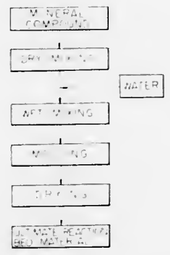
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3,932,578

## METHOD OF MAKING REACTION BED MATERIAL FOR ARTIFICIAL MINERAL WATER PRODUCTION

**Atsushi Nishino; Hiroshi Kumano, and Kazunori Sonetaka, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan**

**Filed July 13, 1973, Ser. No. 378,871**
**Claims priority, application Japan, July 14, 1972, 47-71008; July 14, 1972, 47-71009; Sept. 21, 1972, 47-95364; Sept. 22, 1972, 47-95578**
**Int. Cl.² B29B *1/04***
**U.S. Cl. 264—331** **2 Claims**




1. A method of producing a molded bed material for use in the production of artifical mineral water comprising the steps of: mixing a mineral source powder comprising 40 to 100 mole % of magnesium carbonate with an aqueous solution of a bonding material permissible as a food additive selected from the group consisting of carboxymethyl cellulose, starch, gelatin and polyvinyl alcohol in an amount of 20 to 50% by weight of said powder, the concentration of said solution being from 0.5 to 10% by weight; kneading the resulting wet mixture; molding the kneaded mixture under pressure into pellets; and

drying said pellets at a temperature between room temperature and 850°C.

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3,932,579
RECOVERY OF RHENIUM
Kenneth A. Morgan, Hoffman Estates, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed Dec. 6, 1973, Ser. No. 422,500
Int. Cl.² C01G 47/00
U.S. Cl. 423—49 5 Claims

1. A process for the recovery of rhenium from an iron and molybdenum-containing hydrochloric acid solution thereof, which comprises:

a. adding sufficient acid to the solution to establish a sulfate/chloride anion ratio therein of at least about 20:1;

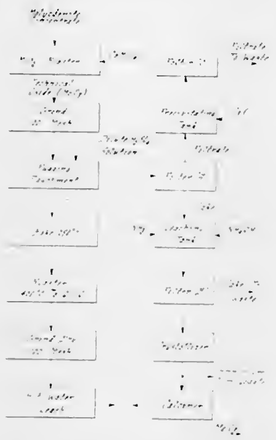
b. admixing the resulting solution with a normally liquid, substantially water insoluble trialkyl phosphate and recovering the rhenium in the trialkyl phosphate phase of the mixture;

c. separating and washing the trialkyl phosphate phase with sulfuric acid for the removal of any residual iron and molybdenum contained therein, and thereafter with hydrochloric acid for the removal of entrained sulfuric acid;

d. separating the washed trialkyl phosphate and back extracting the same with from about 6 to about 11 normal nitric acid, and recovering the rhenium therein as a nitric acid solution of perrhenic acid.

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3,932,580
PROCESS FOR PURIFYING TECHNICAL GRADE MOLYBDENUM OXIDE
Michael A. Vertes, Weston, Conn., and Richard A. Ronzio, Golden, Colo., assignors to Amax Inc., New York, N.Y.
Filed Oct. 21, 1974, Ser. No. 516,290
Int. Cl.² C01G 39/00
U.S. Cl. 423—56 5 Claims



1. A process for purifying molybdenum trioxide which comprises the steps of providing an impure particulated molybdenum trioxide feed material of a particle size less than about 100 mesh, mixing feed material with sulfuric acid in an amount sufficient to provide a stoichiometric excess of sulfuric acid relative to the metallic impurities present in said feed material to form a reaction mixture, agglomerating said reaction mixture into pellets, heating said pellets to a temperature up to about 250°C for a period of time sufficient to effect a baking thereof, heating the baked said pellets to an elevated temperature of from 400°C up to about 600°C in air to effect a roasting thereof and to cause a reaction to occur between the metallic impurities in said feed material and the sulfuric acid to form aqueous soluble sulfate compounds, pulverizing the roasted said pellets into a powder of an average particle size less than about 100 mesh, leaching the said powder with hot water at a temperature above about 50°C to extract the sulfate compounds therefrom, separating the leached said powder from the resultant hot water leaching solution, contacting the leached said poweder with an aqueous ammoniacal leach solution to extract the molybdenum trioxide constituent therein forming a solution containing ammonium molybdate and an insoluble residue, separating said solution containing ammonium molybdate from said residue and recovering the ammonium dimolybdate constituent from said solution.

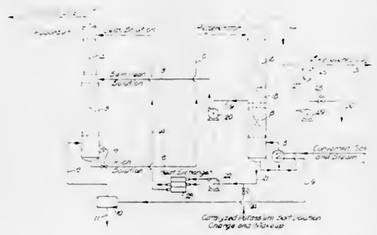
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3,932,581
METHOD OF SEPARATING COBALT (II) AND NICKEL (II) BY EXTRACTION
Raimo Juhani Leimala, Harjavalta, Finland, assignor to Outokumpu Oy, Outokumpu, Finland
Filed May 6, 1974, Ser. No. 467,096
Claims priority, application Finland, May 22, 1973, 1653/73
Int. Cl.² C01G 51/00, 53/00
U.S. Cl. 423—139 9 Claims

1. A method of separating cobalt (II) and nickel (II) by extraction, whereby an aqueous solution containing ions of these metals is mixed with an extraction agent containing an organic phosphoric acid and the pH during the extraction is kept within the range 4–7, after extraction the phases are separated from each other, and the extraction agent is regenerated to recover the cobalt, wherein at least 5 g/l of a water-soluble magnesium compound is added to the solution before the extraction.

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3,932,582
METHOD AND COMPOSITIONS FOR REMOVING ACID GASES FROM GASEOUS MIXTURES AND REDUCING CORROSION OF FERROUS SURFACE AREAS IN GAS PURIFICATION SYSTEMS
Allen G. Eickmeyer, 8126 El Monte, Prairie Village, Kans. 66208
Continuation of Ser. No. 398,066, Sept. 17, 1973, which is a continuation of Ser. No. 22,505, March 25, 1970, abandoned, which is a continuation-in-part of Ser. No. 523,926, Feb. 1, 1966, abandoned, and a continuation-in-part of Ser. No. 432,334, Feb. 12, 1965, abandoned, which is a continuation-in-part of Ser. No. 291,532, June 28, 1963, abandoned, which is a continuation-in-part of Ser. No. 231,963, Oct. 22, 1962, abandoned, which is a continuation-in-part of Ser. No. 209,221, July 11, 1962, abandoned. This application Nov. 14, 1974, Ser. No. 523,735
Int. Cl.² B01D 53/34
U.S. Cl. 423—223 4 Claims



1. In an absorption-desorption process for removing carbon dioxide from a gaseous mixture containing essentially no hydrogen sulfide and oxygen, wherein the gaseous mixture is contacted with an aqueous alkali metal borate absorption solution, the latter thereafter being regenerated by removing at least a portion of the absorbed carbon dioxide and thence recycled for further absorptive contact, the improvement which comprises introducing an oxidizing agent for contact with said solution in sufficient quantities to retard corrosion of ferrous surfaces in contact with the solution.



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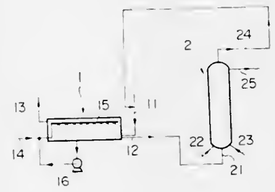
3,932,583
METHOD OF REMOVING HYDROGEN SULFIDE FROM A GAS CONTAINING CARBON DIOXIDE
Vernon Hugo Schievelbein, Houston, Tex., assignor to Texaco Inc., New York, N.Y.
Continuation-in-part of Ser. No. 263,911, June 19, 1972, abandoned. This application Apr. 22, 1974, Ser. No. 462,907
Int. Cl.² B01D 53/34
U.S. Cl. 423—232 16 Claims

1. A process for preferentially removing hdyrogen sulfide from a gas mixture comprising hydrogen sulfide and carbon dioxide and converting the hydrogen sulfide to elemental sulfur comprising

treating said gas mixture at atmospheric pressure with an aqueous solution consisting of inert salts, dissolved bicarbonate ions in sufficient concentration to establish an equilibrium imbalance to prevent substantial dissolution of carbon dioxide, a catalytic quantity of ions of a transition metal and dissolved oxygen in an amount sufficient to stoichiometrically convert all of the hydrogen sulfide to elemental sulfur.

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3,932,584
METHOD FOR PURIFYING HYDROGEN SULFIDE-CONTAINING GAS
Tokuzo Asakusa; Taketoshi Honma; Isao Hirashita; Koichi Yasui; Yoshio Nishi, and Koichi Murayama, all of Nobeoka-shi, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Japan
Filed Jan. 25, 1974, Ser. No. 436,721
Claims priority, application Japan, Feb. 2, 1973, 48-12901
Int. Cl.² C01B 17/16
U.S. Cl. 423—234 8 Claims



1. A method for purifying hydrogen sulfide-containing gas which comprises a first step of absorbing a hydrogen sulfide-containing gas in an aqueous solution of sodium hydroxide and/or sodium sulfide to obtain a solution containing sodium hydrosulfide, and a second step of introducing sulfuric acid and sulfur dioxide gas simultaneously into said aqueous solution after absorption while maintaining a reaction temperature of 5°–70°C and a pH of 1–6 to form sodium sulfate and to deposit sulfur.

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3,932,585
METHOD OF REMOVING NITROGEN OXIDES FROM PLANT EXHAUST
Sanseki Moriguchi; Hiroshi Abe; Kiyoshi Saito, and Makoto Miyazawa, all of Yokohama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan
Filed Sept. 6, 1973, Ser. No. 394,680
Claims priority, application Japan, Sept. 12, 1972, 47-91399
Int. Cl.² C01C 3/00
U.S. Cl. 423—235 9 Claims

1. A method of removing a nitrogen oxide from an exhaust gas containing a nitrogen oxide, which comprises: contacting said gas with an acidic aqueous solution consisting essentially of

i. a salt selected from the group consisting of ammonium sulfite, ammonium acid sulfite, an alkali metal sulfite, an alkali metal acid sulfite, an alkaline earth metal sulfite, an alkaline earth metal acid sulfite, and a mixture of two or more thereof,

ii. at least one copper compound forming divalent copper ions therein, the amount of said copper compound in said solution being such that divalent copper ions are produced in an amount of from 0.01 to 0.1 percent by weight in said solution, and

iii. at least one manganese compound forming divalent manganese ions therein, the amount of said manganese compound being such that divalent manganese ions are produced in an amount of from 0.01 to 0.1 percent by weight in said solution,

to reduce said nitrogen oxide to nitrogen gas.

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3,932,586
REMOVAL OF OXIDES OF SULFUR FROM GASES
Salvatore A. Guerrieri, Newark, Del., assignor to The University of Delaware, Newark, Del.
Filed Oct. 12, 1973, Ser. No. 405,757
Int. Cl.² C01B 17/00
U.S. Cl. 423—242 9 Claims

1. A process for removing sulfur dioxide from gases which includes;

a. contacting said gases and absorbing sulfur dioxide therefrom with an aqueous solution containing potassium carbonate to derive a solution which includes potassium sulfite as well as potassium carbonate and withdrawing said derived solution,

b. returning to step (a) a portion of said derived solution from step (a),

c. introducing lithium carbonate granules into another portion of said derived solution from step (a) to form with said solution a slurry mixture wherein the molar ratio of lithium to potassium is between 42/58 and 62/38,

d. passing said mixture through a first heating zone under pressure and dispersing it into a second heating zone under pressure where water is evaporated and solids are melted, producing a smelt,

e. superheating a portion of said smelt by passing it through a third heating zone, dispersing said superheating smelt into the said second heating zone where it supplies the heat needed to evaporate water and to melt the solids of the incoming mixture,

f. passing another portion of said smelt through a fourth heating zone and then into a first reaction zone wherein, by contact with hydrogen, the oxygenated sulfur compounds in the smelt are reduced to sulfides,

g. transferring the sulfide containing smelt to a second reaction zone wherein, by contact with a mixture of carbon dioxide gas and water vapor, said sulfides react with said gases to produce a smelt including potassium carbonate and lithium carbonate and a gas including hydrogen sulfide,

h. transferring a portion of said smelt from step (g) to the second heating zone,

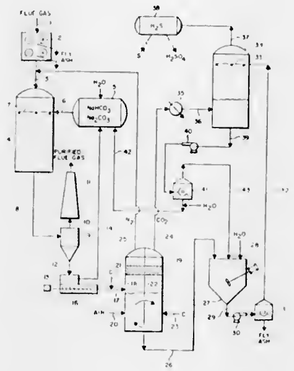
aqueous mixing another portion of the said smelt from step (g) with water at elevated temperature to produce an anqueous solution of potassium carbonate and a residue of lithium carbonate, separating said lithium carbonate from said solution of potassium carbonate transferring said lithium carbonate to step (c), and transferring said aqueous solution of potassium carbonate to step (a).

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## 3,932,587
## ABSORPTION OF SULFUR OXIDES FROM FLUE GAS

**LeRoy F. Grantham, Calabasas; Dennis C. Gehri, Granada Hills, and Bruno Katz, Encino, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.**

**Continuation-in-part of Ser. No. 206,382, Dec. 9, 1971, abandoned. This application Oct. 26, 1972, Ser. No. 300,925**
**Int. Cl.² C01B** *17/00*
**U.S. Cl. 423—242** **7 Claims**



1. A closed-cycle process capable of removing in a single spray-drying step at least 90% of a sulfur oxide impurity from a hot waste gas comprising the steps of:

contacting the hot sulfur oxide-containing waste gas at a temperature of at least 90°C in a single spray-drying step with an aqueous scrubbing medium containing between 2 and 40 wt.% of an absorbent selected from the group consisting of alkali metal carbonate, alkali metal bicarbonate, and mixtures of alkali metal carbonate and bicarbonate to form alkali metal sufate and sulfite,

recovering the resultant reaction product as a flowable, dry powder mixture not requiring further drying, said mixture containing from 20 to 85 wt.% alkali metal sulfite and sulfate and from 15 to 80 wt.% alkali metal carbonate and bicarbonate,

reacting said mixture in the molten state with a carbonaceous reducing agent under reducing conditions to convert sulfite and sulfate to sulfide while supplying a controlled amount of a source of gaseous oxygen to the reaction to provide internal heat generation to melt the mixture and maintain it in the molten state.

recovering a molten reaction product of alkali metal sulfide and carbonate,

dissolving this reaction product in water to form an aqueous solution, and

reacting said aqueous solution with a carbon dioxide-yielding material to form hydrogen sulfide gas as a recoverable product and regenerate alkali metal bicarbonate and carbonate for recirculation in the process.

## 3,932,588
## AMMONIUM CARBONATES AS COLD-END ADDITIVES TO A DESULFURIZATION PROCESS

**Bruce L. Libutti, Bethayres, and Richard J. Neddenriep, Doylestown, both of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.**

**Filed Nov. 5, 1973, Ser. No. 413,122**
**Int. Cl.² B01J** *8/00*; **C01B** *17/00*
**U.S. Cl. 423—244** **8 Claims**

1. A method of reducing the amount of sulfur trioxide condensation on, and therefore the amount of sulfuric acid corrosion of, metal parts in contact with flue gases derived from the combustion of sulfur containing fuels which flue gases flow along a path at the cold-end of the combustion system from a first point of turbulence to a second point at which the turbulence subsides, said method comprising:

a. adding to the flue gases at the cold-end of the combustion system and at the point of turbulence a particulate ammonium carbonate compound, and

b. permitting the particulate carbonate compound to flow with the flue gases at least from the point of turbulence to the second point such that the particles deposit on the surfaces of the metal parts, wherein the carbonate compound is added to the flue gases in an amount from about 0.01 to 0.8 pound of the carbonate compound per pound of sulfur trioxide generated and wherein the carbonate compound has a particle size of 360 microns or less.

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## 3,932,589
## SELECTIVE CHROMATOGRAPHIC SEPARATION OF SULFUR DIOXIDE WITH ORGANIC REAGENTS

**Aaron J. Teller, Great Neck, N.Y., assignor to Teller Environmental Systems, Inc., Worcester, Mass.**

**Division of Ser. No. 156,952, June 25, 1971, Pat. No. 3,859,417, which is a continuation of Ser. No. 860,665, Sept. 24, 1969, abandoned, which is a continuation-in-part of Ser. No. 667,801, Sept. 14, 1967, abandoned, which is a continuation-in-part of Ser. No. 363,403, April 29, 1964, abandoned. This application June 14, 1974, Ser. No. 479,215**
**Int. Cl.² C01B** *17/00*; **B01J** *8/00*
**U.S. Cl. 423—244** **6 Claims**

1. A process for the vapor phase chromatographic separation of sulfur dioxide from a gas stream comprising the steps of:

a. passing said gas stream into contact with a substantially dry absorbent, high surface area solid support material having deposited thereon a compound capable of reacting chemically with sulfur dioxide to form a thermally decomposible molecule and thereby removing sulfur dioxide from the gas stream, said compound being selected from the group consisting of phenols and quinones; and,

b. recovering said gas stream substantially free of sulfur dioxide by removing it from contact with the support material and the thermally decomposible molecule deposited thereon

c. regenerating said compound for reuse by raising the temperature of said support material and the thermally decomposible molecule deposited thereon to a temperature above the decomposition temperature of said molecule until substantially all of the sulfur dioxide is driven off and recovered.



## 3,932,590
## PROCESS FOR PREPARING MEDIUM DENSITY GRANULAR SODIUM TRIPOLYPHOSPHATE

**Raimond Pals, Farmingdale; Robert J. Fuchs, Clark, both of N.J., and John C. Schwartz, Green River, Wyo., assignors to FMC Corporation, Philadelphia, Pa.**

**Filed Apr. 8, 1974, Ser. No. 459,256**
**Int. Cl.² C01B** *15/16, 25/26*
**U.S. Cl. 423—315** **11 Claims**

1. A method of preparing granular sodium tripolyphosphate of medium density which comprises spraying onto rotating finely divided sodium tripolyphosphate particles having a size distribution of at least 50% by weight −100 mesh, 0 to 25% by weight −50+100 mesh and 0 to 25% by weight +50 mesh, an aqueous spray solution of sodium orthophosphate having a concentration of from about 20 to 65% by weight until the total amount of dissolved solids sprayed is between 8 and 15% by weight based on the total weight of sodium tripolyphosphate to be produced, to form an agglomerated product and calcining the agglomerated product at a temperature of 300° to 600°C to produce granular sodium tripolyphosphate having a bulk density between about 0.50 and 0.80 grams per cubic centimeter and a particle size of −20+100 mesh.

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## 3,932,591
## PROCESS FOR THE MANUFACTURE OF PHOSPHORIC ACID WITH MINIMIZED ENVIRONMENTAL EFFECTS

**Rogelio Serge Ribas, Decatur, and John D. Nickerson, Atlanta, both of Ga., assignors to United States Steel Corporation, Pittsburgh, Pa.**

**Filed Apr. 19, 1972, Ser. No. 245,336**
**Int. Cl.² C01B** *25/16*
**U.S. Cl. 423—319** **5 Claims**

1. In a process for producing phosphoric acid wherein phosphate rock is mined, beneficiated, the beneficiated product separated into a slimes stream, one or more pebble streams, and a concentrate stream, the slimes stream discarded, and the pebble streams digested with mineral acid and filtered to remove impurities, the improvement comprising dewatering the slimes stream to a solids content of at least 40 percent by weight, calcining the dewatered slimes at a temperature in the range of 1600° to 2200°F, combining the calcined slimes with the beneficiated pebble prior to digesting with a mineral acid and filtering the resultant slurry to remove solid matter.

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## 3,932,592
## PROCESS FOR PREPARING CATHODOCHROMIC SODALITE

**Lee T. Todd, Jr.; Eugene F. Farrell, both of Lexington, and Arthur Linz, Winchester, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.**

**Filed Apr. 1, 1974, Ser. No. 456,962**
**Int. Cl.² C01B** *33/26, 33/28*; **C09K** *11/08*
**U.S. Cl. 423—328** **19 Claims**

1. A process for preparing cathodochromic sodalite consisting essentially of sodalite of the formula $Na_6Al_6Si_6O_{24} \cdot 2(1-z)$ NaX, wherein $z$ is the fraction of NaX vacancies and X is taken from the group consisting of chlorine, bromine, iodine, OH and mixtures thereof, that comprises: mixing essentially stoichiometric quantities of sodium hydroxide, sodium halide, aluminum oxide and silicon dioxide to form a charge; placing the charge in a hydrothermal pressure vessel having a lower or dissolving zone and an upper or growth zone; adding to the charge water and further sodium hydroxide to provide an excess of sodium hydroxide in the charge; applying heat to the vessel and maintaining the temperature of the charge therein between 300°C and 500°C, the lower or dissolving zone of the vessel being at least 10°C higher in temperature than the upper or growth zone of the vessel, the 300°C to 500°C temperature being maintained for at least the order to 20 hours; cooling the vessel to room temperature and removing from the vessel the material which is in a crystallized powder form in a concentrated sodium hydroxide solution and contains a sodalite phase and unwanted phases; hydrothermally re-crystallizing the powder in a hydrothermal vessel at a temperature of at least 80°C for the order of 3 days to convert the unwanted phases to the sodalite phase and provide a resulting powder that is high in sodalite; and annealing the resulting powder in hydrogen between 550°C and 950°C for 15 minutes to an hour.

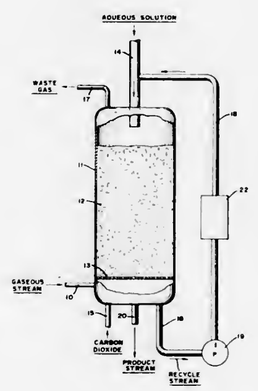
9. A process for preparing cathodochromic sodalite consisting essentially of sodalite of the formula $Na_6Al_6Si_6O_{24} \cdot 2(1-z)$ NaX, wherein $z$ is the fraction of NaX vacancies and X taken from the group consisting of chlorine, bromine, iodine, OH and mixtures thereof, that comprises: mixing quantities of sodium hydroxide, sodium halide, aluminum oxide and silicon dioxide to form a charge; comminuting the charge; sintering the commimuted charge to form a crystalline material containing a sodalite phase and at least one unwanted phase; comminuting the sintered product to form a powder; hydrothermally transforming the powder at a temperature sufficiently high and a growth period sufficiently long to effect re-crystallization of at least some of said at least one unwanted phase to increase the sodalite phase in the powder; and annealing the resulting powder in hydrogen between 550°C and 950°C for at least 15 minutes to an hour.

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## 3,932,593
## PROCESS FOR THE SYNTHESIS OF AMMONIUM NITRITE

**John H. Bonfield, Basking Ridge, N.J., assignor to Allied Chemical Corporation, New York, N.Y.**

**Filed May 11, 1973, Ser. No. 359,292**
**Int. Cl.² C01B** *21/20*
**U.S. Cl. 423—385** **7 Claims**




1. In a process for producing ammonium nitrite by contacting in a reaction zone a gaseous stream comprising at least, in part, nitric oxide and molecular oxygen-containing gas with an aqueous solution having a pH of at least about 6.75 and containing a basically reacting ammonium compound, the improvement which comprises introducing into said reaction zone free carbon dioxide in an amount of from about 15 to 30 volume percent carbon dioxide of said gaseous stream.

## 3,932,594
## PROCESS FOR THE PREPARATION OF FINE GRAIN METAL CARBIDE POWDERS

**Frank P. Gortsema, Croton, N.Y., assignor to Union Carbide Corporation, New York, N.Y.**

**Filed Dec. 28, 1973, Ser. No. 429,269**
**Int. Cl.² C01B *31/30, 31/34***
**U.S. Cl. 423—440** **8 Claims**

1. A process for producing finely divided metal carbide powders which comprises the steps of

a. impregnating a carbohydrate material with a compound of a metal, said metal being selected from the group consisting of tungsten, titanium, tantalum, molybdenum, zirconium, hafnium, thorium, or mixtures thereof;

b. igniting the impregnated material product of step (a) at a temperature which does not exceed the temperature at which sintering occurs, to produce fragile agglomerates of sub-micron size metal oxide particles;

c. comminuting the metal oxide product of step (b) to produce finely divided metal oxide powder having a mean particle size below micron; and

d. heating said metal oxide powder in an atmosphere of methane and hydrogen to convert said metal oxide powder to metal carbide powder.

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## 3,932,595
## PROCESS OF MANUFACTURING CARBON BISULFIDE

**Jean Berthoux, Decines, and Ghislain Schwachhofer, Miribel, both of France, assignors to Rhone-Progil, Paris, France**

**Continuation of Ser. No. 251,980, May 10, 1972, abandoned. This application June 7, 1974, Ser. No. 477,340**
**Claims priority, application France, May 19, 1971, 71.7119**
**Int. Cl.² C01B *31/26***
**U.S. Cl. 423—443** **6 Claims**

1. A process for manufacturing carbon disulfide comprising

contacting and reacting a hydrocarbon selected from the group consisting of olefins, diolefins, cyclic hydrocarbons, light fuels and heavy fuels with both sulfur vapor and sulfur dioxide at temperatures between about 500°–1000°C. for a period of 0.3 to 10 seconds in the absence of a catalyst,

the total sulfur introduced as sulfur vapor and sulfur dioxide being at least equal to the stoichiometric quantity necessary for the conversion of the hydrocarbon into carbon disulfide and

the number of moles of sulfur dioxide introduced being at least equal to one fourth of the number of hydrocarbon hydrogen atoms.

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## 3,932,596
## METHOD FOR SEPARATING AND RECOVERING KISH GRAPHITE FROM MIXTURES OF KISH GRAPHITE AND FUME

**Pradeep Kumar Rohatgi, Bangalore, India, assignor to Bethlehem Steel Corporation, Bethlehem, Pa.**

**Continuation-in-part of Ser. No. 271,443, July 13, 1972, abandoned. This application Apr. 23, 1974, Ser. No. 463,349**
**Int. Cl.² C01B *31/02, 31/04***
**U.S. Cl. 423—448** **22 Claims**

1. An improved method for separating kish graphite from kish graphite and fume mixtures and recovering the kish graphite as a clean product comprising:

a. screening the kish graphite and fume mixture to obtain a screen overflow consisting essentially of kish graphite with fume adhering to the surfaces thereof and a screen underflow consisting essentially of fume, said screen underflow being passed to waste,

b. mixing the screen overflow with at least one washing agent taken from the group consisting of water, hydrochloric acid and waste hydrochloric acid pickle liquor,

c. adding a quantity of at least one surface active agent taken from the group consisting of a water soluble non-ionic compound and a water soluble cationic compound, where said water soluble non-ionic compound is the condensation product of the reaction between two mols of diethanolamine and one mol of at least one fatty acid taken from the group consisting of lauric acid, myristic acid, myristoleic acid, palmitoleic acid, oleic acid and coconut acids and a compound formed by the addition of ethylene oxide to a linear alcohol having a carbon chain length of about $C_{11}$ to about $C_{15}$ and said water soluble cationic compound is a quaternary ammonium salt, to the mix of step (b),

d. agitating the mixture formed in step (c) for a time to substantially completely wet the surfaces of the kish graphite,

e. filtering the agitated mixture of step (d) to separate the kish graphite from the fume washing agent and surface active agent, said kish graphite being collected as a filter cake and the fume, washing agent and surface active agent as an effluent which is passed to waste,

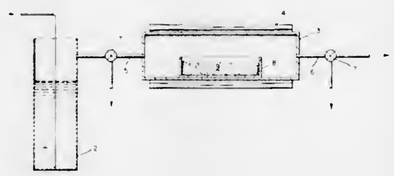
f. washing and drying the kish graphite recovered in step (e) as filter cake.

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## 3,932,597
## PURIFICATION OF ALKALI METAL HALIDES

**Ricardo C. Pastor, Manhattan Beach, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.**

**Continuation of Ser. No. 416,899, Nov. 19, 1973, abandoned. This application June 17, 1975, Ser. No. 587,746**
**Int. Cl.² C01D *3/20, 3/04, 3/10, 3/12***
**U.S. Cl. 423—499** **4 Claims**



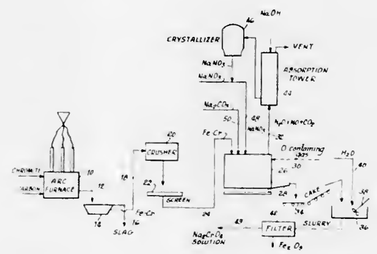
1. A method for upgrading the purity of alkali metal chlorides, bromides, and iodides for use as laser crystal starting materials by removing cation and anion impurities comprising the steps of placing the metal halide in a reaction chamber, heating said halide to its molten state, exposing said metal halide to halide-source species in the vapor phase which yields by dissociation a nascent halogen corresponding to the metal halide being treated from 5 to 20 hours and allowing the purified material to cool to its solidification temperature in the presence of said nascent halogen.



## 3,932,598
## PROCESS FOR PRODUCING ALKALI METAL CHROMATES AND DICHROMATES

**Hugh S. Cooper, deceased, late of Shaker Heights, Ohio, by Henry J. Rand, executor, 25801 Lake Shore Blvd., Euclid, Ohio 44132**

**Filed Apr. 24, 1970, Ser. No. 31,528**
**Int. Cl.² C01G *37/14***
**U.S. Cl. 423—596** **19 Claims**



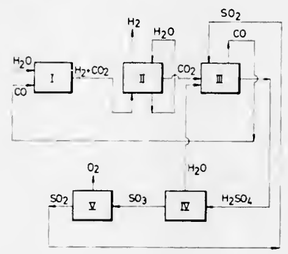

1. A process for producing alkali metal chromates comprising slowly adding a finely divided ferrochrome alloy containing 1% to 10% by weight carbon wherein the ferrochrome alloy is suspended in an oxygen-containing gas and sprayed onto the surface of a molten mixture comprising an alkali metal nitrate and an alkali metal carbonate wherein the alkali metal carbonate constitutes between 2–15% by weight of the mixture at a temperature of 350°C to 900°C, and separating the alkali metal chromate produced.

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## 3,932,599
## METHOD OF OBTAINING HYDROGEN FROM STEAM

**Rudolf Schulten, Richterich; Johannes Teggers, Wesseling, and Roland Schulze Bentrop, Bonn, all of Germany, assignors to Rheinische Braunkohlenwerke Aktiengesellschaft, Cologne, Germany**

**Filed Feb. 25, 1975, Ser. No. 552,828**
**Claims priority, application Germany, Mar. 1, 1974, 2409762**
**Int. Cl.² C01B *1/02, 1/08, 13/02***
**U.S. Cl. 423—655** **1 Claim**




1. A method of obtaining hydrogen from steam in a multi-stage circulatory process, in which in a first reaction stage carbon monoxide is reacted catalytically with steam at a temperature of 300° to 500°C to produce carbon dioxide and hydrogen; and in a second reaction stage the carbon dioxide is reacted with water and sulphur dioxide at a temperature of 100° to 650°C and at a pressure of 20 to 750 atmospheres to produce sulfuric acid and carbon monoxide; the sulfuric acid through an intermediate stage of conversion to sulfur trioxide is dissociated into sulphur dioxide, oxygen and steam by heat treatment; the carbon monoxide which has been obtained is recycled back into the first reaction stage, and the sulphur dioxide which has been obtained is recycled back into the second reaction stage; and the hydrogen and oxygen obtained as end products are separately recovered.

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## 3,932,600
## PROCESS FOR THE GENERATION OF HYDROGEN

**Heinrich Gutbier, and Karl Höhne, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany**

**Filed Sept. 13, 1973, Ser. No. 397,009**
**Claims priority, application Germany, Sept. 13, 1972, 2244944**
**Int. Cl.² C01B *1/07, 1/02***
**U.S. Cl. 423—657** **9 Claims**

1. A process for generating gaseous hydrogen comprising reacting with water, small particles of magnesium metal or of a combination of magnesium and aluminum metal in a weight ratio of magnesium to aluminum of between 7:1 to 2:6, said particles being admixed with an oxide of cobalt selected from the group consisting of tricobalt tetraoxide ($Co_3O_4$) and dicobalt trioxide ($Co_2O_3$), said reaction occuring in the presence of a water soluble chloride selected from the group consisting of alkali metal chlorides and magnesium chloride, wherein the amount of cobalt oxide is from about 0.5 to 5.0% by weight of total metal and the amount of water-soluble chloride is from about 5% to 200% by weight of total metal.

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## 3,932,601
## METHOD AND COMPOSITION FOR THE DIAGNOSIS OF EQUINE INFECTIOUS ANEMIA VIRUS INFECTION BY USING AGAR-GEL-IMMUNODIFFUSION REACTION

**Leroy Coggins, Ithaca, N.Y., assignor to Cornell Research Foundation, Inc., Ithaca, N.Y.**

**Continuation-in-part of Ser. No. 132,073, April 7, 1971, abandoned. This application Nov. 5, 1971, Ser. No. 196,060**
**Int. Cl.² A61K *39/12*; G01N *31/00, 33/16***
**U.S. Cl. 424—12** **6 Claims**

1. A method for obtaining an antigen preparation of equine infectious anemia virus useful in the diagnosis of said virus infection in animals, said antigen preparation being specific in its reaction with equine infectious anemia virus antibody, which method comprises

a. inoculating an equine with a virus of equine infectious anemia having sufficient virulence to render said equine severely febrile rapidly after being inoculated with said virus;

b. removing the equine infectious anemia virus infected spleen from said equine shortly after said animal becomes febrile, but before the antigen in said spleen becomes substantially tied up or contaminated with antibodies to the antigen,

c. forming a spleenic tissue pulp, causing release of an equine infectious anemia virus antigen from the spleenic pulp, thereby providing an extract comprising said antigen preparation.

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## 3,932,602
## NON-STINGING WOUND DRESSING

**Ulf Alan Sweger, Marbella, Spain, assignor to Novitas Nuprot SA, Freibourg, Switzerland**

**Filed Dec. 13, 1973, Ser. No. 424,422**
**Claims priority, application Switzerland, Dec. 27, 1972, 16962/72**
**Int. Cl.² A61L *9/04***
**U.S. Cl. 424—45** **3 Claims**

1. In an aerosol wound dressing of the type having in an aerosol spray container pressurized with dichlorodifluoromethane, 1,1,2-trichloro-1,2,2-trifluoroethane, or trichlorofluoromethane which contains a film forming plastic material selected from the group consisting of N-butyl methacrylate, isobutyl methacrylate, 2-ethoxyethyl methacrylate, methyl

methacrylate, 2-ethoxyethyl methacrylate/methyl methacrylate(90/10 copolymer), N-butyl methacrylate/isobutyl methacrylate(50/50 copolymer), or N-butyl methacrylate/-methyl methacrylate(80/20 copolymer) in a solvent system, the improvement which comprises a solvent system having sym-tetrachlorodifluoroethane alone or at least 50% sym-tetrachlorodifluoroethane in combination with methanol, ethanol, acetone, methyl ethyl ketone, ethyl acetate, or amyl acetate; said improvement rendering the aerosol wound dressing non-stinging.

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**3,932,603**
**ORAL PREPARATIONS FOR REDUCING THE INCIDENCE OF DENTAL CARIES**

**Gerhard J. Haas, Woodcliff Lake, N.J., assignor to General Foods Corporation, White Plains, N.Y.**

**Filed May 28, 1971, Ser. No. 148,203. The portion of the term of this patent subsequent to Mar. 13, 1991, has been disclaimed.**
**Int. Cl.² A61K 7/16**
**U.S. Cl. 424—49** **1 Claim**

1. A method for reducing the incidence of dental caries comprising placing in the mouth an oral preparation containing from 0.002% to 0.3% by weight of an antimicrobial compound selected from the group consisting of sodium-palmitoyl-L-lysine-L-lysine ethyl ester, sodium-palmitoyl-L-lysine-L-lysine amide dihydrochloride and combinations thereof, said preparation capable of producing an effective concentration of the compound in the mouth to be antimicrobial against cariogenic streptococci.

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**3,932,604**
**HUMECTANT SWEETENER**

**Jordan B. Barth, East Brunswick, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.**

**Continuation-in-part of Ser. No. 317,696, Dec. 22, 1972, abandoned. This application Mar. 11, 1974, Ser. No. 449,620**
**Int. Cl.² A61K 7/16**
**U.S. Cl. 424—49** **8 Claims**

1. A dental cream requiring a humectant, said humectant consisting essentially of at least about 15% by weight of xylitol, effective, as sole humectant, to prevent orifice plugging when said cream is left uncapped overnight.

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**3,932,605**
**DENTAL TREATMENT**

**Jaroslav Vit, 40 Partridge Run, Belle Mead, N.J. 08502**

**Filed Oct. 26, 1972, Ser. No. 301,163**
**Claims priority, application United Kingdom, June 29, 1972, 30611/72; June 12, 1972, 27443/72; Aug. 24, 1972, 39588/72; Aug. 24, 1972, 39589/72**
**Int. Cl.² A61K 7/20, 7/22**
**U.S. Cl. 424—51** **24 Claims**

1. A method useful in treating living unextracted teeth in the oral cavity to remove caries, to dissolve or remove plaque, to help in the prevention of calculus formation, or to remove stains thereby to brighten teeth, while leaving the dentine and enamel of healthy tooth tissue entirely unaffected consisting essentially of the step of contacting said teeth in the oral cavity with an effective amount of an N-halo compound which is a member of the group consisting of N-bromoglycine, N-iodoglycine, N-halosulfamic acid, N-halosarcosine, N-halo alpha-aminoisobutyric acid, N-halotaurine, N-halo-2-aminoethanol, N-halo-acetylglycine, N-haloalanine, N-halo betaalanine, N-haloserine, N-halo phenyl alanine, N-halo norvaline, N-haloleucine, N-halo isoleucine, N-haloproline, N-halo hydroxyproline, N-halo omega aminoundecanoic acid, N-haloaspartic acid, N-haloglutamic acid, N-haloasparagine, N-halovaline, N-halotyrosine, N-halothreonine, N-halocysteine, N-halocystine, N-halomethionine, N-haloglutamine, N-halotryptophane, N-halohistidine, N-haloarginine, N-halolysine, N-halo alpha-aminobutyric acid, N-halo gamma-aminobutyric acid, N-halo alpha, epsilon diamino pimelic acid, N-halo ornithine, N-halo hydroxyl lysine, N-haloanthranilic acid, N-halo p-aminobenzoic acid, N-halosulfanilic acid, N-halo orthanilic acid, N-halo phenyl sulfamic acid, N-haloaminopropanesulfonic acid, N-halo 2-aminopropanol, N-halo diethanolamine, N-halo ethylenediamine tetraacetic acid, N-halo nitrilotriacetic acid, N-halotaurine, N-halo aminomethane-sulfonic, N-halo glycylglycine, N-halo glycylglycylglycine, N-halo metanilic acid and N-halo-N-octodecanyl glycine, said halogen having an atomic weight of 35 to 127.

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**3,932,606**
**DENTIFRICE**

**Jordan B. Barth, East Brunswick, and Christopher H. Costello, Millington, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.**

**Filed Feb. 7, 1974, Ser. No. 440,399**
**Int. Cl.² A61K 7/16, 7/18**
**U.S. Cl. 424—52** **23 Claims**

1. A dentifrice having a vehicle with a pH of about 3 to about 10 and including a surface active agent with an otherwise potentially bitter taste and containing as sole or prime high intensity bitter taste masking sweetener approximately by weight 0.01 to 10.0% of a member selected from the group consisting of 3,4-dihydro-1,2,3-oxathiazin-4-one, the alkaline metal salts, and the alkaline earth metal salts thereof.

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**3,932,607**
**ANTIMICROBIAL COMPOSITION**

**Sven-Gunnar Hesselgren, Angsholmen, Drottningholm, Sweden**

**Filed July 26, 1973, Ser. No. 382,815**
**Claims priority, application Sweden, July 31, 1972, 9953/72**
**Int. Cl.² A61K 7/16, 27/00**
**U.S. Cl. 424—52** **11 Claims**

1. An oral antibacterial composition of a pH of 7 to about 7.3 comprising as an essential active ingredient an antibacterially effective combination of (a) dodecyl-di-(aminoethyl)-glycine and (b) chlorohexidine or a salt thereof selected from the group consisting of the digluconate, the diacetate, the dichloride and the monofluorophosphate, in a suitable carrier.

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**3,932,608**
**FOOD COMPOSITION**

**Ray H. Anderson, Osseo, and Albert L. Saari, Minneapolis, both of Minn., assignors to General Mills, Inc., Minneapolis, Minn.**

**Filed Aug. 30, 1971, Ser. No. 176,276**
**Int. Cl.² A61K 5/00, 7/16**
**U.S. Cl. 424—54** **7 Claims**

1. A cariogenic food product fortified nutritionally with a cariostatic effective amount of a member selected from the group consisting of an alkali metal lysine phosphate, an alkaline earth metal lysine phosphate and their diphosphates.

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**3,932,609**
**ANTIPERSPIRANT COMPOSITION**

**Joseph Rosenstreich, Merrick; Joseph Gubernick, Port Washington, and Frank Garone, Kings Park, all of N.Y., assignors to Estee Lauder Inc., New York, N.Y.**

**Filed Mar. 29, 1974, Ser. No. 456,515**
**Int. Cl.² A61K 7/38**
**U.S. Cl. 424—68** **8 Claims**

1. A stable antiperspirant lotion composition which is particularly suitable for use in a roll-on applicator comprising from about 12 to about 20% by weight of aluminum chlorhydrate, from about 1 to about 3% by weight of aluminum chloride, from about 5 about 12% by weight of fumed silica, from about 0.1 to about 1% by weight of a quaternary ammonium salt selected from the group consisting of octyl phenoxy ethoxy ethyl dimethyl benzyl ammonium chloride and octyl cresoxy ethoxy ethyl dimethyl benzyl ammonium chloride, a buffer material in an amount sufficient to adjust the pH of said composition to between about 3.20 and 3.50 and the remainder of the composition being water, said lotion composition being characterized by a viscosity of from about 500 to about 2,225 cps at ambient temperature.



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**3,932,610**
**SHAMPOO COMPOSITION**

**Jerome Rudy, Livingston; Morton Pader, Teaneck, and William Netzbandt, Dumont, all of N.J., assignors to Lever Brothers Company, New York, N.Y.**

**Continuation-in-part of Ser. No. 205,314, Dec. 6, 1971, abandoned. This application Mar. 21, 1973, Ser. No. 343,593**
**Int. Cl.² A61K 7/06**
**U.S. Cl. 424—70** **18 Claims**

1. A foaming shampoo composition comprising (a) at least about 5 weight percent, based on the weight of the total composition of a surfactant system selected from the group consisting of anionic, nonionic and ampholytic detergent compounds, and mixtures thereof;

b. from about 10 to about 90 weight percent, based on the weight of the total composition of a solvent system, the solvent system containing at least 10 weight percent thereof of a water miscible polar organic solvent; and,

c. from about 1.0 to about 60 weight percent based on the weight of the total composition of a hair grooming agent selected from the group consisting of polymerized wood rosin, dimerized wood rosin, hydrogenated wood rosin, $C_1$ to $C_6$ esters of these rosins, sucrose acetate isobutyrate, polyvinyl ethyl ethers having a molecular weight of from about 10,000 to 750,000 alkyds having a molecular weight of from about 10,000 to about 50,000, polyketones having an average molecular weight of from about 500 to 1,000, vinylacetate, acrylic resins having an average molecular weight of from about 10,000 to 150,000, cocoamide having a melting point of 80° to 90°C, steryl amide, ethoxylated higher fatty alcohols, and mixtures thereof, the grooming agent being substantially soluble or dispersible in the solvent-surfactant systems so as to form a single phase with the solvent-surfactant system and substantially insoluble in water so that the agent will become insoluble and deposit onto the hair of the user upon dilution with water during shampooing; the relative amounts of the surfactant system, the solvent system and the hair grooming agent being adjusted within said ranges to give a foaming shampoo composition.

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**3,932,611**
**HAIR DRESSING COSMETIC**

**Connie M. McCarthur, 3709 Lovingood Drive, Dallas, Tex. 75241**

**Filed Aug. 21, 1974, Ser. No. 499,270**
**Int. Cl.² A61K 7/06**
**U.S. Cl. 424—70** **2 Claims**

1. A uniform hair and scalp care cosmetic mixture, comprised of volumetric proportional ingredients, with any one ingredient not exceeding a 15 percent volumetric variation from the specific ingredients, and percentages of total mixture volume thereof defined by and proportional to 86.808 percent white petroleum jelly, 2.129 percent beeswax, 7.011 percent olive oil, 2.631 percent castor oil, 1.316 percent coconut oil, 0.024 percent oil of sassaphras, and 0.018 percent perfuming agent; said mixture having a consistency slightly more viscous than petroleum jelly.

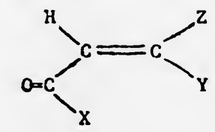
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**3,932,612**
**INSECTICIDAL COMPOSITIONS FOR SUSTAINED RELEASE OF 0,0-DIMETHYL-0-(2,2-DICHLOROVINYL) PHOSPHATE**

**Claus Burkhardt, Krefeld; Karl Raichle, Krefeld-Bockum, and Wolfgang Behrenz, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

**Filed June 15, 1973, Ser. No. 370,512**
**Claims priority, application Germany, June 24, 1972, 2231099**
**Int. Cl.² A01N 9/36**
**U.S. Cl. 424—78** **10 Claims**

1. A method of diminishing the initially objectionable odor of an insecticidal composition comprising 0,0-dimethyl-0-(2,2-dichlorovinyl)-phosphate, an ethylenically unsaturated polyester, a vinyl monomer copolymerizable with the polyester, and at least one solid or liquid filler, comprising incorporating in the composition prior to curing about 0.1 to 10% by weight of the composition of an ethylenically unsaturated compound of the formula



in which
X is —OR or —OH, Y is —H and Z is —COOR, or
X is —OH, Y is —COOR and Z is —H, or
X is —O— or <N—R, Y is <CO and Z is,—H, in which case X and Y are bonded together to form an anhydride or imide ring, and
R is an aliphatic radical with up to 12 carbon atoms.

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**3,932,613**
**METHOD OF PREVENTING LEAKAGE FROM BODY ORIFICES WHEN UTILIZING SUPPOSITORIES AS A SOURCE OF MEDICATION**

**Francis B. Chapura, Norwich, N.Y., assignor to Morton-Norwich Products, Inc., Norwich, N.Y.**

**Filed Aug. 20, 1973, Ser. No. 389,462**
**Int. Cl.² A61K 31/74**
**U.S. Cl. 424—78** **1 Claim**

1. A suppository base consisting of from 91 to 95 parts of a polyethylene glycol having an average molecular weight of about 1000; three parts of a polyethylene glycol having an average molecular weight of 300; one-half part of polyoxyethylene palmitate containing about 20 oxyethylene units; and from one and one-half to five and one half parts of a member selected from the group consisting of amorphous silica and carboxyvinyl polymer resin.

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**3,932,614**
**METHOD OF LUBRICATING OR SOFTENING THE SKIN**

**Howard L. Scott, Philadelphia, Pa., assignor to Fabalon, Inc.; K. & W. Scott Trust; C. N. Wragg, Jr. and B. Wragg, all of Philadelphia, Pa., part interest to each**

**Continuation-in-part of Ser. No. 230,487, Feb. 2, 1972, abandoned. This application Oct. 21, 1974, Ser. No. 516,817**
**Int. Cl.² A61K 7/00, 7/025, 7/035, 31/74**
**U.S. Cl. 424—78** **2 Claims**

1. A method of lubricating or softening the skin which comprises applying to the skin a composition comprising water, carboxypolymethylene and about 1 to about 50% by weight of a lubricating agent selected from the group consisting of chlorotrifluoroethylene resin, the homopolymer of tetrafluoroethylene, the homopolymer of hexafluoropropylene, and the copolymer of tetrafluoroethylene and hexafluoropropylene having the formula $(CF_2CF_2\text{-}CF_2CFCF_3)_n$ where n is an integer corresponding to the number of repeating units in the copolymerized chain, said lubricating agent having a particle size of between about 0.01 to about 30 microns and said composition having a pH of about 7–8.1.

3,932,615

## PROCESS FOR THE PREPARATION OF GRANULES

Shojiro Ito, Ebina; Akira Takami, Atsugi, and Tokio Takekoshi, Machida, all of Japan, assignors to Meiji Seika Co., Ltd., Japan

Filed Mar. 8, 1974, Ser. No. 449,445
Claims priority, application Japan, Mar. 16, 1974, 48-30073
Int. Cl.² A61K *31/00*
U.S. Cl. 424—80 9 Claims

1. Process for the preparation of granular product of uniform particle size, good disintegrating properties, relatively great apparent density and abrasion resistance, which comprises the steps of: (a) mixing a crystalline sugar and a finely powdered basis having a particle size of from about 177$\mu$ to about 500$\mu$ in a mixing apparatus in the presence of about 15% by weight based on the total combined weight of said sugar and said basis of a solution containing from about 0.1 to 3.0% by weight of binder based on the same total combined weight, said basis comprising at least one member selected from the group consisting of penicillin, tetracycline, novobiocin, kanamycin, paromomycin and midecamycin; (b) crushing the resultant wetted mixture of sugar, basis and binder solution in the form of lumps; and (c) removing the remaining solvent from the said solution of the binder, and recovering the granular product therefrom.

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3,932,616

## INSECT ATTRACTANT COMPOSITION

Otto Meresz, 8 Wallingford Road, and Cecilia Mozsgai, 10 Sunny Glenway, No. 103, both of Don Mills, Ontario, Canada

Filed June 11, 1973, Ser. No. 368,960
Claims priority, application United Kingdom, June 26, 1972, 29835/72
Int. Cl.² A01N *17/14*
U.S. Cl. 424—84 1 Claim

1. A pheromonal composition comprising an effective amount of a mixture of cis-9-tricosene and cis-9-heneicosene, the relative amounts thereof being about 70 parts by weight cis-9-tricosene and about 30 parts by weight cis-9-heneicosene.

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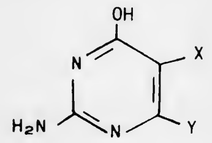
3,932,617

## INTERFERON INDUCTION

Francis Richard Nichol, Jr., Newport Beach, Calif., and Gerald E. Underwood, Kalamazoo County, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed May 24, 1974, Ser. No. 473,012
Int. Cl.² A61K *31/505*
U.S. Cl. 424—85 12 Claims

1. A method for inducing interferon formation in humans or interferon producing animals which comprises administering to said human or animal an amount effective to induce interferon formation in said human or animal of a compound selected from the group consisting of compounds having the formula:




wherein X is a member selected from the group consisting of bromo and iodo and Y is a member selected from the group consisting of methyl and ethyl when X is bromo; or Y is a member selected from the group consisting of methyl, ethyl, n-propyl, benzyl and chloro when X is iodo; or the pharmacologically acceptable acid addition salts thereof.

3,932,618

## ANTI-INFLAMMATORY COMPOSITIONS

Setsuro Fujii, Tokushima; Masatomi Otsuka, Naruto, and Yoshiyasu Osaki, Tokushima, all of Japan, assignors to Otsuka Kagaku Yakuhin Kabushiki Kaisha, Japan

Filed Apr. 14, 1972, Ser. No. 244,256
Claims priority, application Japan, Apr. 14, 1971, 46-24004
Int. Cl.² A61K *35/14, 37/48*
U.S. Cl. 424—94 8 Claims

1. An anti-inflammatory composition which comprises an anti-inflammatorily effective amount of a reaction product of blood serum of cow with a protease obtained from Bacillus sp 0-20, deposit number FERM 270, and an adjuvant, said reaction product being obtained by reacting the serum with the protease at 20 to 60°C for about 0.5 - 5 hours and separating the resultant product from the reaction mixture, and in which said protease is used in an amount ranging from 200 to 2,000γ per ml of the blood serum.

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3,932,619

## METABOLITE A-27106 AND PROCESSES FOR ITS PREPARATION AND USE

Donald R. Brannon, Pittsboro, and Donald R. Horton, Brownsburg, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 328,586, Feb. 1, 1973, abandoned. This application May 24, 1974, Ser. No. 473,016
Int. Cl.² A61K *35/00*
U.S. Cl. 424—120 3 Claims

1. Metabolite A-27106, or the sodium, lithium, potassium, rubidium cesium or ammonium salt thereof, which metabolite is a white solid having a molecular weight of about 832 and a titratable group with a pKa value of 7.2; and the sodium salt of which is a white crystalline solid, relatively soluble in lower alkanol, but generally insoluble in lower alkane and which has:

a. a molecular weight of 854, as determined by mass spectrometry;
b. an approximate elemental composition of 58.78% carbon, 8.51% hydrogen, 27.85% oxygen, and 3.63% sodium;
c. an empirical formula of $C_{42}H_{71}O_{16}Na$;
d. an infrared absorption spectrum in chloroform as shown in the accompanying drawing;
e. a mass spectrum which shows a molecular-ion peak at m/e 854.44630 and characteristic peaks at m/e 836.44129, 779.44690, 761.44740; and
f. an Rf value of 0.49 on silica-gel thin-layer chromatography in benzene-methanol (7:3).

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3,932,620

## KETONES AND KETOXIMES DERIVED FROM ACID S, AN ANTIBIOTIC PRODUCED BY *POLYANGIUM CELLULOSUM* VAR. *FULVUM*

David T. Connor, Parsippany; Samuel M. Ringel, Rockaway, and Maximilian von Strandtmann, Rockaway Township, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed June 24, 1974, Ser. No. 482,052
Int. Cl.² A61K *35/00*
U.S. Cl. 424—122 6 Claims

1. An antifungal substance, ketodiol S, prepared by treating triol S (1 equivalent) with silver carbonate-on-celite (60 equivalents) in refluxing toluene (500 equivalents) for 1 hour and having the following characteristics:

a. Infrared Spectrum $\nu_{max}$ 3450, 1720, 1670, 1450, 1380, 1270, 1120, 1070 and 980 $cm^{-1}$;
b. Molecular Formula $C_{28}H_{42}O_5$; molecular weight 458.



3,932,621

## TRIOLS AND ACETATES THEREOF DERIVED FROM ANTIBIOTIC SUBSTANCE, ACID S, PRODUCED BY *POLYANGIUM CELLULOSUM* VAR. *FULVUM*

David T. Connor, Parsippany, and Samuel M. Ringel, Rockaway, assignors to Max von Strandtmann, Rockaway Township, all of, N.J. and Warner-Lambert Company, Morris Plains, N.J.

Filed June 24, 1974, Ser. No. 482,054
Int. Cl.² A61K *35/00*
U.S. Cl. 424—122 7 Claims

1. An antifungal substance, triol S, prepared by treating acid S (1 equivalent) with lithium aluminum hydride (10 equivalents) in the presence of boiling tetrahydrofuran (200 equivalents) for 3 hours and having the following physical properties:

a. Mass spectrum m/e (relative intensity) 460(6), 442 (5), 431 (52), 365 (6), 347 (26), 329 (10), 195 (75). 193 (100), 167 (off scale) and 165 (off scale); molecular ion observed: 460.3223; calculated for $C_{28}H_{44}O_5$: 460.3189;
b. Infrared Spectrum $\nu_{max}$ 3300, 1440, 1350, 1050, 1010 and 950 $cm^{-1}$.

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3,932,622

## SKIN MOISTURIZER

Herman H. Friedman, Bayside; Linda K. Halik, Ossining, both of N.Y., and Milton H. Schwarz, Westport, Conn., assignors to General Foods Corporation, White Plains, N.Y.

Filed Jan. 11, 1974, Ser. No. 432,722
Int. Cl.² A61K *31/195, 31/00, 7/00*
U.S. Cl. 424—168 9 Claims

1. A moisturizing cosmetic composition which comprises a stable water-in-oil emulsion and an amount of a di-sodium or di-potassium salt of N-acetylglutamic acid which is effective to provide a super-moisturizing effect when applied to the skin.

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3,932,623

## METHOD OF TREATING SCHIZOPHRENIA

Ian C. Wilson, c/o Dorothea Dix Hospital, Raleigh, N.C. 27601

Filed June 18, 1974, Ser. No. 480,546
Int. Cl.² A61K *37/00*; C07C *103/52*
U.S. Cl. 424—177 1 Claim

1. A method for the treatment of a patient suffering from schizophrenia which comprises the administration to the said patient of a therapeutically effective amount of TRH or L-pyroglutamyl-L-histidyl-L-proline amide.

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3,932,624

## METHOD FOR PROLONGING THE INHIBITORY EFFECT OF SARALASIN ON ANGIOTENSIN II

Robert W. Fulton, Hamilton, N.Y., assignor to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed June 17, 1974, Ser. No. 479,829
Int. Cl.² A61K *37/00*; C07C *103/52*
U.S. Cl. 424—177 1 Claim

1. The method of prolonging the antihypertensive effect of saralasin to angiotensin II in animals which consists in administering subcutaneously to angiotensin II hypertensive animals a composition consisting of saralasin in a 15% gelatin gel in an amount to deliver a dose of saralasin of about 5 mg/kg.

3,932,625

## METHOD AND COMPOUND FOR PARASITE CONTROL

Roy L. Whistler, West Lafayette, Ind., assignor to Purdue Research Foundation, Lafayette, Ind.

Filed Mar. 25, 1974, Ser. No. 454,259
Int. Cl.² A01N *9/00*
U.S. Cl. 424—180 7 Claims

1. A method for parasite control which consists essentially of administering to a recipient in which parasites are living at least an effective amount of 5-Thio-D-glucose over a period of time to at least control said parasites.

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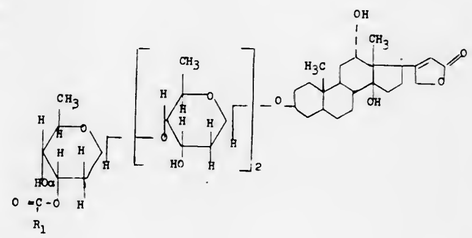
3,932,626

## PHARMACEUTICAL COMPOSITIONS CONTAINING A CARBOXYLIC ACYL DERIVATIVE OF DIGOXIN AND METHOD OF USE

Walter Losel; Herbert Merz, both of Ingelheim am Rhein; Wolfgang Hoefke, Budenheim, and Werner Traunecker, Munster-Sarmsheim, all of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

Division of Ser. No. 215,666, Jan. 5, 1972. This application Jan. 16, 1974, Ser. No. 433,663
Claims priority, application Germany, Jan. 14, 1971, 2101595
Int. Cl.² A61K *31/705*
U.S. Cl. 424—182 13 Claims

1. A pharmaceutical dosage unit composition for increasing the strength of the heart muscle contraction in a warm-blooded animal, consisting essentially of an inert pharmaceutical carrier and an effective amount of a compound of the formula




wherein $R_1$ is alkyl of 2 to 12 carbon atoms, chloro-(alkyl of 1 to 4 carbon atoms), phenyl-(alkyl of 1 to 4 carbon atoms), cycloalkyl of 5 to 6 carbon atoms(alkyl of 1 to 4 carbon atoms) or cycloalkyl of 3 to 8 carbon atoms.

3,932,627

## SIVER-HEPARIN-ALLANTOIN COMPLEX

Harry W. Margraf, Clayton, Mo., assignor to Rescue Products, Inc., Bridgeton, Mo.

Filed Feb. 4, 1974, Ser. No. 439,314
Int. Cl.² A61K 31/725; C08B 37/10
U.S. Cl. 424—183 3 Claims

1. A non-thrombogenic and anti-microbial complex for application to body contact polymeric devices consisting essentially of silver-heparin-allantoinate.

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3,932,628

## EXTRACTS FROM ACTIVE TREE SAPS

Monie S. Hudson, San Jose, Costa Rica, assignor to The United States of America as represented by the Department of Health, Education and Welfare, Washington, D.C.

Continuation-in-part of Ser. No. 837,861, June 30, 1969, abandoned, and a continuation-in-part of Ser. No. 241,409, April 5, 1972. This application June 14, 1973, Ser. No. 370,005
Int. Cl.² A61K 35/78
U.S. Cl. 424—195 14 Claims

1. A method of treating P388 leukemia in mice which consists in injecting into said mice an effective amount for treating P388 leukemia of a tree sap which has been produced by extracting with water and subsequently dried and which is selected from the group consisting of:

*Prunus virginiana* var. *demissa*
*Leucothoe catesbaei*
*Genipa americana*
*Chrysophyllum brenesii*
*Sambucus racemosa* var. *arborescens* and
*Chiococca alba*

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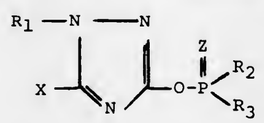
3,932,629

## TRIAZOLYL PHOSPHORUS ESTERS AS PESTICIDES

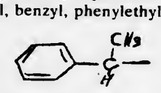
Dag Dawes, Pratteln, and Beat Böhner, Binningen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 310,530, Nov. 29, 1972, Pat. No. 3,867,396. This application Dec. 6, 1974, Ser. No. 530,460
Claims priority, application Switzerland, Dec. 10, 1971, 18065/71; Sept. 29, 1972, 14254/72
Int. Cl.² A01N 9/36
U.S. Cl. 424—200 10 Claims

1. An insecticidal, acaricidal and nematocidal composition comprising an insecticidally, acaricidally and nematocidally effective amount of a compound of the formula



wherein X represents fluorine, chlorine or bromine; Z represents oxygen or sulphur; $R_1$ represents $C_1$-$C_{19}$ alkyl, $C_3$-$C_8$ cycloalkyl, or phenyl, benzyl, phenylethyl, diphenylmethyl or



optionally substituted by halogen, nitro, alkyl, haloalkyl, alkoxy, alkylsulphinyl or alkylsulphonyl, the alkyl groups of which each have 1–6 carbon atoms; $R_2$ represents $C_1$-$C_{19}$ alkoxy, $C_1$-$C_{19}$ alkylthio, amino, mono- or di($C_1$-$C_{19}$)alkylamino; and $R_3$ represents $C_1$-$C_{19}$ alkyl, $C_1$-$C_{19}$ alkoxy, $C_1$-$C_{19}$ alkylthio, phenyl, phenoxy, amino, mono- or di($C_1$-$C_{19}$)alkylamino; together with a suitable carrier therefor.

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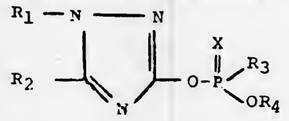
3,932,630

## TRIAZOLYL PHOSPHORUS ESTERS AS PESTICIDES

Beat Böhner, Binningen; Dag Dawes, Pratteln, and Willy Meyer, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 310,728, Nov. 30, 1972, Pat. No. 3,867,398. This application Dec. 6, 1974, Ser. No. 530,461
Claims priority, application Switzerland, Dec. 10, 1971, 18064/71; Sept. 29, 1972, 14254/72
Int. Cl.² A01N 9/36
U.S. Cl. 424—200 12 Claims

1. An insecticidal, acaricidal and nematocidal composition comprising an insecticidally, acaricidally and nematocidally effective amount of a compound of the formula



wherein

$R_1$ represents hydrogen, $C_1$–$C_{12}$ alkyl, $C_3$–$C_8$ cycloalkyl, phenyl, phenyl substituted by methoxy, halogen or $C_1$–$C_5$ alkyl, benzyl or phenylethyl,

$R_2$ represents $C_1$–$C_{12}$ alkylthio, $C_1$–$C_{12}$ alkylsulphinyl, $C_1$–$C_{12}$ alkylsulphonyl, phenylthio, phenylsulphinyl, phenylsulphonyl, benzylthio, benzylsulphinyl or benzylsulphonyl,

$R_3$ represents $C_1$–$C_{12}$ alkyl, $C_1$–$C_{12}$ alkoxy, $C_1$–$C_{12}$ alkylthio or phenyl,

$R_4$ represents $C_1$–$C_{12}$ alkyl, and

X represents oxygen or sulphur; together with a suitable carrier therefor.

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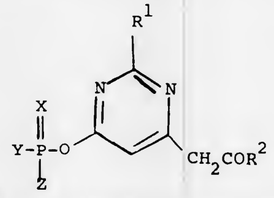
3,932,631

## CERTAIN ORGANOPHOSPHORUS COMPOUNDS USED TO CONTROL INSECTS

Graham Paul Cotterrell, Wokingham, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Mar. 14, 1974, Ser. No. 451,368
Claims priority, application United Kingdom, Mar. 29, 1973, 15159/73
Int. Cl.² A01N 9/36
U.S. Cl. 424—200 8 Claims

1. A composition, for combating insect pests of plants, which comprises an insecticidally effective amount of a compound of the formula:



wherein X is oxygen or sulphur; Y is alkoxy containing from one to four carbon atoms, alkylamino containing from one to four carbon atoms, or dialkylamino containing from one to four carbon atoms in each alkyl moiety; Z is alkoxy containing from one to four carbon atoms; $R^1$ is alkyl containing from one to four carbon atoms, chlorophenyl, alkylamino containing from one to four carbon atoms, dialkylamino containing from one to four carbon atoms in each alkyl moiety, or N-carboxylic acyl alkylamino containing from one to four carbon atoms in the carboxylic acyl moiety and from one to four carbon atoms in the alkyl moiety; and $R^2$ is alkoxy containing from one to four carbon atoms, amino, alkylamino containing from one to four carbon atoms, dialkylamino containing from one to four carbon atoms in each alkyl moiety, or alkenyl amino containing three to five carbon atoms, together with an agriculturally and horticulturally acceptable diluent.



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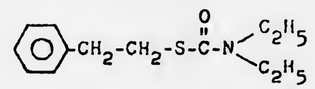
3,932,632

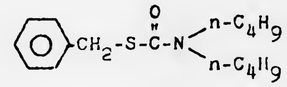
## INSECTICIDAL COMPOSITIONS CONTAINING AN ORGANOPHOSPHORUS COMPOUND AND A THIOLCARBAMATE

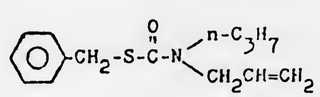
Heinrich Adolphi, Limburgerhof; Hans-Dieter Hoffmann, Ludwigshafen; Karl-Heinz Koenig, Frankenthal, and Wolfgang Rohr, Mannheim, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Germany

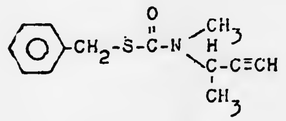
Filed Aug. 15, 1973, Ser. No. 388,427
Claims priority, application Germany, Sept. 8, 1972, 2244090
Int. Cl.² A01N 9/12, 9/36
U.S. Cl. 424—213 4 Claims

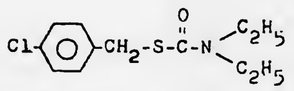
1. An insecticide composition comprising an insecticidally effective amount of a mixture (a) 0,0-dimethyl-S-(1,2-dicarbethoxy)-ethyl dithiophosphate and (b) a member selected from the group consisting of











in a weight ratio of 1:1.

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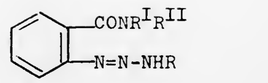
3,932,633

## NOVEL O-TRIAZENOBENZAMIDES, IN TREATING AGGRESSIVE BEHAVIOR

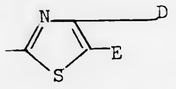
John Terence O'Brien, Chesire, and Zaven S. Ariyan, Woodbury, both of Conn., assignors to Uniroyal Inc., New York, N.Y.

Division of Ser. No. 311,878, Dec. 4, 1972. This application Mar. 4, 1974, Ser. No. 447,605
Int. Cl.² A61K 31/655
U.S. Cl. 424—226 4 Claims

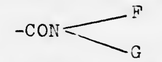
1. A method of preventing and/or inhibiting aggressive behavior in an animal subject, said method comprising administering to an animal subject a therapeutically effective amount of a compound of the formula:



wherein R is



in which D is hydrogen or methyl and E is hydrogen or



wherein F is hydrogen and G is phenyl, halophenyl, trimethylphenyl or benzyl; or F and G together with the nitrogen atom to which they are bonded, form a morpholine ring;

$R'$ is hydrogen or methyl and $R''$ is hydrogen, lower alkyl, phenyl or the sulfate of a dimethylamino lower alkyl group.

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3,932,634

## HIGH POTENCY VITAMIN WATER DISPERSIBLE FORMULATIONS

Joseph A. Kardys, Groton, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation of Ser. No. 374,488, June 28, 1973, abandoned, which is a continuation-in-part of Ser. No. 119,362, Feb. 26, 1971, abandoned. This application Dec. 10, 1974, Ser. No. 531,332
Int. Cl.² A61K 31/595
U.S. Cl. 424—237 2 Claims

1. A pharmaceutical composition for aqueous dispersion to give clear, stable solutions of vitamins consisting essentially of from about 25% to about 55%, by weight of the total composition, of oil-soluble vitamin A, vitamin $D_2$, vitamin $D_3$, vitamin E, or combinations thereof together with from about 35% to about 85%, by weight of the total composition, of a dispersing agent consisting essentially of polyoxyethylene sorbitan monooleate having about 20 oxyethylene units per molecule plus an ester selected from polyethylene glycol 400 monooleate, decaglycerol dioleate, and decaglycerol tetraoleate, the ratio of said sorbitan monooleate to said ester being from about 3:1 to about 1:3.

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3,932,635

## NOVEL CYCLIC PROGESTOGEN-INTERRUPTED ESTROGEN ORAL CONTRACEPTIVE REGIMENS

Eugene J. Segre, Los Altos, Calif., assignor to Syntex Corporation, Panama, Panama

Continuation-in-part of Ser. No. 247,012, April 24, 1972. This application May 5, 1972, Ser. No. 250,785
Int. Cl.² A61K 17/06
U.S. Cl. 424—239 21 Claims

1. A cyclic progestogen-interrupted estrogen method of controlling fertility in a fertile woman wherein the first day of menstrual flow is considered as day 1 of a 28 day cycle, said method comprising orally administering to said woman beginning on one of the 3rd to 6th days of said cycle and every second or third day thereafter a combination oral dosage unit formulation having about 0.01 mg. to about 2.0 mg. of an estrogen and about 0.03 mg. to about 10.0 mg. of a progestogen, and orally administering to said woman beginning on one of the 4th to 7th days of said cycle and every day thereafter on which a combination formulation is not administered an oral dosage unit formulation having only a progestogen in an amount of about 0.03 mg. to about 10.0 mg. as the active

contraceptive component, said formulations being administered for a period of 20 to 23 consecutive days during said 28 day cycle, said amounts of said estrogen and progestogen being effective to control the fertility of said woman.

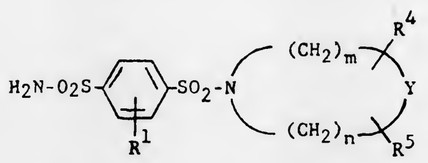
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**3,932,636**
**2 AND 3-SUBSTITUTED-4-(HETEROCYCLIC-AMINO-SULFONYL)BENZENE SULFONAMIDES AS CEREBRAL VASODILATORS**

**Peter Edward Cross, and Brian Gadsby, both of Canterbury, England, assignors to Pfizer Inc., New York, N.Y.**

**Division of Ser. No. 386,854, Aug. 9, 1973, Pat. No. 3,867,390. This application Oct. 4, 1974, Ser. No. 512,010**
**Claims priority, application United Kingdom, Aug. 12, 1972, 37720/73**
**Int. Cl.² A61K** *31/33, 31/54, 31/535, 31/445*
**U.S. Cl. 424—244** **4 Claims**

1. A process for increasing cerebral blood flow in a subject which comprises administering to said subject a cerebral blood flow increasing amount of a compound selected from the group consisting of



and their salts with pharmaceutically acceptable cations wherein $R^1$ is 3-trifluoromethyl, chloro, bromo or fluoro; *n* and *m* are each two or three; Y is methylene or a single bond and $R^4$ and $R^5$ taken together are alkylene dioxy having 2 to 4 carbon atoms, each oxygen atom in said alkylene dioxy being separated from the nitrogen atom of the heterocyclic ring by two or more carbon atoms.

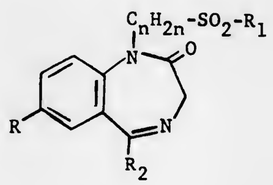
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**3,932,637**
**METHODS AND COMPOSITIONS FOR IMPROVING THE FEED INTAKE OF MEAT PRODUCING ANIMALS**

**Hisao Yamamoto, Nishinomiya; Shigeho Inaba, Takarazuka; Mitsuhiro Akatsu, Toyonaka, all of Japan; Clifton A. Baile, Glen Mills, and Roger G. Parish, King of Prussia, both of Pa., assignors to Sumitomo Chemical Company, Limited, Osaka, Japan and SmithKline Corporation, Philadelphia, Pa.**

**Filed July 22, 1974, Ser. No. 490,813**
**Int. Cl.² A61K** *31/33, 31/44*
**U.S. Cl. 424—244** **14 Claims**

1. The method of inducing increased feed efficiency or feed intake in immature meat producing animals comprising administering to said animals internally in a feed composition or as an implant an effective but nontoxic quantity of a compound or one of its pharmaceutically acceptable non-toxic acid addition salts of the compound having the formula:



in which:
R is hydrogen, nitro, trifluoromethyl or halo;
$R_1$ is lower alkyl of 1–4 carbon atoms;
$R_2$ is phenyl, 2-pyridyl, o-halophenyl, o-trifluoromethylphenyl or o-nitrophenyl; and
*n* is an integer of from 2–4.

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**3,932,638**
**COMPOSITIONS AND METHODS FOR WOUND HEALING**

**Paul Coirre; Bertrand Coirre, both of ville d'Avray; Jean-Claude Denis, Paris; Jerome Rambaud, Paris, and Jean Cahn, Paris, all of France, assignors to Franco-Chimie S.a.r.l., Paris, France**

**Continuation-in-part of Ser. No. 243,397, April 12, 1972, Pat. No. 3,891,765, which is a continuation-in-part of Ser. No. 81,499, Oct. 16, 1970, abandoned, which is a continuation-in-part of Ser. No. 756,410, Aug. 30, 1968, abandoned. This application Nov. 9, 1973, Ser. No. 414,294**
**Int. Cl.² A61K** *31/555, 31/40*
**U.S. Cl. 424—245** **6 Claims**

4. An oral composition in tablet or capsule form suitable for promoting the healing of wounds in mammals comprising from 100 mg. to 200 mg. of an L-hydroxyproline derivative selected from the group consisting of N-acetyl-L-hydroxyproline, N,O-diacetyl-L-hydroxyproline, O-acetyl-L-hydroxyproline, L-hydroxyprolinamide, ethyl N-acetyl-4-hydroxy-L-prolinate, N-acetyl-L-hydroxyprolinamide, N-acetyl-L-hydroxyprolylanthranilic acid and the hydrochloride or non-toxic, pharmaceutically acceptable alkali metal, alkaline earth, copper, aluminum, silicon and zinc salts thereof, and a pharmaceutical carrier.

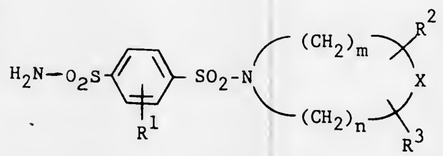
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**3,932,639**
**2- AND 3-SUBSTITUTED-4-(HETEROCYCLIC-AMINO-SULFONYL)BENZENE SULFONAMIDES AS CEREBRAL VASODILATORS**

**Peter Edward Cross, and Brian Gadsby, both of Canterbury, England, assignors to Pfizer Inc., New York, N.Y.**

**Division of Ser. No. 386,854, Aug. 9, 1973, Pat. No. 3,867,390. This application Oct. 4, 1974, Ser. No. 512,007**
**Claims priority, application United Kingdom, Aug. 12, 1972, 33720/72**
**Int. Cl.² A61K** *31/535, 31/33, 31/54, 31/38*
**U.S. Cl. 424—248** **5 Claims**

1. A process for increasing cerebral blood flow in a subject which comprises administering to said subject a cerebral blood flow increasing amount of a compound selected from the group consisting of:



and their salts with pharmaceutically acceptable cations wherein $R^1$ and 3-trifluoromethyl, chloro, bromo or fluoro; *n* and *m* are each two or three; X is oxygen or sulfur; $R^2$ and $R^3$, when taken separately, are each hydrogen or alkyl having 1 to 4 carbon atoms and $R^2$ and $R^3$, when taken together, are alkylene having 2 to 4 carbon atoms.



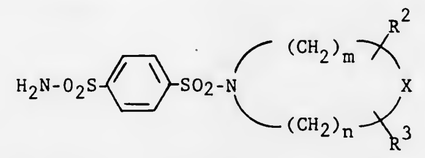
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**3,932,640**
**CYCLIC N-SUBSTITUTED DERIVATIVES OF 1,4-BENZENE DISULPHONAMIDE**

**Gerald F. Holland, New London, Conn., assignor to Pfizer Inc., New York, N.Y.**

**Division of Ser. No. 386,853, Aug. 9, 1973, Pat. No. 3,867,391. This application Oct. 4, 1974, Ser. No. 512,014**
**Int. Cl.² A61K** *31/535, 31/33, 31/54, 31/38*
**U.S. Cl. 424—248** **4 Claims**

1. A process for increasing cerebral blood blow in a subject which comprises admistering to said subject a cerebral blood flow increasing amount of a compound selected from the group consisting of



and their salts with pharmaceutically acceptable cations wherein n and m are each two or three; X is oxygen or sulfur; $R^2$ and $R^3$, when taken separately, are each hydrogen or alkyl having 1 to 4 carbon atoms and $R^2$ and $R^3$, when taken together, are alkylene having 2 to 4 carbon atoms.

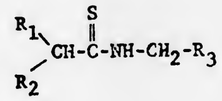
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**3,932,641**
**PHARMACEUTICAL COMPOSITIONS AND METHODS OF INHIBITING GASTRIC ACID SECRETION**

**Henry C. Caldwell, Ambler, and Bernard Loev, Broomall, both of Pa., assignors to SmithKline Corporation, Philadelphia, Pa.**

**Continuation-in-part of Ser. No. 266,181, June 26, 1972, Pat. No. 3,873,536, which is a continuation-in-part of Ser. No. 220,418, Jan. 24, 1972, abandoned. This application Dec. 3, 1974, Ser. No. 529,143**
**Int. Cl.² A61K** *27/00*
**U.S. Cl. 424—248** **10 Claims**

1. A pharmaceutical composition having gastric acid secretion inhibitory activity, in dosage unit form, comprising a pharmaceutical carrier and a gastric acid secretion inhibiting amount of a thioacetamide compound of the formula:



in which:
$R_1$ is 2-pyridyl;
$R_2$ is hydrogen, lower alkyl, lower alkenyl or $-(CH_2)_n$-phenyl;
$R_3$ is di-lower alkylamino, N-lower alkyl-N-phenylamino, pyrrolidino, piperidino or morpholino and
*n* is 0 or 1 or a pharmaceutically acceptable acid addition salt thereof.

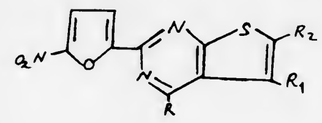
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**3,932,642**
**BIOCIDAL COMPOSITIONS CONTAINING A 2-(5'-NITRO-2'-FURYL)-THIENO(2,3-D) PYRIMIDINE AND METHODS OF USE**

**Eberhard Woitun, and Wolfgang Reuter, both of Biberach an der Riss, Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany**

**Division of Ser. No. 241,414, April 5, 1972, Pat. No. 3,830,813. This application July 19, 1974, Ser. No. 490,114**
**Claims priority, application Germany, Apr. 10, 1971, 2117658**
**Int. Cl.² A01N** *9/22*
**U.S. Cl. 424—251** **12 Claims**

12. A method of killing microorganisms selected from the group consisting of bacteria, fungi and trichomonads, which comprises contacting said microorganisms with an effective bactericidal, fungicidal or trichomonacidal amount of a compound of the formula



wherein
R is amino; (alkanoyl of 2 to 3 carbon atoms)-amino; chloroacetyl-amino; dichloroacetyl-amino; mono(alkyl of 1 to 5 carbon atoms)-amino; di(alkyl of 1 to 4 carbon atoms)-amino; mono(hydroxyalkyl of 1 to 5 carbon atoms)-amino; di(hydroxyalkyl of 2 to 3 carbon atoms)-amino; N-(alkyl of 1 to 4 carbon atoms)-hydroxyethylamino; dihydroxypropyl-amino; (alkoxy of 1 to 2 carbon atoms)-(alkylene of 2 to 3 carbon atoms)-amino; aminoethyl-amino; acetaminoethyl-amino; acetoxy(alkylene of 2 to 3 carbon atoms)-amino; N-acetoxy-ethyl-methylamino; or hydroxy-piperidino; and
$R_1$ and $R_2$ are each hydrogen, methyl or ethyl, or a non-toxic, pharmacologically acceptable acid addition salt thereof.

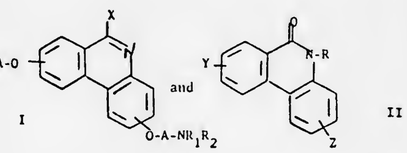
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**3,932,643**
**PHENANTHRIDINES AND PHENANTHRIDINONES AS ANTIVIRAL AGENTS**

**George J. Gauthier, Mystic, Conn., assignor to Pfizer Inc., New York, N.Y.**

**Division of Ser. No. 431,255, Jan. 7, 1974, Pat. No. 3,838,134, which is a division of Ser. No. 240,830, April 3, 1972, Pat. No. 3,838,131. This application June 7, 1974, Ser. No. 477,529**
**Int. Cl.² A61K** *31/47*
**U.S. Cl. 424—258** **11 Claims**

1. A process for the induction of endogeneous interferon in vertebrate animals which comprises orally, parenterally, intranasally or topically administering to the animals a composition containing as the essential active ingredient an effective amount of a compound selected from the group consisting of those having the formulae



and the pharmaceutically-acceptable acid addition salts thereof wherein X is selected from the group consisting of chloro, bromo, hydroxy, alkoxy containing from 1 to 6 carbon atoms, amino, monoalkylamino, dialkylamino wherein each of the alkyl groups contains from 1 to 6 carbon atoms, and benzylamino;

R is selected from the group consisting of hydrogen, alkyl containing from 1 to 6 carbon atoms, $-A-NR_1R_2$ wherein each of $R_1$ and $R_2$ is alkyl containing from 1 to 6 carbon atoms and A is a divalent alkylene radical containing from 2 to 6 carbon atoms; and

each of Y and Z is selected from the group consisting of hydrogen, and ω-dialkylaminoalkoxy wherein the alkyl and alkoxy groups contain from 1 to 6 carbon atoms, respectively;

with the proviso that when R is hydrogen or alkyl, each of Y and Z is ω-dialkylaminoalkoxy.

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**3,932,644**

## H2 HISTAMINE RECEPTOR INHIBITORS

**Graham John Durant, Welwyn Garden city; John Colin Emmett, Codicote, and Charon Robin Ganellin, Welwyn Garden City, all of England, assignors to SmithKline & French Laboratories, Inc., Welwyn Garden City, England**

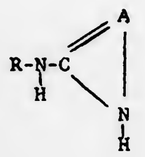
**Filed Apr. 24, 1974, Ser. No. 463,647**

**Claims priority, application United Kingdom, May 3, 1973, 21063/73; July 26, 1973, 35551/73**

**Int. Cl.² A61K** *31/44*

**U.S. Cl. 424—263** **7 Claims**

1. A pharmaceutical composition to inhibit H-2 histamine receptors, said H-2 histamine receptors being those histamine receptors which are not inhibited by mepyramine but are inhibited by burimamide, comprising a pharmaceutical carrier and in an effective amount to inhibit said receptors a heterocyclic compound of the formula:



wherein A taken together with the nitrogen and carbon atoms shown forms a pyridine ring, said ring having a keto or thione group and optionally substituted by one or two lower alkyl, phenyl or benzyl groups; R is a grouping of the formula:

$$Het\text{-}CH_2Z(CH_2)_n\text{-}$$

wherein Het is an imidazole ring, said ring being optionally substituted by lower alkyl, amino, hydroxy or halogen; Z is sulphur or a methylene group and *n* is 2 or 3 or a pharmaceutically acceptable acid addition salt thereof.

**3,932,645**

## PHARMACEUTICAL COMPOSITIONS CONTAINING UNSYMMETRICAL ESTERS OF 1,4-DIHYDROPYRIDINE 3,5-DICARBOXYLIC ACID

**Horst Meyer; Friedrich Bossert, both of Wuppertal-Elberfeld; Wulf Vater, Opladen, and Kurt Stoepel, Wuppertal-Vohwinkel, all of Germany, assignors to Farbenfabriken Bayer AG, Germany**

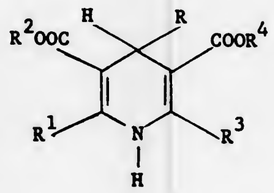
**Division of Ser. No. 242,239, April 7, 1972, Pat. No. 3,799,934. This application Sept. 20, 1973, Ser. No. 398,982**

**Claims priority, application Germany, Apr. 10, 1971, 2117571**

**Int. Cl.² A61K** *31/455*

**U.S. Cl. 424—266** **28 Claims**

1. A pharmaceutical composition useful for effecting coronary vascular dilation and for treating hypertension which comprises a coronary vascular dilating effective amount or an antihypertensive amount of a compound of the formula:



wherein

R is mono or disubstituted phenyl in which the substituents are selected from the group consisting of nitro, cyano, azido, $-S(O)_n$-lower alkyl in which *n* has a value of 0, 1 or 2, lower alkyl, lower alkoxy and halogeno, at least one of said substituents being nitro, cyano, azido or $-S(O)_n$-lower alkyl; or a member selected from the group consisting of naphthyl, pyridyl, methylpyridyl, thenyl, furyl, and pyrryl;

each of $R^1$ and $R^3$, independent of the other, is hydrogen or lower alkyl;

$R^2$ is lower alkyl, lower alkenyl, lower alkynyl, or lower alkoxy(lower alkyl);

$R^4$ is lower alkyl, lower alkenyl, lower alkynyl, or lower alkoxy(lower alkyl), $R^4$ being different from $R^2$,

or a pharmaceutically acceptable acid addition salt thereof, in combination with a pharmaceutically acceptable non-toxic inert carrier.

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**3,932,646**

## PHARMACEUTICAL COMPOSITIONS CONTAINING UNSYMMETRICAL ESTERS OF 1,4-DIHYDROPYRIDINE 3,5-DICARBOXYLATE

**Horst Meyer; Friedrich Bossert, both of Wuppertal-Elberfeld; Wulf Vater, Opladen, and Kurt Stoepel, Wuppertal-Vohwinkel, all of Germany, assignors to Farbenfabriken Bayer AG, Germany**

**Division of Ser. No. 242,238, April 7, 1972, Pat. No. 3,799,936. This application Sept. 21, 1973, Ser. No. 399,387**

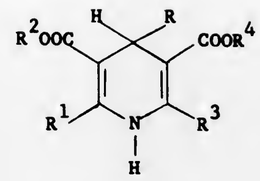
**Claims priority, application Germany, Apr. 10, 1971, 2117572**

**Int. Cl.² A61K** *31/455*

**U.S. Cl. 424—266** **46 Claims**

1. A pharmaceutical composition useful for effecting coronary vascular dilation and for treating hypertension in humans and animals which comprises a coronary vascular dilating amount or an antihypertensive amount of a compound of the formula:





wherein

R is phenyl, unsubstituted or substituted by a substituent selected from the group consisting of lower alkyl, lower alkoxy, halogeno, trifluoromethyl and carbo(lower alkoxy) or by up to three lower alkoxy or halogeno substituents;

$R^1$ and $R^3$, independent of the other, is hydrogen, methyl, ethyl or propyl;

$R^2$ is a member selected from the group consisting of lower alkyl, allyl, butenyl, propargyl, butynyl and lower alkoxy(lower alkyl);

$R^4$ is a member different from $R^2$ and is selected from the group consisting of allyl, butenyl, propargyl, butynyl and lower alkoxy(lower alkyl),

or a pharmaceutically acceptable acid addition salt thereof, in combination with a pharmaceutically acceptable non-toxic inert carrier.

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**3,932,647**

## CYCLIC N-SUBSTITUTED DERIVATIVES OF 1,4-BENZENE DISULPHONAMIDE

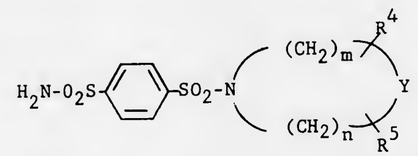
**Gerald F. Holland, New London, Conn., assignor to Pfizer Inc., New York, N.Y.**

**Division of Ser. No. 386,853, Aug. 9, 1973, Pat. No. 3,867,391. This application Oct. 4, 1974, Ser. No. 512,015**

**Int. Cl.² A61K** *31/445, 31/33, 31/535, 31/40*

**U.S. Cl. 424—267** **8 Claims**

1. A process for increasing cerebral blood flow in a subject which comprises administering to said subject a cerebral blood flow increasing amount of a compound selected from the group consisting of



and their salts with pharmaceutically acceptable cations wherein *n* and *m* are each two or three; Y is methylene or a single bond; $R^4$ and $R^5$, when taken separately, are each hydrogen, hydroxy or alkoxy having 1 to 5 carbon atoms and $R^4$ and $R^5$, when taken together, are oxo, any oxygen atom in $R^4$ and $R^5$, when taken separately, and the oxygen atom in $R^4$ and $R^5$, when taken together, being separated from the nitrogen atom of the heterocyclic ring by two or more carbon atoms.

**3,932,648**

## CYCLIC N-SUBSTITUTED DERIVATIVES OF 1,4-BENZENE DISULPHONAMIDE

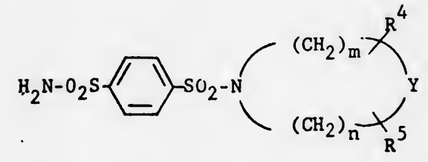
**Gerald F. Holland, New London, Conn., assignor to Pfizer Inc., New York, N.Y.**

**Division of Ser. No. 386,853, Aug. 9, 1973, Pat. No. 3,867,391. This application Oct. 4, 1974, Ser. No. 512,016**

**Int. Cl.² A61K** *31/445, 31/33, 31/535, 31/40*

**U.S. Cl. 424—267** **4 Claims**

1. A process for increasing cerebral blood flow in a subject which comprises administering to said subject a cerebral blood flow increasing amount of a compound selected from the group consisting of



and their salts with pharmaceutically acceptable cations wherein n and m are each two or three; Y is methylene or a single bond and $R^4$ and $R^5$, taken together, are alkylene dioxy having 2 to 4 carbon atoms, each oxygen atom in said alkylene dioxy being separated from the nitrogen atom of the heterocyclic ring by two or more carbon atoms.

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**3,932,649**

## 2 AND 3-SUBSTITUTED-4-(HETEROCYCLIC-AMINO-SULFONYL)BENZENE SULFONAMIDES AS CEREBRAL VASODILATORS

**Peter Edward Cross, and Brian Gadsby, both of Canterbury, England, assignors to Pfizer Inc., New York, N.Y.**

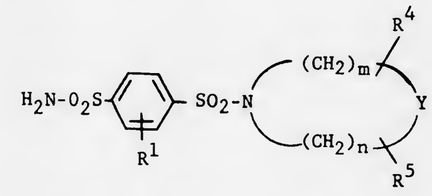
**Division of Ser. No. 386,854, Aug. 9, 1973, Pat. No. 3,867,390. This application Oct. 4, 1974, Ser. No. 512,012**

**Claims priority, application United Kingdom, Aug. 12, 1972, 37720/72**

**Int. Cl.² A61K** *31/445, 31/33, 31/535, 31/40*

**U.S. Cl. 424—267** **11 Claims**

1. A process for increasing cerebral blood flow in a subject which comprises administering to said subject a cerebral blood flow increasing amount of a compound selected from the group consisting of



and their salts with pharmaceutically acceptable cations wherein $R^1$ is 3-trifluoromethyl, chloro, bromo or fluoro; *n* and *m* are each two or three; Y is methylene or a single bond; $R^4$ and $R^5$, when taken separately, are each hydrogen, hydroxy or alkoxy having 1 to 4 caron atoms and $R^4$ and $R^5$, when taken together, are oxo, any oxygen atom in $R^4$ and $R^5$, when taken separately, and the oxygen atom in $R^4$ and $R^5$, when taken together, being separated from the nitrogen atom of the heterocyclic ring by two or more carbon atoms.

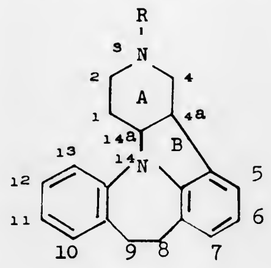
### 3,932,650
### TRANS-OCTAHYDROPYRIDOINDOLOBENZAZEPINES AS CENTRAL NERVOUS SYSTEM DEPRESSANTS

Charles De Witt Adams, Wilmington, Del., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Continuation-in-part of Ser. No. 325,352, Jan. 22, 1973. This application Dec. 6, 1973, Ser. No. 422,616
Int. Cl.² A61K *31/445*
U.S. Cl. 424—267 4 Claims

2. A method of producing a tranquilizer effect in a warm-blooded animal, said method comprising administering to said animal an effective amount of a compound selected from the group consisting of:

A. a free amine having the following formula



wherein

R is benzyl; benzyl ring-substituted with methyl, methoxy, or chloro; phenethyl; 3-phenylpropyl; 3-phenylpropyl ring substituted with chloro, bromo, or methoxy; furfuryl; 2-thenyl; $C_1$–$C_5$ alkyl; cyclopropyl; $C_4$–$C_8$ cycloalkylmethyl; (methylcyclopropyl)methyl; exo-7-norcarylmethyl; (4-methylbicyclo[2.2.2]oct-1-yl)methyl; (bicyclo[2.2.1]hept-2-yl)methyl; 1-adamantylmethyl or 2-adamantylmethyl;

and the hydrogens in the 4a and 14a positions are in trans relationship to each other; and

B. an addition salts of a free amine of A, above, with a pharmaceutically acceptable acid.

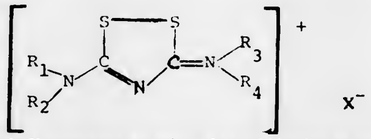
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### 3,932,651
### METHOD OF INDUCING INFERTILITY IN MALE ANIMALS AND INHIBITING THE GROWTH OF THE PROSTATE

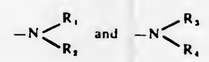
Joseph A. Settepani, Somerville, N.J., assignor to Ortho Pharmaceutical Corporation, Raritan, N.J.

Continuation-in-part of Ser. No. 137,426, April 26, 1971, abandoned. This application July 23, 1973, Ser. No. 381,963
Int. Cl.² A61K *31/40*, *31/425*, *31/445*, *31/495*, *31/535*
U.S. Cl. 424—270 7 Claims

1. A method of inhibiting fertility in male animals and of reducing the size of the prostate and the seminal vesicle in male animals which comprises orally administering to a male animal an effective non-toxic amount of a compound of the formula:



wherein X represents an anion of an acid having an ionization constant of at least $1 \times 10^{-7}$, $R_1$, $R_2$ and $R_3$ are alkyl having one to 36 carbon atoms, aryl having six to 10 carbon atoms, or alkyl aryl having seven to 12 carbon atoms, $R_4$ is hydrogen, alkyl having one to 36 carbon atoms, aryl having six to 10 carbon atoms or alkyl aryl having seven to 12 carbon atoms, and



are each pyrrolidino.

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### 3,932,652
### ANTIDEPRESSANT COMPOSITIONS

Willy Haefely, Reinach, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 371,441, June 19, 1973, abandoned. This application Feb. 27, 1975, Ser. No. 553,781
Claims priority, application Switzerland, June 30, 1972, 9846/72
Int. Cl.² A61K *31/40*, *31/165*
U.S. Cl. 424—274 10 Claims

1. A therapeutic composition for the treatment of depression and insomnia comprising a therapeutically inert, pharmaceutically acceptable carrier material, and as an active ingredient from about one part to about four parts by weight L-5-hydroxy-tryptophan or the equivalent amount of a pharmaceutically acceptable salt thereof and from one part to about five parts by weight $N^1$-(D,L-seryl)-$N^2$-(2,3,4-trihydroxybenzyl)-hydrazine or the equivalent amount of a pharmaceutically acceptable acid addition salt thereof.

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### 3,932,653
### COMPOSITION AND METHOD FOR TOPICAL ADMINISTRATION OF GRISEOFULVIN

Richard B. Stoughton, Rancho Santa Fe, Calif., assignor to Nelson Research & Development Co., Irvine, Calif.

Filed Dec. 19, 1974, Ser. No. 534,227
Int. Cl.² A61K *31/34*
U.S. Cl. 424—285 6 Claims

1. A composition useful in the topical treatment of fungal infections of the skin and nails comprising about 0.1 to about 10 percent by weight of griseofulvin together with about 5 to about 99.9 percent by weight of a compound selected from the group consisting of 2-pyrrolidone and an N-lower alkyl-2-pyrrolidone.

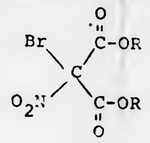
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### 3,932,654
### PRESERVATION OF AQUEOUS SYSTEMS WITH DIALKYL BROMONITROMALONATES

Harold A. Brandman, Glen Ridge; Milton Manowitz, Fair Lawn, and William E. Newman, Montclair, all of N.J., assignors to Givaudan Corporation, Clifton, N.J.

Continuation of Ser. No. 209,988, Dec. 20, 1971, abandoned. This application May 22, 1974, Ser. No. 472,397
Int. Cl.² A01N *9/24*
U.S. Cl. 424—313 6 Claims

1. A method of preventing or eliminating the growth of bacteria and fungi in an aqueous composition subject to spoilage thereby, which comprises incorporating in said composition an effective amount of a compound of the formula



where in R is a straight chain alkyl group having from 1 to 4 carbon atoms.



### 3,932,655
### SURGICAL SKIN SCRUB

Richard H. Conn, Detroit, Mich., assignor to International Pharmakon Laboratories, Inc., Detroit, Mich.

Continuation of Ser. No. 289,089, Sept. 14, 1972, abandoned. This application Apr. 8, 1974, Ser. No. 458,549
Int. Cl.² A01N *9/00*
U.S. Cl. 424—317 4 Claims

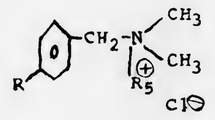
1. A surgical skin scrub of the type adapted for topical application to a user's skin consisting essentially of:

a. from about 99.0 to 99.9 percent by weight of inert ingredients, and

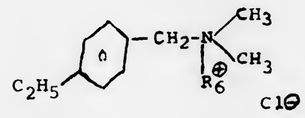
b. from about 0.1 to 1.0 percent by weight of an active ingredient consisting essentially of:

1. from about 25 to 50 percent by weight of a chelating agent selected from the group consisting of ethylene diamine tetraacetic acid, disodium ethylene diamine tetraacetic acid, gluconic acid, lactic acid, citric acid, sodium gluconate, sodium lactate, sodium citrate, potassium gluconate, potassium lactate and potassium citrate, and

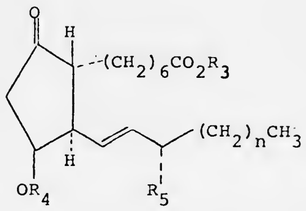
2. from about 50 to 75% by weight of a mixture of three n-alkyl benzalkonium chlorides, the first and second of which are of the formula:



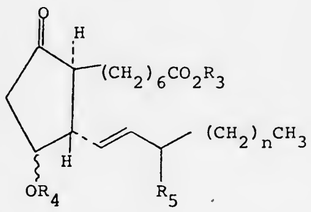
wherein R is hydrogen, $R_5$ is n-alkyl having from 12 to 18 carbon atoms or mixtures thereof, the first benzalkonium chloride having an $R_5$ distribution of $C_{12}$ about 5 percent; $C_{14}$ about 60 percent; $C_{16}$ about 30 percent and $C_{18}$ about 5 percent; the second benzalkonium chloride having an $R_5$ distribution of $C_{12}$ about 50 percent; $C_{14}$ about 30 percent; $C_{16}$ about 15 percent and $C_{18}$ about 5 percent; and the third benzalkonium chloride is of the formula:



and

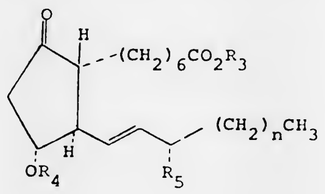


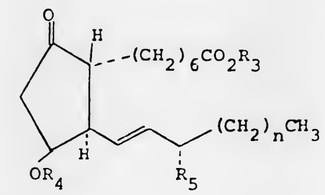
wherein $R_6$ is n-alkyl having a distribution of $C_{12}$ from 65 to 75 percent and $C_{14}$ from 25 to 35 percent, and wherein the benzalkonium chlorides are present in a respective weight ratio of about 2:1:2.

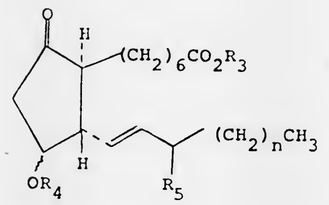


wherein $R_3$ is a member selected from the group consisting of hydrogen and lower alkyl, $R_4$ is a member selected from the group consisting of hydrogen, lower alkyl and an acyl group of 2 to 18 carbons, $R_5$ is hydroxy, *n* is a whole integer of 3 to 5 inclusive, and the diastereomers thereof.

6. An article of manufacture consisting essentially of a biologically acceptable synthetic polymer and wherein the polymer has at least one blood contacting surface rendered releasable to a non-thrombogenic agent and an anti-aggregation agent by having releasably incorporated into the polymeric surface and releasably coated thereon a coagulation inhibiting amount of a anti-thrombogenic agent and a platelet aggregation inhibiting amount of an anti-aggregation agent wherein the anti-thrombogenic agent is a member selected from the group consisting of heparin, coumarin, dicumarol and warfarin and wherein the anti-aggregation agent is a prostaglandin compound selected from those of the formulae:







wherein $R_3$ is a member selected from the group consisting of hydrogen and lower alkyl, $R_4$ is a member selected from the group consisting of hydrogen, lower alkyl and an acyl group of 2 to 18 carbons, $R_5$ is hydroxy, *n* is a whole integer of 3 to 5 inclusive, and the diastereomers thereof.

## 3,932,657
## LIPOSOME ENCAPSULATION OF CHELATING AGENTS

**Yueh Erh Rahman, Downers Grove, Ill., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.**

**Filed Nov. 12, 1973, Ser. No. 415,077**
**Int. Cl.² A61K *31/195*, *47/00***
**U.S. Cl. 424—319** **9 Claims**

1. A method of transferring a polyaminopolycarboxylic acid chelating agent across a cellular membrane comprising: encapsulating said polyaminopolycarboxylic acid chelating agent within liposomes; and carrying said liposome encapsulated chelating agent to said cellular membrane, whereby said liposome encapsulated chelating agent will transfer across said cellular membrane.

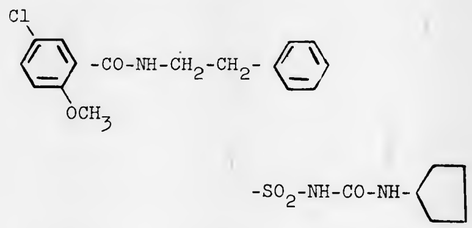
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## 3,932,658
## COMPOSITION AND METHOD FOR LOWER BLOOD SUGAR CONTAINING N-[4-(β-<2-METHOXY-5-CHLORO-BENZAMIDO>-ETHYL)-BENZENESULFONYL]-N'-CYCLOPENTYL-UREA

**Helmut Weber, Frankfurt am Main; Walter Aumuller; Karl Muth, both of Kelkheim-Taunus, and Rudi Weyer, Frankfurt am Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany**

**No Drawing. Division of Ser. No. 10,659, Feb. 11, 1970, Pat. No. 3,754,030. This application Oct. 16, 1972, Ser. No. 297,679**
**Int. Cl. A61k *27/00***
**U.S. Cl. 424—321** **2 Claims**

1. Process for the lowering of the blood sugar level in a diabetic patient which comprises administering to the patient an effective amount for lowering blood sugar of N-[4-(β-<2-methoxy-5-chlorobenzamido>-ethyl)-benzenesulfonyl]-N'-cyclopentyl-urea of the formula



and a salt thereof of a pharmaceutically acceptable base.

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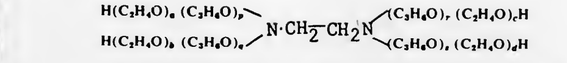
## 3,932,659
## BIOLOGICALLY ACTIVE SUBSTANCE

**Joseph Green, London, and Brian Morgan, Reigate, both of England, assignors to Beecham Group Limited, United Kingdom**

**Continuation of Ser. No. 305,225, Nov. 10, 1972, abandoned, which is a continuation-in-part of Ser. No. 113,052, Feb. 5, 1971, abandoned. This application Feb. 25, 1974, Ser. No. 445,096**
**Claims priority, application United Kingdom, July 24, 1970, 35916/70**
**Int. Cl.² A61K *27/00***
**U.S. Cl. 424—325** **4 Claims**

1. A method for reducing the serum cholesterol level of an animal or human being in need thereof, which comprises orally administering to such animal or human being an amount of at least one non-ionic surfactant of the formula:





as sole hypocholesterolaemic agent, wherein a,b,c,d,p,q,r and s are integers such that the $(C_2H_4O)$ groups account for about 10% of the total molecular weight and the partial molecular weight due to the $(C_3H_6O)$ groups is about 2,750.

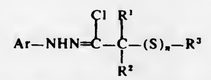
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## 3,932,660
## INSECTICIDAL PHENYLHYDRAZONE SULFIDES

**Joseph E. Moore, Richmond, Calif., assignor to Gulf Research & Development Company, Pittsburgh, Pa.**

**Division of Ser. No. 470,481, May 16, 1974, Pat. No. 3,867,449. This application Jan. 27, 1975, Ser. No. 544,150**
**Int. Cl.² A01N *9/20***
**U.S. Cl. 424—327** **24 Claims**

1. A method for inhibiting the normal growth pattern of insects which comprises contacting pre-adult insects with a metamorphosis-inhibiting amount of a compound of the formula



wherein $R^1$ is hydrogen or alkyl of 1 to 6 carbon atoms, $R^2$ is hydrogen or alkyl of 1 to 6 carbon atoms, $R^3$ is alkyl of 1 to 6 carbon atoms, haloalkyl of 1 to 6 carbon atoms containing 1 to 5 fluoro, chloro or bromo atoms or phenyl substituted with up to 3 fluoro, chloro or bromo atoms, Ar is phenyl substituted with up to 5 fluoro, chloro or bromo atoms and *n* is 1, 2 or 3.

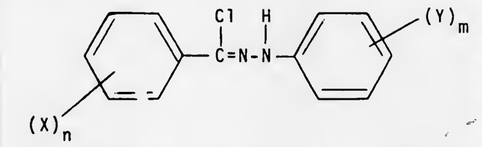
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## 3,932,661
## ANTHELMINTIC METHODS EMPLOYING BENZOYL CHLORIDE PHENYLHYDRAZONES

**Girts Kaugars, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.**

**Continuation-in-part of Ser. No. 67,220, Aug. 26, 1970, abandoned, which is a continuation-in-part of Ser. No. 779,251, Nov. 26, 1968, Pat. No. 3,879,543, which is a continuation-in-part of Ser. No. 709,943, March 4, 1968, abandoned. This application Apr. 17, 1974, Ser. No. 461,705**
**Int. Cl.² A61K *31/15***
**U.S. Cl. 424—327** **9 Claims**

1. A method of controlling parasitic worms in animals which comprises administering orally or parenterally to an animal a therapeutic or prophylactic dosage of a benzoyl chloride phenylhydrazone having the structural formula:



wherein X is halogen, alkyl of from 1 to 6 carbon atoms, inclusive, and nitro; Y is halogen, alkyl of from 1 to 6 carbon atoms, inclusive, and nitro; *n* is an integer from 0 to 5, inclusive; and m is an integer from 0 to 3, inclusive; the sum of *n*+*m* being not more than 6, the sum of carbon atoms in alkyl substituents being not more than 15, and there being no more than one nitro group in the molecule.

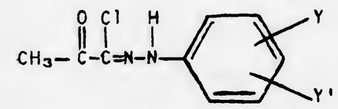
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## 3,932,662
## METHOD OF TREATING ANIMALS AND FORMULATIONS THEREFOR

**Malcolm W. Moon, and Girts Kaugars, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.**

**Filed May 20, 1974, Ser. No. 471,235**
**Int. Cl.² A01N *9/20*, *9/24***
**U.S. Cl. 424—327** **7 Claims**

1. A method of killing and controlling parasitic worms in animals which comprises administering to an animal a therapeutic or prophylactic dosage of a pyruvoyl chloride phenylhydrazone of the formula



wherein Y is selected from the group consisting of chloro, bromo, nitro and trifluoromethyl and Y' has the same meaning as Y and in addition hydrogen.

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## 3,932,663
## CERTAIN 3-AMINO-PROP-1-ENES FOR TREATING *TRYPANOSOMA CRUZI* INFECTIONS

**Paul Anthony Barrett, Beckenham, England, assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.**

**Filed Dec. 13, 1972, Ser. No. 314,845**
**Claims priority, application United Kingdom, Dec. 29, 1971, 60315/71; Oct. 23, 1972, 48748/72**
**Int. Cl.² A61K *31/135***
**U.S. Cl. 424—330** **36 Claims**

1. A pharmaceutical composition for use in treating infections caused by *Trypanosoma cruzi* comprising a compound of formula (I)



wherein $R^1$ and $R^2$ are the same or different and can each represent a substituted or unsubstituted biphenylyl or fluorenyl group, or one only of $R^1$ and $R^2$ can represent a substituted or unsubstituted phenyl group, with the proviso that both $R^1$ and $R^2$ cannot represent a substituted biphenylyl gruop and that when one of $R^1$ and $R^2$ represents a substituted biphenylyl group, the other represents a substituted or unsubstituted phenyl group,

provided that when $R^1$ or $R^2$ are substituted biphenylyl, phenyl or fluorenyl they are substituted with halogen or nitro and wherein $R^3$ and $R^4$ are the same or different and are selected from the group consisting of a hydrogen atom, an alkyl group having from 1 to 4 carbon atoms and a benzyl group; or a pharmaceutically acceptable salt thereof in an amount effective to treat infections of *Trypanosoma cruzi*, in association with a pharmaceutically acceptable carrier therefor.

3,932,664

## SUBSTITUTED PHENOXYALKYL QUATERNARY AMMONIUM COMPOUNDS AS ANTIARRHYTHEMIC AGENTS

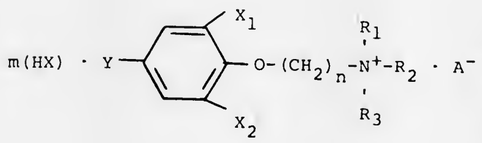
**Stanley J. Strycker, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.**

**Division of Ser. No. 164,086, July 19, 1971, Pat. No. 3,875,215. This application July 1, 1974, Ser. No. 484,525**

**Int. Cl.² A61K** *31/22, 31/33, 31/44, 31/46, 31/135, 31/275*

**U.S. Cl. 424—330** **16 Claims**

9. A method for combatting cardiac arrhythmias which comprises administering to an animal a cardiac anti-arrhythmic amount of a quaternary ammonium compound corresponding to the formula:



wherein Y represents amino or dilower-alkylamino; $R_1$ and $R_2$ represent lower alkyl; $R_3$ independently represents lower alkenyl or lower alkynyl; $X_1$ and $X_2$ both represent halogen; $A^-$ represents a stoichiometric equivalent quantity of a pharmaceutically-acceptable anion; n represents one of the integers 2, 3 or 4; HX represents a stoichiometric equivalent quantity of a pharmaceutically-acceptable acid; and *m* represents one of the integers 0 and 1.

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3,932,665

## PROCESS FOR THE TREATMENT OF ACNE VULGARIS UTILIZING RETINAL

**Eugene J. Van Scott, 1138 Sewell Lane, Rydal, Pa. 19046, and Ruey J. Yu, 4400 Dexter St., Philadelphia, Pa. 19128**

**Filed Apr. 5, 1974, Ser. No. 458,095**

**Int. Cl.² 424** *344;* **A61K** *31/11*

**U.S. Cl. 424—333** **3 Claims**

1. A method of treating acne vulgaris in a human having skin affected thereby, which method consists of:

administering topically to the affected skin a therapeutically effective amount of retinal on a daily basis to promote improvement of the skin without causing worsening of the acne, irritation to the skin, and peeling of the skin.

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3,932,666

## TREATMENT OF TREES FOR PREVENTION AND CURE OF WILT DISEASES

**David J. Bennett, Manlius, N.Y., assignor to Environmental Technology Corporation, Bloomington, Minn.**

**Continuation-in-part of Ser. No. 323,056, Jan. 12, 1973, abandoned. This application Apr. 15, 1974, Ser. No. 460,764**

**Int. Cl.² A01N** *9/24*

**U.S. Cl. 424—341** **10 Claims**

1. A method for the treatment of elm trees for the fungus disease of the vascular system thereof caused by ceratocystis ulmi which comprises injecting into the vascular system of the tree an alcoholic carrier solution of a fungicidally effective quantity of a chlorinated compound selected from the group consisting of 5-chloro-creosol, 6-chloro-creosol, 5,6,-dichloro-creosol, 6-chloro-catechol, 5-chloro-3,4-dimethoxy-toluene, 3-chloro-5 methyl-catechol, and 4-chloro-5 methyl-catechol.

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3,932,667

## ETHER COMPOUND AS AN INHALATION ANESTHETIC

**Ross C. Terrell, Plainfield, N.J., assignor to Airco, Inc., Montvale, N.J.**

**Division of Ser. No. 168,400, Aug. 2, 1971, Pat. No. 3,746,770. This application Apr. 5, 1973, Ser. No. 348,406**

**Int. Cl. A61k** *27/00*

**U.S. Cl. 424—342** **2 Claims**

2. A method of anesthetizing an anesthetic-susceptible mammal which comprises administering by inhalation to the mammal an anesthetically-effective amount of an aliphatic ether compound of the formula $CF_3(CH_3)CH—O—CF_2CF_2H$ while administering life-supporting amounts of oxygen.

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3,932,668

## COMPOSITION FOR TREATING SWINE SCOUR

**Yasuharu Sekizawa; Shigeo Seki; Bunzo Nomiya, all of Tokyo; Takemi Koeda, Yokohama; Fumio Kai, Fujisawa; Naotoshi Akai, Kokubunji; Yasushi Yusa, and Fuguaki Fukuyasu, both of Yokohama, all of Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan**

**Division of Ser. No. 319,127, Dec. 29, 1972, Pat. No. 3,859,362. This application Dec. 10, 1974, Ser. No. 531,415**

**Claims priority, application Japan, Dec. 28, 1971, 46-105753**

**Int. Cl.² A61K** *31/08*

**U.S. Cl. 424—342** **1 Claim**

1. A composition for treating the diarrhea of swine consisting essentially of an effective amount of 2,3,3-triiodo-allyl-methyl ether and a pharmaceutically acceptable carrier.

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3,932,669

## 1-CHLORO-2,2-DIMETHYL-1,4,4-TRIFLUOROCYCLOBUTANE AS AN ANESTHETICS

**Robert S. Holdsworth; Gerald J. O'Neill, both of Arlington, Mass., and Paul Tarrant, Gainesville, Fla., assignors to W. R. Grace & Co., Cambridge, Mass.**

**Filed Jan. 10, 1975, Ser. No. 539,958**

**Int. Cl.² A61K** *31/025*

**U.S. Cl. 424—352** **1 Claim**

1. The process of inducing anesthesia in a mammal, which comprises administering by inhalation to said mammal an effective quantity, to induce anesthesia, of 1-chloro-2,2-dimethyl-1,4,4-trifluorocyclobutane.

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3,932,670

## METHOD OF MANUFACTURING A BACTERIAL PREPARATION CONSISTING OF A NORMAL RUMEN BACTERIAL FLORA WITH AN IMPROVED ABILITY TO UTILIZE AMMONIUM SALTS

**Nobuo Sakurai, Chiba, Japan, assignor to Miyairi Kinzai Kenkyusho Company Limited, Japan**

**Filed May 24, 1973, Ser. No. 363,558**

**Claims priority, application Japan, May 29, 1972, 47-53122**

**Int. Cl.² C12K** *1/00, 3/00*

**U.S. Cl. 426—2** **8 Claims**

1. In a process for conditioning a rumen flora containing a relatively high number of lactobacillus groups and a relatively small number of coliform groups to improve the ammonium salt utilizing ability thereof by serial passage and culturing of microorganisms on a streak inoculated plate culture medium containing the maximum ammonium salt concentration compatible with serial passage culture growth, the improvement which comprises:

a. further culturing colonies of said microorganisms which have been cultured in said streak inoculated plate culture medium containing the maximum ammonium salt concentration compatible with serial passage culture growth by repeatedly streaking said colonies over the surface of said culture medium until the entire surface thereof is covered with colonies and said culture medium is enriched with sufficient metabolic products from the growth of said microorganisms therein to condition said microorganisms to grow in the presence of ammonium salt concentrations higher than said maximum; and

b. transferring colonies of the resultant conditioned microorganisms to a new culture medium having an ammonium salt concentration higher than said maximum, and repeating step a) in said new culture medium.



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3,932,671

## PROCESS FOR PRODUCING PROTEIN HYDROLYZATE

**Tamotsu Yokotsuka, Nagareyama; Takashi Iwaasa, Noda; Tadao Okami, Chiba; Minoru Noda, Kamagaya, and Mitsuharu Fujii, Noda, all of Japan, assignors to Kikkoman Shoyu Co., Ltd., Japan**

**Filed Mar. 20, 1973, Ser. No. 342,982**

**Claims priority, application Japan, Mar. 27, 1972, 47-29825**

**Int. Cl.² A23B** *4/12*

**U.S. Cl. 426—7** **15 Claims**

1. In a process for producing a protein hydrolyzate from proteinaceous materials by hydrolysis with proteolytic enzymes in an aqueous medium to form a protein partial hydrolyzate containing polypeptides the improvement comprising inoculating and culturing salt-resistant lactic acid bacteria selected from the group consisting of *Pediococcus halophilus*, *Pediococcus soyae*, *Tetracoccus soyae* and *Streptococcus thermophilus* in the aqueous medium containing said protein partial hydrolyzate and up to 12 percent by weight of sodium chloride based on the volume of the aqueous medium until the free amino acid content in the aqueous medium is increased.

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3,932,672

## GELLABLE PROTEIN

**Akiva Pour-El, 1389 Keston St., St. Paul, Minn. 55108, and Thomas C. Swenson, Rte. No. 1, Box 340, Deerwood, Minn. 56444**

**Filed Sept. 19, 1974, Ser. No. 507,649**

**Int. Cl.² A23L** *1/20;* **A23J** *3/02*

**U.S. Cl. 426—46** **5 Claims**

1. A process for producing a gellable and whippable acid-insoluble protein material comprising removing insoluble matter from a proteinaceous material to obtain an acid insoluble protein isolate, enzymatically modifying the isolate with a protelytic enzyme at alkaline pH, reisolating the digested isolate by acid precipitation and then raising the pH above the pH of digestion for a relatively short time and then neutralizing and recovering the modified acid insoluble protein material.

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3,932,673

## FRUIT STUFFED WITH BRINE RESISTANT HARD GEL AND METHOD OF FORMING THE SAME

**John R. Webster, Lindsay, Calif., assignor to Lindsay Olive Growers, Lindsay, Calif.**

**Filed Jan. 10, 1975, Ser. No. 540,254**

**Int. Cl.² A23B** *7/10*

**U.S. Cl. 426—49** **18 Claims**

1. A method of treating a pitted drupe having a pit well comprising depositing in the pit well a mixture containing a finely divided edible stuffing material having undesired sugar therein, a low methoxyl pectin gelling agent, and a slowly soluble source of calcium ions producing a calcium ion concentration of from at least about 0.0039 to 0.078 percent by weight, which mixture has previously been heated to from 100°C. to 70°C. for from five minutes to thirty minutes; and fermenting the sugar contained in the stuffing material while in the pit well in an aqueous solution of sodium chloride, a slowly soluble calcium salt and sufficient acid to maintain the pH of the solution between 2.8 and 3.9, the calcium ions from the calcium salt in the brine being present in at least about 1.4 to 5.5 percent by weight of the sodium chloride.

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3,932,674

## CONTROLLED BULK VEGETABLE FERMENTATION

**John L. Etchells; Thomas A. Bell; Henry P. Fleming, and Roger L. Thompson, all of Raleigh, N.C., assignors to The United States of America, Washington, D.C.**

**Filed Nov. 29, 1974, Ser. No. 528,454**

**Int. Cl.² A23L** *1/218*

**U.S. Cl. 426—52** **10 Claims**

1. A rapid, controlled bulk fermentation process for vegetables, under conventional pack-out conditions, which comprises washing said vegetables and then immersing them in a 15°–32° salometer brine; further sanitizing the resulting vegetable/brine mass by chlorinating and acidifying the brine to the extent necessary to provide, respectively, from about 50 to about 100 parts per million of active chlorine in the brine and a pH thereof between about 2.7 and about 3.2, said chlorine destroying substantially all the microflora in the brine; maintaining initial brine strengths by counteracting dilution of the brine resulting from diffusion of vegetable moisture by incrementally adding salt to the brine until the point of near equilibration, the brine at that point containing between about 0.2 and about 0.6% sugar, by volume; repeating the chlorine sanitizing step at least once about midway between the original chlorination and equilibration to again destroy microflora build-up in the brine; uniformly buffering the nutrient-containing brine to a pH between about 4.2 and 4.8; then adding to said brine a viable culture of one or more species of lactic acid bacteria either singly or in conjunction; sweeping with an inert gas autogenously-produced $CO_2$ from the brine during the above steps, this purging being carried out until fermentation is essentially complete, i.e., when the sugar content of the vegetable/brine mass is near zero and there is essentially no further development of brine acid; and the above process being carried out at a temperature in the range of about 65°F. to about 90°F.

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3,932,675

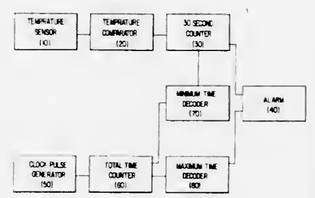
## METHOD FOR TIMED COOKING OF A FOOD PRODUCT

**Duane C. Main, Woodridge, Ill., assignor to General Foods Corporation, White Plains, N.Y.**

**Division of Ser. No. 354,148, April 24, 1973, Pat. No. 3,859,644. This application Oct. 25, 1974, Ser. No. 518,203**

**Int. Cl.² A01K** *43/00*

**U.S. Cl. 426—233** **3 Claims**




1. A method for determining the state of readiness of a food product and indicating the completion of a cooking cycle for the product immersed in a preheated cooking medium comprising the steps of:

monitoring the temperature of the cooking medium and generating a timer control signal when said temperature reaches a predetermined level after immersion of the food product for energizing a fixed interval timer, the timing interval of which establishes a desired cooking

period for the product at said predetermined temperature level, inhibiting the start of said timing interval for a fixed time period after immersion of said food product in the heated cooking medium to thereby establish a minimum cooking time for tahe product immersed in the heated cooking medium, said minimum cooking time including the total of the fixed period plus the period of the interval timer and the time necessary for the cooking medium to reach said predetermined level after completion of the inhibiting fixed period, initiating the timing of an override time period upon immersion of the food product in the cooking medium to thereby establish the maximum cooking time for the produce immersed in the cooking medium, and energizing an alarm either in response to completion of the timing interval or completion of the override time period even though the desired cooking period for the product at said predetermined temperature level has not been maintained to indicate that the product is at the desired state of readiness.

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**3,932,676**

## METHOD FOR DYEING PROTEIN ARTICLES OF FOOD, ESPECIALLY PROTEIN CASINGS

**Mieczyslaw Janicki; Henryk Muler, and Wladyslaw Nijaki, all of Warsaw, Poland, assignors to Instytut Prezemyslu Miesnego, Warsaw, Poland**

**Filed Aug. 30, 1974, Ser. No. 502,104**
**Claims priority, application Poland, Sept. 1, 1973, 165010**
**Int. Cl.² A23L** *1/275*
**U.S. Cl. 426—250** **11 Claims**

1. A method for dyeing a protein food product comprising subjecting the product to the action of a dyeing substance consisting of a wood-bark extract in form of an aqueous solution having a concentration of from 0.5 to 5% until the desired color is imparted to the food product.

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**3,932,677**

## COLLAGEN CASINGS FROM LIMED HIDE COLLAGEN

**Noel I. Burke, Danville, Ill., assignor to Tee-Pak, Inc., Chicago, Ill.**

**Filed Oct. 22, 1974, Ser. No. 517,277**
**Int. Cl.² A22C** *13/00*; **A23J** *1/10*
**U.S. Cl. 426—277** **3 Claims**

1. A process for preparing an edible collagen casing from a hide collagen source which has been completely limed for a period from seven days to several months which comprises deliming the completely limed hide collagen by treating said hide with a dilute, edible acid at a pH of about 4.0 to 5.5 for a time sufficient to reduce the pH in the center of the hide to less than about 5.5 to form water soluble calcium salts from the lime in said hide, washing the water soluble calcium salts from the hide collagen with water until the pH of the supernatant water after a 20-minute exposure to said hide is within at least 0.2 pH units of the pH of the incoming water, forming a soft extrudable slurry from the neutralized and washed hide collagen containing about 2 – 8% collagen, extruding said slurry through an annular die to form a tubular edible collagen casing, coagulating, tanning, and drying the casing thus formed.

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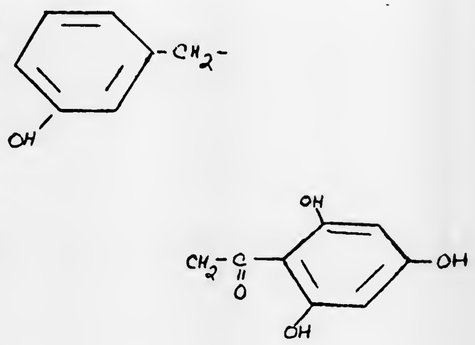
**3,932,678**

## NOVEL DIHYDROCHALCONE SWEETENER COMPOSITIONS

**George P. Rizzi, Springfield Township, Hamilton County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio**

**Division of Ser. No. 157,682, June 28, 1971, Pat. No. 3,855,301. This application June 25, 1974, Ser. No. 482,963**
**Int. Cl.² A23L** *1/236*
**U.S. Cl. 426—548** **9 Claims**

1. A sweetener composition comprising from about a 5 × $10^{-4}$ molar to about a 2.0 molar concentration of 3-(m-hydroxyphenyl)phloropropiophenone of the formula



and a solvent selected from the group consisting of ingestible, polar, organic liquids, and mixtures of ingestible, polar, organic liquids and water, said mixtures containing at least about 0.15% by weight of said ingestible, polar, organic liquids.

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**3,932,679**

## PROCESS FOR THE PREPARATION OF PROTEIN-FREE WAFERS

**Silvio Salza, 46, Via Sottoborgo, 56100 Pisa, Italy**

**Filed Aug. 15, 1973, Ser. No. 388,432**
**Claims priority, application Italy, Aug. 18, 1972, 69664/72**
**Int. Cl.² A21D** *10/04*, *8/06*
**U.S. Cl. 426—549** **3 Claims**

1. A process for preparing protein-free wafers comprising the steps of mixing ingredients consisting essentially of starch and water to form a homogeneous pourable mixture, stirring into said mixture a stabilizing agent consisting of an aqueous dispersion of gelatinized starch, continuing said stirring until a completely homogeneous batter is obtained, pouring said batter in a thin layer into molds and baking the batter to form wafers, the total amount of starch being not more than an equal part by weight of the total amount of water utilized to form said wafer, said stabilizing agent comprising from 0.5 to 1.0% by weight of the total amount of starch and 8 to 15% by weight of the total amount of water.

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**3,932,680**

## PRODUCTION OF STERILE YOGHURT

**Franz Egli, and Franz Egli, both of Lucerne, Switzerland, assignors to Zentralschweizerischer Milchverband, Lucerne, Switzerland**

**Filed Jan. 11, 1974, Ser. No. 432,657**
**Claims priority, application Switzerland, Sept. 20, 1973, 13507/73**
**Int. Cl.² A23C** *9/12*
**U.S. Cl. 426—43** **7 Claims**

1. A method for the production of sterile yoghurt which comprises concentrating pasteurized and homogenized milk by 10% by weight at a temperature of about 92°C in which the pasteurization is effected at a temperature of at least 90°C, thereafter adding 10% – 12% by weight sugar, cooling to about 40°C, adding cultures of lactic acid bacteria and incubating to a pH-value of 4 to 4.3 over 2-½ to 4 hours at 42°C to 44°C after incubation, cooling to 20°C to 30°C, cooling the yoghurt thus produced to a temperature of 4°C to 12°C and adding thereto an effective amount of stabilizer A, which contains by weight 20–30% emulsifier, 30–40% carageen, 30–40% carboxymethylcellulose, 2–3% carob-bean meal or powder, and 4–8% guar meal or powder; stabilizer B, which is potato starch or other starch; and stabilizer C, which contains by weight 75–85% pure modified plant starch and 15–25% of 60% modified gelatin and sucrose wherein the sucrose is the carrier, for the dissolving or distribution of proteins, and permitting the resulting mass to stand at 4°C to 12°C for 5–7 hours, thereafter filling the mass into containers, hermetically sealing the resulting packages, sterilizing the packages in an autoclave at a temperature in the range of 60°C to 85°C and at a pressure up to 2 atmospheres for a time sufficient to sterilize, cooling the packages under pressure to 10°C to 15°C, further storing the packages for 2–4 days at a temperature of 4°C – 6°C, and finally storing the packages at room temperature.



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**3,932,681**

## CERAMIC MASKING METHOD

**Ray B. Forker, Jr., Horseheads, and Joseph N. Panzarino, Big Flats, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.**

**Filed Mar. 11, 1974, Ser. No. 449,897**
**Int. Cl.² B44D** *1/52*, *3/20*
**U.S. Cl. 427—282** **7 Claims**

1. A method of masking a ceramic surface against sprayed coating compositions which comprises the steps of:

applying to selected portions of said surface to be masked a fluid suspension comprising a heat-resistant masking composition and a volatile liquid vehicle, said masking composition consisting essentially, in weight percent, of about 40–90% of a bentonite clay and 10–60% by weight of a finely-divided refractory metal oxide release agent, to provide a coating of said suspension on said surface; and

drying the coating at a temperature in excess of about 100°C. to remove said volatile liquid vehicle therefrom.

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**3,932,682**

## AIR PERMEABLE WATERPROOF PRODUCTS HAVING FABRIC-LIKE AESTHETIC PROPERTIES AND METHODS FOR MAKING THE SAME

**John T. Loft, Springfield; Steven G. Plovan, Livingston, and Clifford M. Vogt, Madison, all of N.J., assignors to Celanese Corporation, New York, N.Y.**

**Division of Ser. No. 43,563, June 4, 1970, Pat. No. 3,690,977. This application Apr. 26, 1972, Ser. No. 247,561**
**Int. Cl.² D04H** *1/04*
**U.S. Cl. 428—296** **3 Claims**

1. An air-permeable waterproof product having fabric-like aesthetic properties which product comprises an open-celled microporous polyolefin film, the microporous film being characterized by a reduced bulk density as compared to the bulk density of a corresponding polyolefin film having no open-celled structure, a crystallinity above about 30 percent, and a pore size of less than 5,000 Angstroms as porosimetrically determined by mercury penetration; and spray spun substantially continuous randomly arranged filamentary polyolefin material of varying crystallinity and diameter which filamentary material is thermally bonded to itself at randomly located filament crossover points and to the film at randomly located contact points between the filamentary material and the film which filament sections extend generally parallel to the plane of the film.

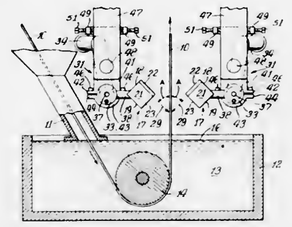
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**3,932,683**

## CONTROL OF COATING THICKNESS OF HOT-DIP METAL COATING

**Norman A. Robins, Flossmoor, and Frank H. Bugajski, South Holland, both of Ill., assignors to Inland Steel Company, Chicago, Ill.**

**Filed Oct. 10, 1972, Ser. No. 296,293**
**Int. Cl.² C23C** *1/04*, *1/06*, *1/08*
**U.S. Cl. 427—349** **8 Claims**



1. In a continuous hot-dip coating line wherein a metal strip is passed through a molten coating bath at a line speed not greater than about 150 feet per minute and is withdrawn vertically from the bath between a pair of gas blowing nozzles for impinging only a single stream of gas against each side of said strip and thereby controlling the coating thickness, the improvement which comprises directing the gas stream from each of said nozzles generally downwardly against the strip at an angle between the strip and the center line of the gas stream of not more than about 40°, whereby to eliminate or substantially minimize ripple formation on the surface of the coated product.

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**3,932,684**

## PHENOLIC AGENTS FOR DISINFECTING STALLS

**Georg Lauermann, Metzkausen, and Uwe Trabitzsch, Langenfeld, both of Germany, assignors to Henkel & Cie G.m.b.H., Dusseldorf, Germany**

**Filed Apr. 1, 1974, Ser. No. 456,894**
**Claims priority, application Germany, Apr. 6, 1973, 2317225**
**Int. Cl.² A01N** *9/26*, *9/30*
**U.S. Cl. 424—346** **8 Claims**

1. A liquid concentrate for killing parasitic spores and eggs in livestock stalls comprising from 10% to 40% by weight of a disinfectant selected from the group consisting of phenol, p-chloro-m-cresol, cresol, o-phenyl-phenol, pentachlorophenol and hexachlorophene and a solvent combination which penetrates the membranes of parasitic spores and eggs consisting essentially of perchloroethylene and a monohydroxy alcohol having 2 to 4 carbon atoms; said liquid concentrate containing from 10% to 50% by weight of said perchloroethylene, from 25% to 50% by weight of said alcohol; and in addition containing from 0% to 40% by weight of a surface-active compound.

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**3,932,685**

## ALUMINUM STABILIZATION PROCESS AND STABILIZATION SOLUTION THEREFOR

**Dervin L. Flowers, Scottsdale, Ariz., assignor to Motorola, Inc., Chicago, Ill.**

**Filed Nov. 9, 1973, Ser. No. 414,587**
**Int. Cl.² B05D** *3/00*; **C09D** *5/00*
**U.S. Cl. 427—352** **4 Claims**

1. In a process of manufacturing aluminum parts which are to be bonded to other parts, the improvement which comprises the step of coating the aluminum parts with a complex solution containing 1 to 30 grams per liter phosphorous pentoxide, 1 to 60 grams per liter boric anhydride, 0.01 to 10.0

grams per liter of a material elected from the group consisting of gold, platinum, palladium and rhodium salts and oxides.

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**3,932,686**
**BINDER COMPOSITION**

**Kevin M. Foley, Hebron, and Frank P. McCombs, Granville, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio**

**Filed Nov. 13, 1974, Ser. No. 523,386**
**Int. Cl.² B32B** *5/16*
**U.S. Cl. 428—268** **9 Claims**

1. A mass of intermeshed vitreous fibers bonded to one another at points of contact by a thermoset phenolic resin binder which is the product of heat curing of a composition containing a phenolic resin and a silanolate salt selected from the group consisting of a salt of the formula

$$\left[H_2N-(CH_2)_x-\underset{\underset{O^{\ominus}}{|}}{\overset{O^{\ominus}}{|}}{Si}-O^{\ominus}\right](M)_y$$

and a salt of the formula

$$\left[H_2N-(CH_2-CH_2)_z-NH-(CH_2)_x-\underset{\underset{O^{\ominus}}{|}}{\overset{O^{\ominus}}{|}}{Si}-O^{\ominus}\right](M)_y$$

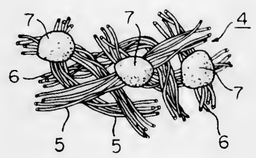
where M is a metal having a valence of up to 2, $y$ is equal to 3 divided by the valence of the metal, $x$ is an integer from 3 to 6 and $z$ is an integer from 1 to 3.

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**3,932,687**
**FIBROUS CONFIGURATION COMPOSED OF A PLURALITY OF MUTUALLY ENTANGLED BUNDLES OF FINE FIBERS**

**Miyoshi Okamoto; Koji Watanabe, both of Otsu; Yasuhiko Nukushina, Kyoto, and Makoto Konosu, Otsu, all of Japan, assignors to Toray Industries, Inc., Japan**

**Continuation of Ser. No. 97,328, Dec. 11, 1970, abandoned, which is a continuation of Ser. No. 675,823, Oct. 17, 1967, abandoned. This application Mar. 26, 1973, Ser. No. 344,620**
**Claims priority, application Japan, Oct. 17, 1966, 41-68903; Oct. 21, 1966, 41-67882**
**Int. Cl.² D04H** *1/58, 1/64, 1/74*
**U.S. Cl. 428—288** **4 Claims**



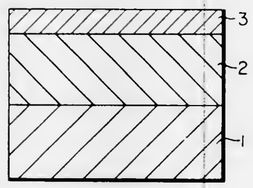

1. A fibrous article comprising: numerous staple fiber bundle units mutually entangled with one another in a three-dimensional configuration, each said staple fiber bundle unit comprising a plurality of flexible and relatively movable synthetic organic ultrafine fibers having a denier within the range of 0.005 to 0.5 denier per one ultrafine fiber, substantially the same fiber length and lying axially along the longitudinal axis of said staple fiber bundle unit; elastic bonding material disposed around and spaced axially along said ultrafine fiber bundle units joining together adjacent ones of said ultrafine fiber bundle units at locations where they intersect with one another to hold the entangled ultrafine fiber bundle units in said three-dimensional configuration while permitting slight relative longitudinal movement between the individual ultrafine fibers within each ultrafine fiber bundle unit; and wherein the ultrafine fibers located on at least one surface of said fibrous article have raised ends which are spaced-apart from each other.

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**3,932,688**
**COMPOSITE MAGNETIC FILM**

**Yutaka Sugita, Tokorozawa; Tsutomu Kobayashi; Hideki Nishida, both of Tokyo, and Masatake Takahashi, Hachioji, all of Japan, assignors to Hitachi, Ltd., Japan**

**Filed Oct. 12, 1973, Ser. No. 405,839**
**Int. Cl.² H01F** *10/00*
**U.S. Cl. 428—336** **17 Claims**




1. A composite free from development of hard bubbles comprising a magnetic bubble domain film capable of forming hard bubbles and having its easy magnetization axis arranged in a direction perpendicular to the surface thereof and in which uniaxial anisotropy is dominant, and a polycrystalline metallic ferromagnetic film deposited on said magnetic film, said polycrystalline film having a thickness of 30 to 500 angstroms.

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**3,932,689**
**FLEXIBLE ADHESIVE COMPOSITION AND METHOD FOR UTILIZING SAME AND ARTICLE FORMED THEREFROM**

**Tsutomu Watanabe; Sigenori Yamaoka, and Kochi Tanaka, all of Yokohama, Japan, assignors to Sumitomo Bakelite Company, Limited, Tokyo, Japan**

**Filed Feb. 21, 1974, Ser. No. 444,263**
**Claims priority, application Japan, Oct. 13, 1973, 48-114353; Oct. 29, 1973, 48-120736**
**Int. Cl.² C09J** *3/14, 3/16*
**U.S. Cl. 428—418** **30 Claims**

1. An adhesive composition for flexible printed circuits comprising a mixture of (1) a fusible and soluble phenol-formaldehyde resin, (2) a polyepoxy compound having at least two epoxy groups in its molecule, (3) at least one polymer selected from the group consisting of acrylonitrile-butadiene copolymers and polyvinylacetal resins, and (4) at least one copolymer selected from the group consisting of (a) partial alkyl esters of copolymers of aromatic vinyl compounds and maleic anhydride, (b) copolymers of aromatic vinyl compounds and alkyl maleates, and (c) copolymers of aromatic vinyl compounds, maleic anhydride, and alkyl maleates.

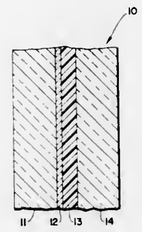
20. A method for manufacturing a metal-clad laminate for flexible printed circuits, which comprises interposing the adhesive composition according to claim 2 between a plastic film and a metal foil, passing the resulting assembly between a pair of pressing rolls of a laminating equipment, one of the rolls being a metal roll and the other being a rubber roll, in such a manner that the plastic film and the metal foil contact with the metal roll and the rubber roll, respectively, and the metal foil is allowed to wrap around the rubber roll from the position on the circumference of the rubber roll for $\pi/4$ or more radians toward the contact line of both rolls, and effecting the bonding by application of heat and pressure while passing through said pair of pressing rolls.



**3,932,690**
**TRANSPARENT, PHOTOTROPIC LAMINATE**

**Georg Gliemeroth, Mainz-Finthen, Germany, assignor to Jenaer Glaswerk Schott & Gen., Mainz, Germany**

**Filed Apr. 29, 1974, Ser. No. 464,963**
**Claims priority, application Germany, Apr. 30, 1973, 7316334**
**Int. Cl.² B32B** *17/06*
**U.S. Cl. 428—432** **8 Claims**




1. A transparent laminate that passes less light in the presence of actinic light than in the absence of actinic light, said laminate comprising:
A. a light-transmitting substrate selected from the group consisting of glass and transparent plastic sheet;
B. a light-transmitting phototropic layer consisting essentially of silver halides and copper halides which darkens in the presence of actinic light said phototropic layer being attached to the substrate;
C. a light-transmitting plastic sheet layer attached to the phototropic layer.

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**3,932,691**
**METHOD OF INSULATING ROTOR PLATES**

**Joseph Danzer, and Helmut Weber, both of Munich, Germany, assignors to Wacker-Chemie GmbH, Munich, Germany**

**Continuation-in-part of Ser. No. 118,984, Feb. 25, 1971, abandoned. This application Oct. 5, 1973, Ser. No. 403,754**
**Claims priority, application Germany, Mar. 3, 1970, 2009906**
**Int. Cl.² B32B** *15/04;* **B05D** *3/04*
**U.S. Cl. 428—450** **11 Claims**

1. An improved method for insulating iron rotor plates for an electric motor in which the electric conductor consists of bare aluminum by contacting decarbonized and degreased rotor plates with steam at a temperature of from 350° to about 950°C. until a blue iron-oxide film is formed, the improvement which comprises coating said plates with a composition containing an organosilicon material and an organic solvent and thereafter drying the coated plates before contacting the plates with steam.

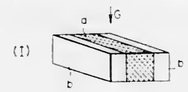
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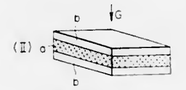
**3,932,692**
**RESINIOUS LAMINATES HAVING IMPROVED GAS PERMEATION AND DELAMINATION RESISTANCE**

**Sadao Hirata; Syunsaku Hirata, both of Yokohama; Toru Suzuki, Yokosuka, and Akira Kishimoto, Tokyo, all of Japan, assignors to Toyo Seikan Kaisha Limited, Tokyo, Japan**

**Filed Aug. 20, 1973, Ser. No. 389,791**
**Claims priority, application Japan, Aug. 20, 1972, 47-83157; July 7, 1973, 48-76138**
**Int. Cl.² B32B** *27/08;* **C08G** *41/04*
**U.S. Cl. 428—474** **17 Claims**

1. A resin laminate structure having an improved gas permeation resistance and high resistance to delamination formed by means of co-extrusion of plurality of resin melts, which structure comprises a layer of a polyolefin and a layer of a blend consisting essentially of (A) a saponified product of an ethylene-vinyl acetate copolymer having an ethylene content of 25 to 50 mole % and a degree of saponification of at least 96% and (B) a thermoplastic polymer containing a carbonyl group in the main or side chain thereof, at an A : B mixing weight ratio ranging from 95:5 to 50:50, said two layers being laminated so that said two layers are adjacent to each other, wherein said blend layer has such a multi-layer laminar structure that the polymer composition is different with respect to the thickness direction but substantially identical with respect to the plane direction and that when the blend layer is divided into three layers in the direction of the thickness, the divided layer adjacent to said polyolefin layer contains predominantly said carbonyl group-containing thermoplastic polymer, namely contains said saponified product in an amount expressed by the following formula




$$M_1 = m_1 X$$

wherein $X$ stands for the average content (% by weight) of the ethylene-vinyl acetate copolymer saponified product in the blend layer, $m_1$ is a number of from 0 to 0.95 and $M_1$ is the content (% by weight) of said saponified copolymer in said divided layer adjacent to the polyolefin layer, and at least one layer of the divided layers other than the divided layer adjacent to the polyolefin layer contains said ethylene-vinyl acetate copolymer predominantly, namely in an amount of expressed by the following formula

$$M_2 = m_2 X$$

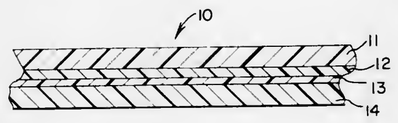
wherein $X$ is as defined above, $M_2$ is the content (% by weight) of said saponified copolymer in said specific divided layer, and $m_2$ is a number of from 1.2 to 4.

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**3,932,693**
**LAMINATED PACKAGING FILM HAVING LOW VAPOR AND GAS PERMEABILITY**

**Fred B. Shaw, Hinsdale, and Richard E. Graumann, Blue Island, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.**

**Continuation-in-part of Ser. No. 81,941, Oct. 19, 1970, abandoned. This application June 3, 1974, Ser. No. 475,466**
**Int. Cl.² B32B** *27/08*
**U.S. Cl. 428—518** **4 Claims**




1. A laminated, heat sealable film having low oxygen and water vapor permeability comprising
a. a base layer, of an oriented polypropylene film
b. a thin continuous layer of a vinylidene chloride polymer containing at least 75 weight percent vinylidene chloride bonded to one surface of the base layer,
c. a thin continuous layer of a first ethylene/vinyl acetate copolymer bonded to the vinylidene polymer layer, the first ethylene/vinyl acetate copolymer having a vinyl acetate content greater than 10 to about 30 percent by weight, and
d. a top layer of a second ethylene/vinyl acetate copolymer having a vinyl acetate content of about 2.5 to 7.5 percent

by weight bonded to the first ethylene/vinyl acetate copolymer layer.

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**3,932,694**
**PRE-TREATMENT METHOD FOR ELECTROLESS PLATING FOR PRODUCING A METAL FILM AS RESISTOR**

**Hachiro Hamaguchi, Nara, and Hiroshi Takahama, Osaka, both of Japan, assignors to Tatsuta Densen Kabushiki Kaisha, Japan**

**Filed Apr. 4, 1974, Ser. No. 458,018**
**Int. Cl.² B05D** *5/12, 3/04, 3/10*
**U.S. Cl. 428—432** **7 Claims**

1. A method for forming metal film resistor on nonmetallic substrate by means of electroless plating, wherein said substrate is sequentially pre-treated with a first stannous chloride solution, silver salt solution, a second stannous chloride solution and further with palladium chloride solution and then forming a metal film resistor on said pre-treated substrate by electroless plating.

**3,932,695**
**REACTANT SHEET FOR DEVELOPING COLORLESS DYE IMAGES**

**Gerald T. Davis, and Robert A. Fetters, both of Chillicothe, Ohio, assignors to The Mead Corporation, Dayton, Ohio**

**Filed Jan. 23, 1967, Ser. No. 610,766**
**Int. Cl.² B32B** *27/08, 27/42;* **B41M** *3/12, 5/00*
**U.S. Cl. 428—531** **3 Claims**

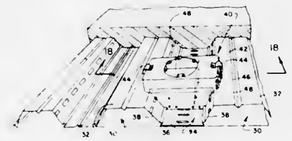
1. A reactant sheet for use in developing a colored image from a colorless image formed by application of a colorless dye dissolved in a carrier liquid, which comprises a pigment coated paper base substrate having an adherent layer of pigment particles on one side, coated on said side with a uniform coating consisting of an essentially solid, non-volatile, water-insoluble, fusible phenol-formaldehyde condensation polymer which is capable of reacting with colorless dyes to form a colored material, said polymer being applied to said paper in an amount of the order of 0.01 to 0.2 pounds of solids per 1300 square feet of paper base, and said polymer being substantially completely on the surface of said paper base substrate and adherent to and essentially completely retained on the exposed surfaces of said adherent layer of said pigment particles on said paper base substrate.

# ELECTRICAL

**3,932,696**
**UNDERFLOOR ACCESS HOUSING UTILIZING A TROUGH SPACE OF A CELLULAR FLOORING UNIT**

**Frank W. Fork, Allison Park; Robert G. Lindner, Sewickley; Charles J. Kelly, Pittsburgh, and Raymond E. Albrecht, Sewickley, all of Pa., assignors to H. H. Robertson Company, Pittsburgh, Pa.**

**Filed Dec. 26, 1973, Ser. No. 427,507**
**Int. Cl.² H02G** *3/28*
**U.S. Cl. 174—48** **37 Claims**



1. In an electrical wiring distributing floor structure including cellular flooring units providing generally parallel enclosed cells, each pair of adjacent cells presenting spaced crests separated by a trough, each said trough comprising a valley and confronting inclined webs connecting said valley to said spaced crests, an access housing fixed to the flooring unit and spanning the distance between said spaced crests, said access housing having perimeter walls, and a top wall provided with an outlet opening, the improvement comprising:
distinct trough closures, one positioned along each side of said access housing and cooperating with a valley segment and confronting web segments to define a trough space accessible through said outlet opening; and
each of said confronting web segments having a web access opening establing communication between each cell of said adjacent cells and said trough space.

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**3,932,697**
**ROPE TERMINATIONS AND METHODS AND APPARATUS FOR FABRICATING THE SAME**

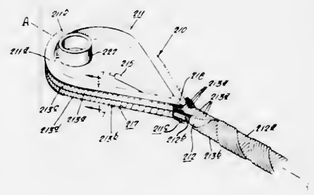
**Henry Alexander Hood, Moorestown, N.J., assignor to Wall Industries, Inc., Beverly, N.J.**

**Filed July 29, 1974, Ser. No. 492,721**
**Int. Cl.² H02G** *15/02, 1/14;* **F16G** *11/00*
**U.S. Cl. 174—79** **9 Claims**

1. A termination of a length of rope having a plurality of rope yarns, comprising:
a termination fitting having an inner end,
fastening means carried by said fitting remote from said inner end,
said fitting having a peripheral surface with a curved portion remote from said inner end and diametrically-opposed portions tapering outwardly from said inner end,
said rope having a main section with said yarns closely associated with one another and an end section with said yarns separated into at least a pair of bundles,
said bundles extending outwardly around the curved portion of said peripheral surface and returning along said diametrically-opposed portions of said peripheral surface,
one of said pair of bundles being wrapped helically in one direction about the main section of the rope and the other of said bundles being wrapped helically in the opposite direction about said one bundle,
said bundles being wrapped for a predetermined distance along said main section of the rope and having ends, and
means securing said ends to the main section of said rope,
whereby the application of tension between the main section of the rope and the fastening means of the fitting causes the wrapped bundles to grip the rope for securely mounting the fitting thereto.

8. A method of terminating a rope composed of a plurality of yarns, comprising the steps of:
associating with one end of the rope a fitting having a frusto-conical peripheral surface with a base and an axial bore,
disposing the fitting with its narrow end toward the end of the rope,
separating the rope yarns into at least one pair of bundles,
inserting the bundles axially into the bore at the narrow end of the fitting,
splaying the bundles diametrically outward around the base of the fitting,
disposing the bundles axially along opposite sides of the peripheral surface,
wrapping one bundle helically in one direction about the rope inwardly of the fitting for a predetermined distance,





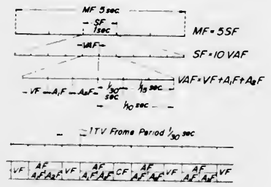
wrapping the other bundle helically in the opposite direction about said one bundle for said distance, and
securing the ends of said bundles to said rope.

9. A method of terminating a rope composed of a plurality of yarns, comprising the steps of:
associating with one end of the rope a fitting having an outwardly-open channel disposed in the form of a loop having a narrow end,
disposing the narrow end of the loop adjacent the end of the rope,
separating the rope yarns into at least one pair of bundles,
extending one bundle in one direction around said loop in said channel,
extending the other bundle in the other direction around said loop in said channel,
wrapping one bundle helically about the rope in one direction for a predetermined distance,
wrapping the other bundle helically about the rope in the other direction for said distance, and
securing the ends of the bundles to the rope.

### 3,932,698
### MULTIPLEX SIGNAL TRANSMISSION SYSTEM

**Akio Yanagimachi, Kawasaki; Osamu Yamada, Kodaira; Hisakichi Yamane, Tokyo; Eiichi Sawabe, Machida; Takashi Uehara, Inagi; Takehiko Yoshino, Yokohama; Teruhiro Takezawa, Komae; Michio Masuda, Tokyo; Hiroaki Nabeyama, Yokohama; Masaaki Fukuda, Kodaira, and Tatsuo Kayano, Hachioji, all of Japan, assignors to Nippon Hoso Kyokai; Hitachi, Ltd. and Hitachi Electronics, Ltd., all of Tokyo, Japan**

**Filed Aug. 27, 1973, Ser. No. 391,977**
**Claims priority, application Japan, Sept. 4, 1972, 47-88554**
**Int. Cl.² H04N 7/08**
**U.S. Cl. 178—5.6** **21 Claims**




1. A multiplex signal transmission system in which a multiplexed signal composed of several video signals and accompanied PCM-TDM audio signals, said audio signals being multiplexed in time division in the form of pulse code modulation signals having respectively arbitrary time durations and arranged in time-serial form, is sequentially divided into a plurality of signal portions contained in one master frame, said one master frame having several sub-frames, each of which includes a plurality of video-audio frames, each of which includes a video frame and an audio frame which has first and second frames, and in which said signal portions are respectively allocated to a plurality of time-parallel channels, each of which has a time duration of one master frame, and said signal portions being transmitted through respective ones of said plurality of time-parallel channels, repeatedly every one master frame period, comprising:

a channel shift means for shifting sequentially the whole of said signal portions allocated to each of said time-parallel channels every predetermined time period; and

a signal transmitting means applied to outputs derived in time-parallel form from said channel shift means and transmitting simultaneously said outputs through respective channels to each of which said signal portions composing respective audio signals are allocated successively every one master frame period,

said channel shift means being provided with

a shift register for temporarily storing input PCM-TDM audio signals during one frame period of said pulse code modulation signals,

a first ring counter to which the PCM-TDM audio signals thus stored in said shift register are transferred in parallel and which circulates the stored audio signals at intervals of one bit clock period of said pulse code modulation signals,

a second ring counter, having counter stages corresponding to the number of channels of said PCM-TDM audio signals contained in one frame period of said pulse code modulation signals, for circulating signals stored initially in said second ring counter at intervals of one master frame period, and

an AND gate group having AND gates the number of which is equal to that of said channels, and each of which has two input terminals connected respectively to output terminals of counter stages corresponding to a position of a first bit in each word of said pulse code modulation signals stored in said first ring counter and to output terminals of counter stages of said second ring counter, positions of which stages correspond to relevant words of said pulse code modulation signals, whereby

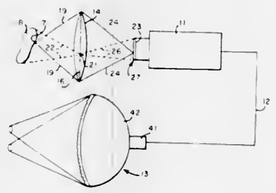
said AND gates sequentially become conductive during one master frame period in accordance with stepping of the content stored initially in said second ring counter at intervals of one master frame period so as to derive the PCM-TDM audio signals which circulate in said first counter through relevant AND gates which thus become conductive in such a manner that channels assigned to the PCM-TDM audio signals thus derived from AND gates sequentially conducting are shifted sequentially.

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### 3,932,699
### THREE-DIMENSIONAL TELEVISION

**R. Maurice Tripp, 15231 Quito Road, Saratoga, Calif. 95070**

**Filed Nov. 26, 1973, Ser. No. 419,123**
**Int. Cl.² H04N 9/54**
**U.S. Cl. 178—6.5** **20 Claims**



1. Apparatus for viewing a three-dimensional scene and providing a manifestation of the depth relationships therein comprising: a radiation sensing means having a radiation responsive surface area and means for converting radiation received by said surface area into a transducer signal representative of both the intensity of said radiation and the locations on said surface area at which said radiation is received; focusing lens means for receiving radiation from said scene at a multiplicity of locations having different angles of view of each point in said scene and focusing the same from said multiplicity of locations to a composite image at a focal plane of said focusing lens means; and dispersing lens means for receiving the radiation focused to said composite image from said multiplicity of locations and dissecting the same into a plurality of image elements of each point in said scene corresponding to said different viewing angles of said scene and thereafter projecting each of said image elements to a location uniquely associated therewith on the radiation responsive surface area of said sensing means, the location on said radiation responsive surface area for each of said image elements being different from the locations thereon for the other of said image elements.

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### 3,932,700
### FOCUS TRACKING REGISTRATION FOR OPTICAL REPRODUCING SYSTEMS

**Paul A. Snopko, Chicago, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.**

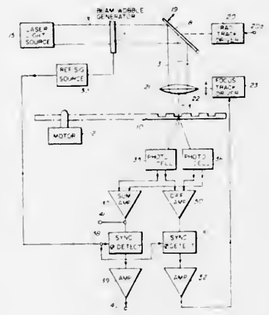
**Filed Feb. 4, 1974, Ser. No. 439,657**
**Int. Cl.² H04N 5/76; G11B 11/18**
**U.S. Cl. 178—6.6 R** **8 Claims**

1. In an optical reproducing system having an information signal stored in a track on a carrier to be derived by reading the storage track with a focused reading beam of energy, which system includes means for effecting periodic lateral relative displacement of said beam with respect to said track at a predetermined wobble frequency to develop a radial tracking error signal and means responsive to said radial error signal to maintain radial tracking registration of said track and said beam, the improvement which comprises a focus tracking arrangement having:



a pair of photoreceptors disposed on opposite sides of a reference plane that includes (a) the optical axis of said reading beam during conditions of radial tracking registration and (b) the tangent of the storage track;

means for differentially combining the output signals of said photoreceptors to develop, during operating intervals in which said beam and said carrier are out of focus registration, a focus error signal of said wobble frequency having



a phase related to the sense of focus misregistration and magnitude related to the extent of misregistration;

a synchronous phase detector;

means for supplying to said detector said focus error signal and a reference signal phase synchronized to the periodic displacement of said beam to develop a focus tracking signal; and

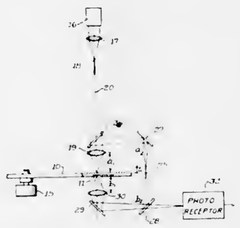
means responsive to said focus tracking signal for maintaining said beam and carrier in focus registration.

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### 3,932,701
### SELF-COMPENSATING FOCUS SYSTEM FOR A REFLECTIVE VIDEO DISC

**Robert Adler, Northfield, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.**

**Filed Jan. 29, 1975, Ser. No. 545,072**
**Int. Cl.² H04N 5/76**
**U.S. Cl. 178—6.6 R** **9 Claims**




1. A self-compensating focus system for an optical video playback device for reading a program record which is reflective to a beam of energy, said record having one surface that is a plain reflector and an opposite surface through which a reading beam may gain access to information stored in said record, said system comprising:

means, including a first objective lens disposed across a first optical path, for focusing a reading beam of energy on said one surface of said record;

means, including a plurality of at least partially reflecting surfaces, for directing energy reflected from said one surface of said record and returned through said first lens along a second optical path to an intermediate focus and then to the opposite surface of said record;

means, including a second objective lens disposed across said second optical path, for imaging said intermediate focus onto said opposite surface of said record, the magnification factor of said first lens being related to the magnification factor of said second lens so that changes in the spacing of said one surface relative to said first lens produce compensating changes in the spacing of said intermediate focus relative to said second lens so that said reading beam remains focused on said opposite surface of said record; and

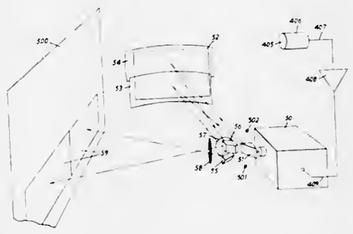
means responsive to energy from said reading beam reflected from said opposite surface of said record for developing an output signal representing information stored in said record.

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### 3,932,702
### OPTICAL SYSTEM FOR THE DISPLAY OF VISUAL IMAGES

**Melville Leslie Shelley, Lindfield, and Archer Michael Spooner, Henley-on-Thames, both of England, assignors to Redifon Limited, London, England**

**Filed Nov. 29, 1972, Ser. No. 310,533**
**Claims priority, application United Kingdom, Dec. 13, 1971, 57699/71**
**Int. Cl.² H04N 7/18**
**U.S. Cl. 178—6.8** **12 Claims**



1. An optical display system, for the projection of visual images onto a viewing screen, comprising a first optical imaging system for viewing an object and providing a first image having a first format, a second optical imaging system including refracting optical elements for dissecting said first image into a plurality of rectangular picture areas and for relatively rearranging the said rectangular picture areas to provide a second sole image having a second format different from said first format, television scanning means for viewing the said second image and providing a third image, substantially reproducing said second image parts and having substantially the same (second) format, and a third optical imaging system including refracting optical elements for viewing the said third image for dissecting said third image into the same said rectangular picture areas and for projecting a fourth image substantially reproducing the said first image and having substantially the same (first) format.

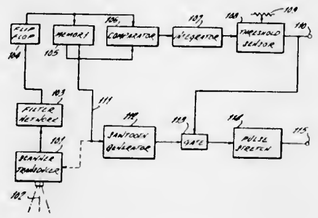
3,932,703
## IMAGE MOTION AND CHANGE TRANSDUCERS AND SYSTEMS CONTROLLED THEREBY

**Emil J. Bolsey, White Plains, N.Y. 10606**

**Continuation-in-part of Ser. No. 193,950, Oct. 29, 1971, Pat. No. 3,823,261, which is a continuation-in-part of Ser. No. 778,870, May 27, 1968, Pat. No. 3,617,016, which is a continuation-in-part of Ser. No. 118,194, June 9, 1961, abandoned. This application July 8, 1974, Ser. No. 486,065**

**Int. Cl.² H04N 7/18**

**U.S. Cl. 178—6.8** **2 Claims**



1. Apparatus for comparing arbitrary images comprising, in combination: scanning means for scanning a selected area of a first arbitrary image, said means operating cyclically to provide at least one scan having a given video pattern, photosensitive means cooperating with said scanning means for changing each said video pattern into video electrical signals which are respectively the analogs of said video patterns, frequency-selective filtering and amplifying means for emphasizing the components of said video electrical signals which fall within an intermediate frequency range, quantizing means cooperating with said filtering and amplifying means for converting the electrical signals produced thereby into first binary signals, a source of reference binary signals comparable with said first binary signals and representative of at least one reference image to be compared with said first image, means for comparing said first binary signals with said reference binary signals and for producing at least one electrical output signal which is indicative of differences occurring between said binary signals, and means for attenuating said electrical output signal whenever the magnitude of said video signal or of a control signal derived therefrom is below a predetermined threshold.

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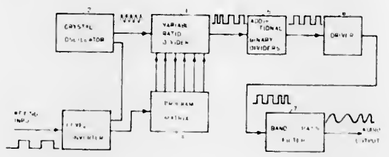
3,932,704
## COHERENT DIGITAL FREQUENCY SHIFT KEYING SYSTEM

**Andrew B. Bodony, Westbury, N.Y., assignor to Coherent Communications System Corporation, Central Islip, N.Y.**

**Filed Aug. 19, 1970, Ser. No. 33,905**

**Int. Cl.² H04B 1/04; H04L 27/12**

**U.S. Cl. 178—66 A** **2 Claims**



1. In a frequency shift signal generator, the combination of;
a source of stable high frequency signals;
a programmable variable ratio frequency divider coupled to said source;
programmable multicircuit selection means connected to said divider for selecting any pair of programmable divider ratios from a great plurality of possible predetermined programmable ratios;
keying signal responsive gating means coupled to said selection means for alternating said divider ratio between the two ratios comprising a selected pair in response to binary mark and space keying pulses;
means for applying keying signals to said gating means;
and output means coupled to said frequency divider.

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3,932,705
## PSK TELEMETERING SYNCHRONIZATION AND DEMODULATION APPARATUS INCLUDING AN AMBIGUITY ELIMINATING DEVICE

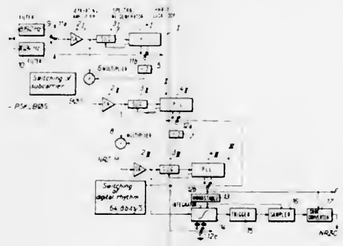
**Vianney Jean-Marie Corneille Wulleman, Soisy-sur-Seine, France, assignor to Centre National d'Etudes Spatiales, Paris, France**

**Filed May 9, 1973, Ser. No. 358,499**

**Claims priority, application France, May 10, 1972, 72.16867**

**Int. Cl.² H04L 7/06**

**U.S. Cl. 178—68** **9 Claims**



5. A spectral line generator for extracting from an input signal at a given frequency, which input signal carries no energy at said frequency, an output signal with energy at said frequency, which comprises: shift register means which comprises a series of cascade connected flip-flops for delaying said input signal; means for multiplying said input signal with a delayed version thereof as supplied by said shift register means; and means for driving said shift register which comprises a phase locked loop which receives as an input signal the output from said multiplying means, said loop including dividing means an output of which drives said shift register means so as to change the states of said flip-flops and output means for delivering said output signal having energy at said frequency.

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3,932,706
## SIGNAL SYNTHESIZING SYSTEM ADAPTABLE FOR DISCRETE FOUR-CHANNEL SOUND REPRODUCING SYSTEM AND MATRIX FOUR-CHANNEL SOUND REPRODUCING SYSTEM

**Susumu Takahashi, and Ryosuke Ito, both of Tokyo, Japan, assignors to Sansui Electric Co., Ltd., Tokyo, Japan**

**Filed May 25, 1973, Ser. No. 364,115**

**Claims priority, application Japan, May 31, 1972, 47-53951**

**Int. Cl.² H04R 5/00**

**U.S. Cl. 179—1 GQ** **5 Claims**

1. A signal synthesizing system for forming first and second recording or transmission signals from first, second, third and fourth sound signals LF, RF, LB and RB, said first recording or transmission signal containing a first main signal L and a first sub-signal A, said second recording or transmission signal containing a second main signal R and a second sub-signal B, said first and second main signals being adapted for a matrix four-channel reproduction system, and said first and second main signals and said first and second sub-signals being adapted for a discrete four-channel reproduction system; said synthesizing system comprising:
first means for combining said first sound signal, an amplitude portion of said second sound signal, said third sound signal and an amplitude portion of said fourth sound signal with a predetermined phase relationship therebetween to form said first main signal;
second means for combining an amplitude portion of said first sound signal, said second sound signal, an amplitude portion of said third sound signal, and said fourth sound signal with a predetermined phase relationship therebetween to form said second main signal, said first and second sound signals in said second main signal being in phase with said first and second sound signals in said first main signal, respectively, and said third and fourth sound signals in said second main signal being 180° out of phase with said third and fourth sound signals in said first main signal, respectively;
third means for combining said first sound signal, said third sound signal and an amplitude portion of said fourth sound signal with a predetermined phase relationship therebetween to form said first sub-signal, said first sound signal in said first sub-signal being in phase with said first sound signal in said first main signal, and said third and fourth sound signals in said first sub-signal being 180° out of phase with said third and fourth sound signals in said first main signal, respectively



fourth means for combining said second sound signal, an amplitude portion of said third sound signal, and said fourth sound signal with a predetermined phase relationship therebetween to form said second sub-signal, said second sound signal in said second sub-signal being in phase with said second sound signal in said second main signal, and said third and fourth sound signals in said second sub-signal being 180° out of phase with said third and fourth sound signals in said second main signal, respectively;
with said first and second main signals L and R and said first and second sub-signals A and B related to said first to fourth sound signals LF, RF, LB and RB according to the following equations

$$L = LF + \Delta RF + jLB + J\Delta RB,$$
$$R = RF + \Delta LF - jRB - j\Delta LB,$$
$$A = LF - jLB - j\Delta RB \text{ and}$$
$$B = RF + jRB + j\Delta LB$$

where Δ represents a matrix coefficient ranging from 0 to 1;
fifth means for frequency-modulating a first carrier signal in accordance with said first sub-signal;
sixth means for frequency-modulating a second carrier signal in accordance with said second sub-signal;
means for adding said first main signal and the frequency-modulated first carrier signal to produce said first recording or transmission signal; and
means for adding said second main signal and the frequency-modulated second carrier signal to produce said second recording or transmission signal.



3,932,707
## ELECTRIC IMPULSE TRANSMITTERS FOR TELEPHONE INSTRUMENTS

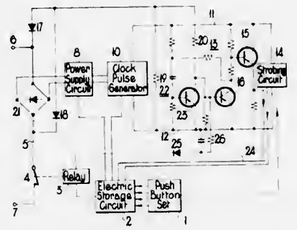
**David Charles Anthony Connolly, 26 Eden Grove, Middridge, Shildon, Durham, and Per Jorgen Hovland, 254 Scholar's Park, Newton Aycliffe, Durham, both of England**

**Filed Oct. 25, 1974, Ser. No. 517,952**

**Claims priority, application United Kingdom, Oct. 25, 1973, 49698/73**

**Int. Cl.² H04M 1/50**

**U.S. Cl. 179—16 AA** **7 Claims**




3. An electric impulse transmitter for a push-button telephone instrument comprising electric storage means, means for entering digit values in said storage means as selected by operation of respective push-buttons of the instrument, electric impulse generator means for generating trains of impulses representative of digit values stored in said storage means, first electric circuit means responsive to line current flowing to the instrument, and further electric circuit means responsive to said trains of impulses and to an output from said first circuit means to provide a clearing signal for said storage means upon cessation of line current to the instrument other than due to signalling of said impulses.

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3,932,708
## FREQUENCY-SELECTIVE SIGNAL RECEIVER FOR COMMUNICATION EQUIPMENTS, MORE PARTICULARLY TELEPHONE EQUIPMENTS

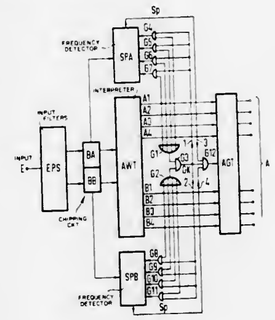
**Klaus-Dieter Rother, Planegg, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany**

**Filed Sept. 20, 1973, Ser. No. 399,337**

**Claims priority, application Germany, Sept. 28, 1972, 2247575**

**Int. Cl.² H04M 1/50**

**U.S. Cl. 179—84 VF** **7 Claims**




1. A telephone equipment frequency-selective signal receiver for receiving a multi-frequency group code having means for detecting signals including other than certain desired frequencies, wherein the signals received comprise several simultaneously occurring single frequencies, said received

signals being applied to clipping means for conversion to a rectangular waveform, said receiver including first frequency detection means having a broad bandwith frequency detector for each desired frequency of said group and responsive to said simultaneously occuring single frequencies in said rectangular waveform for detecting said single frequencies in said received signal and indicating the occurrence of at least one desired frequency, an output section having an activating gate coupled to the output of said first frequency detecting means and responsive to said indication from said first frequency detecting means, second multi-channel detection means having a narrow bandwidth frequency detector assigned to each of said desired frequencies and responsive to two successive half-cycles of said rectangular waveform representing each of said single frequencies for indicating that at least one of said received simultaneously occurring single frequencies is not a member of said group, said activating gate being responsive to said indication from said second multi-channel detection means to inhibit the response of said output section to said first frequency detecting means, and second gate means responsive to said indication from said first frequency detection means for actuating said second frequency detection means.

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## 3,932,709
## ELECTRONIC BUSINESS TELEPHONE

**Don G. Hoff, Tiburon, and Patrick Young, Oakland, both of Calif., assignors to General Teletronics Incorporated, San Francisco, Calif.**

**Continuation-in-part of Ser. No. 351,745, April 16, 1973, abandoned. This application Mar. 7, 1974, Ser. No. 449,155**
**Int. Cl.² H04M *11/00***
**U.S. Cl. 179—90 K** **17 Claims**



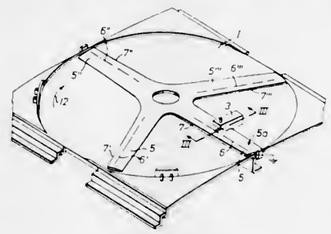

1. An electronic communications terminal comprising:
a. keyboard means for entry of numeric information and function control commands;
b. displaya register means responsive to said keyboard means for buffer storage of so entered numeric information;
c. display means responsive to said display register means for visual presentation of so stored numeric information;
d. automatic dialing means associated with said display register means for generation of telephonic call placement signals representing said stored numeric information under control of at least one said function control commands indicating that said communications terminal is operating in telephone mode;
e. arithmetic computation means associated with said display register means for performing calculations involving said stored numeric information and for supplying the results of said calculations to said display register means for visual presentation under control of at least one of said function control commands indicating that said communications terminal is operating in computation mode; and
f. articulation means associated with said display register means and said display means for causing said stored numeric information to be displayed in a plurality of spaced segments only when the terminal is operating in the telephone mode.

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## 3,932,710
## RECORD DISC FOIL SUPPORT SYSTEM WITH CHARGE LEAKAGE MEANS

**Gerhard Dickopp, and Benno Jahnel, both of Berlin, Germany, assignors to TED Bildplatten Aktiengesellschaft, AEG-Telefunken, TELDEC, Zug, Switzerland**

**Filed Apr. 2, 1974, Ser. No. 457,177**
**Claims priority, application Germany, Apr. 11, 1973, 2318870**
**Int. Cl.² G11B *9/08*, *5/12*; H05F *3/00***
**U.S. Cl. 179—100.4 R** **12 Claims**



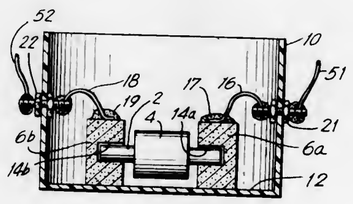
1. In a signal transducing system having a member defining a stabilization surface and arranged to cause a rotating record carrier foil to be held in the vicinity of the stabilization surface by a cushion formed by a gaseous medium flowing between the rotating record carrier foil and the stabilization surface, the system including signal transducing means arranged to cooperate with the foil and mounted to be radially movable across the foil, the improvement wherein said member defining a stabilization surface comprises a body of electrically nonconductive material extending to said surface, and said system comprises means disposed on said surface and presenting strip-shaped, radially extending regions having high electrical conductivity.

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## 3,932,711
## TRANSMISSION OF VOICE OR SOUND THROUGH TELEGRAPHY

**Gerard J. O'Brien, deceased, late of Jersey City, N.J., by Catherine H. O'Brien, executrix, 33 Pamrapo Ave., Jersey City, N.J. 07307**

**Filed Sept. 13, 1973, Ser. No. 396,758**
**Int. Cl.² H04R *21/02***
**U.S. Cl. 179—142** **16 Claims**



1. A transducer for converting a vibratory input into a train of direct-current pulses, comprising:
a soundboard sensitive to said vibratory input;
electrically conductive bearing means rigidly mounted on said soundboard and electrically insulated therefrom;
a conductive switching bar having an axis loosely engaged in said bearing means, a sufficient clearance being provided between said conductive switching bar and said bearing means to permit movement of said conductive switching bar in directions transverse to the axis thereof; and
conductor means for interconnecting said bearing means with a direct-current power sorce, whereby said train of pulses are generated by motion of said switching bar in said bearing means upon the application of a vibratory input to said soundboard.

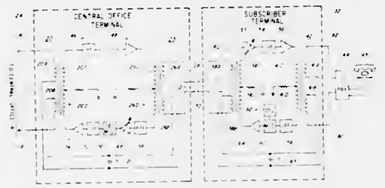


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## 3,932,712
## TELEPHONE TRANSMISSION SYSTEM

**Morris A. Suntop, Rochester, N.Y., assignor to Stromberg-Carlson Corporation, Rochester, N.Y.**

**Continuation of Ser. No. 262,816, June 14, 1972, abandoned, which is a continuation-in-part of Ser. No. 139,734, May 3, 1971, abandoned. This application Feb. 7, 1974, Ser. No. 440,504**
**Int. Cl.² H04B *1/54*, *1/58***
**U.S. Cl. 179—170 R** **8 Claims**




1. A telephone transmission system comprising
a first pair of terminals for connection to a telephone circuit;
a second pair of terminals for connection to a two-wire line which presents a first impedance at audio frequencies and a second impedance, which is substantially less than said first impedance, at a selected carrier frequency;
a communication circuit including first circuit means connected to said first pair of terminals for transmitting audio signals at audio frequencies from one pair of said first and second pairs of terminals to the other pair of said first and second pair of terminals, and second circuit means connected to said first pair of terminals for transmitting signals from one pair of said first and second pairs of terminals to the other pair of said first and second pairs of terminals in a direction opposite the transmission of said audio signals, said second circuit means including in series a first circuit for transmitting audio modulation carrier signals at carrier frequencies, a second circuit for transmitting audio signals at audio frequencies, and a signal converter circuit connected between said first and second circuits; and
third circuit means connecting said first and second circuit means to one end of said two-wire line via said second pair of terminals for producing an impedance match between said communication circuit and said two-wire line at said selected carrier frequency and producing a deliberate impedance mismatch between said communication circuit and said two-wire line at audio frequencies.

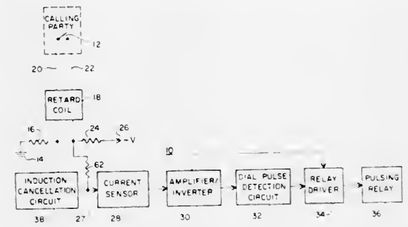
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## 3,932,713
## INDUCTION CANCELLATION CIRCUIT

**Albert C. Fleuchaus, Wheeling, and Paul Shylo, Norridge, both of Ill., assignors to Cook Electric Company, Morton Grove, Ill.**

**Filed May 15, 1974, Ser. No. 470,074**
**Int. Cl.² H04M *1/74***
**U.S. Cl. 179—174** **7 Claims**

3. An induction cancellation circuit for use with a pair of telephone lines on which are induced AC signals, said induction cancellation circuit comprising:
a summing terminal external to said telephone lines,
an inverting amplifier having an input coupled to one of said telephone lines and having an output, said inverting amplifier converting the phase of said AC signals on said one telephone line substantially 180° so as to supply out of phase signals to said output,



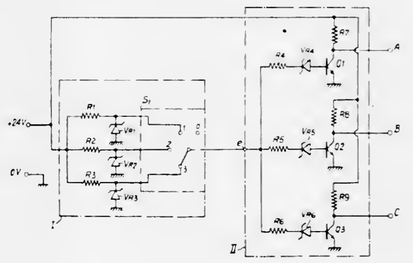

a first resistor coupling said out of phase signals from said output to said summing terminal, and
a second resistor coupling said AC signals on said other telephone line to said summing terminal such that said out of phase signal and said AC signal substantially cancel each other at said summing terminal.

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## 3,932,714
## REMOTE ELECTRICAL TRANSMISSION SYSTEM

**Jacques A. Guimier, Courtry, and Pierre F. Coutin, Paris, both of France, assignors to R. Alkan & Cie, Paris, France**

**Filed Dec. 5, 1974, Ser. No. 530,032**
**Claims priority, application France, Dec. 13, 1974, 74.44558**
**Int. Cl.² H02G *11/02***
**U.S. Cl. 191—12 R** **4 Claims**

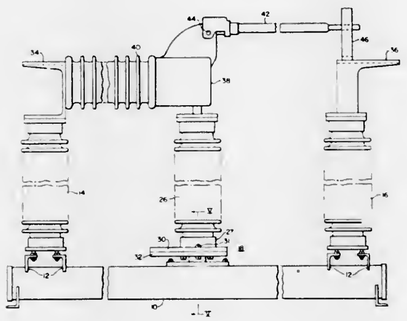


1. Device for the remote electrical transmission, via a single channel, of multiple orders from a single d.c. voltage, which comprises a control unit incorporating a selector switch connecting the transmission channel to anyone of a plurality of output circuits supplied with said single voltage but shunt-connected to respective Zener diodes having stepped reference voltages, and a receiver unit comprising transistors driven by circuit means supplied from said single channel through another set of Zener diodes, respectively, the reference voltage of these last-mentioned Zener diodes being stepped alternatively with respect to the voltages of the Zener diodes of said control unit, whereby said transistors will open or close different control circuits according to the position in which the control selector switch is set.

## 3,932,715
## HIGH VOLTAGE SWITCH

Stanislaw A. Milianowicz, Monroeville, and Steven J. Swencki, Jr., Trafford, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 3, 1974, Ser. No. 466,745
Int. Cl.² H01H 31/00
U.S. Cl. 200—48 SB 6 Claims

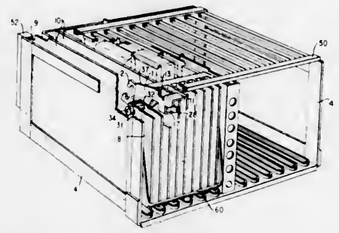


1. A high-voltage switch comprising:
a. separable contact means;
b. rotatable insulating means supporting said separable contact means, rotation of said rotatable insulating means producing separation of said contact means;
c. energizable drive means;
d. linkage means connected to said drive means for rotating said rotatable insulator means; and
e. an arm assembly, said arm assembly comprising an operating arm connected to said linkage means, said operating arm having a first series of holes equally spaced about a first circle, said arm assembly comprising a flange member attached to said rotatable insulating means and having a second series of holes equally spaced about a second circle of radius substantially equal to said first circle, the spacing of said first series of holes being unequal to the spacing of said second series of holes, said operating arm being attached to said flange member and so positioned that the centers of said first circle and said second circle are in axial alignment and at least two of said first series of holes are in axial alignment with at least two of said second series of holes to form at least two pairs of aligned holes symmetrically disposed about said circles, said arm assembly also comprising a plurality of means for securing said operating arm in fixed relationship to said flange member, each of said securing means extending through both holes of an aligned hole pair;
f. energization of said drive means producing movement of said linkage means to cause rotation of said rotatable insulating means and operation of said separable contact means, said symmetrical disposition of said aligned hole pairs about said circles causing rotational loads produced by energization of said drive means to be symmetrically imposed upon said flange member.

## 3,932,716
## LATCH AND SWITCH ACTUATOR INTERLOCK SAFETY STRUCTURE FOR ELECTRONIC COMPONENT MODULE OPERABLE DURING INSERTION AND REMOVAL OF CONNECTOR MEMBERS

Samuel Mottel, New Providence, and David Howard Williamson, Whippany, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 15, 1974, Ser. No. 488,783
Int. Cl.² H01H 9/20
U.S. Cl. 200—50 A 12 Claims

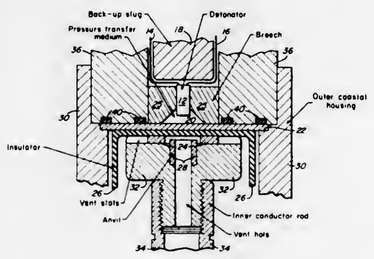


1. A switch assembly for removing electrical power from an electronic component module during insertion and removal of the module connector member with a mating connector member of a support frame comprising a switch device fixedly mounted on said module comprising a member movable to an OFF position in which said switch is in its OFF state for preventing electrical power from being applied to said module and movable to an ON position in which said switch is in its ON state for permitting electrical power to be applied to said module, a switch actuator pivotally mounted on said module and movably engaged with said switch device member for pivoting about said pivotal mount to a first position to move said switch device member to its ON position and for pivoting about said pivotal mount to a second position to move said switch device member to its OFF position, and means mounted on said module abutting against said support frame for restricting said actuator to its second position during insertion and removal of said module connector member to said frame connector member.

## 3,932,717
## HIGH-EXPLOSIVE DRIVEN CROWBAR SWITCH

Robert S. Dike, and Ralph W. Kewish, Jr., both of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Oct. 30, 1974, Ser. No. 519,325
Int. Cl.² H01H 39/00
U.S. Cl. 200—61.08 2 Claims



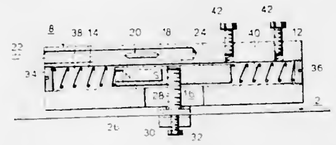

1. An explosive driven low inductance crowbar switch comprising:
a deformable driven plate 22 at a first potential;
a die plate 24 for shaping the deformation of driven plate 22 and for supplying a current joint edge;
an insulation layer 26 disposed between said driven plate 22 and said die plate 24;
a conductive annular anvil 28 for establishing first arc contact with plate 22 and for stopping and establishing a press fit contact with said driven plate 22; and
a detonator 12 and a pressure transfer medium 20 disposed adjacent driven plate 22 for selectively deforming a portion of said driven plate 22 and for driving said portion through insulation layer 26 first into arc contact with annular anvil 28, second into physical contact against anvil 28, and third into a press fit with die plate 24 and anvil 28.



## 3,932,718
## INTRUSION DETECTOR

Chaim Porat, Mivtza Chorev 21, Beersheba, Israel

Filed July 1, 1974, Ser. No. 485,045
Int. Cl.² H01H 3/02, 36/00
U.S. Cl. 200—61.93 9 Claims



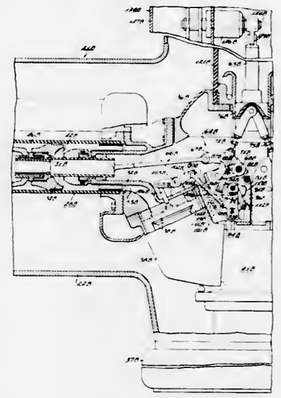
1. An intrusion detector comprising a housing attachable to a fixed support; an electrical switch fixed within the housing; said housing being formed with a longitudinal bore extending at least partly therethrough; a switch actuator movable within the longitudinal bore to actuate the switch; said actuator being attachable to a wire tensioned between the movable actuator and another fixed support so as to actuate the switch upon stretching or cutting the wire; a spring disposed within the bore in the housing, one end of the spring engageing said movable actuator to bias same in the direction opposite to said tensioned wire; and an adjustable closure member closing one end of said bore and engaging the opposite end of the spring to preset the initial non-actuating position of the actuator with respect to said switch.

## 3,932,719
## CIRCUIT BREAKER HAVING A SINGLE PULL-ROD OPERATING SYSTEM WITH A SELECTIVE TRIP-FREE CONTROL

Edwin C. Goodwin, Jr., Canton, and George K. Benham, Somerville, both of Mass., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 26, 1973, Ser. No. 428,257
Int. Cl.² H01H 33/82
U.S. Cl. 200—148 20 Claims

1.
In a mechanism for mechanically actuating the separable contacts and associated blast valves of one or more gas insulated circuit breakers each having a gas insulated sealed enclosure in which the contacts and blast valves are operatively disposed, said circuit breaker including mechanical operating means within the sealed enclosure for mechanically operating the associated contacts and blast valves;
an external pull-rod mechanism supported externally of each of the enclosures of each circuit breaker;
drive means operably connected to be actuated by said pull-rod mechanism and extending from said external pull-rod mechanism into an associated circuit breaker enclosure in gas sealed relationship;
mechanical connecting means operably connected between the end of said drive means within a sealed enclosure and the associated circuit breaker contact and blast valve mechanical operating means for establishing a continuous operable mechanical connection between the external pull-rod mechanism and the internal circuit breaker contact amd blast valve mechanical operating means; and

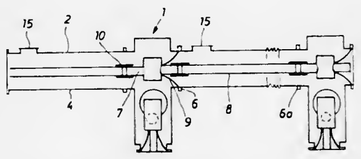


control means remote from said external pull-rod operating mechanism and operably connected to control the operation of each of said external pull-rod operating mechanisms in a contact and blast valve opening and closing movement.

## 3,932,720
## GAS-BLAST INSULATED, ENCAPSULATED HIGH-VOLTAGE SWITCHING INSTALLATION WITH REMOVABLE COLLECTING RAILS

Wilhelm Gaigg, and Vladimir Gutalj, both of Oberentfelden, Switzerland, assignors to Sprecher & Schuh AG, Switzerland

Filed Sept. 26, 1974, Ser. No. 509,731
Claims priority, application Switzerland, Sept. 28, 1973, 13907/73
Int. Cl.² H01H 33/54
U.S. Cl. 200—148 R 11 Claims



1. A gas-blast insulated, excapsulated high-voltage switching installation with removable bus bars, in which switching installation the installation components which comprise housings with flange connections and internal components secured in the form of partitions in such housings by means of conical supporting insulators form pressure gas tight compartments, and wherein the bus bars contain disconnectors as well as dilatation elements, the improvement comprising two oppositely situated connection flanges provided at each housing of the bus bar components, an internal conductor element arranged in each housing, the internal conductor elements bearing against one another and at least a number thereof being supported in their housing by an inwardly directed conical supporting insulator arranged at a connection flange, means for mechanically and electrically coupling the internal con-

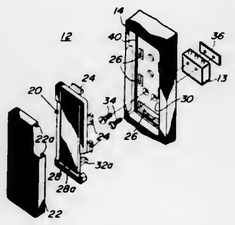
ductor elements with one another and each connection location being located beneath a flange connection, each housing containing a pressure gas tight closable mounting opening by means of which the connection location beneath the other free connection flange is accessible.

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**3,932,721**
**SEALED SWITCH ACTUATOR**

**Kenneth E. Crowell, Fort Lauderdale, Fla., and William M. Brettman, deceased, late of Margate, Fla., by Donna M. Brettman, administratrix, assignors to Motorola, Inc., Chicago, Ill.**

**Filed Feb. 3, 1975, Ser. No. 546,372**
**Int. Cl.² H01H *13/06***
**U.S. Cl. 200—302** **6 Claims**




1. An improved, weather-resistant switch actuator arrangement for effecting a snap-type, flush-fit within a recess of the associated apparatus, said switch actuator comprising in combination:

a housing having a recessed surface with a plurality of spaced apertures therein;

a base actuator member having a plurality of hook members extending laterally therefrom and extending through said plurality of apertures in said housing recessed surface, said base actuator member further including a center portion having a pivotably attached end and a further free end with an operating tab extending laterally therefrom and movable in a direction substantially normal to the plane of said actuator;

an upstanding ridge positioned about the periphery of said housing recessed surface; and

a cover of flexible, non-metallic material having an inturned lip overfitting said base actuator member,

said actuator and overfitted cover providing a snap-type fit in said housing recessed surface with said hook members extending through and cooperating with said plurality of apertures, said upstanding ridge press fitting into the material of said lip of said flexible cover so as to provide an effective weather seal between said switch actuator and associated apparatus.

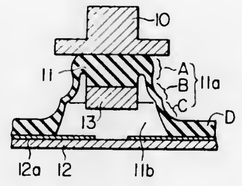
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**3,932,722**
**PUSH BUTTON BODY FOR A PUSH-BUTTON SWITCH PROVIDING SNAP-ACTION OF THE SWITCH**

**Akira Obata, and Takashi Saito, both of Koriyama, Japan, assignors to Nippo Communication Industrial Co., Ltd., Japan**

**Filed Apr. 16, 1974, Ser. No. 461,369**
**Int. Cl.² H01H *13/52***
**U.S. Cl. 200—340** **5 Claims**

1. A push-button switch comprising a push-button body of a hollow mesa shape, being of a resilient material, and interposed between a key top and a printed pattern board, said push-button body having an inclined wall consisting of an upper portion, an intermediate portion and a lower portion, said inclined wall having a larger thickness at said upper portion and the thickness of the inclined wall being gradually reduced to a minimum thickness at the intermediate portion, the thickness of said inclined wall gradually increasing from said minimum thickness intermediate portion to a larger thickness lower portion, said upper portion, said intermediate portion and said lower portion being smoothly contiguous with one another.

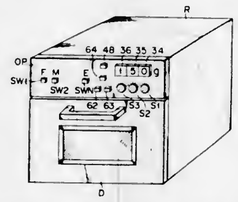



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**3,932,723**
**ELECTRONIC RANGE WITH AUTOMATIC ELECTRONIC DIGITAL TIMER**

**Motokazu Tamano, Yokohama; Tomimitsu Noda, and Masanobu Yoshioka, both of Fuji, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan**

**Filed Apr. 17, 1974, Ser. No. 461,748**
**Claims priority, application Japan, Apr. 20, 1973, 48-44833**
**Int. Cl.² H05B *9/06***
**U.S. Cl. 219—10.55 B** **8 Claims**




1. An electronic range provided with a high frequency generator, which comprises a device including quantity-setting switches for setting a value representing the quantity of food being cooked; a device for indicating the set value in the form of digits; a pulse generator having a time constant circuit; a device including kind-setting switching means for varying the time constant of the time constant circuit to vary the period between pulses generated by said pulse generator in accordance with the kind of food; a counter for counting the number of pulses generated from said pulse generator upon the commencement of heating; and a control device for bringing the operation of the high frequency generator to an end when a prescribed relationship arises between the counts made by the counter and the set value set by said value setting device.

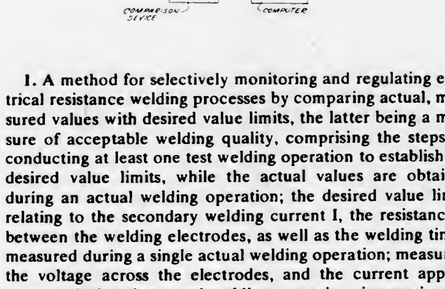
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**3,932,724**
**STUD WELDING APPARATUS**

**Robert J. Raycher, Brunswick, Ohio, assignor to Tru-Fit Products Corporation, Medina, Ohio**

**Filed June 3, 1974, Ser. No. 475,460**
**Int. Cl.² B23K *9/20***
**U.S. Cl. 219—98** **22 Claims**

1. A capacitance discharge stud welding apparatus including in combination a housing, a coil in said housing, an armature movable between first and second positions relative to said coil, a stud chuck, means connecting said stud chuck to said armature, a welding shield secured to said housing and positioned so as to shield the welding of a stud to a metal member which stud is held by said chuck, a relatively light spring constantly urging said armature and said stud chuck toward said first position in the direction of the metal member to which a stud held by said chuck is to be welded, engagement of a stud held by said chuck with a metal member causing said armature to move to said second position relative to said coil and against the urging of said light spring, an electrical welding current circuit, electrical connection means connecting said welding current circuit to said chuck and to a stud held thereby, an electrical coil circuit electrically connected to said coil for energizing the same to move said armature to said first position.

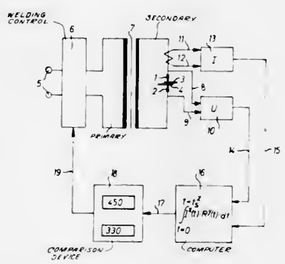


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**3,932,725**
**METHOD FOR MONITORING AND REGULATING ELECTRICAL RESISTANCE WELDING**

**Franz-Josef Ganowski, Maingrundel, Germany, assignor to Keller & Knappich Augsburg Zweigniederlassung der Industrie-Werke Karlsruhe Augsburg Aktiengesellschaft, Augsburg, Germany**

**Filed Feb. 28, 1974, Ser. No. 446,849**
**Claims priority, application Germany, Mar. 27, 1973, 2315184**
**Int. Cl.² B23K *11/24***
**U.S. Cl. 219—110** **1 Claim**




1. A method for selectively monitoring and regulating electrical resistance welding processes by comparing actual, measured values with desired value limits, the latter being a measure of acceptable welding quality, comprising the steps of: conducting at least one test welding operation to establish the desired value limits, while the actual values are obtained during an actual welding operation; the desired value limits relating to the secondary welding current I, the resistance R between the welding electrodes, as well as the welding time t measured during a single actual welding operation; measuring the voltage across the electrodes, and the current applied thereto, during the actual welding operation; integrating the actual values of the voltage and the current to produce a welding result, by interpolation of both the actual and the desired values in the formula:

$$\int_0^t I \cdot R^Y \cdot dt,$$

wherein

$I$ is the secondary welding current in amperes,

$R$ is the resistance between the electrodes in ohms,

$Y$ is an exponent other than unity, and

$t$ is the welding time in seconds;

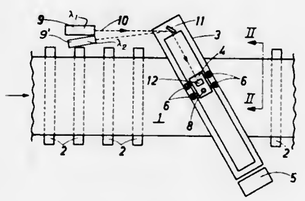
the current, the resistance and the time being subject to unavoidable and tolerable fluctuations in predetermined ranges during the actual welding operation; selecting the magnitude of the exponent so that the influence of the resistance on the desired value limits is at least equivalent to the influence of at least one of the current and the welding time on the same value limits when the former fluctuate within the predetermined ranges; comparing the actual values with the desired value limits; and at least partly disconnecting electrode power when the actual values meet or exceed the desired value limits.

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**3,932,726**
**GLASS CUTTING**

**Willy Verheyen, Mol, Belgium; Andre Raes, Tiel, Netherlands; Jean-Paul Coopmans, Bierbeek, and Jean-Louis Lambert, Chaumont-Gistoux, both of Belgium, assignors to Glaverbel-Mecaniver S.A., Watermael-Boitsfort, Belgium**

**Filed Oct. 11, 1973, Ser. No. 405,598**
**Claims priority, application Luxemburg, Oct. 12, 1972, 66278**
**Int. Cl.² C03B *33/00***
**U.S. Cl. 219—121 LM** **5 Claims**




1. In a method of severing vitreous or vitrocrystalline sheet material along a predetermined line by inducing severing forces of thermal origin in the sheet material by irradiating it with at least one laser beam, the improvement comprising, before such irradiation of the material, scoring the material along substantially the entire length of said predetermined line, and subsequently effecting such irradiation by irradiating the material along such predetermined line with at least two laser beams of different radiation wavelengths such that the material to be severed has different degrees of transparency with respect to the different beams.

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**3,932,727**
**ELECTRICALLY HEATED RISER PIPE FOR A FLUID SUPPLY SYSTEM**

**Cecil Wayne True, 825 S. Maple St., Watertown, S. Dak. 57201**

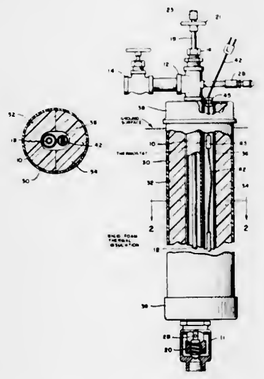
**Filed Dec. 11, 1973, Ser. No. 423,712**
**Int. Cl.² H05B *3/02*; F16L *53/00*; F24H *1/12***
**U.S. Cl. 219—301** **12 Claims**

1. A liquid supply supply system including in combination:

a rigid liquid supply pipe for supplying liquid from an underground supply source to an aboveground utilization point;

a rigid outer pipe with an inside diameter substantially greater than the outside diameter of said liquid supply pipe for encasing said liquid supply pipe with a space therebetween;

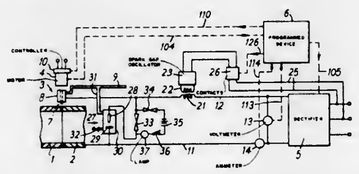
an above ground end cap and a below ground end cap on said outer pipe, each end cap having at least one opening for permitting passage of said supply pipe therethrough;
rigid foam thermal insulation means substantially filling the space between said supply pipe and said outer pipe;
an elongated straight cavity in said insulation means including therein a predetermined portion of the length of said supply pipe and having an open upper end, the cavity extending from the above ground end cap downwardly toward said below ground end cap, said predetermined



portion of said supply pipe having its outer periphery exposed along one side in said cavity, an elongated electric heating means removably positioned in said cavity alongside the exposed portion of said supply pipe and in heat exchange relationship therewith; and
said above ground end cap having a second opening therein aligned with the open upper end of said cavity and being of such size and shape as to allow removal of said elongated heating means from said cavity through said second opening irrespective of connections made to said supply pipe.

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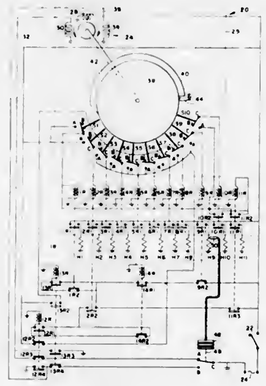
**3,932,728**
**ELECTRIC ARC FUSION WELDING APPARATUS**
**Ian Stuart Maxwell, Kitimat, Canada, assignor to Babcock & Wilcox, Limited, London, England**
**Filed Sept. 5, 1974, Ser. No. 503,404**
**Int. Cl.² B23K 9/10**
**U.S. Cl. 219—131 R** **8 Claims**



**1.** A fusion arc welding apparatus for making welds on a work piece and comprising a welding head, a non-consumable electrode mounted in said head, a motor for moving said electrode along a path traversing the work piece, a device programmed for a predetermined sequence of welding operations, a controller responsive to the programmed device to regulate the operation of said motor, a direct current arc supply circuit including a rectifier and separate leads connecting the rectifier to said electrode and work piece for maintaining a working arc potential across a gap between said electrode and work piece, a circuit communicating with said electrode related lead for applying a transitory voltage therethrough to initiate the arc, said last named circuit including an alternating current supply means, a spark gap oscillator, and contact means interposed between said oscillator and supply means, said contact means being triggerable by the programmed device to supply alternating current to the oscillator for generating said transitory voltage, and means for discharging the transitory voltage should the arc fail to be initiated, said last named means including an anode connected to the work piece related lead, and a cathode connected to the electrode related lead, said anode and cathode being spaced from one another to form a secondary arc gap therebetween, and conduit means for supplying an inert gas to said first and second named arc gaps.

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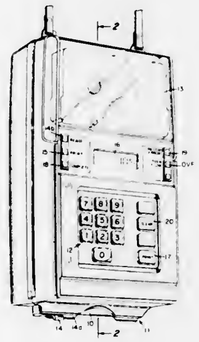
**3,932,729**
**MULTI-STAGE ELECTRIC HEATER APPARATUS AND METHOD OF CONTROL**
**Andrew J. Schlangen, La Crosse, Wis., assignor to The Trane Company, La Crosse, Wis.**
**Filed Oct. 23, 1974, Ser. No. 517,075**
**Int. Cl.² H05B 1/02**
**U.S. Cl. 219—486** **12 Claims**



**1.** A method of controlling a plurality of electric heaters for heating a space including one large heater and a plurality of smaller heaters, each of said large and small heaters having a separate actuator means for actuating its respective heater toward an energized condition comprising the steps upon a continuous heating demand as sensed by a thermostat responsive to the temperature of said space of:
A. sequentially actuating said actuator means of said smaller heaters toward their heater energizing conditions;
B. subsequently deactuating said actuator means of said smaller heaters toward their heater de-energizing condition and actuating said actuator means for said larger heater toward its heater energizing condition; and
C. subsequently sequentially reactuating said deactuated actuator means until all of said actuator means for said large and smaller heaters are actuated toward their heater energizing condition.



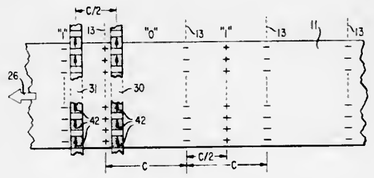
**3,932,730**
**POINT-OF-ACTION BILLING TRANSACTOR**
**Biagio F. Ambrosio, Woodland Hills, Calif., assignor to Electronic Memories & Magnetics Corporation, Los Angeles, Calif.**
**Continuation of Ser. No. 356,503, May 2, 1973, abandoned. This application Sept. 30, 1974, Ser. No. 510,560**
**Int. Cl.² G06K 1/00**
**U.S. Cl. 235—61.9 R** **5 Claims**



**1.** In a portable billing transactor for entering and processing a utility service transaction, and printing a bill on a record medium for immediate delivery to a customer, said service being measured by a meter read by a person for manual entry, said medium having information necessary for computing the bill in predetermined areas, said information including the previous meter reading and a rate code, the combination comprising:
means for accepting said record medium and holding it in a static postion during a billing transaction;
calculating means for performing arithmetic calculations on data coupled thereto under electronic control, said calculating means including first and second arithmetic registers;
means for reading data from different predetermined areas of said record medium at different controlled times;
means for printing data on different predetermined areas of said record medium at different controlled times;
a buffer register for storing said new meter reading;
keyboard means for manually entering said new meter reading into said buffer register for display;
keyboard means for manually producing a print command;
means responsive to said print command for coupling said net meter reading as displayed from said buffer register into said calculating means;
a source of clock pulses;
a ready light and means for displaying said new meter reading entered into said buffer register;
sequence control means including a program counter responsive to said source of clock pulses for automatically controlling said calculating means, reading means and printing means through predetermined coordinated operations once said accepting means has received a record medium in said static position, said coordinated operations comprising:
energizing said ready light to call for manual keyboard entry of said new meter reading into said buffer register after said holding means has accepted said record medium and said record medium is being held in a static position;
energizing said display means to call for a manual keyboard production of said print command to cause said new meter reading to be printed on said record medium and to be coupled into said first one of said arithmetic registers;
reading said previous meter reading from a second predetermined area of said record medium into said second one of said arithmetic registers when printing of said new meter reading has been completed;
computing a difference between said new meter reading and said previous meter reading, and for storing the difference in said first one of said arithmetic registers;
printing said difference in a preselected area of said record medium;
reading said rate code into said calculating means;
computing the amount due from said difference and said rate code;
printing said amount due in a preselected area of said record medium.

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**3,932,731**
**CODE CONVERTER**
**Glenn Ellis Moore, Jr., Murray Hill, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**
**Continuation-in-part of Ser. No. 494,031, Aug. 2, 1974. This application Feb. 27, 1975, Ser. No. 553,528**
**Int. Cl.² G06K 7/08, 5/00; G11B 5/30**
**U.S. Cl. 235—61.11 D** **14 Claims**



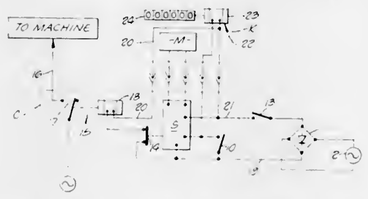
**1.** A sensor for the detection of the presence of characteristic properties of a bit representation in a sequence of bit representations being moved along an axis, each of said representations having a characteristic cell length, said sensor comprising first and second elements operative independently and responsive to each of said bits coupled thereto to provide a signal indicative thereof, said first and second elements being spaced apart along said axis a distance equal to half said cell length.

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**3,932,732**
**KEYED CONTROL DEVICE FOR MACHINES AND OTHER INSTRUMENTALITIES**
**Wayne D. McAllister, 695 Bush Garden Drive, Pasadena, Calif. 91105, and Louis S. Polster, 28034 Cero Drive, Saugus, Calif. 91335**
**Continuation of Ser. No. 75,166, Sept. 24, 1970, abandoned. This application Aug. 14, 1972, Ser. No. 280,504**
**Int. Cl.² G06M 3/02**
**U.S. Cl. 235—92 CT** **5 Claims**

**1.** A control device for preventing the unauthorized use of an instrumentality in the performance of an operation, which comprises:
a. a main control unit, and a portable manually electrically connectable and disconnectable auxiliary keying unit for normally activating and deactivating first means for establishing and interrupting an operation control circuit to said instrumentality; and
b. control means having components for sensing and measuring an operating characteristic of said instrumentality;
c. said measuring component being incorporated within said keying unit and being electrically activated, means to

pre-set the measuring component to a predetermined measurement, said measuring component upon attaining said pre-set measurement being operable to energize said




first means so as to interrupt the established control circuit to said instrumentality, and said measuring component comprising an electrochemically activated device.

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**3,932,733**

## AUTOMATIC FOCUSING OF AN OPTICAL SYSTEM

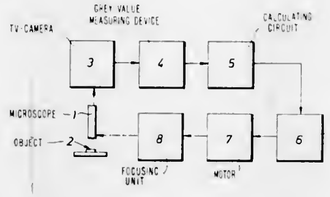
**Bengt Olsen, Flottiljgatan 4, 753 37 Uppsala; Jens Blomster, Vapnargatan 15 A, 753 36 Uppsala; Nils Buss, Vaktargatan 2 B, 754 22 Uppsala; Bjorn Stenkvist, Dobelnsgaten 13, 752 37 Uppsala, all of Sweden, and Lucien Preuss, Feldeggstrasse 74, 8008 Zurich, Switzerland**

**Filed Mar. 19, 1973, Ser. No. 342,426**

**Claims priority, application Sweden, Mar. 17, 1972, 3481/72**

**Int. Cl.² H04N** *5/38*; **G06F** *15/46*

**U.S. Cl. 235—151** **24 Claims**




1. A method of automatically focussing an optical system onto an object, comprising:

deriving a measure of the contrast for each of a plurality of images obtained at different settings of the optical system; and

determining the final focussed setting of the optical system as that setting which corresponds to the image of greatest contrast;

wherein the improvement comprises:

deriving the measure of contrast from the distribution of selected elements of the image within a grey scale.

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**3,932,734**

## BINARY PARALLEL ADDER EMPLOYING HIGH SPEED GATING CIRCUITRY

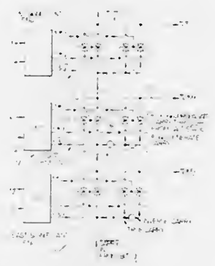
**Brian Jeremy Parsons, Stevenage, England, assignor to Hawker Siddeley Dynamics Limited, England**

**Filed Mar. 8, 1974, Ser. No. 449,461**

**Int. Cl.² G06F** *7/50*

**U.S. Cl. 235—175** **3 Claims**

1. Multi-stage circuitry for use in a binary digital system, comprising a succession of stages each including first and second C-MOS transmission gates, each said gate comprising a p-channel MOS transistor having source, drain and gate electrodes and an n-channel MOS transistor having source, drain and gate electrodes, with the source electrodes of said two transistors connected in common and the drain electrodes of said two transistors connected in common, each stage except the first further including an input line from a preceding stage connected to said source electrodes of said first transmission gate, each stage except the last further including an output line to the next succeeding stage connected to said drain electrodes of both said transmission gates, each said



stage further including a stage control input connected to said source electrodes of said second transmission gate and two stage input lines carrying complementary binary signals connected respectively to the opposite gate electrodes of both transmission gates.

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**3,932,735**

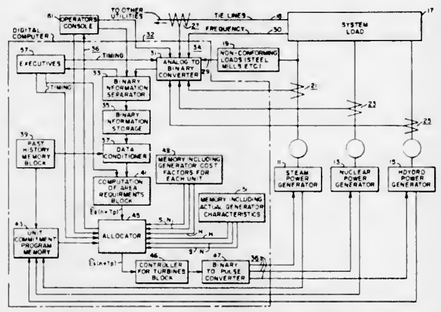
## METHOD OF CONTROLLING SUPPLY OF POWER

**Theodore C. Giras, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**Continuation of Ser. No. 66,591, Aug. 24, 1970, abandoned, which is a continuation of Ser. No. 722,805, April 19, 1968, abandoned, which is a continuation of Ser. No. 425,588, Jan. 14, 1965, abandoned. This application Feb. 3, 1972, Ser. No. 223,378**

**Int. Cl. G06f** *15/06, 15/56*; **H02j** *3/06*

**U.S. Cl. 235—151.21** **67 Claims**




1. The method of, operating a power complex to supply a system load and non-conforming loads; said power complex having a power generating network including a plurality of power generators and tie-lines to neighboring power generating networks, the said method comprising deriving from said complex at relatively short intervals, of the order of one second, signals indicative of:

1. the load power supplied by each of said generators,
2. the frequency of the power of said load,
3. the power drawn by said tie-lines,
4. the power drawn by said non-conforming loads; the said method also comprising converting said signals into digital values, separating said digital values into separate items of data each item corresponding to said items 1, 2, 3 and 4 respectively; storing said separate items; computing from a plurality of said items derived during a plurality of said intervals and the past history of operation of said complex, an area-requirement error which is based, for each computator on the anticipated trend of variation of said system load following the latest of said intervals, responsive to said area-requirement error producing electrical generator resetting signals to reset economically each power generator of said plurality of generators to the extent required to reduce said error to zero, and supplying said resetting signals to said generators to reset said generators as aforesaid.



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**3,932,736**

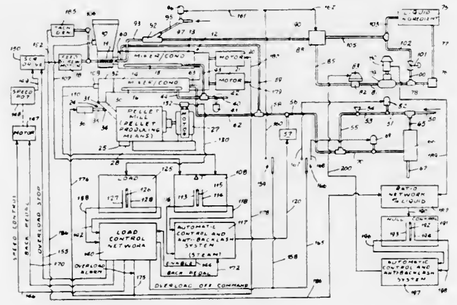
## AUTOMATIC PELLET PRODUCING SYSTEM

**Albert I. Zarow, Mount Pulaski, Ill., and Joseph A. Volk, Jr., Florissant, Mo., assignors to Beta Corporation of St. Louis, Bridgeton, Mo.**

**Filed Apr. 8, 1974, Ser. No. 458,481**

**Int. Cl.² G05B** *13/00*; **A23N** *17/00*

**U.S. Cl. 235—151.1** **55 Claims**



1. An automatic control system for a pelleting apparatus, the apparatus including a pellet producing means and means for feeding a supply of milled material to the producing means, said control system comprising means for automatically controlling the moisture content of the material at the producing means to within a prescribed range, and means responsive to said moisture content controlling means for automatically controlling the feed rate of the material to the producing means.

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**3,932,737**

## SPECTRUM ANALYZER ESTABLISHING A NONLINEAR FREQUENCY DISTRIBUTION OF POWER-DENSITY SPECTRA

**Pierre Delépine, Paris, France, assignor to Thomson-CSF, Paris, France**

**Filed Nov. 5, 1973, Ser. No. 412,786**

**Claims priority, application France, Nov. 7, 1972, 72.39348**

**Int. Cl.² G06F** *15/34*

**U.S. Cl. 235—152** **9 Claims**

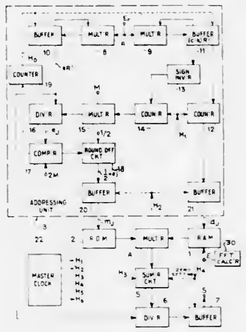
1. A spectrum analyzer for electrical signals, comprising:

a source of precalculated spectral samples equispaced over a predetermined frequency range;

conversion means connected to said source for transforming said precalculated samples into modified samples nonuniformly distributed over said frequency range, said conversion means including a store of weighting coefficients divided into groups which define a plurality of spectral windows along said frequency range, said windows differing in width from one another, said conversion means further including calculating means connected to said source and to said store; and

addressing means connected to said store for ascertaining the presence of any precalculated sample in the frequency band of each window and determining the respective weighting coefficient closest to each precalculated sample in any window;

said calculating means being connected to said addressing means for modifying each precalculated sample in accordance with the magnitude of the respective closest weighting coefficient.



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**3,932,738**

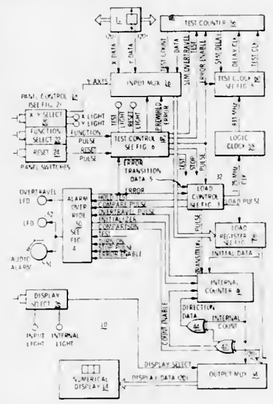
## TRANSITION MONITOR FOR A UNIT TRANSITION COUNTER

**Charles Elwood Hauber, San Jose, Calif.; Stephen L. Vizvary, Punta Gorda, Fla.; Robert E. Simpson, and Jerome W. Meyer, both of Santa Clara, Calif., assignors to The Singer Company, New York, N.Y.**

**Filed Jan. 9, 1975, Ser. No. 539,682**

**Int. Cl.² G05B** *23/02, 1/03*; **H03K** *13/32*

**U.S. Cl. 235—153 AP** **15 Claims**



1. A device for monitoring numerically sequential input data having unit transitions, comprising:

input means for receiving the input data;

at least one internal counter responsive to the input means for changing the internal count data by one unit transition for each transition of the input data;

comparator for comparing the input data to the internal count data for establishing an ERROR state within the device when the input data is not identical to the internal count data;

output means for outputting data from the device; and

a test means for providing test data to the input means, the test means comprising an error circuit for statistically

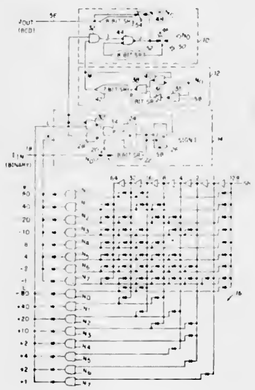
testing the device by providing multistep error data to the input means.

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**3,932,739**
**SERIAL BINARY NUMBER AND BCD CONVERSION APPARATUS**

**Bruce C. Lutz, Richardson, Tex., and Delaine C. Sather, Cedar Rapids, Iowa, assignors to Rockwell International Corporation, El Segundo, Calif.**

**Division of Ser. No. 395,817, Sept. 10, 1973. This application Nov. 14, 1974, Ser. No. 525,422**
**Int. Cl.² H03K *13/24***
**U.S. Cl. 235—155** **6 Claims**



3. Apparatus as claimed in claim 2 wherein:
said third means includes a J–K flip-flop for providing the sign detection;
said gating means includes NAND gates which pass the constants from said first series if the sign of the previous word is positive and pass the second series of constants if the sign of the previous word is negative; and
said fifth means includes storage means for providing the converted BCD number word output during the entire time frame following the conversion time frame.

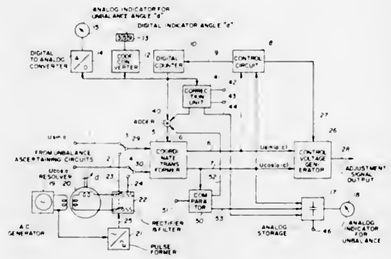
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**3,932,740**
**METHOD AND APPARATUS FOR PROCESSING TWO D.C. VOLTAGES, ESPECIALLY REPRESENTING UNBALANCE COMPONENTS**

**Martin Mueller, Bickenbach, Germany, assignor to Firma Carl Schenck AG, Darmstadt, Germany**

**Filed Sept. 16, 1974, Ser. No. 506,210**
**Claims priority, application Germany, Sept. 27, 1973, 2348498**
**Int. Cl.² G06G *7/22***
**U.S. Cl. 235—186** **20 Claims**

1. A method of processing first and second d.c. voltages, each of which represents information having angular amplitude components; comprising applying said voltages to separate inputs of a coordinate transformation means, adjusting a closed loop control means connected to a control input of said coordinate transformation means in discrete steps in response to the output voltage of said transformation means, until the output voltage of said coordinate transformation means corresponding to one of said d.c. voltages becomes equal to 0, whereby the other output voltage of said coordinate transformation means represents said amplitude component and the output of said control means represents said angular components of said information, and digitally indicating and storing said discrete steps.

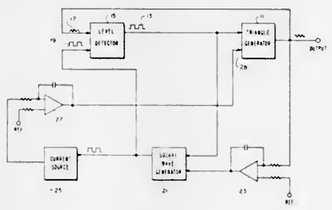


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**3,932,741**
**CIRCUIT TO REDUCE HARMONIC DISTORTION IN A TRIANGULAR WAVE-FORM FUNCTION GENERATOR**

**Raymond C. Hanson, Loveland, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.**

**Filed Sept. 30, 1974, Ser. No. 510,273**
**Int. Cl.² G06G *7/26*; H03K *4/08***
**U.S. Cl. 235—197** **3 Claims**



1. A device for generating triangular wave forms comprising:
first means for generating a triangular wave form in response to an input signal;
level detecting means interconnected in loop configuration with said first means for providing a first square wave signal to said first means in response to said triangular wave form applied at a first input and a level detector reference signal applied at a second input of said level detecting means;
integrator means interconnected with said first means for integrating said triangular wave form to produce an average value thereof indicative of the amplitude symmetry of said triangular wave form and comparing said average value with a reference level to produce an amplitude symmetry error signal; and
square wave generating means interconnected between said integrator means and said level detecting means for producing a second square wave signal of the same frequency as said first square wave signal and having an amplitude responsive to said amplitude symmetry error signal from said integrator means, said second square wave signal serving as said level detector reference signal.

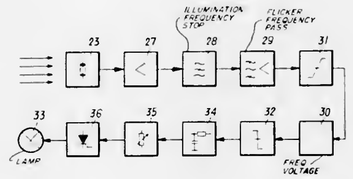


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**3,932,742**
**LOAD-CONTROL SYSTEM RESPONSIVE TO OPERATING CONDITION OF PRODUCER OF INTERMITTENT RADIATION**

**Otto Freudenschuss, Vienna; Herbert Krammer, Hinterbruhl, and Robert Scheiber, Vienna, all of Austria, assignors to Karl Vockenhuber and Raimund Hauser, both of Vienna, Austria**

**Filed Mar. 7, 1973, Ser. No. 339,024**
**Claims priority, application Austria, Mar. 9, 1972, 1955/72**
**Int. Cl.² H04B *9/00***
**U.S. Cl. 250—199** **13 Claims**



1. A monitoring system for controlling a load in response to changes in the operating condition of an apparatus producing intermittent radiation interrupted at a predetermined frequency, comprising:
photoelectric transducer means positioned in the path of said light waves for generating a signal voltage varying with the frequency of interruption thereof;
frequency-discriminating means connected to said transducer means for selectively passing the signal voltage varying at said frequency of interruption, said frequencydiscriminating means comprising a band pass circuit including a negative-feedback loop, said negative-feedback loop comprising a band-stop filter having a stop band including said frequency of interruption whereby said band-pass circuit passes said frequency of interruption said band-stop filter having a stop band in a range different from that of said pass band for eliminating extraneous frequencies other than said frequency of interruption; and
load-control means including a switching circuit connected to said frequency-discriminating means for actuation by said signal voltage in the absence of said intermittent radiation.

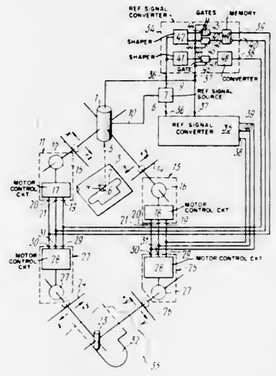
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**3,932,743**
**PHOTO-COPYING DEVICE**

**Valentin Mikhailovich Sitnichenko, ulitsa Odesskaya 58/6, kv. 14; Alexandr Mikhailovich Zamuruev, ulitsa Tereshkovoi 12, kv. 24, and Andrei Isakovich Kogut, ulitsa Pionerskaya 20, kv. 12, all of Odessa, U.S.S.R.**

**Continuation-in-part of Ser. No. 866,334, Oct. 14, 1969, abandoned. This application Oct. 31, 1973, Ser. No. 411,412**
**Int. Cl.² G06K *11/02***
**U.S. Cl. 250—202** **1 Claim**

1. A photo-copying device for regulating the displacement of the working member of a metal gas-cutting machine according to a contour being copied, said device comprising: a photoelectric transducer for the circular scanning of the line of the contour being copied by means of an optical scanning beam for the detection of points of intersection of said beam with said contour line; the path of said beam at the contour being a circumference of a circle a center lying at least approximately on the contour line being copied; said optical scanning beam moving along said path at a constant angular speed and intersecting said contour line at two points; the output signal of said photoelectric transducer during one scanning period being a short pulse generated when the contour line being copied is intersected at one of said points;
mutually perpendicular guides for guiding displacement of said transducer;
a reference signal source having two outputs at which are produced two reference signals in the form of sine and cosine voltages synchronized with said angular speed of movement of said scanning beam along said circumference, the initial phase of said sine voltage corresponding to the position of said scanning orbit with a positive X half-axis in a Cartesian coordinate system wherein the origin coincides with said center of said circumference, and whereof the X and Y axes run parallel to the mutually perpendicular guides for displacement of said photoelectric transducer along said line being copied; the initial phase of said cosine voltage corresponding to the position of said scanning beam on the positive Y half axis of said Cartesian coordinate system;



said reference signals defining the coordinate components of the speed vector in displacement of said photoelectric transducer along said line being copied, the speed vector being directed from said center of the circumference toward the intercept of said beam with said line being copied;
a first drive adapted to move said photoelectric transducer in said guides along the X axis;
a second drive adapted to move said photoelectric transducer in said guides along the Y axis;
machine guides for said working member;
a third drive for shifting said working member along the machine guides corresponding to the X axis;
a fourth drive for shifting said working member along the machine guides corresponding to the Y axis, and running perpendicular to said guides corresponding to the X axis;
said third and fourth drives moving said working member along said guides of the machine with a predetermined proportionality factor with respect to similar displacement of said photoelectric transducer along said X and Y axes for obtaining a scale between the contour of a blank being cut out of a metal sheet by said working member and the contour being copied;
a first converter for converting the instantaneous values of said cosine voltage of the reference signal, corresponding to the intercepts of said scanning optical beam with said line being copied, into a number of pulses delivered during each period of said circular scanning which determine the number of equal steps through which said first drive moves during each circular scanning period and define the scalar magnitude of said coordinate component in the speed vector of the displacement of said photoelectric transducer along the X axis, and also into a logic symbol defining the direction of displacement of said photoelectric transducer along said X axis, said first converter

having a first input which is connected to one of the outputs of said reference signal source and which receives a cosine voltage therefrom, a second input coupled to the output of said photoelectric transducer, a frequency output giving out said pulses whose number during the circular scanning period is proportional to said instantaneous value of said cosine voltage, and two sign outputs a logic unity at one of which determines one of the two directions of displacement of the photoelectric transducer along the X asis;

a second converter for converting the instantaneous values of said sine voltage generated at time moments when said scanning optical beam intersects said line being copied, into a number of pulses following during each period of said circular scanning which determine the number of equal steps made by the second drive during each circular scanning period and define the scalar magnitude of said coordinate component in the speed vector of the displacement of said photoelectric transducer along the Y axis, and also into a logic symbol designating the direction of movement of said photoelectric transducer along the Y axis;

said second converter having a first input which is connected to another of the outputs of said reference voltage source and which receives a sine voltage therefrom, a second input coupled to the output of said photoelectric transducer, a frequency output producing said pulses which determine the number of equal steps of said second drive and whose number during the circular scanning period is proportional to said instantaneous value of said sine voltage, and two sign outputs a logic unity at one of which determines one of the two directions of displacement of said photoelectric transducer along the Y axis;

each of said drives having a frequency input and two sign inputs;

said frequency output of the second converter being connected to said frequency inputs of the second and fourth drives;

said sign outputs of the second converter being connected to said sign inputs of the second and fourth drives; each of said converters comprising:

a first shaper of unidirectional pulses in the form of rectified half-waves of said reference signal, having an input and an output;

a second shaper of square pulses corresponding to the polarity of the half-wave voltages of said reference signal, having two inverted outputs;

the inputs of said first and second shapers being interconnected to form said first converter input;

a first gating circuit which has a signal input connected to said output of the first shaper, a gating input and an output; short pulses appearing at said output of the first gating circuit corresponding to the scalar magnitudes of said instantaneous values of the reference signal;

a second gating curcuit having a signal input connected to one of said inverted outputs of the second shaper, a gating input and an output;

a third gating circuit provided with a signal input coupled to the other said inverted output of the second shaper, a gating input and an output;

said gating inputs of the first, second and third gating circuits being interconnected to form said second input of the converter;

short pulses produced across any output of said second or third gating circuit defining the sign of said instantaneous values of the reference signal;

a converter unit for converting the amplitudes of said output short pulses from said first gating circuit into a proportional number of pulses following at a frequency higher than the frequency of the reference signal; said unit having an input connected to said output of the first gating circuit and an output forming said frequency output of the converter; a memory store which has a unity input and a zero input; said zero input being connected to said output of the second gating circuit, said unity input being connected to said output of the third gating circuit, said zero and unity outputs forming said sign outputs of the converter.

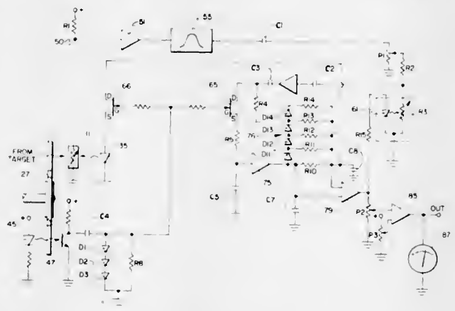
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**3,932,744**

## NULL BALANCE RADIOMETRIC APPARATUS

**Alan S. Anderson, Littleton, Mass., assignor to Williamson Corporation, Concord, Mass.**

**Filed Dec. 6, 1974, Ser. No. 530,079**
**Int. Cl.² G01J** *1/20*
**U.S. Cl. 250—203** **10 Claims**



7. Radiometric apparatus comprising:

a detector element providing a signal which varies as a function of incident radiant energy;

an optical system for coupling radiation between a target and said detector element;

a rotatable chopping disk interposed in the optical path between said target and said detector element;

means for generating a timing signal which is synchronously related to the rotation of said chopping disk;

a light-emitting diode for selectively providing radiation which is also incident on said detector following an optical path which does not traverse said chopping disk;

synchronous detector means controlled by said timing signal for demodulating any a.c. component of the signal provided by said detector element which is synchronous with said chopping thereby to obtain a feedback signal which varies as a function of the relative levels of radiation incident on said detector element during the alternate phases of chopping; and

means for applying said feedback signal to said light-emitting diode through a gating means which is controlled by said timing signal thereby to balance the incident radiation levels during the alternate phases of chopping, the average level of energization of said light-emitting diode being indicative of the level of radiation received from said target.

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**3,932,745**

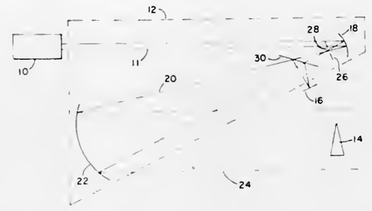
## FAR FIELD CONSTRUCTION FOR OPTICAL FOURIER TRANSFORMS

**Richard L. Hartman, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.**

**Filed Sept. 30, 1974, Ser. No. 510,519**
**Int. Cl.² G01C** *25/00*
**U.S. Cl. 250—216** **10 Claims**

1. An optical reflective device comprising a laser source, a first optical device mounted to receive a laser beam from said laser source and transmit said laser beam in a back focal plane, a second optical device mounted for receiving said laser beam in said back focal plane in the front focal plane of said second optical device and transmitting said beam in a back focal plane, a target mounted in said back focal plane of said second optical device for receiving said laser beam from said second optical device, a detector mounted in an off-set front focal plane of said second optical device, and a beam splitter mounted relative to said first and second optical devices so





that laser energy light reflected from said target back to said second optical device will be reflected by said beam splitter onto said detector in forms of far field pattern of said target.

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**3,932,746**

## TIMING SYSTEM HAVING INFARED START-STOP GATES

**Robert E. Swanson, 4725 Highline Place, Denver, Colo. 80216**

**Filed Apr. 5, 1974, Ser. No. 458,117**
**Int. Cl.² G01D** *21/04*
**U.S. Cl. 250—221** **18 Claims**



1. A readily portable timing system for sporting events and the like comprising:

means for generating pulsed invisible light,

means for directing light from said generating means in a beam across a predetermined path,

light beam receiving means,

said receiving means including means for utilizing the impingement thereon of light from said generating means for producing a sensory signal to facilitate optimum alignment of said receiving means with said beam along said path,

means associated with said receiving means for detecting an interruption of said beam,

timing means having a start and stop control, and

means dependent upon interruption of said beam for actuating said start and stop control to change the condition of operation of said timing means.

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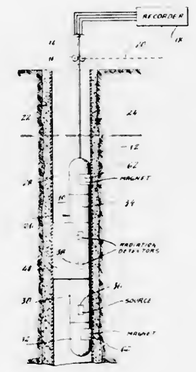
**3,932,747**

## NONFLUID-FILLED BOREHOLE LOGGING APPARATUS

**Harold Sherman, Ridgefield, Conn., assignor to Schlumberger Technology Corporation, New York, N.Y.**

**Filed May 23, 1974, Ser. No. 472,916**
**Int. Cl.² G01V** *5/00*
**U.S. Cl. 250—256** **24 Claims**

1. An elongated sleeve for use with a sonde in logging a subsurface earth formation transversed by nonfluid-filled borehole to determine a selected formation parameter, which sonde has a portion adapted to house a source for emitting radiation into the earth formation and a portion adapted to house at least one radiation detector spaced from the source for use in determining a selected formation parameter comprising a covering member formed to cover a detector portion of a sonde and fabricated of a material selected to provide a particular borehole environment, the member being adapted for attachment to the sonde to prevent substantial longitudinal and rotational movement therebetween and having, in transverse cross-section, (1) an outer surface that conforms generally to a portion of a borehole and (2) an inner surface that conforms generally to the portion of a sonde.



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**3,932,748**

## METHOD OF DETERMINING THE DISTANCE BETWEEN AREA UNDER FIRE AND THE MUZZLE OF THE WEAPON

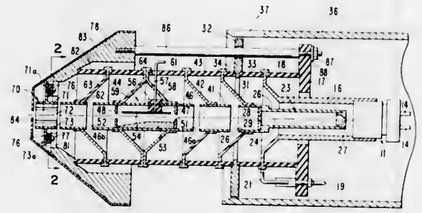
**Jürgen Schmitz, Leopoldshafen, Germany, assignor to Gesellschaft für Kernforschung m.b.H., Karlsruhe, Germany**

**Filed Mar. 25, 1974, Ser. No. 454,556**
**Claims priority, application Germany, Mar. 24, 1973, 2314755**
**Int. Cl.² G21H** *5/02*
**U.S. Cl. 250—303** **5 Claims**



1. A method of determining the distance between an area under fire and the muzzle of the weapon by means of autoradiography of the irradiated firing residues on this area, comprising (a) firing at several carrier areas from various distances, (b) subsequently activating the carrier areas by neutron irradiation, (c) subsequently contacting the carrier areas with a film sensitive to nuclear radiation, (d) developing the film, (e) preparing an autoradiograph of a firing trace to be investigated by following steps (b) through (d), (f) comparing the series of autoradiographs produced after development on the film with the autoradiograph produced of the firing trace to be investigated.

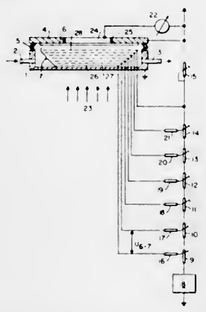
3,932,749
## ELECTRON GUN
Norman J. Taylor, Los Altos, Calif., assignor to Varian Associates, Palo Alto, Calif.
Filed Mar. 22, 1974, Ser. No. 454,038
Int. Cl.² G01N 23/00
U.S. Cl. 250—306 8 Claims



1. In an electron gun: a source of electrons, means for forming the electrons into a beam directed along an axis, a three element cylindrical lens having an output electrode comprising a plurality of semicylindrical plates disposed coaxially of the beam at a predetermined location along the axis, means for applying a deflection potential to the plates to deflect the beam from the axis, and means for applying a correction potential to the plates to correct astigmatism in the beam.

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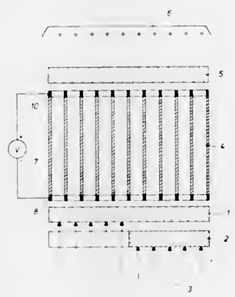
3,932,750
## RAY CONVERTER
Karl-Hans Reiss, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany
Filed Jan. 2, 1974, Ser. No. 430,043
Int. Cl.² H01J 31/50
U.S. Cl. 250—315 A 5 Claims



1. A converter device for producing a stream of electrically-charged particles in which the particle distribution over the cross-section of the stream varies in dependence upon the intensity distribution over the cross-section of a beam of penetrating radiation directed on to the device, the device comprising an anode, a cathode, an ionization chamber having a plurality of gridform electrodes arranged one after another along a path from the anode to the cathode, said grid-form electrodes being substantially parallel to the anode and the cathode, and means connected with the grid-form electrodes for applying thereto working voltages, which increase in the direction from the cathode to the anode, whereby when the device is in use with gas in the chamber under given working conditions there is produced between two of the gridform electrodes which are adjacent to the cathode an electric field having a strength between 1% and 10% below the minimum strength of a homogeneous electric field that would be required to bring about electrical break-down in said gas under the given working conditions.

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3,932,751
## FORMATION OF ELECTROSTATIC CHARGE PATTERNS
Karel Eugeen Verhille, Hoboken, Belgium, assignor to AGFA-GEVAERT N.V., Mortsel, Belgium
Filed Nov. 30, 1973, Ser. No. 420,561
Claims priority, application United Kingdom, Dec. 1, 1972, 55693/72; July 5, 1973, 32007/73
Int. Cl. G01d 15/06
U.S. Cl. 250—315 16 Claims



1. A method of recording information as a pattern of electrostatic charges capable of xerographic development which comprises:

a. exposing to a pattern of electromagnetic radiation corresponding to said information a closed imaging chamber adapted to produce therein upon such exposure electrostatic charges of a given polarity in a pattern corresponding to such exposure, said chamber having a wall section thereof coextensive in area with the charge pattern formed therein constituted of dielectric material,

b. electrically biasing said pattern of charges against the inner surface of said dielectric wall section, and

c. concurrently with said radiation exposure, generating from a source exteriorly of said chamber a corona discharge opposite in polarity to the charges in said pattern and directing such discharge uniformly toward the exterior side of said dielectric wall section to produce adjacent said exterior side an array of corona generated charges modulated in density in a pattern according to the pattern of charges of opposite polarity present on the interior surface of said dielectric wall section.

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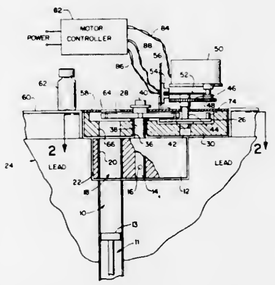
3,932,752
## GAMMA COUNTER SHUTTER ASSEMBLY
Roy W. Aday, Jr., La Habra, and Duane G. Barber, Yorba Linda, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.
Filed Feb. 19, 1974, Ser. No. 443,782
Int. Cl. G01t 1/20
U.S. Cl. 250—328 8 Claims

1. A radioactivity measuring system having a sample counting chamber and means for inserting a sample into and removing the sample from the counting chamber through an entrance thereof comprising:

a high inertia shutter impervious to radioactive emissions and mounted over the entrance to the sample counting chamber and rotatable between first and second shutter positions which, respectively, open and close the sample chamber entrance, the shutter having a sample access port extending therethrough which, in the first shutter position, is aligned with the sample chamber entrance to permit insertion and removal of the sample into and out of the sample chamber; and



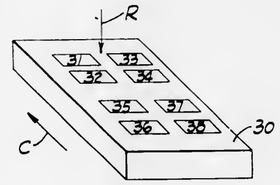
drive means for rotating the shutter between the first and second shutter positions including cooperating driven and drive members rotatable about parallel axes, the driven member being coupled to the shutter and having a radial slot therein, the drive member including a drive element



radially offset from the axis of rotation of the drive member and sliding radially inward and outward of the slot with rotation of the drive member to accelerate and then decelerate the driven member and hence t shutter in response to rotation of the drive member and to loc the shutter in place when the drive member is stopped.

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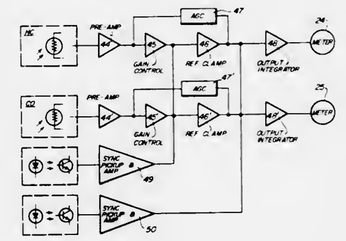
3,932,753
## PYROELECTRIC DEVICE WITH COPLANAR ELECTRODES
Suzanne C. Stotlar, Garretsville, Ohio, assignor to The Harshaw Chemical Company, Cleveland, Ohio
Continuation-in-part of Ser. No. 406,812, Oct. 16, 1973, abandoned. This application Dec. 30, 1974, Ser. No. 537,241
Int. Cl.² G01J 1/00
U.S. Cl. 250—332 6 Claims



1. A single surface pyroelectric detector comprising in combination a substantially single domain body of ferroelectric material provided with a pair of electrodes to convey therebetween a pyroelectric response of said material, said electrodes being proximately disposed in a spaced-apart relationship on a generally planar single surface of said material which has been poled by a polarizing voltage between said electrodes, said response conveyed between said pair of electrodes being essentially independent of other responses conveyed between other electrodes on said material.

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3,932,754
## GAS ANALYZER
Max J. Riedl, and Thaddeus C. Ross, both of Santa Barbara, Calif., assignors to Infrared Industries, Inc., Santa Barbara, Calif.
Continuation of Ser. No. 325,729, Jan. 22, 1973, abandoned. This application Mar. 27, 1974, Ser. No. 455,345
Int. Cl.² G01N 21/26
U.S. Cl. 250—343 9 Claims



1. A gas analyzer of the infrared absorption character comprising, in combination,

a frame,

a sample tube,

a reference tube,

said sample and reference tubes both being supported by the frame,

an infrared source positioned at one end of the tubes,

a detector means comprising a plurality of detectors and a filter over each of said detectors appropriate to a component to be analyzed positioned at a spot remote from the infrared source,

a transmitting mirror remote from the infrared source and said tubes proportioned optically to receive, to split, and to image the split parts of the infrared beam back through each the sample tube and the reference tube in substantially equal intensity,

a receiving mirror remotely opposed to said transmitting mirror and opposite the detector means optically proportioned to direct the respective imaged split parts of the infrared beam from said tubes toward the respective ones of said plurality of detectors,

the path lengths of said infrared beam from said infrared source to said sample tube and to said reference tube and from said sample tube and said reference tube to said detector means being identical and the length of said sample and reference tubes being identical, and wherein all elements of the optical system are identical, whereby the optical system of said gas analyzer is completely balanced,

chopper means interposed in said pathway between the infrared source and detector means to alternatively direct the path of the imaged parts of the infrared beam through the sample tube and reference tube so apertured that energy never passes through both tubes simultaneously but rather passes through each tube for less than one half the time for one rotation of the chopper means thereby alternately gating energy through the reference tube and the sample tube with a time gap therebetween,

and readout means in circuit relationship to each of said detectors to compare the signal attenuation through the sample chamber with the reference chamber and calibrate the same to read the concentration of gas specific to the wave length of the detector's associated filter proportional to the signal differential between the reference tube and the sample tube, thereby enabling the gas analyzer to read out two or more components simultaneously without time sharing, said readout means in circuit relationship to each of said detectors comprising,

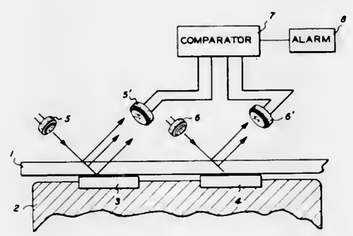
amplifier means for amplfying the output signal from said detector,
gain control means directly coupled to said amplifier means,
a reference clamp for clamping to ground the output signal during the time the infrared beam passes through the reference tube,
an automatic gain control amplifier for providing a peak-to-peak signal of a pre-established value, the clamped and amplitude stabilized signal from said gain control means and said reference clamp being coupled to said automatic gain control amplifier,
means for sampling the signal amplitude as said infrared beam passes through said sample tube,
means for storing said sampled output, and
means for coupling said stored sampled output to meter means for indicating the variation in signals between said reference tube and said sample tube from the same detector as the copper alternately directs signals through each of said tubes.

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### 3,932,755
### DEVICE FOR DETECTING DOUBLE SHEET FEEDING

**Takizo Sagawa, Ebina, Japan, assignor to Rank Xerox Ltd., London, England**

**Filed Aug. 9, 1974, Ser. No. 495,969**
**Int. Cl.² G01J 1/00**
**U.S. Cl. 250—349** **4 Claims**




1. An apparatus for detecting the feeding of piled sheets along a sheet feed path comprising:
a first reflection plate positioned in said sheet feed path, said first plate having a high reflectivity;
a second reflection plate positioned in said sheet feed path, said second plate having a low reflectivity as compared to said first plate;
means for irradiating each of said plates with infrared rays, said irradiating means being positioned to irradiate said plates through said sheets;
means for detecting the quantity of infrared rays reflected from each of said plates; and
means coupled to said detecting means for generating a signal indicating piled sheets being fed when the difference between the quantity of reflected rays from said first plate and the quantity of reflected rays from said second plate is below a predetermined level.

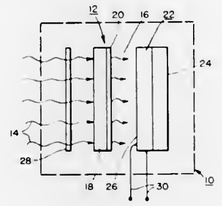
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### 3,932,756
### X-RAY DETECTOR FOR A PANORAMIC X-RAY DEVICE

**David Cowell, Webster, and Frieder H. Ensslin, Rochester, both of N.Y., assignors to Sybron Corporation, Rochester, N.Y.**

**Filed June 24, 1974, Ser. No. 477,897**
**Int. Cl.² G01T 1/20**
**U.S. Cl. 250—361** **6 Claims**

1. Apparatus for detecting the intensity of X-ray radiation received from an amplitude modulated X-ray source, said apparatus comprising:
solid state X-ray radiation detection means responsive to X-ray radiation to generate an electrical output signal the magnitude of which is a function of the intensity of the X-ray radiation wherein the response time of said detector means is sufficiently fast enough to follow the changes in X-ray intensity so that said output signal follows the amplitude of the envelope of the modulated X-ray; and



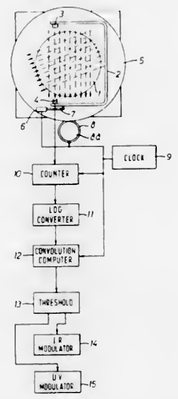
bandpass filter circuit means for transmitting signals at the modulation frequency while rejecting the signals having frequencies substantially higher and lower than said modulation frequency.

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### 3,932,757
### APPARATUS FOR PRODUCING A VISUAL REPRESENTATION OF A RADIOGRAPHIC SCAN

**Godfrey Newbold Hounsfield, Newark, England, assignor to EMI Limited, Hayes, England**

**Filed Apr. 18, 1974, Ser. No. 462,103**
**Claims priority, application United Kingdom, May 5, 1973, 21524/73**
**Int. Cl.² G01T 1/20**
**U.S. Cl. 250—365** **7 Claims**



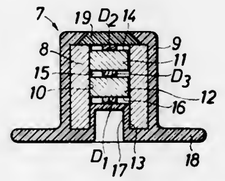

1. Apparatus for examining a body by means of radiation such as X- or γ- radiation including means for deriving, from a planar region of the body, electrical signals indicative of the absorption suffered by the radiation on traversing a plurality of sets of linear paths through the body, means for transforming said electrical signals in accordance with a convoluting function, visual display means including a screen device for displaying, in respect of each of said paths, a visible line of brightness determined by the transformed electrical signal derived from that path, each displayed line being oriented upon said screen device at an angle corresponding to the angle of the corresponding linear path through said region of the body.



### 3,932,758
### METHOD AND APPARATUS FOR DETERMINING THE DOSE VALUE OF NEUTRONS

**Bertram Burgkhardt, Karlsruhe, and Ernst Piesch, Leopoldshafen, both of Germany, assignors to Gesellschaft fur Kernforschung m.b.H., Karlsruhe, Germany**

**Filed Dec. 4, 1973, Ser. No. 421,648**
**Claims priority, application Germany, Dec. 8, 1972, 2260094**
**Int. Cl. G01t 3/00, 1/19**
**U.S. Cl. 250—390** **21 Claims**



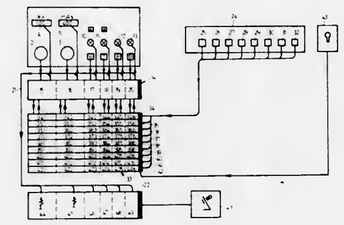

1. Method for determining the dose value of neutrons leaving a body as thermal and intermediate neutrons after having been scattered in the body, comprising the steps of:
detecting on the surface of the body a first dose value of thermal and intermediate neutrons leaving the body by a first detector which is shielded against thermal and intermediate neutrons not emerging from the body,
detecting a second dose value of thermal and intermediate neutrons not emerging from the body by a second detector,
determining a first correction value based on the first and second values from a calibration diagram, and
applying said first correction factor to said first dose value to determine a corrected first dose value.

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### 3,932,759
### X-RAY DIAGNOSTIC INSTALLATION PROVIDING FOR THE FREE AND PROGRAMMED SETTING OF THE X-RAY EXPOSURE DATA

**Bengt Brundin, Sollentuna, Sweden, assignor to Siemens Aktiengesellschaft, Erlangen, Germany**

**Filed Mar. 1, 1974, Ser. No. 447,247**
**Claims priority, application Germany, Mar. 7, 1973, 2311211**
**Int. Cl.² H05G 1/30**
**U.S. Cl. 250—416** **5 Claims**



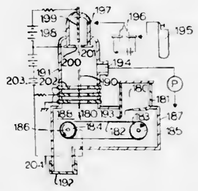
1. An X-ray diagnostic installation comprising means for the unrestricted setting and for setting of exposure data which are programmed dependent upon predetermined organs of a patient; an instrument panel; operating key means mounted on said instrument panel; data storage means connected to said data setting means; storage cell means in said storage means each having a particular exposure data program stored therein and associated with a respective one of said operating key means; and a programming switch connected to said instrument panel, said storage cell means adapted to store the currently set exposure data for an unrestricted data setting responsive to depression of the operating key associated therewith and the actuation of said program switch, and with said storage cells being connected with said setting means for the transmission of their stored contents to said setting means for an X-ray generator upon depression of the therewith associated operating key and with the programming switch being in a non-actuated position.

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### 3,932,760
### POWDER ACTIVATION IN AN INERT ATMOSPHERE

**Kiyoshi Inoue, 16-8 3-chome, Kamiyoga, Setagaya, Tokyo, Japan**

**Division of Ser. No. 60,070, July 31, 1970, which is a continuation-in-part of Ser. No. 692,960, Dec. 22, 1967, Pat. No. 3,598,566. This application Apr. 11, 1973, Ser. No. 350,162**
**Int. Cl.² B22F 1/00**
**U.S. Cl. 250—492** **20 Claims**



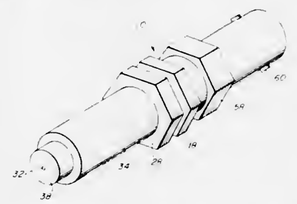
1. Apparatus for activating metallic powder to improve its purity and to clean its surfaces from oxide film, moisture, and other impurities so that it becomes more chemically active and also is able to form denser blocks upon compacting or sintering, comprising
a treatment vessel,
means for holding the powder in said vessel in a fluidized state in a non-oxidizing gaseous atmosphere, and
means for bombarding said powder in said vessel with high energy particles chosen from the class consisting of ions and molecules.

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### 3,932,761
### FIBER COUPLED LIGHT EMITTING DIODE MODULE

**Hubert J. Ramsey, Burlington; Samuel M. Stone, Lynnfield, and Joseph Zucker, Waban, all of Mass., assignors to GTE Laboratories, Incorporated, Waltham, Mass.**

**Filed Nov. 18, 1974, Ser. No. 524,695**
**Int. Cl.² H01L 9/00**
**U.S. Cl. 250—552** **8 Claims**



1. A fiber coupled light emitting diode module comprising
a generally cylindrical, electrically conductive center support element,
a light emitting diode having two electrodes and being electrically, thermally and mechanically connected at its

base electrode to a first end surface of the support element,

a length of optical fiber optically coupled and mechanically affixed to the emitting area of the light emitting diode and extending generally axially away from the support element,

an adapter element formed of an electrically conductive material and having a generally axial through bore therein and an external surface to which accurate position indexing of the module may be made, the support element being positioned in one end of the through bore and being electrically insulated from and thermally connected to the adapter element, the optical fiber exiting from the other end of the through bore,

an inner rigid cylindrical sleeve having a generally axial bore therethrough sized to enable the end of the optical fiber exiting from the adapter element to be fixedly adhered therein with the optical fiber positioned generally parallel to the sleeve axis, the inner sleeve being positioned in and affixed to the end portion of the through bore in the adapter element so that the end of the optical fiber is located in a known relationship relative to the external surface so that efficient optical coupling may be accomplished to another optical fiber,

means for electrically connecting the other electrode of the light emitting diode to the adapter element, and

means for connecting the center support element and the adapter element to a suitable voltage source so that a voltage may be impressed across the light emitting diode whereby the light emitting diode module may be easily coupled into an optical fiber and operated efficiently as the heat generated is conducted away from the light emitting diode.

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**3,932,762**

## APPARATUS FOR MEASURING RADIATION ANGLE DEPENDENCE

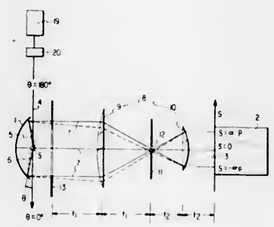
**Herbert Moser, Leopoldshafen, Germany, assignor to Gesellschaft fur Kernforschung m.b.H., Karlsruhe, Germany**

**Filed July 29, 1974, Ser. No. 492,923**

**Claims priority, application Germany, July 28, 1973, 2338481**

**Int. Cl.² G01N** *15/02, 21/26*

**U.S. Cl. 250—574** **8 Claims**



1. Apparatus for rapidly measuring the angular dependence of radiation emanating from a volume disposed at a predetermined location, comprising: a local resolution radiation detector having a radiation-sensitive surface; means directing a laser beam through the volume; and an optical system disposed between the predetermined location and said radiation-sensitive surface to have its optical axis transverse to the axis of the beam, and constituting means creating an unequivocal correspondence between the angular direction of radiation from such volume and the point of impingement thereof on said radiation-sensitive surface.

**3,932,763**

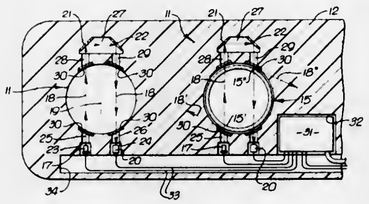
## DETECTOR FOR TUBULAR TRANSPARENT ARTICLE

**Harold Weinstein, Sherman Oaks, Calif., assignor to Sensor Technology, Inc., Chatsworth, Calif.**

**Filed July 29, 1974, Ser. No. 492,483**

**Int. Cl. G01n** *21/24, 1/10*

**U.S. Cl. 250—576** **9 Claims**



1. Apparatus for detecting the presence of a tubular transparent article in an opening through a housing, comprising;

light source means for projecting a light beam across said opening along a path offset from a transverse diameter of said opening, and

detector means, situated to receive said beam after it has traversed said opening, for detecting the intensity of said beam, said light beam being glazingly deflected by the curved surface of a tubular article in said opening, the resultant reduction in intensity detected by said detector means indicating the presence of said article in said opening.

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**3,932,764**

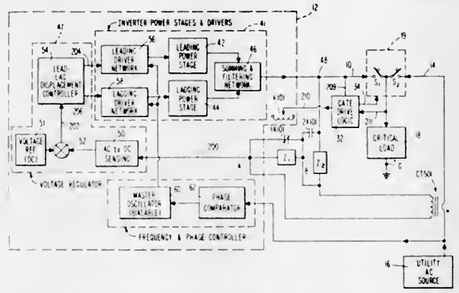
## TRANSFER SWITCH AND TRANSIENT ELIMINATOR SYSTEM AND METHOD

**Philip D. Corey, Raleigh, N.C., assignor to ESB Incorporated, Philadelphia, Pa.**

**Filed May 15, 1974, Ser. No. 470,284**

**Int. Cl.² H02J** *9/00*

**U.S. Cl. 307—85** **3 Claims**




1. In an electrical system for supplying electrical energy to a load from a first electrical supply and a second electrical supply and including first switch means for switching the load from the first electrical supply to the second electrical supply and second switch means for switching the load from the second electrical supply to the first electrical supply and wherein the first electrical supply comprises an inverter including voltage regulating means for regulating the output voltage of the inverter and phase control means for synchronizing the inverter to the second electrical supply the improvement comprising:

a. switch control means operatively connected to the first and second switch means for actuating the first and second switch means either alternately or simultaneously such that either the first or the second or both the first and second electrical supplies may be utilized to supply electrical energy to the load;

b. current sensing means operatively connected to the voltage regulating and phase control means of the inverter and to the second electrical supply for sensing the current of the second electrical supply when both the first and second electrical supplies are simultaneously supplying the load and for providing control signals to the voltage regulating and phase control means of the inverter in response to sensed output current of the second electrical supply;

c. said voltage regulating and phase control means each being responsive to control signals from the current sensing means for adjusting the output voltage of the inverter and its relative phase so as to null the output current of the second electrical supply such that the first electrical supply is supplying the entire energy of the load; and

d. said switch control means being further operable to effect operation of the second switch means for switching the load from the second electrical supply solely to the first electrical supply when the current of the second electrical supply has been nulled.



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**3,932,765**

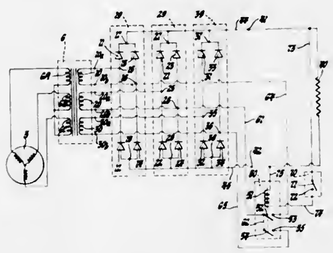
## POLYPHASE RECTIFIER SYSTEM FOR PROVIDING TWO OUTPUT CURRENT-VOLTAGE RANGES

**Peter G. Townsend, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.**

**Filed May 1, 1974, Ser. No. 465,819**

**Int. Cl.² H02M** *1/08*

**U.S. Cl. 307—149** **5 Claims**



1. A polyphase rectifier system for providing two output current-voltage ranges upon the system direct current output circuit comprising in combination with a source of polyphase alternating current voltage of the type having an output electrical coil having two accessible terminal ends corresponding to each phase; a rectifier circuit corresponding to each phase of said source of polyphase alternating current voltage having alternating current input circuit means electrically connected to said terminal ends of said output electrical coil of the phase to which it corresponds and direct current output circuit means; means for connecting said direct current output circuit means of said rectifier circuits in parallel across said system direct current output circuit; and electrical switching means operable to the electrical circuit open and closed conditions for electrically interconnecting one said terminal end of all of said output electrical coils of said source of polyphase alternating current voltage when operated to the electrical circuit closed condition.

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**3,932,766**

## CONTROL SYSTEM FOR AN EXTERNALLY CONTROLLED CONVERTER

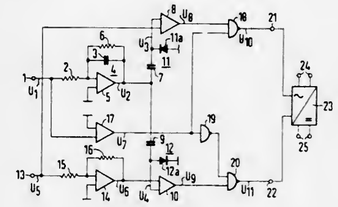
**Damir Kudeljan, Montreal, Canada, and Klaus Rambold, Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany**

**Filed July 23, 1973, Ser. No. 381,543**

**Claims priority, application Germany, July 24, 1972, 2236222**

**Int. Cl.² H03K** *17/00*

**U.S. Cl. 307—229** **8 Claims**



1. In a control system for an externally controlled converter controlled by means providing an alternating current synchronizing voltage the improvement comprising:

a. a first input terminal for accepting the alternating current synchronizing voltage for said converter;

b. a second input terminal for accepting a variable d.c. control voltage representative of the desired converter output;

c. means coupled to said first terminal to develop a comparison voltage output which output is proportional to the voltage time area of synchronizing voltage; and

d. a first comparator having as an input said comparison voltage output and coupled to said second terminal to obtain said d.c. control voltage as a second input, the output of said comparator being coupled to provide firing pulses to the converter.

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**3,932,767**

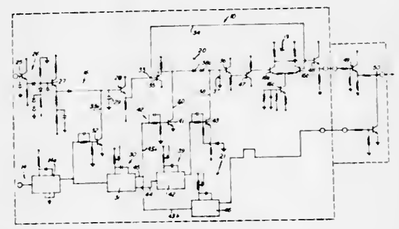
## FILTER-DISCRIMINATOR CIRCUIT

**Thiel J. Gomm, Castle Rock, and Stephen E. Price, Lakewood, both of Colo., assignors to Continental Charter Corporation, Arvada, Colo.**

**Filed July 23, 1973, Ser. No. 381,550**

**Int. Cl.² H03K** *5/20*

**U.S. Cl. 307—235 R** **4 Claims**



1. A filter-discriminator circuit comprising:

means for providing a train of pulses, the amplitude of each of which pulses is to be compared against adjacent pulses in the train;

a first sample and hold circuit that receives the train of pulses and extends the period of the pulses in said train;

a second sample and hold circuit adapted to receive the signal output from said first sample and hold circuit and

having means for delaying the signal passage therethrough by approximately the period of one input pulse;

a difference amplifier that receives the signal outputs from both the first and second sample and hold circuits comparing these signal outputs with one another producing, from that comparison, an output signal having pulses whose amplitudes equal the differences in amplitudes between compared pulses; and

clock means connected to said means for providing a train of pulses and to the difference amplifier for synchronizing the signal outputs with the input train of pulses.

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**3,932,768**

## LIMITING AMPLIFIER

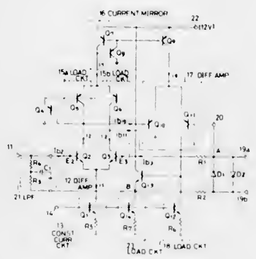
**Nobuaki Takahashi, Yamato, and Masao Kasuga, Sagamihara, both of Japan, assignors to Victor Company of Japan, Ltd., Japan**

**Filed Mar. 12, 1974, Ser. No. 450,394**

**Claims priority, application Japan, Mar. 15, 1973, 48-29472; Mar. 15, 1973, 48-31171[U]**

**Int. Cl.² H03K** *5/08*; **H03G** *3/30*

**U.S. Cl. 307—237** **15 Claims**



**1.** A limiting amplifier comprising: a first differential amplifier means including an input, an output and a pair of transistors therebetween; a circuit point for applying therethrough an input signal to the base of one of said pair of transistors; a circuit point for supplying therethrough a constant voltage to the base of the other of said pair of transistors; a second differential amplifier means including an input and an output, said second amplifier means being connected for amplifying the output of said first differential amplifier; a circuit point for applying as negative feedback a DC output component of said second differential amplifier to the base of said one of said pair of transistors of the first differential amplifier; and a limiting circuit means connected between an output point and the output side of said second differential amplifier and said constant voltage supplying circuit point for producing a limited output from said limiting amplifier.

**3,932,769**

## CIRCUIT ARRANGEMENT FOR PRODUCING A DEFINED LOGIC CONDITION, PARTICULARLY FOR THE MONITORING SIGNAL OUTPUT IN DATA PROCESSING EQUIPMENT

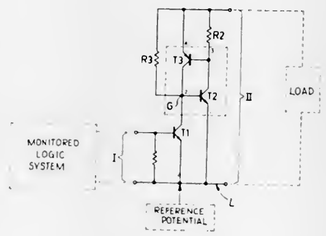
**Werner Pollmeier, Verl, Germany, assignor to Nixdorf Computer AG, Paderborn, Germany**

**Filed June 17, 1974, Ser. No. 480,151**

**Claims priority, application Germany, June 18, 1973, 2330969**

**Int. Cl.² H03K** *17/72*

**U.S. Cl. 307—252 G** **4 Claims**




**1.** A circuit arrangement for transferring a logic condition, comprising:

means defining a pair of input terminals and means defining a pair of output terminals, one of said input terminals being connected by a common line to one of said output terminals;

first semiconductor switching means having a means defining a first current path therethrough, said first current path being connected between said pair of output terminals;

a first control electrode and a second control electrode for said first semiconductor switching means;

second semiconductor switching means having a third control electrode connected to one of said input terminals remote from said common line, means defining a second current path through said second semiconductor switching means, said second current path being connected between said first control electrode and said common line, said third control electrode and said common line thereby defining said pair of input terminals;

means for applying a reference potential to said common line; and

control means for effecting a conduction of said first semiconductor switching means in response to a nonconduction of said second semiconductor switching means and a nonconduction of said first semiconducting switching means in response to a conduction of said second semiconductor switching means, said control means comprising first resistance means connected between said first control electrode and one of said output terminals separate from said common line and second resistance means connected between said second control electrode and said one of said output terminals separate from said common line whereby the impedence of said circuit arrangement across said pair of output terminals is controlled by a predefined change in signal input to said pair of input terminals to change the state of conduction of said second semiconductor switching means to cause said circuit arrangement to deliver a defined logic condition at said pair of output terminals.



**3,932,770**

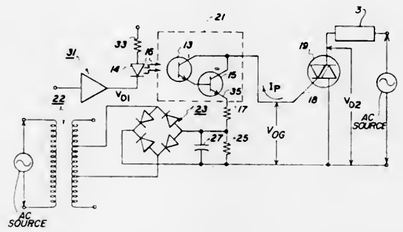
## CONTROL CIRCUIT FOR SWITCHING TRIACS

**Louis John Fantozzi, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.**

**Continuation of Ser. No. 338,808, March 7, 1973, abandoned. This application Sept. 16, 1974, Ser. No. 506,664**

**Int. Cl.² H03K** *17/00*

**U.S. Cl. 307—252 UA** **4 Claims**




**1.** In a circuit comprising: an A.C. source; a load; and a TRIAC for supplying A.C. power to said load from said A.C. source, said TRIAC including first and second gating electrodes, said first electrode being connected in series with said load and said A.C. source being applied across said TRIAC and said load, the improvement wherein, a trigger circuit is provided for said TRIAC comprising:

a photodarlington circuit,

means for biasing said photodarlington circuit to its quiescent state in the absence of a light signal; and

means for making said photodarlington circuit conductive and for enabling it to apply a negative voltage to the gate electrode of said TRIAC to make said TRIAC conductive in the presence of a light signal applied to said photodarlington circuit.

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**3,932,771**

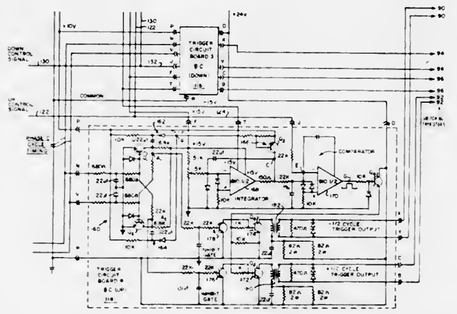
## CONTROL FOR THREE PHASE A.C. MOTOR

**Jiri B. Bucek, State College, and James R. Shultz, York, both of Pa., assignors to Fincor, Inc., York, Pa.**

**Division of Ser. No. 238,141, March 27, 1972, Pat. No. 3,826,928, which is a division of Ser. No. 62,869, Aug. 11, 1970, Pat. No. 3,678,355. This application Jan. 30, 1974, Ser. No. 438,072**

**Int. Cl.² H03K** *5/04*

**U.S. Cl. 307—265** **2 Claims**



**1.** A solid state trigger circuit to provide variable period output signals within a timed sequence of signals for controlling conduction angle firing of thyratron type switching devices in an A.C. phase line comprising:

a bi-stable multivibrator with a first and a second input and a first and a second output which are coupled to form a third output;

timing means providing successive timing signals derived from the alternating current in said phase line to be 180° out of phase with each other, said timing signals respectively being alternately applied to a corresponding one of said first and said second inputs of said multivibrator to oscillate said multivibrator at a desired timing rate, said first and said second outputs of said multivibrator providing a voltage transition spike at said third output at the beginning of each positive half cycle of said timing signals;

means responsive to said voltage transition spike to provide a saw tooth wave form with periods corresponding to said timing rate; means providing a linear voltage input control signal indicative of a desired time period pulse width; and

means comparing said control signal with said saw tooth wave form and providing corresponding square wave trigger output signals with signal pulse periods equal to said desired pulse width.

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**3,932,772**

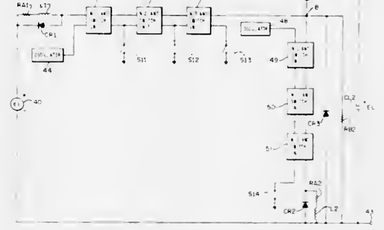
## HIGH VOLTAGE SWITCHING GENERATOR

**Paul W. Graves, Marlborough, and Constantine Rhodes, Sudbury, both of Mass., assignors to GTE Sylvania Incorporated, Stamford, Conn.**

**Filed Sept. 27, 1974, Ser. No. 509,856**

**Int. Cl.² H03K** *1/14*

**U.S. Cl. 307—264** **7 Claims**



**1.** Voltage switching apparatus including

a pair of input terminals;

a pair of output terminals;

a source of DC voltage connected between the input terminals;

load capacitance means connected between the output terminals;

a plurality of non-linear means connected in series between one of said input terminals and one of said output terminals, the current-voltage characteristic of each of said non-linear means having a threshold voltage below which conductance is low and above which conductance increases steeply;

a plurality of switch means, each connected in parallel with a different one of said plurality of non-linear means;

switch driving means for producing energizing pulses;

control means for selectively applying the energizing pulses from said switch driving means to the switch means of said plurality;

each switch means being operable when energizing pulses from said switch driving means are applied thereto to short-circuit the non-linear means in parallel therewith whereby the voltage across said load capacitance means is increased by an amount equal to the threshold voltage of the non-linear means in parallel with a short circuit and

said switch means being operable in the absence of energizing pulses from said switch driving means to provide an open circuit across the non-linear means in parallel therewith whereby the voltage across said load capacitance means is decreased by an amount equal to the threshold voltage of the non-linear means in parallel with an open circuit;

additional non-linear means coupled between said one of said output terminals and the other of said output terminals, the threshold voltage of said additional non-linear means being greater than the total of the threshold voltages of said plurality of non-linear means;

additional switch means connected in parallel with said additional non-linear means; and

additional switch driving means for selectively applying an energizing signal to said additional means;

said additional switch means being operable in the absence of an energizing signal from said additional switch driving means to provide an open circuit across said additional non-linear means, and said additional switch means being operable in response to an energizing signal from said additional switch driving means to short-circuit said additional non-linear means whereby the voltage across said load capacitance means is rapidly reduced.

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**3,932,773**

## CONTROL SYSTEM FOR PERIODICALLY ENERGIZING A CAPACITIVE LOAD

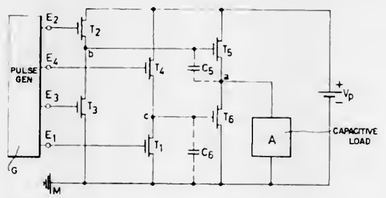
**Jakob Lüscher, 20b, route de Drize, 1227 Carouge, Geneva, and Andre Rusznyak, 28, avenue Pierre-Odier, 1208 Geneva, both of Switzerland**

**Filed July 20, 1973, Ser. No. 380,971**

**Claims priority, application Switzerland, July 21, 1972, 010985/72; July 11, 1973, 10086/73**

**Int. Cl.² H03K** *1/18, 4/58, 5/04, 17/60*

**U.S. Cl. 307—270** **10 Claims**




1. An electronic control system comprising:

a capacitive load to be energized with a recurrent sustained binary signal;

a generator of periodic trigger pulses of a duration representing a small fraction of their repetition period;

a supply of direct current with a positive and a negative pole; and

a set of field-effect transistors connected between said generator and said load, each of said transistors having a pair of main electrodes and a gate insulated from said main electrodes, said set including a first pair of transistors with main electrodes serially connected across said supply forming a first junction therebetween, a second pair of transistors with main electrodes serially connected across said supply forming a second junction therebetween, and a further transistor, one transistor of said first pair having its gate connected to said generator for periodic energization by said trigger pulses, said one transistor of said first pair having a main electrode connected to one pole of said supply, one transistor of said second pair having its gate connected to said first junction and having a main electrode connected to said one pole, said load being connected to said second junction;

said one transistor of said second pair having an input capacitance effective between its gate and said second junction which is small compared to the capacitance of said load whereby the potential of said second junction changes substantially more slowly than the potential of said first junction, each transistor of said second pair in its conductive state forming with said load a network of a time constant long enough to make the transition between said levels outlast the duration of said trigger pulses;

the other transistors of said pairs having main electrodes connected to the other pole of said supply and having their gates interconnected by a third junction, said further transistor being connected with its main electrodes between said second and third junctions for making same conductive between periods of conduction of said one transistor of said first pair due to the trigger pulses applied to the gate thereof, thereby periodically changing the potential of said second junction between a lower and a higher voltage level, and having its gate connected to said generator for triggering thereby after every change in the voltage level of said second junction.

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**3,932,774**

## ELECTRONIC MONITORING SYSTEM WITH SHORT-CIRCUIT PROTECTION

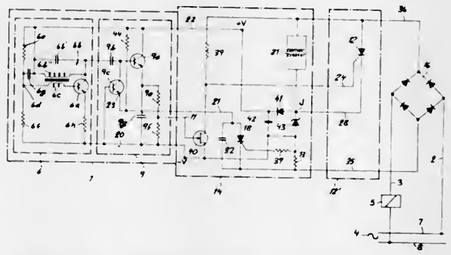
**Robert Buck, Kirchbuhlweg 128, Neukirch, Germany**

**Filed June 24, 1974, Ser. No. 482,478**

**Claims priority, application Germany, June 22, 1973, 2331732**

**Int. Cl.² H01H** *36/00;* **G08B** *13/26;* **H03K** *17/08, 17/72*

**U.S. Cl. 307—308** **10 Claims**



1. An electronic monitoring system comprising:

detector means sensitive to an ambient condition for generating an output signal varying with a change in said condition, said detector means being provided with a pair of power-input terminals;

a voltage divider consisting of a first impedance network and a second impedance network in series, said first impedance network including a voltage-controlled semiconductive device in parallel with a resistive branch, said second impedance network including a current-sensing resistor, said power-input terminals being connected across at least part of said second impedance network;

a supply circuit including a source of direct current connected across said voltage divider;

electronic control means coupled to said detector means and connected to said semiconductive device for altering the conductivity thereof in response to changes in said ambient condition, thereby modifying said output signal with maintenance of a sufficient voltage drop across said second impedance network to keep said detector means operative regardless of changes in the conductivity of said semiconductive device; and

a bistable electronic switch operatively coupled to said first impedance network and provided with a trigger circuit connected across said current-sensing resistor for open-circuiting said semiconductive device in response to a current flow through said second impedance network exceeding a predetermined limit.



**3,932,775**

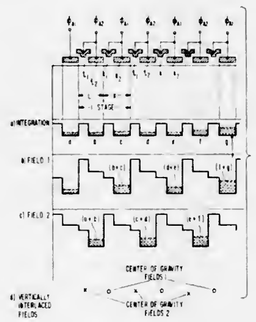
## INTERLACED READOUT OF CHARGE STORED IN A CHARGE COUPLED IMAGE SENSING ARRAY

**Walter Frank Kosonocky, Skillman, N.J., assignor to RCA Corporation, New York, N.Y.**

**Filed July 25, 1974, Ser. No. 491,812**

**Int. Cl.² H01L** *27/10, 29/78, 31/10*

**U.S. Cl. 307—311** **5 Claims**




3. A charge coupled image sensing system comprising:

an array of stages, each including a half stage $I_a$ and a half stage $I_b$, each half stage including means responsive to radiation for producing a charge signal;

means for applying voltages to each half stage during first and second integration times for causing each half stage to store charge signal;

means for producing a first field, after said first integration time, comprising means for controlling the value of said voltages for shifting the charge signal stored in each half stage $I_a$ to the following half stage $I_b$, and for shifting the combined charge signals stored in the half stages

means, after said second integration time, for producing a second field which may be interlaced with the first, comprising means for controlling the value of said voltages for shifting the charge signal stored in each half $I_b$ of one stage to the half $I_a$ of the following stage, and then shifting the combined charge signals stored in the half stages $I_a$ out of the array.

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**3,932,776**

## COLD FUEL THERMIONIC CONVERTER

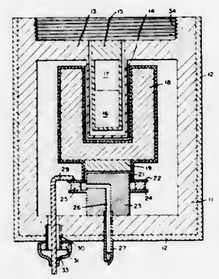
**John B. Dunlay, and Robert C. Howard, both of Wayland, Mass., assignors to Thermo Electron Corporation, Waltham, Mass.**

**Filed Dec. 9, 1966, Ser. No. 600,488**

**Int. Cl. H01j** *45/00*

**U.S. Cl. 310—4** **2 Claims**

1. An energy conversion system comprising an externally insulated housing, a heat sink in the shape of an open-ended receptacle, a capsule of isotope fuel disposed in said heat sink and having a portion thereof extending beyond said, said heat sink being thermally insulated from said capsule and disposed in said housing to receive gamma radiation from said capsule, and a heat utilization device disposed in heat-transfer relationship to said heat sink for deriving heat therefrom, said housing including a portion thereof in heat-transfer relationship with said portion of said capsule extending beyond said heat sink.



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**3,932,777**

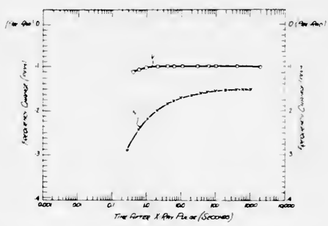
## VACUUM ELECTROLYSIS OF QUARTZ

**James Claude King, Albuquerque, N. Mex., assignor to Bliley Electric Company, Erie, Pa.**

**Filed Nov. 29, 1974, Ser. No. 528,552**

**Int. Cl.² H01L** *41/10*

**U.S. Cl. 310—8** **14 Claims**



1. A method of processing crystal quartz material comprising the steps of,

maintaining the quartz at thermal equilibrium at a temperature of 500°C to 570°C in an atmosphere substantially free of hydrogen, while

applying an electric field along the Z-axis of the crystal quartz between anode and cathode electrodes of a strength from 1 to 5 kV/cm for a period of 72 to 120 hours, and

maintaining said electric field while said crystal is cooled.

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**3,932,778**

## COOLING DEVICE FOR AN ELECTRIC ROTARY MACHINE

**Masatoshi Watanabe; Noriyoshi Takahashi, and Ichiro Nagata, all of Hitachi, Japan, assignors to Hitachi, Ltd., Japan**

**Filed Apr. 9, 1974, Ser. No. 459,341**

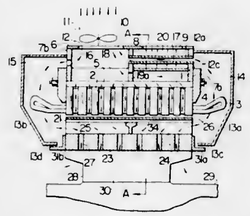
**Claims priority, application Japan, Apr. 9, 1973, 48-39561**

**Int. Cl.² H02K** *1/32*

**U.S. Cl. 310—61** **8 Claims**

1. A cooling device for an electric rotary machine comprising a rotor adapted to rotate together with a rotary shaft, said rotor including a plurality of salient poles affixed to a yoke and having a plurality of radially oriented fluid passageways

formed in the yoke and each interposed between the adjacent poles, a stator including coils and cores and mounted around an outer periphery of said rotor with a predetermined clearance interposed between them, and a plurality of end covers each mounted on one of axial opposite ends of said stator in



such a manner as to enclose end portions of said coils and each including an inner peripheral portion which is in spaced juxtaposed relationship with respect to one axial opposite ends of the yoke with a very small clearance interposed therebetween.

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**3,932,779**

## TURBO-GENERATOR ROTOR WITH A ROTOR WINDING AND A METHOD OF SECURING THE ROTOR WINDING

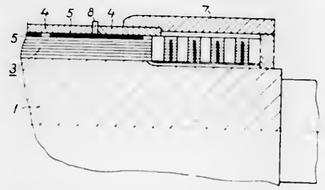
**Kristian Dahl Madsen, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden**

**Filed Mar. 5, 1974, Ser. No. 448,367**

**Claims priority, application Sweden, Mar. 22, 1973, 7304036**

**Int. Cl.² H02K** *3/36*

**U.S. Cl. 310—215** **2 Claims**



1. A turbo-generator rotor provided with a plurality of rotor slots, comprising a rotor winding in the slots, a plurality of axially and consecutively arranged slot wedges of a material of high electrical conductivity and at least one mechanically securing and electrically connecting member for said wedges, said member comprising a metal pressure tube (5), which is closed at both ends and filled with a solidified resin (6), each pressure tube electrically bridging over transition zones between the axially and consecutively arranged slot wedges, and short-circuiting means electrically connecting the end wedges of the slots with each other so that a damping winding is formed.

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**3,932,780**

## ELECTRIC LAMP HAVING AN ENVELOPE WITH A SPECULAR LIGHT-REFLECTIVE COATING OF ORIENTED ALUMINUM PARTICLES

**Aristide R. DeCaro, Edison; Eugene F. Murphy, Pompton Plains, both of N.J., and Billy A. Maynard, Lexington, Ky., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**Filed Mar. 20, 1974, Ser. No. 452,864**

**Int. Cl.² H01K** *1/32*

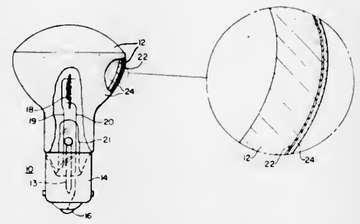
**U.S. Cl. 313—113** **13 Claims**

1. An electric lamp comprising:

a sealed envelope of vitreous light-transmitting material,

a light source within said envelope that also generates heat when the lamp is energized and thereby heats said envelope to an elevated temperature when the lamp is operated and is in use,

an adherent film of minute aluminum particles on the exterior surface of a selected portion of said envelope, said film being of such thickness and said aluminum particles being of such configuration and size and being so oriented that the surface of the film which is in contact with the envelope is specular and thereby constitutes an integral reflector for impinging light rays produced by said light source, and



means protecting said specular light-reflecting film of aluminum particles comprising an overlying coating of a material that is sufficiently heat-resistant to withstand the elevated temperature to which the underlying selected portion of said envelope is heated when the lamp is energized,

a portion of said envelope that is not covered by said specular light-reflecting film of aluminum particles being disposed in the path of reflected light rays and thereby constituting the light-transmitting portion of said envelope.

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**3,932,781**

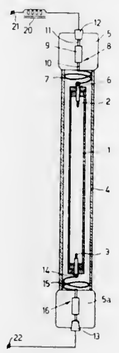
## HIGH PRESSURE SODIUM VAPOR DISCHARGE LAMP

**Jozef C. I. Peeters, Lucien Joannes Maria De Roeck, and Henricus Johannes Joseph Van Boort, all of the Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.**

**Filed Feb. 26, 1973, Ser. No. 335,561**

**Int. Cl.² H01J** *61/22, 61/52*

**U.S. Cl. 313/25** **4 Claims**



2. A high-pressure sodium vapor discharge lamp comprising:

a discharge tube having a internal electrode at each end of said tube, the wall of said discharge tube consisting of densely sintered alumina;

an outer quartz envelope encompassing said tube, the distance between the tube and envelope being no greater than 5 mm, and

an inert gas being present between the discharge tube and the outer envelope, the pressure of said gas being greater than 200 Torr.



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**3,932,782**

## HIGH PRESSURE SODIUM VAPOR LAMP HAVING IMPROVED MONOLITHIC ALUMINA ARC TUBE

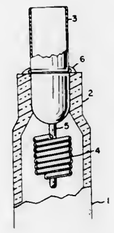
**Bernard Kopelman, Magnolia, Mass., assignor to GTE Sylvania Incorporated, Danvers, Mass.**

**Continuation of Ser. No. 352,970, April 20, 1973, abandoned.**

**This application Feb. 26, 1975, Ser. No. 553,356**

**Int. Cl.² H01J** *61/30, 61/18*

**U.S. Cl. 313—220** **3 Claims**



1. A high pressure sodium vapor lamp comprising a monolithic polycrystalline alumina arc tube having electrodes disposed at the ends thereof and containing a fill including sodium, mercury and inert gas, said arc tube consisting of a tubular body portion and two end portions, the outside diameter of said end portions being smaller than the outside diameter of said body portion, there being no sealing region between said end portion and said body portion, said body portion having a uniform inside diameter throughout its length, each of said end portions having an axial hole therethrough, the diameter of said axial hole being smaller than the inside diameter of the body portion, cylindrical metallic members extending through and sealed to said end portions, said electrodes being supported on metal rods extending from the internal ends of said metallic members.

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**3,932,783**

## FLUORESCENT LAMP CONTAINING INDIUM OXIDE

**Richard A. Menelly, Danvers, and Tadius T. Sadoski, Salem, both of Mass., assignors to Sylvania Electric Products Inc., Danvers, Mass.**

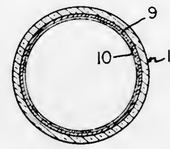
**Continuation of Ser. No. 788,509, Jan. 2, 1969, abandoned.**

**This application Feb. 14, 1972, Ser. No. 199,701**

**Int. Cl.² H01J** *63/04, 61/28*

**U.S. Cl. 313—492** **3 Claims**

1. A tubular fluorescent lamp comprising a sealed light-transmitting envelope, electrodes therein, a gaseous filling therein, mercury vapor therein, and a substantially transparent coating of indium oxide on the inside surface of said envelope, said indium oxide having the indium in a state of oxidation lower than in $In_2O_3$.



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**3,932,784**

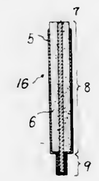
## DOUBLE SECTION CARBON ELECTRODE

**Shigeru Suga, Yoyogi 5-20-2, Shibuya, Tokyo, Japan**

**Filed Aug. 26, 1974, Ser. No. 500,466**

**Int. Cl.² H05B** *31/10*

**U.S. Cl. 314—60** **4 Claims**



1. A carbon electrode for use in carbon arc lamps of the type wherein a plurality of electrodes are clamped to a support which is connected to a power source, said carbon electrode comprising:

an elongate electrode body of carbon material having imbedded therein a core of luminous material and having about the outer surface thereof a metal coating;

said electrode body having a first section of uniform diameter and a second section of substantially greater diameter than said first section, said second section having a solid uniform thickness throughout the entire length thereof.

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**3,932,785**

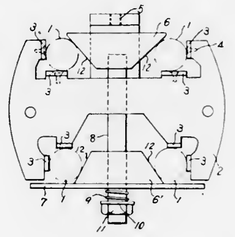
## CARBON ELECTRODE SUPPORT

**Shigeru Suga, Yoyogi 5-20-2, Shibuya, Tokyo, Japan**

**Filed Aug. 26, 1974, Ser. No. 500,472**

**Int. Cl.² H05B** *31/18*

**U.S. Cl. 314—130** **5 Claims**

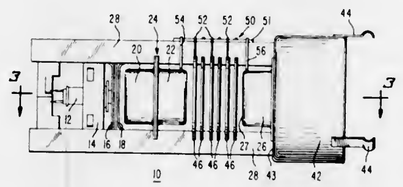


1. A holding device for clamping at least a plurality of carbon electrodes, particularly for use in a carbon arc lamp, said holding device comprising:

a support element having two support areas for each electrode to be clamped;
each said pair of support areas having fixed thereto a pair of conducting means for forming a pair of contact surfaces for contacting an electrode; and
clamping device means, having a third non-conductive contacting surface for each electrode to be clamped, for clamping each electrode against its respective pair of conducting means, said clamping device means comprising a first clamping body having thereon plural non-conductive contacting surfaces, a second clamping body having thereon plural non-conductive contacting surfaces, and means for biasing said first and second clamping bodies toward each other.

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**3,932,786**
**ELECTRON GUN WITH A MULTI-ELEMENT ELECTRON LENS**
**Francis Joseph Campbell, Yardley, Pa., assignor to RCA Corporation, New York, N.Y.**
**Filed Nov. 29, 1974, Ser. No. 528,400**
**Int. Cl.² H01T 29/29; H01J 29/82**
**U.S. Cl. 315—3** **8 Claims**

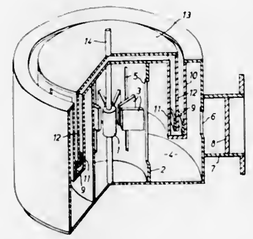


1. In an electron gun structure for producing and directing at least one electron beam along a beam path, said gun including a cathode, a control grid electrode, a screen grid electrode, a first accelerating and focusing electrode and a second accelerating and focusing electrode, spaced respectively along the beam path, the improvement comprising:
a plurality of spaced electrode plates positioned between said first focusing and accelerating electrode and said second focusing and accelerating electrode for expanding the focusing lens fields in the path of the beam, each plate having an aperture therethrough aligned with said beam path;
supporting means connecting said electrode plates; and
resistive means attached at one end to said first accelerating and focusing electrode and at a second end to said second focusing and accelerating electrode and attached to said spaced electrode plates at spaced points between the ends of said resistive means, said resistive means being on said support means.

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**3,932,787**
**TUNABLE COAXIAL MAGNETRONS**
**Alan Butler Cutting, Maidenhead, England, assignor to E M I - Varian Limited, Hayes, England**
**Filed Nov. 6, 1974, Ser. No. 521,535**
**Claims priority, application United Kingdom, Nov. 7, 1973, 51646/73**
**Int. Cl.² H01J 25/50**
**U.S. Cl. 315—39.61** **6 Claims**

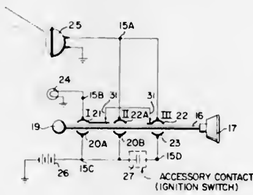
1. A coaxial magnetron including a resonator cavity and a wall means forming a coupled stabilizing cavity, and a stabilizing cavity tuning means including a fixed dielectric portion supporting a fixed conductive tuning element at the middle of the cavity and a movable dielectric portion supporting a movable conductive tuning element for rotation through the middle of the cavity to either overlap or not overlap the fixed element, neither the fixed tuning element or the movable tuning element extending to the wall of the stabilizing cavity, the movable tuning element being capable of continuous



unidirectional rotational displacement to vary said overlap and thereby vary the frequency of the magnetron.

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**3,932,788**
**AUTOMOBILE HEADLIGHT SWITCH**
**Robert Guy Groover, Savannah, Ga., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest**
**Filed Sept. 17, 1974, Ser. No. 506,768**
**Int. Cl.² B60Q 1/04**
**U.S. Cl. 315—82** **1 Claim**



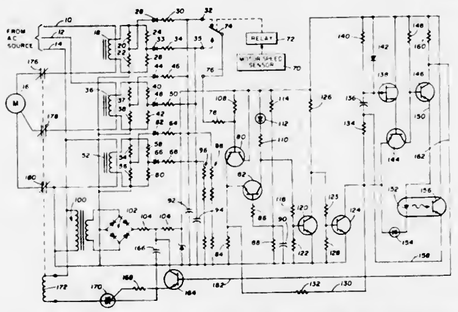

1. A light switch fitted with an operating arm for controlling various lights of a vehicle controlled by an ignition switch which provides for a first position of the operating arm in which all lights of the vehicle are OFF, a second position of the operating arm in which only the parking lights and taillights are ON, a third position of the operating arm in which only the headlights and taillights are ON and a fourth position in which only the headlights and taillights of the vehicle are ON when the ignition switch of the vehicle is also ON,
said light switch formed of an enclosure in which concave metal contacts are individually mounted about an operating arm mounted to move in an axial direction with respect to the enclosure, with one end of the arm projecting beyond an end of the enclosure and fitted with a knob as a manual grip,
said arm fitted with an enlarged section of the arm inside the enclosure, with the exterior of said enlarged section formed of electrically conducting material,
said enlarged section fixed in position on said arm, and said concave metal contacts fixed in position to said enclosure such that when the operating arm is slid axially to a first position of the operating arm, the enlarged section does not touch any of the contact members, when the operating arm is slid to
a second position of the operating arm, the enlarged section contacts both a first and a second metal contact, when the operating arm is slid to
a third position of the operating arm, the enlarged section contacts both a third and a fourth metal contact, and when the operating arm is slid to
a fourth position of the operating arm, the enlarged section contacts both a fifth and a sixth metal contact,



said metal contact being spring mounted to the enclosure to move in a direction perpendicular to the axis of the arm towards the enclosure when contacted by the enlarged section of the arm, with
the second and third contact members electrically connected together and connected to an external terminal for electrical connection to the battery circuit of the vehicle,
the first contact member electrically connected to an external terminal for connection to the taillight and parking light circuit of the vehicle,
the fourth and fifth metal contact members electrically connected together and connected to an external terminal for connection to the headlight circuit of the vehicle,
the sixth metal contact electrically connected to an external terminal for connection to an accessory contact of the ignition switch of the vehicle,
said first contact member formed with a flange that extends adjacent to the fourth and the fifth contact members between said contact members and the enclosure, with said flange located so as to be electrically contacted by either the fourth or the fifth contact member when the fourth or the fifth contact member is contacted by the enlarged sections of the arm,
said accessory contact of the ignition switch being connected to the battery circuit when the ignition switch is in the ON position.

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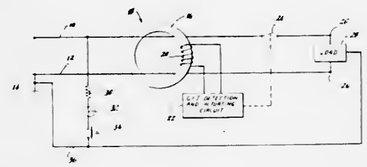
**3,932,789**
**CURRENT SENSING PROTECTOR SYSTEM FOR A. C. MOTORS**
**James E. Sons, Sanger, and Wayne C. Starnes, Dallas, both of Tex., assignors to Detprotector, Inc., Dallas, Tex.**
**Continuation-in-part of Ser. No. 412,809, Nov. 5, 1973. This application Apr. 25, 1974, Ser. No. 464,112**
**Int. Cl.² H02H 7/085**
**U.S. Cl. 317—13 R** **2 Claims**



1. A system for preventing current overload in a multiphase multi-speed alternating current motor in low and high speeds comprising:
current transformers for sensing the current level in each of said phases of said motor,
a resistor divider network connected to each of said sensing means and including a low speed configuration and a high speed configuration,
means responsive to low speed operation of said motor for connecting the outputs of each of said low speed configurations to a summing location and further responsive to high speed operation of said motor for connecting the outputs of each of said high speed configurations to the summing location,
a differential amplifier responsive to the voltage at the summing location for generating an overload signal upon the occurrence of an overload current in any of said phases,
a triac connected to control current flow through said phases,
a switching transistor operable in response to said overload signal for switching said triac to terminate current flow through said phases,
a light emitting device connected to said switching transistor for emitting light upon the occurrence of said overload signal,
a timing circuit including a field effect transistor connected to control said switching transistor and a timing capacitor for controlling the state of the field effect transistor, and
light sensor means for sensing said light and for initiating a timing cycle by said timing circuit during which said triac may not be switched to allow current flow through said phases.

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**3,932,790**
**GROUND FAULT INTERRUPTER WITH REVERSED LINE POLARITY LAMP INDICATOR**
**Paul Muchnick, Norwalk, Conn., assignor to Harvey Hubbell, Incorporated, Bridgeport, Conn.**
**Filed Feb. 22, 1972, Ser. No. 228,075**
**Int. Cl.² H02H 1/02; G08B 21/00**
**U.S. Cl. 317—18 D** **8 Claims**



1. A ground fault interrupter comprising:
a pair of conductors having input terminals adapted to be connected to an AC power supply having a line and a grounded neutral, and output terminals adapted to be connected to a load;
circuit breaker means connected in series with a first of said conductors;
current sensing means for sensing differences in current flowing in said conductors and generating a signal responsive thereto;
detection and actuation means for receiving said signal and opening said circuit breaker means when said signal indicates a difference current of a predetermined magnitude, and
reversed line polarity indicating means associated with said conductors for indicating proper connection of said first of said conductors to said line of said AC power supply, said reversed line polarity indicating means including circuit means for giving an indication of whether or not said first of said conductors is connected to said line of said AC power supply, and actuating means for selectively connecting said circuit means between one of said conductors and ground.

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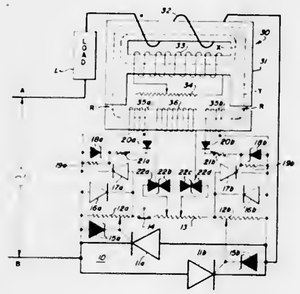
**3,932,791**
**MULTI-RANGE, HIGH-SPEED A.C. OVER-CURRENT PROTECTION MEANS INCLUDING A STATIC SWITCH**
**Joseph V. Oswald, 2852 S. Central Park Ave., Chicago, Ill. 60623**
**Continuation-in-part of Ser. No. 325,812, Jan. 22, 1973, abandoned. This application Feb. 7, 1974, Ser. No. 440,585**
**Int. Cl.² H02H 3/08**
**U.S. Cl. 317—33 SC** **8 Claims**

1. In an electronic circuit breaker having semiconductor switch means connectible between a source of power and a load for removing power from the load when current therethrough exceeds a selected overload level, a circuit for selectively varying said overload response level, comprising:

a transformer having a primary winding connected in series with said semiconductor switch and a secondary winding inductively coupled with said primary winding, a voltage being developed across said secondary winding directly proportional to the current through said primary winding and semiconductor switch, the proportional factor depending upon the inductive coupling between the primary and secondary winding;

a switch control circuit responsive to the voltage developed across said secondary winding exceeding a predetermined magnitude to cause said semiconductor switch to assume a nonconductive state, thereby removing power from the load; and

means associated with said transformer manually operable to selectively vary the inductive coupling between the primary winding and the secondary winding whereby the



overload level corresponding to said predetermined voltage magnitude across the secondary winding may be selectively varied, said inductive coupling varying means including

a magnetic core for said transformer having a first leg around which the primary winding is wound, a second leg around which the secondary winding is wound in parallel magnetic circuit with said first leg, and a third leg in parallel magnetic circuit with said first and second legs,

a control winding wound around said third leg and closed upon itself through a variable resistor for varying the effective reluctance of said third leg, and

means for varying the reluctance of one of said first and second legs including a reluctance gap in one of said first and second legs and means for selectively varying said gap.

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**3,932,792**

**SEALED PUMP AND DRIVE CIRCUITS THEREFOR**

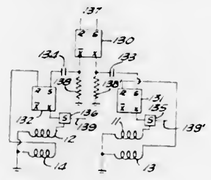
**Philip E. Massie, 4220 Irving Place, Culver City, Calif. 90230**

**Division of Ser. No. 308,044, Nov. 20, 1972, Pat. No. 3,846,682, which is a division of Ser. No. 113,321, Feb. 8, 1971, Pat. No. 3,754,154. This application Aug. 19, 1974, Ser. No. 498,761**

**Int. Cl.² H02K** *33/12*

**U.S. Cl. 318—119** **5 Claims**

1. A reciprocating electrical machine comprising: a magnetically actuatable reciprocatable armature and means supporting it for movement; permanent magnet means associated with the armature and supporting means; electrical winding means disposed to produce a magnetic field for reciprocating the armature in association with the field of the permanent magnet; driving means comprising a source of electrical pulses; means for applying pulses alternately to each of said winding means to cause said armature to be reciprocated; switch means controlling power to each of said windings; an additional pair of windings in coupling relationship with said first windings; first and second flip-flop means connected to control the switch means associated with said first windings; said additional pair of windings being connected to said first and



second flip-flop means; and said source of electrical pulses being connected to said first and second flip-flop means.

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**3,932,793**

**SPEED CONTROL CIRCUIT FOR PERMANENT MAGNET D-C MOTORS**

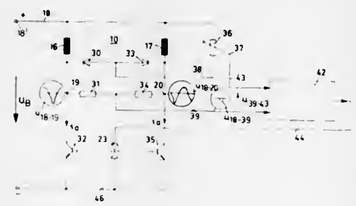
**Rolf Müller, St. Georgen, Germany, assignor to Papst-Motoren KG, St. Georgen, Germany**

**Filed Mar. 18, 1974, Ser. No. 451,869**

**Claims priority, application Germany, Mar. 22, 1973, 2314257**

**Int. Cl.² H02K** *29/02*

**U.S. Cl. 318—138** **18 Claims**



1. A speed control circuit for a constant field d-c motor having armature windings ( **16, 17; 81, 82, 83**),

controlled switch means (**32, 35; 95, 96, 97**) connected in series with the armature windings and a source of power (**18'**; +, − ) to control energization of the armature windings,

a controller (**42-56; 117-125**) providing control signals to the controlled switch means to effect such energization,

and a diode (**30, 33; 104, 105, 106**), each, having first like respective terminals connected to a respective winding and second like terminals connected together at a common diode junction (**38**);

characterized in that

the diodes are poled to be conductive during current flow from the source through respective switch means to the respective windings to derive, across the respective $n$ windings, a first control voltage ($u_{18\text{-}38}$) which is representative of a composite of the emf ($E$) induced by the field of the rotor in the respective windings, and the resistance voltage drop ($i_a \cdot R_a$) due to current flow through the respective $n$ armature windings;

a resistor (**31, 34; 101, 102, 103**), each, is provided having first respective terminals connected to a respective winding of said $n$ windings and second terminals connected together to a common resistor junction (**39**) to derive, across the respective winding, a second control voltage ($u_{18\text{-}39}$) which is representative of $1/n$ of the resistance voltage drop ($i_a \cdot R_a$) due to current flow through the $n$ armature windings;

means (**36, 37; 50; 58, 60; 113**) weighting and normalizing said first and second control voltages with respect to each other by the factor of $n$;



and means (**42; 62, 116**) comparing said first and second normalized, weighted control voltages and forming a difference control signal ($u_{39\text{-}43}$; $u_{51\text{-}38}$),

the controller (**42–56; 117–125**) controlling energization of the controlled switch means (**32, 35; 95, 96, 97**) under command of said difference control signal.

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**3,932,794**

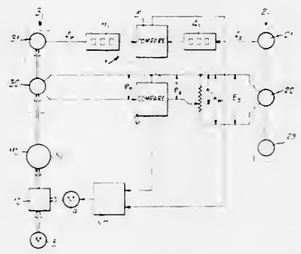
**REVOLUTION SPEED CONTROLLER USING BOTH ANALOG AND DIGITAL CONTROL**

**Hiroyuki Iwako, Tokyo, Japan, assignor to Funken Co., Ltd., Tokyo, Japan**

**Continuation of Ser. No. 369,128, June 12, 1973, abandoned. This application Feb. 20, 1975, Ser. No. 551,156**

**Int. Cl.² H02P** *5/06*

**U.S. Cl. 318—318** **10 Claims**



1. A revolution speed controller for a rotatable follower unit having a defined range of operating revolution speeds, comprising:

means for monitoring the revolution speed of the follower unit and for providing a monitored analog signal and a monitored digital signal each indicating the value of said revolution speed at a selected time;

means for providing a reference analog signal and a reference digital signal of selected values indicating a desired revolution speed of the follower unit;

means for comparing the monitored analog signal with the reference analog signal and for providing a first error signal reflecting the difference therebetween;

means for comparing the monitored digital signal and the reference digital signal and for providing a second error signal reflecting the difference therebetween;

wherein each of said first and second error signal ranges in value over substantially the entire range of the operating revolution speeds of the follower units; and

means for combining the first and the second error signal to provide a combined control signal reflecting the difference, if any, between the two error signals, said control signal indicating the degree of correction needed to conform the actual revolution speed of the follow unit to the desired revolution speed thereof.

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**3,932,795**

**SERVO CONTROL POSITIONING APPARATUS INCLUDING A STANDING WAVE DETECTOR**

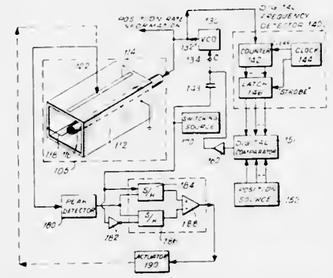
**Jans Kliphuis, 124 Southdown Road, Huntington, N.Y. 11743**

**Filed Nov. 19, 1973, Ser. No. 417,143**

**Int. Cl.² G05B** *1/06*

**U.S. Cl. 318—669** **8 Claims**

1. In combination in automated positioning apparatus; an electrical wave propagating structure having a characteristic impedance, means terminating said wave propagating structure in other than its characteristic impedance, probe means coupled to said electric wave propagating structure and adapted for relative movement with respect thereto, a voltage controlled oscillator for supplying an electrical wave to said wave propagating structure, said voltage controlled oscillator thereby impressing a standing wave on said wave propagating structure, first feedback means, including input command means, for controlling the output frequency of said voltage controlled oscillator, thereby also determining node positioning for said standing wave pattern, and second feedback loop means for positioning and maintaining said probe means at a



standing wave pattern node, said second feedback means including means for detecting the position of said probe relative to a node of said standing wave pattern, and actuator means responsive to the output of said detecting means for selectively moving said probe means relative to said electric wave propagating structure.

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**3,932,796**

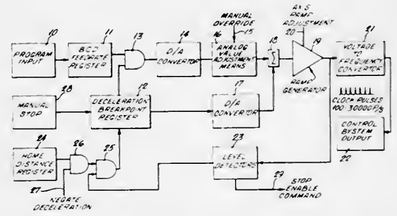
**CONTROL SYSTEM FOR PRODUCING MULTI-AXIS CONTOUR MOVEMENT FOR A STEPPING MOTOR DRIVE**

**Marvin L. Kreithen, Huntingdon Valley, and John J. Lawler, Jr., Newportville, both of Pa., assignors to Textron, Inc., Providence, R.I.**

**Division of Ser. No. 224,752, Feb. 9, 1972, Pat. No. 3,767,990. This application Jan. 31, 1973, Ser. No. 328,285**

**Int. Cl.² G05B** *19/40*

**U.S. Cl. 318—685** **14 Claims**



1. In a system capable of movement of one part relative to another by relative movement of at least three series connected relatively movable members along a predetermined path and having step motors acting between said relatively movable parts to move said parts in discrete increments along a series of successive segments approximating said predetermined path, the improvement comprising a control circuit for generating a chain of pulses at variable frequencies for driving said step motors at variable speeds in accordance with system needs having:

pulse generator means in the form of a voltage to frequency convertor which responds to a voltage input through a voltage adjustment means for generating a train of pulses of variable frequency including means for varying the pulse frequency of pulses generated by said pulse generator means both above and below the slewing range of said step motors;

acceleration means for causing said pulse generator means to modify pulse frequency upon demand and particularly at the beginning of each segment exceeding a predetermined length to increase the pulse frequency from below slewing range into slewing range at a predetermined rate according to the inertial load on the step motors;

sensing means for sensing the number of steps remaining to be taken to the end of each such segment together with means for sensing the adjusted programmed feed-rate frequency and acting upon said acceleration means at some predetermined distance before the end of the segment to decrease pulse frequency to below the slewing range before the end of the segment, and

stop enable means to prevent stopping of step motors until voltage is decreased below a predetermined level representative of the slewing speed of the step motor including means to sense voltage at the voltage to frequency convertor input and employ this voltage against the standard of said predetermined level.

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**3,932,797**

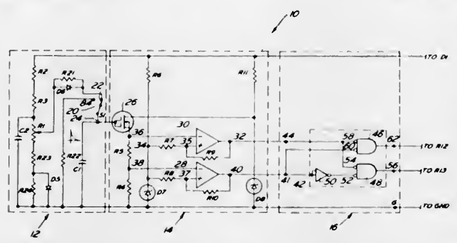
## SELF-TESTING BATTERY DISCHARGE INDICATOR

**Robert A. York, Mechanicsburg, Pa., assignor to Flight Systems, Inc., Mechanicsburg, Pa.**

**Filed Dec. 24, 1974, Ser. No. 536,134**

**Int. Cl.² G08B 21/00; H02J 7/00**

**U.S. Cl. 320—48** **35 Claims**



1. Apparatus for indicating the voltage of a battery and for disabling a load connected to the battery, comprising:

first indicating means for indicating that the battery voltage is greater than a first voltage level;

second indicating means for indicating that the battery voltage is less than said first voltage level but greater than a second voltage level, said second indicating means being electrically connected to said first indicating means so that when said first indicating means is energized said second energizing means is not, and when said second indicating means is energized said first indicating means is not;

third indicating means for disabling said load when the battery voltage is less than said first and second voltage levels and for indicating that the battery is less than said first and second voltage levels, said third indicating means being electrically connected to said first and second indicating means so that when either of said first and second indicating means are energized said third indicating means is not, and when said third indicating means is energized said first and second indicating means are not;

means for selectively energizing said first, second and third indicating means in response to first and second control signals;

means for sensing that the battery voltage is greater than said first voltage level, less than said first voltage level but greater than said second voltage level, and less than said first and second voltage levels and for generating said first and second control signals in response to a third control signal, said sensing means being electrically connected to said selectively energizing means; and

means for selectively generating said third control signal either at a fixed decay rate independent of the actual battery voltage or in response to the actual battery voltage, said generating means being electrically connected to said sensing means.

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**3,932,798**

## ELECTRICAL INVERTER CIRCUIT

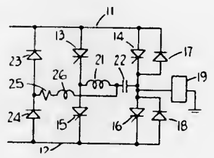
**Brian John Chalmers, Bramhall, and John Philip Gibson, Longsight, both of England, assignors to C.A.V. Limited, Birmingham, England**

**Filed Dec. 5, 1974, Ser. No. 529,753**

**Claims priority, application United Kingdom, Dec. 22, 1973, 59680/73**

**Int. Cl.² H02M 7/515**

**U.S. Cl. 321—45 C** **4 Claims**



1. An electrical inverter comprising in combination positive and negative supply lines, first and second thyristors having their anodes connected to the positive line and their cathodes connected respectively to the anodes of third and fourth thyristors the cathodes of which are connected to the negative line, an oscillatory commutating circuit connected between the anodes of the third and fourth thyristors and comprising a capacitor and an inductor connected in series, a firing circuit providing gate signals to the first, fourth, third and second thyristors in that order, and means for over damping the oscillator circuit, comprising a resistor which effects a reduction in the voltage of the capacitor during the intervals between commutations, means for electrically connecting one end of said resistor to one or the other of said supply lines during the intervals between commutations, said last-mentioned means comprising a pair of diodes connected in series across said supply lines, the other end of said resistor being connected to a point intermediate said inductor and capacitor.

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**3,932,799**

## PEAK LOAD LEVELLING SYSTEM

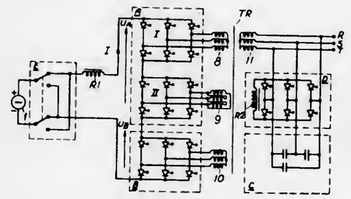
**Kjell Frank, and Kjeld Thorborg, both of Vasteras, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden**

**Filed Oct. 16, 1974, Ser. No. 515,358**

**Claims priority, application Sweden, Oct. 23, 1973, 73143505**

**Int. Cl.² H02M 7/00**

**U.S. Cl. 321—27 R** **3 Claims**



1. Load levelling system for connection to an alternating current network (RST), said system comprising electrochemical direct current energy supply means (1), line-commutated controllable electronic power convertor means (A, B) having DC terminals connected to said energy supply means and AC terminals for connection to said AC network, and continuously controllable reactive power generating means (C, D) connected to said AC terminals, said reactive power generating means comprising a fixed capacitor battery (C) and a line-commutated reactive power convertor (D), the convertor means comprising a first (A) and a second (B) line-commutated thyristor convertor connection, each convertor connection having DC and AC terminals, said convertor connections being series-connected through their DC terminals and having transformer means (TR) connecting their AC terminals, said first convertor connection (A) having a higher rated voltage than the second convertor connection (B), means for setting the control angle of said first convertor connection (A) to either one of two substantially fixed values, corresponding to full direct voltage in rectifying and in inverting operation, respectively, and means for controlling said second convertor connection (B) with a variable control angle.



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**3,932,800**

## DIRECT CURRENT POWER CONTROL CIRCUIT

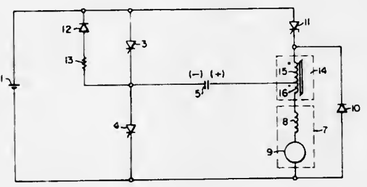
**Hideo Iwamoto, and Mamoru Miyamoto, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan**

**Filed Jan. 10, 1975, Ser. No. 540,191**

**Claims priority, application Japan, Feb. 12, 1974, 49-17328**

**Int. Cl.² H02M 7/515**

**U.S. Cl. 321—43** **6 Claims**



1. In apparatus operative with a direct current power source for supplying current through a predetermined power path to a load, the combination of:

reverse conducting controlled rectifier means for switching said load current from said source to said load in the forward direction;

a commutating thyristor and a capacitor in series connection thereto for commutating said rectifier means out of conduction;

a charging thyristor and a resistor in series connection thereto for initially charging said commutating capacitor from said source with a predetermined initial potential;

a saturable autotransformer having an unsaturated stated between two saturated states, said autotransformer including a first winding connected to said rectifier means, a second winding connected to said load, and a tap terminal common to said first and second windings and connected to said commutating capacitor with said first winding having more turns than said second winding;

said power path including said rectifier means and said first and second winding of said autotransformer in one of said saturated states; and

said commutating thyristor and capacitor being connected in parallel to said first winding and said rectifier means and being operative to apply a commutating voltage to said auto-transformer for changing the state thereof into said unsaturated state and for applying therethrough a reverse current to said rectifier means for terminating the conduction of said rectifier means.

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**3,932,801**

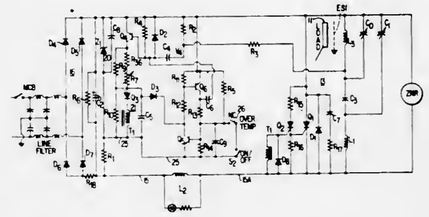
## INDUCTION COOKING UNIT HAVING ALL PAN SAFE OPERATION, WIDE RANGE POWER CONTROL AND LOW START-UP AND SHUT-DOWN TRANSIENTS

**Philip H. Peters, Jr., Greenwich, N.Y., assignor to Environment/One Corporation, Schenectady, N.Y.**

**Division of Ser. No. 354,764, April 26, 1973, Pat. No. 3,886,342. This application Sept. 11, 1974, Ser. No. 505,133**

**Int. Cl.² H02M 7/505**

**U.S. Cl. 321—45 C** **12 Claims**



1. A chopper-inverter power supply comprising gate controlled thyristor means and commutation circuit means coupled in circuit relationship to and excited from a set of power supply terminals for connection to a source of excitation potential, gating circuit means coupled to and controlling turn-on of said gate controlled thyristor means and power control means for controlling the output power level of the chopper inverter power supply, said commutation circuit means comprising serially connected capacitor and inductor commutating reactive components connected in parallel circuit relationship across said gate controlled thyristor means and said power control means comprising a plurality of commutating element switching means for switching in different values of commutating capacitance in operating circuit relationship in the commutation circuit means, shunt capacitor means, and shunt capacitor switching means for switching certain one of ones of said commutating capacitor elements in shunt circuit relationship across at least a part of the inductor commutating reactive component at low power levels.

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**3,932,802**

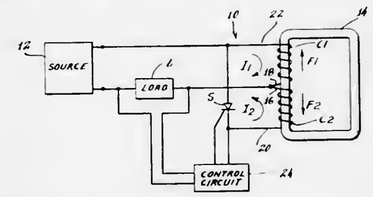
## CONTROLLED POWER TRANSFERRING DEVICE AND METHOD UTILIZING A REACTANCE CONTROLLED BY DEVELOPMENT OF OPPOSING MAGNETIC FLUXES

**Lionel B. Cornwell, 52 Madison Springs Drive, Madison, Conn. 06443**

**Filed July 12, 1974, Ser. No. 487,875**

**Int. Cl.² G05F 1/20**

**U.S. Cl. 323—6** **14 Claims**




1. A power transferring device of the controlled reactance type used to regulate or control the transfer of alternating current electric power from a source to a load, characterized by:

reactance means including a reactive core and a first coil encircling the reactive core and arranged to be connected into a circuit in which the transfer of power is to be controlled, the reactive core and first coil presenting a reactance blocking the transfer of power in the circuit;

a second coil encircling the reactive core and being connected at one end to one end of the first coil;
controllable switch means for selectively connecting the other end of the first coil to the other end of the second coil to place the two coils in parallel;
the first and second coils being arranged on the reactive core so that when they are connected in parallel, the magnetic flux which is produced by a current in the second coil opposes and cancels the magnetic flux produced by the parallel current in the first coil, whereby a small amount of reactance is presented to the circuit by the two parallel coils and power is freely transferred in the circuit;
the controllable switch means selectively switching the reactance of the device between the large blocking reactance provided by the first coil alone and the small reactance of the two parallel coils;
whereby the transfer of power is efficiently controlled by selectively connecting and disconnecting the two coils with little power dissipation occurring in the device in either condition of operation.

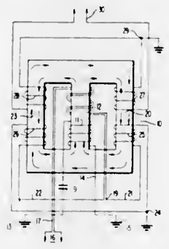
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**3,932,803**
**ELECTRONIC MONITORING SYSTEM INCLUDING CONTACTLESS MOTION DETECTOR**
**Robert Buck, Kirchbuhlweg 128, 7995 Neukirch, Germany**
**Filed June 12, 1974, Ser. No. 478,682**
**Claims priority, application Germany, June 14, 1973, 2330233**
**Int. Cl.² H01H** *36/00*
**U.S. Cl. 323—19** **25 Claims**



1. An electronic monitoring system comprising:
detector means sensitive to an ambient condition for generating an output signal varying with a change in said condition, said detector means being provided with a pair of power-input terminals;
a voltage-generating network including an electronic breakdown device and a constant-current unit in series therewith, said terminals being connected across said breakdown device in an energizing circuit for said detector means;
a source of direct current connected across said network for supplying operating current for said detector means to said energizing circuit via said constant-current unit;
a current-responsive load in series with said source and said constant-current unit;
a voltage-controlled variable-impedance means connected in shunt with at least part of said network across said source in series with said load; and
electronic control means coupled to said detector means and connected to said variable-impedance means for altering the conductivity thereof in response to changes in said output signal, thereby modifying the flow of current through said load with maintenance of a sufficient voltage drop across said breakdown device via said constant-current unit to keep said detector means operative regardless of changes in the conductivity of said variable-impedance means.

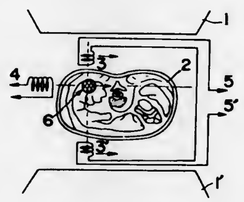
**3,932,804**
**NEUTRALIZING TRANSFORMER ARRANGEMENT**
**Gordon Y. R. Allen, 4 Ireland Court, Islington, Ontario, Canada**
**Filed Jan. 7, 1974, Ser. No. 431,367**
**Int. Cl.² H04B** *3/54, 15/00*
**U.S. Cl. 323—48** **12 Claims**



1. A neutralizing transformer arrangement for use in a power system comprising, in combination: a transformer core, a plurality of windings on said transformer core, one of said windings being a primary neutralizing winding which is to be connected between two spaced-apart points in the power system, and means for preventing saturation of said transformer core, which means include a D.C. blocking capacitor connected in series with said neutralizing winding for preventing a transient direct current component of an asymmetrical fault or switching current from flowing through said neutralizing winding and saturating the transformer core.

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**3,932,805**
**METHOD OF OBTAINING INTERNAL INFORMATION OF A MEASURING TARGET FROM THE OUT-SIDE BY THE APPLICATION OF A NUCLEAR MAGNETIC RESONANCE PHENOMENON**
**Zenuemon Abe; Kunio Tanaka; Masao Hotta, all of Sapporo, and Masaaki Imai, Iwamisawa, all of Japan, assignors to Kichizo Niwa, Sapporo, Japan**
**Filed Aug. 9, 1973, Ser. No. 387,138**
**Claims priority, application Japan, Feb. 2, 1973, 48-13508**
**Int. Cl.² G01R** *33/08*
**U.S. Cl. 324—.5 A** **34 Claims**



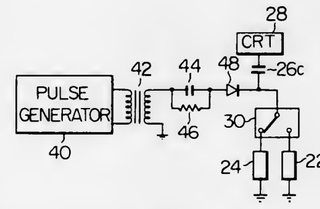
1. A method of obtaining internal information of a specified area of a measuring target by use of a nuclear magnetic resonance phenomenon, including the steps of:
providing a homogeneous magnetic field $H_0$,
disposing the measuring target in said homogeneous magnetic field,
generating a scanning magnetic field $\Delta H_x$ and applying said scanning magnetic field $\Delta H_x$ in superimposed relationship with said homogeneous magnetic field $H_0$ to establish a level of field intensity in the specified area to be examined which differs substantially from the level of field intensity of the remaining portion of the measuring target,



providing a high-frequency magnetic field H resonance frequency of a nuclear magnetic substance in the measuring target area, said high-frequency being determined by the level of field intensity in the said target area, and applying the high-frequency magnetic field in a direction perpendicular to the field $H_0$ so as to encompass at least said specified area of the measuring target and regions adjacent said specified area of said measuring target, to produce a signal representative of a nuclear magnetic substance in said specified area, and detecting and processing said signal for obtaining information of said nuclear magnetic substance of said specified area of said measuring target.

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**3,932,806**
**SURGE COMPARISON TYPE COIL TESTER**
**Tadao Kawada, 1356-7, Kawaguchi-cho, Hachioji, Tokyo, Japan**
**Filed Oct. 4, 1974, Ser. No. 512,288**
**Claims priority, application Japan, Nov. 14, 1973, 48-130704[U]**
**Int. Cl.² G01R** *27/26*
**U.S. Cl. 324—51** **11 Claims**

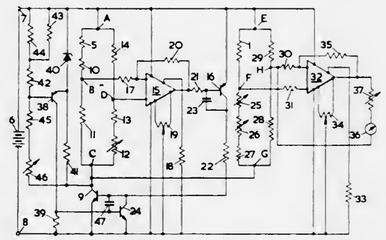



2. A method of testing an electrical coil for defects, comprising the steps of:
generating electrical pulses;
differentiating the electrical pulses;
applying the differentiated pulses to the electrical coil and also to a reference coil of identical specifications as the electrical coil, the reference coil being free from defects, to produce surges of electrical current through the electrical coil and reference coil; and
comparing the waveforms of the current through the electrical coil and reference coil, the electrical coil being judged free from defects if the current waveforms are substantially identical and defective if the current waveforms substantially differ from each other.

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**3,932,807**
**GAS SENSITIVE DEVICES**
**Ronald Wilson, Calver, England, assignor to National Research Development Corporation, London, England**
**Filed Mar. 29, 1974, Ser. No. 456,217**
**Claims priority, application United Kingdom, Mar. 30, 1973, 15576/73**
**Int. Cl.² G01N** *27/00*; **G08B** *21/00*; **G01N** *31/00*
**U.S. Cl. 324—71 SN** **3 Claims**

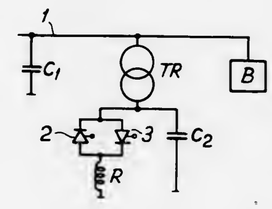
1. A gas detection system comprising:
a gas-sensitive resistor consisting of semiconducting material exposed for contact with an atmosphere under test;
a bridge circuit in one arm of which is connected an electric resistance heater having an appreciable temperature coefficient of resistance, said heater being closely juxtaposed with the gas-sensitive resistor and being operable to heat the gas-sensitive resistor to temperatures at which the electrical conductivity of the semiconducting material is dependent on the concentration of a particular gaseous substance in an atmosphere to which said material is exposed;
means for enabling current to be supplied to said bridge circuit via a pair of input terminals of the bridge circuit, said bridge circuit having a pair of output terminals between which a voltage appears when current is supplied to the bridge circuit via said input terminals with the bridge circuit unbalanced;



means operative in response to variations in said voltage for automatically controlling the current supplied to said bridge circuit via said input terminals so that in normal operation the resistance of said heater is maintained substantially constant at a value corresponding to a desired operating temperature of said gas-sensitive resistor; and
detecting means responsive to changes in the resistance of said gas-sensitive resistor.

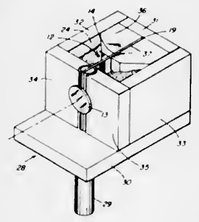
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**3,932,808**
**POWER FACTOR CORRECTING MEANS**
**Kjell Frank, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden**
**Filed Nov. 21, 1974, Ser. No. 526,069**
**Claims priority, application Sweden, Dec. 13, 1973, 7316835**
**Int. Cl.² G05F** *1/68*
**U.S. Cl. 323—102** **4 Claims**




1. Power factor correcting means for connection to an AC voltage network (1) comprising a transformer (TR) with high-voltage terminals for connection to the network and low-voltage terminals, a capacitor battery ($C_1$, $C_2$) for connection to the network, and a controllable inductive element (R, 2,3) connected to the low-voltage terminal of the transformer, in which the capacitor battery comprises a first part ($C_1$) connected to the high-voltage terminal of the transformer and a second part ($C_2$) connected to the low-voltage terminal of the transformer, and in which the rated power of the second portion ($C_2$) of the capacitor battery is between 0.3 and 0.7 times as great as the maximum reactive power of the inductive element.

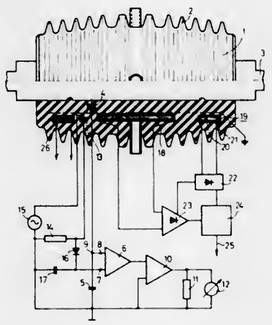
**3,932,809**
**DEFLECTOR GALVANOMETER**
**Lee F. Frank, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.**
**Filed May 28, 1974, Ser. No. 473,635**
**Int. Cl.² G01R 31/00**
**U.S. Cl. 324—96** **7 Claims**



6. The galvanometer in accordance with claim 5 wherein the damping means is a diluted solution of silicone rubber.

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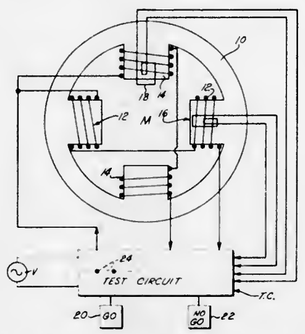
**3,932,810**
**TEMPERATURE COMPENSATED COMBINED CURRENT AND VOLTAGE MEASURING APPARATUS**
**Werner Kohler, Bentfeld, Holstein, and Norbert Steinemer, Berlin, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany**
**Filed Nov. 29, 1974, Ser. No. 528,490**
**Claims priority, application Germany, Dec. 20, 1973, 2363932**
**Int. Cl.² G01R 15/04, 15/00**
**U.S. Cl. 324—126** **8 Claims**



1. A temperature compensated combined current and voltage measuring apparatus for measuring voltage and current on a conductor for conducting current at an upper potential comprising: a body of cast resin disposed in surrounding relation to the conductor; current measuring means carried by said body of cast resin for sensing the current in the conductor; a capacitive voltage divider having upper and lower potential capacitors and extending between the upper potential and a lower potential; said upper potential capacitor being arranged with respect to said cast resin body as to cause said cast resin to be the dielectric thereof; and, a temperature compensating arrangement including: an auxiliary capacitor embedded in the cast resin body and having a dielectric subjected to the same temperature changes as the dielectric of said upper potential capacitor whereby the capacitance of said auxiliary capacitor changes in the same manner as the capacitance of said upper potential capacitor; a resistor serially connected to said auxiliary capacitor; a generator connected across the serial combination of said auxiliary capacitor and said resistor thereby causing a voltage to drop across said resistor having magnitude indicative of the capacitance of said auxiliary capacitor; rectifying and smoothing means for rectifying and smoothing said voltage; and, a differential amplifier having first and second inputs, said first input being connected to receive the smoothed rectified voltage dropped across said resistor, and said second input being connected to said capacitive voltage divider at the terminal of said low-voltage capacitor away from said lower potential whereby a change in the divider ratio of said capacitive voltage divider caused by changes in the temperature of said upper potential capacitor is compensated.

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**3,932,811**
**METHOD AND APPARATUS FOR TESTING WINDINGS OR THE LIKE**
**Robert L. Branch, Brecksville, Ohio, assignor to Avtron Manufacturing, Inc., Cleveland, Ohio**
**Filed Feb. 22, 1972, Ser. No. 228,184**
**Int. Cl.² G01R 31/06; H02K 15/00**
**U.S. Cl. 324—158 MG** **21 Claims**



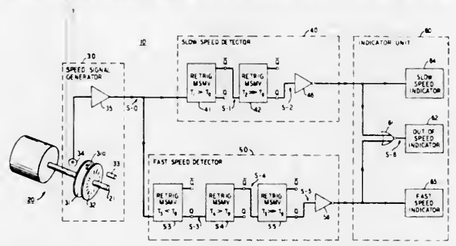

1. A method of testing motor stator windings prior to final motor assembly for proper winding connections of at least first and second windings to obtain a given motor direction and comprising the steps of applying alternating voltage to said windings to respectively produce first and second magnetic fields, electrically sensing each of said magnetic fields and electrically determining whether each field has a first phase relationship or a second phase relationship with respect to said alternating voltage and independently of the relative magnitudes of said fields and said alternating voltage, and providing an output indication of whether the winding connections are proper or not dependent upon said phase relationships.

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**3,932,812**
**MOTOR SPEED INDICATOR**
**Lee J. Milligan, Fairfield, N.J., assignor to Peripheral Equipment Corporation, Fairfield, N.J.**
**Filed Mar. 20, 1974, Ser. No. 452,754**
**Int. Cl.² G01P 3/56**
**U.S. Cl. 324—161** **8 Claims**

1. Apparatus for indicating whether a motor is operating out of speed, comprising:
a slow speed detector;
a high speed detector; and
an indicator unit;
said slow speed detector including a first retriggerable multivibrator having a time period greater than the desired operating speed, and a second retriggerable multivibrator having a time period greater than that of said first multivibrator to provide a slow speed indicator signal for said indicator unit; and said high speed detector including a third retriggerable multivibrator having a time period less than said desired operating speed, a fourth retriggerable multivibrator coupled to said third multivibrator and having a time period greater than said desired operating speed, and a fifth multivibrator coupled to said

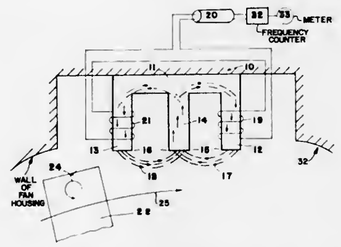





fourth multivibrator and having a time period greater than that of said fourth multivibrator to provide a high speed indicator signal for said indicator unit.

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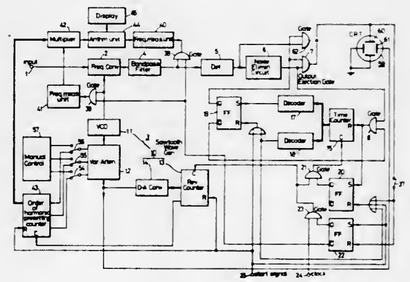
**3,932,813**
**EDDY CURRENT SENSOR**
**George A. Gallant, Burlington, Vt., assignor to Simmonds Precision Products, Inc., Tarrytown, N.Y.**
**Continuation of Ser. No. 245,863, April 20, 1972, abandoned. This application Mar. 28, 1974, Ser. No. 455,742**
**Int. Cl.² G01P 3/46**
**U.S. Cl. 324—164** **4 Claims**




1. An eddy current sensing arrangement for developing a representation of velocity of a turbine engine by sensing eddy currents, which arrangement is substantially insensitive to common mode noise voltages due to stray fields, vibrations, shocks and the like, comprising, in combination:
a. a plurality of fan blades of said turbine engine made from non-magnetic, conductive material,
b. a magnetic core having an integrated back plate and a pair of outer legs offstanding in a plane normal to said back plate, each of said outer legs having a respective longitudinal axis,
c. a central leg having a longitudinal axis and including magnet means interposed between and spaced from said outer legs, to thereby provide an air gap between said central leg and respective ones of said outer legs, said central leg establishing a magnetic flux clockwise through one leg of said outer legs and counter-clockwise through other leg of said outer legs,
d. a first winding wound about one of said outer legs and a second winding wound about the other of said outer legs, said windings have respective winding axes and being connected in series, such that magnetic flux changes passing in opposite directions parallel to said winding axes through said first and second windings induce voltages in said first and second windings which reinforcingly add, and flux changes passing in the same direction parallel to the axes of said windings and through said windings induce voltages in the first and second windings which cancel, and
e. means for rotatably mounting said plurality of fan blades made from non-magnetic, conductive material about an axis substantially perpendicular to a plane containing said longitudinal axis of said central legs for passage one after another in close proximity to said legs, each of said fan blades passing in close proximity to a first one of said outer legs, said central leg and the other of said outer legs in that order,
f. said windings further including leads and an output cable, said legs of said magnetic core being positioned so that when any one of said non-magnetic fan blades made from non-magnetic, conductive material pass through the flux field of the first air gap, and then through the flux field of the second air gap, it induces a voltage in the first winding in one direction and a voltage in the second winding in the opposite direction, and as each of said members pass into the second air gap it induces a reverse voltage in said first and second windings thereby creating a discernible change in voltage which can be transmitted to a counter, whereby a representation of the velocity of said members may be developed substantially free from the influence of common mode noise, and
g. a fan housing of said turbine engine having a wall wherein said magnetic core is mounted.

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**3,932,814**
**HETERODYNE RECEIVER SYSTEM**
**Shoji Niki, Gyoda, Japan, assignor to Takeda Riken Kogyo Kabushikikaisha, Tokyo, Japan**
**Filed May 20, 1974, Ser. No. 471,635**
**Claims priority, application Japan, May 28, 1973, 48-59980**
**Int. Cl.² H04B 1/36**
**U.S. Cl. 325—332** **22 Claims**

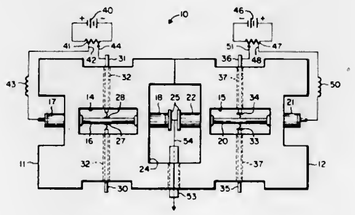


1. A heterodyne receiver system for determining the frequency of an input signal, comprising means for receiving an input signal the frequency of which is to be determined, a frequency swept local oscillator for generating a local oscillator signal and harmonics thereof, a frequency converter responsive to said local oscillator signal and to said input signal and operative to provide a frequency mixing of the input signal frequency with the local oscillator signal frequency and its harmonic frequency, an intermediate frequency filter coupled to said converter for passing those outputs of the frequency converter which are of a predetermined intermediate frequency, an intermediate frequency detector coupled to said filter for detecting the occurrence of signals at said intermediate frequency, said filter producing a pair of time spaced signals at said intermediate frequency at different times in response to a same input signal and for a given order of harmonics of the local oscillator signal, means for extracting one signal of said pair of signals, which occurs at a given time interval after a first occurring one of said intermediate frequency signals thereby to elect said one of said pair of intermediate frequency signals which occurs later in time, and means response to the occurrence of said elected signal within

said given time interval for determining the frequency of said input signal.

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**3,932,815**
**BROADBAND WAVEGUIDE MIXER**
**Lloyd T. Yuan, Hacienda Heights, and Jack S. Honda, Palos Verdes, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.**
**Filed Mar. 21, 1975, Ser. No. 560,917**
**Int. Cl.² H04B *1/26***
**U.S. Cl. 325—445** **11 Claims**

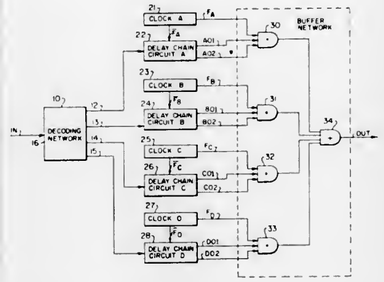


1. A broadband waveguide mixer suitable for use in the microwave and millimeter wave regions comprising:
a. a first waveguide;
b. a second waveguide, said waveguides being disposed substantially parallel and spaced from each other;
c. a first elongated conductive element extending transversely through said first waveguide;
d. a second elongated conductive element extending transversely through said second waveguide, said elements being disposed substantially on a common axis and being spaced from each other;
e. a first pair of diodes arranged back-to-back and disposed in said first waveguide and in contact with said first element;
f. a second pair of diodes arranged back-to-back and disposed in said second waveguide and in contact with said second element, said first pair of diodes having a polarity opposite to that of said second pair of diodes; and
g. a coaxial conductor connected to the adjacent ends of said elements, whereby when a first wave is impressed on said first waveguide and a second wave of different frequency is impressed on said second waveguide, the difference frequency wave is derived from said coaxial conductor.

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**3,932,816**
**MULTIFREQUENCY DRIVE CLOCK**
**William W. MacGregor, Wellesley Hills, Mass., assignor to Honeywell Information Systems, Inc., Waltham, Mass.**
**Filed Dec. 13, 1974, Ser. No. 532,670**
**Int. Cl.² H03K *1/17*; H03B *5/36***
**U.S. Cl. 328—61** **8 Claims**

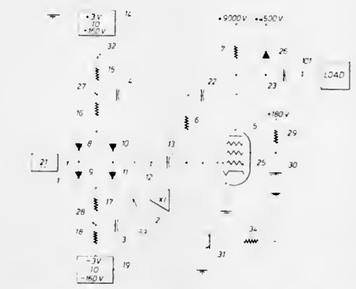
5. Apparatus for generating one of a plurality of clock drive frequencies comprising:
a plurality of clock circuits,
a plurality of input terminals for receiving mutually exclusive control signals,
logical means coupled to said clock circuits and responsive to delayed control signals for selectively passing signals from one of said clock circuits to an apparatus output terminal; and
a plurality of delay means each coupled to a respective one of said input terminals and responsive to signals from one of said clock circuits, said delaying means coupled to said



logical means for sending said delayed control signals to said logical means.

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**3,932,817**
**HIGH VOLTAGE TRIANGULAR WAVEFORM GENERATOR**
**Edwin J. Rogers, P. O. Box 3136, Austin, Tex. 78764**
**Filed Mar. 28, 1974, Ser. No. 455,644**
**Int. Cl.² G06G *7/18*; H03K *4/10***
**U.S. Cl. 328—128** **10 Claims**



1. A triangular waveform generator circuit suitable for driving a deflection plate load, comprising:
an amplifying device having an output electrode and a control electrode;
a two-level current source;
first capacitive coupling means connected between said current source and the control electrode of said amplifying device;
second capacitive coupling means connected between the output electrode of said amplifying device and the load;
an integrating capacitor connected between said current source and the load; and
means connected to the control electrode of said amplifying device for automatically establishing and maintaining the operating point of said amplifying device.

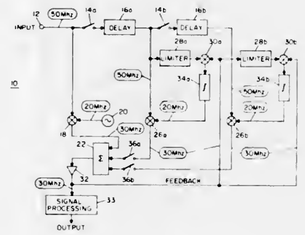
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**3,932,818**
**SPECTRUM NOTCHER**
**Raymond J. Masak, East Northport, N.Y., assignor to Hazeltine Corporation, Greenlawn, N.Y.**
**Filed July 18, 1974, Ser. No. 489,623**
**Int. Cl.² H04B *15/00***
**U.S. Cl. 328—167** **8 Claims**

1. An adaptive filter for suppressing an interfering narrow-



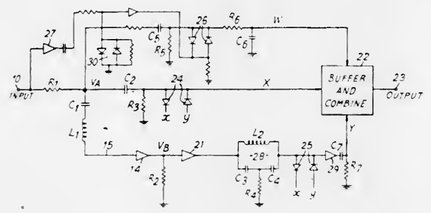
band signal in a composite signal containing a desired broadband signal, comprising:
means, responsive to supplied signals, for combining said signals to form an output signal;
means for supplying said composite signal to said combining means;



means, responsive to said composite signal, for providing a delayed replica of said composite signal;
and means, jointly responsive to said delayed replica and to said output signal, for developing a correction signal and for supplying said correction signal to said combining means to cause suppression of said interfering narrowband signal in said output signal.

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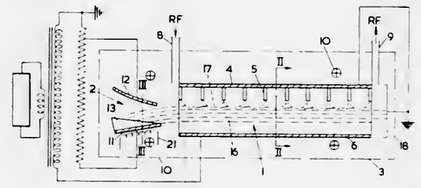
**3,932,819**
**ELECTRICAL FILTERS**
**Paul Anthony Spencer, London, England, assignor to Dolby Laboratories, Inc., New York, N.Y.**
**Division of Ser. No. 346,629, March 30, 1973. This application Oct. 18, 1974, Ser. No. 515,843**
**Claims priority, application United Kingdom, Apr. 4, 1972, 15485/72**
**Int. Cl.² H04B *1/04***
**U.S. Cl. 328—167** **7 Claims**



7. A circuit for modifying the dynamic range of a signal, comprising a main signal path arranged to transmit a main signal component with dynamic range linearity from an input terminal to an output terminal, a further signal path having an input connected to a point in the main path and an output for providing a further signal component limited above a limiting threshold by limiting means in the further path, and means for combining the further signal component with the main signal component so as either to boost or buck the main signal component, wherein the further signal path includes a trap circuit for rejecting a carrier frequency, the trap circuit comprising two capacitors in series in a series arm, an inductor bridging the two capacitors, and a resistive shunt arm connected to the junction of the two capacitors and providing a resistance value such that the signal passed by the trap circuit at the tuned frequency thereof is substantially nil.

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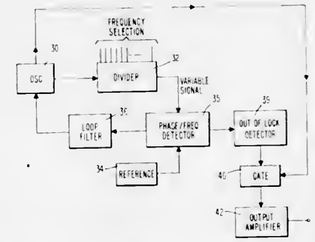
**3,932,820**
**CROSSED FIELD AMPLIFIERS**
**Lionel Damon, and Brian Philip Scoffield, both of Malvern, England, assignors to The British Secretary of State for Defense, London, England**
**Filed July 8, 1974, Ser. No. 486,740**
**Claims priority, application United Kingdom, July 6, 1973, 32202/73**
**Int. Cl.² H03F *3/58***
**U.S. Cl. 330—43** **6 Claims**



1. A crossed field amplifier comprising two spaced electrodes means for applying a first electric potential field between said two electrodes, a radio frequency signal input for feeding input signals between said two electrodes at one end thereof, a radio frequency signal output for collecting the signal from between the electrodes, a cathode and anode disposed in spaced relation to one another adjacent one end of said two spaced electrodes, means for applying a second electric potential field between said cathode and anode to cause the cathode to emit electrons from a surface thereof, an evacuated envelope containing the two electrodes, the cathode, and the anode, a magnetic field system for producing a uniform magnetic field perpendicular to each of said first and second electric potential fields, whereby electrons emitted from the cathode are caused to travel between the two electrodes perpendicular to said magnetic field to interact with the radio frequency signals and provide amplification thereof, said magnetic field system including means for producing a non-uniform magnetic field component normal to said electron emitting surface of said cathode which component varies across said cathode surface whereby noise in the radio frequency signal output is reduced.

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**3,932,821**
**OUT OF LOCK DETECTOR FOR PHASE LOCK LOOP SYNTHESIZER**
**Boyd M. McClaskey, Flourtown, Pa., assignor to Narco Scientific Industries, Inc., Fort Washington, Pa.**
**Filed Nov. 8, 1974, Ser. No. 522,053**
**Int. Cl.² H03B *3/04***
**U.S. Cl. 331—25** **9 Claims**



1. A radio synthesizer system for generating a plurality of selectable radio frequency signals, comprising:
a. oscillator means for generating a periodic signal, being tunable such that the frequency of said periodic signal can be varied as a function of a tuning signal;

b. divider means for dividing the frequency of said periodic signal, said divider means having selecting means for determining the selected system frequency;
c. frequency reference means, for generating a reference signal of a predetermined frequency and phase;
d. phase detector means, connected to said oscillator means, for comparing said divider signal and said reference signal and producing said tuning signal as a function of the comparative phase of said signals, said phase detector means also being characterized by producing a pulsed out of lock signal when said divider and reference signals are out of phase and said system is out of lock;
e. output means for providing the system output signal, having an input circuit connected to said oscillator means; and
f. out of lock detector means for turning off said output means when said system is out of lock, having an input circuit connected to said phase detector means and which receives said pulsed out of lock signal, and an output circuit connected to said output means input circuit, whereby no output signal is produced by said system when it is out of lock.

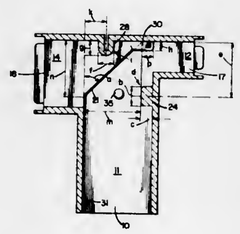
5. In a phase lock loop system for generating a pulse signal at a given frequency, apparatus for generating a DC signal representative of when said system is in lock and when out of lock, comprising detector means for comparing a loop signal with a reference signal and producing pulses as long as said system is out of lock, and means for generating a DC signal having a polarity which is a function of whether said system is in lock, said DC signal means having a non-linear circuit connecting to said detector means for receiving said out of lock pulses, wherein said DC signal generating means comprises a capacitor in combination with a voltage source of a first polarity, said capacitor normally being charged through said source with said first polarity, and wherein said non-linear circuit comprises at least one diode.

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## 3,932,822
## BROAD BAND ORTHOGONAL MODE JUNCTION

**Edward Salzberg, 19 Black Oak Road, Wayland, Mass. 01778**

**Filed Jan. 30, 1975, Ser. No. 545,711**
**Int. Cl.² H01P** *1/16, 5/12*
**U.S. Cl. 333—9** **7 Claims**



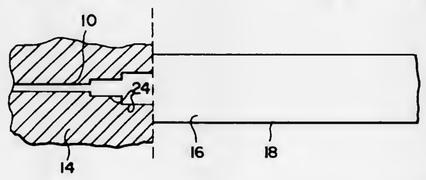
1. A three-arm microwave junction comprising:
a. a first arm of waveguide that will propagate a fundamental mode in two orthogonally related directions of polarization;
b. a second arm of waveguide that will propagate a fundamental mode in only one of said two directions of polarization,
c. a third arm of waveguide that will propagate a fundamental mode only in the second of said two directions of polarization;
d. a junction region joining said first, second and third waveguide arms together so that energy in a first of said two orthogonally related directions of polarization will couple between said second arm and said first arm only and energy in the second of said two orthogonally related directions of polarization will couple between said third arm and said first arm only; and,
e. matching structure in said junction region comprising a protruding ridge across a narrow wall proximate said third arm, a step structure protruding from a broad wall coextensive with said narrow wall and proximate said second arm, said step structure extending into slanting junctures joining said second and third arms along a diagonal within said junction region, and a protruding button in the center of a wall coextensive with a wall of said first arm said button being in spaced proximity to said second arm.

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## 3,932,823
## MICROSTRIP TO WAVEGUIDE ADAPTER

**Louis J. Lavedan, Jr., Springfield, Va., and Carlton S. Collings, Jr., New York, N.Y., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed Apr. 23, 1975, Ser. No. 571,039**
**Int. Cl.² H01P** *1/16*
**U.S. Cl. 333—21 R** **3 Claims**




3. A waveguide to microstrip adapter for permitting the insertion of waveguide circuit components in a microstrip system comprising:
microstrip means with one, wide, ground-plane conductor and a strip conductor of narrow width relative to said ground-plane conductor laying on a supporting medium above said ground plane conductor; and
waveguide means with at least two broad walls and having a small size relative to said microstrip means, said waveguide means being heavily loaded dielectrically so that it can propagate the R.F. energy that is being propagated by said microstrip means;
said microstrip means and said waveguide means being connected end-to-end so that energy propagating in said stripline means will propagate in said waveguide means, said ground-plane conductor being connected directly to one of the broad walls of said waveguide means, said narrow conductor being impedance-matched to said waveguide means and connected to the other of said broad walls.

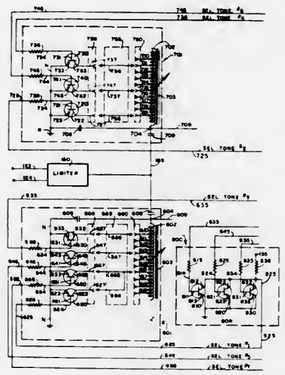
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## 3,932,824
## SIGNAL SELECTIVE CIRCUIT

**Keith H. Wycoff, P.O. Box 308, Lexington, Nebr. 68850**

**Continuation of Ser. No. 17,233, March 6, 1970, abandoned, which is a division of Ser. No. 666,645, Sept. 11, 1967, Pat. No. 3,597,690. This application Oct. 17, 1974, Ser. No. 515,505**
**Int. Cl.² H03H** *7/10*
**U.S. Cl. 333—70 R** **13 Claims**

1. A sequential-signal selective circuit for use in a communication system and comprising a signal responsive circuit having a plurality of terminals for varying the response characteristics of the signal responsive circuit, a first connector having a plurality of terminals fixedly coupled respectively to the terminals of said signal responsive circuit, a second connector having terminals matable with the terminals of said first connector, means associated with said second connector for substantially permanently interconnecting selected ones of the terminals thereof, said means being selectively arrangeable to interconnect selected terminals of said second connector and thereby interconnect corresponding terminals of said signal responsive circuit to establish the response characteristics thereof, and output circuit means coupled to said signal responsive circuit and responsive to a signal therefrom to produce a control signal, said signal responsive circuit having control input means for receiving a control signal to change the response characteristics of said signal responsive circuit in accordance with the arrangement of said interconnecting means.

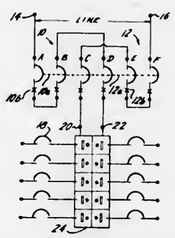


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## 3,932,825
## CURRENT LIMITING CIRCUIT BREAKER SYSTEM

**John De Torre, Albemarle, N.C., assignor to Federal Pacific Electric Company, Newark, N.J.**

**Filed Apr. 9, 1974, Ser. No. 459,321**
**Int. Cl.² H01H** *77/02*
**U.S. Cl. 335—8** **15 Claims**



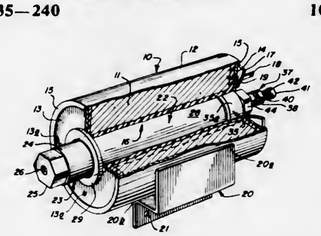

1. A circuit interrupter for a three-wire single phase, 240-volt alternating current supply comprising first and second line terminals and a neutral and having an available current greatly in excess of 10,000 amperes, said interrupter including a plurality of pole units of the molded case air breaker class, each pole unit having at least a movable contact and a companion contact engaged thereby and each pole unit having a molded case of insulation containing said contacts and providing enclosed arcing space for the contacts thereof two of such pole units where arranged as a two-pole breaker having an interruption capacity of 5,000 Amps at 240 volts A.C., operating means for said movable contacts of said plurality of pole units, a first half of said plurality of pole units being connected in series in a first circuit for interposition between the first line terminal and a first load terminal and a second half of said plurality of pole units being connected in series in a second circuit for interposition between the second line terminal and a second load terminal, means for effecting coordinated release of said operating means in response to a fault and for effecting coordinated opening operation of the movable contacts of all said pole units, said release means including at least one overcurrent sensing device in each of said first and second series circuits, said coordinated pole units limiting the rise of fault current and driving the fault current to zero without dependence on the A.C. source voltage decreasing to zero.

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## 3,932,826
## DASHPOT SOLENOID

**Reginald A. Read, Jr., 3713 Grand Blvd., Brookfield, Ill. 60513**

**Division of Ser. No. 402,477, Oct. 1, 1973, Pat. No. 3,852,871. This application Aug. 22, 1974, Ser. No. 499,470**
**Int. Cl.² H01F** *7/16*
**U.S. Cl. 335—240** **10 Claims**



1. An air damped solenoid dashpot assembly for mounting within the coil of a solenoid comprising a thin-walled tubular member, the inner surface of which defines a cylindrical bore, a cylindrical plunger of a predetermined diameter extending into said tubular member through one end thereof for serving as an armature of such a solenoid, said plunger being reciprocable in said bore and effectively closing said end, a reinforcing member circumscribing said tubular member adjacent said end thereof and in circumannular compressive engagement with the external surface of the circumscribed portion of said tubular member, said reinforcing member supporting the wall of said tubular member and maintaining said bore within said portion in a cylindrical configuration of an accurate predetermined diameter, said portion of said tubular member thereby being maintained in effectively fluid-tight sliding annular sealing engagement with the outer cylindrical surface of said plunger during such reciprocating movement of said plunger, a closure member closing the other end of said tubular member, and means for metering passage of air through said closure member, whereby a substantially air-tight damping chamber is provided within said bore between said plunger and said closure member during such reciprocating movement.

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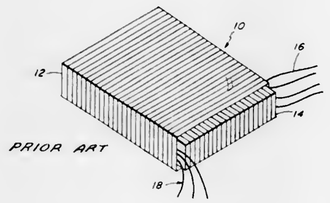
## 3,932,827
## MAGNETIC FIELD DRIVE COILS FOR FIELD ACCESSED CYLINDRICAL DOMAIN MEMORIES

**Carl F. Buhrer, Framingham, Mass., assignor to GTE Laboratories, Incorporated, Waltham, Mass.**

**Filed Aug. 5, 1974, Ser. No. 494,591**
**Int. Cl.² H01F** *27/30*
**U.S. Cl. 336—60** **8 Claims**

1. A magnetic field drive coil arrangement for field accessed cylindrical domain memories, including:
a. a coil form having a length to width ratio greater than unity and an access opening formed in each end of the length of the form, the coil form further having a central region adapted to house therein the cylindrical magnetic memories, peripherial regions on either side of the central region and a longitudinal axis extending along the length of the form to each of the access openings,
b. a first field drive coil disposed around the coil form at the central region and a portion of the peripheral regions, and the portions of the turns of the first coil within the central region being parallel to the longitudinal axis,

c. a second field drive coil disposed around the central region and overlapping the first coil, the turns of the two coils in the central region being perpendicular to each other, the portion of the turns of the first coil disposed




around the peripheral regions of the coil form being aligned at an angle greater than zero degrees to the longitudinal axis so that the turns of the first coil diverge away from the access openings.

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**3,932,828**

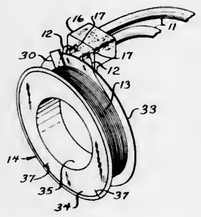
## ENCAPSULATED COIL AND METHOD OF MAKING THE SAME

**James P. Plunkett, West Dundee, Ill., and Joseph T. Latchford, Bowmanville, Canada, assignors to Coils, Inc., Huntley, Ill.**

**Continuation of Ser. No. 408,766, Oct. 23, 1973, abandoned. This application Aug. 5, 1974, Ser. No. 495,034**

**Int. Cl.² H01F 15/10**

**U.S. Cl. 336—96** **5 Claims**



1. A coil assembly including a bobbin and a coil of wire thereon; the bobbin comprising a one-piece molding of plastic insulating material having parallel annular flanges extending radially outwardly from a sleeve-like portion jointly forming a spool on which the coil is wound between the flanges, and a terminal block extending outwardly in an axial direction from the peripheral portion of one of the flanges with a pair of terminal-receiving stepped apertures each having a reduced diameter portion adjacent said flange and an enlarged diameter portion on an opposite end of said block; a tubular terminal having an enlarged head at one end received in said enlarged diameter portion and extending through said reduced-diameter portion of each aperture into the zone in planar relationship with the coil; each terminal having a tongue cut backwardly from an opposite end of the tubular portion thereof and folded back and receiving a coil end; a lead wire extending into each terminal with its insulation extending into the larger-diameter portion of the aperture receiving that terminal and adhered to the wall of said aperture, each terminal being inwardly crimped to secure the lead wire therein and make good contact with the lead wire.

**3,932,829**

## EXCESS CURRENT SWITCH

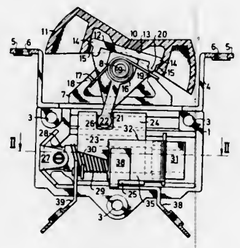
**Jakob Ellenberger, Altdorf near Nurnberg, Germany, assignor to Ellenberger & Poensgen GmbH, Altdorf near Nurnberg, Germany**

**Filed Oct. 11, 1974, Ser. No. 514,281**

**Claims priority, application Germany, Oct. 25, 1973, 2353415**

**Int. Cl.² H01H 71/16**

**U.S. Cl. 337—49** **8 Claims**



1. An excess current switch comprising a housing, a contact bridge, a bimetal strip for providing a thermal trip, switch actuating means movable between an ON position and an OFF position, spring means and a slide bar, the bimetal strip including a retaining member and a stop, the retaining member being arranged for retaining the contact bridge in a first position which represents the switched ON condition of the switch, the slide bar being adapted to be guided in the housing and supporting the spring means which biases the contact bridge so that when the contact bridge is released by the retaining member it is moved under the bias of the spring to a second position which represents the switched OFF condition of the switch, the contact bridge including a stop, said stop being adapted to be engaged by the slide bar and brought into engagement with the retaining member of the bimetal strip during a switching ON operation, the actuating means being coupled to the slide bar and being pivotally mounted about an axis which is perpendicular to the direction of movement of the slide bar, the slide bar including a protuberance, said protuberance being adapted to engage said stop on the bimetal strip during a switching OFF movement of the actuating means whereby the retaining member of the bimetal strip is disengaged from the contact bridge.

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**3,932,830**

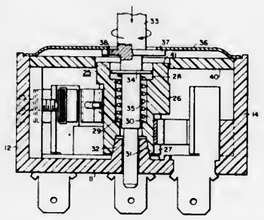
## PUSH-TO-TURN THERMAL CYCLING SWITCH

**Calvin J. Holtkamp, Mansfield, Ohio, assignor to White-Westinghouse Corporation, Cleveland, Ohio**

**Filed Jan. 23, 1975, Ser. No. 543,375**

**Int. Cl.² H01H 71/16**

**U.S. Cl. 337—64** **6 Claims**



1. In a thermal cycling switch including a casing with a base wall having an exteriorly tapered collar with a central bore, a



cover opposite the base wall, a bimetal assembly carrying one switch contact and a spring arm carrying an opposite switch contact movable toward and away from the bimetal assembly, a switch controlling arrangement comprising:

a rotatable shaft having its lower end journaled in said base wall and its upper end projecting out of said cover;

a hollow cam having circumferential cam faces thereon for adjusting said spring arm, said cam having a bore receiving said shaft therethrough in axially shiftable relation;

means at the upper end of said bore fixing said shaft and cam for rotation together;

compression spring means in said bore urging said shaft toward an upper position and said cam downwardly to seat its lower end portion on said tapered collar; and

detent means locking said shaft against rotation when said shaft is in said upper position and permitting said rotation upon shifting said shaft axially downwardly a predetermined amount.

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**3,932,831**

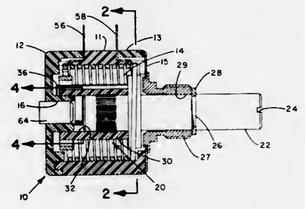
## VARIABLE RESISTANCE DEVICE

**Ronald A. Shirley, La Habra, and Robert J. DeLong, Temple City, both of Calif., assignors to Spectrol Electronics Corporation, Industry, Calif.**

**Filed June 25, 1974, Ser. No. 482,938**

**Int. Cl.² H01C 10/24**

**U.S. Cl. 338—143** **10 Claims**



1. In a variable resistor including a resistance element, a housing supporting the resistance element, a rotary assembly including shaft means located within said housing, contact means carried by said rotary assembly and being adaptable to slidably engage the resistance element in response to rotary movement of said assembly, and electrical conductor means supported by said housing in engagement with spaced positions on said resistance element, the improvement comprising:

means to restrain rotational movement of said rotary assembly except upon application of a relatively large magnitude predetermined force to said assembly, said restraining means including resilient means disposed radially inward of said rotary assembly and a member having first and second operating positions, said member when in said first operating position being spaced apart from said resilient means to permit substantially free rotation of said assembly, and when in said second operating position being in engagement with said resilient means to expand said resilient means radially outward to develop a relatively large magnitude frictional force between opposed surfaces of said resilient means, said rotary assembly and said member whereby the magnitude of said frictional force determines the magnitude of said predetermined force.

**3,932,832**

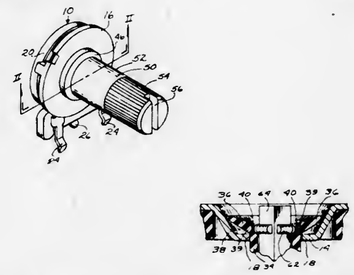
## PLUG-IN SHAFT FOR ELECTRICAL CONTROL

**John D. Van Benthuysen, Elkhart, Ind., assignor to CTS Corporation, Elkhart, Ind.**

**Filed Mar. 18, 1974, Ser. No. 452,126**

**Int. Cl.² H01C 10/34**

**U.S. Cl. 338—166** **6 Claims**



1. A variable resistance control comprising a resistance element and a collector in spaced relationship, a rotatable member, a hub integral with the rotatable member and containing an abuttment member, the rotatable member and hub being provided with a noncircular opening, the edge of the hub engaging one of the collector and the resistance element, the abuttment member being provided with a dish shaped surface circularly disposed about the opening, a contactor constrained to rotate with the rotatable member for wiping contact with the collector and the resistance element, a shaft secured to the rotatable member, said shaft comprising a shoulder, a noncircular first shaft portion disposed within the opening and connected to the shoulder, and a noncircular second shaft portion contiguous with the first shaft portion, said first and second shaft portions having substantially the same surfaces conforming to said opening, and a plurality of discrete nubbins supported on said first shaft portion and engaging said abuttment member, said nubbins projecting from said surface of said first shaft portion whereby the second shaft portion prealigns the shaft upright and rigidly within the noncircular opening, said nubbins resiliently engaging the dish shaped surface and providing outward radial pressure on the hub.

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**3,932,833**

## INSTRUMENT FOR DIRECT MEASUREMENT OF THE VELOCITY OF SOUND IN A FLUID

**Frank Massa, and Donald P. Massa, both of Cohasset, Mass., assignors to Fred M. Dellorfano, Jr. and Donald P. Massa, Trustees of the Stoneleigh Trust u/d/t Dec. 4, 1973, Cohasset, Mass.**

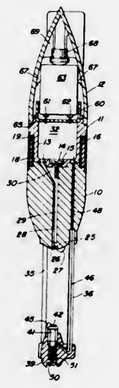
**Continuation-in-part of Ser. No. 790,965, Jan. 14, 1969, Pat. No. 3,561,268, and a continuation-in-part of Ser. No. 798,310, Feb. 11, 1969, Pat. No. 3,611,276. This application Apr. 22, 1970, Ser. No. 30,631**

**Int. Cl.² G01H 5/00**

**U.S. Cl. 340—5 S** **5 Claims**

1. A velocimeter for directly measuring the velocity of sound in a body of water, said velocimeter comprising a structure having a streamlined shape with a weighted streamlined nose section having a circular base, a transducer means comprising a piezoelectric ceramic cylinder coaxially mounted on said circular base, low acoustic impedance insulation means interposed between the end surface of said ceramic cylinder and said base of said nose section, a cup-shaped member with an extended flange section at its open end, said cup member having a body diameter smaller than the inside diameter of said ceramic cylinder and an outer flange diameter substantially equal to the main body diameter of said nose section, means for rigidly fastening said cup-shaped member to the base of said nose section whereby said cup-shaped member and flange serve as a nest for locating said ceramic cylinder

with its outer surface in alignment with the outer surfaces of said nose section and said extended flange section, a low acoustic impedance insulation material between the end surface of said ceramic cylinder and said mating extended flange section of said cup member, a hollow tapered tail section with means for removably attaching said tail section to said ex-



tended flange section of said cup member, means for establishing a waterproof seal between said tail section and said flange section, and a waterproof coating covering the exposed ceramic cylinder and the adjoining regions of said flange section and said nose section which confine the ends of said ceramic cylinder.

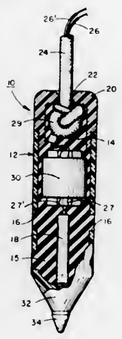
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**3,932,834**

## SEISMIC TRANSDUCER ASSEMBLY FOR MARSHY TERRAINS

**Byron C. Sutherland, Pearland, Tex., assignor to Walker-Hall-Sears, Inc., Houston, Tex.**

**Filed Oct. 23, 1973, Ser. No. 408,772**
**Int. Cl. G01v *1/16***
**U.S. Cl. 340—7 R** **3 Claims**



1. A seismic transducer assembly for detecting pressure variations in a surrounding liquid medium of a marshy terrain, said assembly comprising:

a flexible cable including at least a pair of electric conductors,

a hollow, rigid, cylindrical casing having an inner cavity, the casing defining in its cylindrical wall a plurality of sound-transmitting windows,

a substantially conically-shaped, rigid bottom end cap for the casing to assist the casing to penetrate into the ground,

at least one hydrophone mounted inside said cavity and having a pair of output terminals,

means in said housing for electrically coupling said terminals to said conductors, and

a sound-transmitting, flexible solid core material completely filling said cavity, said material being adapted to support and protect said hydrophone against mechanical damage while solely transmitting pressure variations from said liquid medium to said hydrophone, said pressure variations becoming converted by said hydrophone into corresponding electric signals.

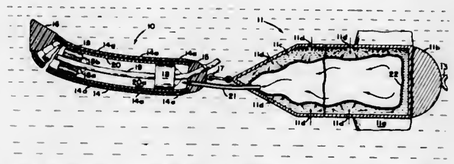
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**3,932,835**

## TOWABLE VLF SONAR PROJECTOR

**Frank R. Abbott, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed Sept. 25, 1974, Ser. No. 508,925**
**Int. Cl.² H04R *1/44***
**U.S. Cl. 340—7 R** **4 Claims**



1. An improved transducer of acoustic energy comprising:

an elongate sleeve enclosing a gas-filled space and having a first stiffness;

a plurality of cylindrically shaped transducer elements longitudinally spaced in the elongate sleeve each sized to occupy the inner diameter of the elongate sleeve having a hollow interior in communication with the gas-filled space;

means coupled to the elongate sleeve for compliantly defining a gas-filled chamber and having a second stiffness which is more compliant than the first stiffness of the elongate sleeve means, as the elongate sleeve and the chamber defining means are subjected to the same ambient pressure changes, the more compliant chamber defining means yields before the elongate sleeve to transfer gas between its chamber and the hollow interior of each transducer element thereby pressure compensating each transducer element and the material forming the elongate sleeve having the first stiffness and the material forming the chamber defining means having the second stiffness are selected to render the improved transducer essentially neutrally buoyant at a preset depth; and

means coupled to the elongate sleeve for towing the elongate sleeve at the present depth in a water medium, the chamber defining means is carried within the towing means and is in communication with the water medium.

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**3,932,836**

## DC/AC MOTOR DRIVE FOR A DOWNHOLE ACOUSTIC TRANSMITTER IN A LOGGING-WHILE-DRILLING SYSTEM

**John W. Harrell, Duncanville, and Wallace B. Allen, Dallas, both of Tex., assignors to Mobil Oil Corporation, New York, N.Y.**

**Continuation of Ser. No. 433,029, Jan. 14, 1974, abandoned. This application Sept. 18, 1974, Ser. No. 507,171**
**Int. Cl.² G01V *1/40***
**U.S. Cl. 340—18 LD** **9 Claims**

4. In a borehole logging operation employing a drilling string through which a drilling fluid is circulated, the method of converting the hydraulic power in the drilling fluid into alternating-current electrical power for driving a two-phase induction motor in a downhole acoustic transmitter, comprising the steps of:

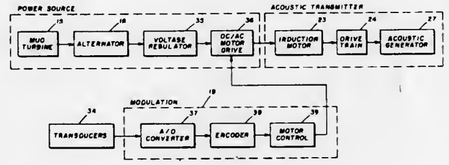
a. rotating a rotary member in response to the hydraulic power of said circulating drilling fluid to convert said hydraulic power into a source of mechanical power,

b. converting said source of mechanical power into a direct-current voltage source,

c. generating clock pulses,

d. generating four signals at a frequency proportional to said clock pulses, said signals being sequentially time shifted 90° with respect to each other,






e. applying said direct-current voltage source in a first polarity across both first- and second-phase windings of said motor in response to said first and second signals respectively such that the current flow through said second-phase winding lags the current flow through said first-phase winding by 90°, and

f. reversing the polarity of said voltage source across both said first- and second-phase windings in response to said third and fourth signals respectively such that the direction of the current flow through said windings is reversed 180° from the direction of the current flow in step (e), thereby providing an alternating-current flow through said windings in which the current flow through said second-phase winding continually lags the current flow through said first-phase winding by 90°.

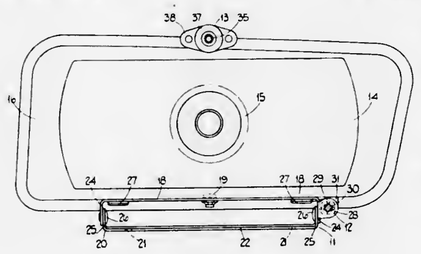
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**3,932,837**

## VEHICLE LAMP ASSEMBLY

**Alfred Dickens Baker, Solihull, England, assignor to Lucas Electrical Company Limited, Birmingham, England**

**Filed Dec. 18, 1974, Ser. No. 533,786**
**Claims priority, application United Kingdom, Jan. 29, 1974, 3977/74**
**Int. Cl.² F21V *7/00***
**U.S. Cl. 240—41.6** **6 Claims**



1. A vehicle lamp assembly comprising a body, a mounting bracket including a first portion which is attached to the body for relative pivotal movement about a first axis and a second portion which is adapted to be mounted on a vehicle, the first and second bracket portions being connected together for relative pivotal movement about a second axis which is substantially perpendicular to the first axis, first adjusting means connected between the first bracket portion and the body for effecting relative pivotal movement about said first axis, and second adjusting means for effecting relative pivotal movement between the first and second bracket portions about said second axis.

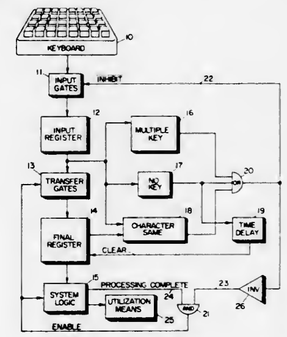
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**3,932,838**

## METHOD AND APPARATUS FOR CONTROLLING CIRCUITRY WITH A PLURALITY OF SWITCHING MEANS

**David N. Sitter, Waynesboro, Va., assignor to General Electric Company, Waynesboro, Va.**

**Continuation of Ser. No. 136,853, April 23, 1971, abandoned. This application Dec. 5, 1973, Ser. No. 421,981**
**Int. Cl.² G06F *3/02*; B41J *5/22***
**U.S. Cl. 340—146.1 AB** **27 Claims**




1. A method for controlling the operation of circuitry in response to an analysis of the operation of individual ones of a plurality of switching means wherein said switching means produces at its output a respective signal in response to operation of individual ones of said switching means comprising the steps of storing a first produced signal in a second storage unit, storing a second produced signal in a first storage unit, replacing the contents of said second storage unit with the contents of said first storage unit, said replacing step comprising sensing the contents of said first storage unit to provide a first indication only in response to the contents of said first storage unit being sensed as representing the operation of only a single switching means, sensing the contents of said first and second storage unit and comparing the sensed contents of said first and second storage units to provide a second indication only in response to the contents of said first storage unit being different from that of the second storage unit, replacing the contents of said second storage unit with the contents of said first storage unit in response to said first and second indications, and controlling the operation of said circuitry in response to the contents of said second storage unit.

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**3,932,839**

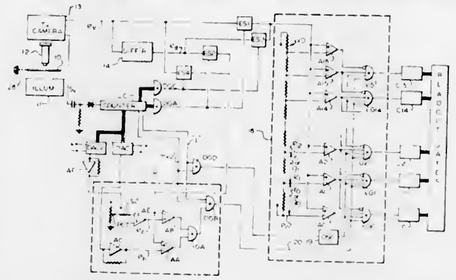
## PATTERN ANALYSIS APPARATUS AND METHOD

**Richard G. Stephens, 318 Security Mutual Life Bldg., Binghamton, N.Y. 13901**

**Filed Apr. 24, 1974, Ser. No. 463,723**
**Int. Cl.² G06K *9/12***
**U.S. Cl. 340—146.3 AG** **20 Claims**

1. Apparatus for analyzing a fixed pattern, comprising, in combination: scanning means for optically scanning said pattern to provide a first electrical waveform substantially commensurate with the light-remissivity of the portions of the pattern being scanned at a given instant and to provide a second electrical waveform substantially commensurate with the light-remissivity gradient of a portion of the pattern scanned substantially at said given instant; first detecting means for detecting those portions of said first electrical waveform which lie within a first pair of levels to provide signals of a first group, each of said signals of said first group having a

duration commensurate with the time during which a respective one of said portions of said first electrical waveform lies within said first pair of levels; second detecting means for detecting those portions of said second electrical waveform which lie within a second pair of levels to provide signals of a second group, each of said signals of said second group having



a duration commensurate with the time during which a respective one of said portions of said second electrical waveform lies within said second pair of levels; and accumulator means connected to be advanced throughout each simultaneous occurrence of a signal of said first group and a signal of said second group.

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**3,932,840**

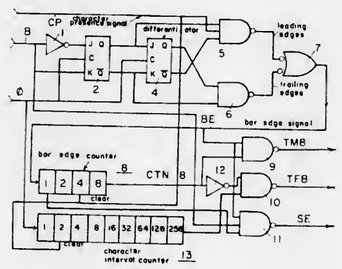
**ERROR DETECTION AND SEQUENCE MAINTAINING SYSTEM FOR BAR-CODE READERS**

**Leland J. Hanchett, Winchester, Mass., assignor to Taplin Business Machines Incorporated, Burlington, Mass.**

**Continuation of Ser. No. 406,518, Oct. 15, 1973, abandoned. This application Dec. 5, 1974, Ser. No. 529,646**

**Int. Cl.² G06K** *5/00*

**U.S. Cl. 340—146.3 Z** **6 Claims**



1. An error detection system for bar coded information wherein each character set is a member of a group made up of a predetermined number of bars and a predetermined number of inter-bar spaces of which each bar and each inter-bar space may have one of two different widths, said system comprising

a. means for establishing bar edge signals including means for sensing bars in terms of electric bar signals and a bar signal differentiator;

b. a bar edge counter supplied with said bar edge signals;

c. a first logic gate having a first input formed by said bar edge signals and a second input formed by a predetermined count of said bar edge counter and producing an output signal indicative of too many bars;

d. a clock-controlled character interval counter;

e. a second logic gate having a first input formed by a predetermined count of said bar edge counter and a second input formed by a predetermined count of said character interval counter and producing as output a too few bars signal;

f. a third logic gate having a first input formed by said bar signals, a second input formed by said bar edge signals and a third input formed by the first bar edge count of said bar edge counter to produce an output signal indicative of a sequence error;

g. a bar interval counter;

h. a fourth logic gate responsive to a predetermined count of said bar interval counter and to said predetermined count of said bar edge counter;

i. a character presence flip-flop for producing a character presence signal connected to be set by said bar edge signal and to be reset by the output of said fourth logic gate; and

j. additional means for resetting said character presence flip-flop including logic circuitry resetting said character presence flip-flop either in response to said too few bars signal or in response to coincidence of a count of said bar edge counter and a count of said bar interval counter.

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**3,932,841**

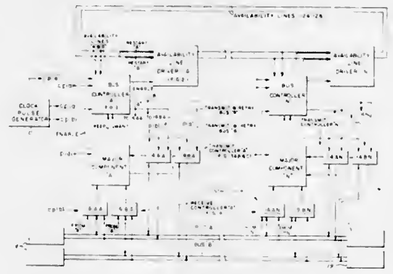
**BUS CONTROLLER FOR DIGITAL COMPUTER SYSTEM**

**Alan J. Deerfield, Newtonville, and Stanley M. Nissen, Reading, both of Mass., assignors to Raytheon Company, Lexington, Mass.**

**Filed Oct. 26, 1973, Ser. No. 409,846**

**Int. Cl.² G06F** *13/00*

**U.S. Cl. 340—172.5** **5 Claims**



1. In a digital computer system wherein a plurality of components is interconnected through a common bus, the operation of each one of such components being synchronized by clock pulses from a system clock pulse generator to produce, during the execution of a program and in intervals between clock pulses, a block of information to be transmitted over the bus, the improvement comprising:

a. selector means, associated with each one of the plurality of components, for producing, during any given interval between successive clock pulses, a transmit gating signal for its associated component to enable transmission of a block of information only from that single one of the components;

b. transmitting control and storage means having an independent controller portion and a storage portion associated with each different one of the plurality of components, each one of such portions being responsive to a transmit gating signal simultaneously to couple information from the corresponding one of the components to the bus and also to store such information within such storage portion;

c. receiving means, associated with each one of the plurality of components and the bus, for accepting and storing information transmitted on the bus en route to and addressed to an associated component;

d. means associated with each of the plurality of components for checking parity of information addressed to the associated component and for producing, when parity is not correctly obtained, an error signal transmitted back to the transmitting components control and storage means; and,

e. means, responsive to the error signal, for inhibiting transmission of further information directly from the corresponding one of the components and for retransmitting the information stored in the transmitting components control and storage means during the next occurring transmit gating signal.



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**3,932,842**

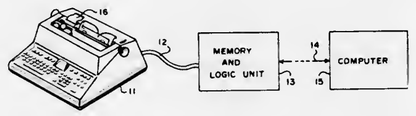
**COMPUTER TERMINAL**

**John J. Kennavane, Seaford, N.Y., assignor to Sanders Associates, Inc., South Nashua, N.H.**

**Filed Oct. 28, 1971, Ser. No. 193,420**

**Int. Cl.² B41J** *15/18*; **G06F** *3/10*

**U.S. Cl. 340—172.5** **8 Claims**




1. A terminal device for communicating with a computer, comprising

a first generally cylindrical platen section,

a second generally cylindrical platen section,

a keyboard having a plurality of keys corresponding to various characters,

means responsive to the actuation of said keys for generating a first series of signals in a first code indicative of the corresponding characters,

a memory for storing said first series of signals,

a code converter for receiving said first series of signals from said memory and for generating therefrom a second series of signals in a second code also indicative of said corresponding characters,

means responsive to said second series of signals for printing said characters on paper held against said first platen section,

a communication link,

means including said code converter for receiving signals over said communication link in said first code and for generating therefrom a third series of signals in said second code, and

means responsive to said third series of signals for printing characters indicative thereof on paper held against said second platen section.

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**3,932,843**

**REAL-TIME CONTROL ARRANGEMENT, FOR A SIMULATION DEVICE**

**Jean Marie Trelut, La Celle St. Cloud; Jean Bernard Michel Liot, Bailly; Therese Marie Leonie Cagnac, Paris, and Antoine Jean Louis Chambet-Falquet, Igny, all of France, assignors to International Standard Electric Corporation, New York, N.Y.**

**Filed Nov. 23, 1973, Ser. No. 418,649**

**Claims priority, application France, Nov. 30, 1972, 72.42564**

**Int. Cl. G06f** *15/16*

**U.S. Cl. 340—172.5** **9 Claims**

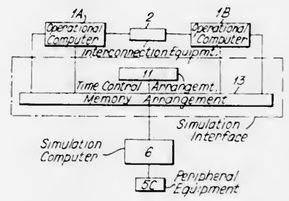
1. A simulation device designed for the development of a program to be used in a real-time operated system including first and second computers operating on a load-sharing basis, said simulation device comprising:

a third computer coupled to said first and second computers to simulate their peripheral equipment in a real system by exchanging with said first and second computers data which would normally be exchanged between said first and second computers and their real system peripheral equipment; and

a real-time control arrangement including

a real-time counter coupled to said first, second and third computers to count real operation time of a program for said real-time system, to subdivide said real operation time into equal steps and to transmit a predetermined signal at the end of each of said steps,

a shift counter coupled to said first, second and third computers to delay the turning on of one of said first and second computers with respect to the turning on of the other of said first and second computers by a time equal to the time elapsed between a stopping of said one of said first and second computers and a stopping of said other of said first and second computers when




both stoppings occurred after a simultaneous operating period of said first and second computers,

two timing counters, each of said timing counters being coupled to a different one of said first and second computers and said third computer to delay the turning on of an associated one of said first and second computers with respect to the turning on of the other of said first and second computers by a time equal to a simulated selected real system peripheral equipment response time after said associated one of said first and second computers was stopped due to the transmission of a data input-output order to a simulated selected real system peripheral equipment, and

a clock to synchronize the operation of said first, second and third computers, said real-time counter, said shift counter and said two timing counters.

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**3,932,844**

**COMMON CONTROL SWITCHING SYSTEM**

**Teruo Yokoo, Tokyo, Japan, assignor to Nippon Electric Company, Ltd., Tokyo, Japan**

**Filed Jan. 8, 1973, Ser. No. 322,047**

**Claims priority, application Japan, Jan. 11, 1972, 47-4959**

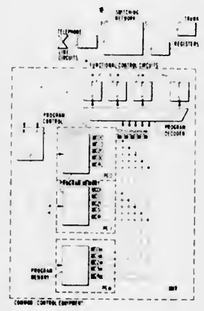
**Int. Cl. G06f** *15/46*

**U.S. Cl. 340—172.5** **4 Claims**

1. A telecommunications switching system comprising common control equipment and a plurality of connection operation equipment groups, each group consisting of a plurality of connection operation equipment, each connection operation equipment in said groups being capable of carrying out a connection operation specific to each said group, each connection operation equipment of at least two of said groups comprising an initiation signal circuit responsive to a call reaching thereto and requesting a connection to be established through said switching system for producing an initiation signal, the connections to be established through said switching system being classified into a plurality of types, said initiation signal being of a level representative of the type of connection requested by a call responsive, to which said initiation signal is produced, a connection of each of said types being established by making selected connection operation equipment, selected in compliance with said each type of connection, sequentially carry out connection operations specific thereto, said common control equipment comprising

a plurality of functional block circuits and control means, connection operation equipment of each of said groups being coupled to at least one of said functional block circuits, said control means being coupled to the initiation signal circuits and to said functional block circuits and responsive to the level of an initiation signal produced by one of said initiation signal circuits for selecting functional block circuits in compliance with the type of connection represented by the said level and for causing the selected functional block circuits to select connection operation equipment, one from each of the groups of connection operation equipment coupled to the selected functional block circuits, thereby causing the selected connection operation equipment to sequentially carry out connection operations specific thereto to establish the connection of the type represented by said initiation signal level, wherein the improvement comprises:

a. end signal means in each of said functional block circuits for producing an end signal upon completion of the con-



nection operation of one of connection operation equipment selected by said each functional block circuit,

b. start signal means in each of said functional block circuits responsive to a start signal delivered thereto for initiating operation of said functional block circuits,

c. a plurality of start signal generating means, each being connected and adapted for applying start signals in sequence and in preselected order to start signal means in said functional block circuits, each said generating means comprising a memory means for storing information indicia representative of said respective preselected order, and

d. a control circuit responsive to the level of said initiation signal for selecting in accordance with said level one of said start signal generating means, and further responsive to said initiation signal and each said end signal for stepping said selected start signal generating means to cause said selected start signal generating means to generate the next start signal in its preselected order.

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**3,932,845**

**SPECIALIZED DIGITAL COMPUTER WITH DIVIDED MEMORY AND ARITHMETIC UNITS**

**Alain Beriot, Paris, France, assignor to Thomson-CSF, Paris, France**

**Filed Jan. 22, 1974, Ser. No. 435,593**

**Claims priority, application France, Jan. 26, 1973, 73.02836**

**Int. Cl.² G06F 7/38, 13/06**

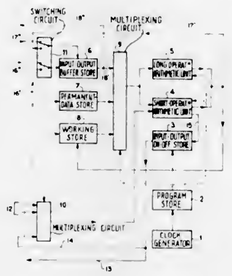
**U.S. Cl. 340—172.5** **7 Claims**

1. A digital computer comprising:

memory means including a program store and additional storage means, said program store being provided with a timing input;

calculating means including a short-operation arithmetic unit and a long-operation arithmetic unit, said additional storage means being addressable by said program store for reading out instructions for said calculating means;

multiplexing means inserted between said additional storage means and said calculating means for selectively directing



said instructions to said short-operation and long-operation arithmetic units under the control of said program store; and

clock means connected to said timing input for triggering said program store into correlated activation of said memory, multiplexing and calculating means.

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**3,932,846**

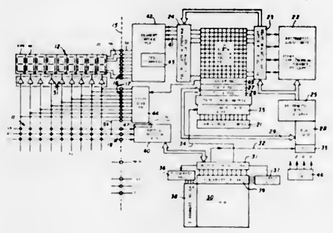
**ELECTRONIC CALCULATOR HAVING INTERNAL MEANS FOR TURNING OFF DISPLAY**

**Charles W. Brixey, Missouri City; Glenn A. Hartsell, Dallas, both of Tex., and Jerry L. Vandierendonck, Santa Cruz, Calif., assignors to Texas Instruments Incorporated, Dallas, Tex.**

**Filed Sept. 24, 1973, Ser. No. 400,438**

**Int. Cl.² G06F 3/14**

**U.S. Cl. 340—172.5** **8 Claims**



1. An electronic calculator system having data storage means, arithmetic means for executing arithmetic operations on data in the data storage means, a read-only-memory for storing a large number of program instruction words, instruction register means for receiving instruction words from the read-only-memory, first gating means for controlling transfer of instruction words from the read-only-memory to the instruction register, address register means for defining a location in the read-only-memory, second gating means for controlling transfer of parts of the instruction word from the instruction register to the address register means, control means for receiving parts of the instruction word from the instruction register means and for controlling operation of the



arithmetic means and other parts of the system, one instruction word being executed during each machine cycle, means for incrementing the address register means by one upon command, characterized in that first control circuitry is provided to inhibit said first gating means for transferring instruction words from the read-only-memory to the instruction register for a plurality of machine cycles whereby the same instruction word is repeatedly executed, and second control circuitry is provided to cause the address register means to be repeatedly incremented during said plurality of machine cycles, and third control circuitry is provided to actuate the second gating means when the address register means overflows.

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**3,932,847**

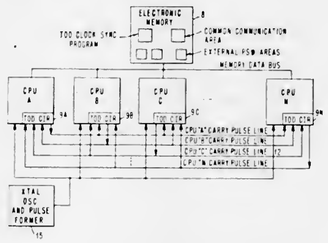
**TIME-OF-DAY CLOCK SYNCHRONIZATION AMONG MULTIPLE PROCESSING UNITS**

**Ronald Morton Smith, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.**

**Filed Nov. 6, 1973, Ser. No. 413,296**

**Int. Cl.² G06F 1/04**

**U.S. Cl. 340—172.5** **5 Claims**



1. A synchronization system for time-of-day (TOD) clocks in a multiprocessing system, in which all said clocks receive driving pulses from a common oscillator, each TOD clock including a plurality of sequentially arranged bistable circuits, a synchronization circuit associated with each respective TOD clock, each synchronization circuit including

carry output means connected to a selected bistable circuit of an associated TOD clock, the selected bistable circuit having a pulse period which is longer than human physical reaction time, the carry output means providing a carry pulse output,

a synch check circuit including

phase detector means having inputs connected to carry pulse outputs of all carry output means in the synchronization system to detect when all received carry pulses are in-phase with each other, the phase detector providing an output signal when any received carry pulse is out-of-phase with another received carry pulse to provide a TOD synch check interrupt signal to an associated processor,

a TOD clock synch switch,

a first AND circuit having one input conditioned by a setting of the TOD clock synch switch and another input enabled in response to an output of the synch check bistable circuit,

means for blocking driving pulses to the associated TOD clock in response to an output of the first AND circuit to stop the operation of the associated TOD clock,

TOD gating means connected to an output of the first AND circuit for transferring into the associated TOD clock a stored predetermined future time setting relating to another TOD clock used as a standard TOD clock, the future time setting indicating the time to occur at a predetermined subsequent carry pulse of the standard TOD clock,

means for unblocking the driving pulses to the associated TOD clock in response to the predetermined subsequent carry pulse from the output of the OR circuit, in order to start the associated TOD clock at the time occurrence of the future time setting transferred by the TOD gating means,

whereby the associated TOD clock is started in time synchronization with the standard TOD clock.

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**3,932,848**

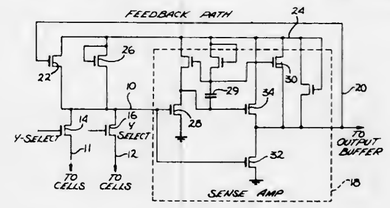
**FEEDBACK CIRCUIT FOR ALLOWING RAPID CHARGING AND DISCHARGING OF A SENSE NODE IN A STATIC MEMORY**

**Eli Porat, Albany, Calif., assignor to Intel Corporation, Santa Clara, Calif.**

**Filed Jan. 20, 1975, Ser. No. 542,253**

**Int. Cl.² G11C 7/06**

**U.S. Cl. 340—173 R** **10 Claims**



1. In a static memory having a charged sense node which is selectively coupled to memory cells in the memory for sensing the state of such cells, a charging means for charging said sense node, and a sense amplifier having its input coupled to said sense node, an improvement comprising:

control means for controlling the flow of current coupled to said sense node; and

feedback means coupled between said sense amplifier and said control means for controlling the flow of current at said sense node;

whereby said sense node may be rapidly charged and discharged since the voltage swing at the node is restricted.

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**3,932,849**

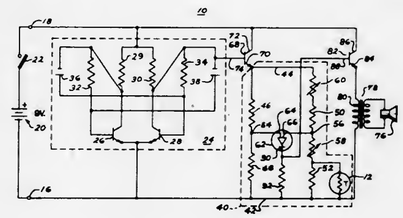
**SELF-CONTAINED, CONDITION RESPONSIVE CIRCUIT**

**Stanley B. Welch, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.**

**Filed June 24, 1974, Ser. No. 482,267**

**Int. Cl.² G08B 17/06**

**U.S. Cl. 340—228 R** **9 Claims**



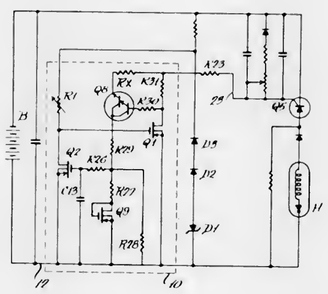
1. A self-contained, condition responsive circuit of the type having condition sensing impedance means for supplying an indication of a predetermined external condition to be sensed, the circuit comprising:

a pair of input supply terminals adapted to be coupled to an electrical energy source for supplying direct current;

means coupled across the input supply terminals for generating a repetitive pulsed signal at an audio frequency rate;
a four-leg impedance bridge network having first and second common terminals arranged to be coupled across the input supply terminals and two comparison terminals intermediate respectively the first and second legs of the bridge network and the third and fourth legs;
means associated with the circuit for coupling the bridge network across the input supply terminals at an audio frequency rate in response to the audio frequency pulsed signal;
a threshold device coupled to the comparison terminals of the bridge network to function as a threshold detector therefor;
the condition sensing impedance means being coupled in circuit with one of the legs of the bridge network;
means associated with the circuit for giving an indication when a predetermined external condition is sensed; and
means associated with the circuit for coupling the indication means across the input supply terminals in response to a switched-on state of the threshold device.

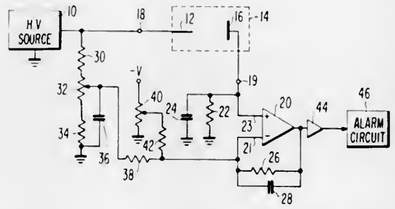
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**3,932,850**
**WARNING DEVICE**
**Frederick J. Conforti, Aurora, and Clifford E. Mensing, Glen Ellyn, both of Ill., assignors to Pittway Corporation, Northbrook, Ill.**
**Filed Jan. 22, 1975, Ser. No. 543,145**
**Int. Cl.² G08B** *17/10*; **H03K** *5/20*
**U.S. Cl. 340—237 S** **14 Claims**



**13.** In a detecting device having a sensor subject to change an electrical property upon the occurrence of a predetermined condition and adapted to emit a sensible electrical signal upon the occurrence of a given magnitude of change in said electrical property within a finite period of time, the improvement comprising impedance means connected to said sensor and capable of matching the impedance of said sensor over a wide range of changes of said electrical property, amplifier means connected to the junction of said sensor and said impedance means, said amplifier means having an input and an output and amplifying said changes in the electrical property, and feedback means connecting said output of said amplifier means to said impedance means, said feedback means having time delay means for delaying feeding the amplifier output to said impedance means.

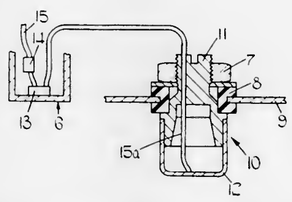
**3,932,851**
**AEROSOL DETECTOR**
**Martin Rayl, Trenton, and Harold Duane Hanson, East Brunswick, both of N.J., assignors to RCA Corporation, New York, N.Y.**
**Filed June 5, 1974, Ser. No. 476,442**
**Int. Cl.² G08B** *17/10*
**U.S. Cl. 340—237 S** **9 Claims**




1. Apparatus for detecting aerosols in a gas comprising:
discharge means having an electrode about which a corona discharge is developed when coupled to a source of given potential;
receiving means for receiving a continuous current of charged particles provided by said discharge means, said discharge means and said receiving means arranged in a gas in which aerosols may be present;
reflecting means adjacent said receiving means and separated from said discharge means by said receiving means for reflecting aerosols towards said receiving means; and
sensing means coupled to said receiving means for detecting the current of charged particles received by said receiving means.

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**3,932,852**
**LIQUID LEVEL DETECTION SYSTEMS**
**William Frank Hill, Stafford, England, assignor to Lucas Electrical Company Limited, Birmingham, England**
**Filed Oct. 25, 1973, Ser. No. 409,449**
**Claims priority, application United Kingdom, Nov. 17, 1972, 53085/72**
**Int. Cl.² G08B** *21/00*
**U.S. Cl. 340—244 R** **1 Claim**

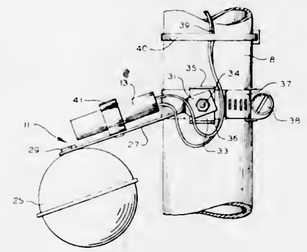


1. A system for monitoring both the level of a liquid in a container and the temperature of a component remote from said container, which comprises:
monitoring means in a liquid container which is electrically grounded, which contacts the liquid at a first location in said container when the liquid level is above a predetermined level;
a positive temperature coefficient resistor mounted at a second location on said component, remote from said container, said resistor being electrically insulated from said component at said second location whose temperature is desired to be monitored;
one terminal of said positive temperature coefficient resistor being connected to ground through said monitoring means and said liquid in series, so that if the liquid level falls below said predetermined level, the impedance to ground will be substantially increased;
the other terminal of said positive temperature coefficient resistor being connected to a circuit which includes means for providing a warning if the impedance to ground increases substantially as a result of either said liquid falling below said predetermined level at said first location or if the resistance of said positive temperature coefficient resistor changes as a result of an excessive rise in temperature at said second location.



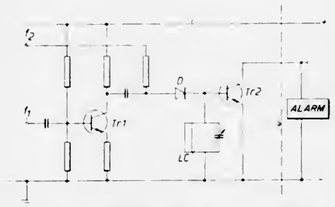
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**3,932,853**
**APPARATUS FOR WARNING OF THE FAILURE OF A SUMP PUMP**
**Richard A. Cannon, 4752 Broad Road, Syracuse, N.Y. 13021**
**Filed Apr. 30, 1974, Ser. No. 465,492**
**Int. Cl.² G08B** *21/00*
**U.S. Cl. 340—244 B** **1 Claim**



1. Apparatus for warning of the failure of a sump pump for pumping water from a sump, the sump having a discharge pipe extending vertically from the sump, said apparatus comprising:
a normally open electric circuit having a storage battery as a source of electricity;
an electrical alarm in said electric circuit for emitting a warning signal in response to the closing of said electric circuit;
float means positioned in the sump for moving with the level of water in the sump, said float means comprising a support arm pivotally mounted at one end on said discharge pipe, and a float attached to the other end of said support arm for effecting the rotation of said support arm in response to changes in the level of water in the sump;
constraining means for constraining the rotation of said support arm, said constraining means being mounted on said discharge pipe;
a mercury switch mounted on said support arm for closing said electric circuit in response to movement of said float means above a position coincident with a water level in the sump indicative of sump pump failure, for closing said electric circuit to effect the emission of said warning signal; and
a test switch connected in said circuit for selectively closing said electric circuit to determine whether said storage battery is of sufficient strength to activate said electrical alarm.

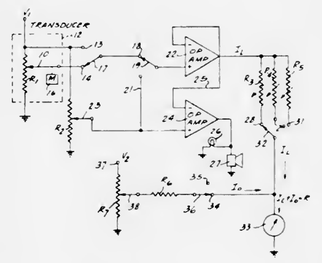
**3,932,854**
**APPARATUS FOR THE DETECTION OF BREAKS IN MOVING THREADLINES**
**Wolfgang Wetzel, Landau, and Manfred Müller, bad Mingolsheim, both of Germany, assignors to Imperial Chemical Ind. (Europa) Fibres, Ostringen, Germany**
**Filed May 8, 1972, Ser. No. 251,732**
**Claims priority, application Germany, May 18, 1971, 2124693**
**Int. Cl.² G08B** *21/00*
**U.S. Cl. 340—259** **19 Claims**




1. A device for detecting a break in a travelling threadline comprising a driven roll and an idler roll between which the threadline passes, said idler roll being driven by the motion of the thread and means to monitor the speed of rotation of the idler roll wherein said means emits a signal when said speed varies by at least a pre-determined amount thus indicating a break in the threadline, wherein said idler roll itself provides a means to monitor its speed of rotation by generating an alternating current by the rotation of the idler roll, the frequency of said current being dependent on the speed of rotation of the roll so that the speed of rotation may be monitored by monitoring the frequency of the alternating current wherein the alternating current generated by the idler roll is combined with a standard frequency and fed to a tuner which is tuned to respond to a pre-determined difference between the input frequency and the standard frequency.

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**3,932,855**
**CRANE RADIUS INSTRUMENT**
**Martin W. Hamilton, Arlington Heights, Ill., assignor to Eaton Corporation, Ohio**
**Filed Sept. 6, 1974, Ser. No. 503,660**
**Int. Cl.² G08B** *21/00*
**U.S. Cl. 340—267 C** **8 Claims**




1. Means for indicating the operating radius of a crane comprising, a transducer mounted on the boom of said crane and producing an electrical signal proportional to cosine $\theta$, where $\theta$ is the angle of said boom with the horizontal plane, a first resistor having a conductance related to the length of said boom receiving the output of said transducer and supplying a current proportional to $L\cos\theta$ where $L$ is the length of said boom, a first potentiometer supplying a current proportional to the offset distance which is the distance from the

boom hinge point to the rotating axis of said crane, and an indicator receiving the currents proportional to $L\cos\theta$ and the offset distance to indicate the operating radius of said crane.

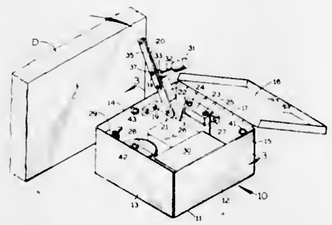
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**3,932,856**

## PORTABLE, GRAVITY-ACTUATED ALARM FOR USE WITH A WINDOW OR DOOR

**Leo J. Tremont, 1108 SW. 25th Ave., Fort Lauderdale, Fla. 33312**

**Filed Dec. 9, 1974, Ser. No. 530,594**
**Int. Cl.² G08B** *13/08*
**U.S. Cl. 340—274 R** **13 Claims**



1. In an intrusion alarm device for a door or window comprising:
- a lever for engagement with a door or window when the latter is closed, means pivotally mounting said lever to drop down by gravity when the door or window is opened;
- a magnetic switch having a permanent magnet on said lever and magnetically-operated switch means mounted in spaced relationship to said mounting means for the lever for operation by said magnet when the lever drops down;
- and signalling means operable to signal an alarm when said switch means is operated;

the improvement wherein said switch means is positioned to one side of the path of movement of said lever when the latter drops down and is in close proximity to said magnet when the lever is down.

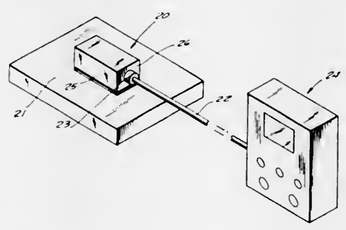
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**3,932,857**

## ALARM SYSTEM SENSING DEVICE

**Blaine A. Way, Schenectady, and William R. Scholtz, Scotia, both of N.Y., assignors to Salient Electronics, Inc., Schenectady, N.Y.**

**Continuation-in-part of Ser. No. 159,697, July 6, 1971, abandoned. This application May 23, 1974, Ser. No. 472,742**
**Int. Cl.² G08B** *21/00*
**U.S. Cl. 340—280** **5 Claims**



1. An attachment mechanism for use in an alarm system sensing device comprising:
- a housing having one surface physically divided into two mechanically separable component parts;
- the outer exposed surfaces of the two separable component parts containing chemically adhesive material so as to allow the device to be adhesively attached to the surface of an object in a manner wherein two chemical bonds of attachment occur between the surface of the object and the respective surface areas of each of the two mechanically separable component parts;
- one of the two separable component surface parts containing means for mechanical interconnection to the structure of the protective housing in a manner which creates a mechanical strength of attachment which is superior to the relative strength of attachment of the adhesive bonding which occurs between that same separable component part and the surface of an object when it is attached thereto;
- the second of the two separable component parts containing means for mechanical interconnection to the structure of the protective housing in a manner which creates a mechanical strength of attachment which is inferior to the relative strength of attachment of the adhesive bonding which occurs between that same separable component part and the surface of an object when it is attached thereto;
- the relationship of relative adhesive and mechanical strengths of interconnections between the object surface, the two separable component parts, and the protective housing being such that the forceable detachment of the device from the surface of an object to which it has been adhesively attached will result in the physical displacement of the two separable component parts relative of one part to the other; and
- the interior of the housing including the separable component parts adapted to receive therein and be attached thereto a variety of secondary component parts, said secondary parts being themselves portions of instrument measuring systems capable of detecting and reacting to changes in the relative physical positions of at least two separable component parts.

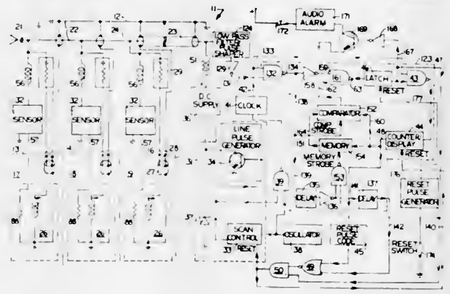
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**3,932,858**

## MASTER ANTENNA LINE COMMUNICATION SYSTEM

**James O. Smith, San Jose, and John J. Gade, Sunnyvale, both of Calif., assignors to Inn-Tronics, San Jose, Calif.**

**Continuation of Ser. No. 330,598, Feb. 8, 1973, abandoned. This application July 25, 1974, Ser. No. 491,656**
**Int. Cl.² G08B** *13/14*
**U.S. Cl. 340—280** **5 Claims**



1. In combination with an antenna system having an antenna for receipt of a communication signal and a common antenna line connected between said antenna and a plurality of locations for common distribution of such communication signal to said plurality of locations; transmitting means for generating a querying information signal different from said communication signal directly connected into said antenna like for distribution of such information signal over said line to said plurality of locations; a plurality of sensors, each of which is connected to said antenna line at an associated one of said locations for receipt of said information signal and includes means responsive to receipt of said information signal by selectively generating and applying a reply information signal to said antenna line in response to a predetermined condition of the sensor circuitry; receiving means connected to said antenna line for generating an alarm signal in response to receipt within a selected time interval of a predetermined number of reply information signals from any one of said sensors; and means on said antenna line for preventing said information signal and any communication signal on said antenna line from interfering with one another; said transmitting means continually generating successive querying signals and distributing the same over said antenna line to said plurality of sensors, and said receiving means generating said alarm signal in response to receipt of a pair of reply signals spaced in time from one another an interval indicative of one of said sensors generating said reply signals in response to succeeding ones of said querying signals; each of said successive querying signals generated by said transmitting means being an electrical scan pulse having a predetermined time of initiation; each of said sensors including timing means adapted to apply a reply signal to said antenna line if said predetermined condition of said sensor circuitry exists at a predetermined time after receipt thereby of said scan pulse, which predetermined time is different for each of said sensors; said receiving means including means for distinguishing between reply pulses received from different ones of said sensors on the basis of the time at which said reply pulse is sent thereto after transmittal of an electrical scan pulse on said line; power supply regulating means for receiving electrical power on said antenna line and regulating the same to provide an essentially constant power level for operation of said sensor; and said timing means of each of said sensors including means providing a time constant for setting said time at which said sensor generates said reply signal after receiving said scan pulse signal, means for generating said reply signal after said predetermined time, and means responsive to the passage of said predetermined time as determined by said time constant means by causing said generating means to initiate said reply signal.



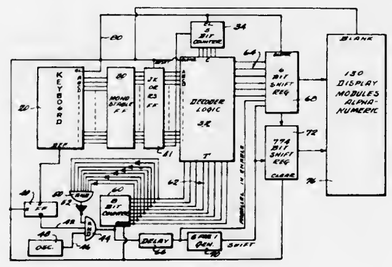
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**3,932,859**

## ELECTRONIC DICTIONARY WITH WORD LENGTH RESPONSIVE DECODER

**Patricia Faust Kyriakides, and James R. Story, both of Miami, Fla., assignors to Anastasios Kyriakides, Miami, Fla.**

**Filed Mar. 7, 1974, Ser. No. 449,083**
**Int. Cl.² G06F** *3/14*
**U.S. Cl. 340—324 R** **7 Claims**



1. An electronic dictionary comprising: keyboard means having a plurality of character keys for entering character symbols which form a word and producing an electrical signal upon each such entrance identifying the character thus entered, and a definition key for producing a definition signal upon operation thereof,
- means for receiving said electrical signals and storing for each symbol which can be entered an electrical stored indication of whether that symbol has been entered,
- means for receiving said electrical signals, counting the number of symbols entered and producing an output signal indicating that count,
- pulse generator means for producing a train of pulses upon operation of said definition key,
- counter means for receiving said train of pulse and providing a count output indicating the number of pulses counted,
- logic means connected to said pulse generator means and to said counter means for disabling said pulse generator means when the output of said counter means indicates a given count,
- decoder logic means connected to said counter means, said receiving and storing means, and said receiving, counting and producing means for producing for each combination of said output signal indicating the count in said receiving, counting and producing means, said stored indication of whether symbols have been entered and said count output of said counter means a definition character signal,
- register means, for receiving and storing in a given order said definition character signals, and
- display means for displaying the characters corresponding to said stored definition character signals.

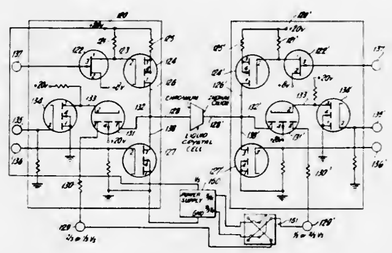
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**3,932,860**

## ELECTRO-OPTICAL DISPLAY WITH CIRCUITRY FOR APPLYING PREDETERMINED POTENTIALS TO ALL DISPLAY SEGMENTS TO EFFECT ACTIVATION OF A SELECTED SEGMENT ONLY

**Sam G. Cohen, Pleasantville, N.Y., assignor to Timex Corporation, Waterbury, Conn.**

**Filed Apr. 25, 1974, Ser. No. 463,927**
**Int. Cl.² G06F** *3/14*
**U.S. Cl. 340—324 M** **11 Claims**



1. An electro-optical display comprising:
- a first and a second plate each having on one side thereof a pattern formed by segments, said segments being layers of conductive material, at least some of said segments being electrically connected together; said plates being spaced from each other and with the segments on each plate aligned; a thin layer of liquid crystal material sandwiched between said plates, said liquid crystal material characterized by a threshold voltage of $V_t$;
- a driver circuit connected to said segments and a voltage source of $V_s$ connected to said driver circuit, said driver circuit having first voltage supply means to provide a first selectable segments of the first plate a voltage $V_1$ which is a fraction of $V_s$ and less than $V_2$, second voltage supply means to provide to first selectable segments of said second plate with a voltage $V_2$ greater than $V_1$ and a fraction of $V_s$, wherein $V_1 + V_2 = V_s$ and $V_2 < V_t > V_1$, third voltage supply means to supply voltage $V_s$, to second selectable segments of the first plate and fourth means to switch second selectable segments of the second plate to zero voltage, whereby the liquid crystal material between the first segments is not activated and the liquid crystal material between the second segments is activated.

3,932,861

## VEHICLE HEAD-UP DISPLAY SYSTEMS

George Carter Bull, East Malling, England, assignor to Elliott Brothers (London) Limited, Essex, England

Filed Apr. 29, 1974, Ser. No. 464,739

Claims priority, application United Kingdom, Apr. 30, 1973, 20399/73

Int. Cl.² G06F *3/14*

U.S. Cl. 340—324 AD 3 Claims



1. A head-up display system for a vehicle comprising:

a. a semi-reflective combiner element adapted to be installed in the vehicle on the line of sight of an observer in the vehicle of a scene outside the vehicle;

b. a display surface;

c. activating means operable to activate substantially any portion of the said surface so as to cause the said portion to emit light;

d. between the combiner element and the display surface a collimating optical system which, when a display is present on the display surface as a result of activation as aforesaid, projects a collimated image of the display to the combiner element for reflection to the observer's eyes, thereby effectively superimposing the image of the display on the observer's view of the outside scene through the combiner;

e. a waveform generator responsive to input data signals derived from sensors carried by the vehicle and representing the relationship of the vehicle to its environment so as to repetitively develop a time sequence of output signals capable of being employed for controlling the activating means to activate desired line segments of the display surface thereby to present at said surface symbols representative of the aforesaid relationship;

f. a signal source operable to develop a raster scan output signal representative of the environment sensed by an imaging sensor;

g. a symbol storage device operable in response to output signals from the waveform generator so as to store symbols to be presented at the display surface;

h. a symbol read-out arrangement operable to develop a raster scan output signal representative of the symbols stored in the symbol storage device, said output signal having the same format as the signal source output signal;

i. signal combiner circuitry operable to receive the output signals from the signal source and the symbol read-out arrangement so as to develop a raster scan output signal representative of both said symbols and said environment; and

j. means for connecting either the output of signal combiner circuitry or the output of the waveform generator to the activating means.

3,932,862

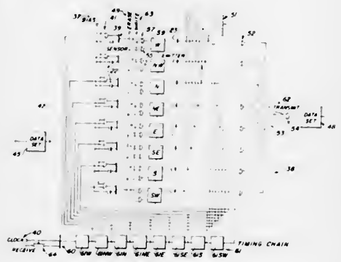
## COLORINGBOOK, A SOLID STATE DISPLAY DEVICE

Robert Michael Graven, 203 Holly Lane, Orinda, Calif. 94563

Continuation of Ser. No. 250,836, May 5, 1972, abandoned, which is a division of Ser. No. 111,659, Feb. 1, 1971, Pat. No. 3,761,620, which is a division of Ser. No. 33,855, May 1, 1970, Pat. No. 3,618,029, which is a continuation-in-part of Ser. No. 644,756, May 25, 1967, abandoned. This application Apr. 2, 1975, Ser. No. 564,425

Int. Cl.² G06F *3/14*

U.S. Cl. 340—324 M 11 Claims



1. An optoelectronic device comprising

a modular circuit unit having

a pn junction light emitter, and

a semiconductor light sensor juxtaposed in a common plane to permit emission and reception of light on one common side of said module,

said emitter and sensor positioned to operate optically independently of each other, and

means for electrically connecting said modular circuit unit to like modular circuit units, said means disposed on another side of said modular unit.

6. An optoelectronic device comprising

a plurality of pn junction light emitters juxtaposed in a common plane and arranged in an ordered array,

means for sequentially activating and deactivating said emitters,

means for storing the status of said light emitters,

means for manually switching said light emitters,

means for simultaneously activating said light emitters,

means for simultaneously deactivating said light emitters, a computer, and

means for operating said light emitters by said computer.

10. An optoelectronic device comprising

a plurality of semiconductor light sensors juxtaposed in a common plane and arranged in an ordered array,

means for individually activating and deactivating said light sensors,

means for storing the status of activation and deactivation of said sensors,

a computer,

means connected to said computer for determining the activated status of said sensors,

a penlight, and

means for activating said sensors using said penlight.



3,932,863

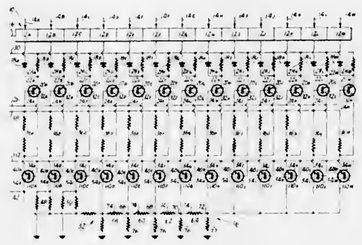
## DIGITAL-TO-ANALOG CONVERTERS

James J. Pastoriza, Lincoln, Mass., assignor to Analog Devices, Inc., Norwood, Mass.

Continuation of Ser. No. 207,463, Dec. 13, 1971, abandoned, which is a division of Ser. No. 809,700, March 24, 1969, Pat. No. 3,685,045. This application July 5, 1974, Ser. No. 486,220

Int. Cl.² H03K *13/04*

U.S. Cl. 340—347 DA 2 Claims



1. A digital-to-analog converter comprising a first set of individually-activatable transistor current sources arranged to conduct currents of equal magnitude producing equal current densities in the transistors;

said transistors each having collector, emitter and base electrodes;

a plurality of equal current-setting resistors each connected between the emitter of a respective transistor and a common power supply line;

means to maintain the bases of said transistors at a substantially constant potential, whereby when said transistors are activated they produce said equal current through the collector circuits of said transistors;

a second set of individually-activatable transistor current sources for controlling said first set of current sources;

said second set of transistors each having collector, emitter and base electrodes;

means connecting the collectors of said second set of transistors respectively to the emitters of said first set of transistors to provide for controlling the flow of current through the corresponding current-setting resistor to control the activation of the associated one of said first set of transistor current sources;

means connected to said second set of transistors to control the individual actuation thereof in accordance with an input binary number thereby to control the flow of current from each transistor collector through the corresponding one of said current setting resistors so as to control the activation of the associated one of said first set of transistor current sources;

a current summing point to which a plurality of separate currents can be directed to produce a combined output current corresponding to the sum of the separate currents;

a plurality of attenuation networks each having an input circuit and an output circuit and arranged, when supplied with an input current, to provide an output current the magnitude of which is a predetermined fraction of the input current;

said attenuation networks having differing attenuations in accordance with a predetermined weighting pattern, such that if the same current is supplied to said input circuits, the corresponding output currents from said networks will differ in accordance with said weighting pattern;

means connecting each of said input circuits directly to the collector circuit of a respective one of said first set of transistor current sources to provide equal input currents thereto from the activated current sources;

said attenuation networks being arranged to present equal impedances to each of said collector circuits in said first set of transistor current sources; and

means connecting all of said attenuation network output circuits together and to said current summing point, whereby to supply thereto currents of differing magnitudes in accordance with said predetermined weighting pattern.

3,932,864

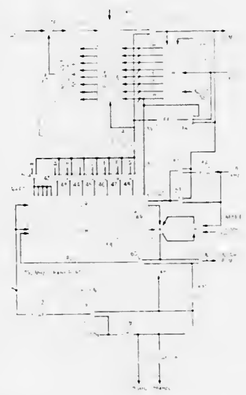
## CIRCUIT FOR CONVERTING A COMPANDED DIGITAL TIME-AMPLITUDE PULSE CODE INTO A LINEAR DIGITAL AMPLITUDE PULSE CODE

James Charles Candy, Convent Station, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 6, 1975, Ser. No. 538,592

Int. Cl.² H03K *13/24*

U.S. Cl. 340—347 DD 6 Claims



1. A pulse code translator for translating plural *n:m* coded, nultibit, pulse code words of a predetermined time-amplitude resolution into linear PCM code words each having a predetermined number of bits sufficient to have an amplitude resolution substantially the same as said predetermined time-amplitude resolution, said translator comprising

means for averaging magnitude information represented by successive pairs of said *n:m* code words, and

means for averaging a plurality *w* of successive words from said word-pair averaging means to produce a single linear PCM word.

3,932,865

## ANALOG-TO-DIGITAL CONVERTER

Iwao Sagara; Hirohisa Shishikura, and Ikuo Anada, all of Tokyo, Japan, assignors to Oki Electric Industry Company, Ltd., Tokyo, Japan

Filed May 22, 1974, Ser. No. 472,480

Claims priority, application Japan, May 25, 1973, 48-57841; May 25, 1973, 48-57844

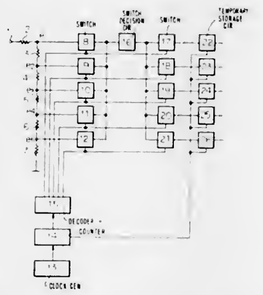
Int. Cl.² H03K *13/02*

U.S. Cl. 340—347 AD 3 Claims

1. An analog-digital converter circuit for converting an analog voltage input to a digital output comprising:

a. voltage divider means, said voltage input being applied across said voltage divider means, said voltage divider means producing a plurality of voltages having amplitudes related to said input voltage;

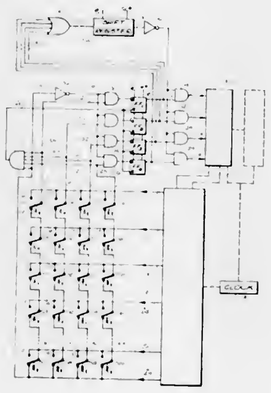
b. a plurality of first switch means, each first switch means being coupled to said voltage divider means;
c. control means coupled to each of said switch means for sequentially closing said first switch means in a predetermined sequence;
d. switching decision means coupled to said first switch means, wherein when each first switch means is closed, the voltage at the point in said voltage divider means to which the first switch means is coupled is applied to said switching decision means, said switching decision means



comparing the amplitude of the voltage applied thereto to a predetermined voltage and producing a first output if the amplitude of the applied voltage is greater than the predetermined voltage and producing a second voltage if the amplitude of the applied voltage is less than the predetermined voltage; and
e. output means coupled to said switching decision means for providing an indication of whether the output of said switching decision means is said first output or said second output.

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**3,932,866**
**COMPUTER KEYBOARD CIRCUITRY**
**Hiroshi Sasaki, Irvine, Calif., assignor to Ricoh Electronics, Inc., Irvine, Calif.**
**Filed July 24, 1974, Ser. No. 491,446**
**Int. Cl.² G08C *1/00***
**U.S. Cl. 340—365 E** **14 Claims**

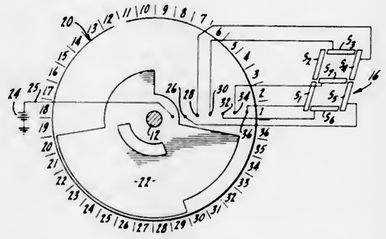


1. Apparatus comprising:

a plurality of principal input lines;
additional input line means;
a plurality of output lines;
pulse supply means for delivering out-of-phase streams of timed input pulses to said principal input lines, and for delivering timed additional input pulses to said additional input line means in out-of-phase relation with respect to the pulses in said principal input lines;
an array of switches for controlling the delivery of output signals to said output lines and each having first and second contact means responsive to actuation of the corresponding switch to first and second positions respectively;
said first contact means of said switches being adapted to receive and control transmission of said additional pulses from said additional input line means;
said second contact means of said switches being connected to said principal input lines to receive, and control transmission of, pulses therefrom;
circuits controlled by pulses transmitted from said principal input lines through said second contact means, and operable in response to movement of an individual one of said switches from said first position thereof to its second position to deliver an output signal to a corresponding one of said output lines, and
means controlled by said additional pulses transmitted from said additional input line means through said first contact means of said switches, and operable only when all of said switches are simultaneously in said first position to condition said apparatus for delivery of a next successive output signal to one of said output lines, and thereby preventing delivery of such a next successive signal until any previously actuated switch has returned to said first position thereof.

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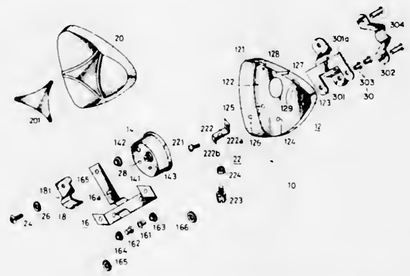
**3,932,867**
**TELEVISION CHANNEL INDICATOR**
**Eugene C. Walding, Arlington Heights, Ill., assignor to Oak Electro/Netics Corporation, Crystal Lake, Ill.**
**Filed May 8, 1972, Ser. No. 251,461**
**Int. Cl.² G08B *5/00***
**U.S. Cl. 340—378 R** **3 Claims**



1. In a television channel indicator, a rotatable shaft, a pair of electricially conductive coded surfaces, means supporting said coded surfaces for rotation with said shaft, a pair of electricially-operated visual read-out devices, each having independent areas capable of being energized to display the digits 0–9,
a source of voltage connected to a common area on each of said coded surfaces, pick-up means for each of said independent areas and each of said pick up means being directly connected to an independent area, said pick-up means being positioned to contact said coded surfaces such that the various independent areas are energized in said readout devices to provide a different visual numerical indication of shaft position and TV channel selection at each position of the shaft.



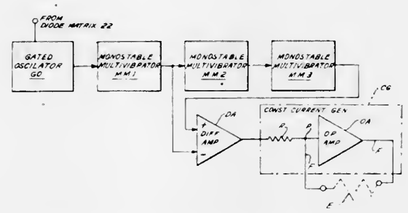
**3,932,868**
**ALARM BUZZER DEVICE**
**Hisashi Saitou, Kasugai, Japan, assignor to Kabushiki Kaisha Saikosha Seisakusho, Kasugai, Japan**
**Filed Sept. 9, 1974, Ser. No. 504,419**
**Claims priority, application Japan, Mar. 13, 1974, 49-28835**
**Int. Cl.² G08B *3/00***
**U.S. Cl. 340—384 R** **4 Claims**



1. An alarm buzzer device comprising a housing, a buzzer element accommodated in said housing, a battery for actuating said buzzer element, means for holding the battery, a resilient contact arm mounted insulatingly on said buzzer element, a lead wire for connecting the anode side of said battery holder to the input side of said buzzer element, another lead wire for connecting the cathode side of said battery holder to said resilient contact arm, a cover member for covering said housing and arranged floatingly by said resilient contact arm, and engaging means for detachably engaging said cover member with said housing, said engaging means comprising claws formed stationary on said housing, a movable claw operable from outside said housing, and blind holes formed in side walls of said cover member to each loosely engage with each of said claws.

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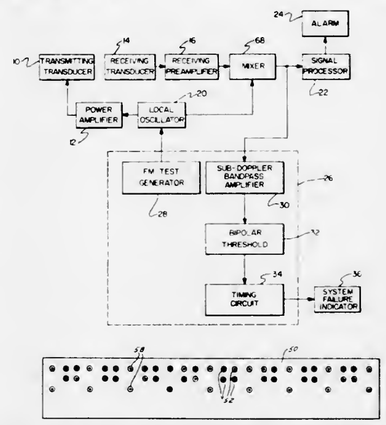
**3,932,869**
**TACTILE NUMERIC DISPLAY DEVICE**
**Gabriel Kane, Manhattan College, Manhattan College Parkway, Bronx, N.Y. 10471**
**Continuation-in-part of Ser. No. 420,956, Dec. 3, 1973, abandoned. This application Oct. 11, 1974, Ser. No. 513,995**
**Int. Cl.² G08B *1/00***
**U.S. Cl. 340—407** **3 Claims**



1. A tactile numeric display apparatus comprising: a panel of insulating material; a plurality of sets of four electrical conductor pairs, the four electrical conductor pairs of each set being disposed in said panel of insulating material at the corners of quadrilaterals to simulate abbreviated Braille representation of Arabic numerals, each of the electrical conductor pairs including a central conductor having a diameter of from 3/64 to ⅛ inch, and a surrounding concentric annular conductor having a width of from 1/32 to 1/16 inch, with the separation of the conductors of the pair being from 3/64 to ⅛ inch, and the operative area of the central conductor being no greater than one-fourth of the operative area of the said annular conductor, each of the conductors of each electrical conductor pair having at least one end extending beyond one of the surfaces of said panel so that it can be touched by a user; a pulse generator means including a plurality of constant current sources, each of said constant sources having an input and an output connected to one of said pairs of electrical conductors, a plurality of bipolar waveform generators, each of said bipolar waveform generators having an input and an output connected to the input of one of said constant current sources, respectively, each of said bipolar waveform generators when activated generating from 20 to 250 pulse pairs per second, wherein each pair comprises a positive pulse of from 0.1 to 1 millisecond duration and a negative pulse of from 0.1 to 1 millisecond duration with a time interval between the positive and negative pulses of each pair being equal to the duration of one of said pulses and the peak to peak amplitude from the positive pulse to the negative pulse being such that the peak to peak current flowing from said constant current sources is between 0.5 and 10 milliampere; and means for selectively energizing said bipolar waveform generators in accordance with the Arabic numerals to be displayed.

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**3,932,870**
**ON-LINE TEST CIRCUIT FOR INTRUSION ALARM SYSTEMS**
**L. Dennis Shapiro, Lincoln, and Aaron A. Galvin, Lexington, both of Mass., assignors to American District Telegraph Company, New York, N.Y.**
**Filed May 31, 1974, Ser. No. 475,057**
**Int. Cl.² G08B *29/00***
**U.S. Cl. 340—411** **10 Claims**



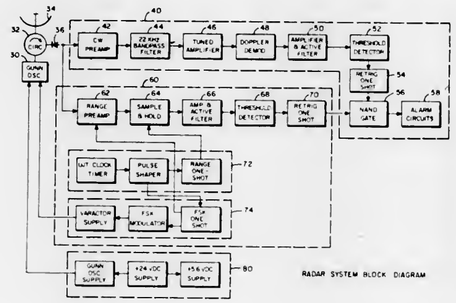

1. For use in a Doppler intrusion alarm system having means for transmitting energy into a surveillance zone, means for receiving energy returned from said zone and from objects therein, and means for detecting the presence of a moving intruder in said zone, circuitry for the continuous on-line monitoring of system operability comprising:
means for providing an FM test signal to said transmitting means to cause provision of a varying energy pattern in said surveillance zone having difference frequencies below the Doppler band of said system;
means coupled to said receiving means for detecting a sub-Doppler signal derived from said energy returned from said zone and from objects therein; and
means for providing an output indication of system failure in the event that said sub-Doppler signal does not exceed a predetermined reference threshold.

**3,932,871**

## FM/CW SURVEILLANCE RADAR SYSTEM WITH RANGE GATING

**Owen L. Foote, Salt Lake City, Utah, assignor to Sperry Rand Corporation, New York, N.Y.**

**Filed Sept. 11, 1972, Ser. No. 288,177**
**Int. Cl.² G01S 9/02, 9/42; G08B 13/22**
**U.S. Cl. 343—5 PD** **10 Claims**



RADAR SYSTEM BLOCK DIAGRAM

1. An FM/CW surveillance radar system with range gating, comprising:
an antenna for continuously transmitting a transmitted signal and for receiving a received signal;
an FM/CW channel coupled to said antenna for receiving said received signal and including means for converting from said received signal a doppler signal above a threshold level to an FM/CW channel alarm signal;
a range channel coupled to said antenna for receiving said received signal and including:
means for frequency shift key (FSK) processing a CW signal, which is to be transmitted by said antenna, only during a range blanking period;
range gate blanking means for inhibiting said received signal from being processed by said range channel only during said FSK process; and,
means for converting from said received signal a range doppler signal above a threshold level to a range channel alarm signal;
alarm means coupled to the alarm signals generated by said FM/CW channel and said range channel for generating an alarm signal only when said FM/CW channel and said range channel alarm signals are concurrently coupled thereto.

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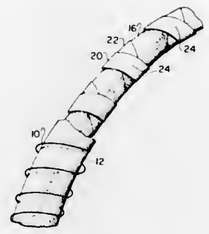
**3,932,872**

## CORE DESIGN FOR FLEXIBLE H-SENSOR FOR ELF

**Joseph A. Zenel, Princeton; William G. McGuffin, Willingboro, both of N.J., and William E. Barnette, Levittown, Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed Dec. 23, 1974, Ser. No. 535,259**
**Int. Cl.² H01Q 7/08**
**U.S. Cl. 343—788** **7 Claims**

1. A magnetic-core, flexible, H-plane sensor for ELF communications comprising:
small-circumference, longitudinal insert means;
first ribbon means of magnetic material wound in a clockwise fashion down the length of said insert means;
second ribbon means of magnetic material wound in a counterclockwise fashion down the length of said insert means so that said first and second ribbon means cross each other at a plurality of good-mechanical-contact points down the length of said insert means;
insulation means wrapped around said first and second ribbon means down the length of said insert means so that said ribbon means are insulated from the outer environment; and



conductor means wrapped around said insulator means down its length to form a distributed-loop sensor.

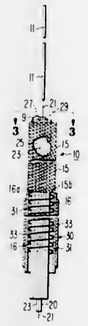
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**3,932,873**

## SHORTENED APERTURE DIPOLE ANTENNA

**Arthur Garcia, Woodbury, N.J., assignor to RCA Corporation, New York, N.Y.**

**Filed Sept. 20, 1974, Ser. No. 507,708**
**Int. Cl.² H01Q 9/16**
**U.S. Cl. 343—792** **7 Claims**



1. A center fed dipole antenna adapted to operate over a given range of frequencies comprising:
a coaxial transmission line,
a first antenna radiator element connected at one end thereof to the inner conductor of said coaxial transmission line at an end of said coaxial transmission line,
a second antenna radiator element including a hollow cylinder of conductive material and a coil, said hollow cylinder being coaxial with said coaxial transmission line and being electrically connected at an end to the outer conductor of said coaxial transmission line at said end of said coaxial transmission line, said cylinder being electrically connected at its other end to said coil and
a cylindrical sleeve of conductive material spaced from said hollow cylinder and closely spaced coaxial with and about a substantial portion of said coil.

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**3,932,874**

## BROADBAND TURNSTILE ANTENNA

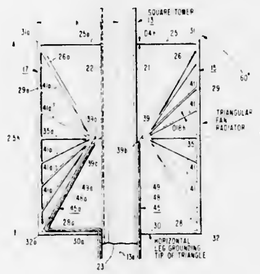
**Oakley McDonald Woodward, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.**

**Filed Sept. 11, 1974, Ser. No. 505,085**
**Int. Cl.² H01Q 21/26**
**U.S. Cl. 343—795** **8 Claims**

1. A turnstile antenna system comprising:
a vertical tower of reflective material,



four triangle-shaped radiating elements extending horizontally from said tower at 90° intervals, each radiating element being mounted to said tower with two sides of the triangle extending from an apex near the tower to a base parallel and remote from said tower, whereby said radiating element has a minimum height at the feed point near the tower and a height that increases linearly to a maximum at said base remote from said tower,




each of said radiating elements being supported to the tower by a conductive support member connecting the radiating element at or near said base to said tower, and
means for feeding equal signal energy to the feed points of said radiators in the relative phase rotation of 0°, 90°, 180° and 270°. .

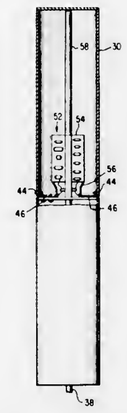
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**3,932,875**

## DIRECTIONAL ANTENNA

**John R. Cooney, Friendship St., Waldoboro, Maine 04572**

**Filed May 13, 1974, Ser. No. 469,535**
**Int. Cl.² G01S 5/02**
**U.S. Cl. 343—820** **2 Claims**



1. A radio direction finding antenna for receiving vertically polarized wave signals comprising a conductive cylindrical element of one half wavelength in length, a mounting staff connected to said element, discrete signal pickup means spaced about the internal-periphery of said cylindrical element, circuit means including a printed circuit board mounted within said element and coupled to said pickup means for relating said signals into directional information based on the phase displacement of the signals at the spaced pickup points and a coaxial cable routed through said mounting staff and coupled to said circuit means.

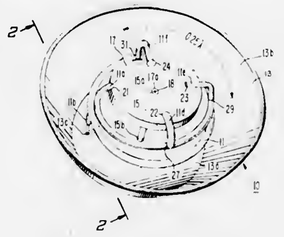
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**3,932,876**

## SHORT END-FIRE CIRCULARLY POLARIZED ANTENNA

**Oded Ben-Dov, Medford, N.J., assignor to RCA Corporation, New York, N.Y.**

**Filed Aug. 9, 1974, Ser. No. 496,361**
**Int. Cl.² H01Q 1/36**
**U.S. Cl. 343—895** **9 Claims**



1. An end-fire helical antenna comprising:
a funnel-shaped, electrically conductive reflector having a base at one end and tapering sides to a larger aperture at the opposite end,
a helical coil extending in an axial direction from a fixed point near the base of the reflector to the plane of the aperture, said helical coil having a given diameter and pitch such that one turn equals approximately one wavelength at an operating frequency of said antenna,
a flat conductive plate connected to the aperture end of said helical coil, and
means for conductively mounting said flat plate to said funnel-shaped reflector.

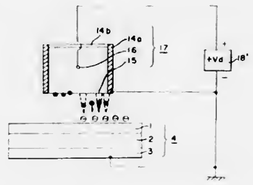
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**3,932,877**

## ELECTROPHOTOGRAPHIC RECORDING SYSTEM WITH PLATE CLEANING

**Masaru Ohnishi, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan**

**Filed July 2, 1974, Ser. No. 485,079**
**Claims priority, application Japan, July 4, 1973, 48-75485**
**Int. Cl.² G03G 15/16; H05F 3/06**
**U.S. Cl. 346—74 P** **9 Claims**

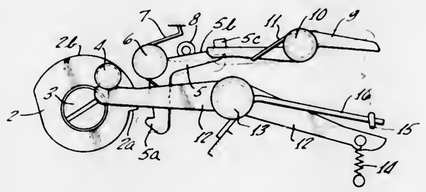


1. An electrophotographic recording system comprising
means for forming a charge image of specific polarity on an electrophotographically sensitive plate,
means for transferring the charge image to a recording paper, and
means for neutralizing the residual charge on the electrophotographically sensitive plate comprising a shielding type charge eraser comprising
means for generating a corona discharge producing an electric field and a large number of ions,
means for shielding the electric field from the residual charge and permitting only ions of a polarity opposite to the residual charge to be disposed adjacent to the electrophotographically sensitive plate, the ions of a polarity opposite to the residual charge being attracted by the residual charge to neutralize the residual charge.

### 3,932,878
### FILM WINDING AND SHUTTER RELEASE ERROR PREVENTION APPARATUS

Hiroshi Kurei, Kawagoe, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed June 20, 1974, Ser. No. 481,463
Claims priority, application Japan, June 26, 1973, 48-75096[U]
Int. Cl.² G03B 19/12, 17/38
U.S. Cl. 354—153 8 Claims

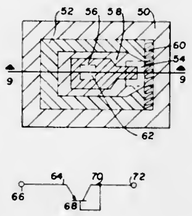


1. A combination film winding and shutter release error prevention device for use in a single lens reflex camera with a swingable mirror, said device comprising:
a film winding mechanism;
a shutter button;
an arresting lever interconnecting said film winding mechanism with said shutter button;
guide means connected to said film winding mechanism; and
adapter means connected to said shutter button, said arresting lever pivotally mounted between said guide means and said adapter means, said arresting lever automatically preventing movement of said shutter button before said film winding operation is completed.

### 3,932,879
### BILATERALLY CONDUCTING ZENER DIODE AND CIRCUIT THEREFOR

Wilson David Pace, Tempe, Ariz., assignor to Motorola, Inc., Chicago, Ill.

Filed July 17, 1974, Ser. No. 489,191
Int. Cl.² H01L 29/90, 29/06, 29/747; H02H 7/06
U.S. Cl. 357—13 5 Claims

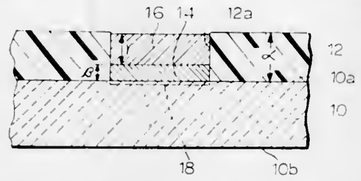


1. A bilaterally conducting zener diode, comprising:
a semiconductor body of a first conductivity type,
an anode region positioned within said semiconductor body and being of an opposite conductivity type;
a cathode region positioned within said body and being of said first conductivity type and forming a P-N junction with said anode region; and
a further region of opposite conductivity type surrounding said anode region and spaced close to said cathode region for collecting the current flowing out of said anode region and contact means for returning such current to the cathode region.

### 3,932,880
### SEMICONDUCTOR DEVICE WITH SCHOTTKY BARRIER

Aiichiro Nara; Hisao Kondo; Masatoshi Mizushima, and Fumi Moriai, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 26, 1974, Ser. No. 527,427
Claims priority, application Japan, Dec. 1, 1973, 48-13593
Int. Cl.² H01L 29/46, 29/48
U.S. Cl. 357—15 13 Claims



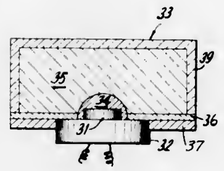
1. A semiconductor device comprising a substrate of semiconductive material, and a metallic member disposed on said substrate to be contacted by the latter thereby to form a Schottky barrier within said substrate adjacent that protion thereof contacted by said metallic member, said metallic member being composed of a nickel-palladium alloy.

10. A semiconductor device comprising a substrate of semiconductive material including a pair of first and second main faces opposite to each other, a surface passivation film of electrically insulating material disposed so as to cover that portion of said first main face of said substrate except for a predetermined portion thereof, a first metallic layer formed of a nickel-palladium alloy and disposed so as to contact said predetermined portion of said first main face of said substrate thereby to form a Schottky barrier in said substrate adjacent that portion thereof contacted by said first metallic member, and a second metallic layer disposed to cover said first metallic layer, the sum of the thickness of said first and second metallic layers not exceeding the thickness of said surface passivation film.

### 3,932,881
### ELECTROLUMINESCENT DEVICE INCLUDING DICHROIC AND INFRARED REFLECTING COMPONENTS

Yoh Mita, and Eiji Nagasawa, both of Tokyo, Japan, assignors to Nippon Electric Co., Inc., Tokyo, Japan

Continuation of Ser. No. 393,490, Aug. 31, 1973, abandoned.
This application Mar. 7, 1975, Ser. No. 556,446
Claims priority, application Japan, Sept. 5, 1972, 47-89333; Nov. 21, 1972, 47-117437
Int. Cl.² H01L 33/00
U.S. Cl. 357—17 4 Claims



1. A light emitting device comprising:
diode means for emitting first infrared radiation;
a single crystal of luminescent material excitable in a step-like manner by said infrared radiation attached to said diode means for emitting visible radiation together with second infrared radiation having a wavelength range in common with said first infrared radiation, said luminescent material being sensitized by ytterbium ions; and

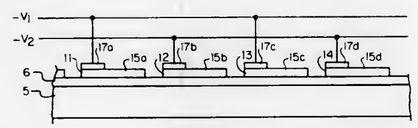


a closed optical cavity comprising, in turn, a dichroic filter disposed in front of said diode means that is transparent to said visible radiation but reflects said first and second infrared radiation and a reflector that extends behind said diode means as a back wall of the cavity and reflects said first and second infrared radiation, said cavity thereby confining said first and second infrared radiation therein and emitting only said visible radiation through said dichroic filter, whereby the excited state lifetime of said ytterbium ions is made as long as about four milliseconds.

### 3,932,882
### CHARGE TRANSFER DEVICE

Josef Berger, Sunnyvale, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 370,887, June 18, 1973, abandoned.
This application Oct. 24, 1974, Ser. No. 517,717
Int. Cl.² H01L 29/78
U.S. Cl. 357—24 6 Claims

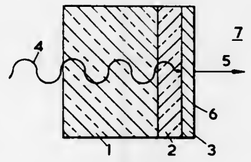


1. A semiconductor charge transfer device comprising:
a substrate layer of a semiconductor material;
an insulating layer of an insulating material on the substrate layer; and
an array of electrodes positioned on the insulating layer with an electrically insulating gap between adjacent electrodes, each electrode comprising a first part of a highly conductive material, and a second part of a highly resistive material, the highly resistive part and an associated portion of the insulating layer forming a distributed RC delay line for delaying the response time of an associated region of the substrate to changes in electrical potentials applied to the electrodes, the resulting variation of electrical potential in the substrate serving to impart dynamic directionality to the transfer of charge in said device.

### 3,932,883
### PHOTOCATHODES

Michael Charles Rowland, Royston, and David Robert Wight, Hitchen, both of England, assignors to The British Secretary of State for Defense, London, England

Continuation of Ser. No. 278,834, Aug. 8, 1972, abandoned.
This application June 24, 1974, Ser. No. 482,700
Int. Cl.² H01L 29/161, 33/00, 27/14, 29/20
U.S. Cl. 357—30 6 Claims

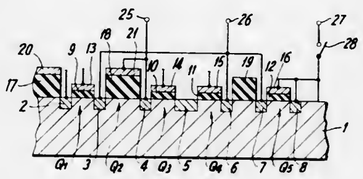


1. A transmission photocathode comprising:
an activated detector layer of p-type gallium arsenide of thickness less than the electron diffusion length in gallium arsenide,
a crystalline substrate of gallium phosphide having an energy band gap greater than that of said gallium arsenide detector layer, and
a p-type intermediate layer selected from the group consisting of $Ga_{(1-x)}Al_xAs$, where $o<x\leq 1$, and $Ga_{0.5}In_{0.5}P$,
said detector layer being epitaxially supported upon said intermediate layer, and said intermediate layer being supported upon said substrate.

### 3,932,884
### MIS TYPE INTEGRATED CIRCUIT DEVICE

Yoshishige Kitamura, Tokyo, Japan, assignor to Nippon Electric Co., Inc., Tokyo, Japan

Filed Mar. 5, 1974, Ser. No. 448,258
Claims priority, application Japan, Mar. 14, 1973, 48-30301
Int. Cl.² H01L 27/02, 29/78; H03K 3/353
U.S. Cl. 357—41 5 Claims



1. A metal-insulator-semiconductor integrated circuit device comprising a semiconductor substrate of a first conductivity type, a plurality of metal-insulator-semiconductor transistors each having regions of a second conductivity type opposite to the first forming a source and a drain on a major surface of said substrate, means for grounding a first portion of said regions belonging to one of said transistors, means for applying a voltage to a second region belonging to a different one of said transistors, said first and second regions being disposed in such relationship that a leakage current flows between them if the absolute potential of said semiconductor substrate exceeds a first predetermined value, and means for clamping the potential of said semiconductor substrate at a second predetermined value closer to the ground potential than said first value predetermined to prevent said substrate from exceeding said first predetermined value, said clamping means being connected between the ground potential and said substrate.

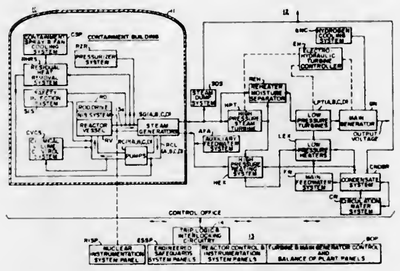
### 3,932,885
### SYSTEM AND METHOD FOR XENON ACCELERATION IN TRAINING SIMULATOR FOR NUCLEAR POWER PLANT

Francis R. Czerniejewski, Glenshaw, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 23, 1973, Ser. No. 335,287
Int. Cl. G06f 15/06, 15/56; G06b 9/00
U.S. Cl. 444—1 15 Claims

1. An automated training simulator for the real-time dynamic operation of a nuclear reactor in which the power output of the reactor is influenced by xenon over an extended period of time; said simulator comprising
a control console having command devices operable to generate input data values
calculating means including sequence controlling means having the following components
a. first means to generate a data value relating to reactor power output in accordance with a data value relating to nuclear flux,
b. second means to generate a data value relating to xenon concentration in accordance with the generated reactor power data value,
c. third means to generate a data value relating to neutron absorption in accordance with the generated xenon concentration data value,

d. fourth means to generate said data value relating to nuclear flux in accordance with the generated neutron absorption data value and the input data values; and



indicating devices governed by selected ones of the generated data values to monitor the operation of the representative reactor.

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**3,932,886**

## METHOD AND APPARATUS FOR MIXING AND RECORDING MULTI-TRACK STEREO AUDIO SIGNALS WHICH HAVE BEEN RECORDED AS SEVERAL INDIVIDUAL AUDIO SIGNALS

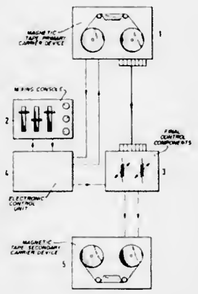
**Karl-Adolf Olms, London, England, and Rolf Schmidt, Hannover, Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany**

**Continuation of Ser. No. 311,004, Nov. 30, 1972, abandoned, Continuation-in-part of Ser. No. 101,469, Dec. 28, 1970, abandoned. This application Feb. 25, 1974, Ser. No. 445,570**

**Claims priority, application Germany, Jan. 14, 1970, 2001493**

**Int. Cl.² G11B *27/02, 31/00***

**U.S. Cl. 360—13** **10 Claims**



1. A method of producing a single composite sound recording from recordings of a plurality of subsidiary audio signals individually recorded on separate tracks of a multi-track primary carrier to provide a number of output channels which is less than the number of subsidiary audio signals, comprising the steps of reading the subsidiary audio signals from the primary carrier, mixing the subsidiary audio signals, contemporaneously with said mixing varying control elements assigned to the subsidiary audio signals to vary acoustic characteristics of said audio signals including level and frequency response, sampling during scanning cycles controlled by synchronizing pulses the positions of the control elements in succession to obtain the varied quantities as analog values, converting the sampled values into digital pulse trains which correspond to the respective control elements, recording the digital pulse trains in succession during recurrent cycles on at least one additional track of the multi-track primary carrier which contains the recordings of the subsidiary audio signals, and recording the mixed audio signals on a second carrier having said number of output channels.

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**3,932,887**

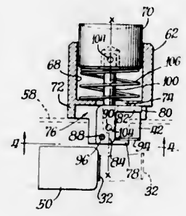
## TAPE MARKER

**John P. Jenkins, Towanda, Ill., assignor to International Tapetronics Corporation, Bloomington, Ill.**

**Filed July 18, 1974, Ser. No. 489,615**

**Int. Cl.² G11B *27/02***

**U.S. Cl. 360—13** **5 Claims**



1. In a tape reproducing machine, a tape trained for movement past a reproducing head in a housing compartment having an opening through which said tape is inserted into and withdrawn from playing position against said head, a tape marker comprising:

a tape marking arm having an inked marking pad, said tape marking arm being pivotally mounted on the housing on a pivot axis laterally offset from one edge of of the tape when in said playing position for swinging movement between a marking position against the tape at the center of the reproducing head, and a stored, out-of-the-way position laterally of said edge of the tape providing open clearance for tape while being inserted through said housing compartment opening along a line of direct approach to the face of the reproducing head, and pushbutton means for actuating said tape marking arm.

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**3,932,888**

## APPARATUS FOR MODIFYING THE TIME BASE OF SIGNALS

**James U. Lemke; Robert A. Lentz, both of Del Mar, and Charles E. Wright, Solana Beach, all of Calif., assignors to Eastman Technology, Inc., Rochester, N.Y.**

**Filed June 10, 1974, Ser. No. 477,583**

**Int. Cl.² H04N *5/79***

**U.S. Cl. 360—36** **10 Claims**

1. Apparatus for processing a signal having a nominal duration and which may have been subjected to time-wise stretch or compression, comprising:

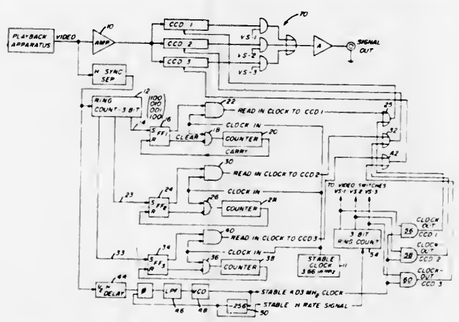
a. analog shift register means,

b. means for clocking said signal into said analog shift register means at a first predetermined fixed clock rate, said fixed rate being sufficient to load all stages of said analog shift register means with samples of, and within the duration of, said signal when said signal has been subjected to time-wise stretch of a predetermined amount, whereby said analog shift register means may be loaded from its output end toward its input end with a number of signal samples that correspond with the degree of time-wise stretch or compression of said signal,



c. means for producing an enabling signal, and

d. means responsive to said enabling signal for clocking said signal samples out of said analog shift register means at a second predetermined fixed clock rate greater than said first fixed clock rate, said second fixed clock rate being sufficient to unload all stages of said analog shift register means within a predetermined duration.



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**3,932,889**

## MAGNETIC RECORDING AND REPRODUCING SYSTEM HAVING AN AUTOMATIC TAPE DRIVE CONTROL FUNCTION

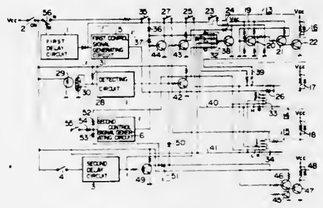
**Kiyoshi Takeda, Neyagawa, and Toshiomi Yabu, Kyoto, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan**

**Filed Oct. 24, 1973, Ser. No. 409,096**

**Claims priority, application Japan, Oct. 27, 1972, 47-108136; Oct. 27, 1972, 47-108137; Oct. 27, 1972, 47-108138; Oct. 27, 1972, 47-108139; May 10, 1973, 48-55138[U]**

**Int. Cl.² G11B *15/18, 15/66***

**U.S. Cl. 360—71** **6 Claims**



1. A magnetic recording and reproducing system using a cartridge housing a reel on which is wound a magnetic tape having a transparent leader tape joined at a leading end thereof and a transparent trailing tape joined at a trailing end thereof, comprising:

a. cartridge holding means for mounting said cartridge for movement between an operative position and an inoperative position on the system and including an ejection means having an ejecting solenoid (**48**) for moving said cartridge from the operative position to the inoperative position;

b. a take-up reel provided on the system;

c. loading means including a pinch roller for transporting the tape over a travel path from said cartridge to said take-up reel responsive to the movement of said cartridge to the operative position;

d. first delay means (**1**) for producing an output voltage signal after a delay time corresponding to the time the leader tape is transported from said cartridge by said loading means to the time the magnetic tape passes through the pinch roller;

e. a first control circuit means (**43**) for inverting an input signal;

f. first switching means (**56**) for applying a supply voltage to said first control circuit means (**43**) through said first delay means when the tape is transported by said loading means and directly to said first control circuit means (**43**) when the tape is not transported by said loading means;

g. first and second pulse generating means (**5, 6**). each generating a pulse at the beginning of a voltage signal applied to their inputs;

h. means for applying the output voltage signal of said first delay means (**1**) to the input of said first pulse generating means (**5**);

i. a rewinding solenoid (**16**), a playback soleniod (**17**) and a fast feed solenoid (**18**) each including a holding circuit means (**13, 14, 15**) for energizing the respective solenoid and having a set terminal and a reset terminal wherein once an input signal is supplied to the set terminal, a fixed state of the set terminal is maintained energizing the respective solenoid until a next signal is supplied to the reset terminal, and when one of the holding circuit means is set, the others are reset;

j. a tape rewinding means activated by said rewinding solenoid (**16**);

k. a playback means activated by said playback solenoid (17);

l. a tape fast feed means activated by said fast feed solenoid (**18**);

m. means for supplying the pulse of said first pulse generating means (5) to the set terminal of the holding circuit means of said playback solenoid (**17**);

n. first detecting means (**29, 30**) arranged in the travel path of said magnetic tape for detecting the presence and absence of said magnetic tape and generating an output signal in the absence of said magnetic tape;

o. means for passing the output signal of said first detecting means to the reset terminal of said holding circuit means of said playback solenoid and said fast feed solenoid, and as the input signal to said first control circuit means, said control circuit means including means for applying the inverted signal to the set terminal of said holding circuit means of said rewind solenoid;

p. means for applying said output signal of said first detecting means (**29, 30**) as the voltage signal applied to the input of said second pulse generating means (**6**);

q. means for applying the pulse of said second pulse generating means (**6**) to the reset terminals of all of said holding circuit means (**13, 14, 15**);

r. tape end second detecting means (**4**), including an indicator scale means which increases depending on the quantity of tape feed and decreases depending on the quantity of tape rewind, for providing an output signal at the zero point of said indicator scale means;

s. a second delay means (**3**) for delaying said output signal of said tape end detecting means and providing an output signal;

t. means for applying the output signal of said second delay means to the reset terminal of said holding circuit means of said rewind solenoid;

u. means (**45, 46**) for ANDing the output signals of said second delay means, said first detecting means and the pulse of said first pulse generating means and providing an output signal; and

v. means for energizing the ejecting solenoid (**48**) in response to the ouput signal of said ANDing means.

**3,932,890**

## DEVICE FOR ELIMINATING TAPE SLACK IN A MAGNETIC TAPE RECORDING AND REPRODUCING APPARATUS

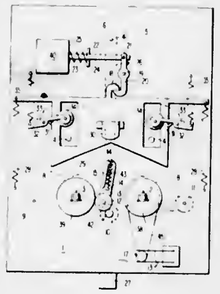
**Yoshiharu Ueki; Yoshio Maruyama; Yoshihiro Magata; Akihiro Fushimi, and Katsuhisa Shimizu, all of Kawagoe, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan**

**Filed Mar. 22, 1974, Ser. No. 453,895**

**Claims priority, application Japan, Mar. 24, 1973, 48-33974**

**Int. Cl.² G11B** *21/02, 15/43, 5/54*

**U.S. Cl. 360—75** **6 Claims**



1. In a tape recording and reproducing device of the type having rotatable supply and take-up spindles engaging tape supply and take-up reels, at least one capstan, means to rotate said supply spindle in a reverse direction, at least one pinch roller selectably engageable with said capstan, a motor driven means to rotate said at least one capstan for feeding the tape in a forward direction when said at least one pinch roller is engaged with said at least one capstan, a movable carriage having a transducer head and means to control the engagement of said at least one pinch roller with said capstan mounted thereon and mounting means to mount said carriage so as to be movable between a first position wherein said transducer head and said at least one pinch roller are out of contact with said tape and said at least one capstan respectively, and a second position wherein said transducer head and said at least one pinch roller are in contact with said tape and said at least one capstan, respectively, the improvements comprising:
   a. means to rotate said take-up spindle in a forward direction so as to wind the tape thereon by running the motor in a forward direction,
   b. means for sensing the rotation of the supply spindle in the forward direction, and
   c. means responsive to said activation of the forward spindle drive and forward rotation of said supply spindle to move the carriage to the second position so as to engage the transducer head with the tape and bring said at least one pinch roller in contact with said at least one capstan.

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**3,932,891**

## MAGNETIC TAPE PLAYER WITH CARTRIDGE DOOR OPENING MEANS

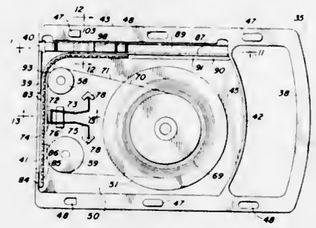
**Emory Horvath, 7065 Overbrook Drive, Longmont, Colo. 80501**

**Filed June 10, 1974, Ser. No. 474,778**

**Int. Cl.² G11B** *23/10;* **B65H** *17/48*

**U.S. Cl. 360—93** **14 Claims**

1. In sound reproducing apparatus for use with magnetic tape cartridges, the apparatus embodying means for receiving such a cartridge in operative position therein, a transducer head, and drive means including a member which is rotatable during operation of said drive means, the combination of
   a. a cartridge insertable into and removable from said operative position,
   b. said cartridge comprising
      1. a housing having
         a. an end wall, and
         b. an aperture in said end wall
      2. a strip of magnetic tape mounted in said housing for movement across said aperture,
      3. an elongated panel movably mounted in said housing for longitudinal reciprocation therein between
         a. a first position wherein it extends across said aperture in closing relation thereto between said end wall and said strip of tape, and
         b. a second position wherein it is disposed laterally outwardly of said aperture,
      4. means for holding said strip of tape in operative engagement with said transducer head when said panel is disposed in said second position and said cartridge is disposed in said operative position in said apparatus, and



      5. means for holding said tape against said rotatable member for movement thereby across said aperture and said transducer head, during operation of said drive means, when said panel is disposed in said second position and said cartridge is disposed in said operative position in said apparatus, and
   c. means for reciprocating said panel between said first position and said second position,
   d. said last mentioned means comprising
      1. a first actuating member operatively connected to said panel, and
      2. a second actuating member mounted in said apparatus in position to operatively engage said first actuating member for reciprocating the latter and thereby said panel,
         a. into said second position during insertion of said cartridge into said operative position, and
         b. into said first position during removal of said cartridge from said operative position.

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**3,932,892**

## SUPERMINIATURE CASSETTE TAPE RECORDER

**Shoichi Saito, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan**

**Filed Dec. 29, 1972, Ser. No. 319,859**

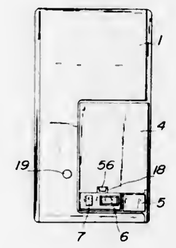
**Claims priority, application Japan, Dec. 29, 1971, 47-180**

**Int. Cl.² G11B** *23/06*

**U.S. Cl. 360—96** **5 Claims**

1. A superminiature cassette tape recorder comprising a flat elongated upper casing; a flat elongated lower casing; an intermediate frame held between said upper and lower casings and having fittings mounted thereon and adapted to mount thereon electrical components; a chassis secured to said intermediate frame and supporting a tape driving mechanism and tape operating members such as record-reproduction, fast-feed and rewind operating members; a printed circuit mounted on said intermediate frame and constituting an electric circuit; a sliding plate slidably mounted on said chassis for movement along an L-shaped passage and having a record-reproduction magnetic head mounted thereon; and a lever plate pivotally secured at its one end to said chassis and having a leaf spring secured at its one end to said lever plate, said lever plate having a manually operable first projection for raising a cassette mounted on said chassis, a second projection penetrating beneath said leaf spring and for raising it together with said lever plate against its spring action, and a third projection adapted to be engaged with the lower end of said sliding plate in the recording-reproducing, fast-feeding and rewinding modes of operation of the tape recorder so as to prevent the cassette from being removed; in which the improvement comprises, said tape operating members, a ball resiliently supported by chassis and partially projected upwards through a gourd-shaped hole formed on said sliding plate, said ball being clicked into a circular hole formed at a position on said sliding plate above said gourd-shaped hole upon said sliding plate being moved downwards and clocked into the right side hole portion of said gourd-shaped hole upon said sliding plate being moved leftwards, thereby maintaining said sliding plate at the position thus moved; a rotatable switch button pivotally secured substantially at its center to one face of said chassis so as to be rotatable in a direction perpendicular to the side edge of casing and selectively assume a recording-reproducing position, a rewinding position, and a stopping position; a lever pivotally secured to said chassis and having an erasing head and a projection; a record push button slidably secured to an intermediate plate and having a projection adapted to be engaged with said projection of said lever when said push button is not depressed and disengaged therefrom when said push button is depressed; a pin secured to a further lever pivotally secured to one end of said rotatable switch button and slidably extending through a rearwardly faced and inclined L-shaped groove formed on said sliding plate and a groove composed of an upwardly inclined leg and a downwardly inclined leg integrally joined at their centers with a common short horizontal leg formed on said chassis; a fast-feed button secured to a lever slidably mounted on the opposite face of said intermediate frame and engaged with said groove, said fast-feed push button biased upwards and engageable at its lower end with said projection of said record push button in a manner such that when said record push button is depressed the fast-feed push button is prevented from being depressed; and a switch having four resilient conductive contact pieces arranged in parallel to each other and each secured at its lower end to an insulated board fastened to said slidable lever, said contact pieces constituting two switch contacts adapted to selectively connect a capstan shaft driving motor to two electric circuits, one for driving said motor at a constant speed and the other for driving said motor at a high speed, said two switch contacts being selectively opened and closed by said pin secured to one end of said rotatable switch button and a pin secured to said fast-feed push button.





**3,932,893**

## SOUND RECORDING AND REPRODUCING APPARATUS

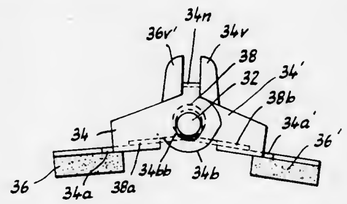
**Franz Singer, Munich, Germany, assignor to Compur-Werk Gesellschaft, Munich, Germany**

**Filed Sept. 30, 1974, Ser. No. 510,759**

**Claims priority, application Germany, Oct. 23, 1973, 2353021**

**Int. Cl.² G11B** *15/60*

**U.S. Cl. 360—130** **6 Claims**



1. In a tape transport mechanism of the type wherein a tape is moved sequentially along signal heads for the reception or reproduction or removal of informational signals, means for guiding and pressing the tape against the signal heads comprising a mounting pin located between the signal heads and on the opposite side of the tape relative to the signal heads, two like-shaped swinging levers each having two guide flanges by which the levers are pivotally journalled on said mounting pin, each swinging lever having a wing portion extending outwardly from said mounting pin and carrying a pad oriented so as to lie generally opposite a respective one of the signal heads for bearing against the tape opposite a respective one of said signal heads, and torsion spring means engaged about the mounting pin for biasing said swinging levers and their wings in respective directions to press the tape against the signal heads, each swinging lever having an abutment nose and an abutment surface so arranged that the abutment nose of one is biased by said torsion spring against the abutment surface of the other to define normal inoperative positions in which the swinging levers are held by the spring when the wing pads are clear of the signal heads, and such that the abutment noses and surfaces are moved away from each other when the wing pads bear against the signal heads to define the operative positions of the swinging levers.

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**3,932,894**

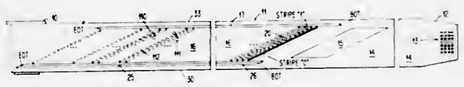
## MAGNETIC RECORD MEMBER FOR USE WITH ROTATING HEAD MAGNETIC RECORDING APPARATUS

**Nelson K. Arter; Thomas F. Eichhorn, both of Boulder County, and Clement H. Kalthoff, Boulder, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.**

**Filed Mar. 14, 1974, Ser. No. 451,270**

**Int. Cl.² G11B** *5/78, 21/04, 23/36, 23/40*

**U.S. Cl. 360—134** **8 Claims**



1. A new article having a flexible longitudinally elongate substrate having a magnetic coating substantially over its longitudinal length and a pair of longitudinal edges, one of which is a reference edge, a leader end and a spool end,
   the improvement including in combination:
   first and second laterally spaced-apart longitudinally extending servo tracks each consisting of a longitudinal extending series of record area designating signals sensi-

ble along respective scan paths, corresponding signals of said servo tracks defining transverse ends of a recording area adapted to receive data signals serially arranged along said scan paths extending along said corresponding signals, respectively;

each said scan path subtending an acute angle with respect to said reference edge and opening toward said leader end;

said first servo track being laterally spaced from said reference edge a distance less than one-fourth the lateral extent of said article;

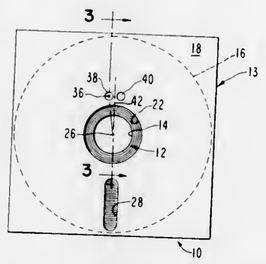
address indicia recorded along each of said scan paths and disposed laterally intermediate said reference edge and said first servo track, each said address indicia identifying said respective scan paths having a lesser extent than the extent of said servo tracks as measured along said scan paths, respectively; and

said second servo track being laterally adjacent a second one of said longitudinal edges.

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**3,932,895**
**REVERSIBLE MAGNETIC RECORDING DISK UNIT**
**Paul F. Ward, San Jose, Calif., assignor to Information Terminals Corporation, Sunnyvale, Calif.**
**Filed Sept. 10, 1974, Ser. No. 504,792**
**Int. Cl.[2] G11B 5/82, 5/012, 23/02**
**U.S. Cl. 360—135** **4 Claims**

4. A jacket for a reversible magnetic recording disk having a magnetic coating on each of the opposed faces thereof, said jacket including a pair of flexible opposed sides having means for connecting the outer peripheral margins thereof together when the disk is therebetween and rotatable relative thereto, each side having a central circular opening, a slot extending radially from and being in spaced relationship to the central opening, a pair of spaced holes symmetrically located on




opposite sides of a line coincident to the radial line on which the slot is disposed, the slot and holes of one side being aligned with the slot and respective holes of the other side, and a pair of recesses symmetrically located relative to said radial line and mating with respective recesses of the other side for permitting the reversible mounting of said recording disk contained therein.

# DESIGNS

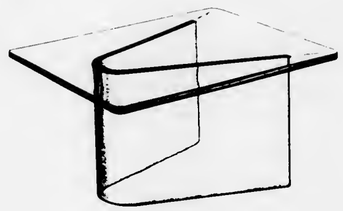
## JANUARY 13, 1976

**238,403**
**JACKET**
**Donald R. Kracke, 5620 Whitecliff Drive, Palos Verdes Peninsula, Calif. 90274**
**Filed July 10, 1974, Ser. No. 487,146**
**Term of patent 14 years**
**Int. Cl. D2—*02***
**U.S. Cl. D2—187**



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**238,404**
**TOY COFFEE TABLE OR SIMILAR ARTICLE**
**Marion D. Owens, Denver, Colo.**
**(890 Reed Court, Lakewood, Colo. 80215)**
**Filed Nov. 13, 1972, Ser. No. 305,902**
**Term of patent 14 years**
**Int. Cl. D6—*03***
**U.S. Cl. D6—5**

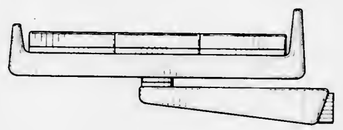


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**238,405**
**NECKTIE RACK**
**Bert Harold Athey, 170 N. Thurston Ave., Los Angeles, Calif. 90049**
**Filed Mar. 11, 1974, Ser. No. 449,940**
**Term of patent 14 years**
**Int. Cl. D6—*04***
**U.S. Cl. D6—28**



**238,406**
**CANTILEVER MOUNTABLE HOSPITAL BED**
**Mitchell Bobrick, 835 Hopkins Way, Suite 406, Redondo Beach, Calif. 90034**
**Filed Nov. 2, 1973, Ser. No. 412,482**
**Term of patent 14 years**
**Int. Cl. D6—*01***
**U.S. Cl. D6—79**



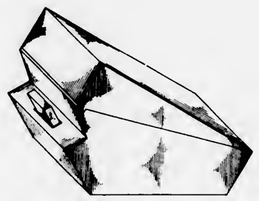
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**238,407**
**TOY COFFEE TABLE OR SIMILAR ARTICLE**
**Marion D. Owens, Denver, Colo.**
**(890 Reed Court, Lakewood, Colo. 80215)**
**Continuation-in-part of abandoned design application Ser. No. 169,586, Aug. 5, 1971. This application Nov. 13, 1972, Ser. No. 305,905**
**Term of patent 14 years**
**Int. Cl. D6—*03***
**U.S. Cl. D6—175**

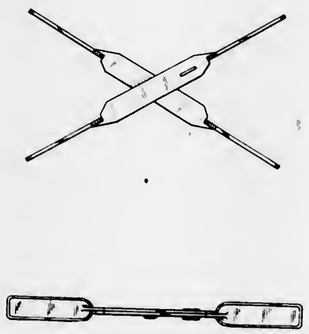


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**238,408**
**NAPKIN DISPENSER**
**Adam Pecht, Cudahy, Calif.**
**(11924 Gurley Ave., Downey, Calif. 90242)**
**Filed Feb. 19, 1974, Ser. No. 443,914**
**Term of patent 14 years**
**Int. Cl. D7—*06***
**U.S. Cl. D7—72**



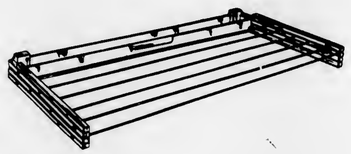
238,409
**STAND FOR HOT COOKING UTENSILS**
Loren C. Kienlen and Jack H. Poppler, Nisswa, Minn., assignors to Doormaid, Inc., Nisswa, Minn.
Filed Aug. 21, 1974, Ser. No. 499,164
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—130



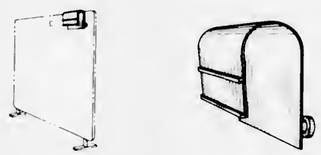
238,411
**BOTTLE OPENER**
Sol J. Levenson, 2636 S. Belvoir Blvd., University Heights, Ohio 44118
Filed Aug. 23, 1974, Ser. No. 500,042
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D8—18




238,410
**CLOTHES DRYER**
Heinz Hermann Weick, 94 Rue de la Servette, 1202 Geneva, Switzerland
Filed Nov. 15, 1973, Ser. No. 416,314
Claims priority, application Switzerland May 15, 1973
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—196



238,412
**SIGN HOLDER FOR USE WITH ACOUSTICAL DIVIDERS**
Donald Albert De Mars, 6964 Shoup Ave., Canoga Park, Calif. 91303
Filed Nov. 29, 1974, Ser. No. 528,084
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D8—245

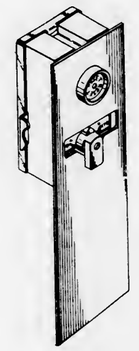




238,413
**WRISTWATCH**
Julius B. Blanchard, New York, N.Y., assignor to E. Gluck Corporation, New York, N.Y.
Filed Aug. 22, 1974, Ser. No. 499,665
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—38



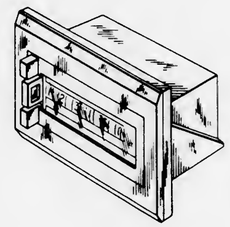
238,414
**THERMOSTATIC CONTROL UNIT**
John W. Stearley, Indiana, Pa., assignor to Robertshaw Controls Company, Richmond, Va.
Filed July 22, 1974, Ser. No. 490,699
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—50



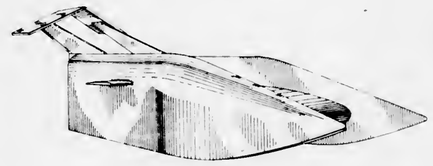
238,415
**LEVELING INSTRUMENT**
Thomas Midgley III, Los Angeles, and Robert E. Forrester, Camarillo, Calif., assignors to Forrgley, Inc., Los Angeles, Calif.
Filed July 22, 1974, Ser. No. 490,736
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—65



238,416
**COUNTER**
Edward M. Stolarz, Yorktown Heights, N.Y., assignor to Redington Counters, Inc., Windsor, Conn.
Filed May 13, 1974, Ser. No. 469,124
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—97



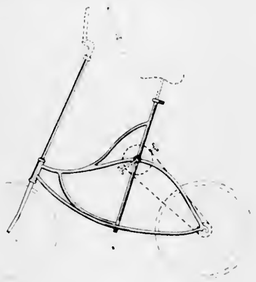
238,417
**SURFACE EFFECT CRAFT**
Thomas M. Austin, Fargo, N. Dak., assignor to Austin Aeromarine, Inc., Fargo, N. Dak.
Filed July 25, 1974, Ser. No. 491,747
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D12—5



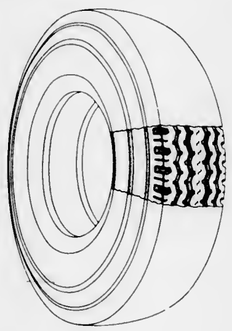
238,418
**SEMI-SUBMERSIBLE BARGE**
Brian Chang, 8 Tosca St., Seletar Hills, Singapore 16, and James Dolan, 71 Neram Road, Seletar Hills, Singapore 18
Filed Oct. 29, 1974, Ser. No. 518,654
Claims priority, application Great Britain May 17, 1974
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—66



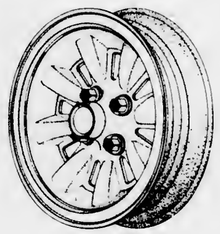
238,419
BICYCLE FRAME
Herman S. Apodaca, P.O. Box 77, Clint, Tex. 79836
Filed July 17, 1973, Ser. No. 380,001
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—111



238,420
TIRE
Henri Verdier, Beauregard-L'Eveque, France, assignor to Compagnie Generale des Etablissements Michelin, raison sociale Michelin & Cie, Clermont-Ferrand, Puy-de-Dome, France
Filed Oct. 26, 1973, Ser. No. 410,082
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—143



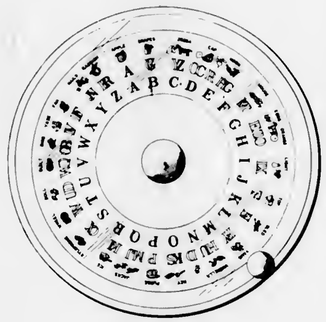
238,421
WHEEL
Randolph J. Wittine, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Apr. 8, 1974, Ser. No. 458,770
Term of patent 7 years
Int. Cl. D12—*16*
U.S. Cl. D12—211



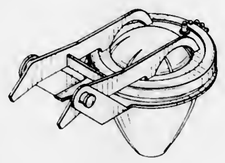
238,422
BICYCLE WHEEL ORNAMENT
Allan C. Stults, 424 Prospect St., Newport Beach, Calif. 92660; Raymond H. Powell, 11871 Simon Ranch Road, Santa Ana, Calif. 92705; and Edward D. O'Brian, 910 Iroquois Ave., Anaheim, Calif. 92801
Filed Apr. 15, 1974, Ser. No. 460,811
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—213



238,423
EDUCATIONAL COLOR WHEEL
Ellis H. Robinson, Bldg. 328, Paine Field, Everett, Wash. 98204
Filed Nov. 26, 1973, Ser. No. 418,888
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D19—59

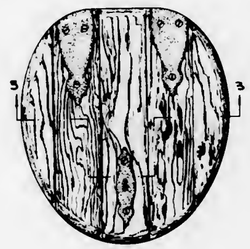


238,424
FLUSH TANK VALVE UNIT
Adolf Schoepe, 1620 N. Raymond Ave., Fullerton, Calif. 92631, and Fredric E. Schmuck, 535 Century Drive, Anaheim, Calif. 92805
Filed Aug. 15, 1974, Ser. No. 497,525
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—19





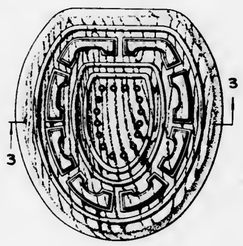
238,425
WATER CLOSET SEAT COVER
David E. Harrison, Columbus, Miss., assignor to Beneke Corporation, Columbus, Miss.
Filed Sept. 5, 1974, Ser. No. 503,913
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—71



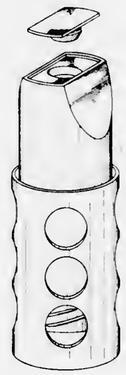
238,426
WATER CLOSET SEAT COVER
David E. Harrison, Columbus, Miss., assignor to Beneke Corporation, Columbus, Miss.
Filed Sept. 5, 1974, Ser. No. 503,914
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—71



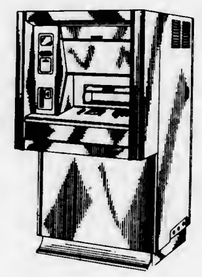
238,427
WATER CLOSET SEAT COVER
David E. Harrison, Columbus, Miss., assignor to Beneke Corporation, Columbus, Miss.
Filed Sept. 5, 1974, Ser. No. 503,915
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—71



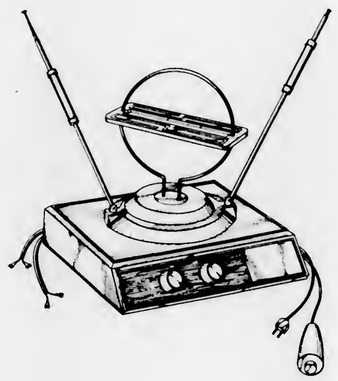
238,428
AIR FRESHENER OR SIMILAR ITEM
Georg Schimanski, Rummenohl, Germany, assignor to Global-Werk GmbH, Neuburg an der Donau, Germany
Filed Aug. 20, 1974, Ser. No. 498,882
Claims priority, application Germany May 2, 1974
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—150



238,429
BANKING MACHINE TERMINAL OR SIMILAR ARTICLE
Thomas L. Hermann, 4540 Selma Pike, Springfield, Ohio 45502
Filed Dec. 3, 1973, Ser. No. 420,928
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



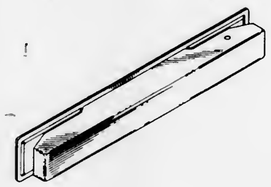
238,430
ANTENNA
Frank Lanson, Woodbury, N.Y., and Milton Spirt, 181—25 Midland Parkway, Jamaica Estates, N.Y. 11442; said Lanson assignor to said Spirt
Filed Apr. 15, 1974, Ser. No. 460,743
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 F



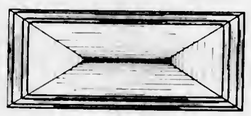
238,431
CIGARETTE LIGHTER CASING
Alfred William Skinner, Epsom, England, and Seymour Rappoport, Rumson, N.J., assignors to Ronson Products Limited
Filed Mar. 5, 1974, Ser. No. 448,213
Claims priority, application Great Britain Sept. 6, 1973
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D27—42

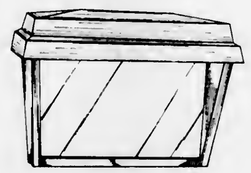


238,432
CASKET LOCK HANDLE
Jon W. Hauser II, St. Charles, Ill., assignor to Elgin Metal Casket Company, Elgin, Ill.
Filed Jan. 2, 1974, Ser. No. 429,864
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D31—11



238,433
LETTER BOX
Bertil Thure Johnzon, 8 Hostgatan, 38200 Nybro, Sweden
Filed Mar. 23, 1973, Ser. No. 344,241
Claims priority, application Sweden Oct. 16, 1972
Term of patent 14 years
Int. Cl. D31—*00*
U.S. Cl. D31—22



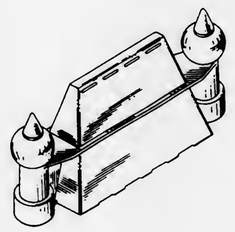




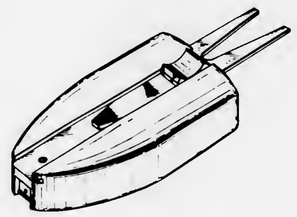
238,434
BALANCING SNAKE FIGURE TOY OR THE LIKE
Evan H. Berlin, 119 Dunn Ave., Lake City, Pa. 16423
Filed July 5, 1973, Ser. No. 376,721
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—2 R



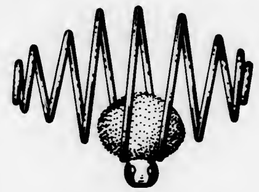
238,435
ROLL-OVER GUIDE FOR PIN BALL MACHINE
Roman F. Garbark, Westchester, Ill., assignor to D. Gottlieb & Co., Northlake, Ill.
Filed Sept. 9, 1974, Ser. No. 504,180
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 JJ



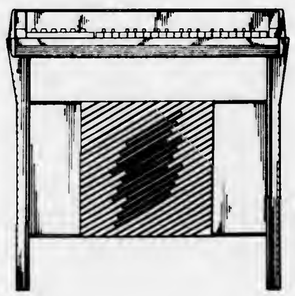
238,436
GOLFER'S MULTI-PURPOSE TOOL
Thomas H. McKelvey, 5195 Rivoli Drive, Macon, Ga. 31204
Filed Jan. 8, 1973, Ser. No. 321,988
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 CB



238,437
SOUNDING TOY FOR PET ANIMAL
Samuel Rosenberg, Brooklyn, N.Y., assignor to Excelsior Pet Products, Inc., Brooklyn, N.Y.
Filed Apr. 13, 1973, Ser. No. 350,739
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 R



238,438
TOY ELECTRIC ORGAN OR SIMILAR ARTICLE
Paolo Bontempi, Via Don Bosco 49, Potenza Picena, Macerata, Italy
Filed June 18, 1973, Ser. No. 371,025
Claims priority, application Italy Dec. 18, 1972
Term of patent 14 years
Int. Cl. D17—*01*; D21—*01*
U.S. Cl. D34—15 C



238,439
WATER TOY
Robert K. Ostrander, Rolling Meadows, Ill., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Mar. 3, 1971, Ser. No. 120,790
Term of patent 14 years
The term of this patent subsequent to Sept. 13, 1989, has been disclaimed
Int. Cl. D21—*01*
U.S. Cl. D34—15 AD



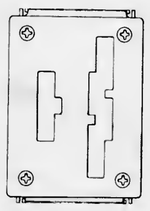
238,440
**MINIATURE BASKETBALL GOAL**
Louis J. Scarlotti, Drayton Plains, Mich.
(105 Washington W., Apt. 3, Clarkston, Mich. 48016)
Filed July 18, 1973, Ser. No. 380,473
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 VV



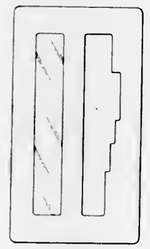
238,441
**LAWN EDGER ATTACHMENT FOR SELF-PROPELLED LAWNMOWERS**
Robert A. Julian, 1608 Brenda Drive, Bellevue, Nebr. 68005
Filed July 3, 1974, Ser. No. 486,152
Term of patent 14 years
Int. Cl. D8—*03;* D15—*03*
U.S. Cl. D40—1 A



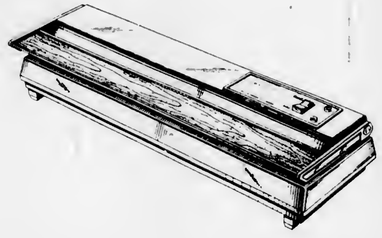
238,442
**PANEL SUPPORTED TRANSMISSION DUAL SHIFT CONTROL MODULE FOR MOBILE OR STATIONARY EQUIPMENT**
Peter D. Adams, La Canada, and Warner R. Lauper, San Pedro, Calif.; said Lauper assignor to Quadrastat Controls Corporation
Filed Apr. 19, 1974, Ser. No. 462,229
Term of patent 14 years
Int. Cl. D15—*01*
U.S. Cl. D55—1 G



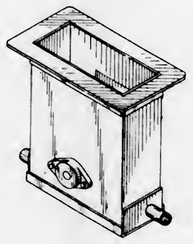
238,443
**TRANSMISSION SHIFT CONTROL MODULE FOR MOBILE OR STATIONARY EQUIPMENT**
Peter D. Adams, La Canada, and Warner R. Lauper, San Pedro, Calif.; said Lauper assignor to Quadrastat Controls Corporation
Filed Apr. 19, 1974, Ser. No. 462,230
Term of patent 14 years
Int. Cl. D15—*01*
U.S. Cl. D55—1 G



238,444
**HEAT SEALING DEVICE**
Bernard B. Schipper, Los Angeles, Calif., assignor to Pakline Corporation, North Hollywood, Calif.
Filed June 29, 1973, Ser. No. 375,039
Term of patent 14 years
Int. Cl. D8—*05;* D15—*99*
U.S. Cl. D55—1 F

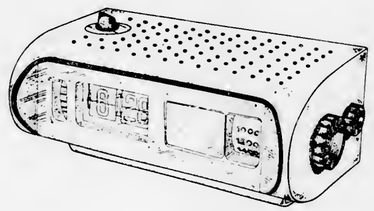


238,445
**POULTRY FEED CHAIN LOADER**
Gerald L. Kitson, 9709 Belding Road, Rockford, Mich. 49341
Original design application June 26, 1972, Ser. No. 266,488, now Patent No. 231,370. Divided and this application Apr. 16, 1974, Ser. No. 461,382
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D55—1 C

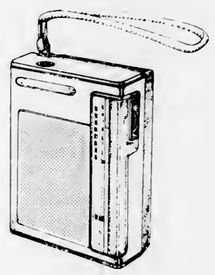




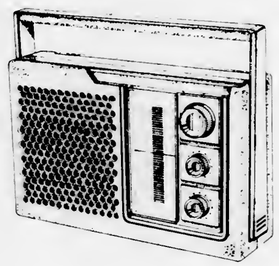
238,446
**CLOCK RADIO**
Shuhei Taguchi, Moriguchi, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Oct. 30, 1973, Ser. No. 411,070
Claims priority, application Japan May 7, 1973
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



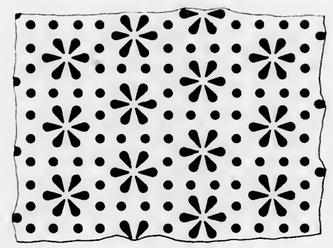
238,447
**RADIO RECEIVER**
Hiroshi Hirasa, Osaka, Kunio Hoshino, Kadoma, and Benito Mishiro, Sakai, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Jan. 9, 1974, Ser. No. 431,970
Claims priority, application Japan Aug. 14, 1973
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



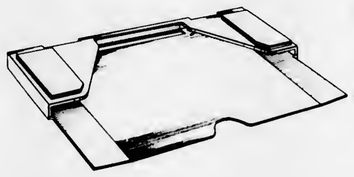
238,448
**RADIO RECEIVER**
Katsuhiko Makino, Hirakata, and Masanori Hamada, Moriguchi, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed May 9, 1974, Ser. No. 468,512
Claims priority, application Japan Nov. 12, 1973
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



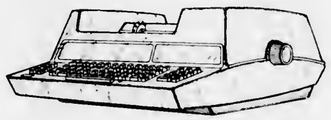
238,449
**PAPER TOWELING**
Ikki Matsumoto, Loveland, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed July 10, 1974, Ser. No. 487,360
Term of patent 14 years
Int. Cl. D5—*03*
U.S. Cl. D59—2 A



238,450
**PAPER CASSETTE**
Donald A. Robertson, Fairport, and Howard D. Ring, Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Apr. 30, 1974, Ser. No. 465,459
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D61—1 Q



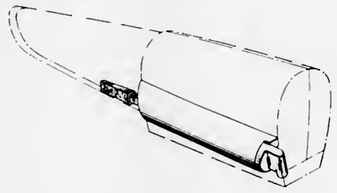
238,451
**CABINET FOR AN INPUT-OUTPUT DEVICE FOR A DATA HANDLING SYSTEM**
John R. Bittner and Kenneth C. McCartney, Waynesboro, Va., and Gregory F. Fossella, Marshfield, Mass., assignors to General Electric Company, Waynesboro, Va.
Filed Apr. 8, 1974, Ser. No. 458,563
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D64—11 C



238,452
**CHAIN CANDLE**
Siegfried Steinhart, 14 Obere Ganshalde, 8908 Krumbach, Germany
Original design application Aug. 22, 1972, Ser. No. 282,659, now Patent No. 233,175, dated Oct. 8, 1974. Divided and this application July 26, 1974, Ser. No. 492,352
Claims priority, application Germany Feb. 25, 1972; Mar. 10, 1972
Term of patent 14 years
Int. Cl. D26—*04*
U.S. Cl. D73—1 B



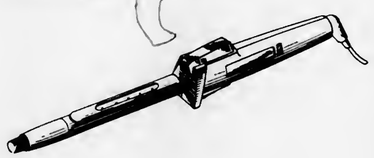
238,453
**HAIR GROOMER ATTACHMENT**
Joseph Kata, New Haven, and Martin J. Wolff, West Haven, Conn., assignors to Sperry Remington, Sperry Rand Corporation, Bridgeport, Conn.
Filed Oct. 1, 1973, Ser. No. 402,454
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 F



238,454
**BOOT JACK**
Frank O. McDougle, P.O. Box F, Fairland, Okla. 74343
Filed May 8, 1974, Ser. No. 467,871
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D86—10 D



238,455
**STEAM CURLING IRON**
Martin J. Wolff, West Haven, Conn., assignor to Sperry Remington, Sperry Rand Corporation, Bridgeport, Conn.
Filed June 17, 1974, Ser. No. 480,049
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 E



238,456
**BLOOD FILTRATION UNIT**
Herman Charles Mouwen, Ventura, Calif., and Francis Martin Servas, Belle Mead, N.J., assignors to Johnson & Johnson and Purolator, Inc.
Filed May 28, 1974, Ser. No. 473,478
Term of patent 14 years
Int. Cl. D23—*99*; D24—*02*
U.S. Cl. D83—12 A



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AGFA-Gevaert, A.G.: *See—*
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Ambrosini, Leonard R.; and Isenson, Raymond S., to United States of America, Army. Self-levitating signal cartridge. B 405,726, Cl. 102-32.000.
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Florian, John, to Mobil Oil Corporation. Self-draining saucer. B 529,156, Cl. 220-23.830.
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Argus Chemical Corporation: *See—*
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Arikawa, Yoshijiro: *See—*
Hirota, Kunio; Takata, Yoshinori; Arikawa, Yoshijiro; Tanno, Kazuo; and Okajima, Yoshiaki, 3,932,224.

Arimura, Katsuo; and Ao, Hideki, to Yoshitomi Pharmaceutical Industries. Imidazolido(1,5-c)thiazolidine-3-spiro-4-piperidines. 3,932,423, Cl. 260-293.570.

Arita, Seiji: *See—*
Yoshida, Hisayoshi; Nakamura, Takato; Nakagawa, Masanao; Arita, Seiji; and Miki, Toshiharu, 3,932,494.

Ariyan, Zaven S.: *See—*
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Armitage, Bernard John: *See—*
Adams, Stewart Sanders; Armitage, Bernard John; and Nicholson, John Stuart, 3,932,499.

Arnold, James F., to HydroTech International, Inc. Apparatus and method for connecting two axially spaced apart pipes. 3,931,670, Cl. 29-157.00R.

Arpe, Hans-Jurgen, to Hoechst Aktiengesellschaft. Methylation of cyclohexanone with simultaneous dehydrogenation. 3,932,518, Cl. 260-586.00R.

Arter, Nelson K.; Eichhorn, Thomas F.; and Kalthoff, Clement H., to International Business Machines Corporation. Magnetic record member for use with rotating head magnetic recording apparatus. 3,932,894, Cl. 360-134.000.

Arzoumanidis, Gregory Gerasimos; and Rauch, Francis Clyde, to American Cyanamid Company. Preparation of antraquinone. 3,932,474, Cl. 260-369.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Asakusa, Tokuzo; Honma, Taketoshi; Hirashita, Isao; Yasui, Koichi; Nishi, Yoshio; and Murayama, Koichi, 3,932,584.
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Asakusa, Tokuzo; Honma, Taketoshi; Hirashita, Isao; Yasui, Koichi; Nishi, Yoshio; and Murayama, Koichi, to Asahi Kasei Kogyo Kabushiki Kaisha. Method for purifying hydrogen sulfide-containing gas. 3,932,584, Cl. 423-234.000.

Ashfield, Herbert Edward; and Hull, Charles Hartley, to David Brown Tractors Limited. Internal combustion engines. 3,931,812, Cl. 123-73.00S.

Ashton, Stanley; Sharma, Vijay Ratna; and Taylor, John Anthony, to Imperial Chemical Industries Limited. Phosphorus acid amides. 3,932,403, Cl. 260-248.00R.

Aspro, Inc.: *See—*
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Astrom, Erling: *See—*
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Ateliers de Constructions Electriques de Charleroi (ACEC): *See—*
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Atlantic Richfield Company: *See—*
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Atlas Powder Company: *See—*
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Aubert, Michel; Gollion, Henri Jacques; and Verriere, Philippe, to Commissariat a l'Energie Atomique. Nuclear reactor. 3,932,214, Cl. 176-65.000.

Auer, Engelbert: *See—*
Schonbeck, Rupert; Kloimstein, Engelbert; Mayr, Hubert; Diskus, Alfred; and Auer, Engelbert, 3,932,405.

Aumuller, Walter: *See—*
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Aurora Products Corporation: *See—*
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Autotrol Corporation: *See—*
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Avery, Michael J.; and Martino, Lawrence A., to Monsanto Company. Methods of severing plastic between blow molds in a rotary blow molding machine. 3,932,572, Cl. 264-99.000.

Avtron Manufacturing, Inc.: *See—*
Branch, Robert L., 3,932,811.

Ayer, Thad E., to International Business Machines Corporation. Document handling apparatus. 3,931,880, Cl. 198-29.000.

Aziende Colori Nazionali Affini Acna S.p.A.: *See—*
Merlo, Fabrizio; Battisti, Ruggero; and Domenis, Danilo, 3,932,377.

B. F. Goodrich Company, The: *See—*
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B. H. Mfg., Inc.: *See—*
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Babcock, Gary J.: *See—*
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Babcock & Wilcox, Limited: *See—*
Maxwell, Ian Stuart, 3,932,728.

Bacon, Duane D.; and Rutt, Edward J. Load-out conveyor apparatus. 3,931,897, Cl. 214-6.00G.

Badger Meter, Inc.: *See—*
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Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
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Bailey, Denis M., to Sterling Drug Inc. Antimicrobial and plant-active 4,5-dihalopyrrole-2-carbonitriles. 3,932,458, Cl. 260-326.620.

Baker, Alfred Dickens, to Lucas Electrical Company Limited. Vehicle lamp assembly. 3,932,837, Cl. 240-41.600.

Bakermans, Johannes Cornelis Wilhelmus, to AMP Incorporated. Bundle strapping tool. 3,931,838, Cl. 140-123.600.

Bakker, Nicolaas: *See—*
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Balentine, George H., Jr. Heat splicing apparatus. 3,932,260, Cl. 156-583.000.

Ball, Dean M.; Camp, Ronnie W.; Hendrix, Warren P.; and Orr, Clyde, Jr., to Micromeritics Instrument Corporation. Liquid chromatography apparatus and method. 3,932,067, Cl. 417-339.000.

Balogh, John J., Jr.: *See—*
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Bamji, Pervez Jal, to Alcan Research and Development Limited. Apparatus for circulating molten metal. 3,931,960, Cl. 266-34.00A.

Barber-Colman Company: *See—*
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Barber, Duane G.: *See—*
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Barberia, Oscar; and Testi, Angel Rogelio. Method of making a double-walled tubular container. 3,931,776, Cl. 113-120.0XY.

Barie, Walter P., Jr., to Gulf Research & Development Company. Mixed epoxy resin-mixed anhydride adhesive compositions. 3,932,343, Cl. 260-37.0EP.

Barnes, Allen L., to Atlantic Richfield Company. Method of heating a subterranean formation. 3,931,856, Cl. 166-245.000.

Barnette, William E.: *See—*
Zenel, Joseph A.; McGuffin, William G.; and Barnette, William E., 3,932,872.

Barney, Arthur Livingston; and Khan, Ausat Ali, to Du Pont de Nemours, E. I., and Company. Preparation of sol chloroprene polymers. 3,932,355, Cl. 260-63.0HA.

Baron, Richard C.: *See—*
Cerankowski, Leon D.; Mattucci, Neil; and Baron, Richard C., 3,932,360.

Barrett, Paul Anthony, to Burroughs Wellcome Co. Certain 3-amino-prop-1-enes for treating Trypanosoma cruzi infections. 3,932,663, Cl. 424-330.000.

Barry-Wehmiller Company: *See—*
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Barry Wright Corporation: *See—*
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Barth, Jordan B., to Colgate-Palmolive Company. Humectant sweetener. 3,932,604, Cl. 424-49.000.

Barth, Jordan B.; and Costello, Christopher H., to Colgate-Palmolive Company. Dentifrice. 3,932,606, Cl. 424-52.000.

Barth, Wayne E.: *See—*
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Bartley, Charles E.; and Settlemire, Lawrence R. Solid propellant with butyl rubber binder. 3,932,242, Cl. 149-19.900.

BASF Aktiengesellschaft: *See—*
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Batorewicz, Wadim, to Uniroyal Inc. Polymeric bromine-containing phosphoramidate polyols. 3,932,565, Cl. 260-928.000.

Batter, John F., Jr., to Polaroid Corporation. Photographic projecting strip film in a cassette. 3,932,187, Cl. 96-78.000.

Battisti, Ruggero: *See—*
Merlo, Fabrizio; Battisti, Ruggero; and Domenis, Danilo, 3,932,377.

Baude, Frederic J., to Du Pont de Nemours, E. I., and Company. 2-(Alkoxycarbonylamino)-1-benzimidazolecarboxylic acid esters with hydroxyaliphatic acids and derivatives thereof. 3,932,448, Cl. 260-309.200.

Bauer, Andreas: *See—*
Oehm, Klaus; Seiffert, Ulrich; Struwe, Burckhard; Fiala, Ernst; Bauer, Andreas; Weissner, Ruediger; and Schwanz, Wilfried, 3,931,988.

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Bayer Aktiengesellschaft: *See—*
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Buttner, Gerhard; Sasse, Klaus; Hammann, Ingeborg; and Kaspers, Helmut, 3,932,406.
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Bays, David Edmund; Peel, Mervyn Evan; Waters, David Martin; and Ellis, Gwynn Pennant, to Allen & Hanburys Limited. N-tetrazolyl quinaldamides. 3,932,416, Cl. 260-287.00F.

Beall, Glenn Lee; Dodge, John Dennis; Koschalk, Robert Francis; and Soika, Emil Henry, to Abbott Laboratories. Apparatus for determining immunoassays of antigens and their antibodies. 3,932,141, Cl. 23-259.000.

Beamar, Samuel W. Means for forming a reinforced concrete module. 3,932,082, Cl. 425-125.000.

Beaulieu, Robert J., to Millmaster Onyx Corporation. Dye carriers for polyamide fibers. 3,932,128, Cl. 8-173.000.

Beck, Frederick R., to McGill Manufacturing Company, Inc. Packaging structure for items provided on wires or cords. 3,931,887, Cl. 206-419.000.

Beckman Instruments, Inc.: *See—*
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Beecham Group Limited: *See—*
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Beeskow, Bruno; Worner, Gunter; and Schrape, Peter, to Daimler-Benz Aktiengesellschaft. Clutch disk for motor vehicle main clutches. 3,931,876, Cl. 192-106.200.

Beets, Roland H. C.: *See—*
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Bell Telephone Laboratories, Incorporated: *See—*
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Belmont Textile Machinery Co., Inc.: *See—*
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Beloit Corporation: *See—*
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Ben-Dov, Oded, to RCA Corporation. Short end-fire circularly polarized antenna. 3,932,876, Cl. 343-895.000.

Bendix Corporation, The: *See—*
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Rachel, Todd Leonard, 3,931,808.

Benham, George K.: *See—*
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Benkoe, Erwin: *See—*
Goldfarb, Adolph E.; and Benkoe, Erwin, 3,931,974.

Bennett, David J., to Environmental Technology Corporation. Treatment of trees for prevention and cure of wilt diseases. 3,932,666, Cl. 424-341.000.

Bennett, Richard H.; and Brockington, James W., to Texaco Inc. Inhibition of aluminum corrosion by sulfuric acid solutions. 3,932,130, Cl. 21-2.70R.

Bensen, Richard E. Latching means. 3,931,926, Cl. 229-45.00R.

Bensky, Norman D.: *See—*
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Benson: *See—*
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Bentrop, Roland Schulze: *See—*
Schulten, Rudolf; Teggers, Johannes; and Bentrop, Roland Schulze, 3,932,599.

Berdyansky, Mark Grigorievich; Khodak, Zarislav Zakharovich; Veevnik, Vladimir Fomich; Dovgan, Vladimir Semenovich; Bashkatov, Vladimir Porfirievich; Kasyan, Vladimir Khrisanfovich; Bezkrovny, Konstantin Fedorovich; and Tsekhnovich, Lev Izrailevich. Plug-retaining device for use in piercing and plugging mills. 3,931,724, Cl. 72-97.000.

Berg, Carl John; and Deviny, Edward John, to Minnesota Mining and Manufacturing Company. Mixed acrylic acid/methacrylic acid esters of tris (hydroxyalkyl) isocyanurates. 3,932,401, Cl. 260-248.0NS.

Berg, Rudolph G.; and Tate, Bryce E., to Pfizer Inc. Citraconic anhydride process. 3,932,469, Cl. 260-346.80R.

Berger, Josef, to Hewlett-Packard Company. Charge transfer device. 3,932,882, Cl. 357-24.000.

Bergeron, Charles R., to Ethyl Corporation. Preparation of fatty acid amides. 3,932,476, Cl. 260-404.000.

Bergman, Carl: *See—*
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Beringer, Monique: *See—*
Buchmann, Paul; Beringer, Monique; and Sporri, Heinz, 3,932,081.

Beriot, Alain, to Thomson-CSF. Specialized digital computer with divided memory and arithmetic units. 3,932,845, Cl. 340-172.500.

Bernady, Karel Francis; Floyd, Middleton Brawner, Jr.; Poletto, John Frank; Schaub, Robert Eugene; and Weiss, Martin Joseph, to American Cyanamid Company. Lithium 3-triphenylmethoxy-1-trans-alkenyl-dialkyl alanates. 3,932,479, Cl. 260-448.00A.

Berthoux, Jean; and Schwachhofer, Ghislain, to Rhone-Progil. Process of manufacturing carbon bisulfide. 3,932,595, Cl. 423-443.000.

Beta Corporation of St. Louis: *See—*
Zarow, Albert I.; and Volk, Joseph A., Jr., 3,932,736.

Bethlehem Steel Corporation: *See—*
Rohatgi, Pradeep Kumar, 3,932,596.

Bettis, Edward S.; and Watts, Harry L., to United States of America, Energy Research and Development Administration. High current capacity electrical connector. 3,932,014, Cl. 339-22.00B.

Betz Laboratories, Inc.: *See—*
Libutti, Bruce L.; and Neddenriep, Richard J., 3,932,588.

Beverung, Warren Neil, Jr.; and Partyka, Anthony, to Bristol-Myers Company. Optionally substituted 1,2,3,5-tetrahydroimidezo(2,1-b)-quinazolin-2-ones and 6(H)-1,2,3,4-tetrahydropyimido(2,1-b)quinazolin-2-ones. 3,932,407, Cl. 260-256.40F.

Bewersdorf, Elmer D., to McCain Manufacturing Corporation. Folding machines. 3,931,963, Cl. 270-61.000.

Bezkrovny, Konstantin Fedorovich: *See—*
Berdyansky, Mark Grigorievich; Khodak, Zarislav Zakharovich; Veevnik, Vladimir Fomich; Dovgan, Vladimir Semenovich; Bashkatov, Vladimir Porfirievich; Kasyan, Vladimir Khrisanfovich; Bezkrovny, Konstantin Fedorovich; and Tsekhnovich, Lev Izrailevich, 3,931,724.

Bharucha, Kekhusroo R.; Ajdukovic, Djordje; Pavilanis, Vytautas; and Mackay, Angus Campbell, to Canada Packers Limited. Antiviral 1,2,3,4-tetrahydro-1,-alkano naphthalenamine derivatives. 3,932,512, Cl. 260-570.900.

Bianco, Pablo: *See—*
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Bickel, Frederic W.; and Long, Richard L., to McDonnell Douglas Corporation. Continuous belt system holding multiple layers. 3,931,881, Cl. 198-165.000.

Bickel, Hans: *See—*
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Bien, Hans-Samuel: *See—*
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Bien, Jack M. Power operated back rest. 3,931,653, Cl. 5-327.00B.

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Bigelow, John Howard; and Richman, Jack E., to Du Pont de Nemours, E. I., and Company. 1,4,7,10-Tetraazatetracyclo[5.5.1.0$^{4,13}$.0$^{10,13}$]-tridecane and its conjugate acids. 3,932,451, Cl. 260-309.600.

Bilal, Abdel-Lativ; Metscher, Klaus; Muhlig, Bernhard; Reichmuth, Christoph; Schwarz, Bernd; and Zimen, Karl-Erik, to Hahn-Meitner-Institut fur Kernforschung Berlin GmbH. Process for separately recovering uranium, transuranium elements, and fission products of uranium from atomic reactor fuel. 3,932,225, Cl. 204-1.500.

Billings, Charles A.; O'Neill, Gerald J.; Simons, Charles W.; and Holdsworth, Robert S., to W. R. Grace & Co. Halocyclopropyl halomethyl ethers. 3,932,529, Cl. 260-611.00R.

Bilofsky, Ruth C.; and Cramer, Richard D., to Polaroid Corporation. Carbazole phthaleins. 3,932,455, Cl. 260-315.000.

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Bio-Medical Sciences, Inc.: *See—*
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Bio-Medicus, Inc.: *See—*
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Bison, Gunter; Heinzelmann, Walter; Linkat, Norbert; and Wolfes, Wolfgang, to Dynamit Nobel Aktiengesellschaft. Process for the production of pure tetrazole-1-acetic acid. 3,932,441, Cl. 260-308.00D.

Bison-Werke Bahre & Greten GmbH & Co. KG: *See—*
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Blackstone Corporation: *See—*
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Blake, Donald Arthur, to Raymond Lee Organization, Inc., The, a part interest. Spit. 3,931,758, Cl. 99-419.000.

Blankenship, Michael G., to Corning Glass Works. Method of making glass optical waveguide. 3,932,162, Cl. 65-3.000.

Blaskiewicz, Arthur A.: *See—*
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Bliley Electric Company: *See—*
King, James Claude, 3,932,777.

Blindheim, Rolf, to A/S Ardal og Sunndal Verk. Vibratory device. 3,932,100. Cl. 425-432.000.

Bliss & Laughlin Industries, Inc.: *See—*
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Block, David A.: *See—*
Crites, Ray D.; Block, David A.; and Sidles, Paul H., 3,931,683.

Blomster, Jens: *See—*
Olsen, Bengt; Blomster, Jens; Buss, Nils; Stenkvist, Bjorn; and Preuss, Lucien, 3,932,733.

Bloom, Abraham. Rotary internal engines. 3,931,807, Cl. 123-8.050.

Blue, Maurice R.; and Younker, Glen, to Slip-Not Corporation. Dispensing-type box. 3,931,916, Cl. 222-465.000.

Bluhm, Harold Frederick, to Atlas Powder Company. Explosive priming device. 3,931,763, Cl. 102-28.00R.

Blum, Hans. Method of comminuting tree stumps. 3,931,841, Cl. 144-309.00R.

Bodony, Andrew B., to Coherent Communications System Corporation. Coherent digital frequency shift keying system. 3,932,704, Cl. 178-66.00A.

Boehringer Ingelheim GmbH: *See—*
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Boettner, Jon E , to Barber-Colman Company. Injection molding control. 3,932,083, Cl. 425-145.000.

Bohler, Hans: *See—*
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Bohner, Beat; Dawes, Dag; and Meyer, Willy, to Ciba-Geigy Corporation. Triazolyl phosphorus esters as pesticides. 3,932,630, Cl. 424-200.000.

Bohner, Beat: *See—*
Dawes, Dag; and Bohner, Beat, 3,932,629.

Boliden Aktiebolag: *See—*
Melkersson, Karl-Axel, 3,932,149.

Bolsey, Emil J. Image motion and change transducers and systems controlled thereby. 3,932,703, Cl. 178-6.800.

Bolton, Theodore S., and Hammons, Burton F., to Carrier Corporation. Means for mounting a rotatable lever in a thin wall. 3,932,157, Cl. 62-408.000.

Bombarider Limited: *See—*
Cote, Yvon, 3,931,862.

Bond, Joseph Kim: *See—*
Korff, Wolfram G.; Emery, Vernon V.; Bond, Joseph Kim; and Hash, Robert S., 3,932,094.

Bonfield, John H., to Allied Chemical Corporation. Process for the synthesis of ammonium nitrite. 3,932,593, Cl. 423-385.000.

Bono, Pierre: *See—*
Lambert, Claude; Bono, Pierre; Pichon, Bernadette; and Daunay, Jacques, 3,932,304.

Boots Company Limited, The: *See—*
Adams, Stewart Sanders; Armitage, Bernard John; and Nicholson, John Stuart, 3,932,499.

Borror, Alan L.; Hill, Ruth Linda; and Zuckerman, Bernard, to Polaroid Corporation. Spectrally sensitized photographic silver halide emulsion. 3,932,186, Cl. 96-77.000.

Bors, Constantin: *See—*
Vilceanu, Marin; and Bors, Constantin, 3,932,139.

Borsatti, Mario: *See—*
Argurio, Frederico; Borsatti, Mario; and Busby, William James, 3,932,563.

Bortel, Donald C.: *See—*
Shumway, Roger R.; and Bortel, Donald C., 3,931,905.

Bossert, Friedrich: *See—*
Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, 3,932,645.
Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, 3,932,646.

Boudreaux, Gordon J.: *See—*
Daigle, Donald J.; Pepperman, Armand B., Jr.; and Boudreaux, Gordon J., 3,932,390.



Bowen, Dennis Dawes, to Bowpark Developments Limited. Ignition circuits for internal combustion engines. 3,931,804, Cl. 123-148.00E.

Bowman, Earl K.; and Teele, John C., to United States of America, Agriculture. Automatic produce-bagging machine that uses factory-roll polyethylene net tubing. 3,931,701, Cl. 53-59.00R.

Bowpark Developments Limited: *See—*
Bowen, Dennis Dawes, 3,931,804.

Bradley, Edmund G., to Her Majesty the Queen in right of Ontario, as represented by the Minister of Natural Resources. Seedling planter apparatus. 3,931,774, Cl. 111-3.000.

Bradshaw, Janice: *See—*
Cook, Martin Christopher; Gregory, Gordon Ian; and Bradshaw, Janice, 3,932,385.

Bradu, Georges, to Societe des Verreries Industrielles Reunies du Loing. Bulbs for cathode tubes, particularly for television tubes. 3,931,906, Cl. 425-505.000.

Bragdon, Robert Wright: *See—*
Thunberg, Jon Carl; Bragdon, Robert Wright; and Moore, William Philip, 3,932,501.

Branch, Robert L., to Avtron Manufacturing, Inc. Method and apparatus for testing windings or the like. 3,932,811, Cl. 324-158.0MG.

Brand, William Wayne; and Reger, David William, to American Cyanamid Company. Process for the chlorination of aromatic isocyanide dichlorides. 3,932,507, Cl. 260-566.00D.

Brandman, Harold A.; Manowitz, Milton; and Newman, William E., to Givaudan Corporation. Preservation of aqueous systems with dialkyl bromonitromalonates. 3,932,654, Cl. 424-313.000.

Brannon, Donald R.; and Horton, Donald R., to Eli Lilly and Company. Metabolite A-27106 and processes for its preparation and use. 3,932,619, Cl. 424-120.000.

Braun, Franz; Thiel, Max; Stach, Kurt; Roesch, Egon; and Roesch, Androniki, to Boehringer Mannheim G.m.b.H. 3,4-Dihydro-2H-naphthalene-1-one-5-oxypropyl-piperazine compounds. 3,932,411, Cl. 260-268.0BC.

Braun, John D.; Nielsen, Arnold; Pickett, M. Frank; Henry, Ronald; and Norris, William P., to United States of America, Navy. Burning rate modifying binder for propellant and method. 3,932,240, Cl. 149-19.200.

Braun, Siegfried; and Herbst, Fritz, to Zahnradfabrik Friedrichshafen AG. Self-actuating friction-clutch assembly. 3,931,874, Cl. 192-54.000.

Brefka, Paul E., to Millipore Corporation. Electrophoresis slide mounting means. 3,932,263, Cl. 204-299.000.

Brettman, Donna M., administratrix: *See—*
Crowell, Kenneth E.; and Brettman, William M., deceased, 3,932,721.

Brettman, William M., deceased: *See—*
Crowell, Kenneth E.; and Brettman, William M., deceased, 3,932,721.

Breuer, Hermann; and Treuner, Uwe, to E. R. Squibb & Sons, Inc. Cyanomethylthioacetylcephalosporins. 3,932,396, Cl. 260-243.00C.

Breuer, Hermann; and Treuner, Uwe, to E. R. Squibb & Sons, Inc. Cyanomethylthioacetylcephalosporins. 3,932,397, Cl. 260-243.00C.

Bridgestone Tire Company Limited: *See—*
Harada, Jumei; Tsukamoto, Kenji; Migita, Tetsuhiko; and Matsunaga, Tsutomu, 3,932,088.

Brinkman, Heinz; Gersbeck, Rolf; and Greten, Berndt, to Hermann Berstorff Maschinenbau GmbH; and Bison-Werke Bahre & Greten GmbH & Co. KG. Apparatus for the continuous production of chipboard, fibreboard and like panels. 3,932,258, Cl. 156-498.000.

Bristol-Myers Company: *See—*
Beverung, Warren Neil, Jr.; and Partyka, Anthony, 3,932,407.
Johnson, David A.; Brundidge, Steven P.; Vulcano, Albert L.; Sapino, Chester, Jr.; Mahan, James; and Grossman, Joseph H., 3,932,392.

British Aluminium Company Limited, The: *See—*
Summers, Steven William, 3,932,230.

British Secretary of State for Defense, The: *See—*
Damon, Lionel; and Scoffield, Brian Philip, 3,932,820.
Rowland, Michael Charles; and Wight, David Robert, 3,932,883.

Brixey, Charles W.; Hartsell, Glenn A.; and Vandierendonck, Jerry L., to Texas Instruments Incorporated. Electronic calculator having internal means for turning off display. 3,932,846, Cl. 340-172.500.

Broadbent, Douglas; Hemming, Harold George; and Hesp, Barrie, to Imperial Chemical Industries Limited. Antiviral complex. 3,932,394, Cl. 260-243.00R.

Brockington, James W.: *See—*
Bennett, Richard H.; and Brockington, James W., 3,932,130.

Broken Hill Proprietary Company, Ltd., The: *See—*
Dalli, Alan George; Debenham, Michael; and Shackleford, Ralph Edward, 3,931,909.

Brotzmann, Karl: *See—*
Knuppel, Helmut; Brotzmann, Karl; Fassbinder, Hans-Georg; Savard, Guy; and Lee, Robert, 3,932,172.

Brown, Allen C.: *See—*
Eyrick, Theodore B.; and Brown, Allen C., 3,932,066.

Brown, Richard E.; and Lustgarten, David M., to Warner-Lambert Company. Substituted 2-amino chromones and process for the preparation thereof. 3,932,466, Cl. 260-345.200.

Brown, William A., to Cogar Corporation. Semiconductor diffusion process. 3,932,239, Cl. 148-186.000.

Brownlee, George Hunnam: *See—*
Osborn, Leroy Gordon; and Brownlee, George Hunnam, 3,932,033.

Brulard, Andre T., to Althouse Tertre en abrege "Atsa" societe anonyme. Water-soluble maroon and rubine sulphodiphenylazophenyl- or naphthylazoaniline dyes for polyamide fibers. 3,932,379, Cl. 260-191.000.

Brumlik, George C., to Ingrip Fasteners, Inc. Adjustable extrusion apparatus for producing thread-like products. 3,932,090, Cl. 425-381.000.

Brundidge, Steven P.: *See—*
Johnson, David A.; Brundidge, Steven P.; Vulcano, Albert L.; Sapino, Chester, Jr.; Mahan, James; and Grossman, Joseph H., 3,932,392.

Brundin, Bengt, to Siemens Aktiengesellschaft. X-ray diagnostic installation providing for the free and programmed setting of the X-ray exposure data. 3,932,759, Cl. 250-416.000.

Brunswick Corporation: *See—*
Croisant, Elmer E., 3,931,783.
Walker, Jerome F., 3,931,966.

Bucalo, Louis, to Investors in Ventures, Inc. Lumen reamer. 3,931,820, Cl. 128-304.000.

Bucalo, Louis. Culturing medium. 3,932,223, Cl. 195-139.000.

Bucek, Jiri B.; and Shultz, James R., to Fincor, Inc. Control for three phase A.C. motor. 3,932,771, Cl. 307-265.000.

Buchi, George H.; and Freidinger, Roger M., to Massachusetts Institute of Technology. Preparation of polyenes. 3,932,546, Cl. 260-666.00C.

Buchmann, Paul; Beringer, Monique; and Sporri, Heinz, to Tamag/Basel AG. Extruder nozzle for shaping a pulp to form smokable strands or fibers. 3,932,081, Cl. 425-72.000.

Buck, Robert. Electronic monitoring system with short-circuit protection. 3,932,774, Cl. 307-308.000.

Buck, Robert. Electronic monitoring system including contactless motion detector. 3,932,803, Cl. 323-19.000.

Buckman Laboratories, Inc.: *See—*
Fenyes, Joseph G. E.; and Flanagan, Kenneth J., 3,932,478.

Bugajski, Frank H.: *See—*
Robins, Norman A.; and Bugajski, Frank H., 3,932,683.

Buhrer, Carl F., to GTE Laboratories, Incorporated. Magnetic field drive coils for field accessed cylindrical domain memories. 3,932,827, Cl. 336-60.000.

Buhrer, Rolf. Self-aligning coupling. 3,931,720, Cl. 64-31.000.

Bull, George Carter, to Elliott Brothers (London) Limited. Vehicle head-up display systems. 3,932,861, Cl. 340-324.0AD.

Burdy, Norbert; Ravet, Christian; and Lacave, Jean, to Fives Lille Cail. Mold apparatus. 3,932,099, Cl. 425-432.000.

Burgkhardt, Bertram; and Piesch, Ernst, to Gesellschaft fur Kernforschung m.b.H. Method and apparatus for determining the dose value of neutrons. 3,932,758, Cl. 250-390.000.

Burke, Noel I., to Tee-Pak, Inc. Collagen casings from limed hide collagen. 3,932,677, Cl. 426-277.000.

Burkhardt, Claus; Raichle, Karl; and Behrenz, Wolfgang, to Bayer Aktiengesellschaft. Insecticidal compositions for sustained release of 0,0-dimethyl-0-(2,2-dichlorovinyl) phosphate. 3,932,612, Cl. 424-78.000.

Burmah Engineering Company Limited: *See—*
Grimston, Roger Anthony, 3,931,978.

Burman, Per Aron, to Burroughs Corporation. Multiple bit wire wrap tool. 3,931,839, Cl. 140-124.000.

Burroughs Corporation: *See—*
Burman, Per Aron, 3,931,839.

Burroughs Wellcome Co.: *See—*
Barrett, Paul Anthony, 3,932,663.

Burrous, Merwyn L., to Chevron Research Company. Functional fluid containing a hydrolysis suppressor. 3,932,294, Cl. 252-78.000.

Burton, Charles G., to Chisholm-Ryder Company, Inc. Cane separator for harvesting machine. 3,931,823, Cl. 130-30.00R.

Busby, William James: *See—*
Argurio, Frederico; Borsatti, Mario; and Busby, William James, 3,932,563.

Buss, Nils: *See—*
Olsen, Bengt; Blomster, Jens; Buss, Nils; Stenkvist, Bjorn; and Preuss, Lucien, 3,932,733.

Butler, Denis Victor, to Plessey Handel und Investments A.G. Liquid ring pumps. 3,932,063, Cl. 417-68.000.

Buttner, Gerhard; Sasse, Klaus; Hammann, Ingeborg; and Kaspers, Helmut, to Bayer Aktiengesellschaft. 2-Trifluoromethylimino-1,3-dithiolo [4,5-b]-quinoxalines. 3,932,406, Cl. 260-250.00Q.

Buzzolini, Mario G.; and Manning, Robert E., to Shandoz, Inc. Sulfuric acid esters of bis-(4-hydroxyphenyl)-methane. 3,932,481, Cl. 260-457.000.

B.V. Machinefabriek en Ijzergieterij Holland-Bergen op Zoom: *See—*
Jacobs, Christianus, 3,931,955.

Byrns, John. Nebulizer bacteria filter. 3,932,153, Cl. 55-511.000.

Byth, Nancy J., to Dow Chemical Company, The. Corrosion inhibitor. 3,932,296, Cl. 252-148.000.

C.A.V. Limited: *See—*
Chalmers, Brian John; and Gibson, John Philip, 3,932,798.

Cables de Lyon Alsacienne: *See—*
Comte, Georges N., 3,932,254.

Cachera, Pierre Charles, to Electricite de France. Method and device for the passive protection of a nuclear reactor. 3,932,217, Cl. 176-83.000.

Cagnac, Therese Marie Leonie: *See—*
Trelut, Jean Marie; Liot, Jean Bernard Michel; Cagnac, Therese Marie Leonie; and Chambet-Falquet, Antoine Jean Louis, 3,932,843.

Cahn, Jean: *See—*
Coirre, Paul; Coirre, Bertrand; Denis, Jean-Claude; Rambaud, Jerome; and Cahn, Jean, 3,932,638.
Caillet, Eugene, to Goodyear Tire & Rubber Company, The. Expansion tank diaphragm assembly. 3,931,834, Cl. 138-30.000.
Cairns, John G.; McPherson, John L.; and Orefice, James D., to Mobay Chemical Corporation. Method of and apparatus for the pouring of fast foaming reactants. 3,931,933, Cl. 239-591.000.
Calderon, Nissim, to Goodyear Tire & Rubber Company, The. Polymeric materials derived from ring-opening polymerization of 1,5-cyclooctadiene. 3,932,373, Cl. 260-93.100.
Caldwell, Henry C.; and Loev, Bernard, to SmithKline Corporation. Pharmaceutical compositions and methods of inhibiting gastric acid secretion. 3,932,641, Cl. 424-248.000.
Caldwell, John R.; and Hawkins, James Maynard, to Eastman Kodak Company. Electrically conducting adhesive composition. 3,932,311, Cl. 252-514.000.
Calgon Corporation: *See—*
Hollingshad, William Robert, 3,932,303.
California Institute of Technology: *See—*
Stevens, Mario R.; and Vickers, John Michael, 3,932,262.
Callahan, James L.: *See—*
Grasselli, Robert K.; Suresh, Dev. D.; and Callahan, James L., 3,932,551.
Camelon, Melville J.; and Gibeau, Rodney C., to Ford Motor Company. Powder paints containing particulate metal II. 3,932,320, Cl. 260-17.00R.
Camelon, Melville J.; and Gibeau, Rodney C., to Ford Motor Company. Powder paints containing particulate metal I. 3,932,347, Cl. 260-42.140.
Camelon, Melville J.; and Gibeau, Rodney C., to Ford Motor Company. Powder paints having aluminum flakes encapsulated in thermosettable material containing tetraalkylammonium halides. 3,932,348, Cl. 260-42.140.
Camelon, Melville J.; and Gibeau, Rodney C., to Ford Motor Company. Thermosettable powder paints containing encapsulated aluminum flakes II. 3,932,349, Cl. 260-42.140.
Camlibel, Irfan; Dabby, Franklin Winston; Pinnow, Douglas Arthur; and Van Uitert, LeGrand Gerard, to Western Electric Company, Inc.; and Bell Telephone Laboratories, Incorporated. Method for forming low loss optical waveguide fibers. 3,932,160, Cl. 65-3.000.
Camp, Ronnie W.: *See—*
Ball, Dean M.; Camp, Ronnie W.; Hendrix, Warren P.; and Orr, Clyde, Jr., 3,932,067.
Campbell, Francis Joseph, to RCA Corporation. Electron gun with a multi-element electron lens. 3,932,786, Cl. 315-3.000.
Canada Packers Limited: *See—*
Bharucha, Kekhusroo R.; Ajdukovic, Djordje; Pavilanis, Vytautas; and Mackay, Angus Campbell, 3,932,512.
Candor, James T. Liquid removing method and apparatus. 3,931,682, Cl. 34-1.000.
Candy, James Charles, to Bell Telephone Laboratories, Incorporated. Circuit for converting a companded digital time-amplitude pulse code into a linear digital amplitude pulse code. 3,932,864, Cl. 340-347.0DD.
Canick, Leon N.; and Aldrich, Charles S. Tape perforator. 3,931,929, Cl. 234-110.000.
Cannon, Richard A. Apparatus for warning of the failure of a sump pump. 3,932,853, Cl. 340-244.00B.
Canon Kabushiki Kaisha: *See—*
Kakei, Mitsuo; Nishida, Keijiro; Kasahara, Tadayoshi; Shimabayashi, Masao; Hiraga, Ryozo; Nakano, Tomomasa; and Komatsubara, Ichiro, 3,931,789.
Takahashi, Toru, 3,932,034.
Cantor, Stephen E.; and Blaskiewicz, Arthur A., to Uniroyal Inc. Adhesion of olefin copolymer rubber to nylon textile. 3,932,559, Cl. 260-847.000.
Capewell, Terence John; Lloyd, Arthur Leslie; and Marshall, David, to Lucas Aerospace Limited. Thrust reversal system for jet aircraft engines. 3,931,944, Cl. 244-110.00B.
Capra, Uberto. Scrubbing apparatus for vehicle-washing station. 3,931,660, Cl. 15-53.0AB.
Cardenas, Carlos G.: *See—*
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Carl Schenck AG, Firma: *See—*
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Carnes, W. Robert, Jr.; and Balogh, John J., Jr., to Pitney-Bowes, Inc. Scan system. 3,932,272, Cl. 209-73.000.
Carpenter, Leslie E., Jr.: *See—*
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Carrier Corporation: *See—*
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Carrus, Andre; Carrus, Pierre A.; and Carrus, Jacques H. Method of continuous printing of documents. 3,931,761, Cl. 101-66.000.
Carrus, Jacques H.: *See—*
Carrus, Andre; Carrus, Pierre A.; and Carrus, Jacques H., 3,931,761.
Carrus, Pierre A.: *See—*
Carrus, Andre; Carrus, Pierre A.; and Carrus, Jacques H., 3,931,761.
Carson, William H. Blowout preventing device for vehicle wheels. 3,931,998, Cl. 301-63.00R.
Carter, Donald F., to Den-Tal-Ez Mfg., Co. Dental patient simulator. 3,931,679, Cl. 32-71.000.
Carter, Lyle. Apparatus for collecting surface particle on body of water. 3,931,740, Cl. 73-425.40R.
Casey, T. Eisirt: *See—*
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Caterpillar Tractor Co.: *See—*
Goloff, Alexander, 3,931,977.
Cathiard, Gaston, to Pomagalski S.A. Chairlift terminal. 3,931,766, Cl. 104-117.000.
Ceccarelli, Jovanna. Combined measuring spoon and receptacle. 3,931,741, Cl. 73-427.000.
Cecchetti, Claudio, to Arco Falc srl. Plastic game board having a unitary frame. 3,931,970, Cl. 273-85.00D.
Celanese Corporation: *See—*
Loft, John T.; Plovan, Steven G.; and Vogt, Clifford M., 3,932,682.
Miano, Ralph R.; and Keith, Charles H., 3,931,824.
Reader, Arthur M., 3,932,566.
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Centro Sperimentale Metallurgico S.p.A.: *See—*
Di Stefano, Vittorio; Grimaldi, Rinaldo; and Marini, Paolo, 3,932,135.
Ceprini, Mario Q.; and Gottesman, Roy T., to Tenneco Chemicals, Inc. Chromium salt compositions and a process for their production. 3,932,285, Cl. 252-1.000.
Cerankowski, Leon D.; Mattucci, Neil; and Baron, Richard C., to Polaroid Corporation. Polyurethane elastomers prepared from diamine curing agents. 3,932,360, Cl. 260-77.5AM.
Cerro Corporation: *See—*
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Chalmers, Brian John; and Gibson, John Philip, to C.A.V. Limited. Electrical inverter circuit. 3,932,798, Cl. 321-45.00C.
Chambers, Ralph M., Jr.: *See—*
Faani, Siamac; and Chambers, Ralph M., Jr., 3,932,042.
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Champlin, Roger A., to Goodyear Tire & Rubber Company, The. Method for preparing pigmented polyesters wherein the pigment glycol slurry is preheated. 3,932,345, Cl. 260-40.00P.
Chance, Leon H.; and Pepperman, Armand B., Jr., to United States of America, Agriculture. Flameproofing of cotton cellulose with hexamethyl phosphorous triamide. 3,932,123, Cl. 8-116.00P.
Chandler, William R.: *See—*
Lyons, Dianne D.; and Chandler, William R., 3,931,967.
Chang, Edward H.; and Nichols, Oliver D., to Fremont Industries, Inc. Cleaning and polishing compound for barrel and vibratory finishing of ferrous and non-ferrous metals. 3,932,243, Cl. 156-20.000.
Chapura, Francis B., to Morton-Norwich Products, Inc. Method of preventing leakage from body orifices when utilizing suppositories as a source of medication. 3,932,613, Cl. 424-78.000.
Chatterjee, Pronoy Kumar, to Personal Products Company. Low hemicellulose, dry crosslinked cellulosic absorbent materials. 3,932,209, Cl. 162-157.00C.
Chattopadhayay, Asoke; and Muller, Wolfgang. Fuel quantity manifold for multi-cylinder internal combustion engines. 3,931,803, Cl. 123-139.0AW.
Chauvette, Robert R., to Eli Lilly and Company. 3-Methylenecephalosporins and process for production thereof. 3,932,393, Cl. 260-243.00C.
Cheatum, Leo George, to Deere & Company. Bale length control mechanism. 3,931,760, Cl. 100-4.000.
Chemetron Corporation: *See—*
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Chen, Larry P.; and Wentworth, Theodore O., to Vulcan-Cincinnati, Inc. Urea manufacture. 3,932,504, Cl. 260-555.00A.
Chetelat, Fernand: *See—*
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Chevron Research Company: *See—*
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Chicago Pneumatic Tool Company: *See—*
Schaedler, Raymond J., 3,932,071.
childers, Mark A.; and Dawkins, Enoch L., to Ocean Drilling & Exploration Company. Mooring method for deployment and retrieving of mooring lines. 3,931,782, Cl. 114-206.00R.
Chillingworth, Colin Andrew, to Perkins, Joan Mary; and Chillingworth, Glyn Andrew Frank. Milking machines. 3,931,794, Cl. 119-14.080.
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Chinuki, Takashi: *See—*
Suda, Hideaki; Dohgane, Iwao; Chinuki, Takashi; Tanimoto, Kenji; Hosaka, Hirokazu; Nakao, Yukimichi; Ueda, Yuji; Imada, Seiya; Yanagihara, Hideki; and Tanaka, Kunihiko, 3,932,528.
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Claassens, Johannes E. L.: *See—*
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Clark Equipment Company: *See—*
Johns, Robert C., Jr., 3,931,687.
Clark, Wallace. Moineau pump with rotating outer member. 3,932,072, Cl. 418-48.000.
Clarke, Robert L.: *See—*
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Clear Air, Inc.: *See—*
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Cleary, Michael, to Sumaspcae Limited. Highway construction. 3,932,051, Cl. 404-82.000.
Clementson, John Joseph; and Horvath, Arisztid Lajos, to Imperial Chemical Industries Limited. Solvent compositions for cleaning. 3,932,297, Cl. 252-171.000.
Clendinning, Robert A.; Potts, James E.; and Niegisch, Walter D., to Union Carbide Corporation. Blends of biodegradable thermoplastic dialkanoyl polymer, a naturally occurring biodegradable product, a plastic additive and a filler. 3,932,319, Cl. 260-7.500.
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Cobb, Raymond L., to Phillips Petroleum Company. Pyrolysis of N-substituted-1-cyclohexene-1,2-dicarboximides. 3,932,457, Cl. 260-326.00C.
Coel, Joseph B., to Badger Meter, Inc. Universal joint connector. 3,931,992, Cl. 285-30.000.
Coers, Don Henry; and Sudduth, Jackie Wayne, to Chicago Bridge & Iron Company. Refrigerant apparatus and process using multicomponent refrigerant. 3,932,154, Cl. 62-9.000.
Coffen, David Llewellyn; and Fryer, Rodney I., to Hoffmann-La Roche Inc. 2,5-Epithio-1,4-benzodiazepines. 3,932,399, Cl. 260-243.00R.
Cogar Corporation: *See—*
Brown, William A., 3,932,239.
Coggins, Leroy, to Cornell Research Foundation, Inc. Method and composition for the diagnosis of equine infectious anemia virus infection by using agar-gel-immunodiffusion reaction. 3,932,601, Cl. 424-12.000.
Cohen, Leonard George; and Schneider, Martin Victor, to Bell Telephone Laboratories, Incorporated. Fabrication of microlenses. 3,932,184, Cl. 96-38.300.
Cohen, Noal; and Saucy, Gabriel, to Hoffmann-La Roche Inc. 7,7a-Dihydro-4-[2-(3-alkoxyphenyl)-2-hydroxyethyl]-7a-alkyl-1, 5(6H)-indandiones,3,4,8,8a-tetrahydro-5-[2-(3-alkoxyphenyl)-2-hydroxyethyl]-8a-alkyl-1,6(7H)-naphthalenediones and processes for the preparation thereof utilizing asymmetric induction. 3,932,519, Cl. 260-590.000.
Cohen, Sam G., to Timex Corporation. Electro-optical display with circuitry for applying predetermined potentials to all display segments to effect activation of a selected segment only. 3,932,860, Cl. 340-324.00M.
Coherent Communications System Corporation: *See—*
Bodony, Andrew B., 3,932,704.
Coils, Inc.: *See—*
Plunkett, James P.; and Latchford, Joseph T., 3,932,828.
Coirre, Bertrand: *See—*
Coirre, Paul; Coirre, Bertrand; Denis, Jean-Claude; Rambaud, Jerome; and Cahn, Jean, 3,932,638.
Coirre, Paul; Coirre, Bertrand; Denis, Jean-Claude; Rambaud, Jerome; and Cahn, Jean, to Franco-Chimie S.a.r.l. Compositions and methods for wound healing. 3,932,638, Cl. 424-245.000.
Coleman, Edward H. Method and apparatus for styling synthetic wigs. 3,931,827, Cl. 132-56.000.
Coleman, Raymond C., to Xerox Corporation. Method for forming a collar. 3,932,177, Cl. 75-214.000.
Colgan, William B., to Raymond Lee Organization, Inc., The, a part interest. Aqua sled. 3,931,777, Cl. 114-16.00A.
Colgate-Palmolive Company: *See—*
Barth, Jordan B., 3,932,604.
Barth, Jordan B.; and Costello, Christopher H., 3,932,606.
Karami, Hamzeh, 3,931,666.
Collin, Per Harald; and Johansson, Folke Karl Evald, to Allmanna Svenska Elektriska Aktiebolaget. Inductially heated gas lift pump action method for melt reduction. 3,932,173, Cl. 75-93.00R.
Collings, Carlton S., Jr.: *See—*
Lavedan, Louis J., Jr.; and Collings, Carlton S., Jr., 3,932,823.
Collis, Raymond D.; and Meyer, Martin H., to Outboard Marine Corporation. Tilt position indicator. 3,931,784, Cl. 115-41.00R.
Comalco (J. & S.) Pty. Limited: *See—*
Jury, Harold Rex; and Hay, John Henry, 3,932,249.
Combinatul Chimic Fagaras: *See—*
Vilceanu, Marin; and Bors, Constantin, 3,932,139.
Combustion Engineering, Inc.: *See—*
Musick, Charles Ronald; and Torres, Jose Marcelo, 3,932,213.
Cominco Ltd.: *See—*
Howe, Fred Ellsworth, 3,932,284.
Commissariat a l'Energie Atomique: *See—*
Aubert, Michel; Gollion, Henri Jacques; and Verriere, Philippe, 3,932,214.
Communications Satellite Corporation (Comsat): *See—*
Allen, William Arthur, 3,931,953.
Compur-Werk Gesellschaft: *See—*
Singer, Franz, 3,932,893.
Comte, Georges N., to Cables de Lyon Alsacienne. Apparatus for semi-continuous production of lengthy helical wave guides. 3,932,254, Cl. 156-361.000.
Concast AG: *See—*
Schmid, Markus, 3,931,848.
Concorde Fibers, Inc.: *See—*
Patel, Pravin, 3,932,576.
Conforti, Frederick J.; and Mensing, Clifford E., to Pittway Corporation. Warning device. 3,932,850, Cl. 340-237.00S.
Conkling, William Collins; and Weber, Joseph Thomas, Jr., to Pennwalt Corporation. Pulsating liquid flow transmitter. 3,931,737, Cl. 73-209.000.
Conn, Richard H., to International Pharmakon Laboratories, Inc. Surgical skin scrub. 3,932,655, Cl. 424-317.000.
Connolly, David Charles Anthony; and Hovland, Per Jorgen. Electric impulse transmitters for telephone instruments. 3,932,707, Cl. 179-16.0AA.
Connor, David T.; Ringel, Samuel M.; and von Strandtmann, Maximilian, to Warner-Lambert Company. Ketones and ketoximes derived from acid S, an antibiotic produced by *polyangium cellulosum* var. *fulvum*. 3,932,620, Cl. 424-122.000.
Connor, David T.; and Ringel, Samuel M., to von Strandtmann, Max; and Warner-Lambert Company. Triols and acetates thereof derived from antibiotic substance, acid S, produced by polyangium cellulosum var. fulvum. 3,932,621, Cl. 424-122.000.
Constructions Edmond Coignet: *See—*
Fougea, Edouard Marie, 3,931,951.
Container Corporation of America: *See—*
Gardner, Jeffrey M.; and Pilz, William M., III, 3,931,924.
Continental Can Company, Inc.: *See—*
Pasternack, George; and Jondahl, Thor, 3,932,346.
Shaw, Fred B.; and Graumann, Richard E., 3,932,693.
Continental Charter Corporation: *See—*
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Continental Oil Company: *See—*
McCain, David L., 3,931,899.
Petry, Eston F.; and Umphrey, Ronald W., 3,931,936.
Starks, Charles M., 3,932,552.
Controlled Environment Systems Inc.: *See—*
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Cook Electric Company: *See—*
Fleuchaus, Albert C.; and Shylo, Paul, 3,932,713.
Cook, Gordon Henry; and Fawcett, John Anthony, to Rank Organisation Limited, The. Beam splitting prism assembly. 3,932,027, Cl. 350-173.000.
Cook, Martin Christopher; Gregory, Gordon Ian; and Bradshaw, Janice, to Glaxo Laboratories Limited. Penicillins having a 6β-(α-etherified oximino) acylamido group. 3,932,385, Cl. 260-239.100.
Cook, Raymon W. Golf club. 3,931,975, Cl. 273-164.000.
Cooney, John R. Directional antenna. 3,932,875, Cl. 343-820.000.
Coop, Jackie Allen. Tear-off closure. 3,931,904, Cl. 215-254.000.
Cooper, Hugh S., deceased; and Rand, Henry J., executor. Process for producing alkali metal chromates and dichromates. 3,932,598, Cl. 423-596.000.
Coopmans, Jean-Paul: *See—*
Verheyen, Willy; Raes, Andre; Coopmans, Jean-Paul; and Lambert, Jean-Louis, 3,932,726.
Cope, Steven Andrew, to Du Pont de Nemours, E. I., and Company. Force resistant assembly. 3,931,993, Cl. 285-200.000.
Corey, Philip D., to ESB Incorporated. Transfer switch and transient eliminator system and method. 3,932,764, Cl. 307-85.000.
Cornell, Paul V.; and Lawlor, Robert E., to Electro Clamp Corporation. Tension energized cable clamp. 3,932,021, Cl. 339-266.00R.
Cornell Research Foundation, Inc.: *See—*
Coggins, Leroy, 3,932,601.
Finn, Robert K.; Tannahill, Alex L.; and Laptewicz, Joseph E., Jr., 3,932,218.
Corning Glass Works: *See—*
Blankenship, Michael G., 3,932,162.
Forker, Ray B., Jr.; and Panzarino, Joseph N., 3,932,681.

Cornwell, Lionel B. Controlled power transferring device and method utilizing a reactance controlled by development of opposing magnetic fluxes. 3,932,802, Cl. 323-6.000.
Corte, Francisco Barcelloni; and Bianco, Pablo. Rotary internal combustion engine. 3,931,809, Cl. 123-43.00R.
Costello, Christopher H.: *See—*
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Cote, Yvon, to Bombarider Limited. Ski suspension for front of snowmobile. 3,931,862, Cl. 180-5.00R.
Cotterrell, Graham Paul, to Imperial Chemical Industries Limited. Certain organophosphorus compounds used to control insects. 3,932,631, Cl. 424-200.000.
Coulter Electronics, Inc.: *See—*
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Coulter, Geoffrey Lionel: *See—*
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Coutin, Pierre F.: *See—*
Guimier, Jacques A.; and Coutin, Pierre F., 3,932,714.
Cowell, David; and Ensslin, Frieder H., to Sybron Corporation. X-ray detector for a panoramic X-ray device. 3,932,756, Cl. 250-361.000.
Cox, David Lloyd; and McDonnell, Neil Patrick Hugh, to Imperial Chemical Industries Limited. Method of sealing fibers in apertures. 3,932,570, Cl. 264-69.000.
Cramer, Richard D.: *See—*
Bilofsky, Ruth C.; and Cramer, Richard D., 3,932,455.
Criterion Manufacturing Company, Inc.: *See—*
Krewalk, John J., Sr., 3,932,148.
Crites, Ray D.; Block, David A.; and Sidles, Paul H. Dryer for particulate material. 3,931,683, Cl. 34-169.000.
Croisant, Elmer E., to Brunswick Corporation. Oil circulating system for marine propulsion gear case. 3,931,783, Cl. 115-34.00R.
Crompton & Knowles Corporation: *See—*
Feeman, James F., 3,932,376.
Cross, Barrington; and Feeny, Richard William, to American Cyanamid Company. Substituted s-triazines as herbicidal agents. 3,932,167, Cl. 71-93.000.
Cross, Peter Edward; and Gadsby, Brian, to Pfizer Inc. 2 And 3-substituted-4-(heterocyclic-amino-sulfonyl)benzene sulfonamides as cerebral vasodilators. 3,932,636, Cl. 424-244.000.
Cross, Peter Edward; and Gadsby, Brian, to Pfizer Inc. 2 And 3-substituted-4-(heterocyclic-amino-sulfonyl)benzene sulfonamides as cerebral vasodilators. 3,932,639, Cl. 424-248.000.
Cross, Peter Edward; and Gadsby, Brian, to Pfizer Inc. 2 And 3-substituted-4-(heterocyclic-amino-sulfonyl)benzene sulfonamides as cerebral vasodilators. 3,932,649, Cl. 424-267.000.
Crossan, James. Connecting systems. 3,932,047, Cl. 403-186.000.
Crounse, Nathan N.; and Desai, Kantilal B., to Sterling Drug Inc. Stilbene optical brighteners and compositions brightened therewith. 3,932,301, Cl. 252-301.20W.
Crovetti, Aldo Joseph; Kenney, Donald Sykes; Lynch, Don Murl; and Stein, Robert George, to Abbott Laboratories. 4-Nitropyrazoles. 3,932,453, Cl. 260-310.00R.
Crovetti, Aldo Joseph: *See—*
Stein, Robert George; and Crovetti, Aldo Joseph, 3,932,168.
Crowell, Kenneth E.; and Brettman, William M., deceased (by Brettman, Donna M., administratrix), to Motorola, Inc. Sealed switch actuator. 3,932,721, Cl. 200-302.000.
CTS Corporation: *See—*
Van Benthuysen, John D., 3,932,832.
Culpepper, Clifford, Jr., to Aero-Dyne Manufacturing, Inc. Burner with automatic high-low operation. 3,932,137, Cl. 23-277.00C.
Cure, Ronald William Lewis: *See—*
Vincent, Alan Henry; and Cure, Ronald William Lewis, 3,932,060.
Curran, William Vincent; Tomcufcik, Andrew Stephen; and Ross, Adma Schneller, to American Cyanamid Company. P-(1H-tetrazol-1-yl)-phenylcarbamates. 3,932,440, Cl. 260-308.00D.
Curtiss-Wright Corporation: *See—*
Jones, Charles, 3,932,075.
Cutting, Alan Butler, to E M I - Varian Limited. Tunable coaxial magnetrons. 3,932,787, Cl. 315-39.610.
Czerner, Peter A.; Daniels, John F.; Melito, Maurice A., Jr.; and Szymansky, Edward, to Sperry Rand Corporation. Electric dry shaver with releasable cutter head. 3,931,675, Cl. 30-41.600.
Czerniejewski, Francis R., to Westinghouse Electric Corporation. System and method for xenon acceleration in training simulator for nuclear power plant. 3,932,885, Cl. 444-1.000.
Czyryk, Chester S., to Mangood Corporation. Low-profile platform scale. 3,931,860, Cl. 177-257.000.
D. Swarovski & Co., Glasschleiferei: *See—*
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Dabby, Franklin Winston: *See—*
Camlibel, Irfan; Dabby, Franklin Winston; Pinnow, Douglas Arthur; and Van Uitert, LeGrand Gerard, 3,932,160.
Dahlman, Inc.: *See—*
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Dai-Ichi Kogyo Seyaku Co. Ltd.: *See—*
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Dai Nippon Toryo Kabushiki Kaisha: *See—*
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Daicel Ltd.: *See—*
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Daigle, Donald J.; Pepperman, Armand B., Jr.; and Boudreaux, Gordon J., to United States of America, Agriculture. 2-Thia-1,3,5-triaza-7-phosphaadamantane 2,2-dioxide. 3,932,390, Cl. 260-243.00R.
Daihatsu Motor Company Limited: *See—*
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Daimler-Benz Aktiengesellschaft: *See—*
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Dainippon Jochugiku Kabushiki Kaisha: *See—*
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D'Albignac, Jean Marie Louis Jules, to Groupement d'Interet Economique Stx. Dyeing textile materials of a basic character. 3,932,127, Cl. 8-173.000.
Dalli, Alan George; Debenham, Michael; and Shackleford, Ralph Edward, to Broken Hill Proprietary Company, Ltd., The. Push-in easy-opening closures. 3,931,909, Cl. 220-268.000.
Damon, Lionel; and Scoffield, Brian Philip, to British Secretary of State for Defense, The. Crossed field amplifiers. 3,932,820, Cl. 330-43.000.
Daniels, John F.: *See—*
Czerner, Peter A.; Daniels, John F.; Melito, Maurice A., Jr.; and Szymansky, Edward, 3,931,675.
Danzer, Joseph; and Weber, Helmut, to Wacker-Chemie GmbH. Method of insulating rotor plates. 3,932,691, Cl. 428-450.000.
Dashew, Stephen S., to Interform, Inc. Multiple concrete form apparatus. 3,931,952, Cl. 249-177.000.
Datron Systems, Inc.: *See—*
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Daum, Sol J.: *See—*
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Daunay, Jacques: *See—*
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David Brown Tractors Limited: *See—*
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Davis, Gerald T.; and Fetters, Robert A., to Mead Corporation, The. Reactant sheet for developing colorless dye images. 3,932,695, Cl. 428-531.000.
Davis, Paul, to Sweetheart Plastics, Inc. Stackable lid. 3,931,890, Cl. 206-508.000.
Davis, Ralph A.; Tigner, Ronald G.; Pedjac, Joseph J.; and Peterson, Laurence I., to Dow Chemical Company, The. Process for the preparation of brominated pentaerythritols. 3,932,541, Cl. 260-633.000.
Davison, Richard R.: *See—*
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Dawes, Dag; and Bohner, Beat, to Ciba-Geigy Corporation. Triazolyl phosphorus esters as pesticides. 3,932,629, Cl. 424-200.000.
Dawes, Dag: *See—*
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Dawkins, Enoch L.: *See—*
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DeCaro, Aristide R.; Murphy, Eugene F.; and Maynard, Billy A., to Westinghouse Electric Corporation. Electric lamp having an envelope with a specular light-reflective coating of oriented aluminum particles. 3,932,780, Cl. 313-113.000.
Dechelette, Helen, to AMP Incorporated. Electrical terminal assembly and terminal therefor. 3,932,017, Cl. 339-97.00P.
de Cleur, Eckhard; Dhein, Rolf; Rudolph, Hans; and Kreuder, Hans Joachim, to Bayer Aktiengesellschaft. Pulverent coating materials containing polyoxazolines and polyesters based on succinic anhydride. 3,932,358, Cl. 260-75.00N.
DeCoursey, Leonard T., to John Mohr & Sons. Method for treating tobacco. 3,931,825, Cl. 131-140.00A.
Deere & Company: *See—*
Cheatum, Leo George, 3,931,760.
Dobberpuhl, Dale Rudolph, 3,931,745.
Soteropulos, Gust; and Meiers, Gerald Franklyn, 3,931,702.
Woods, Terrill Wayne, 3,932,252.
Deerfield, Alan J.; and Nissen, Stanley M., to Raytheon Company. Bus controller for digital computer system. 3,932,841, Cl. 340-172.500.
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Gilpatrick, Michael William, 3,931,669.
DeGregory, Donald Lee, to Bell Telephone Laboratories, Incorporated. Fluidic device. 3,931,833, Cl. 137-829.000.
Delepine, Pierre, to Thomson-CSF. Spectrum analyzer establishing a nonlinear frequency distribution of power-density spectra. 3,932,737, Cl. 235-152.000.
DeLong, Robert J.: *See—*
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Delplanque, Fernand, to Mecaval International. Vise for bias-cutting sawing machines. 3,931,962, Cl. 269-55.000.
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Denis, Jean-Claude: *See—*
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Dennison Manufacturing Company: *See—*
Merser, Francis G.; and Kooistra, Philip A., 3,931,667.
de Putter, Warner Jan, to Wavin B.V. Device for the supply and discharge of cooling liquid in the worms of an extruder press. 3,931,853, Cl. 165-87.000.
Dereng, Viggo G. Parachute canopy testing apparatus. 3,931,734, Cl. 73-147.000.



De Roeck, Lucien Joannes Maria: *See—*
Peeters, Jozef C. I.; De Roeck, Lucien Joannes Maria; and Van Boort, Henricus Johannes Joseph, 3,932,781.
Desai, Kantilal B.: *See—*
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Desbarats, William Edouard. Air sustension propulsion. 3,931,864, Cl. 180-116.000.
De Torre, John, to Federal Pacific Electric Company. Current limiting circuit breaker system. 3,932,825, Cl. 335-8.000.
Detprotector, Inc.: *See—*
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Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
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Deutsche Vergaser GmbH & Co. Kommanditgesellschaft: *See—*
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Deuzeman, Hendrik H. J.; Lumley, Norman; and Santos, Ruben A. Calcia catalyzed resins. 3,932,334, Cl. 260-29.300.
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de Vries, Gerbertus H.; and de Bruyn, Gerrit C., to Stork Werkspoor Sugar B.V.; and Suiker Unie Holding B.V. Serial flow crystallization at linearly decreasing pressures. 3,932,142, Cl. 23-301.000.
DeVries, Wallace J., Sr.: *See—*
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Dhein, Rolf: *See—*
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Freedman, Bernard; and Diamond, Martin J., 3,932,352.
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Dickopp, Gerhard; and Jahnel, Benno, to TED Bildplatten Aktiengesellschaft, AEG-Telefunken, TELDEC. Record disc foil support system with charge leakage means. 3,932,710, Cl. 179-100.40R.
Diem, Hans: *See—*
Seither, Karl; Matthias, Guenther; Diem, Hans; Hussy, Oskar; and Haas, Hans, 3,932,522.
Dien, Sam. Golf glove improvement. 3,931,647, Cl. 2-161.00A.
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Dike, Robert S.; and Kewish, Ralph W., Jr., to United States of America, Energy Research and Development Administration. High-explosive driven crowbar switch. 3,932,717, Cl. 200-61.080.
Director-General of the Agency of Industrial Science and Technology: *See—*
Izumi, Gaku; Kimura, Tetsuo; Mori, Katsuyoshi; and Koizumi, Michiko, 3,932,274.
Yoshida, Hisayoshi; Nakamura, Takato; Nakagawa, Masanao; Arita, Seiji; and Miki, Toshiharu, 3,932,494.
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Di Stefano, Vittorio; Grimaldi, Rinaldo; and Marini, Paolo, to Centro Sperimentale Metallurgico S.p.A. Method and apparatus for the determination of the oxygen content of metallic baths. 3,932,135, Cl. 23-253.00R.
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Dixon, Tracy W. Tire changing device. 3,931,845, Cl. 157-1.220.
Dobberpuhl, Dale Rudolph, to Deere & Company. Tensioning device for a flexible drive element. 3,931,745, Cl. 74-242.11S.
Dr. -Ing. H.c.F. Porsche Aktiengesellschaft: *See—*
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Suda, Hideaki; Dohgane, Iwao; Chinuki, Takashi; Tanimoto, Kenji; Hosaka, Hirokazu; Nakao, Yukimichi; Ueda, Yuji; Imada, Seiya; Yanagihara, Hideki; and Tanaka, Kunihiko, 3,932,528.
Doi, Tadashi; Sekido, Isao; and Tamaki, Ryoichi, to Kao Soap Co., Ltd. Method for rapid hardening of asphalt emulsions. 3,932,331, Cl. 260-28.000.
Doin, Bernard Jean Felix Victor; Grebert, Robert Omer Emmanuel; and Jouhaud, Yves Pierre, to Societe Nationale des Poudres et Explosifs. Method of loading a solid fuel rocket engine. 3,931,709, Cl. 60-255.000.
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Domergue, Annick Marthe Suzanne Simone; Sureau, Robert Frederic Michel; Leboulenger, Jean Ernest Etienne; and Houssin, Jean Marie Alfred, to Products Chimiques Ugine Kuhlmann. Process for the preparation of 4'-alkoxy-4-naphthalimido-pyrazolium compounds and intermediates therefor. 3,932,413, Cl. 260-270.00H.
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Domoto, Masahiro: *See—*
Nakashio, Seizo; Sekine, Noriyuki; Toyota, Nobuhiro; Fujita, Fumio; and Domoto, Masahiro, 3,932,192.
Donohue, Paul C., to Du Pont de Nemours, E. I., and Company. Preparation and doping of semiconducting forms of $CuAlS_2$. 3,932,291, Cl. 252-62.30V.
Dopera, Rudolph. Stringed musical instruments. 3,931,753, Cl. 84-296.000.
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Landgraf, Helmut; and Forster, Herbert, 3,931,850.

Foster, Karl, to Westinghouse Electric Corporation. Method of improving the core-loss characteristics of cube-on-edge oriented silicon-iron. 3,932,235, Cl. 148-113.000.

Foster Wheeler Energy Corporation: *See—*
Waddell, Alistair Tobias, 3,932,110.

Fougea, Edouard Marie, to Constructions Edmond Coignet. Mobile pallet for an installation for production of pre-fabricated elements of concrete. 3,931,951, Cl. 249-158.000.

Foulke, Willing B. Fuel preparation process. 3,932,145, Cl. 44-1.00R.

Foundation: The Research Institute of Electric and Magnetic Alloys, The: *See—*
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Coirre, Paul; Coirre, Bertrand; Denis, Jean-Claude; Rambaud, Jerome; and Cahn, Jean, 3,932,638.

Frank, Kjell; and Thorborg, Kjeld, to Allmanna Svenska Elektriska Aktiebolaget. Peak load levelling system. 3,932,799, Cl. 321-27.00R.

Frank, Kjell, to Allmanna Svenska Elektriska Aktiebolaget. Power factor correcting means. 3,932,808, Cl. 323-102.000.

Frank, Lee F., to Eastman Kodak Company. Deflector galvanometer. 3,932,809, Cl. 324-96.000.

Franklin, William E.; and Rowland, Stanley P., to United States of America, Agriculture. High-molecular weight acidic polymers. 3,932,560, Cl. 260-851.000.

Franz, Helmut, to PPG Industries, Inc. Angled crossfire rinses. 3,931,790, Cl. 118-73.000.

Frazier, Lorne L.: *See—*
Raighn, Edwin H.; Eglinton, Robert B.; Frazier, Lorne L.; Naylor, Robert R.; and Morris, William R., 3,931,940.

Fred M. Dellorfano, Jr. and Donald P. Massa, Trustees of the Stoneleigh Trust u/d/t Dec. 4, 1973: *See—*
Massa, Frank; and Massa, Donald P., 3,932,833.

Frederick, Leonard L. Dynamic force measuring instrument for foundation pile and casing. 3,931,729, Cl. 73-11.000.

Free-Flow Packaging Corporation: *See—*
Fuss, Gunter G., 3,932,569.

Freeburg, Donald J.: *See—*
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Freedman, Bernard; and Diamond, Martin J., to United States of America, Agriculture. Photodegradable plastics containing β-halophenyl ketones. 3,932,338, Cl. 260-32.80A.

Freedman, Bernard; and Diamond, Martin J., to United States of America, Agriculture. Photodegradable plastic composition containing a N-halo imide. 3,932,352, Cl. 260-45.80N.

Freiberg, Leslie Alan, to Abbott Laboratories. 9-Dihydroniddamycin A compounds and related 3-(O)-esters and the process for their preparation. 3,932,383, Cl. 260-210.0AB.

Freidinger, Roger M.: *See—*
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Fremont Industries, Inc.: *See—*
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French, George F. Elastic check valve and method of construction. 3,931,831, Cl. 137-525.000.

Freudenschuss, Otto; Krammer, Herbert; and Scheiber, Robert, to Vockenhuber, Karl; and Hauser, Raimund. Load-control system responsive to operating condition of producer of intermittent radiation. 3,932,742, Cl. 250-199.000.

Frey, Donald G., to Westinghouse Electric Corporation. Pulsed polarization device for measuring angle of rotation. 3,932,039, Cl. 356-138.000.

Frey, Walter: *See—*
Duembgen, Gerd; Engelbach, Heinz; Frey, Walter; Krabetz, Richard; Lebert, Ulrich; Spitzl, Hermann; Thiessen, Fritz; and Willersinn, Carl-Heinz, 3,932,500.

Friction Products Inc.: *See—*
Watts, Willie H.; Lowey, Francis J., deceased; and Old Phoenix National Bank, executor, 3,932,568.

Friedman, Herman H.; Halik, Linda K.; and Schwarz, Milton H., to General Foods Corporation. Skin moisturizer. 3,932,622, Cl. 424-168.000.

Friedman, Ronald L.: *See—*
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Frohberger, Paul-Ernst: *See—*
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Fryer, Rodney I.: *See—*
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Fuji Photo Film Co., Ltd.: *See—*
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Fujii, Setsuro; Otsuka, Masatomi; and Osaki, Yoshiyasu, to Otsuka Kagaku Yakuhin Kabushiki Kaisha. Anti-inflammatory compositions. 3,932,618, Cl. 424-94.000.

Fujii, Toshihiro: *See—*
Kurata, Naoji; Koshida, Kazuo; Fujii, Toshihiro; Matsushiro, Koichi; and Okuda, Yukio, 3,932,531.

Fujimoto, Yasuo; Tatsukawa, Keizo; Teranishi, Masayuki; Koshimoto, Shinsuke; and Doiuchi, Toru, to Kyowa Hakko Kogyo Co., Ltd. Polyurethanes based on amino-acids or derivatives thereof. 3,932,359, Cl. 260-77.50R.

Fujino, Takashi; and Matsui, Riyouichi, to Kao Soap Co., Ltd. Detergent composition. 3,932,295, Cl. 252-102.000.

Fujita, Fumio: *See—*
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Fujita, Kiyoshi: *See—*
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Fukuda, Akira. Flux meter. 3,931,731, Cl. 73-40.000.

Fukuda, Masaaki: *See—*
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Fukumi, Hirokazu; Itoh, Koryo; Usubuchi, Yutaka; and Itoh, Hirataka, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for preparing 4-aminomethyl cyclohexane carboxylic acid-1. 3,932,497, Cl. 260-514.00J.

Fukumoto, Ryoichi: *See—*
Nakano, Ryuzo; Fukumoto, Ryoichi; and Fukura, Kenichi, 3,931,664.

Fukunaga, Yasuhisa; and Okada, Akira, to Kyowa Kagaku Kogyo Kabushiki Kaishi. Process for hydrogenation reaction of unsaturated organic compounds. 3,932,534, Cl. 260-618.00H.

Fukura, Kenichi: *See—*
Nakano, Ryuzo; Fukumoto, Ryoichi; and Fukura, Kenichi, 3,931,664.

Fukushima, Nobuo; Inoue, Masakazu; Takai, Ryouzo; and Hotta, Kozo, to Sumitomo Chemical Company, Limited; and Yomiuri Shimbun, The. Method for preparing a plastic relief printing plate. 3,931,762, Cl. 101-401.100.

Fukushima, Osamu: *See—*
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Fukuyasu, Fuguaki: *See—*
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Fulton, Robert W., to Morton-Norwich Products, Inc. Method for prolonging the inhibitory effect of saralasin on angiotensin II. 3,932,624, Cl. 424-177.000.

Funken Co., Ltd.: *See—*
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Furuta, Shigetaro: *See—*
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Fury, Lawrence A.: *See—*
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Fushimi, Akihiro: *See—*
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Fuss, Gunter G., to Free-Flow Packaging Corporation. Method for producing free-flow interlocking foamed packing material. 3,932,569, Cl. 264-51.000.

Futaki, Kiyoshi; Tsukahara, Hirokazu; and Emoto, Kazuhiro, to Mitsubishi Paper Mills, Ltd. An organic photoconductive composition comprising an organic photoconductive compound and a sensitizing compound having an active methylene group. 3,932,182, Cl. 96-1.600.

Futaki, Kiyoshi: *See—*
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Gadd, Ronald O. C.; Quarmby, Robert C.; and Smith, Frank R., to USM Corporation. Adhesive extruding nozzle-guidance arrangements. 3,931,788, Cl. 118-8.000.

Gade, John J.: *See—*
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Gadsby, Brian: *See—*
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Cross, Peter Edward; and Gadsby, Brian, 3,932,639.
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GAF Corporation: *See—*
Erb, Edward R.; and Maass, Richard L., 3,932,245.

Gaigg, Wilhelm; and Gutalj, Vladimir, to Sprecher & Schuh AG. Gas-blast insulated, encapsulated high-voltage switching installation with removable collecting rails. 3,932,720, Cl. 200-148.00R.





Gaku, Morio: *See—*
Sato, Shunichi; Kurata, Masaharu; Takao, Toshiyuki; Masaki, Sadao; Notomi, Toru; Gaku, Morio; and Moriya, Takehiko, 3,932,250.

Gallant, George A., to Simmonds Precision Products, Inc. Eddy current sensor. 3,932,813, Cl. 324-164.000.

Gallaro, Anthony V.: *See—*
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Ganellin, Charon Robin: *See—*
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Durant, Graham John; Emmett, John Colin; and Ganellin, Charon Robin, 3,932,644.

Ganowski, Franz-Josef, to Keller & Knappich Augsburg Zweigniederlassung der Industrie-Werke Karlsruhe Augsburg Aktiengesellschaft. Method for monitoring and regulating electrical resistance welding. 3,932,725, Cl. 219-110.000.

Garcia, Arthur, to RCA Corporation. Shortened aperture dipole antenna. 3,932,873, Cl. 343-792.000.

Garden State Paper Co., Inc.: *See—*
Illingworth, Robert H.; and Lorey, Frank W., 3,932,206.

Gardner, Jeffrey M.; and Pilz, William M., III, to Container Corporation of America. Erectable partition. 3,931,924, Cl. 229-28.00R.

Garone, Frank: *See—*
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Garr, Leo: *See—*
Fabian, James M., 3,931,972.

Garshelis, Ivan J. Magnetoelastic, remanent, hysteretic devices. 3,932,112, Cl. 431-255.000.

Gates, Eric: *See—*
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Gates Rubber Company, The: *See—*
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Gattersleben, Hermann: *See—*
Jabs, Hartmut; and Wiemers, Minny, 3,931,750.

Gatzi, Karl, to Ciba-Geigy Corporation. Carbamoyloximes derivatives. 3,932,509, Cl. 260-566.0AC.

Gauthier, George J., to Pfizer Inc. Phenanthridines and phenanthridinones as antiviral agents. 3,932,643, Cl. 424-258.000.

Gebhardt, Karl, to U.S. Philips Corporation. Method of manufacturing miniature incandescent lamps. 3,932,164, Cl. 65-32.000.

Gehri, Dennis C.: *See—*
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Geiger, William J.: *See—*
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Gendron, Normond. System to convert liquid fuel to gas. 3,931,800, Cl. 123-133.000.

General American Transporation Corporation: *See—*
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General Electric Company: *See—*
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General Mills, Inc.: *See—*
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General Motors Corporation: *See—*
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Scott, William B., 3,932,061.
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General Teletronics Incorporated: *See—*
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General Tire & Rubber Company, The: *See—*
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Generale Alimentaire: *See—*
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George, Flint R.: *See—*
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Georgoudis, Paul C.: *See—*
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Gerber, Gary A.; and Benson, Kenneth R. Bicycle carrier for automobiles. 3,931,919, Cl. 224-42.10F.

Gerns, Fred R., to Great Lakes Chemical Corporation. Process for preparation of 2,5-dibromo-p-xylene. 3,932,542, Cl. 260-650.00R.

Gersbeck, Rolf: *See—*
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Gertsch AG: *See—*
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Gesellschaft fur Kernforschung m.b.H.: *See—*
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Gettwart, Michael: *See—*
Henning, Wolfram; and Gettwart, Michael, 3,932,022.

Giardini, Dante S.; and Unnewehr, Lewis E., to Ford Motor Company. Variable reluctance motor pump. 3,932,069, Cl. 417-420.000.

Gibeau, Rodney C.: *See—*
Camelon, Melville J.; and Gibeau, Rodney C., 3,932,320.
Camelon, Melville J.; and Gibeau, Rodney C., 3,932,347.
Camelon, Melville J.; and Gibeau, Rodney C., 3,932,348.
Camelon, Melville J.; and Gibeau, Rodney C., 3,932,349.

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Gilbert, Robert L., Jr., to United States of America, Army. Electrical connectors. 3,932,020, Cl. 339-177.00R.

Gillette Company, The: *See—*
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Gilpatrick, Michael William, to Deering Milliken Research Corporation. Loop pile fabric cutting module. 3,931,669, Cl. 26-9.000.

Ginsberg, Guenter; Godin, Thomas John; and Simpson, Ronald Olin, to Coulter Electronics, Inc. Pneumatically controlled liquid transfer system. 3,932,065, Cl. 417-317.000.

Giras, Theodore C., to Westinghouse Electric Corporation. Method of controlling supply of power. 3,932,735, Cl. 235-151.210.

Girault, Pierre: *See—*
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Shaffer, Gary W.; Kitchens, Garry C.; and Kaiser, Kent, 3,932,516.

Glaverbel-Mecaniver S.A.: *See—*
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Glaxo Laboratories Limited: *See—*
Cook, Martin Christopher; Gregory, Gordon Ian; and Bradshaw, Janice, 3,932,385.

Gliemeroth, Georg, to Jenaer Glaswerk Schott & Gen. Transparent, phototropic laminate. 3,932,690, Cl. 428-432.000.

Globe-Union Inc.: *See—*
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Gloyer, Stewart E.; and Fury, Lawrence A., to Kraftco Corporation. Process for manufacture of ketones from olefins. 3,932,521, Cl. 260-597.00B.

Godin, Thomas John: *See—*
Ginsberg, Guenter; Godin, Thomas John; and Simpson, Ronald Olin, 3,932,065.

Goetz, Norbert; and Fischer, Roman, to BASF Aktiengesellschaft. Manufacture of unsaturated ketones. 3,932,462, Cl. 260-340.700.

Goldfarb, Adolph E.; and Benkoe, Erwin. Air table game apparatus. 3,931,974, Cl. 273-126.00R.

Goldowsky, Michael. Liquid administration apparatus. 3,931,818, Cl. 128-214.00C.

Goldsberry, Fred L., to Enserch Corporation. Refrigerant expander compressor. 3,932,159, Cl. 62-510.000.

Gollion, Henri Jacques: *See—*
Aubert, Michel; Gollion, Henri Jacques; and Verriere, Philippe, 3,932,214.

Goloff, Alexander, to Caterpillar Tractor Co. Seal assembly for rotary mechanisms. 3,931,977, Cl. 277-81.00P.

Gomm, Thiel J.; and Price, Stephen E., to Continental Charter Corporation. Filter-discriminator circuit. 3,932,767, Cl. 307-235.00R.

Goode, Raymond A., to Dunbar Manufacturing Co., Inc. Electrically heated dry cereal grain expander. 3,931,757, Cl. 99-323.110.

Goodrich, John Eric; and Hutchinson, Francis Gowland, to Imperial Chemical Industries Limited. Silicone elastomers. 3,932,555, Cl. 260-825.000.

Goodwin, Edwin C., Jr.; and Benham, George K., to Allis-Chalmers Corporation. Circuit breaker having a single pull-rod operating system with a selective trip-free control. 3,932,719, Cl. 200-148.000.

Goodyear Tire & Rubber Company, The: *See—*
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Champlin, Roger A., 3,932,345.
Saracsan, Jeffrey W., 3,932,255.
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Gorton, Bert Sorelle, to Du Pont de Nemours, E. I., and Company. Adhesive composition of vinyl ester polymer, polyvinyl alcohol, glyoxal, and a water miscible alcohol. 3,932,335, Cl. 260-29.6WA.

Gortsema, Frank P., to Union Carbide Corporation. Process for the preparation of fine grain metal carbide powders. 3,932,594, Cl. 423-440.000.

Gotchy, Reginald L., to United States of America, Energy Research and Development Administration. System for disposing of radioactive water. 3,932,300, Cl. 252-301.10W.

Gottesman, Roy T.: *See—*
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Gould, Henry, to Tenneco Chemicals, Inc. Process for the production of 2,3-dibromo-1-propanol. 3,932,540, Cl. 260-633.000.

Graf, Carl R.: *See—*
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Graham, James Richard; Ernest, Michael Vance; and Maselli, James Michael, to W. R. Grace & Co. Auto exhaust catalysts prepared from sulfite treated platinum and palladium salt solutions. 3,932,309, Cl. 252-439.000.

Graham, Roy R., to PPG Industries, Inc. Forming size for textile glass fibers. 3,932,193, Cl. 106-211.000.
Grandine, Joseph D., to Millipore Corporation. Method of sample application to gel electrophoresis media. 3,932,229, Cl. 204-180.00G.
Grant, Marshall D. Net post retention device. 3,931,965, Cl. 273-29.0BF.
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Grantham, LeRoy F.; Gehri, Dennis C.; and Katz, Bruno, to Rockwell International Corporation. Absorption of sulfur oxides from flue gas. 3,932,587, Cl. 423-242.000.
Grasselli, Robert K.; Suresh, Dev. D.; and Callahan, James L., to Standard Oil Company, The. Process for the preparation of diolefins from olefins. 3,932,551, Cl. 260-680.00E.
Grasshoff, J. Michael; and Taylor, Lloyd D., to Polaroid Corporation. Benzylthiosulfuric acid salts. 3,932,480, Cl. 260-453.00R.
Graulus, Marcel J. R.: *See—*
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Graumann, Richard E.: *See—*
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Graven, Robert Michael. Coloringbook, a solid state display device. 3,932,862, Cl. 340-324.00M.
Graves, Paul W.; and Rhodes, Constantine, to GTE Sylvania Incorporated. High voltage switching generator. 3,932,772, Cl. 307-264.000.
Great Lakes Chemical Corporation: *See—*
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Grebert, Robert Omer Emmanuel: *See—*
Doin, Bernard Jean Felix Victor; Grebert, Robert Omer Emmanuel; and Jouhaud, Yves Pierre, 3,931,709.
Green, Joseph; and Morgan, Brian, to Beecham Group Limited. Biologically active substance. 3,932,659, Cl. 424-325.000.
Greensides, Christopher John, to Clarks Limited. Foot measuring machines. 3,931,680, Cl. 33-3.00B.
Greer, Phillip E.: *See—*
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Gregory, Gordon Ian: *See—*
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Greten, Berndt: *See—*
Brinkman, Heinz; Gersbeck, Rolf; and Greten, Berndt, 3,932,258.
Griffiths, Clifford H.; and Walker, Michael S., to Xerox Corporation. Direct alpha to X phase conversion of metal-free phthalocyanine. 3,932,180, Cl. 96-1.500.
Grimaldi, Rinaldo: *See—*
Di Stefano, Vittorio; Grimaldi, Rinaldo; and Marini, Paolo, 3,932,135.
Grimaldo, Samuel. Collapsible trailer hoist. 3,931,895, Cl. 214-1.00A.
Grimston, Roger Anthony, to Burmah Engineering Company Limited. Mechanical seals. 3,931,978, Cl. 277-93.000.
Gritz, Darrell D., to Jacuzzi Bros. Incorporated. Pump systems for liquids. 3,931,830, Cl. 137-505.450.
Grohe, Klaus; and Frohberger, Paul-Ernst, to Bayer Aktiengesellschaft. 2-Thiazolone-5-carboxylic acid ester fungicidal agents. 3,932,436, Cl. 260-306.70R.
Groll, Manfred; Hederich, Volker; and Bien, Hans-Samuel, to Bayer Aktiengesellschaft. Quinophthalone dyestuffs. 3,932,419, Cl. 260-289.0QP.
Groover, Robert Guy, to Raymond Lee Organization, Inc., The, a part interest. Automobile headlight switch. 3,932,788, Cl. 315-82.000.
Gross, Rudolf; and Plotz, Johann, to Kraftwerke Union Aktiengesellschaft. Apparatus and method for depressurizing, degassing and affording decay of the radioactivity of weakly radioactive condensates in nuclear power plants. 3,932,212, Cl. 176-37.000.
Grossman, Joseph H.: *See—*
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Groupement d'Interet Economique Stx: *See—*
D'Albignac, Jean Marie Louis Jules, 3,932,127.
Grubb, Daniel Baker, to AMP Incorporated. Propellant-driven device for crimping large size wire and terminals. 3,931,726, Cl. 72-430.000.
Grychtol, Klaus, to BASF Aktiengesellschaft. Quaternized 6-diethylamino-2-[benzimidazolyl-(2)]benzofuran. 3,932,446, Cl. 260-309.200.
GTE Automatic Electric Laboratories Incorporated: *See—*
Reimer, William A.; and Scheuerman, Elmer L., 3,932,012.
GTE Laboratories, Incorporated: *See—*
Buhrer, Carl F., 3,932,827.
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Guerrieri, Salvatore A., to University of Delaware, The. Removal of oxides of sulfur from gases. 3,932,586, Cl. 423-242.000.
Guigmard, Jean Hubert, to Schlumberger Technology Corporation. Methods and apparatus for measuring the rate of penetration in well drilling from floating platforms. 3,931,735, Cl. 73-151.500.
Guimier, Jacques A.; and Coutin, Pierre F., to R. Alkan & Cie. Remote electrical transmission system. 3,932,714, Cl. 191-12.00R.
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Habeck, Dietmar A.; and Houlihan, William J., to Sandoz, Inc. Substituted indeno, naphtho and cyclohepta pyrazoles. 3,932,430, Cl. 260-296.00T.
Haberditz, Wilhelm-Rudiger: *See—*
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Hack, Heinrich, to Carl Schenck AG, Firma. Method for controlling the weight correction of workpieces prior to finish-machining. 3,932,053, Cl. 408-1.000.
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Haefely, Willy, to Hoffmann-La Roche Inc. Antidepressant compositions. 3,932,652, Cl. 424-274.000.
Hahn-Meitner-Institut fur Kernforschung Berlin GmbH: *See—*
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Hamilton, Martin W., to Eaton Corporation. Crane radius instrument. 3,932,855, Cl. 340-267.00C.
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Hansen, Dan S., to F. L. Smidth & Co. Method and apparatus for burning pulverulent materials. 3,932,116, Cl. 432-14.000.
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Harvey, Bobbie S. Projectile having indented surface areas. 3,931,971, Cl. 273-106.00R.
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Hideg, Kalman; Hankovszky, Olga; Palosi, Eva; Hajos, Gyorgy; and Szporny, Laszlo, to Richter Gedeon Vegyeszeti Gyar Rt. Tricyclic imidazole derivatives. 3,932,395, Cl. 260-243.00R.
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Hirata, Syunsaku: *See—*
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Hodler, Karl; and Walter, Erich. Timing device for pneumatic control systems. 3,931,832, Cl. 137-624.110.

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Hoffman, Herbert F. Hydraulic cow catch-carrier. 3,931,796, Cl. 119-151.000.

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Hoh, George Lok Kwong; and Reardon, Joseph Edward, to Du Pont de Nemours, E. I., and Company. Soft thermoplastic segmented copolyesters as pressure sensitive adhesives. 3,932,326, Cl. 260-26.000.

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Hoke, Donald Irvin, to Lubrizol Corporation, The. Aminosulfonic acid-heterocyclo propane-amine reaction products and fuels and lubricants containing same. 3,932,288, Cl. 252-33.000.

Holdsworth, Robert S.; O'Neill, Gerald J.; and Tarrant, Paul, to W. R. Grace & Co. 1-Chloro-2,2-dimethyl-1,4,4-trifluorocyclobutane as an anesthetics. 3,932,669, Cl. 424-352.000.

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Holland, Gerald F., to Pfizer Inc. Cyclic N-substituted derivatives of 1,4-benzene disulphonamide. 3,932,647, Cl. 424-267.000.

Holland, Gerald F., to Pfizer Inc. Cyclic N-substituted derivatives of 1,4-benzene disulphonamide. 3,932,648, Cl. 424-267.000.

Holliday, Robert G. Trailer with moveable axle assembly. 3,931,987, Cl. 280-80.00B.

Hollingshad, William Robert, to Calgon Corporation. Corrosion inhibition with triethanolamine phosphate ester compositions. 3,932,303, Cl. 252-389.00A.

Holman, Merle A. Method of and apparatus for cutting vehicle tires. 3,931,935, Cl. 241-24.000.

Holmes, Frank A.; and Stansbury, Benjamin H., Jr., to Jaybee Manufacturing Corporation. Springless self-latching hinge having a resilient hinge member. 3,931,663, Cl. 16-142.000.

Holtkamp, Calvin J., to White-Westinghouse Corporation. Push-to-turn thermal cycling switch. 3,932,830, Cl. 337-64.000.

Hombach, Carl J. Holder for a kitchen utensil. 3,931,668, Cl. 24-261.00A.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
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Honma, Taketoshi: *See—*
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Hood, Henry Alexander, to Wall Industries, Inc. Rope terminations and methods and apparatus for fabricating the same. 3,932,697, Cl. 174-79.000.

Hoogeboom, Adrianus Johannes Theodorus, to Landi Den Hartog B.V. Control device. 3,931,798, Cl. 123-120.000.

Horbach, Stephen. Mold base. 3,932,085, Cl. 425-186.000.

Horie, Akira: *See—*
Okagami, Akio; Horie, Akira; and Toida, Tsutomu, 3,932,147.

Horie, Masakazu; Fukuhara, Takao; and Harada, Tetsuya, to Nissan Motor Company Limited. Exhaust gas recirculation control device. 3,931,813, Cl. 123-119.00A.

Hornbaker, Edwin D.; and Sparks, Bryan, to Ethyl Corporation. Emulsion polymerization of vinyl bromide with vinyl comonomer. 3,932,336, Cl. 260-29.60R.

Hornbuckle, Hal E., to Belmont Textile Machinery Co., Inc. Pneumatically operated swift for holding skeins of yarn to be unwound vertically. 3,931,941, Cl. 242-110.000.

Horsting, Albertus G.; and Luzaich, Samuel, to Tur-Colossus, Inc. Apparatus for cleaning and disinfecting insemination straws. 3,931,661, Cl. 15-308.000.

Horton, Donald R.: *See—*
Brannon, Donald R.; and Horton, Donald R., 3,932,619.

Horvath, Arisztid Lajos: *See—*
Clementson, John Joseph; and Horvath, Arisztid Lajos, 3,932,297.

Horvath, Emory. Magnetic tape player with cartridge door opening means. 3,932,891, Cl. 360-93.000.

Hosaka, Hideo; and Kawamata, Yasuo, to Max Kabushiki Kaisha. Powder ejector. 3,931,914, Cl. 222-193.000.

Hosaka, Hirokazu: *See—*
Suda, Hideaki; Dohgane, Iwao; Chinuki, Takashi; Tanimoto, Kenji; Hosaka, Hirokazu; Nakao, Yukimichi; Ueda, Yuji; Imada, Seiya; Yanagihara, Hideki; and Tanaka, Kunihiko, 3,932,528.





Hoshi, Hiroshi: *See—*
Yamaguchi, Tadashi; Ono, Takayuki; Hoshi, Hiroshi; Hirakawa, Michio; and Watanabe, Isao, 3,932,350.

Hotta, Kozo: *See—*
Fukushima, Nobuo; Inoue, Masakazu; Takai, Ryouzo; and Hotta, Kozo, 3,931,762.

Hotta, Masao: *See—*
Abe, Zenuemon; Tanaka, Kunio; Hotta, Masao; and Imai, Masaaki, 3,932,805.

Houlihan, William J., to Sandoz, Inc. Intermediates in the preparation of imidazo(2,1-alpha)isoindoles. 3,932,450, Cl. 260-309.600.

Houlihan, William J.: *See—*
Habeck, Dietmar A.; and Houlihan, William J., 3,932,430.

Hounsfield, Godfrey Newbold, to EMI Limited. Apparatus for producing a visual representation of a radiographic scan. 3,932,757, Cl. 250-365.000.

Houssin, Jean Marie Alfred: *See—*
Domergue, Annick Marthe Suzanne Simone; Sureau, Robert Frederic Michel; Leboulenger, Jean Ernest Etienne; and Houssin, Jean Marie Alfred, 3,932,413.

Hovland, Per Jorgen: *See—*
Connolly, David Charles Anthony; and Hovland, Per Jorgen, 3,932,707.

Howard Machinery Limited: *See—*
North, Bernard C., 3,931,858.

Howard, Robert C.: *See—*
Dunlay, John B.; and Howard, Robert C., 3,932,776.

Howe, Fred Ellsworth, to Cominco Ltd. Barrel shaped mercury separator with spoked agitator. 3,932,284, Cl. 210-523.000.

Hsiung, Du Yung, to Gillette Company, The. Two-part hair dye or hair bleach package. 3,931,912, Cl. 222-94.000.

Huber, William W.; Shriner, Rollin R.; and Shuman, Harry N., to Spartek Inc. Case assembly with tungsten carbide inserts for ceramic tile die. 3,932,098, Cl. 425-412.000.

Hudson, Monie S., to United States of America, Health, Education and Welfare. Extracts from active tree saps. 3,932,628, Cl. 424-195.000.

Hughes Aircraft Company: *See—*
Pastor, Ricardo C., 3,932,597.

Hull, Charles Hartley: *See—*
Ashfield, Herbert Edward; and Hull, Charles Hartley, 3,931,812.

Humer, Donald D., to Du Pont de Nemours, E. I., and Company. Optical coupler for transmitting light linearly between a single point and plural points. 3,932,023, Cl. 350-96.00C.

Hunter, Robert H.; and Zech, John David, deceased, to ICI United States Inc. Ethers of polyglycerol. 3,932,532, Cl. 260-615.00R.

Hunter, Wood Eugene; and Hoffman, Karl H., to Nalco Chemical Company. Raney copper catalyst production and use. 3,932,506, Cl. 260-561.00N.

Hunziker, Louis A. Removable jacking wheel unit. 3,931,986, Cl. 280-43.200.

Hureau, Jean-Claude; Rota, Benjamin; and Thomas-Castelnau, Philippe, to Generale Alimentaire. Apparatus for making plastics mesh structures and other forms of openwork. 3,932,092, Cl. 425-382.000.

Hussy, Oskar: *See—*
Seither, Karl; Matthias, Guenther; Diem, Hans; Hussy, Oskar; and Haas, Hans, 3,932,522.

Hutchinson, Francis Gowland: *See—*
Goodrich, John Eric; and Hutchinson, Francis Gowland, 3,932,555.

Hydrocarbon Research, Inc.: *See—*
Lehman, Leon M., 3,932,269.
Stern, Sidney S., 3,932,156.

HydroTech International, Inc.: *See—*
Arnold, James F., 3,931,670.

ICI United States Inc.: *See—*
Hunter, Robert H.; and Zech, John David, deceased, 3,932,532.

Ikeda, Hiroshi, to Minolta Camera Kabushiki Kaisha. Original holder plate for copying machine. 3,932,037, Cl. 355-76.000.

ILC-Steinthal, Inc.: *See—*
Sepp, Oscar W., 3,931,945.

Illingworth, Robert H.; and Lorey, Frank W., to Garden State Paper Co., Inc. Process for de-inking printed waste cellulosic fibrous material. 3,932,206, Cl. 162-5.000.

Illinois Tool Works Inc.: *See—*
Soltysik, Edmund John, 3,931,946.

Imada, Seiya: *See—*
Suda, Hideaki; Dohgane, Iwao; Chinuki, Takashi; Tanimoto, Kenji; Hosaka, Hirokazu; Nakao, Yukimichi; Ueda, Yuji; Imada, Seiya; Yanagihara, Hideki; and Tanaka, Kunihiko, 3,932,528.

Imagome, Hiroshi: *See—*
Kawakami, Kazuo; Imagome, Hiroshi; Ishizaki, Sumio; and Sugiyama, Genpei, 3,932,121.

Imai, Masaaki: *See—*
Abe, Zenuemon; Tanaka, Kunio; Hotta, Masao; and Imai, Masaaki, 3,932,805.

Imanaka, Takuichi; Kan, Takahiro; Obata, Yoshio; and Sato, Toru, to Kawasaki Steel Corporation. Method for manufacturing single-oriented electrical steel sheets comprising antimony and having a high magnetic induction. 3,932,234, Cl. 148-112.000.

IMI (TAMI) Institute for Research & Development: *See—*
Rona, Peter, 3,932,306.

Imperial Chemical Ind. (Europa) Fibres: *See—*
Wetzel, Wolfgang; and Muller, Manfred, 3,932,854.

Imperial Chemical Industries Limited: *See—*
Ashton, Stanley; Sharma, Vijay Ratna; and Taylor, John Anthony, 3,932,403.
Broadbent, Douglas; Hemming, Harold George; and Hesp, Barrie, 3,932,394.
Clementson, John Joseph; and Horvath, Arisztid Lajos, 3,932,297.
Cotterrell, Graham Paul, 3,932,631.
Cox, David Lloyd; and McDonnell, Neil Patrick Hugh, 3,932,570.
Goodrich, John Eric; and Hutchinson, Francis Gowland, 3,932,555.

Inaba, Shigeho: *See—*
Yamamoto, Hisao; Inaba, Shigeho; Akatsu, Mitsuhiro; Baile, Clifton A.; and Parish, Roger G., 3,932,637.

Inamoto, Yoshiaki; and Aigami, Koji, to Kao Soap Co., Ltd. Process for preparing new amidine compounds. 3,932,492, Cl. 260-501.140.

Information Terminals Corporation: *See—*
Ward, Paul F., 3,932,895.

Infranca, Leonard. Pediatric corrective device. 3,931,817, Cl. 128-80.00A.

Infrared Industries, Inc.: *See—*
Riedl, Max J.; and Ross, Thaddeus C., 3,932,754.

Inglis Nurseries Inc.: *See—*
Fink, Robert, 3,932,052.

Ingram, Woodrow Hayes, II, to Monsanto Company. Emulsified phenolic resin system containing an anti-migratory additive. 3,932,333, Cl. 260-29.300.

Ingrip Fasteners, Inc.: *See—*
Brumlik, George C., 3,932,090.

Inland Steel Company: *See—*
Robins, Norman A.; and Bugajski, Frank H., 3,932,683.

Inmont Corporation: *See—*
Zamer, Joseph, 3,932,561.

Ian-Tronics: *See—*
Smith, James O.; and Gade, John J., 3,932,858.

Inoue, Hirozumi: *See—*
Takeda, Mikio; Inoue, Hirozumi; Hayashi, Goro; and Nurimoto, Seiichi, 3,932,429.

Inoue, Kiyoshi. Powder activation in an inert atmosphere. 3,932,760, Cl. 250-492.000.

Inoue, Masakazu: *See—*
Fukushima, Nobuo; Inoue, Masakazu; Takai, Ryouzo; and Hotta, Kozo, 3,931,762.

Instytut Prezemyslu Miesnego: *See—*
Janicki, Mieczyslaw; Muler, Henryk; and Nijaki, Wladyslaw, 3,932,676.

Intel Corporation: *See—*
Porat, Eli, 3,932,848.

Interatom Internationale Atomreaktorbau GmbH: *See—*
Kruger, Horst, 3,932,215.

Interform, Inc.: *See—*
Dashew, Stephen S., 3,931,952.

International Business Machines Corporation: *See—*
Arter, Nelson K.; Eichhorn, Thomas F.; and Kalthoff, Clement H., 3,932,894.
Ayer, Thad E., 3,931,880.
Smith, Ronald Morton, 3,932,847.
Sprokel, Gerard J., 3,932,026.

International Pharmakon Laboratories, Inc.: *See—*
Conn, Richard H., 3,932,655.

International Standard Electric Corporation: *See—*
Trelut, Jean Marie; Liot, Jean Bernard Michel; Cagnac, Therese Marie Leonie; and Chambet-Falquet, Antoine Jean Louis, 3,932,843.

International Tapetronics Corporation: *See—*
Jenkins, John P., 3,932,887.

International Telephone and Telegraph Corporation: *See—*
Sears, Karl David, 3,932,488.

Investors in Ventures, Inc.: *See—*
Bucalo, Louis, 3,931,820.

Irie, Toshio; Yokoyama, Yasuo; Kameishi, Yoshihiko; Yamaguchi, Katsuo; and Hamachi, Kazuo, to Kawasaki Steel Corporation. Method for forming an insulating glass film on surfaces of an oriented silicon steel sheet. 3,932,237, Cl. 148-113.000.

Isaac, Otto; and Offermanns, Heribert, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the recovery of pure alpha-bisabolol. 3,932,533, Cl. 260-617.00R.

Ishikawa, Hiroshi, to Olympus Optical Co., Ltd. System for detecting the particular chemical component of a test fluid. 3,932,133, Cl. 23-253.00R.

Ishizaki, Sumio: *See—*
Kawakami, Kazuo; Imagome, Hiroshi; Ishizaki, Sumio; and Sugiyama, Genpei, 3,932,121.

Ismail, Roshdy: *See—*
Zoche, Gunter; Richtzenhain, Hermann; and Ismail, Roshdy, 3,932,535.

Isoda, Narihiro, to Suntex Limited. Apparatus for liquid treatment of a cloth band of an endless form. 3,931,722, Cl. 68-176.000.

Itaya, Nobushige: *See—*
Okuno, Yoshitoshi; Hirano, Masachika; Ohno, Isao; Takeda, Hisami; Magara, Osamu; Itaya, Nobushige; Nishioka, Toshio; Mizutani, Toshio; Ohno, Nobuo; and Matsuo, Takashi, 3,932,459.

Ito, Ryosuke: *See—*
Takahashi, Susumu; and Ito, Ryosuke, 3,932,706.

Ito, Shojiro; Takami, Akira; and Takekoshi, Tokio, to Meiji Seika Co., Ltd. Process for the preparation of granules. 3,932,615, Cl. 424-80.000.
Itoh, Hirataka: *See—*
Fukumi, Hirokazu; Itoh, Koryo; Usubuchi, Yutaka; and Itoh, Hirataka, 3,932,497.
Itoh, Koryo: *See—*
Fukumi, Hirokazu; Itoh, Koryo; Usubuchi, Yutaka; and Itoh, Hirataka, 3,932,497.
Ivakhnenko, Viktor Vasilievich; Kuznetsov, Evgeny Fedorovich; Sudarev, Anatoly Vladimirovich; Akodes, Jury Grigorievich, deceased; and by Akodes, Zoya Ivanovna, administrator. Plate-type heat-exchange apparatus. 3,931,854, Cl. 165-166.000.
Iwaasa, Takashi: *See—*
Yokotsuka, Tamotsu; Iwaasa, Takashi; Okami, Tadao; Noda, Minoru; and Fujii, Mitsuharu, 3,932,671.
Iwaki, Koichi; Wakabayashi, Atsushi; Nagahori, Yukihiro; and Nakagawa, Shiro, to Jeco Kabushiki Kaisha. Counter feed mechanism as used in digital clock. 3,931,705, Cl. 58-125.00C.
Iwako, Hiroyuki, to Funken Co., Ltd. Revolution speed controller using both analog and digital control. 3,932,794, Cl. 318-318.000.
Iwamoto, Hideo; and Miyamoto, Mamoru, to Mitsubishi Denki Kabushiki Kaisha. Direct current power control circuit. 3,932,800, Cl. 321-43.000.
Iwata, Sigetaka: *See—*
Shiraishi, Makoto; Iwata, Sigetaka; and Oura, Masao, 3,932,574.
Izumi, Gaku; Kimura, Tetsuo; Mori, Katsuyoshi; and Koizumi, Michiko, to Director-General of the Agency of Industrial Science and Technology. Method for eliminating metals from a solution containing a very slight amount of the metals. 3,932,274, Cl. 210-44.000.
Izumi, Kenkichi: *See—*
Komai, Mitsumasa; Sawa, Toshio; and Izumi, Kenkichi, 3,932,150.
J. I. Case Company: *See—*
Schuck, Paul R., 3,931,717.
J. J. Baker Company Limited: *See—*
Turnbull, James O'Hara; Merritt, William Lipscomb; and McLaughlin, Ivan Patrick, 3,931,684.
J. K. & Susie L. Wadley Research Institute and Blood Bank: *See—*
Dorn, Gordon L., 3,932,222.
Jabs, Hartmut; and Wiemers, Minny, to Heusch, Severin; Plankermann, Ida; Gattersleben, Anneliese; Gattersleben, Hermann; and Thoennissen, Finny. Helical shear blade. 3,931,750, Cl. 83-672.000.
Jabsen, Felix S., to Babcock & Wilcox Company, The. Industrial technique. 3,932,216, Cl. 176-78.000.
Jackson, Auzville, Jr.: *See—*
Weedle, Rosemary B., 3,931,819.
Jackson, Sydney; and Shepherd, Alan Arthur, to Ferranti, Limited. Apparatus for mounting semiconductor devices. 3,931,922, Cl. 228-6.000.
Jacobs, Christianus, to B.V. Machinefabriek en Ijzergieterij Holland-Bergen op Zoom. Butterfly valve. 3,931,955, Cl. 251-305.000.
Jacuzzi Bros. Incorporated: *See—*
Gritz, Darrell D., 3,931,830.
Jaegtnes, Karl O.; and Smith, Millard F., to Westinghouse Electric Corporation. Electrohydraulic emergency trip system and method for a turbine power plate. 3,931,714, Cl. 60-660.000.
Jahnel, Benno: *See—*
Dickopp, Gerhard; and Jahnel, Benno, 3,932,710.
Janicki, Mieczyslaw; Muler, Henryk; and Nijaki, Wladyslaw, to Instytut Prezemyslu Miesnego. Method for dyeing protein articles of food, especially protein casings. 3,932,676, Cl. 426-250.000.
Jankowski, Ollie F. Toilet anti-splash guard. 3,931,649, Cl. 4-1.000.
Janssens, Wilhelmus; Vanheertum, Johannes Josephus; Pollett, Robert Joseph; Sneyers, Hendrik Hubert; and Dierckx, Jozef Aime, to AGFA-GEVAERT N.V. Electrophotographic material. 3,932,418, Cl. 260-288.0CE.
Janszen, Arthur A., to Electrostatic Research Corporation. Wide range speaker system. 3,931,867, Cl. 181-155.000.
Japan Gasoline Co., Ltd.: *See—*
Okagami, Akio; Horie, Akira; and Toida, Tsutomu, 3,932,147.
Japan Steel Works, Ltd.: *See—*
Miyano, Katao; Tomizuka, Shunichi; Adachi, Takao; Takenouchi, Tomoo; Kondo, Satoshi; Hirama, Akira; and Endo, Yasuo, 3,932,200.
Japan Synthetic Rubber Company Limited: *See—*
Maki, Hirohisa; and Kitagawa, Yozo, 3,932,321.
Javerzat, Alex; and Delplanque, Fernand, to Mecaval International. Automatic device for systematically placing elongated products on a conveyor. 3,931,879, Cl. 198-21.000.
Javillonar, Michael A., to Raymond Lee Organization, Inc., The, a part interest. Toothpaste tube supporting device. 3,931,950, Cl. 248-108.000.
Jayawant, Madhusudan D.; and Yates, Paul C., to Du Pont de Nemours, E. I., and Company. Forming highly absorbent, low bulk density sodium silicate by contacting with $H_2O_2$ and heating to about 45° to 60°C. 3,932,140, Cl. 23-293.00A.
Jaybee Manufacturing Corporation: *See—*
Holmes, Frank A.; and Stansbury, Benjamin H., Jr., 3,931,663.
Jeco Kabushiki Kaisha: *See—*
Iwaki, Koichi; Wakabayashi, Atsushi; Nagahori, Yukihiro; and Nakagawa, Shiro, 3,931,705.
Jenaer Glaswerk Schott & Gen.: *See—*
Gliemeroth, Georg, 3,932,690.
Jenkins, John P., to International Tapetronics Corporation. Tape marker. 3,932,887, Cl. 360-13.000.
Jensen, Norman P., to Merck & Co., Inc. N-substituted cycloserine compounds, salts thereof, and processes for preparing them. 3,932,439, Cl. 260-307.00A.
Jerabek, Robert D.; and Geiger, William J., to PPG Industries, Inc. Electrodepositable coating compositions containing therein cellulose acetate butyrate and having improved adhesion. 3,932,191, Cl. 106-178.000.
Jilla, Dara Ardeshir, to Martin Processing Co., Inc. Dyeing assistant composition containing organic amines and carboxylic acids for coloring polyester material with acid dyes. 3,932,126, Cl. 8-172.000.
Jintan Terumo Company, Ltd.: *See—*
Takatsuki, Nobuyuki, 3,931,815.
Joffre, Robert L. Applicator especially adapted for applying fluids to bowling lanes and the like. 3,932,043, Cl. 401-137.000.
Johansson, Folke Karl Evald: *See—*
Collin, Per Harald; and Johansson, Folke Karl Evald, 3,932,173.
John Mohr & Sons: *See—*
DeCoursey, Leonard T., 3,931,825.
Johns-Manville Corporation: *See—*
Lamar, Richard Seyb; and Scheffel, Norman Bach, 3,932,194.
Thiele, William Charles, 3,931,836.
Johns, Robert C., Jr., to Clark Equipment Company. Rear ejector roller and guide for scraper. 3,931,687, Cl. 37-8.000.
Johnson, David A.; Brundidge, Steven P.; Vulcano, Albert L.; Sapino, Chester, Jr.; Mahan, James; and Grossman, Joseph H., to Bristol-Myers Company. Process for the preparation of 7-aminocephalosporanic acids. 3,932,392, Cl. 260-243.00C.
Johnson, Eugene R.; and Mower, Morris F., to Bliss & Laughlin Industries, Inc. Corner finishing tool. 3,932,101, Cl. 425-458.000.
Johnson, Herbert J.: *See—*
Rose, William L.; and Johnson, Herbert J., 3,931,801.
Johnson & Johnson: *See—*
Korpman, Ralf, 3,932,328.
Johnson, Marvin F. L., to Atlantic Richfield Company. Method for determining hydrocarbon hydrotreating activity of a catalyst prior to its use in a hydrotreating process. 3,932,270, Cl. 208-216.000.
Johnson, McVoy. Motorcycle rack for vehicles. 3,931,903, Cl. 214-450.000.
Johnson, Michael R.; Schaaf, Thomas K.; Bindra, Jasjit S.; Hess, Hans-Jurgen E.; and Eggler, James F., to Pfizer Inc. 2-Descarboxy-2-(tetrazol-5-yl)-11-desoxy-15-substituted-ω-pentanorprostaglandins. 3,932,389, Cl. 260-240.00R.
Johnson Service Company: *See—*
Hayes, Thomas Edward, 3,931,806.
Johnston, William V. Side and corner glare eye shade. 3,932,031, Cl. 351-47.000.
Jondahl, Thor: *See—*
Pasternack, George; and Jondahl, Thor, 3,932,346.
Jones, Charles, to Curtiss-Wright Corporation. Rotor and sealing grid for rotary engines. 3,932,075, Cl. 418-121.000.
Jones, Howard: *See—*
Shen, Tsung-Ying; Jones, Howard; and Fordice, Michael W., 3,932,498.
Jones, Lloyd G.: *See—*
Fitch, John L.; and Jones, Lloyd G., 3,931,715.
Jones, Norman E., to Peabody Galion Corporation. Apparatus for dumping open-topped trash containers. 3,931,901, Cl. 214-302.000.
Jones, Walter C., to Rubber Dynamics Corporation. Life vest. 3,931,657, Cl. 9-342.000.
Jones, William E., to Eli Lilly and Company. Dimeric indole alkaloid purification process. 3,932,417, Cl. 260-287.00R.
Jordan, Terence B.: *See—*
McCoy, David R.; Jordan, Terence B.; and Ward, Frank K., 3,932,460.
Jouhaud, Yves Pierre: *See—*
Doin, Bernard Jean Felix Victor; Grebert, Robert Omer Emmanuel; and Jouhaud, Yves Pierre, 3,931,709.
Jung, Christopher; and Pappo, Raphael, to G. D. Searle & Co. Mono- and dialkylated prostynoic acid derivatives. 3,932,496, Cl. 260-514.00D.
Junod, Pierre, to Ciba-Geigy AG. Process for the manufacture of doped silver halides. 3,932,292, Cl. 252-62.30R.
Jurewicz, Anthony T.; and Young, Lewis Brewster, to Mobil Oil Corporation. V-P-Zr Catalysts and method of preparation thereof in the absence of hydrogen halide. 3,932,305, Cl. 252-429.00R.
Jury, Harold Rex; and Hay, John Henry, to Comalco (J. & S.) Pty. Limited. Mesh reinforced elastomeric polymers. 3,932,249, Cl. 156-213.000.
K. & W. Scott Trust: *See—*
Scott, Howard L., 3,932,614.
Kabel-und Metallwerke Gutehoffnungshuette Aktiengesellschaft: *See—*
Vogts, Arnold, 3,932,106.
Kabushiki Kaisha Komatsu Seisakusho: *See—*
Nishijima, Komio; and Kojima, Masakazu, 3,931,754.
Kabushiki Kaisha Saikosha Seisakusho: *See—*
Saitou, Hisashi, 3,932,868.
Kai, Fumio: *See—*
Sekizawa, Yasuharu; Seki, Shigeo; Nomiya, Bunzo; Koeda, Takemi; Kai, Fumio; Akai, Naotoshi; Yusa, Yasushi; and Fukuyasu, Fuguaki, 3,932,668.
Kaiser Aluminum & Chemical Corporation: *See—*
Cheyney, Dan R., 3,931,908.
Kaiser, Kent: *See—*
Shaffer, Gary W.; Kitchens, Garry C.; and Kaiser, Kent, 3,932,515.
Shaffer, Gary W.; Kitchens, Garry C.; and Kaiser, Kent, 3,932,516.



Kakei, Mitsuo; Nishida, Keijiro; Kasahara, Tadayoshi; Shimabayashi, Masao; Hiraga, Ryozo; Nakano, Tomomasa; and Komatsubara, Ichiro, to Canon Kabushiki Kaisha. Vapor deposition apparatus. 3,931,789, Cl. 118-49.000.
Kalthoff, Clement H.: *See—*
Arter, Nelson K.; Eichhorn, Thomas F.; and Kalthoff, Clement H., 3,932,894.
Kameishi, Yoshihiko: *See—*
Irie, Toshio; Yokoyama, Yasuo; Kameishi, Yoshihiko; Yamaguchi, Katsuo; and Hamachi, Kazuo, 3,932,237.
Kamosaki, Minoru; and Asai, Sigel, to Daicel Ltd. Nylon coating composition. 3,932,340, Cl. 260-33.40R.
Kan, Takahiro: *See—*
Imanaka, Takuichi; Kan, Takahiro; Obata, Yoshio; and Sato, Toru, 3,932,234.
Kane, Bernard J.; and Von Genk, Richard A., to SCM Corporation. Process for preparing unsaturated terpene alcohols. 3,932,539, Cl. 260-631.500.
Kane, Gabriel. Tactile numeric display device. 3,932,869, Cl. 340-407.000.
Kaneda, Takuji; Nagao, Makoto; Honjo, Satoru; and Mizuki, Eiichi, to Fuji Photo Film Co., Ltd. Thermodevelopable photographic material containing high silver ion conducting substance. 3,932,189, Cl. 96-114.600.
Kanouse, Roy E.; and Kanouse, Wayne F., to Raymond Lee Organization, Inc., The, a part interest. Snow cycle. 3,931,983, Cl. 280-12.140.
Kanouse, Wayne F.: *See—*
Kanouse, Roy E.; and Kanouse, Wayne F., 3,931,983.
Kansai Paint Company, Ltd.: *See—*
Takagi, Toru, 3,932,356.
Kao Soap Co., Ltd.: *See—*
Doi, Tadashi; Sekido, Isao; and Tamaki, Ryoichi, 3,932,331.
Fujino, Takashi; and Matsui, Riyouichi, 3,932,295.
Inamoto, Yoshiaki; and Aigami, Koji, 3,932,492.
Takamori, Shigeru; Morimoto, Eizi; and Sakaguchi, Kahei, 3,932,556.
Karami, Hamzeh, to Colgate-Palmolive Company. Reusable adhesive diaper fastener. 3,931,666, Cl. 24-73.0VA.
Karch, Hermine, administratrix: *See—*
Karch, Ludwig, deceased, 3,931,767.
Karch, Ludwig, deceased (by Karch, Hermine, administratrix), to Messerschmitt-Bolkow-Blohm GmbH. Magnetic suspension railway. 3,931,767, Cl. 104-130.000.
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Kawada, Tadao. Surge comparison type coil tester. 3,932,806, Cl. 324-51.000.
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Keaton, Clyde D. Method and apparatus for making laminated board with a pocketed core. 3,932,248, Cl. 156-210.000.
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Kletschka, Harold D.; and Rafferty, Edson H., to Bio-Medicus, Inc. Suture bridges. 3,931,821, Cl. 128-335.000.
Klingler, Jerome J. Mirror and guide device for a tractor. 3,932,028, Cl. 350-307.000.
Kliphuis, Jans. Servo control positioning apparatus including a standing wave detector. 3,932,795, Cl. 318-669.000.
Kloimstein, Engelbert: *See—*
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Knapp, Ronald Ralph, to Yamaha International Corporation. Bicycle. 3,931,990, Cl. 280-283.000.
Knebel, Eric. Collapsible cart. 3,931,985, Cl. 280-42.000.
Knifton, John F., to Texaco Inc. Preparation of monocarboxylated cyclododeca derivatives. 3,932,484, Cl. 260-468.00R.
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Kobayashi, Tsutomu: *See—*
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Koch, Gerhard; and Heinemann, Hans, to Dr. -Ing. H.c.F. Porsche Aktiengesellschaft. Synchronization mechanism for change-speed transmissions. 3,931,873, Cl. 192-53.00C.
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Kohler, Werner; and Steinemer, Norbert, to Siemens Aktiengesellschaft. Temperature compensated combined current and voltage measuring apparatus. 3,932,810, Cl. 324-126.000.
Koizumi, Michiko: *See—*
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Korff, Wolfram G.; Emery, Vernon V.; Bond, Joseph Kim; and Hash, Robert S., to Emery Company, Inc. Multiple station plastic pipe belling machine. 3,932,094, Cl. 425-393.000.
Korpman, Ralf, to Johnson & Johnson. Hot melt adhesive composition and tape. 3,932,328, Cl. 260-27.0BB.
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Kotzsch, Hans-Joachim; and Vahlensieck, Hans-Joachim, to Dynamit Nobel Aktiengesellschaft. Siliceous dioxolane derivatives. 3,932,464, Cl. 260-340.900.
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Krenzer, John, to Velsicol Chemical Corporation. 1-Thiadiazolyl-6-alkoxytetrahydropyrimidinones. 3,932,410, Cl. 260-256.50R.
Krenzer, John, to Velsicol Chemical Corporation. 1-(5-Trifluoromethyl-1,3,4-thiadiazol-2-yl)-3-methyl-5-hydroxy-1,3-imidazolidin-2-one. 3,932,438, Cl. 260-306.80D.
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Kudeljan, Damir; and Rambold, Klaus, to Siemens Aktiengesellschaft. Control system for an externally controlled converter. 3,932,766, Cl. 307-229.000.
Kukolja, Stjepan P.; and Lammert, Steven R., to Eli Lilly and Company. Process for the conversion of 3-methyl-3-hydroxycepham compounds. 3,932,387, Cl. 260-239.100.
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Kurei, Hiroshi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Film winding and shutter release error prevention apparatus. 3,932,878, Cl. 354-153.000.
Kurkov, Victor P., to Chevron Research Company. Dihydrofuran preparation. 3,932,468, Cl. 260-346.10R.
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Labes, Mortimer M., to Temple University. Nematic liquid crystals with charge-transfer acceptors as dopants. 3,932,298, Cl. 252-299.000.
Labuda, Edward Franklin; and Ryden, William Dennis, to Bell Telephone Laboratories, Incorporated. Suppression of X-ray radiation during sputter-etching. 3,932,232, Cl. 204-192.000.
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Lakatos, Andras I.; and Flannery, John B., to Xerox Corporation. Imaging system. 3,932,025, Cl. 350-160.00R.
Lakshmanan, Pallavoor R., to Gulf Research & Development Company. Adhesive composition. 3,932,329, Cl. 260-27.00R.
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Lamar, Richard Seyb; and Scheffel, Norman Bach, to Johns-Manville Corporation. Milled talc material and milling method. 3,932,194, Cl. 106-306.000.
Lambert, Claude; Bono, Pierre; Pichon, Bernadette; and Daunay, Jacques, to Societe Generale de Constructions Electriques et Mecaniques Alsthom & Cie. Method for forming a catalytic deposit. 3,932,304, Cl. 252-428.000.
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Lau, George W., to Binks Manufacturing Company. Spray booth. 3,932,151, Cl. 55-229.000.
Lauermann, Georg; and Trabitzsch, Uwe, to Henkel & Cie G.m.b.H. Phenolic agents for disinfecting stalls. 3,932,684, Cl. 424-346.000.
Laukaitis, Hubert T. Laceless elastic-topped athletic shoe. 3,931,685, Cl. 36-2.50A.
Lavagnino, Edward R.; Paget, Charles J.; and Wikel, James H., to Eli Lilly and Company. Preparation of N-2-(6-hydroxybenzothiazolyl)-N'-phenyl (or substituted-phenyl) ureas. 3,932,435, Cl. 260-305.000.
Lavedan, Louis J., Jr.; and Collings, Carlton S., Jr., to United States of America, Navy. Microstrip to waveguide adapter. 3,932,823, Cl. 333-21.00R.
Lawler, John J., Jr.: *See—*
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Lednicer, Daniel, to Upjohn Company, The. Benzospiran derivatives. 3,932,425, Cl. 260-293.620.
Lee, Leonard S.; Sopp, Samuel W.; and Siegel, Howard M., to Merck & Co., Inc. Magnesia coatings for ferrous substrates comprising amorphous magnesia-silica complexes. 3,932,202, Cl. 148-31.500.
Lee, Leonard S.; Uyeda, Yoshio; and Sopp, Samuel W., to Merck & Co., Inc. Magnesia coatings for ferrous substrates comprising amorphous magnesia-silica complexes. 3,932,203, Cl. 148-31.500.
Lee, Robert: *See—*
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Legostaev, Valery Leonidovich; Nadzharov, Oleg Eduardovich; Fedorov, Albert Vasilievich; and Kruglov, Ivan Ivanovich. Pneumatic tire vulcanizing apparatus. 3,932,079, Cl. 425-32.000.
Lehman, Leon M., to Hydrocarbon Research, Inc. Hydrogenation of hydrocarbon residuum. 3,932,269, Cl. 208-157.000.
Lehmann, Wolfgang; Troemel, Gerhard; Ley, Kurt; and Muller, Friedhelm, to Bayer Aktiengesellschaft. Polyamines containing acid groups. 3,932,363, Cl. 260-78.0SC.
Leimala, Raimo Juhani, to Outokumpu Oy. Method of separating cobalt (II) and nickel (II) by extraction. 3,932,581, Cl. 423-139.000.
Lekarski, Simeon; Hardy, Pierre; and Hardy, Leon, to Lekarski, Simeon; Hardy, Pierre; and Hardy, Leon. Pneumatic control device with programmed characteristic particularly for a vehicle braking device. 3,932,001, Cl. 303-22.00R.
Lemke, James U.; Lentz, Robert A.; and Wright, Charles E., to Eastman Technology, Inc. Apparatus for modifying the time base of signals. 3,932,888, Cl. 360-36.000.
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Lewis, Robert William; and Maas, Lawrence Walker, to Shell Oil Company. Process for producing uninhibited transformer oil. 3,932,267, Cl. 208-87.000.
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Little, Julian R.; Nudenberg, Walter; and Rim, Yong S., to Uniroyal Inc. Molecular complexes of DMSQ. 3,932,525, Cl. 260-607.00D.

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Louis, Gerhard, to Licentia Patent-Verwaltungs-G.m.b.H. Liquid decomposing system. 3,932,138, Cl. 23-281.000.

Love, Joseph W., Jr., to B. H. Mfg., Inc. Cable reel transport vehicle. 3,931,902, Cl. 214-390.000.

Lovelace, Billy J., to Petro-Tex Chemical Corporation. Process for production of meso-1,2,3,4-tetrachlorobutane. 3,932,544, Cl. 260-658.00R.

Loveless, Fredrick C.; and Miller, Don H., to Uniroyal Inc. Hydrogenation catalyst. 3,932,308, Cl. 252-431.00R.

Loving, James J., Jr., to Westinghouse Electric Corporation. Method of automatically monitoring the power distribution of a nuclear reactor employing movable incore detectors. 3,932,211, Cl. 176-19.00R.

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Luebbe, Ray H., Jr., to Xerox Corporation. Process of making hexagonal alpha metal-free phthalocyanine. 3,932,454, Cl. 260-314.500.

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Luscombe, Terry L. Inflatable boat. 3,931,655, Cl. 9-2.00A.

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Maki, Hirohisa; and Kitagawa, Yozo, to Japan Synthetic Rubber Company Limited; and Dai-Ichi Kogyo Seyaku Co. Ltd. Flame-retardant polymer composition. 3,932,321, Cl. 260-17.40R.

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Marici, Frank N. Automatic alternating cuff endo tracheal tube inflator. 3,931,822, Cl. 128-351.000.

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Marker, Hannes. Safety ski binding system. 3,931,980, Cl. 280-11.35R.

Markhart, Albert H.; and Santer, James O., to Monsanto Company. Electroconductive resins and process of preparation. 3,932,564, Cl. 260-899.000.

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Masumoto, Hakaru; and Watanabe, Kiyoshi, to Foundation: The Research Institute of Electric and Magnetic Alloys, The. Cobalt-aluminum magnetic materials with high coercive force. 3,932,204, Cl. 148-103.000.

Matsubara, Takashi; Takeuchi, Yuko; Tanaka, Tadashi; Obi, Tatsuro; and Watanabe, Akio, to Nippon Steel Corporation; and Toagosei Chemical Industry Co., Ltd. Coated metallic sheet for use in making a container. 3,932,144, Cl. 29-195.000.

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Maxwell, Bryce. Vented hopper with improved feed system. 3,932,115, Cl. 432-5.000.

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McAlhaney, Norman E. Bale-handling equipment. 3,931,899, Cl. 214-38.0CC.

McAllister, Wayne D.; and Polster, Louis S. Keyed control device for machines and other instrumentalities. 3,932,732, Cl. 235-92.0CT.

McCain, David L., to Continental Oil Company. Apparatus for hydraulically transporting solids. 3,931,999, Cl. 302-14.000.

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McCloskey, Albert R.; and Williams, Gordon T., to Rockwell International Corporation. Bearing having a self-lubricating liner and method of making. 3,932,008, Cl. 308-238.000.

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McCord, Thomas J., to Raymond Lee Organization, Inc., The, a part interest. Door device. 3,931,691, Cl. 43-61.000.

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McCoy, David R.; Jordan, Terence B.; and Ward, Frank K., to Texaco Inc. Method for the preparation of a tetraalkyl-tetraoxa-undecane. 3,932,460, Cl. 260-340.700.

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McGathey, Wendell H. Rotary-piston internal combustion engine. 3,931,810, Cl. 123-44.00E.

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McGuire, Joseph C., to McDonnell Douglas Corporation. Long term vent structure. 3,931,835, Cl. 138-42.000.

McKelvey, Wilfred G., to Western Engineering & Mfg. Co. Variable pitch axial fan. 3,932,054, Cl. 415-130.000.

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McNish, Thomas Gordon. Fibrous insulating materials. 3,932,161, Cl. 65-3.000.

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Nakashio, Seizo; Sekine, Noriyuki; Toyota, Nobuhiro; Fujita, Fumio; and Domoto, Masahiro, to Sumitomo Chemical Company, Limited; and Hayashibara Biochemical Laboratories, Inc. Paper coating material containing pullulan. 3,932,192, Cl. 106-204.000.

Nakayama, Takao: *See—*
Hasegawa, Katsumi; Kumo, Ichiro; Yamazaki, Chikayasu; Okabayashi, Minoru; Nakayama, Takao; and Oshiyama, Masahiro, 3,931,938.

Nalco Chemical Company: *See—*
Hunter, Wood Eugene; and Hoffman, Karl H., 3,932,506.

Nara, Aiichiro; Kondo, Hisao; Mizushima, Masatoshi; and Moriai, Fumi, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor device with Schottky barrier. 3,932,880, Cl. 357-15.000.

Narco Scientific Industries, Inc.: *See—*
McClaskey, Boyd M., 3,932,821.

Narita, Kouichi: *See—*
Nagasawa, Takeshi; Kuroiwa, Katumasa; and Narita, Kouichi, 3,932,375.

National Hellenic Research Foundation, The: *See—*
Screttas, Constantinos G., 3,932,545.

National Research Development Corporation: *See—*
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National Starch and Chemical Corporation: *See—*
Ray-Chaudhuri, Dilip K.; Georgoudis, Paul C.; and Stockmann, Hans H., 3,932,181.

Navarra, Barry A. Infant bathing apparatus. 3,931,652, Cl. 4-177.000.

Nayfa, James E.; and Stanley, Andrew D. Floor cleaning machine with vacuum pickup. 3,931,662, Cl. 15-320.000.

Naylor, Floyd E., to Phillips Petroleum Company. Adhesive compositions. 3,932,327, Cl. 260-27.0BB.

Naylor, Robert R.: *See—*
Raighn, Edwin H.; Eglinton, Robert B.; Frazier, Lorne L.; Naylor, Robert R.; and Morris, William R., 3,931,940.

Neddenriep, Richard J.: *See—*
Libutti, Bruce L.; and Neddenriep, Richard J., 3,932,588.

Needham, James M.; and Weber, Robert E., to Bendix Corporation, The. Adaptive braking system reference pull down. 3,932,000, Cl. 303-21.0BE.

Nelson, David M., to King-Seeley Thermos Co. Barbeque grill. 3,931,805, Cl. 126-41.00R.

Nelson, Harold G.: *See—*
Wetzel, William H.; Nelson, Harold G.; and Shelton, Frederic J., 3,932,537.

Nelson Research & Development Co.: *See—*
Stoughton, Richard B., 3,932,653.

Nescio, John J., to American Home Products Corporation. Sodium 6-(L-aminocyclohexane carboxamido)penicillanic acid. 3,932,386, Cl. 260-239.100.

Netzbandt, William: *See—*
Rudy, Jerome; Pader, Morton; and Netzbandt, William, 3,932,610.

Newman, William E.: *See—*
Brandman, Harold A.; Manowitz, Milton; and Newman, William E., 3,932,654.

Nichol, Francis Richard, Jr.; and Underwood, Gerald E., to Upjohn Company, The. Interferon induction. 3,932,617, Cl. 424-85.000.

Nichols, Oliver D.: *See—*
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Nicholson, John Stuart: *See—*
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Nickerson, John D.: *See—*
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Niegisch, Walter D.: *See—*
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Nielsen, Arnold: *See—*
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Nietzel, Oscar A.: *See—*
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Nijaki, Wladyslaw: *See—*
Janicki, Mieczyslaw; Muler, Henryk; and Nijaki, Wladyslaw, 3,932,676.

Niki, Shoji, to Takeda Riken Kogyo Kabushikikaisha. Heterodyne receiver system. 3,932,814, Cl. 325-332.000.

Nilsson, Osten Karl Alf; and Lindell, Curt, to Toolex Alpha Aktiebolag. Arrangement in moulding presses with parted press tools for the production of hot-pressed plastic material products, especially grammophone records. 3,932,087, Cl. 425-215.000.

Nippo Communication Industrial Co., Ltd.: *See—*
Obata, Akira; and Saito, Takashi, 3,932,722.

Nippon Electric Co., Inc.: *See—*
Kitamura, Yoshishige, 3,932,884.
Mita, Yoh; and Nagasawa, Eiji, 3,932,881.

Nippon Electric Company, Ltd.: *See—*
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Nippon Hoso Kyokai: *See—*
Yanagimachi, Akio; Yamada, Osamu; Yamane, Hisakichi; Sawabe, Eiichi; Uehara, Takashi; Yoshino, Takehiko; Takezawa, Teruhiro; Masuda, Michio; Nabeyama, Hiroaki; Fukuda, Masaaki; and Kayano, Tatsuo, 3,932,698.

Nippon Kogaku K.K.: *See—*
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Nippon Kokan Kabushiki Kaisha: *See—*
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Nippon Oil Company Ltd.: *See—*
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Nippon Paint Co., Ltd.: *See—*
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Kurata, Naoji; Koshida, Kazuo; Fujii, Toshihiro; Matsushiro, Koichi; and Okuda, Yukio, 3,932,531.

Nippon Steel Corporation: *See—*
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Nishi, Yoshio: *See—*
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Nishida, Hideki: *See—*
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Nishida, Keijiro: *See—*
Kakei, Mitsuo; Nishida, Keijiro; Kasahara, Tadayoshi; Shimabayashi, Masao; Hiraga, Ryozo; Nakano, Tomomasa; and Komatsubara, Ichiro, 3,931,789.

Nishijima, Komio; and Kojima, Masakazu, to Kabushiki Kaisha Komatsu Seisakusho. Skiving cutter device for use in cutting internal spur gear. 3,931,754, Cl. 90-7.000.

Nishino, Atsushi; Kumano, Hiroshi; and Sonetaka, Kazunori, to Matsushita Electric Industrial Co., Ltd. Method of making reaction bed material for artificial mineral water production. 3,932,578, Cl. 264-331.000.

Nishioka, Toshio: *See—*
Okuno, Yoshitoshi; Hirano, Masachika; Ohno, Isao; Takeda, Hisami; Magara, Osamu; Itaya, Nobushige; Nishioka, Toshio; Mizutani, Toshio; Ohno, Nobuo; and Matsuo, Takashi, 3,932,459.

Nissan Motor Company Limited: *See—*
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Nissen, Stanley M.: *See—*
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Nissin Shokuhin Kaisha, Ltd.: *See—*
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Nitto Boseki Co. Ltd.: *See—*
Nagasawa, Takeshi; Kuroiwa, Katumasa; and Narita, Kouichi, 3,932,375.

Nixdorf Computer AG: *See—*
Pollmeier, Werner, 3,932,769.

Noda, Minoru: *See—*
Yokotsuka, Tamotsu; Iwaasa, Takashi; Okami, Tadao; Noda, Minoru; and Fujii, Mitsuharu, 3,932,671.

Noda, Tomimitsu: *See—*
Tamano, Motokazu; Noda, Tomimitsu; and Yoshioka, Masanobu, 3,932,723.

Noguchi, Takashi. Mechanism for making a flexible closure. 3,932,257, Cl. 156-497.000.

Nomiya, Bunzo: *See—*
Sekizawa, Yasuharu; Seki, Shigeo; Nomiya, Bunzo; Koeda, Takemi; Kai, Fumio; Akai, Naotoshi; Yusa, Yasushi; and Fukuyasu, Fuguaki, 3,932,668.

Norell, John R., to Phillips Petroleum Company. Preparation of symtriazines by trimerization of nitriles in trifluoromethanesulfonic acid. 3,932,402, Cl. 260-248.0CS.

Norris, William P.: *See—*
Braun, John D.; Nielsen, Arnold; Pickett, M. Frank; Henry, Ronald; and Norris, William P., 3,932,240.

North, Bernard C., to Howard Machinery Limited. Cultivating machine. 3,931,858, Cl. 172-63.000.

Notomi, Toru: *See—*
Sato, Shunichi; Kurata, Masaharu; Takao, Toshiyuki; Masaki, Sadao; Notomi, Toru; Gaku, Morio; and Moriya, Takehiko, 3,932,250.

Novagard Corporation: *See—*
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Novis, Leonard, to Atlas Automation, Inc. Bar unscrambler. 3,931,896, Cl. 214-1.00P.

Novitas Nuprot SA: *See—*
Sweger, Ulf Alan, 3,932,602.

Nozawa, Tadao: *See—*
Wada, Toshiya; Nozawa, Tadao; and Takata, Toshihiko, 3,932,236.

Nudelman, Abraham; and McCaully, Ronald J., to American Home Products Corporation. 3-Halo-cepham derivatives. 3,932,398, Cl. 260-243.00C.

Nudenberg, Walter: *See—*
Little, Julian R.; Nudenberg, Walter; and Rim, Yong S., 3,932,525.

Nukushina, Yasuhiko: *See—*
Okamoto, Miyoshi; Watanabe, Koji; Nukushina, Yasuhiko; and Konosu, Makoto, 3,932,687.

Nurimoto, Seiichi: *See—*
Takeda, Mikio; Inoue, Hirozumi; Hayashi, Goro; and Nurimoto, Seiichi, 3,932,429.

Nystrom, Thomas L.: *See—*
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Oak Electro/Netics Corporation: *See—*
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Obara, Heitaro; Onodera, Junichi; Matukuma, Akira; and Yoshida, Kenji, to Mitsubishi Chemical Industries, Limited. Process for producing pyrogallol and derivatives thereof. 3,932,538, Cl. 260-625.000.

Obata, Akira; and Saito, Takashi, to Nippo Communication Industrial Co., Ltd. Push button body for a push-button switch providing snap-action of the switch. 3,932,722, Cl. 200-340.000.

Obata, Yoshio: *See—*
Imanaka, Takuichi; Kan, Takahiro; Obata, Yoshio; and Sato, Toru, 3,932,234.

Obi, Tatsuro: *See—*
Matsubara, Takashi; Takeuchi, Yuko; Tanaka, Tadashi; Obi, Tatsuro; and Watanabe, Akio, 3,932,144.

O'Brien, Catherine H., executrix: *See—*
O'Brien, Gerard J., deceased; and O'Brien, Catherine H., executrix, 3,932,711.

O'Brien, Gerard J., deceased; and O'Brien, Catherine H., executrix. Transmission of voice or sound through telegraphy. 3,932,711, Cl. 179-142.000.

O'Brien, John Terence; and Ariyan, Zaven S., to Uniroyal Inc. Novel o-triazenobenzamides, in treating aggressive behavior. 3,932,633, Cl. 424-226.000.

Ocean Drilling & Exploration Company: *See—*
childers, Mark A.; and Dawkins, Enoch L., 3,931,782.

O'Day, William R., Jr.; Bensky, Norman D.; and Le Blanc, James D., to Kennecott Copper Corporation. Composite wire containing a mixture of phenolic and thermoplastic resins as a binder. 3,932,344, Cl. 260-38.000.

O'Day, William R., Jr.: *See—*
Marshall, David W.; and O'Day, William R., Jr., 3,932,143.

Oehm, Klaus; Seiffert, Ulrich; Struwe, Burckhard; Fiala, Ernst; Bauer, Andreas; Weissner, Ruediger; and Schwanz, Wilfried, to Volkswagenwerk Aktiengesellschaft. Vehicle safety device. 3,931,988, Cl. 280-150.00B.

Offermanns, Heribert: *See—*
Isaac, Otto; and Offermanns, Heribert, 3,932,533.

O'Hare, Edward C.; and DeVries, Wallace J., Sr., to Dahlman, Inc. Demountable multi-row potato combine. 3,931,857, Cl. 171-14.000.

Ohki, Eiji; Saeki, Hiromichi; and Sugawara, Shinichi, to Sankyo Company Limited. Dideoxybutirosin derivative. 3,932,382, Cl. 260-210.0AB.

Ohnishi, Masaru, to Mitsubishi Denki Kabushiki Kaisha. Electrophotographic recording system with plate cleaning. 3,932,877, Cl. 346-74.00P.

Ohno, Isao: *See—*
Okuno, Yoshitoshi; Hirano, Masachika; Ohno, Isao; Takeda, Hisami; Magara, Osamu; Itaya, Nobushige; Nishioka, Toshio; Mizutani, Toshio; Ohno, Nobuo; and Matsuo, Takashi, 3,932,459.

Ohno, Nobuo: *See—*
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Okabayashi, Minoru: *See—*
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Okada, Akira: *See—*
Fukunaga, Yasuhisa; and Okada, Akira, 3,932,534.

Okagami, Akio; Horie, Akira; and Toida, Tsutomu, to Japan Gasoline Co., Ltd. Method of reforming hydrocarbons. 3,932,147, Cl. 48-214.000.

Okajima, Yoshiaki: *See—*
Hirota, Kunio; Takata, Yoshinori; Arikawa, Yoshijiro; Tanno, Kazuo; and Okajima, Yoshiaki, 3,932,224.

Okami, Tadao: *See—*
Yokotsuka, Tamotsu; Iwaasa, Takashi; Okami, Tadao; Noda, Minoru; and Fujii, Mitsuharu, 3,932,671.

Okamoto, Miyoshi; Watanabe, Koji; Nukushina, Yasuhiko; and Konosu, Makoto, to Toray Industries, Inc. Fibrous configuration composed of a plurality of mutually entangled bundles of fine fibers. 3,932,687, Cl. 428-288.000.

Okano, Shigeru: *See—*
Hibino, Toshihiko; Suzuki, Yoshio; Okano, Shigeru; Hara, Yoichi; and Sato, Etsuro, 3,932,400.

Oki Electric Industry Company, Ltd.: *See—*
Sagara, Iwao; Shishikura, Hirohisa; and Anada, Ikuo, 3,932,865.

Okuda, Yukio: *See—*
Kurata, Naoji; Koshida, Kazuo; Fujii, Toshihiro; Matsushiro, Koichi; and Okuda, Yukio, 3,932,531.

Okuno, Yoshitoshi; Hirano, Masachika; Ohno, Isao; Takeda, Hisami; Magara, Osamu; Itaya, Nobushige; Nishioka, Toshio; Mizutani, Toshio; Ohno, Nobuo; and Matsuo, Takashi, to Sumitomo Chemical Company, Limited. Novel cyclopropanecarboxylic acid esters. 3,932,459, Cl. 260-332.20A.

Old Phoenix National Bank, executor: *See—*
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Kircher, Morton S.; and Wood, Judson A., 3,932,261.

Olms, Karl-Adolf; and Schmidt, Rolf, to Siemens Aktiengesellschaft. Method and apparatus for mixing and recording multi-track stereo audio signals which have been recorded as several individual audio signals. 3,932,886, Cl. 360-13.000.

Olmstead, John Aaron, to RCA Corporation. Improved fluid flow sensor configuration. 3,931,736, Cl. 73-204.000.

Olsen, Bengt; Blomster, Jens; Buss, Nils; Stenkvist, Bjorn; and Preuss, Lucien. Automatic focusing of an optical system. 3,932,733, Cl. 235-151.000.

Olsen, Frederick C.: *See—*
Paramonoff, Elpidifor; and Olsen, Frederick C., 3,931,738.

Olson, Gary A., to Arctic Enterprises, Inc. Snowmobile suspension system. 3,931,861, Cl. 180-5.00R.

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Onoda, Takeshi: *See—*
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Ooue, Shingo: *See—*
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Orban, Jean: *See—*
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Orefice, James D.: *See—*
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Orndorff, Roy L., Jr., to B. F. Goodrich Company, The. Rubber bearing with non-metallic support member. 3,932,004, Cl. 308-238.000.

Orr, Clyde, Jr.: *See—*
Ball, Dean M.; Camp, Ronnie W.; Hendrix, Warren P.; and Orr, Clyde, Jr., 3,932,067.

Orth, Dieter: *See—*
Kramer, Josef; Radunz, Hans; Orth, Dieter; Baumgarth, Manfred; and Harting, Jurgen, 3,932,487.

Ortho Pharmaceutical Corporation: *See—*
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Osaki, Yoshiyasu: *See—*
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Osborn, Leroy Gordon; and Brownlee, George Hunnam, to Westrex Company Limited. Cinematograph projectors. 3,932,033, Cl. 352-228.000.

Oshima, Yasuhiro. Method of making thermoplastic resin mattings. 3,932,247, Cl. 156-148.000.

Oshiyama, Masahiro: *See—*
Hasegawa, Katsumi; Kumo, Ichiro; Yamazaki, Chikayasu; Okabayashi, Minoru; Nakayama, Takao; and Oshiyama, Masahiro, 3,931,938.

Ossbahr, Carl Gilbert Richard. Modular article conveyor. 3,931,882, Cl. 198-165.000.

O'Sullivan, Denis J.; and Casey, T. Eisirt, to Loctite (Ireland) Limited. Dental filling method and composition formed thereby. 3,931,678, Cl. 32-15.000.

Oswald, Joseph V. Multi-range, high-speed A.C. over-current protection means including a static switch. 3,932,791, Cl. 317-33.0SC.

Otake, Nobuyuki; Sato, Yukinori; and Ando, Kozo, to Tokyo Boshi Kabushiki Kaisha. Pen point for writing instruments. 3,932,044, Cl. 401-265.000.

Otis, George A. Surface washer. 3,931,931, Cl. 239-287.000.

Otsuka Kagaku Yakuhin Kabushiki Kaisha: *See—*
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Otsuka, Masatomi: *See—*
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Oura, Masao: *See—*
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Outboard Marine Corporation: *See—*
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Outokumpu Oy: *See—*
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Owens-Corning Fiberglas Corporation: *See—*
Foley, Kevin M.; and McCombs, Frank P., 3,932,686.
Stream, Ralph M., 3,932,163.

Owens, John C. Pocket-size combination storage and display cases for insignia members. 3,931,688, Cl. 40-1.500.

Oxequip Health Industries: *See—*
McWhinnie, David A., Jr.; Viero, Laurence G.; and Freeburg, Donald J., 3,931,829.

Oxy Metal Industries Corporation: *See—*
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Ozmec, Gordon J.: *See—*
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Pace, Wilson David, to Motorola, Inc. Bilaterally conducting zener diode and circuit therefor. 3,932,879, Cl. 357-13.000.

Pader, Morton: *See—*
Rudy, Jerome; Pader, Morton; and Netzbandt, William, 3,932,610.

Paget, Charles J.; and Wikel, James H., to Eli Lilly and Company. N-2-(6-hydroxybenzothiazolyl)-N'-phenyl (or substituted phenyl) ureas. 3,932,434, Cl. 260-305.000.

Paget, Charles J.: *See—*
Lavagnino, Edward R.; Paget, Charles J.; and Wikel, James H., 3,932,435.

Palethorpe, George; and Folk, Edwin W., to Monsanto Company. Method for making void-free acrylic fibers. 3,932,577, Cl. 264-182.000.

Palmiter, James A. Divider for use in the occupant compartment of vehicle. 3,931,994, Cl. 296-24.00R.

Palosi, Eva: *See—*
Hideg, Kalman; Hankovszky, Olga; Palosi, Eva; Hajos, Gyorgy; and Szporny, Laszlo, 3,932,395.

Pals, Raimond; Fuchs, Robert J.; and Schwartz, John C., to FMC Corporation. Process for preparing medium density granular sodium tripolyphosphate. 3,932,590, Cl. 423-315.000.

Parisini, Andrew L. Leaf trap kit for swimming pools. 3,932,281, Cl. 210-163.000.

Panzarino, Joseph N.: *See—*
Forker, Ray B., Jr.; and Panzarino, Joseph N., 3,932,681.

Pappo, Raphael: *See—*
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Papst-Motoren KG: *See—*
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Paramonoff, Elpidifor; and Olsen, Frederick C., to Standun, Inc. Device for monitoring fluid pressure in mechanisms such as hydrostatic fluid bearings. 3,931,738, Cl. 73-389.000.

Parish, Roger G.: *See—*
Yamamoto, Hisao; Inaba, Shigeho; Akatsu, Mitsuhiro; Baile, Clifton A.; and Parish, Roger G., 3,932,637.

Parsons, Brian Jeremy, to Hawker Siddeley Dynamics Limited. Binary parallel adder employing high speed gating circuitry. 3,932,734, Cl. 235-175.000.

Parsons, Stuart L.; and Wasserlein, Henry George, Jr., to AMP Incorporated. Electrical connections for closely spaced conductors and apparatus for forming such connections. 3,932,018, Cl. 339-99.00R.

Partyka, Anthony: *See—*
Beverung, Warren Neil, Jr.; and Partyka, Anthony, 3,932,407.

Pasternack, George; and Jondahl, Thor, to Continental Can Company, Inc. Pigmented photopolymerizable compounds stabilized against premature gelation with thiocarbamates. 3,932,346, Cl. 260-42.210.

Pastor, Ricardo C., to Hughes Aircraft Company. Purification of alkali metal halides. 3,932,597, Cl. 423-499.000.

Pastoriza, James J., to Analog Devices, Inc. Digital-to-analog converters. 3,932,863, Cl. 340-347.0DA.

Patel, Pravin, to Concorde Fibers, Inc. Apparatus for and method of melt spinning. 3,932,576, Cl. 264-178.00F.

Patellis, Anargiros Pete: *See—*
Douglas, Paul S.; Patellis, Anargiros Pete; and Vredenburgh, Walter A., 3,932,332.

Pavilanis, Vytautas: *See—*
Bharucha, Kekhusroo R.; Ajdukovic, Djordje; Pavilanis, Vytautas; and Mackay, Angus Campbell, 3,932,512.

Payne, Donald. Pile splice for concrete and steel piles of various configuration. 3,931,716, Cl. 61-53.000.

Payne, Ralph, to FEI, Inc. Sanitary roller conveyor. 3,931,878, Cl. 193-37.000.

Peabody Galion Corporation: *See—*
Jones, Norman E., 3,931,901.

Pearce, Peter J., to Synestructics, Inc. Modular curved surface space structures. 3,931,697, Cl. 52-80.000.

Pechiney Ugine Kuhlmann: *See—*
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Pedjac, Joseph J.: *See—*
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Penisson, Rene, to Rhone-Poulenc-Textile. Preparation of high molecular weight polymer from oxalic acid and para-phenylene diisocyanate. 3,932,365, Cl. 260-78.00R.

Pennsylvania Crusher Corporation: *See—*
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Daigle, Donald J.; Pepperman, Armand B., Jr.; and Boudreaux, Gordon J., 3,932,390.

Peppler, Stanley R. K. Pill container with pocket. 3,931,891, Cl. 206-538.000.

Perez-Albuerne, Evelio A., to Eastman Kodak Company. Electrophotographic element containing a polymeric multi-phase interlayer. 3,932,179, Cl. 96-1.500.

Peripheral Equipment Corporation: *See—*
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Perronnet, Jacques; and Taliani, Laurent, to Roussel-UCLAF. Pesticidal phosphorous-thiazole compounds. 3,932,433, Cl. 260-302.00E.

Perronnet, Jacques; and Girault, Pierre, to Roussel-UCLAF. Benzimidazoles. 3,932,447, Cl. 260-309.200.

Perry, Robert J., to Phillips Petroleum Company. Selective addition of additives to solid polymer. 3,932,323, Cl. 260-23.00H.

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Peters, Philip H., Jr., to Environment/One Corporation. Induction cooking unit having all pan safe operation, wide range power control and low start-up and shut-down transients. 3,932,801, Cl. 321-45.00C.

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Piascinski, Joseph John, to RCA Corporation. Conditioning partially-completed CRT bulb assembly for storage and/or transit. 3,932,011, Cl. 316-17.000.

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Porter, John H.; and Swift, Robert O., to Ametek, Inc. Electric motor fan unit for wet working air. 3,932,070, Cl. 417-423.00A.

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Rogers, Edwin J. High voltage triangular waveform generator. 3,932,817, Cl. 328-128.000.
Rohatgi, Pradeep Kumar, to Bethlehem Steel Corporation. Method for separating and recovering kish graphite from mixtures of kish graphite and fume. 3,932,596, Cl. 423-448.000.
Rohr Industries, Inc.: *See—*
Tantlinger, Keith W., 3,931,770.
Westergren, Don M.; and Mooney, Walter E., 3,931,943.
Rohr, Wolfgang: *See—*
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Roland Offsetmaschinenfabrik Faber & Schleicher AG: *See—*
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Rolfo-Fontana, Gudrun Birgitta Margareta, to Monega Anstalt. Method and device (analysis machine) for simultaneous performance of a number of analyses, especially microanalyses, of standard type on chemical objects. 3,932,131, Cl. 23-230.00R.
Romine, Donald J.: *See—*
Stadler, Henry L.; Tien, Tseng-Ying; Esper, Michael J.; and Romine, Donald J., 3,932,246.
Rona, Peter, to IMI (TAMI) Institute for Research & Development. Solid catalyst for heterogeneous reactions. 3,932,306, Cl. 252-430.000.
Ronzio, Richard A.: *See—*
Vertes, Michael A.; and Ronzio, Richard A., 3,932,580.
Rose, William L.; and Johnson, Herbert J. Fuel vaporizer and control system. 3,931,801, Cl. 123-134.000.
Rosen, Arye: *See—*
Klatskin, Jerome Barnard; and Rosen, Arye, 3,932,226.
Rosen, Karl Isac Joel, to Aktiebolaget IRO. Thread supply device for textile machines. 3,931,939, Cl. 242-47.010.
Rosenbaum, Larry A., to Koehring Company. S[illegible]:ral design pipehead. 3,932,102, Cl. 425-466.000.
Rosenstreich, Joseph; Gubernick, Joseph; and Garone, Frank, to Estee Lauder Inc. Antiperspirant composition. 3,932,609, Cl. 424-68.000.
Ross, Adma Schneller: *See—*
Curran, William Vincent; Tomcufcik, Andrew Stephen; and Ross, Adma Schneller, 3,932,440.
Ross, Thaddeus C.: *See—*
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Rota, Benjamin: *See—*
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Rothenberg, Howard S., to TRW Inc. Electroformed hermetic glass-metal seal. 3,932,227, Cl. 204-16.000.
Rother, Klaus-Dieter, to Siemens Aktiengesellschaft. Frequency-selective signal receiver for communication equipments, more particularly telephone equipments. 3,932,708, Cl. 179-84.0VF.
Rotondi, Aldo, to U.S. Filter Corporation. Multi-stage blow-pipe construction. 3,932,152, Cl. 55-302.000.
Rouget De Gourcez, Etienne; and Mayeux, Jean-Claude, to Societe Nationale des Poudres et Explosifs. Process for the preparation of phosphine oxides and sulphides. 3,932,524, Cl. 260-606.50P.
Roussel-UCLAF: *See—*
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Perronnet, Jacques; and Girault, Pierre, 3,932,447.
Warnant, Julien; Farcilli, Andre; Medici, Italo; and Toromanoff, Edmond, 3,932,420.
Rowland, Michael Charles; and Wight, David Robert, to British Secretary of State for Defense, The. Photocathodes. 3,932,883, Cl. 357-30.000.
Rowland, Stanley P.: *See—*
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Rowlands, Kenneth Charles: *See—*
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Rudolph, Hans: *See—*
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Rudy, Jerome; Pader, Morton; and Netzbandt, William, to Lever Brothers Company. Shampoo composition. 3,932,610, Cl. 424-70.000.
Ruff, Stanley L. Paperboard container lid convertible into a spoon. 3,931,925, Cl. 229-43.000.
Russell, Donald H.; and Lenton, R. Warren, to Atlantic Richfield Company. Catalysts for the reaction of cyclic nitrile compounds with nucleophilic compounds. 3,932,361, Cl. 260-77.50B.
Russell, Joseph L., to Halcon International, Inc. Cyclohexane oxidation. 3,932,513, Cl. 260-586.0AB.
Rusznyak, Andre: *See—*
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Rutt, Edward J.: *See—*
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Ruzicka, Jaromir; and Tjell, Jens Christian, to Radiometer A/S. Calcium electrode and membrane and composition for use therein. 3,932,233, Cl. 204-195.00M.
Rybicki, Robert C., to United Technologies Corporation. Droop stops for helicopter rotor having elastomeric bearings. 3,932,059, Cl. 416-140.000.
Ryden, William Dennis: *See—*
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Saeki, Hiromichi: *See—*
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Safford, Franklin C., to Drever Company. Method and apparatus for quenching pipe. 3,932,238, Cl. 148-131.000.
Sagara, Iwao; Shishikura, Hirohisa; and Anada. Ikuo, to Oki Electric Industry Company, Ltd. Analog-to-digital converter. 3,932,865, Cl. 340-347.0AD.
Sagawa, Takizo, to Rank Xerox Ltd. Device for detecting double sheet feeding. 3,932,755, Cl. 250-349.000.
Sagel, John A.; and Weber, Clarence Edward, to Procter & Gamble Company, The. Free flowing detergent compositions containing benzoate salts. 3,932,316, Cl. 252-532.000.
Saito, Kiyoshi: *See—*
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Saito, Shoichi, to Olympus Optical Co., Ltd. Superminiature cassette tape recorder. 3,932,892, Cl. 360-96.000.
Saito, Takashi: *See—*
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Saitoh, Kozo: *See—*
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Saitou, Hisashi, to Kabushiki Kaisha Saikosha Seisakusho. Alarm buzzer device. 3,932,868, Cl. 340-384.00R.
Sakaguchi, Kahei: *See—*
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Sakurai, Nobuo, to Miyairi Kinzai Kenkyusho Company Limited. Method of manufacturing a bacterial preparation consisting of a normal rumen bacterial flora with an improved ability to utilize ammonium salts. 3,932,670, Cl. 426-2.000.
Salient Electronics, Inc.: *See—*
Way, Blaine A.; and Scholtz, William R., 3,932,857.
Salmon, John Kennedy; and Adie, Richard A., to Lundy Electronics & Systems, Inc. Process for screening materials with vibrating screens. 3,932,442, Cl. 209-309.000.
Salza, Silvio. Process for the preparation of protein-free wafers. 3,932,679, Cl. 426-549.000.
Salzberg, Edward. Broad band orthogonal mode junction. 3,932,822, Cl. 333-9.000.
Sanders Associates, Inc.: *See—*
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Sandoz, Inc.: *See—*
Anderson, Paul L., 3,932,530.
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Saracsan, Jeffrey W., to Goodyear Tire & Rubber Company, The. Method of making an improved tire building sleeve and said sleeve. 3,932,255, Cl. 156-401.000.
Sarkes Tarzian, Inc.: *See*—
Valdettaro, Alarico A., 3,931,743.
Sartori, Guido; and Lundberg, Robert D., to Exxon Research and Engineering Company. Block copolymers containing olefin sulfur dioxide segments and process for their preparation. 3,932,369, Cl. 260-79.30A.
Sarvay, J. Thomas, to Schlegel Manufacturing Company. Glazing system. 3,931,699, Cl. 52-476.000.
Sasaki, Hiroshi, to Ricoh Electronics, Inc. Computer keyboard circuitry. 3,932,866, Cl. 340-365.00E.
Sasse, Klaus: *See*—
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Sather, Delaine C.: *See*—
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Sato, Etsuro: *See*—
Hibino, Toshihiko; Suzuki, Yoshio; Okano, Shigeru; Hara, Yoichi; and Sato, Etsuro, 3,932,400.
Sato, Masamichi, to Rank Xerox Ltd. Abrasive liquid developing apparatus. 3,931,792, Cl. 118-637.000.
Sato, Masamichi; and Fukushima, Osamu, to Rank Xerox Ltd. Apparatus for transferring a toner image. 3,932,035, Cl. 355-3.00R.
Sato, Shunichi; Kurata, Masaharu; Takao, Toshiyuki; Masaki, Sadao; Notomi, Toru; Gaku, Morio; and Moriya, Takehiko, to Mitsubishi Gas Chemical Co., Ltd. Method for manufacturing metal foil- or plastic film-overlaid laminate. 3,932,250, Cl. 156-213.000.
Sato, Takahiro: *See*—
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Sato, Toru: *See*—
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Sawa, Yoshiro; Hirose, Katsumi; Maeda, Shin; and Hamada, Yoshinori, to Shionogi & Co., Ltd. Dibenzazecines. 3,932,384, Cl. 260-239.00D.
Sawabe, Eiichi: *See*—
Yanagimachi, Akio; Yamada, Osamu; Yamane, Hisakichi; Sawabe, Eiichi; Uehara, Takashi; Yoshino, Takehiko; Takezawa, Teruhiro; Masuda, Michio; Nabeyama, Hiroaki; Fukuda, Masaaki; and Kayano, Tatsuo, 3,932,698.
Sawano, Yukio: *See*—
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Sayles, David C., to United States of America, Army. Propellants based on bis[N-(trinitroethyl)nitramino]ethane. 3,932,241, Cl. 149-19.300.
Scanni, Iberio E.: *See*—
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Scanni, Nino V.; and Scanni, Iberio E., to Raymond Lee Organization, Inc., The, a part interest. Surfaces produced by interlocking members. 3,931,700, Cl. 52-590.000.
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Schaafsma, Sijbrandus E.; Claassens, Johannes E. L.; and Verheijen, Egidius J. M., to Stamicarbon B.V. Preparation of cyclohexane-1,3-dione and of alkyl-substituted derivatives thereof. 3,932,511, Cl. 260-586.00C.
Schaedler, Raymond J., to Chicago Pneumatic Tool Company. Overspeed saftey control mechanism for rotary tools. 3,932,071, Cl. 418-43.000.
Schaub, Fritz: *See*—
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Schaub, Robert Eugene; Floyd, Middleton Brawner, Jr.; and Weiss, Martin Joseph, to American Cyanamid Company. 11-Deoxy-13-dihydro-prostaglandin-9-ketals. 3,932,463, Cl. 260-340.700.
Schaub, Robert Eugene; and Weiss, Martin Joseph, to American Cyanamid Company. Novel 15-substituted prostanoic acids and esters. 3,932,472, Cl. 260-349.000.
Schaub, Robert Eugene: *See*—
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Scheffel, Norman Bach: *See*—
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Scheiber, Robert: *See*—
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Schelling, Hans-Peter; and Schaub, Fritz, to Sandoz Ltd., (Sandoz AG). w-Aliphatic and cycloaliphatic-hydrocarbonoxy-2,6-alkadiene and 2-alkene-1-nitriles. 3,932,483, Cl. 260-465.600.
Schering Corporation: *See*—
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Scherrer, Igor; Chetelat, Fernand; and Hersberger, Pierre, to Ebauches S.A. Correcting device for an electronic watch. 3,931,703, Cl. 58-23.00R.
Scheuerman, Elmer L.: *See*—
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Schibbye, Hjalmar; and Englund, Arnold, to Svenska Rotor Maskiner Aktiebolag. Screw rotor machine with spring and fluid biased balancing pistons. 3,932,073, Cl. 418-97.000.
Schievelbein, Vernon Hugo, to Texaco Inc. Method of removing hydrogen sulfide from a gas containing carbon dioxide. 3,932,583, Cl. 423-232.000.
Schlangen, Andrew J., to Trane Company, The. Multi-stage electric heater apparatus and method of control. 3,932,729, Cl. 219-486.000.
Schlegel Manufacturing Company: *See*—
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Schlumberger Technology Corporation: *See*—
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Sherman, Harold, 3,932,747.
Schmid, Markus, to Concast AG. Method and apparatus for cooling a strand cast in an oscillating mold during continuous casting of metals, especially steel. 3,931,848, Cl. 164-83.000.
Schmidt, Rolf: *See*—
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Schmitt, Karl; Disteldorf, Josef; and Flakus, Werner, to Veba-Chemie Aktiengesellschaft. Polyurethane lacquer composition based on isophorone diisocyanate and .diamine bis-aldime. 3,932,357, Cl. 260-75.0NH.
Schmitz, Jurgen, to Gesellschaft fur Kernforschung m.b.H. Method of determining the distance between area under fire and the muzzle of the weapon. 3,932,748, Cl. 250-303.000.
Schmitz, Reinhold: *See*—
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Schneider, George, to Amchem Products, Inc. Coating solution having trivalent chromium and manganese for coating metal surfaces. 3,932,198, Cl. 148-6.200.
Schneider, Horst, to Oxy Metal Industries Corporation. Reactive cold forming lubricant. 3,932,287, Cl. 252-32.500.
Schneider, Johannes; and Pungs, Wolfgang, to Dynamit Nobel Aktiengesellschaft. Amorphous polyamide of C-alkyl substituted diamine and terephthalic acid dialkyl ester having improved electrical creep resistance. 3,932,362, Cl. 260-78.00S.
Schneider, Martin Victor: *See*—
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Schneider, Robert F. Blow forming apparatus for producing double-walled vessels. 3,932,104, Cl. 425-503.000.
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Schnell, Burkhard, to Zwick & Co. Kommanditgesellschaft. Sliding-joint assembly for test frame or the like. 3,932,007, Cl. 308-238.000.
Scholtz, William R.: *See*—
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Schonbeck, Rupert; Kloimstein, Engelbert; Mayr, Hubert; Diskus, Alfred; and Auer, Engelbert, to Chemie Linz Aktiengesellschaft. Phenylpyridazines. 3,932,405, Cl. 260-250.00A.
Schrape, Peter: *See*—
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Schrock, Richard Royce, to Du Pont de Nemours, E. I., and Company. Cyclooctatetraene complexes of niobium and tantalum. 3,932,477, Cl. 260-429.0CY.
Schuck, Paul R., to J. I. Case Company. Multiple cable chute. 3,931,717, Cl. 61-72.600.
Schulten, Rudolf; Teggers, Johannes; and Bentrop, Roland Schulze, to Rheinische Braunkohlenwerke Aktiengesellschaft. Method of obtaining hydrogen from steam. 3,932,599, Cl. 423-655.000.
Schwab, Kurt, to D. Swarovski & Co., Glasschleiferei. Jewelry Component having mounted stones connected by deformable webs. 3,931,719, Cl. 63-28.000.
Schwachhofer, Ghislain: *See*—
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Schwan, Thomas J., to Morton-Norwich Products, Inc. 5-(P-dimethylaminobenzyl) hydantoin. 3,932,449, Cl. 260-309.500.
Schwan, Thomas J.; and Miles, Nelson J., to Morton-Norwich Products, Inc. 1-Arylmethyl-2-imidazolidinones. 3,932,452, Cl. 260-309.700.
Schwanz, Wilfried: *See*—
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Schwarz, Bernd: *See*—
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Schwarz, Milton H.: *See*—
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Schwebel, Adolf, to Mabeg Maschinenbau GmbH. Sheet feeder apparatus. 3,931,964, Cl. 271-93.000.
Schweizer, Walter; and Reissland, Martin-Ulrich, to VDO Adolf Schindling AG. Apparatus for the continuous measurement of the density of a liquid by utilization of the law of refraction. 3,932,038, Cl. 356-133.000.
Schwerdtel, Wulf: *See*—
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Scott, Howard L., to Fabalon, Inc.; K. & W. Scott Trust; Wragg, C. N., Jr.; and Wragg, B., part interest to each. Method of lubricating or softening the skin. 3,932,614, Cl. 424-78.000.
Scott, William B., to General Motors Corporation. Fluid unit rotor. 3,932,061, Cl. 416-180.000.
Screttas, Constantinos G., to National Hellenic Research Foundation, The. Alkali metal-containing, organometallic products. 3,932,545, Cl. 260-665.00R.
Sears, Karl David, to International Telephone and Telegraph Corporation. Etherification of bark extracts and condensed tannins. 3,932,488, Cl. 260-473.500.
Segre, Eugene J., to Syntex Corporation. Novel cyclic progestogen-interrupted estrogen oral contraceptive regimens. 3,932,635, Cl. 424-239.000.
Seiffert, Ulrich: *See*—
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Seither, Karl; Matthias, Guenther; Diem, Hans; Hussy, Oskar; and Haas, Hans, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Manufacture of formaldehyde. 3,932,522, Cl. 260-603.0HF.
Seki, Shigeo: *See*—
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Sensor Technology, Inc.: *See*—
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Sepp, Oscar W., to ILC-Steinthal, Inc. Rotating parachute. 3,931,945, Cl. 244-145.000.
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Settepani, Joseph A., to Ortho Pharmaceutical Corporation. Method of inducing infertility in male animals and inhibiting the growth of the prostate. 3,932,651, Cl. 424-270.000.
Setterquist, Robert Alton, to Du Pont de Nemours, E. I., and Company. Tetra(neophyl) zirconium and its use in process for the polymerization of olefins. 3,932,307, Cl. 252-430.000.
Settlemire, Lawrence R.: *See*—
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Shackleford, Ralph Edward: *See*—
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Shaffer, Gary W.; Kitchens, Garry C.; and Kaiser, Kent, to Givaudan Corporation. Novel oxygenated derivatives of thujopsene. 3,932,515, Cl. 260-586.00F.
Shaffer, Gary W.; Kitchens, Garry C.; and Kaiser, Kent, to Givaudan Corporation. Novel oxygenated derivatives of thujopsene. 3,932,516, Cl. 260-586.00F.
Shah, Ishwarlal D., to United States of America, Interior. Use of scavenger in recovery of metal values. 3,932,170, Cl. 75-7.000.
Shah, Kanu G., to Richardson Company, The. Thermoplastic urethane compound having low compression set and high modulus. 3,932,337, Cl. 260-29.1SB.
Shandoz, Inc.: *See*—
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Shapiro, Elliot L.: *See*—
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Shapiro, L. Dennis; and Galvin, Aaron A., to American District Telegraph Company. On-line test circuit for intrusion alarm systems. 3,932,870, Cl. 340-411.000.
Sharma, Vijay Ratna: *See*—
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Shaw, Fred B.; and Graumann, Richard E., to Continental Can Company, Inc. Laminated packaging film having low vapor and gas permeability. 3,932,693, Cl. 428-518.000.
Shaw, Jane E.: *See*—
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Shaw, Philip E.; Daum, Sol J.; and Clarke, Robert L., to Sterling Drug Inc. Polyhydro-2-phenanthrylideneacetic acids and esters thereof. 3,932,482, Cl. 260-468.500.
Shea, John J., Jr., to Richards Manufacturing Company. Stapedial prosthesis. 3,931,648, Cl. 3-1.900.
Shell Oil Company: *See*—
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Shelley, Melville Leslie; and Spooner, Archer Michael, to Redifon Limited. Optical system for the display of visual images. 3,932,702, Cl. 178-6.800.
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Shen, Tsung-Ying; Jones, Howard; and Fordice, Michael W., to Merck & Co., Inc. 3-Indenyl-γ-(ketobutyric)-acid compounds. 3,932,498, Cl. 260-515.00A.
Shepherd, Alan Arthur: *See*—
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Shimabayashi, Masao: *See*—
Kakei, Mitsuo; Nishida, Keijiro; Kasahara, Tadayoshi; Shimabayashi, Masao; Hiraga, Ryozo; Nakano, Tomomasa; and Komatsubara, Ichiro, 3,931,789.
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Shine, William P., to Dual-Lite Company. Illuminated sign housing construction. 3,931,689, Cl. 40-132.00R.
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Shioiri, Tomonori: *See*—
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Shirley, Orie W., to Datron Systems, Inc. Gyroscope. 3,931,742, Cl. 74-5.700.
Shirley, Ronald A.; and DeLong, Robert J., to Spectrol Electronics Corporation. Variable resistance device. 3,932,831, Cl. 338-143.000.
Shishikura, Hirohisa: *See*—
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Showa Denko Kabushiki Kaisha: *See*—
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Shumway, Roger R.; and Bortel, Donald C., to Bortel, Donald C. Beverage container opener and sealing device. 3,931,905, Cl. 220-278.000.
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Siden, Dennis, to Raychem Corporation. Deformable wire stripper. 3,931,672, Cl. 29-427.000.
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Simonson, Paul A. Collapsible mounting for power saw units. 3,931,751, Cl. 83-859.000.

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Simpson, Ronald Olin: *See—*
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Singer Company, The: *See—*
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Singer, Franz, to Compur-Werk Gesellschaft. Sound recording and reproducing apparatus. 3,932,893, Cl. 360-130.000.

Sisk, Hollis D., to Wagner Electric Corporation. Blower blade for electric motors. 3,932,062, Cl. 416-230.000.

Sitnichenko, Valentin Mikhailovich; Zamuruev, Alexandr Mikhailovich; and Kogut, Andrei Isakovich. Photo-copying device. 3,932,743, Cl. 250-202.000.

Sitter, David N., to General Electric Company. Method and apparatus for controlling circuitry with a plurality of switching means. 3,932,838, Cl. 340-146.1AB.

Sitter, Matthew M.: *See—*
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Sittmann, Brigitte, to Vereinigte Baubeschlagfabriken Gretsch & Co. GmbH. Adjustable jaw, especially front jaw, for ski bindings. 3,931,981, Cl. 280-11.35T.

Skidmore, Paul E. Gas aerating carburetor. 3,932,567, Cl. 261-30.000.

Sklena, Martin L.; Balent, Russell P.; and Greer, Phillip E., to GTI Corporation. Component handler with fluid controlled memory. 3,931,892, Cl. 209-74.00M.

Sleight, Arthur W., to Du Pont de Nemours, E. I., and Company. Superconductive barium-lead-bismuth oxides. 3,932,315, Cl. 252-521.000.

Slip-Not Corporation: *See—*
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Smith, Charles P., Jr. Emergency rescue device. 3,931,868, Cl. 182-63.000.

Smith, David F. Plaster of Paris bandages bonded with minimal proportions of hydrolyzed polyvinyl esters. 3,932,190, Cl. 106-111.000.

Smith, Francis V. Particulate material spreading apparatus. 3,931,934, Cl. 239-657.000.

Smith, Frank R.: *See—*
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Smith, George N.; and Marshall, John J. Convertible pack frame with compressor flaps for supporting a tent in different modes. 3,931,918, Cl. 224-10.000.

Smith, James O.; and Gade, John J., to Inn-Tronics. Master antenna line communication system. 3,932,858, Cl. 340-280.000.

Smith Kline & French Laboratories, Inc.: *See—*
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SmithKline Corporation: *See—*
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Smithwick, Edward L., Jr., to Eli Lilly and Company. Process for t-butylating hydroxy- or thiol-substituted amino acids. 3,932,489, Cl. 260-482.00C.

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Snopko, Paul A., to Zenith Radio Corporation. Focus tracking registration for optical reproducing systems. 3,932,700, Cl. 178-6.60R.

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Societe des Verreries Industrielles Reunies du Loing: *See—*
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Societe Generale de Constructions Electriques et Mecaniques Alsthom & Cie: *See—*
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Societe Nationale des Poudres et Explosifs: *See—*
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Societe Nationale d'Etude et de Construction de Moteurs d'Aviation: *See—*
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Soltysik, Edmund John, to Illinois Tool Works Inc. Terminal block mounting bracket. 3,931,946, Cl. 248-68.00R.

Sonetaka, Kazunori: *See—*
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Lee, Leonard S.; Uyeda, Yoshio; and Sopp, Samuel W., 3,932,203.

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Soucy, Kenneth Wilfred; Plunkett, Thomas James; and Rowlands, Kenneth Charles, to Remington Arms Company, Inc. Action bar-action spring link using flexible wire. 3,931,690, Cl. 42-16.000.

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Sperry Rand Corporation: *See—*
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Sprokel, Gerard J., to International Business Machines Corporation. Liquid crystal display assembly having dielectric coated electrodes. 3,932,026, Cl. 350-160.0LC.

Staab, Joachim; Apel, Willy; Drager, Achim; Haberditz, Wilhelm-Rudiger; and Fabinksi, Walter, to Hartmann & Braun Aktiengesellschaft. Construction unit for two beam photometers. 3,932,041, Cl. 356-229.000.

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Stamicarbon B.V.: *See—*
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Stein, Hall & Co., Inc.: *See—*
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Stevens, Mario R.; and Vickers, John Michael, to California Institute of Technology. Portable electrophoresis apparatus using minimum electrolyte. 3,932,262, Cl. 204-299.000.

Stickney, Michael E., to Durrum Instrument Corporation. Integrated flow path block. 3,932,136, Cl. 23-259.000.

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Stream, Ralph M., to Owens-Corning Fiberglas Corporation. Apparatus for producing a sliver-like fibrous product. 3,932,163, Cl. 65-9.000.

Streicher, Michael A., to Du Pont de Nemours, E. I., and Company. Chromium, molybdenum ferritic stainless steels. 3,932,174, Cl. 75-124.000.

Streicher, Michael A., to Du Pont de Nemours, E. I., and Company. Chromium, molybdenum ferritic stainless steels. 3,932,175, Cl. 75-126.00C.

Stretanski, Joseph Anthony, to American Cyanamid Company. Light stabilizer compositions for polymers. 3,932,324, Cl. 260-23.00H.

Strohmeyer, Max; Walz, Helmut; Appl, Max; Moell, Hans; Kerber, Horst; and Hohenschutz, Heinz, to BASF Aktiengesellschaft. Process for preventing the formation of an emulsion when working up reaction mixtures containing butyraldehydes and cobalt. 3,932,523, Cl. 260-604.0HF.

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Sudarev, Anatoly Vladimirovich: *See—*
Ivakhnenko, Viktor Vasilievich; Kuznetsov, Evgeny Fedorovich; Sudarev, Anatoly Vladimirovich; Akodes, Jury Grigorievich, deceased; and Akodes, Zoya Ivanovna, administrator, 3,931,854.

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Suga, Shigeru. Carbon electrode support. 3,932,785, Cl. 314-130.000.

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Suh, John T., to Richardson-Merrell Inc. N-[4-(3,4-methylenedioxyphenyl)-but-2-yl]-β-(3,4-dihydroxyphenyl)ethylamine, and salts thereof. 3,932,461, Cl. 260-340.500.

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Suverkropp, Geertrudes H., to Stamicarbon B.V. Process for optical resolution of racemic lysine sulphanilate. 3,932,491, Cl. 260-501.120.

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Swanson, Robert E. Timing system having infared start-stop gates. 3,932,746, Cl. 250-221.000.
Sweetheart Plastics, Inc.: *See—*
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Sweger, Ulf Alan, to Novitas Nuprot SA. Non-stinging wound dressing. 3,932,602, Cl. 424-45.000.
Swencki, Steven J., Jr.: *See—*
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Swenson, Thomas C.: *See—*
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Sybertz, Ferdinand. System for setting blades of a cutter drum of a wood chipper. 3,931,681, Cl. 33-185.00R.
Sybron Corporation: *See—*
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Syntex Corporation: *See—*
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Sze, Morgan C.; and Snell, George J., to Lummus Company, The. Synthetic crude from coal. 3,932,266, Cl. 208-10.000.
Szporny, Laszlo: *See—*
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Tagnon, Luc Andre, to Essilor International (Compagnie Generale d'Optique). Adjustable base, notably for topometry apparatus. 3,931,947, Cl. 248-180.000.
Tai, Harold, to Barry Wright Corporation. Vane damping. 3,932,056, Cl. 415-174.000.
Takada, Takezo, to Takata Kojyo Co., Ltd. Motor vehicle safety devices. 3,931,866, Cl. 180-82.00C.
Takagi, Toru, to Kansai Paint Company, Ltd. Curable polyester resin composition for hydrophilic coatings. 3,932,356, Cl. 260-75.0EP.
Takahama, Hiroshi: *See—*
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Takahashi, Mitsuru, to Nippon Paint Co., Ltd. Resin produced by graft-polymerizing ethylenically unsaturated polymerizable compounds onto a mercapto group containing alkyd resin. 3,932,562, Cl. 260-873.000.
Takahashi, Nobuaki; and Kasuga, Masao, to Victor Company of Japan, Ltd. Limiting amplifier. 3,932,768, Cl. 307-237.000.
Takahashi, Noriyoshi: *See—*
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Takahashi, Shiro, to Shionogi & Co., Ltd. 3-[1-Hydroxy-2-(3- or 4-hydroxypiperidino)ethyl]-5-phenylisoxazole. 3,932,426, Cl. 260-293.670.
Takahashi, Susumu; and Ito, Ryosuke, to Sansui Electric Co., Ltd. Signal synthesizing system adaptable for discrete four-channel sound reproducing system and matrix four-channel sound reproducing system. 3,932,706, Cl. 179-1.0GQ.
Takahashi, Toru, to Canon Kabushiki Kaisha. Developer concentration detecting and replenishment device. 3,932,034, Cl. 355-3.0DD.
Takahashi, Yasushi: *See—*
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Takamori, Shigeru; Morimoto, Eizi; and Sakaguchi, Kahei, to Kao Soap Co., Ltd. Thermosetting resin composition. 3,932,556, Cl. 260-836.000.
Takao, Toshiyuki: *See—*
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Takase, Sinji; Shioiri, Tomonori; and Ushio, Masaru, to Nippon Oil Company Ltd. Isomerization of saturated hydrocarbons with mordenite catalyst containing fluorine and chlorine. 3,932,554, Cl. 260-683.680.
Takata Kojyo Co., Ltd.: *See—*
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Takeda, Kiyoshi; and Yabu, Toshiomi, to Matsushita Electric Industrial Co., Ltd. Magnetic recording and reproducing system having an automatic tape drive control function. 3,932,889, Cl. 360-71.000.
Takeda, Mikio; Inoue, Hirozumi; Hayashi, Goro; and Nurimoto, Seiichi, to Tanabe Seiyaku Co., Ltd. Novel azabicyclo octane derivative and process for preparing same. 3,932,429, Cl. 260-295.50B.
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Tamai, Hisashi; and Nakano, Soichi, to Honda Giken Kogyo Kabushiki Kaisha. Adiabatic integral intake and exhaust conduit for internal combustion engine. 3,931,799, Cl. 123-122.0AB.
Tamaki, Ryoichi: *See—*
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Tanaka, Hiroshi: *See—*
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Tanaka, Tomoji. Method for manufacturing an ink-containable stamp. 3,932,251, Cl. 156-245.000.
Tanimoto, Kenji: *See—*
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Tauzin, Francis, to Pomagalski S.A.; and Sigma Plastique. Automatic opening and closing cabin for ropeways. 3,931,769, Cl. 105-329.00S.
Tayler, Colin Andrew Millar, to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defense in Her Britannic Majesty's Government of the. Rotary bladed fluid flow machine. 3,932,064, Cl. 417-243.000.
Taylor, John Anthony: *See—*
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Taylor, Norman J., to Varian Associates. Electron gun. 3,932,749, Cl. 250-306.000.
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Terrell, Ross C., to Airco, Inc. Ether compound as an inhalation anesthetic. 3,932,667, Cl. 424-342.000.
Tertinek, Christian T.; and Stone, Alan J. Adjustable gear enclosure for mixer pinion and bull gears. 3,931,748, Cl. 74-606.00R.
Tertinek, Christian T.; and Stone, Alan J. Paddle shaft seal assembly. 3,932,006, Cl. 308-187.000.
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Thelen, Hermann; Halcour, Kurt; Schwerdtel, Wulf; and Swodenk, Wolfgang, to Bayer Aktiengesellschaft. Catalyst for the preparation of cyclohexanone from phenol and process therefor. 3,932,514, Cl. 260-586.00P.
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Thibault, Olida. Hydraulic wheel. 3,932,076, Cl. 418-177.000.
Thibodeaux, John D. Lifting apparatus. 3,931,957, Cl. 254-127.000.
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Thomson, Derek Vincent. Surfboard leash. 3,931,656, Cl. 9-310.00E.
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Thrush, James Lloyd, to Anchor Hocking Corporation. Candle holder unit and the like. 3,932,113, Cl. 431-297.000.
Thunberg, Jon Carl; Bragdon, Robert Wright; and Moore, William Philip, to W. R. Grace & Co. Process for recovering beta-alanine from sodium chloride solutions. 3,932,501, Cl. 260-534.000.
Thurston, Benjamin L. Box section cover member. 3,931,923, Cl. 229-23.00R.
Tiby, Gerard A., to Hobart Corporation. Peeler and grater apparatus. 3,931,900, Cl. 241-296.000.
Tien, Tseng-Ying: *See—*
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Tinder, Lawrence E. Die stone casting for dental restoration. 3,931,677, Cl. 32-11.000.
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Todd, Lee T., Jr.; Farrell, Eugene F.; and Linz, Arthur, to Massachusetts Institute of Technology. Process for preparing cathodochromic sodalite. 3,932,592, Cl. 423-328.000.
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Townhill, Arthur. Adjustable golf club. 3,931,969, Cl. 273-79.000.
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Townsend, Peter G., to General Motors Corporation. Polyphase rectifier system for providing two output current-voltage ranges. 3,932,765, Cl. 307-149.000.
Townsend, Ray T., to Townsend Engineering Company. Stripper means for meat skinning machines. 3,931,665, Cl. 17-21.000.
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Trelut, Jean Marie; Liot, Jean Bernard Michel; Cagnac, Therese Marie Leonie; and Chambet-Falquet, Antoine Jean Louis, to International Standard Electric Corporation. Real-time control arrangement for a simulation device. 3,932,843, Cl. 340-172.500.
Tremont, Leo J. Portable, gravity-actuated alarm for use with a window or door. 3,932,856, Cl. 340-274.00R.
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True, Ceeil Wayne. Electrically heated riser pipe for a fluid supply system. 3,932,727, Cl. 219-301.000.
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Turner, Gordon James, to W. R. Grace & Co. Reduction firing of ceramics composited with organic binders. 3,932,310, Cl. 252-455.00R.
Turner, Robert Bruce, to American Medical Electronics Corporation. Apparatus for making probe covers for electronic thermometers. 3,932,108, Cl. 425-515.000.
Turner, William W., to Eli Lilly and Company. 3,3-(Alkylimino)bis(2-methyleneпropiophenone)microbiocides. 3,932,493, Cl. 260-501.180.
Tylko, Jozef Kazimierz, to Tetronics Research and Development Company. Process for high temperature treatment of materials. 3,932,171, Cl. 75-10.00R.
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Uemura, Osamu; Fujita, Kiyoshi; and Onoda, Takeshi, to Showa Denko Kabushiki Kaisha. Apparatus for manufacture of tubular film from thermoplastic resin. 3,932,080, Cl. 425-71.000.
Umezawa, Hamao; Takahashi, Yasushi; Shirai, Tadashi; and Fujii, Akio, to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai. Bleomycinic acid and process for preparing thereof. 3,932,374, Cl. 260-112.50R.
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Wasley, William L.; and Pittman, Allen G., to United States of America, Agriculture. Preparation of stretchable wool textiles. 3,932,125, Cl. 8-128.00R.
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Weber, Helmut; Aumuller, Walter; Muth, Karl; and Weyer, Rudi, to Hoechst Aktiengesellschaft. Composition and method for lower blood sugar containing N-[4-(β-2-methoxy-5-chloro-benzamido>-ethyl)-benzenesulfonyl]-N'-cyclopentyl-urea. 3,932,658, Cl. 424-321.000.
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Weinstein, Harold, to Sensor Technology, Inc. Detector for tubular transparent article. 3,932,763, Cl. 250-576.000.
Weinstein, Stephen B. Motion picture sound synchronization. 3,932,032, Cl. 352-[illegible].000.
Weir, Francis X., to Raymond Lee Organization, Inc., The, a part interest. Disposable bassinet liner. 3,931,651, Cl. 4-173.000.
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Wetzel, William H.; Nelson, Harold G.; and Shelton, Frederic J., to Reichhold Chemicals, Inc. Alkylation of phenols. 3,932,537, Cl. 260-624.00C.
Wetzel, Wolfgang; and Muller, Manfred, to Imperial Chemical Ind. (Europa) Fibres. Apparatus for the detection of breaks in moving threadlines. 3,932,854, Cl. 340-259.000.
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White, David John. Golf tube collar. 3,931,842, Cl. 150-1.50R.
White, George Raymond, to Smith Kline & French Laboratories, Inc. Sulphoxides. 3,932,443, Cl. 260-309.000.
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Wilson, Edward L.; Mitchell, Willard N.; and von Rosenberg, Hermann E., to Exxon Research and Engineering Company. Process for the fluid bed gasification of agglomerating coals. 3,932,146, Cl. 48-210.000.
Wilson, Ian C. Method of treating schizophrenia. 3,932,623, Cl. 424-177.000.
Wilson, Ronald, to National Research Development Corporation. Gas sensitive devices. 3,932,807, Cl. 324-71.0SN.
Winn, Martin, to Abbott Laboratories. Alkylphenyl benzopyranopyridines. 3,932,432, Cl. 260-297.00T.
Woitun, Eberhard; and Reuter, Wolfgang, to Boehringer Ingelheim GmbH. Biocidal compositions containing a 2- (5'-nitro-2'-furyl)-thieno(2,3-d) pyrimidine and methods of use. 3,932,642, Cl. 424-251.000.
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Woodward, Oakley McDonald, to RCA Corporation. Broadband turnstile antenna. 3,932,874, Cl. 343-795.000.
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Wunsch, Steffen, to Robert Bosch G.m.b.H. Hammer-drill. 3,931,744, Cl. 74-22.000.
Wycoff, Keith H. Signal selective circuit. 3,932,824, Cl. 333-70.00R.
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Yahraus, Theodor G., to General Electric Company. Joint structure. 3,932,050, Cl. 403-11.000.
Yamada, Osamu: *See—*
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Yamaguchi, Tadashi; Ono, Takayuki; Hoshi, Hiroshi; Hirakawa, Michio; and Watanabe, Isao, to Lion Fat & Oil Co., Ltd. Method of manufacturing reinforced resin moldings. 3,932,350, Cl. 260-42.140.
Yamaha International Corporation: *See—*
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Yamamoto, Hisao; Inaba, Shigeho; Akatsu, Mitsuhiro; Baile, Clifton A.; and Parish, Roger G., to Sumitomo Chemical Company, Limited; and SmithKline Corporation. Methods and compositions for improving the feed intake of meat producing animals. 3,932,637, Cl. 424-244.000.
Yamamoto, Shigehiko: *See—*
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Yamazaki, Chikayasu: *See—*
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Yanagihara, Hideki: *See—*
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Yasuda, Shinichi: *See—*
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Yazu, Shuji: *See—*
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Yeager, Marvin Leo; and Henschen, Homer Ernst, to AMP Incorporated. Shunt assembly. 3,932,013, Cl. 339-19.000.
Yocum, Charles H., to Rock Valley Water Conditioning, Inc. Multitank ion exchange water treatment system. 3,932,279, Cl. 210-96.000.
Yokoo, Teruo, to Nippon Electric Company, Ltd. Common control switching system. 3,932,844, Cl. 340-172.500.
Yokotsuka, Tamotsu; Iwaasa, Takashi; Okami, Tadao; Noda, Minoru; and Fujii, Mitsuharu, to Kikkoman Shoyu Co., Ltd. Process for producing protein hydrolyzate. 3,932,671, Cl. 426-7.000.
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York, Robert A., to Flight Systems, Inc. Self-testing battery discharge indicator. 3,932,797, Cl. 320-48.000.
Yoshida, Hisayoshi; Nakamura, Takato; Nakagawa, Masanao; Arita, Seiji; and Miki, Toshiharu, to Director-General of the Agency of Industrial Science and Technology. Thiohumic acid, a process for preparing same, and its use for absorbing heavy metal ions. 3,932,494, Cl. 260-502.600.
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Yoshida, Toshiro, to Toyota Jidosha Kogyo Kabushiki Kaisha. Automobile engine carburetors. 3,931,797, Cl. 123-119.00F.
Yoshimura, Noboru, to Aisin Seiki Kabushiki Kaisha. Adjustable hinge fitting for a seat with a movable back. 3,931,996, Cl. 297-366.000.
Yoshino, Takehiko: *See—*
Yanagimachi, Akio; Yamada, Osamu; Yamane, Hisakichi; Sawabe, Eiichi; Uehara, Takashi; Yoshino, Takehiko; Takezawa, Teruhiro; Masuda, Michio; Nabeyama, Hiroaki; Fukuda, Masaaki; and Kayano, Tatsuo, 3,932,698.
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Young, Patrick: *See*—
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Younker, Glen: *See*—
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Yuan, Lloyd T.; and Honda, Jack S., to TRW Inc. Broadband waveguide mixer. 3,932,815, Cl. 325-445.000.
Yusa, Yasushi: *See*—
Sekizawa, Yasuharu; Seki, Shigeo; Nomiya, Bunzo; Koeda, Takemi; Kai, Fumio; Akai, Naotoshi; Yusa, Yasushi; and Fukuyasu, Fuguaki, 3,932,668.
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Zamer, Joseph, to Inmont Corporation. Adhesives comprising solutions of a mixture of a terpene urethane resin with thermoplastic polyether polyurethanes containing tertiary amine group. 3,932,561, Cl. 260-858.000.
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Zarow, Albert I.; and Volk, Joseph A., Jr., to Beta Corporation of St. Louis. Automatic pellet producing system. 3,932,736, Cl. 235-151.100.
Zaruba, Wenzel, to Textol Systems, Inc. Automatic button feeder. 3,931,775, Cl. 112-113.000.
Zech, John David, deceased: *See*—
Hunter, Robert H.; and Zech, John David, deceased, 3,932,532.
Zellmer, Donal R. Personal materials carrier. 3,931,917, Cl. 224-5.00R.
Zenel, Joseph A.; McGuffin, William G.; and Barnette, William E., to United States of America, Navy. Core design for flexible H-sensor for ELF. 3,932,872, Cl. 343-788.000.
Zenith Radio Corporation: *See*—
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Zimmermann, Frederick N., to March Manufacturing Company. Magnetically-coupled pump. 3,932,068, Cl. 417-420.000.
Zimmern, Bernard. Rotary interengaging worm and worm wheel with specific tooth shape. 3,932,077, Cl. 418-195.000.
Zoche, Gunter; Richtzenhain, Hermann; and Ismail, Roshdy, to Dynamit Nobel Aktiengesellschaft. Process for the preparation of 2,2-bis-(4-hydroxy-3-chlorophenyl)-propane. 3,932,535, Cl. 260-619.00A.
Zollinger, Hansrudolf. Table. 3,932,009, Cl. 312-312.000.
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# LIST OF REISSUE PATENTEES

## TO WHOM

## PATENTS WERE ISSUED ON THE 13TH DAY OF JANUARY, 1976

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Baldwin, James French. High temperature alloys. Re. 28,681, Cl. 75-134.00F.
Black Clawson Fibreclaim, Inc.: *See*—
Blakley, Earl T.; Chupka, David E.; Harbron, David L., Jr.; Marsh, Paul G.; and Seifert, Peter, Re. 28,677.
Blakley, Earl T.; Chupka, David E.; Harbron, David L., Jr.; Marsh, Paul G.; and Seifert, Peter, to Black Clawson Fibreclaim, Inc. Waste treatment system. Re. 28,677, Cl. 241-46.080.
Burroughs Corporation: *See*—
Kupsky, George A., Re. 28,683.
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Harmon, Carlyle, to Johnson & Johnson. Apertured nonwoven fabrics and methods of making the same. Re. 28,680, Cl. 8-115.500.
Hoey, Charles E., to Rohm & Haas Company. Decorative laminate. Re. 28,682, Cl. 428-196.000.
Honeywell Inc.: *See*—
Edelman, Walter E.; and Sutton, David J., Re. 28,676.
International Industries Ltd.: *See*—
Robinson, Edgar Clarence, Re. 28,679.
Johnson & Johnson: *See*—
Harmon, Carlyle, Re. 28,680.
Kakuta, Shoichiro: *See*—
Yanagi, Akio; and Kakuta, Shoichiro, Re. 28,678.
Kupsky, George A., to Burroughs Corporation. Gaseous discharge display panel with auxiliary excitation cells. Re. 28,683, Cl. 340-378.00R.
Marsh, Paul G.: *See*—
Blakley, Earl T.; Chupka, David E.; Harbron, David L., Jr.; Marsh, Paul G.; and Seifert, Peter, Re. 28,677.
Minolta Camera Kabushiki Kaisha: *See*—
Yanagi, Akio; and Kakuta, Shoichiro, Re. 28,678.
Robinson, Edgar Clarence, to International Industries Ltd. Burners. Re. 28,679, Cl. 431-9.000.
Rohm & Haas Company: *See*—
Hoey, Charles E., Re. 28,682.
Seifert, Peter: *See*—
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Sutton, David J.: *See*—
Edelman, Walter E.; and Sutton, David J., Re. 28,676.
Yanagi, Akio; and Kakuta, Shoichiro, to Minolta Camera Kabushiki Kaisha. Electric exposure meter. Re. 28,678, Cl. 356-215.000.

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Adams, Peter D., and W. R. Lauper, to Warner R. Lauper interest to Quadrastat Controls Corp. Panel supported transmission dual shift control module for mobile or stationary equipment. 238,442, 1–13–76, Cl. D55—1.
Adams, Peter D., and W. R. Lauper, to Warner R. Lauper interest to Quadrastat Controls Corp. Transmission shift control module for mobile or stationary equipment. 238,443, 1–13–76, Cl. D55—1.
Apodaca, Herman S. Bicycle. 238,419, 1–13–76, Cl. D12—111.
Athey, Bert H. Necktie rack. 238,405, 1–13–76, Cl. D6—28.
Austin Aeromarine, Inc.: *See*—
Austin, Thomas M. 238,417.
Austin, Thomas M., to Austin Aeromarine, Inc. Surface effect craft. 238,417, 1–13–76, Cl. D12—5.
Beneke Corp.: *See*—
Harrison, David E. 238,425.
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Harrison, David E. 238,427.
Berlin, Evan H. Balancing snake figure toy or the like. 238,434, 1–13–76, Cl. D34—2.
Bittner, John R., K. C. McCartney, and G. F. Fossella, to General Electric Co. Cabinet for an input-output device for a data handling system. 238,451, 1–13–76, Cl. D64—11.
Blanchard, Julius B., to E. Gluck Corp. Wristwatch. 238,413, 1–13–76, Cl. D10—38.
Bobrick, Mitchell. Cantilever mountable hospital bed. 238,406, 1–13–76, Cl. D6—79.
Bontempi, Paolo. Toy electric organ or similar article. 238,438, 1–13–76, Cl. D34—15.
Chang, Brian, and J. Dolan. Semi-submersible barge. 238,418, 1–13–76, Cl. D12—66.
Compagnie Generale des Etablissements-Michelin, raison sociale Michelin & Cie: *See*—
Verdier, Henri. 238,420.
DeMars, Donald A. Sign holder for use with acoustical dividers. 238,412, 1–13–76, Cl. D8—245.
D. Gottlieb & Co.: *See*—
Garbark, Roman F. 238,435.
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Midgley, Thomas III, and Forrester. 238,415.
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General Motors Corp.: *See*—
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Harrison, David E., to Beneke Corp. Water closet seat cover. 238,426, 1–13–76, Cl. D23—71.
Harrison, David E., to Beneke Corp. Water closet seat cover. 238,427, 1–13–76, Cl. D23—71.
Hauser, Jon W. II, to Elgin Metal Casket Co. Casket lock handle. 238,432, 1–13–76, Cl. D31—11.
Hermann, Thomas L. Banking machine terminal or similar article. 238,429, 1–13–76, Cl. D26—5.
Hirasa, Hiroshi, K. Hoshino, and B. Mishiro, to Matsushita Electrical Industrial Co., Ltd. Radio receiver. 238,447, 1–13–76, Cl. D56—4.
Hoshino, Kunio: *See*—
Hirasa, Hiroshi, Hoshino, and Mishiro. 238,447.
Johnzon, Bertil T. Letter box. 238,433, 1–13–76, Cl. D31—22.
Julian, Robert A. Lawn edger attachment for self-propelled lawnmowers. 238,441, 1–13–76, Cl. D40—1.
Kata, Joseph, and M. J. Wolff, to Sperry Remington Sperry Rand Corp. Hair groomer attachment. 238,453, 1–13–76, Cl. D86—10.
Kienlen, Loren C., and J. H. Poppler, to Doormaid, Inc. Stand for hot cooking utensils. 238,409, 1–13–76, Cl. D7—130.
Kitson, Gerald L. Poultry feed chain loader. 238,445, 1–13–76, Cl. D55—1.
Kracke, Donald R. Jacket. 238,403, 1–13–76, Cl. D2—187.
Adams, Peter D., and Lauper. 238,442.
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Matsumoto, Ikki, to The Procter & Gamble Co. Paper towelling. 238,449, 1–13–76, Cl. D59—2.
Matsushita Electric Industrial Co., Ltd.: *See*—
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McDougle, Frank O. Boot jack. 238,454, 1–13–76, Cl. D86—10.
McKelvey, Thomas H. Golfers' multi-purpose tool. 238,436, 1–13–76, Cl. D34—5.
Midgley, Thomas III, and R. E. Forrester, to Forrgley, Inc. Leveling instrument. 238,415, 1–13–76, Cl. D10—65.
Ostrander, Robert K., to The Quaker Oats Co. Water toy. 238,439, 1–13–76, Cl. D34—15.
Owens, Marion D. Toy or miniature coffee table with v-shaped end supports. 238,407, 1–13–76, Cl. D6—175.
Owens, Marion D. Toy coffee table or similar article. 238,404, 1–13–76, Cl. D6—5.
Pakline Corp.: *See*—
Schipper, Bernard B. 238,444.

Pecht, Adam. Napkin dispenser. 238,408, 1-13-76, Cl. D7—72.
Poppler, Jack H.: *See*—
Kienlen, Loren C., and Poppler. 238,409.
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# CLASSIFICATION OF PATENTS

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NOTE.—First number, class; second number, subclass; third number, patent number

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228 3,932,033

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## CLASSIFICATION OF DESIGNS

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| D2— | 187 | 238,403 | | 245 | 238,412 | | 211 | 238,421 | | 14F | 238,430 | | N | 238,434 | | | 238,448 |
| D6— | 5 | 238,404 | D10— | 38 | 238,413 | | 213 | 238,422 | D27— | 42 | 238,431 | | R | 238,437 | D59— | 2A | 238,449 |
| | 28 | 238,405 | | 50 | 238,414 | D19— | 59 | 238,423 | D31— | 11 | 238,432 | D40— | 1A | 238,441 | D61— | 1Q | 238,450 |
| | 79 | 238,406 | | 65 | 238,415 | D23— | 19 | 238,424 | | 22 | 238,433 | D55— | C | 238,445 | D64— | 11C | 238,451 |
| | 175 | 238,407 | | 97 | 238,416 | | 71 | 238,425 | D34— | 5CB | 238,436 | | F | 238,444 | D73— | 1B | 238,452 |
| D7— | 72 | 238,408 | D12— | 5 | 238,417 | | | 238,426 | | JJ | 238,435 | | G | 238,442 | D83— | 12A | 238,456 |
| | 130 | 238,409 | | 66 | 238,418 | | | 238,427 | | VV | 238,440 | | | 238,443 | D86— | 10D | 238,454 |
| | 196 | 238,410 | | 111 | 238,419 | | 150 | 238,428 | | 15AD | 238,439 | D56— | 4B | 238,446 | | E | 238,455 |
| D8— | 18 | 238,411 | | 143 | 238,420 | D26— | 5C | 238,429 | | C | 238,438 | | | 238,447 | | F | 238,453 |

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| 1 : 3,931,730 | 3,931,990 | 3,932,858 | 3,932,175 | 3,931,946 | 3,931,806 |
| 3,931,915 | 3,932,003 | 3,932,862 | 3,932,291 | 3,931,963 | 3,931,870 |
| 3,932,241 | 3,932,054 | 3,932,866 | 3,932,307 | 3,931,977 | 3,931,887 |
| 3,932,745 | 3,932,055 | 3,932,882 | 3,932,315 | 3,932,010 | 3,931,904 |
| 4 : 3,931,747 | 3,932,056 | 3,932,888 | 3,932,318 | 3,932,012 | 3,931,916 |
| 3,931,905 | 3,932,094 | 3,932,895 | 3,932,326 | 3,932,068 | 3,931,927 |
| 3,932,242 | 3,932,096 | 8 : 3,931,897 | 3,932,355 | 3,932,083 | 3,931,959 |
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| 6 : Re.28,676 | 3,932,153 | 3,932,746 | 3,932,650 | 3,932,151 | 3,932,219 |
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| 3,931,677 | 3,932,281 | 3,931,948 | 3,932,018 | 3,932,383 | 3,932,619 |
| 3,931,679 | 3,932,289 | 3,931,950 | 3,932,065 | 3,932,410 | 3,932,625 |
| 3,931,694 | 3,932,294 | 3,932,008 | 3,932,093 | 3,932,432 | 3,932,832 |
| 3,931,697 | 3,932,312 | 3,932,058 | 3,932,190 | 3,932,438 | 19 : 3,931,655 |
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| 3,932,039 | 3,932,028 | 3,932,513 | 3,932,452 | 3,932,598 | 46 : 3,931,796 |
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| 3,932,344 | 3,931,729 | 3,932,780 | 3,932,842 | 3,931,726 | 3,931,975 |
| 3,932,360 | 3,931,736 | 3,932,812 | 3,932,847 | 3,931,763 | 3,932,082 |
| 3,932,455 | 3,931,737 | 3,932,851 | 3,932,853 | 3,931,790 | 3,932,146 |
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| 3,932,246 | 3,932,341 | 3,932,177 | 3,932,196 | 3,932,641 | 3,931,835 |
| 3,932,320 | 3,932,354 | 3,932,179 | 3,932,220 | 3,932,665 | 3,931,986 |
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| 3,932,347 | 3,932,371 | 3,932,218 | 3,932,268 | 3,932,735 | 55 : 3,931,649 |
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| 3,932,367 | 3,932,412 | 3,932,273 | 3,932,290 | 3,932,796 | 3,931,783 |
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# OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

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January 20, 1976

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C. Marshall Dann, Commissioner

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# PATENT AND TRADEMARK OFFICE NOTICES

## Second Trial Voluntary Protest Program

A Second Trial Voluntary Protest Program will be conducted during the coming months. It will be increased in scale and somewhat modified in procedure from the first such program. Announcement of and description of the rules for the first program appeared in 923 O.G. 2 on June 4, 1974.

As before, the objective is to gain experience in carrying out such a program and to determine the extent of interest by the public in participating and in supplying pertinent references. To the extent there is participation, the program should be beneficial by bringing new art to the attention of the Office, preventing inadvertent issuance of invalid patents, and increasing confidence in the strength of those patents which survive the protest proceedings.

The first Trial Voluntary Protest Program showed a considerable interest by applicants and the public in taking part in protest proceedings. A summary of the results will be published soon in this Gazette. The second Trial Voluntary Protest Program is designed to gain additional information as to public participation and also to follow more closely the procedures which would be required in a continuing, permanent protest program.

*Applications Involved*

In the second Trial Voluntary Protest Program, a Request to Participate and Waiver of Confidentiality form (PTOL–224 Temp.) will be sent to each applicant to whom a Notice of Allowance is mailed during a selected three week period, probably in October, 1975. The total number of requests mailed will be about 4,500. Applications for plant patents will be excluded from the program. The reason for this exclusion is the high cost of printing colored drawings and the relatively limited prior art available. No other applications will be excluded from the trial program, regardless of subject matter, type of application or earlier proceedings.

*Waiver of Confidentiality*

Two copies of the form letter requesting voluntary waiver of confidentiality (form PTOL–224 Temp.) will be mailed in the same envelope along with the Notice of Allowance. An additional copy of the form letter will be made of record in each application at the time of mailing. The applicant will have three months from the notice of allowance date in which to either (1) elect to participate in the Trial Voluntary Protest Program by filing a signed waiver of confidentiality, or (2) elect not to participate in the program by paying the issue fee. If he does neither, the application will become abandoned, as provided in 37 C.F.R. 1.316. The waiver of confidentiality is a part of form PTOL–224 Temp. This procedure will avoid any increase in pendency time for those applications in which an election is made not to participate in the program. An early filing of a waiver of confidentiality by the applicant will result in early publication of the application.

*Publication*

If the applicant decides not to participate in the protest program and payment of the issue fee is timely made, the patent will issue routinely without delay.

If the applicant elects to participate in the protest program and a signed waiver of confidentiality is filed in the Office within 3 months of the notice of allowance date, the Notice of Allowance will be vacated. In such a case the issue fee should not be filed, as it will not be accepted and applied if filed with a signed waiver of confidentiality. An additional Notice of Allowance will be issued after the protest proceedings have been completed if only allowable claims remain in the application.

After a signed waiver has been filed, the application will be printed in the form of a patent and be available for sale as in the first Trial Voluntary Protest Program. At least one claim and a drawing figure, if any, will be printed in the OFFICIAL GAZETTE. These published applications will appear in about 6 to 9 issues of the OFFICIAL GAZETTE early in 1976. Advance notice will be given in the OFFICIAL GAZETTE of the dates on which applications will be published under this program.

*Inspection of Files*

The Patent and Trademark Office files of the published applications will be available for inspection by the public for a period of three months after publication. The application files will be retained in a single location in the Patent Issue Division during the protest period. This single location will be staffed with personnel to process papers directed to these files, supervise inspection of the files by the public, provide copies of file contents when ordered, and perform other related duties. A coin operated copying machine will also be available at this location.

*Filing of Protests*

Protests relating to the patentability of any published application must be filed in writing in the Patent and Trademark Office no later than three months after publication of the application. No extension of the three month protest period will be granted. Each protest must be filed in duplicate (one copy will be forwarded to the applicant and the other copy will be placed in the application file) and must indicate the grounds for protesting the allowance of any claim contained in the published application. If the protest involves prior art not of record in the application, two copies of the alleged prior art, together with an explanation of the relevance of such prior art to the allowed claims, should be included. The protester may also comment on the prior art record in the application and the manner in which it wns applied.

In those applications where prima facie evidence of prior public use or sale the claimed invention is presented in accordance with 37 C.F.R. 1.292, public use proceedings will give the protester an opportunity to present evidence.

Should claims be copied from a published application for interference purposes, the applicant copying claims must also file a notice of such copying in the file of the published application to avoid the possibility of inadvertent issuance of the published application as a patent before conclusion of any interference proceedings.

For easy identification, all protests should be headed, "Protest Under Trial Voluntary Protest Program" and be addressed to:

Commissioner of Patents and Trademarks
Box TVPP
Washington, D.C. 20231

The protester should fully identify himself and include his mailing address so that communications may be addressed to him. In view of administrative problems encountered in the first Trial Voluntary Protest Program in protecting the confidentiality of the identity of protesters, no attempt will be made by the Office to maintain the confidentiality of any protester under the new program.

If no protests are received during the protest period, the application file will be rerouted for the mailing of a new Notice of Allowance. The file will not be returned to the examining group except for consideration of matters which normally require return of an allowed file.

If one or more protests are filed in an application, the application file and the protest(s) will be returned to the examing group for consideration.

*Consideration of Protest*

The examining group will acknowledge receipt of all protests. The authority for deciding whether or not the evidence submitted constitutes a prima facie showing of unpatentability of any allowed claim will reside with the Group Director. If the Group Director decides that no such showing has been made, the application will be forwarded to the Patent Issue Division for mailing of a new Notice of Allowance. Protesters will be notified in such cases that prosecution has not been reopened, and the applicant will be sent a duplicate copy of all protests. The decision of the Group Director will be final and will not be subject to petition by a protester.





If the Group Director decides that the submitted evidence constitutes a prima facie showing of unpatentability of any allowed claim, prosecution of the application will be reopened. The decision to reopen prosecution will be communicated to the applicant by means of an Office action, signed by a primary examiner, rejecting any claim considered unpatentable. The duplicate copy of each protest will be mailed to the applicant with the Office action. Protesters who submitted evidence on which the rejection is based will be identified in the Office action and will also receive copies of this and subsequent Office actions. Other protesters will be notified that prosecution has been reopened, but based on evidence and for reasons other than those submitted by them and that, consequently, no further correspondence will be directed to them. The applicant will normally be given a three month shortened statutory period to respond to the Office action.

*Response by the Applicant to Subsequent Office Actions*

During this period, the applicant may present amended or new claims which will be subject to further consideration by the primary examiner. In order to allow protesters who submitted evidence on which a rejection in the Office action is based to participate in later prosecution and to comment upon further proceedings, applicant will be required to serve by mail upon each protester identified in the Office action, a copy of any response filed, including any appeal brief. Indication of such service will be a required component of a complete response. Applicant need only reply to the rejections and objections made in the Office action. There need be no specific response to any other points raised by the protesters.

*Comment on Applicant's Response by the Protester*

Each protester served will be allowed one month, running from the date applicant's response or brief is received in the Patent and Trademark Office, to file comments relating thereto. All communications from protesters must be in writing. Examiner interviews with the protesters will not be permitted. No extensions of the one month period will be granted.

Any appeal by the applicant to the Board of Appeals in a protested application will be made special and will be taken up out of order.

*Conclusion of Prosecution*

If, after further prosecution, the application is found to be allowable, all protesters still participating at that time will be notified and the application will be forwarded to the Patent Issue Division for mailing of a new Notice of Allowance. A decision of the primary examiner to allow an application will not be subject to petition or appeal by any protester.

C. MARSHALL DANN,
*Commissioner of Patents and Trademarks.*

Sept. 16, 1975.

[938 O.G. 945]

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## Certificate of Mailing of Correspondence

Increasing problems caused by delays in the delivery of papers to the Office by mail within the time periods set for response by applicants have caused renewed efforts within and outside the Patent and Trademark Office to seek a suitable solution. Helpful suggestions have been received from a number of individuals and bar associations. The following proposal, which is hereby published for comment by all interested parties, appears to provide a simple and effective method of alleviating most of the problems resulting from mail delays and to be within the present statutory authority of the Commissioner.

The proposed practice on which comments are invited would provide that correspondence in pending applications and proceedings would be timely if (1) deposited in the mails within the period or time set by the Office, and (2) accompanied by a suitable declaration.

The present practice of treating a response or other correspondence as effective only upon actual receipt in the Patent and Trademark Office follows a decision by Commissioner Moore in *In re James*, 1913 C.D. 89. At that time the period for response to an Office action was one year, in contrast to the three month shortened statutory period which is usual today. Nothing in the statute appears to prevent the adoption of a different practice which takes into account the difficulties currently arising from shortened periods for response and uncertainties of the mails.

It is proposed that this change in practice be accomplished by Commissioner's notice rather than by changing the Rules of Practice (Title 37 of the Code of Federal Regulations). Comments are, however, also invited as to whether it would be preferable to adopt the proposed practice by rule change.

The proposed practice would not be applicable to the filing of patent or trademark applications. These are excluded because of the priority rights, domestic and international, which are involved.

The proposal contemplates the issuance of an Official Gazette Notice stating that:

Effective _____, in any case where a time is set for taking action relative to any pending patent or trademark application or in any patent or trademark proceeding pending before the Patent and Trademark Office, correspondence will be considered as having been timely filed if it is

(1) deposited prior to the expiration of the period set for response (a) with the United States Postal Service as first class mail or (b) outside the United States with a governmental postal service as air mail, in an envelope addressed to the "Commissioner of Patents and Trademarks, Washington, D.C. 20231," and
(2) accompanied by a statement in the form of a declaration under 37 CFR 1.68 indicating the name of the person depositing the correspondence in the mail, the location of the deposit in the mail, and date of deposit in the mail.

In the event that correspondence is mailed and the application is later held to be abandoned or the proceeding dismissed, terminated, or decided with prejudice because such correspondence was not received in the Patent and Trademark Office, the correspondence will be considered timely and the Office action will be vacated if the party who forwarded such correspondence, promptly after becoming aware of the Office action, informs the Office of the previous mailing of the correspondence, supplies an additional copy of the previously mailed correspondence and declaration of mailing, and includes a new declaration which attests again to the previous mailing of the correspondence and declaration.

A suggested format for the declaration under 37 CFR 1.68 to be included on the first page of any correspondence is shown below:

I hereby certify that this correspondence is being deposited with:

☐ the United States Postal Service as first class mail

☐ a governmental postal service other than the United States Postal Service as air mail

in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231, on _____
Date

from _____
Location of mailing (deposit in the mail)

by _____
Name of person actually depositing the correspondence in the mail

The undersigned declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date _____ _____
Signature of applicant or assignee, or signature and Registration Number of Registered Representative

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Any person wishing to comment upon the proposed practice should address the Commissioner of Patents and Trademarks, Washington, D.C. 20231. Comments should be received by March 16, 1976.

C. MARSHALL DANN,
Dec. 23, 1975. *Commissioner of Patents and Trademarks.*

### Substitute Powers of Attorney

The Patent and Trademark Office has recently received correspondence in certain applications under the title "Substitute Power of Attorney" wherein the principal attorney of record attempted to name other attorneys as his substitute in those applications.

Since the power of the principal attorney may be revoked, or terminated as by his death, revocation or termination of said power of the principal attorney will also terminate the power of those appointed by him. Thus, a principal attorney may appoint an associate attorney whose power terminates with that of the principal, but he may not appoint a "substitute" and any attempt by the principal to appoint a "substitute" attorney whose power survives his own shall not be recognized by the Office.

WILLIAM FELDMAN,

Dec. 17, 1975. *Deputy Assistant Commissioner for Patents.*

# PATENT NOTICES

### Certificates of Correction for the Week of Jan. 20, 1976

| | | | |
|---|---|---|---|
| Re. 28,473 | 3,882,410 | 3,902,905 | 3,909,688 |
| 3,620,700 | 3,884,322 | 3,902,961 | 3,912,521 |
| 3,774,993 | 3,884,729 | 3,903,037 | 3,912,684 |
| 3,776,969 | 3,885,012 | 3,905,488 | 3,912,758 |
| 3,798,553 | 3,886,064 | 3,905,751 | 3,912,820 |
| 3,822,272 | 3,891,648 | 3,905,821 | 3,912,988 |
| 3,825,527 | 3,892,808 | 3,905,924 | 3,913,020 |
| 3,829,433 | 3,894,865 | 3,906,587 | 3,913,174 |
| 3,835,919 | 3,895,352 | 3,906,819 | 3,913,248 |
| 3,840,496 | 3,895,969 | 3,907,021 | 3,914,408 |
| 3,843,558 | 3,895,987 | 3,907,063 | 3,914,439 |
| 3,844,201 | 3,896,182 | 3,907,142 | 3,914,627 |
| 3,847,856 | 3,896,673 | 3,907,172 | 3,914,802 |
| 3,853,389 | 3,897,386 | 3,907,693 | 3,914,960 |
| 3,853,719 | 3,897,927 | 3,907,706 | 3,915,303 |
| 3,855,273 | 3,898,291 | 3,907,927 | 3,916,296 |
| 3,861,833 | 3,898,297 | 3,908,932 | 3,916,363 |
| 3,864,395 | 3,899,958 | 3,909,169 | 3,916,364 |
| 3,869,515 | 3,901,529 | 3,909,261 | 3,916,422 |
| 3,880,819 | 3,901,646 | 3,909,600 | |

## PATENT EXAMINING CORPS

**RENE D. TEGTMEYER, Assistant Commissioner**
**WILLIAM FELDMAN, Deputy Assistant Commissioner**

### CONDITION OF PATENT APPLICATIONS AS OF DECEMBER 20, 1975

| PATENT EXAMINING GROUPS | Actual Filing Date of Oldest New Case Awaiting Action |
|---|---|
| **CHEMICAL EXAMINING GROUPS** | |
| GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices. | 3-19-75 |
| GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides. | 1-2-75 |
| HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes. | 1-13-75 |
| COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography. | 2-3-75 |
| SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes. | 1-21-75 |
| **ELECTRICAL EXAMINING GROUPS** | |
| INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales. | 12-23-74 |
| SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material. | 2-13-75 |
| INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts. | 5-1-75 |
| RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating. | 6-20-75 |
| ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring. | 12-17-74 |
| DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts. | 7-18-74 |
| **MECHANICAL EXAMINING GROUPS** | |
| HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment. | 3-3-75 |
| MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks. | 4-1-75 |
| AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination. | 6-2-75 |
| HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication. | 2-19-75 |
| GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines. | 5-27-75 |

**Expiration of patents:** The patents within the range of numbers indicated below expire during January 1976, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,866,973 to 2,871,478 inclusive
Plant Patents..... Numbers 1,792 to 1,804 inclusive



# PATENT APPLICATIONS

## PUBLISHED JANUARY 20, 1976
## UNDER THE SECOND TRIAL VOLUNTARY PROTEST PROGRAM

NOTE- A copy of the notice setting forth the details of the Second Trial Voluntary Protest Program may be found in the Patent and Trademark Notices section of this issue.

Any protests relating to the patentability of these published applications must be filed in writing before April 20, 1976. These applications are available for inspection in the Allowed Files Branch, Crystal Plaza, Room 2-10C28. All correspondence should be addressed to:

Commissioner of Patents and Trademarks
Box TVPP
Washington, D.C. 20231

Printed copies of the published applications may be purchased from the Patent and Trademark Office at 50 cents each.

An "Index of Applicants and Assignees of Published Applications" and a concordance entitled "Classification of Published Patent Applications" are located in the back of this issue.

## GENERAL AND MECHANICAL APPLICATIONS

**B 356,187**

### TIME DELAY FUSE

**Donald E. Bowman, Baltimore, Md., assignor to Catalyst Research Corporation, Baltimore, Md.**

**Division of Ser. No. 149,483, Oct. 30, 1961, Pat. No. 3,897,731. This application Mar. 31, 1964, Ser. No. 356,187**
**Int. Cl.[2] F42B** *3/10*
**U.S. Cl. 86—1 R** **3 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 2,164,509 | 7/1939 | Fleming et al. | 102/27 |
| 2,416,639 | 2/1947 | Pearsall | 102/27 |

FOREIGN PATENTS OR APPLICATIONS

| | | | |
|---|---|---|---|
| 746,843 | 3/1956 | United Kingdom | 102/27 |

I. A method of making a time delay fuse comprising the steps of overlaying a fuse strip consisting essentially of a paper formed of non-combustible insulating fibers filled with a combustible composition which evolves substantially no gas on burning with a backing strip wider than said fuse strip consisting essentially of a paper formed from noncombustible insulating fibers, both ends of said fuse strip extending beyond and normal to said backing strip, winding said overlaid fuse strip in a flat spiral around the circumference of a cylindrical core formed from non-combustible insulating fibers to form a cylindrical body having said both fuse strip ends exposed on the surface of said core while maintaining a high water content in said fuse strip, backing strip and core, axially compressing said body to form a compact, and drying said compact.

**B 469,947**

### APPARATUS TO TRANSFORM A SINGLE LASER BEAM INTO TWO PARALLEL BEAMS OF ADJUSTABLE SPACING AND INTENSITY

**Carl A. Zanoni, Middletown, Conn., assignor to Zygo Corporation, Middlefield, Conn.**

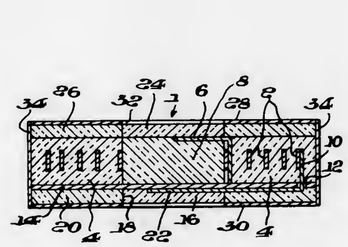
**Filed May 15, 1974, Ser. No. 469,947**
**Int. Cl.[2] G02B** *27/10, 27/28*
**U.S. Cl. 350—173** **2 Claims**

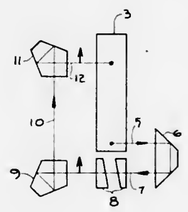
**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 1,505,877 | 8/1924 | Eppenstein | 356/16 |
| 3,817,624 | 6/1974 | Martin | 350/173 X |

OTHER PUBLICATIONS

Hoffman, Article in IBM Technical Disclosure Bulletin, Vol, 8, No. 11, Apr., 1966, p. 1554.




I. A device for converting a beam of collimated light into two parallel beams comprising (a) a beam splitter which permits a first portion of said beam to pass through as a first output beam, and reflects a second portion of said beam onto (b) a roof prism to one side of said beam splitter for offsetting and reflecting said second portion of said beam, in a constant deviation fashion, clear of and to the other side of said beam splitter onto (c) a fixed pentaprism for reflecting said second portion of said beam, in a constant deviation fashion, by 90° onto (d) a moveable pentaprism positioned to reflect, in a constant deviation fashion, by 90°, said second portion of said beam onto said other side of said beam splitter to produce a second output beam in approximate parallelism with said first output beam, whereby the distance between said two output beams can be adjusted from coincidence to substantially the full length of said beam splitter by moving the moveable pentaprism toward or away from the fixed pentaprism, and (e) counter rotating wedges, in the path of said second portion of said beam in advance of said moveable pentaprism, adjustable to ensure effective parallelism between said two output beams.

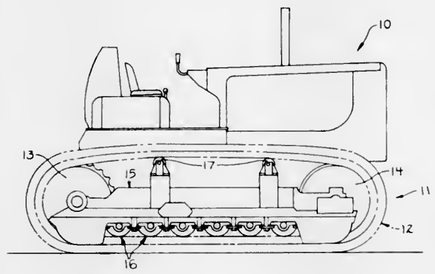
## B 506,566
## CUSHIONED TRACK ROLLER FOR TRACK-TYPE VEHICLES

**Harold L. Reinsma, Dunlap, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.**

**Filed Sept. 16, 1974, Ser. No. 506,566**
**Int. Cl.² B62D** *55/16*
**U.S. Cl. 305—27** **12 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 2,952,495 | 9/1960 | Herr | 308/15 |
| 3,484,139 | 12/1969 | Danner | 305/27 |
| 3,630,581 | 12/1971 | Gostomski | 305/27 |
| 3,695,737 | 10/1972 | Alexander | 267/63 A |
| 3,777,672 | 12/1973 | Schneider | 267/63 A |
| 3,826,325 | 7/1974 | Purcell | 180/9.5 |




1. In a track-type vehicle of the type having a pair of longitudinally extending sub-frames disposed on either side thereof and an endless track entrained about each of said sub-frames to engage a plurality of longitudinally spaced rollers, each rotatably mounted on a shaft secured to a respective sub-frame, the improvement wherein each end of said shaft is mounted in cushioned mounting means comprising

a pair of longitudinally spaced support members secured to each sub-frame to extend downwardly thereon in straddling relationship with respect to each end of said shaft,

a bracket mounted on each end of said shaft and extending longitudinally between said support members,

elastomeric cushioning means disposed axially between an outboard side of each of said brackets and said sub-frame, and

retaining means supporting ends of said bracket on said support members and cooperating with said cushioning means for permitting slight universal movement of said bracket relative to said sub-frame.

## B 515,303
## CAULKING GUN CARTRIDGE LATCH

**Michael Joseph Pedone, Jr., Towson, and Hanspeter Ehrenfried Beisch, Belair, both of Md., assignors to The Black and Decker Manufacturing Company, Towson, Md.**

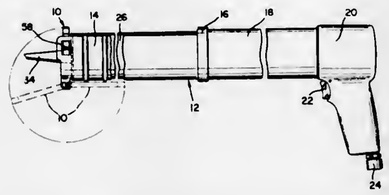
**Filed Oct. 16, 1974, Ser. No. 515,303**
**Int. Cl.² G01F** *15/00*
**U.S. Cl. 222—325** **10 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 2,607,627 | 8/1952 | Gregg et al. | 222/325 |
| 3,315,990 | 8/1967 | Kramer | 285/321 X |
| 3,389,838 | 6/1968 | Morra et al. | 222/326 X |
| 3,568,892 | 3/1971 | Burk | 222/327 |

FOREIGN PATENTS OR APPLICATIONS

| | | | |
|---|---|---|---|
| 133,080 | 8/1902 | Germany | 215/279 |




1. A portable, power-operated cartridge dispensing device comprising a housing having a dependent handle and a power cylinder tube extending forwardly thereof, an elongated cartridge retaining tube extending forwardly of said power cylinder tube and having an open front end for free insertion and removal of a cartridge, an integral latch member pivoted by fixed pivot means on the front end of said cartridge retaining tube and outside its confines, said latch member being pivotable from a first position obstructing said open front end of said cartridge retaining tube wherein a cartridge in said retaining tube is prevented from moving out the front end thereof, to a second position clear of said cartridge retaining tube front end wherein the cartridge may be withdrawn from or inserted in said cartridge retaining tube through its open front end, said latch member and said cartridge retaining tube having cooperable interlocking portions releasably holding said latch member in its first position.

## B 522,354
## STRAP FOR ATTACHING A CEILING TO A STEEL DECK

**Kenneth L. Wasson, 404 Ashford Drive, Lancaster, Pa. 17601**

**Filed Nov. 11, 1974, Ser. No. 522,354**
**Int. Cl.² E04B** *5/52*
**U.S. Cl. 52—484** **2 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 1,213,649 | 1/1917 | Hunter | 52/710 X |
| 2,762,398 | 9/1956 | Adam | 52/710 X |
| 3,102,610 | 9/1963 | Shelby | 52/484 |
| 3,266,202 | 8/1966 | Furer | 52/710 X |
| 3,808,763 | 5/1974 | Ollinger | 52/22 |
| 3,812,636 | 5/1974 | Albert | 52/630 |

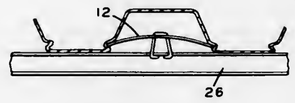
FOREIGN PATENTS OR APPLICATIONS

| | | | |
|---|---|---|---|
| 537,594 | 5/1955 | Belgium | 52/484 |

2. The combination of a structural roof component and a ceiling system, wherein; said structural roof component being formed with a fluted roof deck structure which has a corrugated-type structure with a plurality of parallel extending flutes having their bottoms in a single plane and having therebetween a plurality of gaps, along both edges of the bottom of said flutes there being positioned ridges which form recessed



surfaces facing towards said gaps, said ceiling system in combination therewith having a suspension runner for a suspended ceiling system, said suspension runner being fastened to said roof deck through the use of a support means comprising a strap member and a hanger member, said strap member being longer than the distance between two adjacent ridges and having its ends engaged in two adjacent ridges facing each




other across a single gap and said strap member being bowed with a concave configuration facing towards said suspension runner, said hanger member being a generally U-shaped member connected to the strap member and said suspension runner is placed up against the bottom of the flutes of the roof deck structure and said hanger member clamps said suspension runner up against the bottom of the flutes of the roof deck structure.

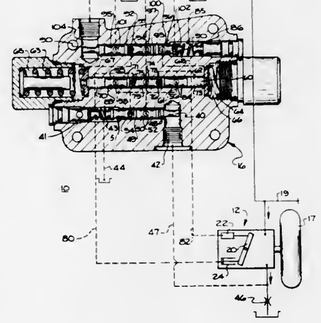
## B 526,445
## AUXILIARY FRONT WHEEL DRIVE

**Loren L. Alderson, Hutchinson, Kans., assignor to The Cessna Aircraft Company, Wichita, Kans.**

**Filed Nov. 22, 1974, Ser. No. 526,445**
**Int. Cl.² F16H** *39/46*
**U.S. Cl. 60—422** **8 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 3,339,660 | 9/1967 | Budzich | 60/420 X |
| 3,354,978 | 11/1967 | Budzich | 60/427 X |




1. An auxiliary hydraulic drive system on a vehicle principally driven by other means, the vehicle having a primary hydraulic system including an engine driven variable displacement pressure compensated pump which supplies the various conventional accessories of the vehicle, the improvement comprising:

a variable displacement motor having a pressure compensating control means connected in driving relation with the primary pump, the motor driving at least one non-mechanically driven wheel on the vehicle, the pressure compensator means on the motor being set at a pressure level less than the pressure compensating level on the primary pump; thereby destroking the motor when the system pressure drops below said lesser value, the lesser pressure compensating level of the motor being sufficient to supply the conventional accessories of the vehicle whereby said accessories have a priority requirement over the drive motor.

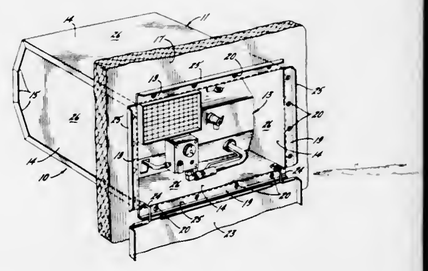
## B 537,903
## WATER HEATER FOR RECREATIONAL VEHICLES

**Donald M. White, c/o Atwood Vacuum Machine Company, 1400 Eddy Ave., Rockford, Ill. 61101**

**Filed Jan. 2, 1975, Ser. No. 537,903**
**Int. Cl.² F24H** *1/00*
**U.S. Cl. 126—350 A** **2 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 1,702,775 | 2/1929 | Hauser | 126/350 A |
| 3,404,539 | 10/1968 | Laing | 62/263 X |
| 3,868,060 | 2/1975 | Mitchell | 237/12.3 B |

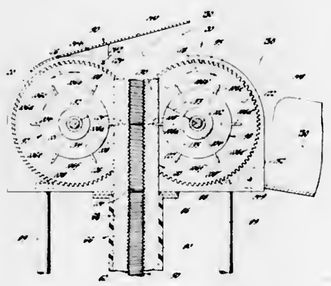


1. A water heater comprising a box-like case, a water heating unit housed within said case, said case being formed by a top panel, by a substantially parallel bottom panel and by two side panels extending between and substantially perpendicular to said top and bottom panels, each of said panels being made of sheet metal and each being defined by a main body and by a forward marginal portion initially disposed substantially in the plane of the main body, substantially rectangular louvers struck outwardly from each panel and spaced from one another along a row located adjacent the junction between said main body and said forward marginal portion and extending parallel to the forward margin of said panel, each louver leaving a three-edged slit extending through the panel and each having a rear edge and two end edges spaced outwardly from the respective edges of the respective slit so as to establish a line of bending extending between the adjacent end edges of adjacent slits and alined with the rear edges of the slits to enable said forward marginal portion to be bent outwardly at right angles to said main body along said line, and the forward margin of each louver being integrally joined to the forward margin of the respective slit to enable the louver to move with said forward marginal portion and substantially close the slit when the forward marginal portion is bent outwardly at right angles to said main body.

**B 564,314**
**VERTICAL TUBE ICE MAKER**
**James A. Bright, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.**
**Filed Apr. 2, 1975, Ser. No. 564,314**
**Int. Cl.² F25C** *1/06, 1/12*
**U.S. Cl. 62—353** **5 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 2,542,891 | 2/1951 | Bayston | 62/353 X |
| 3,861,163 | 1/1975 | Carpenter | 62/353 X |
| 3,896,631 | 7/1975 | Morrison | 62/71 |



1. In an automatic ice piece maker, a vertically extending tubular member defining an ice forming chamber having an upper open end, said chamber having a non-circular cross section, means forming a water supply inlet to said chamber adjacent the lower end thereof, refrigeration means for freezing the water in said chamber, a threaded shaft rotatably mounted within said chamber, said shaft threads having their major diameter in sufficiently spaced relation to the inside surface of said chamber to permit the formation of an ice column therein, the ice column having a non-circular cross section conforming to the cross section of said chamber, whereby the ice column is locked against rotational movement in said chamber; internal threads being formed by the ice column in mating relation with said shaft threads, means for rotating said shaft about its axis of rotation whereby the ice column is moved vertically upward out of said chamber upper open end, and ice harvesting means above said chamber open end operative for successively removing a top portion from the upwardly driven ice column to produce substantially uniform ice pieces with each ice piece having a non-circular cross section substantially conforming to the cross section of said chamber.

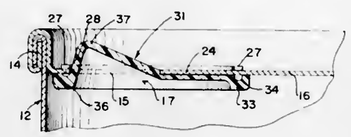
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**B 578,447**
**PUSH-IN EASY OPENING CONTAINER**
**John S. Bozek, Chicago, and Harry A. Peyser, Olympia Fields, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.**
**Continuation of Ser. No. 513,433, Oct. 9, 1974, abandoned, which is a continuation of Ser. No. 365,003, May 29, 1973, abandoned. This application May 19, 1975, Ser. No. 578,447**
**Int. Cl.² B65D** *43/14, 51/04*
**U.S. Cl. 220—337** **11 Claims**

**References Cited**
UNITED STATES PATENTS

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|---|---|---|---|
| 3,731,835 | 5/1973 | Hawkins et al. | 220/359 X |
| 3,871,550 | 3/1975 | Chiappe | 220/339 |
| 3,889,842 | 6/1975 | Bennett | 220/268 |

1. An easy opening end closure for a container comprising a metal panel, an opening formed in said panel, a closure made from plastic material underlying said opening and having a closure flap, an attachment band hingedly attached to said flap and permanently bonded to the underside of said panel, marginal edge portions about said flap releasably



bonded to the underside of said opening, and a tongue integral with said panel extending into said opening from the edge along which said attachment panel is permanently bonded, said tongue being permanently secured to said flap.

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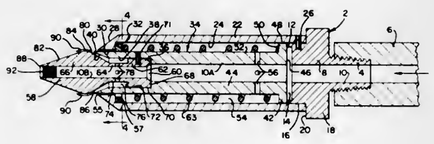
**B 586,215**
**VARIABLE TWO STAGE AIR NOZZLE**
**Alain Frochaux, Boston, Mass., assignor to Barry Wright Corporation, Watertown, Mass.**
**Filed June 12, 1975, Ser. No. 586,215**
**Int. Cl.² B05B** *7/08, 1/30*; **F01N** *1/10, 1/14*
**U.S. Cl. 239—424** **15 Claims**

**References Cited**
UNITED STATES PATENTS

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|---|---|---|---|
| 2,293,181 | 8/1942 | Terman | 181/71 X |
| 2,334,263 | 11/1943 | Hartwell | 181/42 X |
| 2,797,964 | 7/1957 | Alexander | 239/422 X |
| 3,117,726 | 1/1964 | Schoberg | 239/291 |
| 3,318,534 | 5/1967 | Stoltzben | 239/291 |
| 3,628,737 | 12/1971 | Norton | 239/DIG. 7 |
| 3,735,778 | 5/1973 | Garnier | 239/DIG. 7 |
| 3,794,137 | 2/1974 | Tydorescu et al. | 239/DIG. 7 |
| 3,795,288 | 3/1974 | Pall | 181/71 X |
| 3,829,020 | 8/1974 | Stearns | 239/265.13 |
| 3,859,205 | 1/1975 | Reba et al. | 239/DIG. 7 |

FOREIGN PATENTS OR APPLICATIONS

| | | | |
|---|---|---|---|
| 1,408,538 | 7/1965 | France | 239/291 |



1. A high-thrust low-noise nozzle adapted to effect movement of a secondary fluid by a pressurized primary fluid comprising, tubular means forming a passageway having an entrance and an exit orifice, said entrance being adapted for connection to a source of pressurized primary fluid, at least one port communicating with the passageway between said entrance and exit orifice, means cooperating with said port for directing flow of primary fluid from said port along the outside of said tubular means in a direction so as to induce flow of a secondary fluid along the outside of said tubular means toward said exit, noise-reducing means positioned in said passageway between said exit orifice and said port for effecting substantially laminar flow of the stream of pressurized primary fluid discharged from said exit orifice, said noise-reducing means creating sufficient back pressure to force some of the pressurized primary fluid to flow out of said passageway via said port, and means for varying the length of the outside of said tubular means over which secondary fluid flows as a function of the input flow of said primary fluid.

# CHEMICAL APPLICATIONS

**B 370,309**
**CORROSION INHIBITOR COMPOSITION**
**Martin J. Culver, and Howard R. Stopper, both of Cincinnati, Ohio, assignors to The Drackett Company, Cincinnati, Ohio**
**Filed June 15, 1973, Ser. No. 370,309**
**Int. Cl.² C23F** *11/14, 11/12*; **C11D** *7/30*; **C23G** *5/02*
**U.S. Cl. 252—364** **15 Claims**

**References Cited**
UNITED STATES PATENTS

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|---|---|---|---|
| 3,113,155 | 12/1963 | Sims | 252/364 |
| 3,546,305 | 12/1970 | Archer | 252/364 |
| 3,609,091 | 9/1971 | Harden et al. | 252/364 |
| 3,676,355 | 7/1972 | Vuillemenot | 252/364 |

FOREIGN PATENTS OR APPLICATIONS

| | | | |
|---|---|---|---|
| 1,546,120 | 7/1971 | Germany | 252/364 |

4. An aqueous composition consisting essentially of a chlorinated hydrocarbon solvent, water present in greater than trace amounts, and at least 2 weight percent based upon the weight of said solvent-water composition of a three component corrosion inhibitor composition consisting essentially of morpholine, ammonium benzoate, and a member selected from the group consisting of cyclohexene, nitropropane, and cyclopentene, wherein the weight ratio of morpholine to ammonium benzoate to said member is 1:1:2 or 4:1:1.

8. An aqueous composition consisting essentially of a chlorinated hydrocarbon solvent, water present in greater than trace amounts, and at least 2 weight percent based upon the weight of said solvent-water composition of a three component corrosion inhibitor composition consisting essentially of ammonium benzoate, butylene oxide, and a member selected from the group consisting of isopropylamine and triethylamine, wherein the weight ratio of ammonium benzoate to butylene oxide to said member is 1:2:1 or 1:1:4.

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**B 414,481**
**METHODS FOR MOUNTING AN ARTICLE ON AN ADHERENT SITE ON A SUBSTRATE**
**Lyle J. Hentz, Whitehall, and Willard G. Otto, Schnecksville, both of Pa., assignors to Western Electric Co., Inc., New York, N.Y.**
**Continuation-in-part of Ser. No. 374,436, June 28, 1973, abandoned. This application Nov. 9, 1973, Ser. No. 414,481**
**Int. Cl.² B32B** *7/14, 31/20*; **H01L** *27/12*; **H05K** *3/30*
**U.S. Cl. 156—73.6** **9 Claims**

**References Cited**
UNITED STATES PATENTS

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|---|---|---|---|
| 3,465,874 | 9/1969 | Hugle et al. | 206/330 |
| 3,472,356 | 10/1969 | Reppert | 221/157 |
| 3,559,819 | 2/1971 | Large | 214/1 C |
| 3,645,581 | 2/1972 | Lasch, Jr. et al. | 302/2 R |
| 3,663,326 | 5/1972 | Wanesky | 156/3 |
| 3,669,333 | 6/1972 | Coucoulas | 228/3 |
| 3,670,396 | 6/1972 | Lindberg | 29/471.3 |
| 3,752,717 | 8/1973 | White | 156/17 |
| 3,776,394 | 12/1973 | Miller | 214/1 R |

1. A method of mounting an article on a site, having an adherent coating, on a substrate, which comprises the steps of:
a. placing the article on a member associated with a locating and orienting cavity;
b. engaging the article intermittently with the walls of the cavity while lowering the member and the article into the cavity to locate and orient the article without the use of a liquid for supporting the article;
c. aligning the site on the substrate in relation to the cavity; and
d. raising the member with the article thereon to engage the article with the site and thereby mount the article on the site.

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**B 426,274**
**SEPARATION OF CYCLIC COMPOUNDS WITH MOLECULAR SIEVE ADSORBENT**
**John A. Hedge, Wilmington, Del., assignor to Sun Ventures Inc., St. Davids, Pa.**
**Division of Ser. No. 263,372, June 6, 1962, Pat. No. 3,840,610, which is a continuation-in-part of Ser. No. 7,273, Jan. 30, 1970, Pat. No. 3,668,267, and a continuation-in-part of Ser. No. 207,870, Dec. 14, 1971, and a continuation-in-part of Ser. No. 256,863, May 25, 1972, Pat. No. 3,772,399. This application Dec. 19, 1973, Ser. No. 426,274**
**Int. Cl.² C07C** *7/13*
**U.S. Cl. 260—674 SA** **5 Claims**

**References Cited**
UNITED STATES PATENTS

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|---|---|---|---|
| 2,988,503 | 6/1961 | Milton et al. | 260/666 |
| 3,126,425 | 3/1964 | Eberly et al. | 260/674 |
| 3,130,007 | 4/1964 | Breck | 252/455 |
| 3,485,748 | 12/1969 | Eberly et al. | 208/310 |
| 3,558,730 | 1/1971 | Neuzil | 260/674 |
| 3,626,020 | 12/1971 | Neuzil | 260/674 |
| 3,663,638 | 5/1972 | Neuzil | 260/674 |
| 3,665,046 | 5/1972 | Rosset | 260/674 |
| 3,668,266 | 6/1972 | Chen et al. | 260/674 |
| 3,668,267 | 6/1972 | Hedge | 260/674 |
| 3,686,343 | 8/1972 | Bearden et al. | 260/674 |
| 3,699,182 | 10/1972 | Cattanach | 269/674 |
| 3,734,974 | 5/1973 | Neuzil | 260/674 |
| 3,840,610 | 10/1974 | Hedge | 260/674 |

1. A process for separating two structurally similar cyclic hydrocarbons selected from the group consisting of benzene, toluene and xylenes, said process comprising:
A. contacting a fluid feed mixture comprising said cyclic hydrocarbons with a solid adsorbent comprising a partially dehydrated, substantially crystalline alumino-silicate sodium Y zeolite having a critical pore diameter greater than about 6A, the ratio Al/Si of the alumino-silicate framework of the zeolite being in the range of 0.65–0.2, the zeolite having been partially dehydrated by exposure to a temperature in the range of 80°–300°C., whereby there is obtained a rich adsorbent containing an adsorbate which is richer in one said cyclic hydrocarbon than was said fluid feed mixture, and a raffinate product which contains less of the one said cyclic hydrocarbon than did said fluid feed mixture;
B. separating said raffinate product from said rich adsorbent and,
C. removing the one said cyclic hydrocarbon from said rich adsorbent.

**B 431,072**
## WATER-RESISTANT ASBESTOS-CEMENT

**Robert C. Pomerhn, Cheektowaga, and Robert M. Johnson, Kenmore, both of N.Y., assignors to National Gypsum Company, Buffalo, N.Y.**

**Filed Jan. 7, 1974, Ser. No. 431,072**
**Int. Cl.² D21F** *11/00*
**U.S. Cl. 162—133** **6 Claims**

**References Cited**
UNITED STATES PATENTS

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|---|---|---|---|
| 1,804,740 | 5/1931 | Buczkowski | 162/155 |
| 1,859,414 | 5/1932 | Stevenson et al. | 162/171 |
| 1,925,584 | 9/1933 | Fisher | 162/171 |
| 2,335,722 | 11/1943 | Adams | 162/145 |
| 2,555,401 | 6/1951 | Fasold et al. | 162/155 |
| 3,087,851 | 4/1963 | Beuscher et al. | 162/171 |
| 3,095,346 | 6/1963 | Sfiscko et al. | 162/154 |
| 3,300,372 | 1/1967 | Bauer | 162/145 |
| 3,344,015 | 9/1967 | Neal et al. | 162/154 |
| 3,509,020 | 8/1970 | Gelsomino | 162/133 |

1. The method of making an asbestos-cement product of improved water resistance comprising the steps of forming an aqueous slurry of, by weight, from 30 to 50 parts of Portland cement, 10 to 25 parts of asbestos fibers, 10 to 50 parts of inorganic fillers and 2 to 10 parts of an emulsion of asphalt in water, based on an asphalt content in said emulsion of about 60%, said asphalt in said emulsion having a softening point of at least about 150°F and being present in said emulsion in forms substantially all smaller than 10 microns, thoroughly mixing the ingredients of said slurry at a temperature of no more than 110°F, continuously feeding portions of said slurry to means for forming a web therefrom adding a cationic retention aid to the portion of said slurry being fed to said web forming means and subsequently adding an anionic flocculating agent to said slurry being fed to said web forming means, forming a web from the solids of said slurry, forming a laminated product from a plurality of said webs, and curing and hardening said product.

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**B 474,573**
## PHENYL SULFONYL, BENZYLTHIOCHLOROMETHANES

**Wendell Gary Phillips, Olivette, Mo., assignor to Monsanto Company, St. Louis, Mo.**

**Division of Ser. No. 399,664, Sept. 21, 1973, Pat. No. 3,839,403, which is a division of Ser. No. 139,978, May 3, 1971, Pat. No. 3,792,088. This application May 30, 1974, Ser. No. 474,573**
**Int. Cl.² C07C** *149/34*
**U.S. Cl. 260—609 E** **4 Claims**

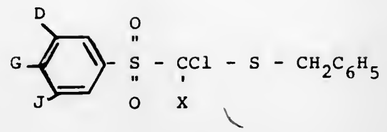
**References Cited**
UNITED STATES PATENTS

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|---|---|---|---|
| 3,742,066 | 6/1973 | Tsuchihashi et al. | 260/609 E |

OTHER PUBLICATIONS

Index of Chemicus, 30, pp. 99571 (1968).

1. A substituted alpha-chloro-benzyl sulfide of the formula



wherein X is hydrogen or chloro and D, G and J are hydrogen, bromo, chloro or alkyl.

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**B 476,837**
## METHOD OF TREATING A LAYER OF SILICON DIOXIDE

**Murray Henderson Woods, and Richard Williams, both of Princeton, N.J., assignors to RCA Corporation, New York, N.Y.**

**Filed June 6, 1974, Ser. No. 476,837**
**Int. Cl.² B05D** *3/06*
**U.S. Cl. 427—39** **6 Claims**

**References Cited**
UNITED STATES PATENTS

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|---|---|---|---|
| 3,556,879 | 1/1971 | Mayer | 148/191 |
| 3,698,945 | 10/1972 | Yokozawa et al. | 117/201 |
| 3,711,324 | 1/1973 | Glendinning et al. | 357/52 |
| 3,755,092 | 8/1973 | Antula | 204/164 |

1. A method of treating a layer of silicon dioxide having a pair of opposite surfaces comprising the steps of:
coating one surface of said layer with a solution of a solute of an ionic fluoride compound in a solvent,
drying said solution to remove said solvent, whereby said solute of ionic fluoride compound remains on said one surface, and
directing a corona discharge onto said one surface between a negative electrode spaced from the coated surface of said layer, and the other surface of said layer which is connected to a source of potential more positive than said negative electrode to drive fluoride ions of said compound into said layer.

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**B 526,510**
## 2-AMINO-1,4-DIHYDROPYRIDINE DERIVATIVES

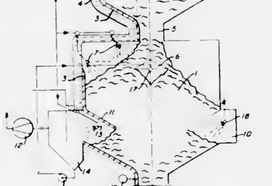
**Horst Meyer; Friedrich Bossert, both of Wuppertal; Wulf Vater, Opladen, and Kurt Stoepel, Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

**Division of Ser. No. 390,194, Aug. 21, 1973, Pat. No. 3,862,162. This application Nov. 25, 1974, Ser. No. 526,510**
**Claims priority, application Germany, Aug. 31, 1972, 2242786**
**Int. Cl.² C07D** *213/55*
**U.S. Cl. 260—294.8 D** **2 Claims**

**References Cited**
UNITED STATES PATENTS

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| 3,775,422 | 11/1973 | Bossert et al. | 260/294.9 |
| 3,799,934 | 3/1974 | Meyer et al. | 260/295.5 R |
| 3,799,936 | 3/1974 | Meyer et al. | 260/295.5 R |

1. A compound of the formula:



wherein $R^1$ is lower alkyl or phenyl;
$R^3$ is pyridyl, naphthyl; thienyl or furyl;
$R^2$ is hydrogen or lower alkyl; and
$R^4$ is lower alkyl, alkenyl of 2 to 4 carbon atoms, or lower alkyl.



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**B 513,280**
## APPARATUS FOR QUENCHING COKE PUSHED FROM COKE OVENS

**Hugo Lewandowski, and Gerd Friedrich Fautz, both of Essen, Germany, assignors to Heinrich Koppers Gesellschaft mit beschrankter Haftung, Essen, Germany**

**Filed Oct. 9, 1974, Ser. No. 513,280**
**Claims priority, application Germany, Oct. 18, 1973, 2352296**
**Int. Cl.² C10B** *39/08, 39/12*
**U.S. Cl. 202—227** **7 Claims**

**References Cited**
UNITED STATES PATENTS

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|---|---|---|---|
| 976,580 | 11/1910 | Krause | 202/227 |
| 1,006,281 | 10/1911 | Ries | 202/227 |
| 3,721,609 | 3/1973 | Spindeler | 202/230 |
| 3,846,250 | 11/1974 | Knappstein et al. | 202/230 |

FOREIGN PATENTS OR APPLICATIONS

| | | | |
|---|---|---|---|
| 573,867 | 4/1933 | Germany | 202/227 |



1. Apparatus for quenching incandescent coke pushed from a coke oven comprising,
a quenching vessel having a top portion with an inlet opening and a bottom portion with an outlet opening,
valve means in said bottom opening to control the flow of quenched coke therethrough and provide a bed of quenched coke in said quenching vessel,
a collector vessel having a bottom outlet opening connected to said quenching vessel top inlet opening, said collector vessel arranged to receive incandescent coke pushed from a coke oven and introduce said incandescent coke at a predetermined rate into said quenching vessel,
first water spray means positioned in said quenching vessel adjacent said top portion, said first water spray means arranged to quench said incandescent coke and form quench water vapors adjacent said quenching vessel top portion,
suction means in said quenching vessel adjacent said quenching vessel bottom portion arranged to draw said quench water vapors downwardly through said bed of quenched coke,
an annular passage in said quenching vessel adjacent said quenching bottom portion, said suction means connected to said annular passage and arranged to draw said quenched water vapors into said annular passage, and
second water spray means positioned in said annular passage and arranged to precipitate particulate matter in said quenched water vapors.

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**B 535,076**
## METHOD FOR INCREASING THE SUCROSE CONTENT OF GROWING PLANTS

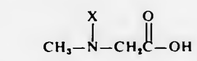
**Ernest G. Jaworski, Olivette, Mo., assignor to Monsanto Company, St. Louis, Mo.**

**Filed Dec. 20, 1974, Ser. No. 535,076**
**Int. Cl.² A01N** *9/24*
**U.S. Cl. 71—113** **7 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 3,282,987 | 11/1966 | Ellis | 71/113 |
| 3,712,804 | 1/1973 | Muller et al. | 71/113 |
| 3,853,530 | 12/1974 | Franz | 71/76 |

1. A method for increasing the sucrose content of sugar cane plants which comprises applying to said plants, from about 2 to 8 weeks prior to harvest, an effective amount of a compound of the formula



wherein X represents hydrogen or methyl, and the non-phytotoxic, agriculturally acceptable salts thereof.

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**B 536,675**
## PLANT GROWTH REGULATORS

**Gerhard H. Alt, Creve Coeur, and John E. Franz, Crestwood, both of Mo., assignors to Monsanto Company, St. Louis, Mo.**

**Filed Dec. 26, 1974, Ser. No. 536,675**
**Int. Cl.² C07D** *307/90*
**U.S. Cl. 260—343.3** **3 Claims**

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Roderick, Chem. Abstracts, Vol. 60 (1964) p. 13179h.
Beno et al., Chem. Abstracts, Vol. 78 (1973) p. 28896f.
Sauers et al., Chem. Abstracts, Vol. 78 (1973) p. 42446r.

1. A compound selected from the group consisting of 3-[(o-halo-m-trifluoromethylphenyl)imino]-phthalide and 3-[(o, m-dimethoxyphenyl)imino]-phthalide.

**B 546,295**
**PROCESS FOR THE PRODUCTION OF LOW MOLECULAR WEIGHT CYCLOALIPHATIC DIGLYCIDYL ESTERS**

**Klaus Prater, Krefeld-Bockum, Germany, assignor to Bayer Aktiengesellschaft, Germany**

**Filed Feb. 3, 1975, Ser. No. 546,295**
**Claims priority, application Germany, Feb. 8, 1974, 2405933**
**Int. Cl.² C07D** *301/30*
**U.S. Cl. 260—348.6** **1 Claim**

1. A process for the production of low molecular weight, low viscosity diglycidyl esters of cycloaliphatic dicarboxylic acids by reacting the cycloaliphatic dicarboxylic acids with excess epihalohydrin in the presence of a catalyst at 80° to 115°C, followed by dehydrohalogenation of the 3-halogen-2-hydroxy propyl carboxylic acid esters formed with aqueous alkali, wherein secondary and/or tertiary o-alkali phosphate is used as catalyst in a quantity of from 0.5 to 4% by weight, based on the dicarboxylic acid.

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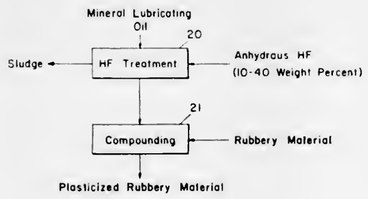
**B 657,438**
**RUBBER CONTAINING ACID-TREATED OILS AND ITS PREPARATION**

**Abraham Schneider, Philadelphia, and Archibald P. Stuart, Media, both of Pa., assignors to Sun Oil Company of Pennsylvania, Philadelphia, Pa.**

**Continuation of Ser. No. 547,670, May 4, 1966, which is a continuation of Ser. No. 186,825, April 6, 1962, abandoned, which is a continuation of Ser. No. 822,155, June 22, 1959, abandoned, which is a continuation-in-part of Ser. No. 409,478, Feb. 10, 1954, abandoned. This application May 29, 1967, Ser. No. 657,438**
**Int. Cl.² C08K** *5/01*; **C10G** *17/02*
**U.S. Cl. 260—33.6 AQ** **2 Claims**

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|---|---|---|---|
| 2,449,463 | 9/1948 | Evering et al. | 196/13 |
| 2,778,807 | 1/1957 | Boggs et al. | 260/33.6 |




1. Process for preparing rubber compositions which comprises admixing a rubber selected from the group consisting of natural rubber, homopolymers of conjugated diolefins, and copolymers of conjugated diolefins with ethylenically unsaturated monomers, with mineral oil having at least 10 Wt. % aromatic compounds which has been obtained by

a. mixing a mineral oil starting material with an acidic reagent comprising anhydrous hydrogen fluoride in amount from 10 to 40 percent by weight of said starting material; thereby to form an acid phase insoluble in said mineral oil and containing components extracted from said starting material, and an oil phase comprising unextracted components of said starting material and containing dissolved acidic material,

b. separating said phase from said oil phase,

c. mixing said oil phase with an alkaline reagent to neutralize said dissolved acidic material and form neutralization products, and

d. separating said neutralization products from said oil phase.

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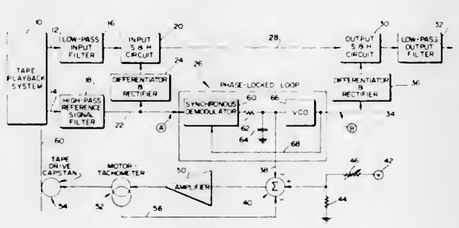
**B 427,883**
**TIMING-ERROR COMPENSATION FOR LOW-SPEED TAPE SYSTEMS**

**Thomas K. Naylor, Belmont, Mass., assignor to American Optical Corporation, Southbridge, Mass.**

**Filed Dec. 26, 1973, Ser. No. 427,883**
**Int. Cl.² G11B** *27/10*
**U.S. Cl. 360—27** **13 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 3,347,997 | 10/1967 | Woodruff | 360/27 |
| 3,761,646 | 9/1973 | Beauviala | 360/26 |




1. A system for deriving a time-error compensated analog signal from a tape on which an original analog signal was recorded together with a clock signal, said clock signal having a frequency greater than the highest frequency component of interest in said original analog signal and the nominal speed of said tape being below one inch per second, comprising means for moving said tape and deriving therefrom the separate analog and clock signals recorded thereon, control means responsive to the clock signal derived from said tape for controlling the speed of said tape such that slow changes therein are compensated so that the average speed of said tape remains constant and for generating a corrected clock signal whose frequency is constant and equal to the average frequency of the clock signal derived from said tape, sampling means for taking samples of the analog signal derived from said tape in synchronism with the clock signal derived from said tape, and means controlled by the corrected generated clock signal for operating on successive samples taken by said sampling means at equally spaced intervals to reconstitute the original analog signal therefrom.



**B 430,276**
**GATE CURRENT SOURCE**

**John Edwin Gersbach, Burlington, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.**

**Filed Jan. 2, 1974, Ser. No. 430,276**
**Int. Cl.² G05F** *3/08*
**U.S. Cl. 323—1** **6 Claims**

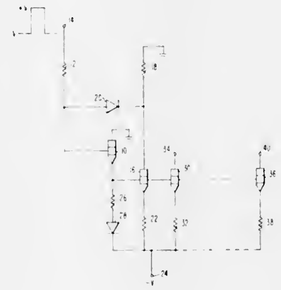
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| 3,348,162 | 10/1967 | Atkins | 330/28 |
| 3,566,158 | 2/1971 | Paine et al. | 323/16 UX |
| 3,681,623 | 8/1972 | Hoffman et al. | 323/4 X |
| 3,754,181 | 8/1973 | Kreitz et al. | 323/1 |

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Dorler et al., T²L Controlled Current Source, IBM Technical Disclosure Bulletin, Vol. 15, No. 4, Sept. 1972, pp. 1102,1103.

Melnyk, Magnet Driver & Pulse-Width Controller, IBM Technical Disclosure Bulletin, Vol. 11, No. 4, Sept. 1968, p. 425.



1. A current source comprising

a current reference circuit, including a first transistor having a base electrode and an emitter electrode, a second transistor having a collector electrode, an emitter electrode and a base electrode coupled to the emitter electrode of said first transistor, a non-linear feedback circuit coupled between said collector electrode and the base electrode of said first transistor, an input terminal for receiving a voltage pulse coupled to the base electrode of said first transistor, a voltage supply source terminal and a first impedance coupling said voltage supply source terminal to the emitter electrode of said second transistor, and

a current sink circuit, including an output current terminal, a second impedance and a third transistor having a collector electrode, an emitter electrode and a base electrode coupled to the base electrode of said second transistor, said collector electrode of said third transistor being connected to said output current terminal and said emitter electrode of said third transistor being connected to said voltage supply terminal through said second impedance.

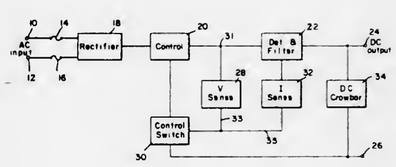
**B 459,811**
**AC-DC VOLTAGE REGULATOR**

**Clyde Raymond Berry, Goleta, and Robert J. Cinzori, Santa Barbara, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.**

**Filed Apr. 10, 1974, Ser. No. 459,811**
**Int. Cl.² G05F** *1/56*, *1/64*
**U.S. Cl. 323—17** **9 Claims**

**References Cited**
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| 3,323,034 | 5/1967 | Dubin et al. | 321/16 |
| 3,336,524 | 8/1967 | Healey | 323/22 SC |
| 3,437,912 | 4/1969 | Morris | 323/DIG. 1 |
| 3,505,583 | 4/1970 | Burkhardt et al. | 323/22 T |
| 3,711,761 | 1/1973 | Watson | 323/22 SC |
| 3,790,879 | 2/1974 | Milovancevic | 323/22 T |
| 3,796,919 | 3/1974 | Johnson | 323/20 |
| 3,809,999 | 5/1974 | Smith | 323/17 |




1. An efficient voltage regulation network for converting an unregulated AC input voltage into a regulated DC output voltage across a load, said network comprising:

a. a series pass control element for conducting current a given portion of each cycle of AC input voltage coupled thereto,

b. means connected to the output of said control element for detecting and filtering the output voltage thereof and providing a DC ripple voltage, said detection means disconnecting said control element from said load once each cycle of AC input voltage applied to said control element and preventing said control element from turning on more than one each cycle of AC input voltage applied thereto,

c. means connected to the output of said control element for sensing the changes in voltage thereat and for generating a control potential at a control node, and

d. means coupled between said control node and the input of said series pass control element and responsive to the voltage generated at control node for controlling the time during each cycle of AC input voltage that said series pass control element is conducting current to an output load, whereby said control element provides the required amount of output current for a varying load on said regulator and the latter, in turn, determines the varying level of voltage at the output of said series pass control element.

**B 463,322**

## MULTIPLE GASEOUS DISCHARGE DISPLAY/MEMORY PANEL HAVING DECREASED OPERATING VOLTAGES

**Robert F. Schaufele, Okemos, Mich., assignor to Owens-Illinois, Inc., Toledo, Ohio**

**Continuation of Ser. No. 67,604, Aug. 27, 1970, Pat. No. 3,846,670. This application Apr. 23, 1974, Ser. No. 463,322. The portion of the term of this patent subsequent to Nov. 5, 1991, has been disclaimed.**

**Int. Cl.² H05B** *37/00*

**U.S. Cl. 315—169 TV** **5 Claims**

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| 2,295,626 | 9/1942 | Beese | 313/112 |
| 2,919,361 | 12/1959 | Tschakert | 313/54 |
| 3,244,922 | 4/1966 | Wolfgang | 313/95 |
| 3,334,269 | 8/1967 | Heureaux | 315/169 X |
| 3,499,167 | 3/1970 | Baker | 315/169 |
| 3,513,327 | 5/1970 | Johnson | 307/89 |
| 3,599,029 | 8/1971 | Martyny | 313/489 |
| 3,846,670 | 11/1974 | Schaufele | 315/169 TV |

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| 1,168,460 | 10/1969 | United Kingdom |
| 1,209,657 | 1/1966 | United Kingdom |

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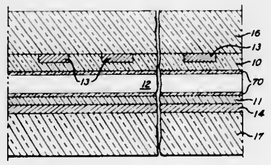
Holland, Vacuum Deposition of Thin Films –Published by Chapman & Hall, Ltd., London, p. 460, 1961.

Bitzer, D. L. and Slottow, H. G. –"The Plasma Display Panel–A Digitally Addressable Display with Inherent Memory" Proceedings of the Full Joint Computer Conference–San Francisco, Nov. 1966.

Arora, B. M., Bitzer, D. L., Slottow, H. G. & Wilson, R. H. –"The Plasma Display Panel–A New Device for Information and Storage," Proceedings of the Eighth National Sympsium for Information Display–May 1967.

Bitzer, D. L. & Slottow, H. G. –"The Plasma Display Panel–A New Device for Direct View of Graphics"–Conference on Emerging Concepts in Computer Graphics, Univ. of Ill., Nov. 1967.

Bitzer, D. L. & Slottow, H. G. –"Principles and Applications of the Plasma Display Panel," Proceedings of the Oar Research Applications Conference Office of Aerospace Research, Arlington, Va., Mar. 1968–also Proceedings of Microelectronics Symposium, I.E.E.E., 6/68.




**1.** In a gaseous discharge display/memory device characterized by an ionizable gaseous medium in a gas chamber formed by a pair of dielectric material bodies having opposed charge storage surfaces, the improvement wherein each dielectric surface is coated with at least one electron emissive substance having a thickness of at least about 100 angstrom units to provide substantially decreased operating voltages without substantially affecting the memory margin of said device, said electron emissive substance being selected from Group IA elements, Group IA oxides, barium, GaAs, GaP, InAs, InSb, InP, NiO, CsF, CsI, AgOCs, and AuOCs.

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**B 466,444**

## TOGGLE SWITCH/INDICATOR CIRCUIT

**Thomas F. Bovitz, Hibbing, Minn., assignor to Sperry Rand Corporation, New York, N.Y.**

**Filed May 2, 1974, Ser. No. 466,444**

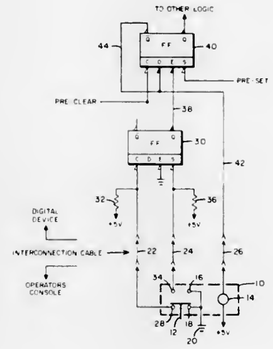
**Int. Cl.² H03K** *17/56*

**U.S. Cl. 307—137** **4 Claims**

**References Cited**

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|---|---|---|---|
| 2,716,230 | 8/1955 | Oliwa | 340/365 E |




**1.** Switching apparatus comprising in combination:

a. a double-pole double-throw push-button switch having a pair of normally closed and normally open contacts;

b. an indicator lamp located in close proximity to said push-button switch;

c. first and second transition edge-triggered flip-flops of the type having a Clear input terminal, a Set input terminal, a Data input terminal and an Enable input terminal and first and second complementary output terminals;

d. means connecting one of said pair of normally closed and normally open contacts individually to said Clear input terminal and said Set input terminal of said first flip-flop respectively and the other of said pair of normally closed and normally open contacts to a common point of fixed potential;

e. means connecting said first output terminal of said first flip-flop to said Enable input terminal of said second flip-flop;

f. means connecting said indicator lamp in series circuit between a source of positive potential and said Data input terminal of said second flip-flop; and

g. means connecting said second output terminal of said second flip-flop back to the Data input terminal of said second flip-flop, the arrangement being such that the first momentary closure of said normally open contacts sets said first flip-flop and enables the toggling of said second flip-flop from its present binary state to its opposite binary state, said indicator lamp being illuminated only when said second flip-flop is in a predetermined one of its two possible states.



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**B 470,798**

## III-V SEMICONDUCTOR DEVICE WITH OHMIC CONTACT TO HIGH RESISTIVITY REGION

**Daniel Diguet, Caen, and Jean-Pierre Rioult, Epron, both of France, assignors to U.S. Philips Corporation, New York, N.Y.**

**Filed May 17, 1974, Ser. No. 470,798**

**Claims priority, application France, May 18, 1973, 73.18120**

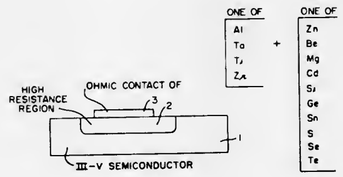
**Int. Cl.² H01L** *23/48, 23/40*

**U.S. Cl. 357—65** **6 Claims**

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| 3,716,407 | 2/1973 | Kahn | 357/67 |
| 3,753,804 | 8/1973 | Tijburg et al. | 357/67 |
| 3,767,482 | 10/1973 | Kock et al. | 357/67 |
| 3,780,427 | 12/1973 | Jenkins et al. | 357/67 |
| 3,794,883 | 2/1974 | Bylander et al. | 357/67 |
| 3,818,377 | 6/1974 | Yamashita et al. | 357/67 |




**1.** A semiconductor device comprising a body of a semiconductor material which consists mainly of at least one element of the column IIIA of the periodic table of elements of which the atomic number is lower than 50 and at least one element of the column VA of the said table of which the atomic number is lower than 52, the said body comprising at least one region of a given conductivity type of which the net number of impurities causing the said given conductivity type is lower than $10^{17}$ atoms per ccm, and at least one ohmic contact to the surface of said one region, said ohmic contact comprising a layer consisting essentially of at least two elements of which the first element is a base metal selected from a first group which consists of: aluminum, tantalum, titanium, and zirconium, and the second element is selected from a second group which consists of zinc, beryllium, magnesium, cadmium, silicon, germanium, tin, sulphur, selenium and tellurium and which causes in the semiconductor region the said given conductivity type, said second element being also incorporated in the region adjacent the surface.

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**B 475,681**

## CONFERENCE CALL CIRCUITRY FOR TDM SIGNAL EXCHANGE

**Michael Allen Patten, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.**

**Filed June 3, 1974, Ser. No. 475,681**

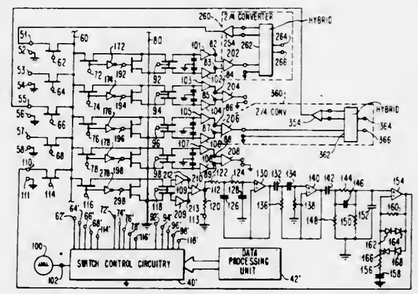
**Int. Cl.² H04M** *3/56*

**U.S. Cl. 179—1 CN** **13 Claims**

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| 3,692,947 | 9/1972 | Lewis | 179/18 BC |
| 3,699,264 | 10/1972 | Pitroda et al. | 179/18 BC |
| 3,835,259 | 9/1974 | Medill et al. | 179/18 BC |
| 3,870,819 | 3/1975 | Dennis et al. | 179/1 CN |




**1.** Conference call circuitry for conferencing more than two subscribers sets connected in a time division electric signal exchange switching circuit arrangement of the type having

a multiple of pairs of exchange input terminals at which the output signals of subscriber sets are applied,

one pair of said pairs of input terminals being reserved for said conference call circuitry,

a multiple of pairs of exchange output terminals at which the output signals for said subscriber sets appear in reconstructed form,

one pair of said pairs of output terminals being reserved for said conference call circuitry, and

circuitry connected in said switching circuit arrangement for successively sampling the signals appearing at all of said pairs of input terminals and multiplexing the sampling to all of said pairs of output terminals at a predetermined rate at which at least all of the applied signals are translated individually to said pairs of output signal terminals,

the improvement comprising said conference call circuitry including

other input terminals connected to said one reserved pair of exchange output terminals of said switching circuit arrangement,

other output terminals connected to said one reserved pair of exchange input terminals, and

signal reconstructing circuitry comprising active and reactive signal modifying components connected between said other input terminals and said other output terminals for compensating for signal regeneration due to conferencing.

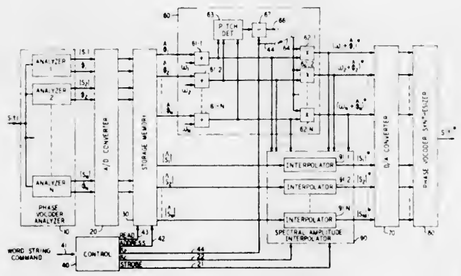
**B 476,577**
**PHASE VOCODER SPEECH SYNTHESIS SYSTEM**
**James Loton Flanagan, Warren, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**
**Filed June 5, 1974, Ser. No. 476,577**
**Int. Cl.² G10L** *1/00*
**U.S. Cl. 179—1 SM** **15 Claims**

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| 3,360,610 | 12/1967 | Flanagan | 179/1 SA |
| 3,369,077 | 12/1967 | French | 179/1 SA |
| 3,450,838 | 6/1969 | Bandat | 179/1 SA |
| 3,828,132 | 8/1974 | Flanagan et al. | 179/1 SA |

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Flanagan, J. and Golden, R., "Phase Vocoder," Bell Syst. Tech. J., Nov. 1966.



**1.** Apparatus for synthesizing a natural sounding speech message from phase vocoder stored signals representative of a vocabulary of words comprising:
means for selectively extracting preselected locations of said stored signals for constructing a predetermined sequence of signals representative of said speech message;
means for altering the pitch parameters of said extracted signals; and
means for combining said pitch modified signals.

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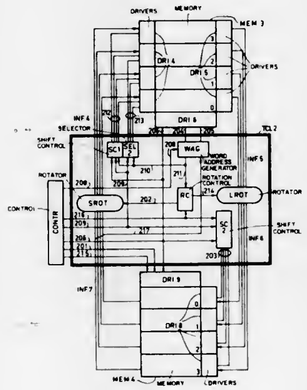
**B 482,907**
**MEMORY SYSTEM WITH BYTEWISE DATA TRANSFER CONTROL**
**Philippe René Gabriel Nyssens, Brussels, Belgium, and Johannes Bernardus Horsten, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.**
**Filed June 25, 1974, Ser. No. 482,907**
**Claims priority, application Belgium, June 26, 1973, 132708**
**Int. Cl.² G06F** *3/00*
**U.S. Cl. 340—172.5** **11 Claims**

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| 3,351,909 | 11/1967 | Hummel | 340/172.5 |
| 3,417,375 | 12/1968 | Packard | 340/172.5 |
| 3,566,363 | 2/1971 | Driscoll, Jr. | 340/172.5 |
| 3,638,194 | 1/1972 | Matsushita et al. | 340/172.5 |
| 3,670,307 | 6/1972 | Arnold et al. | 340/172.5 |
| 3,705,388 | 12/1972 | Nishimoto | 340/172.5 |
| 3,710,349 | 1/1973 | Miwa et al. | 340/172.5 |
| 3,716,838 | 2/1973 | Beard | 340/172.5 |

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**6.** A memory system comprising
a first and second memory having memory elements arranged as separately addressable word locations, each of said word locations comprising a predetermined member of byte locations, said first memory comprising first and second modules;
a data path interconnecting said memories;
an instruction line for each of said memories for transferring read/write signals to said memories;
control means for generating said read/write signals, and for addressing a first word location in a first one of said modules, and a first byte location in said first addressed word location; and
means for bytewise-in-parallel selecting information bytes for parallel transfer from said first module.

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**B 488,634**
**POWER DISTRIBUTION CONTROL SYSTEM**
**Wolfgang Knauer, Malibu, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.**
**Filed July 15, 1974, Ser. No. 488,634**
**Int. Cl.² H02H** *3/00*
**U.S. Cl. 317—9.R** **18 Claims**

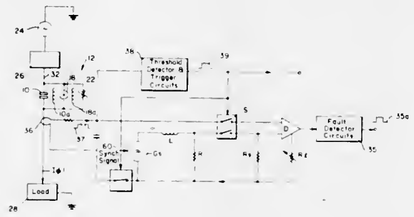
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UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 3,764,851 | 10/1973 | Hicks et al. | 317/11 C |

**12.** The method of controlling ac electric power transmission to provide fault protection comprising the following steps:



establishing a threshold for early detection of potential faults along a power transmission path;
sensing the line signal in the transmission path and producing a threshold signal when it is beyond the established threshold;
producing a reference wave in synchronism with the transmission path;
reducing the impedance on the reference wave upon threshold signalling to produce a simulated fault wave signal representing the minimum fault value at which the path is to be interrupted;
comparing the line signal and the simulated fault wave in a monitoring time period less than a time period for substantial build-up of power resulting from a fault condition to provide a fault signal for line signal beyond the simulated fault wave signal; and
interrupting power transmission in response to the fault signal while maintaining the transmission path closed in the absence of a fault signal.



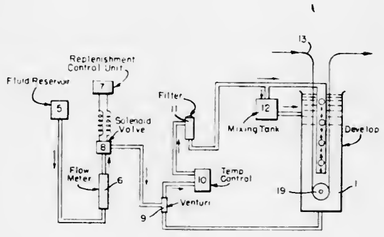
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**B 489,328**
**SYSTEM FOR CONTROLLING REPLENISHMENT OF DEVELOPER SOLUTION IN A PHOTOGRAPHIC PROCESSING DEVICE**
**Nobuhiro Takita, Kyoto, Japan, assignor to LogEtronics Inc., Springfield, Va.**
**Filed July 17, 1974, Ser. No. 489,328**
**Claims priority, application Japan, Nov. 28, 1973, 48-134220**
**Int. Cl.² G03D** *13/00*
**U.S. Cl. 354—298** **15 Claims**

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| 3,529,529 | 9/1970 | Schumacher | 354/297 X |
| 3,559,555 | 2/1971 | Street | 354/298 |
| 3,712,203 | 1/1973 | Kishi et al. | 354/324 X |
| 3,787,689 | 1/1974 | Fidelman | 354/298 X |

**9.** In a film processor of the type comprising developing, fixing, and washing tanks, means for transporting exposed film along a predetermined path from the input of said processor through said tanks in succession to the output of said processor, a supply of replenishment fluid, and control means operative to selectively feed fluid from said supply to replenish the developer in said developing tank thereby to compensate for the lowered activity of said developer resulting from the processing of said film, the improvement comprising a predevelopment sensor disposed adjacent said transport path upstream of said developing tank and responsive to at least the presence of a sheet of film at the processor input for activating said control means to feed an initial increment of replenishment fluid from said supply to said developing tank prior to the processing of said sheet, and a post-development sensor disposed adjacent said transport path downstream of said fixing tank and responsive to at least the image density in at least one processed sheet of film for selectively activating said control means to feed a further increment of replenishment fluid from said supply to said developing tank subsequent to the film processing operation.



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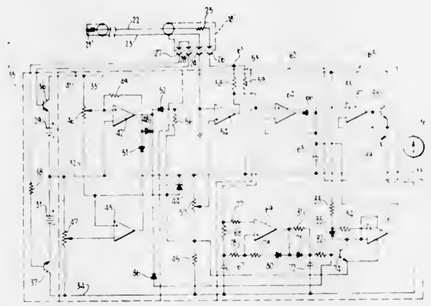
**B 492,688**
**SEMICONDUCTOR SWITCHING CIRCUIT**
**Herbert F. Nichols, San Jose, Calif., assignor to Joel Bauman, San Francisco, Calif.**
**Division of Ser. No. 295,448, Oct. 6, 1972, Pat. No. 3,851,528.**
**This application July 29, 1974, Ser. No. 492,688**
**Int. Cl.² H03K** *17/60;* **G05F** *3/00*
**U.S. Cl. 307—255** **2 Claims**

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| 3,225,218 | 12/1965 | Cochran | 307/313 |
| 3,600,603 | 8/1971 | Watanabe | 307/255 |
| 3,646,428 | 2/1972 | Torok | 323/23 |
| 3,649,851 | 3/1972 | Cohen | 307/255 |

**1.** A semiconductor switching circuit for simultaneously connecting the separate terminals of two dc potentials respectively of positive and negative polarity to a load with a single pole of a switch comprising a load; a terminal providing negative potential; a terminal providing positive potential; a pair of transistors, one of which is a PNP transistor having its emitter connected to said terminal providing positive potential and its collector connected to said load, and the other of which is a NPN transistor having its emitter connected to said terminal providing negative potential and its collector connected to said load; a resistance; and a single pole of a switch, the bases of said transistors being connected to one another through said resistance and said single pole of a switch whereby the

closing of said switch results in simultaneous current flow through said bases to turn said transistors on simultaneously



for the simultaneous application of both of said potentionals to said load.

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## B 496,487
## EPITAXIAL INDIUM-GALLIUM-ARSENIDE PHOSPHIDE LAYER ON LATTICE-MATCHED INDIUM-PHOSPHIDE SUBSTRATE AND DEVICES

**George A. Antypas, Palo Alto, Calif., assignor to Varian Associates, Palo Alto, Calif.**

**Continuation of Ser. No. 291,457, Sept. 22, 1972, abandoned. This application Aug. 12, 1974, Ser. No. 496,487**
**Int. Cl.² H01L** *29/205, 31/00;* **H01S** *31/19*
**U.S. Cl. 357—16** **9 Claims**

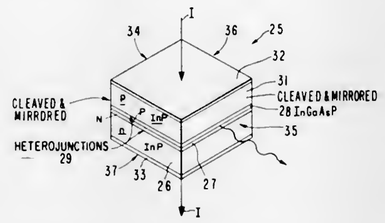
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| 3,218,205 | 11/1965 | Ruehrwein | 148/175 |
| 3,309,553 | 3/1967 | Kroemer | 357/16 |
| 3,415,989 | 12/1968 | Leventhal et al. | 357/30 |
| 3,614,549 | 10/1971 | Lorenz et al. | 357/16 |
| 3,644,770 | 2/1972 | Bell | 313/94 |
| 3,672,992 | 6/1972 | Schaefer | 357/30 |
| 3,691,476 | 10/1972 | Hayashi | 357/18 |
| 3,801,509 | 4/1974 | Kurata et al. | 357/61 |
| 3,814,996 | 6/1974 | Enstrom et al. | 357/16 |
| 3,821,777 | 6/1974 | James | 357/30 |

OTHER PUBLICATIONS

Burnham et al., "$Al_xGa_{1-x}As_{1-y}$, Py'–$GaAs_{1-y}$Py Heterostructure Laser . . . ", Appl. Phys. Lett. 17, pp. 455–457 (11–70).
Shih et al., IBM Tech. Discl. Bull., Vol. 11, No. 12, May 1969, p. 1634.

**1.** A lattice-matched heterojunction device comprising:
a substrate comprising a binary III-V compound of the elements indium and phosphorus and having a lattice constant falling within the range of 5.45 to 6.05 angstrons;
an epitaxial quaternary III-V layer of the compound InGaAsP joined to the surface of said substrate to form a heterojunction with said substrate, said epitaxial layer having a lattice constant matched to within 0.5 percent of the lattice constant of said substrate to form a lattice




matched heterojunction between said substrate and said epitaxial layer.

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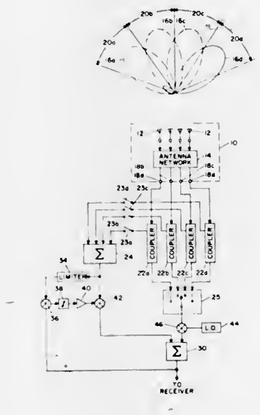
## B 496,502
## INTERFERENCE REJECTION SYSTEM FOR MULTI-BEAM ANTENNA HAVING SINGLE CONTROL LOOP

**Raymond J. Masak, East Northport, and James J. Maune, Plainview, both of N.Y., assignors to Hazeltine Corporation, Greenlawn, N.Y.**

**Filed Aug. 12, 1974, Ser. No. 496,502**
**Int. Cl.² H04B** *7/00*
**U.S. Cl. 343—100 LE** **5 Claims**

**References Cited**
UNITED STATES PATENTS

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|---|---|---|---|
| 3,177,489 | 4/1965 | Saltzberg | 343/100 LE |
| 3,763,490 | 10/1973 | Hadley et al. | 343/100 SA |




**1.** A system for receiving desired wave energy signals from a selected angular region of space within the area covered by the system and for suppressing interfering signals from all other angular regions within the coverage area comprising:
antenna means, having a first plurality of antenna elements and a second plurality of output ports, for receiving wave energy signals from said coverage area and for developing at each of said output ports a signal primarily representative of the wave energy signals received from a corresponding predetermined angular region of said coverage area;



first means for combining supplied signals in accordance with a predetermined function to develop an output signal;
second means for combining supplied signals in accordance with a predetermined function to develop a reference signal;
means for coupling signals, including desired and interfering signal components, from a selected output port of said antenna means to an input of said first combining means and for coupling a portion of the signals from at least the remainder of said antenna ports to inputs of said second combining means;
means for developing a correction signal comprising:
means for mixing the output signal from said first combining means and the reference signal from said second combining means thereby to develop a control signal;
means for mixing said control signal and said reference signal thereby to develop a correction signal;
and means for coupling said correction signal to an input of said first combining means thereby causing suppression of said interfering signal components in said output signal.

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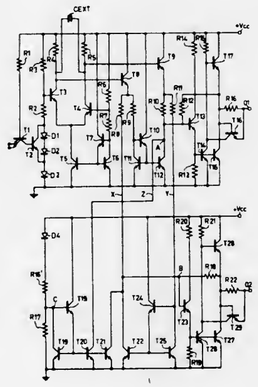
## B 497,960
## TRANSISTOR AMPLIFIER FOR GENERATING COMPLEMENTARY TRAPEZOIDAL WAVEFORMS

**Robert Arthur Hilbourne, Chandlersford, and Peter James, Purley, both of England, assignors to U.S. Philips Corporation, New York, N.Y.**

**Filed Aug. 16, 1974, Ser. No. 497,960**
**Int. Cl.² H03K** *1/00, 3/26, 5/12*
**U.S. Cl. 307—270** **9 Claims**

**References Cited**
UNITED STATES PATENTS

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| 3,252,045 | 5/1966 | Griffin | 307/228 |
| 3,548,219 | 12/1970 | Lawrie, Jr. et al. | 307/268 |
| 3,668,436 | 6/1972 | Bacon | 328/57 |
| 3,868,519 | 2/1975 | Green | 307/270 |




**1.** A transmission line amplifier for producing at first and second output terminals complementary trapezoidal output waveforms comprising, an input terminal, a single capacitor, circuit means having an input coupled to the input terminal and first and second terminals connected to respective electrodes of said capacitor, said circuit means including means responsive to a change from a first input condition to a second input condition to discharge the capacitor from a first direction of charge and to charge it in the opposite direction to produce a first output condition and responsive to a change from the second input condition to the first input condition to discharge the capacitor and to recharge it in the first direction to produce a second output condition, and means coupled to said first and second terminals for selecting the central portion of the discharge and charge characteristic of said capacitor to produce the positive-going and negative-going transitions of the trapezoidal output waveforms and comprising current balancing means to insure that the output waveform transitions are at their midpoint when the capacitor is half way through its discharge-charge cycle thereby to produce at the first and second output terminals two complementary trapezoidal output waveforms the sum of which is constant.

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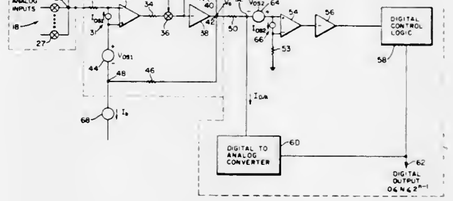
## B 498,500
## SELF-ZEROING ANALOG-TO-DIGITAL CONVERSION SYSTEM

**Jesse B. Lipcon, Brighton, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.**

**Filed Aug. 19, 1974, Ser. No. 498,500**
**Int. Cl.² H03K** *13/02*
**U.S. Cl. 340—347 CC** **30 Claims**

**References Cited**
UNITED STATES PATENTS

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| 3,516,002 | 6/1970 | Hillis | 340/347 SH |
| 3,653,037 | 3/1972 | Utley | 340/347 AD |
| 3,706,986 | 12/1972 | Petit | 340/347 AD |
| 3,736,586 | 5/1973 | Donjon | 340/347 SH |




**13.** An analog-to-digital conversion system for converting analog inputs into coded digital numbers, said system comprising:
A. means for selecting one of a plurality of said analog inputs;
B. a sample and hold circuit for storing an input analog voltage;
C. a conversion circuit for quantifying said analog voltage into a digital number;
D. comparing means shared by said sample and hold circuit and said conversion circuit for comparing voltages; and
E. switching means for switching said system, said switching means when in a first position enabling said comparing means to compare a voltage from said analog input to a voltage from said sample and hold circuit, said switching means when in a second position enabling said comparing means to compare a voltage from said conversion circuit to a voltage established by said comparing means when said switching means was in said first position; wherein the offset errors in said analog-to-digital conversion system are cancelled such that said system is substantially self-zeroing.

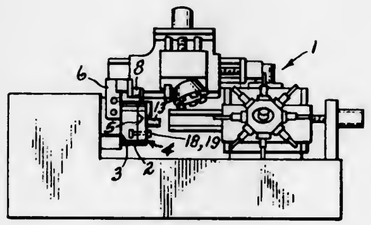
**B 506,286**
## STOCK SENSING DEVICE

**Joseph Henry Cox, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio**

**Filed Sept. 16, 1974, Ser. No. 506,286**
**Int. Cl.² H01H** *3/16*
**U.S. Cl. 200—61.41** **5 Claims**

**References Cited**
UNITED STATES PATENTS

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| 3,187,128 | 6/1965 | Hammer | 200/80 R X |
| 3,424,883 | 1/1969 | Heskett | 200/81.9 R |
| 3,761,654 | 9/1973 | Davis | 200/61.58 R |




**1.** In a machine tool, having a rotating chuck with work gripping members for holding a workpiece being machined, an apparatus for sensing sufficient chucking stock comprising:

a. a body, mounted to said rotating chuck, having its central axis coincident with the axis of rotation of said chuck;

b. an axial bore through the central axis of said body, through which predetermined increments of stock are fed for successive machining operations;

c. an indicator pin, slidably adapted in a radial bore in said body, and located within the dimensional range of the axial length of said work gripping members;

d. mechanical means urging said indicator pin inwardly towards the central axis of said body such that said pin bears on the outer diameter surface of various work sizes when present in said axial bore, and said pin moves inward radially to said central axis of said body when no stock is present at the inwardly-directed end of said indicator pin, and further wherein said mechanical means can trip a stationary signal means when no stock is present beneath said inwardly-directed end of said indicator pin and while said chuck is rotating; and

e. signal means mounted on said machine tool in a stationary position relative to said rotating chuck, wherein said signal means has a signal operator capable of engaging said mechanical means at a predetermined signal position while said body is rotating and said signal means is stationary.

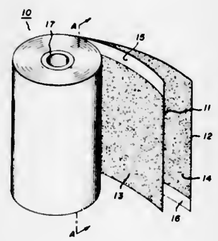
**B 506,461**
## PARTIALLY IMPREGNATED CAPACITOR

**Robert J. Flanagan, Hudson Falls; Richard G. Conners, and Richard G. Merrill, both of Glen Falls, all of N.Y., assignors to General Electric Co., Hudson Falls, N.Y.**

**Filed Sept. 16, 1974, Ser. No. 506,461**
**Int. Cl.² H01G** *4/22*
**U.S. Cl. 317—259** **8 Claims**

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| 3,153,180 | 10/1964 | Bellmore | 317/360 |
| 2,597,429 | 5/1952 | Bailey | 317/258 |
| 2,764,718 | 9/1956 | Peck | 317/258 |
| 2,797,373 | 6/1957 | Peck | 317/258 |
| 3,251,115 | 5/1966 | Pfeiffer | 317/260 X |
| 3,391,313 | 7/1968 | Hevey | 317/260 X |
| 3,457,478 | 7/1969 | Lehrer | 317/260 |
| 3,754,173 | 8/1973 | Eustance | 317/259 |
| 3,818,288 | 6/1974 | Wenzel | 317/260 X |




**1.** A capacitor having a voltage rating in the range of from above about 350 volts AC to 750 volts AC comprising in combination

a. a capacitor roll section having a dielectric and electrode system which consists solely of synthetic resin strips some of which have metal film coatings thereon as the sole electrode structure,

b. said dielectric strips being of less than 0.5 mils thickness to bear a voltage stress of from above about 1200 to 1750 volts per mil at the rated voltage of the capacitor,

c. said strips being wound under heavy tension on a hard cylindrical core to provide a hard round capacitor roll section highly resistant to dielectric liquid penetration at the roll edges,

d. a sealed casing containing said roll section,

e. and a non halogenated dielectric liquid filling said can and submerging said roll edges, and

f. said roll section having a substantially dry central section which predominates the distance between the roll edges which is not penetrated by the dielectric liquid, and narrow margin sections at said edges which are wet by the dielectric liquid.



**B 515,908**
## LIGHT-MEASURING APPARATUS WITH LAMP INDICATOR FOR DETERMINING BALANCE OF A MEASURING BRIDGE

**Siegfried Barbieri, Brixen, Italy, assignor to Durst AG. Fabrik Fototechnischer Apparate, Bozen, Italy**

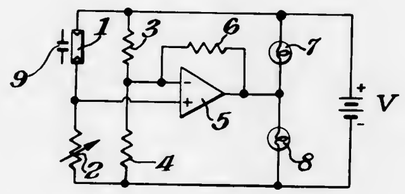
**Filed Oct. 18, 1974, Ser. No. 515,908**
**Claims priority, application Italy, Oct. 26, 1973, 4882/73**
**Int. Cl.² G01J** *1/44*; **H01J** *39/12*
**U.S. Cl. 250—210** **5 Claims**

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| 3,530,378 | 9/1970 | Holle et al. | 250/210 X |
| 3,794,430 | 2/1974 | Maida | 356/226 |

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Electronic Indicator, article in Electronic Engineering, Vol. 46, No. 554, Apr., 1974, p. 11.




**1.** A light-measuring apparatus comprising a measuring bridge, a photoelectric element is arranged in a leg of the measuring bridge, the voltage obtained from the measuring bridge controlling the brightness of two signal lamps arranged in series parallel to a power source feeding the measuring bridge, characterized in that the outputs of the measuring bridge are connected with the inputs of a sum-and-difference amplifier, the output of the sum-and-difference amplifier being connected to a junction between the two signal lamps, the amplification factor of the sum-and-difference amplifier being arranged to be high enough that a simultaneous illumination of both signal lamps connected with the output of the sum-and-difference amplifier only occurs within a predetermined error range allowable for the balancing of the measuring bridge.

**B 531,929**
## ELECTRIC INCANDESCENT LAMP WITH SUPPORT STRUCTURE FOR A PLANAR FILAMENT

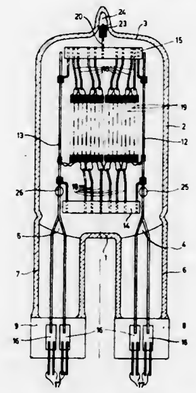
**Dirk Jules Remi De Fraeye, Eindhoven, Netherlands, assignor to U. S. Philips Corporation, New York, N.Y.**

**Filed Dec. 12, 1974, Ser. No. 531,929**
**Claims priority, application Netherlands, Jan. 21, 1974, 7400763**
**Int. Cl.² H01K** *1/24*
**U.S. Cl. 313—273** **2 Claims**

**References Cited**
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| 480,954 | 8/1892 | Melick | 313/316 |
| 2,006,820 | 7/1935 | Adams et al. | 313/274 |
| 2,791,713 | 5/1957 | Dean | 313/277 |
| 3,497,753 | 2/1970 | Huston, Jr. | 313/222 |
| 3,555,338 | 1/1971 | Scoledge et al. | 313/315 |
| 3,626,236 | 12/1971 | Robinson et al. | 313/222 |
| 3,777,207 | 12/1974 | Noteteirs et al. | 313/222 |

**1.** An electric lamp which comprises a glass lamp envelope having a dish-shaped bottom portion and a cavity at the opposite end thereof, said cavity being the interior of a fuse tip of a sealed exhaust tube, two generally planar filaments disposed in generally parallel relationship in said envelope, a frame carrying each filament comprising two side beams and two cross beams disposed in generally parallelogram relationship, first and second supply member extending through and sealed in said bottom portion, said first member being connected to one of said side beams and said second member being connected to the other of said side beams, means for holding said




frames relative to the upper wall of the lamp envelope, said means for holding comprising a brace which includes two pieces of wire, one end of each wire being secured to one of said cross beams proximate to said upper wall, the other end of each wire being coupled together and engaging said cavity, and further including quartz bridge-shaped members extending intermediate said side beams proximate to said cross beams that are proximate to said bottom portion.

**B 540,872**
## PHASE MATCHING IN A LAMINAR STRUCTURE

**Jan Peter van der Ziel, Chatham, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**

**Filed Jan. 14, 1975, Ser. No. 540,872**
**Int. Cl.² H02M** *5/04*
**U.S. Cl. 307—88.3** **16 Claims**

**References Cited**
UNITED STATES PATENTS

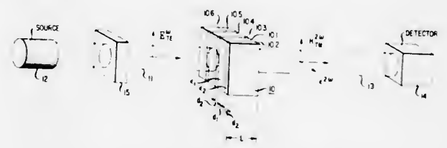
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| 3,537,020 | 10/1970 | Anderson | 330/4.5 |

OTHER PUBLICATIONS

"Applied Physics Letters," 17, pp. 483–485, (1970), Bloembergen et al.

"Applied Physics Letters," 19, pp. 266–268, (1971), Anderson et al.

"Journal of Applied Physics," 44, pp. 3180–3181, (1973), Yacoby et al.




**1.** A nonlinear optical device comprising a multilayered body including a plurality of pairs of layers of material having sufficiently different refractive indices to substantially cancel dispersion produced when a plane wave optical beam at a fundamental frequency propagates through said layers and parallel thereto, at least one of said layers of each pair comprising a nonlinear material and the thickness of said layers

relative to one another being effective to phase match said beam to the second harmonic thereof and being smaller than the wavelength corresponding to said fundamental frequency.

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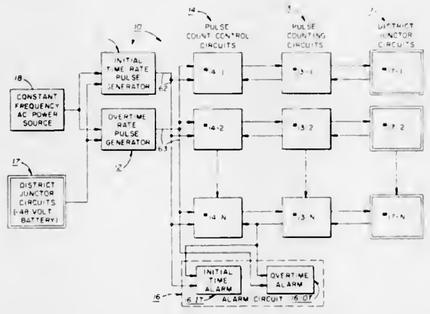
**B 545,050**
**SYSTEM FOR MEASURING THE DURATION OF A TELEPHONE CALL**

**Gary L. Baltzer; Duane A. Desler, and George Pappas, all of Omaha, Nebr., assignors to Western Electric Company, Inc., New York, N.Y.**

**Filed Jan. 29, 1975, Ser. No. 545,050**
**Int. Cl.² H04M** *15/18*
**U.S. Cl. 179—7.1 R** **13 Claims**

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| 3,097,266 | 7/1963 | Luscher | 179/7 R |
| 3,164,677 | 1/1965 | Morris et al. | 179/7.1 R |
| 3,573,378 | 4/1971 | Leyburn et al. | 179/7.1 R |
| 3,590,161 | 6/1971 | Jacobs | 179/7.1 R |
| 3,760,101 | 9/1973 | Burns | 179/6.3 |
| 3,769,463 | 10/1973 | Graham et al. | 179/7.1 TP |
| 3,801,745 | 4/1974 | Zuckerman | 179/7.1 R |




**1.** A system for measuring the duration of a telephone call, which comprises:

first and second pulse generating means for generating pulses at selected frequencies representative of a call initial time rate and a call overtime rate, respectively, and

pulse counting means for counting the pulses from said first pulse generating means until a maximum initial time period for the call initial time rate is reached, and for then counting the pulses from said second pulse generating means to measure the call overtime period.

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**B 546,665**
**RESOLVER TO DIGITAL CONVERTER**

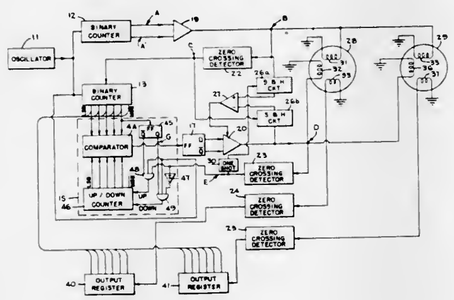
**George W. Miller, Anoka, and Larry A. Meyer, Minneapolis, both of Minn., assignors to FMC Corporation, San Jose, Calif.**

**Filed Feb. 3, 1975, Ser. No. 546,665**
**Int. Cl.² G08C** *19/48*
**U.S. Cl. 340—198** **7 Claims**

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| 2,980,900 | 4/1961 | Rabin | 340/198 |
| 3,258,667 | 6/1966 | McDonough et al. | 340/206 |
| 3,562,740 | 2/1971 | Watkins | 318/661 |
| 3,634,838 | 1/1972 | Granqvist | 340/198 |
| 3,803,567 | 4/1974 | Pezzlo et al. | 340/198 |

**7.** A resolver to digital converter comprising a high frequency signal source; a frequency divider connected to said source, said divider providing a low-frequency signal; first and second filtering means for converting a low-frequency signal to a sinusoidal signal, each of said filtering means having an input and an output, said input of said first filtering means being connected to the output of said divider; a resolver having first and second stator windings and a rotor winding; said first stator winding being connected to said output of said first filtering means; first, second and third zero crossing detectors each having an input and an output, said input of said first detector being connected to said output of said first filtering means; a binary counter having a signal input, a reset input and a plurality of output leads, said signal input lead of said binary counter being connected to said high frequency signal source, said reset input lead being connected to said output of said first detector, said first detector providing a pulse to reset said binary counter at the end of each cycle of said sinusoidal signal; an up/down counter having first and second input leads for adding and subtracting to the count in said up/down counter and a plurality of output leads; first and second logic gates each having first, second and third input leads and an output lead, said output of said second zero crossing detector being connected to said first input lead of said first gate, a flip-flop, said flip-flop being connected between a first output lead of said binary counter and a second input lead of each of




said first and said second gates, said output lead of said first gate being connected to said first input lead of said up/down counter; an inverter, said inverter being connected between said output of said second zero crossing detector and said first input lead of said second gate, said high frequency source being connected to said third input lead of each of said first and said second gates, said output lead of said second gate being connected to said second input lead of said up/down counter; a comparator having an output lead, said output leads of said binary counter and of said up/down counter being connected to said comparator, said comparator providing a pulse to said output lead each time the count of said binary counter matches the count of said up/down counter, said output lead of said comparator being coupled to said input of said second filtering means, said output of said second filtering means being connected to said second stator winding and to said input lead of said second zero crossing detector; and an output register having a plurality of signal input leads and a trigger input lead, said signal input leads of said register each being connected to a corresponding one of said output leads of said binary counter, said trigger input lead of said register being connected to said output of said third detector, said input of said third detector being connected to said rotor winding of said resolver.



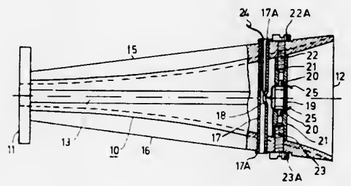
**B 547,994**
**DOPPLER RADAR DEVICE**

**Serge Guennou, Croissy-sur-Seine, France, assignor to U.S. Philips Corporation, New York, N.Y.**

**Filed Feb. 7, 1975, Ser. No. 547,994**
**Claims priority, application France, Feb. 11, 1974, 74.4466**
**Int. Cl.² H01Q** *13/02*
**U.S. Cl. 343—786** **4 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 3,806,942 | 4/1974 | Preti | 343/702 |
| 3,852,743 | 12/1974 | Gupta | 343/8 |




**1.** A Doppler radar device which transmits a linearly polarized electromagnetic wave which is radiated by means of an aerial which is formed by a flared horn having a rectangular cross-section, the smaller sides thereof being parallel to the direction of the electrical field of the radiated wave, and which detects the Doppler-frequency signal resulting from the reception of the wave reflected by a moving object by means of a semiconductor diode which is arranged in the said horn, characterized in that a conductive body is arranged inside the horn and parallel to the direction of the electrical field of the transmitted wave, the width of the said body being small with respect to the width of the horn and the body occupying the entire "height" of the horn at the area where the body is arranged, the said body being situated in the horn at a distance from the horn opening which is larger than the distance between the semiconductor diode and the said opening, the said semiconductor diode being arranged parallel to the direction of the electromagnetic field and in a region where thte intensity of the electrical field of the radiated wave is attenuated by the presence of the said conductive body.

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**B 549,931**
**GAS DISCHARGE LASER**

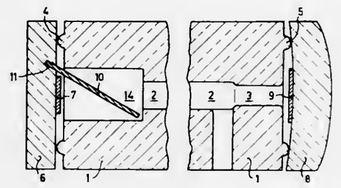
**Kornelis Bulthuis; Johannes Van der Wal, and Bram Johan Derksema, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.**

**Filed Feb. 14, 1975, Ser. No. 549,931**
**Claims priority, application Netherlands, Feb. 28, 1974, 7402691**
**Int. Cl.² H01S** *3/02*
**U.S. Cl. 331—94.5 C** **4 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 3,656,067 | 4/1972 | Zavodny | 331/94.5 C |

**1.** A gas discharge laser for generating stimulated emission, which comprises: a laser tube, first and second reflectors disposed at the ends of said laser tube, at least one of the said reflectors including means for passing a coherent beam, and a plane parallel transparent plate disposed with a normal thereto enclosing an angle with the axis of said laser tube




equal to the Brewster angle, said plate being carried by the other of said reflectors.

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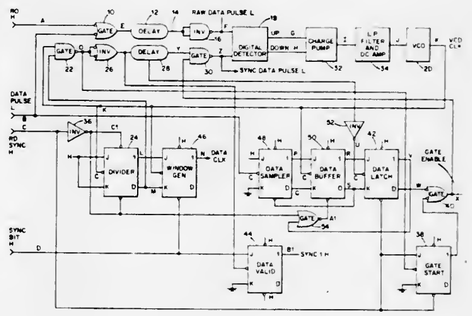
**B 550,693**
**PHASE LOCK LOOP WITH DELAY CIRCUITS FOR RELATIVE DIGITAL DECODING OVER A RANGE OF FREQUENCIES**

**Chao S. Chi, Shresbury; Peter T. McLean, Stow, and Norman A. Field, Acton, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.**

**Filed Feb. 18, 1975, Ser. No. 550,693**
**Int. Cl.² H03B** *3/04*; **H03K** *5/18*
**U.S. Cl. 328—155** **10 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 3,599,110 | 8/1971 | Gindi | 331/1 A |
| 3,614,635 | 10/1971 | LaPine et al. | 328/155 |
| 3,840,821 | 10/1974 | Conway | 331/25 X |




**1.** In an apparatus for synchronizing clock signals and data pulses, the combination comprising:

A. a variable frequency oscillator for providing a continuous series of said clock signals;

B. first delay means responsive to said data pulses for providing a first predetermined delay;

C. second delay means responsive to said clock signals for providing a second and third predetermined delay;

D. means responsive to said second delay means for reconditioning said data pulses to said clock signals;

E. means for comparing the output of said reconditioning means with said first delay means; and

F. means responsive to said comparing means for varying the frequency of said variable frequency oscillator.

**B 554,594**

## STEREOPHONIC SOUND REPRODUCTION WITH ACOUSTICALLY MATCHED RECEIVER UNITS EFFECTING FLAT FREQUENCY RESPONSE AT A LISTENER'S EARDRUMS

**Robert Lee Wallace, Jr., Warren Township, Somerset County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**

**Filed Mar. 3, 1975, Ser. No. 554,594**

**Int. Cl.² H04R** *1/02, 5/00*

**U.S. Cl. 179—1 G** **14 Claims**

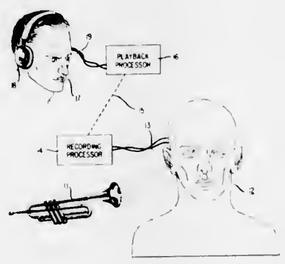
**References Cited**

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|---|---|---|---|
| 2,363,175 | 11/1944 | Grossman | 179/107 R |
| 2,849,533 | 8/1958 | Di Mattia | 179/107 E |
| 3,157,750 | 11/1964 | Weingartner | 179/115.5 R |
| 3,558,833 | 1/1971 | McCrory | 179/175.1 A |
| 3,798,393 | 3/1974 | Gorike | 179/182 |
| 3,890,474 | 6/1975 | Glicksberg | 179/107 E |

OTHER PUBLICATIONS

"An Ear-Like Coupler—," by Zwislocki, Apr., 1971, Special Report LSC-S-9.




1. An in-ear receiver for effecting a substantially flat frequency response at a user's eardrum comprising:

an electroacoustic motor element for supplying an acoustic signal in response to a supplied electrical signal;

a hollow housing adapted for retaining said motor element at one end thereof;

acoustic impedance matching means for transforming the impedance of said electroacoustic motor element so that said transformed impedance is below the impedance of the user's ear canal, said impedance matching means mounted within said hollow housing adjacent to said motor element;

an acoustic resistance mounted within said hollow housing adjacent to said impedance matching means, said acoustic resistance substantially identical to said characteristic impedance of said user's ear canal; and

end plate means mounted across the end of said hollow housing adjacent to said acoustic resistance, said end plate means adapted for insertion in the outer opening of said user's ear canal, said end plate including an orifice for acoustically coupling the signals produced by said electroacoustic motor element to said ear canal.

13. In a stereophonic recording system including a recording mannequin equipped with recording microphones and means for processing the signal produced by said microphones for playback to a remote listener, the improvement comprising acoustic impedance means mounted within said recording mannequin for establishing the acoustic signal which impinges upon said microphones substantially identical to that acoustic signal which would reach the eardrums of a human listener occupying the same location as said recording mannequin.

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**B 559,737**

## METHOD FOR GENERATING PSEUDO-RANDOM BIT SEQUENCE WORDS AND A DEVICE FOR CARRYING OUT THE METHOD

**Lars Henning Zetterberg, and Leif Ake Arvidsson, both of Jarfalla, Sweden, assignors to U.S. Philips Corporation, New York, N.Y.**

**Filed Mar. 19, 1975, Ser. No. 559,737**

**Claims priority, application Sweden, Mar. 20, 1974, 7403748**

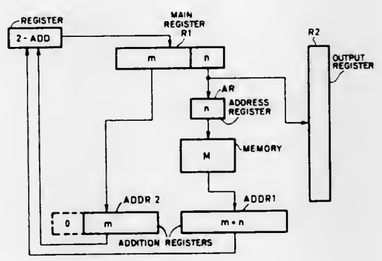
**Int. Cl.² G06F** *7/38*

**U.S. Cl. 235—152** **4 Claims**

**References Cited**

UNITED STATES PATENTS

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| 3,746,847 | 7/1973 | Maritsas | 235/152 |
| 3,777,278 | 12/1973 | Majeau et al. | 331/78 |
| 3,811,038 | 5/1974 | Reddaway | 235/152 |
| 3,838,259 | 9/1974 | Kortenhaus | 235/152 |
| 3,881,099 | 4/1975 | Ailett et al. | 235/152 |




1. A method for generating pseudo-random bit-sequence words consisting of 0's and 1's by means of registers, and a series of such words each having a predetermined number of bits comprising the steps of

supplying a starting bit pattern which is not entirely composed of 0's into a main register which comprise a predetermined number $m + n$ of bistable elements, where $m$ and $n$ are integers;

using the bit-contents of a predetermined number $n$ of said elements of said main register as an address for reading out from a memory a corresponding superposition bit-sequence having a length equal to the length of said main register;

selecting the bit-sequence of predetermined ones of said elements of said main register, corresponding to a word length of $n$ bits as a first word of said series;

modifying the bit sequence of the remaining $m$ ones of said elements of said main register by transposing the bits in accordance with a predetermined reproducible transposition pattern; and

simultaneously feeding back the result of said modifying step into the main register.

# REISSUES

## JANUARY 20, 1976

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

**Re. 28,684**

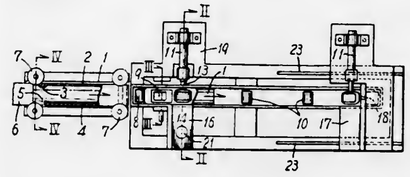
## APPARATUS FOR AUTOMATICALLY CONNECTING SHUTTER SLAT AND PREVENTING ITS DISENGAGEMENT

**Hiroshi Kataoka, Osaka, Japan, assignor to Overhead Door Corporation, Dallas, Tex.**

**Original No. 3,651,555, dated Mar. 28, 1972, Ser. No. 72,732, Sept. 16, 1970. Application for reissue Feb. 11, 1974, Ser. No. 441,554**

**Int. Cl. B23p** *19/04*

**U.S. Cl. 29—208 D** **12 Claims**




1. Apparatus for automatically connecting shutter slat and preventing its disengagement which comprises: a feed means which moves the shutter slat having a notch and slots for preventing its disengagement and cut in specified dimension, to the connecting position while guiding it exactly; a forward feed means that moves the shutter slat, which is moved to said connecting position, to the holding position and holds it there; and a press means provided ahead of said holding position in order to prevent the connected shutter slat from being disengaged, thereby automatically connecting shutter slats that are sent to the connecting position one after another, and preventing the connected slats from being disengaged.

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**Re. 28,685**

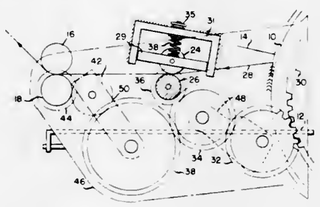
## METHOD AND APPARATUS FOR THE TREATMENT OF COTTON FIBRES

**André Varga, Toronto, Canada, assignor to Carding Specialists (Canada) Limited, Toronto, Canada**

**Original No. 3,003,195, dated Oct. 10, 1961, Ser. No. 771,050, Oct. 31, 1958. Application for reissue Nov. 14, 1969, Ser. No. 871,494**

**Int. Cl.² D02G** *3/00;* **D01G** *15/00*

**U.S. Cl. 57—156** **2 Claims**




6. *In the production of cotton yarns of improved quality and cleanliness by the cotton system, the method of treating the cotton fibres which comprises, in sequence:*

*a. carding the fibres and forming them into a thin carded web;*

*b. passing said web through crushing rollers adapted to crush small impurities in the web;*

*c. subjecting said web on leaving said crushing rollers to a longitudinal drafting action sufficient to cause relative longitudinal fibre movement therein;*

*d. condensing said web into a sliver; and*

*e. processing the fibres of said sliver into yarn by steps comprising drafting and spinning.*

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**Re. 28,686**

## MEASUREMENT OF FLUID FLOW RATES

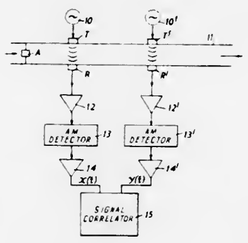
**John Coulthard, 1, Sinnington Close, Guisborough, Yorkshire, England**

**Original No. 3,762,221, dated Oct. 2, 1973, Ser. No. 159,864, July 6, 1971. Application for reissue Sept. 12, 1974, Ser. No. 505,609**

**Claims priority, application United Kingdom, July 6, 1970, 32563/70; Jan. 19, 1971, 2593/71**

**Int. Cl.² G01F** *1/00*

**U.S. Cl. 73—194 E** **27 Claims**




1. Apparatus for measuring the rate of flow of a fluid, comprising means for transmitting a beam of [radiant] *ultrasonic* energy, into and across the fluid flow at each of two positions spaced apart in the direction of flow of the fluid, respective receiving means associated with each beam and each positioned to receive the associated beam after passage across the flow, each receiving means producing a beam-representative carrier signal modulated by a noise signal caused by disturbances in the fluid flow profile, a respective detector connected to each receiving means for detecting said noise signals, and a signal correlator for cross-correlating the two detected noise signals whereby the value of correlation delay producing maximum correlation between said two noise signals can be ascertained.

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**Re. 28,687**

## WIRE STRIPPER

**Irving R. Metcalf, St. Charles, Ill., assignor to Ideal Industries, Inc., Sycamore, Ill.**

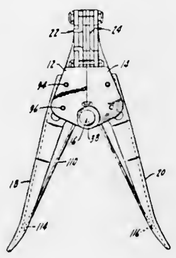
**Original No. 3,564,951, dated Feb. 23, 1971, Ser. No. 712,682, Mar. 13, 1968. Application for reissue Jan. 26, 1972, Ser. No. 326,819**

**Int. Cl. H02g** *1/12*

**U.S. Cl. 81—9.5 A** **24 Claims**

1. In a stripper mechanism, a pair of pivoted levers, handles on the levers constructed to perform a closing and opening action effective to open and close the levers, pairs of clamping and stripping members on the levers effective to grasp and strip insulation from wire positioned between them, and a

friction retard mechanism effective to releasably hold the levers apart in pivoted position while the paired members



separate allowing a wire to be removed prior to closing of the levers.

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**Re. 28,688**

## SOLID HEAT-FLOWABLE DISPERSED PHASE IN A CROSSLINKED ELASTOMER

**Paul M. Cook, Atherton, Calif., assignor to Raychem Corporation, Menlo Park, Calif.**

**Original No. 3,597,372, dated Aug. 3, 1971, Ser. No. 65,953, Oct. 31, 1960. Application for reissue Aug. 2, 1973, Ser. No. 385,050**

**Int. Cl. C29c** *13/00*

**U.S. Cl. 260—4** **73 Claims**

**36.** *An article of manufacture composed of an organic polymeric composition comprising a cross-linked elastomeric component having incorporated therewith and substantially uniformly distributed therein an organic, normally solid heat-flowabel constituent having a softening temperature above about 140° F., said heat-flowable constituent being present in an amount sufficient to hold said elastomeric component in a stretched, elastically deformed condition, said article being elastomeric at storage temperatures and at the softening temperature of said heat-flowable constituent and being in a dimensionally heat-unstable condition capable of altering its physical form upon application of heat alone to soften said heat-flowable constituent, said article upon application of such heat assuming a dimensionally heat-stable condition, the article in its altered, heat-stable form being elastomeric.*

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**Re. 28,689**

## METHOD OF MOLDING A BUILDING STRUCTURE BY SPRAYING A FOAMED PLASTIC ON THE INSIDE OF AN INFLATABLE FORM

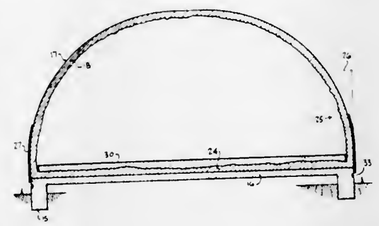
**Lloyd S. Turner, 50 Chestnut Ave., Los Gatos, Calif. 95030**

**Original No. 3,277,219, dated Oct. 4, 1966, Ser. No. 98,457, Mar. 27, 1961. Application for reissue Nov. 24, 1972, Ser. No. 309,123**

**Int. Cl.² B29D** *27/04*

**U.S. Cl. 264—46.6** **13 Claims**

**1.** A method for erecting a building structure comprising: inflating a form, [positioning thickness gauges within the inner surface of the form, said thickness guages being preformed from a plastic foam material,] spraying a [n additional quantity of the same] plastic foam material against the inside of the form to build up a [layer having a thickness determined by the thickness gauges which become integral with the] layer, [and] allowing the plastic foam to harden



and become rigid and self-supporting [.] *and coating the inside of the layer of foam with a layer of concrete.*

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**Re. 28,690**

## 17α-ETHINYL-18-METHYL-19-NORTESTOSTERONE ESTERS

**Hans-Gunter Lehmann; Heinz Gibian; Rudolf Wiechert, and Friedmund Neumann, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin, Germany**

**Original No. 3,514,514, dated May 26, 1970, Ser. No. 547,438, May 5, 1965. Application for reissue July 19, 1974, Ser. No. 490,022**

**Claims priority, application Germany, May 5, 1965, 37001**

**Int. Cl.² A61K** *31/56*

**U.S. Cl. 424—238** **6 Claims**

**1.** A therapeutic compound for inhibiting ovulation comprising [as active ingredient a compound selected from the group consisting of] a 17-ester of 17α-ethinyl-18-methyl-19-nortestosterone [and a 17α-ethinyl-18-methyl-$\Delta^{3,5}$-estradiene-3, 17β-diol-3, 17β-diester] wherein the said 17-ester [and 3, 17β-diester groups are] *group is* formed from *an* aliphatic carboxylic [acids] *acid* having from [1] *six* to 11 carbon atoms in the ester residue [; and a pharmaceutical carrier for said compound].

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**Re. 28,691**

## METHODS AND COMPOSITIONS FOR INCREASING FEED INTAKE OF ANIMALS USING TERTIARY ALCOHOLS

**Clifton A. Baile, Glen Mills; Gregory Gallagher, Collegeville; Carol L. McLaughlen, Malvern, and Robert Lee Webb, West Chester, all of Pa., assignors to SmithKline Corporation, Philadelphia, Pa.**

**Original No. 3,852,473, dated Dec. 3, 1974, Ser. No. 328,235, Jan. 31, 1973. Application for reissue Mar. 25, 1975, Ser. No. 561,728**

**Int. Cl.² A61K** *31/045*

**U.S. Cl. 424—343** **14 Claims**

**1.** The method of increasing feed intake in an immature ruminant animal subject comprising administering orally or by implant to said animal subject a quantity effective for increasing feed intake but nontoxic to the subject of a tertiary alcohol having the formula:

RR'R''CX

in which:

R is lower alkyl of from 1–9 carbons or hydroxy lower alkyl of from 1–9 carbons;

R' is lower alkyl of from 1–9 carbons, fluoro, bromo or chloro;

R'' is lower alkyl of from 1–9 carbons, lower alkenyl of from 2–9 carbons, *lower alkynyl of from 2–9 carbons* and, when R and R' are lower alkyl or hydrogen, *R'' is* phenyl; and

X is —OH.



**Re. 28,692**

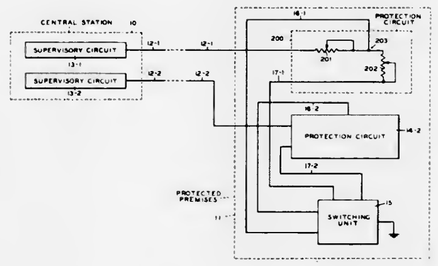
## MONITORING APPARATUS AND METHOD FOR ELECTRICAL PROTECTION SYSTEMS

**Raymond J. Highstone, deceased, late of Scottsdale, Ariz., by American District Telegraph Co., and Manfred W. Muehter, Lanoka Harbor, Jersey City, N.J., assignors to American District Telegraph Company, New York, N.Y.**

**Original No. 3,401,384, dated Sept. 10, 1968, Ser. No. 516,896, Dec. 28, 1965. Application for reissue Jan. 10, 1975, Ser. No. 540,147**

**Int. Cl.² G08B** *13/22*

**U.S. Cl. 340—276** **11 Claims**




**1.** Apparatus for increasing the security of an electrical protection system in which a protected location is conductively coupled to a central station which comprises at least two conductive means for coupling said protected location to said central station,

at said central station, a first supervisory circuit and a second supervisory circuit, each supervisory circuit including a source of supervisory current coupled to a corresponding one of said conductive means and current-sensitive means coupled to said corresponding conductive means to detect predetermined changes in supervisory current therein, and

at said protected location, a first protection circuit and a second protection circuit respectively corresponding to said first and second supervisory circuits at said central station, wherein each protection circuit is provided with an input terminal, a shunt terminal and an output terminal, and wherein at least one of said protection circuits is provided with at least one detection device connected between said input terminal and said output terminal so that operation of said detection device alters the flow of supervisory current in said protection circuit,

means for connecting the input terminal of each of said protection circuits to a corresponding one of said conductive means to couple each protection circuit to a corresponding supervisory circuit at said central station, so that supervisory current is directed to each protection circuit,

a ground point,

switching means interposed between said ground point and said output terminals of said first and second protection circuits, said switching means including:

first relay means and second relay means respectively corresponding to said first and second protection circuits, wherein each of said relay means is provided with a winding having first and second terminals, an armature, and a contact,

means for connecting the second terminal of each relay means to said ground point,

means for connecting the armature of each relay to the first terminal of the winding of the other relay,

two first conductor means for connecting the output terminals of said first and second protection circuits to said respective first terminals of said windings of said corresponding first and second relay means, and

two second conductor means for connecting the shunt terminals of each of said first and second protection circuits to said contacts of said second and first relay means, respectively, wherein each of said shunt terminals is located in said respective first and second protection circuits at a point selected to shunt a predetermined portion of the respective protection circuit in response to the energizing of the relay means corresponding to the other protection circuit.

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**Re. 28,693**

## IMAGE TRANSFER RECORDING APPARATUS WITH RESIN COATED DRUM

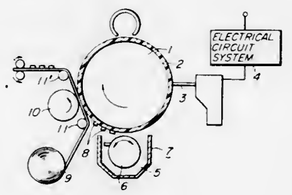
**Tetsuo Doi, and Shoji Sagae, both of Hitachi, Japan, assignors to Hiatchi, Ltd., Japan**

**Original No. 3,662,395, dated May 9, 1972, Ser. No. 9,176, Feb. 6, 1970. Application for reissue May 9, 1974, Ser. No. 468,600**

**Claims priority, application Japan, Feb. 7, 1969, 44-8738; Nov. 7, 1969, 44-88757**

**Int. Cl.² G01D** *15/06;* **G03G** *15/16*

**U.S. Cl. 346—74 ES** **9 Claims**




**1.** An apparatus for recording an image by transfer printing comprising a recording drum composed of a drum member of conductive metal and a layer of resin covering the surface of said drum member, said layer having a breakdown voltage of not less than 1 KV, a volume resistivity of more than $10^{14}\Omega$ cm, a surface resistivity of more than $10^{14}\Omega$ and no pinholes and preventing fused toner from attaching thereto, means for applying information [in the form of a signal voltage] *of the image* to the surface of said recording drum [through a recording electrode thereby] to form a latent image of an electrical charge on the surface of said recording drum, developing means for selectively supplying a powdery developer [through the medium of a magnet drum] to the latent image [formed] *to form a powder image* on *the surface of* said recording drum, heating means for applying heat to a recording sheet, and means for transfer printing the powder image [that is selectively attached to the latent image portion] on *the surface of* said recording drum onto the heated recording sheet, and at the same time, fusing the powder to firmly fix *the* same to the recording sheet under heat.

# PLANT PATENTS

## GRANTED JANUARY 20, 1976

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

**3,824**

**ROSE PLANT**

**Mathias Tantau, Utersen, Germany, assignor to Jackson & Perkins Company, Medford, Oreg.**

**Filed Sept. 16, 1974, Ser. No. 506,755**

**Int. Cl. A01h** *5/00*

**U.S. Cl. Plt.—28** **1 Claim**

1. A new and distinct cultivar of rose of the floribunda class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a vigorous, compact plant habit, abundant, large foliage, an orange red flower color.



**3,825**

**ROSE PLANT**

**William A. Warriner, 1341 Lurline Lane, Tustin, Calif. 92680**

**Filed Apr. 15, 1974, Ser. No. 460,691**

**Int. Cl. A01h** *5/00*

**U.S. Cl. Plt.—26** **1 Claim**

1. A new and distinct cultivar of rose plant of the floribunda class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its large glossy foliage, relatively fewer thorns than Bridal Pink, smooth stems, glossy petals of light Carmine Rose (W), and productive growth as a cut flower cultivar when grown in a greenhouse.

# PATENTS

## GRANTED JANUARY 20, 1976

### ERRATA

| For CLASS | See PATENT NO. |
|---|---|
| 084-318 | 3,933,077 |
| 084-387 | 3,933,078 |
| 084-388 | 3,933,079 |
| 179-002 TV | 3,933,233 |
| 250-439 | 3,933,251 |
| 210-213 | 3,933,792 |
| 162-183 | 3,933,966 |
| 423-232 | 3,934,012 |
| 428-413 | 3,933,875 |
| 260-23.5R | 3,934,056 |

# PATENTS

GRANTED JANUARY 20, 1976

NOTE – A cross reference listing of applications published under Trial Voluntary Protest Program on January 28, 1975 is located in the back of this Issue. These entries will be in numerical order by document publication number.

## GENERAL AND MECHANICAL

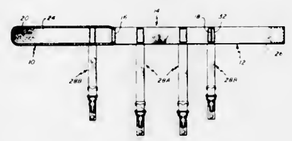
**3,932,896**
**SWIMSUIT**
**Konrad Dottinger, Reutlingen, Germany, assignor to Busino & Co., Reutlingen, Germany**
**Filed Feb. 22, 1974, Ser. No. 444,954**
**Int. Cl.[2] A41D** *7/00*
**U.S. Cl. 2—67** **5 Claims**



**1.** A swimsuit comprised of an elastic material adapted to snugly fit the wearer and including a waist portion of reduced diameter between a lower and an upper portion, said upper portion including front and back parts extending upwardly from said waist portion between a pair of arm cutouts and joining each other on each side of the wearer's neck to form a generally circular neck opening which encircles the wearer's neck to substantially prevent water and air from entering the suit through the neck opening with the uppermost point on said neck opening lying at the rear thereof, a narrow elongate-shaped passage below the rear of said neck opening extending centrally from said uppermost point through said back part and downwardly into and below said waist portion, and means extending throughout the length of said elongate passage for maintaining it in said narrow shape whereby air or water entering said suit may exit through said opening.

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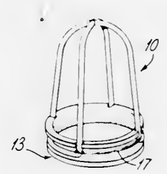
**3,932,897**
**HOCKEY GARTER BELT**
**Nathan H. Young, Boynton Beach, Fla., assignor to Baka Manufacturing Co., Inc., Plainville, Mass.**
**Filed Dec. 12, 1974, Ser. No. 531,922**
**U.S. Cl. 2—306** **3 Claims**



**1.** A hockey garter belt comprising:
a body encircling member having first and second elongate end sections and intermediate elongate section, the end sections being connected to opposite ends of the intermediate section;
the first of the end sections being formed from a nonstretchable web of material;
the second of the end sections being formed from a nonstretchable web of material and having one surface thereof substantially completely covered by and defining a looped fabric, the looped fabric extending along at least one third of the overall length of the body encircling member;
the intermediate section being formed from an elastic webbing which is stretchable in its longitudinal direction;
a plurality of elongate garter straps each formed from a length of the body encircling sections having at least one garter strap attached thereto at the inside surface thereof, each garter strap having means at the free end thereof for attaching a portion of a stocking thereto, at least two of the garter straps being attached to the elastic intermediate section;
the inwardly facing surface of the second end member being of a relatively soft fabric; and
a strip of fastener material secured to the free end of the first end section and on the opposite side of the body encircling member from that on which said looped fabric is disposed, the fastener material including a multiplicity of closely spaced hooked mem-ers to releasably lock with the looped fabric at any location along the looped fabric.

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**3,932,898**
**PROSTHETIC HEART VALVE SEPARATELY FORMED CAGE**
**John Thomas Matthew Wright, Southport, England, assignor to National Research Development Corporation, London, England**
**Filed Sept. 4, 1974, Ser. No. 503,527**
**Claims priority, application United Kingdom, Sept. 28, 1973, 45444/73**
**Int. Cl.[2] A61F** *1/22*
**U.S. Cl. 3—1.5** **5 Claims**



**1.** In a prosthetic heart valve comprising a valve body including an annular base member, from circumferentially spaced positions of which a plurality of elongate members extend first generally axially and then mutually inwardly to define a cage, and which further comprises a movable valve member captively located in said cage for movement into and out of valve-closure seating engagement with said base member, the improved valve body construction in which:
said base member is formed with a circumferential groove around its radially outer periphery;
said elongate cage members are interconnected by arcuate members held in said groove;
said elongate cage members and said arcuate members are defined by successive portions of a single elongate member having its free ends fixed to other points therealong to form a closed loop configuration;
and said configuration includes two arcuate member portions of diametrally opposed quadrant shape and location, and four elongate cage member portions extending generally axially from respective ends of said arcuate member portions, said elongate cage member portions being formed mutually inwardly and interconnected at their ends remote from said arcuate member portions.

**3,932,899**

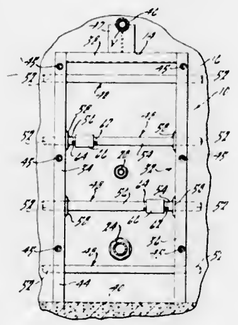
## COMBINATION SUPPORT FRAME AND SECURITY MEANS

**G. Vincent Brady, Philadelphia, and J. Les Campbell, Flourtown, both of Pa., assignors to Kelsey-Hayes Company, Romulus, Mich.**

**Continuation of Ser. No. 244,820, April 17, 1972. This application June 25, 1974, Ser. No. 483,030**

**Int. Cl.² A47K** *4/00*

**U.S. Cl. 4—3** **8 Claims**



1. In combination with a plumbing facility adapted to be mounted in confronting relation to an access opening in a structure fabricated of concrete, within which water supply and drain conduits for the facility are located,

a frame cast into said concrete within the opening and comprising a plurality of frame elements arranged in end-to-end abutting relation and located around the periphery of said opening and a plurality of spaced security bars extending across said opening and supported at opposite ends thereof by said frame elements with some of said ends extending beyond said frame elements into said concrete for preventing unauthorized passage from one side of said structure to the opposite side thereof through said opening,

at least one of said security bars including means for expanding said frame to assure contiguous engagement thereof with the periphery of said opening, said security bar comprising first and second end sections having confronting terminal end portions threaded with opposite hand thread forms, and wherein said expansion means comprises a sleevelike member having an internally threaded bore adapted for threadable engagement with said terminal end portions, whereby preselected rotational movement of said sleeve element will effect opposed movement of said bar sections to cause the associated frame to expand into contiguous engagement with the periphery of said opening, and

means attached to said frame and protruding therefrom adapted to support part of said plumbing facility.

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**3,932,900**

## TOILET WATER SAVER

**Victor Huston, and James R. Huston, both of 2363 S. Dangle, Muskegon, Mich. 49442**

**Filed Sept. 16, 1974, Ser. No. 506,032**

**Int. Cl.² E03D** *1/34*

**U.S. Cl. 4—63** **2 Claims**

1. A water saver device intended for use with a conventional toilet flush tank including a water inlet valve controllable by a support rod having a float connected to one end thereof, the device comprising, in combination:

a connector member adapted to be readily mounted to the support rod in a position adjacent the float, the connector member comprising;

an elongated solid body member having a top end and a bottom end and parallel side surfaces;

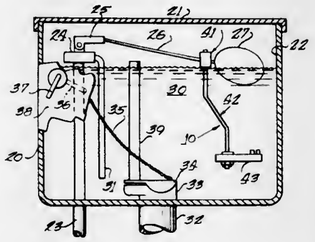
an open faced channel defining slot extending through one of the side surfaces and opening out of each of the adjacentmost side surfaces intermediate the top and bottom ends of the connector;

a threaded bore extending through the top end in communication with a side wall of the slot;

a threaded cylindrically shaped set screw threadedly received in the threaded bore for rotation about its axis between a position spaced from the slot and a position projecting into the slot to engage and retain the connector to the float support rod passing through the slot; and

an interiorly threaded cylindrical bore extending upward through the bottom end and adapted to receive one end of the rod securely therein;

a rod mounted to the connector member and projecting outwardly therefrom to extend vertically into a water level of a toilet tank, the rod provided with screw threads on both ends thereof, one end of the rod being threadedly received in the bottom end threaded bore of the connector, the opposite end of the rod being connected to the float body member;



a float body member affixed to the projecting free end of the rod and extending therefrom, the float body member comprising a box-like rectangularly configured float housing having a flat top surface, a flat bottom surface, vertical side wall surfaces, and vertical front and back end surfaces, a washer member having an aperture in its center secured in a flat manner on the top surface adjacent the float member back end, a nut having a threaded aperture in vertical axial alignment with the aperture of the washer and affixed in a flat manner on the bottom surface of the float member, the free end of the rod extending through the washer aperture and being threadedly received in the nut to secure the float member to the rod; and

a plurality of compensating weight members removably associated with the float body member for selective attachment and detachment therefrom to vary the floatation and buoyancy characteristics of the body member selectively by an individual to compensate for local water pressure and toilet flushing requirements.

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**3,932,901**

## FLUSH TOILET BOWL

**Kanji Inui; Jun-Ichi Sakamoto, both of Hirakata, and Yukihiro Gokoh, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan**

**Filed Aug. 22, 1974, Ser. No. 499,512**

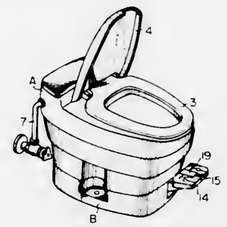
**Claims priority, application Japan, Aug. 28, 1973, 48-96365**

**Int. Cl.² E03D** *11/10*

**U.S. Cl. 4—79** **4 Claims**

1. A flush toilet bowl comprising a bowl unit containing a bowl having a bowl seat and a lid in the upper part and a discharging port in the lower part and forming a water reservoir chamber between the bowl and an outer case, and a supporting unit formed intergrally with said bowl unit on the lower surface of the bowl unit, said supporting unit being provided with a dropping port opposed to the discharging port of the bowl, a valve slidable in the horizontal direction when a first pedal located on said supporting unit is trod for opening said dropping port, a diaphragm pump, a means for pressing the diaphragm pump when a second pedal located on said support unit is trod, a means for operating an opening and closing valve to feed water into the diaphragm pump actuated by said pressing means for the diaphragm pump, and a water





jetting pipe connecting said diaphragm pump and a water delivering port in the upper part of the bowl with each other, said means for pressing forces water from said diaphragm through said water jetting pipe into said bowl, said means for pressing the diaphragm pump and said means for operating the opening and closing valve being connected with each other through a delaying means opening said water feeding valve at a fixed time after said diaphragm pump is pressed and closing said water feeding valve just before said diaphragm pump returns to an initial position.

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**3,932,902**

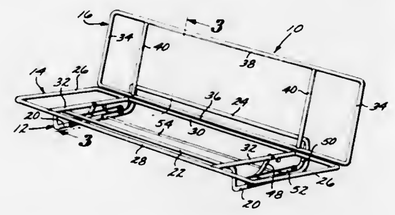
## CONVERTIBLE SOFA BED

**Earl H. Belk, Long Beach, Calif., assignor to Kustom Fit Manufacturing Company, Los Angeles, Calif.**

**Filed Jan. 10, 1975, Ser. No. 539,978**

**Int. Cl.² A47C** *17/40*

**U.S. Cl. 5—28** **5 Claims**



1. A convertible sofa bed comprising:

a frame;

a seat portion;

a back portion pivotally connected to said seat portion for movement about a hinge axis and between generally horizontal and generally upright positions; and

a pair of pivot assemblies, one at each side of said frame and each including a front pivot arm having opposite extremities pivotally connected to said frame and said seat portion, a rear pivot arm having opposite extremities pivotally connected to said frame and said back portion, said front and rear pivot arms being pivotable between raised positions wherein said front and back portions are forwardly projected and said front pivot arm is engaged upon said frame whereby said front pivot arm is prevented from further pivotal movement forwardly, and lowered positions wherein said front and back portions are rearwardly retracted, said rear pivot arm being connected to said back portion adjacent said hinge axis whereby said back portion is upwardly pivoted about said hinge axis in said retracted position, said pivot assemblies also each including a connecting link pivotally connecting said front and rear pivot arms whereby said rear pivot arm is prevented by said connecting link from pivoting forwardly in said raised position of said front pivot arm.

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**3,932,903**

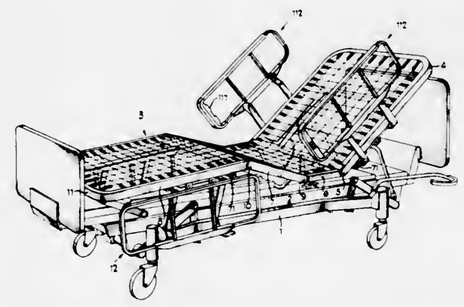
## GUARD INCLUDING ELECTRICAL CONTROLS AND SLIDABLE UNDERNEATH THE BED

**James S. Adams, Batesville; Leslie Dale Foster, Brookville, and William H. Peck, Batesville, all of Ind., assignors to Hill-Rom Company, Inc., Batesville, Ind.**

**Filed Oct. 4, 1974, Ser. No. 512,312**

**Int. Cl.² A47D** *09/00*; **H02P** *07/14*

**U.S. Cl. 5—100** **11 Claims**



1. In a guard structure for a bed having:

A. body restraining means for preventing unintended egress of an occupant from said bed, said restraining means being movable between an elevated and a lowered position;

B. retaining means coupled to said restraining means for holding said restraining means in an elevated position; and

C. release means coupled to said retaining means for disengaging said retaining means and allowing said restraining means to descend, the improvement comprising moving means for permitting said restraining means to move between an inner limit toward the center and an outer limit away from the center of a bed to which affixed, said moving means prohibiting motion toward the center of said bed beyond a predesignated point located between said inner and outer limits when said restraining means occupies a position substantially above said lowered position.

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**3,932,904**

## COMBINATION TOOL

**Rune Nilsson, Lindesberg, and Ake Jansson, Orebro, both of Sweden, assignors to United Shoe Machinery Company AB, Orebro, Sweden**

**Continuation of Ser. No. 408,574, Oct. 23, 1973, abandoned. This application Feb. 27, 1975, Ser. No. 553,645**

**Claims priority, application Sweden, Oct. 27, 1972, 13908/72**

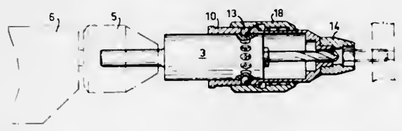
**Int. Cl.² B25F** *1/00*; **B26B** *11/00*

**U.S. Cl. 7—14.1 R** **5 Claims**

1. A combination tool for providing a bore in a workpiece and for introducing a fastener, preferably a self-threading screw, into said bore, said tool comprising

a. a cylindrical core having at one end a stud shaft adapted to be driven by a driving means and at the other end a central mounting member for a drill;

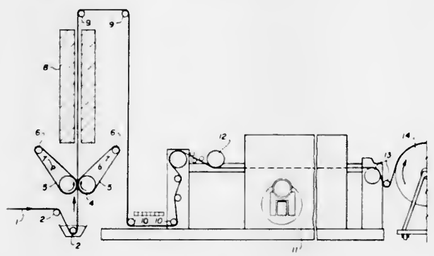
b. a first sleeve having at one end a tightening member, said first sleeve surrounding said core and being rotatable and axially displaceable relatively thereto;
c. a second sleeve surrouding said first sleeve and being rotatable and axially displaceable thereto; and
d. coupling means which are axially displaceable together with said first sleeve, said coupling means being so arranged that
i. in a first end position of said first sleeve in which said drill protrudes through and beyond said tightening members, and in a first end position of said second sleeve to connect said two sleeves for mutual axial displacement;



ii. upon such mutual axial displacement of said two sleeves into a second end position of said first sleeve in which said drill is completely retracted inside of said tightening member to release said connection between said two sleeves and to engage said core for unrotatable as well as axially undisplaceable connection of said first sleeve to said core; and
iii. upon continued axial displacement of said second sleeve relatively to said first sleeve into a second end position of said second sleeve to lock said coupling means in said engagement.

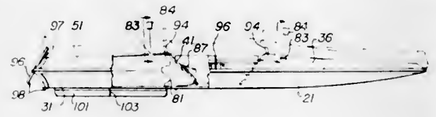
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**3,932,905**
**METHOD OF DYEING A TEXTILE WEB**
**Heinz Houben, Monchengladbach, Germany, assignor to A. Monforts, Monchengladbach, Germany**
**Filed Aug. 19, 1974, Ser. No. 498,532**
**Claims priority, application Germany, Aug. 21, 1973, 2342128**
**Int. Cl.² D06B *21/00***
**U.S. Cl. 8—149.1** **5 Claims**



1. Method of dyeing a textile web having a relatively large volume or relief-like construction which comprises immersing the web in a dye solution having a dye concentration corresponding to the quantity of liquid to be squeezed from the web in a subsequent dewatering step, passing the web between two absorbed endless entrainer membrs of a squeeze foulard that are continuously saturated with the dye solution prior to engagement of the endless entrainer members with the web. and squeezing the web in the foulard so as to dewater it to less than substantially 40% moisture with respect to dry weight of the web, then passing the web through an infra-red channel at an adjusted relatively low drying velocity so as to prevent the formation of cloudiness in the dye distribution and drying the web to a final moisture content of at most 5% with respect to dry weight of the web.

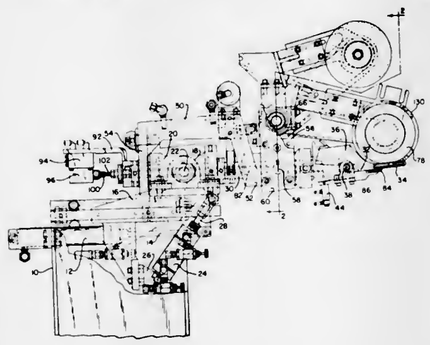
**3,932,906**
**COLLAPSIBLE BOAT**
**Walter E. Johnson, 21 Colorados Drive, Millbrae, Calif. 94030**
**Filed May 10, 1974, Ser. No. 468,975**
**Int. Cl.² B63B *7/06***
**U.S. Cl. 9—2 C** **8 Claims**



1. A collapsible boat comprising a flexible top having front and rear top panels, a flexible bottom having front and rear bottom panels, first transverse hinge means hinging together and permanently securing against detachment said front and rear top panels, second transverse hinge means hinging together and permanently securing against detachment said front and rear bottom panels, whereby when said boat is collapsed it may be folded in half at said transverse hinge means, said top and bottom comprising a prow, a stern and sides, seal means sealing the peripheral edges of said top and bottom panels together, said top cut away for a cockpit opening and having longitudinal edges, and gunwale panels hinged to said longitudinal edges about third hinge means extending longitudinally of said boat, said gunwale panels being depressible to approximately upright position, the height of said gunwale panels relative to said third hinge means causing said top and bottom to be forced apart from each other, said top and bottom thereby flexing so that said top and bottom are outwardly convex and having an axis of curvature extending longitudinally of said boat.

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**3,932,907**
**ROUGHING MACHINE**
**Walter Vornberger, Tewksbury, Mass., assignor to International Shoe Machine Corporation, Nashua, N.H.**
**Filed Feb. 3, 1975, Ser. No. 546,223**
**Int. Cl.² A43D *95/00***
**U.S. Cl. 12—1 R** **2 Claims**

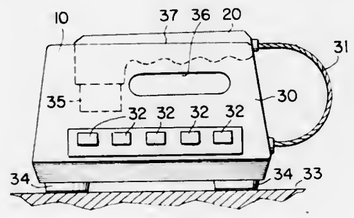


1. A machine for roughing the margin of an upper of a shoe assembly, said shoe assembly comprising a last having an insole located on its bottom and the upper mounted thereon with the upper margin lying against and being secured to the periphery of the insole, comprising: a shoe assembly support for supporting the shoe assembly bottom-up; a slide mounted for forward-rearward movement toward and away from the shoe assembly; a first motor connected to the slide for effecting said forward-rearward movement; a tool mount mounted to the slide for heightwise movement; a second yieldable motor connected to the tool mount for effecting said heightwise movement; a tine mounted to the tool mount; a sensing member mounted to the tool mount below the tine; actuable operating means so connecting the sensing member and the first motor as to cause the first motor to move the slide from a rearward idle position wherein the sensing member is spaced from the shoe assembly forwardly until the sensing member engages a particular portion of the side of the shoe assembly and to enable the first motor to retain the sensing member in engagement with successive portions of the side of the shoe assembly with a consequent forward or rearward movement of the tool mount as the successive portions of the side of the shoe assembly move past the sensing member; means for initially deactuating the operating means so that the first motor retains the slide in said idle position; means for initially causing the second motor to retain the tool mount in an upper position spaced above the shoe assembly; means for causing the second motor to yieldably lower the tool mount so as to bring the tine into engagement with the bottom of the shoe assembly; triggering means responsive to the engagement of the tine with the bottom of the shoe assembly to actuate said operating means; means operative to thereafter so move the shoe assembly support as to move successive portions of the shoe assembly past the tool mount thereby moving successive portions of the side of the shoe assembly past the sensing member and thereby moving successive portions of the bottom of the shoe assembly past the tine; and a roughing tool so mounted to the tool mount as to be in engagement with successive portions of the upper margin as said successive portions of the shoe assembly move past the tool mount.



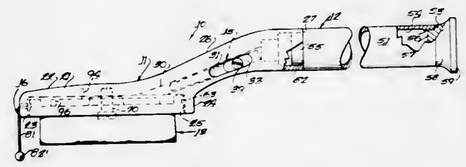
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**3,932,908**
**PORTABLE SCRUBBING DEVICE**
**Andrew J. Bitgood, and Roger T. Bellavance, both of Moosup, Conn., assignors to The Raymond Lee Organization, Inc., New York, N.Y., a part interest**
**Filed Mar. 20, 1974, Ser. No. 452,965**
**Int. Cl.² A46B *13/02***
**U.S. Cl. 15—28** **1 Claim**



1. A compact portable scrubbing or stirring device comprising a housing member, a handle member and a detachable rotary tool,
said housing member incorporating a motor and gear unit linked to a flexible drive shaft which leads from the housing member into the handle member,
said handle member fitted with an output shaft rotatably mounted to said handle member, said output shaft linked inside the handle member to said flexible drive shaft, with said output shaft shaped, externally of the handle member, to engage a socket in said detachable rotary tool, in which a surface of the housing is formed with a recess of a shape to fit the handle member and an attached detachable rotary tool, with the bottom of said recess linked by a drain hole through the housing to the exterior of the housing, so as to drain excess water from the recess.

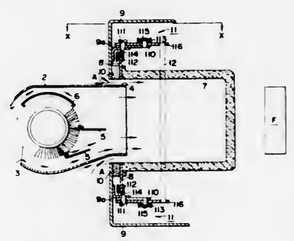
**3,932,909**
**PERSONAL SELF-POWERED SCRUB BRUSH**
**George Beldon Johnson, and Virginia M. Johnson, both of 218 N. 7th St., Avondale, Ariz. 85323**
**Filed Oct. 25, 1974, Ser. No. 517,954**
**Int. Cl.² A46B *13/06***
**U.S. Cl. 15—29** **7 Claims**



1. A personal self-powered scrub brush intended for use by individuals for scrubbing and cleansing of their bodies, the scrub brush comprising, in combination:
a head member;
a handle member;
a liquid soap containing compartment defined in said handle member;
means interconnecting said handle member to said head member for dispensing liquid soap from said soap containing compartment into said head member;
a valve interposed between said handle member and said head member for controlling the flow of said liquid soap therebetween;
a circular brush rotatively affixed to said head member and projecting outwardly therefrom and adapted to receive soap from said head member;
spring means disposed intermediate said brush and said head member and having one end connected to said brush and the opposite end connected to said head member for effecting winding of the spring by rotation of said brush in a first direction, with said wound spring effecting rotation of said brush in the opposite direction during unwinding of said spring; and
a flexible cord wrapped about said brush and extending outwardly of said head member and adapted for use in the rotation of said brush in a direction to wind said spring means with said cord being automatically rewound about said brush as said spring means unwinds and rotatively drives said brush.

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**3,932,910**
**TONER CLEANING APPARATUS IN ELECTROPHOTOGRAPHIC COPYING MACHINE**
**Kazuho Shimoda, Hachioji, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan**
**Filed Sept. 10, 1974, Ser. No. 504,713**
**Claims priority, application Japan, Sept. 10, 1973, 48-101222**
**Int. Cl.² G03G *15/00***
**U.S. Cl. 15—301** **2 Claims**



1. An improved cleaning apparatus for an electrophotographic copying device which comprises (a) a cleaning brush,

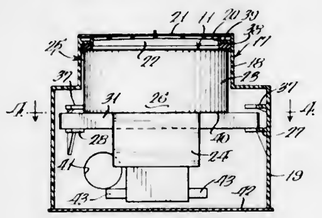
(b) a casing for said brush having a front end portion which forms a first opening and a rear end portion which forms a second opening adapted to pass a toner therethrough, said brush within said casing and positioned adjacent said first opening so as to be adapted to contact a work surface, (c) a filter bag having a rim which forms an opening adapted to pass toner therethrough and which substantially overlaps said rear end portion, said filter bag opening being substantially larger than said second opening whereby a gap is formed between said rear end portion and said rim, and (d) means for producing suction through said casing into and through said filter bag to carry toner-containing air.

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**3,932,911**
**STRUCTURE FOR MOUNTING AIR MOVING MEANS IN A VACUUM CLEANER**

**Stanley R. Crooks, Shakopee, and Warren H. Fish, White Bear Lake, both of Minn., assignors to Whirlpool Corporation, Benton Harbor, Mich.**

**Filed Jan. 16, 1974, Ser. No. 433,917**
**Int. Cl.² A47L** *9/22*
**U.S. Cl. 15—327 D** **17 Claims**



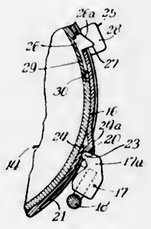
**10.** Structure for mounting a suction means including an air moving means and an electric drive motor in a vacuum cleaner comprising: housing means including an integral portion defining an air flow passage having an inlet and outlet and flange means adjacent said inlet; means defining a plurality of retaining shoulders integral with said air flow passage means; bracket means resting on said mounting shoulders and retaining said suction means in said air flow passage for drawing air through said inlet and discharging it through said outlet; and resilient means interposed between said flange and said suction means biasing said suction means downwardly against said bracket means for retaining said bracket means against said mounting shoulders.

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**3,932,912**
**VACUUM CLEANER**

**Robert E. Johnson, St. Paul, Minn., assignor to Whirlpool Corporation, Benton Harbor, Mich.**

**Filed Feb. 15, 1974, Ser. No. 442,799**
**Int. Cl.² A47L** *9/32*
**U.S. Cl. 15—410** **11 Claims**



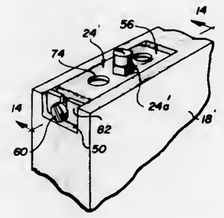
**1.** A vacuum cleaner comprising: a cleaning unit movable over a floor for cleaning thereof; a handle structure for moving said cleaning unit including a handle and means swingably mounted to said cleaning unit for movement of said handle between an upper operating position and a lower operating position; and cooperating means on said cleaning unit and handle structure for selectively retaining the handle in an intermediate position intermediate said upper and lower operating positions including first stop shoulder means defining a first stop shoulder on said cleaning unit, and second stop shoulder means defining a second stop shoulder on said handle structure, and manually operable means for selectively fixedly positioning said second stop shoulder on said handle in a retaining position or in a retracted position, said first stop shoulder being disposed in the path of movement of said second stop shoulder when said second stop shoulder is selectively disposed in the retaining position while permitting a preselected limited movement of said handle relative to said cleaning unit in said upper operating position, said first stop shoulder being disposed out of the path of movement of said second stop shoulder when said second stop shoulder is selectively disposed in the retracted position to permit said handle to be brought to said lower operating position.

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**3,932,913**
**PIVOT ASSEMBLY**

**Larry K. Johnson, Morrison, Ill., assignor to Lawrence Brothers Inc., Sterling, Ill.**

**Division of Ser. No. 449,321, March 11, 1974, which is a continuation-in-part of Ser. No. 352,878, April 20, 1973, abandoned. This application Jan. 9, 1975, Ser. No. 539,789**
**Int. Cl.² E05D** *7/04*
**U.S. Cl. 16—130** **5 Claims**



**1.** An adjustable pintle arrangement for a door pivot assembly of the general type wherein a pintle device is carried by a door member and pintle accommodating means is mounted to the door frame, said adjustable pintle arrangement comprising, a base member mountable to the door member in a relatively fixed position, a slide member carried by said base member for longitudinal movement relative thereto, drive means mechanically inter-connecting said slide member and base member for producing controlled longitudinal movement of said slide member relative to said base member, and a pintle device carried by said slide member and projecting therefrom, such that operation of said drive mechanism will produce relative longitudinal movement of said pintle device with respect to said base member, said slide member including an aperture formed therein, said pintle device being disposed in said aperture, and spring means biasing the said pintle device outwardly of said slide member so as to project from the upper surface thereof.

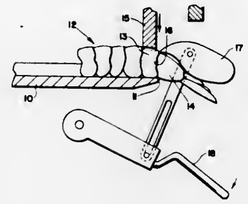
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**3,932,914**
**CONDYLE HINGE BREAKING DEVICE**

**Fernand S. Lapeyre, New Orleans, La., assignor to The Laitram Corporation, New Orleans, La.**

**Filed May 28, 1974, Ser. No. 473,939**
**Int. Cl.² A22C** *29/00*
**U.S. Cl. 17—71** **4 Claims**

**1.** A condyle hinge breaking device comprising a shrimp support upon which a shrimp is fed axially along its major axis positioned ventral side down with the joint between the 5th and 6th shell segments immediately above the terminus of the support, axial position holding means above the fifth shell segment and engagable therewith to prevent motion of the shrimp along its longitudinal axis, and pressure means positioned relative to the sixth shell segment to move the sixth shell segment in the dorsal to ventral direction and further wrap the sixth segment under the support terminus to insure breaking of the 5–6 condyle joint.

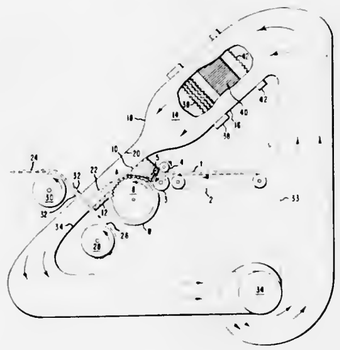


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**3,932,915**
**AIR-LAYDOWN APPARATUS FOR FORMING UNIFORM WEBS OF STAPLE FIBERS**

**Rashmikant M. Contractor, Wilmington, and Sang-Hak Hwang, Newark, both of Del., assignors to E. I. Du Pont de Nemours & Company, Wilmington, Del.**

**Filed Aug. 9, 1974, Ser. No. 497,046**
**Int. Cl.² D01G** *25/00*
**U.S. Cl. 19—156.3** **3 Claims**



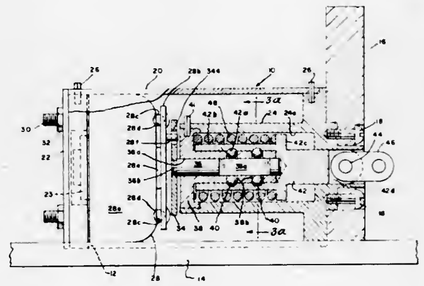
**1.** In an air-laydown apparatus for forming a web of staple fibers which comprises duct means for conveying fibers in a stream of air, a rotating toothed disperser roll and coacting stationary disperser plate for projecting fibers through an opening in the duct means to form a stream of fibers in the stream of air, condenser means for separating the fibers from the air to form a web, and air supply means which includes a highly uniform air passage with a larger cross-sectional area than said duct means connected directly to the duct means by a converging section in the form of a smooth, gradual curve, in combination with screens and a honeycomb structure located in the larger air passage to provide a uniform flow substantially free of turbulence and vorticity; the improvement for high speed production of highly uniform webs which comprises grooves in the stationary disperser plate extending across the plate in a direction transverse to the rotational direction of the roll for generating a high intensity of air turbulence between the disperser roll and plate, the percent turbulence being at least 25 when the roll is rotating at a surface speed of about 315 feet per second.



**3,932,916**
**CAPTIVE ELEMENT RELEASE MECHANISM**

**Curtis K. Baker, 25 Tally Ho Drive, Warminster, Pa. 18974**

**Filed Nov. 4, 1974, Ser. No. 520,315**
**Int. Cl.² G05G** *5/06*; **A44B** *17/00*
**U.S. Cl. 24—211 N** **4 Claims**



**1.** An apparatus comprising:
a barrel member having a shank, an axial bore through the shank and a plurality of radial apertures communicating with said axial bore;
a locking member mounted in each of said plurality of apertures for radial movement between a retracted position within said shank and a locking position extending radially from said shank;
a control blade rotatably mounted in the axial bore and having a control surface for cam action against said locking members to urge the locking members from said retracted position to said locking position, said control blade comprising two substantially rectangular parallel surfaces joined at the extremities thereof by two arcuate surfaces wherein each of said arcuate surfaces has a first portion intermediate its ends having a radius equal to the radius of the control shaft and second and third portions each extending from said first portion to a respective one of said two parallel surfaces along an arc having a radius less than the control shaft radius; and
means operatively connected to said control blade for rotating said control blade.

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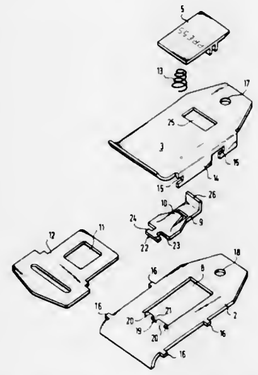
**3,932,917**
**BUCKLE ASSEMBLY FOR MOTOR VEHICLE SAFETY BELTS**

**Jochen Dobelmann, Schwäbisch-Gmünd-Lindach, Germany, assignor to REPA GmbH Feinstanzwerk, Schwabisch-Gmund-Lindach, Germany**

**Filed Dec. 30, 1974, Ser. No. 537,387**
**Claims priority, application Germany, Dec. 31, 1973, 2365250**
**Int. Cl.² A44B** *11/26*
**U.S. Cl. 24—230 A** **3 Claims**

**1.** Buckle assembly for motor vehicle safety belts comprising a buckle member and an insert tongue secured to a belt, said insert tongue being insertable in a given insertion direction into said buckle member so as to be secured in a locking position therein, said buckle member including a base plate, a latch member pivotally mounted on said base plate transversely to said given insertion direction, a spring-biased key depressible so as to pivot said latch member about said insert tongue in said locking position, said latch member being formed with a latch nose which, in said locking position of said insert tongue, engages in a recess formed in said insert tongue, said base plate being formed with a recess in a substantially central region thereof that is longer and wider than said latch member, said recess in said base plate being partly defined by a forward edge formed with ears having an open gap therebetween and bent at an angle initially outwardly and, in a free marginal region thereof, in said given insertion direction of

said insert tongue, said latch member being formed with a hammerhead-like projection having a neck portion extending



through said gap between said ears and, with said hammerhead portion thereof, engaging said ears from behind at the outside of said base plate.

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**3,932,918**

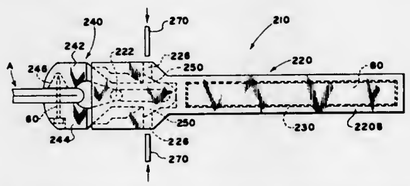
**RELEASABLY ATTACHABLE CLIP**

**Joseph H. Paskert, Lakewood, Ohio, assignor to Eaton Corporation, Ohio**

**Division of Ser. No. 365,943, June 1, 1973. This application Aug. 15, 1974, Ser. No. 497,589**

**Int. Cl.² A44B *21/00***

**U.S. Cl. 24—260** **2 Claims**



**1.** A clip for releasable attachment to an article to be monitored, said clip comprising:

a body for encapsulating receipt of a monitor activating device; and

a normally V-shaped attachment member mounted in said body, said attachment member having a first position in which the free ends of the legs of said V-shaped member are separated for release of said article and a second position wherein the free ends of the legs of the V-shaped member are urged towards one another for releasable attachment to said article, said V-shaped attachment member including a pin extending from the free end of one of the legs and a pin receiving cavity in the free end of the other leg, said pin receiving cavity receiving said pin when said V-shaped member is in said second position;

said body defining a cavity opening to the exterior of said body in which said V-shaped attachment member is mounted, said V-shaped attachment member in said first position retained in said body by means of a shaft engaging the base of said V-shaped member, the walls of said cavity defining generally inwardly tapering surfaces which will cammingly engage the normally resiliently separated legs of the V-shaped attachment member to urge said legs together as said V-shaped attachment member is urged into said cavity to assume its said second position, said V-shaped attachment member and said body defining a plurality of mating resilient locking members and resilient locking member catches which will releasably engage when said V-shaped attachment member is in said second position to lock said V-shaped attachment member in said second position, said V-shaped attachment member releasable from said second position only upon simultaneous mechanical contact on all of said locking members, said locking members located interiorly of said body and accessible from the exterior of said clip only via a series of passageways, one for each locking member, formed in the body of said clip, at least two of said passageways opening to opposite exterior surfaces of said body.

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**3,932,919**

**GRIPPER RETURN MEANS FOR A MACHINE FOR SIMULTANEOUSLY BIAXIALLY STRETCHING THERMOPLASTIC FILM**

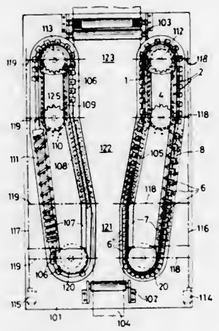
**Armin S. P. Hutzenlaub, Wiehl, Germany, assignor to Erwin Kampf Maschinenfabrik, Wiehl, Germany**

**Continuation-in-part of Ser. No. 200,499, Nov. 19, 1971, abandoned. This application Dec. 7, 1973, Ser. No. 422,797**

**Claims priority, application Germany, Nov. 26, 1970, 2058262**

**Int. Cl.² D06C *3/00***

**U.S. Cl. 26—57 R** **8 Claims**



**1.** An improved gripper return means for a machine for treating and simultaneously biaxially stretching thermoplastic web material under varying thermal conditions, said machine including: guide rails extending along closed loop paths on each side of the machine, multiple web grippers slidably secured to the guide rails for engaging opposite side portions of web material to be treated in the machine, transport means for the grippers on each side of the machine, the transport means each comprising, in sequence about the guide rail paths, gripper infeeding means for infeeding grippers on the guide rails to the working stretch of the machine at a first velocity, a gripper advancing drive means for progressively increasing the speed of the grippers along the guide rails to a second velocity and thereby extending the spacing between the grippers along the guide rails, a gripper return feeding means for advancing grippers received from said gripper advancing drive means in a reverse direction at said second velocity, and a gripper return means for receiving grippers from said gripper return feeding means at said second velocity and advancing the grippers to a gripper storage area along said guide rails at a progressively decreasing velocity, whereby the grippers may be supplied to the gripper infeeding means at said first velocity; said improved gripper return means each comprising a variable length screw comprising an elongated shaft extending along a portion of said guide rail and being driven synchronously with said gripper return feeding means; said shaft having a sleeve having a helical gripper advancing cam on its periphery, said sleeve being slidably mounted adjacent one



end of said shaft but fixed for rotation therewith adjacent a gripper storage area, the gripper storage area being defined as an area between said sleeve and said gripper infeeding means along a portion of said guide rail, said helical gripper cam having a progressively decreasing lead for progressively slowing the advancing speed of each gripper element advanced along said sleeve before said grippers are advanced to said storage area; said shaft furthermore having a resilient helical guide means in the form of a coil spring concentrically mounted thereon on the side of said sleeve towards said gripper return feeding means; means for securing one end of said helical guide means to said sleeve, and means for fixedly securing the opposite other end of said helical guide means with respect to said shaft adjacent said gripper return feeding means, said sleeve being thereby resiliently retained in an axial sense along said shaft by said resilient helical guide means while being fixedly secured with respect to said shaft in a rotational sense; a driving protrusion on each of said grippers for enabling the advancement thereof by said transport means; said resilient helical guide having a helical cam surface of uniform pitch for engaging said gripper protrusion and advancing each gripper from said gripper return feeding means to said sleeve when said shaft is rotated; said sleeve and said resilient helical guide being joined together so as to permit advancement of said protrusion of each gripper continuously along said shaft without interruption when said shaft is rotating; said sleeve slowing down the velocity of each gripper advanced thereby to said storage space and being resiliently urged against the last-advanced gripper in said storage space in an axial direction along said shaft by said resilient helical guide means when a predetermined number of grippers are in said storage area in abutting relationship along said guide rail to thereby ensure reliable seizure of grippers in said storage area by said gripper infeeding means and to compensate for thermally induced variations of said gripper transport means along the length of each of said guide rails.

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**3,932,920**

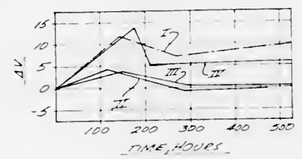
**METHOD OF MANUFACTURING A MULTIPLE GASEOUS DISCHARGE DISPLAY/MEMORY PANEL HAVING IMPROVED VOLTAGE CHARACTERISTICS**

**Roger E. Ernsthausen, Lucky, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio**

**Division of Ser. No. 293,817, Oct. 2, 1972, which is a continuation-in-part of Ser. No. 60,376, Aug. 3, 1970, abandoned. This application Aug. 6, 1973, Ser. No. 385,741**

**Int. Cl.² H01J *9/00*; B44D *1/02***

**U.S. Cl. 29—25.11** **2 Claims**




**1.** In the manufacture of a multiple gas discharge display/memory device comprising an ionizable gaseous medium in a gas chamber formed by a pair of opposed dielectric material members, each backed by an array of electrode members, each said dielectric material and array of electrode members being backed by a glass substrate, the electrode members behind each dielectric material member being transversely oriented with respect to the electrode members behind the opposing dielectric material so as to define a plurality of discharge units, the surfaces of said dielectric material members serving to store charges during each half-cycle of operation, the improvement comprising selectively enriching an uncured dielectric material with about 0.5 to about 8 weight percent, based on the total weight of the dielectric material, of at least one element in the oxide state and selected from the group consisting of lithium, sodium, potassium, rubidium, cessium, francium, beryllium, magnesium, calcium, strontium and barium to provide gas discharge device operating voltages which are substantially uniform and which do not significantly change with time after a period of aging, applying said selectively enriched dielectric material to at least one of said glass substrates supporting an array of electrodes, and heat curing said selectively enriched dielectric material to form said dielectric material member.

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**3,932,921**

**CONTROLLED DEFLECTION ROLL**

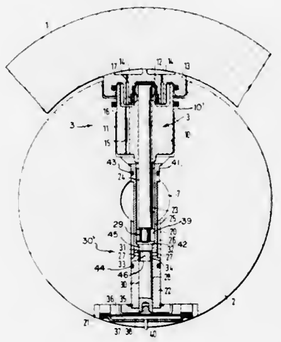
**Mario Biondetti, Schio, Italy, assignor to Escher-Wyss Limited, Zurich, Switzerland**

**Filed Feb. 10, 1975, Ser. No. 548,419**

**Claims priority, application Switzerland, Feb. 12, 1974, 1921/74**

**Int. Cl.² B21B *13/02***

**U.S. Cl. 29—116 AD** **7 Claims**



**1.** A roll comprising a beam, a hollow roll shell surrounding the beam, a plurality of fluid-actuated shell supporting elements arranged on the beam, said beam having arranged thereon a pressure fluid duct and a separate duct connecting from each of said elements to said pressure fluid duct, said roll further comprising adjustable remotely controllable flow control means in at least one of said separate ducts.

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**3,932,922**

**PIPE SYSTEMS FOR HOT MEDIA**

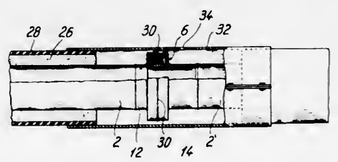
**Ove Thastrup, Fredericia, Denmark, assignor to A/S E. Rasmussen, Denmark**

**Filed Apr. 22, 1974, Ser. No. 463,184**

**Claims priority, application United Kingdom, Apr. 26, 1973, 19907/73**

**Int. Cl.² B23P *11/00*; B21D *39/04*; F16L *1/02***

**U.S. Cl. 29—405** **8 Claims**



**1.** A method of laying pipe systems for conducting a hot

fluid, such as subterranean heating pipe systems, the method comprising the steps of:

disposing a plurality of fluid conducting lengths of pipe in axial alignment, with the ends of adjacent pipe lengths being spaced at a predetermined distance;

providing axially compressible fluid conductor elements between said adjacent pipe length ends which interconnect said lengths of pipe to form a fluid-tight connection therebetween;

axially expanding said lengths of pipe by conducting a hot fluid, at a temperature below the expected maximum operational temperature of the pipe system, through the assembled fluid conducting lengths of pipe and fluid conductor elements until the ends of adjacent pipe lengths are brought into engagement thereby compressing the axially compressible fluid conductor elements; and

securing the lengths of pipe by rigidly joining the engaged ends thereof in a sealed manner.

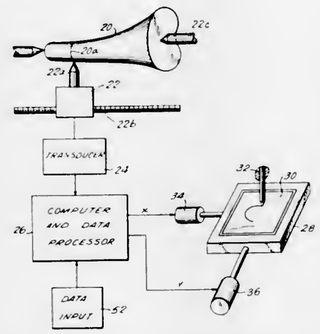
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**3,932,923**

## METHOD OF GENERATING AND CONSTRUCTING THREE-DIMENSIONAL BODIES

**Paul L. DiMatteo, Huntington, N.Y., assignor to Dynell Electronics Corporation, Melville, N.Y.**

**Filed Oct. 21, 1974, Ser. No. 516,373**
**Int. Cl.² B23Q** *17/00*
**U.S. Cl. 29—407** **8 Claims**




1. A method for constructing a predetermined surface comprising the steps of: defining the surface to be constructed; measuring a plurality of cross-sections of said defined surface; generating a substantially planar element for each cross-section measured, each said element having a cross-section corresponding to the respective measured cross-section of said defined surface; and stacking the generated elements adjacent one another in predetermined sequence to form said surface, the sequence of the stacked generated elements corresponding to the sequence of said plurality of cross-sections of said defined surface.

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**3,932,924**

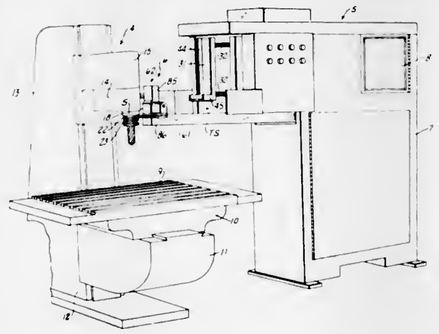
## METHOD OF CHANGING TOOLS

**William T. Anderson, Arlington Heights, Ill., assignor to Doall Company, Des Plaines, Ill.**

**Division of Ser. No. 163,268, July 16, 1971, Pat. No. 3,811,179. This application Feb. 12, 1974, Ser. No. 441,857**
**Int. Cl.² B23Q** *3/157*
**U.S. Cl. 29—426** **3 Claims**

1. A method of transferring tools between a spindle of a machine tool and a tool storage magazine in which the tools are carried inverted with respect to their disposition in the spindle, by means of a pair of movable transfer arms each having tool gripping means thereon which method is characterized by

1. while the spindle is rotating and a tool held thereby is performing a machining operation on a workpiece, moving said transfer arms towards the tool storage magazine as required to bring the tool gripping means on one of said arms into position to grasp the tool which is to perform the next machining operation on the workpiece;
2. actuating the gripping means on that transfer arm to cause it to grasp said tool and hold it in inverted disposition;
3. moving said transfer arms along a linear path with respect to both the tool storage magazine and the spindle to carry said tool while still inverted towards the spindle and then hold it at a tool-ready position from which said tool can be substituted for the one performing a machining operation as soon as that operation is completed, the spindle stops and the tool therein is removed;



4. moving the transfer arms to bring the other of said arms into juxtaposition to the spindle with its tool-gripping means closely adjacent to the tool held by the spindle;
5. as soon as the spindle stops, grasping the tool held by the spindle with the tool gripping means of said other transfer arm;
6. swinging said other transfer arm about an axis spaced from and lying in a plane normal to the axis of the spindle to thereby remove the tool in the grasp of its tool-gripping means from the spindle;
7. moving the transfer arms to bring the first identified transfer arm into juxtaposition to the spindle; and
8. swinging said first identified transfer arm about an axis spaced from and lying in a plane normal to the axis of the spindle to rotate the tool carried thereby end-over-end from its inverted disposition and bring said tool to the spindle.

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**3,932,925**

## METHOD OF MAKING CHEMICAL TOILET CABANA

**George W. Harding, Warren, Mich., assignor to Poly-San Corporation, Sarasota, Fla.**

**Division of Ser. No. 378,316, July 11, 1973, Pat. No. 3,835,480. This application July 31, 1974, Ser. No. 493,256**
**Int. Cl.² B21D** *39/03;* **B23P** *11/00*
**U.S. Cl. 29—428** **5 Claims**

1. A method of making a portable enclosure comprising the steps of:

forming at least two identical shell sections, each having a dome-like roof, a side wall terminating in a bell-like enlarged lower end, and a base flange extending outwardly from the lower end of said side wall;

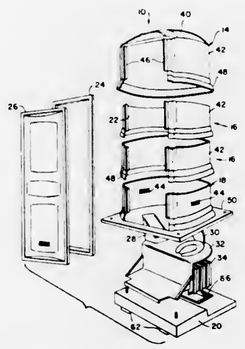
removing the base flange from a first section to form a shell top;

removing the dome-like roof from a second section to form a shell bottom; and

stacking said first section on said second section with the wall of said second section fitting within the enlarged



lower end of said first section, and with the walls of said first and second sections being substantially in vertical alignment,



whereby said enlarged lower end serves as a louver to restrict moisture from entering said shell bottom.

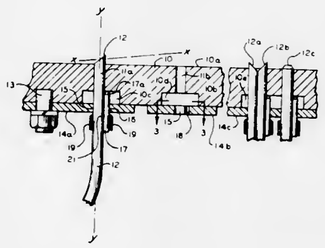
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**3,932,926**

## METHOD OF MAKING OPTICAL FIBER MOUNTING ARRANGEMENT

**Martin Dotsko, Binghamton, N.Y., assignor to The Singer Company, New York, N.Y.**

**Division of Ser. No. 397,148, Sept. 13, 1973. This application Feb. 3, 1975, Ser. No. 546,745**
**Int. Cl.² B23P** *11/02*
**U.S. Cl. 29—447** **9 Claims**



1. A method of mounting an optical fiber in an aperture of a base member so that an end of said fiber has a precise angular orientation and protrudes a predetermined distance beyond one surface of said base member, comprising the steps of:

affixing a keying element to said optical fiber at a predetermined distance from and angular orientation relative to said fiber end to form a fiber-keying element assembly;

attaching a keying plate to a surface of said base member opposite said one surface, said keying plate having an opening which permits passage therethrough of said fiber-keying element assembly but restricts the rotational movement of said assembly about the fiber axis, a portion of the opening in the attached plate registering with the aperture in said base member; and

inserting said fiber-keying element assembly through the opening in said keying plate so that said fiber extends through the aperture in said base member and said keying element abutts against said base member, whereby the end of said fiber is positioned with a precise angular orientation and protrusion relative to said one surface of said base member.

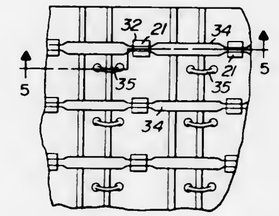
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**3,932,927**

## SCANNABLE LIGHT EMITTING DIODE ARRAY AND METHOD

**Lawrence A. Grenon, Phoenix, and Michael G. Coleman, Tempe, both of Ariz., assignors to Motorola, Inc., Chicago, Ill.**

**Division of Ser. No. 337,818, March 5, 1973. This application Mar. 29, 1974, Ser. No. 456,117**
**Int. Cl.² B01J** *17/00*
**U.S. Cl. 29—577** **2 Claims**




1. A method of manufacturing a monolithic light emitting diode display comprising:

depositing an epitaxial layer of a first conductivity semiconductor material upon the substrate;

etching channels through said epitaxial layer to the substrate to form a plurality of parallel ridges;

coating the surface of the channels and the ridges with a dielectric material;

filling said channels with a conductive material;

electrically connecting said conductive material to at least one portion of said ridge to form an electrical connection to one side of said PN junction;

removing said conductive material and said dielectric from the surface of the ridges; and

diffusing an opposite conductivity affecting material into a plurality of spaced locations in each of said ridges to form an othagonal matrix of PN junctions in the surface of the epitaxial layer.

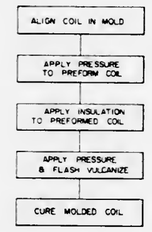
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**3,932,928**

## METHOD OF INSULATING STATOR COILS

**George E. S. King, Trinidad, British W. Indies, assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed Jan. 2, 1974, Ser. No. 430,369**
**Int. Cl.² H02K** *15/04*
**U.S. Cl. 29—596** **2 Claims**




1. A method of insulating stator motor coils in a mold, comprising the steps of:

centering the stator motor coils in a cavity of the mold;

placing lead spacers along the length of the stator motor coils and the lead wires thereof;

applying high pressure to the mold for preforming the stator motor coils;

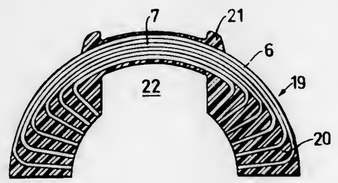
skip-lapping a fiberglass tape around the preformed stator motor coils;
butt-lapping a silicone rubber tape over the skip-lapped fiberglass tape around the preformed stator motor coils;
placing the mold containing the silicone butt-lapped stator motor coils in a preheated platten of a hydraulic press;
applying pressure to the mold while placed on the preheated platten of the hydraulic press;
releasing the pressure applied to the mold;
removing the mold from the preheated platten of the hydraulic press; and curing the molded stator motor coils in a oven.

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**3,932,929**
## METHOD OF MAKING A SECTIONED STATOR FOR A DYNAMOELECTRIC MACHINE

**Stig Lennart Hallerback, Vastra Frolunda, and Leif Lachonius, Surte, both of Sweden, assignors to SKF Industrial Trading and Development Company, B.V., Jutphaas, Netherlands**

**Filed Sept. 9, 1974, Ser. No. 504,460**
**Claims priority, application Sweden, Sept. 28, 1973, 7313243**
**Int. Cl.² H02K** *15/02*
**U.S. Cl. 29—596** **11 Claims**



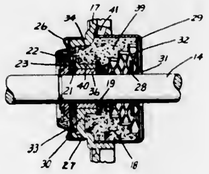

**1.** A method of manufacturing rotating electric machines comprising a stator and a rotor, said stator consisting of at least two sections, each section having magnetic flux providing means embedded in a plastic mass, said mass having a predetermined shape corresponding to a portion of the complete, assembled stator, consisting of the steps of forming said stator sections by permanently embedding in a plastic mass at least the means providing the magnetic flux and shaping said plastic mass to said predetermined shape, positioning the stator sections such that they circumscribe the rotor and thereafter securing the stator sections in a fixed position relative to one another.

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**3,932,930**
## METHOD OF MAKING DYNAMOELECTRIC MACHINES AND ASSEMBLIES THEREFOR

**Richard W. Dochterman, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.**

**Division of Ser. No. 332,265, Feb. 14, 1973, Pat. No. 3,891,878. This application Dec. 16, 1974, Ser. No. 532,868**
**Int. Cl.² H02K** *15/14*
**U.S. Cl. 29—596** **5 Claims**



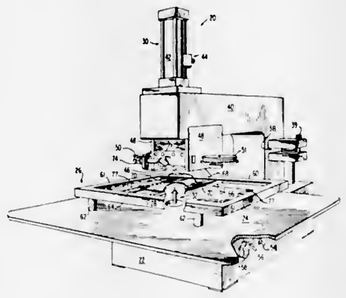

**1.** A method of manufacturing an end frame assembly for a dynamoelectric machine having a lubricant reservoir and an extrudable lubricant retaining mass therein, the method comprising assembling together an end frame and a foraminous walled retainer, and thereby establishing a predetermined locale for a lubricant retaining mass on a first side of the formainous walled retainer and an oil slinger cavity on the other side of the foraminous walled retainer; extruding an extrudable lubricant retaining mass through at least two extrusion apertures in the end frame into the predetermined locale determined at least in part by the end frame and at least in part by the foraminous wall of the retainer; and restricting the flow of the extrudable lubricant retaining mass beyond the foraminous wall of the retainer while performing the extruding step.

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**3,932,931**
## POST TERMINAL INSERTION METHOD AND APPARATUS

**Robert Charles Wright, Huntingdon Valley, Pa., assignor to Elco Corporation, Willow Grove, Pa.**

**Division of Ser. No. 368,448, June 8, 1973, Pat. No. 3,837,063. This application June 12, 1974, Ser. No. 478,692**
**Int. Cl.² H05K** *13/02, 13/04*
**U.S. Cl. 29—626** **18 Claims**



**1.** Apparatus for advancing a terminal carrier strip along a guided path of travel, the apparatus comprising:
feed means operable to apply tension to the strip urging the strip in an advancing direction of travel; and
escapement means for controlling advancement of the carrier strip along the path of travel, said escapement means including:
first and second escapement finger means alternately engageable with the strip; and
each of said first and second finger means being arranged, when in engagement with said strip, to resist said tension and prevent advancement of said strip by said feed means; and
escapement finger control means establishing alternate engagement of said first and second escapement finger means with the strip, to provide incremental advancement of the strip by said feed means during a period when both of said finger means are disposed out of engagement with said strip.

**7.** Apparatus for insertion of terminals into a substrate, the apparatus comprising:
movable ram arm means engageable with terminals for insertion thereof into the substrate;
said ram arm means including a nose section comprised of an integral body section having coupled thereto a removable resilient insert for defining a terminal receiving aperture opening therebetween, for resiliently gripping a received terminal;
said body section including an aperture;
said insert including a tab extending generally transversely relative to the direction of ram movement and into said aperture;



securing means engaging said insert at a location remote from said tab to hold said insert in place;
said tab defining a shoulder limiting the depth of reception of the terminal in said terminal receiving opening; and
said nose section further including apertures cooperable with selected inserts for varying the location of said shoulder.

**13.** In a method of ram insertng of terminals supported by a strip into a substrate, the improvement comprising:
providing a zone for location of the substrate for terminal reception,
inserting a substrate into said zone such that an aperture of said substrate is disposed in the vicinity of a movable sensing finger that is operably connected to a power control mechanism for the ram; and
employing said finger to condition activation of the ram by:
disabling ram activation in response to sensing of improper substrate location.
maneuvering said substrate and said finger relative to one another from
an improperly disposed orientation wherein said aperture and pin are unaligned causing depression of said finger to disable ram activation, to
a proper orientation wherein said aperture and pin are aligned, permitting extension of said finger into said aperture to allow ram activation.

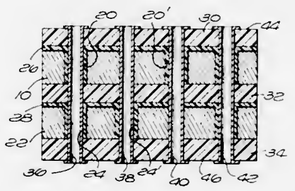
**14.** A method of establishing a path of travel for a terminal carrier strip, said strip being comprised of a flexible elongate member of generally U-shaped cross section defined by a base and contiguous spaced legs having support portions deflectable by ram means operable to remove terminals from the strip and directly insert them into a substrate, said support portions of the legs releasably mounting a plurality of terminals generally orthogonally to strip extent, with the terminals extending between and projecting beyond both legs, the method comprising:
establishing first and second guide channel sections separated by a terminal removal and insertion zone,
constraining the carrier strip path of travel in the first guide channel section by:
passing the carrier strip along guide surfaces formed in a first support portion which:
guide the base of the carrier and the external portions of both carrier strip legs along their extent from that base to the terminals, and
guide projecting portions of the terminals extending from the carrier strip legs; and
simultaneously passing the carrier strip along guide surfaces formed in a second support portion spaced from said first support which:
guide the internal portions of both carrier strip legs along their extent projecting beyond the terminals, and
guide an extent of the terminals situated between the carrier strip legs and facing away from the base of the carrier strip;
constraining the carrier strip path of travel in the second guide channel section by:
passing the carrier strip along guide surfaces formed in said first support portion which:
guide the base of the carrier strip and deflected portions of one of the strip legs adjacent their juncture with that base, while deflected portions of the other strip legs remain essentially free from guidance, and
simultaneously passing the carrier strip along a guide surface formed in said second support portion which:
guides the deflected portions of said one of the strip legs adjacent their ends;
the constraint of the carrier strip path of travel in the first and second sections being sufficient to constrain the carrier strip and supported terminals against significant twisting and significant excursion laterally and transversely of the extent of the strip threaded in said guide channel, while providing clearance accommodating flexibility of the strip and limiting binding during travel thereof.

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**3,932,932**
## METHOD OF MAKING MULTILAYER PRINTED CIRCUIT BOARD

**David S. Goodman, Orange, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.**

**Filed Sept. 16, 1974, Ser. No. 506,058**
**Int. Cl.² H05K** *3/00*
**U.S. Cl. 29—625** **7 Claims**



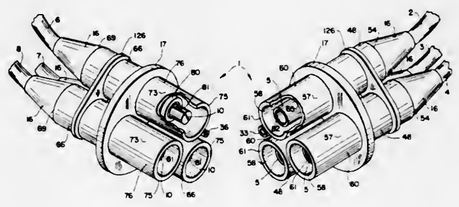

**1.** A method of making a multilayer printed circuit board comprising the steps of:
providing at least two individual metal sheets of a thickness which, if etched, would have an under-etch condition;
simultaneously punching a plurality of clearance holes in one of said sheets in a first predetermined pattern;
simultaneously punching a plurality of clearance holes in the other of said sheets in a second predetermined pattern;
filling said clearance holes with an insulative material;
stacking said sheets with an insulative inner layer therebetween and insulative outer layers on the top and bottom thereof with at least some of the clearance holes in the respective sheets misaligned;
laminating said stack of sheets and layers together to provide a unitary assembly;
drilling holes vertically through said stack coaxial with the clearance holes in each of said sheets, said through holes having a diameter less than that of said clearance holes; and
plating through said through holes with a conductive material.

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**3,932,933**
## HIGH VOLTAGE CABLE COUPLER WITH TERMINATION ADAPTOR AND METHOD OF CONSTRUCTING CABLE TERMINATION

**Roy M. Broad, Sagamore Hills, Ohio, assignor to The Scott & Fetzer Company, Cleveland, Ohio**

**Filed Oct. 4, 1973, Ser. No. 403,455**
**Int. Cl.² H01R** *43/00*
**U.S. Cl. 29—628** **14 Claims**



**1.** Method of constructing a high voltage cable termination with a cable having at least one outer layer containing conduc-

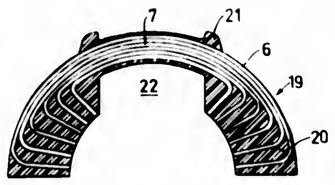
skip-lapping a fiberglass tape around the preformed stator motor coils;
butt-lapping a silicone rubber tape over the skip-lapped fiberglass tape around the preformed stator motor coils;
placing the mold containing the silicone butt-lapped stator motor coils in a preheated platten of a hydraulic press;
applying pressure to the mold while placed on the preheated platten of the hydraulic press;
releasing the pressure applied to the mold,
removing the mold from the preheated platten of the hydraulic press, and curing the molded stator motor coils in a oven

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## 3,932,929
## METHOD OF MAKING A SECTIONED STATOR FOR A DYNAMOELECTRIC MACHINE

**Stig Lennart Hallerback, Vastra Frolunda, and Leif Lachonius, Surte, both of Sweden, assignors to SKF Industrial Trading and Development Company, B.V., Jutphaas, Netherlands**

**Filed Sept. 9, 1974, Ser. No. 504,460**
**Claims priority, application Sweden, Sept. 28, 1973, 7313243**
**Int. Cl.² H02K** *15/02*
**U.S. Cl. 29—596** **11 Claims**



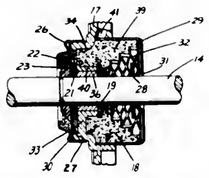

**1.** A method of manufacturing rotating electric machines comprising a stator and a rotor, said stator consisting of at least two sections, each section having magnetic flux providing means embedded in a plastic mass, said mass having a predetermined shape corresponding to a portion of the complete, assembled stator, consisting of the steps of forming said stator sections by permanently embedding in a plastic mass at least the means providing the magnetic flux and shaping said plastic mass to said predetermined shape, positioning the stator sections such that they circumscribe the rotor and thereafter securing the stator sections in a fixed position relative to one another.

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## 3,932,930
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**Int. Cl.² H02K** *15/14*
**U.S. Cl. 29—596** **5 Claims**



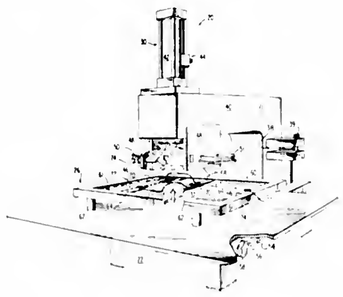

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## 3,932,931
## POST TERMINAL INSERTION METHOD AND APPARATUS

**Robert Charles Wright, Huntingdon Valley, Pa., assignor to Elco Corporation, Willow Grove, Pa.**

**Division of Ser. No. 368,448, June 8, 1973, Pat. No. 3,837,063. This application June 12, 1974, Ser. No. 478,692**
**Int. Cl.² H05K** *13/02, 13/04*
**U.S. Cl. 29—626** **18 Claims**



**1.** Apparatus for advancing a terminal carrier strip along a guided path of travel, the apparatus comprising:
feed means operable to apply tension to the strip urging the strip in an advancing direction of travel; and
escapement means for controlling advancement of the carrier strip along the path of travel, said escapement means including:
first and second escapement finger means alternately engageable with the strip; and
each of said first and second finger means being arranged, when in engagement with said strip, to resist said tension and prevent advancement of said strip by said feed means; and
escapement finger control means establishing alternate engagement of said first and second escapement finger means with the strip, to provide incremental advancement of the strip by said feed means during a period when both of said finger means are disposed out of engagement with said strip.

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said body section including an aperture;
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securing means engaging said insert at a location remote from said tab to hold said insert in place;
said tab defining a shoulder limiting the depth of reception of the terminal in said terminal receiving opening; and
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**13.** In a method of ram insertng of terminals supported by a strip into a substrate, the improvement comprising:
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inserting a substrate into said zone such that an aperture of said substrate is disposed in the vicinity of a movable sensing finger that is operably connected to a power control mechanism for the ram, and
employing said finger to condition activation of the ram by:
disabling ram activation in response to sensing of improper substrate location.
maneuvering said substrate and said finger relative to one another from
an improperly disposed orientation wherein said aperture and pin are unaligned causing depression of said finger to disable ram activation, to
a proper orientation wherein said aperture and pin are aligned, permitting extension of said finger into said aperture to allow ram activation.

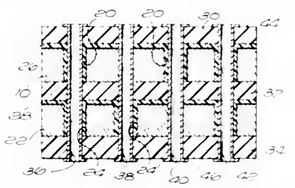
**14.** A method of establishing a path of travel for a terminal carrier strip, said strip being comprised of a flexible elongate member of generally U-shaped cross section defined by a base and contiguous spaced legs having support portions deflectable by ram means operable to remove terminals from the strip and directly insert them into a substrate, said support portions of the legs releasably mounting a plurality of terminals generally orthogonally to strip extent, with the terminals extending between and projecting beyond both legs, the method comprising:
establishing first and second guide channel sections separated by a terminal removal and insertion zone,
constraining the carrier strip path of travel in the first guide channel section by:
passing the carrier strip along guide surfaces formed in a first support portion which:
guide the base of the carrier and the external portions of both carrier strip legs along their extent from that base to the terminals, and
guide projecting portions of the terminals extending from the carrier strip legs, and
simultaneously passing the carrier strip along guide surfaces formed in a second support portion spaced from said first support which:
guide the internal portions of both carrier strip legs along their extent projecting beyond the terminals, and
guide an extent of the terminals situated between the carrier strip legs and facing away from the base of the carrier strip;
constraining the carrier strip path of travel in the second guide channel section by:
passing the carrier strip along guide surfaces formed in said first support portion which:
guide the base of the carrier strip and deflected portions of one of the strip legs adjacent their juncture with that base, while deflected portions of the other strip legs remain essentially free from guidance, and
simultaneously passing the carrier strip along a guide surface formed in said second support portion which:
guides the deflected portions of said one of the strip legs adjacent their ends;
the constraint of the carrier strip path of travel in the first and second sections being sufficient to constrain the carrier strip and supported terminals against significant twisting and significant excursion laterally and transversely of the extent of the strip threaded in said guide channel, while providing clearance accommodating flexibility of the strip and limiting binding during travel thereof.

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## 3,932,932
## METHOD OF MAKING MULTILAYER PRINTED CIRCUIT BOARD

**David S. Goodman, Orange, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.**

**Filed Sept. 16, 1974, Ser. No. 506,058**
**Int. Cl.² H05K** *3/00*
**U.S. Cl. 29—625** **7 Claims**



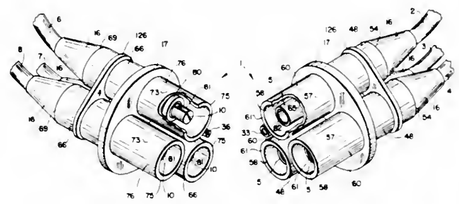
**1.** A method of making a multilayer printed circuit board comprising the steps of:
providing at least two individual metal sheets of a thickness which, if etched, would have an under-etch condition;
simultaneously punching a plurality of clearance holes in one of said sheets in a first predetermined pattern;
simultaneously punching a plurality of clearance holes in the other of said sheets in a second predetermined pattern;
filling said clearance holes with an insulative material,
stacking said sheets with an insulative inner layer therebetween and insulative outer layers on the top and bottom thereof with at least some of the clearance holes in the respective sheets misaligned;
laminating said stack of sheets and layers together to provide a unitary assembly;
drilling holes vertically through said stack coaxial with the clearance holes in each of said sheets, said through holes having a diameter less than that of said clearance holes; and
plating through said through holes with a conductive material.

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## 3,932,933
## HIGH VOLTAGE CABLE COUPLER WITH TERMINATION ADAPTOR AND METHOD OF CONSTRUCTING CABLE TERMINATION

**Roy M. Broad, Sagamore Hills, Ohio, assignor to The Scott & Fetzer Company, Cleveland, Ohio**

**Filed Oct. 4, 1973, Ser. No. 403,455**
**Int. Cl.² H01R** *43/00*
**U.S. Cl. 29—628** **14 Claims**



**1.** Method of constructing a high voltage cable termination with a cable having at least one outer layer containing conduc-

tive shielding properties overlying an insulative covered conductor comprising the steps of

stripping from the terminal end of the cable a portion of the conductive shielding exposing the conductor insulation,

stripping from the immediate terminal end of the cable a portion of the cable insulation,

inserting the stripped insulated portion into an elongated elastomeric adaptor having a central bore and two oppositely opposed frusto-conical surfaces with the smaller diametrical extent of each surface at opposite ends thereof,

securing an electrical connector to the stripped conductor,

positioning the inserted adaptor into engagement with the secured connector and thereby permissible exposing a portion of the stripped insulated conductor between the terminus of the conductive shielding and the adaptor, and

Applying a layer of shielding material having metallic properties along the cable terminus on the exposed portion of the cable shielding, thence along any remaining exposed cable insulation and thence up over a portion of one of the frusto-conical surfaces of the adaptor.

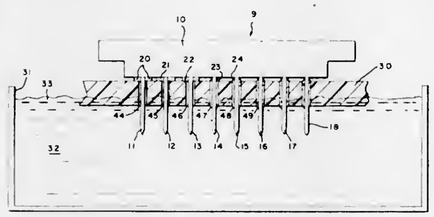
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**3,932,934**

## METHOD OF CONNECTING TERMINAL POSTS OF A CONNECTOR TO A CIRCUIT BOARD

**James Edward Lynch, Harrisburg, and David Francis Fussleman, Middletown, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.**

**Filed Sept. 16, 1974, Ser. No. 506,153**
**Int. Cl.² H01R *43/00***
**U.S. Cl. 29—628** **6 Claims**




**1.** A method of securing the terminal posts of a connector having a housing and at least two rows of terminal posts into holes prepared therefor in a circuit board substrate and comprising the steps of:

inverting said connector with the terminal posts pointed upwardly;

slipping a solder element around selected ones of said terminal posts;

inserting a slip of resilient material between said rows of terminal posts;

said slip of material having a width sufficient to span the distance between said rows of terminal posts and to press against the inner surfaces of said terminal posts to lock said solder elements on said terminal posts between said slip of material and said connector housing;

inserting said terminal posts at least part way into said holes prepared therefor in said circuit board substrate;

extracting said slip of material from between said rows of terminal posts;

melting said solder elements while said terminal posts are pointed downwardly.

**3,932,935**

## METHOD FOR MANUFACTURING A DUCTILE SILVER METALLIC OXIDE SEMI-PRODUCT

**Ulf O. Harmsen, Pforzheim, and Wolfgang S. Pottken, Keltern, both of Germany, assignors to Dr. Eugene Durrwachter DODUCO, Pforzheim, Germany**

**Filed Feb. 14, 1974, Ser. No. 442,683**
**Claims priority, application Germany, Mar. 3, 1973, 2310784**
**Int. Cl.² H01R *9/00***
**U.S. Cl. 29—630 C** **9 Claims**




**1.** A method for producing a ductile silver metallic oxide semi-finished product comprising:

a. selecting plates of a particular silver-metallic oxide material from a class consisting of internally oxidized and powder metallurgically produced material;

b. stacking said plates;

c. aligning said plates in a predetermined relationship for subsequent extrusion;

d. securing said alignment; and

e. extruding said plates under conditions of elevated temperature and pressure.

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**3,932,936**

## METHOD OF MANUFACTURING A DUCTILE SILVER METALLIC OXIDE SEMI-FINISHED PRODUCT CONTACTS

**Ulf O. Harmsen, Pforzheim; Wolfgang Pottken, Keltern, and Egon Oertel, Pforzheim, all of Germany, assignors to Dr. Eugene Durrwachter DODUCO, Pforzheim, Germany**

**Continuation-in-part of Ser. No. 442,683, Feb. 14, 1974. This application July 12, 1974, Ser. No. 487,870**
**Claims priority, application Germany, July 21, 1973, 2337197**
**Int. Cl.² H01R *9/00***
**U.S. Cl. 29—630 C** **7 Claims**




**1.** A method for producing a ductile silver metallic oxide semi-finished product comprising:

a. selecting rods from at least one member of a class consisting of silver metallic oxide, silver metal and silver metalloid rods;



b. aligning a plurality of rods in an axial mode;

c. bundling said rods;

d. extruding said rods under conditions of elevated temperature and pressure.

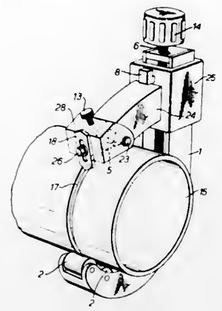
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**3,932,937**

## TOOL FOR CUTTING AND GRADUATING OF PLASTIC TUBES

**Gunnar Bastiansen, Rosendalsvn. 45, Oslo, Norway**

**Filed Mar. 21, 1975, Ser. No. 560,739**
**Claims priority, application Norway, Mar. 26, 1974, 1077/74**
**Int. Cl.² B23D *21/08, 21/10*; B26D *3/16***
**U.S. Cl. 30—102** **4 Claims**




**1.** A tool for cutting and graduating plastic tubes, comprising:

a support member including an arcuate section;

a guide bracket supported by and projecting from said support member at a location spaced from said arcuate section;

primary cutting means, carried by said guide bracket, for cutting a tube disposed between said arcuate section of said support member and said guide bracket projecting from said support member;

a pivotable support bracket adjustably articulated to said guide bracket; and

auxiliary cutting and graduating means mounted on said support bracket in position to graduate the tube being cut by said primary cutting means.

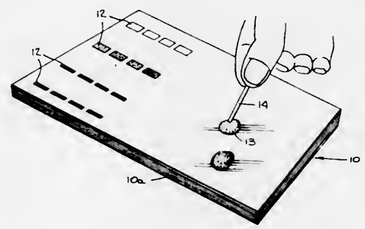
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**3,932,938**

## PIGMENT PACKAGE FOR DENTAL FILLING MATERIALS

**Leo Mackta, 444 Beach 132nd St., Belle Harbor, N.Y. 11694**

**Filed Dec. 11, 1972, Ser. No. 313,758**
**Int. Cl.² A61K *5/02***
**U.S. Cl. 32—15** **9 Claims**




**1.** A sheet containing a plurality of discrete, premeasured quantities of pigments for producing natural colors in composite plastic dental filling materials, said pigments being adhered to said sheet by a hardened vehicle in which said pigments are dispersed, and said pigments in said vehicle being directly dispersible in said filling materials when brought into contact therewith.

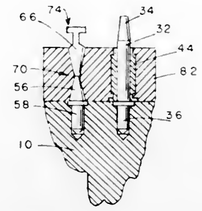
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**3,932,939**

## PIN ARRANGEMENT FOR PROSTHODONTIC CASTS

**Bernard Weissman, 225 E. 48th St., New York, N.Y. 10017**

**Filed Aug. 8, 1973, Ser. No. 386,722**
**Int. Cl.² A61C *13/00***
**U.S. Cl. 32—2** **21 Claims**




**1.** In a dental model of teeth, wherein segments thereof may be individually removed and replaced in original positions, a first cast forming an impression of at least one tooth on one surface thereof and having a substantially flat surface in opposed relation to said one surface; and second cast provided with a substantially flat surface for abutting against said flat surface of said first cast; at least two pins embedded in said first cast each having different length projections extending beyond said flat surface of said first cast, said second cast being provided with openings in the flat surface thereof configurated to receive at least portions of said pins when said flat surfaces are in abutment against one another, whereby the pin with the longer projection is a locating pin which initially engages and locates a corresponding opening in said second cast and the pin with the shorter projection is an alignment pin which is received in a corresponding opening to align and fix the position of said first cast relative to said second cast.

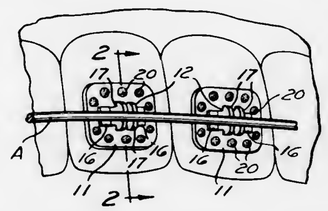
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**3,932,940**

## DENTAL APPLIANCE

**Frank J. Andren, 6889 Anthony Lane, Parma Heights, Ohio 44130**

**Filed Dec. 6, 1971, Ser. No. 204,900**
**Int. Cl.² A61C *7/00***
**U.S. Cl. 32—14 A** **10 Claims**




**1.** An orthodontic device removably attachable to a tooth for cooperative connection with orthodontic apparatus and for transmitting a force applied by the connected apparatus to the tooth, said device comprising

a thin plate of stiff, bendable sheet material having oppositely facing plain surfaces no larger than about the area of a tooth face, said bendable sheet material permitting said plate to be shaped generally to conform onen of said plain surfaces to a tooth surface,

a bracket fixedly mounted on the other of said plain surfaces of said plate for receiving and supporting and for attachment to cooperating force-applying orthodontic apparatus,

whereby suitable force is able to be effectively applied to a tooth through said device when said one of said plain surfaces of said plate is cemented to the tooth surface to which it generally conforms.

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**3,932,941**

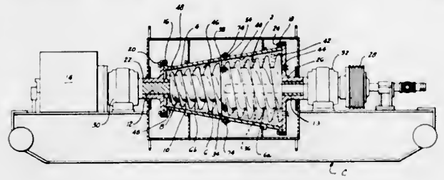
## ROTATING MACHINE WEAR GAUGE MEANS

**George S. Ormsby, P.O. Box 8774, Houston, Tex. 77009**

**Division of Ser. No. 223,210, Feb. 4, 1972, Pat. No. 3,849,893. This application Mar. 27, 1974, Ser. No. 455,401**

**Int. Cl.² G01B** *5/14*

**U.S. Cl. 33—181 R** **7 Claims**



**1.** In a scroll type conveyor for conveying solids, said conveyor having a helical blade, a housing at least partially encasing said blade and with respect to which said blade has relative rotation, and means defining a feed inlet to said housing and a solids outlet in said housing, said blade having wear characteristics which vary along its length and including a first wear portion and a second wear portion, said first portion having high wear characteristics relative to said second portion, said first portion being closer to said feed inlet than said second portion, and said second portion being closer to said solids outlet than said first portion, the combination of wear gauge means for measuring wear of said blade, said wear gauge means comprising a measuring device in the wall of said housing at a location along the length of said wall which is generally aligned with said first portion of said blade, said measuring device being operable cooperatively with said blade and said housing to measure the distance between a reference point radially and longitudinally fixed with respect to the axis of said blade and the radially outer edge of said first portion of said blade, and wherein the amount of wear of said first portion of said blade is so related to the amount of wear of said second portion of said blade that the amount of wear of said first portion is indicative of the amount of wear of said second portion.

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**3,932,942**

## DRESSMAKER'S PATTERN KIT AND METHOD OF MAKING A GARMENT

**Kathleen A. Ahajot, 445 S. Los Robles Ave., Pasadena, Calif. 91101**

**Filed Jan. 24, 1974, Ser. No. 436,133**

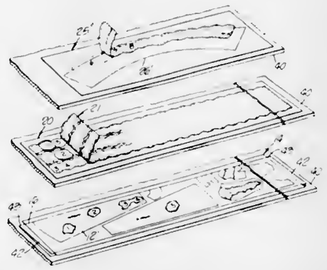
**Int. Cl.² A41H** *3/06*

**U.S. Cl. 33—12** **9 Claims**

**1.** A by the numbers dressmaker's pattern kit for use in making a garment with customized components of decorative lace appliqued thereto, said kit including:

a garment pattern having imprinted thereon outline guides for cutting garment yardage into individual components of a garment, certain of which outline guides have imprinted thereon irregularly contoured decorative images of at least one lace component of selected size and shape to be appliqued to the face of said garment components, said images each being imprinted with a distinctive identifying symbol;

a decorative lace pattern having imprinted thereon an image of an outstretched unfolded single layer of decorative lace yardage of a selected design and a plurality of closed loop guides superimposed on said lace pattern for subdividing said pattern into areas spaced crosswise and lengthwise thereof and for subdividing said lace yardage into a multiplicity of separate irregularly contoured decorative lace components, each of said closed loop guides being imprinted with an identifying symbol matching a respective symbol of said image of said garment pattern;



wherein said garment pattern outline guides are used to cut out garment components, said plurality of closed loop guides of said decorative lace pattern is used to cut out lace components and said lace components are appliqued to said garment components by using said images of said garment pattern as a guide.

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**3,932,943**

## METHOD OF PREPARATION OF LYOPHILIZED BIOLOGICAL PRODUCTS

**Anglis R. Briggs, Newark, Del., and Thomas J. Maxwell, Philadelphia, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.**

**Division of Ser. No. 340,196, March 12, 1973, which is a continuation-in-part of Ser. No. 177,834, Sept. 3, 1971, abandoned, and a continuation-in-part of Ser. No. 63,942, Aug. 14, 1970, Pat. No. 3,721,725. This application Aug. 16, 1974, Ser. No. 498,326**

**Int. Cl.² F26B** *5/06*

**U.S. Cl. 34—5** **21 Claims**

**1.** A method of making a homogeneous lyophilized product of a substance containing at least one biologically active component which comprises:

a. forming a solution or colloidal suspension of said substance in a liquid which will freeze and which will also vaporize at a temperature which will not destroy the biological activity of said material;

b. spraying said solution or colloidal suspension, onto the surface of a moving bath of boiling fluorocarbon refrigerant having a temperature of below about −20°C. from a sufficient height above the surface of the moving bath to allow droplet formation before the solution or suspension strikes the surface of the moving bath, whereby said droplets are frozen; and

c. lyophilizing said droplets to form a plurality of uniform sized porous spheres.

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**3,932,944**

## METHOD AND APPARATUS FOR PREVENTING WATERDROPS INSIDE A SEALED INSTRUMENT

**Misumasa Chiba, c/o Choshichi Ishida, Mainichi Sangyo Bldg., 39, 2-chome, Dojima Kami, Kita, Osaka, Japan**

**Filed Sept. 12, 1974, Ser. No. 505,320**

**Int. Cl.² F26B** *7/00*, *5/04*

**U.S. Cl. 34—12** **2 Claims**

**1.** A method of preventing the formation of moisture in a watch having a detachable air-tight cover comprising the steps of placing the watch with its cover loosened in a sealed zone;

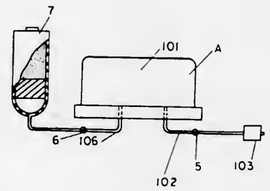


evacuating the air from said zone to cause a vacuum therein then feeding in dry air therein, whereby the dry air penetrates the watch and even when the zone is opened and the cover tightened, the dry air remains in the watch preventing the future foundation of moisture therein.

**2.** An apparatus for providing a protective dry air in a watch to prevent the formation of moisture in the watch comprising in combination:

a. a box-like housing having a deep lower chamber with a top and bottom defined therein, an elongated shallow recess upper chamber (**2**) with an upper peripheral abutment (**8**) formed of packing material around said recess upper chamber, a transparent plate (**9**) resting on said packing material covering said recess and sealed by said packing material, and first and second ports (**4, 3**) to said upper chamber;

b. a plurality of vertical cylindrical containers (**15**) including a first and a last container in said lower chamber, each container being linked to another container alternately towards the top and bottom of said chamber so as to define an elongated gas travel path in said lower chamber,



said containers each being filled with a silcia gel desiccator; an air filter (**17***a*) connected to said first container, an aperture (**22**) and a one-way valve (**20**) into said lower chamber connecting to said air filter (**17***a*) said last container being connected to said first port (**4**);

c. a threaded first valve (**6**) with a knob (**12**) connected to said first port (**4**) to control the dry air flow into said recess upper chamber (**2**), and a second valve (**5**) connected to said second port (**4**);

d. a suction outlet connection connected to said second port (**3**) for connection to vacuum exhaust means and pump means (**103**) to exhaust air from said recess upper chamber whereby when a watch with a loosened cover is placed in said chamber, said first valve (**6**) is closed, said second valve means (**5**) is opened and pump means (**103**) exhausts air from the chamber and from the watch, then, when said second valve means is closed and said first valve means (**6**) is opened, dry air from said lower chamber flows into the recess upper chamber into said watch remaining therein even when said chamber is opened to allow tightening of the watch cover.

**3,932,945**

## DIRECT COOLING OF REDUCED MANGANESE ORE

**Jay Y. Welsh, Catonsville, Md., assignor to Diamond Shamrock Corporation, Cleveland, Ohio**

**Filed Nov. 11, 1974, Ser. No. 522,359**

**Int. Cl.² F26B** *5/00*

**U.S. Cl. 34—20** **10 Claims**




**1.** In a process for the cooling of hot reduced manganese ore, the improvement which comprises blowing air through a layer of hot manganous oxide ore at a velocity of at least 1 meter per second until the ore has reached the desired temperature.

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**3,932,946**

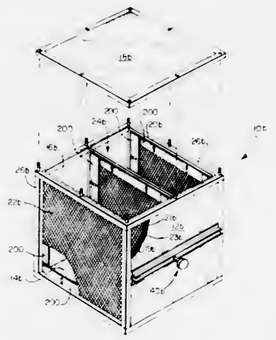
## MODULAR TOBACCO HANDLING AND CURING SYSTEM AND METHOD

**William H. Johnson, Raleigh, N.C., assignor to Research Corporation, New York, N.Y.**

**Continuation of Ser. No. 288,028, Sept. 11, 1972, abandoned. This application Dec. 18, 1973, Ser. No. 425,848**

**Int. Cl.² F26B** *19/00*

**U.S. Cl. 34—201** **10 Claims**

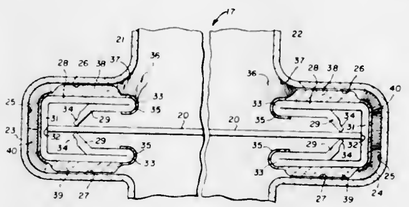


**1.** A curing or drying container for tobacco in intact or cut strip for use in a multiple container curing station, said container being of generally rectangular solid configuration comprising two pairs of opposed generally imperforate side walls forming gas flow directing means and the side walls of a curing station and a pair of opposed gas permeable perforate side walls for the passage of curing or drying gas therethrough, at least one immovable interior transverse perforate wall parallel to the opposed perforate walls, and means releasably securing one of the opposed imperforate walls to the others to thereby form an access opening for the container said two pairs of

opposed imperforate side walls are heat insulating and wherein said pair of perforate side walls and said interior transverse wall are provided with peripheral baffles.

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**3,932,947**
**BEARING AND SEAL FOR TUMBLER BELT CLOTHES DRYER**
**Edward H. Smoot, Holcomb, N.Y., assignor to The Schlegel Manufacturing Company, Rochester, N.Y.**
**Filed Dec. 9, 1974, Ser. No. 531,159**
**Int. Cl.² F26B** *25/00*
**U.S. Cl. 34—242** **10 Claims**

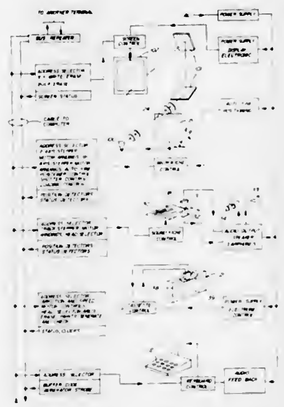


1. In a clothes dryer having an endless tumbler belt driven in a pair of matching channels formed in a pair of opposed upright panels with said belt extending between said panels to provide a clothes drying chamber between said panels and inside said belt, a bearing and seal comprising:
   a. a carrier extending all the way around each edge of said endless belt;
   b. means for holding each of said carriers securely on said belt;
   c. each of said carriers having a metallic element extending over said edge of said belt and disposed in said channels;
   d. each of said carriers having a continuous pile strip disposed along the inside of said belt to engage inner edges of said channels to form a sealing barrier keeping lint and air from entering said channels;
   e. each of said carriers having a wear-resistant, low-friction material engaging the sides of said channels to provide a running fit for said belt in said channels; and
   f. each of said carriers having a wear-resistant, low-friction material arranged between said metallic element and the bottoms of said channels to provide edge bearings for said belt.

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**3,932,948**
**AUDIO-VISUAL LEARNING SYSTEM**
**Murray C. Goddard, and Ray S. Kicklighter, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.**
**Filed Apr. 18, 1973, Ser. No. 352,859**
**Int. Cl.² G09B** *7/08*
**U.S. Cl. 35—9 A** **6 Claims**

1. A student controlled, interacting audio-visual learning device for manifesting lesson subject matter in response to presented queries and responses, the lesson subject matter comprising a number of distinct records separately introducible into the device and including a visual record having a number of addressed images, an audio record having a number of addressed message tracks and a control record having recorded program and address data for selecting at least one of the images and of the message tracks as related to a presented query or response, the combination comprising:
   a data center having storage means and memory means and in which programming information data and address data related to the lesson subject matter are introduced into the storage means and subsequently released in accordance with the presented query or response;
   a display terminal comprising student--actuated input means, visual display means comprising a gaseous discharge panel connected to the input means and the date center and a transmission type screen axially aligned in spaced relation with the panel for jointly or severally displaying a legible manifestation on the panel and a selected one of the addressed images on the screen, and respective stations for receiving each of the records;
   the input means being interconnected to the data center and to the visual display means and including means for converting alpha-numeric and graphic information into input data for acceptance by the data center and for reproducing the information on the panel as the legible manifestation;
   the station receiving the visual record including a projection system and means responsive to released address data from the data center for locating a correspondingly ad-

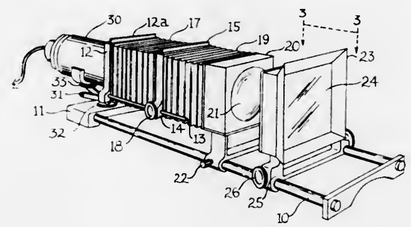


dressed image in the system for projecting the image onto the screen in superposed relation to any legible manifestation on the panel;
   the station receiving the audio recording including transducer means and means responsive to released address data from the data center for locating a correspondingly addressed message track relative to the transducer means and for moving the audio record to reporduce the message as an aural query or response related to at least one of the reproduced information and of the projected image on the visual display means; and
   the station receiving the control record including transducer means interconnected to the storage means and memory means for reading and transmitting the recorded program and address data to the data center;
   means responsive to some portion of the query or response presented via the input means for transferring from the storgae means to the memory means the address of at least one of the addressed images, the address of one of the addressed message tracks and program data for providing a legible manifestation on the panel related to the presented query or response; and
   circuit means interconnecting each of the storage means, the memory means, the visual display means, the image locating means and the track locating means and responsive to a control signal generated by the input means, upon completion of the query or response, for jointly or severally transferring and subsequently releasing the program and address data related to the presented query or response from the storage means to the memory means, the released program data initiating the converting means to provide the legible manifestation of the query or response on the panel and the released address data initiating at least one of the locating means to position the addressed image related to the query or response in the projection system to provide a visual image on the screen that is superposed on any legible manifestation and the locating and moving means to position the addressed message track related to the query or response relative to the transducer to provide an audio presentation.



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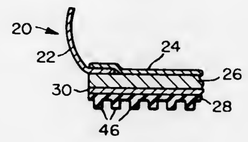
**3,932,949**
**METHOD FOR DEMONSTRATING OPTICAL ABERRATION FORMATION**
**Hugh R. King, 1075 First Ave., New York, N.Y. 10022**
**Filed Feb. 20, 1974, Ser. No. 444,111**
**Int. Cl. G09b** *23/22*
**U.S. Cl. 35—19 B** **8 Claims**



1. A method for the visual demonstration of the process of the formation of image aberrations and their causes as created by optical lens refraction, comprising the steps of:
   a. illuminating a given object by means of an illuminator so that said object projects an intense image by either incident or transmitted light;
   b. aligning said illuminated object with an opaque plate perforated with multiple pinhole apertures so as to project said intense image upon and through said pinhole apertures so as to create multiple pinhole images of said intense image;
   c. aligning said opaque plate with an optical lens system so as to project said multiple pinhole images upon and through said lens system;
   d. aligning said lens system with a movable means of directly observing the characteristics and behaviour of said pinhole images after they have passed through and been refracted by said lens system and at any given distance from said system.
   e. moving said movable means of observing the behaviour of said refracted pinhole images back and forth through the image plane of said lens system so as to visually demonstrate the processes which cause the formation of varying optical aberrations observed when said refracted pinhole images superimpose at said image plane.

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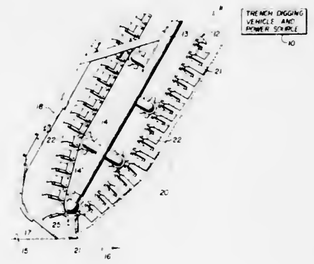
**3,932,950**
**FOOTWEAR WITH NON-SLIP TREAD**
**George J. Taber, Buffalo, N.Y., assignor to Tractioneers, Inc., Buffalo, N.Y.**
**Filed Nov. 14, 1974, Ser. No. 523,656**
**Int. Cl.² A43B** *23/28, 13/04*
**U.S. Cl. 36—59 R** **3 Claims**



1. An athletic shoe particularly suited for use on both artificial and natural turfs, resepectively, having an insole,
   a flexible backing secured to the underside of said insole,
   a flexible outsole secured to said backing, and
   a plurality of spaced, flexible protuberances carried by said outsole and providing a non-slip tread for the shoe,
   said protuberances being uniformly spaced, flexible members integral with the outsole and projecting downwardly beyond the bottom surface of said outsole in rows spaced laterally and longitudinally of the outsole, and
   said protuberances being circular in cross section and having diameters ranging from 3/16 inch to ⅜ inch, heights ranging from 5/32 inch to ½ inch and center to center spacing between protuberances ranging from ¼ inch to ¾ inch.

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**3,932,951**
**TRENCH DIGGING MACHINERY**
**Louie B. Scott, and Ellery A. Scott, both of P.O. Box 237, Lonoke, Ark. 72086**
**Filed Nov. 27, 1974, Ser. No. 527,833**
**Int. Cl.² E02F** *5/06*
**U.S. Cl. 37—86** **6 Claims**



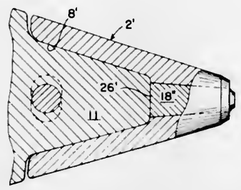

1. A machine for digging trenches by cyclically movable mechanism mounted on a movable vehicle with a power source for moving said vehicle and mechanism comprising, in combination, a set of spaced, successive extension plates fixed to and extending outwardly to different heights from the top surface of said mechanism; arcuate tooth means mounted on the outer end of each of said plates to dig a trench thereby; each of said arcuate tooth means being successively larger than a preceding tooth means and the combination of said tooth means functioning to produce a semi-circular trench bottom and to distribute the digging load substantially uniformly to the power source as the machine is moved along the trench.

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**3,932,952**
**MULTI-MATERIAL RIPPER TIP**
**Eugene L. Helton, Peoria, and Walter B. Miller, Pekin, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.**
**Filed Dec. 17, 1973, Ser. No. 425,191**
**Int. Cl.² E02F** *9/28*
**U.S. Cl. 37—142 R** **1 Claim**

1. A multi-material earthworking ripper tip for mounting upon a shank member of an earthworking device comprising; support means for mounting said tip upon said shank member, said support means including an internally formemd socket adapted to engage said shank member, separate tapered nose means attached to said support means, said nose means including a nose member having a first external portion, said first external portion being conical and having a taper diverging toward said support means, said nose member also having a uniformly tapered centrally disposed bore therein continuously diverging toward said support means, core means disposed within said central continuously diverging tapered bore and extending therein from a first end of said nose member

proximate said support means to a second distal end of said nose member, said core means being comprised of material which is harder and more wear resistant than that of said support means, said core means including a tapered hollow cone member mounted within said centrally disposed bore




and having an axially disposed second bore therein, said core means further including a core member being comprised of tungsten carbide material sintered in situ within said tapered centrally disposed bore, said core member being tapered and having an external surface diverging toward said support means.

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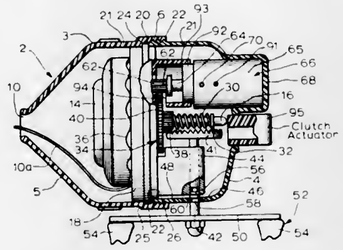
**3,932,953**
**EXTENSIBLE SHAFTS AND FISHING SPEARS**
**Richard William Sharp, 89 Ngamotu Road, New Plymouth, New Zealand**
**Filed Mar. 18, 1975, Ser. No. 559,613**
**Claims priority, application New Zealand, Apr. 1, 1974, 173873**
**Int. Cl.² A01K** *81/04*
**U.S. Cl. 43—6** **9 Claims**



**7.** A hand spear comprising an extensible shaft having a main tubular part with hand grip means, a cylindrical extension part telescopically located in and engaged with said main part so as to extend co-axially from one end thereof, the outer free end portion of the extension part being formed as or provided with a spear head, liquid seal means provided between the extension piece inner end and the main part, a butt end piece adapted to close the end of the main part remote from the end through which the extension part extends, said butt end piece incorporating liquid inlet means which can be exposed or opened by adjustment of the butt end piece relative to the main part to permit liquid from an external source to be drawn into the main part on extension of the extension piece, and seal means being provided between the main part and butt end piece so as to prevent escape of liquid from the main part when the butt end piece is adjusted to close the liquid inlet means and lock the extension piece against axial movement relative to the main part, and resilient thrust imparting means provided on the spear and arranged to add impetus to a spear thrust by a user.

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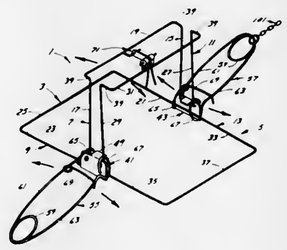
**3,932,954**
**MOTORIZED SPINNING REEL**
**Alexander Hobart Wyroski, 4940 W. Oakdale Ave., Chicago, Ill. 60641**
**Filed Jan. 25, 1974, Ser. No. 436,616**
**Int. Cl. A01k** *89/017, 87/06*
**U.S. Cl. 43—21** **4 Claims**




**1.** In a fishing reel having a line-receiving spool element, a guide element for guiding a line onto the spool element, and means for selectively rotating at least one of said elements relative to the other for winding the line on the spool element comprising transmission means, and selectively actuable manual and motor-driven means operatively connected to said transmission means, and said reel comprising a housing, a motor holder moulded into said housing of yieldable plastic material, said transmission comprising a motor-driven driving gear and a meshing driven gear, and said material yielding upon imposition of a predetermined load causing said gears to wedge apart to release said driven gear and thereby the line.

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**3,932,955**
**ANIMAL TRAP**
**Wilfrid Desrosiers, 6 Cournoyer St., Kapuskasing, Ontario, Canada**
**Filed Apr. 2, 1974, Ser. No. 457,377**
**Int. Cl.² A01M** *23/30*
**U.S. Cl. 43—81** **1 Claim**

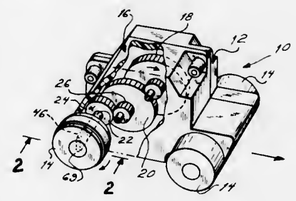


**1.** An animal trap comprising a first and a second jaws connected together in back-to-back relation to open in opposite directions, spring means engaging said jaws and operable for simultaneously closing the jaws, latch means constructed and arranged to releasably hold the jaws in open position, each of said jaws including a first and a second substantially U-shaped members joined together at their opposite ends, and both first substantially U-shaped members of said jaws being fixedly and unitarily interconnected in end-to-end alignment and forming a fixed substantially flat support operatively underlying both said second substantially U-shaped members, a pair of plates rigidly secured to said flat support against the opposite sides thereof, said second U-shaped members pivoted to said plates at their ends, said plates forming abutments restraining pivoting of both second U-shaped members relative to both first U-shaped member.



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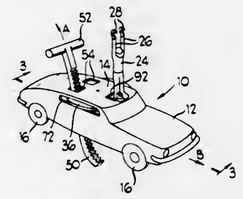
**3,932,956**
**TOY VEHICLE CLUTCH**
**Edmund Young, West, Hong Kong, assignor to Ideal Toy Corporation, Hollis, N.Y.**
**Filed Jan. 8, 1975, Ser. No. 539,370**
**Int. Cl.² A63H** *29/00*
**U.S. Cl. 46—202** **12 Claims**



**1.** In a toy vehicle having a plurality of ground engageable wheels and drive means having a drive shaft operatively engaged with at least one of said wheels for driving the vehicle; a clutch formed in said at least one drive wheel for protecting said drive means; said clutch comprising a first clutch element fixed to the drive shaft for rotation therewith and a second clutch element freely rotatably mounted on said drive shaft; said second clutch element having a cavity formed therein which receives and peripherally surrounds said first clutch element; one of said first and second clutch elements having a plurality of radially extending gear-type teeth formed thereon and the other of said clutch elements having at least one enlarged detent formed thereon and dimensioned to fit between two adjacent gear teeth to provide a driving connection therebetween for transmitting power from the motor to the second clutch element to drive the wheel; said gear teeth being formed of a material having a predetermined flexibility relative to said detent whereby the teeth will flex over the detent so the clutch elements can rotate with respect to one another when the driven wheel is stopped while the drive means is in operation.

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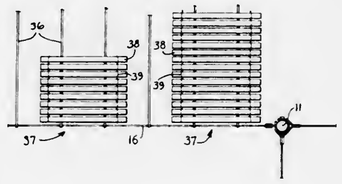
**3,932,957**
**TOY VEHICLE**
**Howard J. Morrison, Deerfield, and Donald F. Nix, Hanover Park, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.**
**Filed Feb. 12, 1975, Ser. No. 549,498**
**Int. Cl.² A63H** *17/00, 29/20*
**U.S. Cl. 46—206** **11 Claims**



**10.** A gyroscopic toy vehicle, comprising:
a vehicle body;
a gyroscopic rotor fixed to an axial shaft journalled at its opposite ends on a gimballed rotor support means, said rotor support means being rotatably mounted on said vehicle body on an axis at an angle to said rotor axial shaft, and;
means for effecting rapid rotation of said gyroscopic rotor.

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**3,932,958**
**PLANT SHELTER**
**John J. Kistler, Jr.; William E. Chappell, both of Grand Haven, and Frank J. Brechting, Jr., Spring Lake, all of Mich., assignors to John Kistler & Associates, Inc., Grand Haven, Mich.**
**Filed Oct. 11, 1973, Ser. No. 405,702**
**Int. Cl.² A01G** *13/00, 13/02*; **E04B** *7/14*
**U.S. Cl. 47—26** **2 Claims**



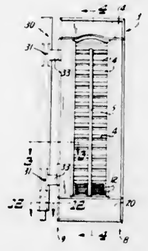
**1.** A shelter for controlling the amount of light reaching a relatively large surface in which or upon which living plants or the like are to be raised, the combination comprising:
a plurality of stationary posts projecting upwardly from said surface and arranged in longitudinal and transverse rows along said surface;
a plurality of parallel, longitudinal cables connected to the upper ends of said posts in said longitudinal rows, each said longitudinal cable being connected to the posts of one of said longitudinal rows;
each post located intermediate the ends of said longitudinal rows having an upwardly opening slot formed in the upper end thereof, said slot extending across said post in the longitudinal direction of said longitudinal cable for accommodating an intermediate portion of said longitudinal cable therein;
a pair of clamp means fixed to the intermediate portion of said longitudinal cable and positioned directly adjacent the opposite sides of each slotted post, said clamp means being larger than the width of the slot for engaging the post to prevent longitudinal movement of said longitudinal cable relative to said intermediate post;
anchor cable means extending between the endmost posts of said longitudinal rows and said surface;
a plurality of parallel, transverse wires extending between and connected to pairs of said longitudinal cables, said transverse wires being uniformly spaced longitudinally of said longitudinal cables with the spacing between adjacent transverse wires being substantially less than the spacing between adjacent posts located in said longitudinal rows so that several of said transverse wires are positioned between said adjacent posts; and
cover means supported on said transverse wires and removable for permitting a selectively controlled amount of light to pass therethrough, said cover means including a plurality of elongated slatlike elements of substantially uniform length, said elements being removably supported on said transverse wires and positioned so that they extend perpendicularly between a pair of adjacent transverse wires;
said cover means also including wirelike flexible means interconnecting said slatlike elements at uniform spaced intervals and in parallel arrangement for permitting said slatlike elements and flexible means to be formed into a roll for storage purposes, said flexible means resulting in elongated narrow openings between adjacent slatlike elements whereby a controlled amount of light can pass

through said narrow openings, said slatlike elements having a length greater than the spacing between an adjacent pair of transverse wires so that a roll of said slatlike elements and flexible means can be unrolled upon and along a pair of adjacent transverse wires to provide a plant cover;

said cover means including a plurality of said rolls of slatlike elements and flexible means, said rolls being individually positionable on and freely removable from said transverse wires, whereby the number of rolls positioned on said transverse wires and the spacing between said rolls permits selective control over the amount of light permitted to reach the surface located below the shelter.

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**3,932,959**
**ADJUSTABLE SHUTTER ASSEMBLY**
**Eric G. Jansons, and Raymond D. Clark, both of Schaumburg, Ill., assignors to DeSoto, Inc., Des Plaines, Ill.**
**Continuation-in-part of Ser. No. 471,231, May 20, 1974, abandoned. This application Dec. 23, 1974, Ser. No. 535,298**
**Int. Cl.² E06B 7/086**
**U.S. Cl. 49—75** **9 Claims**



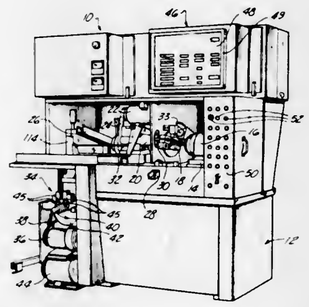
1. An adjustable shutter assembly comprising:
a. a pair of opposed vertical frame members and top and bottom members securing said vertical members;
b. a plurality of spaced laterally extending louvers journaled at their ends and pivotally mounted in said frame members;
c. an actuator rod shiftably coupling said louvers;
d. vertical adjustment means comprising legs extending downwardly from said frame members, said legs being easily severable to adjust the length thereof;
e. a boot having a generally hollow U-shaped body including internal recesses receiving and holding said legs, said boot including gripper means at the upper end thereof; and
f. means on a lower portion of said shutter assembly to be grasped by said gripper means when said boot is in place upon said legs.

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**3,932,960**
**SINGLE SLIDE GRINDING MACHINE**
**Hugh T. Edgar, Charlestown, N.H., and John W. Lovely, Springfield, Vt., assignors to Bryant Grinder Corporation, Springfield, Vt.**
**Filed Apr. 29, 1974, Ser. No. 464,917**
**Int. Cl.² B24B 53/04, 49/18, 47/20, 5/10**
**U.S. Cl. 51—5 D** **45 Claims**

1. A metal working machine comprising a base, first and second laterally spaced parallel slidebars rigidly mounted on the base, a wheelslide assembly mounted on the bars for longitudinal displacement thereover, said wheelslide assembly including a metal working wheelhead disposed substantially over the first bar, a workhead assembly rigidly mounted on the base in substantial longitudinal alignment with the wheelslide assembly, program means for producing controlled longitudinal displacement of the wheelslide assembly over the slidebars, and means independent of said program means for rotating the wheelslide assembly about said first slidebar thereby to laterally displace the wheelhead relative to the workhead assembly.

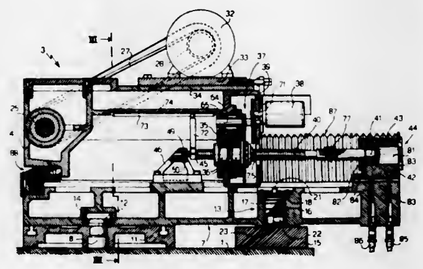
40. Apparatus as defined in claim 1 wherein said workhead assembly comprises a chuck, said wheelslide assembly com-



prises a grinder wheel spindle, the combination further comprising dresser means carried by said base, said program means being operatively connected to the dresser for bringing the dresser into operative contact with the grinder wheel in synchronism with the longitudinal displacement program of the wheelslide assembly.

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**3,932,961**
**GRINDING MACHINE**
**Elio Pagella, and Carlo Guerci, both of Ivrea via Montefer-rando, Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Torino, Italy**
**Filed Nov. 21, 1973, Ser. No. 417,904**
**Int. Cl.² B24B 49/18**
**U.S. Cl. 51—165.8** **7 Claims**

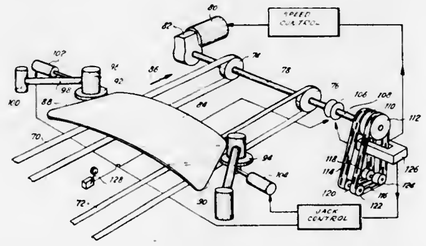


1. In a grinding machine having a frame, a wheelhead mounted on said frame, a wheel spindle rotatably mounted on said wheelhead, and a grinding wheel having a grinding surface secured to said spindle, a workhead adjustably mounted on said frame, said workhead comprising:
a work spindle for holding a workpiece carried by said workhead, said work spindle being carried by bearings mounted on said workhead,
means for mounting said work spindle for rotatable and axial movement with respect to said grinding surface whereby said workpiece can be oriented with respect to said grinding surface and brought into contact with said grinding surface,
power means for rotating said work spindle,
a screw element having threadably mounted thereon a nut element, said nut element and said screw element being mounted for relatively rotatable movement with respect to one another to displace said elements axially with respect to one another, said nut element having outer teeth and being rotatably mounted on said workhead and fixed against axial movement with respect to said workhead, said work spindle being coaxial with said nut element and passing through said nut element, said screw element comprising the outer surface of a first ring movable axially,
a second ring attached to said work spindle and rotatably and axially movable therewith, said second ring being engageable by said first ring to cause axial movement of said work spindle, and
means for rotating said screw element and said nut element with respect to one another comprising a step-by-step reversible electric motor carried by said workhead and having an output shaft means rotatable by a predetermined number of electric pulses, said output shaft means directly rotatably engaging said outer teeth of said nut element whereby rotation of said nut element by said output shaft means results in axial movement of said work spindle with respect to said workhead.



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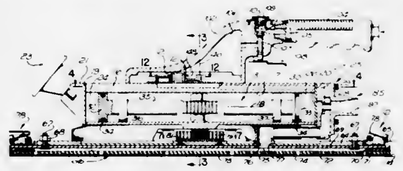
**3,932,962**
**CONTROL APPARATUS FOR A MACHINE FOR GRINDING THE EDGES OF A WORKPIECE**
**Julien Devillers, Livry Gargan, France, assignor to International Trading Company, France**
**Filed July 1, 1974, Ser. No. 484,572**
**Claims priority, application France, July 12, 1973, 73.25551**
**Int. Cl.² B24B 49/12**
**U.S. Cl. 51—165.72** **12 Claims**



1. Control apparatus for a machine for grinding the edges of a workpiece by means of at least one rotary grinder during the displacement of the workpiece, which control apparatus is operable to impose a programme of speeds on the displacement of the workpiece, the said machine comprising: an endless linear conveyor defining a path of displacement for the workpiece; a motor for driving the conveyor; and at least one rotary grinder placed on one side of the conveyor so as to come into contact with one of the edges of the workpiece in the course of the displacement of the workpiece; the said apparatus comprising: a programming element having zones of varying transparency or reflectance; an emitter unit for emitting light beams to the programming element and an associated receptor unit for receiving the light beams which have been transmitted or reflected; means for turning the programming element so that one complete rotation corresponds to one complete movement along the path; an electric circuit connected to the receptor unit and to the motor of the conveyor for controlling the speed of rotation of the motor as a function of the intensity of the signal provided by the receptor unit so that the speed of displacement of the workpiece varies during the movement along the path according to the programme defined by the zones of the programming element.

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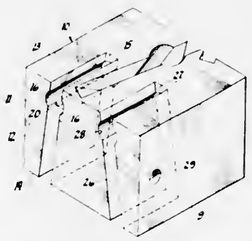
**3,932,963**
**STRAIGHT LINE ABRADING TOOL**
**Alma A. Hutchins, 49 N. Lotus Ave., Pasadena, Calif. 91107**
**Filed Aug. 19, 1974, Ser. No. 498,534**
**Int. Cl.² B23D 67/00**
**U.S. Cl. 51—170 TL** **25 Claims**



1. A portable abrading tool, comprising:
a cylinder body adapted to be held and manipulated by a user;
a piston structure mounted in said body for reciprocation relative thereto along a predetermined axis;
valve means for admitting pressure fluid to said cylinder body in a relation causing reciprocation of the piston structure;
two racks carried by said piston structure for reciprocation therewith along said axis, said two racks both facing transversely of said axis but facing in two essentially opposite transverse directions respectively;
two gear units mounted to said body for rotation relative thereto and having gear teeth meshing with said two oppositely facing racks respectively in a relation transmitting to said body through said gear units transverse forces exerted thereagainst by said racks in said two opposite directions;
a shoe mounted for reciprocation relative to said body and parallel to said axis to abrade a work surface; and
means driven by at least one of said gear units for reciprocating said shoe relative to said body but oppositely from said piston structure.

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**3,932,964**
**MULTI-ANGLE GRINDING FIXTURE**
**James B. Simms, Taylor, Mich., assignor to James B. Simms, Taylor, Mich.**
**Filed Dec. 13, 1971, Ser. No. 207,361**
**Int. Cl.² B24B 3/24**
**U.S. Cl. 51—220** **1 Claim**



1. A multi-angle grinding fixture for holding a spade drill blade in a number of positions for grinding operations thereon, comprising:
a. a body member shaped as a block and having parallel side faces, parallel top and bottom faces, and parallel front and rear faces;
b. said body member being provided with at least four inwardly extended slots for holding a spade drill blade in four different positions for grinding the primary side clearance surfaces, the secondary side clearance surfaces,

the cutting lip angles, and the radii of the cutting edge lips of the blade;

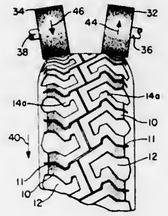
c. each of said slots being angularly disposed relative to a particular block face to hold a spade drill blade at a predetermined angle when the block is seated on said particular block face to allow a particular cutting surface on the blade to be ground by a surface grinder;

d. each of said slots being provided with a rectangular cross-sectional configuration with a pair of laterally spaced apart parallel side walls and a circular seat formed centrally in each side wall and extended longitudinally of said slot, whereby each slot mates with and receives a spade drill blade to be held therein for a grinding operation on the blade; and,

e. means adjacent each of said slots for releasably locking a spade drill blade in each slot to hold the blade in a predetermined position for the grinding of a particular cutting surface when the body member is disposed with a particular one of said block faces downwardly.

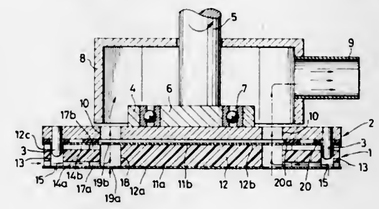
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**3,932,965**
**METHOD FOR TIRE TREAD FINISHING**
**Crandall R. Kline, Jr., Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio**
**Filed Mar. 24, 1975, Ser. No. 561,137**
**Int. Cl.² B64B** *1/00*
**U.S. Cl. 51—281** **4 Claims**



**1.** In a process for grinding arcuate portions of the tread of an inflated pneumatic tire near the lateral edge or edges of such tread to reduce variations in force exerted by such tire on the surface of a load measuring wheel, and in which process the tire is mounted and inflated on a power driven rotating chuck in a machine having a fully rotatable load measuring wheel for engaging the tread of the tire in loaded rolling contact and two grinding wheels driven at grinding speed to remove material from said arcuate portions engageable and disengageable with said portions in response to variations in load exerted on said wheel by said tire; the improvement comprising: driving each of said grinding wheels in a rotational sense opposite to the rotational sense of the other of said grinding wheels, such that one of said grinding wheels while engaged in material removing contact with the rotating tire cuts in an up-grinding mode and the other of said grinding wheels while engaged in material removing contact with the rotating tire cuts in a down grinding mode whereby the surface appearance of the tread of the tire is improved relative to the appearance thereof by rotating both said grinding wheels in a usual common directional sense.

**3,932,966**
**ABRASIVE DISC**
**Leif E. Stern, Uppakra, Sweden, assignor to Bill Peter Philip Nederman, Helsingborg, Sweden**
**Filed Mar. 25, 1975, Ser. No. 561,896**
**Claims priority, application Sweden, Mar. 26, 1974, 74040247; Sept. 17, 1974, 74116674**
**Int. Cl.² B24B** *55/02, 23/00*
**U.S. Cl. 51—356** **11 Claims**



**1.** An abrasive disc which has an interior through which air and particles may flow and which is adapted to be detachably secured to a holder having pins projecting therefrom and a suction device associated therewith, the abrasive disc comprising:

a. a body of soft, resilient material having oppositely facing sides and an edge therebetween;

b. a first abrasive layer on one side of said body;

c. a first set of grooves in said body on at least said one side thereof, said abrasive layer extending across said grooves;

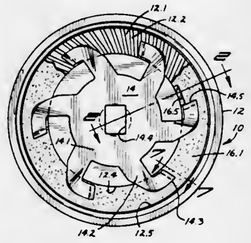
d. a first set of openings in said edge;

e. a first set of apertures in said first abrasive layer, said openings and said apertures being connected with said grooves;

f. whereby, in operation, air and particles may be drawn into said apertures and openings, through said grooves, and toward the suction device.

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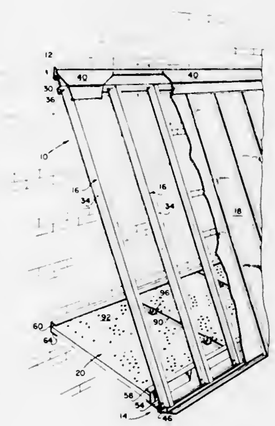
**3,932,967**
**SHARPENER FOR ROTARY ELECTRIC RAZOR**
**Donald M. Hanes, 1755 Oakwoods, New Brighton, Minn. 55112**
**Filed May 7, 1975, Ser. No. 575,382**
**Int. Cl.² B24D** *17/00*; **B26B** *19/38*; **B24D** *11/00*
**U.S. Cl. 51—358** **8 Claims**



**1.** A sharpener for a rotary action electric razor with a comb having an annular, flat-bottomed, slotted trough and a blade having a plurality of spaced heads rotating in the trough, the sharpener comprising a flexible, normally flat annular disc receiveable in the trough flushly against its flat bottom and having a sharpening abrasive flat surface, the disc having a tab extending from an edge thereof and positionable at an angle to the plane of the disc and generally parallel to a side wall of the trough when the disc is received therein.



**3,932,968**
**WALL PANELING SYSTEM**
**William C. Heirich, 2912 Wauhilah Drive, Muskogee, Okla. 74401**
**Filed Feb. 5, 1974, Ser. No. 439,754**
**Int. Cl.² E04C** *1/39*; **E04D** *1/06*
**U.S. Cl. 52—74** **7 Claims**



**1.** A paneling system to be suspended from a wall, comprising:

a first support, means securing said first support to the wall and permitting said support to rotate with respect to the wall;

a plurality of bars, means securing the top ends of said bars to said first support in such manner that said top ends are spaced apart from each other and extend continuously along said first support, each of said bars being provided with a top supporting wall and inwardly sloping side walls depending therefrom;

a second support, means securing the bottom ends of said bars to said second support in such manner that said bottom ends are spaced apart from each other and extend continuously along said second support;

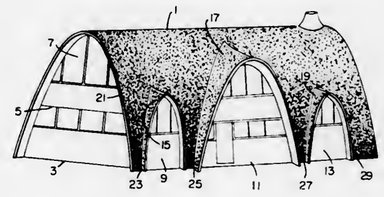
a plurality of first panels secured to and connecting said first bars, adjacent of said first panels including one panel provided with a supporting wall abutting said supporting wall of the adjacent of said bars and an inwardly sloping side wall depending therefrom abutting one of said inwardly sloping side walls of the adjacent of said bars, and another panel provided with a supporting wall abutting said supporting wall of said one panel and inwardly sloping side walls depending therefrom abutting said inwardly sloping side wall of said one panel and the other of said inwardly sloping side walls of the adjacent of said bars;

a third support, means mounting said third support to said second support permitting said second and third supports to rotate with respect to each other;

a fourth support, means securing said fourth support to the wall; and

a plurality of second panels, the ends of each of said second panels being secured to said third and fourth supports, said second panels extending continuously along said third and fourth supports beneath said first panels.

**3,932,969**
**FERROCEMENT STRUCTURES AND METHOD**
**Thad E. Matras, Box 307, R.D. No. 1, Highland, N.Y. 12528**
**Filed Aug. 19, 1974, Ser. No. 498,582**
**Int. Cl.² E04B** *1/32*
**U.S. Cl. 52—86** **10 Claims**



**1.** An enclosure comprising:

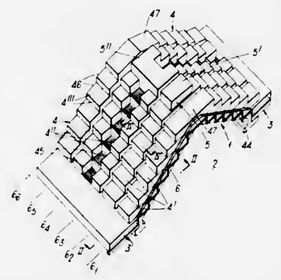
a. a load-bearing framework defining the shape of said enclosure, at least a portion of said framework having a convex configuration;

b. at least one layer of moisture-impermeable flexible sheet-like material having an inside surface and an outside surface disposed over and supported by said framework, portions of said inside surface being in contact with said framework; and

c. a layer of cured cement mortar having reinforcing means therein disposed over and in contact with the outside surface of said sheet-like material, said reinforcing means comprising at least two layers of wire mesh embedded in said cement.

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**3,932,970**
**BUILDING**
**John D. Winders, 26 Chantry Hurst, Epsom, Surrey, and Marian F. Grzesik, 26/28 Hillcroft Crescent, Ealing, London, W. 5, both of England**
**Continuation of Ser. No. 344,764, March 26, 1973, abandoned. This application Oct. 7, 1974, Ser. No. 512,873**
**Claims priority, application United Kingdom, Mar. 27, 1972, 14296/72**
**Int. Cl.² E04H** *1/00*; **E04B** *1/342*
**U.S. Cl. 52—169** **14 Claims**

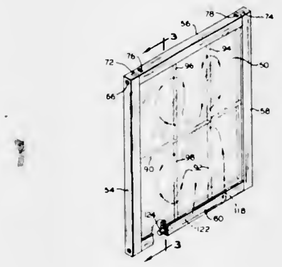


**7.** A monolithic multi-storey building over an area on which it is not desired or not possible to build directly, comprising a load bearing frame having an inverted substantially V-shaped profile and spanning said area without intermediate support, and a plurality of accommodation units, each of said units including a floor, a plurality of walls, and a roof, erected on said frame in a staggered formation towards the apex of said frame to form the storeys of said building, said frame consisting of a plurality of axially spaced arches, said arches having sloping upper and lower surfaces and vertical side walls between said upper and lower surfaces, pitched so that the dis-

tance between said upper and lower surfaces of said arches, measured vertically, is equal to the height of each of said storeys of said building, and the weight of said building is supported substantially wholly by said arches, a plurality of horizontal platforms and vertical webs extending between each pair of said arches in alternating and continuous manner to form a series of staggered steps between said pair of arches on at least one side of the apices of said arches, the height of each of said vertical webs being equal to the storey height of said building, and means fixedly mounting said platforms and said webs on said side walls of said arches adjacent said platforms and said webs, each of said accommodation units being erected on one of said steps with said vertical web of said step providing one of said walls of said unit, said platform of said step providing at least part of said floor of said unit, and said side walls of said arches adjacent said step providing part of two more of said walls of said unit, whereby said accommodation units are keyed into and are integral with said frame.

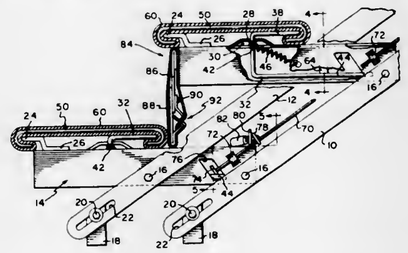
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**3,932,971**
**WINDOW CONSTRUCTION**
**Ralph K. Day, 307 W. Harrison Ave., Maumee, Ohio 43537**
**Filed May 21, 1973, Ser. No. 361,989**
**Int. Cl.² E06B** *7/12*
**U.S. Cl. 52—171** **3 Claims**



1. A hollow double transparent closure comprising:
a pair of substantially parallel spaced apart panes of transparent sheet material;
resilient gasket means disposed between the marginal edges of the facing surfaces of said panes, said gasket means having curved compressible faces engaging the adjacent faces of said spaced apart panes and defining an enclosed volume between the facing surfaces of said panes;
a frame circumscribing the periphery of said panes, said frame including elements of a material of a low thermal conductivity containing grooves for receiving the marginal edges of said panes and having walls of the grooves engaging and urging said panes toward one another to compress said gasket means an amount sufficient to produce an airtight sealing contact between the marginal edges of the facing surfaces of said panes and said gasket means; extending tongues on alternate ones of the elements of said frame fitted within the grooves of the adjacent other ones of the elements of said frame;
flushing gas directing means in the enclosed volume between said facing surfaces of said panes, said directing means being spaced across the planes of the respective panes to sub-divide the enclosed volume between the facing surfaces of said panes; and
fastener means for interconnecting the grooved elements of said frame to form a rigid structure.

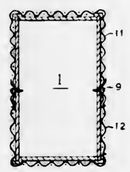
**3,932,972**
**STAIR CONSTRUCTION**
**Rudolph J. Rossman, Box 16-B, Star Rte., Hillman, Mich. 49746**
**Filed Oct. 29, 1974, Ser. No. 518,709**
**Int. Cl.² E04F** *11/00*
**U.S. Cl. 52—183** **9 Claims**



1. A stair tread construction comprising an elongate tread member having a flat main body portion and inturned flange portion extending along each of the opposed longitudinal edges of said main body portion in underlying relationship to said main body portion to define inwardly facing opposed longitudinal recesses on the underside of said tread member, a pair of tread support frame members extending transversely beneath said tread members adjacent the opposite ends thereof to support said tread member, an elongate tongue member fixedly mounted upon and extending between said support frame members and projecting into one of said recesses to anchor one longitudinal edge of said tread member to said support frame members, an elongate clamp member pivotally mounted on and extending between said support frame members, said clamp member having a longitudinal tongue portion projecting into the other of said recesses to anchor the other longitudinal edge of said tread member to said support frame members and to clamp said tread member against said tongue member, said clamp member being pivotally supported upon said support frame members for pivotal movement about an axis extending longitudinally of said tread member at a location intermediate the longitudinal edges of said main body portion, and a manually operable arm portion on said clamp member for pivoting said tongue portion of said clamp member between a generally horizontal tread member clamping position and an upwardly inclined tread member release position.

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**3,932,973**
**INSUBARS**
**Alvin Edward Moore, Manini Way, Bay St. Louis, Miss. 39520**
**Filed Nov. 18, 1974, Ser. No. 524,504**
**Int. Cl.² E04C** *1/06*
**U.S. Cl. 52—216** **19 Claims**



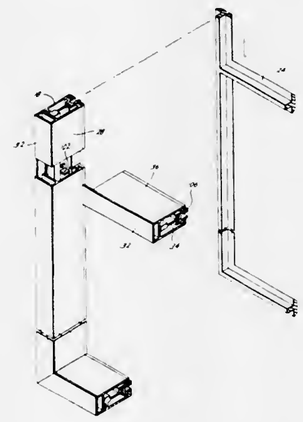
1. A plural-sided construction member, including:
a plurality of end-joined sheathed-can rows, each of said rows comprising: a plurality of cans having their axes substantially arranged in a line; encompassing said cans, a pair of oppositely positioned, partially telescoped chan-



nels of apertured stiff material, having apertures adapted to receive and hold stucco, one of said channels having an opposite, spaced pair of elongated edge portions each of which is contiguous to and overlaps an elongated edge portion of the other of said channels; and means extending thru apertures in said contiguous, lapped edge portions for fastening said channels together and to the row of cans;
means fastening together each adjacent pair of sheathed-can rows at row ends in a strength-providing joint of said member, comprising: a row-end attachment flange on a said channel, extending beyond end cans of the row to which the channel is connected, and at said joint overlapping a joint portion of a channel of a second sheathed-can row and overlapping an end can of said second row; and attaching means, passing thru said row-end flange, thru said lapped joint portion, and fastened to said end can.

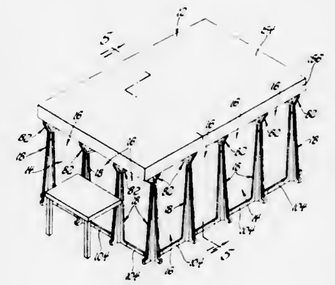
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**3,932,974**
**GLAZING SYSTEM**
**Gerald Thomas Wright, Bradfordwoods, Pa., assignor to Helmerich & Payne, Inc., Houston, Tex.**
**Filed Dec. 26, 1973, Ser. No. 428,346**
**Int. Cl.² E04B** *2/88*
**U.S. Cl. 52—235** **12 Claims**



1. Curtain wall structure for use in the wall of a building, comprising
an elongate structural support member having an outside edge and an inside edge,
a longitudinally extending groove in the outside edge,
a longitudinally extending resilient sealing member engaged in said groove,
said sealing member having at least one laterally extending sealing lip facing toward said structural support member,
a wall panel sealingly engaged by said sealing lip,
a longitudinally extending compression member engaging said wall panel in such a way as to hold it in sealing engagement with said sealing lip, and
means for attaching said compression member to said structural support member to hold the compression member in position,
said compression member covering the structural member from the inside edge to the outside edge, and
an inside cover plate concealing the inside edge, so that none of the structural member is visible.

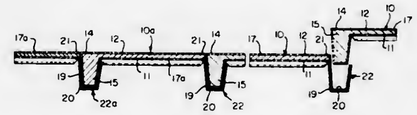
**3,932,975**
**BUILDING STRUCTURE AND COMPONENTS**
**John S. Hodge, 2350 Westridge Court, Ferndale, Mich. 48220**
**Continuation-in-part of Ser. No. 340,595, March 12, 1973, Pat. No. 3,861,102. This application Nov. 25, 1974, Ser. No. 527,137**
**Int. Cl.² E04B** *2/72*
**U.S. Cl. 52—282** **24 Claims**



1. A building structure, comprising a plurality of generally vertically extending spaced column means, groove-like recess means formed in said column means and extending generally longitudinally thereof, said groove-like recess means having at least a major portion thereof inclined with respect to the vertical, and a plurality of wall panel means separate from said column means, said plurality of wall panel means being adapted to be respectively received between said spaced column means and at least partly received within said groove-like recess means formed in said column means to thereby define at least a segment of a wall assembly supported by said column means, said wall panel means comprising first and second oppositely disposed side edges, a first edge portion of said first side edge and a second edge portion of said second side edge also being inclined with respect to the vertical in a manner as to be complementary to the angle of said recess means, said first side edge further comprising a third edge portion, said second side edge further comprising a fourth edge portion, said third edge portion being disposed above said first edge portion and extending vertically upwardly as to define a vertical continuation of said first edge portion, and said fourth edge portion being disposed above said second edge portion and extending vertically upwardly as to define a vertical continuation of said second edge portion.

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**3,932,976**
**PREFABRICATED MODULAR STRUCTURAL PANELS**
**John F. Steel, P.O. Box 401, Palm Beach, Fla. 33480**
**Continuation-in-part of Ser. No. 767,890, Sept. 3, 1968, abandoned, which is a continuation-in-part of Ser. No. 652,386, June 14, 1967, abandoned, which is a continuation-in-part of Ser. No. 423,075, Jan. 4, 1965, abandoned. This application May 22, 1970, Ser. No. 39,610**
**Int. Cl.² E04B** *2/10*; **E04C** *1/10*
**U.S. Cl. 52—309** **3 Claims**



1. A self-supporting vertical wall section consisting essentially of a plurality of self-supporting modular structural members, each structural member including a rigid-foamed plastic body panel of substantial thickness, a marginal edge portion

of the body panel defining an integral, vertically extending, roof-supporting beam portion which extends outwardly with respect to a first major surface of the body panel; a sheet member bonded to the body panel and beam portion in surface-to-surface contact to define the exterior surfaces of the structural member and to conform to the contour of the body panel and beam portion; marginal portions of the exterior sheet member being overlapped at an opposite marginal edge of the body panel to define an integral channel portion which is substantially coextensive with the opposite marginal edge and extends outwardly with respect to the first major surface of the body panel, the channel portion of each structural member being nestably received and interlocked with the beam portion of another structural member of like configuration.

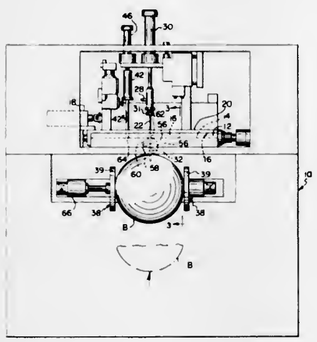
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**3,932,977**

## BALL INFLATING APPARATUS AND METHOD

**Lloyd H. Ringler, 2500 Greenway Drive, Brownwood, Tex. 76801**

**Filed Apr. 19, 1973, Ser. No. 352,575**
**Int. Cl.² B65B** *3/04*
**U.S. Cl. 53—7** **18 Claims**



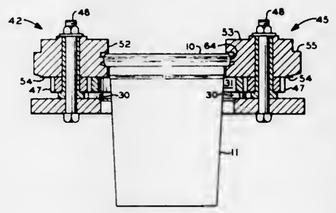
15. A method for inflating an expandable ball of type having an integral valve housing apertured for inward yielding reception of a closure adapted to retain inflating fluid in the ball comprising, impaling the apertured valve housing of the ball on a reciprocal inflation element and engaging the ball from the sides thereof for retaining it with said valve housing in predetermined position on the inflation element, inflating the ball to a predetermined expanded diameter size by means of the said inflation element, withdrawing the inflation element from the ball valve housing and shifting said withdrawn element laterally to non-interfering relation with respect to the apertured valve housing and positioning a valve closure over the apertured valve housing of the inflated ball, and forcing the valve closure into the apertured valve housing while retaining the ball with the valve housing maintained in said predetermined position by lateral gripping of the sides of the ball and thereby to seal the valve housing aperture so as to retain the inflating fluid interiorly of the inflated ball, and then terminating said gripping engagement of the ball from the sides thereof to permit movement of the ball away from the gripping means.

**3,932,978**

## WORM-TYPE DISPENSER FOR RIMMED CONTAINERS

**Alfred W. Kinney, Kansas City, Mo., assignor to Phillips Petroleum Company, Bartlesville, Okla.**

**Division of Ser. No. 370,532, June 15, 1973, Pat. No. 3,849,970. This application Oct. 21, 1974, Ser. No. 516,479**
**Int. Cl.² B67B** *3/00*; **B65B** *7/28*
**U.S. Cl. 53—37** **10 Claims**



1. A process for filling and capping a paperboard container having a circular horizontal cross section and having an annular rolled rim projecting outwardly and downwardly from the upper end of said container, said rolled rim having an outer generally vertical wall with an original maximum outside diameter, said outer generally vertical wall having a central portion as determined by measuring vertically with the container in the normal position, which comprises applying inwardly directed pressure about the at least substantially entire horizontal circumference of said rim to said central portion of said outer generally vertical wall of the rim of the container to thereby inwardly compress said central portion so that the diameter of the thus compressed central portion is less than the original maximum outside diameter of said rim, and substantially immediately thereafter filling and capping the thus treated container with a closure having a depending cylindrical skirt, said skirt having an internal diameter greater than the maximum outside diameter of the thus compressed rim and approximately equal to said original maximum outside diameter of the uncompressed rim such that said skirt frictionally engages the outer surface of said rim when said compressed rim tends to return to its original condition after said thus treated container is capped with said closure.

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**3,932,979**

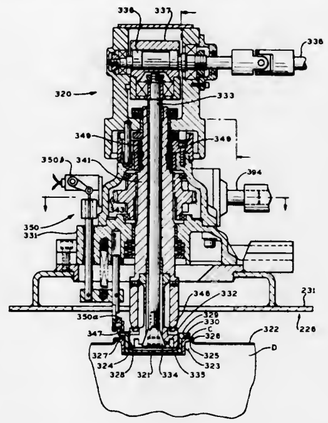
## APPARATUS FOR INSERTING CLOSURE MEANS INTO A CONTAINER

**Arthur J. Stock, Lakewood; Donald E. Christofer, Willowick, and Joseph E. Brinza, Euclid, all of Ohio, assignors to Stock Equipment Company, Chagrin Falls, Ohio**

**Division of Ser. No. 182,088, Sept. 20, 1971, Pat. No. 3,835,617. This application Oct. 25, 1973, Ser. No. 409,397**
**Int. Cl.² B65B** *43/40*, *7/28*, *57/02*
**U.S. Cl. 53—76** **25 Claims**

1. Apparatus for placing a closure means having a helical thread at an opening of an object which opening has an axis and a coaxial matching helical thread at said opening adapted to have screwed onto it the thread of said closure means when said closure means is placed at said opening, which closure means has grasp means by which said closure means may be grasped at essentially any location about its axis, said apparatus comprising wrench means adapted to be actuated to positively engage said grasp means at essentially any location about its axis to firmly grasp said closure means and adapted to be actuated to positively disengage said wrench means from said grasp means to release said closure means; shaft means carrying said wrench means, said shaft means having a helical thread of the same pitch as said threads of said closure means and said opening; means) for supporting said shaft means and said wrench means for rotation and for movement of said wrench means toward and away from said opening, said supporting means including means having a helical thread matching and engaging the thread of said shaft means, said helically threaded supporting means being immovable relative to said object while said wrench means is actuated to engage the grasp and unscrew said closure means from said opening and while said shaft means and wrench means are being rotated;





means for rotating said shaft means to cause said wrench means to move axially and to rotate; and means associated with said wrench means for actuating said wrench means to positively engage it with said grasp means of said closure means to grasp said closure means, and to positively disengage it from said grasp means to release said closure means.

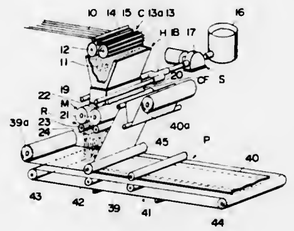
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**3,932,980**

## APPARATUS FOR CONTINUOUSLY MAKING A MIXTURE OF VISCOUS MATERIAL WITH SOLID MATERIAL

**Keliti Mizutani; Akira Ogino, both of Osaka; Minoru Yamada, Hyogo, and Nobuyuki Nakagawa, Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan**

**Filed Dec. 30, 1974, Ser. No. 537,420**
**Claims priority, application Japan, Jan. 23, 1974, 49-10500; Jan. 23, 1974, 49-10499**
**Int. Cl.² B65B** *9/02*, *9/04*; **B01F** *15/02*
**U.S. Cl. 53—111** **8 Claims**



1. An apparatus for continuously making a mixture of viscous material with solid material, which comprises;

first and second rotatable members supported in position for rotation in the opposite directions with respect to each other and spaced a predetermined distance from each other to define a mixing gap therebetween;

first supply means for supplying the viscous material and for generating zones of cascading flow of said viscous material, said zones of cascading flow of said viscous material being respectively downwardly oriented towards said first and second rotatable members, said cascading flow of said viscous material in said zones forming a viscous layer around said first and second rotatable members, said viscous layers on said first and second rotatable members adjoining to each other and subsequently entering said mixing gap as said first and second rotatable members are rotated in the opposite directions to each other;

second supply means for supplying the solid material onto said viscous layers, said solid material after having been supplied onto said viscous layers being dragged into said mixing gap during rotation of said first and second rotatable members to mix with said viscous material as it pass through said mixing gap; and

third and fourth rotatable members supported in position below said first and second rotatable members for rotation in the opposite directions to each other at a higher speed than any of said first and second rotatable members, said third and fourth rotatable members being respectively rotated in the same direction as said first and second rotatable members and spaced a predetermined distance from said respective first and second rotatable members, said third and fourth rotatable members acting to remove the viscous mixture, which has emerged from said mixing gap sticking in part to said first rotatable member and in part to said second rotatable member, off from said first and second rotatable members, said mixture which has been removed from said first and second rotatable members subsequently falling downwards by gravity and being then collected.

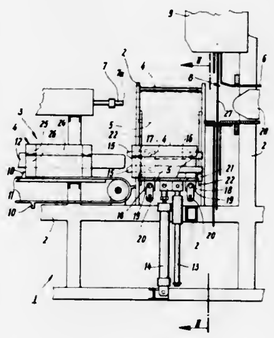
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**3,932,981**

## MACHINE FOR MULTIPLE ARTICLE PACKAGING

**Walter Fillmann, and Werner Kalmbach, both of Stuttgart, Germany, assignors to Fr. Hesser Maschinenfabrik AG, Stuttgart - Bad Cannstatt, Germany**

**Filed Oct. 7, 1974, Ser. No. 512,502**
**Claims priority, application Germany, July 19, 1974, 2434805**
**Int. Cl.² B65B** *63/02*
**U.S. Cl. 53—124 D** **8 Claims**



1. A machine for wrapping a plurality of articles in a single package, comprising a lifting table for delivering a plurality of articles to a particular level, compressing means coupled to said lifting table and operative to move horizontally as a function of the vertical position of said lifting table whereby said articles are compressed, and wrapping means for horizontally receiving and wrapping said articles after delivery to said particular level.

**3,932,982**

## APPARATUS FOR PLACING FOLDED BOXES OR THE LIKE IN SHIPPING CARTONS

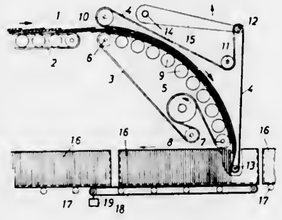
**Hartmut Klapp, Kaarst, Germany, assignor to Jagenberg-Werke Aktiengesellschaft, Dusseldorf, Germany**

**Filed Nov. 28, 1973, Ser. No. 419,843**

**Claims priority, application Germany, Dec. 15, 1972, 2261416**

**Int. Cl.² B65B** *5/10, 35/24*

**U.S. Cl. 53—244** **3 Claims**



1. An apparatus for filling a shipping carton with flat-folded boxes as put out in shingled array by a generally horizontal conveyor of a manufacturing or processing meachine, comprising a conveyor for supporting said carton and positioned below said manufacturing machine conveyor, a pair of cooperating curved conveyors extending from said manufacturing machine conveyor to said carton, a portion of one of said curved conveyors in operative position extending into said carton and bearing against one flat surface of boxes within said carton, whereby said boxes are transferred from horizontal shingled array to vertical shingled array and are successively discharged into said carton in vertical disposition, successive boxes discharged into said carton causing said carton to advance on its conveyor, and means for displacing said portion of said one curved conveyor between operative position in said carton and inoperative position above said carton, whereby when said carton is filled actuation of said displacing means to displace said portion into inoperative position permits said filled carton to be removed from below said curved conveyors and to be replaced by an empty carton, whereafter said displacing means may be again actuated to restore said portion to operative position.

**3,932,983**

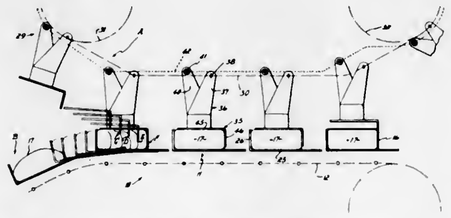
## TAMPER AND CONFINER FOR PRODUCT BUCKET

**Charles C. Hughes, Ludlow, Ky., assignor to R. A. Jones & Co. Inc., Covington, Ky.**

**Filed Sept. 26, 1974, Ser. No. 509,416**

**Int. Cl.² B65B** *5/04, 63/02*

**U.S. Cl. 53—252** **7 Claims**



2. In a continuous motion cartoner comprising,
an endless carton transport conveyor,
a product bucket conveyor extending parallel to said transport conveyor and containing a series of product buckets,
means for feeding pouches into said buckets,
a barrel loader located adjacent said bucket conveyor to thrust said pouches from said buckets into cartons,
the improvement comprising,
said buckets being L-shaped and having a horizontal bottom wall and a vertical trailing wall,
an endless chain overlying said bucket conveyor,
a series of inverted L-shaped tamper-confiner elements mounted on said chain, each having a horizontal top wall and a vertical leading wall,
and means for bringing each said bucket gradually into juxtaposition with a respective tamper-confiner element to define a generally rectangular tube confining a pouch.

**3,932,984**

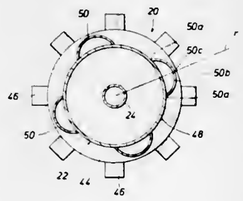
## HARVESTING TOPPER WITH CURVED DEFLECTORS

**Donald J. Brassette, Raceland, La., assignor to Thomson International Company, Thibodaux, La.**

**Filed July 25, 1974, Ser. No. 491,781**

**Int. Cl.² A01D** *45/02*

**U.S. Cl. 56—63** **6 Claims**



1. Deflector apparatus for a harvesting topper, said deflector apparatus comprising:
an upstanding carrier having an upstanding axis and a surface facing laterally outwardly with respect to said axis;
a deflector on said carrier, and projecting laterally outwardly therefrom, said deflector having two side edges circumferentially spaced from each other on the laterally outwardly facing surface of said carrier and a curved outwardly convex deflector surface extending between said two side edges, said deflector surface facing generally laterally outwardly with respect to said laterally outwardly facing surface of said carrier; and
means connected to said carrier for mounting said deflecting apparatus for rotation about the axis of said carrier.

**3,932,985**

## YARN FRICTION FALSE TWIST DEVICE

**Geoffrey Naylor, Macclesfield, England, assignor to Ernest Scragg & Sons Limited, Macclesfield, England**

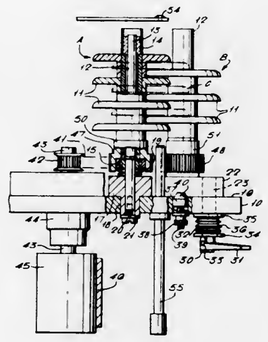
**Filed Nov. 4, 1974, Ser. No. 520,891**

**Claims priority, application United Kingdom, Nov. 3, 1973, 51135/73**

**Int. Cl.² D01H** *7/92*; **D02G** *1/04*

**U.S. Cl. 57—77.4** **10 Claims**

1. Friction false twist device of the class comprising three equiangularly spaced parallel shafts each having a set of rotary friction discs equally axially spaced and arranged so that discs of the sets overlap one another substantially when viewed axially and a strand passing through the centre of the device follows a zig-zag spiralling path as it contacts the rim of each disc in turn, wherein one of the sets of discs is a datum set and is mounted on a support member with its shaft projecting relative to a flat reference surface of the support member and with its shaft axis at a location which is fixed relative to the parallel axes of the shafts of the other two sets of discs, the latter shafts being carried on respective pivotal members each having a flat undersurface seated upon the flat reference surface of the support member or a surface co-planar therewith, and the shafts being mounted on the pivotal members with their axes equally spaced from fixed axes about which the pivotal members are adjustable, the latter axes being equally spaced from each other and from the shaft axis of the datum



set of discs, and means being provided for locking the pivotal members in selected positions of adjustment.



**3,932,986**

## METHOD FOR MANUFACTURING A TEXTURED SYNTHETIC MULTIFILAMENT YARN HAVING ALTERNATELY GROUPED S AND Z TWISTS

**Kenzo Kosaka; Shin Morioka; Kunio Shibata; Takashi Goto, all of Nagoya, and Eizi Takahashi, Toyoake, all of Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan**

**Filed Mar. 8, 1974, Ser. No. 449,492**

**Int. Cl.² D02G** *1/02, 3/34*

**U.S. Cl. 57—157 TS** **5 Claims**



1. In a method for producing a synthetic multifilament textured yarn having compact and bulky portions comprising feeding a material multifilament yarn to a supply roller means, false-twisting said yarn fed from said supply roller means, delivering said false-twisted yarn by a delivery roller means, winding said false-twisted yarn delivered from said delivery roller means under an over-feed condition, an improvement comprising in combination, carrying out said false-twisting operation under a processing temperature within a range between a softening temperature and a melting temperature of the yarn, stretching said false-twisted yarn in a restricted condition below a limit of elastic deformation thereof, whereby the individual filaments in the compact portions are substantially separated from each other.

**3,932,987**

## METHOD OF OPERATING A COMBUSTION PISTON ENGINE WITH EXTERNAL COMBUSTION

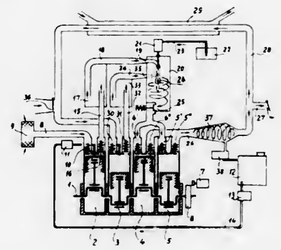
**Friedrich Munzinger, Hohenrandstr. 46, 7 Stuttgart-Vaihingen, Germany**

**Continuation of Ser. No. 100,867, Dec. 23, 1970, abandoned. This application Nov. 21, 1974, Ser. No. 525,818**

**Claims priority, application Germany, Dec. 23, 1969, 1964427**

**Int. Cl.² F02G** *1/02, 3/00*

**U.S. Cl. 60—39.05** **13 Claims**



1. A method of operating a combustion piston engine with external combustion at substantially constant pressure of an air-fuel mixture whose air content has been pre-compressed together with a liquid coolant, characterized by precompressing said air content and said coolant in one step to a pressure-temperature value at which the coolant is substantially saturated vapour.

**3,932,988**

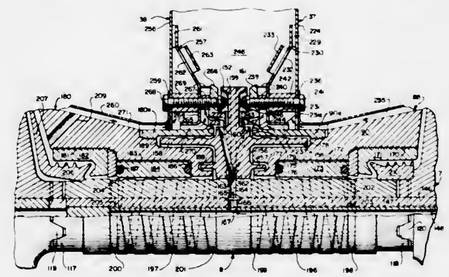
## FUEL SLINGER COMBUSTOR

**Albert H. Beaufrere, Private Road, Huntington, N.Y. 11743**

**Division of Ser. No. 300,774, Oct. 25, 1972, Pat. No. 3,818,696. This application June 24, 1974, Ser. No. 482,805**

**Int. Cl.² F02C** *7/22*

**U.S. Cl. 60—39.71** **4 Claims**



1. In a combustor with a rotary slinger as the fuel injector, the combination of wall means defining a combustion zone and a premix chamber in flow communication with said combustion zone; a rotary fuel slinger attached to shaft means to project atomized fuel in said premix chamber with a predetermined tangential swirl component; said premix chamber having an inlet means to supply inlet air to said premix chamber; air directing means in said inlet air means for directing said inlet air with a tangential swirl component opposite to said predetermined swirl component whereby the air is directed into and mixed with the projected fuel before the fuel reaches the combustion zone; and said wall means for the premix chamber comprising generally planar side walls and at least one conical wall surrounding said slinger so as to redirect the fuel into the path of the inlet air to the premix chamber; and said wall means further comprising additional air directional

means disposed to direct main primary combustion air into a heavy recirculation swirl of fuel/air mixtures in said combustion zone.

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**3,932,989**

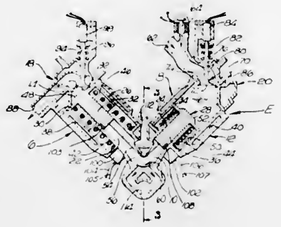
## RESONANT GAS-EXPANSION ENGINE WITH HYDRAULIC ENERGY CONVERSION

**Mihai C. Demetrescu, 17761 Palmento Way, Irvine, Calif. 92664**

**Division of Ser. No. 314,211, Dec. 11, 1972, Pat. No. 3,848,415. This application July 1, 1974, Ser. No. 484,739**

**Int. Cl.² F04B** *17/00*

**U.S. Cl. 60—327** **6 Claims**



**1.** A method of operating a gas expansion engine during intervals of idling and power-providing operation, having resiliently-mounted displacement-related pistons to provide motive power, comprising the steps of:

establishing a resonant frequency of oscillating motion for said pistons as the operating frequency for the engine;

sensing the amplitude of the oscillating motion of said pistons;

selectively actuating power strokes by each of said pistons during idling intervals of operation upon the amplitude of oscillating motion dropping below a predetermined level and otherwise during power-providing intervals of operation to provide motive power.

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**3,932,990**

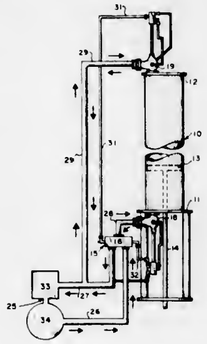
## CLOSED LOOP BOOSTER SYSTEM PNEUMATIC ACTUATOR FOR OIL WELLS

**Joseph H. Klaeger, 610 Chauncey, San Antonio, Tex. 78216**

**Continuation-in-part of Ser. No. 421,844, Dec. 5, 1973, Pat. No. 3,933,175. This application Aug. 15, 1974, Ser. No. 497,695**

**Int. Cl.² F15B** *1/00, 13/042*

**U.S. Cl. 60—369** **6 Claims**



**1.** An improved actuator for oil well pumps comprising:

a. an elongated cylinder,

b. a piston movably positioned in said cylinder dividing said cylinder into a top end and a bottom end,

c. a floating piston three-way spool valve having a low pressure port and a high pressure port and a cylinder port,

d. a top snifter valve operably secured to the top end of said cylinder,

e. a bottom snifter valve operably secured to the bottom end of said cylinder,

f. a bottom power line interconnecting the cylinder port of said three-way valve and said bottom snifter valve, said bottom power line adapted to flow gases to and from said bottom snifter valve,

g. a low pressure line leading from said low pressure port of said three-way valve,

h. a high pressure line leading from said high pressure port of said three-way valve,

i. a piston pressure equalizing line interconnecting the said low pressure line and the pumping cylinder top end through the said top snifter valve,

j. a top control line operably interconnecting said top snifter valve and a first end of said floating piston three-way spool valve,

k. a bottom control line operably interconnecting said bottom snifter valve and a second end of said floating piston three-way spool valve,

l. a booster means interconnecting said low pressure line and said high pressure line, said booster means receiving low pressure gases and compressing said gases and returning said gases to the high pressure line,

m. said top snifter valve and said bottom snifter valve in conjunction with said control lines and said floating piston three-way valve controlling the flow of high pressure gases to said cylinder and the flow of low pressure gases from said cylinder.

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**3,932,991**

## HYDROSTATIC TRANSMISSION CONTROL SYSTEM

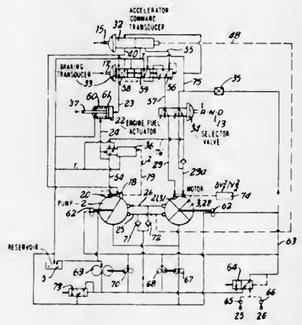
**Robert Cecil Clerk, Edison House, Fullerton Road, Queensway Industrial Estate, Glenrothes, Fife, Scotland**

**Filed July 23, 1974, Ser. No. 490,921**

**Claims priority, application United Kingdom, July 23, 1973, 34908/73; July 18, 1974, 34908/74**

**Int. Cl.² F16H** *39/46*

**U.S. Cl. 60—431** **1 Claim**



**1.** In a vehicle drive system, in combination, a variable displacement type pump which pumps fluid at a pump delivery pressure, a fuel driven engine for driving said pump, a load-driving variable displacement type hydraulic motor driven by said fluid at said pump delivery pressure, and a control system including an accelerator for said engine, accelerator signal producing means for producing an accelerator signal as a function of accelerator command, pump speed signal producing means for producing a pump speed signal as a function of pump speed, fuel supply means responsive to said accelerator signal to increase the supply of fuel to said engine as a function of said accelerator signal and responsive to said pump speed signal to decrease the supply of fuel to said engine as a function of said pump speed signal, means responsive to said accelerator signal for reducing the displacement of said pump as a function of said accelerator signal, motor displacement signal producing means responsive to said accelerator signal and to pump delivery pressure for producing a motor displacement signal as a function thereof, and means for increasing motor displacement as a function of said motor displacement signal.



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**3,932,992**

## PRESSURIZED FLUID SUPPLY POWER CONTROL MEANS

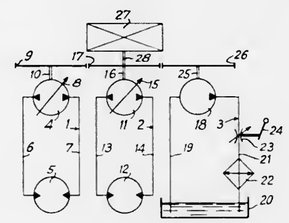
**Louis E. Martin, Senlis, France, assignor to Poclain, Le Plessis Belleville, France**

**Filed Nov. 11, 1974, Ser. No. 522,841**

**Claims priority, application France, Nov. 21, 1973, 73.41493**

**Int. Cl.² F15B** *18/00*

**U.S. Cl. 60—431** **8 Claims**



**1.** A pressurized fluid supply apparatus comprising:

a closed circuit including a variable delivery pump having a drive shaft and no flow-limitation;

an open circuit including a pump having a delivery conduit and a drive shaft, a fluid reservoir and a fluid cooler;

an engine for driving said pumps and having an output shaft to which are coupled said drive shafts of said pumps, and

a flow-limiter arranged in the delivery conduit of said pump of said open circuit so as to divide said delivery conduit into two portions and comprising a restriction whose configuration is independent of the pressure of the fluid in the portion of said delivery conduit immediately upstream of said flow-limiter.

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**3,932,993**

## CONTROL APPARATUS FOR AN ADJUSTABLE HYDRAULIC MACHINE DRIVEN BY AN ADJUSTABLE DRIVING MOTOR

**Josef Riedhammer, Ulm, Germany, assignor to Hydromatik GmbH, Ulm, Germany**

**Filed Dec. 11, 1974, Ser. No. 531,542**

**Claims priority, application Germany, Dec. 19, 1973, 2363335**

**Int. Cl.² F16D** *31/00;* **F16H** *39/46*

**U.S. Cl. 60—431** **3 Claims**

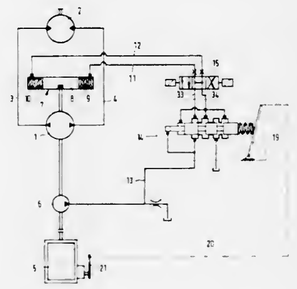
**1.** Control apparatus for an adjustable hydraulic machine driven by a driving motor which can be set to different desired speeds, comprising:

a fluid-operated adjustment motor having first and second control inlets for first and second fluid control inputs respectively, and having a machine adjustment control member displaceable in one direction under the action of the said first fluid control input, to effect adjustment of the hydraulic machine in one sense, and displaceable in the opposite direction under the action of the said second fluid control input to effect adjustment of the hydraulic machine in an opposite sense;

and a pressure control valve device comprising:

a valve housing having first and second fluid inlets, for connection to receive a fluid pressure input which provides the said first fluid control input and varies with the actual speed of the driving motor, a control outlet for connection to the said second control inlet to supply thereto the said second fluid control input, and a discharge outlet; portions of the housing defining a first control chamber, connected to the said first fluid inlet, a second control chamber, connected with the said control outlet, first internal passage, connected between the said second fluid inlet and the said control outlet, and a second internal passage connected between the said control outlet and the said discharge outlet,

a displaceable valve slide accommodated in the said housing for displacement therein between a first position, in which the slide blocks the said first internal passage but leaves the second internal passage open, a second position, in which the slide blocks the second internal passage



but leaves the first internal passage open, and intermediate positions in which the slide provides partial opening and closing of the first and second internal passages; respective portions of the slide defining first and second piston faces respectively located in the said first and second control chambers and each facing in a direction from the said first position to the said second position, whereby the slide is urged in the direction from its said second position to its said first position by fluid pressure in the said control chamber and is additionally urged in that direction, when the control slide is in its said second position, by fluid pressure in the said second control chamber,

and adjustable biasing means acting upon the said valve slide to apply thereto a force, selectively adjustable in dependence upon the desired speed of the said driving motor, urging the said valve slide from its said first position to its said second position; whereby a fall of the actual speed of the driving motor by more than a predetermined amount relative to a selected desired speed of the driving motor initiates compensatory adjustment of hydraulic machine by way of the said adjustment motor.

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**3,932,994**

## THERMAL ACTUATOR

**Paige W. Thompson, Morrison, Ill., assignor to General Electric Company, Fort Wayne, Ind.**

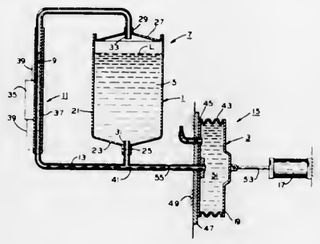
**Filed Feb. 6, 1974, Ser. No. 439,894**

**Int. Cl.² F03G** *7/06*

**U.S. Cl. 60—531** **64 Claims**

**1.** A method of driving a driven one of a pair of means for containing a vaporizable liquid and communicating with each other in a thermal actuator comprising the setps of:

a. deliving the liquid from the other of the containing means to means exteriorly thereof for vaporizing the liquid;
b. vaporizing the liquid delivered to the vaporizing means upon the occurrence of a preselected condition; and



c. delivering the vapor created during the vaporizing step to the other containing means to act on the fluid therein and effect its displacement for driving the driven one of the containing means and utilizing at least a part of the displaced liquid for replenishing at least in part the liquid vaporized by the vaporizing means.

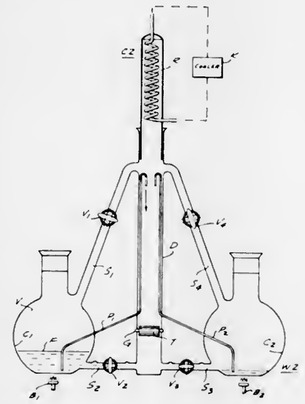
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**3,932,995**

## SYSTEM FOR PRODUCING WORK USING A SMALL TEMPERATURE DIFFERENTIAL

**Milan Pecar, Ante Kovacica 1, Zagreb, Yugoslavia**

**Continuation-in-part of Ser. No. 241,596, April 6, 1972, abandoned. This application June 17, 1974, Ser. No. 480,096**
**Claims priority, application Germany, Apr. 17, 1971, 2118824**
**Int. Cl.² F03G 3/00**
**U.S. Cl. 60—531** **3 Claims**



1. An apparatus for producing mechanical work using a pair of zones having a temperature differentials between them, said apparatus comprising:
a pair of substantially closed chambers at least one of which is in the high-temperature zone, a fluid having a boiling temperature lying between the temperatures of said zones being disposed in said chambers;
an upright duct at least partially in the low-temperature zone;
a tube extending between a lower region of each chamber and the upper end of said duct;
conduit means extending between each of said chambers and said duct for flow of liquid and gas therebetween, said chambers, duct, tubes, and conduit means constituting a closed system;
valve means in each of said conduit means for alternately blocking and unblocking same, whereby with the valve means of one of said chambers closed and the valve means of the other chamber open, said fluid having a boiling temperature lying between the temperatures of said zones will vaporize in said one chamber and be driven up the respective tube to flow down said duct and through the conduit means of the other chamber into this other chamber; and
turbine means in said duct between the ends thereof and operable by liquid flow through said duct for creating mechanical work.

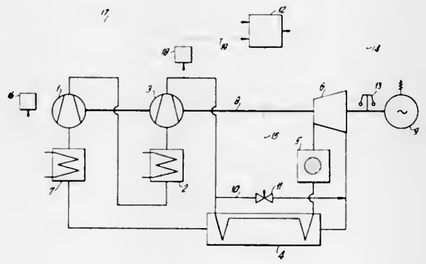
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**3,932,996**

## PROCEDURE AND DEVICE SUITABLE FOR THE SPEED CONTROL OF A CLOSED GAS TURBINE PLANT CONTAINING A WORKING MEDIUM CYCLE

**Karl Bammert; Reinhard Krapp, both of Hannover, and Günter Krey, Berenbostel, all of Germany, assignors to Gutehoffnungshutte Sterkrade Aktiengesellschaft, Germany**

**Filed Jan. 24, 1975, Ser. No. 544,014**
**Claims priority, application Germany, Jan. 24, 1974, 2403344**
**Int. Cl.² F01K 25/10**
**U.S. Cl. 60—650** **11 Claims**



1. Procedure for the speed control of a closed cycle gas turbine plant containing a working medium, having at least one by-pass valve serving as an adjusting member for the working medium cycle, and using measuring transformers for converting the high pressure and the low pressure of the working medium cycle into a high pressure signal and a low pressure signal, respectively, and for converting the actual speed and the nominal speed into an actual speed signal and a nominal speed signal, respectively, said procedure comprising the steps of processing, in a first regulator part, only the difference signal between the actual speed signal and the nominal speed signal to provide a first output signal; processing, in a second regulator part, the high pressure signal and the low pressure signal to produce a second output signal; combining the first and second output signals to provide a summation signal; supplying the summation signal to a third regulator part as an input signal; and utilizing the output signal of the third regulator part to adjust the by-pass valve to control the working medium cycle.

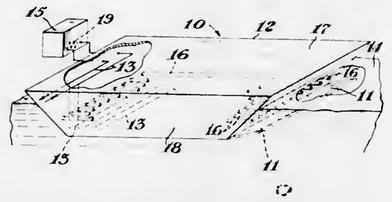


**3,932,997**

## METHOD FOR SUPPRESSING THE FORMATION OF ICE IN NATURAL OR MAN-MADE BODIES OF WATER

**John S. Best, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.**

**Division of Ser. No. 311,491, Dec. 4, 1972, which is a continuation-in-part of Ser. No. 268,468, July 3, 1972, Pat. No. 3,768,264. This application Sept. 23, 1974, Ser. No. 508,368**
**Int. Cl.² E02B 3/00**
**U.S. Cl. 61—1 R** **1 Claim**



1. A method for suppressing the formation of ice in a natural or man-made body of water, comprising the steps of:
a. storing heat near said natural or man-made body of water from at least one thermal energy source, said heat being stored in a liquid composition having a freezing temperature substantially above that necessary for the formation of ice in said body of water; and
b. transferring said stored heat into a portion of water adjacent the surface of said body of water in sufficient amount to substantially prevent or suppress the formation of ice in said body of water during cold seasonal weather when the air temperature is below that necessary for the formation of an ice cover on said body of water, said transferring of stored heat being accomplished in conjunction with pumping and distributing of warm bottom water disposed adjacent the bottom of said body of water into said portion of water adjacent the surface.

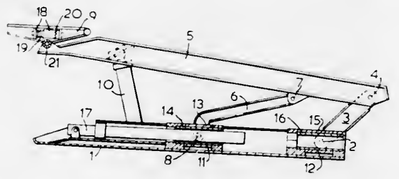
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**3,932,998**

## MINE ROOF SUPPORT

**Walter Lubojatsky, Recklinghausen, and Wilhelm Wertelewski, Datteln, both of Germany, assignors to Becorit Grubenausbau GmbH, Recklinghausen, Germany**

**Filed Feb. 15, 1974, Ser. No. 442,833**
**Claims priority, application Germany, Feb. 27, 1973, 2309671**
**Int. Cl.² E21D 23/04**
**U.S. Cl. 61—45 D** **10 Claims**



1. A mine roof support comprising an elongated ground-engaging structure for placement with its longitudinal axis perpendicular to a mineral face, a roof-engaging structure overlying a forward portion of the ground-engaging structure, a shield structure extending between the rear of said ground-engaging structure and said roof-engaging structure longitudinally of and overlying said ground-engaging structure, first hinge means having a first hinge axis extending transversely to the longitudinal axis of said ground-engaging structure and serving hingedly to connect a rear portion of said shield structure to said ground-engaging structure, hydraulically extensible prop means extending between said shield structure and said ground-engaging structure and operable to pivot said shield structure relative to said ground-engaging structure about said first hinge means, second hinge means connecting a forward portion of said shield structure to said roof-engaging structure, said first hinge means including pivot means whereby said first hinge axis is pivotal about a second axis normal to said first hinge axis.

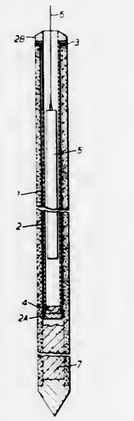
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**3,932,999**

## PILE DRIVING

**George Stewart Todd, Thames Ditton, England, assignor to Taylor Woodrow International Ltd., London, England**

**Filed Nov. 15, 1974, Ser. No. 524,276**
**Claims priority, application United Kingdom, Nov. 16, 1973, 53425/73**
**Int. Cl.² E02D 7/00**
**U.S. Cl. 61—53.5** **6 Claims**



1. A method driving hollow piles, comprising driving such a pile by applying blows to a first abutment of a hollow drive tube, said first abutment being remote from one end of the tube, said tube having a second abutment remote from said one end, said tube extending down the pile so that said first abutment is within the pile and spaced from the bottom of the pile so that the force of applied blows is transferred to the pile via said second abutment.

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**3,933,000**

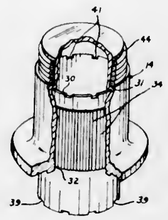
## TUBULAR REGENERATOR FOR A CRYOGENIC REFRIGERATOR

**Richard D. Doody, Culver City, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.**

**Filed Feb. 6, 1975, Ser. No. 547,664**
**Int. Cl.² F25B 9/00**
**U.S. Cl. 62—6** **3 Claims**

1. A hot cylinder for a cryogenic refrigerator having a hot displacer in the hot cylinder; a cold cylinder inclosing a cold displacer; a crankcase connected to the hot cylinder and the cold cylinder, a motor for moving the hot displacer and the cold displacer and a heater for said hot cylinder comprising: a cylindrical wall member adapted to be secured to said crankcase; an annular liner member positioned between the hot displacer and said wall member and spaced a predetermined distance from said wall member; a plurality of elongated tubular members in the space between the wall member and the liner member; said liner member including means for axially positioning the tubular members; means for providing a seal

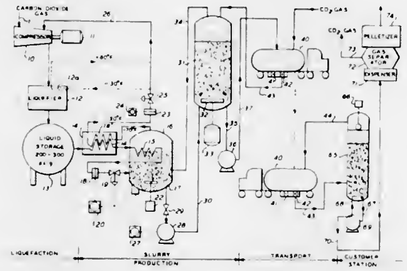
between said hot displacer and said liner member; said liner member including means for providing a gas flow path be-



tween the crankcase through said tubular members into a hot volume adjacent the heater in the hot cylinder.

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**3,933,001**
**DISTRIBUTING A CARBON DIOXIDE SLURRY**
**Allen V. Muska, Berkeley Heights, N.J., assignor to Airco, Inc., Montvale, N.J.**
**Filed Apr. 23, 1974, Ser. No. 463,226**
**Int. Cl.² F25J *1/00***
**U.S. Cl. 62—47** **1 Claim**



1. A system for transporting a solid-liquid carbon dioxide slurry including a vessel for retaining said slurry which during transport separates into solid carbon dioxide collected at the bottom of the vessel and a layer of liquid carbon dioxide thereabove, and vessel having a header disposed therein and a discharge pump having an outlet coupled to a slurry discharge conduit, the improvement comprising:

said discharge pump having a first inlet selectively coupled to said liquid carbon dioxide;

said header being substantially linear and having an inlet, a plurality of nozzles extending from said header along the length thereof and first and second end nozzles disposed in communication with either end of said header;

means for selectively coupling the outlet of said discharge pump to the inlet of said header;

a reslurry pump having an inlet selectively coupled to the bottom of said vessel and an outlet selectively coupled to said header inlet, said discharge pump having a second inlet selectively connected to the bottom of said vessel with said first end nozzle of said header juxtaposed with the inlet of said reslurry pump and said second end nozzle of said header juxtaposed with the second inlet of said discharge pump such that upon said discharge pump passing liquid $CO_2$ from the first inlet thereof to said header inlet, jets of liquid carbon dioxide emitted through said first and second header nozzles are effective to fluidize solid $CO_2$ collected in the inlet of said reslurry pump and in said second inlet of said discharge pump such that reslurried liquid-solid $CO_2$ is passed through said reslurry pump and said header nozzles into said vessel with the solid $CO_2$ collected at the bottom of said vessel thereby reslurried prior to removal of said slurry from said vessel through said discharge pump and said slurry discharge conduit.

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**3,933,002**
**SKATING RINK**
**Earle R. Vickery, 101 Merrick St., Worcester, Mass. 01609**
**Filed June 17, 1974, Ser. No. 479,818**
**Int. Cl.² F25D *1/00*; A63C *19/10***
**U.S. Cl. 62—56** **6 Claims**



6. A method of forming a skating rink, comprising the steps of:

a. forming a flexible tube into the periphery of a closed geometric figure on a horizontal surface,

b. placing a material in the tube,

c. causing the material to fill the tube and form a rigid mass,

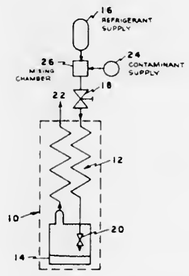
d. covering the closed figure with a water resistant sheet to form a liquid holding structure, and

e. placing water in the structure,

f. causing the water to freeze.

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**3,933,003**
**CRYOSTAT CONTROL**
**Arvel Dean Markum, San Juan Capistrano, Calif., assignor to General Dynamics Corporation, Pomona, Calif.**
**Division of Ser. No. 464,078, April 25, 1974, Pat. No. 3,885,939. This application Jan. 6, 1975, Ser. No. 538,651**
**Int. Cl.² F25B *47/00***
**U.S. Cl. 62—85** **10 Claims**



1. A method of automatically controlling the flow of refrigerant in a cryostat comprising the steps of:

selecting a cooling cycle for the cryostat to be automatically controlled;

selecting and providing a refrigerant gas supply for the cryostat to meet the requirements of said selected cooling cycle;

selecting and providing a contaminant for the cryostat to meet the requirements of said selected cooling cycle, said contaminant having a solidification point higher than that of said refrigerant;

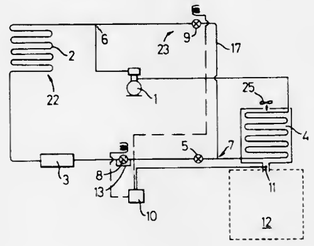
introducing said contaminant into said refrigerant supply; and

alternately and automatically solidifying and melting said contaminant in the cryostat to reduce the flow of said refrigerant through the cryostat.



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**3,933,004**
**REFRIGERATION CONTROL SYSTEMS**
**William Derrick Marshall Carter, Holme Drove, and Gerald Robin Scrine, Cambridge, both of England, assignors to Shipowners Refrigerated Cargo Research Association, London, England**
**Filed Apr. 25, 1974, Ser. No. 463,964**
**Claims priority, application United Kingdom, Apr. 26, 1973, 19935/73**
**Int. Cl.² F24D *11/02*; F25B *13/00***
**U.S. Cl. 62—199** **15 Claims**

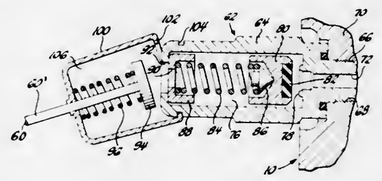


1. In a refrigeration system for a substantially enclosed space and including a compressor, a condenser, an evaporator, conduit means connecting said compressor, condenser and evaporator to form a cooling circuit, a hot gas by-pass conduit between the compressor and the evaporator and a thermostat which is sensitive to the heating or cooling requirement of the space, the improvement which comprises a first valve responsive to said thermostat provided in the hot gas by-pass conduit, a second valve responsive to said thermostat provided in the cooling circuit, the second valve having a permanently open by-pass, and means provided in the system for apportioning flow of gas between the cooling circuit and the by-pass conduit so that, during a temperature controlling phase of refrigeration, the gas flows both to the condenser and to the by-pass conduit and the apportioning of flow can cause either net heating or net cooling of the enclosed space, and in which the means apportioning the flow is so arranged that when first and second valves are open, there is net cooling of the space and that when said second valve is closed, there is net heating of the space.

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**3,933,005**
**HIGH PRESSURE COMPRESSOR CUT-OFF SWITCH**
**John H. Beltz, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.**
**Filed Oct. 15, 1974, Ser. No. 514,295**
**Int. Cl.² F25B *1/00***
**U.S. Cl. 62—228** **2 Claims**

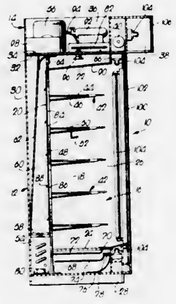
1. A combination pressure relief valve and disconnect switch adapted for use with an air conditioning compressor which is activated by the energization of an electromagnetic clutch comprising: a valve housing enclosing an interior space and having a relief passage extending therefrom for connection to the outlet portion of the compressor; a valve seat formed around the end of the relief passage; valve means within said interior space normally engaging said valve seat to prevent fluid flow therebetween when the fluid pressure in the compressor outlet is below a predetermined level and being movable away from said valve seat in response to said predetermined fluid pressure to discharge excess pressurized fluid into said interior space; a generally cup-shaped connector member having a hollow interior and an open end; said open end having turned-in edge means engaging said valve housing and sealingly enclosing said connector interior; said valve housing having a fluid relief passage connecting the interiors of said housing and said connector; a clutch terminal member



normally held in electrical contact with said housing by said connector member to close a clutch energization circuit whereby pressurization of said connector interior by opening of the valve causes separation of the inturned edge and said valve housing and opening of said clutch circuit by the resultant disconnection of said terminal member and said valve housing.

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**3,933,006**
**SUPERMARKET PRODUCE DISPLAY FIXTURE**
**Lewis E. South, Kansas City, Mo., assignor to The Weather Box Company, Kansas City, Mo.**
**Filed May 9, 1974, Ser. No. 468,232**
**Int. Cl.² F25B *19/00***
**U.S. Cl. 62—231** **1 Claim**



1. An in-store article display fixture for bananas comprising:

an upright display case,

said case having a normally open-front display compartment defined by a back wall, a top wall, a bottom wall, opposed side walls and a curtain wall on each side of said open front;

a plurality of support members within said compartment for receiving the bananas to be displayed, said support members being in the form of arms extending from said back wall into said display compartment, said arms being adapted to receive and support hands of bananas in spaced, noncontacting relationship;

air circulating means operably associated with the case and disposed to selectively circulate air within said compartment and around the hands of bananas;

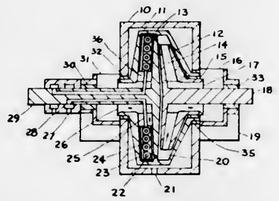
air cooling means operably associated with said case in a manner to selectively control the temperature of the air circulated within the compartment;

a pressure container containing a banana curing agent, said container being in communication with said display compartment; and

control means for providing time-controlled dispensing of said curing agent into said display compartment for circulation therewithin by said air circulating means.

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**3,933,007**
**COMPRESSING CENTRIFUGE**
**Michael Eskeli, 7994-41 Locke Lee, Houston, Tex. 77042**
**Filed Oct. 11, 1973, Ser. No. 405,584**
**Int. Cl. F25b** *3/00*
**U.S. Cl. 62—401** **7 Claims**

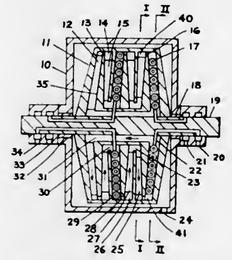


1. A working fluid compressor expander comprising:
a. a casing for supporting shafts;
b. shafts journalled in bearings in said casing for rotation;
c. a rotating first rotor mounted on a first rotor shaft so as to rotate in unison therewith, said rotor being of circular cross section in a radial plane and adapted for high speed rotation with its structural walls being thicker near the center than at its periphery; said rotor having an entry port for said working fluid near the center of said rotor and radially extending passageways having vanes therewithin for assuring that said working fluid therewithin rotates at the same rotational speed as said rotor for effecting centrifugal compression and effecting an elevated pressure at its periphery a cooling heat exchanger within said radially extending passageways in said first rotor with a coolant being circulated through passages within said heat exchanger in heat exchange relationship with said working fluid for the purpose of removing heat from said working fluid; said coolant being supplied to said heat exchanger via passages provided through said first rotor shaft, and returned via passages within said first rotor shaft; nozzles communicating at their entry end with said radially extending passageways and discharging said working fluid to a peripheral portion within said rotor; with said peripheral portion being separated from said radially extending passage ways by a wall with said nozzles mounted on said wall;
d. a rotating second rotor mounted on a second rotor shaft so as to rotate in unison therewith, said second rotor being of circular configuration in a radial plane and adapted for high speed rotation; said rotor having radially extending passageways communicating with said peripheral portion of said first rotor for receiving said working fluid; said radially extending passageways extending inwardly toward the center of said rotor, and having vanes therewithin to cause rotation of said second rotor on impingement by said working fluid against said vanes; and having an exit port near the center of said second rotor.

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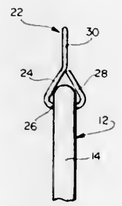
**3,933,008**
**MULTISTAGE HEAT EXCHANGER**
**Michael Eskeli, 7994-41 Locke Lee, Houston, Tex. 77042**
**Filed Jan. 2, 1974, Ser. No. 429,496**
**Int. Cl.² F25B** *3/00*
**U.S. Cl. 62—401** **2 Claims**

1. A multistage heat exchanger comprising:
a. a means for supporting a shaft in bearings for rotation;
b. a shaft;
c. a rotor mounted on said shaft so as to rotate in unison therewith, said rotor having first radially outward extending passages connecting at their outward ends with first inward extending passages, said first inward extending passages connecting at their inward ends with second outward extending passages, said second outward extending passages connecting at their outward ends with second inward extending passages, said second inward extending passages connecting at their inward ends with third outward extending passages, said third outward extending passages connecting at their outward ends with third inward extending passages, said third inward extending passages connecting at their inward ends with the inward ends of said first outward extending passages for passing a first fluid, said second outward extending passage having a first heat exchanger means for removing heat from said first fluid during and after compression of said first fluid by said rotor, said third inward extending passages having second heat exchanger means for adding heat into said first fluid after said first fluid has been cooled by expansion within said rotor, said first heat exchanger means being supplied with a second fluid and circulated in heat exchange relationship with said first fluid, said second heat exchanger means being supplied with a third fluid and circulated in heat exchange relationship with said first fluid, said second fluid and said third fluid being passed into their respective heat exchangers via fluid passages within said rotor.



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**3,933,009**
**EARRING HAVING PIVOTED ONE-PIECE EARWIRE WITH MEANS FOR LIMITING LATERAL SHIFT**
**Thomas R. Ireland, Cumberland, R.I., assignor to Hallmark Findings Inc., Warwick, R.I.**
**Filed Aug. 9, 1974, Ser. No. 496,207**
**Int. Cl.² A44C** *7/00*
**U.S. Cl. 63—12** **2 Claims**

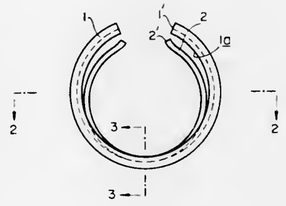


1. A pierced earring construction, comprising an earring member including a body portion that terminates in spaced free ends, a laterally extending opening formed in said body portion adjacent to one of the free ends thereof, and an earwire including a pivot portion formed as an integral part thereof that is mounted in said opening for pivotally locating said earwire on said body portion, a piercing portion of said earwire joined to the pivot portion thereof and bridging the space between said free ends for mounting the earring member on an ear of a wearer, said pivot portion of said earwire including a pivot leg that extends through said opening and that is located in substantially perpendicular relation with respect to the piercing portion to which said pivot portion is joined, said pivot portion including means for coacting with adjacent surfaces of said body portion to prevent undue lateral shifting of said earwire relative to said body portion during pivoting, said means comprising other legs that are joined to said pivot leg and that cooperate therewith to define a triangular configuration, said other legs being located in close proximity to said surfaces of said body portion on opposite sides thereof.



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**3,933,010**
**PROFILE WIRE RING**
**Josef Ulbrich, Sudetenstrasse 86-88, 8950 Kaufbeuran-Neugablonz, Germany**
**Filed May 28, 1974, Ser. No. 474,075**
**Claims priority, application Germany, June 1, 1973, 20584[U]**
**Int. Cl.² A44C** *9/02*
**U.S. Cl. 63—15.6** **1 Claim**

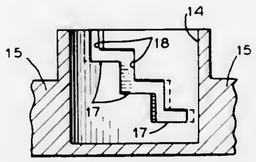


1. A profile wire ring as a component for the production of finger rings, consisting of a first ring provided with an opening, said first ring being a profile ring and having a smoothly curved inner side provided with a groove extending along the whole length of said inner side, said groove being shaped in transverse section like a U with a flat bottom, and a second ring arranged in said groove, said second ring being resilient and having an opening radially inwardly adjacent to the opening of the first ring, the opening in the first ring serving for the subsequent insertion of a decoration mount, the second ring being arranged in a recessed manner in said groove at a location generally opposite to said openings, and means clamping said first and second rings in fixed relation with the bottom of said second ring conforming to the bottom of said groove, said means comprising two oppositely arranged lugs swaged from the material of the first ring in such a manner that neither the second ring nor the lugs extend radially inwardly from said smoothly curved inner side at the location of said lugs.

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**3,933,011**
**RING WITH INTERCHANGEABLE SETTING**
**Philip DiGilio, 843 E. 228th St., Bronx, N.Y. 10466, and John Manetta, 7402-19th Ave., Brooklyn, N.Y. 11218**
**Filed Mar. 27, 1974, Ser. No. 455,218**
**Int. Cl.² A44C** *17/02*
**U.S. Cl. 63—29 R** **1 Claim**

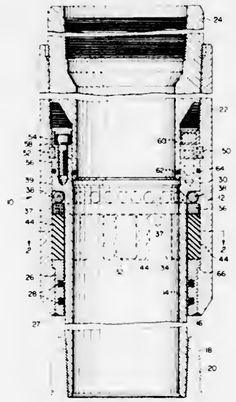
1. In an improved ring having an interchangeable setting, the improvement wherein:
said ring is provided with a base having a cylindrical bore, said setting having a cylindrical body adapted for mating engagement with said bore,
said bore having a surface provided with at least two programmed courses, the latter in spaced, balanced relationship, one to the other, around the surface of said bore, each of said programmed courses including an array of steps, each of said steps consisting of a horizontal slot followed in series by a communicating vertical slot on the surface of said bore,



said body having at least two separate arrays of protruding keys on said cylindrical surface, said key arrays being adapted to simultaneously traverse respective ones of said courses in the separation or engagement of said body relative to said base.

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**3,933,012**
**TORQUE ABSORBER FOR SUBMERGIBLE PUMPS**
**Lewis A. Ketchum, Bartlesville, Okla., assignor to TRW Inc., Cleveland, Ohio**
**Filed July 13, 1973, Ser. No. 378,947**
**Int. Cl.² F16D** *3/06*
**U.S. Cl. 64—23** **13 Claims**



1. A torque absorber for a submergible pump or the like, comprising inner and outer cylindrical members relatively rotatable to a limited extent about a longitudinal axis, said outer member having an internal annular collar engaging the outer surface of said inner member, said inner member having an external annular collar engaging the inner surface of said outer member, said collars being spaced from each other, a thrust bearing between said inner and outer members in the space between said collars, said inner member having outwardly directed projections and said outer member having inwardly directed projections interdigitated with the projections of the inner member and spaced therefrom circumferentially of said inner and outer members, and torque absorbing elements located in the spaces between the adjacent projections of the inner and outer members, respectively.

## 3,933,013
## CONTROL PANTY HOSE

Edward L. Cassidy, Sr., Burlington, N.C., assignor to Alamance Industries, Inc., Burlington, N.C.

Filed Feb. 18, 1975, Ser. No. 550,221
Int. Cl.² D04B 1/24, 9/18, 9/38
U.S. Cl. 66—177 7 Claims



1. A lower body garment, such as panty hose, including a control panty portion knit of stretch and spandex yarns to provide compressive force against the body of the wearer and comprising an attractive pattern of relatively opaque areas and open lace areas, said panty portion being knit with alternate courses of spandex yarn and intervening courses knit of main and auxiliary stretch yarns, said spandex yarn being knit in every wale of said opaque areas and being selectively knit and tucked in said open lace areas, said main stretch yarn being knit in every wale of both said opaque and open lace areas, and said auxiliary stretch yarn being knit in plated relationship with said main stretch yarn in said opaque areas and being selectively knit and floated in said open lace areas, said auxiliary stretch yarn being floated in the wales of said open lace areas in which said spandex yarn is tucked.

## 3,933,014
## DOOR LOCK ATTACHMENT

Adolph Moses, 8 E. 83rd St., New York, N.Y. 10028

Filed Feb. 18, 1975, Ser. No. 550,269
Int. Cl.² E05B 13/00
U.S. Cl. 70—416 11 Claims

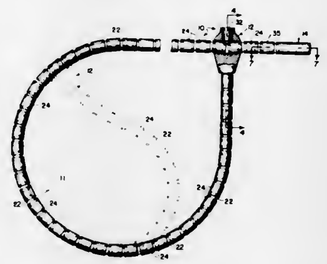


1. A one-hand operated, snap on and off, pocketable security locking attachment for a door lock having a thumb knob actuated bolt and a door knob hub, a single piece of material formed to embrace loosely the upper, lower, and lateral surfaces of the thumb knob, having shallow lips engaging the rear surfaces of the thumb knob but otherwise the embracing elements are open, both front and rear, and the thumb knob embracing elements extended to embrace the door knob hub.

## 3,933,015
## ARMORED CABLE-TYPE LOCK ASSEMBLY WITH SPECIAL MEANS FOR RENDERING IT TAMPER-PROOF

Stanley C. Balicki, 2834 North Commerce St., Franklin Park, Ill. 60131

Filed June 20, 1974, Ser. No. 481,062
Int. Cl.² E05B 67/06
U.S. Cl. 70—49 4 Claims



1. An armored cable-type lock assembly comprising an elongated flexible stranded steel cable having a fixed end and a free end, a lock housing secured to said fixed end, an end member secured to said free end, a series of tubular sheathe-like armor sections threadedly received over said cable in bead-like fashion and forming with said stranded cable an armored cable assembly, said armored cable assembly including alternately arranged cylindrical tubular socket members and intervening ball members, each ball member, in combination with the adjacent tubular socket members, establishing a ball and socket joint between such adjacent socket members to allow limited flexing of the armored cable accompanied by corresponding angular displacement between adjacent socket members, said lock housing being provided with a transverse bore therein and adapted slidingly to receive therethrough axially aligned adjacent cylindrical socket members on the free end region of the cable in order to produce a closed variable size loop, one side wall portion of the bore being formed with a shallow internal concave relief area which is V-shaped from end to end, and releasable key-actuated locking means mounted in the lock housing and including a locking bolt disposed opposite to the relief area, extending at right angles to the bore, and slidable between a projected position wherein it extends into said bore and engages the opposed end edges of a pair of adjacent socket members in the vicinity of a ball and socket joint and displaces said adjacent socket members angularly and presses such joint into said relief area, said locking bolt being provided with a tapered end surface to the end that it makes linear contact with the adjacent end regions of the housing-enclosed socket members when it is fully projected and thus binds and kinks the armored cable within the bore and relief area, and a retracted position wherein the thus kinked region of the armored cable is relieved so that the armored cable may be withdrawn from the confines of the bore, thus releasing the cable and its associated armor sections for sliding movement through the bore.

## 3,933,016
## DOOR LOCK MECHANISM

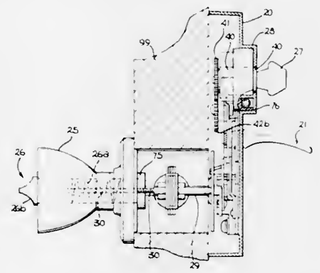
Roger J. Nolin, Monterey Park, Calif., assignor to TRE Corporation, Beverly Hills, Calif.

Filed Oct. 29, 1974, Ser. No. 518,277
Int. Cl.² E05C 1/12; E05B 17/00, 55/00
U.S. Cl. 70—149 26 Claims

1. A door lock comprising:

a. a lock mechanism, said lock mechanism having disposed therein, a reciprocating latch bolt, a latch driving means for engaging said latch bolt, and a rotatable lock cylinder assembly, said latch driving means effecting movement of said latch bolt from extended to retracted positions, said lock cylinder assembly having at least a first, second and third gear means for actuating said latch driving means, said first gear means is coupled to said lock cylinder assembly and engages said second gear means, said second gear means engages said third gear means, and said third gear means is arranged and configured such that rotation of said lock cylinder assembly causes said third gear means to engage said latch driving means thereby effecting movement of said latch bolt;

b. an actuating member coupled to said latch driving means to selectively cause said latch driving means to effect movement of said latch bolt; and

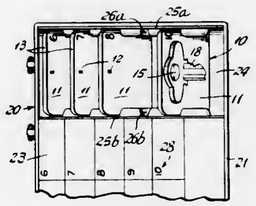


c. a selective control member, said selective control member and said latch driving means cooperatively coupled in said lock mechanism such that when said selective control member is in in a first position, said actuating member, when activated, engages said latch driving means and causes said latch bolt to move into said retracted position, and when said selective control member is in a second position, said latch driving means is disengaged from said actuating member, whereby said actuating member may be activated without causing said latch bolt to move into said retracted position.

## 3,933,017
## KEY HOLDER AND RACK THEREFOR

William S. Shee, Woodbridge, Conn., assignor to Signal Office Products Co., Milford, Conn.

Filed Feb. 5, 1975, Ser. No. 547,358
Int. Cl.² A47G 29/10
U.S. Cl. 70—456 R 8 Claims



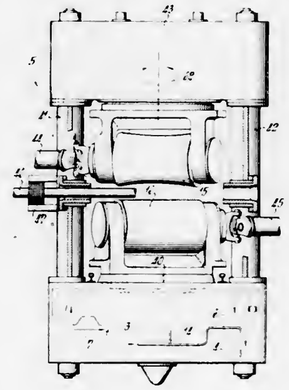
1. A key holder to which a key having an aperture is securable comprising a flat sheet of essentially rigid material having a periphery at least as large as the key, an elongate rectangular slot formed in the sheet adjacent one edge thereof and a fastener having a head larger than the key aperture and essentially parallel bifurcated legs with said legs being rectangular in cross-section and formed of bendable material, said slot being dimensioned to permit passage of the parallel legs therethrough but to resist relative rotation of the fastener with respect to the flat sheet whereby the fastener legs are adapted to pass through the key aperture and the slot from one side of the sheet to the other side and be bent flat against the other side to secure the key to the sheet while permitting the key to be rotated with respect to the sheet.



## 3,933,018
## METHOD AND APPARATUS FOR STRAIGHTENING END SECTIONS OF ELONGATED WORKPIECES

Ralf Fangmeier, and Carl-Ludwig Pohler, both of Solingen, Germany, assignors to Th. Kieserling & Albrecht, Solingen, Germany

Filed Oct. 3, 1974, Ser. No. 511,639
Claims priority, application Germany, Oct. 3, 1973, 2349693
Int. Cl.² B21D 3/04
U.S. Cl. 72—7 13 Claims



1. A method for straightening sections of elongated workpieces, especially bars and tubes in a bending, forging and/or straightening machine having at least one straightening roll movable radially relative to the workpiece and at least a second roll for determining the straightening gap and force, comprising the steps of:

placing a section of a bar or tubing between the rolls;

moving one such roll into working position during the initial phase of straightening the forward section of the elongated workpiece in accordance with a predetermined mathematical work sequence function;

and straightening the intermediate section between the forward section and tail section of said workpiece by moving one roll into working position in a predetermined sequence which is independent of and substantially different from said work sequence for said forward and tail sections.

## 3,933,019
## RIVETING DEVICE

Gary E. Underland, Clinton Falls Township, Steele County, and Thomas Novak, Woodville Township, Waseca County, both of Minn., assignors to Borroughs Tool & Equipment Corporation, Kalamazoo, Mich.

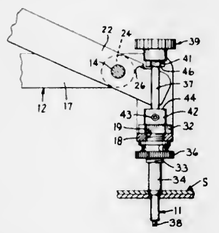
Filed Oct. 4, 1974, Ser. No. 512,082
Int. Cl.² B21J 15/34
U.S. Cl. 72—114 3 Claims

1. A tool for installing an internally threaded tubular rivet, said tool comprising:

first and second relatively movable levers, said first lever having a portion with means defining a hole therein, said second lever having surface means thereon spaced above said hole and axially aligned therewith;

a tubular anvil having a portion received in said opening, said tubular anvil having enlarged head means defining a

radially outwardly extending shoulder thereon, said shoulder engaging said portion of said first lever encircling said hole to locate said anvil relative to said first lever and a threaded portion adjacent said shoulder, said threaded portion being received in said hole and nut means larger in diameter than said hole and having a thread thereon engaged with said threaded portion on said anvil, said nut means engaging said anvil on the opposite side of said portion of said first lever so that said portion of said first lever is clamped between said shoulder and said nut means;



releasable fastening means for releasably securing said tubular anvil to said first lever;

a rod extending axially through said tubular anvil, said rod and said tubular anvil having axial movement relative to each other; and

rotating means on said rod spaced axially from said anvil for rotating said rod relative to said anvil, said rotating means having an abutment thereon engaging said surface means whereby a relative movement between said first and second levers will effect a relative movement between said rod and said anvil.

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**3,933,020**

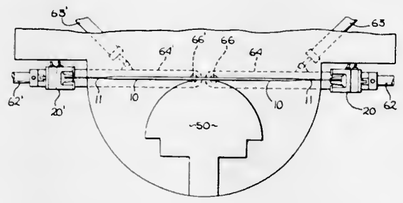
**METHOD FOR STRETCH WRAPPING OF PANELS**

**Lavern G. Orr, Tustin, and Etric Lee Stone, Costa Mesa, both of Calif., assignors to TRE Corporation, Beverly Hills, Calif.**

**Filed July 18, 1974, Ser. No. 489,618**

**Int. Cl.² B21D** *11/02*

**U.S. Cl. 72—297** **3 Claims**



**1.** A method of stretch forming a honeycomb structure sandwich panel which comprises:

a. joining a pair of electrode tabs to opposing edges of said panel;

b. sealing the periphery of said panel;

c. gripping each of said electrode tabs between two groups of pairs of jaws, each of said pair of jaws being slideable between a pair of tapered blocks, whereby the clamping force between each pair of jaws will increase as tension is applied to said panel;

d. applying force to separate said groups of pairs of jaws, whereby tension will be created in said panel;

e. coupling a source of electrical current to said tapered blocks, all of said tapered blocks gripping one of said electrode tabs being coupled in parallel;

f. circulating an inert gas through the interior of said panel while said panel heated by said electrical current; and

g. wrapping said panel about a form block wherey said panel will assume the contours of said form block.

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**3,933,021**

**PROCESS OR METHOD OF PRODUCING A SMALL OPENING IN A RELATIVELY THICK METALLIC OR PIPE WALL**

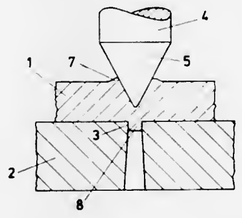
**Burkhart Reese, Eitorf, and Lothar Schick, Windeck, Herchen, both of Germany, assignors to Boge GmbH, Eitorf,Sieg, Germany**

**Filed Aug. 28, 1974, Ser. No. 501,234**

**Claims priority, application Germany, Aug. 29, 1973, 2343432**

**Int. Cl.² B21D** *28/24*

**U.S. Cl. 72—327** **8 Claims**



**1.** In a method for producing a small opening in a relatively thick metallic wall, the steps comprising placing one face of the wall on a die formed with an opening corresponding substantially to the opening that is to be produced in the wall, positioning a tool formed with a generally conical tip adjacent the other face of the wall such that the conical tip is aligned with the opening in said die, and forcing said conical tip into said wall to a penetration depth approximately equal to the thickness of the wall at the point of penetration to force a portion of the wall metal into the die opening and shear it from the metallic wall.

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**3,933,022**

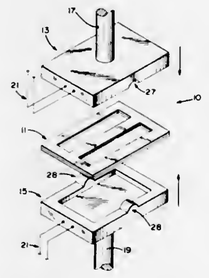
**METHOD FOR MANUFACTURING BIMETALLIC MEMBERS HAVING SNAP ACTION CHARACTERISTICS**

**John Robert Peltz, Warren, Pa., assignor to GTE Sylvania Incorporated, Stamford, Conn.**

**Filed Apr. 7, 1975, Ser. No. 565,753**

**Int. Cl.² B21D** *53/00*

**U.S. Cl. 72—342** **7 Claims**



**1.** An improved method for controlling the snap action characteristics of a thermally expansive bimetallic member during the manufacture of said bimetallic member wherein said snap action characteristics are defined by a predetermined temperature range having upper and lower limits, said bimetallic member being provided said characteristics during a forming operation utilizing at least two opposing shaping members for engaging said bimetallic member for an established time period when said bimetallic member is positioned therebetween and imparting a predetermined shape thereto, said improvement comprising: heating said bimetallic member to an established temperature substantially above said upper limit of said predetermined temperature range for said snap action characteristics during said period of engagement by said opposing shaping members.



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**3,933,023**

**METHOD FOR MANUFACTURING A UNIT PIECE OF A V PULLEY**

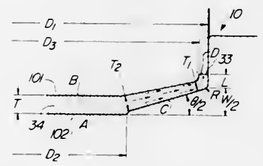
**Hideo Tatsumi, Hitachi; Tomoyoshi Hirazuka, and Hisanobu Kanamaru, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Japan**

**Filed Feb. 26, 1975, Ser. No. 553,212**

**Claims priority, application Japan, Mar. 1, 1974, 49-23356**

**Int. Cl.² B21K** *1/42*

**U.S. Cl. 72—359** **3 Claims**



**1.** A method for manufacturing a unit piece for a V pulley of the type in which at least a pair of unit pieces of the same configuration are assembled in back-to-back relation to each other into a single complete pulley, said unit piece having a central flat portion and a circumferential V groove forming portion continuous to the flat portion, characterized by the steps of preparing a forging stock of a disk form of which the outer diameter is equal to the outer diameter $D_1$ of the pulley unit piece and the thickness is equal to the thickness T of said flat portion of the pulley unit piece; and cold-forging said forging stock by means of at least a pair of upper and lower halves of a forging die for deforming an outer circumferential portion thereof so that the thickness of the portion is gradually reduced radially outwardly to form said circumferential V groove forming portion.

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**3,933,024**

**METHOD FOR COLD ROLLING OF A HIGH MAGNETIC FLUX DENSITY GRAIN-ORIENTED ELECTRICAL STEEL SHEET OR STRIP HAVING EXCELLENT PROPERTIES**

**Fumio Matsumoto; Katuro Kuroki; Kunihide Takashima; Toshihiko Takata; Hiromichi Yasumoto, all of Kitakyushu, and Kuniyasu Honda, Nakama, all of Japan, assignors to Nippon Steel Corporation, Japan**

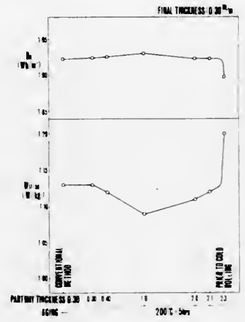
**Filed June 10, 1974, Ser. No. 478,100**

**Claims priority, application Japan, June 18, 1973, 48-68458**

**Int. Cl.² B21B** *3/02*

**U.S. Cl. 72—364** **1 Claim**

**1.** In a cold rolling method for producing a high magnetic flux density grain oriented electrical steel sheet or strip comprising the steps of hot rolling a silicon steel material containing 2.5 to 4.0% Si, not more than 0.085% carbon and 0.010 to 0.065% acid soluble Al, annealing the hot rolled steel sheet at a temperature between 950° and 1200°C and rapidly cooling the steel sheet to precipitate AlN, subjecting the steel sheet to a one-step heavy cold rolling at a reduction rate between 81 and 95 percent to obtain a final sheet thickness, decarburization annealing of the cold rolled steel sheet, and final annealing, the improvement which comprises obtaining the final steel sheet or strip thickness by a plurality of rolling passes of the heavy cold rolling through various interim sheet thicknesses and holding the steel sheet at a temperature between 100° and 350°C for at least 1 minute during the heavy cold rolling step at least one time between the above plurality of rolling passes.



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**3,933,025**

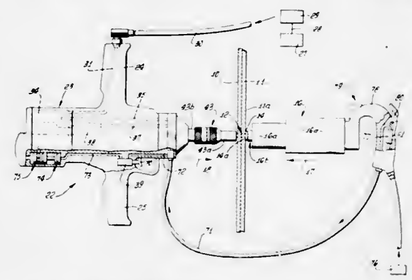
**HIGH SPEED RIVETING SYSTEM**

**Franklin S. Briles, 3600 Catamaran, Corona Del Mar, Calif. 92625**

**Continuation-in-part of Ser. No. 455,555, March 28, 1974. This application May 3, 1974, Ser. No. 466,536**

**Int. Cl.² B21J** *15/20, 15/30;* **B23P** *11/00*

**U.S. Cl. 72—391** **10 Claims**



**1.** In a gun for upsetting the shank terminal of metallic rivet projecting through work, the rivet also having a head spaced from said terminal, the combination comprising

a. structure including a plunger to be driven forwardly for transmitting upsetting force to be delivered to said terminal,

b. means including a piston to drive the plunger forwardly after back-up force is applied to the rivet head,

c. a chamber to store working fluid pressure, a control valve, and a trigger actuated valve for releasing the passage of control fluid pressure to operate the control valve for releasing working fluid pressure to actuate the piston,

d. said structure including a forwardly extending tubular barrel, and an anvil element carried by and movable relative to the barrel between the plunger and rivet terminal to receive said upsetting force and to transmit same to the rivet terminal, there being a spring urging the anvil element forwardly relative to the plunger, the anvil extending in front of the plunger, the anvil element having generally frusto-conical recess means to receive and confine the tip of the rivet terminal during upset formation, said recess means including first and second conical recesses, the first recess located between the second recess and the forward end of the anvil, the first and

second recesses defining respective generally conical angles $\alpha$ and $\beta$, and wherein $\alpha$ is substantially greater than $\beta$.

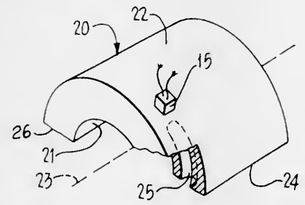
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**3,933,026**

## ULTRASONIC CALIBRATION STANDARD

**William C. Ham, 360 Panoramic Way, Apt. F; Francis J. Dodd, 2228 Dwight Way, No. 4, both of Berkeley, Calif. 94704, and Spencer J. Friedrick, 1349 Rose St., Apt. C, Berkeley, Calif. 94702**

**Filed July 31, 1974, Ser. No. 493,446**
**Int. Cl.² G01N** *29/04*
**U.S. Cl. 73—1 R** **11 Claims**




**1.** An improved ultrasonic calibration standard for use in calibrating an ultrasonic inspection system for testing components fabricated from a component material having known ultrasonic wave propagating properties, said standard comprising a solid monolithic block fabricated from a material having ultrasonic wave propagating properties substantially similar to said component material, said block having at least one curved surface of predetermined curvature and means for providing an internal controlled geometry ultrasonic wave reflector surface, said means including a bore formed internally of said block and having a curved longitudinal axis, the curvature of said longitudinal axis following the curvature of said curved surface so that the perpendicular distance between said curved surface of said block and all points lying on a line on the surface of said bore drawn parallel to said longitudinal axis is substantially constant.

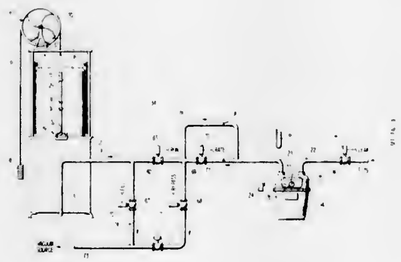
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**3,933,027**

## APPARATUS AND METHOD FOR PROVING METERS

**Francis J. Mehall, 305 W. Sheridan Ave., DuBois, Pa. 15801**

**Filed Oct. 15, 1974, Ser. No. 514,950**
**Int. Cl.² G01F** *25/00*
**U.S. Cl. 73—3** **14 Claims**



**1.** The method of proving gas meters and the like comprising the steps of:

measuring a unit volume of a selected fluid in a proving standard and providing an electrical output signal consisting of a first plurality of pulses generated in accordance with the measurement reading of said unit volume provided by said standard's volume indicator, said pulses corresponding to predetermined unit measures of time;

measuring the same unit volume of said selected fluid in a meter under test and providing another electrical output signal consisting of a second plurality of pulses generated in accordance with the measurement reading of said unit volume as provided by said meter's volume indicator, said second pulses also corresponding to said same predetermined unit measures of time;

entering said first and second plurality of pulses into computing apparatus, said computing apparatus then operating to provide a signal output comprising the correlation ratio of said first plurality of pulses to said second plurality of pulses; and

displaying said signal output as a measure of calibration between the proving standard and the meter under test;

said step of measuring a unit volume in said proving standard and providing an electrical output signal consisting of enabling a first pulse gate circuit upon initiation of the measuring step, feeding pulses of predetermined frequency from a measure clock oscillator to a pulse counter until said unit volume is measured and then inhibiting said pulse gate circuit, and thereafter maintaining the pulse count in said counter until the step of entering said pulses into said computing apparatus occurs; and

said step of measuring said unit volume in said meter and providing another electrical output signal consisting of enabling a second pulse gate circuit upon initiation of the respective measuring step, feeding pulses of said predetermined frequency from the same said measure clock oscillator to another counter circuit, inhibiting said pulse gate circuit when said unit volume measurement reading is provided by said meter's volume indicator, and thereafter maintaining the pulse count in said second pulse counter until said step of entering said second plurality of pulses into said computing apparatus occurs.

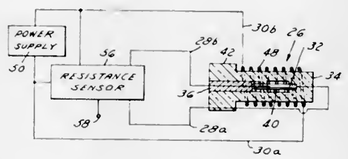
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**3,933,028**

## AIR/FUEL RATIO SENSOR FOR AIR/FUEL RATIOS IN EXCESS OF STOICHIOMETRY

**Kamlakar R. Laud, Ann Arbor; Eleftherios M. Logothetis, Birmingham, and Kwansuh Park, Ann Arbor, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.**

**Filed Apr. 23, 1974, Ser. No. 463,345**
**Int. Cl.² G01N** *7/02, 31/00*
**U.S. Cl. 73—23** **10 Claims**




**6.** In a system for monitoring the air/fuel ratio of the combustion mixture provided to an internal combustion engine intended to operate under steady state conditions at a preselected air/fuel ratio wherein an exhaust gas sensor is situated within the stream of exhaust gases produced by the engine and is arranged to produce an electrical signal indicative of the partial pressure of oxygen in the exhaust gases and including electrical means communicating with and responsive to the sensor and arranged to generate an electrical signal indicative of the air/fuel ratio of the combustion mixture, the improvement wherein the exhaust gas sensor is comprised of a cobalt monoxide ceramic sensing element connected electrically in series with a source of electrical energy and the electrical means are arranged to respond to the current flow through said cobalt monoxide sensing element to generate an output signal having a magnitude and polarity indicative of excursion of the air/fuel ratio of the combustion mixture from a selected value in the lean regime.

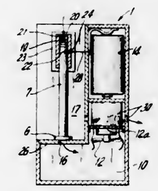


**3,933,029**

## GAS DETECTOR WITH AUTOMATICALLY OPERABLE FAN SWITCH

**Horst Rabenecker, Bad Schwartau, and Horst Spahrbier, Lübeck, both of Germany, assignors to Drägerwerk Aktiengesellschaft, Germany**

**Filed Jan. 18, 1974, Ser. No. 434,411**
**Claims priority, application Germany, Jan. 26, 1973, 2303710**
**Int. Cl.² G01N** *1/22*
**U.S. Cl. 73—23** **5 Claims**



**1.** A gas detector for use with a gas testing tube into which the gas is delivered and which indicates the presence of preselected gases, comprising a housing having an interior cavity and a support wall having a testing tube receiver fitting with an opening therethrough into the cavity, means for holding the testing tube over the receiver fitting, a fan in said housing for drawing a gas sample through the testing tube and receiver fitting and into said cavity, a power cell in said housing, and switch means associated with said testing tube holding means and responsive to insertion of the testing tube therein to connect said power cell to said fan to operate said fan, said testing tube holding means comprising a sleeve carried on said housing and located in alignment with and spaced above said receiver fitting.

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**3,933,030**

## SYSTEM FOR CONTINUOUS MONITORING OF THE DENSITY OF CRYOGENIC LIQUIDS VIA DIELECTRIC CONSTANT MEASUREMENTS

**Eric O. Forster, Scotch Plains, and William R. L. Thomas, Holmdel, both of N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.**

**Filed Sept. 9, 1974, Ser. No. 504,143**
**Int. Cl.² G01N** *9/00*; **F17C** *13/02*
**U.S. Cl. 73—32 R** **11 Claims**

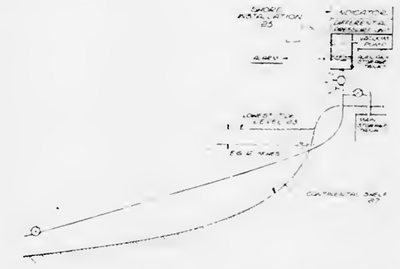
**1.** A process for obtaining continuous and simultaneous multiple density measurements of cryogenic liquids at temperatures between −40° to −215°C. in storage tanks yielding an accurate density profile of the cryogenic liquid stored in the tanks to avoid rollover and obtain accurate billing data consisting of the steps of making numerous simultaneous measurements of the dielectric constant and temperature of the cryogenic liquid by means of numerous probes spaced vertically in the tank at some predetermined interval, determining the density using the dielectric constant in a single step independent of knowledge of the absolute material composition of the cryogenic liquid, continuously monitoring the density profile and triggering a pump or circulation system upon monitoring density stratification or inversion in the tank to avoid the occurrence of rollover.

**3,933,031**

## SUBMARINE PIPELINE LEAK LOCATOR OR THE LIKE

**William J. Uhlarik, Monterey Park, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.**

**Filed Dec. 18, 1974, Ser. No. 533,806**
**Int. Cl.² G01M** *3/28*
**U.S. Cl. 73—40.5 R** **10 Claims**



**1.** Liquid delivery apparatus comprising: an inclined pipeline full of a liquid having a first predetermined density T and having one end mounted in a fixed position in proximity to the shore of a body of water having a second predetermined density S greater than said first predetermined density, said inclined pipeline having its other end located in the water below the elevation of said one end; first means to seal off said one pipe end; second means to seal off said other pipe end; third means submerged in the water and fixed relative to and adjacent the shore, and also connected at a point $P_o$ from said one pipeline end to produce an output directly proportional to the difference between the pressure of the water and that of the liquid in the pipeline; and fourth means to indicate the magnitude of said third means output.

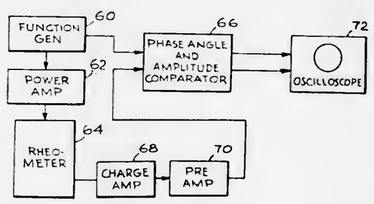
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**3,933,032**

## DYNAMIC RHEOMETER

**Nicholas W. Tschoegl, Pasadena, Calif., assignor to California Institute of Technology, Pasadena, Calif.**

**Filed Sept. 1, 1971, Ser. No. 176,873**
**Int. Cl.² G01N** *3/32*
**U.S. Cl. 73—67.1** **9 Claims**




**1.** A dynamic rheometer comprising:

a support base,

a piezoelectric transducer means supported on said support base,

means for supporting a specimen to be tested on said piezoelectric transducer means,

a force pickup transducer,

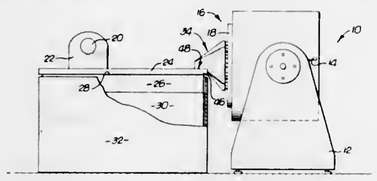
means for supporting said force pickup transducer on top of said specimen to be tested for generating signals responsive to motion of said specimen,

power means for driving said piezoelectric transducer means for causing compression deflections and flexure deflections to said specimen, and

means for comparing the phase and amplitude of the signals applied by said power means to said piezoelectric transducer means and the signals generated by said force pickup means in response to compression and deflection of said specimen.

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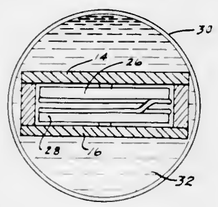
**3,933,033**
**CANTILEVER DRIVER BAR**
**David V. Kimball, 481 St. Augustine, Claremont, Calif. 91711**
**Filed May 20, 1974, Ser. No. 466,151**
**Int. Cl.² B06B *1/12***
**U.S. Cl. 73—71.6** **6 Claims**



1. In vibration testing apparatus comprising a shaker head carried for high frequency vibration in a horizontal plane, a horizontally disposed slip plate adapted to carry a test piece opposite the shaker head, and a slip plate support block having a planar locus of free sliding engagement with the undersurface of the slip plate; the improvement comprising driver bar means interconnecting said slip plate and shaker head in vibration transmitting relation opposite said support block, said driver bar means comprising a normally vertically disposed base attached to said shaker head and a normally horizontally disposed flange attached to said slip plate, and freely of the plane of said engagement locus; said base defining plural fastening means distributed horizontally and above and below the plane of said flange for fastening together the driver bar base and said shaker head, and said flange defining plural distributed fastening means for fastening said flange to said slip plate.

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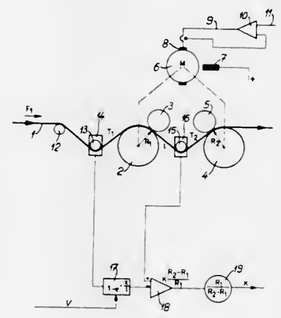
**3,933,034**
**HYDROSTATIC STRESS GAUGE SYSTEM**
**James S. Noel, Waco, Tex.; John V. Hobbs, Camarillo, Calif., and Leonard D. Webb, College Station, Tex., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.**
**Filed Mar. 25, 1974, Ser. No. 454,198**
**Int. Cl.² G01L *1/02***
**U.S. Cl. 73—88.5 R** **4 Claims**



1. A hydrostatic stress gage comprising: a sphere of deformable material; a cylinder positioned within the sphere deformable cover means located at each end of said cylinder for forming an enclosure; support means attached to each of said cover means extending into the enclosure; flat conductive coil means mounted on each support means, and an incompressible fluid filling the volume between the sphere and enclosure whereby the distance between said coils varies upon deformation of said sphere.

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**3,933,035**
**INSTALLATION FOR CONTINUOUS MEASUREMENT OF THE ELASTIC COEFFICIENT OF A TRAVELING STRIP, WIRE OR RIBBON**
**Roger Henri Roch, Lausanne, Switzerland, assignor to J. Bobst & Fils S.A., Switzerland**
**Filed Sept. 5, 1974, Ser. No. 503,295**
**Claims priority, application Switzerland, Sept. 19, 1973, 13482/73**
**Int. Cl.² G01N *3/00***
**U.S. Cl. 73—95.5** **5 Claims**



1. Apparatus for continuously measuring the elastic coefficient of a moving strip, comprising:
first and second drive means for driving the strip, said second drive means arranged behind said first drive means with respect to the direction of motion of the strip and operable to drive the strip at a speed different from that provided by said first drive means;
first and second tension measuring devices respectively positioned in front of said first and second drive means and operable to continuously provide respective first and second quantities which are proportional to the strip tensions measured at those positions; and
comparison means connected to said first and second tension measuring devices and responsive to said first and second quantities to continuously provide a third quantity which is proportional to the difference in the measured tensions, which is proportional to the elastic coefficient of the strip.

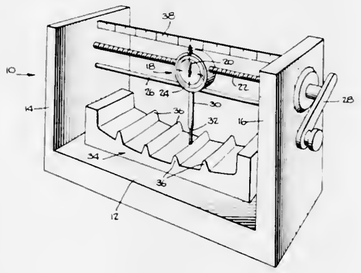
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**3,933,036**
**TREAD-WEAR PREDICTION**
**Seymour A. Lippmann, Huntington Woods, and Kenneth L. Oblizajek, Warren, both of Mich., assignors to Uniroyal Inc., New York, N.Y.**
**Filed Feb. 19, 1974, Ser. No. 443,595**
**Int. Cl.² G01M *17/02***
**U.S. Cl. 73—146** **6 Claims**

1. A method of predicting tire tread-wear, comprising the steps of:
a. rolling a specimen tire freely upon a laboratory surface at substantially zero degrees of steer and camber;
b. measuring pressure exerted by a selected circumferential rib of said tire normally against said surface at substantially an exit end portion of the tread/surface interface;
c. measuring traction in terms of force/unit area exerted by said selected rib against said surface in a plane of said tread/surface interface and substantially at said exit end portion;
d. repeating steps (a) through (c) for additional specimen tires;
e. measuring the actual amount of tread-wear resulting from rolling each of said tires a selected distance over a test-course surface;



f. substituting the data collected for each said tire from steps (a) through (e) in an equation corresponding to:
$Wr = P_{r,exit} \cdot 0(\tau_{r,exit})$,
wherein
$W_r$ = tread-wear data collected from step (c),
$P_r$, exit = pressure data collected from step (b),
$\phi(\tau_{r,exit})$ = a statistical distribution function incorporating the prevalence of tread-slip on the test-course surface,
$\tau_{r,exit}$ = the tractive ratio of the data collected in step (c) to the data collected in step (b),
$r$=said selected tread-rib, and "exit"=the designation for said exit end portion of said tread/surface interface;
g. determining numerical values of the function $\phi(\tau_{r,exit})$ from step (f) for each corresponding rib of each said tire;
h. tabularizing each value determined in step (g) opposite its corresponding tractive ratio constituted by respective ratios of the values measured in step (c) to the values measured in step (b);
i. selecting at least one additional tire whose tread-wear is to be predicted;
j. performing steps (a) through (c) for the selected tire of step (i);

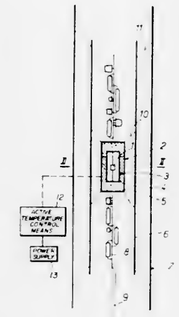


k. selecting a numerical value from the tabularized data of step (h) of the function $\phi(\tau_{r,exit})$ corresponding to the tractive ratio of the latter said tire as determined from the data collected from step (j); and
l. substituting the numerical value for $\phi(\tau_{r,exit})$ determined in step (k) and the pressure value determined in step (j) in an equation corresponding to the equation recited in step (f) to determine anticipated tread-wear of the designated rib r of the selected tire of step (i); said step (c) comprising:
forming a plaster casting of a portion of each tread of said steps (a) and (d) in both a new and worn condition, the plaster during the formation of the castings penetrating the tread-grooves between neighboring circumferential tread-ribs and thereby presenting raised casting ribs;
measuring the depth of each of the corresponding new and worn-condition tread castings from reference points constituted of the respective raised casting ribs; and
comparing the relative depths of the corresponding castings to determine actual tread-wear.

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**3,933,037**
**DEVICE INCLUDING A THERMOSTATIC ENCLOSURE, WHICH IS SUSPENDED FROM A TROPOSPHERIC BALLOON**
**Irénée Alet, Toulouse, France, assignor to Centre National d'Etudes Spatiales, Paris, France**
**Filed Jan. 29, 1974, Ser. No. 437,640**
**Claims priority, application France, Feb. 6, 1973, 73.04080**
**Int. Cl.² G01W *1/08***
**U.S. Cl. 73—170 R** **13 Claims**

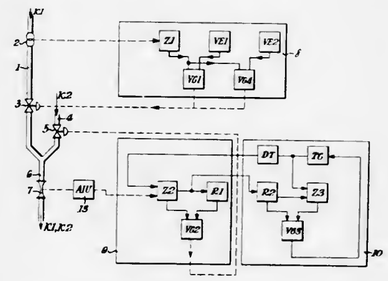
1. A device adapted to be suspended from a tropospheric balloon in a substantially constant temperature environment comprising:
an apparatus which requires for its correct operation that the temperature thereof be maintained between narrow limits for periods in excess of **24** hours;
means for maintaining the temperature of said apparatus between narrow limits for periods in excess of **24** hours, said temperature maintaining means comprising a thermally insulated enclosure surrounding and supporting said apparatus, means for providing a solar radiation barrier comprising a sheath open at both ends and having



a greater cross-section and greater length than the cross-section and length respectively of said enclosure and connection means for attaching and suspending said enclosure within said sheath with a substantial clearance between the enclosure and the sheath extending over the entire length of the sheath, said connection means including a plurality of cord-like elements having a poor thermal conductivity whereby free circulation of the surrounding air is permitted between said sheath and said enclosure by natural convection.

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**3,933,038**
**VOLUMETRIC DETERMINATION OF CONTAMINATED LIQUID OR GASEOUS MEDIA**
**Hans Wilhelm Valentin, Hurth-Knapsack; Kurt Schmeiser, Cologne, and Paul Beuth, Hurth, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany**
**Filed June 28, 1974, Ser. No. 484,139**
**Claims priority, application Germany, July 30, 1973, 2338622**
**Int. Cl.² G01F *25/00***
**U.S. Cl. 73—194 R** **8 Claims**



1. A method for the discontinuous measurement of the volume of liquid and gaseous media, respectively, contaminated with solids, by alternately flowing a pure medium of an accurately measured volume and a contaminated medium of unknown volume which is to be measured through a measuring device delivering its measured results in the form of pulses; storing the number of pulses delivered by the passage of said

pure medium through the measuring device; flowing contaminated medium through the measuring device until the number of pulses delivered by the measuring device corresponds to the number of stored pulses; flowing said pure medium through the measuring device and storing the number of pulses delivered; comparing the last number of pulses stored with the number of pulses delivered and stored on the previous passage of said pure medium through the measuring device; modifying the number of pulses last stored by half the difference between the two stored numbers of pulses; and passing, in the next following metering cycle, contaminated medium through the measuring device until the number of pulses delivered by the measuring device corresponds to the modified number of pulses.

**2.** An apparatus for the discontinuous measurement of the volume of liquid and gaseous media, respectively, contaminated with solid matter, the apparatus comprising

a. a first pipe provided with a first flowmeter permitting the supply of metered quantities of a pure medium and with a first automatically actuated valve; a second pipe provided with a second automatically actuated valve, the first pipe and the second pipe leading into a third pipe provided with a second flow meter permitting the supply of metered quantities of a contaminated medium;

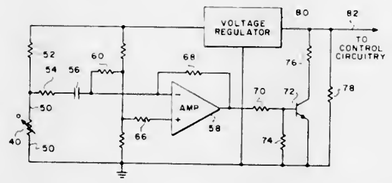
b. a first processing unit comprised of a first counter connected to the first flow meter in said first pipe; a first presetter, and a first comparator; said first comparator being connected to the first automatically actuated valve, to the first counter and to the first presetter, and closing the first automatically actuated valve in said first pipe when a quantity of pure medium adjusted in the first presetter has passed through the first flowmeter;

c. a second processing unit comprised of a second counter connected to the second flowmeter in said third pipe, a first register, and a second comparator; the second comparator being connected to the second automatically actuated valve, to the second counter and to the first register, and closing the second automatically actuated valve in said second tube when an amount of contaminated medium which has passed through the second flowmeter in said third pipe has produced a number of pulses which is equal to the number of pulses stored in the first register from the previous passage of the quantity of pure medium through the second flowmeter;

d. a third processing unit comprised of a second register, a third counter, a third comparator, a clock generator, and a divider, said divider being connected to the clock generator, to the third counter, and to the second counter of the second processing unit; the second register being connected to the third counter, to the third comparator, to the first register, and to the second counter; and the third comparator being connected to the clock generator.

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**3,933,039**
**PULSE FLOW DETECTOR**
**Robert Mayer, Ardmore, Pa., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.**
**Filed Jan. 18, 1974, Ser. No. 434,534**
**Int. Cl.² G01F** *1/68*
**U.S. Cl. 73—204** **1 Claim**




1. In a fluid injection system having an injection pump which periodically produces fluid pulses in a fluid stream, a fluid pulse flow detector circuit comprising:

a. a power supply for producing a first power supply voltage;

b. a voltage regulator coupled to said power supply for producing a second power supply voltage which is relatively low compared to said first power supply voltage;

c. a thermistor disposed in the fluid stream and coupled to said second power supply voltage with the thermistor being heated by the flow of current through it and cooled by fluid pulses in the fluid stream, and with the cooling resulting in a decreased resistance in the thermistor;

d. a limiting resistor coupled in series with said thermistor across said second power supply voltage, said limiting resistor functioning to limit the current through the thermistor, and the limiting resistor and thermistor functioning as a voltage divider network with the voltage across the thermistor varying with its resistance in dependence upon temperature, whereby each fluid pulse which cools the thermistor results in a voltage pulse across the thermistor;

e. a pulse filter means, coupled to the output of said thermistor and including a series coupled resistor and capacitor, for passing only pulses having frequency components corresponding to the pulses provided by the injection pump;

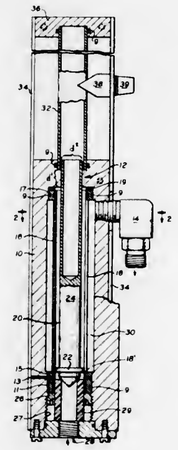
f. a feedback amplifier, coupled to the output of said pulse filter means, for amplifying the output of said pulse filter;

g. a series coupled limiting resistor and biasing resistor coupled to the output of said amplifier; and

h. a transistor means, coupled to said first power supply voltage and further coupled to receive the voltage across said biasing resistor as an input, for being driven to saturation by each voltage pulse across the biasing resistor to produce a squarewave pulse output across an output load resistor in response to each voltage pulse across the biasing resistor, whereby the output of the circuit is a squarewave pulse for each fluid pulse produced by the injection pump.

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**3,933,040**
**FLOWMETER**
**Henry Christian Thompson, Huntington Bay, N.Y., assignor to Metco, Inc., Westbury, N.Y.**
**Filed Nov. 7, 1973, Ser. No. 413,721**
**Int. Cl.² G01F** *1/22*
**U.S. Cl. 73—208** **4 Claims**



1. Flowmeter comprising:



a. housing means forming at its upper end a centrally located tubular guide means;

b. said housing means having a centrally located chamber terminating at its upper end at said tubular guide and communicating with a gas outlet;

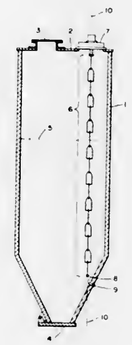
c. gas tube means mounted in said chamber having a gas escape slot opening to said chamber and communicating at its lower end with a gas inlet, calibration means carried by said housing means to change the axial position of the gas tube means;

d. float means adapted to slidably move up and down within said gas tube means and said tubular guide means, said tubular guide means having a length at least 0.1 times the diameter of said float means so as to provide a good sliding contact surface for the float means as it moves up and down therein; and

e. sight glass means mounted on the upper portion of the housing means co-axial with the float means and said tubular guide means for viewing movement of the upper portion of the float means therein, said sight glass means being sealed at its upper end forming shock absorbing means to compensate for movement of the float means therein.

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**3,933,041**
**BULK MATERIAL LEVEL MEASURING SYSTEM**
**Frank S. Hyer, Duxbury, Mass., assignor to Hyer Industries, Inc., Pembroke, Mass.**
**Filed Sept. 30, 1974, Ser. No. 510,422**
**Int. Cl.² G01F** *23/00*; **H01H** *35/18*
**U.S. Cl. 73—290 R** **18 Claims**



1. Apparatus for measuring the level of bulk material comprising, in combination,

an elongate member, each lengthwise element of said member being rotatable through a predetermined angle about a lengthwise axis relative to each adjacent element, each element being adapted for transmitting torque to said adjacent elements at the limits of said angle, and formed to develop appreciable resistance to rotation about said axis by reaction against said bulk material,

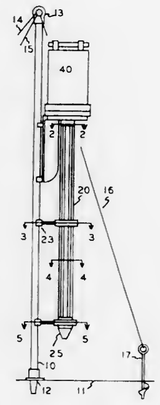
means to suspend said member with said axis extending between points displaced vertically to subtend the levels to be measured,

means to apply a drive torque about said axis to the upper end of said member, said torque having sufficient magnitude to rotate the portion of its length above the level of said bulk material but insufficient magnitude to rotate the portion reacting against said material,

and means to measure the angle of rotation of said upper end.

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**3,933,042**
**WATER LEVEL GAUGE**
**Norwood H. Rector, and Rodney G. Fredericks, both of Baton Rouge, La., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**
**Filed Apr. 5, 1974, Ser. No. 458,156**
**Int. Cl.² G01F** *23/26*
**U.S. Cl. 73—304 C** **9 Claims**



1. An improved liquid level gauge of the variable capacitance type comprising:

a. a stilling well;

b. means for retaining said stilling well in a predetermined relationship with respect to a liquid whose level is to be measured;

c. a first probe inside said stilling well;

d. a dielectric coating on said first probe;

e. a second probe in said stilling well spaced from said probe;

f. means for spacing said first and second probes in a predetermined fixed spaced relationship to each other;

g. a conical end member coupled to said stilling well for admitting liquid whose level is to be measured into said stilling well having a funnel-shape orifice located along the longitudinal axis at the bottom;

h. means for applying an electrical signal to said first and second probe; and,

i. means for measuring the signal between said probes which is related to the change in capacitance between said first and second probes depended upon the amount of liquid in said stilling well.

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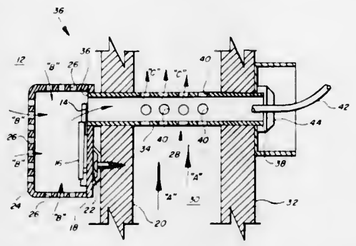
**3,933,043**
**AIR QUALITY SENSING APPARATUS**
**Bernard R. Shuler, Louisville, Ky., assignor to American Air Filter Company, Inc., Louisville, Ky.**
**Filed Sept. 25, 1974, Ser. No. 509,284**
**Int. Cl.² G01W** *1/02*
**U.S. Cl. 73—336** **5 Claims**

1. An air quality sensing apparatus for determining predetermined qualities of air within a room having a return air system, comprising:

a sensor housing disposed within the room and adapted to contain air quality sensing means, said housing having a plurality of aperture means to provide fluid communication between the interior of the room and the interior of said housing; and,

siphon means comprising a conduit open to the interior of said housing, said conduit having a plurality of apertures formed in its wall and said apertures in the wall of said conduit being disposed in the return air stream such that return air flowing in the return air system flows past said

apertures creating low air pressure areas at said apertures in the wall of said conduit to draw air from the interior of



said housing through said conduit and hence from the interior of the room into the interior of said housing.

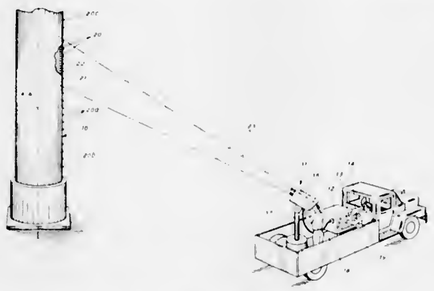
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**3,933,044**

## METHOD AND APPARATUS FOR MONITORING TEMPERATURES DURING CATALYTIC REGENERATION

**D. Roger Loper, Lafayette, and Walter E. Fauerso, Richmond, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.**

**Filed Mar. 15, 1973, Ser. No. 341,626**
**Int. Cl.² G01J** *5/08*; **B01J** *37/08*; **G01N** *25/48*
**U.S. Cl. 73—355 R** **4 Claims**



1. Apparatus for monitoring the regeneration of a catalyst located within an insualtion-clad vessel involving elevating the temperature interior of said vessel after production of hydrocarbon products such as petrochemicals, gasoline, light fuel oils, and the like, has been terminated, comprising:

1. a plurality of metallic stud means affixed to the metallic sidewall of said vessel associated with a similarly oriented spatial position interior of said vessel, for defining a true temperature gradient for catalyst regeneration interior of said vessel as said vessel is utilized in a catalyst regeneration operating mode;
2. an infrared scanning and detection unit responsive to infrared energy in a frequency frange from about $300 \times 10^9$ to $10^{15}$ Hz, for the purpose of detecting said infrared energy emitted from said plurality of stud means during operation of said vessel in said regeneration mode, and displaying said energy as a function of geometric and time variables indicative of the geographic positions of said stud means as viewed from a scanning station exterior of said vessel, said infrared scanning and detection unit including:

A. infrared camera means for generating electrical signals as a function of detected infrared energy;

B. means for allowing said infrared camera means (A) to be movably positioned at a series of vertically separated viewing stations along a pathway extending upwardly from ground level, each being horizontally adjacent to a selected group of said stud means of said vessel;

C. control means fixably positioned relative to said vessel but electrically connected to said motion allowance means (B) and camera means (A) for controlling movement of said camera means (A) along said vertical pathway, said control means also including first cooperative switch means for controlling operation of said camera means (A) to allow detection of said infrared signals at least when said camera means (A) is stationary relative to said vessel at each of said viewing stations;

D. recording circuit means also fixedly positioned relative to said vessel, but electrically connected to said camera means (A) for recording said electrical signals generated by said camera means (A) due to the detection of infrared energy emitted from said plurality of stud means of said vessel.

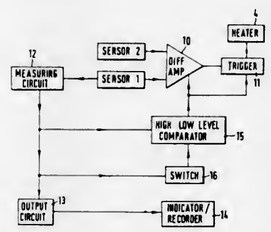
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**3,933,045**

## TEMPERATURE MEASUREMENT

**Ronald Howard Fox, Chorley Wood, and Arthur James Solman, London, both of England, assignors to National Research Development Corporation, London, England**

**Filed Apr. 30, 1971, Ser. No. 138,916**
**Claims priority, application United Kingdom, May 1, 1970, 21078/70**
**Int. Cl.² G01K** *1/16, 7/14*
**U.S. Cl. 73—359** **4 Claims**




1. Apparatus for measuring the core temperature within a body, in a region thereof which is inaccessibly remote from the outer surface of the body, in an instance where the body exhibits a fall in temperature from said region to said surface, comprising:

a sandwich assembly of two temperature sensors separated by a layer of material resistant to thermal conduction which extends in continuous manner laterally beyond the sensors to form an annulus around said sensors having lateral dimensions of at least equal order to those of said sensors;

said sandwich being superposed by an electrical heating element; control means operable in response to a temperature measurement differential indicate by said sensors to energise said heating element to annul said differential, said control means comprising means to energise said heating element continuously to elevate the temperature at one of said sensors to a predetermined high level; and

switch means operable thereafter to put said temperature differential annulling operation into effect.

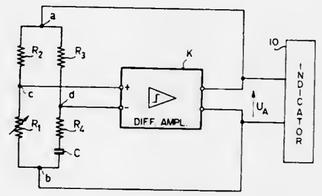


**3,933,046**

## LOGARITHMIC RESISTANCE-TO-FREQUENCY CONVERTER

**Dietrich Meyer Ebrecht, Hamburg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.**

**Filed Feb. 15, 1973, Ser. No. 332,734**
**Claims priority, application Germany, Mar. 1, 1972, 2209770**
**Int. Cl.² G01K** *7/24*
**U.S. Cl. 73—362 AR** **9 Claims**




1. A logarithmic resistance-to-frequency converter which produces a square-wave signal whose period is proportional to the natural logarithm of a resistance ratio comprising, a comparator amplifier having two input terminals and two output terminals, a first resistor, a second resistor connected in series with said first resistor to form first and second arms of a bridge circuit with said resistance ratio being determined by the resistance ratio of said first and second resistors, a third resistor, a fourth resistor, a capacitor, means connecting the third resistor in circuit to form a third arm of the bridge and the series combination of said fourth resistor and said capacitor as the fourth arm of the bridge, means connecting the bridge input terminals to the comparator amplifier output terminals and the bridge output terminals to the comparator amplifier input terminals so that the junction of the first and second bridge arms supplies a positive feedback voltage to the comparator amplifier input terminal to which it is connected whereby the circuit arrangement will self-oscillate to produce a square-wave signal at the comparator amplifier output terminals whose period varies as the natural logarithm of the resistance ratio of said first and second resistors.

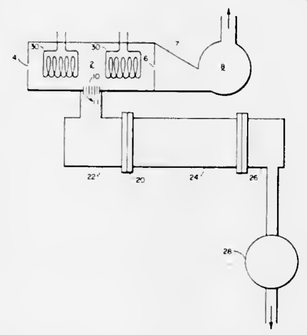
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**3,933,047**

## METHOD AND MEANS FOR GAS SAMPLING IN MASS SPECTROMETRY

**Peter Fowler, Ipswich, Mass., assignor to Cabot Corporation, Boston, Mass.**

**Filed Aug. 15, 1974, Ser. No. 497,752**
**Int. Cl.² G01N** *1/22*
**U.S. Cl. 73—421.5 R** **17 Claims**



1. A method for sampling gas from an environment of comparatively high pressure and introducing same into a mass spectrometer gas analyzer under relatively low pressure which comprises: providing an enclosed zone having an inlet in communication with said environment, an outlet and a separate sample admission port in communication with said mass spectrometer; maintaining the pressure in said enclosed zone intermediate that of said environment and that of said mass spectrometer; causing sample gas from said environment to flow through said inlet and said outlet under critical flow conditions; and causing a portion of sample gas contained in said enclosed zone to flow through said sample admission port under free molecular flow conditions and into said mass spectrometer gas analyzer.

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**3,933,048**

## PIPETTES

**Emil A. Scordato, Bronxville, N.Y., assignor to Medical Laboratory Automation, Inc., Mount Vernon, N.Y.**

**Filed Feb. 12, 1974, Ser. No. 441,765**
**Int. Cl.² B01L** *3/02*
**U.S. Cl. 73—425.6** **17 Claims**



1. A pipette for aspirating a predetermined volume of liquid into a reservoir and thereafter discharging said liquid from the reservoir, said pipette comprising, a first air chamber, a first piston movable in said air chamber, said piston being movable a set distance to aspirate a predetermined volume of liquid into a reservoir, a second air chamber, a second piston movable in said second air chamber, said second piston being movable to expel liquid from the reservoir, the piston area of said second piston being substantially greater than the piston area of said first piston, actuating means movable between two limiting positions for moving said first and said second pistons in said air chambers, a first fixed stop for arresting said actuating means in one limiting position, a second fixed stop for arresting said actuating means in the other limiting position, and means for connecting said second air chamber to said first air chamber as said actuating means approaches said first stop whereby air in said second air chamber aids in expelling liquid from the reservoir and for separating said air chambers when said actuating means is arrested by said first fixed stop so that the volume of liquid aspirated into the reservoir is controlled only by the movement of said first piston in said first air chamber.

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**3,933,049**

## DECOMPRESSION INDICATING INSTRUMENT FOR DIVERS

**Ralph B. Shamlian, San Francisco, and Ashley J. Hollingsworth, Atherton, both of Calif., assignors to Farallon Industries, Inc., Belmont, Calif.**

**Filed July 3, 1974, Ser. No. 485,455**
**Int. Cl.² G01F** *23/14*
**U.S. Cl. 73—432 R** **17 Claims**

1. In a decompression indicating instrument for divers:

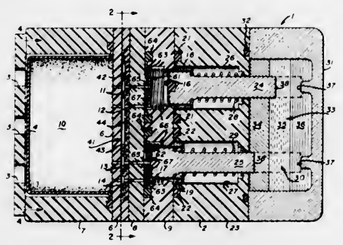
ambient pressure sensing chamber means containing a working fluid therein, said working fluid being subjected to hydrostatic pressure when the instrument is submerged in water;

time-constant chamber means;

fluid communication means disposed intermediate said sensing and time-constant chamber means for providing fluid communication therebetween;

delay means operatively associated with said fluid communication means for delaying the flow of fluid from said sensing chamber to said time-constant chamber with a first half time delay characteristic to simulate uptake of

gas by human tissue of a first tissue half time, and for delaying the flow of fluid from said time-constant chamber to said ambient sensing chamber with a second half time delay characteristic longer than said first tissue half time delay characteristic to approximate outgassing of human tissue under the ambient hydrostatic pressure of the instrument, said delay means including a check valve means in said fluid communication means, said check valve means being connected for passing fluid from said

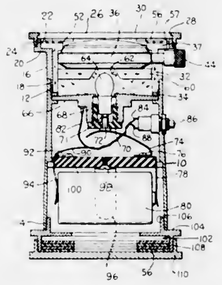


ambient sensing chamber to said time-constant chamber with a first resistance to flow of fluid therebetween while providing a second resistance to fluid flow from said time-constant chamber to said ambient sensing chamber, said second resistance to fluid flow being greater than said first resistance to fluid flow, and

indicating means operatively associated with and responsive to the fluid pressure in said time-constant chamber for indicating to the diver whether decompression is necessary.

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**3,933,050**
**SPEED CALCULATOR**
**John L. Burch, Decatur, and James C. Billions, Huntsville, both of Ala., assignors to The United States of America as represented by the United States National Aeronautics and Space Administration Office of General Counsel-Code GP, Washington, D.C.**
**Filed Feb. 27, 1974, Ser. No. 446,563**
**Int. Cl.² G01P *3/64***
**U.S. Cl. 73—488** **5 Claims**



**1.** An apparatus for measuring the velocity of a vehicle traveling between first and second measured points comprising:

a cylindrical housing comprising a separable, cylindrical, cup-shaped, top portion having an open top end;

a separable, removable transparent disk carried adjacent said open top end of said top portion;

indicia representing speed calibrations circumferentially spaced adjacent an outer perimeter of said disk;

a stopwatch carried in said cup-shaped top portion below said disk;

said stopwatch having a rotatable hand which rotates at a predetermined rate under said indicia when started;

a separable cylindrical member encompassing said stop watch and supported within said cup-shaped top portion;

an upwardly extending reference element carried on said cylindrical member at the upper end thereof;

said transparent disk having an opening therein into which said upwardly extending reference element extends for positioning said transparent disk in a predetermined position relative to said stopwatch;

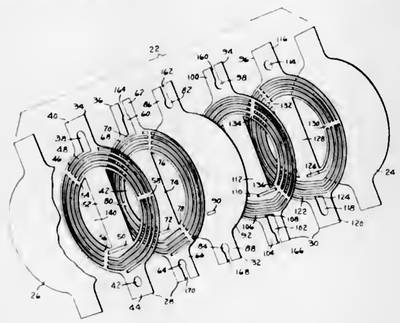
means for starting the rotation of said rotatable hand from a reference point when said vehicle passes said first measured point and for stopping the rotation of said hand when said vehicle passes said second measured point;

whereby said hand when stopped points to said calibrated indicia on said disk indicating the velocity said vehicle was traveling between said first and second measured points;

a removable cover engaging said top portion and comprising a transparent central portion overlying said stopwatch and said disk whereby said cover may be removed and said disk readily replaced with an alternate disk.

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**3,933,051**
**CLOSED LOOP FLUIDIC ANGULAR RATE GYRO**
**Carl Gustave Ringwall, Scotia, N.Y., assignor to General Electric Company, New York, N.Y.**
**Filed Oct. 15, 1974, Ser. No. 514,756**
**Int. Cl.² G01C *19/28***
**U.S. Cl. 74—5.6 B** **15 Claims**



**1.** A closed loop fluidic angular rate gyro having a single sensitive axis, comprising:

a. a supporting member;

b. means for sensing movement of said gyro about said sensitive axis;

c. means for pivotally mounting said sensing means to said supporting member and about a torsional axis which is perpendicular to said sensitive axis to maintain said sensing means in a normal null position and allow rotation of said sensing means about said torsional axis in response to the angular velocity of said gyro about said sensitive axis;

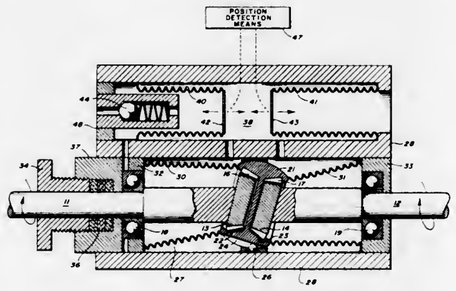
d. means responsive to movement of said sensing means for providing a restoring torque to return said sensing means to said normal null position and for producing an output signal proportional to movement of said sensing means about said torsional axis, whereby said output signal is proportional to the angular velocity of said gyro about said sensitive axis; and

e. said sensing means being comprised of a coil having a fluid flowing therethrough in a plane substantially parallel to a plane established by the intersection of said torsional axis and said sensitive axis when said coil is in the normal null position, whereby the angular momentum of said fluid flowing through said coil causes an angular displacement of said coil about said torsional axis in response to the angular velocity of said gyro about said sensitive axis.



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**3,933,052**
**PRESSURE COMPENSATED HERMETICALLY SEALED TRANSMISSION SYSTEM**
**Carl R. Coles, 619 Barberry Road, R.D. 1, Center Valley, Pa. 18034**
**Filed Oct. 21, 1974, Ser. No. 516,206**
**Int. Cl.² F16J *15/50, 15/52***
**U.S. Cl. 74—18.1** **5 Claims**




**1.** A power transmission device comprising

a. a hermetically sealed chamber having a first opening in a first wall of said chamber, and a second opening in an opposing rear wall of said chamber, said openings having a common axis;

b. rigid transmission means, capable of being wobbled, nonrotatably engaging the interior wall of said chamber, said transmission means being arranged to wobble about a substantially fixed point lying substantially along said common axis;

c. a first flexible imperforate membrane engaging said transmission means and sealing said first opening;

d. a second flexible imperforate membrane engaging said transmission means and sealing said second opening;

e. a rotatable driving member external to said chamber and extending through said first opening of said chamber;

f. a driven member external to said chamber and extending through said second opening of said chamber;

g. means coupling said driving member to said transmission means for converting the rotary motion of said driving member into a wobbling motion of said transmission means; and

h. means coupling said transmission means to said driven means for converting the motion of said transmission means into a rotating motion of said driven means.

**2.** A power transmission device for transmitting power from an external environment to an internal environment comprising

a. a housing for separating said external environment from said internal environment, said housing having a first opening in a first wall communicating with said external environment, said housing having a second opening in an opposing rear wall communicating with said internal environment, said openings being aligned along a common axis and forming the ends of a first chamber within said housing, a third opening in said first wall and a fourth opening in said rear wall forming a second chamber within said housing;

b. transmission means within said first chamber of said housing being adapted to wobble about a fixed point lying substantially in said common axis;

c. a rotatable driving member extending from said external environment through said first opening of said housing;

d. means coupling said driving member to said transmission means for converting the rotary motion of said driving member into a wobbling motion of said transmission means;

e. a first bearing housed within said first chamber for supporting said driving member;

f. a driven member external to said housing and extending from said internal environment through said second opening of said housing;

g. means coupling said transmission means to said driven means for converting the wobbling motion of said transmission means into rotary motion of said driven means;

h. a second bearing housed within said first chamber for supporting said driven member:

i. a first flexible imperforate membrane engaging said transmission means and sealing said first opening at said first bearing;

j. a second flexible imperforate membrane engaging said transmission means and sealing said second opening at said second bearing;

k. a third flexible imperforate membrane affixed to an inner wall of said second chamber and sealing in communication said third opening and a fifth opening extending from said second chamber to said first bearing on the external environmental aide thereof;

l. a fourth flexible imperforate membrane affixed to said inner wall of said second chamber and sealing said fourth opening, while permitting a sixth opening to be unsealed between said first chamber and said second chamber; and

m. pressure sensitive means covering said third opening.

**3.** Apparatus for detecting the reliability of a hermetically sealed torque transmission system, wherein said system includes a first shaft extending from an external environment into said system, and a second shaft extending from an internal environment into said system, comprising

a. a housing extending from said external environment to said internal environment, and forming a chamber therewithin including

1. a first opening at an external environmental side thereof;

2. a second opening at an internal environmental side thereof; and

3. a third opening extending through to the interior of said system;

b. a first flexible imperforate diaphragm engaging an inner wall of said chamber and sealing said first opening;

c. a second flexible imperforate diaphragm engaging said inner wall of said chamber and sealing said second opening, whereby said diaphragms jointly seal said third opening from normally free communication with either of said first or second openings; and

d. pressure checking means covering said first opening, whereby with constant pressure in said external and internal environments, a change in pressure detected by said pressure checking means occurs upon one or more of the following conditions;

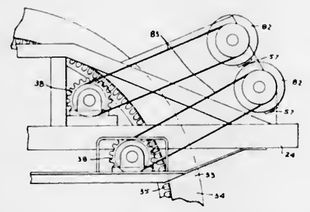
1. a leak or rupture of said first flexible imperforate diaphragm;

2. a leak or rupture of said second flexible imperforate diaphragm;

3. failure of seal of said first opening by said pressure indicating means; or

4. failure of reliability of said hermetically sealed torque transmission system.

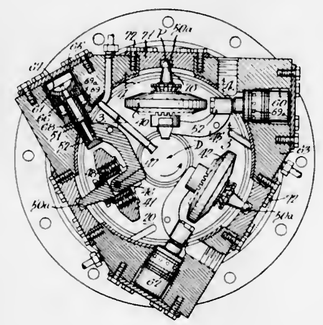
**3,933,053**
**DITCHER**
**Fred Willie Bartels, Edmonton, Canada, assignor to Banister Pipelines Ltd., Edmonston, Canada**
**Division of Ser. No. 343,107, March 20, 1973, Pat. No. 3,863,988. This application Aug. 23, 1974, Ser. No. 500,089**
**Int. Cl.² F16H** *55/30, 1/06, 55/12*
**U.S. Cl. 74—243 R** **4 Claims**



1. In a ditcher comprising a wheel frame having a non-axially supported digging wheel rotatably mounted thereon, said wheel having a pair of spaced rim assemblies, each said rim assembly having inwardly and outwardly directed side faces, the improvement which comprises:
a row of spaced teeth projecting from each of said side faces adjacent the circumference of said rim assembly to provide a double segment tooth assembly for accepting torque input from a drive sprocket;
at least two double drive sprockets rotatably mounted on the wheel frame adjacent each rim assembly and engaging said rows of teeth to drive the wheel; and
means for rotating the drive sprockets.

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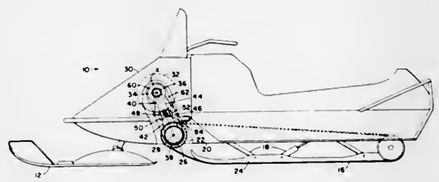
**3,933,054**
**TOROIDAL TRACTION DRIVE**
**Walter J. Iseman, Monroe Center, Ill., assignor to Sundstrand Corporation, Rockford, Ill.**
**Filed July 18, 1974, Ser. No. 489,466**
**Int. Cl.² F16H** *15/38*
**U.S. Cl. 74—200** **10 Claims**



10. A traction drive comprising,
a casing,
a pair of spaced discs coaxially mounted in the casing for independent rotation about a drive axis and each having a partially toroidal groove,
a plurality of angularly spaced rollers positioned between said discs, each rotatable about a roller axis and in rolling frictional engagement with both of said grooves,
reciprocal means independently mounting each of said rollers for adjustment along an axis extending tangentially of said grooves normal to the roller axis,
each reciprocal means including an arm mounted for rocking movement about the tangential axis to adjust the contact of the roller radially relative to the discs,
means mounting each roller on the associated arm for pivotal movement about a fourth axis normal to the roller axis and tangential axis and parallel to the drive axis when the roller engages both discs equidistant from the drive axis, and
means for maintaining the roller axis intersecting the drive axis.

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**3,933,055**
**TENSIONING DEVICE FOR A FLEXIBLE DRIVE ELEMENT**
**Thomas Charles Newhouse, Fond du Lac, and Thomas Herbert Lohr, Horicon, both of Wis., assignors to Deere & Company, Moline, Ill.**
**Filed Oct. 29, 1974, Ser. No. 518,585**
**Int. Cl.² F16H** *7/12, 7/10*
**U.S. Cl. 74—242.11 S** **6 Claims**



1. In combination with a drive of a type including a support on which generally cylindrical drive and driven members are mounted for rotation about parallel axes, a flexible drive element trained about said drive and driven members so as to form first and second runs located on opposite sides of a line of centers passing through said axes, a tensioning device comprising: a tensioning member located between said drive and driven members and extending transversely to said line of centers; said tensioning member including first and second abutment surface means disposed such that said first and second runs extend therebetween and are respectively engaged therewith; at least one aperture located in said tensioning member between said first and second abutment surface means and elongated so as to extend transversely to said line of centers; and a pin extending through the aperture and pivotally mounting the tensioning member on said support between said first and second runs.

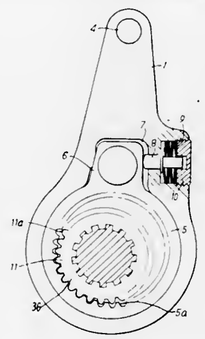
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**3,933,056**
**SLACK ADJUSTERS**
**Alistair Gordon Taig, Bristol, England, assignor to Bendix Westinghouse Limited, Bristol, England**
**Filed Apr. 8, 1974, Ser. No. 458,980**
**Claims priority, application United Kingdom, May 12, 1973, 22729/73**
**Int. Cl.² F16H** *35/06*
**U.S. Cl. 74—399** **14 Claims**

1. A slack adjuster including an angularly movable input member and an angularly movable output member a one member being mounted eccentrically with respect to the other member and having external gear teeth mutually intermeshing



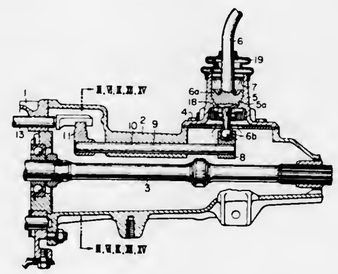
with internal gear teeth of the other member and adjustment means for moving the centre of one said member in relation



to the centre of the other said member to reduce slack in a mechanism when connected thereto.

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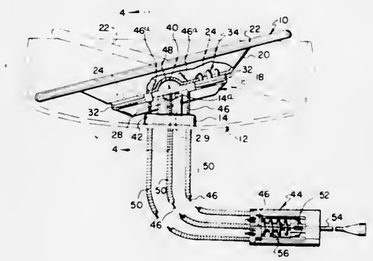
**3,933,057**
**AUTOMOTIVE VEHICLE SHIFT CONTROL MECHANISM FOR MANUAL TRANSMISSIONS**
**Isao Tsuzuki, Kariya; Yasuie Takahashi, and Hideaki Koga, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan**
**Filed Aug. 8, 1974, Ser. No. 496,025**
**Claims priority, application Japan, Dec. 29, 1973, 49-1983**
**Int. Cl.² G05G** *9/12;* **F16H** *57/06*
**U.S. Cl. 74—476** **20 Claims**



1. In a manual multiple-forward-speed vehicle transmission having transmission means shiftable between a reverse drive and a plurality of forward speed ratios, a manual shift lever controlling said transmission means by movement through a shift pattern of selection positions including a neutral position, said shift lever being connected to shift said transmission means to said reverse drive and to one forward speed ratio by movement thereof, respectively, to a pair of selection positions lying at the ends of a substantially linear path extending across said neutral position, and a transmission lever movable with said shift lever and operatively interconnected between said shift lever and said transmission means; a misshift preventive mechanism for controlling movement of said shift lever along said linear path between said selection positions for said reverse drive and said one forward speed ratio, said misshift preventive mechanism comprising a first projection extending from said transmission lever and arranged to be moved through a range of motion including a prescribed path corresponding to the movement of said shift lever through said linear path, a housing, guide means mounting said housing for rotative movement and for linear movement transversely of said rotative movement, with the range of movement of said housing being defined to include an initial position, a second projection extending from said housing and arranged to be located within said prescribed path of said first projection when said housing is in said initial position, spring means biasing said housing to said initial position, said first projection being configured to effect initial engagement with said second projection to rotate said housing against the force of said spring means out of said initial position when said shift lever is moved into said linear path through said neutral position, with subsequent disengagement between said first and said second projection by movement of said shift lever within said linear path operating to enable said spring means to return said housing to said initial position to place said second projection within said prescribed path of said first projection to cause said housing to undergo said linear movement as a result of reengagement between said first and second projections, and stopper means for limiting said linear movement of said housing thereby to prevent misshifting of said transmission which might occur by movement of said shift lever between said selection positions for said one forward speed ratio and said reverse speed ratio directly through said linear path.

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**3,933,058**
**UNIVERSAL SUPPORT FOR VEHICLE MIRROR**
**Ronald J. Kraine, Garfield Heights, Ohio, assignor to Tenna Corporation, Cleveland, Ohio**
**Filed Feb. 20, 1974, Ser. No. 444,106**
**Int. Cl.² F16C** *1/10*
**U.S. Cl. 74—501 M** **18 Claims**



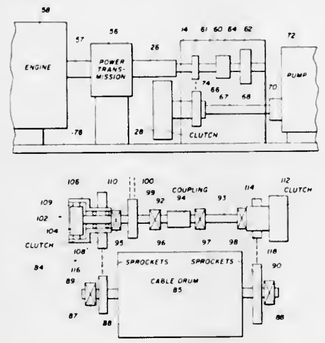
1. In a support for effecting limited adjustment in a plurality of planes of a part to be adjusted, comprising, a first supporting member, a second member generally spaced from the first member, a universal joint means connecting said members and effecting limited movement in a plurality of planes therebetween, said joint means being formed of vibration absorbing material and comprising pivotal bearing means coacting with bearing means on said first member for swinging movement of said second member and said joint means relative to said first member in one plane, and said joint means including flexible means for swinging movement of said second member relative to said first member in another plane.

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**3,933,059**
**DEEP DRILLING MACHINE DEMOUNTABLE FOR HELICOPTER TRANSPORT**
**Theodore B. Houck, Tulsa, Okla., assignor to Parker Drilling Company, Inc., Tulsa, Okla.**
**Division of Ser. No. 194,182, Nov. 1, 1971, Pat. No. 3,767,329. This application Mar. 23, 1973, Ser. No. 344,090**
**Int. Cl.² F16H** *37/06*
**U.S. Cl. 74—661** **5 Claims**

1. In a drilling apparatus for drilling small diameter bore holes deep into the earth, said apparatus designed, for transportation purposes, to be demountable into a plurality of subassemblies, each having a weight less than a specified magnitude, the improvement comprising:

a. a plurality of separate drive subassemblies, each of said drive subassemblies comprising;
1. a drive subassembly housing;
2. an engine;
3. a speed transmission means operable at the high speed of said engine, said transmission means including gear means to provide a plurality of reduced output speeds;
4. means to couple said engine to said transmission, and said transmission to drive means in said drive subassembly;
5. pump means;
6. means including clutch means to connect said pump means to said drive means in said subassembly;
7. means to connect said housings of a plurality of said subassemblies into a single compound assembly housing; and

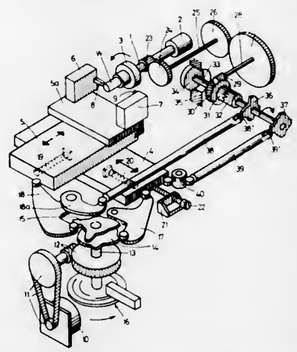



8. means to connect a plurality of said drive means in a plurality of said subassemblies to a single output drive shaft;
b. a drawworks comprising;
1. a drawworks housing;
2. an output drive shaft, including cable reel means on said output drive shaft;
3. input drive means comprising two separate drive shafts;
4. separate drive means, including clutch means, for coupling drive shaft to said output shaft; each of said drive means of different step-down speed ratio;
5. means to couple said two input drive shafts to turn together; and
c. means to couple the output drive shaft of (a) to the input drive means of (b).

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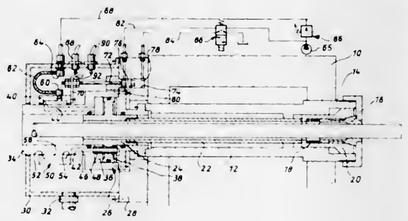
**3,933,060**
**AUTOMATIC LATHE**
**Hans-Jürgen Leiber, Tramelan, Switzerland, assignor to Kummer Freres S.A., Fabrique de machines, Tramelan, Switzerland**
**Filed Jan. 27, 1975, Ser. No. 544,519**
**Claims priority, application Switzerland, Jan. 29, 1974, 1204/74**
**Int. Cl.² B23B** *1/00, 3/28*
**U.S. Cl. 82—5** **3 Claims**

1. An automatic lathe comprising a workpiece spindle, a compound slide arrangement embodying a longitudinal slide and a cross-slide, a primary control shaft, two primary cam disks seated on said primary control shaft, transmission levers individually operatively associated with said primary cam disks, said longitudinal slide and said cross-slide each being controlled by said primary cam disks through the agency of the respective individually associated transmission lever, at least two lathe tool supports arranged adjacent one another at the compound slide, a control mechanism which can be switched-on during a portion of each work cycle of the automatic lathe for carrying out a thread chasing operation by means of a thread chasing tool clamped in one of said lathe tool supports, said control mechanism embodying an auxiliary control shaft for driving connection with the workpiece spindle, two auxiliary control cam disks defining first and second auxiliary control cam disks fixedly seated upon said auxiliary control shaft, a respective plunger operatively associated with each slide and auxiliary control cam disk, means for displacing said auxiliary control shaft into an axial position for thread chasing in which the first of said auxiliary control cam disks carries out the control of the movements of the longitudinal slide by means of the plunger associated with said first auxiliary control cam disk and the transmission lever associated with the longitudinal slide and in which the second of the auxiliary control cam disks acts upon the cross-slide by means of the plunger associated with said second auxiliary control cam disk and an additional transmission lever member in order to raise-off the cross-slide from the transmission lever associated therewith for the time duration of each rapid return movement of the longitudinal slide controlled by the first auxiliary control cam disk between successive thread chasing operations in order to lift-off the thread chasing tool from the workpiece.



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**3,933,061**
**APPARATUS FOR HYDRAULICALLY OPERATING THE CHUCK OF THE HOLLOW SPINDLE OF A LATHE**
**Helmut Link, Esslingen, Germany, assignor to Index-Werke KG Hahn & Tessky, Esslingen, Germany**
**Filed July 5, 1974, Ser. No. 485,781**
**Claims priority, application Germany, July 10, 1973, 2334940**
**Int. Cl. B23b** *19/02, 5/22*
**U.S. Cl. 82—30** **9 Claims**

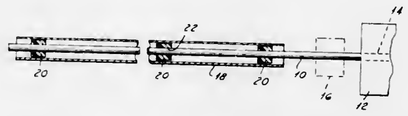


1. In a lathe having a hollow spindle for receiving an elongated workpiece, an axially operable chuck located at its forward end for selectively clamping said workpiece, a hollow shaft located within said spindle and axially reciprocal with respect to said spindle to operate said chuck, a double acting chuck motor comprising a cylinder secured to said spindle and a piston secured to said hollow shaft, said cylinder having two pressure chambers and a cylinder extension coaxially extending to the rear thereof, first duct means in said extension communicating with one of the pressure chambers, second duct means within said extension communicating with the other pressure chamber, each of said ducts having an opening on the peripheral surface of said cylinder extension axially offset from each other, a slidable sleeve surrounding said cylinder extension, said slidable sleeve having radially inwardly directed flanges along its axial edges defining with said extension member an annular space, conduit means secured to said sleeve connecting said space to a source of fluid under pressure, and means for axially shifting said sleeve between the first and second duct means to selectively supply fluid under pressure to one or the other of said pressure chambers thereby actuating said piston to reciprocate said shaft and operate said chuck.



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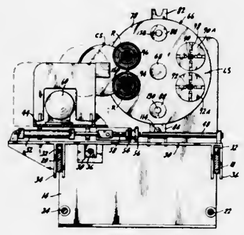
**3,933,062**
**SOUND DEADENING MEANS FOR SCREW MACHINE**
**Harold J. Huber, 7625 Payne, Dearborn, Mich. 48126**
**Filed Aug. 2, 1974, Ser. No. 494,096**
**Int. Cl.² B23B** *25/00*
**U.S. Cl. 82—38 A** **1 Claim**



1. The combination comprising an elongated work stock member for feeding into a screw machine, an elongated work stock tube receiving said elongated work stock member, and at least one ring-like member press-fitted onto said work stock member, said ring-like member being fabricated of a plastic material and having a central opening therethrough, said central opening being oval in cross-section, said ring-like member being located at a point remote from the end of the work stock member which is to be operated upon by a screw machine, said ring-like member further being located within said work stock tube.

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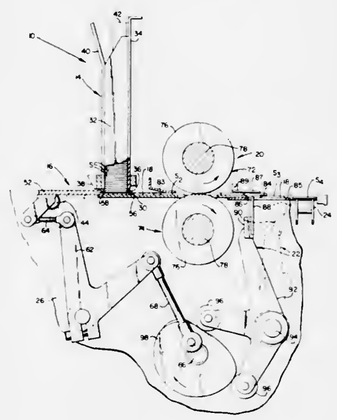
**3,933,063**
**TURRET ROLL SLITTING MACHINE**
**Carl A. Stoffels, Flemington, N.J., assignor to Judelshon Industries, Inc., Jersey City, N.J.**
**Filed Oct. 2, 1974, Ser. No. 511,197**
**Int. Cl.² B23B** *3/04, 5/14, 7/00*
**U.S. Cl. 82—85** **9 Claims**



1. An improved roll cutting machine for cutting rolls of sheet material at a cutting station in said machine while simultaneously unloading previously cut rolls from said machine and loading new rolls to be cut thereon at a loading and unloading station of said machine comprising:
a. frame means;
b. a turret assembly mounted on said frame means for rotational movement about a turret axis;
c. multiple spindle shafts mounted on said turret and extending parallel to said turret axis including means to support rolls of material to be slit and chuck means engageable with said rolls of sheet material when mounted on spindle shafts;
d. said turret being rotatable to transport at least one spindle shaft to a cutting station at a first location about said turret axis while simultaneously moving at least one other spindle shaft to a loading and unloading station at a second location about said turret axis;
e. cutting means mounted on said frame for longitudinal movement parallel to said spindle shafts and for movement in a plane perpendicular to said spindle shafts to affect cutting of a roll of material mounted on said at least one spindle shaft in said cutting station; and
f. drive means for driving said cutting mechanism.

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**3,933,064**
**GUM SLAB FEED APPARATUS**
**Lawrence W. Schoppee, Springfield, Mass., assignor to Package Machinery Company, East Longmeadow, Mass.**
**Filed Apr. 25, 1974, Ser. No. 463,909**
**Int. Cl.² B26D** *3/08*
**U.S. Cl. 83—11** **21 Claims**

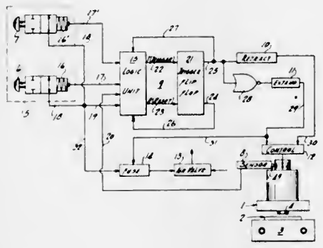


1. Apparatus for feeding gum to a wrapping machine or the like and comprising means defining a substantially horizontal path of gum travel, a magazine feed mechanism for feeding a succession of slabs of gum to and along said path and including a magazine for containing a supply of gum slabs, means supporting said magazine for movement between an active position wherein it extends upwardly from said path to maintain the supply of slabs in vertically stacked relation and an inactive position wherein it is displaced a substantial distance from said active position, and means for successively feeding slabs from the bottom of said magazine to said path and advancing the slabs along said path, and a scoring mechanism mounted in said path for receiving each successive slab advanced by said feeding means and scoring it along a plurality of generally parallel score lines as it advances along said path.

### 3,933,065
### FLUIDIC MACHINE CYCLE CONTROL

George J. Janu, Brookfield, and Donn R. Fischer, Milwaukee, both of Wis., assignors to Johnson Service Company, Milwaukee, Wis.

Filed Apr. 18, 1974, Ser. No. 462,296
Int. Cl.² B26D 5/00, 7/24
U.S. Cl. 83—62 32 Claims

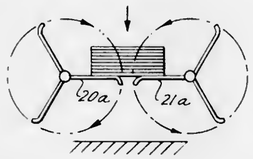


1. A fluid machine control apparatus for a movable working element of a machine comprising a plurality of manually operable fluid signal source means having a first position and operable to a second position, each of said source means generating a plurality of unique fluid signals in response to the movement from the first to the second position to monitor the actuation thereof and the setting of said source means to said second position, sensor means for monitoring the position of the working element and producing a machine position related fluid output signal, a fluid signal logic processing means including fluid signal comparator means including first monitor means monitoring the operation of the source means and the sensor and responsive to simultaneous generation of signals of the source means and the output of the sensor to produce a control output to selectively enable the operation of the machine and second monitoring means monitoring the setting of the source means to the second position and the sensor means to selectively disable the machine in response to movement from said second position.

### 3,933,066
### DUAL SPEED STACKER PADDLE ASSEMBLY

Robert J. Spooner, and Oscar W. Dillon, both of Essex, Conn., assignors to Cashin Systems Corporation, Williston Park, N.Y.

Filed Feb. 26, 1975, Ser. No. 553,144
Int. Cl.² B26D 4/46
U.S. Cl. 83—92 14 Claims




1. In combination a slicing maching having a slicing blade, a feeding means for feeding a product to be sliced by said blade and control means for determining the rate of advance of said feeding means toward said blade, and consequently the sliced thickness, and apparatus for stacking slices of said product as they are discharged by said slicing machine and then transferring the stacks of sliced product, said apparatus comprising in combination:

a paddle stacker to be located adjacent to the discharge end of said slicing machine for receiving the slices discharged therefrom;

a low inertia D. C. motor to rotate the paddles of the paddle stacker at low speed as the slices are being stacked on such paddles and at high speed when the desired size of stack has been achieved, said motor at low speed being synchronized with the rate of advance of said slicer feeding means;

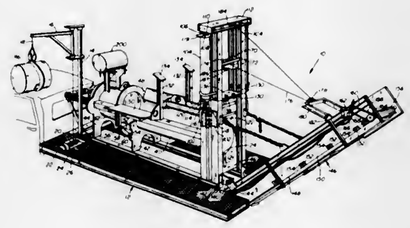
control means coupling the said motor and the paddle stacker for actuating said motor when the desired size of stack has been achieved and rotating the paddles at high speed to transfer the said stack and bring the paddles to the low speed position ready for reception of another stack of slices;

stack receiving means adapted to receive thereon the stacks of sliced product transferred by said stacker.

### 3,933,067
### CUTTER DEVICE FOR CUTTING THERMOPLASTIC MATERIAL

Julius Clark, 224 W. Freeport, Broken Arrow, Okla. 74012

Filed Sept. 24, 1974, Ser. No. 508,905
Int. Cl.² B26D 7/06
U.S. Cl. 83—155 2 Claims



1. A cutter device for cutting thermoplastic material, comprising:

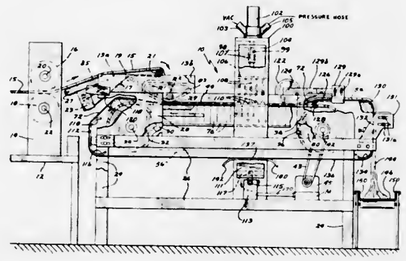
a frame, including support means for portions of thermoplastic materials, pusher means for urging said portions of thermoplastic material toward a first end of said support means, an end plate on said support means, disposed substantially normal thereto, said end plate having a slot therein, a double acting knife blade slidable on said frame operable adjacent to and parallel to said end plate, said double acting knife blade having cutter means positioned thereon slidable in relation to said slot, power means to operate said pusher means and said knife blade, said power means being hydraulic means, and said hydraulic means including control means to operate said hydraulic means selectively, said pusher means including a hydraulic cylinder behind a reciprocable pusher member and in substantial axial alignment therewith to move said pusher member reciprocably, said frame including a hydraulically operable lift member positioned swingably adjacent said support means to receive said thermoplastic material and transfer said material to said support means, said frame including a swinging boom positioned upstandingly adjacent said support means and having hydraulically operable lifting means to lift articles of thermoplastic material and place them upon said lift member, said frame including a conveyor having a conveyor support frame attached pivotally by a first end to said frame adjacent said end plate, a cable having a first end attached to a second end of said support frame and second end attached to a hydraulically operated winch to raise and lower said conveyor, and a hydraulically operated conveyor belt, said conveyor positioned to receive cut portion of thermoplastic material and convey said portion to a remote location.



### 3,933,068
### TRIM REMOVAL BELT FOR DOUGH CUTTING APPARATUS

Jack J. Rejsa, Golden Valley, Minn., assignor to The Pillsbury Company, Minneapolis, Minn.

Filed July 26, 1974, Ser. No. 492,080
Int. Cl.² B26D 7/08; B65G 23/18
U.S. Cl. 83—168 11 Claims

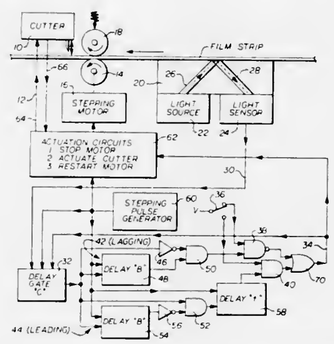


1. An apparatus for cutting bakery goods from an elongated strip of dough, said apparatus comprising a supporting framework, an endless cutting means including a cutting surface member having openings therein, upwardly extending cutting rings around the openings, means for feeding the dough strip onto the top of the cutting rings, means for pressing the dough onto the cutting rings to cut a dough piece from the center of each ring, an endless trim stripping belt comprising flexible sheet material in engagement with the cutting surface member and positioned around the rings in the interstices between the rings on the surface of the cutting means, support means for the belt and means operable with the belt to cause the belt to engage said endless cutting means at a predetermined point prior to the point at which the dough is pressed thereagainst and means for lifting the belt together with the trim thereon from said endless cutting means after the cut pieces of dough have been removed from the trim.

### 3,933,069
### CAMERA FILM PROCESS FILM LOCATING FEED AND CUTTER

Leonard H. Tall, Mercer Island, and Gerald L. Edwards, Seattle, both of Wash., assignors to CX Corporation, Seattle, Wash.

Filed Feb. 6, 1975, Ser. No. 547,379
Int. Cl.² B26D 5/32, 5/34
U.S. Cl. 83—210 7 Claims

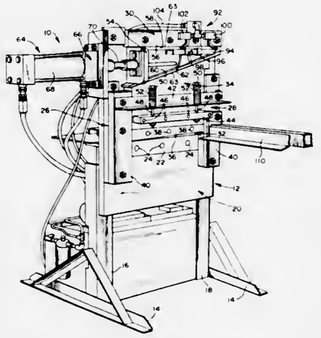



1. Processing apparatus comprising in combination with feed means for longitudinally advancing camera film strip and the like longitudinally therein with either end leading, processing means at a processing station for performing a processing operation on the strip at each of successive positions of advancement thereof by said feed means, said strip having locating elements successively spaced lengthwise along the strip each with opposing first and second longitudinally spaced terminal edges, corresponding first ones of such edges occupying predetermined longitudinal positions on the strip and the corresponding opposing edges longitudinal positions subject to variation, edge detector means operable in predetermined positional relation to the processing station to scan the advancing strip locating elements and provide therefrom first signals from detection of the respective leading ones of such edges and second signals from detection of the respective lagging edges thereby scanned, and control means selectively operable to actuate the processing means in response to each of the leading edge signals with the strip being advanced with one end leading, and alternatively operable to actuate such operating means in response to the lagging edge signals with the strip being advanced with its other end leading.

### 3,933,070
### WEDGE ACTUATED CUTTING AND/OR FORMING TOOLS

Andrew C. Walters, Dallas, and William M. Goss, Richardson, both of Tex., assignors to Fabco, Incorporated, Lewisville, Tex.

Filed Feb. 9, 1973, Ser. No. 331,237
Int. Cl.² B26D 5/08, 5/12
U.S. Cl. 83—529 12 Claims



1. A cutting and/or forming tool comprising:

a frame including a fixed platen and guide structure extending in a predetermined direction from the fixed platen for cooperation therewith to define a work area;

a movable platen slidably supported on the guide structure of the frame for reciprocation relative to the fixed platen in the work area;

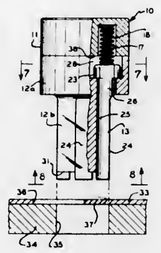
a wedge supported for sliding movement in a direction extending generally perpendicularly to the predetermined direction and having a camming surface;

means defining a camming surface mounted in engagement with the camming surface of the wedge and adapted for cooperation therewith to reciprocate the movable platen toward and away from the fixed platen in response to reciprocation of the wedge;

fluid powered cylinder means having a predetermined stroke and operatively connected to the wedge for effecting reciprocation thereof and thereby effecting reciprocation of the movable platen in the work area; and

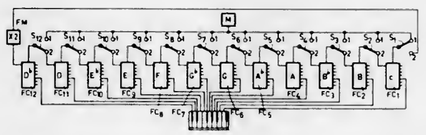
means including a portion mounted on the wedge for reciprocation therewith and a portion mounted on the frame and operatively associated with said cylinder for selectively varying the separation between the fixed and movable platens at the points of minimum and maximum separation during reciprocation of said movable platen.

3,933,071
## SHEARPROOF PUNCH
Edward J. Doring, Syracuse, N.Y., assignor to Onondaga Tool Corporation, Fayetteville, N.Y.
Filed Mar. 27, 1975, Ser. No. 562,411
Int. Cl.² B26F 1/12
U.S. Cl. 83—637 4 Claims



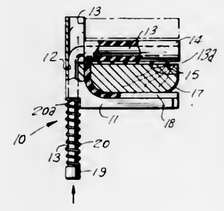
1. A male shearproof punch having a retainer member adapted to be secured to a press, a unitary punch body having an upper portion removably secured to the retainer member and a lower portion having four vertically extending side surfaces, and four heels, each heel being slidably contained in a vertically extending groove in a lower body side surface and extending upward into the upper body portion, the lower body portion and the heels having flat bottom surfaces the edges thereabout defining the punch cutting edge, each heel lower portion having a portion of its outer side surface cut away to conform to the configuration of the adjacent lower body side surface, wherein the improvement comprises a slot in the upper surface of the upper body portion for each heel, each heel having a head flatted on two diametrically opposite sides for sliding contact with the slot sides, each slot being of a greater depth than the heel head height, and each heel being spring-biased downward, whereby rotation of each heel is prevented and each heel is biased downward ahead of the punch body for entering a female die to cooperate with the punch body when not arrested by a workpiece in order to prevent deflection of the punch body and the heels are retractable to align their cutting edges with those of the punch body when arrested by a workpiece.

3,933,072
## GENERATOR FOR PRODUCING TONES OF A MUSICAL SCALE IN AN ELECTRONIC MUSICAL INSTRUMENT
David Josephus van der Wal, and Frans Grotepas, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Oct. 24, 1974, Ser. No. 517,781
Claims priority, application Netherlands, Oct. 31, 1973, 7314925
Int. Cl.² G10H 1/00, 5/06
U.S. Cl. 84—1.01 5 Claims



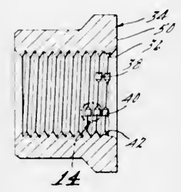
1. Generator for producing tones of a musical scale in electronic musical instruments of the type which comprises one master oscillator and a plurality of frequency converters equal in number to the number of tones per octave, which frequency converters each have an input and at least a first output, the first output of each frequency converter being connected to the input of the next subsequent frequency converter while the input of the first frequency converter is connected to the master oscillator, the improvement comprising a frequency multiplier that multiplies by a factor of 2, means connecting the first output of the final frequency converter to the input of the first frequency converter through said frequency multiplier, and means for switching the master oscillator to the input of any one of the frequency converters and for disconnecting this input from the preceding frequency converter.

3,933,073
## MUSICAL INSTRUMENT CAPO
Marvin H. Hutchins, 10503 Ave. P, La Porte, Tex. 77571
Filed Apr. 24, 1975, Ser. No. 571,072
Int. Cl.² G10D 3/08
U.S. Cl. 84—318 3 Claims



1. A musical instrument capo for changing the key stringed instruments, comprising, an L-shaped body, an L-shaped slide bar slidably carried within said body with cap means and spring means for operating, a rubber sleeve carried upon said slide bar and protective padding secured to said capo for protecting the neck of the instrument.

3,933,074
## FATIGUE IMPROVEMENT NUT
Erwin C. Witte, Placentia, and Paul V. Pagel, Fullerton, both of Calif., assignors to Kaynar Manufacturing Co., Inc., Fullerton, Calif.
Filed Dec. 9, 1974, Ser. No. 530,947
Int. Cl.² F16B 31/04
U.S. Cl. 85—32 T 5 Claims



1. In a fatigue improvement nut comprising a generally cylindrical nut body with a wrenching surface on the outer periphery and a threaded central bore for use with a conventional bolt, the improvement comprising a plurality of circumferentially spaced flutes in the threads of said nut extending axially from the bolt entrance end thereof across at least two threads and radially into the threads to approximately four-fifths of thread depth, thereby to weaken said threads sufficiently to allow axial flexure thereof relative to the uninterrupted threads of said nut when subjected axial loads thereby to move the zone of maximum stress transfer between said nut and said bolt from the interface between the engaged and non-engaged threads of said bolt to a zone located substantially centrally of the axial length of said nut.



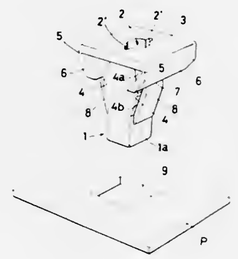
3,933,075
## SELF-DRILLING FASTENER AND METHOD OF MAKING SAME
Roy E. Peterson, Rockford, Ill., assignor to Elco Industries, Inc., Rockford, Ill.
Continuation-in-part of Ser. No. 384,597, Aug. 8, 1973, abandoned. This application Nov. 8, 1974, Ser. No. 522,095
Int. Cl.² F16B 25/00
U.S. Cl. 85—41 10 Claims



1. A self-drilling fastener including a generally cylindrical, threaded shank, a drill tip integrally formed on one end portion of said shank, first and second concave grooves formed in opposite sides of said end portion, each groove having a straight axis and appearing to intersect with the axis of the other groove at an acute included angle as measured in a plane extending parallel to the axis of said shank, said angle appearing to be bisected by the axis of said shank as measured in said plane, first and second planar heels formed on said one end between said grooves and intersecting each other at an included angle bisected by the axis of said shank, a chisel edge on the end of said shank defined by the intersection of said heels, first and second cutting edges defined by the intersections of said first and second grooves with said first and second heels, respectively, said cutting edges each being curved concavely both in a direction generally radially of said shank and in a generally axial direction toward the other end of said shank, each of said cutting edges being formed with a positive rake angle along the entire length thereof and said rake angle increasing in magnitude upon progressing along said cutting edge from adjacent said chisel edge and toward the surface of said shank, and first and second peripheral edges defined by the intersections of the planes of said first and second heels, respectively, with the cylindrical surface of said shank, said first and second grooves intersecting said second and first peripheral edges, respectively, at first and second points not beyond the points of maximum progression of said peripheral edges toward the other end of said shank, said first and second points being angularly spaced from the outer ends of said second and first cutting edges, respectively, at an obtuse included angle.

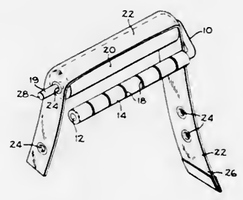
3,933,076
## SCREW GROMMET
Toshie Tanaka, Tokyo, Japan, assignor to Nifco Inc., Tokyo, Japan
Filed Dec. 9, 1974, Ser. No. 530,633
Claims priority, application Japan, Dec. 20, 1973, 48-145182[U]
Int. Cl.² F16B 13/06
U.S. Cl. 85—80 5 Claims

1. A one-piece plastic screw grommet for use in a complimentary polygonal-shaped panel aperture, said grommet including a leg having a polygonal cross section and a head at one end which extends laterally in at least two opposite directions from said leg a predetermined distance terminating in a pair of opposite edges, a bore traversing said head and extending axially into said leg, said leg having a first pair of slopes diverging outwardly in the same two opposite directions from its juncture with said head to a point intermediate its length and then converging inwardly along a second pair of slopes toward its opposite end to provide a pair of shoulders at the juncture of said slopes which project outwardly from said leg in the same directions as the edges of the head, the distance from each of said edges to the adjacent shoulder on the leg being substantially equal to said predetermined distance from said edge to the juncture of said head and leg, a pair of first planar means each hingedly connected to one of said edges and each initially extending angularly from one of said edges



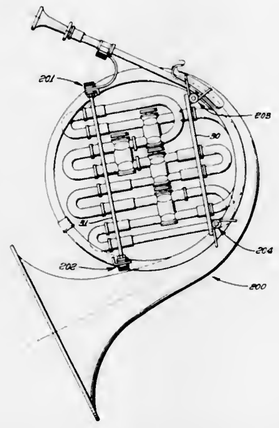
to its adjacent shoulder, second planar means hingedly connected to each of said first planar means and initially lying generally in the direction of and along said second pair of slopes, whereby when said grommet leg and said second planar means are inserted into said panel aperture and axial pressure applied to move said first planar means from its initial angular position to a position juxtaposed to said head, said hingedly connected second planar means are angularly moved into engagement with said first pair of diverging slopes and caused to underlie said panel aperture edges in opposition to said head.

3,933,077
## CONVERTER FOR GUITARS
James Dunlop, Bldg. 52, Benicia Industrial Park, Benicia, Calif. 94510
Filed Feb. 20, 1975, Ser. No. 551,093
Int. Cl.² G10D 3/00
U.S. Cl. 84—318 4 Claims



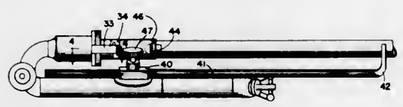
1. A converter for Spanish guitars comprising a spacer member for insertion underneath the strings of the guitar to raise and strings higher above the top surface of the neck of the guitar, said spacer member carrying rotatably mounted thereon a sleeve of elliptical cross-sectional contour, a pressure member supported from said spacer member for application over the strings of the guitar to urge them against said sleeve, and means for detachably securing said pressure member to the neck of the guitar.

**3,933,078**
**MUSICAL HORN CONSTRUCTION**
**Mark S. Veneklasen, 12338 Montana Ave., Apt. 11, Los Angeles, Calif. 90049**
**Filed Nov. 2, 1973, Ser. No. 412,334**
**Int. Cl.² G10D 7/10**
**U.S. Cl. 84—387** **15 Claims**



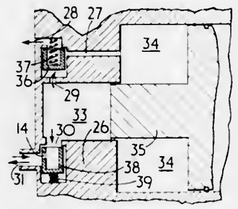
**1.** In a horn in the form of a brass instrument having multiple valves and tubes defining straight path sections and crooks, the combination comprising
a. a support frame having elongated metallic members and generally annular portions integral therewith, said portions receiving the tube straight path sections therethrough,
b. means removably retaining the tube straight path sections to said frame annular portions, and
c. the tube straight path sections having removable telescopic connection with said crooks.

**3,933,079**
**MUSICAL WIND INSTRUMENT**
**Earl Joseph Gillespie, Kenosha, Wis., assignor to G. Leblanc Corporation, Kenosha, Wis.**
**Filed Sept. 6, 1974, Ser. No. 503,962**
**Int. Cl.² G10D 7/10**
**U.S. Cl. 84—388** **5 Claims**



**1.** In a wind instrument formed of tubular material having an initial straight portion beginning at a mouthpiece receiving end and terminating in a sound-emanating bell portion the combination comprising a plurality of piston valves for the playing of different musical notes, a pair parallel spaced apart tubes held in a fixed relation to the wind instrument and having terminating ends extending in a direction opposite that of the mouthpiece receiving end portion, a slide member having a U-shaped portion leading into a pair of straight parallel spaced apart portions having open ends telescoping with said terminating ends of said pair of parallel spaced apart tubes to slide therealong for the playing of different musical notes, and a bar adjustably secured to said wind instrument substantially parallel to said one of said parallel spaced apart tubes and its associated one of said pair of spaced apart straight portions, said bar having terminating end means to engage said slide member thereby limiting the extent of travel of said slide member.

**3,933,080**
**PNEUMATIC ACTUATORS**
**Nicholas John Byrom Corrie, Camberley, England, assignor to Martonair Limited, Middlesex, England**
**Filed Sept. 7, 1972, Ser. No. 286,862**
**Claims priority, application United Kingdom, Sept. 14, 1971, 42763/71**
**Int. Cl.² F15B 15/22**
**U.S. Cl. 91—394** **3 Claims**



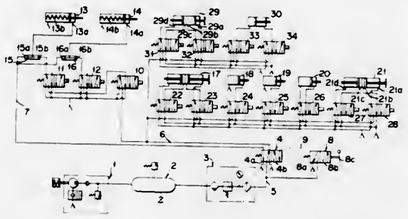
**1.** An actuator comprising a cylinder and a piston within said cylinder, a wall of said cylinder being stepped to define a region of reduced cross-section at one end of the cylinder, said piston also being stepped to define a boss provided at one end adjacent said region of reduced cross-section to be disposed within said region at one extremity of its range of possible movement within the cylinder, a first working chamber defined in said cylinder in said region, an inlet and exhaust passage in said chamber, an orifice in said passage and in communication with said first working chamber, and a pressure relief valve mounted in said passage and operable to control the size of said orifice so that upon a predetermined pressure being produced in said first working chamber said orifice has a fixed cross-sectional orifice exhausting said first working chamber whereby upon said predetermined pressure being produced the pressure in said first working chamber is dependant upon the velocity of said piston in said first working chamber, a second working chamber defined in said cylinder and separated and sealed from said first working chamber by said piston boss when said boss is located in said region to act as a cushion volume to limit the piston velocity, an exhaust passage in communication with said second working chamber, an exhaust valve in said exhaust passage, biasing means biasing said exhaust valve towards an open position, an outlet orifice in said exhaust passage closable by the exhaust valve, and a connecting passage communicating pressure from said first working chamber to said exhaust valve to operate said valve against the action of said biasing means and close said outlet orifice upon a predetermined pressure being produced in said first working chamber.

**3,933,081**
**FLUID CONTROL CIRCUIT FOR A RADIO CONTROLLED VEHICLE**
**Hiroyuki Taki; Masanovu Ogura, both of Komatsu; Toru Tanabe, and Hidenori Mizuguchi, both of Kanazawa, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan**
**Filed Apr. 17, 1974, Ser. No. 461,795**
**Int. Cl.² F15B 11/16, 13/06**
**U.S. Cl. 91—411 R** **3 Claims**

**1.** A fluid control circuit of a radio controlled vehicle for operating an engine, transmission, steering, movable elements of an earth-moving machine and braking devices of the vehicle by means of radio control, comprising a plurality of shuttle valves communicating at the output side thereof with a brake

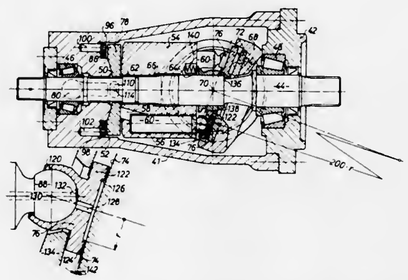


cylinder; a first conduit means communicating with said shuttle valves at respective inlet port sides thereof; a circuit changing valve means communicating with a source of fluid under pressure through a second conduit means, said circuit changing valve means being interposed between said second conduit means and said first conduit means communicating with said shuttle valves; and a third conduit means communicating with operating cylinders for the engine, transmission, steering, movable elements of an earth-moving machine and braking devices of the vehicle through respective remotely controlled



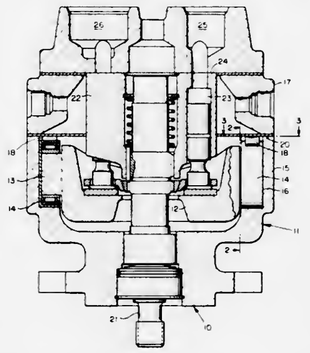
solenoid operated valves for controlling said operating cylinders, said circuit changing valve means being manually operable between a first position for feeding fluid under pressure from said source to said first conduit means communicating with said shuttle valves and a second position for feeding fluid under pressure from said source to said third conduit means communicating with said operating cylinders through said solenoid operated valves, whereby said operating cylinders may be remotely controlled by the remote operation of said solenoid operated valves only when said circuit changing valve means is in said second position.

**3,933,082**
**AXIAL PISTON TYPE MACHINE**
**Hans Molly, Dr. Eugen-Essig-Str.48, 7502 Malsch/Krs. Karlsruhe, Germany**
**Filed Aug. 6, 1973, Ser. No. 385,838**
**Claims priority, application Germany, Aug. 16, 1972, 2240116; May 24, 1973, 2326435**
**Int. Cl.² F01B 1/06**
**U.S. Cl. 91—485** **5 Claims**



**1.** In an axial piston machine comprising a casing having a portion about a primary axis with high and low pressure openings therein, a cylinder barrel journaled in the casing at two spaced points along its axis for axial and rotary motion about said primary axis with respect to the casing, said cylinder barrel having two ends with axial cylinder bores extending inwardly from one end and connecting passages extending from the cylinder bores to the other end, said other end being adjacent said portion, valving means for valving the flow of fluid to and from said cylinder bores, whereby with said rotation said passages communicate with said openings through said valving means, said valving means including said portion, said other end and an intermediate disc between the barrel and said portion of the casing, said disc having two sides with one side in contact with the casing and the other side in contact with said other end of the barrel, said sides having different centers of curvature, said other end of the barrel and said portion of the casing having shapes complementary to the respective side of the disc which they contact, and means for rendering said disc stationary with respect to said casing,
a stroke plate positioned adjacent said one end of the cylinder barrel, said stroke plate having an axis which is at an angle to the primary axis, and axial piston means having portions within said cylinder bores and portions contacting said stroke plate to produce a reciprocating movement thereof upon relative rotational movement between the cylinder barrel and the stroke plate, the improvement comprising:
said means for rendering said disc stationary including a retainer member, first guide means engaging said casing and said retainer member for guiding said retainer member relative to said casing in a first direction normal to said primary axis, second guide means engaging said retainer member and said intermediate disc for guiding said intermediate disc relative to said retainer member in a second direction normal to said first direction, said first and second guide means permitting movement of the intermediate disc in the direction of said primary axis and angular movements about axes parallel to said first and second directions.

**3,933,083**
**VARIABLE DISPLACEMENT CYLINDRICAL PUMP**
**Charles O. Weisenbach, Watertown, and Donald R. Schneckenburger, Chaumont, both of N.Y., assignors to General Signal Corporation, Rochester, N.Y.**
**Filed Oct. 21, 1974, Ser. No. 516,319**
**Int. Cl.² F01B 13/04**
**U.S. Cl. 92—12.2** **9 Claims**



**1.** A variable displacement cylindrical pump comprising a sectional housing and a cam plate within the housing having trunnions and trunnion bearings wherein improved means for journalling the trunnions in a sectional housing comprises;
a. an integral first generally annular pump housing section having oppositely disposed recesses formed from one end thereof only in its inner periphery and not penetrating the outer periphery of the integral housing section for permitting the cam plate with its trunnions and trunnion bearings assembled thereon to be inserted within the first housing section from said one end with its bearings journalled in the recesses,
b. securing means including a second generally annular pump housing section adjoining the first housing section for securing the cam plate trunnions and trunnion bearings within the recesses, and

c. resilient means disposed between the second housing and each trunnion bearing for preventing vibration of the cam plate.

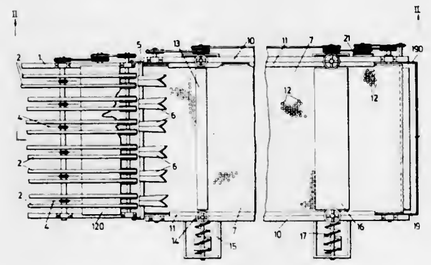
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**3,933,084**

## SQUEEZING-SHREDDING MACHINE FOR TOMATO PULP SUITABLE FOR CANNING IN THE RAW STATE

**Gianfranco Dall'Argine, Via Bizzozzero No. 12, and Ermes Ghiretti, Via Bezzecca No. 3, both of Parma, Italy (43100)**

**Filed Nov. 18, 1974, Ser. No. 524,879**
**Claims priority, application Italy, Nov. 22, 1973, 46900/73**
**Int. Cl.² A23N *4/24***
**U.S. Cl. 99—538** **9 Claims**



**1.** Machine for squeezing and shredding tomatoes and the like which comprises in combination:

at least one pair of continuous parallel conveyor belts defining therebetween a channel for supporting and advancing tomatoes from an input to an output end,

a knife positioned between said belts to cut tomatoes advanced along said belts in half,

a perforated conveyor belt downstream of said parallel conveyor belts,

means for guiding cut tomatoes from the output end of said parallel conveyor belts onto said perforated conveyor belt,

a first pressure roller positioned above said perforated conveyor belt and resiliently biassed toward said belt with a force sufficient to urge the seeds in said cut tomatoes through the perforations in said belt, and

a second pressure roller positioned above said perforated conveyor belt downstream of said first pressure roller and pressing downwardly on said perforated belt with a force sufficient to drive the pulp of said tomatoes through said perforations.

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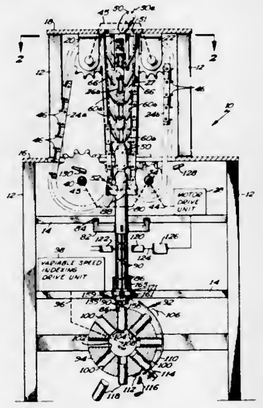
**3,933,085**

## POTATO CORING MACHINE

**Jack J. Rejsa, Minneapolis, Minn., assignor to The Pillsbury Company, Minneapolis, Minn.**

**Filed Mar. 11, 1974, Ser. No. 449,815**
**Int. Cl.² A23N *3/04***
**U.S. Cl. 99—544** **4 Claims**

**3.** An apparatus for coring potatoes comprising a framework having a potato inlet, a coring knife mounted on the framework, a conveyor between the knife and the inlet, said conveyor including potato contacting members for engaging each potato to advance the potato on the framework towards the knife and force the potato through the plane of the knife whereby the knife removes a central core portion from each potato, a potato core holding wheel mounted in spaced relationship to the knife, said wheel having a plurality of radially extending pockets therein, a drive shaft supporting the wheel for rotation upon an axis at the junction of lines extending centrally from each pocket, a guide means between the knife and the wheel for guiding the potato cores from the knife to the outer open ends of the pockets extending through the wheel, each of the pockets through the wheel being open at its outer and inner ends, first and second stationary cutting blades at the inner and outer ends of the pockets respectively, a first stop mounted adjacent the inner ends of the pockets for supporting the potato with its inward end extending a predetermined distance beyond the inward end of each pocket when the pocket is rotated past the first cutting blade, drive



means connected to the wheel for rotating the wheel, a second fixed stop mounted radially outward from the wheel whereby the rotation of the wheel causes an outward shifting of each of the cores due to centrifugal force thereby throwing the potato cores outwardly against said second stop means so that the outer end of each potato core projects through the outer open end of each pocket in position to be removed by the second cutting blade.

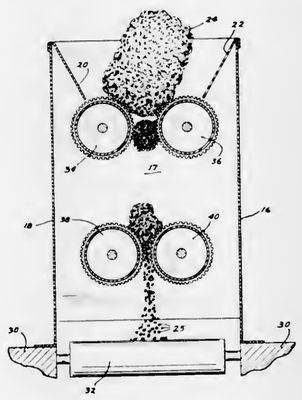
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**3,933,086**

## APPARATUS FOR SEPARATING DRIED FRUIT AGGREGATES

**Charles N. Standing, Minneapolis, Minn., assignor to The Pillsbury Company, Minneapolis, Minn.**

**Filed Aug. 2, 1973, Ser. No. 385,006**
**Int. Cl.² B07B *13/00***
**U.S. Cl. 99—646 R** **3 Claims**



**1.** An apparatus for separating blocks of aggregated dried fruit into individual food pieces comprising:

a. a supporting framework,



b. a pair of parallel deaggregating rolls mounted upon the framework,

c. the surfaces of both the deaggregating rolls being formed from rubber,

d. substantially uniformly spaced apart rubber projections over substantially the entire surface of each of the rolls of the pair,

e. the projections being integral with each of the roll surfaces,

f. the height and width of the projections being less than an inch,

g. the space between the projections being on the same order as the width thereof,

h. the rubber projections frictionally engaging the dried fruit pieces on the surface of the aggregate,

i. the deaggregating rolls being mounted on the framework for rotation in opposite directions such that points on the surfaces move toward one another and thereafter away from one another through a zone of minimum clearance between the rolls,

j. the width of the clearance zone between the rolls being from about 1/2 to 2 times the average diameter of the food pieces,

k. a drive means operatively connected to both of the rolls to impart rotation thereto in opposite directions and at different surface speeds such that a speed differential is established therebetween to provide a shearing action upon the fruit,

l. the blocks of aggregated fruit upon being placed on the rolls between the surfaces being thereby subjected to shear forces sufficient to reduce the aggregated blocks into individual fruit pieces as the rolls rotate thereby separating the fruit aggregate into individual fruit pieces without macerating or otherwise damaging the fruit pieces.

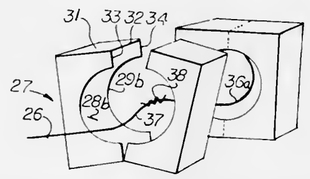
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**3,933,087**

## BALER WIRE CARTON AND SYSTEM

**Manuel A. Mattos, 1424 Eucalyptus, Patterson, Calif. 95363**

**Continuation of Ser. No. 316,111, Dec. 18, 1972, abandoned. This application Nov. 25, 1974, Ser. No. 526,451**
**Int. Cl.² B65B *13/18***
**U.S. Cl. 100—1** **3 Claims**



**1.** A system for the purpose described comprising a rack mounted on a baling machine, said rack having brackets for positioning first and second rectangular cartons side by side with a gap between said cartons, each said carton being formed of paperboard and initially having a closed front and back each formed with a central circular first score line adapted to be manually severed without the use of tools to form a cut out and four sides interconnecting said front and back, one said side comprising a top when said carton is installed in said rack, a coil of wire in each said carton having a leading and a trailing end, said leading end of said coil in said first carton extending out through the back cutout in said first carton, said leading end of said coil in said second carton extending out through the front cutout of said second carton and being spliced to said trailing end of said coil in said first carton, said cartons being insertable in and removable from said brackets, the top of each said carton initially being completely closed, each said top being formed with a second score line across said top and down said front and back to intersect said cutouts of said front and back, said carton being easily manually severable along said second score line without use of tools to lay open said top and permit removal of said carton from encirclement of wire.

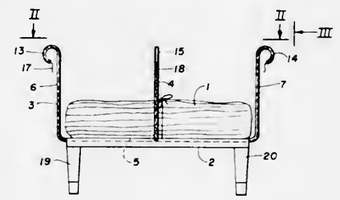
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**3,933,088**

## NEWSPAPER AND MAGAZINE STORAGE DEVICE

**Mary A. Pessagno, Fremont, Calif., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest**

**Filed Sept. 3, 1974, Ser. No. 502,438**
**Int. Cl.² B65B *13/18***
**U.S. Cl. 100—34** **2 Claims**



**1.** A newspaper and magazine storage device for storing and disposing of a plurality of newspapers and magazines, said storage device comprising

a substantially rectangular plate-like support member; and

a pair of tubular members affixed to the top of the support member and crossing each other on top of the support member at substantially right angles to each other, each tubular member extending along a corresponding axis of the support member and each tubular member having a substantially U-shaped configuration with a head part affixed to the support member and a pair of arms extending substantially perpendicularly from the ends of the head part and extending substantially perpendicularly to the plane of the support member, each of the tubular members having a slit formed therein along the length thereof for accommodating cord-like binding material in each of the tubular members, and each of the tubular members being curved at both its free ends in a substantially hook-like configuration.

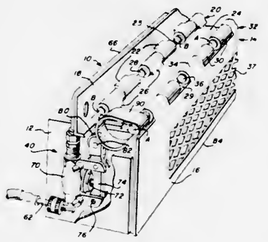
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**3,933,089**

## SAFETY GUARD FOR PRESS

**Robert E. Spooner, Chicago, Ill., assignor to Robert E. Spooner and Sylvia M. Spooner, both of Chicago, Ill.**

**Filed Feb. 13, 1975, Ser. No. 549,734**
**Int. Cl.² B30B *15/16***
**U.S. Cl. 100—53** **13 Claims**



**1.** Safety apparatus for a press or the like having relatively movable dies defining an open area therebetween for receiving an article, comprising a gate;

primary pivot means on said gate defining a primary pivot axis adjacent said open area about which said gate is

movable from an open position to expose said open area to a closed position to shield said open area;

secondary pivot means defining a secondary pivot axis generally parallel to and spaced from said primary pivot axis;

normally closed switch means cooperating with said press;

said switch means being positioned to be opened by said gate when said gate is moved about said primary axis from said open position to said closed position and to allow said switch to close when moved about said primary axis from said closed position to said open position to interrupt the movement of said dies; and

said gate pivoting about said secondary pivot axis when an obstruction is aligned with said gate to allow said switch means to close and interrupt the movement of said dies.

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**3,933,090**

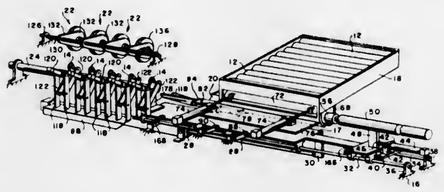
## TUBE CUTTING APPARATUS

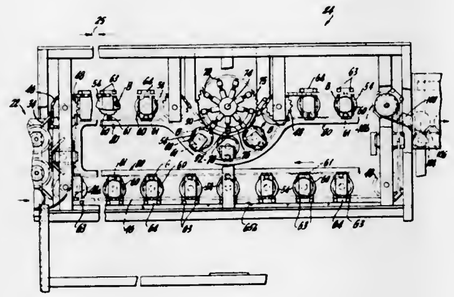
**James R. Reynolds, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.**

**Division of Ser. No. 391,303, Aug. 24, 1973. This application Oct. 2, 1974, Ser. No. 511,142**

**Int. Cl.² B41F 17/08; B23B 5/14, 7/00**

**U.S. Cl. 101—38 A** **3 Claims**





**1.** A machine to automatically cut a larger tube into a smaller tube or tubes comprising: a frame, a mandrel rotably mounted on said frame, a platform slidably mounted on said frame, a plurality of cutter blades rotably mounted on said frame and operably associated with said mandrel, a tube storage tray mounted on said frame adjacent said platform, tube receiving means mounted on said frame receiving tubes from said tube storage tray, means mounted on said platform to deliver tubes from said tube receiving means, means operably associated with said tube storage tray to allow tubes to be delivered to said tube receiving means, means mounted on said platform to place a tube from said tube receiving means on said mandrel, means to slide said platform to place a tube on said mandrel, means to pivot said cutter blades into contact with the tube placed on said mandrel, control means to automatically pivot said cutter blades away from said mandrel and doff the tube cut on said mandrel when said cutter blades cut through said tube, and a printing means mounted on said frame to print desired information on the tube prior to cutting thereof by said cutting blades.

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**3,933,091**

## APPARATUS FOR SCREEN PRINTING BOTTLES

**Henry Carl Von Saspe, Fort Lauderdale, Fla., assignor to New Products Corporation, Staten Island, N.Y.**

**Filed June 17, 1974, Ser. No. 479,988**

**Int. Cl.² B41F 17/22**

**U.S. Cl. 101—40** **24 Claims**

**1.** An in-line automatic and continuous container printer adapted to be positioned colinearly with and intermediate container production and container filling lines, said printer comprising:

a. a loading station including a first plurality of roller means, first endless belt means trained about said first roller means and first means for driving one of said first roller means for receiving and transporting a plurality of successive containers;

b. a printing station including a second plurality of roller means, a second pair of laterally spaced apart endless belt means trained thereabout and means for driving at least one of said second roller means for receiving successive containers from said loading station, said printing station further including stationary, arcuate screen means having an outer surface past which the containers are transported in tangential contact, a plurality of squeegees normally in tangential contact with the inner surface of said screen means for driving such squeegees over the inner surface of said screen means whereby a supply of ink passes through said screen means, said second roller means being positioned such that said second belt means are moved along a generally rectangular path, one of the longer legs of said rectangular path including an arcuate path portion, there being further included a shaft and additional roller means mounted on said shaft for maintaining the shape of said arcuate path portion, said arcuate screen means being coaxial with said arcuate path portion of said second belt means, there being still further included a plurality of arms extending radially from said shaft, one of said squeegees being mounted on the radially outer end of each said arm, said second means for receiving the successive containers comprising a plurality of pairs of nose cone assemblies and cup-shaped base member assemblies, each said nose cone assembly in said pair being coupled to one of said second belt means in said printing station, each said base assembly in said pair being secured to another one of said second belt means in said printing station and means for urging said nose cone assemblies toward said base member assemblies and into the open end of the containers;

c. means for rotating the containers about their own longitudinal axes during transport thereof past said screen means, said means for rotating the containers comprising a gear coaxial and integral with each said base member assembly and a cooperating, generally oblong rack that is at least partially congruent and coaxial with said second belt means in said printing station;

d. means for detecting the absence of a container in said printing station, said detecting means being positioned adjacent said screen means for preventing contact between selected ones of said squeegees and said screen means; and

e. a drying station for receiving the containers after the printing thereof.



**3,933,092**

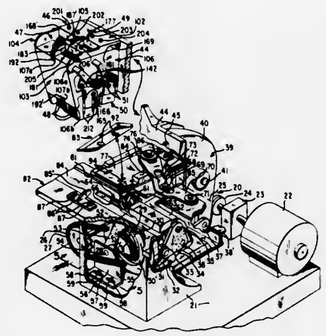
## PRINTING APPARATUS

**Raymond L. Kirby, Jr., Vandalia, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio**

**Filed Dec. 30, 1974, Ser. No. 537,630**

**Int. Cl.² B41J 27/12**

**U.S. Cl. 101—105** **27 Claims**



**1.** Printing apparatus, comprising: a platen, a print head cooperable with the platen, a feed finger, means for driving the feed finger in a forward direction from a home position to feed a web of record members to a printing position between the print head and the platen and for driving the feed finger in the return direction to the home position, an inker, means driven by the driving means for actuating the inker into and out of inking cooperation with the print head, and manually settable means for varying the stroke of the driving means to vary the travel of the feed finger, the actuating means including means to effect travel of the inker through the same distance irrespective of the stroke of the driving means as determined by the setting of the settable means.

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**3,933,093**

## ROTATION SCREEN PRINTING MACHINE AND SQUEEGEE DEVICE

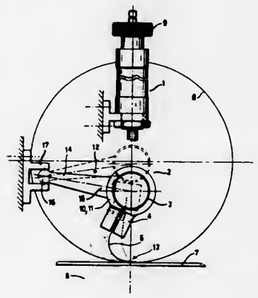
**Jacobus Gerardus Vertegaal, Boxmeer, Netherlands, assignor to Stork Amsterdam B.V., Amsterdam, Netherlands**

**Continuation-in-part of Ser. No. 811,787, April 1, 1969, abandoned. This application July 27, 1973, Ser. No. 383,155**

**Claims priority, application Netherlands, Apr. 25, 1968, 6805845**

**Int. Cl.² B41L 13/04**

**U.S. Cl. 101—120** **5 Claims**



**1.** A rotary screen printing machine having a frame, supporting members for the ends of one or more cylindrical stencils and with suspension members mounted on the frame for a squeegee device disposed within the stencil and consisting of a squeegee holder with a fitting for a flexible squeegee blade, and with means for guiding the material to be printed; the improvement consisting in that the squeegee blade consists of a thin flexible metal strip, the thickness of which is less than 1% of the width of the portion of the strip which freely protrudes from the fitting, said squeegee holder being supported at least on one end by suspension members, and the squeegee blade with its fitting being supported by the squeegee holder at two spaced locations, the suspension members of each squeegee holder comprising means for adjusting the height of the squeegee blade within the stencil, and further comprising means connecting the squeegee holder with the frame and permitting displacement of the holder in a generally horizontal direction, parallel to the guiding direction of the material to be printed during the adjustment for height, in such manner that the pressure area of the squeegee blade is situated permanently in a substantially fixed desired zone of the stencil.

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**3,933,094**

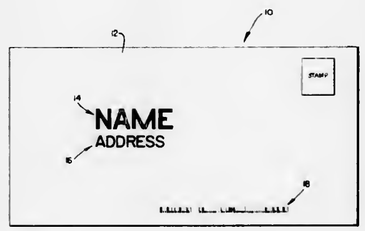
## SUBSTRATE HAVING COLORED INDICIA THEREON FOR READ-OUT BY INFRARED SCANNING APPARATUS

**Joseph M. Murphy, Wilbraham, and Robert E. Lafler, Charlton City, both of Mass., assignors to United States Envelope Company, Springfield, Mass.**

**Filed Nov. 19, 1973, Ser. No. 417,355**

**Int. Cl.² B07C 5/342; G06K 7/12; B65D 27/00**

**U.S. Cl. 101—426** **6 Claims**




**1.** A substrate having indicia thereon for read-out by infrared scanning apparatus and made by a method comprising the steps of providing a printing ink of a color which in combination with the substrate yields a Print Contrast Signal substantially less than 50 percent when measured in the range of 800 to 900 nanometers as determined by the equation

$$\text{Print Contrast Signal} = \frac{Rw-Rb}{Rw} \times 100$$

where $Rw$ is the percentage reflectance of the unprinted substrate and $Rb$ the percentage reflectance of the printed area, adding a pigment dispersion comprising Pigment Blue 27 — Color Index 77510 to said ink in quantity sufficient to increase said Print Contrast Signal to at least 50 percent when measured within said range, and imprinting said indicia on said substrate with said ink after said material has been added thereto.

**3,933,095**

## DELAYED ACTION STRIKING DEVICE WHICH MAY BE UTILIZED FOR THE PRIMING OF DETONATORS

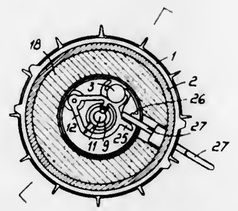
**Federico Engeli, Lugano, Switzerland, assignor to Technical Arco Establishment-Schaan, Liechtenstein**

**Filed Jan. 14, 1974, Ser. No. 433,277**

**Claims priority, application Switzerland, Mar. 5, 1973, 3211/73**

**Int. Cl.² F42C** *7/02*

**U.S. Cl. 102—70 R** **2 Claims**



**1.** A delayed action striking device for priming detonators of mines and the like, comprising, in combination, an outer casing; a pressure cap closing an end of said casing; a relatively stiff diaphragm seated in said casing and defining, with said pressure cap, an air chamber which is not closed airtight; an expansible lung in said casing in communication with said air chamber, and constituting a bursting delay device; two concentric annular bursting charges seated in said casing; a detonator seated centrally in the inner one of said bursting charges; a cylinder carried by said diaphragm in axial alignment with said detonator and spaced axially therefrom; a firing pin slidable in said cylinder; spring means in said cylinder biasing said firing pin toward said detonator; a displaceable lever controlled by said delay device and normally blocking movement of said firing pin to impact said detonator; said delay device, responsive to pressure on said pressure cap, effecting a delayed release of said lever to release said firing pin to impact said detonator to ignite successively the inner and outer bursting charges; a retractible safety device engaged with said lever and preventing movement of said lever in a direction to release said firing pin; said safety device comprising a rod insertable substantially radially into said casing with its inner end in engagement with said lever to restrain said lever from moving to a position releasing said firing pin; a first projection fixed on said casing and a second projection carried by said lever; said rod being engageable between said first and second projections to prevent movement of said lever in a direction to release said firing pin.

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**3,933,096**

## GYROSCOPIC RATE SWITCH

**Howard W. Boothroyd, Amherst, N.H., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.**

**Filed Mar. 11, 1974, Ser. No. 449,884**

**Int. Cl.² F42C** *15/40*; **G01C** *19/14*

**U.S. Cl. 102—70.2 R** **6 Claims**

**1.** A pneumatic gyroscopic rate switch for arming and safing a spinning missile which comprises:

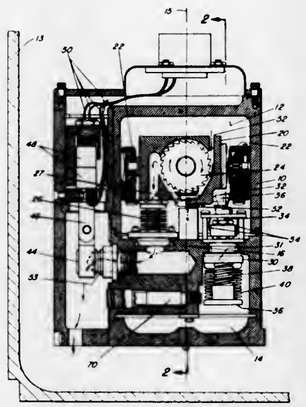
hermetically sealed housing means having an input axis axially aligned with the longitudinal axis of said missile, a transversely positioned common housing wall having a calibrated orifice therein dividing said housing means into a first and a second chamber, said first and second chambers containing a pressurized gas therein and communicating with each other through said calibrated orifice;

pneumatic valve means fixedly attached to said housing means for pressurizing said housing means;

pneumatic gyroscopic means rotatably supported by said housing means within said first chamber;

frangible exhaust means, operatively connected to said housing means, pneumatically communicating with and torsionally restraining said gyroscopic means;

pneumatic caging means operatively positioned in said housing means for caging and uncaging said gyroscopic means, having a pair of electrical interlock switches affixed to said caging means, said interlock switches being closed by said caging means in response to a pressure differential in said first and second chambers;



temperature compensating pneumatic by-pass valve means operatively positioned in said housing and communicating with said first chamber and said exhaust means, said valve means controlling the gas flow rate from said first chamber to said exhaust means as a function of temperature; and

an electrical switch operatively attached to said housing means and said gyroscopic means, said switch closing in response to the precessing motion of said gyroscopic means thereby arming said missile.

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**3,933,097**

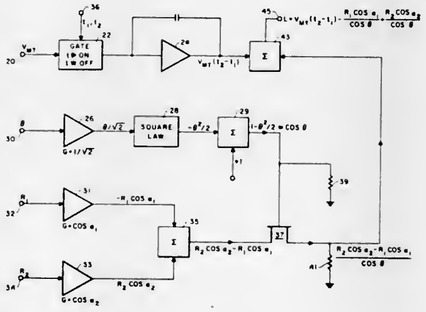
## DEVICE TO DETERMINE EFFECTIVE TARGET SIZE FOR FIXED ANGLE FUZES

**Louis J. Avila, Jr., Costa Mesa, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed Jan. 4, 1968, Ser. No. 697,558**

**Int. Cl.² F42C** *13/00*

**U.S. Cl. 102—70.2 P** **2 Claims**




**1.** A system for determining the effective target size in a guided missile-target encounter, the combination comprising:



a. gate circuit means having a first input adapted to receive a voltage representing the closing velocity between the missile and target, a second input adapted to receive gating pulses and having an output,

b. a first function generating means having an input adapted to receive a voltage proportional to the target long range line-of-sight angle and providing an output signal proportional to the cosine of the target long range line-of-sight angle,

c. a second function generating means having a first input adapted to receive a voltage proportional to the missile to target range upon the first detection of the target and a second input adapted to receive a voltage proportional to the missile to target range upon loss of the detection of the target for generating an output signal proportional to the difference in missile to target range along the relative trajectory between the missile and target,

d. signal adding circuit means having a first input coupled to the output of said first function generating means and a second input coupled to the output of said second function generating means for providing an output signal which is proportional to the difference in range signal divided by the output signal from said first function generating means,

e. summing circuit means having a first input coupled to the output of said signal adding circuit means and having a second input coupled to the output of said gate circuit means for providing an output signal proportional to the effective length of the target.

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**3,933,098**

## SOLID CYLINDRICAL CENTRIPETALLY BURNING PROPELLANT WITH FOUR CONVEX ARCED LOBES

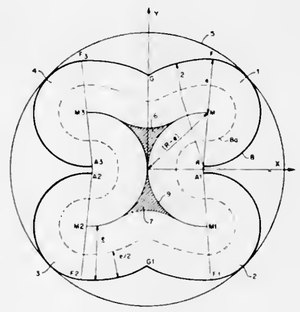
**Pierre Louis Portalier, Sevres, France, assignor to Societe Nationale des Poudres et Explosifs, France**

**Continuation-in-part of Ser. No. 396,389, Sept. 12, 1973, abandoned. This application Mar. 11, 1974, Ser. No. 449,927**

**Claims priority, application France, Sept. 26, 1972, 72.33941**

**Int. Cl.² F42B** *5/16*

**U.S. Cl. 102—99** **16 Claims**



**1.** A solid elongated externally burning propellant element, the external configuration being such that the element retains its general configuration during combustion, the configuration of the element being such that the element may be inscribed in a cylinder of radius R, the cross section of the element having a contour comprising four identical connected lobes, said element having a first and a second perpendicular planes of symmetry, said element exhibiting mirror-symmetry with respect to said first and a second perpendicular planes passing through the axis of said cylinder of radius R, each lobe comprising a convex arc of a circle of radius $e$ whose center is at a distance $(R - e)$ from the axis of the cylinder, where $e$ is the combustion thickness of the element, said arc being tangential to said cylinder, and each arc contains only one point at the minimum distance $e$ from the axis of the cylinder, the four points of the arcs at said distance $e$ being symmetrical with respect to the axis of the cylinder, the thickness of relative combustion $e/R$ varying at a continuous rate during combustion, whereby the combustion of the element leaves only two combustion residues.

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**3,933,099**

## VEHICLE CONTROL APPARATUS FOR A CLOSED TRANSPORTING SYSTEM

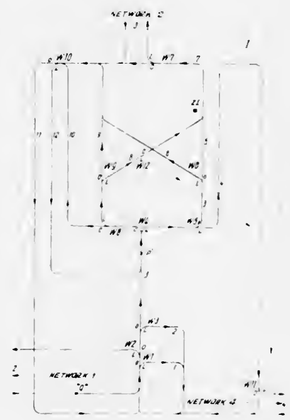
**Sieb, Reinhard, Luneburg, Germany, assignor to H. Jungheinrich & Co., Germany**

**Continuation of Ser. No. 275,876, July 27, 1972, abandoned. This application Jan. 3, 1974, Ser. No. 430,404**

**Claims priority, application Germany, July 29, 1971, 2137864**

**Int. Cl.² B61J** *3/00*

**U.S. Cl. 104—88** **28 Claims**

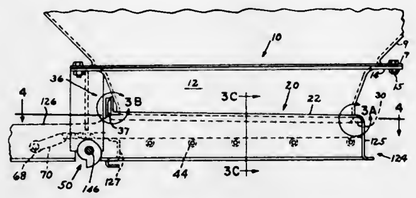


**1.** For a closed transport system comprising a plurality of routes, a plurality of route junctions which each allow a choice of two directions, and at least one vehicle arranged to travel along said routes, a control apparatus comprising: a transmitter associated with each said junction, each transmitter being adapted to transmit a particular coded signal indicating the direction to be taken at the associated junction to proceed towards various route segments; drive means on each of the one or more vehicles for moving each of the one or more vehicles; and a respective destination selection device on each of the one or more vehicles connected to control the drive means of such vehicle, each said device comprising: a store in which may be entered a code indicative of a destination route segment for the vehicle; a receiver for receiving the coded signal transmitted from the transmitter associated with an approaching junction; a comparator connected to the associated store and receiver for comparing said stored destination signal and said received signal; and control means responsive to the output of the associated comparator to select the direction to be taken by the associated vehicle at the junction each transmitter including sending means to send said coded signal in the form of a fixed series of signal elements each associated with a particular segment and destination marking together with any said signal element associated with a route segment which will be reached on leaving the associated junction, and on the vehicle said receiver and comparator including operating means to function with the same number of signal elements.

### 3,933,100
### HOPPER GATE ACTUATING MECHANISM

**Richard H. Dugge, St. Louis, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.**

**Filed July 31, 1974, Ser. No. 493,209**
**Int. Cl.² B61D** *7/20, 7/22, 7/26, 7/32*
**U.S. Cl. 105—282P** **14 Claims**

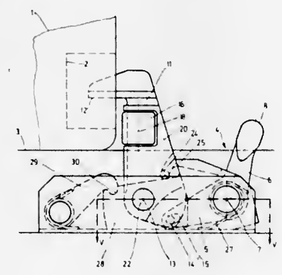


1. A gravity outlet comprising:
a pan having flange means for attachment to a hopper and sides inclined inwardly and downwardly to define an opening for lading discharge;
a gate movable horizontally between a closed position wherein said gate closes said opening and an open position wherein lading may discharge through said opening;
said gate having an upper surface which is inclined downwardly toward said first side acting to reduce the torque required to open said gate by moving away from the lading as the gate opens;
means for moving said gate horizontally between said open and closed positions comprising cam means for initiating movement of said gate from said first side, and drive means separate from said cam means for moving said gate to a desired open position and for moving said gate to closed position;
said cam means and said inclined upper surface acting together to effect a reduction in the starting torque required to open the gate until said cam means is no longer operative to reduce the torque required to open said gate, after which said inclined upper surface continues to reduce the torque required to open the gate.

### 3,933,101
### ANCHORING MECHANISM FOR ANCHORING OF FREIGHT CONTAINERS

**Günter Blas, Faistenhaar, Germany, assignor to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany**

**Filed Aug. 5, 1974, Ser. No. 494,467**
**Claims priority, application Germany, Aug. 9, 1973, 2340315**
**Int. Cl.² B60P** *7/08*
**U.S. Cl. 105—366 B** **4 Claims**

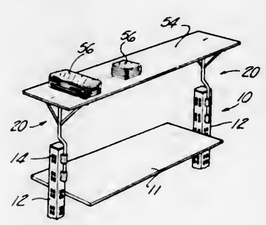


1. An anchoring mechanism having a pivotal hook for engaging and anchoring freight containers to flooring in an aircraft, comprising:
a two arm lever pivotally supported for movement about a first pivot axis having a bar secured to one arm and extending above the surface of said flooring, said bar having a pair of inclined contact faces for engaging a moving freight container, said moving freight container effecting a pivoting of said lever about said first pivot axis when said freight container engages said two arm lever, the other arm of said two arm lever being rotatably connected to a locking hook pivotally supported on said flooring for movement about a second pivot axis between positions above and below said surface of said flooring, said locking hook being pivotal in response to a pivoting movement of said two arm lever to effect a movement of said locking hook to a position below the surface of said flooring.

### 3,933,102
### DISPLAY RACK EXTENSION

**Frederick F. Brunette, 22804 Brookdale, Farmington, Mich. 48024**

**Filed Sept. 23, 1974, Ser. No. 508,230**
**Int. Cl.² A47B** *3/00*
**U.S. Cl. 108—111** **3 Claims**



1. The combination of a display rack and a display rack extension, said display rack having spaced and vertical upright supports, said supports having a plurality of sides, at least one of said sides being provided with vertically spaced slots, said display rack extension comprising spaced and vertical legs, said legs being spaced to coincide with said supports, hooked portions carried on said legs for engaging said upright supports of said display rack through said slots to lock said display rack extension to said supports whereby said display rack extension is disposed above said display rack, a shelf support secured to the upper ends of said vertical legs, and a shelf carried by said shelf support in a horizontal position above said display rack and said vertical legs each having an angled portion providing a lower segment having said hooked portion and an upper segment carrying said shelf support, said upper segment being offset from said lower segment by said angled portion by an amount which positions the axis of said upper segment substantially co-axial with the axis of said support of said display rack whereby said shelf is supported directly above said supports.

### 3,933,103
### SLUICE FOR COMBUSTION FURNACES AS ROTARY KILNS

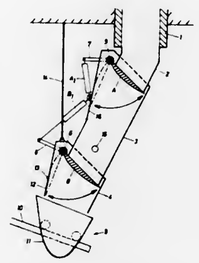
**Verner Johannes Mikkelsen, deceased, late of Kastrup, Denmark, by Aase Foght Mikkelsen, executrix, assignor to Aktieselskabet "Volund", Glostrup, Denmark**

**Filed Mar. 13, 1974, Ser. No. 450,805**
**Claims priority, application Denmark, Mar. 14, 1973, 1383/73**
**Int. Cl.² F23J** *1/00*
**U.S. Cl. 110—165 R** **20 Claims**

1. An apparatus for removing burnt material such as clinker or uncombusted residual material and the like from a combustion furnace having means communicating with the furnace for discharging said material which comprises:



a. a duct attached to the discharge means and having a cross-section at least equal to that of the discharge means, said duct defining a sluice chamber therewithin and being oriented in a generally downward direction relative to a horizontal plane;
b. and upper flap rotatably mounted with respect to the upper end portion of the duct and having a first open position which exposes substantially the full cross-section of the duct to the discharge means and a second closed position in which the flap defines an upper wall portion of said sluice chamber;
c. a second flap rotatably mounted with respect to the lower end portion of the duct and having a first open position which exposes substantially the full cross-section of the lower portion of the duct and a second closed position in



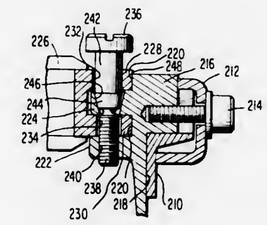
which said second flap defines the lower wall of said sluice chamber; and
d. at least one nozzle mounted in a side wall of said duct between said upper and lower flaps and connected to a liquid supply means and capable of introducting a liquid into the sluice chamber at least at introducing minimum rate at least sufficient to contain dust in the sluice chamber and to maintain the nozzle in a relatively dust free condition at least when the lower flap is in a closed position and the upper flap is in an open position and material from the furnace is permitted to enter the sluice chamber, said nozzle and liquid supply means being capable of introducing said liquid at a relatively increased rate sufficient to cool material accumulated within the sluice chamber at least when the upper and lower flaps are in closed positions,
said flaps being selectively rotatable to said opened and closed positions such that simultaneously maintaining the lower flap in a closed position and the upper flap in an open position permits material discharged from the furnace to accumulate to a predetermined level within the sluice chamber while said liquid is introduced into the sluice chamber at least at said minimum rate and closing the upper flap while maintaining the lower flap in said closed position while introducing said liquid into said sluice chamber at said relatively increased rate provides cooling of the material accumulated therein and selectively opening the lower flap causes discharge of the material accumulated within the sluice chamber.

**18.** A method for operating a sluice system for removing hot material such as cement clinker from a furnace such as a rotary kiln or uncombusted or slag material and the like from a furnace through an ash pit communicating with a discharge opening of the furnace and having a steel plate duct having a cross-section at least equal to the cross-section of the ash pit, said duct being connected to the ash pit and positioned in a downward, relatively steeply slanted position, an upper rotatably mounted flap having an open position exposing substantially the full cross-section of the duct to the ash pit and a closed position at least substantially sealing communication between the duct and the ash pit and defining the upper wall of a sluicing chamber within the duct, a lower rotatably mounted flap having an open position exposing substantially the full cross-section of the lower end portion of the duct and having a closed position at least substantially sealing the lower end portion of the sluicing chamber within said duct and defining the lower wall of said sluicing chamber, nozzle means mounted in the side wall of the duct between said upper and lower flaps and connected to a water supply means and adapted for introducing water into said sluicing chamber defined within said duct comprising:
a. positioning a material receiving means in a material receiving position below the discharge end portion of the sluicing chamber;
b. closing the lower flap and opening the upper flap for a time period sufficient to permit a predetermined amount of said material from the ash pit to enter the sluicing chamber while simultaneously introducing water through said nozzle means and into said sluicing chamber at least at a minimum level sufficient to contain dust and to maintain the nozzle means in a dust free condition;
c. closing the upper flap and introducing water through said nozzle means at a rate greater than the rate of introduction of water utilized to contain the dust in the sluice chamber and sufficient to further cool the hot material in said sluicing chamber;
d. discontinuing the introduction of cooling water at said greater rate; and
e. opening the lower flap while simultaneously permitting the relatively cooled material to be discharged from the sluicing chamber into the material receiving means.

### 3,933,104
### CUTTING MECHANISM FOR SEWING MACHINE

**Edward A. Kelly, Wethersfield, Conn., assignor to The Merrow Machine Company, Hartford, Conn.**

**Division of Ser. No. 354,714, April 26, 1973. This application Dec. 30, 1974, Ser. No. 537,628**
**Int. Cl.² D05B** *37/04*
**U.S. Cl. 112—121.2** **4 Claims**



1. A trimming mechanism for sewing machines including, in combination, an elongated oscillatory cutter arm supporting a movable cutting blade for movement in a fixed plane, a fixed cutter blade positioned to cooperate with said movable cutter blade to trim a workpiece on the machine, a flat end surface on said cutting arm, a groove formed in the flat end surface dividing the end portion of said cutting arm into a pair of parallel spaced flanges, a cutter mounting bracket for supporting said movable cutter blade mounted on the end portion of said cutter arm, said mounting bracket having a flat reference surface adapted to engage said flat end surface on said cutting arm to position said movable cutter blade, a flange on said mounting bracket extending outwardly from and perpendicular to said reference surface and projecting therefrom a distance slightly less than the depth of said groove, a screw fastener extending through and cooperating with the flanges on said cutter arm and said mounting bracket for rigidly mounting said mounting bracket on said cutter arm, and cooperating cam means on said screw fastener and said flange on said bracket operable to cam said flat end surface and said reference surface into firm surface-to-surface contact to accurately align said bracket on said cutter arm upon tightening said screw.

**3,933,105**

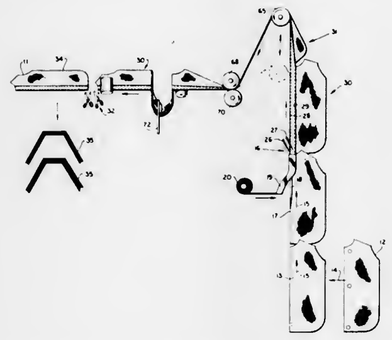
## SHIRT FRONT ASSEMBLY, METHOD AND APPARATUS

**Wade W. Frost, Vidalia, Ga. 30474, and William C. Sandlin, 708 1st National Bank, Waco, Tex. 76701**

**Continuation-in-part of Ser. No. 467,052, May 6, 1974, which is a continuation-in-part of Ser. No. 391,645, Aug. 27, 1973, Pat. No. 3,871,309, which is a division of Ser. No. 243,753, April 13, 1972, Pat. No. 3,780,682, which is a continuation-in-part of Ser. No. 79,031, Oct. 8, 1970, Pat. No. 3,675,604. This application Dec. 16, 1974, Ser. No. 532,960. The portion of the term of this patent subsequent to Mar. 18, 1992, has been disclaimed.**

**Int. Cl.² D05B *19/00***

**U.S. Cl. 112—121.29** **3 Claims**



1. Apparatus for forming shirt front assemblies or the like comprising connecting means for connecting together a connected series of center plait pattern parts and a series of shirt front pattern parts, and conveying means for conveying the connected series of center plait pattern parts with the shirt front pattern parts connected thereto away from the connecting means as the connecting means connects the parts together and toward a subsequent work station with the shirt front pattern parts hanging from and being moved by the center plait pattern parts.

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**3,933,106**

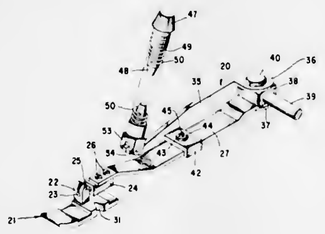
## PRESSER DEVICE FOR OVEREDGE SEWING MACHINES

**Ian S. Murray, Harestanes Kirkintilloch, Scotland, assignor to The Singer Company, New York, N.Y.**

**Filed Oct. 31, 1974, Ser. No. 519,461**

**Int. Cl.² D05B *29/02***

**U.S. Cl. 112—235** **2 Claims**



1. For an overedge sewing machine having a frame, a presser device comprising:

a presser bar arm having two ends, means pivotally supporting one end of said presser bar arm relatively to said frame on substantially horizontal and vertical pivots, means on the other of said ends for receiving a force for depressing said presser bar arm,

a leaf spring located substantially parallel to said presser bar arm and having two extremities, means supporting one extremity of said leaf spring together with said presser bar arm for pivotal motion therewith, a presser foot carried at the other extremity of said leaf spring, and

a lateral projection formed on said presser bar arm extending over and contacting a portion of said leaf spring intermediate the leaf spring extremities.

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**3,933,107**

## SEWING MACHINES

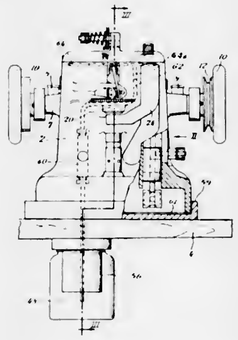
**Philip Henri Davies, deceased, late of Brightlingsea, England, by Bessie Snowden Davies, executrix, assignors to Allbook & Hashfield Holdings Limited, London, England**

**Filed Apr. 17, 1974, Ser. No. 461,507**

**Claims priority, application United Kingdom, Apr. 19, 1973, 19148/73**

**Int. Cl.² D05B *71/00***

**U.S. Cl. 112—256** **8 Claims**



1. In a sewing machine comprising a sewing mechanism and feed members for progressing the material to be sewn and means for relative displacement of said members between their operative position and an inoperative position for the insertion and removal of the material, the improved lubrication means consisting essentially of a reservoir of lubricating fluid, a pump having inlet means communicating with said reservoir and outlet means separate and operatively independent from said inlet means leading to at least one lubrication location in the machine, an actuating member of the pump operatively connected with at least one of said feed members for displacement in synchronism with the relative displacement of the feed members whereby the supply of lubricating fluid to said at least one location is controlled by the relative movements of said members between their operative and inoperative positions.

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**3,933,108**

## BUOYANT RISER SYSTEM

**Benton F. Baugh, Houston, Tex., assignor to Vetco Offshore Industries, Inc.**

**Filed Sept. 3, 1974, Ser. No. 502,280**

**Int. Cl.² B63B *35/00***

**U.S. Cl. 114—.5 D** **5 Claims**

1. An offshore oil well buoyant riser system adapted to extend from an offshore drilling platform to a subsea wellhead for encasing a drill string, wherein at least one riser section comprises:

a cylindrical riser pipe for enclosing a portion of the drill string;

a plurality of mounting rings mounted on said riser pipe, each of said rings being longitudinally spaced along said riser pipe with respect to another of said rings to form an annular recess on said riser pipe;



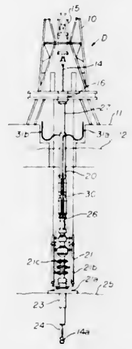
an annular gasket positioned in said annular mounting recess on said riser pipe, said gasket preventing galvanic corrosion and including an annular gasket recess therein positioned inwardly with respect to said spaced mounting rings;

a plurality of elongated, hollow, closed tanks having a gaseous fluid therein;

a pair of semi-cylindrical mounting plates having said tanks mounted therein;

choke and kill mounting plates mounted on said riser pipe to secure choke and kill lines about said riser pipe;

semi-circular openings formed in each of said semi-cylindrical mounting plates for receiving choke and kill lines therethrough;



an internal, semicircular mounting edge on each of said semi-cylindrical mounting plates, said internal, semi-circular mounting edges being mounted into said gasket recesses and being supported by said mounting rings;

lug end portions on each of said semi-cylindrical mounting plates for lining said plates and receiving bolt connectors for securing said plates onto said riser pipe;

said pair of semi-cylindrical plates extending circumferentially around said riser pipe for mounting said tanks circumferentially about said riser pipe with said tanks extending parallel to the longitudinal axis of said riser pipe whereby said tanks cooperate to create sufficient buoyant force in the water to substantially contribute to the application of tensile forces on said riser system.

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**3,933,109**

## BUOY RELEASABLE FROM A SUBMARINE

**Gerard M. Boisrayon, Ollioules; Gilbert M. Martin, La Seyne, and Gabriel M. Delfosse, La Garde, all of France, assignors to Etat Francais, Paris, France**

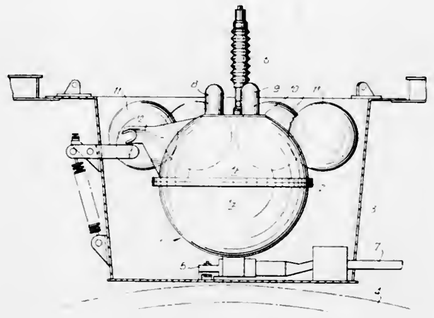
**Filed Nov. 29, 1973, Ser. No. 420,161**

**Claims priority, application France, Nov. 30, 1972, 72.42521**

**Int. Cl.² B63G *8/00***

**U.S. Cl. 114—16.5** **3 Claims**

1. A distress buoy for a submarine adapted to be mounted in an open recess in the top of a structure on the outside of the hull of the submarine, and adapted to be released to float freely at the surface of the water, said buoy comprising a hollow central spherical body containing at least one electrical power source and signal generator means connected to said source, a ring of auxiliary solid float members, and means fixing said ring of float members to said central spherical body at the upper portion thereof, said float members being fixed to said body to be disposed against the same so that said auxiliary float members are closely bound to follow all the movements of said central spherical body, said auxiliary float members being constituted of spherical blocks of cellular material having diametral bores, said means for fixing the float members to said body comprising mounting plates fixed to the upper portion of said spherical body between adjacent auxiliary floats and shafts mounted in said bores and fixed to said



plates, said mounting plates being fixed to the upper portion of said spherical body in diametral planes of said spherical body.

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**3,933,110**

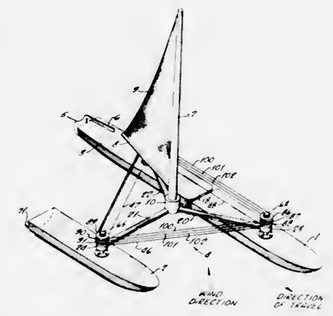
## PLURAL-HULL SAILING CRAFT AND METHODS FOR SAILING CRAFT

**Robert S. Jamieson, General Delivery, Corozal Town (Belize)**

**Filed Apr. 1, 1974, Ser. No. 456,846**

**Int. Cl.² B63B *1/10***

**U.S. Cl. 114—39** **28 Claims**



1. A plural-hull craft comprising:

a. port and starboard hulls,

b. means for interconnecting said port and starboard hulls in laterally-separated relationship relative to each other,

c. means for changing the relative buoyancy of said port and starboard hulls to establish a condition of relatively greater buoyancy of that one of said hulls which is to the leeward, and

d. means for maintaining said condition of relatively greater buoyancy of the leeward hull independent of the course of said craft relative to the wind.

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**3,933,111**

## DOCK BUMPER UNIT

**Robert J. von Bose, Arlington, and Darrell D. Dial, Fort Worth, both of Tex., assignors to Oil States Rubber Company, Arlington, Tex.**

**Filed Mar. 22, 1974, Ser. No. 453,853**

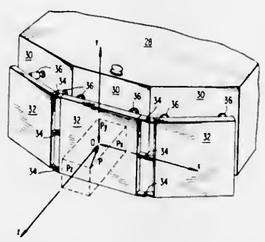
**Int. Cl.² B63B *59/02***

**U.S. Cl. 114—219** **12 Claims**

1. A marine docking fender, for dissipating the energy of dynamic forces exerted by a floating vessel against a pier

having at least one generally vertical side facing a body of water, said docking fender comprising:

a. bumper means for receiving dynamic forces from the hull of a floating vessel, said bumper means being connected in spaced relation to said side of said pier facing said body of water;

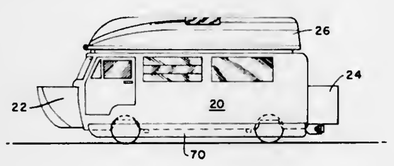


b. at least one compressible self-restoring cushioning means, extending orthogonally between and connecting said bumper means and said pier, for dissipating the dynamic forces; and

c. diagonal, vertically inclined countering means for exerting tensile forces upon said bumper means to rigidly restrain said bumper means against lateral displacement relative to said pier in response to the lateral components of the dynamic forces.

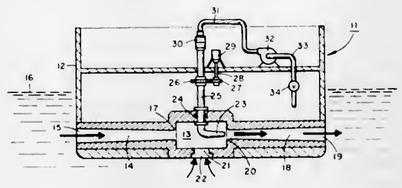
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**3,933,112**
**ROAD BOAT**
**Sidney Edwin Veazey, 1611 Crofton Parkway, Crofton, Md. 21113**
**Filed Nov. 21, 1973, Ser. No. 417,924**
**Int. Cl.² B60F** *3/00*
**U.S. Cl. 115—1 R** **1 Claim**



**1.** A vehicle adapted for use on dry land or in water comprising a van type vehicle comprising a body; drive means; sealing means attached to the lower sections of said body forming a bow and stern structure and maintaining said vehicle watertight; flotation means attached to said body and a roof structure including a boat which conforms to the upper section of said body providing a seal therebetween, said roof structure further including means for securing said boat to the body of said vehicle and dismounting means for removal of said boat from said vehicle wherein said dismounting means includes a ball and socket respectively attached to said boat and said vehicle; a threaded bolt attached to said ball; a threaded cylinder adapted to receive said threaded bolt, said threaded cylinder including a nut at its closed end, actuation of which lowers and raises said threaded bolt and ball attached thereto.

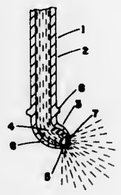
**3,933,113**
**MARINE VESSEL PROPULSION SYSTEM**
**Henry E. Dornak, Jr., Alvin, Tex., assignor to Exxon Research and Engineering Company, Linden, N.J.**
**Continuation-in-part of Ser. No. 293,284, Sept. 28, 1972, abandoned. This application Dec. 10, 1973, Ser. No. 423,609**
**Int. Cl.² B63H** *11/00*
**U.S. Cl. 115—12 R** **8 Claims**



**6.** In the propulsion of a marine vessel wherein a stream of water is discharged from a jet nozzle into a generally horizontal discharge passageway which contains a venturi constriction and extends in a direction perpendicular to the longitudinal axis of said vessel from an internal chamber surrounding said nozzle to a discharge port in the hull of the vessel for the generation of thrust and wherein supplemental water is admitted into said chamber through a generally horizontal intake passageway extending into said chamber from an intake port in the hull of said vessel to increase the amount of water expelled through said discharge passageway, the improvement which comprises simultaneously admitting additional supplemental water into said chamber adjacent said nozzle through a bottom intake passageway extending upwardly into said chamber beneath the nozzle from a bottom intake port in the hull of the vessel.

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**3,933,114**
**SELF-PURGING TELL-TALE NOZZLE**
**Norman E. Horn, Oshkosh, Wis., assignor to Brunswick Corporation, Skokie, Ill.**
**Continuation of Ser. No. 385,821, Aug. 6, 1973, abandoned. This application Jan. 24, 1975, Ser. No. 543,918**
**Int. Cl.² B63H** *21/26*
**U.S. Cl. 115—17** **5 Claims**

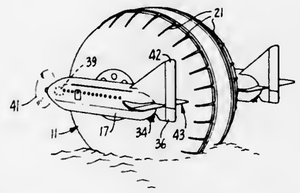


**1.** A marine outboard motor including a powerhead, a cowling enclosing said powerhead, a cooling water jacket generally surrounding said powerhead, water pump means driven by said motor and responsive to the operating speed thereof for supplying said water jacket with cooling water under pressure, and a tell-tale overboard water discharge line, characterized by; a self-purging overboard discharge nozzle for said tell-tale line, said nozzle comprising a self-supporting unbroken conical wall of soft resilient material defining a conical passage tapering in cross section from a wide end to an annular orifice, said conical wall diminishing in thickness from the wide end of said conical passage to said orifice, said wall being sufficiently rigid to maintain the shape and size of said orifice under operating conditions of selected maximum free water flow through said orifice at full engine and water pump speed, and said wall being sufficiently resilient to enable said conical passage to be automatically expanded by the water pressure output of said water pump when said engine is near idle speed and said orifice is blocked to a diameter substantially equal to that of said tell-tale overboard discharge line so as to permit the blocking matter to pass therethrough.



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**3,933,115**
**SPHERICAL ROLLING HULL MARINE VESSEL**
**Alessandro O. Dandini, 101 Greenridge Drive, Reno, Nev. 89502**
**Filed Feb. 8, 1974, Ser. No. 440,793**
**Int. Cl.² B63H** *1/38*
**U.S. Cl. 115—19** **4 Claims**



**1.** A marine vessel for rapidly transporting passengers and cargo, comprising

a spherical hull,

a hollow shaft means rotatably mounted in the horizontal poles of said spherical hull,

a frame assembly rigidly fixed to said shaft means in the interior of said sphere,

a propulsion means carried by said frame assembly and operatively connected to the interior of said spherical hull to effect rotation thereof,

elongated enclosed cabins mounted to said shaft means exteriorly of said hull,

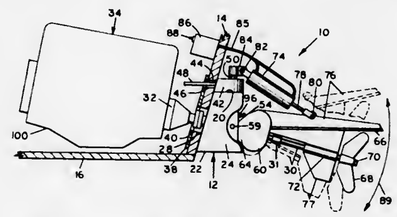
said hollow shaft means providing a passageway formed to communicate through said hull between said frame assembly and said cabins,

said cabins being buoyant and seaworthy, and

selectively detachable coupling means on said shaft for instantaneous decoupling of the cabins therefrom.

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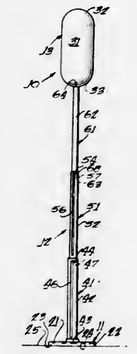
**3,933,116**
**UNITARY PROPELLING AND STEERING ASSEMBLY FOR A POWER BOAT**
**Thomas F. Adams, Hallandale; Douglas W. Janisch, and William L. Sirois, both of Fort Lauderdale, all of Fla., assignors to Thomas F. Adams, Hollandale; Douglas W. Janisch and William L. Sirois, both of Fort Lauderdale, Fla.**
**Filed Dec. 2, 1974, Ser. No. 528,946**
**Int. Cl.² B63H** *24/42*
**U.S. Cl. 115—35** **15 Claims**



**1.** A unitary direct in-line propelling and steering assembly (**10**) for an inboard motor (**34**) of a power boat, said assembly comprising a gimbal support frame (**12**) to be secured externally to the boat wall or transom (**14**), a vertically extending gimbal ring (**54**), pivot shaft means (**50, 58**) vertically pivoting said ring (**54**) in said gimbal support frame (**12**), a propeller shaft thrust bearing box (**60**), means for pivoting said thrust bearing box (**60**) on horizontal pivot means (**59**), in said vertical gimbal ring (**54**) for vertically swinging said thrust bearing box (**60**) in said gimbal ring (**54**), a single propeller shaft (**30**) journaled through said thrust bearing box (**60**), a single flexible coupler (**90, 92, 94**) secured directly on the forward end (**62**) of said single propeller shaft (**30**) for connecting said single propeller shaft (**30**) through an opening (**26**) in said gimbal support frame (**12**) and through an aligned opening (**28**) in the boat transom (**14**) for connection to the inboard boat motor (**34**), a second bearing box (**72**), a common means (**66**) for mounting said second bearing box (**72**) spaced from and secured to said first thrust bearing box (**60**), said single propeller shaft (**30**) being also journaled through said second bearing box (**72**) adjacent its propeller rear end, a propeller (**68**) secured directly on said single propeller shaft (**30**) rear end, said bearing boxes (**60, 72**) and said common mounting means (**66**) maintaining said single propeller shaft (**30**) in alignment with said single coupler (**90, 92, 94**), lifting and depressing control means (**74, 78, 80, 82, 84, 85, 86, 88**) secured to said bearing boxes common mounting means (**66**) for vertically swinging said single propeller shaft (**30**), and a tiller (**48**) secured to said gimbal ring pivot shaft (**50**) for horizontally swinging said bearing boxes (**60, 72**), said common mounting means (**66**), and said single propeller shaft (30) journaled therethrough.

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**3,933,117**
**VEHICLE DISTRESS WARNING DEVICE**
**Peter J. Maietta, 609 E. Wheelock Parkway, St. Paul, Minn. 55101**
**Filed Nov. 4, 1974, Ser. No. 520,261**
**Int. Cl.² B60Q** *1/26*
**U.S. Cl. 116—28 R** **1 Claim**



**1.** A distress warning device intended for use on vehicles and the like, the device comprising, in combination:

a suction base member consisting of a flat disc shaped top member having an exterior surface, an interior surface, and peripheral circular cylindrical side wall surfaces; cylindrical side wall surfaces; cylindrical side walls depending downwardly from said side edges of said top member and defining an annular ridge surrounding said interior surface; a hollow chamber defined between said annular ridge and said interior surface of said top member and opening out of a base of said suction base member as defined between surrounding bottom edges of said annular ridge; said chamber adapted to have its base portion disposed in confronting relationship with a surface of the vehicle onto which said suction cup member is to be affixed with said bottom edges of said annular ridge engaging said surface; depressing centrally of said exterior surface in a direction inwardly of said chamber expels air from said chamber to create a partial vacuum therein thus

detachably mounting said suction cup base member to said surface against which it is applied;

a ringed shaped boss member affixed centrally of said base member exterior surface and extending axially upwardly therefrom and defining a socket therein opening out of a top end thereof;

a hollow cylindrically shaped signal member including cylindrical side walls, a hemi-spherical dome shaped top end surface, and a hemi-spherical dome shaped bottom end surface;

said signal member having an exterior surface extending completely over the side walls and top and bottom ends;

a vivid irridescent color applied completely over the exterior surface of said signal member, said color having high light reflective characteristics providing a high level of visibility both during the daylight hours as well as when illuminated during nighttime hours by light rays falling thereon, such as encountered by headlights of passing vehicles;

a first mast segment consisting of an axially elongated tubular body member having cylindrical side walls, a closed bottom end, an open top end, and a passageway extending axially therethrough opening out of said top end;

a slot extending longitudinally through said side wall of said first segment in communication with said passageway and extending from a position spaced inwardly of said bottom end to a position spaced inwardly of said top end;

a second passageway disposed in said first segment side wall extending normal to said first passageway about a short portion of the circumference of said side wall and parallel to said top end, said second passageway having one end in communication with said first passageway, said first and second passageways each having an identical width;

said bottom end of said first segment being affixed in said socket of said suction cup base member with said first segment projecting vertically outwardly therefrom;

a second mast segment consisting of an axially elongated tubular configuration having cylindrical side walls, a bottom end, a top end, and a passageway extending axially therethrough and opening out of the top end thereof;

the exterior diameter of said second segment being less than the diameter of said first segment passageway with the bottom end portion of said second segment being telescopically received in the top end of said first segment, said second segment being reciprocally movable axially relative to said first segment between a collapsed position disposed inwardly of said first segment and a telescopically extended position extending outwardly of said first segment;

a rod shaped pin member extending radially from said second segment side walls adjacent said bottom end thereof and having a diameter to be slidingly received in said first and second passageways of said first segment for guiding the movement of said second segment relative to said first segment;

a first slot extending longitudinally through said second segment side wall in communication with said passageway therein and extending from a position spaced inwardly of said top end to a position spaced inwardly of said bottom end;

a second slot disposed in said side wall extending normal to said first slot and having one end in communication with said first slot, the second slot extending about a short portion of the circumference of said second segment side wall and parallel to said top end thereof, said second slot being of the same width as said first slot;

a third mast segment being of an axially elongated tubular configuration and consisting of cylindrical side walls, a bottom end, and a top end;

said third segment having an exterior diameter of said cylindrical side walls less than the interior diameter of said second segment passageway with said bottom end of said third segment being telescopically received through said top end of said second segment and movable axially relative thereto between a collapsed position inwardly of said second segment and an extended position extending telescopically outwardly of said second segment;

a rod shaped pin member extending radially outwardly from said third segment cylindrical side wall adjacent said third segment bottom end and having a diameter to be slidingly received in said first and second slots of said second segment for guiding the movement of said third segment relative to said second segment;

said pin members of said third segment and second segment retaining said telescopically extending positions of said segments relative to their respective segments when said pin members are received in said second mentioned slot or passageway of said segments;

said top end of said third segment being affixed centrally of said dome shaped bottom end of said signal member with the longitudinal axis of said mast being in alignment with the axis of said signal member; and

whereby said signal member may be telescopically extended by said mast segments to a distance disposed above said section base member to be clearly visible at a lengthy distance therefrom to warn vehicles in the surrounding area of a distress condition.

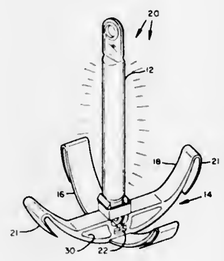
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**3,933,118**

## CHEMILUMINESCENT SIGNAL DEVICE

**John H. Lyons, Ridgecrest; Steven M. Little, China Lake, both of Calif., and Vincent J. Esposito, Washington, D.C., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed Mar. 26, 1974, Ser. No. 454,878**
**Int. Cl.² E01F** *09/10;* **H05B** *33/00*
**U.S. Cl. 116—63 P** **5 Claims**



1. A traffic signal marker comprising:

an unbreakable elongated light transmitting tube containing two manually miscible chemical reactants;

said reactants, when mixed, being effective to emit light from said light transmitting tube;

a base member securedly receiving one end of said tube;

said base member comprising first and second support members;

said support members being arcuate in form and having upwardly facing concave surfaces and bottom surfaces for contacting a horizontal surface; and

each said support member having upturned peripheral ends with attached resilient downwardly projecting outboard stabilizing prongs, said bottom surfaces and said stabilizing prongs coacting to contact a supporting surface at approximately right angles thereto and to maintain the light tube in an upright position when the signal marker is deployed on the horizontal surface.

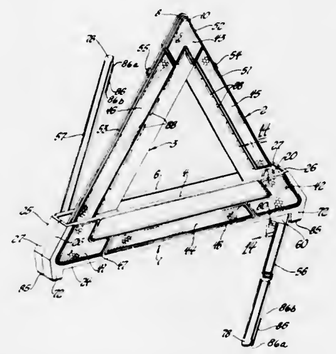


**3,933,119**

## TRIANGULAR SIGNALLING DEVICE

**Peter Hedgewick, Windsor, and Stewart H. Birrell, Clarkson, both of Canada, assignors to Reflex Corporation of Canada Limited, Windsor, Canada**

**Continuation of Ser. No. 273,250, July 19, 1972, abandoned, which is a continuation-in-part of Ser. No. 196,428, Nov. 8, 1971, abandoned, and a continuation-in-part of Ser. No. 163,734, July 19, 1971, abandoned. This application July 12, 1974, Ser. No. 488,081**
**Int. Cl.² E01F** *9/10*
**U.S. Cl. 116—63 P** **33 Claims**



1. A foldable triangular traffic signalling device comprising: a collapsible body having first, second and third leg members connected together for movement between an erect triangle forming position in which each leg member constitutes one leg of a triangle and a folded position; said first leg member having a pair of spaced side wall members; said second and third leg members each having an inner end and an outer end with said inner ends being received in the space between said side wall members and pivotally connected at spaced locations to said side wall members such that each of said second and third leg members is pivotally movable with respect to said first leg member and projects angularly from said first leg member in said erect position and is received in the space between said side wall members in said folded position; interengaging means near said outer ends of said second and third leg members for detachably securing said outer ends together in said erect position; light reflective means on at least one outer surface of each of said leg members; said first leg member comprising a pair of complementary shell members secured together to form an enclosure for receiving said second and third leg members in the folded position, each of said side wall members defining a side wall of one of said shell members; said shell members each further including end wall members projecting inwardly from the opposite end edges of the associated side wall member, and a bottom wall member projecting inwardly from the bottom edge of the associated side wall member; one of said shell members being formed with inwardly projecting tapered pins and the other of said shell members being formed with complementary tubular guide members receiving said pins; including support means mounted on said first leg member for movement between an active position to support said leg members upright in their erect position and an inactive stored position, said support means including a pair of support arms each having its inner end pivotally connected to said first leg member such that each support arm is pivotally movable with respect to said first leg member between an extended active position and a retracted, inactive position, said support means further including locking means engaged between said support arms and said first leg member for restraining said support arms against movement from their active positions, said locking means comprising grooves and projections on said support arms and first leg member, said projections being resiliently received in the respective grooves when the respective support arms are in the extended position.

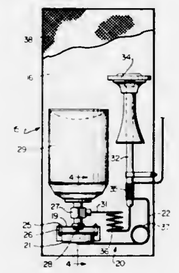
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**3,933,120**

## ALARM FOR DEEP FREEZER

**Murrell W. Ollis, 125 Sunnybrook Drive, Bristol, Tenn. 37620**

**Filed Apr. 24, 1975, Ser. No. 571,334**
**Int. Cl.² F25B** *49/00*
**U.S. Cl. 116—103** **9 Claims**



9. A self-contained alarm for intermittently operating a signal when the temperature within a freezer rises to a predetermined value, said alarm comprising a remote bulb element having first and second connected portions, said first portion including means responsive to said freezer temperature, said second portion including means located exteriorly of said freezer, a source of expansible fluid having valve means operatively associated with said second portion of said remote bulb element, expansion means communicating with said valve means, said connecting means of said remote bulb element having portions located adjacent to said expansion means, and signal means operated by fluid within said expansion means, whereby an increase in pressure in said remote bulb element caused by a rise in temperature within the freezer opens the valve means of said source of fluid to discharge fluid into said expansion means where the fluid operates said signal and the fluid absorbs heat from said remote bulb element to reduce the pressure therein and close the valve means of said source of fluid to interrupt the flow of fluid therefrom.

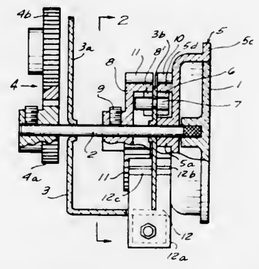
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**3,933,121**

## TV CHANNEL NUMBER INDICATOR

**Akira Otsuki, Kakuda, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan**

**Filed June 6, 1973, Ser. No. 367,372**
**Claims priority, application Japan, June 24, 1972, 47-74547**
**Int. Cl.² H03J** *1/02*
**U.S. Cl. 116—124.2 R** **10 Claims**

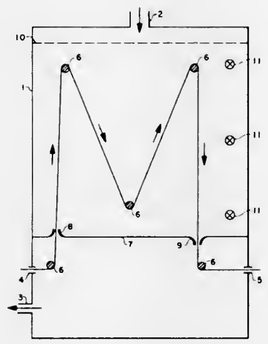


1. A TV channel number indicator for use with a TV tuner, said indicator comprising a frame, a drive shaft mounted on

said frame, means for drivingly connecting said shaft to a TV tuner, a first digit indicator operatively connected to said drive shaft so as to be rotated thereby, a second digit indicator rotatably disposed on said frame concentric with said first digit indicator, a first external intermittent locking cam operatively connected to said drive shaft and having a first internal gear consisting of at least one isolated gear tooth secured to said first digit indicator, a second external intermittent locking cam with a second internal gear secured to said second digit indicating plate, spring means mounted on said frame and resiliently engaging said first and second cams to permit intermittent locking rotation action of said cams, and gear means mounted on said frame and in gear with said first and second internal gears, whereby in response to every rotation of said first digit indicator said second digit indicator is rotated a predetermined angle.

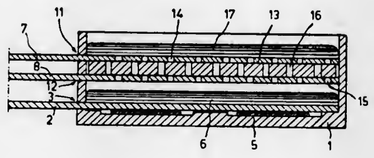
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**3,933,122**
**VAPOR DEPOSITION APPARATUS**
**George M. Wagner, Lewiston, N.Y., assignor to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.**
**Division of Ser. No. 244,574, April 17, 1972, Pat. No. 3,846,155. This application Aug. 1, 1974, Ser. No. 493,815**
**Int. Cl.² C23C *13/08***
**U.S. Cl. 118—49** **4 Claims**



1. An apparatus for the gaseous ammonia polymerization of resin on cellulosic textile materials which comprises:
a housing;
a gas inlet means disposed in the upper portion of said housing;
a gas outlet means disposed in the lower portion of said housing;
material inlet means and material outlet means disposed in the lower portion of said housing above said gas outlet means;
partition means disposed in said housing above said gas outlet means and below said gas inlet means so as to form a gas treatment chamber in the upper portion of said housing, said partition means including means for the introduction into and removal from said gas treatment chamber of textile material to be treated in said gas treatment chamber while minimizing the passage of gas into and out of said gas treatment chamber; and
means disposed in said gas treatment chamber for supporting textile material to be treated, said support means being disposed below said gas inlet means.

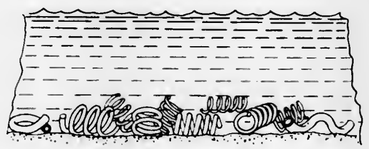
**3,933,123**
**LIQUID PHASE EPITAXY**
**Elie Andre, Herouville Saint-Clair, France, assignor to U.S. Philips Corporation, New York, N.Y.**
**Continuation of Ser. No. 421,045, Dec. 3, 1973, abandoned, which is a continuation of Ser. No. 270,281, July 10, 1972, abandoned. This application Dec. 19, 1974, Ser. No. 535,045**
**Claims priority, application France, July 13, 1971, 71.25739**
**Int. Cl.² B05C *11/12*; H01L *7/38***
**U.S. Cl. 118—421** **4 Claims**



1. An assembly for epitaxially depositing a crystallized layer on a monocrystalline substrate from a material in the liquid state, said assembly comprising a jig suitable for heating by a furnace, said jig comprising means for holding a monocrystalline substrate in a base portion of said jig, means for selectively exposing a face of said substrate to a first material in the liquid state including a first slidable wall member adapted to reciprocate in a plane substantially parallel to the base portion of the jig so as to control the exposure of a face of said substrate to a first material in the liquid state held in said jig above said substrate by said first slidable wall portion and side wall portions of said jig contiguous with said first slidable wall portion, said jig further comprising at least two additional wall members at least one of which is apertured and at least one of which is slidable and adapted to reciprocate in a plane substantially parallel to the base portion of said jig said additional wall members being positioned above said first material in the liquid state and below a second material in the liquid state and adapted by slidable movement of said additional wall members relative to each other of controlling the access of said second material in the liquid state to said first material in the liquid state through the apertures in said additional wall members to thereby control the flow of said second material in said liquid state into said first material in said liquid state.

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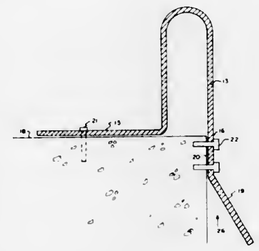
**3,933,124**
**ARTIFICIAL HABITATS**
**Claude Ledoux, Massy; Pierre Raoul, Epinay-Orge, and Jean-Claude Thomas, Neuilly-Seine, all of France, assignors to Rhone-Progil, Courbevoie, France**
**Filed May 31, 1974, Ser. No. 454,236**
**Claims priority, application France, Mar. 26, 1973.**
**Int. Cl.² A01K *61/00***
**U.S. Cl. 119—2** **14 Claims**



1. An artificial habitat for rearing aquatic fauna, which comprises a plurality of structures deposited on the bed of a body of water, the structures comprising longitudinal elongate helicoidal members of thermoplastic material having a density from 1.2 to 2 g/cm³



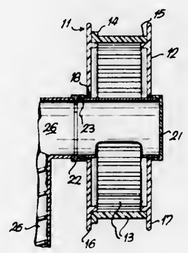
**3,933,125**
**BEDDING RETAINER**
**Adrian Veldman, St. Pauls, Canada, assignor to Wildwood Farm Services International Inc., St. Pauls, Canada**
**Filed Feb. 14, 1974, Ser. No. 442,423**
**Claims priority, application Canada, Apr. 27, 1973, 169764**
**Int. Cl.² A01J *1/00***
**U.S. Cl. 119—28** **3 Claims**



1. A bedding retainer for use in retaining bedding in an animal stall having a floor bounded by a gutter wall and a gutter, said retainer comprising a horizontally elongated, upright portion formed of a single sheet of rigid material with the upstanding portion having an inverted U shape in transverse cross section; a flange integral with and extending laterally from one upright arm of the upright portion to form an extending surface by which the stall area is expanded, a skirt depending from the other upright arm of the upright portion to a point below the level of said flange and defining between the skirt and the gutter wall a plenum, said skirt portion being appropriately bent or disposed so as to come into close proximity with the wall of the gutter and having means disposed along the skirt below the level of the flange for securing the depending skirt to the gutter wall whereby additional structural support is given to the upright portion.

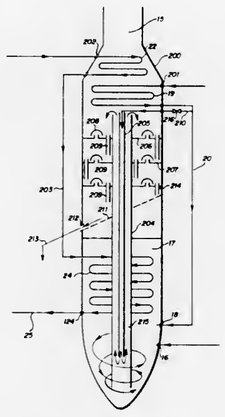
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**3,933,126**
**ANIMAL EXERCISE DEVICE**
**Richard A. Gordon, 95 W. Third St., Freeport, N.Y. 11520**
**Filed Nov. 18, 1974, Ser. No. 524,405**
**Int. Cl.² A01K *29/00***
**U.S. Cl. 119—29** **2 Claims**



1. A small animal exercise device comprising, in combination, a substantially circular rotatable housing, a plurality of circumferentially disposed spaced ribs carried by said housing, a substantially centrally disposed hub opening provided within said housing, a hub member adapted to fit within said hub opening, said hub member having lateral fastening means thereupon and being provided with a circumferentially disposed cut-out portion thereupon, and an oppositely laterally disposed cap member carried by said hub member.

**3,933,127**
**DESULFURIZATION OF HIGH SULFUR FUELS DURING COMBUSTION**
**Jan J. Arps, 414 Peony Road, Dallas, Tex. 75215**
**Filed June 26, 1974, Ser. No. 483,308**
**Int. Cl.² F22B *1/06*; F23G *7/00***
**U.S. Cl. 122—1 R** **45 Claims**



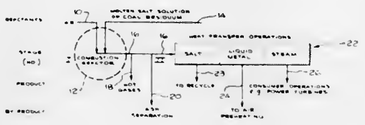
1. A method of removing sulfur from a carbonaceous fuel during combustion comprising:
a. providing a molten bath of a salt;
b. passing into said bath:
i. said fuel containing sulfur;
ii. a collector which will form a compound with said sulfur which is insoluble in said molten salt; and
iii. oxygen for combustion of said fuel;
c. allowing said fuel to combust and said compound to form in said molten salt bath; and
d. removing from said molten salt bath a slurry formed from vaporous products of combustion and said collector, said removing including the steps of applying pressurized air to lift said slurry above said bath, filtering said slurry through an inclined screen positioned above said bath, and removing particles of impurities by the force of gravity.

28. A system for removing sulfur and other impurities from fuel during combustion, which comprises:
a. a vertical, cylindrical vessel having an enclosed conically-shaped bottom and an open neck;
b. a molten salt bath filling said bottom;
c. a plurality of interconnected heat exchange coils situated within said vessel, some of which are positioned near said neck and the remainder of which are embedded in said bath;
d. a plurality of interconnected pneumatic coils situated within said vessel and positioned near said neck;
e. a vertical pipe mounted within said vessel extending above and below the surface of said bath;
f. a vertical tubing mounted within said vertical pipe extending above and below the surface of said bath;
g. a by-pass valve connected between said plurality of pneumatic coils and said vertical tubing;
h. two nozzles tangentially disposed in the walls of said vessel below the surface of said bath, one of said two being connected to said plurality of pneumatic coils;
i. a mixture comprising said fuel and an alkaline-earth metal collector;
j. a hopper directing said mixture under pressure to a second of said two nozzles;
k. a plurality of vertically stacked trays positioned above the surface of said bath and connected to the inner walls of said vessel and around the outer circumference of said vertical pipe; and

l. an inclined screen positioned below said trays and connected between the inner walls of said vessel and around the outer circumference of said vertical pipe above said bath.

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**3,933,128**
**STEAM GENERATION WITH COAL**
**Frank B. Cramer, Mission Hills, Calif., assignor to Clean Energy Corporation, Los Angeles, Calif.**
**Filed Oct. 7, 1974, Ser. No. 512,540**
**Int. Cl.² F22B** *1/06*
**U.S. Cl. 122—4 R** **72 Claims**



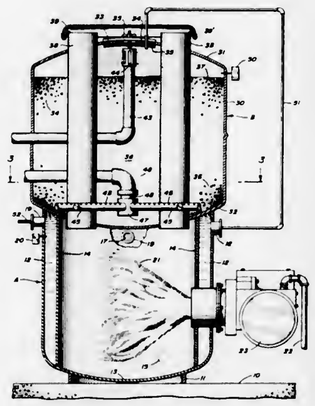
**1.** In the process for the generation and recovery of heat from highly aromatic refractory carbonaceous fuel reactants which include oxidizing the fuel in a molten salt matrix within a reaction zone and recovering heat of combustion from the salt matrix, the steps of mixing the fuel with the molten salt to dissolve the fuel in the salt to form a salt-fuel reactant solution, and thereafter introducing the reactant solution to said reaction zone to effect oxidation of said fuel reactant within the reaction zone.

**38.** Apparatus for the generation and recovery of heat from highly aromatic refractory carbonaceous fuel reactants said apparatus comprising a reactor, means for mixing said fuel reactant with molten salt to form a salt-fuel reactant solution, means for introducing said solution into said reactor, said reactor defining a through passage for the salt fuel reactant solution, means to pass a free oxygen-containing gas through said reactor differentially to said salt-fuel reactant solution in combustion heat absorbing relation, and means beyond said reactor to transfer said heat from said salt including a high specific heat fluid, and means to recharge said molten salt with fresh fuel reactant following heat transfer and to return said recharged salt to said reactor.

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**3,933,129**
**COMBINED LIQUID FILTERING AND HEATING APPARATUS**
**William A. van den Broek, Doylestown, Pa., assignor to KDI-Sylvan Pools, Inc., Doylestown, Pa.**
**Filed Mar. 6, 1975, Ser. No. 556,033**
**Int. Cl.² F22B** *7/00, 33/06*
**U.S. Cl. 122—156** **8 Claims**

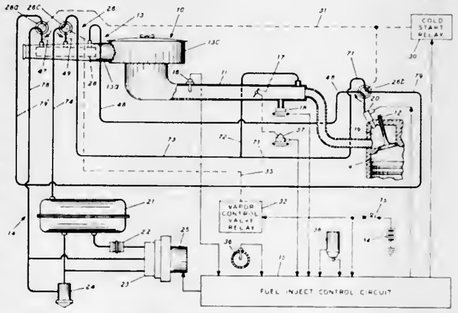
**1.** A combined filtering and heating apparatus comprising heating chamber means, water-jacket means substantially surrounding said heating chamber means, filter means mounted on said heating chamber means, heating means in said heating chamber means for heating water in said filter means and said water-jacket means, supply conduit means for supplying water from a source to said filter means, additional conduit means for supplying water to said water-jacket means



and return conduit means for returning heated water from said filter means and said water-jacket means to said source.

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**3,933,130**
**FUEL INJECTION COLD START AND EVAPORATIVE CONTROL SYSTEM USING A BIMODAL ADSORBENT BED**
**Sigmund M. Csicsery, Lafayette, Calif., assignor to Chevron Research Company, San Francisco, Calif.**
**Continuation-in-part of Ser. No. 295,040, Jan. 1, 1974, Pat. No. 3,838,667. This application Mar. 6, 1974, Ser. No. 448,775**
**Int. Cl.² F02M** *27/02*
**U.S. Cl. 123—3** **9 Claims**



**1.** In a high fuel injection system for a spark-ignition combustion engine of the type having a shaft, one or more cylinders each having an injector valve responsive to a control signal for injecting and mixing a predetermined quantity of full-range fuel with air to form a combustible mixture for delivery to such cylinders of said engine, and computing means including synchronizing and condition means for controlling and generating said control signals as a function of one or more engine operating parameters, said synchronizing means being operatively connected to said injection valves for synchronizing operation thereof as a function of predetermined angular position of said shaft by generating a correctly timed start signal for each of said injector valves, said condition means responsive to each of said start signals as well as to signals indicative of other operating parameters, for controlling the duration of energization of said each of said injection valves, the improvement for reducing exhaust pollutants



of said engine by (i) dynamically varying the composition of said full-range fuel during cold starting of said engine (cold start cycle), and alternatively (ii) adsorbing evaporative emissions originating from vapor zones within fuel system at least during an inoperative state of said engine, comprising:

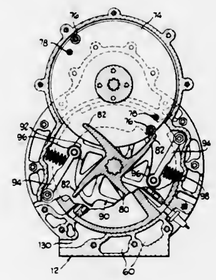
i. cannister means selectively connectable between said injection valves and a reservoir of said full-range fuel including an adsorption bed of adsorbent material,

ii. control means for controlling fluid flow including liquid fuel and vapor emission and flow between said reservoir means, said cannister means and said injection valves as a function of at least one of several engine operating parameters,

iii. said control means including at least first and second precondition means for alternatively (i) initiating, during said cold start cycle, flow of said full-range fuel from said reservoir to said cannister means and hence over said adsorption led so as to elute a cold start fuel effluent composed essentially of low molecular weight liquid constituents, said effluent being passed to said injection valves in sufficient amounts to assure starting of said engine, and (ii) permitting flow of evaporation vapors from said vapor zones of said fuel system to said same adsorption bed for capture thereon during, at least, said inoperative state of said engine.

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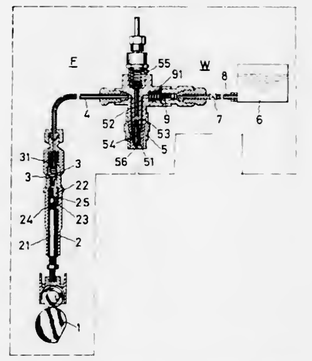
**3,933,131**
**ROTARY ENGINE**
**Russel I. Smith, 668 Rochdale Circle, Lombard, Ill. 60148**
**Continuation-in-part of Ser. No. 388,629, Aug. 15, 1973, abandoned. This application July 12, 1974, Ser. No. 488,025**
**Int. Cl.² F02B** *53/00*
**U.S. Cl. 123—8.47** **9 Claims**



**1.** A rotary engine comprising a casing, a rotatable output shaft mounted in said casing, a rotatable rotor shaft mounted in said casing, a pair of concentric rotors comprising an intermittently rotating and constantly rotating rotor in said casing, said intermittently rotating rotor connected to be driven by said rotor shaft, said constantly rotating rotor being drivingly connected to said output shaft and partly defining at least two rotary internal gas expansion chambers, the intermittently rotating rotor being disposed wholly within said constantly rotating rotor and having at least one reaction element thereon disposed within said internal chamber, said rotors both rotating about the axis of said rotor shaft, intermittent drive means connected between said output shaft and said rotor shaft and adapted to intermittently drive said rotor shaft and thereby said intermittently rotating rotor, separate reaction brake means connected to said rotor shaft, said reaction brake means adapted to hold said rotor shaft stationary to provide a reaction for said intermittently rotating rotor whereby when gas expands within said internal chamber said constantly rotating rotor will be driven to drive said output shaft, said brake means comprising cam means formed on said rotor shaft engaged by pivoted followers which permit only one way rotation of said rotor, a driving cam having arms thereon connected to said rotor shaft, a rotary member having a plurality of driving means thereon and driven by said output shaft, said driving means adapted to intermittently engage said driving cam arms to provide for intermittent drive of said rotor shaft, said driving means having two or more roller pairs, which roller pairs successively engage with an arm of the driving cam and thereby move said driving cam to start up slowly and then to stop abruptly as the inner rotor is about to catch up with the outer rotor.

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**3,933,132**
**ANOTHER LIQUID-MIXING INJECTION SYSTEM FOR INTERNAL-COMBUSTION ENGINE**
**Keiji Kishishita, Yokohama, Japan, assignor to Isuzu Motors Limited, Japan**
**Continuation-in-part of Ser. No. 441,382, Feb. 11, 1974, abandoned, which is a continuation of Ser. No. 299,617, Oct. 11, 1972, abandoned. This application Dec. 17, 1974, Ser. No. 533,717**
**Claims priority, application Japan, Oct. 20, 1971, 46-83041**
**Int. Cl.² F02D** *47/00*
**U.S. Cl. 123—25 C** **5 Claims**

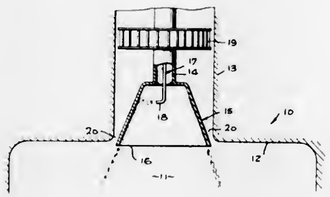


**1.** In an internal combustion engine provided with a fuel injection system comprising a fuel injection pump arranged to receive a supply of fuel, a delivery valve connected to said fuel injection pump for receiving fuel from said fuel injection pump, a fuel pipe having a first end connected to said delivery valve and a second end, and a fuel injection nozzle connected to the second end of said fuel pipe and arranged to inject fuel into a combustion chamber, and an apparatus for supplying water to said fuel injection nozzle, wherein the improvement comprises that said apparatus for supplying water comprises a water tank, a water pipe interconnecting said water tank and said fuel injection nozzle, and a check valve located in said water pipe, said fuel injection nozzle comprising an orifice through which the fuel is injected into the combustion chamber, said fuel injection nozzle forming a space therein in communication with said orifice so that the fuel flows from the space into said orifice, said fuel injection nozzle forming a fuel passage and a separate water passage with said fuel passage extending between said fuel pipe and said space in said fuel injection nozzle and said water passage extending between said check valve in said water pipe and said space in said fuel injection nozzle, said delivery valve comprises a piston located therein in the path of flow of the fuel from said fuel injection pump to said fuel pipe, said piston being displaceable within said valve from a first position blocking flow therethrough to a second position permitting flow therethrough, said piston having a volume approximately equal to the volume of water to be injected so that as it is displaced from the second position to the first postion a negative pressure is developed in said fuel pipe, said fuel passage and said space and acts in said water passage to open said check valve for admitting an amount of water from said water tank approximately equal to the volume of said piston.

## 3,933,133
## ROTATING CUP FUEL INJECTOR

**Jack R. Shekleton, San Diego, Calif., assignor to International Harvester Company, San Diego, Calif.**

**Filed Nov. 19, 1973, Ser. No. 417,456**
**Int. Cl.² F02M *61/02***
**U.S. Cl. 123—30 C** **1 Claim**



**1.** In a turbine having a combustion chamber, a variable fuel injector comprising:

an annular flange communicating with the combustion chamber;

a frusto-conical cup rotably mounted within said flange whereby the outwardly diverging end of said cup is disposed within the combustion chamber and a throat is formed between said cup and said flange;

means secured to one end of said cup and adapted to rotate said cup;

a hollow tube extending coaxially through said rotating means into said cup, the other end of said tube being disposed intermediate the ends of said cup, whereby fuel is deposited within said cup through said tube;

means for generating a high velocity air stream through the throat and over the outer lip of said cup, said air stream being substantially parallel to the axis of rotation of said cup;

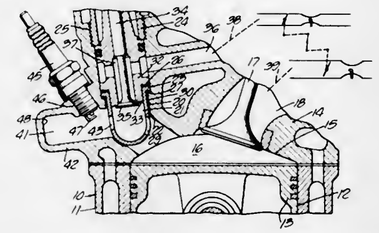
an ignition means mounted within said combustion chamber in substantially normal orientation to the axis of rotation of said cup and in complementary relationship to the lip of said cup, said air generating means and said cup rotating means being operably so that when said cup is first rotated fuel on the inner surface of said cup is caused to leave said cup at a constant spray angle of 180 degrees without significant air blast to allow contact with the ignition means and, after ignition, to provide a high velocity air stream, whereby the fuel and air are intimately mixed and assume a spray angle of less than 180°.

## 3,933,134
## METHOD AND APPARATUS USING PROPORTIONAL RESIDUAL GAS STORAGE TO REDUCE $NO_x$ EMISSIONS FROM INTERNAL COMBUSTION ENGINES

**Shizuo Yagi, Asaka, and Kazuo Inoue, Ianashi, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan**

**Filed Oct. 11, 1973, Ser. No. 405,483**
**Int. Cl.² F02B *19/10, 19/16***
**U.S. Cl. 123—32 SP** **19 Claims**

**1.** In a four-cycle spark-ignition internal combustion reciprocating piston engine having a main combustion chamber with a valved intake passage for a lean mixture, an auxiliary combustion chamber having a valved intake passage for a rich mixture, and a torch nozzle restriction connecting said chambers, the improvement for minimizing $NO_x$ in the engine exhaust gases comprising, in combination: a residual gas chamber having a restricted opening at one end communicating with the auxiliary chamber and having an end wall remote from said opening, a spark plug having electrodes forming a spark gap positioned in said residual gas chamber nearer to the restricted opening than to said end wall, the position of said restricted opening with respect to the auxiliary chamber being such that the suction stroke of the piston serving to draw a rich mixture into and through the auxiliary chamber and through the torch nozzle restriction into the main chamber does not substantially change the contents of the residual gas chamber which comprise residual burned gas from the previous combustion cycle of the engine, the restricted opening

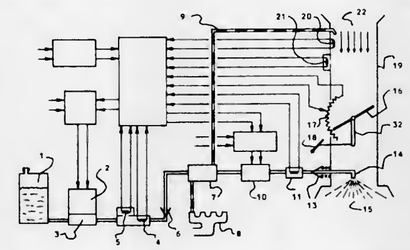


serving to promote mixing of rich mixture and residual gas in said residual gas chamber during the compression stroke of the piston, whereby at the time of ignition, the concentration of residual gas near said end wall of said residual gas chamber is greater than in the region containing said spark gap.

## 3,933,135
## ELECTRONIC CONTROLLED MANIFOLD INJECTION SYSTEM

**Jack H. Zillman, 30798 Calle Chueca, San Juan Capistrano, Calif. 92675, and William I. Ballentine, Jr., 103 Paseo Laredo N, Cathedral City, Calif. 92234**

**Filed May 1, 1974, Ser. No. 465,732**
**Int. Cl.² F02B *3/00*; F02M *31/00***
**U.S. Cl. 123—32 EA** **8 Claims**



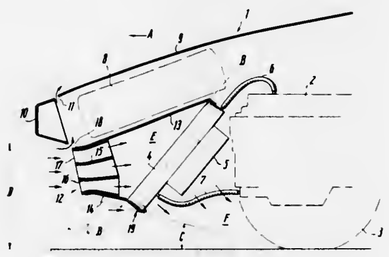
**1.** An improved fuel system for an internal combustion engine comprising: a manifold injector for the internal combustion engine; an electric motor-driven fuel pump; combination heating chambers including hot gas and electrical heating means for heating fuel from the fuel pump; a first fuel passage coupling said fuel pump to the combination heating chambers; an electrical temperature control means connected to the electrical heating means for heating the fuel in the combination heating chambers; an injector tube mounted in the manifold injector for receiving the heated fuel from the heating chambers, whereupon its release from the injector tube the fuel is vaporized; a second fuel passage coupling the combination heating chambers to the injector tube; air mass flow electric sensing means mounted in the manifold injector; fuel mass flow electric sensing means mounted in at least one of the fuel passages; electronic circuitry coupled to the electric sensing means and to the electric motor-driven fuel pump and responsive to signals from the electric sensing means to control the speed of the fuel pump and thereby to provide a constant air/fuel ratio through the manifold injector; air throttle means disposed in the manifold injector immediately above the injector tube; a shaft mounted in the manifold injector, said throttle means being connected to said shaft; an accelerator control coupled to the shaft for rotation of said throttle means; a rheostat mechanically coupled to said shaft and electrically connected in circuit with said electronic circuitry for providing means for coupling and controlling electric power to said electric motor-driven fuel pump; a first electrical Wheatstone type of bridge included in circuit with said electronic circuitry and electrically connected to said air mass flow electric sensing means, said bridge producing signal voltages as a function of air mass flow in the manifold injector; a second electrical Wheatstone type of bridge included in said electronic circuitry and connected to said electric fuel mass flow sensing means, said second bridge producing signal voltages as a function of fuel mass flow; bridge output signal voltage amplifying means included in said electronic circuitry and preset to obtain a constant air/fuel ratio and adjustable for varying the air/fuel ratios; a power switching speed control circuit for the electric motordriven fuel pump, said amplifier means receiving an algebraic sum of the bridge signal voltages from the first and second bridges, and said amplifier means further producing a rising or falling voltage signal to the power switching circuit, said power switching circuit including switching means for conducting electric power from a voltage source to the electric motor-driven fuel pump or to dump electric power from said electric motor to ground, and said power switching circuit including power transmission means to add to electric power conducted through said rheostat to the electric motor-driven fuel pump.



## 3,933,136
## COOLING APPARATUS FOR PASSENGER MOTOR VEHICLE

**Hermann Burst, Stuttgart, Germany, assignor to Dr. -Ing H.c.F. Porsche Aktiengesellschaft, Germany**

**Filed Feb. 8, 1974, Ser. No. 440,757**
**Claims priority, application Germany, Feb. 9, 1973, 2306517**
**Int. Cl.² F01P *7/00***
**U.S. Cl. 123—41.58** **32 Claims**



**32.** Cooling apparatus for cooling an engine on a motor vehicle comprising:

at least one cooler including means for exchanging heat between cooling air flowing therethrough and an engine cooling medium,

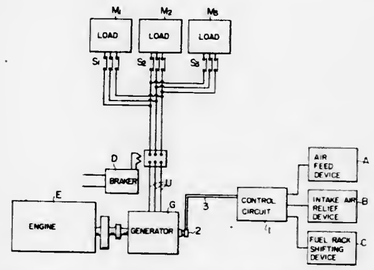
and cooling air guide means for guiding the flow of cooling air to and from said at least one cooler, said guide means including vacuum producing means for producing a cooling air flow inducing vacuum at said cooler in dependence on a driving speed of a vehicle so as to optimize the distribution of cooling air over said cooler,

wherein said vacuum producing means includes means for inducing a vacuum at least at an inlet side of said at least one cooler.

## 3,933,137
## LOAD FOLLOW-UP DEVICE FOR INTERNAL COMBUSTION ENGINE EQUIPPED WITH SUPERCHARGER

**Motohiko Uno, Takatsuki; Shigeaki Noma, Ikeda; Hideo Ujiie, Amagasaki; Kazuo Masui, Nara, and Tadashi Kanesa, Kawanishi, all of Japan, assignors to Yanmar Diesel Engine, Co., Ltd., Osaka, Japan**

**Filed Mar. 13, 1974, Ser. No. 450,700**
**Claims priority, application Japan, Jan. 26, 1973, 48-12131[U]; Jan. 26, 1973, 48-12132[U]; Jan. 26, 1973, 48-12133[U]; Feb. 3, 1973, 48-13899**
**Int. Cl.² F02D *23/00***
**U.S. Cl. 123—119 CE** **7 Claims**




**1.** An internal combustion engine having at least one cylinder and equipped with a supercharger for feeding air into the cylinder by way of an intake manifold, a control member for controlling the rate of supply of fuel to the cylinder, and a load follow-up device which comprises:

detector means operatively connected with the engine to sense a sudden application of load to the engine;

air feed means operable to admit air into the engine cylinder directly, without passing through the intake manifold;

intake air relief means operable to vent pressurized air from the intake manifold to atmosphere;

actuating means operable to displace the control member to increase the rate of supply of fuel; and

control circuit means connected to th detector means to respond substantially instantly to a sensed sudden application of load by operating the air feed means, the intake air relief means and the actuating means to admit air into the cylinder directly, vent pressurized air from the intake manifold, and increase the rate of supply of fuel thereby to follow-up faithfully the application of the additional load and prevent reduction in engine speed.

## 3,933,138
## SPARK DISTRIBUTOR

**Jean Henri Stellwagen, Paris, France, assignor to Societe Anonyme pour l'Equipement Electrique des Vehicules S.E.V. Marchal, Issy-les-Moulineaux, France**

**Filed Dec. 20, 1973, Ser. No. 426,898**
**Claims priority, application France, Dec. 27, 1972, 72.46487**
**Int. Cl.² F02P *1/00***
**U.S. Cl. 123—146.5 R** **17 Claims**

**1.** Method for obtaining optimum static adjustment in the spark point of a variable magnetic flux spark distributor for an internal combustion engine and the like, which distributor is comprised of:

a. a housing **1**;

b. a spark shaft **2** inside said housing **1**;

c. a gear **18** on and driven by said shaft **2** and rotatably movable with respect to said shaft **2**; under the effect of

d. at least one advancing wheel device element **9** displaced in said distributor housing **1**; all in relationship with

e. a magnetic flux captor element **33** which channels magnetic flux towards said shaft **2**;

f. said captor element **33** being in connected correspon-

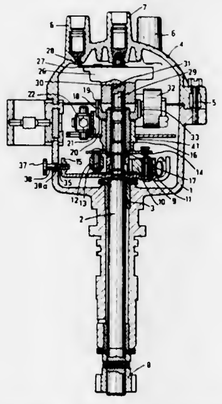
dence with the nucleus center of an induction coil **32**; all wherein there is

g. a slot **35** in the wall of said housing **1** generally disposed within the zone of said advancing wheel element **9**, and also disposed so as to be substantially perpendicular to the axle of said shaft **2**; wherein

h. said advancing wheel element **9** has an orifice **36** in the area located opposite said slot **35**;

which method comprises:

A. Providing for association with said advancing wheel element **9** a bar-like setting device **38** of sufficient length to extend from the orifice of said wheel element **9** through said slot **35** without said housing **1**, said setting device **38** having a frangible head portion **37**



and an intermediate fragile and breakable sector **38***a* disposed inwardly from its head **37**;

B. Passing said setting device **38** through said slot **35** in the housing **1** to engage it in said orifice **36** with said fragile and breakable sector **38***a* disposed within said housing **1**; while

C. Simultaneously holding from without said housing **1** the extending head extremity **37** of said bar-like setting device **38**;

D. Positioning in an optimum co-relative spacing relationship said gear **18** and said captor element **33**; upon which

E. Said distributor is thereby readied for use and/or storage for subsequent use.

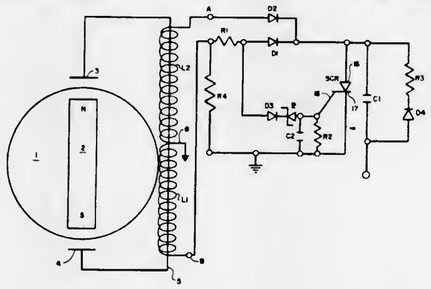
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**3,933,139**

## CAPACITIVE DISCHARGE IGNITION SYSTEM

**Bruce R. Beeghly, Liberty Township, Trumbull County, Ohio, assignor to The Economy Engine Company, Girard, Ohio**

**Filed Jan. 22, 1971, Ser. No. 108,795**
**Int. Cl.² F02P** *1/00*
**U.S. Cl. 123—148 E** **20 Claims**



**1.** An ignition system for an internal combustion engine comprising an alternating current generator synchronized with the engine, said alternating current generator having two windings, said two windings being of unequal turns and of opposite polarity, at least one high tension ignition coil having a primary and secondary winding, at least one first circuit for creating and releasing a capacitive discharge through the primary winding, and at least one second circuit including at least one spark plug in series with the secondary winding, said capacitive discharge circuit comprising a storage capacitor, a thyristor having two main terminals and at least one trigger terminal, said main terminals in series with said capacitor and primary winding, a rectifying circuit connected to the alternating current generator and to the storage capacitor for charging the capacitor with a direct current, a voltage sensitive trigger circuit connected to the high turns winding of said generator and to the trigger terminal of the thyristor whereby when the voltage in the trigger circuit reaches a given threshold voltage, the thyristor is triggered discharging the capacitor through the primary winding of the coil.

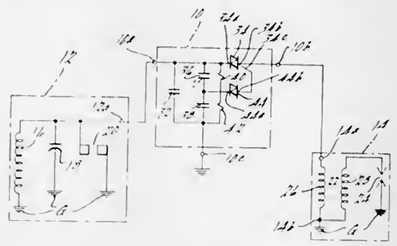
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**3,933,140**

## CAPACITIVE DISCHARGE IGNITION ADAPTER

**George E. Gynn, Fort Wayne, Ind., assignor to Syncro Corporation, Oxford, Mich.**

**Filed July 25, 1973, Ser. No. 382,475**
**Int. Cl.² F02P** *1/00*
**U.S. Cl. 123—148 CC** **37 Claims**



**1.** For a single cylinder engine having an existing ignition system of the type comprising a source of electrical power, an ignition coil for the single cylinder of said engine having primary and secondary windings, a spark plug for the single cylinder of said engine operatively coupled with said secondary winding and means operatively coupling said source of power with said primary winding comprising a controlled conduction device operatively connected to the engine to be alternately changed from a conductive to a non-conductive condition in timed relation with the engine to cause said spark plug to fire, an adapter circuit assembly for converting the existing ignition system to a capacitor discharge ignition system and interconnectable between said controlled conduction device and said primary winding, said adapter circuit assembly comprising:

a capacitor means;

input circuit means for operatively coupling said capacitor means with said controlled conduction device and said source of power such that said capacitor means is charged from said source of power when the conduction of said controlled conduction device is changed; and

output circuit means including a triac having blocking and conducting states and comprising a trigger terminal via which said element is switched from the blocking state to the conducting state, and including a diac operatively coupling said capacitor means with said trigger terminal, said triac operatively coupling said capacitor means with said primary winding, said diac being responsive to the magnitude of charge voltage across said capacitor means as said capacitor means charges subsequent to the change of conduction of said first controlled conduction device for switching said triac from its blocking state to its conducting state after said magnitude of charge voltage has attained a predetermined level to discharge said capacitor



means into said primary winding and thereby cause the spark plug to fire.

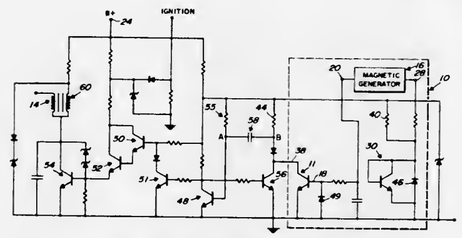
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**3,933,141**

## ZERO CROSSING CIRCUIT FOR ELECTRONIC IGNITION SYSTEM

**Philip D. Gunderson, Arlington Heights, Ill., assignor to Motorola, Inc., Chicago, Ill.**

**Filed Mar. 7, 1974, Ser. No. 449,185**
**Int. Cl.² F02P** *1/00*
**U.S. Cl. 123—148 E** **4 Claims**




**1.** An electronic ignition system comprising an ignition coil for providing a high voltage output, ignition circuit means connected to said coil, and ignition timing generator means having first and second output terminals and operable to provide an output voltage varying in amplitude from some positive to some negative voltage, said generator means being connected at the output terminals thereof to said ignition circuit means for initiation of the operation thereof, said ignition circuit means including temperature compensation means for detecting the zero crossing point of said generator means and including a first transistor having predetermined operating characteristics and input, output and common electrodes, the input of said transistor being connected to the first output terminal of said generator means, the common electrode of said first transistor being directly connected to a fixed reference potential, and biasing means having predetermined values connected to said first transistor for establishing therein a first predetermined current density when the generator output at the first terminal thereof is zero, and cooperating with the first transistor characteristic to establish at that current density the switching voltage at the input of said first transistor, said transistor being rendered conductive upon application at said input electrode of said switching voltage by said generator means to produce an output between said output and common electrodes of said first transistor for operating said ignition circuit means, said biasing means including a second transistor having operating characteristics similar to that of said first transistor and having input, output and common electrodes, said input and output electrodes being coupled together causing said transistor to operate effectively as a diode and being coupled to the second output terminal of said generator means, the common electrode of said second transistor being connected to the reference potential, said biasing means biasing said second transistor into conduction to establish therein a second predetermined current density substantially equal to the first predetermined current density when the generator output at the first terminal thereof is zero in order to maintain the second output terminal of said generator means at a voltage level substantially the same as the switching voltage established at the input of said first transistor and to maintain said first transistor in a partial state of conduction when the output voltage of said generator means at the first terminal thereof is zero, the switching voltage at the input of said first transistor changing with temperature or supply voltage variations and the voltage level at the second output terminal of said generator means being maintained in accordance therewith, said switching voltage of said first transistor substantially corresponding to the zero crossing point at the first output terminal of said generator means when said generator is going from a negative to a positive output to ensure said first transistor is turned on upon said generator means reaching its zero crossing point despite said temperature changes and said supply voltage variations, said second transistor having a lower dynamic impedance than a conventional diode to maintain a low impedance at the input of said first transistor and further comprising said biasing means having predetermined values establishing the switching voltage at a level substantially corresponding to the zero crossing point at the first output terminal of said generator means when said generator is going from a positive to a negative output to ensure said first transistor is turned off upon said generator means reaching its zero crossing point despite said temperature changes and said supply voltage variations.

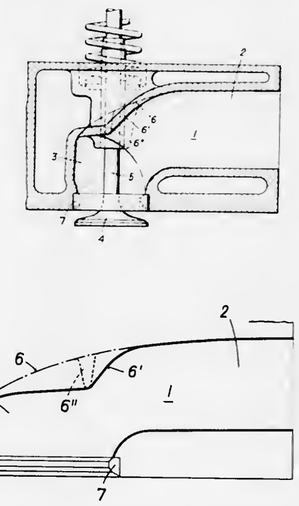
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**3,933,142**

## INTERNAL COMBUSTION ENGINE, PARTICULARLY A DIESEL ENGINE

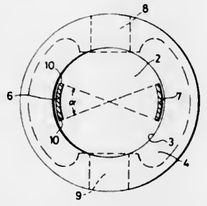
**Hans List; Rainer Cichocki; Karl Kirchweger, and Friedrich Steinwandter, All of Graz, Austria, assignors to Hans List, Graz, Austria**

**Filed June 5, 1974, Ser. No. 476,515**
**Claims priority, application Austria, June 8, 1973, 5115/73**
**Int. Cl.² F01L** *3/00*
**U.S. Cl. 123—188 M** **3 Claims**



**1.** An internal combustion eninge, in particular a Diesel engine, comprising at least one inlet valve for each cylinder, arranged in eccentric relation to the cylinder axis, an inlet duct connected to said inlet valve and comprising a delivery portion and an adjoining spiral-shaped duct portion, said inlet valve having a valve stem extending through the spiral-shaped duct portion, said inlet duct having a reduction of the cross-sectional area formed by a portion of an upper duct wall comprising a stepped portion or rib protruding into the inlet duct at the point of transition from the delivery portion to the spiralshaped duct portion and extending in transverse relation to the direction of the delivery portion.

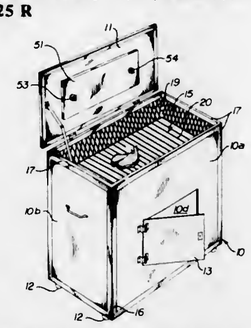
**3,933,143**
**COMBUSTION CHAMBER PROTECTION MEANS**
**Rudolf Gürtler, Endersbach, Germany, assignor to Mahle GmbH, Stuttgart, Germany**
**Filed May 28, 1974, Ser. No. 473,685**
**Claims priority, application Germany, May 30, 1973, 2327551**
**Int. Cl.² F02F** *3/28*
**U.S. Cl. 123—193 P** **8 Claims**



**1.** In a combustion engine of which the pistons are provided with a combustion chamber, the provision of means for protecting the edge of the mouth of the opening of the combustion chamber from the formation of cracks, said protecting means being arranged in the two peripheral zones of said edge adjacent the supporting sides of the piston and extending over an angle of not more than 90° over the central point of each supporting side.

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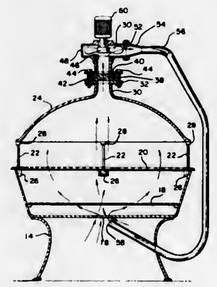
**3,933,144**
**BARBECUE GRILL CONSTRUCTION**
**Clyde Bandy, 7138 Conley, Houston, Tex. 77021**
**Filed July 13, 1973, Ser. No. 379,112**
**Int. Cl.² A47J** *37/07*; **F24B** *3/00*
**U.S. Cl. 126—25 R** **1 Claim**



**1.** A barbeque grill for cooking food with charcoal fuel, or the like, comprising, in combination: an upright housing having a lower portion in which the fuel is burned and an upper portion in which the food to be cooked is to be placed; grill means in said upper portion for supporting the food to be cooked; a cover attached to said housing to permit access to said upper portion for placement of food to be cooked, said cover including an opening therethrough; air control means disposed on said cover about said opening and including means for adjusting the quantity of air flow through said opening for controlling the flow of smoke from said housing, said air control means including a louvered member mounted over said opening on the outside of said cover, and a plate mounted over said opening on the inside of said cover, and means for so mounting said plate while permitting movement of said plate to and from said opening, said means including resilient means for biasing said plate away from said opening; rack means in said lower portion for supporting said fuel for burning; and a wick type fuel igniter located in said lower portion and disposed to rotate from a first position for lighting said fuel, to a second position wherein the wick is protected from drippings from the food being cooked, said igniter including an elongated trough for accumulation of a liquid fuel, an elongated wick extending from said trough and a shield member extending from the side walls of said trough and extending over said trough to shield said wick when in second position, and further including mounting means for mounting said igniter on and beneath said rack for movement between said first and second position, and a door in said housing for permitting access to said lower portion thereof.

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**3,933,145**
**RECIRCULATING BARBEQUE DEVICE**
**Harry Reich, 2931 Fillmore, San Franciso, Calif. 94123**
**Filed Aug. 5, 1974, Ser. No. 494,846**
**Int. Cl.² A47J** *37/07*; **F24B** *3/00*
**U.S. Cl. 126—25 R** **4 Claims**



**1.** A cooking device for use with a charcoal-type open receptacle having a charcoal burning area comprising: a hood having means for supporting said hood over the open receptacle; a flue connected to said hood with an opening for collecting smoke and gases from combustion of charcoals in said receptacle; filter means connected to said flue for filtering particulate matter from the smoke and gases of combustion, said filter means including fan means for conveying smoke and gases through the filter means; a conduit having a first end and a second end, said conduit having further first means for connecting the first end of the conduit to the filter means, and second means for directing the second end of said conduit at the charcoal burning area of said receptacle; and, an air admission vent in said receptacle proximate to said charcoal burning area, wherein said second end of said conduit is directed at said air admission vent from outside said receptacle, the end of said conduit being proximately arranged with said air admission vent and adapted to aspirate air into said vent by action of said smoke and gases conveyed into said receptacle from said conduit.

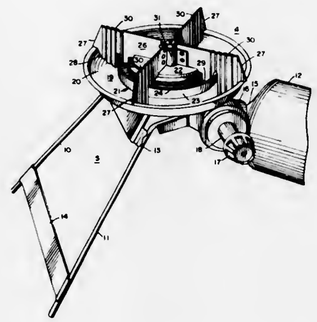
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**3,933,146**
**PORTABLE SINGLE BURNER CAMPSTOVE**
**Thomas C. Hastings, Willowdale, Canada, assignor to The Coleman Company, Inc., Wichita, Kans.**
**Filed Mar. 12, 1975, Ser. No. 557,761**
**Int. Cl.² F24C** *5/20*
**U.S. Cl. 126—38** **8 Claims**

**1.** In a portable single burner campstove, the combination providing increased wind resistance and high efficiency, comprising: a cooking unit assembly including a reflector bowl providing an upwardly extending outer wall portion, a burner within said reflector bowl, and grate means for supporting a cooking utensil over said burner, a burner bowl having an outer upwardly extending wall intermediately located between said burner and said reflector bowl wall portion, said burner providing a tubular side wall in opposed relation to said burner bowl wall and having a multiplicity of flame ports distributed therearound and arranged to direct flame jets outwardly toward said burner bowl wall for impingement thereon, said grate means including at least three vertically oriented strips

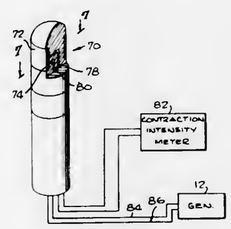


of sheet metal extending outwardly from the central portion of said assembly over said burner, burner bowl, and reflector bowl, the upper edges of said strips providing support for a cooking utensil, said strips having portions extending downwardly into said burner bowl and said reflector bowl for cooperating with said burner bowl wall and said reflector bowl wall portion to increase the heat transferred to the cooking utensil and to reduce the effect of crosswinds on such transfer.



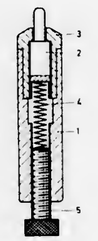
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**3,933,147**
**APPARATUS AND METHOD FOR TREATING DISORDERS IN THE REGION OF THE PUBOCOCCYGEOUS MUSCLE**
**Wilbur E. Du Vall, 22710 Pennsylvania Ave., Torrance, Calif. 90501, and Roger J. Foster, 26614 Menominee Place, Palos Verdes, Calif. 90274**
**Filed Apr. 2, 1970, Ser. No. 25,022**
**Int. Cl.² A61B** *5/10*; **A61N** *1/32*
**U.S. Cl. 128—2 S** **1 Claim**




**1.** Apparatus for treating a muscle in the pelvic region comprising:
- a probe of a width on the order of an inch to permit insertion into the adult human vagina, said probe having spaced electrode means thereon for applying currents to the body and strain gauge means for sensing the intensity of muscle contractions that tend to compress the electrodes;
- a generator coupled to said electrode means, said generator constructed to generate trains of pulses at a repetition rate within the range of 100 per second to 400 per second; and
- meter means coupled to said strain gauge means for providing an indication of the level of intensity of muscle contractions.

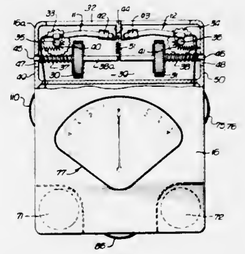
**3,933,148**
**DEVICE FOR DETERMINING SKIN SENSITIVITY**
**Eugen Wyler, Kusnacht, and Wladimir Tur, Mutschellen, both of Switzerland, assignors to Lovida AG, Oberwil near Zug, Switzerland**
**Filed Apr. 12, 1974, Ser. No. 460,462**
**Claims priority, application Switzerland, Apr. 16, 1973, 5483/73**
**Int. Cl.² A61B** *10/00*
**U.S. Cl. 128—2 R** **6 Claims**



**1.** A device for determining the degree of skin sensitivity due to the persistence of a scratch trace on the skin surface produced by said device, comprising:
- a housing having a base surface;
- at least one pressure element having one end extending into said housing and having a rounded trace producing surface on the other end thereof, said trace producing surface protruding from said housing at said base surface;
- compressible means within said housing in engagement with said pressure element, having a predetermined spring force, for compressing said at least one pressure element against the skin surface at a constant pressure of 250–500 gm/mm² when said trace producing surface is depressed to said base surface,
- whereby said at least one pressure element is depressable into said housing at a constant pressure and therefore the pressure on the skin surface will be constant, thereby allowing a plurality of scratch traces to be applied to the skin surface at the same surface pressure.

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**3,933,149**
**ANISOTHERMAL DIFFERENTIATOR**
**Edmond A. Salera, 714 Surf View Drive, Santa Barbara, Calif. 93109, and Edmond E. Salera, 1522 Centinela Ave., Los Angeles, Calif. 90025**
**Filed Apr. 18, 1974, Ser. No. 461,854**
**Int. Cl.² A61B** *5/00*; **G01K** *7/24*
**U.S. Cl. 128—2 H** **17 Claims**



**1.** In local body heat sensing instrumentation, the combination comprising
- a. first and second probes each including a tip having a frontwardly exposed surface shaped for application in heat transfer proximity with a patient's body, the tip

consisting of material characterized as electrically insulative and heat conductive,

b. first and second electrically energizable means carried by the respective probes to detect heat transfer between said surface and the source via said material, said frontwardly exposed surface of each tip being generally convex,

c. each probe including an openly hollow and forwardly elongated support, said tip confined at the forward end of said support, said tip having a rearward surface facing and exposed to the hollow interior of the support, the outer extent of the tip connected to the support, each said means embedded in the tip material between said front and rear surfaces,

d. a carrier from which the probes extend in active positions to locate the tips for engaging a human patient's body, the carrier including a housing, there being rotary means including worm gear means on the carrier and supporting the probes for rotation between extended positions outside the housing and retracted positions inside the housing, there also being worm means on the carrier and meshing with the worm gear means, and manually operable means to rotate the worm means, and

e. recording means electrically connected with said electrically energizable means.

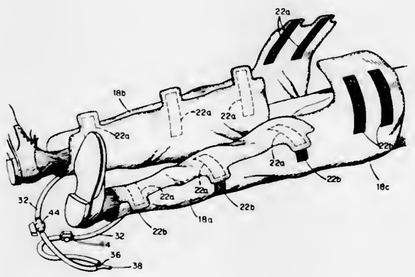
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**3,933,150**

**MEDICAL PNEUMATIC TROUSER FOR EMERGENCY AUTOTRANSFUSION**

**Burton H. Kaplan, Fort Leavenworth, Kans.; Forrest R. Poole, and John E. Flagg, both of Worcester, Mass., assignors to David Clark Company Incorporated, Worcester, Mass.**

**Filed Feb. 8, 1974, Ser. No. 440,644**
**Int. Cl.² A61H** *1/00*
**U.S. Cl. 128—24 R** **5 Claims**



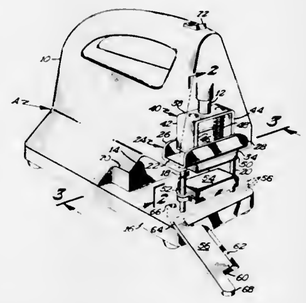
**1.** Apparatus for transferring pooled venous blood in the lower extremities and abdominal area of a victim suffering from shock, said apparatus comprising: a doublewalled panel of flexible material forming chamber means, said panel having a pair of lower sections adapted to operatively surround the legs of the victim and an upper section adapted to operatively surround the abdomen of the victim in the region below the victim's rib cage; fastening means on the exterior surface of said panel for retaining said sections in their operative positions on the victim; gas pressurizing means adapted to be placed in communication with said chamber means for inflating said panel to thereby exert pressure on the legs and abdomen of the victim in order to decrease the volume of venous blood pooled therein and thus increase venous return to the victim's heart; and normally closed valve means communicating with said chamber means and being operative to open in response to the attainment of a selected level of gas pressure in said chamber means to bleed gas from said chamber means.

**3,933,151**

**DEVICE FOR MASSAGING A FINGER**

**Joe Huie, 122 E. 5th St., Duluth, Minn. 55805**

**Filed Dec. 12, 1974, Ser. No. 532,020**
**Int. Cl.² A61H** *7/00*
**U.S. Cl. 128—52** **2 Claims**



**1.** A device for massaging a finger comprising:

a. a main support,

b. an operable reciprocating member mounted on said main support,

c. an upper resilient pad,

d. means mounting said upper pad on said main support for reciprocal movement by said reciprocating member,

e. means normally urging said upper pad against reciprocation,

f. a lower resilient pad carried by said main support,

g. means mounting said lower resilient pad on said support in alignment with said upper pad on which a finger is supported for intermittent contact with said upper pad in its reciprocating action,

h. means for adjustably positioning said lower pad relative to said upper pad, said adjustable means including:

i. at least one plate and

j. means for removably positioning said plate between said lower pad and said main support.

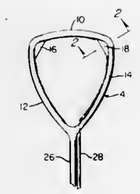
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**3,933,152**

**INTRAUTERINE CONTRACEPTIVE DEVICE**

**Thomas S. Moulding, 1954 Glencoe, Denver, Colo. 80220**

**Continuation-in-part of Ser. No. 189,212, Oct. 14, 1971, Pat. No. 3,802,425. This application Feb. 19, 1974, Ser. No. 443,338**
**Int. Cl.² A61F** *5/46*
**U.S. Cl. 128—129** **12 Claims**



**1.** An intrauterine contraceptive device made of biomedical material and which conforms to the size and shape of the uterus after insertion therein, said device comprising:

an inflatable member having a first inlet insertable into a uterus in a collapsed position and movable into an expanded position within the uterus upon introduction of a fluid into said member through said first inlet; and

tubular means connected to and extending around the periphery of said inflatable member and having a second inlet for receiving a self-hardening liquid plastic so that after said device is positioned in the uterus and said inflatable member is expanded to position said tubular means against the uterine walls, the liquid plastic which has been introduced into said tubular means through said second inlet in said tubular means will hold said tubular means in position against the uterine walls after which said member is deflated.



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**3,933,153**

**INTRA-UTERINE CONTRACEPTIVE DEVICE**

**Laszlo Kalman Csatary, 1913 Windsor Road, Alexandria, Va. 22307, and Frank Istvan Pongracz, 10833 Margate Road, Silver Spring, Md. 20901**

**Filed Mar. 18, 1974, Ser. No. 451,742**
**Int. Cl.² A61F** *5/46*
**U.S. Cl. 128—129** **4 Claims**



**1.** An intra-uterine contraceptive device comprising a hollow body made from a biologically inert resilient material, said body including a plurality of adjacent free and hollow arm means adapted to expand when said contraceptive device is inflated by means of a fluid within the uterus, said arm means having free end portions rounded-off for coming into direct contact with the inner walls of the uterus when in the extended position preventing the expelling of the contraceptive device through the cervix due to expelling forces exerted thereon by the uterus, wherein said plurality of arm means extend from said body in a christmas-tree-like fashion laterally and retrogressively when said contraceptive device is inflated, said adjacent arm means leaving sufficient space when extended with the adjacent arm means for allowing the unimpeded passage of the menstrual flow therebetween, said body including a portion containing self-sealing valve means for the injection of said fluid into said contraceptive body and said valve means being adapted to tightly reseal itself after the injection.

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**3,933,154**

**IMMOBILIZER DEVICE**

**Edwin M. Cabansag, 3937 Johnson St., Western Springs, Ill. 60558**

**Filed Jan. 15, 1974, Ser. No. 433,452**
**Int. Cl.² A61F** *5/37*
**U.S. Cl. 128—134** **22 Claims**

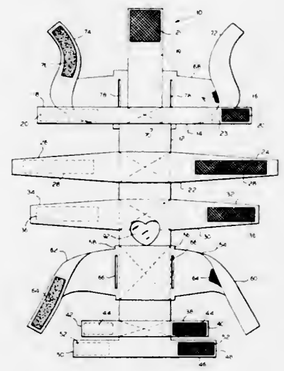
**1.** An immobilizer for use in X-ray or surgical procedures on a patient comprising:

a completely flexible radiotransparent member including flexible restraining means,

said flexible member having a front surface adapted to extend longitudinally adjacent the posterior of said patient and a posterior surface;

said restraining means adapted to extend around portions of said patient and secure said patient to said flexible member and against movement; and

a rigid radiotransparent backing member removably attached to one of said surfaces of said flexible radiotransparent member to alternatively provide a rigid support for said member when desired.



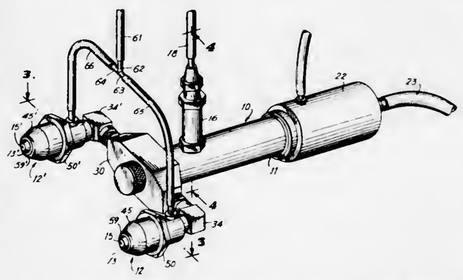
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**3,933,155**

**PRESSURE INJECTOR APPARATUS HAVING IMPROVED TRIGGER MECHANISM**

**Charles Johnston, Roanoke, Va., assignor to Mizzy Inc., Clifton Forge, Va.**

**Filed Jan. 23, 1975, Ser. No. 543,438**
**Int. Cl.² A61M** *5/30*
**U.S. Cl. 128—173 H** **7 Claims**

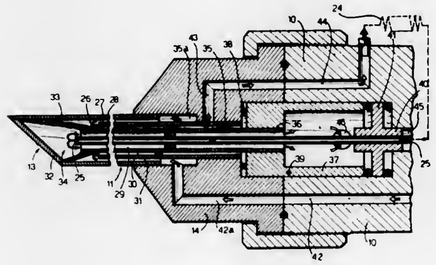


**1.** In a transdermal pressure injection mechanism including a body portion having a liquid reservoir, and discharge means for expelling predetermined dosages of liquid under high pressure from said reservoir to a discharge conduit, a self-triggering nozzle assembly fixed to an end of said body portion, said assembly comprising a collar member having an internal bore terminating in an outwardly facing mouth portion, a discharge nozzle mounted in said bore in spaced relation to said collar and extending substantially parallel thereto, said nozzle including a face portion projecting through said mouth portion, said nozzle including an orifice extending through said face portion and connected to said discharge conduit, said nozzle and collar defining therebetween a chamber opening outwardly through said mouth, trigger conduit means for introducing air under pressure into said chamber, and sensor means operatively connected to said trigger conduit means for energizing said discharge means to expel a dosage of liquid through said orifice responsive to a pressure variation of a predetermined magnitude sensed in said conduit means as a result of substantially sealing said mouth portion of said chamber by positioning of said mouth against an injection site.

## 3,933,156
## COOLING APPARATUS PARTICULARLY FOR MEDICAL-SURGICAL USE

Giovanni Riggi, Via Giacosa 2 bis, Turin, Italy

Filed Jan. 8, 1975, Ser. No. 539,564
Claims priority, application Italy, Jan. 15, 1974, 67108/74
Int. Cl.² A61B 17/36
U.S. Cl. 128—303.1 3 Claims

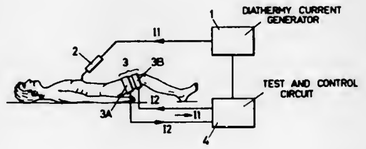


1. In a refrigerating apparatus suitable for medical use, of the type comprising:
a body,
a tubular probe projecting from said body, said probe comprising,
a first tube formed as a capillary tube, and connected by one end to a first conduit within said body,
a second tube surrounding said first tube and connected by one end to a second conduit within said body, the other end of said second tube being closed and forming a chamber around the other end of said first tube and an annular passageway between itself and said first tube,
a source of refrigerant fluid under pressure,
means defining a flow path for said refrigerant fluid from said source of refrigerant fluid to said first conduit, and
a control valve in said second conduit operable to connect said second conduit to the atmosphere whereby to permit refrigerant fluid to flow from said source means along said first tube from which it expands into said chamber at said other end of said second tube to effect refrigeration of the walls of said chamber by flash evaporation and expansion, and to flow from said chamber along said annular passageway through said control valve to the atmosphere,
the improvement wherein,
said second tube is surrounded by a third tube which is coaxial therewith and spaced therefrom to define a second annular passageway between said second and third tubes,
said third tube is surrounded by a fourth tube which is coaxial therewith and spaced therefrom to define a third annular passageway, said second and third annular passageways communicating with one another but not with said expansion chamber at said other end of said probe and said second and third tubes being of such a length that they surround all but a part of said expansion chamber, which is left exposed, and
means interconnecting said second and third annular passageways in series in the flow path of said refrigerant between said source and said first tube whereby said refrigerant acts as a thermal insulation for said first and second tubes which are in thermal contact with said expansion chamber.

## 3,933,157
## TEST AND CONTROL DEVICE FOR ELECTROSURGICAL APPARATUS

Per Henrik Bjurwill, Bromma, and Nils Bertil Jacobson, Solna, both of Sweden, assignors to Aktiebolaget Stille-Werner, Sweden

Filed Oct. 23, 1973, Ser. No. 408,535
Int. Cl.² A61B 17/36; A61N 3/00
U.S. Cl. 128—303.14 5 Claims

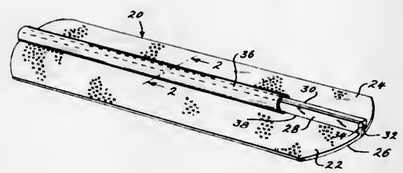



1. A test and control device for an electrosurgical diathermy current circuit of the type having a high-frequency diathermy current generator, an active electrode connected to the diathermy current generator and an inactive electrode comprising two spaced electrode segments connected in parallel to the diathermy current generator, said test and control device comprising:
a. a sensing circuit means for being connected in series through the spaced electrode segments as bridged by a patient's body including a source of alternating test current and an impedance, said sensing means comprising;
1. a free-running multivibrator having two operating states, and
2. a relay having a coil connected to and controlled by said multivibrator and a two-position switch arranged to disconnect the spaced electrode segments from the diathermy current circuit in one position;
b. means for automatically and repetitively sensing the resulting voltage drop across the electrode segments;
c. means connected to said sensing means and adapted to be connected to the diathermy current circuit and responsive to such voltage drop for inhibiting the passage of diathermy current whenever said voltage drop exceeds a predetermined maximum, or is less than a predetermined minimum said inhibiting means adapted to be connected to said electrode segments through the second position of the two-position switch; and
d. circuit means controlled by said inhibiting means for applying said alternating test current to said multivibrator to hold it in that state by which said relay coil is deenergized.

## 3,933,158
## SKIN CLOSURE MEANS

Charles B. Haverstock, 44 Frederick Lane, Glendale, Mo. 63122

Filed Feb. 15, 1974, Ser. No. 442,784
Int. Cl.² A61B 17/08
U.S. Cl. 128—335 20 Claims



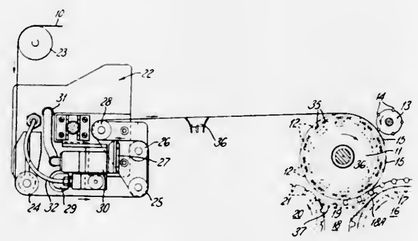
1. Means for closing skin separations comprising a pair of sheet-like elements each having opposite side surfaces and adjacent side edges, an adhesive substance applied to corresponding side surfaces of each of said elements for attaching the elements to the skin adjacent to a skin separation with the side edges of said elements extending respectively along and closely adjacent to opposite sides of the skin separation, cooperating means on each of said sheet-like elements extending along the respective side edges thereof on the opposite sides thereof from the adhesive substance, the cooperating means and the adjacent sheet side edges on said elements being movable into abutment to close the skin separation, and elongated channel shaped means having continuous opposed edges extending substantially continuously the full length of the cooperating means cooperatively removably engaged with said cooperating means on said elements to hold said cooperating means together in abutment, said channel shaped means applying substantially uniform pressure to hold the elements together along the length of the engagement between the channel shaped means and the cooperating abuting means on the adjacent sheets.



## 3,933,159
## MANUFACTURE OF MOUTHPIECE CIGARETTES

Desmond Walter Molins, London, England, assignor to Molins Limited, England

Continuation-in-part of Ser. No. 222,568, Feb. 1, 1972, abandoned. This application Mar. 26, 1974, Ser. No. 454,953
Claims priority, application United Kingdom, Feb. 9, 1971, 4284/71
Int. Cl.² A24C 5/48, 5/58
U.S. Cl. 131—94 5 Claims



1. Apparatus for making mouthpiece cigarettes by uniting a length of mouthpiece material to each cigarette in abutting relationship thereto by means of an encircling uniting band, comprising a rotatable drum, means to apply molten hot melt adhesive to a continuous web of uniting band material, means to deliver the web onto the drum at a temperature slightly below the melting point of the adhesive and at a speed less than the peripheral speed of the drum, severing means to sequentially cut off the successive foremost ends of the web on the drum to form a succession of uniting bands spaced apart by a gap, heating means to apply sufficient heat to the drum to re-activate the adhesive on the uniting bands, a rolling member having a concave part-cylindrical surface spaced from the drum to define a rolling passage therebetween, and conveyor means to directly deliver cigarette assemblages each with an aligned and abutted mouthpiece portion to said passage in timed relationship with the leading end of a re-activated uniting band so that said re-activated band is rolled in said passage around the preceding assemblage, the temperature of the rolling member being low enough to cool the adhesive to cause it to set.

## 3,933,160
## TOBACCO-SMOKE FILTERS

Guy V. A. Gerardy, Waterloo, Belgium, assignor to British-American Tobacco Company Limited, London, England

Filed Aug. 22, 1973, Ser. No. 390,504
Claims priority, application Belgium, Sept. 1, 1972, 12161
Int. Cl. A24c 5/50
U.S. Cl. 131—264 3 Claims

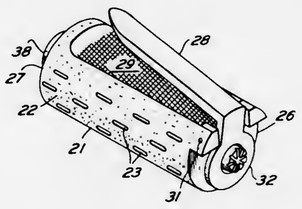


1. A tobacco-smoke filter composed of absorbent paper and a filtering composition comprising a tow of material, selected from the group consisting of fibres and filaments, associated with the paper in superimposed layers, wherein the absorbent paper and filtering composition are in the form of strips extending longitudinally of the filter, the filtering-composition strip having a width greater than the width of the paper strip and being associated with the paper strip to cover one face of the latter and having folds along the two longitudinal edges of the paper strip to form marginal portions covering at least part of the other face thereof.

## 3,933,161
## HAIR CURLER AFFIXABLE WITH ONE HAND

Donna F. Strickman, and Melvyn B. Strickman, both of Academy St., Shiloh, N.J. 08353

Filed Apr. 28, 1975, Ser. No. 572,284
Int. Cl.² A45D 2/00
U.S. Cl. 132—40 3 Claims



1. A hair curler comprising in combination:
a cylindrical drum having a circumferential outer surface, the drum having an axis and a first end spaced longitudinally from a second end,
the drum provided with a jaw arranged longitudinally thereabout and moveable between a first jaw orientation wherein it is urged to engage the outer surface of the drum and a second jaw orientation wherein it is spaced from the drum,
a crank connected fixedly to the jaw and connected hingedly to the drum at said first end, a crank spring connected between the drum and the crank to urge the jaw normally into said first jaw orientation,
the crank moveable manually from said first jaw orientation to said second jaw orientation overcoming the crank spring,
the first end of the drum provided with a bearing organized along the axis and adapted to receive a shaft journaled axially therein,
a shaft biasing spring connected between the bearing and the shaft normally to urge the shaft toward the second end of the drum,
the shaft provided at the second end of the drum with a clutch which is rotatable only in a positive sense of rota-

tion about said axis and not rotatable in a negative sense of rotation thereabout,

the second end of the drum provided with a clutch seat projecting into the drum to engage the clutch,

a detent penetrating the drum via the second end thereof and along the axis, the detent connected to the clutch, the detent moveable manually to a first detent position overcoming the detent biasing spring to disengage the clutch,

the detent having a knob connected thereto and outward of the second end, the knob turnable to rotate the shaft in said positive sense, a torsion spring connected between the drum and the shaft to store energy on said rotating of the shaft in said positive sense and for giving up said energy to turn the drum on unwinding in said negative sense whereby a hair section engaged between the jaw and the outer surface of the drum is rolled onto the drum.

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**3,933,162**

## COIN FEEDING DEVICES

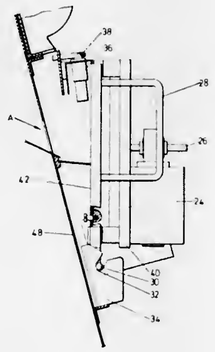
**Colin Howard Stanwell Smith, Cambridge, England, assignor to Automatic Revenue Controls (Europa) Ltd., Watford, England**

**Continuation-in-part of Ser. No. 467,875, May 8, 1974, abandoned. This application Sept. 3, 1974, Ser. No. 502,525**

**Claims priority, application France, May 16, 1974, 74.17128; United Kingdom, May 17, 1973, 23663/73**

**Int. Cl.² G07D** *3/00*

**U.S. Cl. 133—1 R** **25 Claims**



1. Apparatus for feeding coins in a coin operated device, comprising

a rotatable disc,

entry guide means arranged to guide a coin onto the surface of the disc,

means mounting the disc for rotation about an axis which is tilted from the horizontal;

a motor drivingly connected to the disc;

at least one pair of coin-engaging pins projecting outwardly from the surface of the disc, the two pins of each pair being spaced apart radially on the disc a distance slightly less than the diameter of the smallest coin to be handled,

an exit chute for the coin,

whereby when a plurality of coins are fed into the guide means, each coin in turn is engaged by a set of pins and carried to the exit.

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**3,933,163**

## SPRAY ETCHING APPARATUS

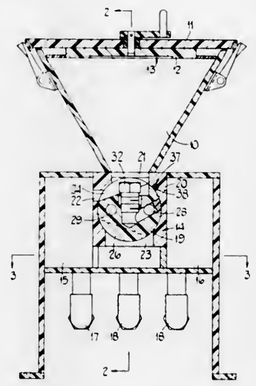
**Maurice Parramore, Birmingham, England, assignor to Lucas Industries Limited, Birmingham, England**

**Filed Feb. 4, 1975, Ser. No. 547,006**

**Claims priority, application United Kingdom, Mar. 14, 1974, 11418/74**

**Int. Cl.² B08B** *3/02*

**U.S. Cl. 134—96** **6 Claims**



1. A spray etching apparatus comprising a chamber having a surface to which workpieces to be etched may be secured, a valve element movable within a housing and including first and second supply passages for an etchant and a rinsing fluid respectively, first and second spray nozzles mounted on said valve element and respectively communicating with said first and second supply passages, first and second drain wells in said housing, and means for moving said valve element between a first position in which said first nozzle is directed towards said surface, said chamber communicates with said first drain well and is isolated from said second drain well and said second nozzle communicates with said second drain well, and a second position in which said second nozzle is directed towards said surface, said chamber communicates with said second drain well and is isolated from said first drain well, and said first nozzle communicates with said first drain well.

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**3,933,164**

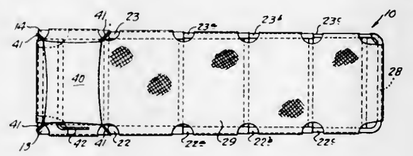
## PORTABLE DUCK BLIND CAMP COT AND BACK PACK

**Philip J. Ness, 5948 Mendocino Blvd., Sacramento, Calif. 95824, and Barney S. Kawada, 5930 24th St. 58, Sacramento, Calif. 95822**

**Filed Jan. 29, 1974, Ser. No. 437,641**

**Int. Cl.² A45F** *1/00*

**U.S. Cl. 135—1 R** **1 Claim**



1. A combined duck blind, cot and back pack comprising a plurality of relatively rigid frame sections having telescoping side frame members, a plurality of generally U-shaped legs integrally connecting each of said frame sections and extending generally parallel to each other, a canvas support secured to said frame sections for supporting an occupant, spring urged latch and recess means on said frame sections for locking said frame sections in extended position, a fabric cover member to cover the entire cot detachably secured to said device with said cover member being hinged parallel to the longitudinal axis of the cot at regular spaced intervals along the entire length of the device to permit the cover to be moved into and out of covering position with respect to said device, a plurality of telescopically collapsible related frame sections forming said cover member, and a plurality of clamping members attached to said cover, each clamping member adapted to releasably attach to a plurality of cot frame members.

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**3,933,165**

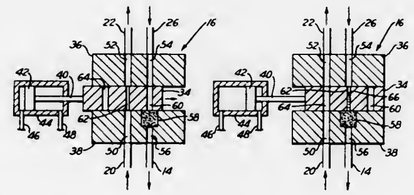
## APPARATUS FOR OCTANE MONITORING

**Paul A. Budzak, Cheswick, and Russell M. Clinton, III, Gibsonia, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.**

**Filed Aug. 20, 1974, Ser. No. 499,060**

**Int. Cl.² G01N** *1/00*; **F16K** *11/06*

**U.S. Cl. 137—625.48** **5 Claims**



1. Apparatus for charging a gasoline stream to a reactor in which the gasoline is mildly reacted with an oxygen-containing gas for monitoring the octane number of the gasoline, comprising a sampling valve including a first guide block having a guide surface, a second guide block spaced from the first guide block and having a guide surface spaced from and parallel to the guide surface of the first guide block, a slider block between the guide blocks constructed and arranged to slidably and sealingly engage the guide surfaces on the first guide block and second guide block, gasoline circulating passages through each of the guide blocks opening through the guide surfaces thereof, a carrier gas passage extending through the first guide block and opening through the guide surface thereof, a sample delivery passage through the second guide block opening at the guide surface thereof, a gasoline sampling passage through the slider block constructed and arranged to communicate with the gasoline circulating passages when the slider block is in a gasoline circulating position, a carrier gas passage through the slider block spaced from the gasoline sampling passage oriented whereby the carrier gas passage in the slider block communicates with the carrier gas passage in the first guide block and the sample delivery passage in the second guide block when the slider block is in the gasoline circulating position, means connected to the slider block for periodically moving the slider block from the gasoline circulating position to a sample delivery position placing the gasoline sampling passage in the slider block in communication with the sample delivery passage in the second guide block and the carrier gas passage in the first guide block, a chamber of large volume and cross-sectional area relative to the volume and cross-sectional area of the gasoline sampling passage adjacent the guide surface of the second guide block forming a part of the sample delivery passage in the second guide block, and wicking means in the chamber.

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**3,933,166**

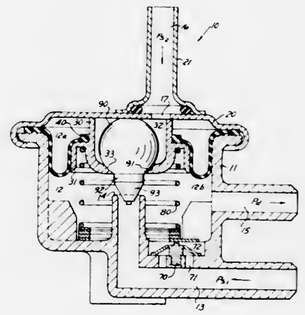
## ALTITUDE COMPENSATED VACUUM REGULATING VALVE

**Richard H. Gould; George Ludwig, both of Troy; William J. Walters, Milford, and Remy J. VanOphem, Sterling Heights, all of Mich., assignors to The Bendix Corporation, Southfield, Mich.**

**Division of Ser. No. 468,859, May 10, 1974. This application Mar. 17, 1975, Ser. No. 559,182**

**Int. Cl.² G05D** *7/00*

**U.S. Cl. 137—102** **1 Claim**



1. A vacuum regulating valve comprising:

a cup shaped housing having a cavity with one open end and an opposite closed end, said housing including:

a first conduit disposed within said cavity, said conduit having one end portion extending into said cavity through said opposite closed end of said housing, an opposite end portion protruding from said cup shaped housing, and a first passage communicating with said cavity, said one end portion of said conduit having a first valve seat, said opposite end portion adapted to receive a vacuum source signal;

a second conduit passage having one end portion protruding from said housing cavity and a second passage adapted to communicate with said housing cavity, said one end portion adapted to provide an output signal;

a third passage disposed in said opposite closed end, one end of said passage communicating with said cavity and an opposite end communicating with said first passage of said first conduit;

an annular member coaxially disposed in said cavity, said member having a central passage with one end portion having a narrowed inside diameter adapted to provide a second valve seat and an opposite end portion having an inside diameter larger than said one end inside diameter, said one end portion also having an annular groove coaxially disposed with respect to said central passage;

a circular diaphragm having an outside diameter portion and an inside diameter portion, said outside diameter portion adapted to be mounted to the open end of said housing cavity and said inside diameter portion adapted to be mounted to said annular member, whereby the cavity within said housing is separated into a first and second pressure chamber;

a cover member adapted to be mounted over the open end of said housing cavity and the outside diameter portion of the diaphragm, said cover having a passage adapted to communicate with the central passage of said annular member;

means for biasing said annular member a predetermined amount in a first direction toward said cover, said means disposed between said opposite closed end of said housing cavity and said annular groove in one end of the annular member, whereby the force generated by the

biasing means moves said annular member in said first direction against said cover member;

a fourth conduit passage coaxially disposed with said second passage through said cover member, said conduit having one end extending in a direction away from the open end of said cavity, an opposite end portion adjacent said cover and means for mounting said opposite end to said cover member;

an umbrella-shaped check valve disposed in said third passage of the cup shaped housing, said check valve adapted to permit air flow in a direction from said first passage to said cavity and to prevent air flow in a second opposite direction; and

a ball-check valve body disposed within the central passage of said annular member, said body having a first portion which seats on said second valve seat on the narrowed end portion of said annular member central passage and a second portion extending beyond said second valve seat into said first chamber in the direction of said first valve seat on said one end of said first conduit.

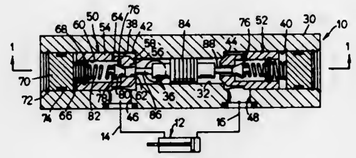
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**3,933,167**

## PILOT OPERATED CHECK VALVE

**James Otto Byers, Jr., Racine, Wis., assignor to Tomco, Inc., Racine, Wis.**

**Filed Feb. 20, 1974, Ser. No. 444,128**
**Int. Cl.² F16K *11/18***
**U.S. Cl. 137—106** **4 Claims**



1. A pilot operated check valve comprising:

a valve body having a longitudinally extending bore,

a chamber at each end of said longitudinal bore,

a pair of fluid flow passages connected to said longitudinal bore,

a fluid flow port connected to each of said chambers,

a poppet valve in each of said chambers for preventing flow of fluid from said chamber into said longitudinal bore, each poppet valve including a hollow tubular valve member having a reduced diameter section closing one end of said valve member and a spring for continuously biasing said reduced diameter section into sealing engagement with the end of said bore, the cross sectional area of the valve member between the reduced diameter section and the outside diameter of the valve member being exposed to the pressure of the fluid in the flow port,

means in said poppet valve for providing restricted fluid flow across said poppet valve,

a check valve in each of said valve members to control the flow of fluid from said valve members to said longitudinally extending bore,

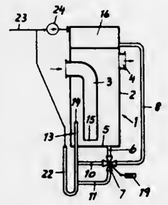
and a piston positioned in said longitudinal bore between said pair of fluid flow passages, said piston responding to fluid pressure at one end of said bore and including means for opening the check valve at the opposite end of said bore whereby the drop in pressure in the valve member on opening the check valve will allow the pressure of the fluid in the flow port to open the corresponding poppet valve against said bias.

**3,933,168**

## LIQUID CLOSURE DEVICE

**Georg Michael Meyer, Brookfield, Conn., assignor to Georg Michael Meyer, Brookfield, Conn.**

**Filed Dec. 11, 1973, Ser. No. 423,668**
**Claims priority, application Germany, Dec. 13, 1972, 2260874**
**Int. Cl.² F16L *9/00***
**U.S. Cl. 137—253** **1 Claim**



1. A liquid closure device for an inert gas comprising an upright container, a gas inlet means for conducting gas to said container, a vertical gas inlet conduit joined to said gas inlet means, said vertical gas inlet conduit being vertically disposed within said container, said gas inlet conduit having means at its lower end portion defining a gas inlet orifice, a gas outlet on said container located at a higher elevation than said gas inlet orifice, a fluid inlet and a fluid outlet for said container, an efflux outlet means on said container and having an orifice disposed above the level of said gas inlet orifice, said vertical gas inlet conduit having a longitudinal length selected such that the internal volume of said gas inlet conduit is equal to or greater than the volume of said container between the level of said gas inlet orifice and the level of said efflux orifice, whereby liquid is precluded from flowing through said vertical gas inlet conduit to said gas inlet means as a result of a higher pressure in said container relative to said gas inlet means, a fluid reservoir disposed above said container and having a capacity to fill said container above the level of said gas inlet orifice, a fluid conduit leading from said reservoir to said fluid inlet, valve means in said fluid conduit for controlling the flow of fluid from said reservoir to said container, said valve being closed during normal operating conditions of the liquid closure device such that that said container is empty of fluid and said gas flows freely from said container gas inlet to said container gas outlet, said valve being opened when it is desired to effect a seal such that upon opening of said valve, fluid will flow by gravity from said reservoir to said container to a level above the level of said gas inlet orifice to thereby effect the seal by the gravity flow of said fluid and thereby preclude flow of gas from said container to said gas inlet conduit, water inlet means for said reservoir, said efflux outlet means comprising an efflux conduit connected to said water inlet means, and a pump in said water inlet means between said container and the connection between said efflux conduit and said water inlet means whereby there is provided a closed system in which said water is recirculated.

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**3,933,169**

## JET ACTION CHEMICAL FEEDING APPARATUS

**James L. Halley, Mableton, Ga., assignor to Tesco Chemicals, Inc., Marietta, Ga.**

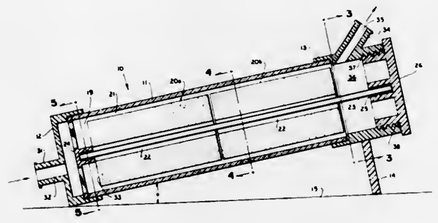
**Filed Apr. 10, 1975, Ser. No. 566,833**
**Int. Cl.² E03C *1/046*; C02B *1/36*; E04H *3/20***
**U.S. Cl. 137—268** **8 Claims**

1. Apparatus for feeding a chemical into a liquid by directing liquid against a soluble chemical composition, comprising:

body means defining a chamber for receiving a solid body of the soluble chemical composition, said chamber having a longitudinal dimension and being positioned for support on a horizontal surface with said longitudinal chamber disposed at an incline with respect to the horizontal;



liquid inlet means in said body means in liquid flow communication with the lower end of said inclined chamber; and fluid outlet means in said body means in fluid flow communication with the uppermost location within said inclined



chamber means to permit the gaseous fluid produced by dissolution of the chemical composition in said inclined chamber to exit through said fluid outlet means without being entrapped within said inclined chamber.

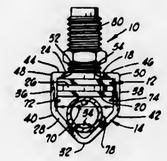
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**3,933,170**

## APPARATUS FOR SECURING A LINE TAP VALVE TO THE EXTERIOR OF A TUBING LINE

**John W. Olson, Jr., Oklahoma City, Okla., assignor to C & D Valve Manufacturing Company, Oklahoma City, Okla.**

**Filed Mar. 20, 1975, Ser. No. 560,563**
**Int. Cl.² B23B *41/08*; F16L *41/04***
**U.S. Cl. 137—318** **13 Claims**



1. Apparatus for securing an externally threaded line tap valve to the exterior of a penetrable tubing line having any one of a plurality of outside diameters, comprising:

a body member having first and second end faces and an internally threaded longitudinal passage extending therethrough communicating the first and second end faces;

a first cylindrical outer surface formed on said body member adjacent to the first end face thereof and coaxial with the passage therethrough;

a second cylindrical outer surface formed on said body member intermediate said first cylindrical outer surface and the second end face of said body member and coaxial with the passage therethrough;

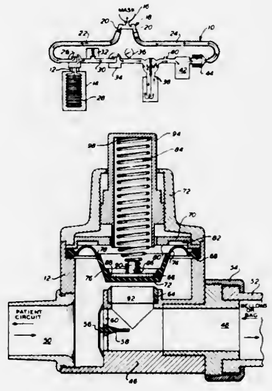
bifurcated spring clip means having opposite ends for partially encircling the exterior of a penetrable tubing line and having notch means formed on the opposite ends thereof for yieldably releasably mutually engaging said first cylindrical surface and, alternately engaging said second cylindrical surface and securing said body member to the exterior of the tubing line with the second end face adjacent to the exterior of the tubing line and, alternately, with the first end face adjacent to the exterior of the tubing line.

**3,933,171**

## ANESTHESIA BREATHING CIRCUIT WITH POSITIVE END EXPIRATORY PRESSURE VALVE

**Wayne W. Hay, Madison, Wis., assignor to Airco, Inc., Montvale, N.J.**

**Filed Apr. 9, 1974, Ser. No. 459,437**
**Int. Cl.² A61M *17/00***
**U.S. Cl. 137—493.7** **6 Claims**



1. In a patient breathing circuit having gas delivery means for forcing inhalation anesthesia gas to, and receiving exhalation gas from the patient, the improvement comprising a valve that is connected between said gas delivery means and the remainder of the breathing circuit for retaining positive residual pressure in the breathing circuit at the end of patient exhalation, said valve comprising a housing having an inlet for connection to said gas delivery means, and an outlet for connection to the remainder of the breathing circuit, said inlet and outlet being interconnected within the housing by first and second parallel gas flow paths, a check valve in said first gas flow path adapted to pass gas only in a direction from said gas delivery means into the breathing circuit during patient inhalation, and a pressure operated valve in said second gas flow path that is opened in response to delivered gas pressure during inhalation and is spring-biased to close when the pressure within the second gas flow path drops below a predetermined minimum value of positive pressure during patient exhalation.

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**3,933,172**

## PIPELINE SURGE RELIEVER WITH SANITARY BARRIER

**Donald M. Allen, Pinole, Calif., assignor to Grove Valve and Regulator Company, Oakland, Calif.**

**Filed Feb. 24, 1975, Ser. No. 552,559**
**Int. Cl.² F16K *31/126*, *31/365***
**U.S. Cl. 137—494** **10 Claims**

1. In a pressure surge relief system for a liquidtransporting pipeline including:

an accumulator for transferring the pressure of the liquid in a pipeline to a gas; and

a pilot load duct connected between said pipeline and said accumulator;

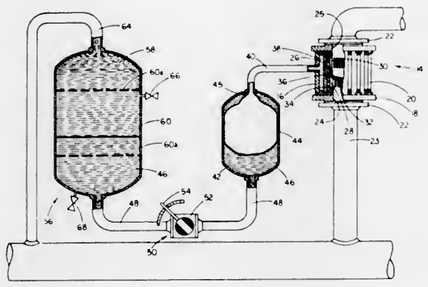
means for isolating the interior of said accumulator from the liquid in the pipeline comprising:

a barrier fluid vessel connected into said pilot load duct;

a first connection of the pilot load duct opening from a first portion of said fluid vessel to said accumulator; and

a second connection opening from another portion of said fluid vessel to said pipeline;

a relatively inert liquid occupying said accumulator, said first connection and said first portion of said vessel;



the pipeline liquid occupying said second connection and said another portion of said vessel; and

means separating said pipeline liquid and said inert liquid while equalizing pressures thereof.

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**3,933,173**

**CHECK VALVE**

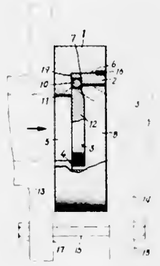
**Yoshio Kajita, Tokyo, Japan**

**Continuation of Ser. Nos. 148,156, May 28, 1971, abandoned, and Ser. No. 766,388, Oct. 10, 1968, abandoned. This application Sept. 17, 1973, Ser. No. 398,168**

**Claims priority, application Japan, Feb. 26, 1968, 43-11824**

**Int. Cl. F16k** *15/03*

**U.S. Cl. 137—527.8** **1 Claim**



1. In a check valve comprising a valve body having a stepped bore providing an inlet bore, an outlet bore of greater diameter than said inlet bore and a wall extending laterally of and between said inlet and outlet bores, providing a valve seat, a circular valve support having its periphery detachably mating with said outlet bore and an end face positioned against said valve body wall, said valve support having a bore of a greater diameter than said inlet bore, a disc valve being of a smaller diameter than and positioned in said valve support bore and being of greater diameter than said inlet bore, the improvement in which said valve support end face has a straight slot thereacross facing said valve body wall, the axis of said slot being tangential to the bore in said support, and a shaft attached tangentially at the surface of said shaft to a portion of the periphery of said disc valve and being seated in said valve support slot pivotally supporting said disc valve for flap movement to and from said wall for closing and opening said inlet bore.

**3,933,174**

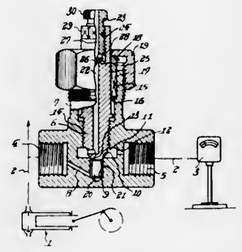
**VALVE WITH A PULSATION DAMPING DEVICE**

**Kunihiko Kanomata, Aikawa, Japan, assignor to Sanko Engineering & Construction Co., Ltd., Yokohama, Japan**

**Filed May 20, 1974, Ser. No. 471,576**

**Int. Cl.² F16K** *37/00, 31/50*

**U.S. Cl. 137—557** **1 Claim**



1. A valve with a pulsation damping device comprising a valve body (**7**) formed in T-form, said valve body (**7**) containing a first opening (**4**) coupled with a pulsating fluid, a second opening (**5**) coupled with a pressure gauge (**3**) and a truncated valve stem (**6**) opening and closing a connection between the first opening (**4**) and the second opening (**5**), a valve seat (**10**) formed in the valve body (**7**), said valve seat (**10**) being opened and closed by said truncated valve stem (**6**), a cylindrical hole (**9**) formed beneath said valve seat (**10**) in the valve body (**7**), the lower end of said cylindrical hole (**9**), being connected to the first opening (**4**), a small chamber (**11**) formed above said cylindrical hole (**9**) in the valve body (**7**), said small chamber (**11**) being connected to the second opening (**5**), a main exhaust hole (**22**) formed through said truncated valve stem (**6**), on end of said main exhaust hole (**22**) being opened in said small chamber (**11**), a valve seat (**25**) and a small chamber (**28**) both formed at another end of said main exhaust hole (**22**) in the truncated valve stem (**6**), a tapped hole (**24**) for a vent screw (**23**) formed through said truncated valve stem (**6**) above the valve seat (**25**) and the small chamber (**28**), an auxiliary exhaust hole (**27**) formed through the vent screw (**23**) screwed in the tapped hole (**24**), one end of said auxiliary exhaust hole (**27**) being opened in the air and another end thereof opened in the small chamber (**28**), and a cylinder (**20**) for damping pulsation formed in the cylindrical hole (**9**) at the lower end of said valve stem (**6**), said cylinder (**20**) being unified with said truncated valve stem (**6**) and being movable in the longitudinal direction of said cylindrical hole (**9**) so as to have the resistance thereof proportional to the distance of the movement in the longitudinal direction of said cylinder (**20**).

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**3,933,175**

**SNIFTER VALVE USEFUL IN CONTROL MEANS FOR A PISTON IN A CYLINDER**

**Joseph H. Klaeger, 610 Chauncey, Apt. No. 2, San Antonio, Tex. 78216**

**Filed Dec. 5, 1973, Ser. No. 421,844**

**Int. Cl.² F16K** *31/12*

**U.S. Cl. 137—595** **6 Claims**

1. In the controlled means for pneumatic actuated piston in a pumping cylinder the sub-combination of a snifter valve comprising:

a. an elongated cylindrical snifter cylinder projecting on an axis from a first end to the second end,

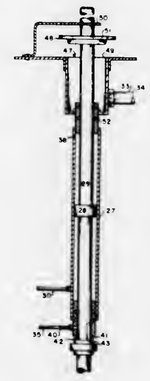
b. a snifter rod mounted for longitudinal reciprocal movement on the axis of said snifter cylinder,

c. a bleeder vent constructed in a first end of said snifter valve, said bleeder vent adapted to move alternately from an open to a closed position responsive to the movement of said snifter rod along the axis of said cylinder,



d. pneumatic pressure closing means applied internally of said snifter cylinder for normally urging said snifter rod into a position urging said bleeder vent into contact with closing means secured to said first end of said snifter cylinder,

e. a brake disc having a pumping cylinder side and a brake seat side, said brake disc slidably mounted externally of said second end of said snifter cylinder on said snifter rod,



said brake disc constructed and arranged to move from an open position not in contact with said snifter cylinder to a braking position in contact with,

f. a brake seat secured to said second end of said snifter cylinder adapted to be contacted by said brake disc thereby stopping the flow of gas from said pumping cylinder responsive to the movement of said brake disc to a braking position.

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**3,933,176**

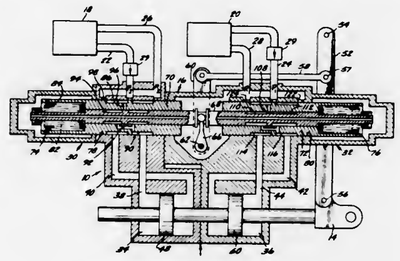
**FAIL OPERATIVE SPLIT TANDEM VALVE**

**Mildred S. Wheeler, Long Beach, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.**

**Filed July 12, 1974, Ser. No. 488,036**

**Int. Cl.² F15B** *20/00*

**U.S. Cl. 137—596** **3 Claims**



1. A fail operative valve for simultaneous valving in two separate systems including:

a valve housing having first and second portions, said first housing portion having an inlet for pressurized fluid, at least one outlet for fluid return and a pair of ports for feeding the fluid to and from actuator means, said second housing portion having an inlet for pressurized fluid, at least one outlet for fluid return and a pair of ports for feeding the fluid to and from actuator means;

a first valve slide positioned in said first housing portion adjacent said first housing portion inlet, outlet and ports, said first valve slide having first and second annular passageways which are the only annular passageways therein, said first and second passageways normally valving said hydraulic fluid between said first housing portion inlet, outlet and ports to operate the actuator means, said first valve slide also having a third passageway connected to said first passageway and a fourth passageway connected to said second passageway;

a second valve slide positioned in said second housing portion adjacent said second housing portion inlet, outlet and ports, said second valve slide having first and second annular passageways which are the only annular passageways therein, said first and second passageways normally valving said hydraulic fluid between said second housing portion inlet, outlet and ports to operate the actuator means, said second valve slide also having a third passageway connected to said first passageway and a fourth passageway connected to said second passsageway; and

bypass driver means having a connection for mechanical input commands, first preloaded resilient means connected to move said first valve slide with said bypass driver means in response to the mechanical input commands up to a predetermined force, second preloaded resilient means connected to move said second valve slide with said bypass driver means in response to the mechanical input commands up to a predetermined force, a first pair of passageways positioned to complete a bypass flow channel between said first valve slide third and fourth passageways when the predetermined force is exceeded and said bypass driver means are moved by said mechanical input with respect to said first valve slide, and a second pair of passageways positioned to complete a bypass flow channel between said second valve slide third and fourth passageways when the predetermined force is exceeded and said bypass driver means are moved by said mechanical input with respect to said second valve slide, said first and second passageways of said first and second valve slides being positioned to always be in communication with said pair of ports for feeding fluid to and from the actuator means so a jam of one of said valve slides to said valve housing cannot produce hydraulic lock of the actuator means and said first and second valve slides having concentric inner and outer cylindrical surfaces, said first and second passageways thereof being annular channels in said outer cylindrical surfaces and said bypass driving means being positioned in contact with said inner cylindrical surfaces, said bypass driver means having at least one cylindrical outer surface, said first pair of passageways of said bypass driving means being annular channels in said cylindrical outer surface thereof, said fourth passageways of said first and second valve slides being positioned to always be in communication with said pairs of passageways in said bypass driving means and said third passageways of said first and second valve slides being positioned to be in communication with said pair of passageways in said bypass driving means only when the preload of said respective preloaded resilient means is exceeded.

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**3,933,177**

**MANUALLY CONTROLLED AIR INFLATOR ADAPTOR**

**John Robert Dwyer, Jr., Excelsior, Minn., assignor to The Black and Decker Manufacturing Company, Towson, Md.**

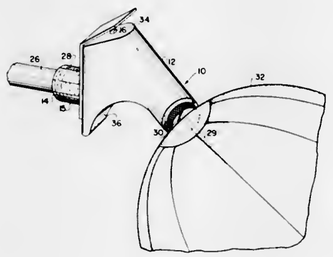
**Filed Oct. 23, 1973, Ser. No. 408,923**

**Int. Cl.² F16K** *41/02*

**U.S. Cl. 137—608** **1 Claim**

1. A manual, hand-held air inflator adaptor comprising a one-piece molded plastic body having an inlet port, a bleed port, and a discharge port; a flat external surface encompassing said bleed port; said inlet port and said discharge port being substantially equal in cross sectional area, and said

bleed port being substantially smaller than said discharge port in cross sectional area; a first passageway extending longitudinally through said body from said bleed port to said discharge port, said first passageway being tapered so as to form a smooth-walled surface increasing in cross sectional size from said bleed port to said discharge port to cause the total force exerted by compressed air within said body to be substantially larger at said discharge port than it is at said bleed port; second passageway means extending internally of said body from



said inlet port to said first passageway means to allow a normal flow of air from said inlet port into said second passageway and through said discharge port when the pressure externally of said discharge port is lower than that at said inlet port; said flexible closure means mounted externally on said body, said closure means including a planar sealing portion positioned adjacent said bleed port for pivotal movement by an operator into sealing engagement with said flat surface about said bleed port to cause the full pressure of compressed air at said inlet port to be applied to said discharge port.

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**3,933,178**

## METERING APPARATUS FOR LIQUIDS CONTAINING GRANULAR SOLIDS, IN PARTICULAR LAPPING LIQUID

**Edmund Eich; Ewald Weber; Heinz Gerner, all of Coburg, and Rudolf Merkel, Coburg-Scheuerfeld, all of Germany, assignors to Werkzeugmaschinenfabrik Adolf Waldrich Coburg, Coburg, Germany**

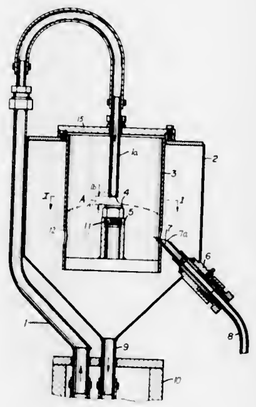
**Filed Sept. 9, 1974, Ser. No. 504,532**

**Claims priority, application Germany, Sept. 14, 1973, 2346325**

**Int. Cl.² F17D** *3/10*

**U.S. Cl. 137—608** **11 Claims**

**1.** A metering apparatus for liquids containing granular solids, in particular lapping liquid, comprising: a collecting pipe adjustable transversely of a stream of liquid issuing from a feed pipe for the metering of the liquid, said collecting pipe having its collecting opening disposed transversely of the stream of liquid and immersed therein, converting means for converting said stream of liquid issuing from said feed pipe over a wide area against a substantially vertical wall to run down thereon in the form of a thin film of uniform thickness, said collecting pipe being arranged essentially on a side of the wall which is remote from said liquid film, said wall having a through orifice therein in its lower zone for receiving a free end of said collecting pipe therein, said free end extending upward of said collecting pipe, said collecting opening having



a cross-section which widens with progressive movement of said collecting pipe into said through orifice.

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**3,933,179**

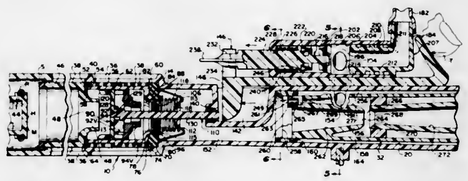
## WATER AND CONCENTRATE SUPPLY VALVES FOR PROPORTIONING MIXER-DISPENSER

**Valentine Hechler, IV, 26 Meadow View, Northfield, Ill. 60093**

**Filed Feb. 27, 1974, Ser. No. 443,831**

**Int. Cl.² F16K** *19/00*

**U.S. Cl. 137—635** **10 Claims**



**1.** In a fluid mixture dispensing device having a housing defining a mixing compartment;

manually controlled valve means for conducing solvent to said compartment;

valve means for conducting solute to said compartment;

solvent flow control valve means between said compartment manually controlled valve means biased to close at a comparatively low positive gauge pressure upon the solvent;

negative gauge pressure responsive means normally closing said solute valve means under a negative gauge pressure; and

manual means actuating the solvent valve means independently and the solute valve means selectively simultaneously therewith.



**3,933,180**

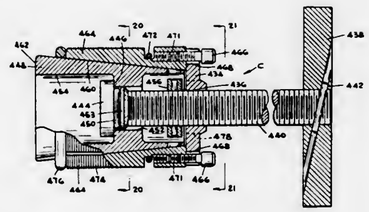
## METHODS AND APPARATUS FOR MAKING FIBER REINFORCED PLASTIC PIPE

**J. Warne Carter, Wichita Falls, Tex., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.**

**Division of Ser. No. 243,991, April 14, 1972, which is a division of Ser. No. 824,153, May 13, 1969, Pat. No. 3,700,519, which is a continuation-in-part of Ser. No. 577,035, Sept. 2, 1966, Pat. No. 3,507,412, which is a continuation-in-part of Ser. No. 387,372, Aug. 4, 1964, abandoned. This application Oct. 23, 1973, Ser. No. 408,339**

**Int. Cl.² F16L** *55/12*; **B65D** *39/12*

**U.S. Cl. 138—89** **2 Claims**



**1.** A device for sealing the end of a pipe comprising a bearing plate having a central, internally threaded opening, a solid threaded shaft extending through said opening to clamp and unclamp the device from a pipe, manually operable means for rotating the shaft, the forward end of the shaft having a disk fixed thereto of a larger diameter than the diameter of the shaft, an O-ring positioned adjacent the rear side of the disk, a hollow plug having a central bore, said O-ring being cooperable with the wall of said bore, said plug having a counterbore to receive said disk, the intersection of the bore and counterbore providing a shoulder cooperable with said disk in the clamped position of the device, whereby the O-ring is in sealing engagement with the bore's wall, the outer side of said plug being convergingly tapered toward said bearing plate to provide a ramp, a plurality of segments providing a split, expandable sleeve overlying said plug, said segments being matingly tapered on their inner sides for cooperation with said ramp, the segments being provided on their outer sides with means for gripping the interior of a pipe, an elastic retaining ring to resiliently maintain said segments against the underlying plug, and means connecting the segments to said bearing plate in a manner permitting the segments to move in a radial direction.

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**3,933,181**

## LONG DISTANCE HEATING CONDUIT IN PARTICULAR FOR HOT WATER LINES

**Erland Nilsson, Torshalla, and Lennart Lundbohm, Nacka, both of Sweden, assignors to Nyby Bruk AB, Sweden**

**Filed Apr. 19, 1973, Ser. No. 352,420**

**Claims priority, application Germany, Apr. 20, 1972, 2219228**

**Int. Cl.² F16L** *58/00*

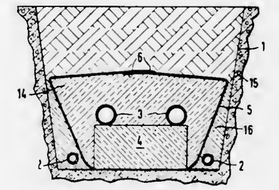
**U.S. Cl. 138—105** **32 Claims**

**24.** An underground hot fluid conveying tube arrangement comprising:

at least one tube means for conveying hot fluid,

at least one cover means surrounding said tube means for protecting said tube means from corrosive media,

wherein at least a portion of said at least one cover means includes holes of sufficient size to be permeable to gases and vapors of said corrosive media to permit passage of said gases and vapors from inside said cover means to the outside thereof, but impermeable to liquid states of said corrosive media to prevent passage of the liquid corrosive media from outside said cover means to the inside thereof,



and insulating means between said tube means and said cover means for insulating said tube means.

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**3,933,182**

## SYSTEM FOR SEALING AND HEAT-INSULATING A DUCT CONTAINING A HOT FLUID UNDER PRESSURE

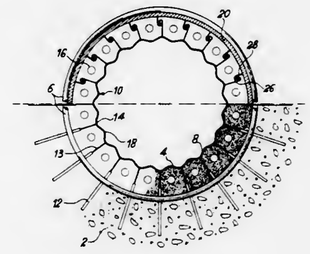
**Didier Costes, Paris, France, assignor to Commissariat a l'Energie Atomique, Paris, France**

**Filed Feb. 5, 1974, Ser. No. 440,136**

**Claims priority, application France, Feb. 6, 1973, 73.04169**

**Int. Cl. F16l** *5/02*

**U.S. Cl. 138—149** **7 Claims**



**1.** A system for sealing and heat-insulating a duct which contains a hot fluid under pressure and is limited by a cold structure surrounding the duct, wherein said system comprises:

an internal duct lining of rigid heat-insulating material,

a cylindrical sheet-metal element of corrugated transverse section having wave troughs within and completely covering said heat-insulating lining, said lining being provided with the same corrugations as said sheet-metal element,

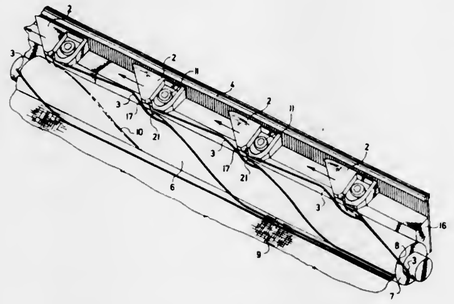
means for anchoring said sheet-metal element in the cold structure and disposed along radii of said duct, each of the means aforesaid being secured at one end thereof to one wave trough of said sheet-metal element and at the other end thereof to said cold structure.

**3,933,183**

## METHOD OF AND WEFT INSERTER FOR ELIMINATING A CHAIN FORMATION OF WEFTS NOT TRANSFERRED INTO THE BEAT-UP POSITION IN TRAVELLING-WAVE SHEDDING LOOMS

**Vladimir Mateju; Zdenek Zabrodsky; Vitezslav Vasek, and Frantisek Jekl, all of Usti nad Orlici, Czechoslovakia, assignors to Vyzkumny ustav bavlnarsky, Usti nad Orlici, Czechoslovakia**

**Filed Oct. 21, 1974, Ser. No. 516,733**
**Claims priority, application Czechoslovakia, Oct. 24, 1973, 7322-73**
**Int. Cl.² D03D *47/24*; D03J *5/06***
**U.S. Cl. 139—12** **8 Claims**



**1.** Method of eliminating a chain formation of wefts not transferred into the beat-up position in a travelling-wave shedding loom with weft inserters and a rotary seed comprising discs with cutouts for engaging weft and displacing it to the fabric fell, the method comprising introducing an interwoven but not transferred weft into the cutouts of the discs of the rotary reed which correspond to the next weft inserter, in lieu of the weft from said next weft inserter.

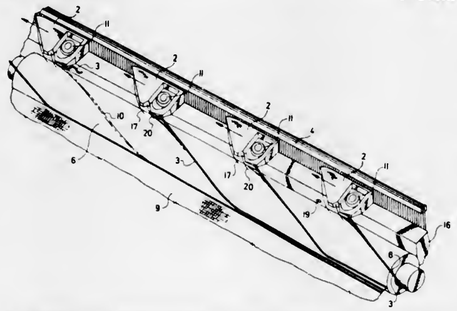
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**3,933,184**

## METHOD OF AND WEFT INSERTER FOR ELIMINATING A CHAIN FORMATION OF WEFTS NOT TRANSFERRED INTO THE BEAT-UP POSITION IN TRAVELLING-WAVE SHEDDING LOOMS

**Vladimir Matěju; Zdeněk Zábrodský; Vitezslav Vašek, and Josef Bleha, all of Usti nad Orlici, Czechoslovakia, assignors to Vyzkumny ustav bavlnarsky, Usti nad Orlici, Czechoslovakia**

**Filed Oct. 22, 1974, Ser. No. 516,907**
**Claims priority, application Czechoslovakia, Oct. 24, 1973, 7324-73**
**Int. Cl.² D03D *47/24*; D03J *5/06***
**U.S. Cl. 139—12** **5 Claims**



**1.** Method of eliminating a chain formation of wefts not transferred into its beat-up position due to the presence of a foreign body interwoven in the weaving shed in a travelling-wave shedding loom provided with a plurality of weft inserting means travelling one after the other into said weaving shed, the shed being closed behind each inserting means and after having been exchanged, being open in front of each weft inserting means, the loom being provided with a rotary reed consisting of discs having cutouts for engaging weft inserted by said weft inserting means into the weaving shed and for displacing it to the fabric fell into the beat-up position, said method comprising severing the weft laid upstream of the interwoven foreign body beyond the reach of the discs of said rotary reed.

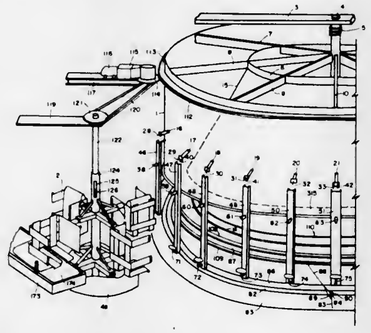
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**3,933,185**

## SPILL COLLECTION DEVICE

**Harold Seals, South Pittsburg, Tenn., assignor to Larry Harold Kline, Charleston, S.C.**

**Filed July 11, 1974, Ser. No. 487,531**
**Int. Cl.² B65B *3/04*, *1/04***
**U.S. Cl. 141—88** **25 Claims**



**1.** A split collection device, for a revolving machine which bags material, comprising:

a. material landing means located below the position in said revolving machine where said material is bagged, whereby excess material will fall onto said material landing means;

b. material collection means mechanically operative in accordance with said revolving machine to collect said excess material which falls onto said material landing means;

c. material return means operative to return said excess material which falls onto said material landing means to said revolving machine.

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**3,933,186**

## PROTECTIVE HOUSING FOR A LIQUID SAMPLE CONTAINER

**Norman E. Scheffler, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.**

**Filed Dec. 3, 1973, Ser. No. 421,210**
**Int. Cl.² B65H *3/18*; F16P *1/00***
**U.S. Cl. 141—97** **1 Claim**

**1.** A protective housing unit for a liquid sample container, which comprises the combination of:

an outer housing section defined by a cylindrical section which has a single side wall, an open top, a bottom which connects into a drain line, and an opening in the side wall;

a support plate for supporting a liquid sample container, the plate being positioned within the outer housing section near the bottom of the section;

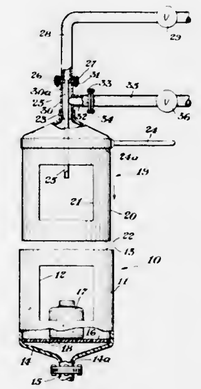
an inner housing section defined by a cylindrical section which has a single side wall, an open bottom, an open top, and an opening in the side wall, the inner section being positioned within the outer housing section, and the inner section being rotatable within the outer housing section;



a tee fitting which has an upper end in communication with a liquid inlet line, which has a lower end in communication with the open top of the inner housing section, and which has a branch end in communication with a vent line;

a fill pipe which is positioned lengthwise within the tee fitting, such that an annular space is defined between the fill pipe and the tee fitting, the fill pipe having an open upper end in communication with the liquid inlet line and an open lower end which extends into the sample container, the annular space defining a passageway for diverting vapors from the sample container into the vent line;

the inner housing section being rotatable to a first position which will seal the opening in the outer housing section and enclose the sample container, and to a second position in which the opening of the inner housing section will be in alignment with the opening of the outer housing section, to permit the sample container to be inserted and removed from the said housing unit.



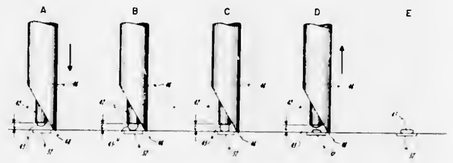
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**3,933,187**

## CONTROLLED EPOXY DISPENSING TECHNIQUE AS RELATED TO TRANSISTOR CHIP BONDING

**Edward J. Marlinski, Rochester, N.Y., assignor to Stromberg-Carlson Corporation, Rochester, N.Y.**

**Filed Mar. 5, 1974, Ser. No. 448,330**
**Int. Cl.² B67D *1/00*; G01F *11/00***
**U.S. Cl. 141—392** **3 Claims**




**1.** In combination with an epoxy bonding machine of the type including a tubular dispenser movable in a substantially vertical direction and having at one end thereof a pressure activated tubular dispensing tip for dispensing upon a substantially horizontal surface conductive epoxy in the substantially vertical direction generally along the longitudinal axis of the dispenser, an improvement comprising:

generally annular spacing means attached to the dispenser, movable in the substantially vertical direction, having an inner surface spaced a substantially constant distance laterally from and extending generally parallel to the outer surface of the dispenser, having a longitudinal axis which is substantially coincident with the longitudinal axis of the dispenser and including a generally annular spacing means end surface which is substantially parallel to the end of the dispensing tip and which extends a predetermined gap distance substantially in the vertical direction beyond the end of the dispenser such that during dispensing said predetermined gap exists between said dispensing tip and said horizontal surface.

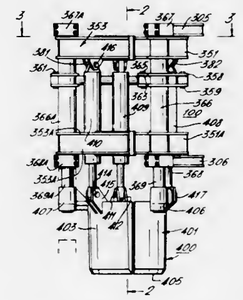
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**3,933,188**

## ROOT SHEAR FELLER

**Joseph J. R. Boivin, Montreal, Canada, assignor to Logging Development Corporation, Montreal, Canada**

**Filed July 26, 1974, Ser. No. 491,993**
**Claims priority, application Canada, Aug. 2, 1973, 178004**
**Int. Cl.² A01G *23/08***
**U.S. Cl. 144—34 R** **19 Claims**



**1.** A device for cutting appendages projecting from the stem of a tree such as roots or the like comprising in combination:

a. a frame;

b. a grapple having arms movably mounted on said frame for positively gripping the stem of a tree; and

c. a cutting device movably mounted on said grapple in spaced relation relative thereto for movement in a direction toward and away therefrom longitudinally along the stem of a tree grasped by said grapple, said cutting device having a cutting member connected to an arm of the grapple movably mounted on the frame for movement in unison therewith toward and away from the stem of the tree during grasping and releasing of the same by said grapple, said cutting member having a cutting edge facing longitudinally of the stem of the tree grasped by the grapple for severing appendages projecting outwardly from the stem of the tree.

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**3,933,189**

## NOISE REDUCING PLANER CUTTER HEAD

**Charles L. Boles, and Richard J. Flanigan, both of McMinnville, Tenn., assignors to Powermatic/Houdaille, Inc., McMinnville, Tenn.**

**Filed Sept. 9, 1974, Ser. No. 504,564**
**Int. Cl.² B27C *1/14***
**U.S. Cl. 144—117 R** **8 Claims**

**1.** A planer cutterhead comprising a cutterhead member having an axially elongated cylindrical portion, the cylindrical portion provided with a plurality of circumferentially spaced blade grooves extending into the cutterhead from the periphery thereof, the grooves extending continuously from adjacent one axial end to adjacent the other axial end, and having a circumferential dimension to receive a cutting blade, a plurality of cutting blades received in each groove in axially spaced relation to one another, the cutting blades in circumferentially adjacent grooves being axially staggered with respect to the

blades in adjacent grooves, and means securing the blades in the grooves.

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3,933,190

## METHOD FOR FABRICATING SHELL MOLDS FOR THE PRODUCTION OF SUPERALLOY CASTINGS

Michael H. Fassler, Portland, and James S. Perron, Chester, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 16, 1974, Ser. No. 533,374
Int. Cl.² B22C 9/04, 3/00
U.S. Cl. 164—26 6 Claims





1. A method for the fabrication of shell molds suited for use in the production of directionally solidified components made from nickel and cobalt base alloys, comprising the steps of

A. providing a pattern which duplicates the size and shape of the desired final produet, said pattern being made of wax or similar material;

B. providing a slurry containing

from 15 to 25 parts of an aqueous solution containing about 50% aluminum polyoxychloride, from 6 to 10 parts water, from 8 to 14 parts of a binding agent such as latex, from 25 to 35 parts of −325 mesh alumina, from 7 to 12 parts of −100 mesh alumina, from 10 to 20 parts of −38/+100 mesh alumina, and from 0.5 to 1.5 parts of a pH control agent such as a 2% aqueous solution of HCl;

C. dipping the pattern into the slurry so as to coat the pattern with the slurry;

D. drying the coated pattern;

E. dipping the coated pattern into the slurry and then applying dry −38/+100 mesh alumina;

F. drying the coated pattern;

G. dipping the coated pattern into ethyl alcohol, then into the slurry, and then applying dry −28/+48 mesh alumina;

H. drying the coated pattern;

I. repeating steps G and H a plurality of times;

J. removing the wax by heating the coated pattern to a temperature in excess of the melting temperature of the pattern material;

K. firing the mold at an elevated temperature to remove all pattern residue and consolidate the shell mold;

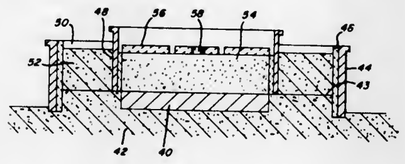
whereby the resultant shell mold is composed of substantially pure alumina and is resistant to attack by molten nickel and cobalt alloys during exposures of up to 12 hours.

3,933,191

## METHOD FOR CONTAINING THE MOLTEN REACTION PRODUCTS OF A REACTIVE CLADDING PROCESS

Richard C. Adams, Pitcairn Borough, Allegheny County; Robert H. Kachik, Washington Township, Westmoreland County; Arthur J. Pignocco, Franklin Township, Westmoreland County, and Waldo Rall, Fox Chapel Borough, Allegheny County, all of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Division of Ser. No. 332,869, Feb. 15, 1973, Pat. No. 3,856,076. This application July 2, 1974, Ser. No. 485,193
Int. Cl.² B23K 23/00
U.S. Cl. 164—54 3 Claims




1. A method for producing an exothermic reduction-deposited metal clad coating on a planar surface of metal substrate, comprising:

a. supporting the substrate on a bed of a first particulate insulating refractory material extending around the substrate to the plane of the substrate surface to be clad;

b. forming a metal deposition zone defined by a solid refractory wall enclosing the substrate at the edges thereof and extending to the aforesaid surface plane;

c. surrounding the metal deposition zone with a second particulate insulating refractory material extending at least to said surface plane and providing a sealing medium flowable into any irregularities between said substrate and said solid wall and containing fluid cladding reaction products escaping therefrom during cladding, and

d. igniting a particulate exothermic cladding material on the substrate surface to be clad, thereby forming fluid cladding reaction products and cladding said metal substrate.

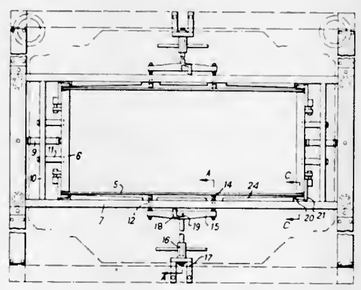
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3,933,192

## SEMI-CONTINUOUS CASTING METHOD FOR FLAT INGOTS

William Simon Rodenchuk, Montreal, and Anthony Garth Eccles, Oakville, both of Canada, assignors to Alcan Research and Development Limited, Montreal, Canada

Filed Apr. 30, 1974, Ser. No. 465,552
Claims priority, application United Kingdom, Apr. 30, 1973, 20553/73
Int. Cl.² B22D 11/16
U.S. Cl. 164—89 3 Claims



1. Procedure for direct chill semi-continuously casting a substantially rectangular-section metal ingot including the steps of



a. supplying molten metal to the inlet end of a mould having an open outlet end and a substantially rectangular passage therethrough and maintaining a head of molten metal in said mould during said casting operation,

b. cooling the mould for solidifying the peripheral portion of the metal therein,

c. advancing the ingot through the mould at a relatively low initial speed and then increasing the rate of advance of the ingot through the mould,

d. applying coolant directly to the surface of the ingot emerging from said mould,

wherein the improvement comprises increasing the gap at least between the mid-points of the opposed longer sides of the rectangular mould without substantial alteration of the gap between said sides at the ends thereof when the rate of advance of the ingot through the mould is increased above the relatively low initial speed whereby the sides of the solidified ingot are controlled to an acceptable condition of flatness throughout their length.

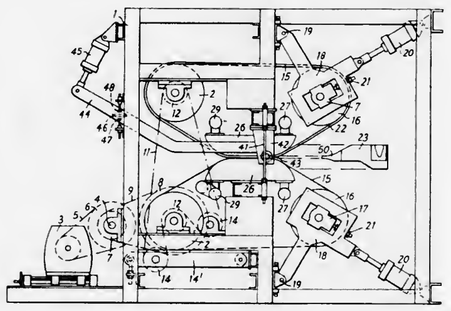
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3,933,193

## APPARATUS FOR CONTINUOUS CASTING OF METAL STRIP BETWEEN MOVING BELTS

William Albert Baker, Mexico, N.Y.; Eric Arthur Wootton; Sidney Reginald King, both of Banbury, England; Donald Louis William Collins, Daventry, England, and George Edward Macey, Banbury, England, assignors to Alcan Research and Development Limited, Montreal, Canada

Continuation-in-part of Ser. No. 426,046, Dec. 19, 1973, abandoned, which is a continuation of Ser. No. 225,979, Feb. 14, 1972, abandoned. This application June 27, 1974, Ser. No. 483,836
Claims priority, application United Kingdom, Feb. 16, 1971, 4780/71; Feb. 3, 1972, 5187/72
Int. Cl.² B22D 11/06
U.S. Cl. 164—146 25 Claims



1. An apparatus for the continuous casting of metal in strip form comprising a pair of movable heat conducting metal belts, defining therebetween a mould space, means for applying coolant to the reverse faces of said belts adjacent said mould space, said apparatus including at opposite faces of said mould space a plurality of belt supports at closely spaced positions lying in a surface defining a path for the adjacent belt, and means effective independently of head of metal in the mould space for applying to each of said belts during transit through said mould space an outwardly directed force in a direction perpendicular to the path of that part of the belt to hold the same in a closely defined path in contact with said belt supports, including means for applying a subatmospheric pressure to the rear surface of at least one of said belts during its transit through said mould space, said apparatus further comprising at said casting zone a system for the application of coolant and differential pressure to the reverse face of at least one of said belts, said system comprising a rigid casing, a belt contacting surface on the outside of said casing, an opening in said casing lying within and surrounded by said surface, an inlet plenum chamber separated from said opening by a first partition, a water inlet passage to said plenum chamber, a plurality of closely spaced jet orifices formed in said first partition, the axes of said jet orifices being at a large angle to the belt in contact with said belt contacting surface, an outlet plenum chamber separated from the inlet plenum chamber by a second partition, closely arranged belt support members being arranged in said opening and supported by said first partition, said support members being level with the surrounding belt contacting surface of the casing, recessed water passages lying between said support members, the said jet orifices opening into said water passages for directing individual closely spaced jets of water onto the reverse surface of the belt in the casting zone, drain passages leading from said water passages to said outlet plenum chamber whereby the application of suction to the outlet plenum chamber draws water into said inlet plenum chamber and directs closely spaced individual water jets onto the reverse surface of the belt and simultaneously creates reduced pressure conditions in said water passages between said belt support members to draw the belt against said support members to define the path of the belt through the casting zone.

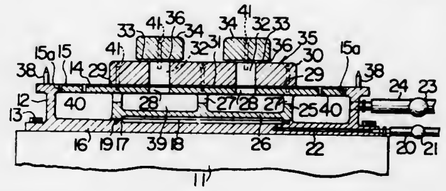
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3,933,194

## PATTERN PLATE DEVICE FOR VACUUM SEALED MOLDING

Itsuo Hijikata, Nagoya; Hideto Terada, and Kazuo Nagasaka, both of Toyokawa, all of Japan, assignors to Sintokogio, Ltd., Aichi, Japan

Filed July 26, 1974, Ser. No. 492,333
Claims priority, application Japan, Apr. 5, 1974, 49-39298
Int. Cl.² B22C 15/22
U.S. Cl. 164—160 8 Claims

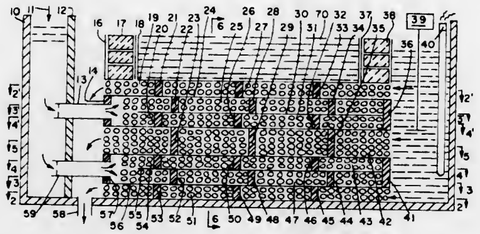


1. A pattern plate device for forming vacuum sealed molds in which a flexible film is sucked to the surfaces of said pattern plate device and placed in tight contact therewith comprising a frame body having a bottom plate and an encircling side wall to form an opening above the bottom plate, a pattern plate adapted to be detachably attached to said frame body, to cover said opening and to define a hollow chamber inside said encircling side wall, said pattern plate being provided with first communicating means along the periphery of said pattern plate for communicating the upper surface of the pattern plate with said hollow chamber and at least one through hole for communicating the upper surface of the pattern plate with said hollow chamber, a pattern provided on the upper surface of said pattern plate, and pressure reducing means disposed in said frame body and adapted to render a reduced pressure to said hollow chamber for producing a sucking action in said first communicating means, so that said flexible film is sucked and placed in tight contact with the upper surface of the pattern plate along the periphery thereof, said pattern including second communicating means, forming spaces between the lower surface of said pattern and the upper surface of said pattern plate, said second communicating means adapted to communicate with at least one of said through holes and to form open ends at positions along the peripheral edge of the lower surface of said pattern, so that said flexible film is adapted to be sucked and placed in tight contact with the peripheral edge of the lower surface of said pattern by said reduced pressure.

### 3,933,195
### LIQUID-LIQUID HEAT EXCHANGER MADE OF PLASTIC SHEETS IMBEDDED IN MASS OF PEBBLES

John C. St. Clair, Box 216, R.R. 5, London, Ohio 43140

Filed Mar. 13, 1972, Ser. No. 234,136
Int. Cl.² F28F 3/00, 21/06
U.S. Cl. 165—1 27 Claims

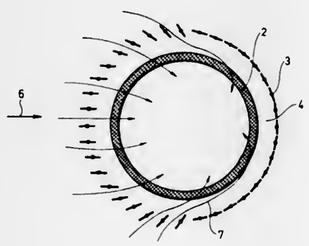


1. A method for indirectly heating a cold liquid with a hot liquid which comprises passing the cold liquid on one side of a sheet of plastic, said cold liquid touching the sheet, passing the hot liquid on the other side of the sheet, said hot liquid touching the sheet at a spot, said spot being on the opposite side of the sheet from the spot where it was mentioned as being touched by the cold liquid, said plastic sheet being imbedded in a mass of pebbles and being held in place by the mass of pebbles, the direction of flow of the cold liquid and the direction of flow of the hot liquid, when taken over the distance of five times the maximum dimension of the heaviest pebble at the spots mentioned, being at an angle to each other, the directions being measured at the spots mentioned.

### 3,933,196
### MOVABLE OPENINGS SHUTTING UP ELEMENTS FOR THE REDUCTION OF WIND ACTIVITY AT COOLING EQUIPMENTS

Laszlo Heller; Laszlo Forgo; Gyorgy Bergmann, and Gyorgy Palfalvi, all of Budapest, Hungary, assignors to Transelektro Magyar Villamossagi, Budapest, Hungary

Filed Aug. 20, 1973, Ser. No. 389,825
Claims priority, application Hungary, Aug. 29, 1972, HE 616
Int. Cl.² F28F 13/06, 27/02
U.S. Cl. 165—1 4 Claims

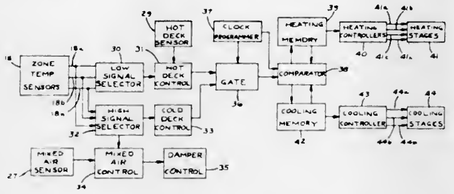


1. A method of heat transfer in cooling equipment including a heat exchanger, a chimney for drawing cooling air through said heat exchanger and selectively movable openings closing elements surrounding said heat exchanger for controlling air flow through said heat exchanger and up said chimney, an improved method comprising selectively setting the positions of said elements in response to existing conditions of wind direction, strength and cooling equipment operating conditions to define a damming area of preselected extent between said heat exchanger and said elements whereby to control said flow of cooling air.

### 3,933,197
### CONTROL OF HEATING AND COOLING AVAILABLE FROM CENTRAL SOURCES TO A MULTI-ZONE TEMPERATURE CONTROLLED SPACE

Darrel E. Zimmer, North Park, and Paul H. Brace, Rockford, both of Ill., assignors to Barber-Colman Company, Rockford, Ill.

Filed May 16, 1974, Ser. No. 470,567
Int. Cl.² F25B 13/00
U.S. Cl. 165—2 8 Claims

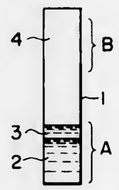


1. A method for automatically controlling the amounts of heating and cooling simultaneously available from a central location to heat and cool a plurality of temperature controlled zones, said method comprising the steps of determining separately the representative heating and cooling demands of said zones, comparing said heating and cooling demands alternately with respective reference values provided by a single means, controlling the amount of heat available as a function of the result of said heating demand comparison, and controlling the amount of cooling available as a function of the result of said cooling demand comparison.

### 3,933,198
### HEAT TRANSFER DEVICE

Toshitsugu Hara; Motokazu Uchida, both of Tokyo; Yasushige Kashiwabara, Musashino, and Michio Yanadori, Hachioji, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Mar. 14, 1974, Ser. No. 451,286
Claims priority, application Japan, Mar. 16, 1973, 48-30116; Apr. 25, 1973, 48-46170; May 30, 1973, 48-59770; June 8, 1973, 48-63892
Int. Cl. F28d 15/00
U.S. Cl. 165—32 11 Claims



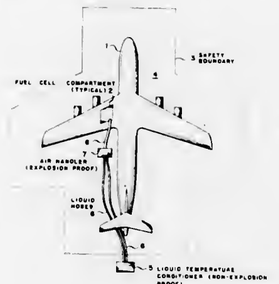

1. In a heat transfer device, the improvements comprising; a vessel having a heating section and a cooling section; a thermal transfer medium for transferring heat from said heating section to said cooling section; and a liquid body having a specific gravity smaller than said thermal transfer medium and being low in vapor pressure at a temperature corresponding to the boiling point of said thermal transfer medium, said liquid being not dissolvable in said thermal transfer medium; said thermal transfer medium and said liquid being charged in said vessel under an adequate pressure which is determined in accordance with an operating temperature of the device and a saturated vapor pressure of said thermal transfer medium, thereby forming two layers therein, a level of said liquid forming an upper layer of said two layers is maintained without being salient into said cooling section.



### 3,933,199
### METHOD AND APPARATUS FOR SUPPLYING A TEMPERATURE CONDITIONED AIRFLOW TO AN OPEN COMPARTMENT IN AN EXPLOSION SUSTAINING AMBIENT SURROUNDING

Roy L. Kilgore, Marietta, Ga., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Division of Ser. No. 223,282, Feb. 3, 1972, Pat. No. 3,848,662.
This application June 21, 1974, Ser. No. 481,485
Int. Cl.² B60H 3/00
U.S. Cl. 165—42 5 Claims




1. Portable apparatus for supplying temperature conditioned, ambient air to the interior of a compartment open to the ambient and containing explosion sustaining vapors at a compartment temperature in the range of from approximate the ambient temperature up to approximately 50°F. above the ambient temperature, said open compartment further producing an explosion sustaining zone ambient to the compartment, said apparatus comprising in combination:

a liquid temperature conditioning means located exteriorly of the explosion sustaining zone;

an explosion proof heat exchange means located remote from the liquid temperature conditioning means and within the explosion sustaining zone, including an air-liquid heat exchange coil;

a liquid supply and return means interconnecting said liquid temperature conditioning means and said heat exchange means and completing a closed, liquid circulating circuit;

means circulating liquid within said circuit whereby temperature conditioned liquid flows from said liquid temperature conditioning means to said heat exchange means for passage through said heat exchange coil and back to said liquid temperature conditioning means;

explosion proof blower means associated with said heat exchange means to supply explosion sustaining zone which is air ambient to said heat exchange means into contact with said heat exchange coil containing temperature conditioned liquid; and

at least one flexible, air flow duct interconnecting said heat exchange means and the compartment interior whereby temperature conditioned ambient air from the explosion sustaining zone is supplied to the compartment.

### 3,933,200
### TEMPERATURE CONDITIONING MEANS

Donald M. Cunningham, Pittsburgh, Pa., assignor to Emerson Electric Co., St. Louis, Mo.

Filed June 21, 1974, Ser. No. 481,895
Int. Cl.² F28F 1/16, 1/22, 1/26, 1/32
U.S. Cl. 165—64 7 Claims

1. A thermal transfer unit for extruder barrels and other elongated tubular members, comprising:

a jacket adapted to be clamped around the barrel, said jacket being formed of more than two elongated metal shoes adapted to be disposed lengthwise of the barrel and in side-to-side relation thereabout,

at least certain shoes having temperature conditioning means and each having an inner transverse arcuately-shaped surface which is substantially complementary to the outer transverse surface of a selected barrel and adapted to lie in close contact therewith throughout the major part of the length of a respective shoe,

a longitudinally extending groove in each shoe extending inwardly of the outer transverse surface intermediate the shoe sides, said groove providing for transverse flexing of the shoe,

clamp means between at least one pair of adjacent shoes and having portions respectively seating within the longitudinally extending grooves in the same, said clamp means being constructed to draw together adjoining sides of said pair of shoes,

and means at adjoining sides of adjacent shoes, except said adjoining sides of said pair of shoes, for interconnecting the same in band-forming relation about the barrel, said clamp means providing a tensioning force to draw the arcuate transverse inner surfaces of all shoes against the barrel peripheral surface.





7. A thermal transfer unit for extruder barrels and other elongated tubular members, comprising:

a jacket adapted to be clamped around the barrel, said jacket being formed of more than two elongated metal shoes adapted to be disposed lengthwise of the barrel and in side-by-side relation thereabout,

at least certain shoes having temperature conditioning means and each having an inner transverse arcuately-shaped surface which is substantially complementary to the outer transverse surface of a selected barrel and adapted to lie in close contact therewith throughout the major part of the length of a respective shoe,

each of the sides of each shoe being formed with a longitudinally extending ledge defining a longitudinally extending groove with the respective side of the shoe, the ledge and groove on one shoe side being parallel to but inverted with respect to the ledge and groove on the opposite shoe side, the ledge and groove on one shoe side interlocking with an inverted ledge and groove at the adjoining side of

an adjacent shoe to connect the same.

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**3,933,201**

## METHOD USING OVERBASED BRANCHED-CHAIN ALKYLAROMATIC SULFONATES AS WATERFLOOD ADDITIVES

**Oliver C. Kerfoot; Charles R. Clark, both of Ponca City, Okla., and Carl D. Kennedy, San Diego, Calif., assignors to Continental Oil Company, Ponca City, Okla.**

**Division of Ser. No. 350,552, April 30, 1973, abandoned. This application Oct. 11, 1974, Ser. No. 513,919**

**Int. Cl.² E21B** *43/22*

**U.S. Cl. 166—275** **4 Claims**

**1.** A process for recovering hydrocarbons from a petroliferous formation, said process comprising:

a. injecting into said formation an effective amount of an aqueous mixture containing from about 0.5 to about 25 weight percent of an overbased waterflood additive; and

b. recovering displaced hydrocarbons from said formation, said waterflood additive consisting essentially of:

c. a base component selected from the group consisting of NaOH, KOH, LiOH, $Na_2CO_3$, $NaHCO_3$, $NH_4OH$, $K_2CO_3$ and mixtures thereof;

d. a branched-chain alkylaromatic alkylate sulfonate, prepared by

1. alkylating an aromatic hydrocarbon, said aromatic hydrocarbon being represented by the formula

$$Ar-(R)_n$$

wherein Ar is benzene or a naphthalene ring having a valence of $n$, wherein R is methyl or ethyl and wherein $n$ is 0, 1, or 2, with a propylene tetramer dimer product containing from about 20 to about 30 carbon atoms per molecule, said aromatic hydrocarbon being employed in an amount equal to from about 1 to about 25 moles of said aromatic hydrocarbon per mole of said propylene tetramer dimer product to produce a branched-chain alkylaromatic alkylate;

2. separating from said alkylate a first portion having a molecular weight from about 200 to about 275 and a second portion having a molecular weight from about 300 to about 475;

3. sulfonating said alkylate to produce a sulfonic acid derived from a mixture containing from about 0.5 to about 2.0 parts by weight of said first portion per part of said second portion and from about 0.2 to about 1.0 parts by weight of a high molecular weight oil-soluble sulfonate precursor per part of said second portion; and,

4. neutralizing said acid with said base component, said waterflood additive being overbased such that the ratio "weight of excess base component/weight of sulfonate" is about 0.03 to about 3.0.

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**3,933,202**

## APPARATUS FOR SETTING AND LOCKING PACKING ASSEMBLIES IN WELLHEADS

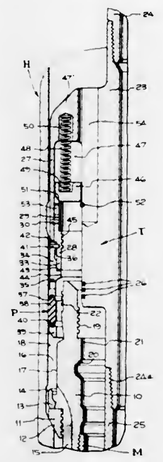
**Arthur G. Ahlstone, Ventura, Calif., assignor to Vetco Offshore Industries, Inc., Ventura, Calif.**

**Filed Oct. 21, 1974, Ser. No. 516,173**

**Int. Cl.² E21B** *23/06, 33/035, 33/128*

**U.S. Cl. 166—182** **20 Claims**

**11.** Apparatus for forming a seal in an annulus between an underwater wellhead housing and a casing hanger installed therein comprising: a running tool having a body connectable to a running pipe string to be lowered thereby into the housing, said body having an actuator portion, packing means actuatable to form a seal between the housing and casing hanger, packing locking means for locking said packing in sealing condition, first shearable means connecting said packing locking means to said actuator portion, second shearable means connecting said packing means to said locking means, said actuator portion being engaged with said packing means to shear said shearable means upon movement of said body



when said locking means initially engages said casing hanger to prevent movement of said locking means with said body.

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**3,933,203**

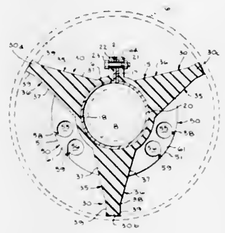
## CENTRALIZER FOR PRODUCTION STRING INCLUDING SUPPORT MEANS FOR CONTROL LINES

**Orde R. Evans, P.O. Box 51303, O.C.S., Lafayette, La. 70501**

**Filed Mar. 27, 1975, Ser. No. 562,590**

**Int. Cl.² E21B** *17/10*

**U.S. Cl. 166—241** **5 Claims**



**1.** An elastomer centralizer for a production string comprising:

a. an elastomer body having a split extending longitudinally thereof;

b. said body having a longitudinally extending, central opening communicating with said split;

c. a plurality of longitudinally spaced rings molded in said body adjacent said longitudinal opening, said rings being split to coincide with the split in said elastomer body and having portions extending substantially at right angles to said rings at said split with an opening therethrough whereby said elastomer body may be closed and positioned on the production string;

d. said elastomer body having a plurality of projections extending longitudinally of said body in circumferentially spaced relationship;

e. an annular rib extending in a plane substantially perpendicular to said elastomer body between predetermined pairs of said projections and having a circumferential outer edge;



f. said rib having a plurality of openings extending therethrough in a plane parallel to the axis of the central opening through said elastomer body; and

g. said rib having a separate split therein from its circumferential outer edge to each of the respective openings in said rib.

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**3,933,204**

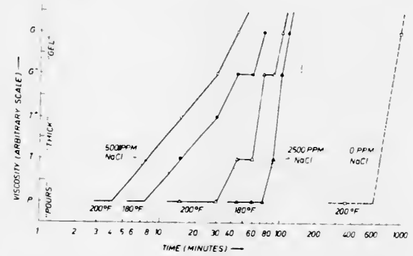
## PLUGGING SUBTERRANEAN REGIONS WITH ACRYLIC-EPOXY RESIN-FORMING EMULSIONS

**Randolph H. Knapp, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.**

**Filed Oct. 15, 1974, Ser. No. 514,705**

**Int. Cl.² E21B** *33/138*

**U.S. Cl. 166—295** **8 Claims**




**1.** In a well treating process in which a subterranean region is plugged by flowing into it a pumpable fluid that subsequently becomes relatively immobile, the improvement which comprises:

compounding an aqueous emulsion that contains an epoxy-resin-forming polyepoxy polymer, an acrylic-resin-forming polycarboxy polymer, and a material for controlling the rate of the polymerization of said polymers; and

correlating the proportions of said polymers and polymerization rate-controlling material with the temperature and flow properties of the subterranean region to be plugged so that, after being flowed into said region, the emulsion becomes a resinous plug having a significant compressive strength.

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**3,933,205**

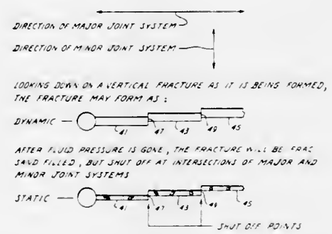
## HYDRAULIC FRACTURING PROCESS USING REVERSE FLOW

**Othar Meade Kiel, c/o Intercomp Resource Development and Engineering, Inc., 2000 W. Loop S., Houston, Tex. 77027**

**Continuation-in-part of Ser. No. 404,691, Oct. 9, 1973. This application Jan. 27, 1975, Ser. No. 544,411**

**Int. Cl.² E21B** *43/02, 43/26*

**U.S. Cl. 166—308** **50 Claims**




**1.** A method of well treatment by hydraulic fracturing of the formation to be treated, said fracturing including at least one double cycle comprising injection of fluid into the formation for a period of at least three minutes under pressure throughout said period sufficient to fracture the formation; planned discontinuance of said fluid injection and at least one period of reverse flow of said fluid from said formation for a period of time at least long enough to allow a significant pressure drop in said fluid, resumption of injection, and discontinuance of injection.

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**3,933,206**

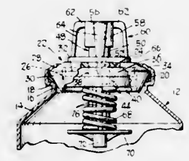
## HEAT-RESPONSIVE AEROSOL VALVE

**James E. Burke, N. Riverside, Ill., assignor to VCA Corporation, Greenwich, Conn.**

**Filed Aug. 29, 1974, Ser. No. 501,602**

**Int. Cl.² A62C** *35/02*

**U.S. Cl. 169—26** **10 Claims**



**1.** A heat-responsive valve construction for pressurized containers, comprising in combination:

a. a mounting member adapted for securement to the open end of a container for pressurized liquid, said member having a through passage;

b. a resilient sealing gasket secured against the mounting member, said gasket having an opening through it which is aligned with the passage of the member;

c. a rigid washer disposed adjacent the sealing gasket so as to back up the same and having an opening aligned with that of the gasket and mounting member;

d. a valve stem extending through said mounting member, sealing gasket and rigid washer and projecting from both sides of the mounting member, said valve stem having a bore in one end communicating with side orifices disposed intermediate its ends;

e. normally rigid heat-responsive means adjoining the said one end of the valve stem and engaged with the mounting member, said means positioning the side orifices of the stem at that side of the sealing gasket which faces the mounting member and yielding structurally in response to excessive heat; and

f. spring means carried by the valve stem at the other end thereof and engaging the rigid washer for maintaining said heat-responsive means under continual stress and for biasing the valve stem in a direction to shift the side orifices thereof entirely through the sealing gasket.

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**3,933,207**

## PIVOT BALL ASSEMBLY

**Claude M. Frisbee, Bettendorf, Iowa, assignor to J. I. Case Company, Racine, Wis.**

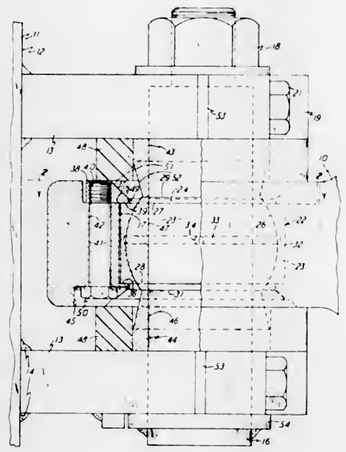
**Filed Sept. 30, 1974, Ser. No. 510,293**

**Int. Cl.² E02F** *3/76*

**U.S. Cl. 172—804** **1 Claim**

**1.** A pivot ball assembly for use in swivelly attaching a bulldozer blade to a support arm, comprising a support arm having an opening extending therethrough, an assembled pivot ball unit disposed in said opening and having a spherically-shaped inner race member and a flat-ended outer race member with said members being nested together for swivel movement therebetween and with said inner race member having a central axial opening, a pair of spaced-apart ears affixable to the bulldozer blade and having aligned openings therethrough, a threaded attachment pin disposed in said aligned openings and extending between said ears and through

said inner race opening, said inner race member having opposite end surfaces respectively spaced from said ears, a plurality of spacing members, each spacing member disposed in abutment with one of said inner race end surfaces and the one of said ears nearest thereto, in addition to said spacing members spacer members, each spacer member disposed respectively between each said spacing member and said attachement pin for limiting the clamping force of said attachment pin on said ears and on said assembled pivot or ball unit, said support arm having a first shoulder surface surrounding said opening therein, said outer race member having its axially opposite end surfaces flat and parallel to each other and with one of said opposite end surfaces being disposed in abutment on said first shoulder surface of said support arm for restricting movement of said outer race member on said support arm and in the

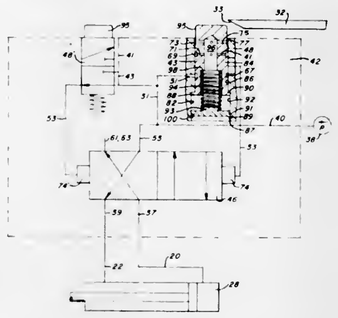


direction from said outer race member toward said one of said opposite end surfaces, said support arm having a second shoulder surface disposed countersunk along the plane of the other of said end surfaces of said outer race member and adjacent thereto, a retainer ring having a planar end surface disposed on and spanning said second shoulder surface and said outer race member other end surface for securing said outer race member on said support arm, said support arm having a plurality of holes extending therethrough in the direction perpendicular to the plane defined by each of said shoulder surfaces and intersecting said second shoulder surface, said retainer ring having a plurality of threaded holes axially aligned with said support arm holes, and screws extending through said holes in said support arm and threaded into said retainer ring holes for releasably holding said retainer ring on said support arm.

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**3,933,208**
**CENTRALIZER CONTROL**
**Edward A. Bailey, Newport; David C. Langevin, Claremont, and James F. Ordway, West Lebanon, all of N.H., assignors to Joy Manufacturing Company, Pittsburgh, Pa.**
**Filed May 16, 1974, Ser. No. 470,367**
**Int. Cl.² B23Q 5/00; E21C 9/00**
**U.S. Cl. 173—1** **10 Claims**

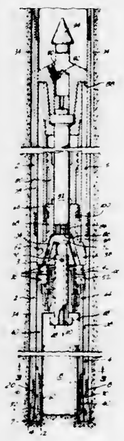
**6.** A method of controlling a drill string centralizer of a drilling machine which includes an elongated boom, a drill motor assembly longitudinally reciprocable along said boom and a centralizer actuator means mounted on said boom at a location adjacent the path of reciprocable movement of said drill motor assembly and intermediate the axial ends of said boom, comprising the steps of: moving said drill motor assembly along said path in one direction from one end portion of said boom toward the opposite end portion thereof; positioning a portion of said centralizer into a drill string support position in response to at least a portion of said drill motor assembly passing said location on said boom; maintaining said portion of said centralizer in said support position as said drill motor assembly moves past said location in said one direction and until said drill motor assembly passes said location during the return movement thereof; moving said drill motor assembly along said path in an opposite direction from said opposite



end portion toward said one end portion; positioning said portion of said centralizer into a drill motor assembly pass position in response to at least a portion of said drill motor assembly passing said location during said last mentioned moving; maintaining said centralizer portion in said pass position as said drill motor assembly moves past said location in said opposite direction and until said drill motor assembly passes said location during return.

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**3,933,209**
**DRILLING APPARATUS AND TECHNIQUE USING DOWN-HOLE MOTOR**
**Gerald T. Sweeney, Federal Way, Wash., assignor to Tigre Tierra, Inc., Puyallup, Wash.**
**Continuation-in-part of Ser. No. 283,208, Aug. 23, 1972, Pat. No. 3,854,539. This application Mar. 1, 1974, Ser. No. 447,360**
**Int. Cl.² E21B 5/00**
**U.S. Cl. 173—80** **10 Claims**



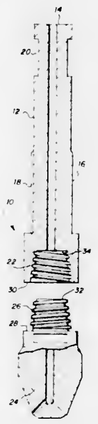
**1.** In a drilling apparatus of the type wherein a piston-like means having a fluid operated hammer mechanism thereon is retractably slidably inserted in the bore of a rotary drill rod



comprising an elongated pipe having a longitudinally extending bore therethrough and a percussive bit at the distal end thereof, and the hammer of the mechanism is operatively applied to an abutment which is relatively transverse the bore adjacent the bit and operatively connected with the bit to receive and transmit the hammer blows into the working face of the bit, and wherein the fluid transmission means for operating the hammer mechanism include means for passing fluid through the piston-like means and means for exhausting the fluid into the region adjacent the working face of the bit after the mechanism has operated, and there are means on the rod whereby the exhausted fluid can discharge from said region toward the proximal end of the pipe on the opposite side of the pipe from the piston-like means, and means on the piston-like means for generating a pressure differential thereacross longitudinally of the bore to maintain the hammer mechanism in operative relationship to the abutment during the application of the hammer thereto, the feature of said bit being annular and having an inner bit adjacent the opening thereof which is retractably suspended from the piston-like means and operatively interengaged with the drill rod to rotate in conjunction with the annular bit.

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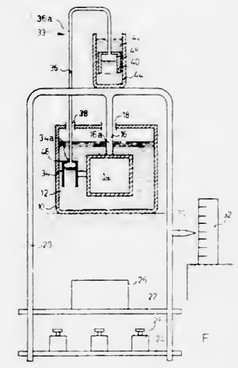
**3,933,210**
**DRILL HEAD ASSEMBLY**
**Sam C. Skidmore, 1513 Azteca Drive, Fort Worth, Tex. 76112**
**Filed Oct. 11, 1974, Ser. No. 514,252**
**Int. Cl.² E21C 15/02**
**U.S. Cl. 173—132** **5 Claims**



**1.** A drilling tool assembly, comprising:
a. a shank having an upper end for receiving driving forces which are intended to drive the assembly into the earth, and having a counterbore opening at its lower end with internal tapered threads for engaging a drill head, and the shank having first and second downwardly facing impact surfaces, with one of said impact surfaces being above the threads and the other impact surface being below the threads;
b. a removable drill head having an upward protuberance with external tapered threads for engaging corresponding shank threads along substantially the full length thereof, and the drill head having first and second upwardly facing impact surfaces adapted to respectively bear against the first and second impact surfaces on the shank, and the drill head impact surfaces being positioned such that they are still separated from the confronting shank impact surfaces by substantially identical gaps when the threads of the two elements initially make up along the pitch line, and the flanks of the threads having a certain surface finish measured in microinch units, and the ratio of surface finish (as measured in microinches) to the initial gap between confronting impact surfaces (as measured in thousandths of an inch) is between about 3.0 and 8.0, and said initial gaps between the impact surfaces being within the range of about 0.010-0.070 inch, such that the threads will be slightly deformed as torque is applied to the drill head in order to bring both sets of confronting impact surfaces into load-bearing contact with one another.

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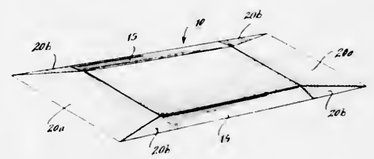
**3,933,211**
**BUOYANCY BALANCE**
**Peter Schmid, Vienna, Austria, assignor to Mettler Instrumente AG, Greifensee, Switzerland**
**Filed Aug. 15, 1974, Ser. No. 497,618**
**Claims priority, application Austria, Sept. 4, 1973, 47654/73; Sept. 28, 1973, 48345/73**
**Int. Cl.² G01G 5/02**
**U.S. Cl. 177—207** **10 Claims**



**1.** A buoyancy balance comprising a buoyant body floating in a fluid, a container for containing the fluid, a load scale, means for coupling the load scale with the buoyant body, and means for partially compensating the change in buoyancy brought about by the movement of the load scale.

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**3,933,212**
**WEIGHING APPARATUS**
**Chester D. Bradley, Darien, and Malcolm C. Tate, Stamford, both of Conn., assignors to The A. H. Emery Company, New Canaan, Conn.**
**Filed Nov. 11, 1974, Ser. No. 522,413**
**Int. Cl.² G01G 5/04**
**U.S. Cl. 177—209** **8 Claims**



**1.** Weighing apparatus comprising
A. a platform structure having a planar upper surface;
B. a frame structure wholly underlying the surface plane of the platform structure; and
C. a plurality of mutually displaced hydraulic load cells interposed between downwardly directed surface areas of the platform structure and upwardly directed areas of the frame structure for conjointly measuring, by their compression between the two structures, the total weight of

a load placed on the upper platform surface, each of said load cells

i. being free from attachment to the frame structure; and

ii. having a positive attachment to the platform structure.

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**3,933,213**

## VARIABLE RESPONSE SNOWMOBILE SUSPENSION SYSTEM

**Darrell L. Trowbridge, Fond du Lac, Wis., assignor to Brunswick Corporation, Skokie, Ill.**

**Filed Apr. 11, 1974, Ser. No. 460,024**

**Int. Cl.² B62D** *55/08*

**U.S. Cl. 180—5 R** **17 Claims**



**1.** In a snowmobile having a chassis, an endless drive track, means for driving said track and means for supporting said track in engagement with said driving means and the ground,

an improved means of suspending said track support means from said chassis, comprising:

a front spring and shock absorber suspension assembly pivotally connected between said chassis and said track support means, and

a rear spring and shock absorber suspension assembly pivotally connected between said chassis and said track support means,

and separate linkage means operatively connecting each of said front and rear suspension assemblies to said track support means for displacing the spring and shock absorber elements of each of said assemblies in unison over the operating range thereof in response to displacement of said track support means with respect to said chassis,

each of said separate linkage means including a lever arm and means associated with each of said lever arms for independently varying the mechanical advantage of each of said assemblies over its operating range in response to displacement of said track support means, and

wherein one of said lever arms comprises a cam surface and said means for varying the mechanical advantage includes a low friction means attached to said track support means and bearing upon said cam surface.

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**3,933,214**

## ALL TERRAIN PLEASURE VEHICLE

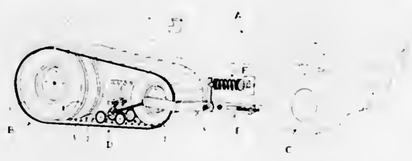
**Georges E. Guibord, 462 Edwards St., Rockland, Ontario, and Marcel P. Guibord, 72 - 6th Ave., Apt. 6, Ile Perrot, Quebec, both of Canada**

**Continuation of Ser. No. 377,852, July 9, 1973, abandoned. This application Jan. 30, 1975, Ser. No. 545,663**

**Claims priority, application Canada, July 12, 1972, 146933**

**Int. Cl.² B62D** *55/00*

**U.S. Cl. 180—9.2 R** **5 Claims**



**1.** A half track attachment for a vehicle, said attachment comprising a pair of driving wheels, a pair of flexible endless tracks, a pair of auxiliary wheels spaced a distance from said driving wheels for engageably guiding said tracks, a plurality of spaced longitudinally aligned protrusions directed inwardly from the inside surface of each of said tracks, and a plurality of circumferentially aligned and radially inwardly directed protrusion receiving holes in each of said driving wheels, the holes in each driving wheel being positioned so that each hole overlaps the next to form a circumferential groove having generally corrugated protrusion engaging sides, whereby the holes in said driving wheels may coact with the protrusions on said tracks such that each driving wheel may engage and propel its own track.

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**3,933,215**

## DIGITAL SYSTEM FOR CONTROLLING THE WHEELS OF A HEAVY-DUTY COMMERCIAL VEHICLE

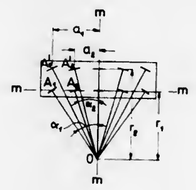
**Willy Scheuerle, Pfedelbach-Öhringen, Germany, assignor to Willy Scheuerle.Fahrzeugfabrik, Pfedelbach-Ohringen, Germany**

**Filed Aug. 15, 1974, Ser. No. 497,731**

**Claims priority, application Germany, Aug. 16, 1973, 2341442**

**Int. Cl.² B62D** *61/10*

**U.S. Cl. 180—23** **19 Claims**



**1.** Steering system for a vehicle having a plurality of individually controllable wheels, comprising, in combination, first means for furnishing a desired angular position signal indicative of the desired angular position of said wheels relative to a determined axis of said vehicle; second means for furnishing actual position signals indicative of the actual position of said wheel relative to said determined axis, at least said first or said second means comprising means for furnishing a digital signal having a plurality of determined values each corresponding to one of a plurality of angular positions of said wheels relative to said determined axis; and control means connected to said first and second means and said wheels for adjusting the angular position of said wheels as a function of said desired and actual position signals, in such a manner that said angular position of said wheels varies as a predetermined non-linear function of said desired position signal.

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**3,933,216**

## VEHICLE WITH ALIGNED INTAKE AND EXHAUST PIPES

**Gordon A. Irwin, Harwood, N. Dak., assignor to Steiger Tractor Inc., Fargo, N. Dak.**

**Filed Feb. 20, 1975, Ser. No. 551,305**

**Int. Cl.² B60K** *13/02, 13/04*

**U.S. Cl. 180—54 R** **6 Claims**

**1.** A self-propelled vehicle having an internal combustion engine for propelling the vehicle and an enclosed operator's cab,

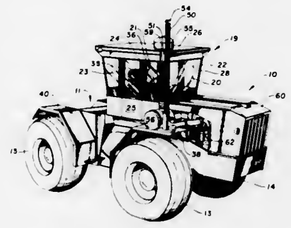
said internal combustion engine being disposed forwardly of said cab and having an intake manifold and an exhaust manifold,

said operator's cab comprising a seat for the operator, controls for controlling the operation of the engine and the steering of the vehicle, and an enclosure for the cab including a windshield, side windows and upright front corner posts disposed between said windshield and said side windows,

a vertical intake pipe connected to said intake manifold and extending above the top of said cab,

a vertical exhaust stack connected to said exhaust manifold and extending above the top of the cab, and





means mounting said intake pipe and said exhaust stack on said vehicle to one side of and in front of one of said corner posts and closely adjacent thereto with the longitudinal axes of said intake pipe and exhaust stack lying in a substantially vertical plane extending diagonally with respect to said windshield and through said corner post so that said intake pipe and said exhaust stack are both disposed closely adjacent to said engine but offer the minimum of obstruction to the view of the operator.

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**3,933,217**

## DRIVE GEAR SYSTEM FOR MOTOR VEHICLES

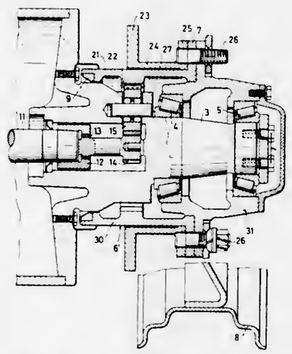
**Johann Eichinger, Putzbrunn, Germany, assignor to Carl Hurth, Maschinen- und Zahnradfabrik, Munich, Germany**

**Filed Mar. 29, 1974, Ser. No. 456,255**

**Claims priority, application Germany, Apr. 4, 1973, 2316932; May 4, 1973, 23226075**

**Int. Cl.² B60K** *17/04*

**U.S. Cl. 180—70 R** **8 Claims**



**1.** A drive train for a vehicle having a frame member and a hub, said drive train comprising: drive motor means fixed to said frame member, and having a rotatable output shaft; planetary gear means drivingly connecting said output shaft to said hub, said planetary gear means comprising a sun gear secured to said output shaft, a planet gear secured to said frame member about a fixed rotation axis and in meshing engagement with said sun gear, and a first elongated hollow sleeve having an internal toothed ring gear in meshing engagement with said planet gear, and having first flange means for securement to said hub; a second elongated hollow sleeve in radially spaced relationship to said first sleeve forming a radial air space therebetween, said second sleeve having a disk brake means, and having second flange means for securement to said hub; said hub having third flange means, said first, second and third flange means being relatively coextensive and parallel; and fastener means for securing said first, second and third flange means together.

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**3,933,218**

## CONTAINER HANDLING TRUCK

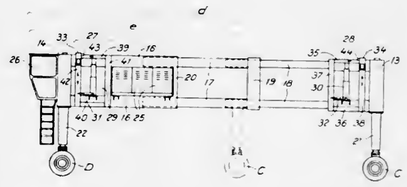
**Ernst Bertil Oler, and Odd Peder Hunnes, both of Karlskoga, Sweden, assignors to AB Bofors, Bofors, Sweden**

**Filed Oct. 7, 1974, Ser. No. 512,565**

**Claims priority, application Sweden, Oct. 11, 1973, 7313797**

**Int. Cl.² B60P** *1/64;* **B62D** *5/04, 33/08*

**U.S. Cl. 180—79.1** **8 Claims**



**1.** A truck for stowing, stacking etc., large containers of varying sizes, said truck having a chassis supported at four corners thereof by means of four elongated legs extending downwardly from said four corners to wheels carried by the lower ends of said legs respectively, said chassis comprising a pair of substantially parallel, transverse cross beams spaced from one another and interconnected to one another by a pair of elongated longitudinal beams, said longitudinal beams each comprising a plurality of telescopic beam parts which can be selectively displaced longitudinally relative to one another to vary the effective length of said longitudinal beams thereby to vary the effective length of said chassis, said chassis defining a pair of open end portals at the opposing ends of said chassis respectively, each of said end portals being formed by one of said cross beams and by two of said downwardly extending legs respectively, the width of each end portal corresponding to the distance between said two legs and the height of each end portal being greater than the distance between said legs, said pair of longitudinal beams being disposed in vertically superposed relation to one another with both longitudinal beams being located adjacent the same corresponding ends of said cross beams whereby a horizontal section of said chassis is shaped substantially in the form of a right-angled yoke having a substantially C-configuration, the lower of said pair of longitudinal beams being disposed at an elevated position and cooperating with said legs and with the chassis to form a side portal having a width corresponding substantially to the length of said chassis and a height substantially equal to the distance between the pair of legs at a given end of said chassis, and said truck including a steering system operative to set the wheels at the lower ends of said legs into position for steering said vehicle along either of two main directions, one of said main directions being in the direction of elongation of said longitudinal beams and the other of said main directions being at right angles to the direction of elongation of said longitudinal beams.

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**3,933,219**

## SPEAKER SYSTEM

**John L. Butler, Marshfield, Mass., assignor to Ambient, Inc., N. Marshfield, Mass.**

**Filed Apr. 8, 1974, Ser. No. 458,843**

**Int. Cl.² H05K** *5/00*

**U.S. Cl. 181—144** **9 Claims**

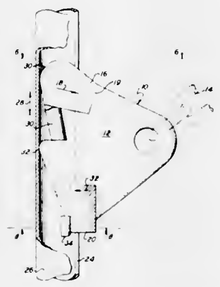
**1.** A speaker system for use in a listening room having means defining a plurality of reflective surfaces including an

end wall, said system comprising a unitary dual channel speaker enclosure having a plurality of enclosing walls including a pair of walls disposed at an angle, other than a straight angle, to each other and also at an acute angle to the end wall of the room, and a pair of speaker arrays each including a low audio frequency speaker and an upper audio frequency speaker, each array carried, respectively, by each wall of the pair of walls and the speakers of each array being operated from different stereo channels to provide left and right channel signals to respective arrays thereby providing stereo effect in a unitary enclosure, each said low frequency speaker operating over a low frequency range having an upper frequency limit, said enclosure being positioned a predetermined distanced from the end wall to permit mutual coupling between the low audio frequency speakers wherein the distance *d* is less than or equal to λ/4 wherein λ is the wavelength of sound corresponding to the upper frequency limit of the low frequency speakers, said low frequency speakers being disposed apart a distance *s* to provide mutual radiation resistance at bass frequencies, and radiating toward the end wall, wherein the distance *s* is less than or equal to λ/2 where λ is the wavelength of sound corresponding to the upper frequency limit of the low frequency speakers.




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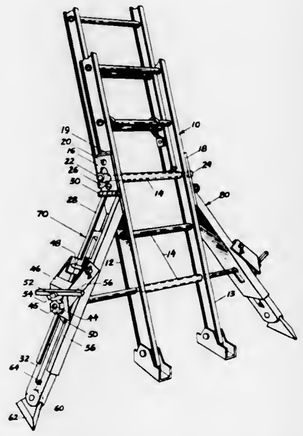
**3,933,220**
**CLIMBING DEVICE**
**William E. Swager, P.O. Box 498, Fremont, Ind. 46737**
**Filed May 17, 1974, Ser. No. 471,061**
**Int. Cl.² A62B** *35/00*
**U.S. Cl. 182—3** **19 Claims**



1. A safety device comprising the combination of a clamping means and an elongated firm support rail, an elongated slot disposed in the outer surface of said support rail, said slot having substantially parallel facing walls on each side, said clamping means having a clamping portion mounted alternately to slide freely in said slot in sliding engagement with said side walls and including means for gripping and binding said clamping means firmly to said facing walls of said slot to prevent movement in the position of clamped engagement with said support rail, and a trigger arm supporting said clamping means extending laterally from said clamping means for moving said clamping means in easy pull sliding in said slot, and for activating said clamping means into clamped engagement with the facing walls of said slot by rapid downward pull by the user.

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**3,933,221**
**LADDER ADJUSTING AND STABILIZING APPARATUS**
**Virgil H. Sorenson, P.O. Box 198, Staffordville, Conn. 06077**
**Continuation-in-part of Ser. No. 209,073, Dec. 17, 1971, abandoned. This application May 3, 1973, Ser. No. 357,070**
**Int. Cl.² E06C** *1/04, 1/22*
**U.S. Cl. 182—172** **10 Claims**



1. Stabilizing means for a ladder having side rails with interconnecting rungs and including at least two spaced tubular rungs comprising a first elongated rod extending through one of said rungs, a second elongated rod extending through the other of said rungs, a pair of stabilizers positioned on each side of said ladder, and means on said stabilizers fixedly securing them to said rods and relative to said ladder with the stabilizers extending downwardly and outwardly to engage a surface upon which the ladder rests, the last said means comprising a pair of elongated stabilizer supports secured by at least one of said rods to opposite sides of said ladder and means securing the upper ends of said stabilizers to said supports, said supports being disposed in parallel relationship to said ladder rails and at least one longitudinally adjustable element is removably carried by one of said supports and extendable below the bottom of the adjoining rail to compensate for ground slope, each support comprising an elongated channel shaped member having a pair of legs and a transverse member coupling said legs, said transverse member lying against one of said ladder rails, transverse members secured to the upper and lower ends of said channel members and having upper and lower aligned openings for removably receiving longitudinally adjustable elements.

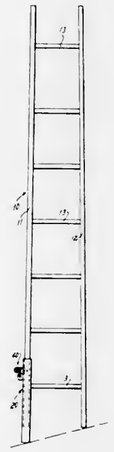
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**3,933,222**
**LADDER LEVELER**
**Coba C. Craig, Jr., Lexington, Ky., assignor to James E. Jenkins; Joseph L. Moore and Coba C. Craig, all of Lexington, Ky., part interest to each**
**Filed Sept. 25, 1974, Ser. No. 509,304**
**Int. Cl.² E06C** *7/44*
**U.S. Cl. 182—204** **2 Claims**

1. A ladder leveler comprising,
a ladder having a pair of parallel legs spaced apart by rungs which interconnect them, each of the said legs being channel shaped with spaced flanges projecting parallel to the rungs,



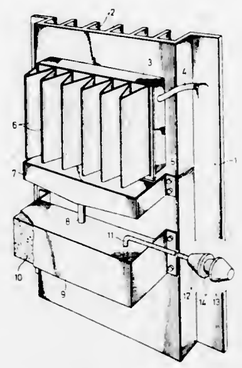
at least one leg of the ladder having an adjustable extension mounted to it for extending the effective length of said leg to enable said ladder to rest stably on uneven ground,
said extension being in the form of a channel having a back wall and spaced side walls extending from the back wall, said side walls projecting parallel to the said flanges of said one leg, said extension also including inturned retainer lips extending from the side walls and projecting reversely toward said back wall, the said one leg being slidably embraced within the channel and the respective flanges thereof retained between said retainer lips and the adjacent side walls, said extension permitting only longitudinally sliding movement of the leg with respect to it,
and a lock for locking the longitudinal position of the extension of the leg, said lock being mounted to one of the extension and the leg, the other of the extension and the leg having a series of longitudinally spaced holes,
said lock including a finger projecting through said one of said extension and leg and selectively engageable in the respective holes of said series to prevent movement of the extension on the leg.



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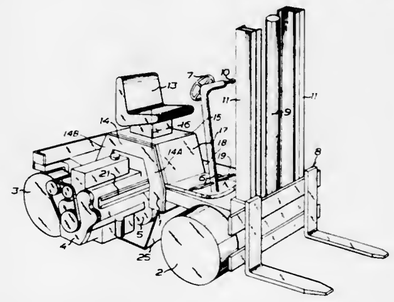
**3,933,223**
**BEARING LUBRICATED WITH WATER**
**Ludwig Ludin, Kesselackerweg, CH-5611 Anglikon-Wohlen, Switzerland, and Nikolaus Laing, Hofener Weg 35-37, D-7141 Aldingen bei Stuttgart, Germany**
**Filed Nov. 26, 1973, Ser. No. 419,215**
**Claims priority, application Austria, Nov. 28, 1972, 10107/72**
**Int. Cl.² F01M** *1/06*
**U.S. Cl. 184—7 R** **5 Claims**

1. Bearing in combination with a rotating machine in which the cooperative sliding elements of the bearing moveable relative to each other are lubricated by water and wherein the rotating machine is surrounded in part by ambient air containing moisture, the improvement comprising having a heat sink in thermal contact with said ambient air and, means whereby the heat sink may absorb heat from the air and cool it below its dew point to condense water therefrom, and means extending from said heat sink to said bearing for collecting and conveying the condensed water from said heat sink to said bearing.



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**3,933,224**
**FORK LIFT TRUCK**
**Jan Ove Lennart Nilsson, Billesholm, and Carl Nils Erik Risberg, Eslov, both of Sweden, assignors to Stockamollan AB, Eslov, Sweden**
**Filed May 30, 1973, Ser. No. 365,307**
**Int. Cl.² B60K** *5/04, 5/10, 26/00;* **B66B** *9/20*
**U.S. Cl. 187—9 R** **4 Claims**



1. A fork lift truck of the type including a chassis mounted for movement over a surface by front and rear pairs of wheels, power means for driving the truck, transmission means, a hydraulic fork lift at one end of the chassis, a driver's seat, and steering and control means for controlling operation of the truck, the improvement wherein a portion only of said chassis extending between said front and rear wheels is in the form of an arch including an upper portion which is located between and substantially above the level of said pairs of wheels and steeply sloping front and rear portions, said arch-shaped portion lying essentially on one side of the vertical longitudinal median plane of the truck, the portion of the chassis on the other side of said longitudinal median plane lying substantially on a level with the chassis ends at the pairs of wheels, means mounting said power means underneath said upper portion of said chassis arch and between said pairs of wheels, said driver's seat including a chair-like portion mounted for pivotal movement about a generally vertical axis above said upper portion of said arch, a foot-rest portion spaced substantially below said upper portion of said arch and means joining said foot-rest portion and said chair-like portion and extending in outwardly spaced relation to said steeply sloping portiions of said arch, and said steering and control means being mounted

on said driver's seat for pivotal movement therewith about said vertical axis.

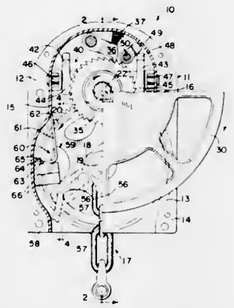
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**3,933,225**

## SHOCK ABSORBING MEANS FOR RAILWAY HAND BRAKE MECHANISM

**Frank E. Bretz, Jr., Elmhurst, Ill., assignor to Cleveland Hardware and Forging Company, Cleveland, Ohio**

**Filed June 10, 1974, Ser. No. 477,898**
**Int. Cl.² B61H *1/00***
**U.S. Cl. 188—33** **9 Claims**



1. In a hand brake mechanism, the combination with a housing, a chain winding drum and a main gear wheel rotatably mounted on said housing, a hand wheel shaft rotatably bearingly mounted on said housing substantially centrally and at one end of said shaft and having a hand wheel receiving section at the other end externally of said housing, a ratchet wheel intermediate the ends of said shaft and rotatable therewith, a pawl in said housing cooperating with said ratchet wheel to hold it against reverse rotation, a pinion freely rotatable on said shaft and engaging said main gear wheel and having a radially extending flange rotatable conjointly therewith, a disengageable driving connection between said flange and said ratchet wheel, a trip cam rotatably mounted in said housing, trip bar means operable by said trip cam for cooperating with said flange for moving it to disengage said driving connection and permit said pinion to rotate freely to release said main gear wheel for rotation in a brake releasing direction accompanied by release of said chain winding drum and a chain wound thereon likely to be swung against an overlying side wall of said housing and to wind in the wrong direction on said drum of: energy absorbing means for stopping rotation of said drum and chain connected thereto comprising a bracket stationarily mounted in said housing, and resilient means carried by said bracket and located in the path of at least a portion of said chain or drum for absorbing some of its kinetic energy incident to release thereof under tension.

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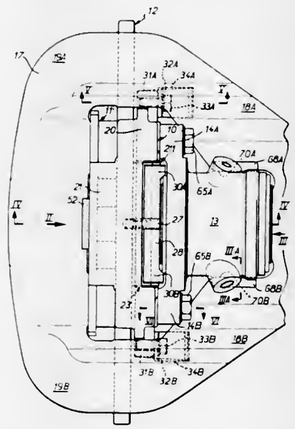
**3,933,226**

## DISC BRAKE MOUNTING STRUCTURE

**Jean Maurice, Paris, France, assignor to Societe Anonyme Francaise du Ferodo, Paris, France**

**Continuation of Ser. No. 53,346, July 9, 1970, abandoned. This application Apr. 15, 1974, Ser. No. 461,127**
**Claims priority, application France, July 11, 1969, 69.23672; Aug. 7, 1969, 69.27122; Mar. 27, 1970, 70.11110**
**Int. Cl.² F16D *55/228***
**U.S. Cl. 188—72.5** **11 Claims**

1. A disc-brake comprising a generally right-angle dihedral-shaped fixed support, a rotatable disc fixed to a member to be braked, a pad mounted for movement perpendicular to the plane of the disc on each side thereof, a control unit and a ring-like transfer member mounted for movement perpendicular to the disc, said control unit including a cylinder and two pistons mounted for sliding movement in opposite directions in said cylinder, one of said pistons acting directly on a first pad and the other of said pistons acting indirectly on the second pad through the intermediary of said transfer member, said ring-like transfer member extending around said fixed support, the control unit, the pads and a portion of said disc, said generally right-angle dihedral-shaped fixed support comprising a plate member parallel to the disc and a positioning member perpendicular to the disc radially outward of and having its radially inner surface facing the edge of the disc, said plate member and said positioning member being fixed relative to each other, said plate member having a surface facing the control unit and including a frame portion for limiting the movement of the first pad in both directions of rotation of the disc and in at least one radial direction, said positioning member including at least one longitudinal support abutment for radially retaining the second pad relative to the disc, at least two transverse support abutments for limiting



the movement of the second pad in both directions of rotation of said disc, and transverse support abutments being disposed at the ends of said positioning member, two lateral extensions on said second pad and being disposed on opposite sides of said positioning member for contacting said transverse support abutments, said transfer member having a radially outwardly directed supporting surface that faces the positioning member, said second pad having two opposed support surfaces one of which contacts said transfer member supporting surface and the other of which contacts said longitudinal support abutments on said positioning member, said surfaces and abutments extending transversely of the plane of said disc and said support surfaces extending transversely of a radius of said disc that passes through said support surfaces, and resilient means between said transfer member and said fixed support urging said transfer member radially outwardly, the positioning member and the transfer member resiliently gripping the second pad radially between themselves.

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**3,933,227**

## BRAKE HAVING A BRAKING MEMBER IN THE FORM OF A RING, ESPECIALLY FOR AUTOMOBILE VEHICLES

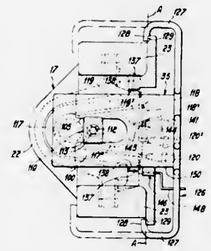
**Gerard de Gennes, Senlis, France, assignor to Societe Anonyme Francaise du Ferodo, Paris, France**

**Filed Aug. 2, 1974, Ser. No. 494,298**
**Claims priority, application France, Aug. 17, 1973, 73.30012**
**Int. Cl.² F16D *53/00***
**U.S. Cl. 188—76** **31 Claims**

1. A spot type ring brake comprising a fixed support, a member to be braked having a normally generally cylindrical ring, one brake pad arranged for frictional engagement with



the radially inner face of said ring and another brake pad arranged for frictional engagement with the radially outer face of said ring, a stirrup member straddling the brake pads and having legs extending respectively inside and outside said ring and a bight portion interconnecting said legs and opposite the free outer edge of said ring, operating means housed in said stirrup member and acting directly on one of said brake pads, a retaining member mounting the stirrup member for sliding movement for indirectly transmitting force to said other brake pad as well as for pivotal movement of only one fixed radius about only one fixed axis for compensating for eventual conical deformation of said ring so that said stirrup member substantially stays with said ring even when the latter becomes



conically deformed with use, said retaining member having a central portion closely overlying the surface of the bight portion of said stirrup remote from the free outer edge of said ring and in simple supporting contact therewith, said retaining member having two lateral branches securing it to said fixed support, said retaining member having a fulcrum thereon that positions said stirrup for said pivotal movement of fixed radius about said fixed axis that is perpendicular to the axis of the ring and substantially tangential to the cylinder of the ring, the ends of said fulcrum being spaced apart a substantial distance along said fixed axis, and resilient means axially urging said stirrup member away from said ring and urging said bight portion of the stirrup member against the central portion of said retaining member overlying the same.

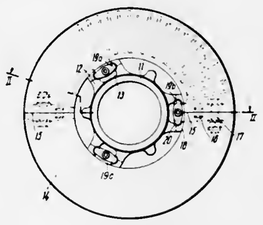
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**3,933,228**

## BRAKE DISK CONSTRUCTION

**Alfred Otto, and Hans Zeuner, both of Remscheid, Germany, assignors to Bergische Stahl-Industrie, Stuttgart, Germany**

**Filed Feb. 7, 1974, Ser. No. 440,467**
**Int. Cl.² F16D *65/12***
**U.S. Cl. 188—218 X L** **7 Claims**



3. A brake disk construction, comprising, in combination, a circular hub unit adapted to be connected to a vehicle wheel for rotation therewith and comprised of a plurality of radially outwardly extending angularly spaced carrier arms each comprised of a pair of angularly spaced prong portions defining between themselves a receiving recess; a circular brake ring unit surrounding said hub unit and comprised of angularly spaced radially inwardly projecting mounting projections each clamped between the two prong portions of a respective carrier arm, said brake ring unit being divided along at least one radial plane into at least two parts located at opposite sides of the axis of said circular brake ring unit, each part having surfaces abutting corresponding surfaces of the adjoining part to form radially extending seams located in said at least one radial plane, wherein at least one of said mounting projections constitutes the radially innermost part of a radially extending joining portion forming part of said circular brake ring unit, and wherein said at least one mounting projection and the associated radially extending joining portion are bisected by said radial plane to form two halves each fast with a respective one of said parts of said brake ring unit; and connecting means dismountably mounting said brake ring unit on said hub unit by releasably connecting together said parts of said brake ring unit, whereby to permit separation of said parts of said brake ring unit to facilitate dismounting of said brake ring unit from said hub unit, said connecting means including an elongated connector unit oriented perpendicular to said axis and to said radial plane and passing through and connecting together said two halves of said joining portion, wherein said receiving recesses and said mounting projections extend in direction axially of said hub unit and of said brake ring unit, wherein said connecting means further includes wedge members wedged into the ends of said axially extending receiving recesses to prevent relative axial shifting between said hub unit and said circular brake ring unit, wherein said axially elongated mounting projections are shorter in axial direction than said axially extending receiving recesses, and wherein each axially extending receiving recess has at each of its axial ends a widened portion in which is received and wedged one of said wedge members, and wherein said connecting means further includes a plurality of screws each passing through and connecting together the two wedge members located in a respective one of the receiving recesses.

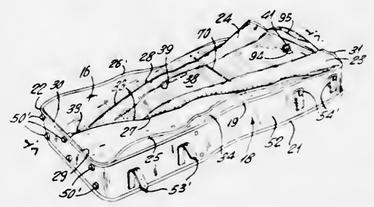
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**3,933,229**

## MULTI-FUNCTIONAL FOLDABLE SUITCASE

**Joseph Y. Pelavin, North Bergen, N.J., assignor to Lark Luggage Corporation, New York, N.Y.**

**Filed June 5, 1974, Ser. No. 476,644**
**Int. Cl.² A45C *3/00***
**U.S. Cl. 190—41 B** **15 Claims**

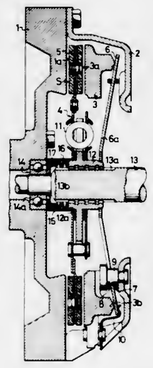


1. A multi-functional, foldable suitcase comprising first and second flexible, elongated side walls, said first side wall overlying said second side wall in spaced relationship relative thereto, a continuous flexible end wall of substantially constant cross-section having a pair of opposed edges, each opposed edge being connected to a respective side wall for thereby defining a suitcase enclosure for housing garments therein, said suitcase enclosure having a pair of remote ends therein, means within said remote ends of said enclosure for defining a pair of concomitant, discrete packing compartments within said enclosure for housing folded garments therein, each of said packing compartments having a depth corresponding to said means, said means comprising first and second substantially resilient configured frames of predetermined length fitted and secured within a respective remote end of said enclosure between said first and second side walls, means underlying said first side wall and cooperating therewith for defining a garment suspension space within said en-

closure said last-mentioned means overlying said packing compartments, said suspension space having dimensions of width and length substantially corresponding to said first side wall, and means secured to said second side wall for defining fold lines therein, said remote ends of said suitcase being foldable into confronting relation about said fold lines.

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**3,933,230**
**CLUTCH WITH DISC RELEASE SPRING**
**Kazuma Adachi, Yao, Japan, assignor to Kabushiki Kaisha Daikin Seisakusho, Osaka, Japan**
**Division of Ser. No. 300,366, Oct. 24, 1972, Pat. No. 3,834,501. This application June 3, 1974, Ser. No. 475,873**
**Claims priority, application Japan, Nov. 17, 1971, 46-107639**
**Int. Cl.² F16D *13/75***
**U.S. Cl. 192—70.28** **2 Claims**

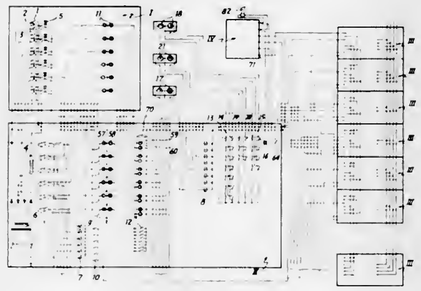


1. A device for preventing improper disengagement of a clutch comprising a combination of: a clutch disc having clutch facings disposed between a flywheel and a pressure plate, a main drive shaft fitted in a spline hub of the clutch disc through spline engagement to support the clutch disc in an axially movable manner, a pilot bearing for rotatably supporting an end of the main drive shaft on the flywheel, and spring means interposed between the inner ring of the pilot bearing and the spline hub to accumulate therein a resilient force when the clutch is in an engaged state, the spring means including a combination of a plurality of dished springs housed and retained in a cylindrical holder, the cylindrical holder having one end slidably fitted around a cylindrical portion of the spline hub and the other end in abutting contact with the inner ring of the pilot bearing, the dished springs being arranged in alternate orientation, the spring means being operable to forcibly push the clutch disc to its neutral position upon a clutch disengaging operation, the pushing force of the spring means being so determined as to be reduced to zero when the clutch disc reaches the neutral position.

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**3,933,231**
**AUTOMATIC WORKSHOP INSTALLATION**
**Herbert Paul Vinet, 12, rue Paul Redoute, Meudon-la-Foret, France (92360)**
**Filed Aug. 12, 1974, Ser. No. 497,146**
**Claims priority, application France, Oct. 5, 1973, 73.35617**
**Int. Cl.² G07F *17/00***
**U.S. Cl. 194—1 R** **13 Claims**

1. A workshop installation in which a user can service equipment, said installation comprising at least one enclosure having a single access space and a displaceable barrier at said access space, said barrier being normally retracted to allow free entry into said enclosure via said access space and being closable after entry into said enclosure, means in said enclosure for removable support of tools to be utilized by the user within the enclosure, a pre-payment device in the enclosure coupled to the barrier and the tool support means for allowing removal of tools after sufficient payment has been made in the pre-payment device corresponding to a pre-determined period of time, at least one electrical warning circuit, means for locking said barrier in the closed position thereof, and presence detector means for detecting the presence of the tools in



the tool support means, said presence detector means being coupled to said pre-payment device and to said barrier locking means and electrical warning circuit for activating the barrier locking means when a tool is removed from the tool support and for closing the electrical warning circuit when the pre-determined period of time of the pre-payment device has expired and the tools have not been returned to the tool support means.

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**3,933,232**
**COIN VALIDATOR**
**Brian Christopher Searle, Staines, England, and Glenn Richard Ritter, West Allenhurst, N.J., assignors to Tiltman Langley Ltd., England**
**Filed June 17, 1974, Ser. No. 480,256**
**Int. Cl.² G07F *3/02***
**U.S. Cl. 194—100 A** **16 Claims**



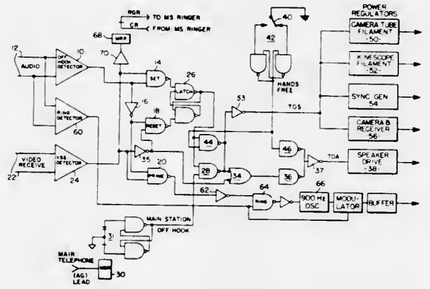
1. A coin validator electronic circuit comprising:
coin sensing means for producing a transient signal the amplitude of which is dependent on the denomination of the coin sensed;
a plurality of comparator means set up with amplitude parameters respectively to represent the coin denomination to be validated and each operable by a signal whose amplitude is at least equal to the amplitude parameter of the comparator means, but so that operation of more than one comparator means by any one signal is sequential;
means for generating a control signal at the maximum of the transient signal amplitude;



and means responsive to a control signal generated by said generating means and to the operation of a comparator means, only when the coin sensed by the coin sensing means gives rise to said control signal and to said operation of the comparator means coincidently in time, to produce a circuit output signal indicating validation of that coin.

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**3,933,233**
**CONTROL CIRCUIT FOR SUBSCRIBER STATION IN VIDEO TELEPHONE SYSTEM**
**Uno Randmere, Victor, and Walter A. Halbig, Webster, both of N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.**
**Filed Jan. 2, 1974, Ser. No. 429,936**
**Int. Cl.² H04M *11/06***
**U.S. Cl. 179—2 TV** **5 Claims**

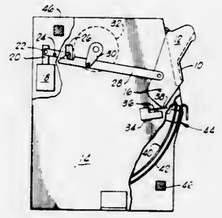


1. A control circuit for a subscriber station in a video telephone system of the kind in which the station includes separate audio and video receive leads, a loudspeaker and means for driving it, an annunciator system for alerting the subscriber to incoming video calls, and video gear including a video camera, a video display device, and means for producing synchronizing signals, said circuit comprising:
a. an OFF HOOK detector for producing an output signal in response to an off-hook signal on the audio leads of the station,
b. a RING detector for producing an output signal in response to a ring signal on the audio leads,
c. a VIDEO detector for producing an output signal in response to a video supervisory signal on the video receive leads of the station, and
d. means including electrical toggles, gates, and invertors responsive to the output signals produced by said OFF HOOK, RING, and VIDEO detectors for selectively energizing and deenergizing the video gear, the loudspeaker, and the annunciator system of the subscriber station, turning the video gear on in response to simultaneous output signals from the OFF HOOK and the VIDEO detectors and holding it deenergized in the absence of either, and energizing the loudspeaker drive means in response to an output signal from the VIDEO detector in the absence of an output signal from the OFF HOOK detector.

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**3,933,234**
**DOCUMENT HANDLING ASSEMBLY FOR A PRINTER**
**Jack L. Smith, Oklahoma City; Darby A. Gray, Norman, and Brian R. Sullivan, Oklahoma City, all of Okla., assignors to Honeywell Information Systems, Inc., Waltham, Mass.**
**Filed Feb. 4, 1972, Ser. No. 223,589**
**Int. Cl.² B41J *13/00***
**U.S. Cl. 197—127 R** **4 Claims**

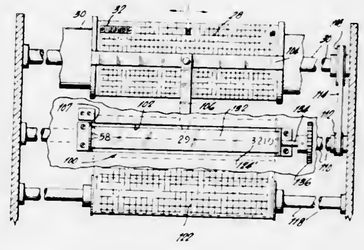
1. For use in a document printer having a printing mechanism, a document handling assembly for positioning a document relative to the printing mechanism comprising:
a. document guiding means for constraining movement of the document to a predetermined path relative to the printing mechanism;
b. document engaging means including movable fingers for gripping the lower edge of a document at one or more



places to hold the document during movement along a generally vertical predetermined path; and
c. controllable driving means connected to said document engaging means for driving said engaging means between print positions along the predetermined path.

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**3,933,235**
**TYPE INDICATOR**
**Vincent Chan, 84, Waterloo Road, B2, 18th Floor, Kowloon, Hong Kong**
**Filed Nov. 12, 1973, Ser. No. 414,916**
**Int. Cl.² B41J *29/42***
**U.S. Cl. 197—187** **5 Claims**

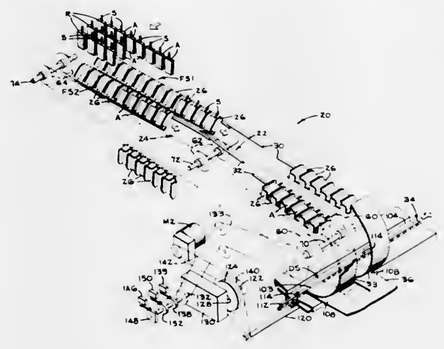


1. A type character visual indicator for an interlingual typewriter having a chassis, a roller having an axis said roller being rotatably mounted on said chassis and a drum having a plurality of rows of type characters arranged thereon in a pre-determined left to right order in alignment with said axis said drum being slidably mounted on said roller for movement along said axis a striker, and means for rotating and sliding said drum to a position to align a selected type character with said striker; said indicator comprising a window in said chassis extending parallel to said axis, an endless band having indicia thereon arranged in rows in reverse order to the type characters on said drum, drive means responsive to rotation of said roller to align the containing row of indicia said selected type on said endless band with said window, and pointer means attached to said drum movable and along said axis with said drum for indicating a particular indicium in said particular row corresponding to said selected type character.

### 3,933,236
### ARTICLE TRANSFER MECHANISM

John S. Aterianus, Green Bay, Wis., and Robert J. Betschart, Sacramento, Calif., assignors to FMC Corporation, San Jose, Calif.

Filed May 3, 1974, Ser. No. 466,742
Int. Cl.² B65G 47/26
U.S. Cl. 198—32 4 Claims



1. In an apparatus for transferring articles at high speed from a multi-lane intermittently driven inlet conveyor to a single lane output conveyor including, a pair of spaced transfer conveyors having arcuate discharge end portions and being driven in a direction normal to that of the output conveyor, means for effecting transfer of articles from a plurality of lanes of the multi-lane inlet conveyor into one of said transfer conveyors and for effecting transfer of the articles from other lanes of the inlet conveyor into the other transfer conveyor, carrier buckets each having an open top and an open end on the transfer conveyors for receiving and controlling the movement of the articles until the articles are aligned with said single lane output conveyor adjacent said arcuate discharge ends, drive means for driving each conveyor in timed relation; the improvement which comprises an arcuate shield around the arcuate discharge ends of the transfer conveyors for cooperating with the carrier buckets to prevent articles from egress from the open tops of the buckets until in position over the output conveyor and to then simultaneously transfer one article from a carrier bucket on each transfer conveyor directly into the single lane output conveyor, and arcuate cam means disposed around the arcuate discharge portions of the transfer conveyors in position for closing the open ends of the carrier buckets from article egress from said open ends, said arcuate cam means including downturned portions positioned to engage and cam articles out of the carrier pockets and into the output conveyor in the event the articles tend to stick to the carrier buckets.

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### 3,933,237
### CONVEYOR FOR A TRANSIT WAREHOUSE FOR PARCELLED CARGO TO BE STORED, PARTICULARLY FOR GOODS TRANSPORTED ON PALLETS

Robert Rotterman, Rebbergstrasse 81 d, CH-8102 Oberengstringen, Switzerland

Filed Aug. 28, 1974, Ser. No. 501,028
Claims priority, application Switzerland, Aug. 30, 1973, 12418/73
Int. Cl.² B65G 37/00
U.S. Cl. 198—37 6 Claims

1. Conveyor apparatus for parcelled goods, particularly for goods to be stored on pallets, with at least one conveyor path comprising a delivery station, a build-up stretch with a plurality of storage points to be passed in succession by the goods, and a pick-up station, comprising:

a first conveyor at the delivery station;

a second conveyor along the build-up stretch;

a third conveyor at the pick-up station said second conveyor having a beginning adjacent said first conveyor and an end adjacent said third conveyor;

driving means for moving said second conveyor independently of said other two conveyors in backward direction or together with either one of said other conveyors or both of them in forward direction; and

switching means for controlling said driving means and actuated by the passing goods so that, in a delivery mode, said goods are delivered by said first conveyor to accumulate at the beginning of said build-up stretch and, in a



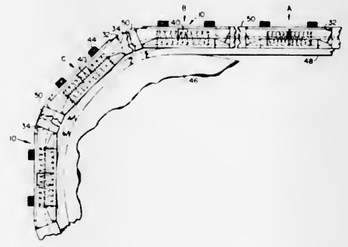
pick-up mode, said accumulated goods are moved to the end of said build-up stretch to be picked up by said third conveyor, and so that, in an alternating delivery and pick-up mode with an incompletely occupied build-up stretch, the totality of goods accumulated at the end of said build-up stretch are shifted backward to the beginning of said build-up stretch when said delivery station is served with goods awaiting to be delivered to said second conveyor, while said totality of goods are shifted to said end of said build-up stretch when said pick-up station is ready to pick up goods from said second conveyor, the shift to the beginning having priority so long as goods are awaiting delivery at said delivery station to an available storage point on said second conveyor.

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### 3,933,238
### SHIELD ASSEMBLY FOR FLEXIBLE BELT CARRIER MECHANISM

Richard J. Maguire, Kingston, Mass., assignor to The Gillette Company, Boston, Mass.

Filed June 19, 1974, Ser. No. 480,862
Int. Cl.² B65G 17/00
U.S. Cl. 198—189 7 Claims



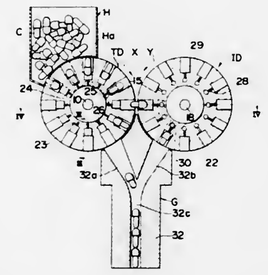
1. In an endless flexible belt carrier mechanism including an endless flexible belt and a plurality of work holders attached to and spaced along said belt, the improvement which comprises a shield assembly for insertion in the spaces between said work holders and adapted to be moved along with said belt, said shield assembly comprising a pair of movable shield members biased outwardly from said shield assembly into contact with said work holders on either side of said shield assembly, whereby said shield assembly maintains contact with said work holders when said flexible carrier mechanism follows a straight path or a curved path.



### 3,933,239
### CAPSULE POSITIONING MACHINE

Haruhiko Yoshida, Osaka, Japan, assignor to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Nov. 11, 1974, Ser. No. 522,865
Claims priority, application Japan, Nov. 15, 1973, 48-129027
Int. Cl.² B65G 47/24
U.S. Cl. 198—287 4 Claims



1. A capsule positioning machine for supplying a plurality of capsules in a predetermined posture, each of said capsules being composed of a substantially cylindrical container and a substantially cylindrical cap which is mounted on and, therefore, overlaps one end portion of said container thereby defining a capsule chamber, said capsule positioning machine comprising:

a supply hopper for accommodating said capsules therein in any arbitrary posture and having the bottom opened;

a transport drum supported substantially below said bottom of said supply hopper for rotation in one direction and having a plurality of radially inwardly extending pockets which are spaced from each other at equal intervals around the periphery of said transport drum, said pockets being adapted to receive therein said capsules in any arbitrary posture from said supply hopper, the interior of each of said pockets being stepped to provide a large diameter portion adjacent the periphery of said transport drum and a reduced diameter portion remote from the periphery of said transport drum, each of said pockets having a size satisfying the following relations.

$$D < D' \leqq d < d' \text{ and}$$
$$l < La$$

wherein D represents an outer diameter of the container, D′ represents a diameter of the reduced diameter portion of said pocket, *d* represents an outer diameter of the cap, *d′* represents a diameter of the large diameter portion of the same pocket, *l* represents the depth of the reduced diameter portion of the same pocket and La represents the difference between the total length of the capsule and the length of the cap of the same capsule;

means for driving said transport drum so as to rotate said transport drum in said one direction, said transport drum being, during each rotation thereof, sequentially brought to supply, ejecting and delivery stations located around the transport drum in the direction of rotation of said transport drum;

first means operatively positioned for permitting said capsules to be received in the corresponding pockets in said transport drum at said supply station in any arbitrary posture and for permitting said capsules held within said pockets in said transport drum to be transferred towards said ejecting station as said transport drum rotates, comprising means for drawing air within each of said pockets to create a substantial vacuum therein;

second mean operatively positioned for permitting only the capsules, which are held in the associated pockets with the cap radially outwardly oriented, to be ejected out of said associated pockets at said ejecting station of said transport drum;

third means operatively positioned for permitting the capsules, which have been transported to said delivery station of said transport drum while held in the associated pockets with the cap radially inwardly oriented, to be ejected out of said associated pockets at said delivery station; and

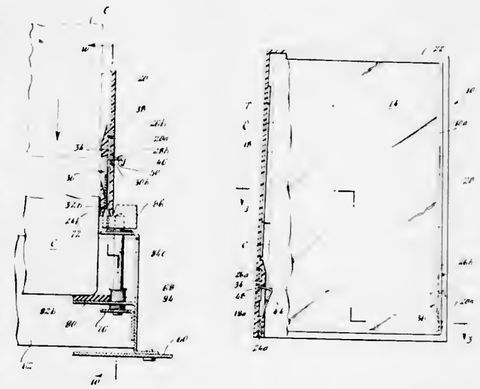
fourth means positioned adjacent said transport drum at said delivery station for receiving the capsules, which have successively been ejected out of said pockets at said delivery station with the container outwardly oriented, and for subsequently feeding them to a subsequent process.

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### 3,933,240
### ANTI-THEFT SECURITY CONTAINER

David R. Humble, Lauderhill, Fla., assignor to Sensormatic Electronics Corporation, Hollywood, Fla.

Filed Oct. 15, 1974, Ser. No. 514,490
Int. Cl.² B65D 55/04; B65B 69/00
U.S. Cl. 206—1.5 16 Claims



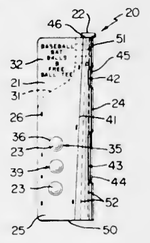
1. Apparatus for preventing unauthorized removal of an article of merchandise from a protected area which comprises: a container defining a main opening therein for receiving said article and at least two spaced key openings adjacent said main opening: an electromagnetic reradiator carried by said container; first and second resilient clips carried by said container, each having a normal first position clear of said main opening but bendable to a second position blocking said main opening; means for latching said clips in said second position; and an article release member including at least two spaced key means simultaneously advanceable into said key openings for shifting each of said clips from said second position to said first position.

16. A release mechanism for an article holding container which comprises: a base; first and second key means supported by said base in spaced apart relationship; a housing substantially enclosing said base and key means and defining a top opening overlying said key means; actuating plate means within said housing normally positioned against said top opening but downwardly movable upon the application of force, said actuating plate means defining first and second passages to receive said key means therethrough and an article opening positioned to receive therethrough an article released from said container.

### 3,933,241
### PACKAGE CONSTRUCTION

Joseph V. Tassone, 2425 Rawnsdale Road, Kettering, Ohio 45440, and James T. Candor, 5440 Cynthia Lane, Dayton, Ohio 45429

Filed Dec. 11, 1973, Ser. No. 423,705. The portion of the term of this patent subsequent to June 25, 1991, has been disclaimed.
Int. Cl.² B65D *69/00, 85/00*
U.S. Cl. 206—223 8 Claims

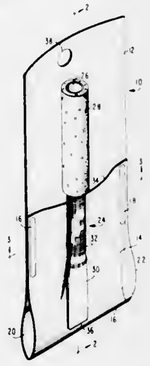


1. A package construction comprising a collapsible baseball and softball tee member for supporting a ball to be hit by a baseball and softball type ball bat when said tee member is erected whereby said tee member in said erected condition thereof is adapted to support a ball for striking by a batter at a vertical height which is at least equal to the vertical height defined by the batter's knee, and one of a baseball and softball type ball bat and ball being held by said tee member disposed thereabout in a collapsed condition and forming therewith a self-contained package construction.

### 3,933,242
### REED CONTAINER

William A. Roscoe, 100 Union St., Erwin, Tenn. 37650

Filed Nov. 14, 1974, Ser. No. 523,948
Int. Cl.² B65D *85/54*
U.S. Cl. 206—314 4 Claims

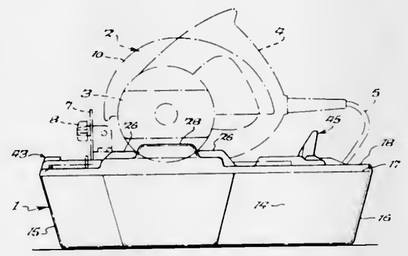


1. A reed container for double reeds having an enlarged shoulder portion spaced from the tip of the reed comprising a flexible, substantially rectangular sheet of plastic material folded partially back upon itself and fastening means securing said folded back portion to said sheet along the edges thereof in spaced relation to the fold portion to provide ventilation gaps adjacent said fold portion, the edge of said folded back portion between said fastening means being spaced from the fold portion a sufficient distance to prevent the tip of a double reed from contacting the fold portion when a double reed is inserted between said sheet and said folded back portion with the shoulder portion of the double reed resting on said edge.

### 3,933,243
### SUPPORT AND STORAGE TRAY

Peter T. Schurman, Woodbridge, Conn., assignor to The Plastic Forming Company, Inc., Woodbridge, Conn.

Filed Oct. 23, 1973, Ser. No. 408,305
Int. Cl.² B65D *85/54, 85/68*
U.S. Cl. 206—349 8 Claims

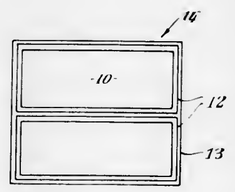


1. In combination with a power tool of the type having a handle, a driven work element, and a drive motor for said element, a support and storage tray therefor comprising means for supporting said tool in a storage position with said handle oriented as a carry handle for said tray, means for releasably latching said tool in said position, whereby said tray supports said tool for storage and is transported with said tool when the latter is carried by its handle and wherein said tray is compartmented to receive at least one accessory for said tool, said motor overlying said accessory compartment and retaining the accessory therein when said tool is in said storage position.

### 3,933,244
### SHRINK-WRAPPING OF ARTICLES

Merfyn Jones Hughes, Little Sutton; Derek William Shorten, Westerfield, and Graham Westley Smith, Witnesham, all of England, assignors to Bakelite Xylonite Limited, London, England

Filed Dec. 5, 1973, Ser. No. 421,812
Claims priority, application United Kingdom, Dec. 12, 1972, 57461/72
Int. Cl.² B65D *65/00*; B65B *53/02*
U.S. Cl. 206—497 26 Claims



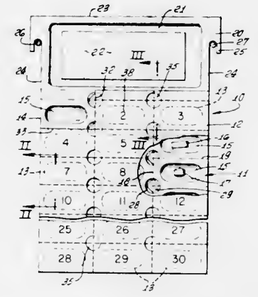
15. Double-wrap pack comprising a collation of a plurality of first packages each comprising at least one article wrapped in first ethylene polymer film, said collation being shrink-wrapped in a second ethylene polymer film, wherein one of said film contains an anti-block additive present in an amoutn between the effective anti-blocking amount of said additive and the self-heat-sealing-preventing amount of said additive, and the other of said films is substantially free from anti-blocking additive.



### 3,933,245
### ARTICLE HOLDING AND DISPENSING CONTAINER

Patrick E. Mullen, 828 Fifth St., Apt. 9, Santa Monica, Calif. 90403

Filed July 9, 1973, Ser. No. 377,557
Int. Cl.² B65D *83/04*
U.S. Cl. 206—498 7 Claims



1. In an article holding and dispensing container having an article receiving holding compartmental tray, a plurality of vertical frangible score lines associated with said tray separating generally aligned vertical rows of a plurality of article receiving pockets formed in said tray, pockets in said vertical rows being generally horizontally aligned with pockets in adjacent vertical rows, and horizontal frangible score lines associated with said tray separating aligned horizontal rows of said pockets, said pockets being open on one side thereof and closure means associated with said tray closing off the open sides of said pockets, the improvement which comprises:

said closure means having a plurality of vertical frangible score lines generally aligned with the vertical score lines of said holding compartment and a plurality of horizontal frangible score lines generally aligned with the horizontal score lines of said holding compartment, said closure means being heat-sealed to said holding compartment; and

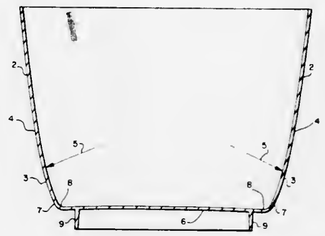
article removal facilitating means associated with both said holding compartment and said closure means at the intersection of said horizontal and vertical score lines, wherein said article removal facilitating means includes a plurality of non-heat-sealed zones in the areas of the intersection of the vertical and horizontal score lines of said closure means and at the intersection of the vertical and horizontal score lines of said holding compartment.

### 3,933,246
### CONTAINER

Edward W. Fulton, c/o The Alan I. W. Frank Corp., Exton, Pa. 19341

Continuation of Ser. No. 312,533, Dec. 6, 1972, abandoned. This application Dec. 24, 1974, Ser. No. 536,067
Int. Cl.² B65D *21/02*
U.S. Cl. 206—520 5 Claims

1. A container of generally circular shape defining a generally cup-shaped article including an inverted frusto-conical upper side wall portion of uniform thickness throughout; a lower side wall portion also of the same uniform thickness as that of the upper side wall portion, said lower side wall portion defining a curvilinear surface of progressively decreasing diameter; a flat, disciform bottom wall merging with the lowermost part of said curvilinear side wall portion at smoothly curved juncture having a radius of curvature substantially less than that of said curvilinear bottom portion of said side wall, said bottom wall being of identical uniform thickness as that of said side wall portions; the bottom wall having a dependent cylindrical foot formed integrally therewith, the diameter of said dependent foot being less than the diameter of said disciform bottom wall and the vertical height of said dependent foot being such that when two or more containers are nested

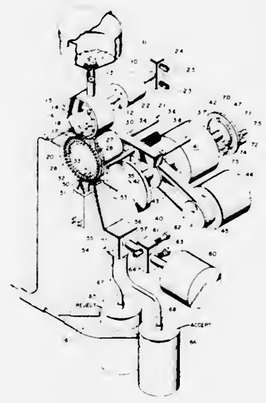


the side wall of the uppermost container is slightly spaced from the inner surface of the side wall of the lowermost container.

### 3,933,247
### HIGH SPEED MAGNETIC CORE HANDLER

Nathan R. Smith, Blaine, Minn., assignor to Micro Component Technology, Inc., Minneapolis, Minn.

Filed Dec. 14, 1973, Ser. No. 424,701
Int. Cl.² B07C *5/344*
U.S. Cl. 209—73 18 Claims



1. Magnetic core handling apparatus comprising:

a. moving means moving a plurality of magnetic cores to a retrieving station having an orifice larger than a single, but smaller than a double, diameter of said magnetic cores;

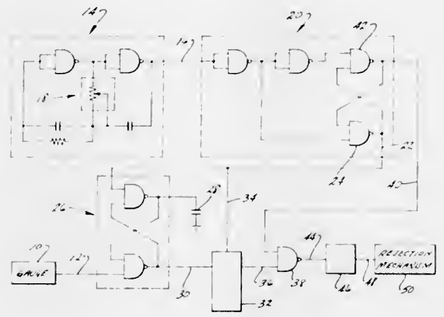
b. index wheel means having a plurality of core holding devices equally spaced around the periphery thereof, said wheel means operably communicating with said orifice of said moving means for consecutively retrieving a single core of said plurality and holding said cores;

c. magnetic core testing means disposed at a station downstream from said retrieving station for testing the magnetic characteristics of said magnetic cores;

d. intermittantly energized driving means operably connected to said index wheel means and thereby transporting said magnetic cores intermittently from said retrieving station to said testing station; and,

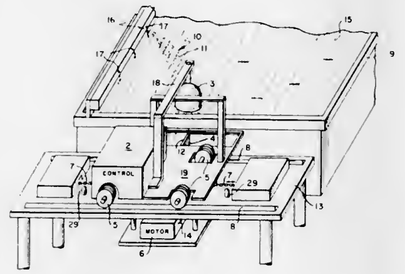
e. controlling means connected between said driving means and said magnetic core testing means for controlling the intermittent movement of said driving means.

**3,933,248**
**BIRD-SWING DETECTOR**
David A. Damm; John W. Juvinall, both of Toledo, and Gerald F. Scherf, Holland, all of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio
Filed Sept. 30, 1974, Ser. No. 510,182
Int. Cl.² B07C 5/36
U.S. Cl. 209—74 M 1 Claim



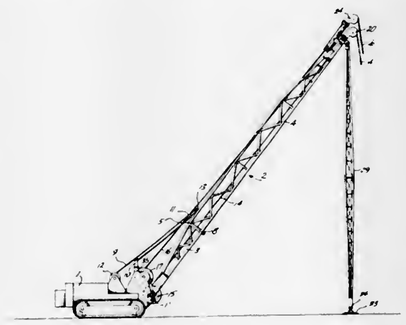
1. In an apparatus for the inspection of containers for bird-swing defects of the type wherein said containers are transported in single file by an endless moving conveyor to and through said apparatus, wherein said containers are inspected by a light beam while moving through said apparatus, and wherein deflection of said light beam by a bird-swing defect will cause generation of a rejection signal, the improvement in said apparatus of a downstream rejection system for said apparatus which comprises, in combination:
an oscillator for producing a continuous series of electrical pulses;
means, connected to said oscillator, for varying the frequency of said oscillator to allow synchronism of said frequency with the rate of travel of said containers on said conveyor;
a wave-shaping circuit, connected to said oscillator, for shaping the pulses from said oscillator into a substantially square wave pattern at the same frequency as said oscillator frequency;
a flip-flop having one input terminal connected to said wave-shaping circuit and a second input terminal connected to said inspection apparatus to receive said rejection signal;
a capacitor, having one side connected to ground and the other side thereof connected to said flip-flop, for delaying the resetting of said flip-flop a predetermined length of time after receipt of a signal from said wave-shaping circuit, the value of said capacitor fixing said pre-determined length of time of said delay;
a multi-stage shift register having a clocking input terminal connected to said wave-shaping circuit and a signal input terminal connected to an output terminal of said flip-flop;
an output electronic gate having one input terminal connected to said wave-shaping circuit and a second input terminal connected to an output terminal of said multi-stage shift register, said output electronic gate generating an output signal at an output terminal thereof only when both said multi-stage shift register and said wave-shaping circuit furnish a signal thereto;
a one-shot unit, connected to said output terminal of said output electronic gate, for generating a signal in response to a signal from said output electronic gate; and
rejection means, responsive to a signal from said one-shot unit, for removing containers from said conveyor, said rejection means being positioned at a location adjacent said conveyor and downstream from said inspection apparatus.

**3,933,249**
**PRODUCT SEPARATOR**
Robert A. Welsh, Bethel Park, and Albert W. Deurbrouck, Pittsburgh, both of Pa., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.
Filed Mar. 26, 1973, Ser. No. 344,697
Int. Cl.² B07C 5/342
U.S. Cl. 209—75 11 Claims



1. A material separating apparatus for separting a concentrate from the material comprising:
a primary material separator means having a surface with a recovery end for initially separating out a concentrate from the material and to visually indicate the concentrate on its surface;
a secondary material separator operatively associated with said primary separator at its recovery end to separate and recover said concentrates based on a characteristic quality of its reflected light;
said secondary separator including a light responsive detecting means to monitor the concentrate on the primary separator surface, a material separator and recovery means, and a control drive interconnecting between them whereby the material separator of the secondary separator is capable of being moved in response to variations on the monitored concentrate on the primary surface as a function of the characteristic quality of the detected reflected light.

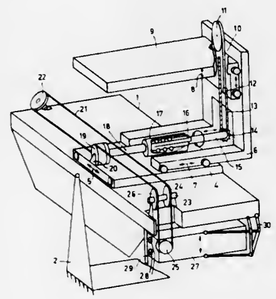
**3,933,250**
**GUY CRANE JIB TIP PROP**
Alvin M. Roberts, and Kenneth E. Roberts, both of 705 W. McBryde, Montesano, Wash. 98563
Filed Nov. 1, 1974, Ser. No. 519,823
Int. Cl.² B66C 23/94
U.S. Cl. 212—58 R 6 Claims



1. In a guy jib crane comprising a crane jib, an upright prop supporting the tip of said crane jib, a hauling line extending in one generally horizontal direction laterally of said crane jib from its tip, and a guy line extending generally horizontally laterally from the tip of said crane jib generally in the direction opposite said hauling line.

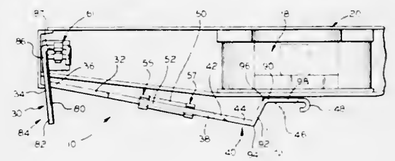


**3,933,251**
**X-RAY EXAMINATION APPARATUS COMPRISING A COUNTER-WEIGHT FOR THE IMAGE SECTION**
Walter Schmedemann, Timmerloh 3, 2 Hamburg 62, Germany
Filed May 15, 1974, Ser. No. 470,274
Claims priority, application Germany, May 16, 1973, 2324699
Int. Cl.² G03B 41/16
U.S. Cl. 250—439 2 Claims



1. X-ray examination apparatus comprising:
a frame having a longitudinal direction, a transverse direction and a compression direction, all mutually perpendicular to each other;
a principal carriage mounted on said frame for movement in the longitudinal direction;
a transverse carriage mounted on said principal carriage for movement in the transverse direction;
an image section mounted on said transverse carriage for movement in the compression direction;
a first shaft rotatively mounted along the transverse direction on said transverse carriage;
a second shaft rotatively mounted in the transverse direction on said principal carriage;
means for mechanically coupling rectilinear movement of said image section in the compression direction to rotary movement of said first shaft;
means for mechanically coupling rotary movement of said first shaft to rotary movement of said second shaft while permitting relative rectilinear movement thereof in the transverse direction;
a belt drum coaxially mounted on said second shaft for common rotation therewith;
a counterweight mounted on said frame for movement in the compression direction;
a belt having two ends, both of which are attached to said drum, so that rotation of said drum simultaneously winds both ends of said belt onto or off of said drum thereby increasing or decreasing the remaining length of said belt, the ends of said belt extending away from each other in the longitudinal direction;
a reversing guide roller mounted on said counterweight for reversing the direction of said belt; and
guide rollers mounted on said frame for directing said belt toward and away from said reversing guide roller,
whereby movement of said image section in the compression direction causes opposite movement of said counterweight in the compression direction, said counterweight counterbalancing the weight of said image section.

**3,933,252**
**RAILROAD CAR UNCOUPLING LEVER WITH ANTIFRICTION SLIDEWAY ARRANGEMENT**
Richard F. Murphy, Aurora, and Osvaldo F. Chierici, Elmhurst, both of Ill., assignors to Holland Company, Lombard, Ill.
Filed Nov. 11, 1974, Ser. No. 522,467
Int. Cl.² B61G 3/08
U.S. Cl. 213—166 16 Claims

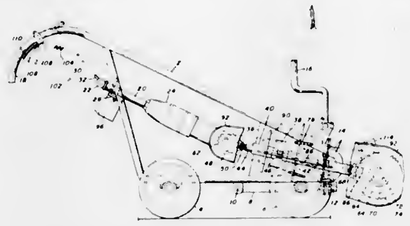


1. In an uncoupling lever device for a railroad car having a coupler mounted at one end thereof for side to side swinging movement and movement longitudinally of the car in response to buff and draft forces and including a lock lifter for uncoupling the coupler, with said uncoupling device including a lever assembly comprising a lock lifter section including a hook eye at one end thereof adapted to operatively engage the lock lifter for support by the coupler, and a handle section including a handle portion at one end thereof adapted to be pivotally secured to the car to one side of the end of the car to swing about a pivot point to move said hook eye portion to operate said lock lifter, for mounting the lever assembly in operative relation on the car, with the handle section comprising an elongate rectilinear bar of polygonal transverse cross-sectional configuration, with the handle portion being fixed to one end of said bar, and the lock lifter section comprising an elongate rectilinear bar having the hook eye affixed to one end of same, and with the lock lifter section bar adjacent the other end of same including an elongate slideway extending generally longitudinally same, and the handle section bar slidably received in said slideway in cranking relation to the lock lifter section bar for accommodating shifting action of the lock lifter section relative to the handle section on side to side swinging movement of the coupler, the improvement wherein:
said slideway comprises:
an elongate tube having a bore defining slideway surfacing thereabout formed from a high density polymer having self-lubricating characteristics,
said tube being open at either end of same for free travel of said lock lifter section slideway longitudinally of said handle section bar to, on movement of said lock lifter section bar toward the handle portion, dispose the other end of said handle section bar exteriorly of said slideway at the hook eye end of same for accommodating contraction of said device under coupler swing when the coupler swings toward said handle portion,
said bars being formed for free travel of said lock lifter section bar relative to said handle section bar, on said movement to project said other end of said handle section bar from said slideway, to adjacent said one end of said lock lifter section bar, and for free travel of said slideway lengthwise of said handle section bar,
said bars being proportioned to dispose said other end of said handle section bar intermediate said one end of said lock lifter section bar and the slideway inboard end when the coupler is centered relative to the car,
and means for fixing said tube to said lock lifter section bar against movement longitudinally of said lock lifter section bar, with said tube being free of bonded connection to said lock lifter section bar.

### 3,933,253
### MECHANICAL TURNING DEVICE FOR STRUCTURAL SHAPES

**Keith Gardner, 49 N. 300 East, Spanish Fork, Utah 84660**

**Filed July 30, 1974, Ser. No. 493,016**
**Int. Cl.² B65G 7/00**
**U.S. Cl. 214—1 Q** **4 Claims**



1. A mechanical turning device for structural shapes comprising

a frame member,

a pair of spaced apart bearings mounted on one end of the frame and with one bearing on one side of the frame and the other bearing on the other side of the frame,

a hollow drive shaft supported to rotate in the bearings,

an extension shaft fitting inside the hollow drive shaft and adapted for rotation with the drive shaft and for longitudinal movement with respect to the drive shaft,

turning jaws mounted on the end of the extension shaft for engaging the end of a structural shape,

means connected to the drive shaft for rotating the drive shaft selectively in either direction of rotation to a desired angle of rotation,

means connected to the extension shaft for selectively moving the extension shaft longitudinally with respect to the drive shaft, and

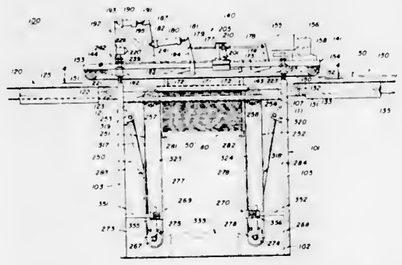
a pair of wheels and a supporting axle mounted on the frame for movement of the device to a position for engaging the end of a structural shape.

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### 3,933,254
### STACKER-UNSTACKER

**Willis C. Pulver, Burbank, and Henry A. Heide, Addison, both of Ill., assignors to Velten & Pulver, Inc., Chicago Ridge, Ill.**

**Filed Mar. 8, 1973, Ser. No. 339,314**
**Int. Cl.² B65G 60/00**
**U.S. Cl. 214—6 DS** **20 Claims**



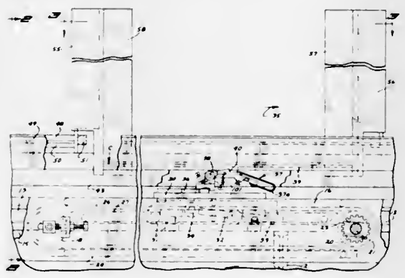
1. A machine for both feeding into a stack and removing from a stack baking pans and the like, said machine comprising a transfer conveyor for conveying baking pans to the stack, away from the stack and past the stack, said transfer conveyor including attraction means for attracting the baking pans and holding them in engagement with said transfer conveyor during transfer of the baking pans thereby, a pan carrier mounted below said transfer conveyor in position to receive a pan dropped therefrom, said attraction means including a pan positioning mechanism for sequentially separating baking pans from said transfer conveyor and sequentially depositing the baking pans upon said pan carrier to form a stack of pans thereon and for sequentially lifting baking pans from said pan carrier and sequentially engaging the baking pans with said transfer conveyor, said pan positioning mechanism being movable above and away from said transfer conveyor for separating baking pans therefrom and being movable below said transfer conveyor for lifting baking pans from said pan carrier, carrier drive mechanism for moving said pan carrier upwardly and toward said transfer conveyor as pans are unstacked from said pan carrier and onto said transfer conveyor and for moving said pan carrier downwardly and away from said transfer conveyor as baking pans are stacked on the said pan carrier from said transfer conveyor, and a control mechanism for selectively and sequentially operating said transfer conveyor and said pan positioning mechanism and said carrier drive mechanism in a baking pan unstacking mode and in a baking pan pass-through mode and in a baking pan stacking mode, said control mechanism in the baking pan unstacking mode thereof causing said pan positioning mechanism to operate sequentially to move below said conveyor to lift baking pans from said pan carrier and sequentially engage the baking pans and said transfer conveyor as said carrier drive mechanism sequentially moves said pan carrier upwardly and toward said transfer conveyor, said control mechanism in the pass-through mode thereof causing said transfer conveyor to carry the baking pans past said pan carrier, said control mechanism in the stacking mode thereof causing said pan positioning mechanism to operate sequentially to move above and away from said conveyor to separate baking pans from said transfer conveyor by breaking the attraction therebetween and sequentially deposit the baking pans upon said pan carrier as said pan carrier drive mechanism sequentially moves said pan carrier downwardly and away from said transfer conveyor.

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### 3,933,255
### CASE MAGAZINE AND FEED APPARATUS

**Gaylerd M. Lieder, and Harold K. Fox, both of Minneapolis, Minn., assignors to Bemis Company, Inc., Minneapolis, Minn.**

**Filed Dec. 6, 1973, Ser. No. 422,308**
**Int. Cl.² B65G 59/00**
**U.S. Cl. 214—8.5 K** **4 Claims**



1. For removing a case from a vertical stack of cases in horizontal, flat folded conditions that have elongated first edge portions and elongated edge portions opposite the first edge portions, a frame, longitudinally elongated slide means on the frame for supporting the stack of cases, means mounted on the frame for retaining the cases in the stack in generally vertical alignment while permitting the lowermost case of the stack being slid along the slide means from beneath the stack, stripper means mounted on the frame for moving the lowermost case along the slide means from beneath the stack and lifter means mounted on the vertical alignment means for engaging cases in the stack that are located more than the thickness of a plurality of cases above the slide means to lift engaged cases and retain the lifted cases in vertical spaced relationship to the remainder of the cases in the stack and separated therefrom, and subsequently release the lifted cases to fall toward the slide means, the lifter means including a generally vertical case engaging lifter member, a vertically elongated cam member having at least a lower portion that extends downwardly and away from the stack, vertically movable means for mounting the case engaging lifter member and vertically movably engaging the cam member lower portion to move the case engaging lifter member toward the adjacent case edge portions as it moves vertically upwardly along said cam member lower portion, power means secured to the vertically movable means for selectively moving the vertically movable means upwardly and downwardly in engagement with the cam member and means for mounting the cam member and power means on the vertical alignment means.

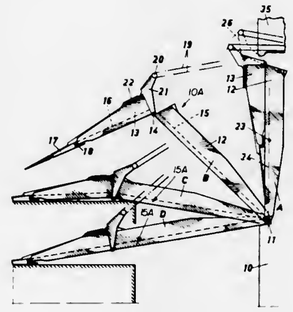


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### 3,933,256
### SHIP'S LOADING RAMP

**Per Fagerlund, Torslanda, Sweden, assignor to Navire Cargo Gear International AB, Goteborg, Sweden**

**Filed Apr. 22, 1974, Ser. No. 463,167**
**Claims priority, application Sweden, May 7, 1973, 7306337**
**Int. Cl.² B65G 11/00**
**U.S. Cl. 214—15 R** **4 Claims**



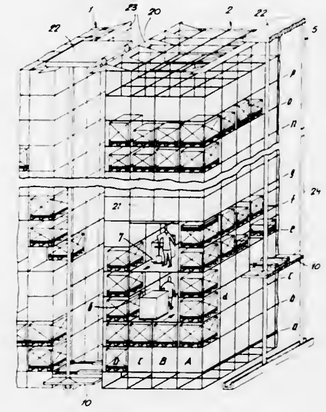
1. A ship's loading ramp including two spaced substantially parallel side beams, and a travelling track carried by the side beams said side beams and said tracks being divided transversely into inner and outer portions, first hinge means for swingably mounted the inner portion of said ramp at the ship, second hinge means interconnecting the inner and outer portions of the ramp, winch means for operating the ramp between a folded and a vertically staved position on board the ship and an extended working position, and further including a balancing arm at each side beam having one end pivotably mounted thereto adjacent to the second hinge means and extending its other end above the upper edge of the side beam, a sheave means at the other end of each arm for guiding a wire from the winch means, and an actuator, mounted between one of the beam portions and the pertaining balancing arm for adjusting the angular position of the latter.

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### 3,933,257
### WAREHOUSE SHELVING SYSTEM

**Reinold Karl Weber, August-Siebert-Strasse 4, Frankfurt am Main, Germany**

**Continuation-in-part of Ser. No. 245,963, April 20, 1972, abandoned. This application July 18, 1974, Ser. No. 489,481**
**Claims priority, application Germany, Dec. 21, 1973, 2363795**
**Int. Cl.² B65G 1/06**
**U.S. Cl. 214—16.4 A** **3 Claims**



1. A shelving system for the storage of pallet-size loads, comprising:

a plurality of stacks of shelves each vertically subdivided into a multiplicity of tiers positioned on the same levels in said plurality of stacks, longitudinally adjoining stacks being separated by a transversely extending aisle, each stack having a depth of several storage spaces each accommodating a pallet-size load, said aisle having a depth substantially equaling at least twice the depth of a storage space;

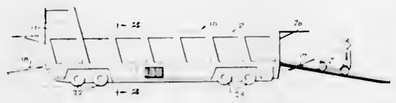
hoisting means in said aisle including a pallet carrier alignable with the tiers of the adjoining stack on any level, said carrier comprising a platform, a longitudinally extendable arm on said platform substantially spanning the depth of said aisle when in a contracted position, lifting means alongside said arm on said platform, and transfer means mounted on said lifting means and longitudinally displaceable thereon between opposite extremities of said arm, the length of said transfer means being less than the length of said arm in said contracted position thereof; and

mechanism on said carrier for placing said transfer means under a pallet riding on one extremity of the contracted arm, actuating said lifting means to engage said transfer means with the pallet and raise the latter off said arm, displacing said transfer means on said lifting means into an alternate position relative to said arm, depositing the pallet on the other extremity of said arm with disengagement of said transfer means therefrom, and extending said arm into the adjoining stack on the side of said other extremity, said stacks being provided at certain levels with throughgoing transverse passageways adjoining a single row of storage spaces next to said aisle.

### 3,933,258
### VEHICULAR TRANSPORTATION SYSTEM

**Robert W. Forsyth, and John P. Forsyth, both of 1517 N. 3rd Ave., Upland, Calif. 91786**

**Filed Jan. 2, 1974, Ser. No. 430,186**
**Int. Cl.² B60P** *1/00*
**U.S. Cl. 214—85** **13 Claims**



**1.** A vehicular transportation apparatus for processing a passenger vehicle comprising: vehicles

a plurality of individual self-propelled vehicles;

a transporter vehicle having tired wheels and a storage compartment for storing a plurality of said individual vehciles including their occupants in a controlled grouping for combined transportation from one place to another along a roadway;

said transporter vehicle having a deck for supporting said individual vehicles in longitudinal line one behind the other in two parallel rows;

ramp means associated with the opposite ends of each storage row and operably carried by said deck to permit selective loading and unloading of said individual vehicles under their own propulsion onto and from said deck;

locking mechanism carried by said individual vehicles and said deck for retaining said individual vehicles on said deck in said rows; and

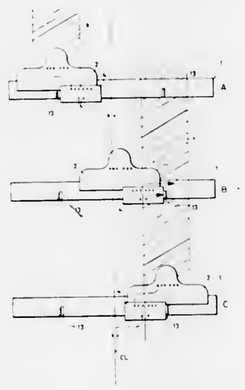
means cooperatively disposed between said individual vehicles and said transporter vehicle for providing conditioned air to the interior of each of said individual vehicles.

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### 3,933,259
### SIDE-SHIFT BACKHOE

**Alasdair John Irving, Epping, Australia, assignor to J. I. Case Company, Racine, Wis.**

**Filed July 2, 1973, Ser. No. 375,914**
**Claims priority, application Australia, July 3, 1972, 9553/72**
**Int. Cl.² B66F** *9/00*
**U.S. Cl. 214—138 C** **5 Claims**



**1.** A side-shift backhoe comprising a supporting frame for connection to a tractor, a slide member mounted on and for lateral movement with respect to said frame, a working member mounted on said slide member, and an operator's station having control means for said slide member and said working member, said operator's station being slidably mounted on said slide member for movement parallel to said slide member, stop members secured to said frame in spaced relation at either side of said station, said stop members being engaged by said station as said slide member moves with respect to said frame whereby the relative position of said station with respect to said slide member may be changed in either direction.

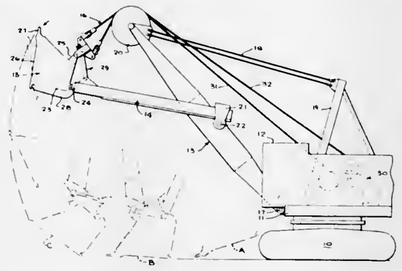
**2.** A side-shift backhoe comprising a supporting frame for connection to a tractor, a slide member mounted on and for lateral movement with respect to said frame, a working member mounted on said slide member and an operator's station having control means for said slide member and said working member, said operator's station being slidably mounted on said frame for lateral offset parallel movement with respect to said frame and said slide member, stop members extending from either end of the slide member, and a projection on said station adapted to be engaged by said stop members as the slide member moves with respect to said frame whereby the relative position of the slide to the station may be changed in either direction.

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### 3,933,260
### HOIST SYSTEM FOR POWER SHOVELS

**Loren Kronlokken, Edina, Minn., and Guenter Fritz Lehmann, Marion, Ohio, assignors to Marion Power Shovel Co., Inc., Marion, Ohio**

**Filed Sept. 14, 1973, Ser. No. 397,586**
**Int. Cl.² B66C** *3/02*
**U.S. Cl. 214—138 R** **30 Claims**



**1.** In a power shovel having a main frame, a boom connected at a lower end thereof to said main frame, a dipper handle pivotally connected to said boom and a dipper pivotally connected to said dipper handle, a hoist system for said dipper including means for varying the pitch thereof comprising a common hoist drum mounted on said main frame, a first hoist line operatively connected at one end thereof to said hoist drum, passing over a point on said boom and operatively connected at the opposite end thereof to said dipper handle, a second hoist line operatively connected at one end thereof to said hoist drum, passing over a point on said boom and operatively connected at the opposite end thereof to said dipper, and means for selectively displacing one of said hoist lines relative to the other thereof.

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### 3,933,261
### CONSTRUCTION EQUIPMENT

**Jerome L. Marostica, and William L. McLaughlin, both of Anchorage, Alaska, assignors to BHB Corporation, Anchorage, Alaska**

**Filed Apr. 16, 1974, Ser. No. 461,455**
**Int. Cl.² B66F** *9/00*
**U.S. Cl. 214—138 R** **7 Claims**

**1.** A mobile, self-contained construction machine comprising, in combination:

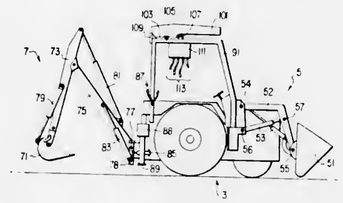
an automotive vehicle presenting a support platform and including a cab having a roof arranged to support high level weight loads, said cab defining an enclosure to be occupied by an operator;

a backhoe system supported by said platform and extending from one side of said vehicle, said backhoe system being mounted to said platform for pivotal movement in a horizontal plane relative to said vehicle;

an extendible folding boom including at least two articulated members, and pivotally mounted on said roof of said cab and extending upwardly therefrom;

a pole claw composed of a pair of opposed limbs pivotally mounted at the free end of said boom, and claw operating





means connected for pivoting said limbs in directions to respectively open and close said pole claw;

a cable carried by said boom and means at the free end of said boom for guiding the end of said cable so that the end of said cable extends from said guiding means downwardly from the free end of said boom;

a chain and hook connected to the end of said cable; and

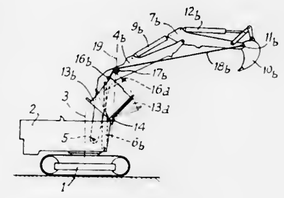
control means disposed in said cab for use by an operator therein and operatively connected to said backhoe system, said boom and said claw operating means for enabling the operation thereof to be controlled by the operator.

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### 3,933,262
### METHOD OF HANDLING A PIVOTING CAB OF A PUBLIC WORKS MACHINE AND A PUBLIC WORKS MACHINE APPLYING SAID METHOD

**Michel M. Cresp, Ormoy-Villiers, France, assignor to Poclain, Le Plessis Belleville, France**

**Filed Jan. 7, 1975, Ser. No. 539,187**
**Claims priority, application France, Jan. 15, 1974, 74.01315**
**Int. Cl.² E02F** *3/32*
**U.S. Cl. 214—138 R** **8 Claims**



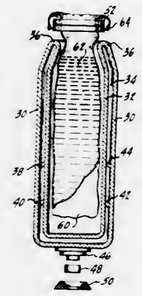
**2.** A public works machine comprising a frame, an arm mounted to pivot with respect to the frame about a first axis and supporting the working tool, a movable cab, pivot means connecting said cab to said frame for enabling said cab to pivot with respect to the frame about a second axis substantially parallel to the first axis, fastener means connected to the cab at a location spaced from the second axis and tie means connecting said fastener means to said arm for effecting pivotal movement of said cab by pivoting of said arm as desired.

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### 3,933,263
### EASILY CLEANSABLE CONTAINER

**Florence Frew, 13 Thoreau Drive, Englishtown, N.J. 07726, and Janet Indiveri, 15 Paper Mill Road, Cherry Hill, N.J. 08003**

**Filed Mar. 25, 1974, Ser. No. 454,151**
**Int. Cl.² A47J** *41/00*
**U.S. Cl. 215—13 A** **6 Claims**



**1.** An easily cleansable container comprising:

an outer housing;

an inner vacuum bottle providing a substantially thermally isolated environment;

a disposable liner situated within said vacuum bottle and adapted to receive liquids, solids or the like for retention in said environment, said liner being arranged to fold around at least a portion of said housing; and

a stopper positioned to jointly close said inner bottle and said disposable liner to hold said liquids, solids or the like in place when it is desired to keep them at their initial temperatures, and positioned to jointly open said inner bottle and dispoable liner when removed to provide access to the liquids, solids or the like held within

wherein said disposable liner is of a flexible, stretchable plastic composition to hold against said portion of the outer housing;

wherein said disposable liner incorporates an elasticized material band around an outer edge thereof, positioned to further hold the liner against said portion of the outer housing and to present an easy manner of grasping the liner for removal when it is desired to be discarded; and

wherein the portion of the outer housing around which said disposable liner is folded includes a lip portion arranged to cooperate with said elasticized band to hold it in place and the liner further against said housing in preventing total insertion of said liner in said vacuum bottle.

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### 3,933,264
### CONTAINER AND CAP WITH TEAR STRIP

**Anthony T. Rossi, Bradenton, Fla., assignor to Tropicana Products, Inc., Bradenton, Fla.**

**Filed Sept. 20, 1974, Ser. No. 507,973**
**Int. Cl.² B65D** *41/32*
**U.S. Cl. 215—254** **5 Claims**

**1.** A molded plastic container cap for closing a container having a circumferentially extending interlock projection, said cap including:

a cover section comprising:

a generally central raised portion, and

a sloping edge portion sloping downwardly and radially outwardly from said central raised portion; and

an inverted, generally U-shaped seating section for receiving an upper side wall portion of said container, said seating section comprising:

a wall portion integral with and extending upwardly from said sloping edge portion of said cover section,

an outer, circumferentially extending, depending skirt portion for embracing the outer side of said container side wall portion,

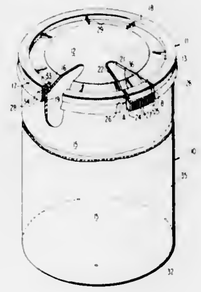
said skirt portion including a circumferentially extending seating recess, for interlocking with said interlock projection of said container, and

said wall portion and said skirt section establishing a raised circumferential ridge projecting above said sloping edge portion of said cover section;

said cover section and said seating section including a tear strip portion of the cap for establishing a drinking and pouring access opening through said cap, said tear strip portion being bounded by

slots extending upwardly from the bottom of said skirt portion toward but short of the top of said circumferential ridge, and

grooves commencing with the termination of said slots and extending upwardly along said skirt portion, across said ridge, downwardly along said wall portion of said seating portion, across said sloping edge portion and at



least part of said central portion in generally converging directions;

means disposed adjacent the portion of said grooves extending across said sloping edge portion for rigidifying said cap by engaging said sloping edge portion and engaging said wall portion;

the portion of said ridge between said grooves being operable to establish a fulcrum about which the portion of said skirt bounded by said grooves is pivotable in response to lifting of the portion of said skirt bounded by said slots; and,

the portion of the juncture of said wall portion and said downwardly sloping edge portion bounded by said grooves being operable to establish a rigidified zone contiguous with the outer periphery of said downward sloping edge portion, about which rigidified zone the portion of said wall bounded by said grooves is rotatable toward said downwardly sloping edge portion to permit removal of said tear strip by movement of a portion of said tear strip bounded by said slots in a smooth, upward and inward, arcuate path.

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**3,933,265**

**BOTTLE CLOSURE**

**Jac H. Karlan, 5992 Netherland Ave., Riverdale, N.Y. 10471**

**Filed Sept. 19, 1972, Ser. No. 290,418**

**Int. Cl.² B65D** *51/16*

**U.S. Cl. 215—260** **8 Claims**

**1.** A closure for a receptacle having an a first external bead in the vicinity of the mouth thereof and a second external bead lower than the first bead, comprising

a one-piece closure construction having:

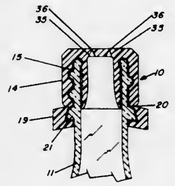
a hollow flexible annular insert of flexible thermoset material integral with the base and of at least equivalent flexibility depending from the base insertable within the receptacle and adapted to press and increasingly seal against and conform to an internal wall of the receptacle under the influence of increasing pressure within the receptacle,

corrugations on said insert for pressing against the internal wall of the receptacle,

hollow outer annular wall of flexible thermoset synthetic material, shorter than said insert, integral with the base and surrounding the insert and depending from the base for substantially surrounding and covering the first bead on the receptacle and adapted to press and increasingly seal against the bead under the influence of increasing pressure within the receptacle,

means formed integrally with the base for relieving fluid pressures within the receptacle above a predetermined level comprising

a thinned portion of the base over the mouth of the receptacle of a geometry and thickness adapted to burst at a level of fluid pressure above a predetermined level of sealing pressure within the receptacle,



severable skirt means extending from the hollow outer annular wall and adapted to engage the second external bead tightly, said skirt means having flexibility and stretch characteristics which facilitate advancing the skirt axially over the second external bead without tearing the skirt means, the outer annular wall or the skirt means from the outer annular wall, said skirt means further having annular shoulder means extending laterally beyond the hollow outer annular wall for receiving plunger means for urging the closure over the receptacle and axially over the first external bead and into mating fit on the first external bead and for urging the skirt into engagement with the second external bead,

the length of the outer annular wall and the skirt means being such that it is necessary to stretch the skirt means in the axial direction of the receptable to engage the second external bead.

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**3,933,266**

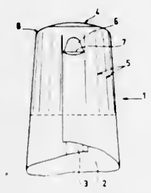
**BOTTLE CAP SEAL**

**Bernard Dautreppe, Reims, and Michel Lallemang, Justices, both of France, assignors to Chisalu, Mareuil-sur-ay, France**

**Filed Nov. 24, 1972, Ser. No. 308,993**

**Int. Cl.² B65D** *41/00*

**U.S. Cl. 215—316** **1 Claim**



**1.** A bottle cap formed of a soft metal sheet having a closed upper end and a long skirt portion of frustoconical shape and having corrugations therein with the lateral edge portions overlapped for joinder, an adhesive which is hardened in between the overlapped lateral edge portions to interbond the overlapped edge portions of the sheet and in which the overlapped edge portions are free of corrugations, and a single depression through the overlapped edge portions, in which the depression is formed while the adhesive is still in the unhardened state and in which the depression is located in the upper edge portion where the frustoconical skirt portion meets the top.



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**3,933,267**

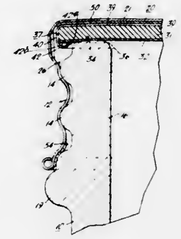
**CONTAINER CLOSURE ASSEMBLY**

**Leroy H. Rohde, Malvern, Pa., assignor to The West Company, Phoenixville, Pa.**

**Filed July 16, 1973, Ser. No. 379,819**

**Int. Cl.² B65D** *53/00*

**U.S. Cl. 215—350** **4 Claims**



**1.** A container closure assembly for a container comprising an outer cap of generally cup-like form having a top and a skirt depending from the outer peripheral edge of the top, an annular pocket formed in the skirt of the cap adjacent said top, a floating liner assembly mounted in said pocket including a disc-like core of resilient material, a first liner element confronting one face of the core, a cup-like shell having a top portion overlying the other face of the core, and a turned in locking flange engageable with the first liner element adjacent the periphery thereof, and a second liner element made of a low friction material disposed between the inner surface of the top and the top portion of said shell to facilitate rotation of said shell and cap relative to one another when said members are in pressure applying relation.

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**3,933,268**

**CONTAINER**

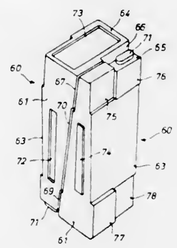
**Fritz Buske, Rothenbaumchaussee 131, 2 Hamburg 13, Germany**

**Filed Jan. 11, 1974, Ser. No. 432,558**

**Claims priority, application Germany, Jan. 13, 1973, 2301645; Dec. 29, 1973, 2365193; May 24, 1973, 2326931**

**Int. Cl.² B65D** *21/02*

**U.S. Cl. 220—23.4** **6 Claims**



**1.** A container for packaging liquids adapted to interengage with an identical container to define a right parallelpiped form whereby interengaged containers interlock to restrict relative displacement therebetween comprising a hollow body having first and second spaced parallel sides of right angle trapezoid form, first and second nonparallel lateral sides, and parallel upper and lower sides, said first lateral side being perpendicular to said lower side, the spacing between said lateral sides being greater adjacent said lower side than at said upper side, first engaging means defined on said second lateral side adjacent said upper side, second engaging means defined on said second lateral side adjacent said lower side, said engaging means including surfaces transversely disposed to said second lateral side and of complimentary mating configuration, third engaging means defined on said first parallel side of trapezoid form, and fourth engaging means defined on said second parallel side of trapezoid form, said third and fourth engaging means being complimentary and interengageable for engagement with adjacent like containers.

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**3,933,269**

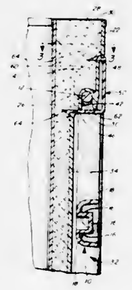
**HANDLE ASSEMBLY FOR CHEST**

**Donald Mastrovito, Shrewsbury, Mass., assignor to Family Products, Inc., Cambridge, Mass.**

**Filed Dec. 26, 1972, Ser. No. 317,948**

**Int. Cl. B65d** *25/28*

**U.S. Cl. 220—94 R** **7 Claims**



**1.** An improved handle construction for a container having a sidewall comprising:

means, formed integrally and in one piece with said sidewall and defining a downwardly opening channel along the exterior of the sidewall of said container, said channel generally paralleling said sidewall;

a handle having a manually grippable bottom bar, an upper hinge bar adapted to be received in said channel and means securing said bottom bar to said hinge bar in spaced relation therefrom, said hinge bar being pivotally disposed within said channel; and

a cap connected to said sidewall and adapted to cover at least a portion of the open bottom of said channel thereby to retain said hinge bar therein.

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**3,933,270**

**CLOSURE WITH PROTECTIVE INSERT**

**John S. Bozek, Chicago, Ill., assignor to Continental Can Company, Inc., New York, N.Y.**

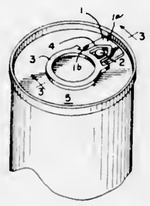
**Filed Jan. 27, 1975, Ser. No. 544,152**

**Int. Cl.² B65D** *41/32*

**U.S. Cl. 220—270** **10 Claims**

**1.** An improved safety closure for use on a can or similar container comprising an end panel having a score defining an

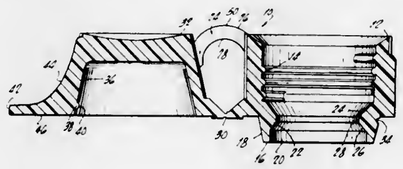
opening flap therein, a pull tab secured to said end panel and having means for fracturing said score to open said flap, and



protective means for shielding said score from said fracturing means.

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**3,933,271**
**CAPTIVE CAP**
**Russell Park McGhie, Somers, N.Y., assignor to Colgate-Palmolive Company, New York, N.Y.**
**Filed Feb. 14, 1974, Ser. No. 442,439**
**Int. Cl.² B65D** *43/24*
**U.S. Cl. 220—335** **9 Claims**

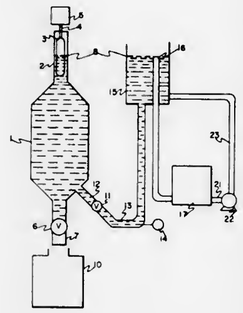


1. A captive cap comprising a hollow base, a hollow lead tube projecting from and communicating with said hollow base, means for attaching said hollow base to a container, a cap having a hollow portion, said hollow lead tube projecting toward said cap and proportioned to reside within said cap when said cap is closed onto said hollow base, a hinge member disposed between said hollow base and said cap, at least one spring member disposed between said hollow base and said cap and spaced apart from said hinge member and with said spring member having a first end pivotally attached to said hollow base, a second end pivotally attached to said cap, and a curved portion joining said first end and said second end, said cap including a protuberance extending from the inner surface of said cap and said hollow base having a complimentary recess on its outer surface said protuberance being disposed to lodge in said complimentary recess when said cap is closed onto said hollow base for reversibly locking said cap onto said hollow base.

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**3,933,272**
**APPARATUS FOR DISPENSING LIQUIDS**
**Norman C. Lamb, Ralston, and Harvey T. Shank, Papillion, both of Nebr., assignors to Stauffer Chemical Company, Westport, Conn.**
**Filed Oct. 25, 1973, Ser. No. 410,008**
**Int. Cl.² G01F** *11/28*
**U.S. Cl. 222—1** **17 Claims**

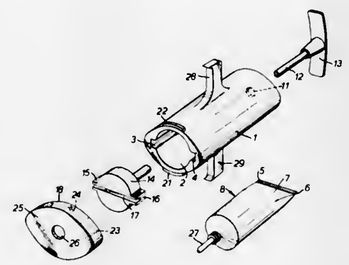
14. In a method for volumetrically dispensing a predetermined weight of liquid at variable temperatures, wherein a displacement means is positioned in a calibrated vessel in a relation to the temperature of the liquid, the improvement which comprises monitoring the temperature of the liquid, positioning a displacement means in the liquid in the calibrated liquid dispensing vessel through a tubular section of reduced cross section in open communication with the main body of the vessel, the cross section of said displacement means being smaller than the cross section of the tubular section to permit passage of the liquid between the displacement means and the tubular section, wherein the position of the displacement means in the calibrated vessel is determined by the temperature of the liquid; filling the calibrated liquid



dispensing vessel to a predetermined level in the reduced cross section between the displacement means and the tubular section with the liquid whereby a predetermined weight of liquid is contained in the vessel for dispensing.

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**3,933,273**
**DISPENSER FOR EXPELLING CONTENTS OF COLLAPSIBLE TUBES AND METHOD OF USING**
**Patrick Clement Cox, "The Pippins", Brimpton, Reading, Berkshire, England**
**Filed Feb. 13, 1974, Ser. No. 442,186**
**Claims priority, application United Kingdom, Feb. 15, 1973, 7499/73; May 14, 1973, 22779/73; Aug. 24, 1973, 40276/73**
**Int. Cl.² B65D** *35/30*
**U.S. Cl. 222—1** **19 Claims**



1. A method of dispensing material from a collapsible tube which comprises the steps of:
placing a collapsible tube, having a flat crimped closed end, within a sleeve having axially extending grooves open at one end so as to permit insertion of, and accommodating, laterally projecting ear portions of said collapsible tube which are formed at said closed end of said tube; and
compressing said tube by an axially moving plunger also disposed within said sleeve.

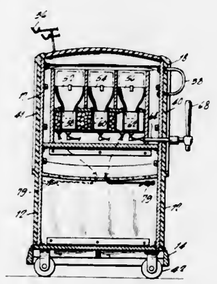


**3,933,274**
**PRODUCT FOR THE TREATMENT OF CELLULOSIC FABRICS**
**Stuart Albert Emmons, Cwmbran, Wales; John Leonard Metcalfe, Wirral, England, and John Winston Potts, Ndola, Zambia, assignors to Lever Brothers Company, Maine**
**Continuation of Ser. No. 287,406, Sept. 11, 1972, abandoned. This application Oct. 9, 1973, Ser. No. 404,539**
**Int. Cl.² B65D** *35/22*; **B67D** *5/06*
**U.S. Cl. 222—94** **6 Claims**

1. A product comprising a container having at least two compartments for holding at least two fluid substances separate from one another but adapted for dispensing the substances simultaneously, siad container having two mutually co-extensive outer walls of flexible sheet material and at least one inner wall of flexible sheet material which is co-extensive with the outer walls and acts as a partition between adjacent separate compartments, all the walls being secured together at the edge regions of the container, such that cutting into the container along at least one edge thereof will thereby cut into all the walls and provide a multiple outlet to simultaneously dispense fluids from each of the compartments, said container having in one compartment an aqueous solution of a substituted urea-formaldehyde resin precondensate, the concentration of the resin precondensate in the aqueous solution being from about 5 to 85% by weight, and in another compartment an aqueous solution of a latent acid catalyst selected from the group consisting of aluminum chloride, magnesium sulphate, magnesium perchlorate, zinc nitrate, ammonium chloride, ammonium sulphate, ammonium nitrate, ammonium tartrate and the weak organic acids citric and tartaric acid, the concentration of the latent acid catalyst in the aquous solution being from about 1 to 40% by weight, whereby an aqueous solution containing both the resin precondensate and the latent acid catalyst in the correct predetermined proportions for their use, with the amount of the latent acid catalyst being from about 10 to 50% by weight of the resin precondensate, may readily be used for the application of crease resistant finishes to cellulosic fabrics.

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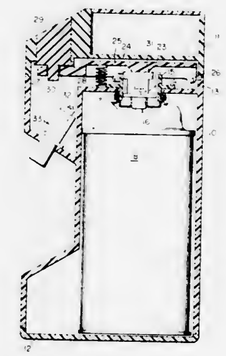
**3,933,275**
**PORTABLE WINE DISPENSER**
**Irving L. Metzner, Dover, N.J., and Daniel O'Connell, Pound Ridge, N.Y., assignors to Colgate-Palmolive Company, New York, N.Y.**
**Filed Feb. 7, 1974, Ser. No. 440,283**
**Int. Cl.² B67D** *5/60*
**U.S. Cl. 222—131** **6 Claims**



1. A portable beverage dispenser comprising a support, a housing secured to said support, a casing carried by said support in said housing, said casing being divided into a plurality of bottle receptacles, compartments for ice secured to said casing, said housing having a movable upper wall portion, said casing having a hingedly mounted wall pivotable from an upwardly extending position to a horizontal position extending outwardly of said housing, said hingedly mounted wall being supported by an ice compartment when in said horizontal position, said compartments for ice having openings disposed to communicate with the interior of said housing when said hingedly mounted wall is in said upwardly extending position and disposed to be blocked by said hingedly mounted wall when said hingedly mounted wall is in said horizontal position.

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**3,933,276**
**HEATING AND DISPENSING APPARATUS**
**Charles C. Packham, Wokingham; Raymond G. Parsonage, Maidenhead, both of England, and Donald L. Underwood, Holliston, Mass., assignors to The Gillette Company, Boston, Mass.**
**Filed Dec. 9, 1974, Ser. No. 530,992**
**Int. Cl.² B67D** *5/62*
**U.S. Cl. 222—146 HE** **27 Claims**

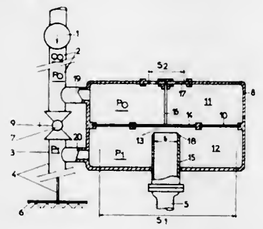


1. Apparatus for heating and dispensing a product from an outlet of a pressurized container comprising:
a housing for removably receiving and holding the pressurized container;
a heat exchanger assembly mounted in said housing and spaced apart from the pressurized container, said heat exchanger assembly having an inlet and an outlet and including a cup-like mass of a heat conductive material having a wall portion, said wall portion having a single thin deep elongated passageway of a substantially uniform width and of a depth substantially equal to that of said wall portion and extending for a distance less than the circumference of said cup-like mass from said inlet to said outlet of said heat exchanger assembly;
means for directing the product from said inlet to said outlet of said heat exchanger assembly in a single predetermined direction through said elongated passageway, said directing means being positioned between said inlet and said outlet of said heat exchanger assembly thereby preventing the product from traveling through said cup-like mass a distance greater than the circumference of said cup-like mass;
manually actuable means for actuating the outlet valve of the pressurized container thereby releasing the product from the pressurized container;
means for connecting the outlet of the pressurized container to said inlet of said heat exchanger assembly;
means for connecting said outlet of said heat exchanger assembly to a delivery spout extending through said housing;
heating means disposed within said heat exchanger assembly in a heat transfer relationship with said wall portion to provide heat to the product in said elongated passageway through said wall portion; and
circuit means for connecting said heating means to a power source.

3,933,277
**METHOD AND DEVICE FOR CONTROLLING FLUID PRESSURE**

Jean-Pierre Volat, Marseille; Fernand Berthoud, and Guy Berthoud, both of Belleville-sur-Saone, all of France, assignors to Berthoud, S.A., Belleville-sur-Soane, France

Filed Aug. 12, 1974, Ser. No. 496,732
Claims priority, application France, Aug. 13, 1973, 73.29510
Int. Cl.[2] A01C *15/00*; L01M *6/00*
U.S. Cl. 222—178 7 Claims

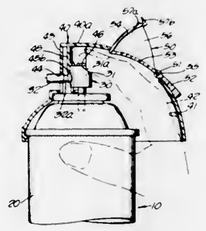


1. A regulator device for controlling the pressure of a fluid delivered to a point of use, comprising:
a conduit through which the fluid is forced towards said point of use;
means in said conduit to create a pressure drop therein, said means dividing said conduit into an upstream portion and a downstream portion;
valve discharge means to discharge a fraction of said fluid from said downstream portion of said conduit;
and movable means having opposed areas responsive to the pressures of said fluid in said upstream portion and in said downstream portion, the areas of said movable means being different and being effective to actuate said valve discharge means in such manner as to maintain in said downstream portion a pressure dropped in proportion to said ratio.

3,933,278
**CHILD-SAFE CONTAINER ASSEMBLY**

Victor F. Anderson, Wenonah, N.J., assignor to Shell Oil Company, Houston, Tex.

Filed Sept. 23, 1974, Ser. No. 508,375
Int. Cl.[2] B65D *83/14*
U.S. Cl. 222—182 5 Claims

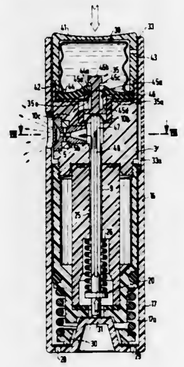


1. A child-safe container assembly comprising:
a container having closure means selectively actuable for releasing contents from said container;
cover means for said container defining an elongated passageway whose internal end communicates with said closure means and whose external end defines an aperture adapted for the insertion of a single finger of a user, the length of said passageway being such that the finger of an adult is able to reach said closure means but the finger of a young child is not long enough to do so; and
a damper-like member pivotally supported from said cover means and normally obstructing said passageway whereby the finger of the user must move said damper-like member at least partially out of the way before being able to reach and actuate said closure means.

3,933,279
**AEROSOL DISPENSER FOR FLUID PRODUCTS COMPRISING A PISTON PUMP ASSEMBLY FOR GENERATING COMPRESSED AIR**

Christian Maier, Munich, Germany, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 16, 1973, Ser. No. 416,550
Claims priority, application Sweden, Nov. 28, 1972, 15486/72
Int. Cl.[2] B67D *5/54*
U.S. Cl. 222—193 3 Claims



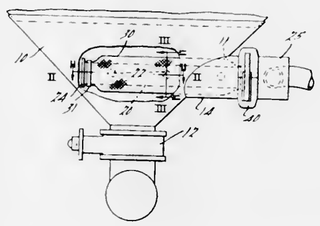
1. In an aerosol dispenser for fluid products comprising a container for product to be dispensed, a piston-cylinder pump means separate from the product container, and having piston and cylinder means, one of which is movable relative to the other which is fixed, for generating compressed air as a propellant, spray nozzle in which compressed air flowing therethrough aspirates, and sprays product from the product container, flowpaths, for compressed air from the pump means, and for product from the product container, to the spray nozzle, valve means comprising valve housing and displaceable valve bodies in the housing, and being associated with said flowpaths and opening the paths dependent on the movable means of said pump means approaching or reaching full compression stroke position in the fixed means of the aforesaid pump means, abutment means in the pump means acting, in the aforesaid compression stroke position, by direct mechanical contact on at least the valve body of the compressed air flow-controlling valve means; and a mounting for said spray nozzle and having a passageway therein which is part of said compressed-air flowpath; said product container and product flow control valve means being mounted on said mounting and said mounting being detachably connected to the fixed means of said piston and cylinder means, forming a mounting-piston assembly; and said fixed means being hollow and constituting the housing for the remaining parts of said compressed air controlling valve means; the improvement comprising
a. flexible elastic wall means across said compressed air flowpath and separating the latter from the interior of said product container;
b. product outlet means in the wall of said product container outside said flexible elastic wall means and being part of said flowpath for product to said spray nozzle; and
c. a movable valve member mounted on said flexible elastic wall means and biased toward the closed position and having abutting means in an open end of said passageway in said mounting, and said valve body of said compressed air flow-controlling valve means having contact rod means extending through said passageway and engaging said abutting means of said product flow control valve means and thereby opening the product flowpath, when said abutment means in the piston pump acts on the valve body of said compressed air flow-controlling valve means.



3,933,280
**BULK CARGO UNLOADER AERATOR**

Rex V. Plumb, Hopwood, Pa., assignor to Fruehauf Corporation, Detroit, Mich.

Filed Apr. 11, 1974, Ser. No. 459,887
Int. Cl.[2] B67D *5/54*
U.S. Cl. 222—193 1 Claim



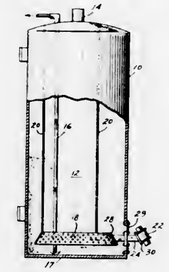
1. In combination with a hopper having a side wall with an orifice-defining portion in said wall between the top and bottom thereof, an aerating assembly comprising a rigid pervious elongated tubular supporting member and a loose porous fabric enclosing sleeve secured thereover, a hollow neck carried by said orificed portion of the wall and projecting laterally outwardly from the hopper, the aerating assembly having a cross sectional area which is materially less than that of the interior of the neck and also materially less than that of the orifice defined by said portion and being insertable into the hopper, and removable from the hopper, through said neck and orifice, coupling clamp means appurtenant to said neck which when released frees said aerating assembly for removal from said neck, said assembly being in a generally horizontal position and extending into and through said neck and orifice and across the hopper, with an air inlet portion of said assembly connectible through said neck and coupling to an external air supply, a portion of said sleeve being inside the neck when the aerating assembly is secured in said position, whereby air may be discharged into the neck as well as into a cross section of the hopper to prevent clogging in either area, and whereby air is also directed laterally into the hopper from the neck.

3,933,281
**APPARATUS FOR VIBRATING BULK MATERIAL WITHIN A BIN OR TANK**

Samil S. Uralli, Palos Verdes, and Lemuel Huff, Paramount, both of Calif., assignors to Johns-Manville Corporation, Denver, Colo.

Continuation of Ser. No. 110,941, Jan. 29, 1971. This application July 9, 1973, Ser. No. 377,682
Int. Cl.[2] B65G *65/70*
U.S. Cl. 222—200 5 Claims

1. An apparatus for vibrating powdery bulk material in a container for aiding flow therefrom, said apparatus comprising:
a. a container closed at its bottom and having inlet means and outlet means for transiently storing powdery bulk material, said outlet means including a material suction conveyance pipe;
b. a closed-loop shaped vibratable member defining a substantially centrally located opening therethrough, said member being positioned within said container near the closed bottom of the container and in a non-contacting relationship therewith, said vibratable member being positioned substantially parallel with a horizontal plane passing through said container and including an outer periphery and inner periphery, both of which are angularly disposed with respect to said horizontal plane, said conveyance pipe extending into said container and terminating between said vibratable member and the closed bottom of said container, said opening defined by said member being exposed to the material in said container

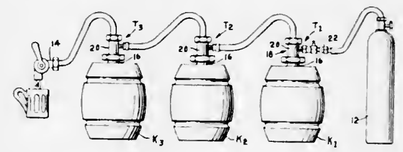


so as to allow material in said container to pass through said opening;
c. means for supporting said vibratable member within said container; and
d. means for vibrating said vibratable member.

3,933,282
**UNIVERSAL TAVERN UNIT FOR KEG TAPPING DEVICE**

Frederick F. Stevens, Jr., Fairfield, Conn., assignor to Hoff-Stevens, Inc., Ansonia, Conn.

Filed Feb. 4, 1974, Ser. No. 439,540
Int. Cl.[2] B65D *83/00*
U.S. Cl. 222—400.7 6 Claims



1. In a keg tapping apparatus having a keg unit for connection to a keg, the improvement comprising a universal tavern unit having a body for connection to the keg unit and including means defining fluid passageways through said body for communicating with the interior of the keg when the keg unit is connected to the keg and the tavern unit is connected to the keg unit, a cylindrical tubular part connected to the body and extending outwardly therefrom, said cylindrical tubular part partially defining one of said fluid passageways and having a generally radially disposed axially outwardly facing annular bearing surface thereon, a pressure relief-check valve adaptor assembly including a first tubular part having a radially disposed axially inwardly facing sealing surface, a male thread on one of said parts comprising said cylindrical part and said first tubular part and a female thread on the other of said parts for threadable engagement with said male thread for releasably connecting said first tubular part to said cylindrical part, a pressure relief valve mounted on said first tubular part intermediate its ends and communicating with the interior thereof, said pressure relief valve extending radially outwardly from said first tubular part, a second tubular part, means for releasably connecting said second tubular part to said first tubular part, an elastomeric check valve disposed in one of said first and second tubular parts and having means associated therewith for cooperating with said first and second tubular parts to provide a substantially fluid tight seal between said first and second tubular parts when the latter parts are connected, and at least one annular sealing and positioning washer selected from a plurality of washers of differing axial thicknesses, said

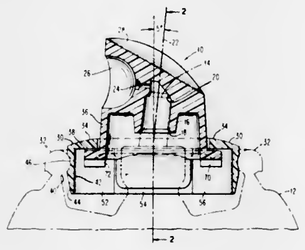
one washer disposed between said cylindrical part and said first tubular part in sealing engagement with said bearing surface and said sealing surface, said one washer causing said pressure relief valve to attain a generally predetermined angular position relative to said body when a generally predetermined torque is applied to threadably connect said first tubular part to said cylindrical part with said one washer therebetween.

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**3,933,283**
**ACTUATOR NOZZLE ASSEMBLY FOR AEROSOL CONTAINERS**

**Harold G. Hoagland, Croton-on-Hudson, N.Y., assignor to Elmer Hoagland, North Bergen, N.J. and Curtis Ailes, Mount Kisco, N.Y., a part interest to each**

**Continuation-in-part of Ser. No. 274,195, July 24, 1972, abandoned. This application Apr. 10, 1974, Ser. No. 459,697**
**Int. Cl.² B65D** *83/14*
**U.S. Cl. 222—402.13** **18 Claims**



1. An actuator nozzle assembly for an aerosol container of the type having a tubular valve stem protruding at the center of one axial end thereof, comprising

an actuator which is rotatable with respect to the valve stem when assembled therewith,

said actuator comprising a member defining a cylinder surface operable to telescopically interfit with the valve stem and forming a seal therewith,

said actuator including a nozzle opening communicating with the interior of said cylinder surface member and extending radially outwardly from the upper end thereof,

said actuator also including a skirt portion extending downwardly and generally parallel to the axis of said cylinder surface member and having radially outwardly extending flange at the lower portion thereof,

the upper surface of said flange generally defining a plane,

a locking ring arranged for assembly to the upper edge portion of the aerosol container,

said locking ring having a radially inwardly extending flange portion which interlocks with the upper surface of said radially outwardly extending flange of said skirt portion of said actuator,

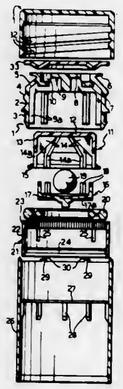
said plane defined by said upper surface of said radially outwardly extending flange of said skirt portion being tilted away from an orientation perpendicular to the axis of said cylinder surface member so as to impart a corresponding tilt to said actuator and the associated valve stem in the assembled 'at rest' position,

the tilt of said flange being downwardly in the front of said nozzle opening and upwardly in the rear of said nozzle opening.

**3,933,284**
**SECURITY BOTTLE CLOSURE DEVICE**

**Piergiacomo Guala, Alessandria, Italy, assignor to S.A.S. Angelo Guala di Piergiacomo e Roberto Guala & C., Alessandria, Italy**

**Filed Oct. 2, 1974, Ser. No. 511,395**
**Claims priority, application Italy, Oct. 17, 1973, 70068/73**
**Int. Cl.² B65D** *5/76*
**U.S. Cl. 222—500** **2 Claims**



1. A security closure device for attaching to the neck of a bottle which has an annular groove in the neck, comprising:

a. a pourer body, having an annular groove therein,

b. a plurality of radially inwardly protruding ribs located within said pourer body, the innermost edges of said ribs being downwardly divergent when said bottle is in an upright position,

c. a valve seat,

d. a shutter disc valve which is axially slidable within said pourer body, said disc valve movable between a closed position wherein it abuts said valve seat, and an open position spaced from said valve seat,

e. a ball interposed between said shutter disc valve and said radially inwardly protruding ribs, the weight of said ball holding said shutter disc valve in its closed position when the axis of the bottle is vertical or horizontal and allowing the shutter disc valve to open when the axis is tilted past a horizontal position,

f. an annular collar attachable to said pourer body, said annular collar having a first inner annular projection for engagement with the annular groove in the bottle neck and a second inner annular projection for engagement with the annular groove in said pourer body, said second annular projection and said annular groove in said pourer body being knurled to prevent relative rotation between said annular collar and said pourer body,

g. an outer sleeve surrounding said annular collar,

h. a cap threadingly engaged with said pourer body, and

i. a plurality of frangible links connecting said cap to said outer sleeve.

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**3,933,285**
**ELECTROSTATIC PAINT SPRAYING SYSTEM WITH PAINT LINE VOLTAGE BLOCK**

**Richard F. Wiggins, Fairfield, Conn., assignor to The Gyromat Corporation, Stratford, Conn.**

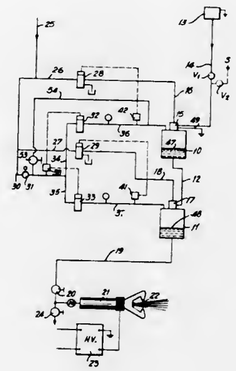
**Filed Dec. 3, 1973, Ser. No. 421,504**
**Int. Cl.² B67D** *5/08*
**U.S. Cl. 222—56** **7 Claims**

4. The system of claim 3, further characterized by

a. said discharge means including a rotating plate-like member positioned within said vessel,



b. said plate-like member being spaced above the maximum liquid level in said vessel and below the upper wall thereof, and



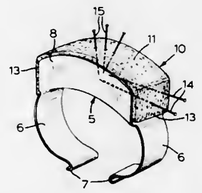
c. said discharge means further including means for controllably flowing coating material into said plate-like member.

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**3,933,286**
**PIN CUSHION AND METHOD OF MAKING SAME**

**Esko Kullerno Karkas, 22 Howland Road, Toronto, Ontario, Canada (M4K 226)**

**Filed Jan. 29, 1974, Ser. No. 437,711**
**Int. Cl.² A44C** *5/00*
**U.S. Cl. 224—28 P** **1 Claim**



1. A pin cushion comprising a holder constituted by a unitary piece of thermoplastics material in the form of an arcuate wrist-covering band having its ends bent into flexible arcuate jaws adapted to engage around the wrist of the user, and having side walls extending along opposing side edges of the central arcuate portion of the band, and extending upwardly from said band and defining an open-ended channel therebetween and cushion material snugly received and secured in the channel between the side walls, the cushion material being of a shape complementary to said channel and composed of fibrous felt arranged with its fibers running in a direction substantially normal to the band and the surface of said material being directly exposed at the top and ends of said channel.

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**3,933,287**
**BOOK STRAP**

**Gerard Foley, P.O. Box 1191, New Rochelle, N.Y. 10802**

**Continuation-in-part of Ser. No. 439,240, Feb. 4, 1974, Pat. No. 3,865,292. This application Oct. 31, 1974, Ser. No. 519,596**
**Int. Cl.² B65D** *71/00*
**U.S. Cl. 224—55** **4 Claims**

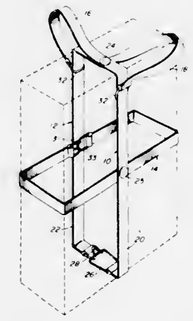
1. A device for carrying a package comprising:

a first strap, a second strap and a third strap, each of said straps being formed from an elastic material;

means securing said first and second straps to each other at a common location between the ends of each of said straps to define a short segment and a long segment of each strap;

said first and second straps extending along substantially the same direction, said long segment of said first strap having an end which extends outwardly from said common location beyond the adjacent end of the short segment of said second strap, the opposite end of the long segment of said second strap extending beyond the corresponding opposite end of the short segment of said first strap;

a loop means secured to the shorter segment of said second strap and receiving the longer segment of said first strap therethrough;



the end of the shorter segment of said first strap having a loop means secured thereto and receiving the longer segment of said second strap therethrough;

means securing said third strap extending substantially transverse to said first and second straps to said first strap at a point intermediate said first common location and the end of the longer segment of the first strap; and

fastener means secured to the outermost end of each of the longer segments of said first and second straps and to each of the ends of the third strap to enable said straps to be wrapped about said package with the outermost end of each of the longer segments of said first and second straps interconnected and the ends of the third strap separately interconnected.

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**3,933,288**
**DISPENSING CARTON WITH CUTTING EDGE**

**Glenn E. Struble, Oxford, Ohio, assignor to Diamond International Corporation, New York, N.Y.**

**Filed Nov. 15, 1974, Ser. No. 524,330**
**Int. Cl.² B26F** *3/02*
**U.S. Cl. 225—49** **6 Claims**

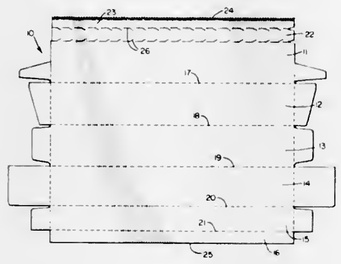
1. A carton for dispensing sheet material formed from a blank of paperboard material or the like comprising

a front wall panel, a top wall panel, a rear wall panel, a base panel, and an overlap panel connected in the aforementioned consecutive order,

a tear strip connected to said front wall panel along the opposite side from the connection of said front wall panel to said top wall panel,

a cutter strip connected to said tear strip on the opposite side of said tear strip from the connection of said tear strip to said front wall panel,

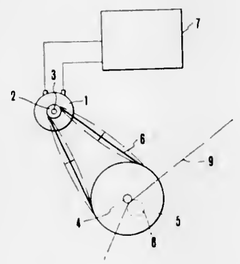
a cutting edge on said cutter strip on the free end of said cutter strip opposite to its connection to said tear strip,



said cutter strip folded back under said tear strip and attached to said base panel.

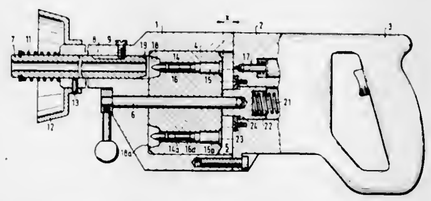
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**3,933,289**
**MAGNETIC RECORDING AND REPRODUCING APPARATUS**
**Mitsuaki Furukawa, Fuchu, Japan, assignor to New Nippon Electric Co., Ltd., Osaka, Japan**
**Filed Oct. 31, 1973, Ser. No. 411,331**
**Claims priority, application Japan, Nov. 7, 1972, 47-111482; Nov. 13, 1972, 47-113630**
**Int. Cl.² B65H** *17/22*
**U.S. Cl. 226—178** **8 Claims**



1. In magnetic recording and reproducing apparatus of the class comprising a driving motor, and a capstan driven by said driving motor for driving a record/read out tape and wherein the speed of said tape is varied over a wide range including very low speeds of the order of 1.8 millimeters per second, the improvement wherein said driving motor comprises a pulse actuated stepping motor having a drive shaft, variable frequency pulse control means coupled to and exciting said pulse actuated stepping motor for varying the frequency of the excitation pulses applied to said pulse actuated stepping motor to thereby vary the speed at which the tape is driven, and resilient belt coupling means coupling said stepping motor to said capstan for transforming intermittent rotation of said stepping motor drive shaft into substantially uniform rotation of said capstan.

**3,933,290**
**EXPLOSION-DRIVEN BOLT SETTING GUN WITH DRUM MAGAZINE**
**Elmar Maier, Feldkirch-Tisis, Austria, assignor to Hilti Aktiengesellschaft, Liechtenstein**
**Filed Aug. 29, 1974, Ser. No. 501,833**
**Claims priority, application Germany, Sept. 6, 1973, 2345054**
**Int. Cl.² B25C** *1/12*
**U.S. Cl. 227—9** **7 Claims**

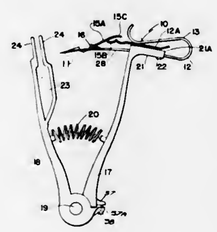


1. A setting gun utilizing an explosive charge for driving fastening elements, such as bolts, into a target material, comprising an axially extending housing having a first end facing in the direction in which fastening elements are driven and a second end spaced from the first end facing the opposite direction, a barrel axially movably mounted within said housing at the first end thereof, said barrel having a first end facing in the direction in which fastening elements are driven and a second end spaced from the first end thereof and facing in the opposite direction, said housing forming an axially extending space located intermediate the second end of said barrel and the second end of said housing, said space in said housing having a forward end and a rearward end spaced axially from the forward end and located further away from the first end of said housings, a rotatable drum magazine positioned within said space in said housing with its axis of rotation disposed in parallel relation with the axis of the housing and having a number of receiving bores therein each arranged to be aligned with the axis of the barrel, a breech plug located at the second end of said housing, and a firing mechanism located within said breech plug and arranged to fire cartridges positioned in the receiving bores in said drum, wherein the improvement comprises that said barrel and drum magazine are axially displaceable within said housing between a firing position and a rest position where the cartridges in said drum magazine cannot be fired, means axially displacing said barrel and said drum in the axial direction toward the first end of said housing into the rest position so that displacement of said barrel and drum magazine toward the second end of said housing against the action of said means is required for positioning said barrel and drum magazine in the firing position, said drum magazine having a forward end and a rearwad end spaced axially from the forward end and located closer to the second end of said housing, said means comprising a first means for spring biasing said barrel into the rest position and a second means for spring biasing said drum magazine into the rest position, in the rest position the forward end of said drum magazine is located spaced axially rearwardly from the second end of said barrel, said firing mechanism comprising a firing pin located entirely in said breech plug and arranged to fire a cartridge in said drum magazine when said drum magazine is moved into the firing position, said first means comprising a first spring biasing said barrel so that the second end of said barrel in the rest position is spaced axially forwardly of the forward end of said space containing said drum magazine, said second means comprises a force storage device mounted in said breech plug and disposed in contact with the rearward end of said drum magazine, said force storage device includes a compression spring for biasing said drum magazine toward the first end of said housing, said breech plug forms a closure at the second end of said housing extending across the end of the space in said housing containing said drum magazine and forming the rearward end of the space in said housing, said breech plug having a recess in the surface thereof forming the rearward end of the space in said housing and the recess being aligned with the axis of rotation of said drum magazine, said force storage device comprises a pressure part axially telescopically mounted in said recess for displacement in the axial direction of said housing and extending from said recess into contact with the rearward end of said drum magazine when said drum magazine is in the rest position, said compression spring located in said recess and disposed in contact with the opposite end of said pressure part from the end contacting said drum magazine for biasing the pressure part toward the first end of said housing and into contact with said drum magazine, and said pressure part being displaceable rearwardly into said pressure plug against the biasing action of said compression spring when said drum magazine is moved from the rest position to the firing position so that in the firing position the rearward end of said drum magazine contacts the surface of said breech plug forming the rearward end of the space within said housing containing said drum magazine.



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**3,933,291**
**EAR TAG INSERTING PLIERS**
**Robert Edgar Stephenson, Box 16, Cayley, Alberta, Canada**
**Filed Apr. 29, 1974, Ser. No. 464,748**
**Claims priority, application Canada, Nov. 8, 1973, 185720**
**Int. Cl.² B25C** *1/00*
**U.S. Cl. 227—67** **9 Claims**



1. An applicator holder for facilitating the insertion of ear tags through ears of animals in conjunction with an applicator which includes a handle portion, an ear piercing spear on said handle portion and means on said spear to detachably hold one end of a flexible identification tag during insertion; said holder including a first jaw portion, means on one end of said first jaw portion to detachably retain said applicator, a second jaw portion, ear receiving means on one end of said second jaw portion to detachably receive the ear of the animal, means for rotationally connecting said first jaw portion to said second jaw portion at a location spaced from the respective said one ends thereof, for relative approaching movement between said one first ends of said jaw portions, and spring means extending between and normally biassing said one ends of said first and second jaw portions apart, whereby when said one end of said jaw portions are moved toward one another against the pressure of said spring means the spear of said applicator will pierce the ear of the animal and extend through said ear receiving means on said one end of said second jaw portion.

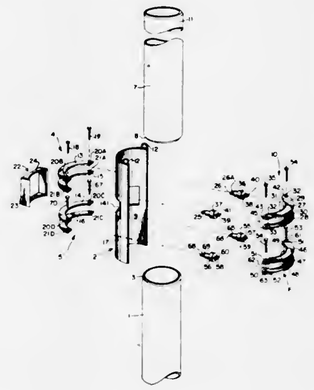
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**3,933,292**
**APPARATUS FOR WELDING**
**Marion A. Martin, 2055 Woodcrest, Baton Rouge, La. 70814**
**Filed Feb. 24, 1975, Ser. No. 552,279**
**Int. Cl.² B23K** *37/04*
**U.S. Cl. 228—49** **13 Claims**

1. An apparatus for holding a first and second objects adjacent to one another in position for welding which comprises:

a. a jacket that fits at least partially about said objects as they are positioned for welding, said jacket being provided with a welding opening through which said objects can be at least partially welded together;

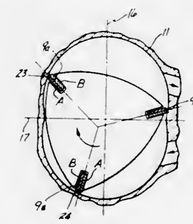
b. a first securing assembly, capable of being shortened, attached to said jacket and extending around said first object in a position to secure said first object to said jacket when said first securing assembly is shortened; and



c. a second securing assembly, capable of being shortened, attached to said jacket and extending around said second object in a position to secure said second object to said jacket when said second securing assembly is shortened, said second object being secured adjacent to said first object whereby at least a portion of that area to be welded is accessible through said welding opening.

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**3,933,293**
**METHOD OF MAKING COMPOSITE METAL SEALS FOR USE IN ROTARY INTERNAL COMBUSTION ENGINES**
**Charles D. McLain, Alton, Ill., assignor to Olin Corporation, New Haven, Conn.**
**Division of Ser. No. 347,153, April 2, 1973, abandoned. This application May 13, 1974, Ser. No. 469,249**
**Int. Cl.² B23K** *21/00*
**U.S. Cl. 228—117** **5 Claims**



1. A method for the preparation of improved tip seals for use in rotary internal combustion engines of the type having a hollow epitrochoidal chamber enclosed by a wall and a rotor having a plurality of apexes, the rotor being rotatably and eccentrically mounted within the chamber, with the rotor having sealing means located at each apex, comprising:

A. providing at least two metal strips of different composition and frictional properties, one strip being of a high strength low friction copper base alloy;

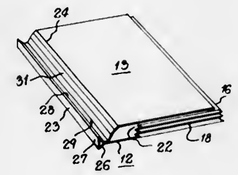
B. cleaning the surfaces of the strips;

C. arranging the strips in a stack with the adjoining faces being cleaned;

D. bonding the strips together by pressure rolling;
E. subdividing and forming the strip to a composite seal having a leading and trailing face, said seal being adapted for mounting in said rotor apexes so that in use each face thereof sequentially contacts said wall, with the leading face being of the said high strength low friction copper base alloy; and
F. annealing said composite seal.

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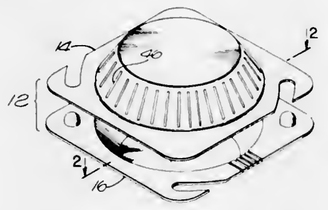
**3,933,294**
**FILE FOLDER WITH A RIGID SPINE**
**Vincent D. Meenan, 25 Millbrook Drive, Middletown, N.J. 07748, and Thomas P. Meenan, 3309 164th St., Flushing, L. I., N.Y. 11358**
**Filed Aug. 29, 1974, Ser. No. 501,546**
**Int. Cl.² G65D** *27/00*
**U.S. Cl. 229—1.5 R** **3 Claims**




1. A file folder formed from a single, flat sheet having a front leaf and a back leaf and a pocket in the back leaf, characterized by means at a juncture of the front and back leaves for forming a rigid index spine along said juncture, said means including a flat surface along said juncture forming said spine for placement of indexing information on said flat surface, said index spine being triangular in cross section and in which said flat surface faces outward, and said means also including a short portion of said front leaf along said juncture adhesively secured thereto to provide a reinforcing leg for said rigid index spine.

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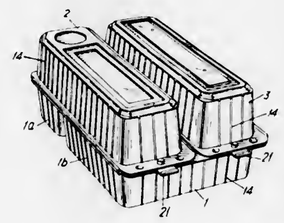
**3,933,295**
**INSULATIVE PACKAGING DEVICE**
**Wayne L. Congleton, Whittier, Calif., assignor to Dolco Packaging Corporation, Burbank, Calif.**
**Filed Jan. 17, 1974, Ser. No. 434,466**
**Int. Cl.² B65D** *43/02*
**U.S. Cl. 229—2.5** **10 Claims**




1. A packaging device comprising a pair of members which, when interconnected, form a substantially closed food container, each of said members being formed from thermally insulative foam material whereby to provide a thermally insulative structure for minimizing loss of interior heat from a hot food item, each of said members comprising a dish-shaped portion having a planar flange formed along the periphery thereof, the interior surface of said dish-shaped portion being textured to define a plurality of protuberances interconnected in a gridlike network by a plurality of valleys so as to enable moisture condensed from hot food placed adjacent said interior surface to accumulate in said valleys, the top surface of each protuberance having an area of less than 0.17 cm².

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**3,933,296**
**PACKAGING CONTAINERS**
**Bryan Ernest Sydney Ruskin, St. Albans, and Peter James Webber, Leverstock Green, both of England, assignors to Lunch Locker Systems Limited, St. Albans, England**
**Filed Mar. 5, 1974, Ser. No. 448,183**
**Claims priority, application United Kingdom, Mar. 9, 1973, 11453/73; Apr. 14, 1973, 18071/73; Apr. 25, 1973, 19572/73; May 9, 1973, 22135/73; Nov. 24, 1973, 54641/73**
**Int. Cl.² B65D** *1/00, 43/10*
**U.S. Cl. 229—2.5** **6 Claims**

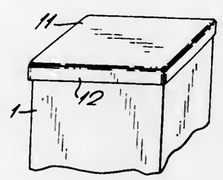



1. A packaging container comprising, in combination, a body having a pair of end walls, a pair of side walls and a bottom wall defining a storage compartment having an upper access opening, a pair of lid portions each having a pair of end walls, a pair of side walls and a bottom wall defining a storage compartment having an upper access opening, hinge means for interconnecting the upper edge portion of each of said body side walls with the upper edge portion of one of the side walls of each of said lid portions to position said lid portions on opposite sides of said body for presenting a tray-like configuration, a pair of substantially flat cover portions each having a pair of side edges and a pair of end edges, hinge means for interconnecting the upper edge portion of the other side wall on each of said lid portions with one of the side edges on each of said cover portions each of said cover portions being pivotably movable into closing relationship with the access opening of the storage compartment of the associated lid portion, said closed lid portions being subsequently pivotably movable into vertically stacked relationship with said body to position said cover portions in adjacent closing relationship with the access opening of said body storage compartment, and releasable locking means on the upper edge portions of said body, said lid portions, and said cover portions for retaining said body and said lid portions in said vertically stacked relationship.

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**3,933,297**
**PACKING CONTAINER**
**Lars C. Carlsson, Staffanstorp; Goran K. Larsson, Dalby; Jan F. Palsson, and Hans A. Rausing, both of Lund, all of Sweden, assignors to Tetra Pak Developpement SA, Lausanne, Switzerland**
**Filed Feb. 11, 1974, Ser. No. 441,219**
**Claims priority, application Sweden, Feb. 20, 1973, 7302411**
**Int. Cl.² B65D** *5/40, 5/56, 25/14*
**U.S. Cl. 229—3.1** **4 Claims**

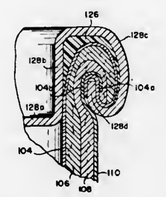
1. A packing container comprising a rectangular container body open at opposed ends and composed of a packaging material having coatings of a homogeneous plastic material on both sides thereof, closure panel members for closing the open ends of said container body and composed of foamed polystyrene having a thickness of from 0.5 to 2 mm. and having coatings of a homogeneous plastic material on both sides thereof and of a thickness not greater than 0.2 mm., the marginal edge portions of said closure panel members being secured to the end edges of said container body by a thermoplastic bonding agent, at least one of said marginal edge portions and the end edges of said container body being compressed together, said closure panel members including a downwardly




extending skirt portion around at least a portion of said closure panel members, said skirt portions being sealed to the outer wall of said container body, the walls of said container body normally flexing inwardly when the container is empty but assuming a vertical position when the container is filled.

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**3,933,298**
**END SEAM CONSTRUCTION FOR COMPOSITE CONTAINERS**
**Donald H. Ellerbrock, Florissant, and John E. Bacon, St. Charles, both of Mo., assignors to Boise Cascade Corporation, Boise, Idaho**
**Division of Ser. No. 442,399, Feb. 14, 1974. This application Feb. 26, 1975, Ser. No. 553,138**
**Int. Cl.² B65D** *3/14, 3/22, 3/10*
**U.S. Cl. 229—5.6** **3 Claims**

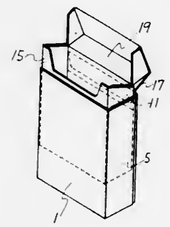



1. An end seam connection for connecting the metal end and laminated body wall members of a cylindrical composite container, said metal end member including a central end wall portion, a tubular chuck wall portion connected at one end with and extending axially from the outer periphery of said end wall portion, an annular seaming panel portion connected at its inner periphery with the other end of said chuck wall portion, and a generally tubular inwardly-facing curl portion connected at one end with the outer periphery of said seaming panel portion and arranged in concentrically spaced relation about said chuck wall portion, said body wall member including a tubular layer formed of fibrous material, and a tubular metal inner liner layer bonded to the inner wall surface of said fibrous layer and projecting axially at at least one end a given distance beyond the outer periphery of said fibrous layer, said body wall member at said one end being deformed radially outwardly to define a funnel-shaped flange portion about the outer surface of which the projecting metal liner layer is deformed, said metal end member being seated in closed relation on said flange portion of said body wall member with the central end wall portion being contained within the body wall member, said seaming panel and curl portions being connected with said flange portion by a rolled, radially-inwardly compressed seam, the reversely deformed projecting liner portion being in metal-to-metal engagement with the surface of said curl portion that faces said seaming panel portion, and a layer of sealing compound compressed solely between said metal-lined flange portion and the chuck wall and seaming panel portions of said metal end member.



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**3,933,299**
**BACKWARD OPENABLE CONTAINER WITH A DEVICE TO PREVENT ITS INNER TRAY FROM BEING SLIPPED DOWNWARD**
**Katsuji Shimada, 11-10, Midorigaoka, Ashiya, and Katsuyuki Shimada, 13-46-203, 2-chome, Nigawa-kita, Takarazuka, both of Japan**
**Filed July 5, 1974, Ser. No. 485,866**
**Int. Cl.² B65D** *5/66*
**U.S. Cl. 229—20** **3 Claims**



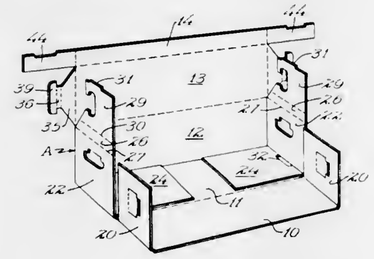

1. A carton having an automatically opening cover, said carton comprising:
an outer shell having an unapertured shell bottom wall which extends the full length of said outer shell;
an extension attached to the upper portion of said shell bottom wall of said outer shell and bent downwardly along an inside surface thereof;
an inner tray slidably disposed inside said outer shell and having a tray bottom wall and a tray top wall disposed parallel to one another and connected by a tray lower end wall, and an upper portion hinged to said tray bottom wall defining a lid wall having a flap extending from a rear portion thereof downwardly between said tray bottom wall and said shell bottom wall, said flap having a free lower end;
said tray bottom wall of said inner tray having a first cutout defining an upwardly directed tongue pointing towards and overlapping said free lower end of said flap;
said flap having a second cutout and forming a hook, the latter being folded and pointing in an upward direction of said upper portion of said inner tray and engagingly overlapping said downwardly bent extension of said outer shell;
said outer shell having a shell top wall, said shell top wall and said shell bottom wall being disposed parallel to one another, said shell top wall and said shell bottom wall having lower portions thereof;
two continuous pieces connecting said lower portion of said shell top wall to said lower portion of said shell bottom wall, said two continuous pieces being formed with a gap in a middle of said two continuous pieces; and
said tray lower end wall being disposed adjacent said continuous pieces of said outer shell and adjacent said gap, whereby the inner tray may be pushed upwardly within said outer shell by pressing said tray lower end wall through said gap in said continuous pieces.

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**3,933,300**
**LOIN BOX WITH LOCKING COVER**
**Thomas B. Dempster, Sioux City, Iowa, assignor to Hoerner Waldorf Corporation, St. Paul, Minn.**
**Filed Jan. 20, 1975, Ser. No. 542,194**
**Int. Cl.² B65D** *5/22*
**U.S. Cl. 229—33** **5 Claims**

1. A loin box comprising:
a bottom panel,
a rear wall having end walls hingedly connected to each end and extending at right angles thereto,

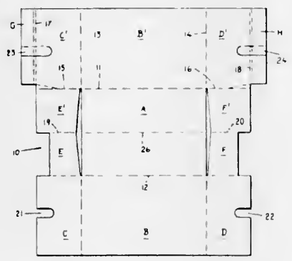
bottom reinforcing panels foldably connected to the lower ends of said end walls and overlying said bottom panel,
end wall reinforcing panels secured to the upper edges of said end walls, each of said end wall reinforcing panels having die-cut therein an area adjacent said rear wall including a vertically oriented elongated opening spaced a predetermined distance from said rear wall,
a front wall having intermediate end wall panels connected to the ends thereof folded between said end walls and said end wall reinforcing panels,
said end walls having hand holes therein spaced from the upper ends thereof,



a top panel hingedly connected to the upper edge of said rear wall,
a front flange connected to the forward edge of said top panel and overlying the upper portion of said front wall,
end flanges connected to the ends of said front flange and lying outwardly of the upper portions of said end walls above said hand holes, and
locking flaps on the ends of said top panel formed in shape substantially equal to said die-cut area in said end wall reinforcing panels and engageable in said hand holes to lock the top panel closed.

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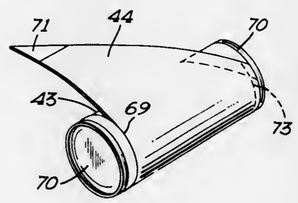
**3,933,301**
**CARTON STRUCTURE AND BLANK THEREFOR**
**Kenneth N. Pugsley, 2164 Wedgewood Road, Mississauga, Ontario, Canada**
**Filed Nov. 18, 1974, Ser. No. 524,925**
**Claims priority, application Canada, Nov. 19, 1973, 186201**
**Int. Cl.² B65D** *5/36*
**U.S. Cl. 229—41 B** **7 Claims**



**1.** A collapsible carton comprising a pair of opposite side panels having respective parallel bottom edges and a pair of opposite end panels having respective parallel bottom edges, the side and end panels forming a continuous wall, a base panel extending between and connected to the bottom edges of the side panels, each end panel being formed with an outwardly expressed medial fold line and defining a pair of end panel portions on opposite sides thereof, and the base panel being formed with an upwardly expressed medial fold line, the base panel and the end panels, in the collapsed condition of the carton, being folded about their respective medial fold lines so that the side panels lie superimposed with the folded base panel between them, each end panel being formed with a unitary folding flap hingedly connected to its bottom edge on opposite sides of the medial fold line and hingedly connected to the adjacent end of the base panel on opposite sides of its medial fold line, the carton being capable of being erected by application of pressure to its opposite ends whereby the end panels, base panel and flaps are unfolded about their respective fold lines.

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**3,933,302**
**CYLINDRICAL FIBER CONTAINER WITH DISPLAY LABEL**
**Francis R. Reid, and James R. Leezer, both of Minneapolis, Minn., assignors to The Pillsbury Company, Minneapolis, Minn.**
**Continuation of Ser. No. 313,731, Dec. 11, 1972, abandoned.**
**This application Mar. 4, 1975, Ser. No. 555,208**
**Int. Cl.² B65D** *81/34, 83/00*
**U.S. Cl. 229—51 BP** **10 Claims**

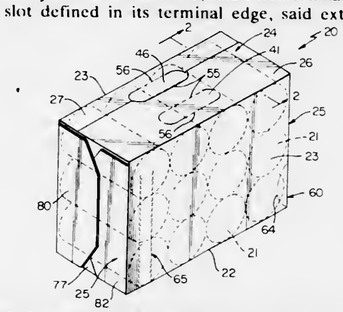


**1.** A fiber can designed to permit easy, substantially full length opening thereof, said can comprising a generally cylindrical inner body strip having a weakened separation line extending helically substantially the full length thereof from one end of the can to the other, said inner body comprising a helically wound strip having its side edges abutting one another to define said weakened separation line and said strip having an established width, a temporary reinforcing means superimposed over abutting edges of the inner body and having at least a portion thereof overlying the separation line, said reinforcing means being readily removable from the underlying can body to expose the separation line throughout substantially the entire length thereof when the can is to be opened, an overlying label formed from flexible sheet material in strip form, said label having a width of at least about 1½ times the established width of the strip that forms the inner body, whereby the surface area of the label is at least about 1½ times the outside surface area of the sidewall of the can, end closures to seal the ends of the can and a circumferentially extending collar cut is provided on the exterior of the can to a depth extending at least through the label and reinforcing means to provide a lifting tab thereon to facilitate the separate removal of the label and reinforcing means whereby the label can be removed intact and the temporary reinforcing means can be removed at a later time to expose the weakened separation line.

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**3,933,303**
**CARTON AND BLANK FOR MAKING SAME**
**Thomas E. Kirby, Jr., Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.**
**Filed Oct. 7, 1974, Ser. No. 512,460**
**Int. Cl.² B65D** *5/46*
**U.S. Cl. 229—52 B** **17 Claims**

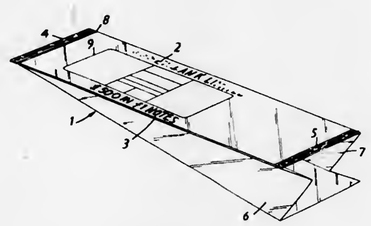
**1.** A carton comprising, a bottom wall, a pair of oppositely arranged side walls foldably connected to said bottom wall, and a top wall defined by a pair of flaps each foldably connected to an associated side wall, said flaps having means defining at least a triple thickness handle for said carton, said means defining said handle comprising, one of said flaps having a first half slot defined in its terminal edge and slit means defining a first foldable tab and a first full slot, and the other of said flaps having an extension foldably connected along a weakened line, said other flap having slit means defining a second foldable tab and a second full slot and having a third full slot therein which is open and centered about an axis defined by said weakened line, said extension having a second half slot defined in its terminal edge, said extension being



folded along said weakened line to bifold said third slot and said extension being fixed against said other flap and being dimensioned so that said half slot therein adjoins and is aligned with said second full slot to define a double thickness construction, said one flap having said first half slot being arranged so that it is aligned with said second full slot with said first full slot in said one flap being arranged in aligned relation with said bifolded third slot, said one flap being laminated against said double thickness construction to define said triple thickness handle upon severing each of said slit means and pushing the associated tab within said carton.

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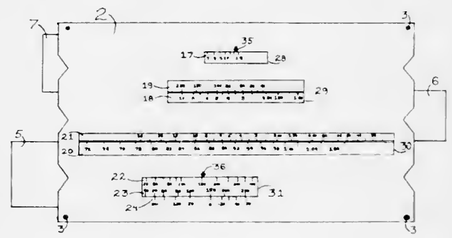
**3,933,304**
**BAGS FOR CONTAINING BANK NOTES**
**William James Judd, London, England, assignor to Decoflex Limited, England**
**Filed Feb. 22, 1974, Ser. No. 444,903**
**Int. Cl.² B65D** *33/34*
**U.S. Cl. 229—62** **1 Claim**



**1.** A container for containing slips of paper, the container comprising an elongated bag made of a synthetic plastic material, said bag having: two longitudinal end portions, each bearing an area of printing, said areas of printing extending transversely to the longitudinal axis of said bag; a first heat seal located between said area of printing at one said longitudinal end portion of said bag and the center of said bag, at a position immediately adjacent to such area of printing; and said bag being adapted to be heat sealed at a second location between said area of printing at the other said longitudinal end portion of said bag and the center of said bag, at a position immediately adjacent such area of printing; whereby after slips of paper have been inserted within the bag and the heat seal at said second location formed, any tampering with said bag would be readily visibly apparent.



**3,933,305**
**ASSET VALUE CALCULATORS**
**John Michael Murphy, 104 Lehman Lane, Mill Valley, Calif. 94941**
**Filed Aug. 23, 1974, Ser. No. 499,758**
**Int. Cl.² G06G** *1/02*
**U.S. Cl. 235—70 A** **4 Claims**



**1.** A device for calculating the intrinsic, fair and proper value of certain financial assets comprising:
a body member consisting of a sleeve having a plurality of windows thereon;
a plurality of slides receivable in said sleeve;
a first index mark adjacent one of said plurality of windows,
a first logarithmic scale on one of said slides denoting a quality factor for said financial asset viewable through said one window;
a second window;
a logarithmic scale along one edge of said first slide denoting the current price of a market index viewable through said second window;
a logarithmic scale along one edge of a second slide denoting the yearly earnings of said market index viewable through said second window, said market index current price scale and said market index yearly earnings scale being juxtaposed so that values on each scale may be aligned by relative motion of said first and second slides;
a third window;
a logarithmic scale along the opposite edge of said second slide denoting the yearly earnings of said financial asset viewable through said third window;
a logarithmic scale along one edge of a third slide denoting the ratio $[(1 + \text{company factor})/(1 + \text{market factor})]^{12}$ viewable through said third window, said financial assets earning scale and said ratio scale being juxtaposed so that values on each scale may be aligned by relative motion of said second and third slides;
a fourth window;
a second index mark on said sleeve adjacent said fourth window; and
a logarithmic scale denoting the fair and proper value of said financial asset on said third slide viewable through said fourth window, whereby known values of financial asset quality factor, market index current price, market index yearly earnings, financial asset yearly earnings, and said ratio may be entered by placing said quality factor opposite said first index mark, said market index yearly earnings opposite said market index price, and said ratio opposite said financial asset yearly earnings, and the fair and proper value of said financial asset may be read out opposite said second index mark.

### 3,933,306
### AIR INLET MEANS FOR AIR CONDITIONING INSTALLATIONS OR THE LIKE(II)

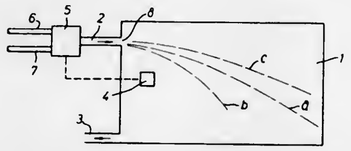
**Peter Vilhelm Nielsen, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark**

**Continuation of Ser. No. 356,477, May 2, 1973, abandoned. This application Oct. 31, 1974, Ser. No. 519,502**

**Claims priority, application Germany, May 5, 1973, 2222127**

**Int. Cl.² F24F** *7/04*

**U.S. Cl. 236—49** **9 Claims**



1. An air conditioning system comprising a room to which conditioned air having temperature and volume parameters is delivered, temperature sensor means for sensing the temperature of air in said room, an air duct having an opening defined in one of said walls, air supply means responsive to said temperature sensor means for supplying a constant volume of air through said air duct having a dependent temperature which tracks said sensed temperature, damper means in said air duct for varying the effective area of said opening, regulating means responsive to said temperature sensor means for modulatingly moving said damper means for varying the air velocity in accordance with a constant value for expression $A_r.l^{-3/2}$ where $l$ represents the effective area of said opening and $A_r$ is the Archimedean number.

### 3,933,307
### AUTOMATIC CHOKE VALVE CONTROL ARRANGEMENT FOR AN INTERNAL COMBUSTION ENGINE

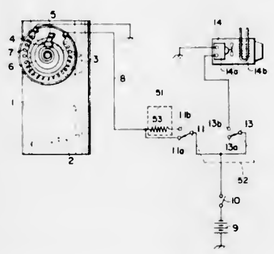
**Masahiko Nakada, and Nobuyuki Kobayashi, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan**

**Filed June 6, 1974, Ser. No. 476,942**

**Claims priority, application Japan, June 6, 1973, 48-62879**

**Int. Cl.² B60H** *1/02*

**U.S. Cl. 237—12.3 B** **2 Claims**



1. For use in a water-cooled motor vehicle equipped with (A) a room heater excitable by a power source in accordance with the temperature of the vehicle engine cooling water and (B) a separate electric heater excitable by the power source for controlling a thermostat that automatically adjusts the vehicle engine choke valve, an improved automatic choke control arrangement which comprises:

first switching means for selectively connecting the power source to the room heater to effect operation of the room heater when the first switching means is moved from a first inoperative position to a second operative postion;

second switching means for connecting the power source to the thermostat heater through a selected one of a first path and a second path, the impedance of the second path being high relative to that of the first path, whereby the choke valve is opened at a relatively high rate when the second switching means establishes the first path and at a relatively low rate when the second switching means establishes the second path; and

ganging means coupling the first and second switching means for establishing the first path of the second switching means when the first switching means is in its inoperative position and for establishing the second path of the second switching means when the second switching means is in its operative position.

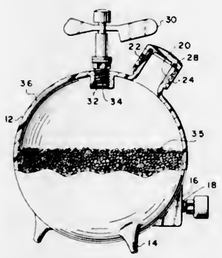
### 3,933,308
### SOLUBILIZING AND DISPENSING MATERIAL

**William S. Bradley; James F. Lea, Jr., and Robert L. Macy, all of 2216 Ridgecrest Drive, Richardson, Tex. 75080**

**Filed Sept. 16, 1974, Ser. No. 506,222**

**Int. Cl.² B05B** *17/04*

**U.S. Cl. 239—10** **10 Claims**



1. Apparatus for solubilizing and dispensing liquid soluble particulate material, comprising: a generally spherical hollow container; inlet means located in the lower half of the spherical container for introducing liquids into the spherical container and arranged to direct liquid flow into the container in a horizontal direction, generally tangential to the interior surface of the hollow container wall, so as to create a vortex flow of the introduced liquid; outlet means located in the top portion of the spherical container which includes liquid diffusing means; and filter means for introducing soluble particulate material.

10. The method of solubilizing and spreading particulate fertilizer comprising: placing the particulate fertilizer in a spherical plastic container capable of containing 100 psi; continually introducing water under pressure into the lower portion of the spherical container at an angle to the vertical axis of the container to impose a vortex flow of water; and continuously withdrawing and diffusing water solubilized fertilizer from the upper end of the container.

### 3,933,309
### SPRAY BOOM

**Robert J. Odegaard, R. R. 1, Box 1, Kindred, N. Dak. 58051**

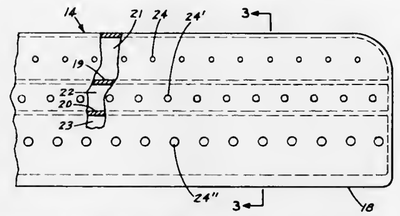
**Filed Jan. 14, 1975, Ser. No. 540,896**

**Int. Cl.² B05B** *17/02*; **B64D** *1/18*

**U.S. Cl. 239—171** **30 Claims**

1. A device for spraying material into the atmosphere comprising: body means having a single wall structure surrounding a plurality of separate compartments, separate means for admitting material to each of said compartments, and means mounted on the body means for discharging material from each of said compartments to the surrounding atmosphere, said means for for discharging material including separate discharge openings in the body means, said discharge openings of one compartment being arranged with respect to the discharge openings of a second compartment so that the discharge openings are in a staggered relationship whereby material discharged from the openings of one compartment fall on an area not covered by the material discharged from the openings of the second compartment.





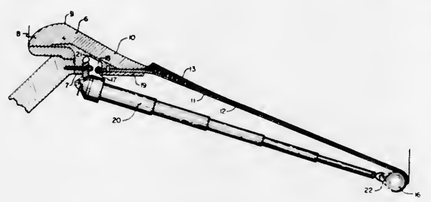
### 3,933,310
### ROCKET NOZZLE CONSTRUCTION AND SURFACES IMPERVIOUS TO HOT, HIGH VELOCITY GASES

**Charles C. Hickox, Brigham City, Utah, assignor to Thiokol Corporation, Newtown, Pa.**

**Filed July 11, 1974, Ser. No. 487,521**

**Int. Cl.² B64D** *33/04*, *33/08*

**U.S. Cl. 239—265.43** **10 Claims**



1. In a convergent-divergent, thrust nozzle for rockets, the improvement comprising:

a light-weight exit cone forming at least a portion of the divergent part of the nozzle, comprising a hollow, truncated cone and densely packed, refractory fibers anchored to the truncated cone so that the fibers extend inwardly to form a pile of the inner surface of the cone.

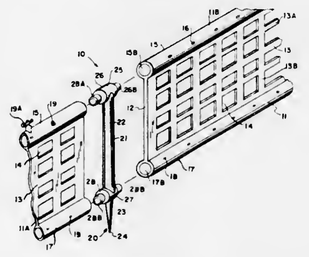
### 3,933,311
### EXTRUDED FENCE

**Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840**

**Continuation-in-part of Ser. No. 265,281, June 22, 1972. This application May 17, 1973, Ser. No. 361,049**

**Int. Cl.² B05B** *9/00*

**U.S. Cl. 239—276** **10 Claims**



1. A fence assembly comprising in combination:

a plurality of fence sections each having a central lattice-like portion,

each of said fence sections having upper and lower tubular formations integral with the central portion thereof with at least one of said tubular formations of each of said fence sections being adapted to carry an irrigation fluid, said tubular formations extending parallel to each other and longitudinally along said central portion from one end of said central portion to the other end thereof,

coupling means provided between each of said fence sections for joining said fence sections together,

said coupling means comprising respective elongated members having respective connection formations respectively secured to the ends of each of the longitudinally extending upper and lower tubular formations of respective aligned fence sections,

portions of at least certain of said coupling means protruding downwardly from said fence sections and being secured beneath said fence sections to the ground so as to support said fence sections above the ground and

said coupling means including means for fluidically connecting the irrigation fluid carrying tubular formations of each of said fence sections to those of the adjacent fence sections.

### 3,933,312
### GATING ARRANGEMENT FOR THE MOULDING WORKING OF PLASTICS FORMED FROM A PLURALITY OF FLUID CONSTITUENTS

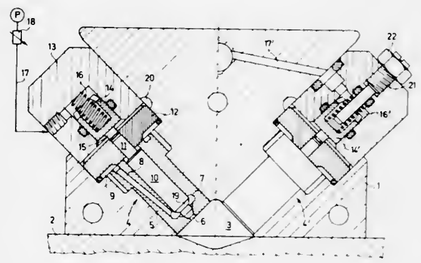
**Bernd Fries, Volkach, Germany, assignor to Messrs. DEMAG Kunstofftechnik GmbH, Nurnberg, Germany**

**Filed Apr. 23, 1974, Ser. No. 463,397**

**Claims priority, application Germany, Apr. 26, 1973, 2321153**

**Int. Cl.² B05B** *12/08*

**U.S. Cl. 239—413** **9 Claims**

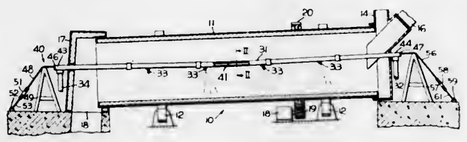


1. A gating arrangement for a plurality of fluid constituents of a plastics material comprising, a plurality of nozzles for delivering said constituents under pressure into a mixing chamber, each nozzle having a nozzle chamber, a closing element sealingly disposed within each nozzle chamber and having an end portion therein and being movable between positions opening and closing its respective nozzle, each closing element being moved, in a first direction of movement, from its closing to its opening position by pressure of said fluid constituents thereon at its end portion, and a hydraulic piston associated with each closing element and urging said closing element in a line of movement opposite to the first line of movement, means for applying hydraulic pressure to said hydraulic piston and urging said piston in its line of movement, thereby maintaining each closing element in a definite position, with respect to said nozzle chamber, on application of a predetermined hydraulic pressure to said piston.

### 3,933,313
### SPRAY TUBING WITHIN A ROTATING DRUM SUPPORTED INDEPENDENTLY OF THE DRUM

John J. Waite, Chateauguay, Canada, assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Nov. 13, 1974, Ser. No. 523,526
Int. Cl.² B05B *15/08, 1/18*
U.S. Cl. 239—587 6 Claims



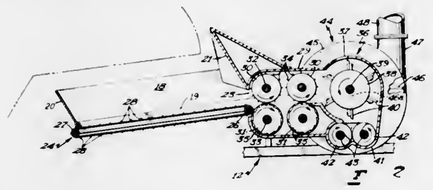
1. In a rotary cooler device having an elongated cylindrical shell;
a tubular spray pipe extending through the elongated cylindrical shell but having no physical connection to the cylindrical shell;
a support within said tubular spray pipe and extending outwardly of the ends thereof;
anchor means at each end of the cooler device external of the cylindrical shell; and,
means connecting the extending ends of said support to said anchor means.

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### 3,933,314
### CHOPPING IMPLEMENT

Art Luscombe, Armstrong, Iowa

Continuation of Ser. No. 331,824, Feb. 12, 1973, abandoned.
This application Sept. 3, 1974, Ser. No. 502,554
Int. Cl.² B02C *13/286*
U.S. Cl. 241—60 1 Claim



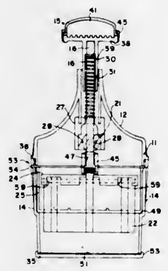
1. A towed type chopping machine adapted to be connected in trailing relation to a harvesting combine for receiving from the combine the leaves, stalks and the like such as stover of the crop being harvested, the harvesting combine including a housing having a downwardly facing opening of predetermined size adjacent the rear end of the combine housing, comprising:
a frame,
ground engaging wheels on said frame,
a hitch mounted on the front of said frame and projecting forwardly therefrom for connection to the rear end of a harvesting combine,
an elongate hopper mounted on said frame adjacent the front end thereof, said hopper having elongate side walls and a front end wall and having length and width dimensions slightly larger than the corresponding dimensions of the downwardly facing discharge opening of a combine housing, the front and side walls of said hopper having lower edges, the lower edge of said front wall being located above the lower edge of said side walls, said hopper being positioned below the discharge opening of a combine to receive therefrom stover or the like, such as stalks, leaves, shelled ears, and shuck, said hopper having a rearwardly facing discharge opening thereon,
a generally horizontally oriented endless belt conveyor positioned in said hopper and extending in a fore and aft direction, and projecting longitudinally beyond the lower edge of said hopper front wall, said belt conveyor having a plurality of longitudinally spaced apart transversely extending conveyor elements affixed thereto to facilitate conveying the stover or other material in a rearward direction through the discharge opening in said hopper, said hopper and belt conveyor being readily removable from the implement frame,
a deflector secured to said hopper and extending upwardly and forwardly from the rear end of said hopper and and deflecting the stover and other material from a combine downwardly upon said conveyor, said deflector including forwardly projecting side portions secured to the side walls of the hopper and having a lower edge, the latter defining the upper edge of said discharge opening,
a housing on said frame and having a forwardly facing opening therein,
a pair of vertically arranged driven feed rolls positioned in said housing closely adjacent the rear end of said conveyor and receiving the stover or similar material from the conveyor,
a driven rotary chopper device positioned in said housing rearwardly of the feed rolls to receive the stover or similar material therefrom, and being operable to chop the stover or similar material into fine particles,
a second conveyor means positioned adjacent the chopper housing and receiving the chopped stover material from the chopper device,
a blower mechanism including a blower housing mounted on one side of said first mentioned housing and connected with said second conveyor means and receiving said chopped mateiral therefrom, fan in said blower housing for entraining the chopped material in a stream of air,
and conduit connected to said blower housing through which the air entrained chopped material passes.

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### 3,933,315
### FOOD CHOPPER & CUTTING SURFACE

Samuel Joseph Popeil, Chicago, Ill., assignor to Popeil Brothers, Inc., Chicago, Ill.

Filed July 12, 1974, Ser. No. 487,973
Int. Cl.² B02C *18/04*
U.S. Cl. 241—166 6 Claims



1. A food chopper and cutting surface comprising,
a body having an upper and lower housing,
said lower housing having a lower portion thereof,
a cutting board conforming to the lower housing configuration,
means for removably securing the cutting board to the lower portion of the lower surface,
a handle and shaft yieldably secured to the upper housing for riciprocation,
a cross bar secured to the lower portion of the shaft and having a plurality of slots along the bottom thereof and extending only partially upwardly into said cross bar,
pin means passing through the cross bar and slots,
an integral convoluted blade being uninterrupted excepting only for having holes to receive said pin means, and
a stripper in said lower housing having slots conforming to the convolutions of the blade.

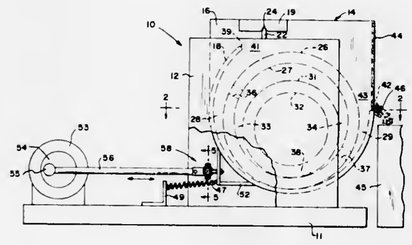


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### 3,933,316
### MILL FOR COMMINUTING ORE MATERIAL

Roy D. Jones, Lovelock, Nev., assignor to Resource Products, Inc., Berkeley, Calif.

Filed Mar. 21, 1974, Ser. No. 453,212
Int. Cl.² B02C *4/00*
U.S. Cl. 241—170 19 Claims



1. A mill for comminuting material such as mineral ores comprising the combination of a support frame, a cradle having an arcuate wall extending about a generally horizontal axis between an inlet zone and a discharge zone, at least one hollow cylindrical shell roll member supported on said arcuate wall within the cradle, the cylindrical roll member extending along a longitudinal axis disposed generally parallel with the axis of said arcuate wall, said roll member having an outer diameter less than the inner diameter of said arcuate wall whereby wedge-shaped spaces are defined therebetween, means mounting the cradle at a position on the frame for pivotal movement about a support axis which is in a vertical plane offset horizontally from the effective center of gravity of the cradle and roll member, and actuating means to move said cradle in a gyratory action through an angle about said support axis with an amplitude which is effective to cause the roll member to be lifted on one stroke and then fall back on alternate strokes within the cradle for comminuting material which is supplied through the inlet zone and into the wedge-shaped spaces.

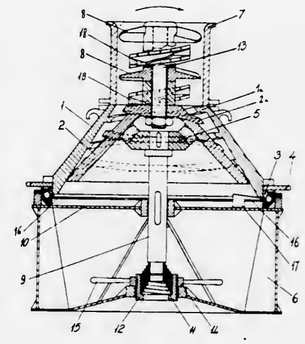
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### 3,933,317
### GRINDING MILL

Virgilio Rovere, 33010 Magnano in Riviera, via Chiesa N.4, Udine, Italy

Continuation-in-part of Ser. No. 378,080, July 11, 1973, abandoned. This application Aug. 12, 1974, Ser. No. 496,623
Int. Cl.² B02C *4/10, 4/32*
U.S. Cl. 241—246 4 Claims

1. A grinding mill comprising two coaxial cones, means for mounting said cones in telescopic relationship so that the distance between the walls of the cones is smallest at the base of the cones, the outer cone being rotatable and having internal helical ribs and the inner cone being stationary and having external helical ribs, the ribs on one cone crossing the ribs on the other cone so that material passing between the two cones is conveyed from the apex to the base of the cones.

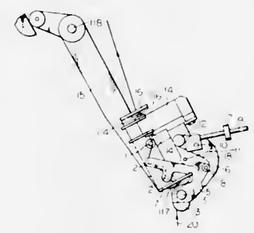


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### 3,933,318
### TENSION CONTROL APPARATUS

Toshio Yajima, Toyonaka; Terukazu Ohta, Ikeda, and Nobuhide Iwasaki, Itami, all of Japan, assignors to Kamitsu Seisakusho Ltd., Japan

Filed Apr. 8, 1974, Ser. No. 459,166
Claims priority, application Japan, Apr. 14, 1973, 48-41843
Int. Cl.² B65H *59/30*
U.S. Cl. 242—154 4 Claims

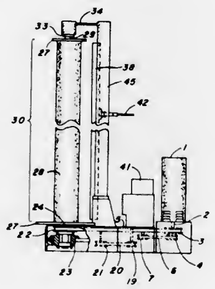


1. A yarn tension control device for controlling the tension of a running yarn comprising, first and second yarn guide members having yarn guide pins alternately engaged by traveling yarn, means mounting the first yarn guide member pivotally free to pivotably move rockably across the normal yarn path, means movably mounting the second yarn guide member, the first yarn guide member mounting a roller or pin spaced from the pivot thereof and a first balancing weight, a control cam pivotally mounted and having a second balancing weight and an extending arm, a third weight adjustably mounted on said extending arm, said control cam having a cam profile which contacts said roller or pin mounted on the first yarn guide member, and the third weight and said extending arm biasing said cam profile into engagement with said roller or pin to pivot the first yarn guide member in a desired direction.

## 3,933,319
## VERTICAL SPINDLE WINDER

**Harold Gerard Sachleben, Sr., Bellmawr, N.J.; Everett Gray Montgomery, Chester, Va.; Clarence Albert Forman; Robert David Carr, both of Hopewell, Va.; Lawrence Edward Cary, Richmond, Va.; Beryl Aaron Boggs, Chesterfield, Va.; Harold George Burnley, Jr., Chester, Va., and Alistair James Chafer, Greenock-Renfrewshire, Scotland, assignors to Allied Chemical Corporation, Petersburg, Va.**

**Filed Apr. 9, 1974, Ser. No. 459,429**
**Int. Cl.² B65H** *54/06, 54/30*
**U.S. Cl. 242—18 R** **6 Claims**

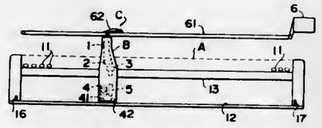


1. In an apparatus to wind vertically running yarn comprising
a vertical spindle with a driven pulley mounted on a shaft,
a stationary yarn guide,
an upper vertically movable yarn guide,
a lower vertically movable yarn guide,
a double track cam, vertically mounted with vertically attached driven pulley and shaft,
an upper cam follower and shoe,
a lower cam follower and shoe,
a cam housing, vertically mounted and having a vertical slot,
a motor having a spindle drive pulley and a cam drive pulley mounted on a drive shaft,
connecting means to drive said spindle from said motor,
connecting means to drive said cam from said motor, and
a presser roll, vertically mounted along the length of said spindle
said motor driving said vertical spindle and cam by connection of said driven pulleys to said drive pulleys with said connecting means, said vertically movable yarn guides connected to said respective cam followers and shoes through cam housing slot, said cam followers and shoes both driven by a respective cam track of said double track cam to oscillate vertically along said cam housing slot in such a manner that said upper vertically movable yarn guide oscillates only in the upper half of said slot at half the speed of the lower vertical movable yarn guide, and the lower vertically movable yarn guide oscillates nearly the full length of said slot and for the full traverse of the winding yarn, said movable guides acting in concert to maintain a constant length of yarn between the stationary yarn guide and the spindle, said stationary guide centered with respect to said vertical spindle, said presser roll holding said wound yarn in a cylindrical package during winding, the improvement comprising
said connecting means to drive said cam including a two speed transmission to drive said cam at two winds,
said high speed double track cam having tracks cut so that said cam followers will describe a path at the reversal along a 60° angular displacement of a curve of a cycloidal development
so that said spindle and said cam can start at a wind of from about 89 to about 152.52 and after about 0.1 to about 3 minutes change to achieve a wind of about 11 to about 17 whereby said wound up yarn can be unwound at speeds up to 3,000 feet per minute.

## 3,933,320
## APPARATUS AND PROCESS FOR AUTOMATICALLY SUPPLYING COPS TO A THREAD WINDER

**Kotaro Tsurumi, Takatsuki; Shigeyuki Nishiyama, and Kunio Nishimura, both of Amagasaki, all of Japan, assignors to Nihon Spindle Seizo Kabushiki Kaisha, Japan**

**Filed Aug. 29, 1973, Ser. No. 392,572**
**Claims priority, application Japan, Aug. 30, 1972, 47-101745[U]; Sept. 4, 1972, 47-88512; Sept. 4, 1972, 47-88513; Sept. 4, 1972, 47-88514; Mar. 31, 1973, 48-37038**
**Int. Cl.² B65H** *54/20, 54/26*
**U.S. Cl. 242—35.5 R** **18 Claims**

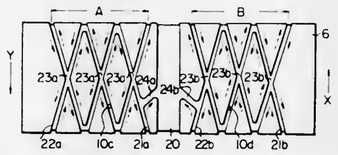


1. Apparatus for automatically supplying cops to a plurality of rotatable magazines of a thread winder, each of said magazine having a plurality of pockets for holding cops, comprising guide means proximate said thread winder, said guide means being essentially as long as said thread winder, a movable cop-feeder on said guide means, first driving means for moving said cop-feeder back and forth along the length of said guide means and into registry with any of said magazines, and halting means for halting said cop-feeder in registry with any of said magazines, said cop-feeder including a cop-storage section, a rotatable cop-holder movable between two positions, said cop-holder having at least one cavity for holding a cop, said cop-holder in the first of said positions being adapted for receiving at least one cop from said cop-storage section and in the second of said positions being adapted for transferring at least one cop to a magazine, means for feeding cops from said cop-storage section to said cop-holder, means for moving said cop-holder reciprocally between said two positions, said cop-storage section and said magazine being in spaced-apart relation, and means for transferring cops by gravity from said cop-holder to said magazine.

## 3,933,321
## DEVICE FOR SIMULTANEOUSLY TRAVERSING THREAD GUIDES OF A WINDING APPARATUS FOR TAKING-UP PLURAL THREADS

**Yoshikazu Kawauchi, and Hiroshi Honda, both of Takahama, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Tokyo, Japan**

**Filed Feb. 24, 1975, Ser. No. 552,659**
**Claims priority, application Japan, Feb. 27, 1974, 49-23461[U]**
**Int. Cl.² B65H** *54/30*
**U.S. Cl. 242—43 R** **4 Claims**



1. In a winding apparatus for simultaneously taking up a plurality of threads, provided with a common friction roller for rotating a plurality of bobbins or thread packages formed on said bobbins and a traverse device disposed at a position adjacent to said friction roller, an improved traverse device

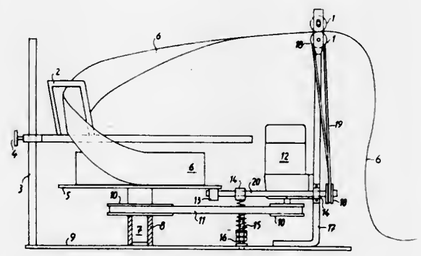


comprising a cam box provided with a horizontal aperture formed at a part thereof in parallel condition to a longitudinal axis of said friction roller, a pair of thread guide rails secured to edge portions of said horizontal aperture of said cam box in parallel condition to said aperture, at least a pair of thread guides slidably disposed in a space formed between said guide rails, a common cam rotatably held in said cam box in axially parallel condition to said aperture of said cam box; said common traverse cam provided with at least a pair of helical endless guide grooves formed on a cylindrical surface thereof and provided with a ring shaped guide groove formed on said cylindrical surface thereof at an intervened position between said helical endless guide grooves and provided with a pair of auxiliary guide grooves connecting axially inside portions of said endless guide grooves to said ring shaped guide groove, respectively, one of said guide rails provided with a cut-out portion formed at a central portion thereof facing said ring shaped guide groove, said thread guides slidably engaged in either one of said guide grooves of said common traverse cam, respectively.

## 3,933,322
## METHOD AND APPARATUS FOR THE UNWINDING OF BANDS

**Roland Satzinger, Hammelburger Str. 21 a, 8731 Euerdorf, Germany**

**Filed July 31, 1974, Ser. No. 493,932**
**Claims priority, application Germany, Aug. 9, 1973, 2340321**
**Int. Cl.² B65H** *75/02*
**U.S. Cl. 242—55** **9 Claims**



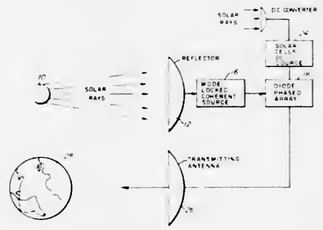
1. A method for unwinding and simultaneously turning a band or the like from an unwinding reel on which it is wound, which reel has a vertical axis of rotation which comprises removing said band off of said reel in a horizontal direction, raising said band to a height above said reel in said horizontal direction and, at said height, turning said band about 90° and moving said band, while turned, in a direction opposite to that in which it was removed from said reel.

## 3,933,323
## SOLID STATE SOLAR TO MICROWAVE ENERGY CONVERTER SYSTEM AND APPARATUS

**Kenneth W. Dudley, Sudbury, and George H. MacMaster, Lexington, both of Mass., assignors to Raytheon Company, Lexington, Mass.**

**Filed Mar. 20, 1974, Ser. No. 453,133**
**Int. Cl. B64c** *39/02*
**U.S. Cl. 244—1 R** **6 Claims**

1. A system for converting solar energy into microwave energy comprising in combination;
a source of solar energy radiation;
means for collecting said solar energy operatively associated with a pulsed coherent radiant energy mode-locked laser beam source operative at a fixed predetermined microwave energy frequency;
solid state semiconductor amplifier means adapted to be irradiated by said radiant energy laser beam to generate an amplified microwave energy output at substantially said predetermined frequency; and

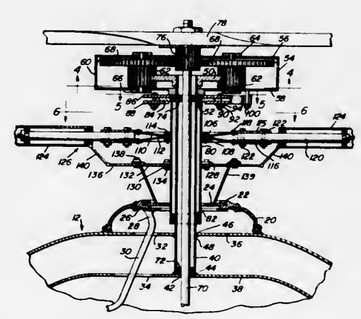


means for transmitting said amplified microwave energy to a utilization load.

## 3,933,324
## HELICOPTER WITH OPPOSITE ROTATING TORQUE CANCELLING HORIZONTAL PROPELLER

**Stanislaw Ostrowski, Highway 40, Gusher, Utah 84030**

**Filed Aug. 2, 1974, Ser. No. 494,369**
**Int. Cl.² B64C** *27/10*
**U.S. Cl. 244—17.23** **7 Claims**

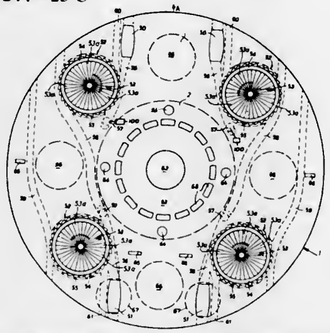


1. A helicopter including an air frame, vertically spaced and horizontally disposed small and large diameter propeller and bladed rotor assemblies, respectively, journaled from said air frame, powered drive shaft means drivingly coupled to said assemblies, said small diameter propeller being journaled from said air frame for rotation about an upstanding axis, said bladed rotor assembly including generally radial blades anchored at their radial inner ends to a hub journaled from said air frame coaxial with the axis of rotation of said propeller, said hub including flexive portions enabling vertical swinging of the outer end portions of said blades, a mounting member supported from said frame for rotation about said axis and for universal canting in all directions relative to a plane normal to said axis, and connecting means spaced about said axis interconnecting said mounting member and said blades at points on the latter spaced outwardly from said flexive portions, whereby canting said mounting member will cause the plane in which the outer end portions of said blades disposed outwardly of said flexive portions rotate to be similarly canted relative to the plane in which the propeller rotates.

### 3,933,325
### DISC-SHAPED AEROSPACECRAFT

Joseph Richard Kaelin, Villa Seeburg, Buochs, Switzerland

Filed Sept. 24, 1974, Ser. No. 508,895
Claims priority, application Switzerland, Sept. 25, 1973, 13750/73
Int. Cl.² B64C 29/00
U.S. Cl. 244—23 C 2 Claims

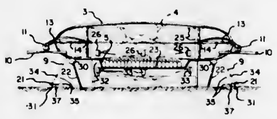


1. An aerospacecraft comprising a substantially discus-shaped body, a number of disc-type air screws provided for said body, a number of turbines and a number of jet engines provided for said body, one respective turbine and jet engine being operatively associated with a respective disc-type air screw, each of said disc-type air screws being driven by the associated turbine by means of exhaust gases emanating from the associated jet engine, each of said disc-type air screws being equipped with variable pitch blades and functioning in the manner of a helicopter rotor for the generation of lift, each turbine having vanes driven by the exhaust gases generated by the associated jet engine, and said number of jet engines being symmetrically arranged along diagonals extending across the craft, two of said number of jet engines defining rear engines, means for rotating said two rear jet engines through 180° in a plane extending through the center of the body, and each jet engine driving the associated disc-type air screw.

### 3,933,326
### OBSERVATION/INTERPRETATION SYSTEM

Peter P. Schauffler, 5200 Battery Lane, Bethesda, Md. 20014

Continuation-in-part of Ser. No. 386,935, Aug. 9, 1973, abandoned. This application May 1, 1975, Ser. No. 573,749
Int. Cl.² B64B 1/50
U.S. Cl. 244—33 8 Claims



1. An integrated all-weather observation/interpretation system comprising:

a lighter-than-air observation vehicle for transporting passengers above a scene of interest to provide said passengers with an advantageous vantage point for the observation of said scene,

means for lifting said vehicle vertically, maintaining it at a point above the surface from which said scene can be viewed, rotating it for viewing various sectors of this scene, and returning it to the surface,

an insulated cable for continuously providing electric power to said vehicle from the surface,

a gondola under said vehicle which includes a plurality of seats facing an observation window extending from a horizontal plane substantially coincident with the passengers' normal view downward almost to a vertical plane and positioned so that said passengers can view said scene of interest therethrough,

a darkened screen positioned directly above said horizontal plane and oriented with the direction of observation so that the passengers can observe both said screen and said window,

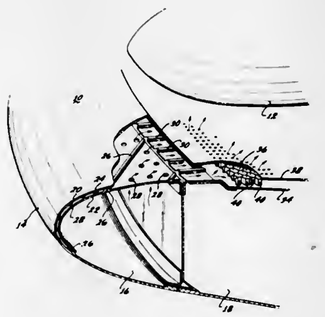
means for internally projecting supplementary and interpretive images specifically related to the scene of interest onto said screen, with said images programmed and coordinated so as to coincide with said observation, and

means for presenting audio programs coordinated with said observed scene of interest as supplemented with said images.

### 3,933,327
### AIRCRAFT ANTI-ICING PLENUM

Leonard J. Cook, Canoga Park, and Herman A. Rosenthal, San Diego, both of Calif., assignors to Rohr Industries, Inc., Chula Vista, Calif.

Filed Aug. 30, 1974, Ser. No. 502,059
Int. Cl.² B64D 15/04
U.S. Cl. 244—134 B 3 Claims



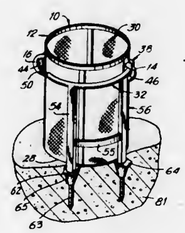
1. Anti-icing plenum to eliminate formation of ice at the leading edge of a jet engine nacelle, the nacelle being divided into leading and trailing chambers, and a partition separating said chambers, a portion of the leading and trailing chambers comprises a double skin along the side thereof generally facing interiorly toward the jet engine, said double skin defining therebetween a cell for the passage of hot gases which heat the leading chamber outer skin from the inside thereof, a series of spaced apertures formed in the inner skin of said leading chamber admit controlled amounts of hot gases into said cell, whereby said leading chamber outer skin is heated to a temperature sufficient to retard formation of ice particles at the nacelle inlet, said partition separating said chambers comprises a series of spaced channels formed between said inner and outer skins adapted to pass the spent heating gases out of said leading chamber into the trailing chamber, said inner wall of the trailing chamber comprises a structural acoustic sandwich, the intermediate layer of which comprises honeycomb cellular material, said structural acoustic sandwich comprises inner and outer skins separated by said layer of honeycomb cellular material having cells with side walls with notches therein, said side walls perpendicular to said skins, said outer skin being apertured allowing said heating gases to pass through notches cut in the side walls of the cells of said honeycomb cellular material and said apertures.



### 3,933,328
### APPARATUS FOR RECEIVING REFUSE

Peter Werner Michelbrink, 420 Park Place, Fort Lee, N.J. 07034

Filed Oct. 25, 1974, Ser. No. 517,816
Int. Cl.² A47G 23/02
U.S. Cl. 248—146 7 Claims

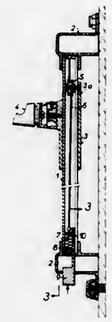


1. A holder device for a refuse container, said refuse container having substantially upstanding sides providing a predetermined diameter for said container with a pair of circumferentially spaced apart closed loop handles outwardly extending from said sides with said closed loops extending substantially in the direction of said sides, said holder device comprising a circumferentially extending housing having a diameter greater than the diameter of said container, said container being removably insertable in said circumferentially extending housing, said housing having a ring-like portion circumferentially extendable about said inserted container, said ring-like portion comprising a pair of circumferentially spaced apart arcuate portions defining a pair of circumferentially spaced apart lockable openings in said ring-like portion through which said handles are insertable when said container is inserted in said housing, the circumferential spacing of said openings being dependent on the circumferential spacing between said handles, said handles of said container being simultaneously insertable through said openings and simultaneously slidably rotatable on said ring-like portion adjacent said openings when said inserted container is rotated, each of said arcuate portions comprising said ring-like portion having at least one intersecting portion extending downwardly therefrom adjacent a different one of said pair of openings for supporting said arcuate portion at a predetermined height above the ground and further comprising a pivotal locking means being disposed at a different one of said pair of openings for lockably retaining said handles to said ring-like portion to thereby prevent removal of said slidably inserted handles and thus removal of said container when said locking means locks said handles to said housing after said simultaneous slidable insertion and rotation of said handles, said pivotal locking means being pivoted to a locking position at each of said openings for locking said handles between said intersecting portions and said pivoted locking means for locking said handles to said ring-like portion while confining rotation thereon to the distance between said locked pivotal locking means and said adjacent intersecting portion, said housing further comprising anchoring means for anchoring said housing to the ground for preventing ready removal of said container locked housing, whereby the refuse container may be inserted in said holder therefor and locked in place.

### 3,933,329
### SUPPORT APPARATUS FOR A PORTABLE SHOWER HEAD

Maurice Granger, 28 rue Charles de Gaulle, 42000 Saint Etienne - Loire, France

Filed Jan. 10, 1974, Ser. No. 432,338
Int. Cl.² A47F 5/00; A47H 1/10
U.S. Cl. 248—295 10 Claims

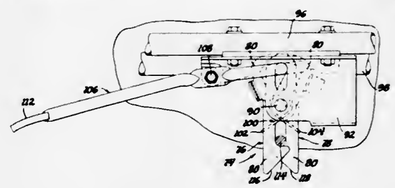


1. Adjustable support apparatus for a portable shower head, said apparatus comprising a fixable vertical guide column having a front and rear, a carriage vertically slidable on said guide column and including a support for a shower head, releasable means supporting said carriage on said guide column, and a linearly displaceable control means supported by said column and coupled to said releasable means to selectively release the same in one direction of displacement of the control means and permit descent of the carriage on the guide column and to re-effect support of the carriage by the releasable means upon release of the control means, said releasable means comprising a cable extending along said column, said cable having a given length with one end fixed to said column, at least one roller attached to said carriage and on which said cable passes, and a spring connected to said column and to said cable at the other end thereof to render the cable taut and hold the carriage in place on the column, said control means including means to oppose the action of the spring to slacken the cable when the control means is displaced in said one direction and allow the roller to travel by gravity downwards along the cable whereby the carriage descends.

### 3,933,330
### LATCH MECHANISM

Edward S. Gwin, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 419,771, Nov. 28, 1973, Pat. No. 3,879,082. This application Oct. 15, 1974, Ser. No. 514,753
Int. Cl.² B60N 1/04
U.S. Cl. 248—371 1 Claim



1. A latch mechanism for use with a tiltable motor vehicle seat having the forward end thereof supported by a base for movement about a transverse horizontal axis, said latch mechanism comprising a plate member adapted to be secured to said base, a pair of overlapping lock members, a lock bar

adapted to be fixed to said base for cooperation with said lock members for locking said seat to said base, pin means mounted on said plate member for pivotally interconnecting said lock members for relative movement in a scissors fashion about a first pivot axis, each of said lock members having a lower portion formed as a J-shaped hook and an upper portion having a triangular opening therein, a compression spring wound about said pin means and having a pair of oppositely extending arms which wrap around the lower portions of said lock members and urge said lower portions towards each other into a locked position with said lock bar, a release member, pivot means offset from the longitudinal axis of each of said lock members and supporting said release member on said plate member for pivotal movement about a second pivot axis that is parallel to said first pivot axis, said release member having an integral inner end formed with a pair of bends and extending into the openings formed in the upper portions of said lock members for causing the lower portions to be spread apart against the bias of said spring when said release member is pivoted about said second axis so as to place the lock members in an unlocked position relative to said lock bar, said inner end having a straight section between said pair of bends, the longitudinal center axis of said straight section being parallel to and lying in a common vertical plane with said first pivot axis when the lock members are in the locked and unlocked positions.

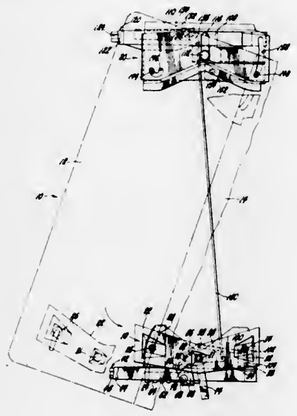
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**3,933,331**

## SEAT ADJUSTER MECHANISM

**Hubert P. Blom, Royal Oak, Mich., assignor to General Motors Corporation, Detroit, Mich.**

**Filed Nov. 25, 1974, Ser. No. 526,832**
**Int. Cl.² F16M** *13/00*
**U.S. Cl. 248—425** **2 Claims**



**2.** A seat adjuster mechanism for a vehicle seat comprising: first and second adjuster track assemblies respectively mounting the first and second ends of the vehicle seat on the vehicle body, first and second swivel means respectively in connection between the first and second adjuster track assemblies and the first and second ends of the vehicle seat to permit pivoting movement of the vehicle seat relative the respective adjuster track assemblies, first and second latch means associated respectively with the first and second adjuster track assemblies, and being movable between latched and unlatched positions to permit fore and aft adjusting movement of the associated end of the vehicle seat, latch operating means actuatable to unlatch the first latch means to permit forward movement of the first end of the vehicle seat, the first and second means pivoting the first and second ends of the vehicle seats relative the respective first and second adjuster track assemblies upon forward movement of the first end of the vehicle seat, and blocking means responsive to the relative pivotal position between the first end of the seat and the first adjuster track assembly and being effective to maintain the first latch means in unlatched position when the first end of the vehicle seat is pivoted relative the first adjuster track assembly to assure rearward return of the first end of the seat into transverse alignment with the second end of the seat before the first latch means returns to normal latched position.

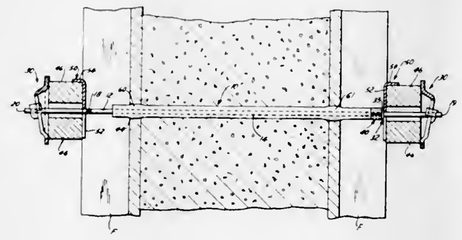
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**3,933,332**

## SELF-SEALING TIE ASSEMBLY FOR ERECTING CONCRETE FORMS

**Peter R. Lovisa, Pelham, and Dusan Tausanovitch, Northport, both of N.Y., assignors to Tullio E. Lovisa, Huntington, N.Y., a part interest**

**Continuation-in-part of Ser. No. 433,085, Jan. 14, 1974, abandoned. This application May 17, 1974, Ser. No. 470,923**
**Int. Cl.² E04G** *17/08*
**U.S. Cl. 249—42** **25 Claims**



**1.** The combination of a feed-through tie assembly and concrete forms, the feed-through tie assembly for mounting as a unit on the concrete forms and for removal therefrom as a unit without first disassembling the forms or the tie assembly and without requiring a lubricant thereon, said combination comprising:

opposed concrete forms spaced a selected distance apart;

an elongated tie rod having means disposed at each end thereof for cooperating in releasably mounting the tie rod in fixed position on the forms;

means associated with the tie rod between the ends thereof for mounting external spreader means to releasably hold the concrete forms a predetermined distance apart;

an elongatable, elastomeric sleeve positioned between the ends of the tie rod and being of a length greater than the selected distance between the forms, said elongatable, elastomeric sleeve when positioned through opposed openings in the forms being self sealing due to the lateral deformation and bubbling of the sleeve when it is in the openings by the compressive forces exerted by the concrete on the tie assembly thereby plugging the openings to provide a self sealing removable closure by the elastomeric sleeve;

said sleeve and tie rod having interengageable surfaces for coupling the sleeve to the tie rod; and

guide means positioned over one end of the sleeve to facilitate insertion of the tie assembly through opposed spaced openings in the forms so that both ends of the sleeve are projected exteriorly of the space between the forms.

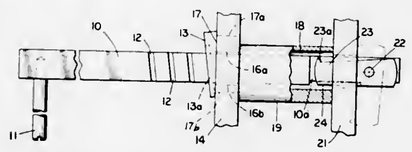


**3,933,333**

## CLAMP FOR CONCRETE FORMS

**Douglas G. Ellson, 209 S. Hillsdale Drive, Bloomington, Ind. 47401**

**Filed Dec. 23, 1974, Ser. No. 535,954**
**Int. Cl.² F04G** *17/06*
**U.S. Cl. 249—43** **5 Claims**



**1.** A clamp assembly for maintaining form members in predetermined spaced position during the depositing of flowable material between the members, said assembly including a shaft freely inserted into an enlarged aperture in the outer face of one form member, across the space between said form members and freely through an aperture of smaller dimension in the other form member, a spacer on the shaft having an outer transverse dimension smaller than said enlarged aperture but larger than said smaller aperture and a longitudinal dimension substantially equal to said predetermined space between the forms, an eccentric passage formed in and extending longitudinally through said spacer freely accommodating said shaft, whereby said spacer member is passed through said enlarged aperture with said shaft when oriented in one position with relation to the shaft axis and blocked from withdrawal through said enlarged aperture when oriented in another position with relation to the shaft axis, latching means on the remote end of said shaft which can be selectively actuated to prevent withdrawal of the shaft from said aperture in the other form member and deactuated to permit withdrawal, a plug member on said shaft for closing the space between said shaft and the margin of said enlarged aperture, and releasable means cooperating with said shaft to press said one form member against the adjacent end face of said spacer, whereby after deposit of the flowable material between said members, said latching means may be deactuated, said releasable means released and said shaft withdrawn for reuse leaving said spacer in situ between said members.

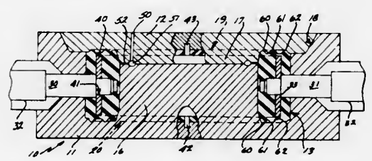
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**3,933,334**

## BUTTERFLY VALVE SEAT MOLD

**Robert B. Edwards, Milton Township, Cass County, Mich., assignor to Nibco, Inc., Elkhart, Ind.**

**Division of Ser. No. 370,765, June 18, 1973, abandoned. This application Sept. 6, 1974, Ser. No. 503,799**
**Int. Cl.² B29F** *1/022*; **B29C** *1/14*
**U.S. Cl. 249—57** **1 Claim**



**1.** A mold for making the annular resilient disc seat for a butterfly valve which seat has a plurality of axially projecting, concentric, circular beads on each of its axial side faces and a rigid reinforcement ring embedded within the elastomeric body of the seat, the ring having a pair of diametrically positioned holes, said mold having an annular cavity defined by a pair of concentric inner and outer walls and a pair of end faces spaced apart corresponding to the axial thickness of the seat to be molded therein, said mold having concentric circular channels for forming said beads on said ring; said mold having means projecting into the mold cavity radially thereof for forming a pair of diametrically opposed openings in the seat for the disc supporting shafts and extending through the openings in the ring for supporting said ring in spaced relationship to both of said faces, said mold characterized by a pair of pins projecting into said mold cavity, said pins being aligned and extending toward each other from opposite ones of said faces of said mold, the inner end of each of said pins extending an equal distance from its adjacent end face, said inner ends being spaced apart a distance equal to the width of said reinforcement ring; said pins being located approximately midway between said projecting means circumferentially of the mold cavity and between a pair of said channels whereby the resulting openings in the ring will be between a pair of said beads; said pins having a cross-sectional size no greater than the wall thickness of the reinforcing ring.

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**3,933,335**

## CASTING MOLD FOR METALS

**Nobuo Maruyama, Tokyo, and Yasuo Sakaguchi, Iwaki, both of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Japan**

**Filed Mar. 21, 1972, Ser. No. 236,788**
**Claims priority, application Japan, Apr. 1, 1971, 46-19226**
**Int. Cl.² A47F** *7/00*
**U.S. Cl. 249—114** **5 Claims**

**1.** In a casting mold for obtention of cast metal articles of superior surface quality, the improvement which comprises a lining adhered to the inner surface of said mold by means of an adhesive, said lining comprising a paper-like sheet of carbon fibers admixed with organic fibers or pulp, said carbon fibers being present in an amount of at least 35 percent by weight.

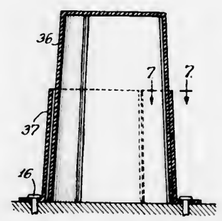
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**3,933,336**

## PIPE SLEEVE

**Carl O. Tolf, Jr., St. Charles, Ill., assignor to Cato, Inc., St. Charles, Ill.**

**Filed Apr. 26, 1974, Ser. No. 464,370**
**Int. Cl.² B28B** *7/28*; **B65D** *21/00*
**U.S. Cl. 249—177** **2 Claims**

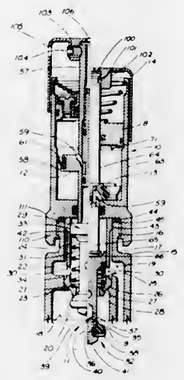


**1.** A pipe sleeve comprising a small diameter section and a large diameter section, both of said sections being tubular and having an angle of taper within the range of approximately 2° to approximately 4°, said small diameter section being telescoped into said large diameter section to bring the larger diameter ends of said two sections flush with each other, a radially outwardly extending flange formed on the larger diameter end of said large diameter section, and at least one longitudinally and radially outwardly extending rib formed on the outer surface of said small diameter section adjacent its larger diameter end, said rib tightly engaging the inner surface of said large diameter section and binding said sections in assembled relation.

### 3,933,337
### TIME-DELAYED AUTOMATIC SHUT-OFF MEANS FOR VALVES

**Earl L. Morris, and Theodore J. Sally, both of Whittier, Calif., assignors to Acorn Engineering Company, Industry, Calif.**

**Filed June 7, 1974, Ser. No. 477,190**
**Int. Cl.² F16K** *21/06, 21/16, 31/48*
**U.S. Cl. 251—54** **14 Claims**

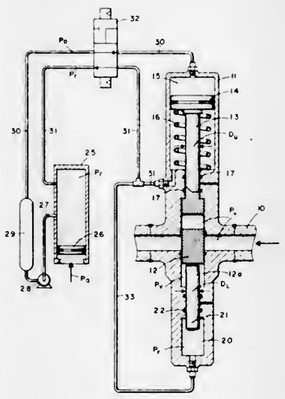


1. A liquid-filled, dashpot mechanism, comprising:
a. a dashpot housing having a dashpot chamber and a reservoir chamber wherein said liquid is disposed, said dashpot housing having portions of unequal diameters therein with rims thereabout;
b. a stem means interposed in said dashpot housing and a portion of said stem means being disposed within said smaller diametered portion in contiguous relationship to said rim of said smaller diametered portion and slidably operable therein and projecting therebeyond;
c. means for effecting a fluid sealing relationship between said rim of said smaller diametered portion and stem means;
d. a dashpot piston means smaller in diameter than said larger diametered portion and fixedly disposed on said stem means, said dashpot piston means being operably disposed within said dashpot housing and capping said dashpot chamber formed between said smaller diametered portion in said dashpot housing and said dashpot piston;
e. flexible flange means disposed about and inbetween said dashpot piston and said dashpot housing, said flexible flange means effecting fluid sealing engagement between said dashpot housing and said dashpot piston means when said dashpot piston means is moved away from said smaller diametered portion and effecting non-fluid sealing engagement when said dashpot piston means is moved towards said smaller diametered portion, thereby functioning as a check valve;
f. a reservoir piston means slidably mounted on said stem means between said larger diametered portion and said dashpot piston means and disposed in peripheral, slidable engagement with said dashpot housing, said reservoir piston capping said reservoir chamber formed in said dashpot housing between said dashpot piston and said reservoir piston disposed within said dashpot housing;
g. means for effecting fluid sealing relationship between said reservoir piston means and said stem means;
h. means for effecting a fluid sealing relationship between said reservoir piston means and said dashpot housing;
i. spring biasing means disposed between said reservoir piston means and said dashpot housing adjacent to said larger diametered portion in said dashpot housing for urging said reservoir piston means towards said dashpot piston means thereby maintaining said reservoir piston in full contact with said liquid in said reservoir chamber; and
j. a liquid metering passageway through said dashpot piston providing fluid communication between said dashpot chamber and said reservoir chamber, whereby when said dashpot piston is moved towards said smaller diametered portion in said dashpot housing by urging said stem means to move within said smaller diametered portion of said dashpot housing and outwardly therefrom, the liquid in said dashpot chamber is forced through said liquid metering passageway and simultaneously flexes said flexible flange means away from said dashpot housing thereby creating non-fluid sealing engagement between said dashpot piston and said dashpot housing and when said dashpot piston is moved away from said smaller diametered portion in said dashpot housing by urging said stem means to move inwardly into said dashpot housing through said smaller diametered portion in said dashpot housing, the liquid in said reservoir chamber flexes said flexible flange means towards said dashpot housing and into fluid selaing engagement therewith and is forced to pass solely through said liquid metering passageway from said reservoir chamber to said dashpot chamber thereby effecting time-delayed movement of said stem means.

### 3,933,338
### BALANCED STEM FAIL-SAFE VALVE SYSTEM

**David P. Herd; John W. McCaskill, both of Houston, Tex., and Thomas W. Childers, Mandeville, La., assignors to Exxon Production Research Company, Houston, Tex.**

**Filed Oct. 21, 1974, Ser. No. 516,704**
**Int. Cl.² F16K** *31/126*
**U.S. Cl. 251—63.6** **12 Claims**



1. A hydraulically operable valve system for use in controlling flow of fluids through a submerged flowline comprising:
a valve housing arranged on said submerged flowline;
a valve chamber arranged in said valve housing;
a valve element movable in said valve chamber between open and closed positions for controlling the flow of fluids through said flowline;
first fluid pressure operable means connected to said valve element for urging said valve element from one to another of said positions of said valve element upon application of fluid pressure to said first fluid pressure operable means;
biading means arranged in said valve housing for urging said valve element from said other to said one of said positions of said valve element; and

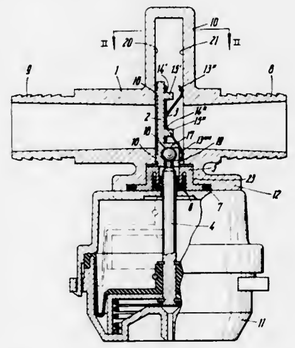


second fluid pressure operable means detached from and engageable with said valve element to urge said valve element toward said one position of said valve element upon application of same or about same fluid pressure applied to said first fluid pressure operable means to counterbalance the force applied to said valve element by means of said first pressure operable means.

### 3,933,339
### WATER FAUCET WITH SLIDER

**Kurt Dietzsch, Leonberg-Eltingen, Germany, assignor to Sudeutsche Kuhlerfabrik, Julius Fr. Behr, Stuttgart, Germany**

**Continuation of Ser. No. 413,353, Nov. 6, 1973, abandoned.**
**This application May 20, 1975, Ser. No. 579,133**
**Claims priority, application Germany, Nov. 11, 1972, 2255278**
**Int. Cl.² F16K** *31/165, 25/00*
**U.S. Cl. 251—176** **9 Claims**



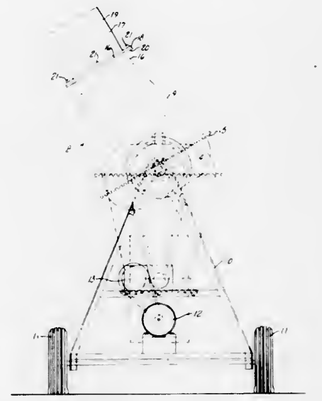
1. In a valve comprising a housing and a slider movable within said housing transversely to the direction of liquid flow through the valve, the improvement comprising:
said housing having a cooperative sealing surface on the interior thereof for said slider, a spring sliding surface opposite said cooperative sliding surface, and a sealed insert orifice at one end thereof;
an actuation rod linked to said slider by a universal or ball joint, said actuation rod extending into said housing through said sealed insert orifice;
said slider having a rectangular shape, a first face containing a toroidal sealing surface in slidable cooperation with said cooperative sealing surface, and a second face having a spring retaining surface, said slider being translational against said cooperative sealing surface in a direction normal to the direction of liquid flow; and
spring means for loading said toroidal slider sealing surface against said cooperative sealing surface at the center of mass of said slider sealing surface, said spring means comprising a spring retained against rotation on said spring retaining surface and having a center portion extending across the center of said slider and four spring legs extending outwardly from said center portion and terminating in sliding portions in sliding relationship with said spring sliding surface.

### 3,933,340
### METHOD OF AND APPARATUS FOR DRY MIXING

**Frank B. Krull, Highway M-35 Ingallstan, P.O. Box 55, Menominee, Mich. 49858**

**Continuation of Ser. No. 420,657, Nov. 30, 1973. This application Jan. 6, 1975, Ser. No. 538,883**
**Int. Cl.² B01F** *13/06, 15/04, 15/02*
**U.S. Cl. 259—14** **8 Claims**

1. A method of mixing dry powdered material which comprises:
A. providing a mixing drum having a mouth;
B. providing an open-topped container having an upper portion of a size to fit into the mouth of the mixing drum;
C. placing a hood over the open top of said container;
D. through a hole in the top of said hood, pouring the materials to be mixed into said container;
E. as the materials are poured into the container, maintaining a subatmospheric pressure in the hood by connecting its interior with a source of suction;
F. when all of the materials to be mixed have been poured into the open-topped container, lifting the hood from its position over the open top of the container;

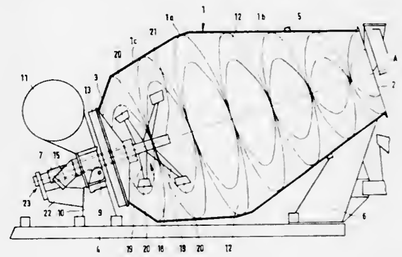


G. with the mouth of the mixing drum facing downward, inserting the upper open-topped portion of the container into the mixing drum; and
H. securing the container to the mixing drum with the space between the sides of the container and the mouth of the mixing drum sealed, so that the container coacts with the mixing drum to form a closed chamber confining the materials to be mixed,
whereby mixing of the materials can be effected without dispersion of powdered material into the atmosphere.

### 3,933,341
### TRANSIT CONCRETE MIXER

**Gerhard Hudelmaier, Frauenstrasse 22, 7900 Ulm, Danube, Germany**

**Filed Jan. 29, 1975, Ser. No. 545,002**
**Int. Cl.² B28C** *5/18*
**U.S. Cl. 259—174** **10 Claims**



1. A transit concrete mixer wherein a mixing drum tapers conically toward a fill and discharge opening and is mounted on a vehicle frame for rotation on an axis which extends in the

direction from the drum bottom toward said opening on an upward slant relative to the horizontal by means of a stub axle secured to said drum bottom and projecting therefrom into a supporting bearing; wherein said drum is provided at its inner wall surface with axial concrete conveying elements and encloses a coaxial supplemental mixing tool which extends in the direction of the drum axis from said drum bottom over a range of not more than about one-half of the total drum length, said mixing tool being mounted on an overhung shaft associated with said drum bottom; and wherein drive means exteriorly of said drum are operatively connected to said mixing drum and to said overhung shaft.

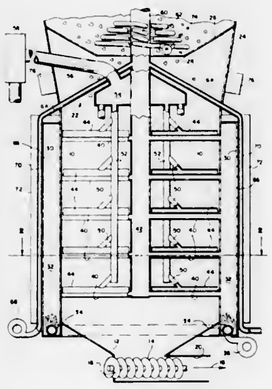
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**3,933,342**

## ORE PROCESSING FURNACE

**Arthur G. Schramm, 3113 E. Highland Ave., Phoenix, Ariz. 85016**

**Filed Oct. 29, 1974, Ser. No. 518,575**
**Int. Cl.² F27B** *9/10*
**U.S. Cl. 266—15** **17 Claims**



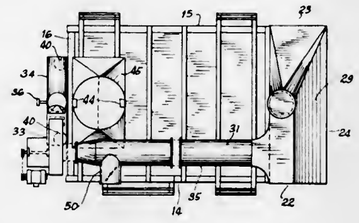
1. An ore processing furnace adapted for processing ores such as those containing antimony and which require temperatures ranging generally between 600° Fahrenheit and 1200° Fahrenheit; said furnace comprising: an ore containing and processing chamber structure having a surrounding wall and an upper open end provided with an ore receiver; said chamber structure having a lower partially enclosed end; a power operated means in said lower end adapted to be driven at a controlled rate to move ore waste such as rock particles or the like from said lower end of said chamber structure; a heat retaining wall surrounding said chamber structure and disposed in spaced relation thereto and defining a fire box space adjacent said chamber structure; said surrounding wall of said chamber structure having a plurality of openings extending therethrough; ore heating tubes communicating with said space; a central hot gas exhaust pipe extending upwardly through said chamber structure; said ore heating tubes intercommunicating with said openings and said hot gas exhaust pipe for conducting hot gas through the interior of said chamber structure whereby said ore heating tubes conduct heat to ore in said chamber structure; vapor collectors above said ore heating tubes; vapor conduits communicating with said vapor collectors and extending upwardly through said chamber structure.

**3,933,343**

## METHOD AND APPARATUS FOR MELTING METALS

**Robert K. Rawlings, Maumee, Ohio, assignor to U.S. Reduction Co., East Chicago, Ill.**

**Division of Ser. No. 284,244, Aug. 28, 1972, Pat. No. 3,839,016. This application Sept. 18, 1974, Ser. No. 507,078**
**Int. Cl.² F27B** *17/00*
**U.S. Cl. 266—16** **8 Claims**



1. A well-type melting furnace for reclaiming metals from metallic scrap material contaminated with combustibles comprising: a well for containing scrap material during melting; means defining a combustion chamber over a portion of said well, said chamber having an exhaust opening and an input opening; means defining a vaporization chamber over the remaining portion of said well, said vaporization chamber having an outlet adjacent an upper end of said vaporization chamber; a burner secured within said input opening for heating and melting said scrap material and forming a molten metal pool within said well to produce combustible fumes in said vaporization chamber by vaporizing said combustibles; and duct means connecting said vaporization chamber outlet with said burner for collecting said fumes from said vaporization chamber and channeling them directly into and through said burner for ignition in said combustion chamber, said combustibles being thereby captured for utilization in melting said scrap material, and the exhaust of combustible fumes being thereby substantially eliminated.

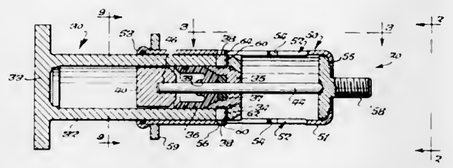
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**3,933,344**

## LIQUID SPRING-SHOCK ABSORBER ASSEMBLY

**Paul H. Taylor, Grand Island, N.Y., assignor to Tayco Developments, Inc., North Tonawanda, N.Y.**

**Continuation-in-part of Ser. No. 390,875, Aug. 23, 1973, abandoned. This application Apr. 21, 1975, Ser. No. 569,601**
**Int. Cl.² F16F** *5/00*
**U.S. Cl. 267—64 A** **7 Claims**



1. In a liquid spring shock absorber assembly including housing means adapted to hold a body of fluid, a piston head having a longitudinal axis and slidably disposed within said housing means, a semi-flexible seal and retaining cap disposed within one end of said housing means, and a body of compressible fluid within said housing means the improvements comprising:

a. a piston rod slidably disposed along the longitudinal axis of said piston head and through said seal and cap and having a first end portion disposed outside said housing means and a second end portion frictionally engaged in a press fit relationship within said piston head, whereby the area of frictional engagement and the frictional force created by said press fit is sufficient to maintain said piston rod and said piston head in fixed engagement after said compressible fluid is pressurized within said housing means; and

b. a jacketing member having an open end slidably disposed over said housing means, a closed end abutting the first end portion of said piston rod, guide means for maintaining said open end in slidable disposition with said housing means, and a plurality of tow pins inserted through said housing means and into said retaining cap, said tow pins being aligned with said guide means, whereby said jacketing member accomodates tension loads applied to the shock abosrber assembly and none of said loads are transmitted to said piston rod.



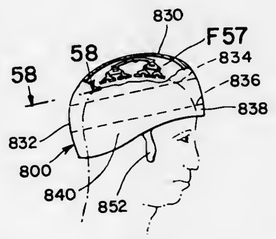
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**3,933,345**

## ZIGZAG ARRANGEMENT OF HELICAL SPRINGS IN DEVICES FOR GENERATING ARTIFICIAL REVERBERATION

**Werner Fidi, Baden, and Otto Marschall, Vienna, both of Austria, assignors to AKG-Akustische und Kino Gerate GmbH, Austria**

**Filed Sept. 6, 1974, Ser. No. 503,690**
**Claims priority, application Austria, Sept. 12, 1973, 7916/73**
**Int. Cl.² F16F** *1/12*
**U.S. Cl. 267—168** **8 Claims**



1. In a zigzag arrangement of helical springs, in devices for generating artificial reverberation, the improvement comprising, in combination, two consecutive portions of a single helical spring having their helical turns mutually interfitted with each other while remaining out of contact, and with their axes in substantially tangential contact; and means firmly interconnecting adjacent ends of said two consecutive helical spring portions to each other directly at the deflection point of the two consecutive helical spring portions.

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**3,933,346**

## CLAMPING OR GRIPPING DEVICES

**Leonard John Carver, Little Haywood, England, assignor to Carver & Co. (Engineers), Walsall, England**

**Filed Apr. 1, 1974, Ser. No. 456,497**
**Claims priority, application United Kingdom, Apr. 17, 1973, 18402/73**
**Int. Cl.² B25B** *1/02, 1/08*
**U.S. Cl. 269—4** **9 Claims**

1. A clamping or gripping device comprising:

a a handle including an elongated shaft for holding the device in one hand to position it relatively to work to be clamped or gripped;

b a first elongated jaw mounted on said handle and extending in a direction transverse to said shaft;

c a carrier slidably mounted on said shaft for movement towards and away from said first jaw, said carrier having a portion thereof in contact with one side of said shaft;

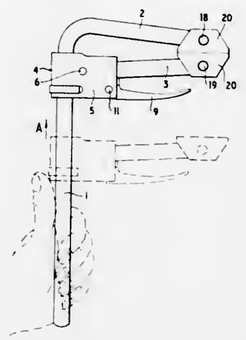
d frictional resistance means on said carrier and in sliding contact with said shaft to retain said carrier against movement along said shaft under the influence of gravity;

e a second elongated jaw having a radiused inner end;

f means mounting said second jaw on said carrier for pivotal movement about an axis and at a position such that the surface of the radiused inner end thereof abuts the side of said shaft, opposite said one side;

g a lever pivotally mounted on said carrier and having a cam edge face;

h a thrust block interposed between said cam edge face and said second jaw, said block having a curved face engaging the surface of said cam face and a face slidingly engaging a surface of said second jaw at the side of said pivot axis opposite said radiused inner end; and



i means biasing said second jaw towards said lever;

j said lever being arranged such that when the device is held by said handle in one hand to position it relatively to the work, said lever is movable by said one hand from an inoperative position in a direction towards said shaft to cause leverage to be exerted, by cam action between said cam edge face and said thrust block against said biasing means, on said second jaw to cause clamping or gripping pressure to be applied against the work in the direction of said first jaw and said portion of said carrier and said radiused inner end of said second jaw to jam against said opposite sides of said shaft, respectively, whereby the carrier cannot be displaced along the shaft until said lever is returned to said inoperative position.

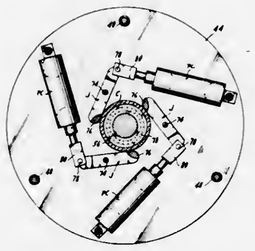
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**3,933,347**

## AIR CHUCK AND MANDREL FOR ROLL SLITTING MACHINE

**Carl A. Stoffels, Flemington, N.J., assignor to Judelshon Industries, Inc., Jersey City, N.J.**

**Filed June 11, 1974, Ser. No. 468,340**
**Int. Cl.² B23Q** *3/14*
**U.S. Cl. 269—31** **11 Claims**



1. In a slitting machine for making radial cuts in a roll of material as said roll is rotated about a stationary mandrel, a fluid actuated chuck for gripping said roll of material, said

chuck including a stationary chuck body member mounted in the frame of said machine coaxially with said mandrel, a rotatable chuck body member coaxially mounted within said stationary chuck body member and bearing means therebetween providing free rotation of said rotatable chuck body member with respect to said stationary chuck body member, mandrel mounting means positioned within said chuck to receive one end of the mandrel for supporting said mandrel in a stationary non-rotating manner, chuck jaw means mounted on said rotatable chuck body member for movement between a gripping position in which said jaws engage said roll of material and a release position disengaged from the roll of material, fluid powdered actuation means operatively connected to said chuck jaw means to move said jaws means between the release position and the gripping position, fluid pressure means having multiple fluid paths for controlling said actuating means including for each of said multiple fluid paths coupling means between the rotatable chuck body member and a source of fluid pressure and means providing a fluid passageway between said coupling means and said actuating means for controlling said actuating means, drive means connected to said rotatable chuck body member for actuating a roll of material on the machine mandrel by rotating said rotatable chuck body member and said chuck jaw means when said chuck jaw means are engaged with the roll of material mounted on the mandrel.

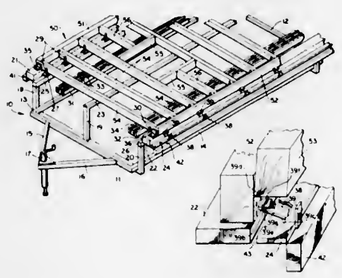
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**3,933,348**

## DOUBLE PLATING WALL FRAMER

**Carl E. Tidwell, Jr., 5800 Riverview Road, Mabelton, Ga. 30059**

**Filed Oct. 24, 1974, Ser. No. 517,456**
**Int. Cl.² B23P** *19/00*
**U.S. Cl. 269—303** **6 Claims**



**1.** Apparatus for supporting components of a frame structure, comprising:

first means defining positions for receiving a plurality of structural members in predetermined certain relation;

second means defining a position for receiving a second structural member in predetermined certain position adjacent at least some of said plural structural members;

said second means including first locating means against which a side surface of such second structural member is abutted to be in said certain position;

a second locating means mounted in spaced apart relation with said first locating means to provide abutment for a third structural member optionally positioned alongside and contiguous to said second structural member; and

means operatively associated with said first locating means and normally operative to dispose said first locating means into a first position for said abutment with a second structural member and selectively operative to displace said first locating means from said first position in response to placement of a third structural member in abutment with said second locating means, so that the position of said third structural member is defined by abutment with said second locating means and by contiguity with said second structural member.

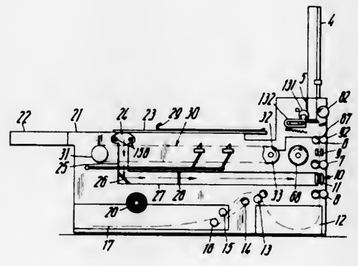
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**3,933,349**

## DOCUMENT COPYING MACHINE

**Walter Limberger, deceased, late of Hamburg-Poppenbuttel, Germany; by Jurgen Limberger, heir, Hamburg-Poppenbuttel, Germany; by Ursula Limberger, heir, Hamburg-Poppenbuttle, Germany; Francois Prick van Wely, Travenberg, Germany, and Uwe Winzentsen, Hamburg, Germany, assignors to Lumoprint Zindler KG, Germany**

**Division of Ser. No. 351,288, April 16, 1973. This application Mar. 7, 1974, Ser. No. 449,021**
**Claims priority, application Germany, Apr. 20, 1972, 2219307**
**Int. Cl.² B65H** *7/18*
**U.S. Cl. 271—10** **6 Claims**



**1.** A copying machine for producing one or a number of copies from an original, comprising a casing having an upper surface, a reciprocally movable carriage mounted on the upper surface of said casing and arranged to support an original positioned thereon for movement with said carriage, chain drive means for said carriage including an endless circulating chain, a control shaft and a wheel assembly mounted on said control shaft and in engagement with said circulating chain, said wheel assembly providing rotational movement to said control shaft, a stack holder for copy sheet material with each copy sheet having a leading edge, means forming a guide path for the copy sheets through the casing and said guide path means including feed roller means for feeding individual copy sheets along the guide path, said feed roller means including a first pair of feed rollers forming a nip therebetween for gripping an individual copy sheet and passing it along said guide path, means for removing individual copy sheets from said stack holder and for introducing the copy sheets into the guide path, and a movable trip element positioned in the guide path from said stack holder immediately in front of said first pair of feed rollers, said movable trip element being arranged to hold the leading edge of a copy sheet withdrawn from the stack holder by said means for removing individual copy sheets until the carriage supporting the original has reached a predetermined position said trip element pivotally mounted in said casing for pivotal movement about an axis spaced from and in generally parallel relation with said control shaft, and means operatively connected to said trip element and supported on said control shaft for pivotally displacing said trip element from in front of said first pair of rollers so that the leading edge of a copy sheet can be freed for entry into the nip of said feed roller.



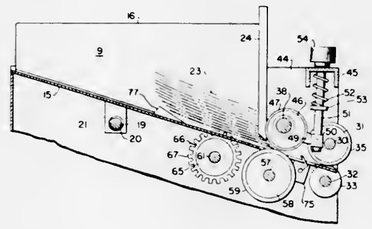
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**3,933,350**

## PAPER INSERT FEEDER

**Frank J. Mignano, 293 8th St., Brooklyn, N.Y. 11215**

**Filed Dec. 9, 1974, Ser. No. 530,755**
**Int. Cl.² B65H** *3/06, 5/04*
**U.S. Cl. 271—10** **5 Claims**



**1.** A feeder for paper inserts comprising, in combination,

a. a hopper having a forward sloping bottom plate, sides extending upward from said bottom plate and having front ends, and front stop plates extending inward from the front ends of said sides with a clearance over said bottom plate;

b. a first driven shaft;

c. at least two first rollers mounted on said first shaft;

d. a second spring mounted shaft;

e. second rollers mounted on said second shaft contacting said first rollers forming at least a pair of driven pinch rollers at the front of said bottom plate;

f. a third shaft extending across said hopper above said bottom plate in front of said front stop plates;

g. first transmission means enabling said first shaft to intermittently drive said third shaft;

h. a fourth shaft mounted below said bottom plate substantially under said front stop plates;

i. at least one front feed roller mounted on said fourth shaft, said bottom plate containing a first opening through which said at least one front feed roller projects;

j. gate means disposed in front of said front stop plates above said at least one front feed roller;

k. adjustment means positioning said gate means a distance over said at least one front feed roller to permit passage therebetween of a single paper insert;

l. a fifth shaft journalled behind said fourth shaft below said bottom plate;

m. second transmission means connecting said third shaft to said fourth and fifth shafts so that said third shaft drives said fourth and fifth shafts; and

n. at least one pair of rear feed rollers mounted on said fifth shaft, said bottom plate containing second openings through which said rear feed rollers project, said paper inserts being stacked in said hopper between said sides against said front stop plates and resting at least partially on said at least one pair of rear feed rollers, said first transmission means intermittently driving said third shaft and thereby said front and rear feed rollers advancing a lowermost paper insert into said at least one pair of pinch rollers.

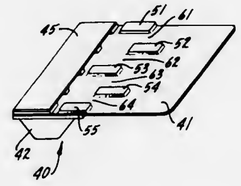
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**3,933,351**

## SHEET DELIVERY ARRANGEMENT HAVING AN AIR-STREAM SHEET RETARDER

**Peter Mayer, Mulheim, and Siegfried Schuhmann, Offenbach, both of Germany, assignors to Roland Offsetmaschinenfabrik Faber & Schleicher AG, Germany**

**Filed Nov. 22, 1974, Ser. No. 526,156**
**Claims priority, application Germany, Nov. 22, 1973, 2358206**
**Int. Cl.² B65H** *29/68*
**U.S. Cl. 271—183** **7 Claims**



**1.** In a delivery arrangement for a sheet-fed printing press for delivering sheets onto a delivery pile, the combination comprising means for supporting a pile of sheets, a conveyor for conveying sheets by their leading edges longitudinally along a sheet delivery path to a position above the pile, a take-off mechanism at the delivery pile synchronized with the arrival of the sheets for taking the sheets from the conveyor and for decelerating the leading edges thereof for depositing them on the pile, a nozzle assembly including spaced fingers defining a series of nozzles spaced edge to edge in a plane, a source of air under pressure for feeding the nozzle assembly, the nozzle assembly being located adjacent the pile below the level of the approaching sheets and extending along the width of the sheets so that laterally spaced jets of air are directed substantially parallel to the underside of each sheet in a direction upstream of sheet movement, a guide plate spaced under the sheet path and extending from the nozzle assembly in the upstream direction tending to confine the jets of air under an arriving sheet, the surface of the guide plate having formed on the surface thereof a plurality of upraised islands laterally spaced from one another so as to be in respective alinement with the fingers between the jets, the islands presenting plateau surfaces at approximately the same elevation above the guide plate and substantially parallel thereto and extending above the plane of the nozzles so that when the sheet is sucked downwardly by the effect of the jets it is drawn to the plateau surfaces in light frictional engagement to apply frictional drag to the body of the sheet while preventing fluttering thereof.

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**3,933,352**

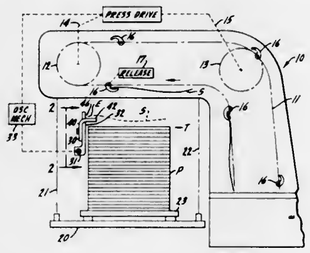
## SHEET PILE DELIVERY FOR PRINTING PRESSES

**Helmut Sinn, Wiesloch, Baiertal, Germany, assignor to Roland Offsetmaschinenfabrik Faber & Schleicher AG, Germany**

**Filed Dec. 11, 1974, Ser. No. 531,811**
**Int. Cl.² B65H** *29/34, 29/04*
**U.S. Cl. 271—189** **6 Claims**

**6.** In a sheet delivery arrangement for a sheet-fed lithograph press, the combination comprising a driven sheet conveyor having grippers at spaced intervals, a platform under the conveyor, releasing means acting upon the grippers in predetermined phase position for dropping sheets seriatim toward the platform to form a pile thereon, means including a vertically extending jogging element at the top of the pile and extending along at least one side thereof, means for oscillating the jogging element for cyclical engagement of the edge of successively dropped sheets to square up the pile, an interceptor member associated with the jogging element and projecting horizontally inward above the pile, the interceptor member being made up of a horizontal ledge portion and a vertical portion rigidly joined together in intersecting relation to form

a deep, positive generally right-angled pocket for the leading edge of the sheet, means mounting the interceptor member for horizontal movement between a sheet intercepting position and a retracted position in which it is clear of the pile, and a cyclical drive connection between the conveyor and the interceptor member so phased that the interceptor member is in its intercepting position as a sheet from the conveyor arrives at the pile, the leading edge of the sheet being thereby engaged and temporarily supported in the pocket of the interceptor




member in registered relation above the level of the pile while the body of the sheet settles on pile so that the leading edge cannot, by reason of curling, become inserted between the jogging element and the pile, the interceptor member being subsequently retracted during the course of its cyclical movement with the body of the sheet being held by friction against the pile so that the engaged edge of the sheet may become fully supported upon the pile for edgewise engagement by the jogging element.

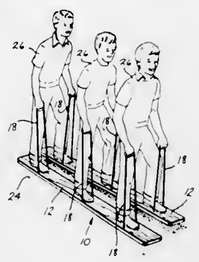
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**3,933,353**

## GAME DEVICE FOR TWO OR MORE PERSONS WHICH IS USED WITH THE FEET

**Charles M. Marsh, Rte. 1, Box 75, Bristol, Ind. 46507**

**Filed Apr. 28, 1975, Ser. No. 572,171**
**Int. Cl.² A63B** *23/04*
**U.S. Cl. 272—70** **3 Claims**



**1.** A game for two or more players and used with the feet comprising a pair of rigid strip members, each member having upper and lower faces, first and second loop parts connected to each member between the ends of the member, each loop part having two end portions and an intermediate bight portion and bein secured to its connecting member at its end portions with its bight portion projecting from the upper face of the member, the end portions of each loop part being spaced apart along a line extending transversely of its connecting member, said strip members each being of a width to accommodate a players foot and being of a length to allow at least two players to stand adjacently thereon, each said transverse spacing of said end portions being of a distance to accommodate a players foot therebetween and being of such longitudinal spacing such that when said members are placed side by side upon the ground generally paralleling one another one player may stand with one foot upon each member upper face positioned between the end portions of a said loop part with a hand gripping the bight portion of the loop part and a second player may stand next to said one player with one foot upon each member upper face positioned between the end portions of another loop part with a hand gripping the bight portion of the loop part to allow said players to walk in unison causing a shuffling motion of said members over the ground while holding said members against their feet by pulling upwardly on said loop parts.

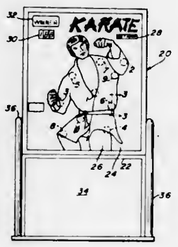
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**3,933,354**

## REFLEX TESTING AMUSEMENT DEVICE

**Adolph E. Goldfarb, Tarzana, and Erwin Benkoe, Encino, both of Calif., assignors to Brunswick Corporation, Skokie, Ill.**

**Filed Sept. 18, 1974, Ser. No. 507,249**
**Int. Cl.² A63B** *69/00*
**U.S. Cl. 273—1 E** **43 Claims**




**35.** An amusement device for simulating competition in the martial arts comprising:

a pair of substantially identical pictures of a combatant, each picture set at an angle with respect to a vertical plane;

two series of lights, each series of lights camouflaged behind the surface of its respective picture such that the positions of the individual lights can only be seen when they are illuminated;

means for detecting when a picture has been hit in the immediate vicinity of a light;

switching means for extinguishing a light in each series and for illuminating another light in each series each time either picture is hit in the vicinity of an illuminated light;

means for determining which picture has hit first for each illuminated light in the series; and

means for totaling the score of such first hits for each participant.

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**3,933,355**

## SIMULATED TENNIS GAME

**Donald Pearce, 111-D Village Lane, Greensboro, N.C. 27409**

**Filed Sept. 16, 1974, Ser. No. 506,548**
**Int. Cl.² A63F** *3/00*
**U.S. Cl. 273—85 R** **4 Claims**

**1.** A simulated tennis game comprising:

a. a playing board having a tennis court scale diagram with various landing areas indicated thereon, player pieces, at least one ball marker piece, and a random selector means;

b. a ball flight indicator means, selectively positionable on said playing board, for selectively indicating the intended path of a stroked ball, and for indicating the speed, magnitude of travel, and point of first bounce of a stroked ball, said random selector means determining said speed and magnitude;

c. a ball bounce indicator means positionable at said point of first bounce along the path of a stroked ball for indicating the allowable return area between the first and second bounce of a ball, said random selector means determining the distance between said first and second bounce on the board;

d. a player position indicator means, selectively positionable on the playing board, for selectively indicating the direction of player piece movement, and the magnitude of player piece movement during the course of play, said random selector means determining said magnitude of player piece movement; and

e. a chart means carrying indicia indicative of results of selected shots, said random selector means cooperating with said chart means for determining a particular result.



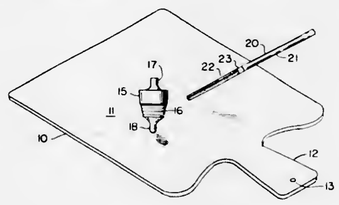
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**3,933,356**

## TOP AND APPARATUS FOR PLAYING THEREWITH

**Abraham M. Torgow, 185 E. 206th St., Bronx, N.Y. 10458**

**Continuation-in-part of Ser. No. 341,862, March 16, 1973, Pat. No. 3,863,925. This application Nov. 29, 1974, Ser. No. 528,043**
**Int. Cl.² A63F** *9/00*; **A63H** *1/12*
**U.S. Cl. 273—108** **3 Claims**



**1.** A top and apparatus for play therewith comprising, in combination, a top having a substantially cylindrical downwardly tapering body at least one half the height of said top, and having upper and lower projections extending from said body to be hand twirled to initially spin said top, a board for spinning said top thereon, said board having a handle extending from one side thereof, and a whip for striking said top while spinning on said board to accelerate the spinning of said top, said whip having a handle and a flexible whip element of foam rubber projecting from said whip handle for striking said top.

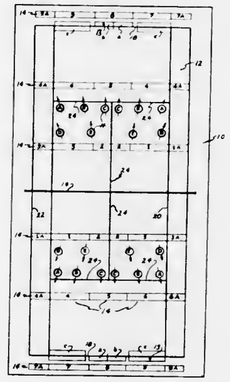
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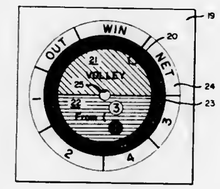
**3,933,357**

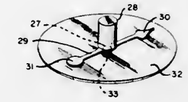
## SPINNER ASSEMBLY FOR BOARD GAME

**Donald W. Mercer, and Edward C. Horey, Jr., both of Pittsburgh, Pa., assignors to Donbee Corporation, Pittsburgh, Pa.**

**Division of Ser. No. 267,399, June 29, 1972, Pat. No. 3,853,322. This application Apr. 15, 1974, Ser. No. 461,039**
**Int. Cl.² A63F** *5/04*
**U.S. Cl. 273—141 R** **7 Claims**





**1.** A spinner assembly for a board game comprising

a transparent spinner disc having an opening therethrough, said spinner disc having an upper surface and a lower surface,

a spinner shaft having a first portion and a second portion,

said spinner shaft first portion originating above said spinner disc upper surface, extending through said disc opening and projecting beyond said spinner disc lower surface,

said spinner shaft being fixedly secured to said spinner disc,

said spinner shaft second portion providing a finger grip on said spinner shaft first portion above said spinner disc upper surface,

a pointer arm pivotally mounted on said spinner shaft first portion between said spinner disc upper surface and said spinner shaft second portion,

the radial extent of said transparent spinner disc being at least as great as the greatest radial extent of said pointer arm,

a number of spinner scale elements each representing different player options and each having an opening therein for receipt of said spinner shaft first portion projection,

one said spinner scale element underlying said spinner disc and having a said opening generally aligned with said spinner disc opening, and

said spinner shaft first portion projection removably secured within said spinner scale element opening, whereby a single spinner disc, spinner shaft and pointer arm combination will function as a unit and may be employed sequentially with said spinner scale elements by removing said spinner shaft first portion projection from said spinner scale element opening and inserting said first portion projection into the opening of another said spinner scale element.

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**3,933,358**

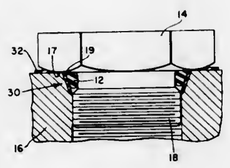
## O-RING PORT CONTOUR SHEATH AND SEAL

**Kenneth Leon Hoer, Cedar Falls, Iowa, assignor to Deere & Company, Moline, Ill.**

**Filed Nov. 7, 1974, Ser. No. 521,621**
**Int. Cl.² B16J** *15/10*
**U.S. Cl. 277—170** **3 Claims**

**1.** For use in combination with a frusto-conical port contour and a fitting, a seal comprising: a frusto-conical contour sheath of a heat-resisting, non-porous, extrudable, low coeffi-

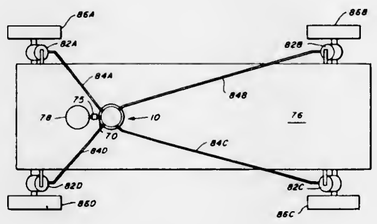
cient of friction material for positioning over the frusto-conical port contour; and a non-porous, elastomeric, toroidal ring




for insertion around the fitting and compressably nesting in said sheath when the fitting is positioned in the port contour.

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**3,933,359**
**VEHICLE LEVELING DEVICE**
**Arthur G. Wallace, 3011 W. 53, Tulsa, Okla. 74103**
**Filed Sept. 23, 1074, Ser. No. 508,062**
**Int. Cl.² B60S 9/10**
**U.S. Cl. 280—6 H** **10 Claims**

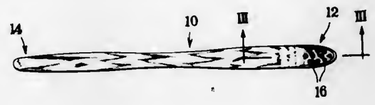



1. A vehicle leveling system comprising
a. a vehicle having a frame to be maintained in a horizontal position, said frame having at least three spaced points of support;
b. pressure fluid lift cylinder means in each of said points of support, said lift cylinder means connected by conduit to a pressure fluid control chamber;
c. said pressure fluid control chamber comprising a cylinder having a base attached to said frame to be coplanar therewith;
d. a plumb bob axially supported in said chamber by a flexible wire, said plumb bob in the shape of an inverted truncated cone;
e. a plurality of at least three valves mounted circumferentially spaced in the wall of said chamber at a selected horizontal plane relative to said plumb bob, and valve stems projecting inwardly from each valve to the surface of said plumb bob when said base is horizontal, said valves connected by said conduits to said lift cylinders; and
f. means to provide pressure fluid to the interior of said control chamber.

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**3,933,360**
**SKI**
**Fusaji Arai, 4940, Oaza-Ohmachi, Ohmachi, Nagano, Japan**
**Filed Jan. 2, 1975, Ser. No. 537,938**
**Int. Cl.² A63C 5/04**
**U.S. Cl. 280—11.13 S** **4 Claims**

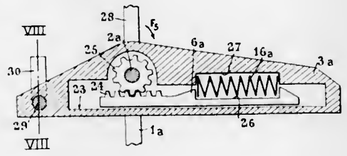
1. A ski including at least a body and a top bend portion extending from one end of said body, said top bend portion being provided with a plurality of air holes passing through said top bend portion from the front to the back surface




thereof and allowing air flow to pass therethrough in gliding of said ski.

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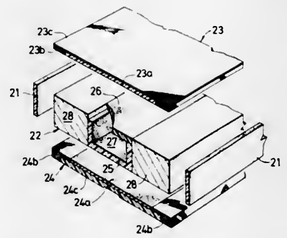
**3,933,361**
**SKI BRAKING DEVICE**
**Jean Joseph Alfred Beyl, Boulevard Victor Hugo, Nevers, France**
**Filed Feb. 21, 1975, Ser. No. 551,905**
**Claims priority, application France, Mar. 1, 1974, 74.06969**
**Int. Cl.² A63C 7/10**
**U.S. Cl. 280—11.13 B** **2 Claims**




1. Ski braking device for stopping the free sliding of a ski on snow in case the ski is accidentally or otherwise separated from the ski boot comprising a pivoting braking lever adapted to be brought into frictional contact with, or sunk into, the snow under the force of a spring, said lever being rotatably rigid with a rotary shaft extending across the ski, said rotary shaft being coupled through mechanical means adapted to convert rotation of the shaft into translation of said mechanical means, said mechanical means comprising a toothed pinion rigid with said shaft and a rack portion, said rack portion being movable in the longitudinal direction and responsive to a compression spring reacting against a member substantially fixed in the longidutinal direction.

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**3,933,362**
**SKI HAVING A HOLLOW CORE**
**Kenichi Sakuma, and Ryozi Tanahashi, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan**
**Filed Mar. 21, 1975, Ser. No. 560,592**
**Claims priority, application Japan, Mar. 25, 1974, 49-33257; Mar. 28, 1974, 49-34359**
**Int. Cl.² A63C 5/12**
**U.S. Cl. 280—11.13 L** **5 Claims**

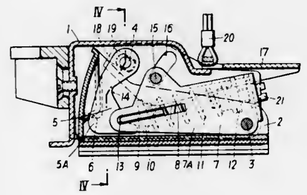



1. A ski having a hollow core assembly provided with a ski top constituting unit firmly laminated to the top surface of the core assembly, and a ski bottom constituting unit firmly laminated to the bottom side of said core assembly, said hollow core assembly comprising:
a central channel member having a substantially U-shaped cross section and being positioned at a substantially central part of the ski relative to the transverse direction thereof and extending longitudinally thereof, said central channel member of U-shaped cross section having a pair of leg members defining an opening therebetween on the free end side thereof,
two flanking members secured firmly to the lateral sides of said central channel member, respectively, and each having a substantially flat surface on that side of the ski which is faced by said opening of the U-shaped central member,
said end edges of the substantially U-shaped central member being positioned short of said substantially flat surfaces of the two flanking members, defining a space between the two flanking members on the free end side of the leg members of the central channel member, and
a cover plate covering the opening of said U-shaped central channel member and being bonded firmly to the end edges of said central channel member, said cover plate being sandwiched between the flanking members within said space defined therebetween, whereby said core assembly has therein a longitudinally extending central hollow structure at substantially the central part of the ski relative to the transverse direction thereof.



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**3,933,363**
**SAFETY SKI BINDING**
**Gottfried Schweizer, Vienna, and Josef Svoboda, Schwechat, both of Austria, assignors to Gertsch AG, Zug, Switzerland**
**Filed Sept. 30, 1974, Ser. No. 510,605**
**Claims priority, application Austria, Oct. 4, 1973, 8496/73**
**Int. Cl.² A63C 9/08**
**U.S. Cl. 280—11.35 T** **10 Claims**




1. A safety ski binding, comprising:
a base member having means defining a locking projection thereon;
sole holder means pivotally supported to said base member for movement about a first pivot axis;
support means pivotally supported to said base member for movement about a second pivot axis, said support means including guide means thereon and a movable locking part guided for movement by said guide means;
a locking member pivotally supported on said sole holder means, said locking member having a recess therein receiving said locking projection when said sole holder means is in a position of use;
resilient means mounted on and movable with said support means, said resilient means being positioned between and engaging said support means and said locking part to resiliently urge said locking part into engagement with said locking member so that said locking member is also urged by said resilient means into engagement with said locking projection, said locking projection being maintained in said recess by the force of said resilient means; and
release lever means pivotally supported on said sole holder means for movement between first and second limits about a third pivot axis, said release lever means including securement means for securing said release lever means to said support means, whereby a pivoting movement of said release lever means about said third pivot axis will effect a pivoting movement of said support means about said second pivot axis to prevent said resilient means from resiliently urging said locking part into engagement with said locking member so that said sole holder is free to pivot about said first pivot axis.

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**3,933,364**
**SKI POLE**
**Bror With, Jarlsborgveien 1, Oslo 3, Norway**
**Filed July 10, 1972, Ser. No. 270,513**
**Int. Cl.² A63C 11/22**
**U.S. Cl. 280—11.37 D** **7 Claims**



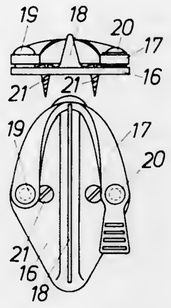

1. A ski pole comprising a rod having upper and lower end portions with hand strap and disc, wherein a substantial intermediate part of said rod comprises a tube of a material having a high modulus of elasticity, such as metal, at least one end of said rod comprising a portion of a lower modulus of elasticity, such as plastic, connected to the intermediate part at a location spaced from the adjacent one of the hand strap and the disc.

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**3,933,365**
**DEVICE FOR HOLDING TOGETHER A PAIR OF SKIS**
**Ralf Brangenberg, Riffelstrasse 46, 81 Garmisch-Parten Kirchen, Germany**
**Filed Nov. 7, 1974, Ser. No. 521,756**
**Claims priority, application Germany, Nov. 10, 1973, 2356312**
**Int. Cl.² A63C 11/02**
**U.S. Cl. 280—11.37 A** **2 Claims**

1. Holder for a pair of skis arranged to grip said skis in a stacked configuration, including a rhomboidally-shaped connecting plate for mounting upon the flat surface of the longitudinal axis of one of said stacked skis, said plate including a scraping strip in the form of an upwardly extending rib disposed over the long diagonal axis of said plate; a single elastic and flexible tensioning element having at least one opening;

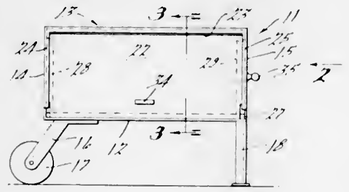
and a holding pin mounted at an obtuse angle on said plate, said tensioning element engaging said holding pin by means of




said opening, said tensioning element secured to said plate opposite said holding pin.

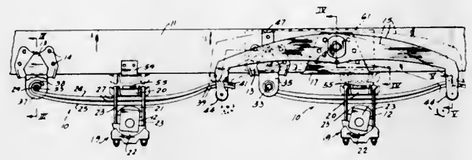
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**3,933,366**
**CONTAINER FOR REFUSE BAGS**
**William C. Wilburn, 18403 Santa Rosa, Detroit, Mich. 48221**
**Filed Sept. 27, 1973, Ser. No. 401,435**
**Int. Cl.² B62B *1/18*; B65D *43/18***
**U.S. Cl. 280—47.31** **8 Claims**



**7.** A container for refuse bags comprising a bottom of rectangular shape, a cover having a fixed portion extending upwardly from the rear edge of said bottom and curving around over the top thereof, the upper edge of said fixed cover portion being located past the center plane of the container, a lid portion of the cover having a curved shape similar to that of the fixed cover portion and movable between open and closed positions, the lid portion in its closed position having an upper section underlying a section of the fixed cover portion and a lower edge closely adjacent the forward edge of the container bottom, whereby said refuse bags need be lifted only approximately to the level of said bottom in order to deposit them in the container when the lid portion is open, a pair of end walls on the container having straight lower edges connected to the bottom and curved upper edges connected to the fixed cover portion, a pair of flanges extending inwardly from said end walls, said flanges being substantially parallel to said fixed cover portion and extending forwardly and downwardly toward the forward edge of said container bottom, friction-reducing means carried by said lid portion and disposed between said flanges and said fixed cover portion, said flanges being closely adjacent the edges of said lid portion along most of its extent, whereby said flanges both guide and support said lid portion during its movement, a wheel below the forward portion of said container bottom, a pair of fixed legs extending downwardly from the rear portion of said container bottom, and a handle on the rear end wall for lifting the rear portion of said container.

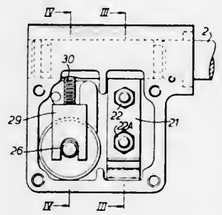
**3,933,367**
**DUAL LEAF SPRING SUSPENSION**
**Attila J. Tamas, Lexington, Ky., assignor to Dura Corporation, Southfield, Mich.**
**Filed July 3, 1974, Ser. No. 485,447**
**Int. Cl.² B60G *5/00***
**U.S. Cl. 280—104.5 A** **14 Claims**



**3.** In combination with a vehicle frame and an axle housing:
a leaf spring assembly comprising a pair of laminar leaf springs mutually coacting in load supporting relation throughout their length;
means connecting the spring assembly at one end in load supporting relation to the vehicle frame;
a rocker arm pivotally mounted on the frame and having a cam surface engagement with the opposite end of the spring assembly;
means connected the spring assembly intermediate its ends in load supporting relation to the axle housing;
said spring assembly providing a constant rate load supporting relation between the frame and the axle housing; and
supplementary spring means carried by the central portion of the spring assembly normally spaced from the frame and thrusting against the frame with progressively increasing spring rate under excessive suspension random loads.

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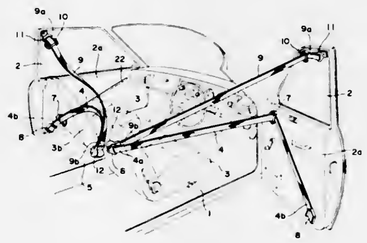
**3,933,368**
**LEVELLING VALVES**
**John Anthony Kellett, Birmingham, England, assignor to Girling Limited, Birmingham, England**
**Filed Sept. 23, 1974, Ser. No. 508,165**
**Int. Cl.² B60G *17/04*; F16K *11/16***
**U.S. Cl. 280—124 F** **15 Claims**



**1.** A levelling valve for a vehicle suspension system having an adjustable suspension member, comprising an inlet for connection to a source of pressure fluid, means defining an intermediate chamber adapted to be connected to said vehicle suspension member, an inlet valve for controlling the flow of pressure fluid from said inlet to said intermediate chamber, an exhaust valve for controlling the flow of pressure fluid from said intermediate chamber, said valves including respective valve operating members movable to open and close said valves and valve operating means including a movable member arranged to operate each of said inlet and exhaust valves, said movable member being pivotable with respect to said valve operating members of the respective valves, such pivoting with respect to either one valve operating member effecting movement of the other valve operating member to a valve open position.

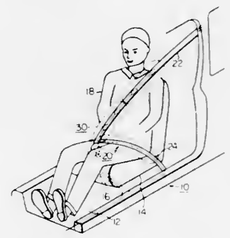


**3,933,369**
**SAFETY BELT DEVICES FOR VEHICLES**
**Yuichiro Kaneko; Fuminori Teraoka; Tatsushi Kubota, and Takehiko Nishikawa, all of Aichi, Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Japan**
**Filed Oct. 30, 1972, Ser. No. 301,796**
**Claims priority, application Japan, Nov. 4, 1971, 46-87868**
**Int. Cl.² B60R *21/10***
**U.S. Cl. 280—150 SB** **5 Claims**



**1.** A safety belt device for vehicles, comprising: a first safety belt retractor provided on the inner surface of a door of a vehicle at a location opposite the outer side of a seat adjacent said door; a second safety belt retractor fixed to the central portion of a vehicle body; a first safety belt having one end connected to said first retractor and extending from said first retractor across said seat with the other end thereof secured to the inner side of the seat; a second safety belt having one end connected to said second retractor and extending obliquely from said second retractor across the chest portion of a passenger with the other end thereof secured to the upper portion of a door framework of the vehicle; and a belt driving mechanism wholly positioned in a portion of the door and including a motor which drives a pulley drum and a cup ring, a first drawing member connected to said first safety belt and moved by said motor around said pulley drum and two other pulley drums spaced apart from each other, a second drawing member connected to said second safety belt and moved by said motor around said cup ring and along the door framework of the vehicle at the same time said first drawing member is moved, a door switch incorporated in a door lock for controlling the direction of rotation of said motor, a seat switch provided below the seat and actuated to close a motor driving circuit when a passenger sits down on the seat, a first stop swich for controlling said motor in cooperation with a first actuator and a first stopper which is fixed to said first drawing member at a predetermined location between one of said two other pulley drums and said first actuator, and a second stop switch for controlling said motor in cooperation with a second actuator and a second stopper which is fixed to said first drawing member at a predetermined location between the other of said two other pulley drums and said second actuator, and said motor being set in motion by said door switch in timed relation with a door opening operation, whereby when the door is closed, said first safety belt and said second safety belt are retracted into said first retractor and said second retractor, respectively, and placed in their engaging position to restrain the waist and the chest portions of a passenger sitting on the seat.

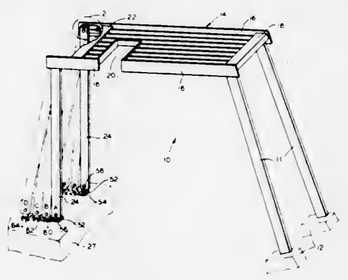
**3,933,370**
**EXPANSIBLE SEAT BELT FOR VEHICLES**
**Fumiyuki Abe, Yokohama, and Syuichi Otani, Tokyo, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan**
**Filed Nov. 26, 1973, Ser. No. 418,839**
**Claims priority, application Japan, Nov. 27, 1972, 47-135420[U]**
**Int. Cl.² B60R *21/08***
**U.S. Cl. 280—150 AB** **1 Claim**



**1.** A safety device mounted on a vehicle having a body and a seat assembly, which comprises:
means for producing an electric signal when said vehicle collides with an object;
at least one occupant restraining seat belt mounted on said body and having therein at least two expansible sections in each of which a cavity extending along the length of said seat belt is formed;
at least two gas generators mounted on said expansible sections for generating pressurized gas in response to said electric signal and for feeding the pressurized gas into said cavity so as to cause said expansible sections to expand, each of said gas generators including a casing mounted on each of said expansible belt sections and defining therein a chamber communicating with each of said cavities, an ignitable chemical charge filling said chamber, electro-conductive wires embedded in said belt for conveying said electric signal, and an ignitor assembly located within said chamber and connected to said wires to be responsive to said electric signal; and
a reinforcing member of insulating material laid between said casing and said belt section.

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**3,933,371**
**OVERHEAD GUARD FOR LIFT TRUCKS**
**Frederick A. Graham, Bellevue, Mich., assignor to Clark Equipment Company, Buchanan, Mich.**
**Filed Apr. 21, 1975, Ser. No. 570,288**
**Int. Cl.² B60R *21/00***
**U.S. Cl. 280—150 C** **12 Claims**

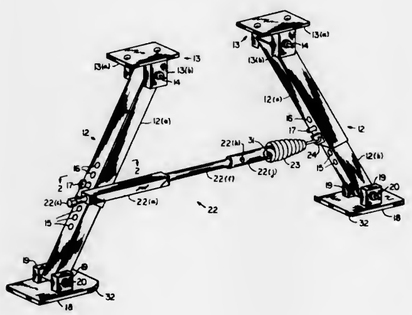


**1.** In an industrial vehicle having an operator's compartment and a driver's overhead guard of generally inverted U-

shaped construction connected to the vehicle forwardly and rearwardly of the compartment, the improvement comprising a downwardly extending end support leg means pivotably connected at the upper end to one end portion of the overhead bridge of the guard and adjustable to a plurality of pivoted positions in relation to the bridge and to the vehicle, means secured to the upper end of the support leg means which extends outwardly therefrom contiguous to said one end portion of the bridge, and means for connecting said secured means to said contiguous one end portion at a location spaced from said pivotal connection at each position of said plurality of pivoted positions of said support leg means.

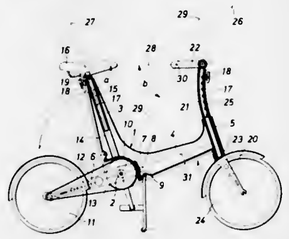
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**3,933,372**
**TRAILER STABILIZER**
**Robert R. Herndon, 206 Woodlawn St., Smithville, Tex. 37166**
**Continuation-in-part of Ser. No. 260,656, June 7, 1972, Pat. No. 3,801,128. This application Mar. 27, 1974, Ser. No. 455,226**
**Int. Cl.² B60S** *9/02*
**U.S. Cl. 280—150.5** **3 Claims**



1. A stabilizing and leveling support assembly for trailers, comprising:
a. a pair of extensible leg assemblies,
b. means for attaching one end of said leg assemblies to the underside of a trailer, one leg assembly adjacent each lateral side of the trailer with said leg assemblies being secured by said attaching means for pivotal movement of said leg assemblies between an operative position extending downward and outward from the trailer and a raised position extending outward from the trailer and generally adjacent to the underside of the trailer,
c. an elongate member of adjustable length with one end of said elongate member having a spring attached axially thereto with the other end of said spring being pivotally connected to one of said leg assemblies, and with the other end of said elongate member pivotally connected to the other leg assembly,
d. means for adjusting the length of said elongate member thereby applying a force to said leg assemblies in a direction transverse to the trailer and towards or away from each other, said force tending to move the respective leg assemblies towards each other when the length of said elongate member is shortened and away from each other with the length of said elongate member is lengthened.

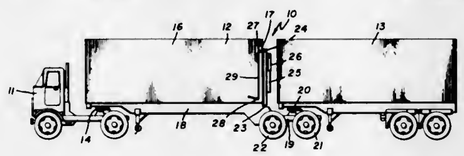
**3,933,373**
**BICYCLE HAVING ARCHED MOUNTING TUBE FOR THE STEERING MEMBER**
**Niels Gammelgaard, Frederiksholms Kanal 18 A, 1220 Copenhagen K., Denmark**
**Filed Apr. 10, 1974, Ser. No. 459,792**
**Claims priority, application Denmark, Apr. 10, 1973, 1950/73**
**Int. Cl.² B62K** *21/22*
**U.S. Cl. 280—278** **3 Claims**



1. A bicycle comprising a frame portion extending obliquely from a crank and carrying a tube in which a saddle mounting tube is adjustably mounted by means of tightening means, so that the saddle can be fixed at a desired height, the frame further having an oblique front fork tube in which a mounting tube for a steering member tube tube is adjustably mounted, said mounting tube extending upwardly from the frame portion which receives the front fork tube and being arched in such a way that the centre is positioned in front of the frame when the front wheel is in position for straight ahead driving, a steering member tube arched in the same way as the mounting tube and slidably mounted in the mounting tube, and tightening means for fixing the two arched tubes in relation to each other.

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**3,933,374**
**TANDEM TRAILER SYSTEM**
**Gerard A. Arguin, 3 Valley St., Spencer, Mass. 01562**
**Continuation of Ser. No. 370,744, June 18, 1973, abandoned. This application Dec. 2, 1974, Ser. No. 528,786**
**Int. Cl.² B62D** *53/08*
**U.S. Cl. 280—408** **6 Claims**



1. A trailer unit to be towed behind a highway tractor, and behind which may be towed another trailer, the trailer unit comprising:
a. a cargo container,
b. a chassis on which the container is mounted, the chassis having a first and a second end, a portion of the chassis associated with the second end extending downwardly and rigidly beyond an end of the cargo container,
c. first attaching means associated with the first end of the chassis by which the chassis can be connected to a highway tractor,
d. a second attaching means associated with the portion of the chassis which extends beyond the end of the cargo container, by which another standard trailer can be attached to the chassis, the second attaching means being entirely below a horizontal plane which includes the lowest portion of the cargo container and at the level of the first attaching means,



e. a single set only of wheels attached to the said portion of the chassis, at a point where the set is at least as far away from the first end as the second attaching means, an entrance to the cargo container being provided facing toward and adjacent the second end of the chassis, and
f. a horizontal platform provided between the cargo container entrance and a vertical plane including the second end of the chassis.

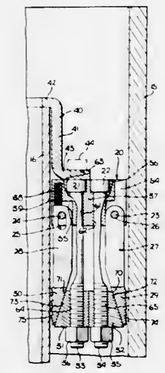
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**3,933,375**
**BOOK COVER**
**Norman J. Humphrey, 17123 Sprenger, East Detroit, Mich. 48021, and Lawrence A. Hages, Jr., 22449 Edmunton Drive, St. Clair Shores, Mich. 48036**
**Continuation of Ser. No. 419,482, Nov. 28, 1973, abandoned. This application Mar. 24, 1975, Ser. No. 561,614**
**Int. Cl.² B42D** *3/04*
**U.S. Cl. 281—34** **2 Claims**



1. In a book cover and post card combination, a sheet of paper board cut to provide a central body portion for the back of a book, front and back cover portions extending from opposite edges edges of said body portion for the covers of the book, the edge of the front cover portion opposite to the body portion being folded back upon itself to form an inner pocket, the edge of the back cover portion opposite to the body portion being folded back upon itself to form an inner flap, a first scored line between the body portion and the front cover portion which provides a width for the front cover portion which equals the width of the front cover of a book, a plurality of scored lines in said central body portion spaced from said first scored line, one of which folds to have the free edges of the front and back cover portions disposed in aligned relation, a plurality of scored lines located adjacent to and forming the fold between the back cover portion and said flap, a tab cut inwardly from the edge of said flap opposite said fold and extending through said last mentioned plurality of scored lines to form a book mark for extending between the book pages at the edge opposite to said central body portion, and postcard decorative printed matter on the exposed side of the front cover portion located opposite to the side having the pocket, said pocket having a slot in the outer closed edge for receiving said tab and retaining the flap against said pocket when the front and back cover portions are engaged when folded on said one scored line so that the book cover can be employed as a postal card a postcard indication with an area for an address and a stamp on the outer side of the back cover portion to be on the opposite side from the post card decoration printed matter when the cover portions are secured as a postcard.

**3,933,376**
**REMOVABLE PACKER AND TENSION SLIP ASSEMBLY**
**Edward T. Cugini, Brea, Calif., assignor to Grant Oil Tool Company, Los Angeles, Calif.**
**Filed Dec. 13, 1973, Ser. No. 424,289**
**Int. Cl.² F16L** *55/00, 57/00, 21/00*
**U.S. Cl. 285—23** **16 Claims**



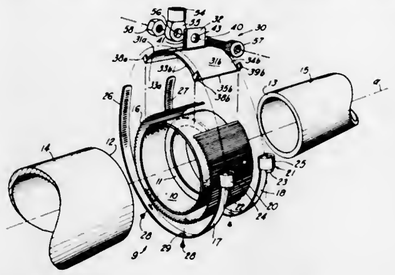
1. A device for securing an inner coaxial pipe to an outer coaxial pipe and for forming a seal in the annulus between said coaxial pipes, comprising:
a. locking means having a plurality of circumferentially disposed engaging means, each said engaging means having first and second sides, said first side arranged and configured to selectively engage the walls of said coaxial pipes such that one of said coaxial pipes is placed in tension with respect to the other and held in position, said second side having at least one inclined surface which matingly engages with one of two setting rings, said setting rings being positioned in said annulus such that selective movement of said setting rings causes said first side of said engaging means to be disposed against the walls of said coaxial pipes; and
b. a temporary spacing and support plate coupled to said locking means positioning said locking means until said locking means is secured by said engaging means and supporting said locking means during retrieval of said locking means, said support plate arranged and configured in said device so as to be completely removable therefrom;
whereby said temporary spacing and support plate may be coupled to said locking means until said locking means is secured in position, after which said spacing and support plate may be removed without affecting said locking means.

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**3,933,377**
**HANGER ASSEMBLY FOR PIPE**
**Gordon W. Arrowood, Palmetto, Ga., assignor to McKenney's, Inc., Atlanta, Ga., a part interest**
**Filed May 30, 1974, Ser. No. 474,603**
**Int. Cl.² F16L** *3/00*
**U.S. Cl. 285—61** **12 Claims**

1. A hanger assembly comprising, in combination, a coupling for joining two end portions of pipes together and a stabilizer secured to said coupling, said stabilizer including a lug projecting away from said coupling by means of which the coupling and pipes can be supported from a supporting structure and a saddle carrying said lug, and a band for circum-

scribing a portion of the coupling, said band passing over a portion of said saddle, said saddle conforming to the contour



of said coupling and being sufficiently thin that it does not materially alter the contour of the circumscribing band.

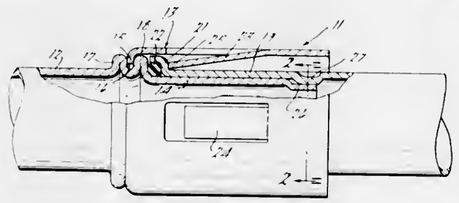
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**3,933,378**

## QUICK-CONNECT TUBING COUPLING

**Phillip A. Sandford, Highland Park, Ill., and John D. York, Connersville, Ind., assignors to Ford Motor Company, Dearborn, Mich.**

**Filed Nov. 29, 1974, Ser. No. 528,108**
**Int. Cl.² F16L** *39/00*
**U.S. Cl. 285—319** **1 Claim**



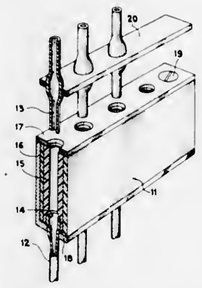
**1.** A quick-connect tubing coupling comprising:
a first tube having a cup-shaped cage externally attached thereto,
the cup-shaped cage having an opened end and an apertured base wall spaced from the opened end through which aperture an end portion of first tube projects into the cage,
the first tube having spaced upset beads projecting externally from its outer surface and engaged with the outer and inner sides of the base wall of the cage holding the latter against axial movement,
the inside diameter of the cage being sufficiently greater than the outside diameter of the tube end portion contained therewithin to provide a space therebetween,
the cage having a plurality of cantilevered leaf springs that extend axially from the cage open end toward its base wall and that project radially inwardly toward the tube end portion within the cage,
some of the leaf springs being longer than the others,
an O-ring positioned on the tube end portion contained within said cage,
a second tube outwardly cupped at one end to encapsulate said O-ring,
the cupped end of the second tube being concentrically received between the cage and the first tube end portion,
the cupped end of the second tube providing a shoulder behind which the longer leaf springs can lock with said O-ring compressed in a sealed mode between said cupped end and the upset bead engaging the inner side of the base wall or behind which the shorter leaf springs can lock with the first and second tubes axially displaced so that said O-ring is released from its sealed mode to provide a pressure relief vent.

**3,933,379**

## SEPARABLE COUPLING BETWEEN TWO TUBES AND ITS PRODUCTION PROCESS

**Jacques Pontigny, 14, Rue E. Legendre, 95 Margency, France**

**Filed Dec. 13, 1973, Ser. No. 426,724**
**Claims priority, application France, Dec. 22, 1972, 72.46072**
**Int. Cl.² F16L** *47/00*
**U.S. Cl. 285—381** **9 Claims**



**6.** A coupling device for separably coupling a series of first tubes and a series of second tubes, the first tubes being composed of a thermoplastic material; comprising sleeve means of elastomer material defining throughway bores for respectively receiving the first tubes in a first part of the bores and the second tubes in a second part of the bores axially adjacent said first part of the bores, means defining a hollow body which at least partly surrounds the sleeve means to position them in parallel relation and is harder than the sleeve means and has at a first end of the body a transverse portion extending transversely of the bores of the sleeve means, the transverse portion defining a plurality of apertures which are coaxial with but of smaller size than the bores so as to constitute abutments for axially retaining the sleeve means, the apertures affording the corresponding first tubes a free passage so as to allow the first tubes to enter the corresponding bores before final assembly of the first tubes with the sleeve means and body, the bores of the sleeve means having in the free state of the sleeve means in the body and before introduction of the first tubes and second tubes a diameter which is at the most equal to the diameter of the corresponding second tubes the first tubes being of a type having a plastic memory and capable of expanding upon application of heat and having an end portion which is engaged in the first part of the corresponding bores and is in an expanded state which is a result of the application of heat to said end portion sufficient to activate said plastic memory, said expanded end portions of the first tubes having such diameter that they put the sleeve means in a radially compressed state in said first part of the bores and extend radially beyond the corresponding apertures whereby said end portions of the first tubes are axially retained in the sleeve means in both directions, the second tubes being separably engaged in the second part of the corresponding bores.

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**3,933,380**

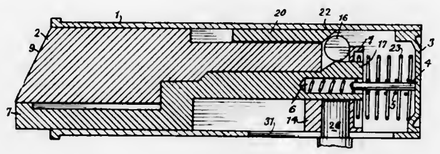
## LOCK MECHANISM

**John F. Wellekens, 51 E. 42nd St., New York, N.Y. 10017**

**Filed Oct. 21, 1974, Ser. No. 516,640**
**Int. Cl.² E05C** *1/10*; **E05B** *55/00*
**U.S. Cl. 292—175** **4 Claims**

**1.** A lock mechanism comprising, a casing having a bolt outlet, a spring-biased bolt mounted within the casing and capable of projection therefrom to either a partially advanced or fully advanced position, a sensing bar arranged alongside of and in slidable contact with the bolt, said sensing bar being adapted to extend co-extensively with the bolt while the bolt is in its partially advanced position, a roller carried by the bolt, a cam carried by the sensing bar and on which the roller rests while the bolt is in its fully retracted or partially advanced positions and while the sensing bar is co-extensive to the bolt, stop means for limiting movement of the roller while said





roller rests on the cam, the bolt having a sliding movement relatively to the sensing bar to bring it into fully advanced position when sliding movement of the sensing bar is prevented by contact with a striker plate on a door frame.

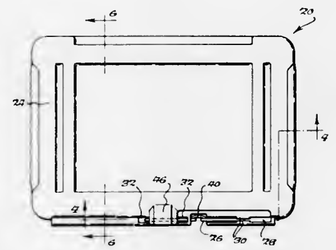
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**3,933,381**

## PLASTIC CONTAINER AND LATCH

**Peter T. Schurman, Woodbridge, Conn., assignor to The Plastic Forming Company, Inc., Woodbridge, Conn.**

**Filed Nov. 4, 1974, Ser. No. 520,541**
**Int. Cl.² E05C** *5/02*
**U.S. Cl. 292—57** **8 Claims**



**1.** A latch assembly for a container wherein the container includes a base portion and cover portion of double wall thermoplastic construction hingedly connected to one another for movement between open and closed positions relative thereto and with mating edges on said base and cover portions adapted to abut in the closed position of said cover portion, said latch assembly comprising:
a bolt means, one end of said bolt means being mounted within a groove on said cover portion and being axially slidable therein;
a bolt mounting portion disposed on said cover portion in alignment with said groove; and
locking apertures, at least one locking aperture disposed on said bolt mounting channel and on said base portion, said locking apertures being aligned with one another in the closed position of said cover portion for axially receiving the second end of said bolt means so that said cover and base portions may be selectively locked together.

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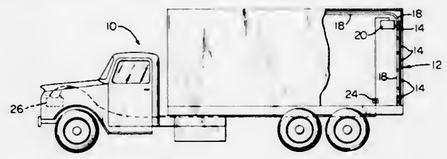
**3,933,382**

## SECURITY LOCK

**W. Ray Counts, Golden, and Wayne M. Schickedanz, Arvada, both of Colo., assignors to Transport Security Systems, Inc., Denver, Colo.**

**Filed July 13, 1973, Ser. No. 379,068**
**Int. Cl.² E05C** *3/06*
**U.S. Cl. 292—144** **15 Claims**

**1.** In a lock for use with a moveable closure or the like having a two position bolt adapted to move into the path of movement of the closure to a locked position to prevent movement thereof or move out of the path of movement of the closure to unlocked position to permit movement thereof, the improvements, comprising:
a. electric motor means including a pair of solenoids adapted to be selectively energized for moving the bolt between its two positions,
b. means for preventing movement of the bolt when disposed at its two positions,



c. a two position control switch for energizing the motor means for selectively causing same to move the bolt between its two positions, and
d. other switch means operated by movement of the bolt for de-energizing the motor means when the bolt moves to its two positions.

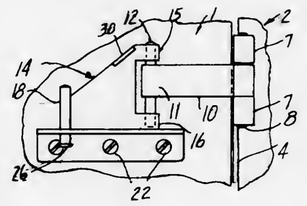
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**3,933,383**

## LATCH

**Brooks Walker, 807 Francisco St., San Francisco, Calif. 94109**

**Filed Sept. 20, 1974, Ser. No. 507,761**
**Int. Cl.² E05C** *17/04*, *17/06*, *17/10*, *17/32*
**U.S. Cl. 292—262** **4 Claims**



**1.** A safety latch for holding a closure of a closure structure such as a door, window or the like having a frame, a hinge edge and an opposite latch edge, comprising:
a first link,
means swingably connecting one end of said first link to such frame at the latch edge,
a second link swingably connected at one of its ends to an opposite end of said first link, and vertically slidable relative to the latter between upper and lower positions,
a keeper member carried by said closure and including a horizontally disposed flange formed with an elongated slot,
said second link being provided at the end opposite said one end with a projection adapted to be received in said slot,
said keeper member being provided with an upwardly projecting portion, whereby
said second link may be raised to its upper position and moved to a position between said portion and said closure and lowered to a position interposed between said portion and said closure to hold said closure against opening from a closed position with said projection at one end of said slot, and whereby said latch holds said closure against further openings from a partially open position when said second link is released from said interposed position and said projection is at the opposite end of said slot.

**3.** A safety latch for holding a door of a door structure that includes a frame, a hinge edge and an opposite latch edge, comprising:
a first link,

means swingably connecting one end of said first link to such frame at the latch edge,

a second link swingably connected at one of its ends to the opposite end of said first link,

a keeper member carried by said door and including a horizontally disposed flange formed with a horizontally elongated slot having a laterally offset portion at one end,

said second link being provided at the end opposite said one end with a projection adapted to be received in said slot, whereby

said latch holds said door against opening when said projection is in said offset portion of the slot and whereby said latch holds said door against further opening from a partially open position when said projection is at the opposite end of said slot.

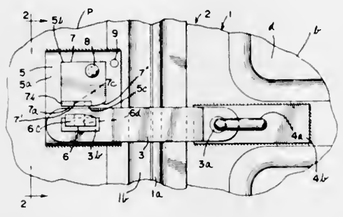
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**3,933,384**

## ANTI-PILFERAGE LOCKING DEVICE

**James J. Schuller, Crete, Ill., and Ronald W. Marsh, Michigan City, Ind., assignors to Pullman Incorporated, Chicago, Ill.**

**Filed Oct. 7, 1974, Ser. No. 512,774**
**Int. Cl. E05c** *19/08*
**U.S. Cl. 292—285** **3 Claims**



1. A door structure of a railway car including a first door engaging member having a first edge and a second door engaging member having a second edge confronting the first edge, an anti-pilferage locking device for securing the second door engaging member and the first door engaging member against longitudinal relative movement, the improvement comprising:

a keeper secured to the outer surface of the first member adjacent the first edge, said keeper including a substantially horizontal laterally outstanding portion and an elevated catch at its outer end having a vertical aperture therethrough,

an elongated hasp pivotally secured on the outer surface of the door adjacent the second edge and having a loose fit therewith for multi-pivotal movement,

said hasp having a free end portion having a slot therein, said slot in a locked position of said hasp receiving said keeper wherein said outstanding portion projects through said slot and said elevated catch overlaps a portion of said hasp to entrain the same against outward lateral movement,

a cam vertically spaced above said keeper, means pivotally securing said cam to the outer surface of the first member adjacent the first edge,

said cam including a bottom edge having a flat edge portion,

a flange projecting outwardly from said cam, said cam having an aperture therethrough in substantially vertical alignment with the aperture in said catch,

said means pivotally securing said cam to the outer surface of the first member being positioned vertically above said keeper and said flange and in substantial vertical alignment therewith whereby during a closed position of said hasp, said free end portion of said hasp is disposed immediately below said flat edge portion of said cam to restrain said hasp against upward movement,

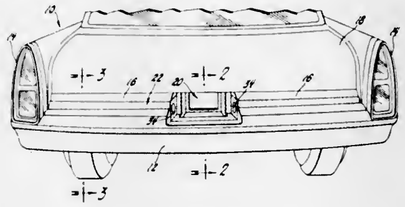
and anti-pilferage locking means within said apertures to secure said hasp on said keeper.

**3,933,385**

## RESILIENT FILLER AND BUMPER SUPPORT ARRANGEMENT

**Robert L. Sanford, Williamston, and Casimer J. Wesolek, Lansing, both of Mich., assignors to General Motors Corporation, Detroit, Mich.**

**Filed Mar. 17, 1975, Ser. No. 558,661**
**Int. Cl.² B60R** *19/02*, *19/06*; **B61F** *19/04*; **B62D** *27/04*
**U.S. Cl. 293—63** **3 Claims**



1. A filler and support arrangement for use in the space between an automotive bumper assembly and an adjacent body portion, said bumper assembly including an exposed bumper and an unexposed reinforcement member secured to the inner surface of said bumper, said filler and support arrangement comprising a laterally extending flexible plastic filler member, left- and right-hand flexible plastic support members, each having an upper wall, a lower wall, and an end wall interconnecting said upper and lower walls, said filler member being secured to said end walls, said left- and right-hand support members being secured at said respective lower walls thereof to portions of an upper surface of said reinforcement member, a plurality of substantially U-shaped ribs secured at the outer edges thereof to the respective inner surfaces of said upper, lower, and end walls of each of said left- and right-hand support members for providing a spring-back reaction of said filler member to its original position after being deflected in response to an external impact against said bumper.

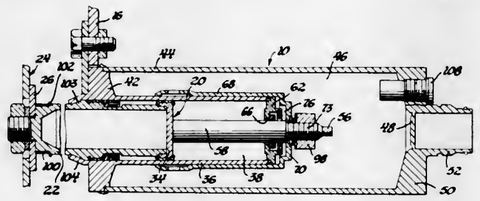
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**3,933,386**

## REBOUND CONTROL FOR ENERGY ABSORBER UNIT

**Wayne V. Fannin, Xenia, Ohio, assignor to General Motors Corporation, Detroit, Mich.**

**Filed Nov. 25, 1974, Ser. No. 526,833**
**Int. Cl.² B60R** *19/02*
**U.S. Cl. 293—70** **4 Claims**



1. A telescoping energy absorbing unit for a vehicle operatively connecting a bumper assembly to the vehicle comprising a first cylinder secured to the vehicle, a piston assembly mounted for telescopic movement between first and second positions with respect to said first cylinder, said piston assembly having a piston and a piston rod axially projecting from said piston, means operatively connecting said piston rod to the bumper assembly, said piston cooperating with said first cylinder to form a first expansible and contractable chamber, a second cylinder mounted for sliding movement on said first cylinder and cooperating therewith to form a second expansible and contractable chamber, means drivingly connecting said second cylinder to said piston assembly for movement therewith, a sealed housing surrounding said first and second



cylinders and cooperating therewith to form a third chamber, a pressurized fluid medium in said first, second and third chambers, first valve means operatively connected between said first and second cylinders to permit the flow of fluid from said first chamber into said second chamber when said piston assembly is moved from said first position toward said second position and to subsequently restrict and meter the flow of fluid from said second chamber into said first chamber in response to the movement of said piston assembly back to said first position, and second valve means operatively connected between said second and third chambers to seal said second chamber from said third chamber so that the fluid trapped in said second chamber exerts a force to reduce the rate of recovery of said piston assembly in moving to said first position.

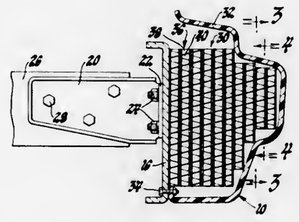
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**3,933,387**

## THERMOFORMED PLASTIC ENERGY ABSORBER FOR VEHICLES

**Robert J. Salloum, and Raymond H. Hodges, both of Sterling Heights, Mich., assignors to General Motors Corporation, Detroit, Mich.**

**Filed Mar. 10, 1975, Ser. No. 556,586**
**Int. Cl.² B60R** *19/08*
**U.S. Cl. 293—71 R** **4 Claims**



1. A resilient energy absorber operatively mounted on a rigid support of a vehicle comprising a first thin sheet of plastic material, said sheet having a plurality of projections equal in size and spaced a predetermined distance from each other in a plurality of rows to form a first pattern, a second thin wall sheet of plastic material, said second sheet having a plurality of projections equal in size and spaced a predetermined distance from each other in a plurality of rows to form a second pattern, said first sheet being operatively mounted on said second sheet with the projections of said first sheet fitting into the spaces between the projections of said second sheet, each of said projections of said first sheet having contact with the surrounding projections of said second sheet whereby an impact force directed onto said energy absorber deflects said projections of said first and second sheets and said projections flex to absorb the energy of said impact force.

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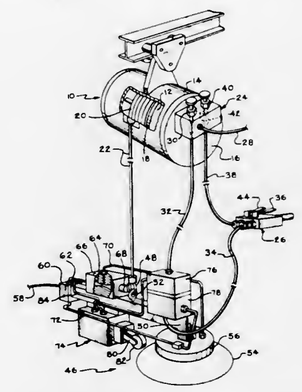
**3,933,388**

## INTERLOCK CONTROL SYSTEM FOR A FLUID-OPERATED HOIST

**Stewart J. Conboy, St. Clair Shores, Mich., assignor to D. W. Zimmerman Mfg. Inc., Madison Heights, Mich.**

**Filed July 17, 1974, Ser. No. 489,391**
**Int. Cl.² B66C** *1/02*
**U.S. Cl. 294—64 R** **9 Claims**

1. In combination, a fluid-operated hoist including a hoist chamber, a flexible member, and a piston in said chamber for raising and lowering the flexible member in response to pressure of fluid in said chamber, fluid-operated, load-engaging means carried by said flexible member for engaging and disengaging a load, a load-sensing device having a valve with two positions, being in one position when a load is engaged by said load-engaging means and in another position when there is no load engaged by said load-engaging means, means for supplying fluid under pressure to said load-sensing device, a load-sensitive valve, means connecting said load-sensitive valve and said load-sensing device to supply fluid under pressure to said load-sensitive valve when said load-sensing device is in the one position, said load-sensing device and said load-sensitive valve



enabling control of fluid under pressure in said hoist chamber when said load-sensing device is in the one position, and a remote controller for controlling the pressure of fluid in said chamber, said load-sensitive valve being in series with said remote controller and said hoist.

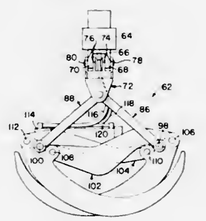
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**3,933,389**

## GRAPPLE STRUCTURE

**Adrian Charles Korbel, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.**

**Filed Oct. 16, 1974, Ser. No. 515,081**
**Int. Cl.² B66C** *3/16*
**U.S. Cl. 294—88** **2 Claims**



1. In a grapple skidder including a wheel-supported frame having a boom means supported thereon, a rotary joint mounted at a free end of the boom means and having a normally downwardly projecting output shaft, a universal connector means pivotally connected to the output shaft and to upper ends of first and second suspension link assemblies of a grapple structure, first and second arcuate grapple tongs having upper end portions respectively pivotally connected to lower ends of said first and second suspension link assemblies for swinging movement about respective first and second axes; first and second cross link assemblies crossing each other midway between and having respective opposite first and second ends respectively pivotally connected to the upper end portions of said first and second grapple tongs, an extensible and retractable hydraulic actuator means coupled between said upper end portions of said first and second tongs and a pair of fluid hoses interconnected between said output shaft of the rotary joint and said hydraulic actuator, the improvement comprising: said respective first ends of the first and second

cross link assemblies respectively being connected to the upper end of the first grapple tong at locations equidistant from and on opposite sides of said first axis; and said respective second ends of the first and second cross link assemblies respectively being connected to the upper end of the second grapple tong at locations equidistant from and on opposite sides of said second axis.

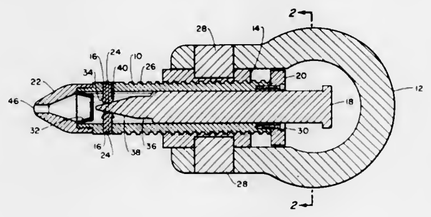
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**3,933,390**

**ATTACHMENT DEVICES FOR UNDERWATER SALVAGE**

**Frederick B. Barrett, Camarillo, and Peter A. Nielsen, Ventura, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed May 22, 1974, Ser. No. 472,010**
**Int. Cl.² B66C *1/42***
**U.S. Cl. 294—94** **12 Claims**



**1.** An attachment device for underwater salvage comprising:

a. an elongated cylindrical body;

b. an external concentric collar adjustably mounted on said body toward one end thereof;

c. a shackle for cable attachments pivotally mounted on said collar, forming a shackle-collar assembly; said shackle being free to rotate on said collar;

d. a plurality of extendable lugs supported in at least one aperture in the opposite end of the body from the shackle-collar assembly;

e. means in said cylindrical body for extending said lugs after insertion of the device in a predrilled hole;

f. means for adjusting the collar in a direction parallel to the longitudinal axis of said cylindrical body;

g. said means for adjusting the collar comprises a helical thread on said body and a handle rigidly attached to the shackle end of said body to facilitate tightening down and retention of the collar, whereby the device may be securely tightened against an object after attachment to increase side load bending strength, and provide ease in manipulation by an underwater diver and a high strength to weight ratio.

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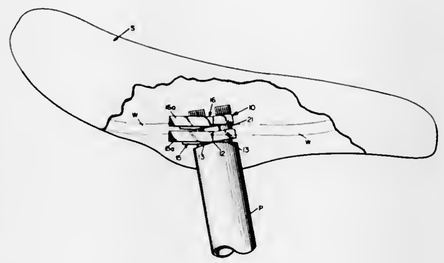
**3,933,391**

**SADDLE SEAT MOUNT WITH SPECIAL SUPPORT POST AND COOPERATING CLAMP ASSEMBLY**

**William B. Shook, Columbus, Ohio, assignor to Thurston, Inc., Columbus, Ohio**

**Filed Nov. 11, 1974, Ser. No. 522,860**
**Int. Cl.² B62J *1/00*; F16B *7/08***
**U.S. Cl. 297—195** **9 Claims**

**9.** A seat mount for a bicycle seat or the like comprising a post having an upper end, a bracket assembly connectable to a bicycle seat and having a lower surface disposed in contacting engagement with and supported on the upper end of said post, one of said lower bracket assembly surface and said upper post end having an angular formation with a transverse vertex line and areas which recede both forwardly and rearwardly of the vertex line and the other having a cooperative surface bearing against said vertex line thereby permitting tilting of said bracket assembly relative to said post, and adjusting bolts connected to said bracket assembly and to the



upper end of said post forwardly and rearwardly of the vertex line to tilt the bracket assembly about the vertex line.

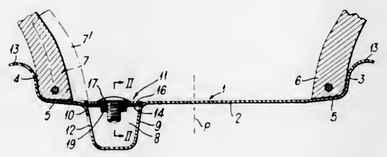
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**3,933,392**

**WHEEL RIM**

**William Neil Wells, Melksham, England, assignor to Avon Rubber Company Limited, Melksham, United Kingdom**

**Continuation of Ser. No. 356,303, May 2, 1973. This application Feb. 18, 1975, Ser. No. 550,281**
**Claims priority, application United Kingdom, May 2, 1972, 20397/72; Nov. 6, 1972, 51069/72**
**Int. Cl.² B60B *21/00***
**U.S. Cl. 301—98** **16 Claims**



**1.** A safety road wheel for receiving a tubeless pneumatic tire with inextensible beads having, in combination, a rim supported by a wheel structure and having a flange each axial side of the rim and a base, the base of the rim having a cylindrical portion and bead seats, each bead seat being adjacent a different one of said flanges, the bead seats being adapted to receive and seat beads of a tubeless tire to support loads transmitted between the beads and rim during use, the cylindrical portion of the rim having a well disposed axially between the bead seats and having side walls and a well base, the well being axially adjacent one of the bead seats and spaced from the other bead seat, the side walls extending radially inwardly of the cylindrical portion of the rim towards the well base, the well having a well mouth circumferentially continuous around the rim and being adapted to receive a tire bead during fitting of a tire, removable obstructor for the well, the obstructor including a band to extend circumferentially around the well at least at the mouth thereof and with ends of the band juxtaposed, and coupling means acting between the ends of the band effective for holding them positively together and retaining the band inextensibly and holding the obstructor radially towards the base of the well, the obstructor when so retained denying the tire bead access to any substantial circumferential length of the well, the said retaining means being operable at will to retain or release the said obstructor.

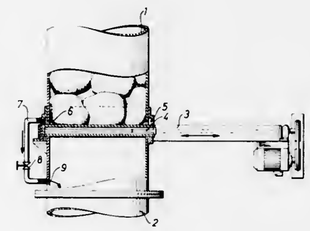


**3,933,393**

**ARRANGEMENT AT CENTRAL INSTALLATIONS FOR PNEUMATIC TRANSPORT OF PACKAGED REFUSE**

**Sergio De Feudis, Nacka, Sweden, assignor to Aktiebolaget Svenska Flaktfabriken, Nacka, Sweden**

**Filed Mar. 4, 1974, Ser. No. 447,839**
**Claims priority, application Sweden, Mar. 27, 1973, 7304330**
**Int. Cl.² E04F *17/12***
**U.S. Cl. 302—27** **3 Claims**



**1.** In apparatus for controlling the flow of refuse from a bottom portion of a vertically-extending branch duct to a pneumatic main duct positioned beneath said bottom portion of said branch duct and operated at below atmospheric pressure, comprising a valve positioned between said bottom portion of said branch duct and said main duct, said valve having an upper surface on which said refuse accumulates in said bottom portion of said branch duct when said valve is in its closed position and which permits said refuse to pass through said valve and be sucked away by said pneumatic main duct when said valve is in its open position, said refuse being capable of producing on the upper surface of said valve an accumulation of liquid harmful to the operation of said valve,

the improvement comprising an annular chamber extending about said bottom portion of said branch duct at the level of the upper surface of said valve and having at least one opening providing liquid communication between said annular chamber and the interior of said branch duct at the level of said upper surface of said valve, thereby to collect liquid accumulating at said upper surface of said valve, and means connecting said annular chamber to the interior of said main duct when said valve is closed, so that the suction exerted by said lower-than-atmospheric pressure in said main duct removes said collected liquid from said annular chamber to said main duct to maintain said upper surface of said valve substantially dry.

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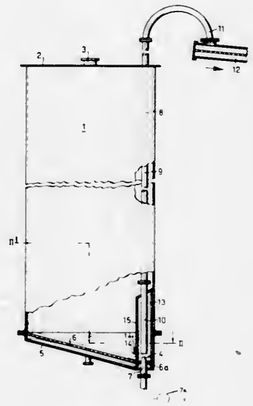
**3,933,394**

**APPARATUS FOR PNEUMATICALLY WITHDRAWING FINE MATERIAL FROM A SILO CONTAINER**

**Hans Klein, Beckum; Gerhard Balzau, Neubeckum, both of Germany, and Jacquy-Pierre Laffargue, Paris, France, assignors to Polysius AG, Neubeckum, Germany**

**Filed Oct. 4, 1974, Ser. No. 511,735**
**Claims priority, application Germany, Oct. 13, 1973, 370179[U]**
**Int. Cl.² B65G *53/40***
**U.S. Cl. 302—57** **11 Claims**

**1.** Apparatus for pneumatically withdrawing fine material from a silo container having a peripheral wall and a base, said base being inclined toward a discharge zone, said apparatus comprising a housing within said container forming a relief chamber at said zone, said housing having apertures adjacent the base of said container to provide an entry for fine material into said chamber; an airfeed nozzle extending into said chamber from below; and a conveyor conduit extending into said



chamber from above and having a receiving end in register with and spaced above said nozzle.

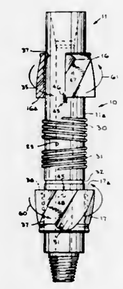
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**3,933,395**

**STABILIZER**

**Ernest G. Evans, Lafayette, La., assignor to Reamco, Inc., Lafayette, La.**

**Filed Dec. 13, 1973, Ser. No. 424,617**
**Int. Cl.² F16C *17/00***
**U.S. Cl. 308—4 A** **14 Claims**



**1.** A stabilizer for a tubular string including:

a. a tubular body;

b. sleeve means split transversely to form two sleeve portions for fitting on said body;

c. means for securing said split sleeve means on said body; and

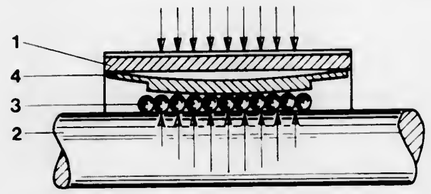
d. said securing means including left and right hand threads on said body and conforming left hand threads on one sleeve portion and right hand threads on the other sleeve portion whereby rotation of said sleeve portions on said body positions said sleeve portions in end to end abutting relationship on said body.

**3,933,396**

## BALL BUSHING

**Sven Walter Nilsson, Partille, Sweden, assignor to AB SKF Nova, Goteborg, Sweden**

**Filed Mar. 11, 1974, Ser. No. 449,783**
**Claims priority, application Sweden, Apr. 24, 1973, 7305684**
**Int. Cl.² F16C *31/06***
**U.S. Cl. 308—6 C** **3 Claims**




1. A ball bushing device adapted to be mounted on a shaft, comprising:

a. a sleeve element adapted to be disposed around said shaft and comprising an interior wall surface defining a bore within which said shaft can be received;

b. plural balls disposed within said sleeve element and adapted to be maintained adjacent to said shaft; and

c. a raceway structure located between said balls and said sleeve element, said raceway structure comprising curved elastic plate members having a substantially concavo-convex configuration and comprising a central portion and end portions, the convex surface facing toward said balls and the concave surface facing toward said sleeve element and in an unloaded condition said central portion being disposed closer to said shaft and more remote from said sleeve element than said end portions.

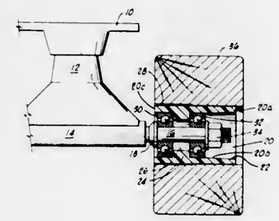
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**3,933,397**

## BEARING AND SUPPORT STRUCTURE FOR SPEED RACING ROLLER SKATE

**John C. Hood, 4008 S.W. 24th St., Oklahoma City, Okla. 73102**

**Filed May 22, 1974, Ser. No. 472,488**
**Int. Cl.² A63C *17/22***
**U.S. Cl. 308—180** **14 Claims**



1. An improved bearing and support structure for use in roller skates comprising:

an elongated cylindrical sleeve having a bore of non-uniform diameter extending from one end of the sleeve to the other end thereof;

an annular spacer flange projecting radially inwardly into the bore from the sleeve and spaced axially inwardly in the bore from the opposite ends of the sleeve, said flange partitioning the bore into a first portion of uniform diameter extending from one end of the sleeve to the flange, and a second portion which includes a bearing seat zone of uniform diameter adjacent said flange with the remainder of said second portion extending from said bearing seat zone to the second end of said sleeve and continuously increasing in diameter from said bearing seat zone to said second end of the sleeve;

a skate axle extending into said bore concentrically in the sleeve from said one end at least past said bearing seat zone;

a first bearing disposed in the first portion of said bore adjacent said flange and around said axle between the axle and the sleeve;

a second bearing disposed in the bore at said bearing seat zone and around said axle between the axle and the sleeve; and

a wheel mounted on and bonded to said sleeve.

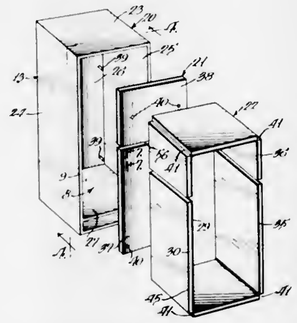
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**3,933,398**

## REFRIGERATION APPARATUS ENCLOSURE STRUCTURE

**Charles W. Haag, Evansville, Ind., assignor to Whirlpool Corporation, Benton Harbor, Mich.**

**Filed Jan. 14, 1974, Ser. No. 433,072**
**Int. Cl.² A47B *81/00*; F25D *11/00***
**U.S. Cl. 312—214** **19 Claims**



1. A refrigeration apparatus enclosure structure comprising: an outer cabinet; a preformed inner, laminate wall within said outer cabinet defined by unitary construction of an inner sheet liner having an outer surface bonded to outer insulation confronting said outer cabinet, said insulation having a plurality of preformed openings therethrough, said sheet liner comprising the inner wall element of the enclosure structure; insulative support means secured to said cabinet and extending forwardly therefrom to be received in said openings in said insulation and terminate at said outer surface of said sheet liner, the laminate wall being positioned in preselected relationship to said outer cabinet by the disposition of said support means in said preformed openings whereby the sheet liner is fully spaced from said outer cabinet; and securing means securing said sheet liner to said support means for securing said sheet liner in preselected positioned relationship of said laminate wall with said cabinet wall whereby said sheet liner is in thermally insulated relationship to said cabinet.

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**3,933,399**

## DISPLAY STAND FOR ARTICLES OF MERCHANDISE

**Joel Robert Kolbensvik, Dallas, and Carole Oman Greene, McKinney, both of Tex., assignors to Application Calculators Incorporated, Dallas, Tex.**

**Filed Apr. 30, 1974, Ser. No. 465,691**
**Int. Cl.² A47B *13/08***
**U.S. Cl. 312—223** **7 Claims**

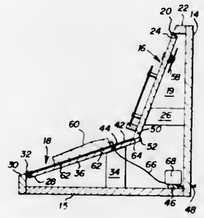
1. A display stand for merchandise which prospective customers may be expected to operate in order to test the suitability of the merchandise, the display stand comprising:



a housing having a display shelf which forms part of the housing and is so oriented that merchandise may be displayed upon the top surface of the shelf;

means for mounting the display shelf to the housing to permit the shelf to be moved between a first position which permits access to the bottom surface of the shelf and a second position in which the bottom surface of the shelf is inaccessible,

securing means adapted to temporarily affix the merchandise to the display shelf so that a prospective customer has physical access to the merchandise, which securing means is positioned beneath the top surface of said shelf and is accessible when said shelf is in the first position and



cannot be removed by the prospective customer when the display shelf is in the second position to prevent removal of the merchandise from the shelf by the prospective customer,

said display shelf comprising:

a base;

a panel to which said articles of merchandise may be mounted; and

means for attaching said panel to said base which permits said panel to be removed from said base when said display shelf is in said first position to permit attachment of the articles of merchandise to the panel and returned to and securely attached to the base after attachment of the article of merchandise to the panel.

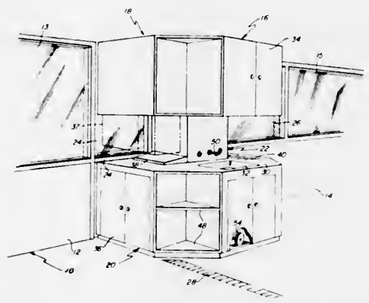
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**3,933,400**

## REVOLVING KITCHEN PACKAGE

**Peter L. Helgeson, Macungie, Pa., assignor to Raytheon Company, Lexington, Mass.**

**Filed May 30, 1974, Ser. No. 474,834**
**Int. Cl.² A47B *49/00*, *77/06*, *77/08*; E04B *1/346***
**U.S. Cl. 312—223** **2 Claims**



1. A kitchen package adapted for movable mounting within a wall comprising a group of selected appliances and conveniences assembled into a unit, means for rotating said unit about a vertical axis to locate selected ones of said appliances and conveniences in predetermined position with respect to said wall, one of said conveniences comprising a water-utilizing device having a water inlet and a drain, and coupling means comprising a first fixed member mounted on said support for connection to external drainage means and source of water, and a second member mounted on said unit for rotation therewith and connected in rotatable water-tight relation to said first member, said second member being connected to said drain and water inlet of said device, said coupling members having therein separate cooperating compartment means for conveying fluids to said water inlet and separately from said drain.

2. A kitchen package adapted for mounting within an opening in a wall and for rotation upon a base within said opening about a vertical axis, comprising spaced upper and lower groups of selected appliances and conveniences arranged in circular fashion around said axis, said groups being of substantially equal outside diametric size, a pedestal section of smaller diametric size interconnecting said groups and forming a unit therewith, said axis extending through said pedestal, means for rotating said unit about said axis on said base, water control elements located in said pedestal section for cooperative use with at least one of said conveniences, at least one of said conveniences comprising a drain and coupling means in said base comprising a first fixed member mounted on said base for connection to external drainage means and source of water, and a second member mounted on the unit for rotation therewith and connected in rotatable water-tight relation to said first member, said second member being connected to said drain of the device and to said water control elements in said pedestal section, said coupling members having separate cooperating compartment means therein for conveying water to said water control elements and for separately conveying fluids from said drain.

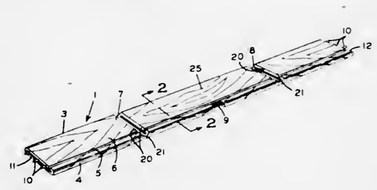
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**3,933,401**

## FOAMED POLY(VINYL CHLORIDE) DRAWER SIDES

**John G. Lampe, and Willie E. Wall, both of Thomasville, N.C., assignors to Armstrong Cork Company, Lancaster, Pa.**

**Continuation of Ser. No. 127,258, March 23, 1971. This application June 21, 1974, Ser. No. 481,699**
**Int. Cl.² A47B *47/04*, *88/00*, *96/20*; B32B *7/02***
**U.S. Cl. 312—330 SM** **4 Claims**



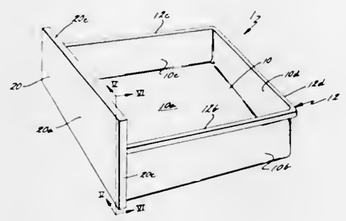
1. A drawer comprising two side walls, an integral rear wall, a bottom and a front, said side walls and rear wall characterized in that they are made of one continuous foamed thermoplastic slab having a dense reinforcing core and a densified skin on the planar surfaces, said dense reinforcing core is centrally located and consists of consolidated portions of the foamed thermoplastic slab material, said resulting slab structure thereby being a three-part structure having a first densified core, secondly, a layer of foam material surrounding said core forming an annulus around the core, and a third part consisting of a densified skin substantially surrounding the densified core and foam material layer, said densified skin surfaces having a simulated wood grain, drawer bottom receiving means on the inner surfaces of said side walls and rear wall, bendable rear corner forming means joining said side walls and rear wall and spaced apart a distance equal to the length of the rear wall, a drawer bottom panel positioned in said bottom panel receiving means, drawer front fastening means on the end of said side walls, and a drawer front fastened to said ends of said side walls.

**3,933,402**

## DRAWER WITH REMOVABLE FRONT PANEL

**Warren J. Peterson, Stevens Point, Wis., assignor to Joerns Furniture Company, Stevens Point, Wis.**

**Filed July 15, 1974, Ser. No. 488,507**
**Int. Cl.² A47B** *88/00*
**U.S. Cl. 312—330** **13 Claims**



**1.** A drawer with a removable front panel comprising:
a drawer pan having mounting means for mounting a panel on the front thereof;
a front panel removably secured on said drawer pan; and
fastening means attached to the back side of said drawer panel and invisible from the front side of said panel, said fastening means including a plate member secured to said panel and a latch member mounted on and movable with respect to said plate member and slidably engaging said mounting means for removably securing said panel to said pan; and gripping means positioned to be invisible from the front of said drawer for moving said latch member into engagement with said mounting means to secure said front panel on said drawer pan.

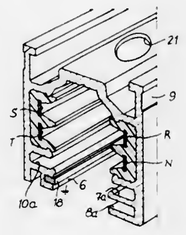
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**3,933,403**

## ADAPTOR FOR FEEDING CURRENT TO ELECTRICAL CONTACT RAILS

**Erich Rubesamen, Slavertrift 32, and Karl Wehling, Liegnitzer Str. 9, both of 492 Lemgo, Germany**

**Filed Apr. 15, 1974, Ser. No. 461,179**
**Claims priority, application Germany, Apr. 26, 1973, 2320983**
**Int. Cl.² H01R** *13/60, 9/12*
**U.S. Cl. 339—22 R** **16 Claims**



**1.** An adaptor for insertion into a power distribution rail to feed current into the rail wherein the rail is of the type comprising an openbottomed channel-shaped metallic section having a top positioned opposite said open bottom and having a pair of spaced sides extending downwardly from said top, each of said rail sides including a plurality of webs which are longitudinally spaced from one another to define elongated ducts along the opposing interior sides of the rail having elongated conductors supported therein in electrically insulated relation to the rail for electrical contact with said adaptor and to further define elongated channels along the opposing sides of the rail spaced from the ducts and adapted to receive supporting clips comprising a portion of said adaptor, each web on one side of the rail extending toward a corresponding web on the other side of the rail with the facing edges of each pair of corresponding webs being laterally spaced from one another to define an open region extending along the vertical center line of the rail into which said adaptor may be inserted from the open bottom of said rail, the top of said rail having an aperture therein, said adaptor including a plurality of outwardly extending electrical contacts respectively connected to electrical conductors extending upwardly from said contacts for passage through said aperture in the top of said rail when said adaptor is inserted into the open bottom of said rail, said adaptor comprising a support portion having said supporting clips adjacent thereto, the exterior of said support portion being dimensioned to permit said adaptor to be inserted into the open region of the rail from the bottom of the rail below said aperture in the top of said rail in a predetermined orientation relative to the rail and being shaped to permit said inserted adaptor thereafter to be rotated through a limited angle between the laterally spaced facing edges of the pairs of corresponding webs to turn said supporting clips into the rail channels and to effect electrical contact between said adaptor contacts and the rail conductors, said support portion exterior comprising a pair of diametrically opposed cylindrical segments spaced from one another by a diametrical distance less than the distance between the laterally spaced facing edges of the webs in the rail, the opposing ends of each cylindrical segment merging into a pair of flat planar sections, the flat planar section extending from each end of one of said segments intersecting a flat planar section extending from one end of the other of said segments whereby said intersecting planar sections define a pair of spaced, substantially parallel edges located respectively between the opposing ends of said pair of cylindrical segments, the distance between said pair of edges being greater than the distance between the laterally spaced facing edges of the webs in the rail, and means adjacent the lowermost end of said adaptor for rotating said adaptor through said limited angle after said adaptor has been inserted into the bottom of said rail with its electrical conductors passing from said inserted adaptor to the exterior of the rail via said aperture in the top of said rail.

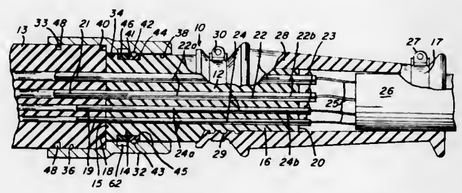
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**3,933,404**

## STRAIN LIMITING MECHANISM

**A. Dean Oehlerking, Mitchell, S. Dak., and Charles G. Stoner, New Philadelphia, Ohio, assignors to Joy Manufacturing Company, Pittsburgh, Pa.**

**Filed July 3, 1974, Ser. No. 485,340**
**Int. Cl.² H01R** *13/54*
**U.S. Cl. 339—45 M** **12 Claims**



**11.** An electrical connector portion comprising: a unitary insulating body member; at least one elongated contact assembly carried by said body member and extending along an axis; said contact assembly including first and second contact portions spaced along said axis a first predetermined distance from each other and an intermediate contact portion; the length of said intermediate contact portion spanning said first distance to provide electrical communication between said first and second contact portions; said body member being deformable to increase the dimension thereof in the direction of said axis upon a tensile force acting on said body member in a direction parallel to said axis; said first and second contact portions being separated from each other a second distance greater than said first distance upon said tensile force acting with a predetermined minimum magnitude on said body member; the maximum length of said intermediate contact portion being less than said second distance to interrupt electrical communication between said first and second contact portions upon said force reaching said predetermined minimum magnitude.



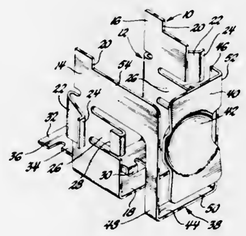
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**3,933,405**

## ELECTRICAL CONNECTOR WITH DEFLECTABLE BUTT CONTACT TERMINAL

**Charles A. Patterson, Jr., McDonald, and Emil J. Tolnar, Jr., Warren, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.**

**Filed May 16, 1974, Ser. No. 470,440**
**Int. Cl.² H01R** *25/00*
**U.S. Cl. 339—48** **1 Claim**



**1.** An electrical connector with a deflectable butt contact terminal portion comprising:
a unitary sheet metal stamping having a generally U-shaped mounting portion having substantially parallel leg portions and an interconnecting portion having a stop tab, each of said parallel leg portions having spring arms carrying latch shoulders and resilient wings whereby said connector is adapted to be snap mounted in a hole extending through a support panel and secured thereto by engagement with portions of the panel adjacent the hole and on opposite sides thereof,
a generally U-shaped channel portion having a frontal area no greater than the frontal area of said mounting portion, said generally U-shaped channel portion further having first and second leg portions of equal length which are spaced from each other and substantially parallel, said leg portions having first and second end portions respectively at the free ends thereof,
a web connecting said first end portion to said mounting portion, said web and said first end portion and a portion of one of said leg portions of said mounting portion being contiguous and substantially coplanar,
a plate-like butt contact terminal portion disposed in a substantially perpendicular relationship to said second end portion and having a frontal area no greater than the frontal area of said mounting portion, said plate-like butt contact terminal portion having a central dished portion adapted to engage a rounded end of a stud terminal, and
a bight portion constituting the sole means connecting said plate-like butt contact terminal portion to said second end portion whereby said terminal portion is deflectable toward said mounting portion and universally center on the rounded end of a stud terminal located at various distances from the mounting portion due to manufacturing variations by the resilient twisting of said channel portion.

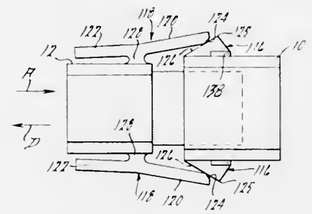
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**3,933,406**

## ELECTRICAL CONNECTOR BLOCK ASSEMBLY HAVING OVERCENTER LOCKING

**John M. Cameron, Tempe, Ariz., and Robert D. Kennedy, Northville, Mich., assignors to Ford Motor Company, Dearborn, Mich.**

**Filed Jan. 4, 1974, Ser. No. 430,971**
**Int. Cl.² H01R** *13/54*
**U.S. Cl. 339—91 R** **6 Claims**



**1.** In combination with a pair of matable electrical connector block members, easily releasible overcenter locking means comprising:
first and second locking lever arm members attached to one member of the matable pair, each of said lever arm members having a forwardly extending portion and a rearwardly extending portion, each of the forwardly extending portions terminating in a transverse portion, said transverse portions being arranged to extend toward each other and to be in closely spaced relation to each other;
means forming a deformable pivot connection between each of the first and second locking lever arm members and the one member of the matable pair, each pivot connection being at least slightly deformable about one axis, each of said at least one axis of each pivot connection being arranged to be generally perpendicular to the plane formed by the two forwardly extending lever arm portions; and
a double ramp member formed on the other member of the matable pair and having first and second ramp surfaces, said double ramp member being positioned on said other member of the matable pair as to be intermediate said forwardly extending lever arm portions, said transverse portions and said pivot connections when the matable pair of connector block members are in fully assembled relation;
each transverse portion including a cooperative surface for cooperating with the double ramp member first surface to deflect the forwardly extending portions in the direction of said one pivot axis and for cooperating with the double ramp member second surface to apply energy stored in said forwardly extending lever arm portions by their deflection to apply an additive force to urge the matable pair of connector blocks together;
said rearwardly extending lever arm portions operative to forcibly rotate said first and second locking lever arm members about said one pivot axis to cause said transverse portions to be rotated apart whereby the cooperation of the forwardly extending lever arm portions and the second surface of the double ramp member in generating a force to urge the matable pair of connector block members together may be avoided during intentional disassembly.

### 3,933,407
## ARTICLES COATED WITH SYNERGISTIC ANTI-FOG COATINGS BASED ON HYDROPHILLIC POLYMERS AND ORGANOSILOXANE- OXYALKYLENE BLOCK COPOLYMERS

**Robert S. Tu, 18 University Road, East Brunswick, N.J. 08816, and John J. Shields, 13 Trenton Ave., Edison, N.J. 08817**

**Filed June 28, 1973, Ser. No. 374,784**
**Claims priority, application United Kingdom, June 29, 1972, 30612/72**
**Int. Cl.² G02B** *1/10*; **B32B** *17/10, 27/06, 27/08*
**U.S. Cl. 350—61** **14 Claims**

1. A normally fogging transparent or reflecting substrate having on at least one surface thereof a non-fogging water insoluble hydrophilic coating comprising: (1) a hydrophilic acrylate or methacrylate polymer selected from the group consisting of polymers of hydroxy lower alkyl acrylates, hydroxy lower alkyl methacrylates, hydroxy lower alkoxy lower alkyl acrylates and hydroxy lower alkoxy lower alkyl methacrylates and (2) in an amount sufficient to synergistically improve the anti-fog activity of the hydrophilic polymeric compound of an organo-siloxane-oxyalkylene block copolymer comprising (a) at least one siloxane block containing at least two siloxane units represented by the formula:

$$R_bSiO_{(4-b)/2}$$

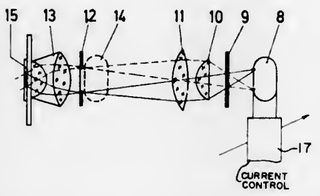
whrein R contains from one to about 20 carbon atoms and is selected from the group consisting of monovalent hydrocarbon groups, halogen-substituted monovalent hydrocarbon groups, and divalent hydrocarbon groups and *b* has a value from 1 to 3 inclusive, said siloxane block containing at least one of said siloxane units wherein at least one R group is a divalent hydrocarbon group, and (b) at least one oxyalkylene block containing at least four oxyalkylene groups represented by the formula—R'O—, wherein R' is an alkylene group containing from two to about 10 carbon atoms, said siloxane oxyalkylene blocks being interconnected by said divalent hydrocarbon group.

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### 3,933,408
## MICROSCOPE-ILLUMINATING SYSTEM

**Guido Georg Reinert, Allgauer Strasse 103, D-8000 Munich 71, Germany**

**Filed Mar. 6, 1974, Ser. No. 448,737**
**Claims priority, application Austria, Mar. 6, 1973, 1977/73**
**Int. Cl.² G02B** *21/08*
**U.S. Cl. 350—87** **4 Claims**

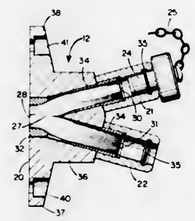



1. An illuminating system for a microscope provided with an objective, comprising:
   a fluorescent lamp remote from said objective;
   a field-control diaphragm proximal to said lamp and an aperture-control diaphragm remote from said lamp disposed along the objective axis between said objective and said lamp; and
   collective lens means between said diaphragms producing an aerial image of said lamp immediately ahead of said aperture-control diaphragm while focusing said field-control diaphragm at infinity whereby an image of said field-control diaphragm is formed at a focal plane of said objective illuminated by rays from said aerial image.

### 3,933,409
## BIFURCATED FIBEROPTIC ADAPTORS

**Jacobus Kloots, Sturbridge, Mass., assignor to Applied Fiberoptics, Inc., Southbridge, Mass.**

**Filed Oct. 7, 1974, Ser. No. 512,626**
**Int. Cl.² G02B** *5/16*
**U.S. Cl. 350—96 B** **5 Claims**



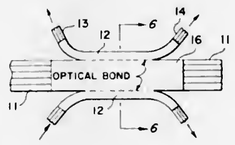

1. In apparatus having a light source and an outlet connection, for piping light from said source through light conductors to a remote location, the combination with said outlet connection of a bifurcated fiberoptic adaptor comprising:
   a. a rigid body;
   b. a bifurcated fiberoptic bundle within said body consisting of multiple thousands of optical fibers all gathered together at a single receiving end and gathered in two groups at their opposite extremities to provide two transmitting ends;
   c. means to bond said fibers together at said receiving end both to each other and to said body;
   d. means to bond said fibers together in two groups at said transmitting ends both to each other and to said body;
   e. means integral with said body for mating said receiving end to said light source; and,
   f. means integral with said body for mating said transmitting ends to flexible fiberoptic cables, all for dividing the light along two separate paths to be piped to two separate locations.

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### 3,933,410
## OPTICAL CONNECTOR WITH SINGLE SCRAMBLING VOLUME

**A. Fenner Milton, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed Nov. 29, 1974, Ser. No. 528,537**
**Int. Cl.² G02B** *5/16*
**U.S. Cl. 350—96 C** **4 Claims**




1. An optical connector for connecting two sections of a main fiber optic bundle transmission line together and for coupling radiation into and out of the main transmission line; which comprises:
   a main optical transmission dielectric rod having ends with a cross sectional area equal to said main transmission lines;



said dielectric rod including at least one side with a flat surface along a portion of the length thereof;
an auxiliary dielectric rod having the same index of refraction as said main dielectric rod;
said auxiliary dielectric rod including a flat side surface and joined with said main dielectric rod along its flat surface in optical alignment therewith;
whereby said main dielectric rod may be optically connected to said main radiation transmission line and said auxiliary rod may be connected with auxiliary fiber optic bundles.

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### 3,933,411
## HYDROPHILIC CONTACT LENS WITH EMBEDDED STABILIZING MEANS

**Albert E. Winner, 67 E. Madison St., Chicago, Ill. 60603**

**Filed July 23, 1971, Ser. No. 165,662**
**Int. Cl.² G02C** *7/04*
**U.S. Cl. 351—160** **4 Claims**




1. An improved contact lens made of hydrophilic plastic material which is adapted generally to orient itself in a manner corresponding with the eye contour and surface on which it rests, the improvement comprising:
   a contact lens body having a central optical area corresponding generally to the maximum pupil opening of the eye and an outer peripheral area in surrounding relationship with said optical area;
   means embedded wholly within said lens body and positioned radially beyond said central optical area for stabilizing the anterior portion of said central optical area against re-orientation in a manner corresponding to the eye contour, whereby the optical characteristics originally provided in said optical area is retained during re-orientation of the lens body; and
   an inwardly beveled surface on the posterior outermost radial edge of said peripheral area.

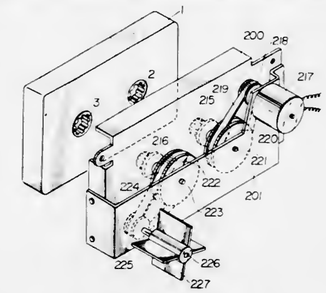
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### 3,933,412
## PROCESSING SYSTEM UTILIZING A MULTI-PURPOSE FILM HANDLING CARTRIDGE

**Kazuya Hosoe, Machida, and Yoshio Komine, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Japan**

**Filed May 29, 1974, Ser. No. 474,155**
**Claims priority, application Japan, May 31, 1973, 48-61689; May 31, 1973, 48-61679; May 31, 1973, 48-61680**
**Int. Cl.² G03C** *11/00*
**U.S. Cl. 352—130** **28 Claims**

1. A film handling system capable of using a film cartridge comprising a film cartridge accommodating a strip of film therewithin and adapted to be utilized commonly in each process for exposure, development as well as projection of the film, said cartridge comprising a housing, a first reel means disposed within said housing for entwining a strip of film therearound at a predetermined position, a second reel means disposed within said housing for taking up said strip of film taken out from said first reel means, a means disposed within said housing for storing developer to develop said film, said means being provided with an opening wherefrom said developer is adapted to impinge selectively on the film path of said strip of film, an apparatus capable of effecting at least said development process for the film accommodated within said film cartridge, said apparatus comprising driving means for actuating said apparatus, said driving means being adapted to provide a driving force of nearly constant speed at all times, a film cartridge chamber for accommodating therewithin said film cartridge at a predetermined position, a film strip advance means for transporting said film in said film cartridge disposed within said film cartridge chamber, said means being arranged



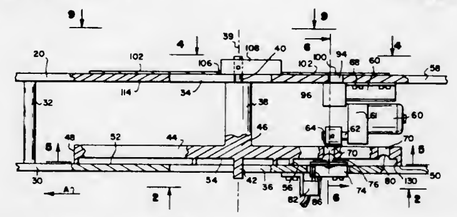

selectively to be mechanically linked with at least said second reel means and being actuated by the driving force of said driving means, a mechanical transducer means for decelerating the rotational speed of said film strip advance means with respect to the rotational speed of said driving means at a predetermined ratio corresponding to the amount of film taken around said second reel means, whereby the travelling speed of the film is substantially made constant when the film accommodated within said film cartridge is subjected to at least the development process.

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### 3,933,413
## DRIVE MECHANISM FOR A SPIRAL ARRAY OF INDIVIDUAL FILM PHOTOGRAPHS

**Ralph A. Sickles, 1418 E. Steamboat Bend, Tempe, Ariz. 85253**

**Filed Mar. 22, 1974, Ser. No. 453,725**
**Int. Cl.² G03B** *23/10, 25/00*
**U.S. Cl. 353—110** **20 Claims**




1. In a drive mechanism for a spiral array of individual film photographs wherein the spiral array of individual photographs are carried by a photograph mount, the combination of: a frame; a rotary driving plate movably mounted on said frame; a photograph mount having a spiral array of individual translucent photographs; means coupling said rotary driving plate and said photograph mount and adapted to rotatably drive said photograph mount; said rotary driving plate having a spiral array of switch operating portions; each of said switch operating portions disposed in corresponding relationship to one of said translucent photographs; a stationary switch mounted on said frame and disposed to be intermittently and successively actuated by said switch operating portions of said rotary driving plate; a power operated means mounted on said frame and coupled to said switch and adapted to be intermittently energized by said switch; a pall driven by said power operated means; a spiral array of pall engaging portions carried by said rotary driving plate and disposed to be individually engaged by said pall for rotating said rotary driving plate;

said pall engaging portions each disposed and corresponding with one of said photographs and corresponding ones of said switch operating portions (portion).

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### 3,933,414
### ELECTROSTATIC COPYING MACHINE

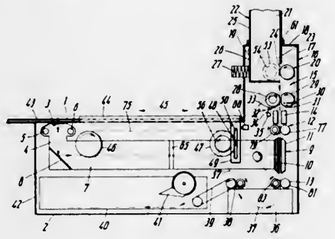
**Walter Limberger, deceased, late of Hamburg-Poppenbuttel, Germany; by Jurgen Limberger, heir, and by Ursula Limberger, heir, both of Hamburg-Poppenbuttel, Germany, assignors to Lumoprint Zindler KG, Germany**

**Continuation of Ser. No. 351,289, April 16, 1973. This application Oct. 30, 1974, Ser. No. 519,262**

**Claims priority, application Germany, Apr. 19, 1972, 2218977**

**Int. Cl.² G03G *15/22***

**U.S. Cl. 355—3 R** **3 Claims**



1. An electrostatic copying machine in which an image is transferred from an original to a copy sheet, comprising an L-shaped machine casing including a first box-shaped part having longitudinally extending horizontally arranged upper and lower surfaces, a second box-shaped part extending vertically upwardly from one end of the upper surface of said first box-shaped part, said first box-shaped part including side surfaces extending vertically between said upper and lower surfaces and consisting of a first side surface, a second side surface located at the end of said first box-shaped part from which said second box-shaped part extends and disposed opposite to and spaced from said first side surface, a third side surface and a fourth side surface disposed opposite to and spaced from said third side surface, said first and second side surfaces disposed substantially perpendicularly to and extending between said third and fourth side surfaces, a horizontally arranged scanning aperture located in said upper surface adjacent to said first side surface and extending between said third and fourth side surfaces, a carriage movably mounted on said upper surface of said casing for reciprocal movement in the direction between said first and second side surfaces over said scanning aperture, an L-shaped light tunnel located within said first box-shaped part and having a vertically extending leg depending downwardly from said scanning aperture in said upper surface and a horizontally extending leg extending from the lower end of said vertical leg toward said second side surface and being in parallel relation therewith and spaced between and from said upper and lower surfaces, an optical reflector located at the junction of the vertical and horizontal legs of said light tunnel, the end of said horizontally extending leg of said light tunnel remote from said reflector aligned vertically below said second box-shaped part and forming an exposure station arranged to receive light rays from said reflector, said second box-shaped part located on the opposite side of said scanning aperture from said first side surface, said second box-shaped part forming an upward extension of the interior of said first box-shaped part from the upper surface of said first box-shaped part, said second box-shaped part having a downwardly extending recess in its upper horizontally arranged end, said second box-shaped part comprising two pair of vertically extending sides with one side of one said pair aligned with said second side surface and with one side of the other said pair aligned with said third side surface and the other side of the other said pair aligned with said fourth side surface, means defining an L-shaped path forming the complete path for the copy sheets through said machine casing, said L-shaped path comprising a vertical leg and a horizontal leg with said vertical leg extending substantially parallel to said vertical leg of said light tunnel and located at the opposite end of said machine casing adjacent said second side surface, said vertical leg of said L-shaped path extending downwardly from the lower end of said recess said second box-shaped part into said first box-shaped part to adjacent and above the lower surface of said first box-shaped part, said vertical leg of said L-shaped path intersecting the exposure station at the end of said horizontal leg of said L-shaped light tunnel, said horizontal leg of said L-shaped path connected to the lower end of said vertical leg and extending therefrom through said first box-shaped part toward said first side surface below and in generally parallel relation with said horizontal leg of said light tunnel, a developing unit positioned within said first box-shaped part and located in said horizontal leg of said L-shaped path at its junction with said vertical leg of said L-shaped path and said developing unit including a curved guide arranged to deflect copy sheets from a vertical to a horizontal orientation as they pass along said L-shaped path, a drying fan located in the horizontal leg of said L-shaped path and spaced from said developing unit toward said first side surface, a cassette-type stack holder arranged to hold copy sheets, said stack holder being removably insertable in the vertical direction into the recess in the upper end of said second box-shaped part with said stack holder extending vertically and arranged to position the copy sheets vertically for passage vertically downward directly into the upper end of the vertical leg of said L-shaped path, said cassette-type stack holder extending upwardly from the upper end of said second box-shaped part, means in the upper end of said vertical leg of said L-shaped path for removing individual copy sheets from said cassette-type stack holder and for passing them downwardly through the vertical leg of said L-shaped path, and an electrostatic charging device positioned in said vertical leg of said L-shaped path in advance of the position at which said vertical leg of said L-shaped path intersects the exposure station in said L-shaped light tunnel, said means for removing individual copy sheets and for passing them downwardly comprises a withdrawal roller located in said second box-shaped part at the lower end of said recess therein for removing individual copy sheets from said stack holder and three pairs of rollers spaced vertically and positioned in said L-shaped path for moving a copy sheet vertically downwardly within said casing with a first one of said pairs located between said withdrawal roller and said electrostatic charging device, a second one of said pairs located between said electrostatic charging device and said exposure station and a third one of said pairs located between said exposure station and said developing unit, said copying machine providing a compact and space saving device by the correlated L-shaped arrangements of said casing, said light tunnel and said path of the copy sheets.

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### 3,933,415
### PAINTING SYSTEM

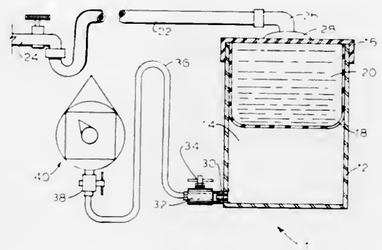
**John C. Woolpert, 1717 Ala Wai Blvd., Honolulu, Hawaii 96815**

**Filed May 11, 1973, Ser. No. 359,340**

**Int. Cl.² B05D *1/28***

**U.S. Cl. 401—145** **14 Claims**

1. A paint applying system comprising an upright paint container having a base wall and an upright wall connected to the base wall and extending upward therefrom, paint disposed in the container in contact with the base wall and the upright wall, a flexible wall in engagement with the paint in the container, a water pressure source means for continuously applying water pressure to the flexible wall in a direction to extend the flexible wall toward the paint within the container; an opening in the upright wall near the base wall of the container for flowing paint out of the container through the opening upon pressurizing of the paint by extension of the flexible wall toward the paint, valve means connected adjacent to the opening externally of the container for controlling the flow of paint outward through the opening and through the valve means, and paint conducting means having a proximal end connected to the valve means for conducting paint outward



from the valve means, and paint applying means connected to a distal end of the conducting means for receiving and distributing paint flowing to the paint applying means from the conducting means, the paint applying means including a second valve connected to the distal end of the paint conducting means for controlling flow of paint from the paint conducting means to the paint applying means.

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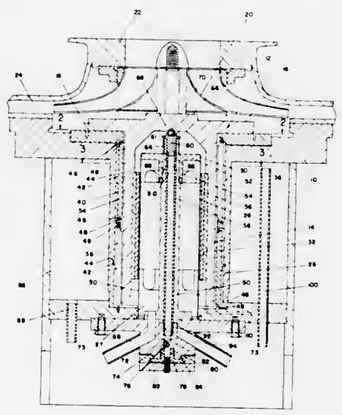
### 3,933,416
### HERMETICALLY SEALED MOTOR BLOWER UNIT WITH STATOR INSIDE HOLLOW ARMATURE

**Khatchik O. Donelian, New York, N.Y., assignor to United States Energy Research & Development Administration, Washington, D.C.**

**Filed May 1, 1945, Ser. No. 591,240**

**Int. Cl.² F04B *35/04***

**U.S. Cl. 417—354** **13 Claims**



1. An electric motor comprising, in combination, a hollow rotor having an external bearing surface, a motor-stator located within said hollow rotor, a plurality of tiltable bearing shoes having bearing surfaces confronting the external bearing surface of said rotor and adapted to cooperate therewith to support the radial thrust of said rotor, said bearing shoes being radially opposite at least a part of said motor-stator and a motor-rotor mounted on said rotor in operative relationship with respect to said motor-stator, said motor-rotor and said motor-stator cooperating to rotate said rotor.



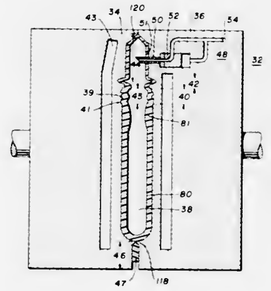
### 3,933,417
### APPARATUS FOR FORMING MULTIAXIALLY ORIENTED CONTAINERS

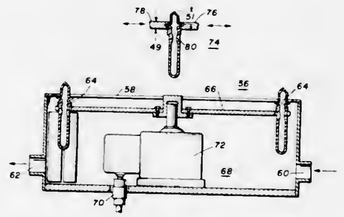
**Joseph R. Reilly, Naugatuck, and Thomas F. Sincock, Simsbury, both of Conn., assignors to Monsanto Company, St. Louis, Mo.**

**Division of Ser. No. 336,023, Feb. 26, 1973, which is a division of Ser. No. 148,544, June 1, 1971, now Defensive Publication No. 3,754,851. This application June 5, 1974, Ser. No. 476,656**

**Int. Cl.² B29C *5/06*; B29D *23/03***

**U.S. Cl. 425—326 B** **6 Claims**





1. Apparatus for forming biaxially oriented containers comprising:

a. surface means for forming a parison;

b. a conditioning mold downstream of said surface means, said conditioning mold having an internal cavity smaller in surface area than that of said container, said conditioning mold including cooling means for regulating the surface temperature of the wall of said internal cavity;

c. a finishing mold downstream of the conditioning mold, said finishing mold having an internal cavity configuration conforming to that of the container and having cooling means for regulating the surface temperature of the wall of the cavity of said finishing mold;

d. first means for expanding the parison in the conditioning mold to form a preform;

e. means for longitudinally stretching the preform subsequent to expansion in the conditioning mold and prior to expansion in the finishing mold;

f. temperature conditioning means separate from said conditioning mold and finishing mold for bringing the temperature of the preform to within the range at which

substantial molecular orientation occurs on stretching; and

g. second means distinct from said first means for expanding the preform in the finishing mold.

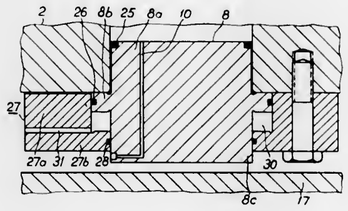
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**3,933,418**

## PRESS FOR TREATING PRODUCTS UNDER HIGH PRESSURE

**Staffan Elmgren, Helsingborg, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden**

**Filed Mar. 17, 1975, Ser. No. 559,050**
**Claims priority, application Sweden, May 2, 1974, 7405837**
**Int. Cl.² B30B** *11/00, 15/02*
**U.S. Cl. 425—405 H** **3 Claims**




**1.** Press for treating material with a high pressure, comprising a high pressure chamber including a vertical high pressure cylinder (**2**) having end closures (**7,8**) projecting into the cylinder (**2**), a press stand (**12**) with a clear opening which is somewhat greater than the length of the high pressure chamber when the end closures (**7,8**) are fully inserted, which stand (**12**) surrounds the high pressure chamber during the pressing operation and takes up the axial forces which a pressure medium in the pressure chamber exerts on the end closures (**7,8**), carrying members (**1, 3, 4, 5**) for the pressure chamber for holding said chamber in such a position that gaps (**21,22**) are formed between the press stand (**12**) and the end closures (7,8) of the chamber when the end closures are inserted to their innermost positions in the cylinder, in which a ring (**27**) is connected to one end of the high pressure chamber and one of the end closures (**8**) comprises a piston slidable within said ring.

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**3,933,419**

## MAGNETICALLY-CONTROLLED GAS IGNITION SYSTEM

**Pat Romanelli, Harrington Park, N.J., assignor to Ram Domestic Products Company, Northvale, N.J.**

**Filed Nov. 20, 1974, Ser. No. 525,397**
**Int. Cl.² F23N** *5/00*
**U.S. Cl. 431—66** **9 Claims**

**1.** An automatic fuel ignition and detection system for gas fired devices having a source of electrical power, a burner provided with an outlet, and a fuel valve for controlling the flow of gas into said burner,

said system comprising an electrical ignition element connected to said source of electrical power and located in proximity to said burner outlet for igniting gas flowing thereto when said ignition element is energized and brought to a gas ignition temperature,

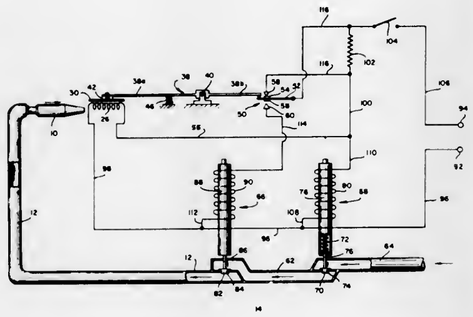
a heat-sensing element mounted adjacent to said ignition element in a position to receive the heat therefrom,

said heat-sensing element being normally magnetically attractable and having a Curie temperature at least as high as said gas ignition temperature at which it loses its magnetic attractability,

a permanent magnet positioned to be attracted to and engaged by said heat-sensing element when the temperature of the latter is below its Curie temperature, said magnet being released by said heat-sensing element when the latter is heated to its Curie temperature,

biasing means urging said magnet in a direction away from said heat-sensing element,

and means operatively connecting said magnet to said fuel



valve for closing said fuel valve when said magnet is in engagement with said heat-sensing element, and opening said fuel valve when said magnet is released by said heat-sensing element and moved out of engagement therewith by said biasing means,

whereby gas is fed through said burner only after said ignition element has been heated to said gas ignition temperature.

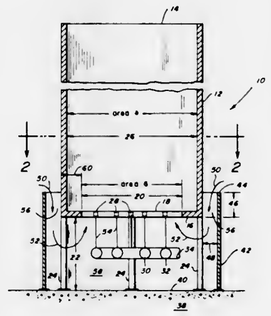
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**3,933,420**

## VERTICALLY FIRED BURNER FOR WASTE COMBUSTIBLE GASES

**John S. Zink; Robert E. Schwartz, and Robert D. Reed, all of Tulsa, Okla., assignor to John Zink Company, Tulsa, Okla.**

**Filed Aug. 19, 1974, Ser. No. 498,276**
**Int. Cl. F23d** *13/20*
**U.S. Cl. 431—202** **9 Claims**




**1.** A vertically fired furnace for burning combustible waste gases comprising;



a. a cylindrical or polygonal furnace of internal cross-sectional area A, said furnace supported with its axis vertical and with its base a selected distance above the grade surface on which it is supported;

b. plate means partially closing off the bottom of said furnace, said plate means having at least one opening for air and fuel entry;

c. burner means positioned in said at least one opening, in the plane of said plate means, the net cross-sectional area of said at least one opening for the passage of air being B;

d. cylindrical wind baffle means coaxial with the bottom of said furnace, and partially enclosing the space between the bottom of said furnace and the grade surface on which said furnace is supported, the remaining opening for supplying combustion air to said burner means being of area C and positioned at least a selected distance from said burner means; and

e. means to supply combustible gas to said burner means.

### 3,933,421
### POLYMER TREATMENT OF FIBROUS AND FILAMENTARY MATERIALS

**David Malcolm Lewis, Otley, England, assignor to I.W.S. Nominee Company Limited, London, England**

**Filed Dec. 5, 1972, Ser. No. 312,357**

**Claims priority, application United Kingdom, Dec. 9, 1971, 57313/71; Feb. 7, 1972, 5643/72**

**Int. Cl.² D06P** *1/86*; **D06Q** *1/02*; **D06M** *3/06*

**U.S. Cl. 8—10** **36 Claims**

1. A process for the treatment of fibrous or filamentary material which comprises applying thereto a polymeric compound comprising:

a. a radical derived by the removal of two or more hydroxyl groups from a polyhydric alcohol;

b. bound to this radical through an oxygen atom at the sites vacated by said hydroxyl groups at least two poly(oxyalkylene) chains; and

c. at least two thiosulfuric acid or thiosulfate groups each bound through a linking group to a chain terminating oxygen atom of said poly(oxyalkylene) chains, said linking group containing from 1 to 10 carbon atoms and being an alkylene, alkylenecarbonyl or hydroxy alkylene group, and curing the compound on the fibres.

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### 3,933,422
### NON-STAINING KERATINIC COLORING PRODUCT

**Hosny Y. Saad, Berkeley Square, N.Y., assignor to Avon Products, Inc., Suffern, N.Y.**

**Continuation-in-part of Ser. No. 227,601, Feb. 18, 1972, abandoned, and a continuation-in-part of Ser. No. 712,398, March 12, 1968, abandoned. This application Apr. 25, 1974, Ser. No. 464,036**

**Int. Cl.² A61K** *7/13*

**U.S. Cl. 8—10.1** **8 Claims**

1. An aqueous hair coloring composition that is non-staining to the skin consisting essentially of:

a. a major amount of water;

b. from about 0.1 to about 10% by weight of a premetallized dye soluble in a compatible organic dye carrier and capable of penetrating keratinic fibers;

c. from about 0.1 to about 10% by weight of a compatible organic dye carrier for coassisting the transfer of said dye into keratinic fibers, said dye carrier selected from the group consisting of:

1. a benzyl alcohol derivative selected from the group consisting of benzyl alcohols, $C_1$-$C_4$ carboxylic acid esterified benzyl alcohol and benzyloxyalkanols;
2. an alkyl phenone;
3. an oxygen substituted cyclohexane selected from the group consisting of cyclohexanols and cyclohexanones;
4. n-nonylaldehyde;
5. 2-methyl-1-pentanol;
6. 2-phenoxy-ethanol;

d. from about 0.1 to about 5% by weight of an anionic surface active agent; and

e. from about 0.1 to about 5% by weight of a skin stain inhibiting agent selected from the group consisting of polyoxyalkylene (10 - 80) lanolins, lanolin alchols, lanolin fatty esters and $C_8$-$C_{20}$ fatty alcohols.

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### 3,933,423
### AZOIC DYEING OF LEATHER

**Catharine Elizabeth Looney, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.**

**Filed May 15, 1973, Ser. No. 360,584**

**Int. Cl.² D06P** *3/12*, *3/32*, *5/00*; **G03C** *1/52*

**U.S. Cl. 8—13** **17 Claims**

1. An improved process for dyeing leather with azoic dyes without significantly changing the surface or bulk esthetic or physical properties of the leather which comprises interacting within leather a diazonium and a coupling component to form a colored dye wherein the improvement consists essentially of (a) incorporating into substantially dry leather simultaneously or sequentially

(1) a diazonium component, and

(2) coupling component as required, in solution in a substantially non-aqueous, volatile, low-viscosity solvent liquid containing less than about 25% water, (b) interacting the diazonium component and a coupling component without wetting the leather with water, and (c) evaporating any remaining solvent liquid from the leather at ambient temperatures.

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### 3,933,424
### MODIFIED SULFONATED RESIN SURFACTANTS

**Sten I. Falkehag, Mount Pleasant, and Carl W. Bailey, III, Isle of Palms, both of S.C., assignors to Westvaco Corporation, New York, N.Y.**

**Division of Ser. No. 333,995, Feb. 20, 1973, Pat. No. 3,870,681. This application Feb. 25, 1974, Ser. No. 445,536**

**Int. Cl.² C09B** *9/00*, *49/00*; **D06P** *5/04*

**U.S. Cl. 8—34** **12 Claims**

1. A dyestuff composition comprising, a disperse or vat dye cake and from 1 to 75% by weight of a water-soluble dispersant on said dyestuff composition, said water-soluble dispersant being reaction products of sulfomethylated phenolic-formaldehyde resin and 0.25 moles to 20 moles per 1000 grams of said resin of an agent of the type $X(CHR)_m(CH_2)_nY$, wherein X is a halogen, a halohydrin group, an activated double bond or an epoxide group, Y is a sulfonate, carboxylate, phosphonate or hydroxyl, mercaptan, amine or hydrogen, and $n$ and $m$ are integers from 0 to 5 with $m$ and $n$ together being at least 1, to give resin adducts with the phenolic hydroxyl at least partially blocked.

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### 3,933,425
### METHOD OF CLEANING TEXTILES

**Werner Grünewälder, Haan Rhineland, and Herbert Frotscher, Langenfeld Rhineland, both of Germany, assignors to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany**

**Filed June 29, 1973, Ser. No. 375,097**

**Claims priority, application Germany, July 1, 1972, 2232397**

**Int. Cl.² D06L** *1/02*

**U.S. Cl. 8—142** **11 Claims**

1. In the method of chemically cleaning and preventing greying of a textile in an organic solvent which comprises contacting a textile with an organic solvent containing cleaning intensifiers and a small quantity of water, said organic solvent being selected from the group consisting of halogenated methane and ethane solvents and aliphatic hydrocarbon solvents, separating said textile from said solvent and recovering said cleaned textile, the improvement which comprises bringing said organic solvent during the cleaning operation into substantially continuous contact with an adsorption material having an insolubly fixed impregnation of a polycondensation product containing polyalkylene glycol units, said polycondensation product containing polyalkylene glycol units being selected from the group consisting of (I) a reaction product of a component (a) selected from the group consisting of water-soluble melamine-formaldehyde condensates and water-soluble urea-glyoxal-formaldehyde condensates with a component (b) selected from the group consisting of polyalkylene oxides and products of addition of alkylene oxides to a compound selected from the group consisting of phenols, fatty alcohols, fatty acids, fatty acid amides, alkylamines, and alkylolamines, (II) a reaction product of a component (a) selected from the group consisting of polyalkylene polyamines, aqueous ammonia and mixtures thereof with a component (b) consisting of alkylene oxide derivatives having 3 to 70 alkylene oxide units and more than one halogenhydrin in the molecule, (III) a reaction product of a component (a) selected from the group consisting of a water-soluble compound having reactive amino groups containing polyalkylene oxide units and water-soluble polyalkylene polyamines containing polyalkylene oxide units reacted with a component (b) selected from the group consisting of epichlorohydrin and compounds having more than one substituent selected from the group consisting of epoxide, halogenhydrin, and the mixtures thereof in the molecule, and (IV) a water-soluble polyvalent amine obtained by condensation of a component (a) selected from the group consisting of polychlorohydrin ethers of polyalkylene oxides and polychlorohydrin ethers of compounds having polyalkylene oxide reacted with a component (b) selected from the group consisting of ammonia and mixtures of ammonia and polyvalent amines, further reacted with a component (c) selected from the group consisting of epichlorohydrin ethers of polyols, dichlorohydrin ethers of polyols, bischlorohydrin ethers of polyols, and the mixtures thereof, said contacting with said adsorption material consisting of passing said organic solvent through a layer of said adsorption material in particulate form.

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### 3,933,426
### PROCESS FOR MAKING TEXTILES CONTAINING CELLULOSE CREASE-RESISTANT

**Bruno Martini, Rheinfelden, Switzerland; Gunter Pusch, Leitershofen, Germany; Erich Rossler, Leitershofen, Germany, and Dieter Walz, Hainhofen, Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.**

**Filed Oct. 2, 1973, Ser. No. 402,663**

**Claims priority, application Germany, Oct. 7, 1972, 2249272**

**Int. Cl.² D06M** *13/34*

**U.S. Cl. 8—183** **12 Claims**

1. A process for making textile containing cellulose crease-resistant which comprises contacting the textile material with an aqueous finishing solution containing one or more N-methylol or N-methylol ether derivatives of nitrogenous compounds and of which at least 40% by weight based on the weight of the sum of the N-methylol derivatives calculated as anhydrous substances is 1,3-dimethylol-4,5-dihydroxyethylene urea the hydroxyl and methylol groups of which are free or are partially or completely etherified with a monohydric aliphatic alcohol containing 1 to 3 carbon atoms, a potential acid catalyst, and from 1 to 12% by weight based on the weight of the N-methylol derivatives calculated as anhydrous substances of an alkali metal chloride or a bromide of sodium or potassium and drying and subjecting the textile material to a heat treatment.





### 3,933,427
### PROCESS FOR PREVENTING CORROSION AND THE FORMATION OF SCALE IN WATER CIRCULATING SYSTEM

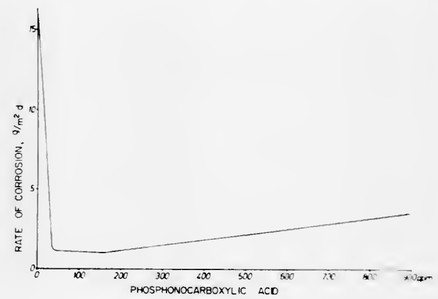
**Gerhard Bohnsack, Bergisch-Neukirchen; Hans Geffers; Herbert Kallfass, both of Cologne, and Walter Radt, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

**Filed May 21, 1973, Ser. No. 362,449**

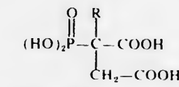
**Claims priority, application Germany, May 26, 1972, 2225645**

**Int. Cl.² C23F** *11/10*; **C02B** *5/06*; **C07F** *9/02*

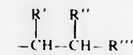
**U.S. Cl. 21—2.7 A** **6 Claims**




1. A process for preventing corrosion and the formation of scale in a water re-circulating system which comprises adding to each cubic meter of the water being re-circulated from about 5 to 100 grams of a compound selected from the group consisting of those of the formula



and the water-soluble salts thereof, R being hydrogen, alkyl, alkenyl or alkinyl having up to 4 carbon atoms; phenyl; cycloalkyl having 3 to 6 carbon atoms; benzyl; phenethyl or



wherein R′ is hydrogen, alkyl having 1 to 4 carbon atoms or carboxyl, R″ is hydrogen or methyl and R‴ is carboxyl.

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### 3,933,428
### DEVICE FOR THE STERILIZATION OF PACKAGING MATERIAL

**Hermann Egger, St. Ursen, Switzerland, assignor to Quepar S.A., Fribourg, Switzerland**

**Filed Dec. 4, 1973, Ser. No. 421,724**

**Claims priority, application Italy, Dec. 22, 1972, 54978**

**Int. Cl.² A61L** *3/00*; **B08B** *1/02*

**U.S. Cl. 21—93** **2 Claims**

1. A device for the sterilization of packaging material comprising:

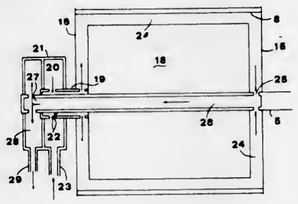
a closed sterilization chamber;

a plurality of drums rotably mounted within said chamber, each of said drums comprises a hollow external cylinder having a permeable cylindrical surface impregnated with a heated sterilant, said hollow external cylinder enclosing a smaller cylinder, both said external cylinder and said smaller cylinder being coaxially and rigidly attached to a common shaft, said hollow cylinder and said smaller cylinder having a space therebetween;

guide means for leading packaging material along said impregnated drum surfaces;

overpressurizing means for keeping an overpressure of sterile air within said sterilization chamber to prevent unsterile external atmosphere from penetrating into the interior of said chamber; and

means for circulating the heated sterilant within said space which comprises: a stationary distributor having an inlet compartment having an interior and an outlet compartment for the sterilant; a hollow shaft surrounding said common shaft to define a fluid chamber with said common shaft and extending from the interior of said inlet compartment to said space; inlet and outlet apertures in the walls of said hollow shaft corresponding respectively to said inlet compartment and said space to permit the inflow of sterilant to said space; and an axially extending passage within said common shaft to communicate said space with said outlet compartment of said distributor.



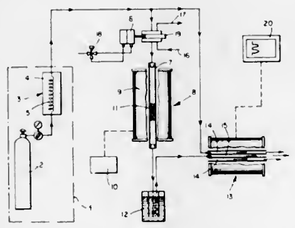
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**3,933,429**

## METHOD AND APPARATUS FOR DETERMINING THE TOTAL OXYGEN DEMAND OF COMBUSTIBLE MATERIALS IN AQUEOUS DISPERSION

**Yoshiki Shibata; Hideo Kakigami, and Syuzo Takeda, all of Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan**

**Filed Apr. 26, 1973, Ser. No. 354,643**
**Claims priority, application Japan, May 2, 1972, 47-43291**
**Int. Cl.² B01K** *1/00*; **G01N** *27/52, 31/12, 33/18*
**U.S. Cl. 23—230 PC** **25 Claims**



**1.** A method for determining the total oxygen demand of combustible materials in an aqueous dispersion said materials being provided in a feed gas stream, using means forming a combustion zone and a detector for determining differences of concentration of oxygen in comparative samples, having two flow paths, which comprises the following steps:

a. dividing a feed gas stream composed of an inert gas containing oxygen into two parts.

b. supplying a first part of said feed gas stream into said first flow path through said detector for determining differences in the concentration of oxygen, and

c. supplying a second part of said feed gas stream through a combustion conduit in said combustion zone which contains a catalyst bed and is heated to a combustion supporting temperature, wherein said second part of said feed gas stream flows through said combustion supporting catalyst bed in said combustion zone, and

d. thereafter channeling the effluent second part of said feed gas stream from said combustion conduit into said second flow path through said detector, and

e. while continuing the above procedures, injecting a small amount of an aqueous dispersion of combustible materials into said combustion conduit upstream of said catalyst bed, whereby said combustible materials are burned and an electrical signal corresponding to the total oxygen demand for burning said combustible material is generated by said detector.

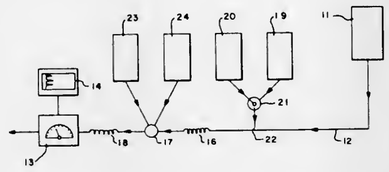
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**3,933,430**

## CONSTANT FLOW SYSTEM FOR DETECTION OF AMINO ACIDS

**Peter Edgar Hare, Takoma Park, Md., assignor to Durrum Instrument Corporation, Palo Alto, Calif.**

**Filed June 25, 1975, Ser. No. 590,216**
**Int. Cl.² G01N** *31/08, 21/26*
**U.S. Cl. 23—230 R** **11 Claims**



**1.** In a continuous method for avoiding baseline shift in the detection of at least a first and second substance in a known sequence in a liquid sample stream moving in a flow path at a substantially constant flow rate to a detection zone, wherein detectability of said first substance is impeded by reaction with a conversion reagent and detectability of said second substance is improved by reaction with said conversion reagent, the steps of

a. adding an inert liquid diluent stream at a predetermined flow rate to said sample stream in said flow path when the sample stream includes said first substance at a selected location in said flow path,

b. adding a conversion reagent stream at essentially the same flow rate as the liquid diluent stream of step (a) at said selected location when the sample stream at said location includes said second substance and simultaneously discontinuing the flow of said liquid diluent stream, whereby liquid flows through said detection zone at a substantially constant rate during detection of said first and second substances.

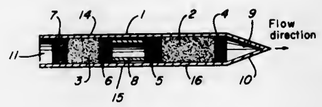
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**3,933,431**

## METHOD AND APPARATUS FOR SAMPLING ATMOSPHERIC MERCURY

**Patricio E. Trujillo, Santa Fe; Evan E. Campbell, and Bernard C. Eutsler, both of Los Alamos, all of N. Mex., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.**

**Filed July 23, 1974, Ser. No. 491,088**
**Int. Cl.² B01D** *53/04*; **B01J** *21/18*; **G01N** *1/22, 31/06*
**U.S. Cl. 23—232 R** **6 Claims**




**5.** A method for determining the content of mercury in organic mercurial and metallic mercury vapors in air which comprises (a) passing a known volume of said air through a first adsorber which selectively and quantitatively adsorbs organic mercurial vapors, (b) then passing said air volume through a second adsorber which quantitatively adsorbs metallic mercury vapor, (c) individually thermally desorbing collected vapors from said first and second adsorbers, (d) reducing said desorbed organic mercurial vapors to metallic mercury vapor, and (e) individually measuring by flameless atomic adsorption spectroscopy the amount of metallic mercury vapor obtained from each of said first and second adsorbers.



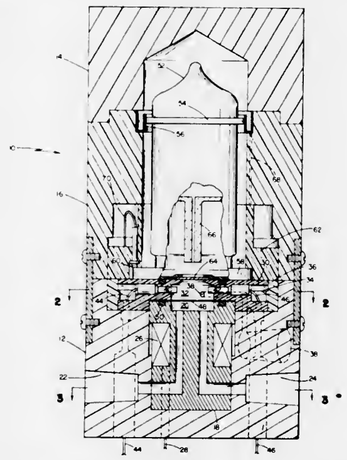
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**3,933,432**

## PHOTOIONIZATION

**John N. Driscoll, Revere, Mass., assignor to HNU Systems Inc., Newton Upper Falls, Mass.**

**Filed Oct. 29, 1974, Ser. No. 518,231**
**Int. Cl.² G01N** *21/26*; **H01J** *27/00*
**U.S. Cl. 23—232 E** **25 Claims**



**14.** In the method of selective photoionization of a component in a gaseous stream in which gases from said stream are passed through a photoionization chamber, radiant energy of a predetermined level is passed through said chamber with said gases therein, and ionization of said component is detected at detector electrodes in said chamber, the improvement in which

said gaseous stream is passed through an inlet into a ballast chamber and is passed through an outlet out of said ballast chamber, a portion of said gaseous stream being diffused from said ballast chamber into said photoionization chamber through a gas permeable organic plastic membrane.

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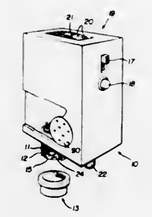
**3,933,433**

## METHOD AND APPARATUS FOR GAS DETECTION

**Robert R. Hooker, Ypsilanti, Mich., assignor to Dynamation Enterprises, Inc., Ann Arbor, Mich.**

**Filed Dec. 18, 1974, Ser. No. 534,072**
**Int. Cl.² G01N** *27/16*
**U.S. Cl. 23—232 E** **8 Claims**

**1.** A method for continuously sensing the presence of noxious gases in the atmosphere and for differentiating between carbon monoxide and other noxious gases including hydrocarbons, including the steps of providing a semi-conductor catalytic sensor, flowing the gas to be sensed along a flow path to said sensor, moisturizing the gas in said flow path to at least 50% relative humidity, exposing said moisturized gas to said sensor for oxidation of said gas, sequentially applying input voltages at first ans second levels to said sensor, and determining the relative change in the impedance of said sensor as said input voltage is changed from said first level to said second level.



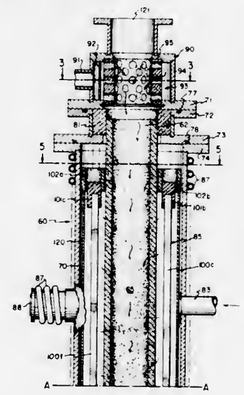
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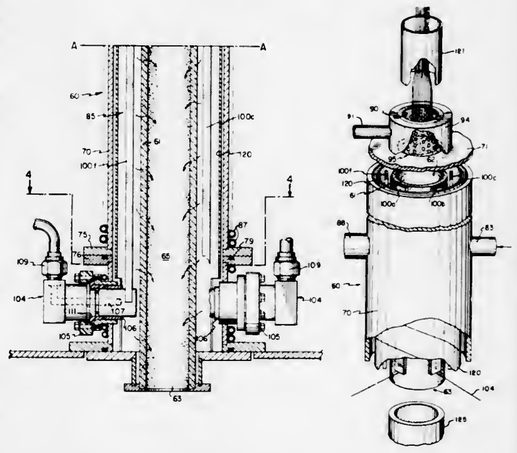
**3,933,434**

## HIGH TEMPERATURE CHEMICAL REACTOR

**Edwin Matovich, Brea, Calif.**

**Filed July 13, 1972, Ser. No. 271,560**
**Int. Cl. B01j** *1/00*
**U.S. Cl. 23—252 R** **18 Claims**





**1.** A high temperature reactor wherein substantially all of the heat is supplied by radiation coupling comprising:

a. a reactor tube having an inlet end and an outlet end, the interior of the tube defining a reactor chamber, the reac-

tor tube being made of a porous refractory material capable of emitting sufficient radiant energy to raise the temperature of reactants within the reactor tube to a level required to initiate and sustain the desired chemical reaction; the pores of the refractory material being of such diameter as to permit a uniform flow of sufficient inert fluid which is substantially transparent to radiant energy through the tube wall to constitute a protective blanket for the radially inward surface of the reactor tube;

b. a fluid-tight, tubular pressure vessel enclosing the reactor tube to define an inert fluid plenum between the reactor tube and the pressure vessel, the inlet and outlet ends of the reactor tube being sealed from the plenum; the pressure vessel having an inlet for admitting the inert fluid which is directed under pressure into the plenum and through the porous tube wall into the reactor chember;

c. means for introducing at least one reactant into the reactor chamber through the inlet end of the reactor tube, the reactants being directed in a predetermined path axially of the reactor tube and being confined by the protective blanket substantially centrally within the reactor chamber and out of contact with the inner wall of the reactor tube;

d. electrical means disposed within the plenum and spaced radially outwardly of the reactor tube for heating the reactor tube to the temperature level at which it emits sufficient radiant energy to initiate and sustain the desired chemical reaction, the radiant energy being directed centrally therewithin substantially coincident with at least a portion of the path of the reactants; and

e. a circumferential heat shield disposed within the pressure vessel and radially outwardly of the heating means, the heat shield reflecting radiant energy toward the reactor tube.

## 3,933,435

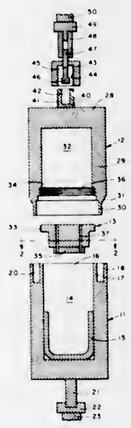
## APPARATUS FOR DIRECT MELT SYNTHESIS OF COMPOUNDS CONTAINING VOLATILE CONSTITUENTS

Wilson P. Menashi, Lexington; Joseph F. Wenckus, Needham, and Roger A. Castonguay, Salem, all of Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 365,135, May 30, 1973, Pat. No. 3,825,242, which is a division of Ser. No. 169,315, Aug. 5, 1971, Pat. No. 3,777,009. This application June 3, 1974, Ser. No. 475,780

Int. Cl.² B01D 9/00; B01J 3/00; F27B 14/10

U.S. Cl. 23—252 R 18 Claims



1. A reaction vessel suitable for carrying out the melt synthesis of an inorganic compound formed by reacting elemental reactants, at least one of which is essentially nonvolatile and at least another of which is volatile at elevated temperatures, comprising in combination

a. enclosure means defining a reaction chamber for containing a molten mass of said nonvolatile reactant and of said inorganic compound and having an upper access opening;

b. reservoir-closure means defining a reservoir for said volatile reactant, engageable with said upper access opening thereby to form a mechanical seal and having a removable plug defining the bottom of said reservoir-closure means and fluid communication means in said plug through which said volatile reactant may be introduced as a gas into said reaction chamber above said molten means; and

c. liquid sealant channel means associated with said mechanical seal to define therewith a combination liquid-mechanical seal of a character which prevents said liquid sealant from entering said reaction chamber but which permits the diffusing of high-pressure gases therethrough.

## 3,933,436

## AUTOMATIC ANALYZING APPARATUS

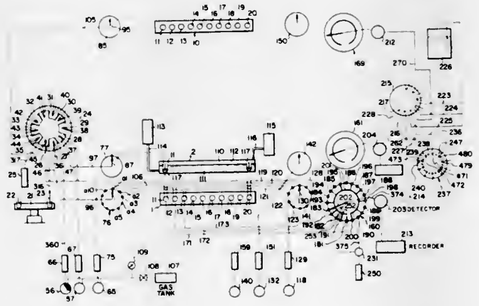
Toyohiko Naono, Tokyo, Japan, assignor to Nihon Denshi Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 13, 1973, Ser. No. 387,918

Claims priority, application Japan, Aug. 15, 1972, 47-81709; Aug. 15, 1972, 47-81715; Aug. 15, 1972, 47-81721; Aug. 15, 1972, 47-95684

Int. Cl.² G01N 33/16, 1/14

U.S. Cl. 23—253 R 3 Claims



1. An automatic analyzing apparatus comprising:

a. a plurality of reaction baths corresponding to selectable reaction treatments or conditions, said baths divided by a partition plate into upper and lower chambers, means for circulating a heated fluid in the lower chambers to maintain a constant temperature, and means connecting the upper chambers to an inert gas source to pressurize said upper chambers;

b. a plurality of reaction tubes, housed in each reaction bath and supported by said partition to open into said upper chambers;

c. means for drawing sample;

d. means for dividing the drawn sample into a given number of portions;

e. means for distributing the divided sample portions, each to a reaction tube in each reaction bath;

f. means for supplying reagents to the reaction tubes comprising reagent reservoirs, which are closed, and means for supplying compressed inert gas to said reservoirs in order to supply reagent to said reaction tubes;

g. means for sequentially feeding contents from reaction tubes in each reaction bath to an analyzer associated with said bath; and,

h. means for backwashing a cleansing solution into said reaction tubes via said means for sequentially feeding contents from reaction tubes to said analyzer.



## 3,933,437

## APPARATUS FOR AUTOMATICALLY PURIFYING EXTRACTS OF VEGETABLE AND ANIMAL SPECIMENS FOR THE DETERMINATION FREE FROM INTERFERENCE OF TRACES OF SELECTED EXTRACT CONSTITUENTS

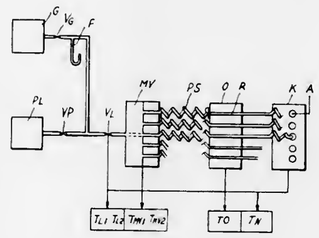
Winfried Ebing, Trautenaustrasse, 1 Berlin 31, and Jochen Pflugmacher, 67, Hochsitzweg, 1 Berlin 37, both of Germany

Filed Sept. 5, 1973, Ser. No. 394,586

Claims priority, application Germany, Sept. 6, 1972, 2243650

Int. Cl.² B01D 11/00; G01N 33/02, 33/16

U.S. Cl. 23—253 R 7 Claims



1. Apparatus for automatically purifying extracts of vegetable and animal specimens for the determination, free from interference by substances including waxes, fats and dyes which interfere with the determination of the active substances, of traces of selected extract constituents by a combined flushing and codistilling process of the extracts with solvents, comprising:

a. a plurality of sample coil tubes for the reception of samples, each sample coil tube having inlet and outlet ends,

b. means for feeding a mixture of solvent and inert gas to said sample coil tubes,

c. multiple way valve means detachably connected to the inlet ends of said sample coil tubes for connecting said mixture feeding means to each of said sample coil tubes in sequence,

d. a plurality of purifying tubes for receiving precipitated constitutents from said samples, each purifying tube having inlet and outlet ends, the inlet end of each purifying tube being detachably connected to the outlet end of one of said sample coil tubes,

e. means surrounding said purifying tubes for heating said purifying tubes to flush and codistil vapors,

f. a plurality of cooling tubes for quantitatively condensing vapors from said purifying tubes forming a condensate therein, each cooling tube having inlet and outlet ends, the inlet end of each cooling tube being connected to the outlet end of one of said purifying tubes,

g. means surrounding said cooling tubes for cooling said cooling tubes,

h. a plurality of receiving tubes, each connected to the outlet end of one of said cooling tubes, for receiving the condensate discharged from said cooling tubes

i. timing means for controlling said multiple way valve means to control the time interval during which said mixture feeding means is connected to each sample coil tube and the time interval between connections of said mixture feeding means to successive sample coil tubes, and

j. control means for regulating the temperature of said heating means and said cooling means.

## 3,933,438

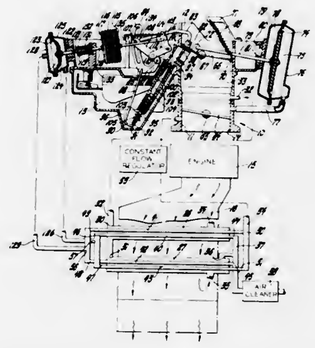
## COMBUSTIBLE GAS SENSOR FOR CLOSED LOOP FUEL CONTROL

Lauren L. Bowler, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed July 5, 1974, Ser. No. 485,913

Int. Cl.² F02M 7/12; G01N 31/10, 33/22

U.S. Cl. 23—255 R 1 Claim



1. For use with an internal combustion engine having means for inducting air and fuel in a variable ratio and engine exhaust means, apparatus for sensing air-fuel ratio of the engine exhaust gases and generating a signal for application to the air and fuel inducting means for controlling the ratio of air and fuel inducted in closed loop control, the apparatus comprising:

a pair of sensor conduits within the exhaust means, each sensor conduit having an exhaust gas inlet orifice open in the exhaust means and an outlet, one of the sensor conduits having an air inlet orifice adjacent the exhaust gas inlet orifice and open to atmosphere;

first, second, third and fourth capillary tubes having inlets and outlets and being coated on their outer surfaces with an oxidationn catalyst substance, the first and fourth capillary tubes being coadjacent within the one sensor conduit, the second and third capillary tubes being coadjacent within the other of the sensor conduits, the inlet of the second capillary tube communicating with the outlet of the first capillary tube, the inlet of the fourth capillary tube communicating with the outlet of the third capillary tube, and the inlets of the first and third capillary tubes being open to atmosphere;

means for generating a substantially constant air pressure less than atmospheric, said means communicating with the outlets of the sensor conduits, whereby a metered flow of exhaust gas and air is drawn through the one sensor conduit over the first and fourth capillary tubes, a metered flow of exhaust gas is drawn through the other sensor conduit over the second and third capillary tubes, and the temperature of each tube is determined by the temperature of the gases flowing over it and the heat of catalytically induced chemical reactions adjacent its outer surface;

means communicating with the outlets of the second and fourth capillary tubes for drawing air therethrough from the atmosphere through the first and third capillary tubes, said means including constant flow regulating means, whereby the pressure drop through each capillary tube is dependent on its temperature;

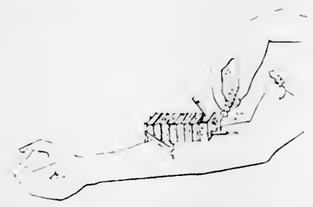
a first signal pressure tap between the first and second capillary tubes; and

a second signal pressure tap between the third and fourth capillary tubes, the pressure differential between the first and second signal pressure taps comprising a signal indicative of exhaust gas air-fuel ratio.

### 3,933,439
### BLOOD COLLECTION DEVICE

**Bernard McDonald, 24826 Malibu Road, Malibu, Calif. 90265**

**Filed Apr. 29, 1974, Ser. No. 464,807**
**Int. Cl.² G01N** *1/12, 1/14, 33/16*
**U.S. Cl. 23—259** **10 Claims**

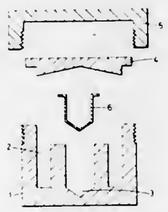


1. A blood collection device comprising:
a closed, longitudinally collapsible elastic container movable between a normally extended position having a larger interior volume and a compressed position having a smaller interior volume;
a blood collection needle in fluid communication with the interior of the container;
manually releasable means for temporarily securing the container in its compressed position; and
a permeable member mounted within the container and including blood clotting sites exposed on the surfaces thereof.

### 3,933,440
### CHEMICAL REACTION VESSEL

**John Frederick Woolley, Sawbridgeworth, England, assignor to International Telephone and Telegraph Corporation, New York, N.Y.**

**Filed Aug. 12, 1974, Ser. No. 496,569**
**Claims priority, application United Kingdom, Sept. 20, 1973, 44086/73**
**Int. Cl.² B01L** *1/00, 7/00;* **G01N** *33/38*
**U.S. Cl. 23—259** **5 Claims**



1. A gas-tight chemical reaction vessel comprising a body member having a first chamber for reagents and at least one sample chamber, a sample cap within each sample chamber, said cap being adapted to contain a sample of intractable material, a sealing member for sealing the body member, and a cap for securing the sealing member against the body, said sealing member providing a gas-tight relationship with said body while retaining a vapor passageway between said first and said sample chambers, and in which the body, the sealing member and the sample cap are made of a material which is chemically inert to the reagents.

### 3,933,441
### THIN, CONTINUOUS STEEL WIRES

**Jean-Marie Massoubre, Clermont-Ferrand, France, assignor to Compagnie Generale des Establissements Michelin, raison sociale Michelin & Cie, France**

**Division of Ser. No. 248,569, April 28, 1972, abandoned. This application June 11, 1973, Ser. No. 368,823**
**Claims priority, application France, May 10, 1971, 71.16882**
**Int. Cl.² B21C** *1/02*
**U.S. Cl. 29—183.5** **2 Claims**

1. Thin, continuous steel wires of a diameter between 30 and 400$\mu$ having manganese ($x$) and silicon ($y$) contents, expressed in percentages by weight with respect to the iron content of the steel, such that for any value of ($x$) the value for ($y$) is greater than that given by the equation

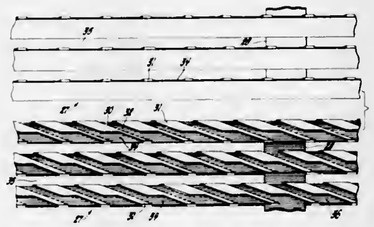
$$y = 0.55\ x^2 - 0.18x + 0.1$$

said steel wires having silica as the principal oxidation product therein.

### 3,933,442
### LAMINATED BODY

**Charles D. Carroll, Greensburg, and George B. Meginnis, Indianapolis, both of Ind., assignors to General Motors Corporation, Detroit, Mich.**

**Division of Ser. No. 307,446, Nov. 17, 1972, Pat. No. 3,834,001. This application May 3, 1974, Ser. No. 466,741**
**Int. Cl.² B32B** *15/00*
**U.S. Cl. 29—191** **4 Claims**



1. A laminated metal body usable in the manufacture of a porous seal element having a seal face adapted to cooperate with the other element of a seal and having a rear face, the body comprising a plural number of metal sheets each divided by parallel slots into parallel metal strips, each strip having two edges, the strips being joined by weak metal ties extending between edges of adjacent strips across the slots, the sheets being stacked and bonded together with the strips aligned and abutting, a large portion of the strips having grooves extending across at least one face thereof to define with the face of an abutting strip pores extending between the stacked strips from edge to edge of the strips.

### 3,933,443
### COKING COMPONENT

**Hugo Lohrmann, Holzhauerthalstrasse, Neunkirchen-Heinitz, Germany**

**Continuation of Ser. No. 214,450, Dec. 30, 1971, abandoned. This application Jan. 17, 1974, Ser. No. 434,225**
**Claims priority, application Australia, May 18, 1971, 28965/71**
**Int. Cl.² C10L** *5/10;* **C10B** *53/00;* **C09K** *3/00*
**U.S. Cl. 44—1 C** **12 Claims**

1. A coking component of a coking mixture which is easier to transport than coke dust and which has an increased fixed carbon content, said coking component consisting of a mixture of 10–60% of finely ground coke and at least one carbon-containing substance selected from the group consisting of coking coal, non-coking coal, petroleum coke, semi-coke or lignite; said carbon-containing substance having a particle size of 90% below 3 mm; said coking component adapted to be mixed with coal to form the coking mixture and coked.

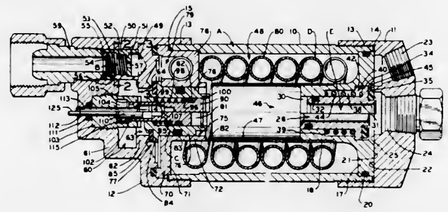
### 3,933,444
### FLASH BACK ARRESTOR

**Charles Ray Kilgore, Rocky River, Ohio, assignor to Emerson Electric Co., St. Louis, Mo.**

**Filed Apr. 29, 1974, Ser. No. 465,250**
**Int. Cl.² F17D** *3/00*
**U.S. Cl. 48—192** **16 Claims**

1. A safety device for automatically interrupting a flash back through a gas supply conduit comprising in combination; a housing, means defining a passageway in said housing having an inlet end and an outlet end, a pressure actuated valve comprising a valve seat surrounding the inlet end of said passageway and a valve member freely slidable in said housing on a line of movement from a first position spaced from said valve seat to a second position sealingly engaging said valve seat, said valve member having a first pressure surface on the end remote from said valve seat exposed to pressures at the outlet end of said passageway and a second pressure surface exposed to pressures at the inlet end of said passageway, a locking member slidably supported in said valve member on said line of movement and having a first position toward said





pressure surface and a second position toward said valve seat, said locking member having first pressure surface on the end remote from said valve seat exposed to the pressures at the outlet of said passageway and means biasing said locking member relative to said valve member to said first position.

### 3,933,445
### PROCESS AND APPARATUS FOR PREVENTING DEPOSITS ON A GAS INLET NOZZLE

**David E. Mueller, and William J. Metrailer, both of Baton Rouge, La., assignors to Exxon Research and Engineering Company, Linden, N.J.**

**Filed Oct. 15, 1973, Ser. No. 406,219**
**Int. Cl.² C10J** *3/54*
**U.S. Cl. 48—197 R** **7 Claims**



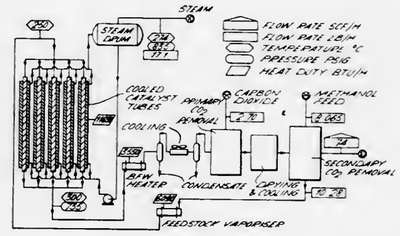
1. In a gasification process wherein an oxygen-containing fluidizing gas is introduced through a nozzle into a bed of carbonaceous particles containing metallic contaminants, the improvement which comprises: preventing the formation of metallic ash deposits on said nozzle by introducing said oxygen-containing fluidizing gas into said bed as a downwardly directed stream at an angle of declination from a horizontal axis at least as great as the angle of repose of said bed particles and at an inlet velocity into said bed in the range of about 50 to 500 feet per second.

### 3,933,446
### PROCESS FOR THE PRODUCTION OF A SUBSTITUTE NATURAL GAS

**Cyril Timmins, London, England, assignor to British Gas Corporation, London, England**

**Filed Dec. 20, 1973, Ser. No. 426,455**
**Claims priority, application United Kingdom, Dec. 20, 1972, 58728/72**
**Int. Cl.² C10K** *3/02*
**U.S. Cl. 48—197 R** **3 Claims**

1. A process for the production of gases suitable for substitution for Natural Gas which process comprises preheating methanol to a temperature of at least 250°C to form a methanol vapor, passing said vapor through a bed of nickel catalyst in an isothermal reactor to form a product gas, maintaining said catalyst bed at a single isothermal temperature within the

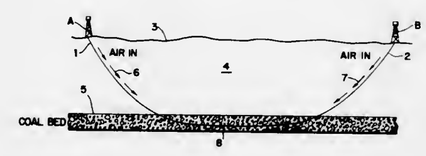



range of 250° to 350°C by external cooling with boiling water at a steam pressure of at least 550 psig, and removing carbon dioxide from said product gas.

### 3,933,447
### UNDERGROUND GASIFICATION OF COAL

**Joseph Pasini, III; William K. Overbey, Jr., both of Morgantown, W. Va., and Charles A. Komar, Uniontown, Pa., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.**

**Filed Nov. 8, 1974, Ser. No. 522,170**
**Int. Cl.² C10J** *5/00;* **E21C** *43/00*
**U.S. Cl. 48—210** **12 Claims**




1. A method for the in situ combustion of coal in a coalbed comprising:
determining the major natural fracture system of the coalbed;
drilling at least one well or borehole from the surface to intersect the coalbed while traveling in a horizontal direction and intersecting the major natural fracture system of the coalbed at a predetermined angle;
maintaining said well or borehole in said horizontal direction intersecting the major natural fracture system of the coalbed at said predetermined angle;
initiating burning of the coal while introducing a combustion supporting gas through said well or borehole to convert the coal in situ to a relatively high Btu gas; and
recovering said relatively high Btu gas.

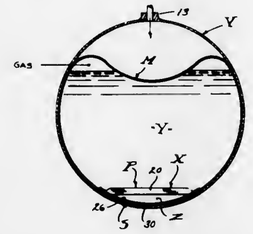
### 3,933,448
### GAS SEPARATOR FOR LIQUID SUPPLY

**Leonard J. Di Peri, 18325 Lahey St., Northridge, Calif. 91324**

**Filed Aug. 20, 1971, Ser. No. 173,548**
**Int. Cl.² B01D** *53/22*
**U.S. Cl. 55—159** **2 Claims**

1. A device for acquisition of gas-free liquid from a closed storage vessel having an acquisition opening in one side portion thereof, and including; a collapsible imperforate membrane coextensively lining the interior of the vessel, and a porous surface tension partition juxtapositioned in closely spaced relation to and with its periphery sealed with the membrane and disposed over said side portion of the vessel and the

acquisition opening therein and defining a liquid acquisition chamber in open communication with said liquid acquisition




opening and separate from a liquid storage chamber within the membrane.

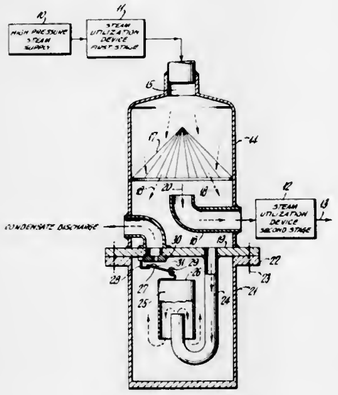
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**3,933,449**

## MEANS FOR SEPARATION AND DRAINAGE OF LIQUID FROM A POINT BETWEEN SUCCESSIVE STAGES OF STEAM UTILIZATION

**Abraham C. Miselem, Pachuca No. 87-102, Mexico, D.F., Mexico**

**Filed July 15, 1974, Ser. No. 488,418**
**Int. Cl.² B01D** *45/12*
**U.S. Cl. 55—218** **8 Claims**



**2.** A combined gas trap and liquid separator, comprising an upper gas-chamber body and a lower liquid-trap-chamber body removably carried by and beneath said gas-chamber body, said gas-chamber body having an upper inlet port for admission of a flow of liquid-gas mixture, flow-deflector means comprising a generally conical array of swirl-inducing blades carried within said gas-chamber body and effectively dividing the interior of said gas-chamber body into an upper inlet region and a lower discharge region, thereby imparting to the inlet flow of admitted mixture a rotary swirl about a central axis of flow, and thereby also centrifugally directing to an outer zone of greatest radii about said axis the liquid component of the mixture, a gas-outlet port including a conduit having an open inlet end above the bottom of the lower region and facing the flow discharged by said deflector means, said open end having an area confined to a central zone of lesser radii about said axis, trap means including an inverted bucket movably suspended within said trap-chamber body, and a liquid drain conduit extending from the outer zone of said gas-chamber body and positioned to discharge into the interior of said inverted bucket, said trap means including valve-controlled means discharging external to said bodies and having an operating connection to a movable part of the bucket suspension.

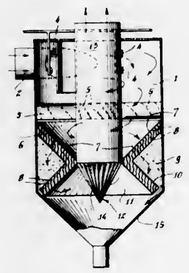
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**3,933,450**

## PURIFIER FOR THE PHYSICAL-CHEMICAL TREATMENT OF COMBUSTION GASES AND OTHER GASES CONTAINING POLLUTING OR NOXIOUS CONSTITUENTS

**Emile Henri Gabriel Percevaut, Route de Longjumeau, Chilly Mazarin (Essonne), France**

**Filed Feb. 5, 1974, Ser. No. 439,944**
**Claims priority, application France, Feb. 7, 1973, 73.04376**
**Int. Cl.² B01D** *47/06*
**U.S. Cl. 55—223** **8 Claims**



**1.** A purifier of the cyclone-washer type for treating gases containing polluting or noxious constituents comprising:
- a cylindrical wall concentric about a vertical axis defining a first chamber therein,
- inlet duct means communicating with said first chamber through which gases to be treated can enter said first chamber,
- said inlet duct means being directed tangentially into said first chamber for swirling the gases entering within said first chamber in a first direction about said vertical axis,
- spray means associated with said first chamber for spraying washing liquid droplets into the swirling gases in said first chamber for treating gases therein,
- said cylindrical wall extending downwardly below said first chamber,
- a ring of helicoidal blades positioned within said cylindrical wall in the lower part of said first chamber, said helicoidal blades projecting the swirling mixture of gases and liquid droplets downwardly from said first chamber within said cylindrical wall below said ring of blades,
- a honeycomb structure of curved vanes positioned within said cylindrical wall below said ring of blades for increasing the length of the path traversed by said mixture of gases and liquid droplets,
- a hopper at lower part of said cylindrical wall below said honeycomb structure for receiving the washing liquid, and
- a central evacuation duct communicating with the region within said cylindrical wall below said honeycomb structure and extending upwardly along said axis.

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**3,933,451**

## DUST COLLECTING BAG

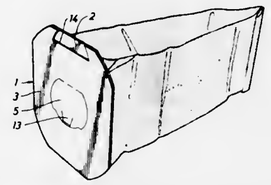
**Goran R. Johansson, Lilla Edet, Gota, Sweden**

**Filed Apr. 19, 1973, Ser. No. 352,709**
**Claims priority, application Sweden, Apr. 24, 1972, 5339/72**
**Int. Cl.² B01D** *46/02*
**U.S. Cl. 55—367** **1 Claim**

**1.** Dust collecting bag including a substantially rigid endwall, said endwall comprising:



a central opening, said opening including locking means disposed about a small portion of its edge;
a cover flap having a free defining edge, said cover flap pivotally resiliently mounted on said endwall along a portion of the edge of said opening, said cover flap covering said opening when locked into a covering position by said locking means, with at least a portion of said free defining edge positioned within the area of the opening;
said cover flap further includes the presence of slits extending from said at least a portion of said free defining edge,



said portion located substantially diametrically opposite the pivotable mounting of said cover flap and with the part of said free edge defined by said slits being pivotable out of the plane defined by the remainder of the cover flap;
said locking means located substantially diametrically opposite the pivotal mounting of said cover flap and consisting of at least one pliable locking flap, said locking flap overlying said at least a portion of said free defining edge and biased against the resilient mounting of the cover flap when the cover flap is in a closed and locked position.

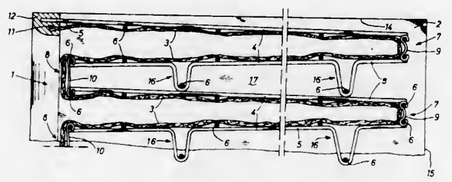
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**3,933,452**

## FILTER CARTRIDGE FOR SUSPENDED PARTICLES

**Ernst Rudin, Arboldswil, Switzerland, assignor to H. Gertsch & Co. Aktiengesellschaft, Zurich, Switzerland**

**Filed Sept. 3, 1974, Ser. No. 502,474**
**Claims priority, application Switzerland, Sept. 14, 1973, 13233/73**
**Int. Cl.² B01D** *46/10*
**U.S. Cl. 55—499** **4 Claims**



**1.** A filter cartridge for filtering suspended particles from a fluid passing through the cartridge, comprising:
- a frame defining an inlet opening for admitting fluid to be filtered and an outlet region for permitting filtered fluid to leave the frame;
- grid means positioned in the frame and having peripheral portions embedded therein;
- an elongate filter web positioned in the frame and having peripheral portions embedded therein, the web being supported and backed by the grid means and having one main surface facing towards said inlet opening and its other main surface facing towards the grid means and said outlet region so that fluid to be filtered passes through the web in the direction from said one main surface towards said other main surface,

the grid means being elongate and comprising a plurality of essentially planar grids extending substantially parallel to one another away from the inlet opening and secured together end-to-end by clamps, and the web being folded along a plurality of fold regions spaced apart along the web to give it a pleated configuration with the pleats extending between respective pairs of adjacent grids, at least one of said grids being formed with a projection protruding out of the plane of the grid into the space between successive pleats of the filter web to maintain the grids and said successive pleats in spaced relationship.

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**3,933,453**

## FLAME HYDROLYSIS MANDREL AND METHOD OF USING

**Gerald E. Burke, Painted Post, and Robert D. DeLuca, Big Flats, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.**

**Filed May 6, 1974, Ser. No. 467,017**
**Int. Cl.² C03C** *25/02*; **C03B** *9/32*, *19/06*; **C03C** *15/00*
**U.S. Cl. 65—3** **17 Claims**




**1.** In an apparatus for forming a hollow cylindrical glass article comprising
a cylindrically shaped mandrel, and
means for forming a glass coating on the surface of said mandrel,
said mandrel being characterized in that it comprises
a cylindrical support, and
tubular means slidably mounted on the surface of said support, the outer surface of said tubular means being formed of refractory metal.

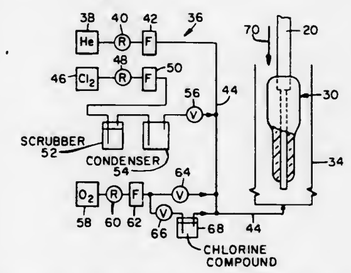
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**3,933,454**

## METHOD OF MAKING OPTICAL WAVEGUIDES

**Robert D. DeLuca, Big Flats, N.Y., assignor to Corning Glass Works, Corning, N.Y.**

**Filed Apr. 22, 1974, Ser. No. 462,962**
**Int. Cl.² C03C** *25/02*, *21/00*, *17/22*
**U.S. Cl. 65—3** **18 Claims**




**1.** In the method of forming a glass article comprising the steps of
depositing on a starting member a coating of flame hydrolysis-produced glass soot to form a soot preform,
consolidating said soot preform to form a dense glass layer free from particle boundaries, and
forming said dense glass layer into a desired shape, said consolidation step being characterized in that it comprises
heating said soot preform to a temperature within the consolidation temperature range for a time sufficient to cause said soot particles to fuse and form a dense glass layer, and simultaneously

subjecting said soot preform to a stream of a substantially dry, hydrogen-free, chlorine containing atmosphere that is substantially free from contaminants that would adversely affect the optical properties of said glass article, said chlorine permeating the interstices of said soot preform during the consolidation thereof and replacing hydroxyl ions by chlorine ions, thereby resulting in a glass article that is substantially water-free.

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### 3,933,455
### METHOD FOR JOINING OPTICAL FIBRE BUNDLES

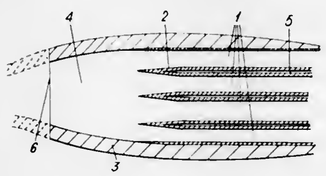
**Martin Chown, Harlow, England, assignor to International Standard Electric Corporation, New York, N.Y.**

**Filed May 17, 1974, Ser. No. 470,882**

**Claims priority, application United Kingdom, June 14, 1973, 28284/73**

**Int. Cl.[2] C03B** *23/20*; **G02B** *5/14*

**U.S. Cl. 65—4** **2 Claims**




1. A method of providing a coupling region at least one of the ends of a glass optical fibre-bundle including a plurality of glass fibres each having an inner core glass and outer cladding glass, which method includes the steps of etching the fibres at that end of the bundle to remove the cladding glass and produce tapered ends to the individual fibres, of inserting the tapered ends into the bore of a glass tube having a lower refractive index than that of the fibre cores, of heating and fusing the assembly of tube and fibre ends while drawing it down so as to provide a solid zone of core glass within the tube and to eliminate the cladding glass and interstices between the side walls of the tapered ends of the fibres in said zone, and of forming a polished end within said zone.

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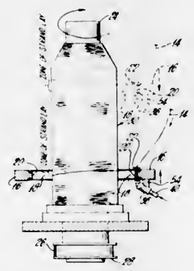
### 3,933,456
### APPARATUS FOR PACKAGING GLASS FIBERS

**Cletis L. Roberson, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio**

**Division of Ser. No. 356,537, May 2, 1973, Pat. No. 3,851,435. This application June 19, 1974, Ser. No. 480,902**

**Int. Cl.[2] D10L** *13/26*; **C03B** *37/02*; **F26B** *7/00*

**U.S. Cl. 65—11 W** **3 Claims**



1. Apparatus for packaging glass strand comprising:
means for supplying streams of molten glass for attenuation into continuous glass filaments:
means for applying liquid to the filaments;
means for gathering the wet filaments into a glass strand;
a winder under the means for supplying molten glass streams including a rotatable collector upon which the glass strand is collected into successive layers as a wound package, means for rotating the collector, and strand traversing means including a reciprocatable mounted strand guide and means for reciprocating such guide lengthwise of the collector to distribute the strand on the package during its formation; and
means immediately adjacent to the outer circumferential surface of the package for directing a stream of air at the package effective to increase the rate of evaporation of liquid from successive outer layers of the package wherein such means is mounted to reciprocate with the strand guide whereby the exterior of the package is progressively subjected to the drying influence of the stream during package formation.

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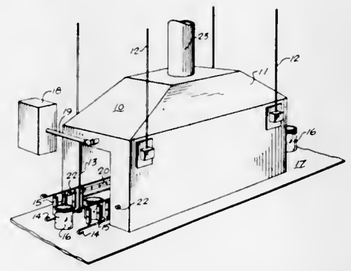
### 3,933,457
### APPARATUS AND METHOD FOR TREATING VITREOUS SURFACES

**Addison B. Scholes, Muncie, Ind., assignor to Ball Corporation, Muncie, Ind.**

**Continuation of Ser. No. 54,417, July 13, 1970, abandoned. This application May 21, 1974, Ser. No. 472,044**

**Int. Cl.[2] C03C** *17/22*

**U.S. Cl. 65—60** **7 Claims**



1. A method for coating newly formed vitreous articles with a metal oxide by pyrolytic decomposition of a treatment gas thereon which treatment gas is normally hydrolized in the presence of water vapor into objectionable and corrosive constituents which can then undesirably accumulate on the surfaces of associated treatment equipment to clog, corrode or otherwise interfere with the treatment equipment, said method comprising the steps of:
providing an enclosure having entrance and exit openings therein for the passage of said articles,
moving said articles through said enclosure,
allowing ambient air of uncontrolled water vapor content to pass into said enclosure through said openings,
providing an upwardly extending vent from said enclosure for conducting used treatment gas vapors from said enclosure,
directing a supply of said treatment gas inside said enclosure through a distribution manifold on both sides of said articles in a direction towards said articles while said articles are at a temperature above the pyrolytic decomposition temperature of said treatment gas,
burning sufficient quantities of heating gas within the enclosure, at locations along both sides of the enclosure between said openings and at a lower level of said enclosure opposite said vent (1) to substantially maintain the atmosphere temperature within said enclosure above a predetermined critical temperature at which water vapor forms hydrates with the treatment gas and, at the same time, (2) to maintain the internal surfaces of the enclosure and of the vent above said critical temperature due to movement of the heated atmosphere therewithin from the lower level where the heating gas is burned to and through said vent whereby said objectionable constituents are substantially prevented from forming either in said atmosphere or on the internal surfaces of said enclosure and vent in spite of the fact that water vapor is present as a combustion product of said heating gas as a contaminant from the external ambient atmosphere entering through said openings.

7. Apparatus for coating newly formed vitreous articles with a metal oxide by pyrolytic decomposition of a treatment gas thereon which treatment gas is normally hydrolized in the presence of water vapor into objectionable and corrosive constituents which can then undesirably accumulate on the surfaces of associated treatment equipment to clog, corrode or otherwise interfere with the treatment equipment, said apparatus comprising:
an enclosure having entrance and exit openings therein for the passage of said articles and through which openings ambient air of uncontrolled water vapor content passes into said enclosure, said enclosure also being provided with an upwardly extending vent for conducting used treatment gas vapors from said enclosure,
means for moving said articles through said enclosure,
manifold distribution means for directing a supply of said treatment gas inside said enclosure through a distribution manifold on both sides of said articles in a direction towards said articles while said articles are at a temperature above the pyrolytic decomposition temperature of said treatment gas,
means for burning sufficient quantities of heating gas within the enclosure, at locations along both sides of the enclosure between said openings and at the lower level of said enclosure opposite said vent (1) to substantially maintain the atmosphere temperature within said enclosure above a predetermined critical temperature at which water vapor forms hydrates with the treatment gas and, at the same time, (2) to maintain the internal surfaces of the enclosure and of the vent above said critical temperature due to movement of the heated atmosphere therewithin from the lower level where the heating gas is burned to and through said vent whereby said objectionable constituents are substantially prevented from forming either in said atmosphere or on the internal surfaces of said enclosure and vent in spite of the fact that water vapor is present as a combustion product of said heating gas and as a contaminant from the external ambient atmosphere entering through said openings.

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### 3,933,458
### METHOD OF MAKING A RIGID UNITARY FERTILIZER COMPOSITE

**Warren H. Philipp, 6234 Columbia Road, North Olmsted, Ohio 44070**

**Continuation-in-part of Ser. No. 412,272, Nov. 2, 1973, abandoned. This application Dec. 5, 1974, Ser. No. 529,740**

**Int. Cl.[2] C05G** *1/00*; **C05C** *13/00*

**U.S. Cl. 71—27** **11 Claims**

1. A method of forming a rigid, unitary mass plant and soil conditioner composite for use in treating plants and trees comprising the steps of forming an aqueous paste of plant and soil conditioners, acrylamide, a catalyst, and between about 5 and 40 volume percent water, said acrylamide being present in an amount sufficient to provide at least 5 percent by weight of polyacrylamide in the final product, forming said aqueous paste to a desired shape, polymerizing said acrylamide to form polyacrylamide, and drying said molded content to remove substantially all of said water.





### 3,933,459
### HIGH-MAGNESIUM AMMONIUM POLYPHOSPHATE SOLUTIONS

**William Percy Moore, Hopewell, Va., and James Earl Sansing, Baton Rouge, La., assignors to Allied Chemical Corporation, New York, N.Y.**

**Division of Ser. No. 390,832, Aug. 23, 1973. This application Oct. 11, 1974, Ser. No. 513,980**

**Int. Cl.[2] C05B** *7/00*

**U.S. Cl. 71—34** **2 Claims**

1. A process for producing and storing stable ammonium polyphosphate solutions containing at least 0.35% by weight MgO, comprising:
a. mixing 24–40% by weight aqueous ammonia with superphosphoric acid containing 66–76% by weight $P_2O_5$ and 0.7–2.0% by weight MgO to give a reaction solution having a $P_2O_5$/N weight ratio of 3.6–4.0 and a pH in the range 5.0–5.7;
b. maintaining the temperature of the reaction at 50°–100°C.;
c. cooling said reaction solution after mixing to a temperature of 25°–35°C.; and
d. storing said solution at 25°–35°C. in a carbon steel tank, under a layer of liquid paraffin hydrocarbon having a boiling point of 150°–300°C., and at pH 5.0–5.7, whereby the solution remains stable and does not precipitate solids for at least 250 days, and shows a corrosion rate in said carbon steel tank of less than 1.4 mils per year, said corrosion rate being measured below the air-liquid interface of the solution.

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### 3,933,460
### HERBICIDAL MIXTURE OF A BENZOFURANYL METHANESULFONATE AND A SUBSTITUTED PYRIDAZONE

**Adolf Fischer, Mutterstadt, Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany**

**Filed July 1, 1974, Ser. No. 484,974**

**Claims priority, application Germany, July 9, 1973, 2334787**

**Int. Cl.[2] A01N** *9/00*

**U.S. Cl. 71—88** **1 Claim**

1. A herbicide composition consisting essentially of an inert carrier and a herbicidally effective amount of a mixture of (a) 2-ethoxy-2,3-dihydro-3,3-dimethyl-5-benzofuranyl methane sulfonate and (b) 1-m-trifluoromethylphenyl-4-dimethylamino-5-chloropyridazone-(6) in a weight ratio of (a) to (b) in the range of 3:1 to 1:3.

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### 3,933,461
### HERBICIDE

**Adolf Fischer, Mutterstadt, Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Germany**

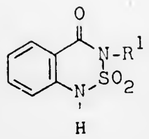
**Filed June 3, 1974, Ser. No. 476,150**

**Claims priority, application Germany, June 16, 1973, 2330743**

**Int. Cl.[2] A01D** *9/14*

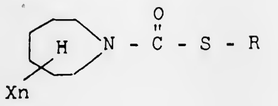
**U.S. Cl. 71—91** **4 Claims**

1. A herbicide composition containing a herbicidally effective amount of mixture of
a. a compound having the formula



wherein $R^1$ denotes lower alkyl, or a salt of said compound, and

b. a compound having the formula



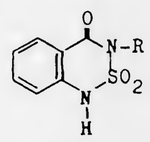
wherein X denotes lower alkyl, *n* denotes one of the integers 0, 1, 2 and 3, and R denotes lower alkyl, benzyl or benzyl substituted by lower alkyl in a weight ratio of *a* to *b* in the range of 5:1 to 1:5.

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**3,933,462**
**MIXTURE OF SUBSTITUTED BENZOTHIADIAZINONES AND BENZONITRILES AS HERBICIDES**
**Adolf Fischer, Mutterstadt, Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Germany**
**Division of Ser. No. 343,629, March 22, 1973, Pat. No. 3,888,655. This application July 30, 1974, Ser. No. 493,116**
**Claims priority, application Germany, Apr. 13, 1972, 2217722**
**Int. Cl.² A01N 9/12**
**U.S. Cl. 71—91** **6 Claims**

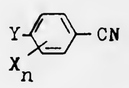
1. A herbicide composition comprising an inert carrier containing a herbicidally effective amount of a mixture of herbicides consisting essentially of

a. a compound of the formula

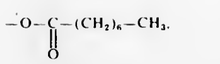


where R denotes lower alkyl of a maximum of 4 carbon atoms, or an alkali metal, ammonium, alkaline earth metal, lower alkyl ammonium, lower hydroxyalkylammonium or hydrazine salt thereof, and

b. a compound of the formula



where Y denotes hydroxy or the radical



X denotes bromine or iodine and *n* denotes the integer 2 in a weight ratio of *a* to *b* in the range of 5:1 to 1:5.

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**3,933,463**
**HERBICIDALLY ACTIVE IMIDAZOLIDIN-2-ON-1-CARBOXYLIC ACID AMIDES**
**Ferdinand Munz, Schildgen; Helmuth Hack, Cologne-Buchheim, and Ludwig Eue, Cologne-Stammheim, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**
**Filed July 28, 1969, Ser. No. 845,540**
**Claims priority, application Germany, Aug. 13, 1968, 1795117**
**Int. Cl.² A01N 9/22**
**U.S. Cl. 71—92** **13 Claims**

1. Herbicidal composition which consists essentially of a mixture of a dispersible carrier vehicle selected from the group consisting of (1) a finely divided dispersible carrier solid containing a surface-active agent selected from the group consisting of non-ionic emulsifying agents, anionic emulsifying agents, dispersing agents, and mixtures of such agents, and (2) a dispersible carrier liquid selected from the group consisting of inert organic solvents, water, and mixtures thereof, and containing a surface-active agent selected from the group consisting of non-ionic emulsifying agents, anionic emulsifying agents, dispersing agents, and mixtures of such agents, and a herbicidally effective amount, constituting substantially between about 0.005–95% by weight of the mixture, and sufficient to combat weeds, of an imidazolidin-2-on-1-carboxylic acid amide of the formula



in which R is selected from the group consisting of alkyl of 1–4 carbon atoms and alkenyl of 3–4 carbon atoms.

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**3,933,464**
**HERBICIDE**
**Adolf Fischer, Mutterstadt, Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Germany**
**Division of Ser. No. 348,085, April 4, 1973. This application May 23, 1974, Ser. No. 472,653**
**Claims priority, application Germany, Apr. 13, 1972, 2217698**
**Int. Cl.² A01N 9/22**
**U.S. Cl. 71—92** **2 Claims**

1. A herbicide composition containing a herbicidally effective amount of a mixture consisting essentially of (a) 2-ethoxy-2,3-dihydro-3,3-dimethyl-5-benzofuranylmethane sulfonate and (b) 3-cyclohexyl-5,6-trimethylene uracil in a weight ratio of *a* to *b* in the range of 5:1 to 1:5.



**3,933,465**
**HERBICIDE MIXTURES OF 2-ETHOXY-2,3-DIHYDRO-3,3-DIMETHYL-5-BENZOFURANYLMETHANE SULFONATE**
**Adolf Fischer, Mutterstadt, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany**
**Division of Ser. No. 348,085, April 4, 1973. This application July 30, 1974, Ser. No. 493,113**
**Claims priority, application Germany, Apr. 13, 1972, 2217698**
**Int. Cl.² A01N 9/22**
**U.S. Cl. 71—92** **2 Claims**

1. A herbicide composition containing a herbicidally effective amount of a mixture of (a) 2-ethoxy-2,3-dihydro-3,3-dimethyl-5-benzofuranylmethane sulfonate, (b) 3-methoxycarbonylaminophenyl-N-(3′-methylphenyl)-carbamate, and (c) 1-phenyl-4-amino-5-chloropyridazone-(6) in a weight ratio of a:b:c of 1–10:1–10:1–10.

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**3,933,466**
**URACIL AND CARBAMATE HERBICIDE MIXTURES**
**Adolf Fischer, Mutterstadt, Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany**
**Division of Ser. No. 348,085, April 4, 1973. This application July 30, 1974, Ser. No. 493,114**
**Claims priority, application Germany, Apr. 13, 1972, 2217698**
**Int. Cl.² A01N 9/22**
**U.S. Cl. 71—92** **1 Claim**

1. A herbicide composition containing a herbicidally effective amount of a mixture of (*a*) 3-cyclohexyl-5,6-trimethylene uracil and (*b*) 3-methoxycarbonylaminophenyl-N-(3′-methylphenyl)-carbamate in a weight ratio of *a* to *b* in the range of 10:1 to 1:10.

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**3,933,467**
**SUBSTITUTED NITROANILINES AND SUBSTITUTED 1, 3, 5-TRIAZINES AS HERBICIDAL MIXTURES**
**Adolf Fischer, Mutterstadt, Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany**
**Continuation-in-part of Ser. No. 162,317, July 13, 1971, Pat. No. 3,849,107. This application May 23, 1974, Ser. No. 472,646**
**Claims priority, application Germany, July 28, 1970, 2037265**
**Int. Cl.² A01N 9/22**
**U.S. Cl. 71—93** **2 Claims**

1. A herbicide composition containing a herbicidally effective amount of a mixture consisting essentially of

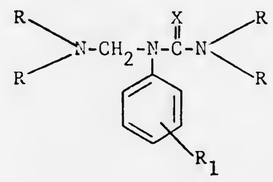
a. N-n-propyl-N-β-chloroethyl-2,6-dinitro-4-trifluoromethylaniline and

b. 2-methylmercapto-4,6-diisopropylamino-1,3,5-triazine; 2-methoxy-4-ethylamino-6-isopropylamino-1,3,5-triazine; 2-azido-4-sec.butylamino-6-methylmercapto-1,3,5-triazine; 2-chloro-4-ethylamino-6-tert-butylamino-1,3,5-triazine; 2-chloro-4-ethylamino-6-isopropylamino-1,3,5-triazine; 2-chloro-4,6-diethyl-amino-1,3,5-triazine; or 2-(2-chloro-4-ethylamino-1,3,5-triazine-6-yl-amino)-2-methylpropionitrile in a weight ratio of compound a to compound b in the range of 3:1 to 1:3.

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**3,933,468**
**HERBICIDAL COMPOSITIONS**
**Alexander Mihailovski, Berkeley, Calif., assignor to Stauffer Chemical Company, Westport, Conn.**
**Division of Ser. No. 247,671, April 26, 1972, Pat. No. 3,860,410, which is a division of Ser. No. 99,658, Dec. 18, 1970, abandoned. This application Aug. 26, 1974, Ser. No. 500,217**
**Int. Cl.² A01N 9/22**
**U.S. Cl. 71—95** **6 Claims**

1. The method of controlling undesirable vegetation comprising applying to the locus where control is desired an herbicidally effective amount of a compound having the generic formula

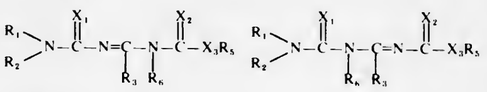


wherein X is oxygen or sulfur, each set of the two R groups form a ring structure having 4 carbon atoms, $R_1$ is hydrogen, halogen, haloalkyl, alkyl or alkoxy.

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**3,933,469**
**METHODS FOR INCREASING CROP YIELDS**
**James D. Long, Elkton, Md., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.**
**Continuation-in-part of Ser. No. 414,876, Nov. 12, 1973, abandoned, which is a continuation-in-part of Ser. No. 348,323, April 5, 1973, abandoned. This application Feb. 28, 1974, Ser. No. 446,800**
**Int. Cl.² A01N 9/12**
**U.S. Cl. 71—100** **12 Claims**

1. Method for increasing the yield of corn crops by applying an allophanimidate to the crop plants during inflorescence initiation or early development and in an amount sufficient to increase the number of inflorescences or the number of florets per inflorescence but insufficient to cause substantial foliar burn, chlorosis, or necrosis, the allophanimidate being a compound of one of the following formulas:



wherein

$X_1$ and $X_2$ are oxygen;

$X_3$ is oxygen or sulfur;

$R_1$ is hydrogen;

$R_2$ is monohalophenyl or dihalophenyl;

$R_3$ is $OR_4$ or $SR_4$;

where

$R_4$ is methyl or ethyl;

$R_5$ is methyl or ethyl; and

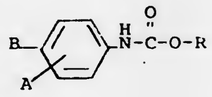
$R_6$ is hydrogen.

### 3,933,470
### ESTER OF (ALKYNYLOXY)-, (ALKENYLOXY)-, AND (CYANOALKOXY) CARBANILIC ACIDS AND THEIR USE AS HERBICIDES

**Barrington Cross, Rocky Hill, and Robert Louis Arotin, Willingboro, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.**

**Division of Ser. No. 267,838, June 30, 1972, Pat. No. 3,852,532. This application May 24, 1974, Ser. No. 473,030**
**Int. Cl.² A01N 9/20**
**U.S. Cl. 71—111** **9 Claims**

1. A method for the control of undesirable plant species comprising applying to said undesirable plants or locus of plants or seeds a herbicidally effective amount of a compound of the formula:



wherein A is hydrogen, chlorine or $-OCH_2C\equiv CH$; B is hydrogen, $-O-CH_2C\equiv CH$ or $-OCH_2CH=CH_2$
R is alkyl ($C_1-C_4$) benzyl, or cyclohexyl; provided that A and B are both not hydrogen.

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### 3,933,471
### COMPOSITIONS FOR CONTROLLING WEEDS

**Pierre Poignant, Nyons; Bernard Thellot, Villefranche, and Jacques Rognon, Ecully, all of France, assignors to PEPRO, Societe pour le Development et la Vente de Specialites, Lyon, France**

**Filed Feb. 1, 1974, Ser. No. 438,647**
**Claims priority, application France, Feb. 2, 1973, 73.04389**
**Int. Cl.² A01N 9/20**
**U.S. Cl. 71—120** **12 Claims**

1. An herbicidal composition for killing weeds growing among crops, consisting essentially of
as active material an amount sufficient to kill said weeds without phytotoxicity to said crops, of a mixture of one part by weight of N-4-isopropylphenyl-N′,N′-dimethylurea (I.P.U.) and 0.5 to 3 parts by weight of 2-4-dinitro-6-tert.-butyl-phenol (dinoterbe) or the alkali metal, ammonia and amine salts thereof,
and an inert herbicidal carrier and a wetting agent.

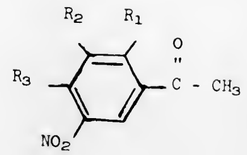
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### 3,933,472
### SUBSTITUTED ALKYLARYL KETONES AND METHODS OF USE AS HERBICIDES

**Stanley J. Buckman, Memphis; Joseph G. E. Fenyes, Germantown; Kenneth J. Flanagan, Memphis; John D. Pera, Memphis, and Miguel L. Pulido, Memphis, all of Tenn., assignors to Buckman Laboratories, Inc., Memphis, Tenn.**

**Division of Ser. No. 271,454, July 13, 1972, Pat. No. 3,869,513, which is a continuation-in-part of Ser. No. 261,751, June 12, 1972, abandoned, which is a continuation-in-part of Ser. No. 230,476, Feb. 29, 1972, abandoned. This application Oct. 15, 1974, Ser. No. 514,351**
**Int. Cl.² A01N 9/20**
**U.S. Cl. 71—121** **4 Claims**

1. The method of controlling the growth of germinating and seedling weed grasses and germinating and seedling broadleaf weeds without damaging the desirable crop plants present in the same area which comprises applying to said area an effective amount of a compound of the following formula:



wherein $R_1$ or $R_2$ is nitro, $R_1$ or $R_3$ is dipropylamino, and one of $R_1$, $R_2$ and $R_3$ is hydrogen.

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### 3,933,473
### METHOD FOR RECOVERING A USABLE ALLOY FROM TITANIUM SCRAP

**James Dickson, Stirling, N.J., assignor to Airco, Inc., Murray Hill, New Providence, N.J.**

**Filed Oct. 19, 1973, Ser. No. 408,237**
**Int. Cl.² C22B 4/06**
**U.S. Cl. 75—10 R** **10 Claims**

1. The method of obtaining a weldable, forgeable, ductile, corrosion resistant product alloy from scrap metal alloy of a major component of titanium having additives including at least in excess of 2 per cent of aluminum, and comprising not in excess of about 2 per cent interstitial impurities including one or more of the elements nitrogen, carbon, hydrogen and oxygen, which comprises the steps of:
cleansing the said scrap metal to remove scale comprising oxides and nitrides and hydrocarbons,
charging said cleansed scrap metal into a furnace in a vacuum-tight housing evacuated to a pressure not exceeding about $5 \times 10^{-4}$ torr, said furnace comprising an open-faced hearth section having an inlet end and a casting station spaced apart from and disposed downstream from said inlet end,
melting the said scrap metal charge in said furnace by electron beam bombardment at the inlet end of said hearth section thereby causing said molten charge to drip down onto said open-faced hearth section to form a stream flowing along said hearth section in the direction of said casting station,
exposing said molten scrap stream flowing along said hearth section to further electron beam bombardment at one or more points spaced apart from said inlet end causing the higher vapor pressure elements thereof including at least a portion of said aluminum to become volatilized and distilled off, and
collecting the remaining portion of said molten scrap stream in said casting station permitting it to flow into and solidify in a mold.

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### 3,933,474
### LEECH ALLOYING

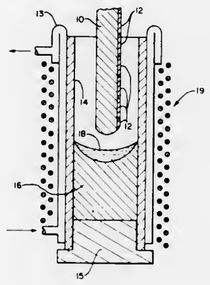
**John L. Ham, Wellesley, and John G. Gorsuch, Brockton, both of Mass., assignors to Norton Company, Worcester, Mass.**

**Filed Mar. 27, 1974, Ser. No. 455,201**
**Int. Cl.² C22B 4/00**
**U.S. Cl. 75—10 R** **15 Claims**

1. Alloy production method for introducing minority alloying ingredients of higher volatility and lower melting point into a majority metallic component comprising,
mixing powders of the alloying ingredients with powders of the majority metal and forming coherent compacts of such mixtures as patches,
melting and resolidifying the majority metal to form an elongated bar of the majority metal as a first melt ingot,
applying said patches as an axial array along the surface of said bar, and
re-melting the patched bar progressively along its length and resolidifying the melt as a final ingot to controllably and continuously introduce the alloying ingredients and



majority metal into the melt with the majority metal content of the patches acting as a wick during melting, and to homogenize the dispersion of alloying ingredients



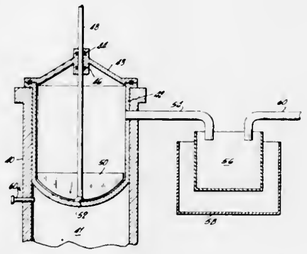
throughout the majority metal in the final ingot and predictably maintain desired proportions of alloy ingredients.

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### 3,933,475
### EXTRACTION OF COPPER FROM COPPER SULFIDES

**Rollan Swanson, Eureka, Nev. 89316**

**Continuation-in-part of Ser. No. 467,099, May 6, 1974. This application Nov. 11, 1974, Ser. No. 522,448**
**Int. Cl.² C22B 15/00**
**U.S. Cl. 75—21** **11 Claims**



1. A process for recovering copper from a sulfidic ore thereof, comprising: mixing and fusing said ore under vacuum in the absence of water, $CO_2$, and oxygen with at least a stoichiometric amount of a non-saturated sulfide of sodium or potassium at a temperature between about 210°C and 360°C thereby forming a melt of copper metal, copper oxides, and a more saturated sulfide of said sodium or potassium and separating said copper from said melt.

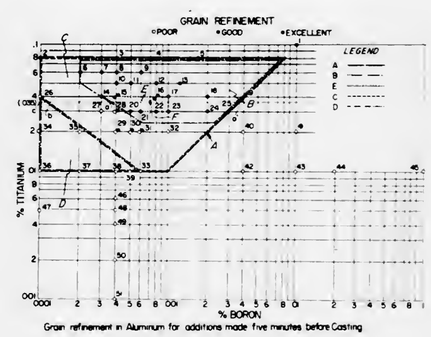
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### 3,933,476
### GRAIN REFINING OF ALUMINUM

**Kuldip S. Chopra, Grand Island; William D. Forgeng, Niagara Falls, and Nicholas J. Pappas, Snyder, all of N.Y., assignors to Union Carbide Corporation, New York, N.Y.**

**Filed Oct. 4, 1974, Ser. No. 512,157**
**Int. Cl.² C22C 21/00**
**U.S. Cl. 75—68 R** **6 Claims**

6. An addition agent for refining aluminum, base metal consisting essentially of compacted blended mixture of titanium, aluminum and $KBF_4$ wherein the titanium and boron contents are in proportions which intersect in region (E) of




Grain refinement in Aluminum for additions made five minutes before Casting

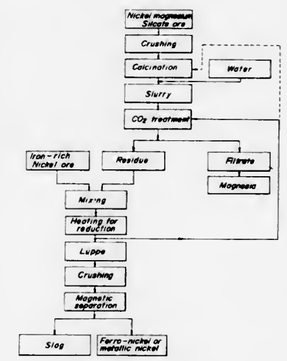
FIG. 1 and the aluminum content is from about one-tenth to 4 times the amount of the titanium content.

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### 3,933,477
### METHOD OF PRODUCING FERRO-NICKEL OR METALLIC NICKEL

**Yohta Sato, Tokyo; Masakata Matsuda; Yukio Ohi, both of Miyazu, and Toyomi Matsumori, Miyazu, all of Japan, assignors to Nippon Yakin Kogyo Company Limited, Tokyo, Japan**

**Continuation-in-part of Ser. No. 40,545, May 26, 1970, Pat. No. 3,765,873. This application July 5, 1973, Ser. No. 376,403**
**Claims priority, application Japan, Feb. 2, 1970, 45-8428; Feb. 9, 1970, 45-10906. The portion of the term of this patent subsequent to Oct. 16, 1990, has been disclaimed.**
**Int. Cl.² C22B 23/06**
**U.S. Cl. 75—82** **8 Claims**




1. A method of refining nickel by reducing iron-rich starting material containing nickel which is substantially free from silica, comprising mixing said starting material with silica which is substantially free from magnesium and carboneous reducing agent in a reaction vessel to form a mixture containing at least about 13% silica, heating said mixture so as to produce a reducing atmosphere in said vessel comprising carbon dioxide and carbon monoxide in a ratio of

$$\frac{CO}{CO + CO_2}$$

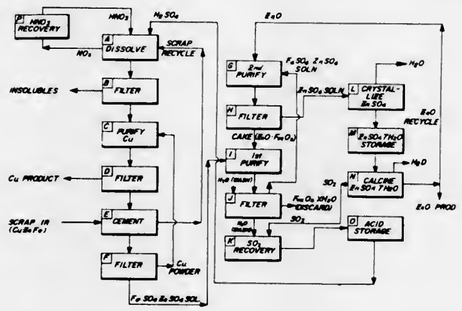
of 1.6% to 90%, firing said mixture at 900° to 1,300° C without melting said mixture thereby causing the iron in said starting material to compound with said silica to form difficulty reducible fayalite and the nickel in said starting material to be selectively reduced to crude nickel, cooling and crushing the cooled fired mixture and separating said crude nickel from the crushed fired mixture to recover said crude nickel.

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**3,933,478**
**RECOVERY OF ZINC AND COPPER FROM BRASS SCRAP**

**Robert N. Moore, Des Plaines, Ill., assignor to Nicosep Associates, Chicago, Ill.**

**Continuation-in-part of Ser. No. 391,949, Aug. 27, 1973, abandoned. This application May 16, 1974, Ser. No. 470,624**
**Int. Cl.² C22B** *15/08, 15/12, 7/00, 19/22*
**U.S. Cl. 75—101 R** **12 Claims**




1. A process for recovering copper values from a copper-bearing feed material which process comprises:

a. leaching said copper out of said feed material by treating with aqueous sulfuric acid, in the presence of nitric acid as a promoter, to produce a solution containing copper ions;

b. cementing copper as a finely divided solid precipitate out of the solution resulting from step (a) by contacting said solution with an excess of iron;

c. separating and recovering said precipitated copper from the aqueous solution resulting in step (b), said solution containing dissolved ferrous sulfate;

d. contacting the solution from step (c) with solid ZnO, said ZnO reacting with said dissolved ferrous sulfate to produce a precipitate of hydrated $Fe_2O_3$ and zinc sulfate in solution, whereby the concentration of ferrous sulfate in solution is reduced;

e. removing the solid materials remaining after the reaction in step (d), leaving a solution containing dissolved zinc sulfate; and

f. removing water from the solution resulting in step (e) to produce a solid product comprising zinc sulfate.

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**3,933,479**
**VANADIUM STABILIZED MARTENSITIC STAINLESS STEEL**

**Joseph D. Defilippi, Allegheny Township, Westmoreland County, and George A. Ratz, Allegheny County, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.**

**Filed Oct. 10, 1974, Ser. No. 513,699**
**Int. Cl.² C22C** *38/46*
**U.S. Cl. 75—128 V** **3 Claims**

1. A martensitic stainless steel having an excellent combination of strength and toughness consisting essentially of 0.01 to 0.15% carbon, 1.00% maximum silicon, 10 to 13% chromium, 2.0 to 5.0% nickel, 0.05 to 0.20% vanadium, and a remainder of iron and normal residual impurities.

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**3,933,480**
**METHOD OF MAKING STAINLESS STEEL HAVING IMPROVED MACHINABILITY**

**Vijayakumar A. Tipnis, Parma, Ohio, assignor to Republic Steel Corporation, Cleveland, Ohio**

**Division of Ser. No. 289,591, Sept. 18, 1972, Pat. No. 3,846,189. This application Aug. 12, 1974, Ser. No. 496,459**
**Int. Cl.² C22C** *33/00*; **C21C** *7/00*
**U.S. Cl. 75—129** **10 Claims**

1. In a method of making stainless steel which comprises producing, in molten state, a stainless steel melt which consists essentially of 0.01 to 1.2% carbon, 10 to 27% chromium, 0 to 22% nickel, 0.3 to 10% manganese, and further elements as specified in the following procedure, balance iron and incidental impurities, and solidifying said molten stainless steel, the procedure for producing said stainless steel to have improved machinability, which consists in incorporating into the molten steel of said melt at the end of its being produced:

1. amounts of sulfur and of an element or elements selected from the class consisting of selenium and tellurium for establishing in the solidified steel a content of 0.15 to 0.7% sulfur and a total of 0.03 to less than 0.15% of said selected element or elements, to produce in said solidified steel a distribution of globular inclusions which are predominantly provided by manganese, sulfur, and said selected element or elements; and

2. deoxidizing-agent-containing material for deoxidizing the molten steel of said melt, the deoxidizing agent or agents of said material being an element or elements selected from the group consisting of silicon and the rare earth elements;

said material being characterized by absence of aluminum in that the maximum content thereof is an amount that would add 0.003% aluminum to the melt and said melt being maintained substantially free of aluminum oxide, whereby the solidified steel is produced to have less than 0.0025% aluminum oxide.

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**3,933,481**
**HIGH-TEMPERATURE EUTECTOID ALLOY AND PROCESS OF MAKING**

**James D. Livingston, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.**

**Filed Mar. 21, 1974, Ser. No. 453,283**
**Int. Cl.² C22C** *19/02*
**U.S. Cl. 75—135** **4 Claims**



1. A process for producing an aligned solid composite of a Co-Si eutectoid type alloy having a minimum tensile strength at 900°C of 50,000 psi in an inert atmosphere, said alloy having a transformation temperature at which it transforms



from a single phase solid to a solid of at least two phases, which comprises forming a melt of a $Co_{3-x}M_xSi_{1-y}N_y$ alloy where Co and Si can vary from the $Co_3Si$ eutectoid composition by about 1 atomic %, where M represents elements substituting for Co and is a member of the group consisting of Ni, Cr, Fe, Mn, Cu, Ta, Mo, W, Ti and alloys thereof and where $x$ ranges up to about 0.6, where N represents elements substituting for Si and is a member of the group consisting of Ge, Sn, Al, Ga, In and alloys thereof and where $y$ ranges up to about 0.2, unidirectionally cooling said melt through a thermal gradient ranging from 50°C/cm to 3,000°C/cm at a velocity ranging from 0.05 cm/hr to 20 cm/hr which produces a single phase solid consisting essentially of elongated columnar macro-grains aligned substantially parallel to each other before reaching said transformation temperature, said macro-grains having an average diameter larger than 10 microns, and continuing unidirectionally cooling said macro-grain solid through the same thermal gradient at the same velocity through said transformation temperature directionally transforming said single phase solid into an aligned solid composite consisting essentially of at least two phases, the ratio of said thermal gradient to said velocity being greater than 150°C/cm²/hr, said phases being in the form of substantially uniform alternating lamellae substantially parallel to each other and to the thermal gradient and having an average interlamellar spacing ranging from about 0.2 micron to 3 microns and being substantially uniformly distributed throughout said composite, said composite being substantially or completely free of dendrites.

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**3,933,482**
**WEAR-RESISTANT COMPOSITE MATERIAL**

**Daniil Andreevich Dudko, ulitsa Anri Barbjusa, 22/27, kv. 143; Grigory Valentinovich Samsonov, ulitsa Vladimirskaya, 51-53, kv. 43; Boleslav Ivanovich Maximovich, ulitsa Anri Barbjusa, 22/26, kv. 99; Vitaly Ivanovich Zelenin, ulitsa Ezhena Potie, 9, kv. 7; Alexandr Sergeevich Klimanov, Bulvar Lesi Ukrainki, 9, kv. 50; Vladimir Nikolaevich Potseluiko, Darnitsky bulvar, 4a, kv. 144; Gennady Vasilievich Trunov, ulitsa Dobrokhotova, 24, kv. 63, and Vasily Mikhailovich Sleptsov, ulitsa Vyborgskaya, 80/17, kv. 55, all of Kiev, U.S.S.R.**

**Continuation of Ser. No. 424,075, Dec. 12, 1973, abandoned. This application Dec. 23, 1974, Ser. No. 535,155**
**Claims priority, application U.S.S.R., Dec. 12, 1972, 1855761**
**Int. Cl.² C22C** *9/05, 9/06, 9/12*
**U.S. Cl. 75—159** **4 Claims**

1. A wear-resistant composite material consisting of 40–80 volume % of a refractory chemical compound in particulate form with a size of 0.3–2 mm and consisting essentially of, by weight, 7–30% chromium, 40–60% titanium and 30–40% boron; and 20–60 volume % of an alloy matrix consisting essentially of, by weight, 10–35% nickel, 10–35% manganese and the balance being copper.

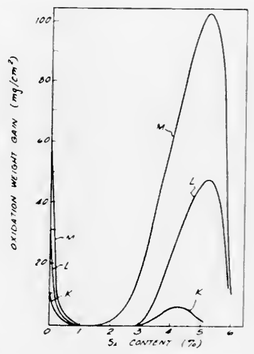
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**3,933,483**
**SILICON-CONTAINING NICKEL-ALUMINUM-MOLYBDENUM HEAT RESISTING ALLOY**

**Noboru Komatsu; Takatoshi Suzuki; Nobuyuki Yamamoto, and Yukikazu Tsuzuki, all of Nagoya, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Japan**

**Continuation-in-part of Ser. No. 376,954, July 6, 1973, abandoned. This application Jan. 15, 1975, Ser. No. 541,251**
**Claims priority, application Japan, July 14, 1972, 47-70960**
**Int. Cl.² C22C** *19/03*
**U.S. Cl. 75—170** **11 Claims**

1. A heat resisting alloy consisting essentially of a basic constituent; and an additive of silicon in the range of 0.5–2.5% by weight of the total alloy; said basic constituent comprising nickel, aluminum and molybdenum in the following percentage by weight of the basic constituent: nickel 65–85%, aluminum 5–15% and molybdenum 10–20%.

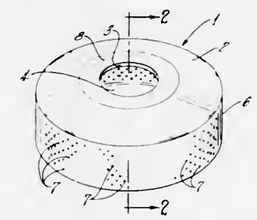



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**3,933,484**
**COBALT-BASE ALLOY**

**Darryl J. Costin, Columbus, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio**

**Filed May 31, 1974, Ser. No. 475,220**
**Int. Cl. C22c** *19/00*
**U.S. Cl. 75—171** **10 Claims**




1. A composition of matter consisting essentially of the following elements in amounts expressed in weight percent:

Chromium — from about 25 to about 36
Nickel — from about 3.5 to about 13
Wolfram — from about 3 to about 10.5
Tantalum — from about 1.4 to about 6.5
Zirconium — from about 0.005 to about 0.02
Silicon — from about 0.05 to about 2
Carbon — from about 0.35 to about 0.95
Boron — from about 0.001 to about 0.1
Iron — from about 0.01 to about 12
Cobalt — Balance

the weight ratio of wolfram to tantalum being within the range of from about 1 to about 5.5 and the weight ratio of zirconium to boron being within the range of from about 0.05 to about 35.

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**3,933,485**
**ELECTRICAL CONTACT MATERIAL**

**Akira Shibata, Yokohama, Japan, assignor to Chugai Denki Kogyo Kabushiki-Kaisha, Tokyo, Japan**

**Filed May 29, 1974, Ser. No. 474,173**
**Claims priority, application Japan, July 20, 1973, 48-80705; Nov. 26, 1973, 48-131740**
**Int. Cl.² B32B** *15/00*
**U.S. Cl. 75—173 A** **4 Claims**

1. Electrical contact materials comprising an alloy having metal oxides precipitated therein as the result of internal

oxidation and being composed of about 5 to about 10% by weight of tin, and 1.0 to 6% by weight of indium, the balance being silver.

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**3,933,486**

## SILVER-METAL OXIDE COMPOSITE AND METHOD OF MANUFACTURING THE SAME

**Akira Shibata, Yokohama, Japan, assignor to Chugai Denki Kogyo Kabushiki-Kaisha, Tokyo, Japan**

**Filed May 30, 1974, Ser. No. 474,704**

**Claims priority, application Japan, Feb. 12, 1974, 49-16226; Feb. 12, 1974, 49-16227**

**Int. Cl.² B32B** *15/00*

**U.S. Cl. 75—173 A** **3 Claims**

**1.** An electrical contact material obtained by internally oxidizing an alloy of silver and solute metal elements, said alloy comprising a silver matrix, 5 to 20 weight percent of one or more of solute metal elements selected from the group consisting of tin, zinc, and antimony, and as an essential material, 0.01 to 1.0 weight percent of bismuth precipitated in the alloy as oxides.

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**3,933,487**

## IMAGING COMPOSITION FOR PHOTOELECTROPHORETIC IMAGING SYSTEM

**Robert L. Cowley, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.**

**Filed Jan. 6, 1971, Ser. No. 104,337**

**Int. Cl.² G03G** *17/04*

**U.S. Cl. 96—1 PE** **11 Claims**

**1.** The method of photoelectrophoretic imaging comprising:

a. providing an imaging donor sheet comprising a substrate having adhered to a surface thereof a layer of an imaging composition, said imaging composition comprising a plurality of finely divided colored particles and from about 0.5% to about 10% by weight of thixotropic additive particles in a carrier liquid, each of said colored particles comprising an electrically photosensitive pigment, said imaging composition having a viscosity above about 10,000 centipoises when at rest;

b. providing first and second electrodes at least one of which is at least partially transparent;

c. attaching said imaging donor sheet to said first electrode with the free surface of said donor sheet substrate adjacent the outer surface of said first electrode;

d. contacting said imaging composition layer with the surface of said second electrode so as to apply a shearing force to said composition thereby reducing the viscosity of said composition to from about 600 to about 1000 centiposes; and

e. substantially simultaneously exposing said imaging composition to an image through said at least partially transparent electrode with a source of activating radiation while subjecting said composition to an applied electric field whereby an image is formed.

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**3,933,488**

## INFORMATION DISPLAY METHOD

**Yasuhiro Noguchi; Hisatake Ono, and Tsutomu Sugisaki, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara, Japan**

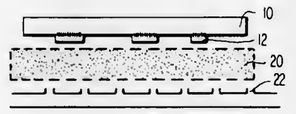
**Filed May 16, 1973, Ser. No. 361,004**

**Claims priority, application Japan, May 17, 1972, 47-48920**

**Int. Cl.² G03G** *13/06*

**U.S. Cl. 96—1 R** **24 Claims**

**1.** An information display method wherein a component chemiluminescent system is caused to chemiluminesce on a support which comprises forming an image on a support of the components of the chemiluminescent system lacking at least one essential component to cause chemiluminescence by incorporating said components lacking said one essential component in a heat-sensitive layer on a recording material capable of transmitting infrared rays, bringing said layer in contact with an original having varying absorption for infrared rays, subjecting said layer to transmitted exposure or reflected exposure of light including infra-red rays in imagewise fashion from said original and removing exposed or non-exposed




portions of said layer to form an image, and contacting said image with the lacking component or components of the chemiluminesent system to cause said image to chemiluminesce selectively to display information on the support based on a difference in luminescence between the chemiluminescent image and the non-image portion.

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**3,933,489**

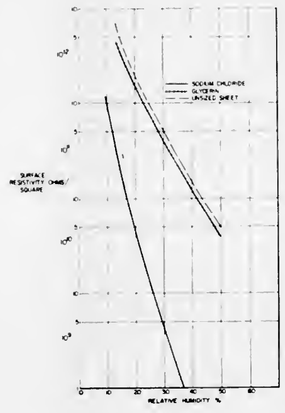
## ELECTROSTATIC REPRODUCTION PROCESS EMPLOYING NOVEL TRANSFER PAPER

**Wally Z. Walters, West Springfield, Mass., assignor to Preco Corporation, West Springfield, Mass.**

**Division of Ser. No. 237,797, March 24, 1972, Pat. No. 3,873,354. This application Feb. 21, 1974, Ser. No. 444,296**

**Int. Cl.² G03G** *13/16, 13/22*

**U.S. Cl. 96—1.4** **9 Claims**




**1.** In the method of producing a visual image on a copy member comprising the steps of forming a latent electrostatic image on an electrostatically chargeable, photoconductive member by producing a patterned distribution of electrical charges thereon; applying to said photoconductive member a finely divided, pigmented toner which will adhere to those areas of the member where a charge is present; transferring said toner from said photoconductive member to an image receiving surface of an uncharged copy member made of paper; and heating the copy member to fuse the toner thereto in a high temperature environment in which the relative humidity ranges down to **10** percent or lower, the improvement wherein the toner is transferred to a copy member which is resistant to the build-up of static charges on its image receiving surface in the low humidity, high temperature environment in which the copy member is located while the toner is fused thereto and which comprises means for making said image receiving surface counteractive to the retention of static charges which are transferred with said toner particles



to said image receiving surface and a web of cellulosic material, said means being an electrical conductivity imparting additive distributed on or in the web in an amount sufficient to reduce the surface resistivity of the image receiving surface to from not more than $3 \times 10^{11}$ ohms/square at a relative humidity of 25 percent up to not more than $60 \times 10^{11}$ ohms/square at a relative humidity of 10 percent to thereby facilitate the dissipation of static charges therefrom in said low humidity, high temperature environment and thereby keep said charges from remaining on said image receiving surface and creating a tendency for the copy member to stick to another charged copy member or to parts of the copy making apparatus.

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**3,933,490**

## IMPROVEMENTS IN TRANSFER ELECTROPHOTOGRAPHY

**Hiroshi Tsuchiya, Urawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan**

**Continuation of Ser. No. 301,220, Oct. 26, 1972, abandoned. This application Aug. 12, 1974, Ser. No. 496,837**

**Claims priority, application Japan, Nov. 4, 1971, 46-87762**

**Int. Cl.² G03G** *13/14, 13/10*

**U.S. Cl. 96—1.4** **19 Claims**

**1.** For use in transfer electrophotography, a method of optimizing the efficiency of transfer, to a transfer material, of developed images obtained by developing electrostatic images formed on the photosensitive member for electrophotography by a liquid developer, which comprises the steps of controlling the depth of the liquid developer on the surface to a value in the range of 5–30$\mu$ prior to transfer, and then transferring the developed images to the transfer material having an oil absorption coefficient larger than 50 seconds and a smoothness determined by Beck tester in the range of 30–150 seconds in such a manner that the 5–30$\mu$ controlled thickness of the developer on the photosensitive member is reduced to a value in the range of 2–15$\mu$.

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**3,933,491**

## IMAGING SYSTEM

**William L. Goffe, Webster, and Joseph Mammino, Penfield, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.**

**Continuation-in-part of Ser. No. 837,592, June 30, 1969, abandoned, which is a continuation-in-part of Ser. No. 553,837, May 31, 1966, abandoned, and a continuation-in-part of Ser. No. 837,591, June 30, 1969, abandoned. This application Sept. 20, 1971, Ser. No. 181,990**

**Int. Cl.² G03G** *5/04*

**U.S. Cl. 96—1.5** **1 Claim**

**1.** An imaging member comprising a substrate and a fracturable layer comprising migration marking material wherein said fracturable layer is contiguous the surface of and at least partially embedded in and contacting a photoconductive insulating softenable layer comprising homogeneous photoconductive softenable material, said photoconductive insulating softenable layer material substantially devoid of fracturable layer material and said fracturable layer is overcoated with another layer of softenable material.

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**3,933,492**

## NOVEL PHOTOCONDUCTIVE SUBSTANCES AND THEIR APPLICATION

**Shoji Maruyama, Sagamibara, and Takamichi Enomoto, Sendai, both of Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan**

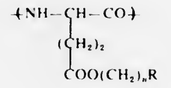
**Continuation-in-part of Ser. No. 335,744, Feb. 26, 1973, abandoned. This application July 5, 1973, Ser. No. 376,747**

**Claims priority, application Japan, Feb. 23, 1972, 47-19260; Germany, Feb. 20, 1973, 2308332; United Kingdom, Feb. 23, 1973, 8916/73; Canada, Feb. 22, 1973, 164355**

**Int. Cl.² G03G** *5/04*

**U.S. Cl. 96—1.5** **10 Claims**

**1.** An electrophotographic copying material comprising a conductive support and a photoconductive layer containing a photoconductor which is a derivative of polyglutamic acid having a molecular weight of from 1,000 to 100,000 and the formula:



wherein

R represents polynuclear aromatic or heterocyclic nitrogen groups each containing up to about sixteen carbon atoms, and

*n* is the integer 1 or 2.

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**3,933,493**

## AMIDRAZONES AS DYE COMPONENTS AND DEVELOPER SCAVENGERS IN DIFFUSION TRANSFER MATERIALS AND PROCESSES

**Yasushi Ohyama, and Hideo Sumitani, both of Kyoto, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan**

**Filed July 3, 1972, Ser. No. 268,264**

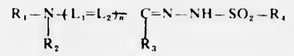
**Claims priority, application Japan, July 2, 1971, 46-48756**

**Int. Cl.² G03C** *7/00, 5/54, 1/40*

**U.S. Cl. 96—29 D** **9 Claims**

**1.** A quick diffusion transfer process for forming a color positive image not requiring fixing thereof comprising:

a. imagewise exposing a photosensitive material which comprises at least two light-sensitive silver halide emulsion layers of different optical sensitivity separated by an intermediate layer, on a support, each of said layers containing an amidrazone compound represented by the formula:



wherein $L_1$ and $L_2$ each represents —CH= or —N=; *n* is 0 or 1; $R_1$, $R_2$, $R_3$ and $R_4$ each represents a hydrogen atom, an alkyl group, an aryl group, an aralkyl group, an alkylaryl group or said groups containing an O, S or N atom or said groups substituted by a halogen atom, a carboxylic acid residue or a sulfonic acid residue; wherein said $R_1$ may form a heterocyclic ring with said $R_2$; wherein said $R_2$ may form a ring with $R_3$ together with said —L= $L_2$—; wherein the amidrazone compounds in said silver halide emulsion layers have a ballasting group of at least 10 carbon atoms substituted in said $R_4$; and wherein the amidrazone compound present in said intermediate layer have a ballasting group of at least 10 carbon atoms substituted in said $R_1$, $R_2$ or $R_3$; each of the amidrazone compounds in each of said layers thereby having a diffusion-resistant property;

b. subjecting the exposed photosensitive material to a black and white development;

c. intimately contacting that surface of the photosensitive material away from the support with an image-receiving layer and, while contacted, subjecting the same to an

oxidation treatment in a processing solution containing a ferricyanide, said image-receiving layer containing, dispersed in a binder therefor, a diffusion-resistant color coupler capable of oxidative coupling with the diffusable intermediate oxidation product of said amidrazone compounds formed by the oxidation treatment in said silver halide emulsion layers of said photosensitive material, whereby, said diffusable intermediate oxidation products diffusion-transfer from said silver halide emulsion layers into said image-receiving layer corresponding to said imagewise exposure and couple with said color coupler to form a color image in said image-receiving layer corresponding to said imagewise exposure; and

d. removing said photosensitive material from contact with said image-receiving layer.

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**3,933,494**

## METHOD FOR OBTAINING A COLOR CONTRAST PHOTOGRAPHIC IMAGE BY COLOR DEVELOPMENT AND SILVER SALT DIFFUSION TRANSFER PROCESSING OF ONE PHOTOGRAPHIC ELEMENT

**Vinicio Busatto, Savona, and Luigi Franchi, Ferrania, Savona, both of Italy, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.**

**Filed Nov. 8, 1973, Ser. No. 413,966**
**Claims priority, application Italy, Nov. 15, 1972, 54051/72**
**Int. Cl.² G03C** *5/54, 7/00, 1/48, 1/40*
**U.S. Cl. 96—29 R** **13 Claims**

**1.** A method for the formation of a color contrast photographic image consisting of processing an exposed photographic material including:

a. a base;

b. at least one layer of a silver halide photographic emulsion dispersed in a hydrophilic colloidal binder, reactively associated with at least one color coupler capable of yielding a substantially blue dye upon development with a p-phenylene diamine developer;

c. at least one hydrophilic colloidal binder receptive layer reactively associated with said emulsion layer; containing dispersed silver condensation nuclei for the formation of substantially yellow colored colloidal silver by development with an aqueous alkaline solution comprising:

d. a p-phenylene diamine developer, and

e. a carrying agent for silver halide said condensation nuclei and said coupler being able to give rise to two different colors to form a color contrast image, yellow from the condensation nuclei and blue from the coupler, with (b) and (c) on the same side of said base.

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**3,933,495**

## PRODUCING PLANOGRAPHIC PRINTING PLATE REQUIRING NO DAMPENING WATER

**Asaji Kondo; Shizuo Miyano, and Kenichiro Yazawa, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan**

**Filed May 14, 1973, Ser. No. 359,959**
**Claims priority, application Japan, May 12, 1972, 47-47320**
**Int. Cl.² G03F** *7/02*
**U.S. Cl. 96—33** **2 Claims**

**1.** A process for producing a planographic printing plate, which does not require dampening water for printing, which comprises image-wise exposing through a positive film a presensitized plate comprising a support, a layer formed on said support of a photosensitive substance prepared by the reaction at a pH of not more than 7.5 of the condensation product of p-diazo-phenylamine and formaldehyde with 2-hydroxy-4-methoxybenzopheneone-5-sulfonic acid and a layer formed on said photosensitive layer of a one package silicone rubber curable at room temperature, heating said plate before or after exposure at a temperature not less than 120°C and treating said exposed presensitized plate with a treating solution of γ-butyrolactone or methyl cellosolve capable of removing only the non-exposed portion of said exposed presensitized plate.

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**3,933,496**

## DIRECT-POSITIVE PHOTOGRAPHIC MATERIAL AND METHOD FOR ITS PRODUCTION

**Konstantin Nikolaev Kolev, and Jordan Petrov Malinowski, both of Sofia, Bulgaria, assignors to Zlafop pri Ban, Bulgaria**

**Filed Nov. 15, 1973, Ser. No. 416,009**
**Claims priority, application Bulgaria, Nov. 15, 1972, 21873**
**Int. Cl.² G03C** *5/24*
**U.S. Cl. 96—48 R** **6 Claims**

**1.** A photographic material capable of yielding on image-wise exposure to radiation a direct positive image, which material comprises: a non-metallic carrier base; and on the carrier base, a layer of metal salt selected from the group consisting of halides of divalent tin, divalent lead, trivalent titanium and stannous sulfide and a layer of at least one photosensitive compound selected from the group consisting of the halides of silver, cadmium, lead, bismuth, thallium, zinc, copper and mercury and chalcogenides or oxides of arsenic, lead, cadmium, and antimony, said photosensitive compound being capable when activated upon exposure to radiation of reacting chemically with said metal salt layer in a manner such that in any region exposed to radiation the metal salt layer loses its catalytic activity to a metallization baths, and in any region not exposed to radiation the said metal salt layer remains intact, thereby forming a positive latent image which is visualized on intensification by chemical metallization.

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**3,933,497**

## PHOTOSENSITIVE AZIDO PROCESSES

**Balwant Singh, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.**

**Division of Ser. No. 313,378, Dec. 8, 1972, Pat. No. 3,844,793, which is a continuation-in-part of Ser. No. 82,129, Oct. 19, 1970, abandoned, which is a continuation-in-part of Ser. No. 29,527, March 17, 1970, abandoned. This application June 27, 1974, Ser. No. 483,483**
**Int. Cl.² G03C** *1/52, 1/72, 5/18*
**U.S. Cl. 96—49** **9 Claims**

**1.** A dry imaging process comprising the consecutive steps of:

a. imaging a light sensitive material comprising a suitable photographic substrate having a coating deposited thereon, said coating consisting essentially of a permeable film-forming plastic having a photosensitive, volatile, peri-substituted naphthalene azido compound dispersed therein wherein the azido compound has one of the following substituents oriented peri to the azido group: amino, hydroxy azido, trifluoroacetamido, or



wherein R is lower alkyl having from $C_1$–$C_6$ or phenyl by irradiating with patterned activating radiation to produce a visible image; and

heating the material to evaporate the unreacted naphthalene azido compound.



**3,933,498**

## FOGGED, DIRECT POSITIVE SILVER HALIDE EMULSIONS CONTAINING A BLEACH INHIBITING COMPOUND AND A DMIN MAINTAINER COMPOUND

**Leewellyn C. Fischer, Fairport, and Heman Dowd Hunt, Webster, both of N.Y., assignors to E. I. Du Pont de Nemours and company, Wilmington, Del.**

**Filed Sept. 28, 1973, Ser. No. 403,263**
**Int. Cl.² G03C** *5/24, 1/36, 1/34, 1/28*
**U.S. Cl. 96—64** **4 Claims**

**1.** In a Herschel reversal type direct positive silver halide emulsion having prefogged silver halide grains containing a desensitizing dye, the improvement comprising a combination of a bleach inhibiting compound which retards bleaching of fogging nuclei by short wavelength radiation and a different Dmin maintainer compound which inhibits residual latent image formation said bleach inhibiting compound being selected from the group consisting of 5-nitrobenzotriazole, 5-chlorobenzotriazole, 6-amino-2-(methylthio)-benzothiazole, 6-methyl-2-(p-amino-phenyl)-benzothiazole, 2-amino-6-methylbenzothiazole, 2-amino-6-methoxybenzothiazole, 2-amino-5,6-dimethylbenzothiazole, 6-amino-2-methyl-7-nitrobenzothiazole, 6-amino-4-mercaptobenzothiazole, 2-amino-5-nitrothiazole, 2-aminothiazole, 2-amino-4-methylthiazole, 2-amino-4,5-dimethylthiazole, 2-amino-5-(p-nitrophenyl-sulfonyl)-thiazole, 2-acetaminothiazole, 2-amino-4-phenyl-5-ethylthiazole, 2-amino-4-(chloromethyl) thiazole-HCl, 2-amino-5-nitrothiazole, 2,4-dihydroxythiazole-5-acetic acid, 2-amino-5-bromothiazole, 2-amino-5-ethyl-4-phenyloxazole, 4-amino-6-chloro-5-nitropyridine, 5-aminoindiazole, 4-benzoylimino-3-t-butyl-1,3-thiazilidine-2-thione, 4-benzoylimino-3-phenyl-1,3-thiazilidine-2-thione, and said Dmin maintainer compound being selected from the group consisting of 2-amino-5-nitropyridine, 2-amino-4-methyl-2-nitropyridine, 2-amino-4-methyl-3-nitropyridine, 2-amino-3-nitropyridine, pyromellitimide, 5-nitroindazole, 6-nitroindazole, 3-chloro-5-nitroindazole, 3-chloro-6-nitroindazole, 5-nitrobenzotriazole, 6-chlorobenzotriazole, benzotriazole, 3-amino-1H-1,2,3,-triazole, 2-amino-5 -nitrothiazole, 2-methyl-6-nitrobenzothiazole, 2-mercapto-6-nitrobenzothiazole, 2-acetamido-5-(p-nitrophenylmercapto)-thiazole, 6-amino-2-methyl-7-nitrobenzothiazole, 2-amino-5-chlorobenzoxazole, 2-nitrothiophene, 5-nitrobenzimidazole, 5-nitro-2-benzimidazole-thiol, 8-nitro-quinoline, m-nitrobenzamidine, 5-nitroanthraquinone sulfonic acid and p-nitrobenzenediazonium fluoborate.

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**3,933,499**

## PRINTING PLATE COMPRISING DIAZO-BOROFLUORIDE AND DIAZO RESIN LAYERS

**Richard T. Traskos, Brooklyn, Conn., assignor to Lith-Kem Corporation, Lynbrook, N.Y.**

**Continuation-in-part of Ser. No. 288,043, Sept. 11, 1972, Pat. No. 3,837,858. This application July 24, 1974, Ser. No. 491,393. The portion of the term of this patent subsequent to Sept. 24, 1991, has been disclaimed.**
**Int. Cl.² G03F** *7/02*
**U.S. Cl. 96—68** **10 Claims**

**1.** A planographic printing plate having:

a hydrophilic substrate;

a first coating containing a water soluble light reactive diazo resin on said substrate; and

a second coating containing a photosensitive solvent-soluble diazo-borofluoride salt and an organophilic hydrophobic water insoluble resin over and in intimate contact with said diazo resin, said organophilic hydrophobic water insoluble resin being less than 50% by weight of said second coating;

said plate being developable by water or aqueous solution whereby areas of the diazo resin unexposed to light and areas of the diazo-borofluoride salt thereover are washed away to define hydrophilic oleophobic non-printing areas, and areas of the diazo resin exposed to light and the diazo-borofluoride salt thereover define hydrophobic oleophilic printing areas.

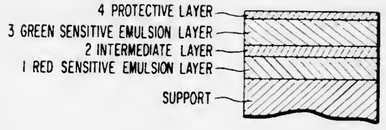
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**3,933,500**

## COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

**Keisuke Shiba; Nobuo Furutachi; Harumi Katsuyama; Takeshi Hirose; Toshiaki Aono, and Shoji Ishiguro, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan**

**Filed Mar. 25, 1974, Ser. No. 454,525**
**Claims priority, application Japan, Mar. 23, 1973, 48-33238**
**Int. Cl.² G03C** *1/76, 3/00, 7/00*
**U.S. Cl. 96—74** **11 Claims**




**1.** A color photographic silver halide light-sensitive material which comprises a support having thereon at least two light-sensitive layers, at least one of said layers containing a compound capable of coupling with an oxidation product of a color developing agent and in which a splitable hetero aromatic ring containing a triazole or diazole ring is connected to the carbon atom in the coupling position, through the nitrogen atom in the 1-position of said triazole or diazole ring.

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**3,933,501**

## PHOTOGRAPHIC ELEMENTS CONTAINING COLOR-FORMING COUPLERS HAVING AND INHIBITING EFFECT UPON THE REACTIVITY OF COMPETING COUPLERS

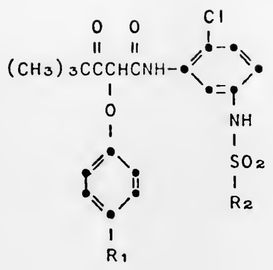
**Robert G. Cameron, North Chili, and Dan Neuberger, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.**

**Continuation-in-part of Ser. No. 419,573, Nov. 28, 1973, abandoned. This application June 10, 1974, Ser. No. 478,123**
**Int. Cl.² G03C** *1/76*
**U.S. Cl. 96—74** **29 Claims**

**1.** In a photographic element comprising a support coated with at least two silver halide emulsion layers; each of said emulsion layers being preferentially sensitive to different regions of the visible spectrum and each of said emulsion layers being associated with at least one coupler compound which, upon reaction with oxidized primary aromatic amine color developing agent, forms an image dye; a first emulsion layer sensitive to the relatively shorter wavelength region of the visible spectrum overlying the second emulsion layer in said element; said second emulsion containing a cyan dye-forming coupler compound or a magenta dye-forming coupler compound;

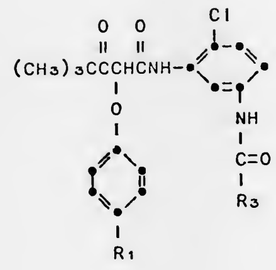
the improvement which comprises, in said element, the presence in said first emulsion layer of a yellow dye-forming coupler compound having a Competitive Reaction Ratio of at most about 1.20; said yellow dye-forming coupler compound being selected from those having one of the structures:

(A)



or

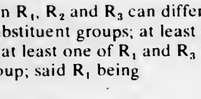
(B)



wherein $R_1$, $R_2$ and $R_3$ can differ and are non-interfering coupler substituent groups; at least one of $R_1$ and $R_2$ in structure A and at least one of $R_1$ and $R_3$ in structure B being a ballasting group; said $R_1$ being

-nitro,





alkoxy

-NHSO2-alkyl,







-SO2-alkyl, or



-CN, and

said $R_2$ being
$-C_nH_{2n+1}$, where n is 1 to 30;
-alkaryl;
-aralkyl;
-phenyl; or
alkoxyphenyl,
wherein the groups designated as alkyl and alkoxy contain 1–30 carbon atoms and the alkaryl, aralkyl and alkoxyphenyl groups contain 7–35 carbon atoms.

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**3,933,502**
**1,4-BIS(2-ISOPROPYL-6-METHYLANILINO)ANTHRAQUINONE AND A POLYETHYLENE TEREPHTHALATE FILM CONTAINING SAME AS AN X-RAY PHOTOGRAPHIC FILM SUPPORT**

**Atsuaki Arai; Noburo Hibino, and Kunihira Seto, Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan**

**Filed Aug. 3, 1973, Ser. No. 385,264**
**Claims priority, application Japan, Aug. 5, 1972, 47-78473**
**Int. Cl.² G03C** *1/84*
**U.S. Cl. 96—84 R** **4 Claims**

**1.** An X-ray photographic material comprising a support having thereon an X-ray sensitive silver halide photographic emulsion, said support comprising a polyethylene terephthalate film containing the compound 1,4-bis(2′-isopropyl-6′-methylanilino) anthraquinone.

**3.** A photographic silver halide light-sensitive material comprising as a support a polyethylene terephthalate film containing 1,4-bis(2′-isopropyl-6′-methylanilino) anthraquinone.

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**3,933,503**
**CARRIER FOR TRANSFERRING IMAGES**

**Herman Schönberg, Klostergatan 5, 582 23 Linkoping, Sweden**

**Filed May 6, 1974, Ser. No. 467,508**
**Int. Cl.² G03C** *1/86, 1/78, 1/96*
**U.S. Cl. 96—85** **4 Claims**

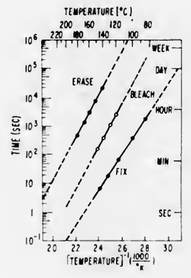
**1.** A carrier for transferring images to an image receiver comprising a paper treated with a release agent selected from the group consisting of silicones, polyethylene, and polytetrafluoroethylene, and a transparent binder suspension layer disposed thereon, said binder suspension consisting essentially of a solid suspension in a solvent, said solid comprising a nitrile butadiene rubber obtained by copolymerizing butadiene with acrylonitrile.



**3,933,504**
**PHOTOCHROMIC LITHIUM NIOBATE AND METHOD FOR PREPARING SAME**

**William Phillips, Princeton, and David Lloyd Staebler, Trenton, both of N.J., assignors to RCA Corporation, New York, N.Y.**

**Division of Ser. No. 345,323, March 27, 1973, Pat. No. 3,799,642.**
**This application Nov. 19, 1973, Ser. No. 417,385**
**Int. Cl.² G03C** *1/00*
**U.S. Cl. 96—88** **4 Claims**




**1.** Photochromic lithium niobate containing at least about 0.001 mol percent of iron as a first dopant and at least about 0.001 mol percent of a second dopant selected from the group consisting of manganese and copper.

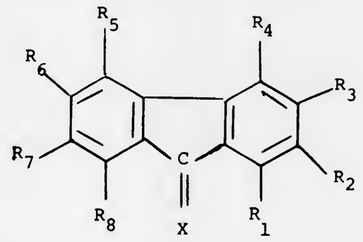
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**3,933,505**
**FOGGED, DIRECT POSITIVE SILVER HALIDE EMULSION CONTAINING A NITRO-SUBSTITUTED FLUORENE DESENSITIZER**

**Keisuke Shiba; Masanao Hinato, and Reiichi Ohi, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan**

**Filed Dec. 18, 1973, Ser. No. 425,747**
**Claims priority, application Japan, Dec. 18, 1972, 47-126862**
**Int. Cl.² G03C** *1/36*
**U.S. Cl. 96—101** **22 Claims**

**1.** A fogged silver halide photographic emulsion for direct positives, containing $1 \times 10^{-5}$ to $5 \times 10^{-2}$ moles per mole of silver halide of a fluorene compound having at least one nitro group as a substituent, which said nitro-substituted fluorene compound has the following general formula (1),



in which X is an oxygen atom or



group, and $R_1$ to $R_8$ each are a hydrogen atom, an alkyl group, a hydroxyl group, a halogen atom or a nitro group, with at least one of $R_1$ to $R_8$ being a nitro group.

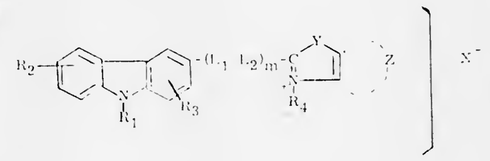
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**3,933,506**
**SPECTRAL SENSITIZATION OF DIRECT-POSITIVE SILVER HALIDE EMULSIONS**

**Henri Depoorter, Mortsel, and Jozef Remy Schellekens, Wilsele, both of Belgium, assignors to AGFA-GEVAERT N.V., Mortsel, Belgium**

**Filed Apr. 29, 1974, Ser. No. 465,369**
**Claims priority, application United Kingdom, May 18, 1973, 23863/73**
**Int. Cl.² G03C** *1/36*
**U.S. Cl. 96—101** **4 Claims**

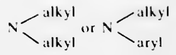
**1.** A direct-positive photographic element comprising a support and a light-sensitive silver halide emulsion layer containing fogged silver halide grains wherein the said emulsion layer contains a dye of the formula:



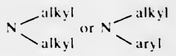
wherein:
$R_1$ is hydrogen, an alkyl group, an aryl group or an acyl group,
each of $R_2$ and $R_3$ represents hydrogen, carboxyl, sulpho, nitro, cyano, halogen, an alkyl group, or an aryl group.
each of $L_1$ and $L_2$ represents a methine group,
*m* is 1 or 2,
Y is O, S, Se or



$R_4$ represents an aliphatic group, or an aromatic group,
$X^-$ represents an anion but does not exist when the molecule itself contains an anionic group, and
Z represents the atoms necessary to close a fused-on benzo- or naphtho-ring having a $COR_5$ or $SO_2R_6$ group wherein $R_5$ is alkyl, aryl, hydroxyl, O-alkyl, $NH_2$, NH-alkyl, NH-aryl,



and $R_8$ is alkyl, aryl, $NH_2$, NH-alkyl, NH-aryl,



and does not include a desensitizing group.

**2.** A direct-positive photographic element according to claim **1**, wherein the emulsion layer also comprises a nitrobenzylidene or nitrostyryl dye.

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**3,933,507**

## PHOTOGRAPHIC LIGHT-SENSITIVE AND HEAT DEVELOPABLE MATERIAL

**Anita von Konig, Leverkusen; Helmut Kampfer, Cologne, both of Germany; Eric Maria Brinckmann, Mortsel, and Frans Clement Heugebaert, Kontich, both of Belgium, assignors to AGFA-Gevaert, A.G., Leverkusen-Bayerwerk, Germany**

**Filed Aug. 10, 1972, Ser. No. 279,523**

**Claims priority, application Germany, Aug. 12, 1971, 2140462**

**Int. Cl.² G03C** *1/02*

**U.S. Cl. 96—114.1** **14 Claims**

**1.** A light-sensitive photographic material free of light-sensitive heavy metal salts containing

a light-insensitive silver salt selected from the group consisting of silver salt of a long-chain fatty acid, and a silver salt of aliphatic carboxylic acid containing a thioether group;

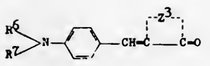
and the material contains a polymethine sensitizer in a spectrally sensitizing amount selected from those having the following formulae:



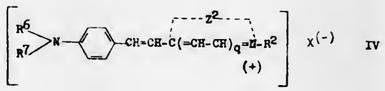
I



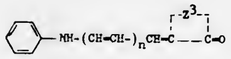
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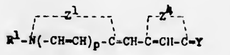
III



IV



V



VI



VII



VIII

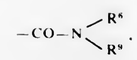
in which

$R^1$, $R^2$ = (1) a saturated or unsaturated aliphatic group; (2) cycloalkyl; (3) aryl or (4) alkoxy;

$R^3$ = hydrogen, phenol or a saturated aliphatic group;

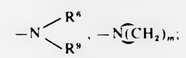
$R^4$ = hydrogen, cyano, —CO—$R^8$,





—COOR⁸;

$R^5$ = $R^8$, $OR^8$,



$R^4 + R^5$ together the ring members required for completing an isocyclic or heterocyclic ketomethylene ring;

$R^6$, $R^7$ = hydrogen or $R^8$;

$R^8$ = a saturated or olefinically unsaturated aliphatic group;

X(-) = an anion other than an anion capable of producing a light-sensitive silver metal salt with the non-light sensitive silver salt in the material;

$m$ = 4, 5, 6;

$n$ = 0, 1, 2;

$r$, $p$, $q$ = 0, 1;

Q = O, S;

$R^9$ = hydrogen, $R^8$ or aryl;

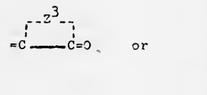
$Z^1$, $Z^2$ = the members required for completing a 5- or 6-membered heterocyclic ring in which the heterocylcic group may contain a condensed benzene or naphthalene ring;

$Z^3$ = the ring members required for completing an isocyclic or heterocyclic ketomethylene ring;

$Z^4$ = the members required for completing a 5- or 6-membered isocyclic ring;

$Z^5$ = S, N—$R^9$;

Y = a radical of the following formulae:



in a proportion of 0.1 - 2 g of sensitizing dye per mol of the silver salt for spectrally sensitizing the silver salt solely by said sensitizer, whereby the combination of the silver salt and said sensitizer is light-sensitive only in the spectral range of said sensitizer;

and a reducing agent having at least one active hydrogen atom attached to O, N or C, capable of reducing the silver salt in areas exposed to light and causes the development of a visible image in said material by reducing the silver salt when processed with heat after exposure whereby the said combination is sensitive to light in the absence of light-sensitive heavy metal salts.

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**3,933,508**

## HEAT DEVELOPABLE LIGHT-SENSITIVE MATERIALS

**Kinji Ohkubo, and Takao Masuda, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan**

**Filed May 9, 1973, Ser. No. 358,559**

**Claims priority, application Japan, May 9, 1972, 47-45696**

**Int. Cl.² G03C** *1/72, 1/02*

**U.S. Cl. 96—114.1** **19 Claims**

**1.** A heat developable light-sensitive material comprising, on a support, (1) an organic silver salt, (2) a light-sensitive silver halide or silver-halide prepared by reacting the organic silver salt with a halide, (3) a reducing agent, (4) a binder, and (5) an overcoat layer overlying components (1)-(4); said components (1)-(4) occurring in a single coated layer over said support; and said overcoat layer consisting essentially of a polymer having a refractive index greater than 1.45 at 20°C, having heat resistance to temperatures greater than about 115°F, being colorless and soluble in organic solvents, and providing increased transparency for the said overcoat layer.

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**3,933,509**

## PHOTO-POLYMERIZABLE COMPOSITION CONTAINING AN ACID SALT OF AN INDOLINOBENZOSPIROPYRAN

**Yasuhiro Noguchi; Syu Watarai; Chiaki Osada, and Hisatake Ono, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan**

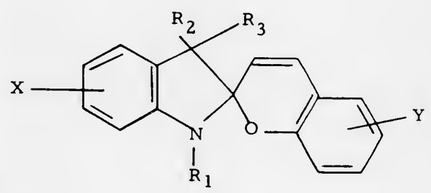
**Filed Aug. 22, 1973, Ser. No. 390,671**

**Claims priority, application Japan, Aug. 23, 1972, 47-84383**

**Int. Cl.² G03C** *1/68;* **C08F** *2/46, 8/00;* **C07D** *209/04*

**U.S. Cl. 96—115 P** **16 Claims**

**1.** A photo-polymerizable composition comprising (A) a photo-polymerization initiator comprising at least one inorganic or organic acid salt of a Lewis acid or proton acid effective as an initiator for cationic polymerization and an indolinobenzospiropyran represented by the following general formula (I);



(I)

wherein $R_1$ represents an alkyl group, substituted alkyl group or a phenyl group; $R_2$ and $R_3$ each represents an alkyl group or a phenyl group or, when taken together, $R_2$ and $R_3$ form a methylene chain $-CH_{2-n}$ wherein $n$ is an integer of 4 to 5; X represents a hydrogen atom, a nitro group, a halogen atom, a carboxy group, an alkoxycarbonyl group, an alkyl group or an alkoxy group; and Y represents one or more substituents selected from the group consisting of a hydrogen atom, a nitro group, a halogen atom, a formyl group and an alkoxy group, and (B) at least one cationically polymerizable substance having an ethylenically unsaturated bond or having a cyclic group capable of ring-opening for polymerization.

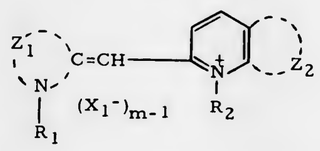
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**3,933,510**
**SPECTRALLY SENSITIZED SILVER HALIDE PHOTOGRAPHIC EMULSION**

**Keisuke Shiba; Haruo Takei; Akira Sato, and Tadashi Ikeda, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan**

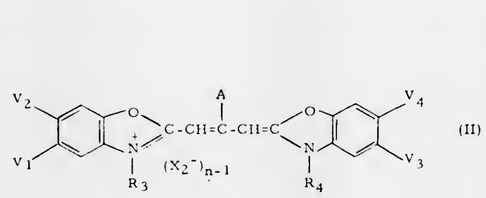
**Filed Sept. 4, 1973, Ser. No. 394,016**
**Claims priority, application Japan, Sept. 4, 1972, 47-88528**
**Int. Cl.² G03C 1/14**
**U.S. Cl. 96—124** **11 Claims**

1. A silver halide photographic emulsion which contains in combination at least one pseudocyanine sensitizing dye represented by the following general formula (I);



(I)

wherein $Z_1$ represents a benzothiazole nucleus or a benzoselenazole nucleus either of which is substituted at the 5-position by a halogen atom, an alkoxycarbonyl group, a cyano group, a trifluoromethyl group, a methylsulfonyl group, an acetyl group or a phenyl group; $Z_2$ represents the non-metallic atoms necessary to form a benzene nucleus; $R_1$ and $R_2$ each represents an aliphatic group, at least one of $R_1$ and $R_2$ being an alkyl group having a sulfo group; $X_1^-$ represents an anion; $m$ represents 1 or 2 and, when the dye forms an intramolecular salt, $m$ represents 1; and at least one oxacarbocyanine sensitizing dye represented by the following general formula



(II)

wherein $V_1$ represents a halogen atom, a trifluoromethyl group, a phenyl group, or an alkoxycarbonyl group; $V_2$ and $V_4$ each represents a hydrogen atom or an alkyl group; $V_3$ represents a halogen atom, a trifluoromethyl group, a phenyl group, an alkoxycarbonyl group, an alkyl group, an alkoxy group, a hydroxy group or a hydrogen atom; A represents a methyl group, an ethyl group or a propyl group; $R_3$ and $R_4$ each represents an aliphatic group, at least one of $R_3$ and $R_4$ being an alkyl group having a sulfo group or a carboxy group; $X_2^-$ represents an anion; $n$ represents 1 or 2 and, when the dye forms an intramolecular salt, $n$ represents 1; said dyes of the general formula (I) and of the general formula (II) being present in such amounts that the combination exhibits a supersensitizing action.

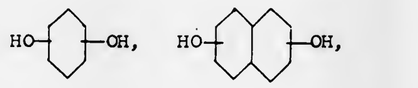
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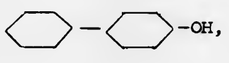
**3,933,511**
**POLISHES CONTAINING WAX-ANHYDRIDE COMPOUNDS**

**William J. Heintzelman, and Michael I. Naiman, both of St. Louis, Mo., assignors to Petrolite Corporation, St. Louis, Mo.**

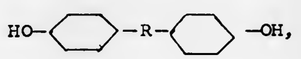
**Continuation of Ser. No. 64,570, Aug. 17, 1970, abandoned, which is a division of Ser. No. 607,877, Jan. 9, 1967, Pat. No. 3,590,076, which is a continuation-in-part of Ser. No. 527,075, Feb. 14, 1966, abandoned. This application Dec. 22, 1972, Ser. No. 317,537**
**Int. Cl.² C09G 1/08; C09D 11/12**
**U.S. Cl. 106—10** **10 Claims**

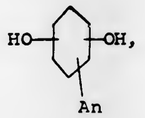
1. An emulsion polish comprising
I. water, mineral spirits or a mixture of water and mineral spirits; and
II. A. a wax-maleic compound adduct reaction product of (i) maleic acid, maleic anhydride, citraconic acid, citraconic anhydride, ethylmaleic acid, ethylmaleic anhydride, gultaconic acid, glutaconic acid anhydride, itaconic acid, itaconic acid anhydride, methylitaconic acid, or methylitaconic acid anhydride and (ii) plastic microcrystalline wax, tank bottom microcrystalline wax, solvent extracted microcrystalline wax, Fischer-Tropsch wax, polyalkylene hydrocarbon wax or mixtures thereof, characterized by a melting point of at least about 150°F. and a penetration of less than about 50 (ASTM) TEST METHOD D5-25), or
B. said wax-maleic compound adduct reaction product of A coupled with
1. a polyfunctional polyalcohol selected from the group consisting of ethylene glycol, diethylene glycol, propylene glycol, dipropylene glycol, tripropylene glycol, triethylene glycol, butylene glycol, polyethylene glycol having a molecular weight of about 600, tetramethylene glycol, neopentyl glycol, 2-methyl-1,3-pentanediol, 1,5-pentanediol, hexamethylene glycol, glycerol, polyglycerol, pentaerylthritol, mannitol, trimethylolpropane, trimethylolethane, 1,2,6-hexanetriol, polypentaerythritol, polyallyl alcohol, polymethallyl alcohol,



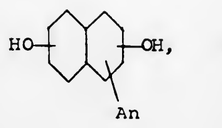


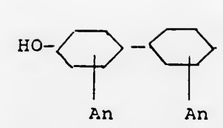


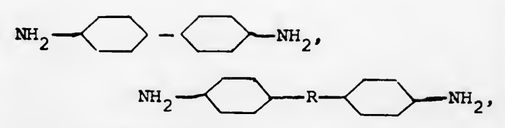




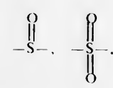


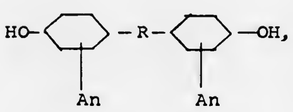


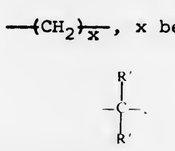




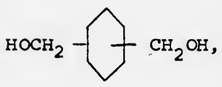
where R is O, S,



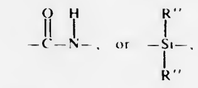


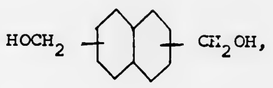


$-(CH_2)_x-$, x being 1-4,

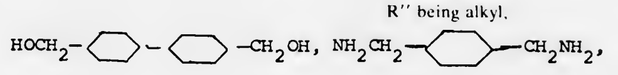


R′ being H or alkyl,

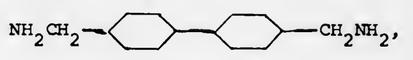


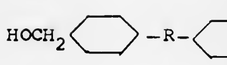


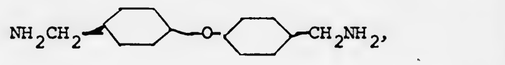
R″ being alkyl,



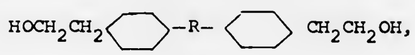






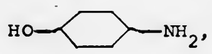


and morpholine,



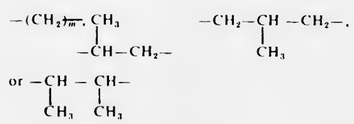
or

3. a polyfunctional alcohol-amine selected from the group consisting of
$NH_2(CH_2)_xOH$.
where $x$ is 1–10,

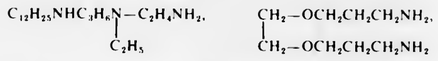


where R is hydrocarbon, amino, amide, ester, oxygen, silicon, ketone, phosphorus, sulfur, sulfone, or sulfoxide, A is alkyl, alkoxy, halo or nitro, and $n$ is 1–4, or

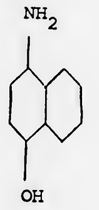
2. a polyfunctional amine selected from the group consisting of a polyamine of the formula $NH_2\text{-}(ANH)_n\,H$ where A is



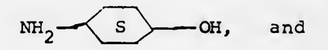
$m$ being 2–10 and $n$ being 1–8,
$C_8H_{17}NH\text{-}CH_2CH_2NH_2$, $C_{14}H_{29}NH\text{-}CH_2CH_2NH_2$,
$C_{16}H_{33}NHCH_2CH_2NH_2$,
$C_{12}H_{25}NHC_2H_4NHC_2H_4NHC_2H_4NH_2$,
$C_{12}H_{25}NHC_3H_6NH_2$, $C_{15}H_{31}NHC_3H_6NH_2$,
$C_{10}H_{21}NHC_3H_6NH_2$.



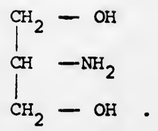
p-phenylene diamine, m-phenylene diamine, o-phenylene diamine,



,



and



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**3,933,512**

## CARBON PAPER INKS CONTAINING WAX-ANHYDRIDE COMPOUNDS

**William J. Heintzelman, and Michael I. Naiman, both of St. Louis, Mo., assignors to Petrolite Corporation, St. Louis, Mo.**

**Continuation of Ser. No. 64,571, Aug. 17, 1970, abandoned, which is a division of Ser. No. 607,877, Jan. 9, 1967, Pat. No. 3,590,076, which is a continuation-in-part of Ser. No. 527,075, Feb. 14, 1966, abandoned. This application Dec. 22, 1972, Ser. No. 317,524**

**Int. Cl.² C09D *11/12***

**U.S. Cl. 106—22** **11 Claims**

**1.** In a carbon paper ink comprising a mixture of

I. a vehicle oil,

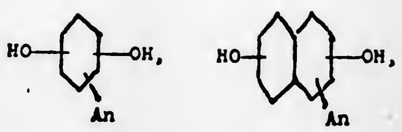
II. a pigment,

III. a dye, the improvement comprising, in said mixture, an additive

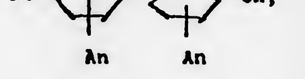
IV. selected from the group consisting of A. a wax-maleic compound adduct reaction product of (i) maleic acid, maleic anhydride, citraconic acid, citraconic anhydride, ethylmaleic acid, ethylmaleic anhydride, glutaconic acid, glutaconic acid anhydride, itaconic acid, itaconic acid anhydride, methylitaconic acid, or methylitaconic acid anhydride and (ii) plastic microcrystalline wax, tank bottom microcrystalline wax, solvent extracted microcrystalling wax, Fischer-Tropsch wax, polyalkylene hydrocarbon wax or mixtures thereof, characterized by a melting point of at least about 150°F. and a penetration of less than about 50 (ASTM Test Method D5-25), the molar ratio of (i) to (ii) being from about 0.9 to about 1.5 and the reaction being carried out at substantially atmospheric pressure under free radical conditions, and

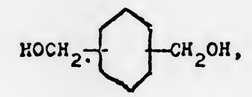
B. said wax-maleic compound adduct reaction product of A coupled with a polyfunctional compound selected from the group consisting of

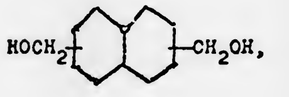
1. a polyfunctional polyalcohol selected from the group consisting of ethylene glycol, diethylene glycol, propylene glycol, dipropylene glycol, tripropylene glycol, triethylene glycol, butylene glycol, polyethylene glycol having a molecular weight of about 600, tetramethylene glycol, neopentyl glycol, 2-methyl-1,3-pentanediol, 1,5-pentanediol, hexamethylene glycol, glycerol, polyglycerol, pentaerythritol, mannitol, trimethylolpropane, trimethylolethane, 1,2,6-hexanetriol, polypentaerythritol, polyallyl alcohol, polymethallyl alcohol,



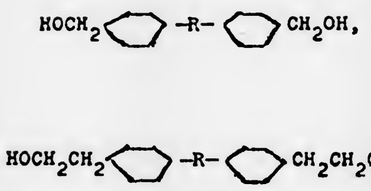


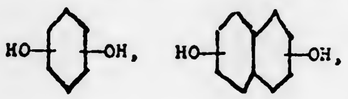




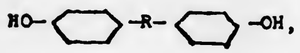






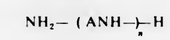




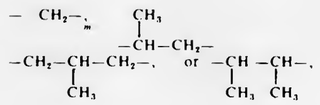


where R is hydrocarbon, amino, amide, ester, oxygen, silicon, ketone, phosphorus, sulfur, sulfone, or sulfoxide, A is alkyl, alkoxy, halo or nitro, and *n* is 1-4,

2. a polyfunctional amine selected from the group consisting of a polyamine of the formula

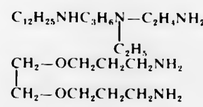


where A is





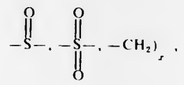
*m* being 2-10 and *n* being 1-8, $C_8H_{17}NH\text{-}CH_2CH_2NH_2$, $C_{14}H_{29}NH\text{-}CH_2CH_2NH_2$, $C_{18}H_{33}NHCH_2CH_2NH_2$, $C_{12}H_{25}NHC_2H_4NHC_2H_4NHC_2H_4NH_2$, $C_{12}H_{21}NHC_4H_8NH_2$,



p-phenylene diamine, m-phenylene diamine, o-phenylene diamine,



where R is O, S,



x being 1-4,



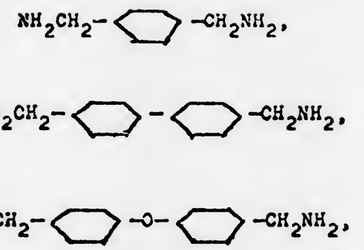
R′ being H or alkyl,



or

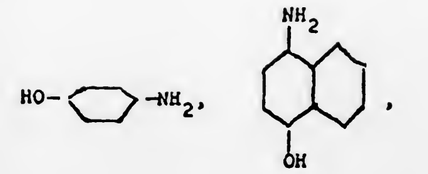


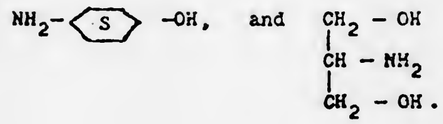
R″ being alkyl,



and morpholine, and

3. a polyfunctional alcohol-amine selected from the group consisting of $NH_2(CH_2)_xOH$, where *x* is 1-10,





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**3,933,513**

## REFRACTORY HEAT INSULATING MATERIALS

**Vincent Edward Mellows, Birmingham, England, assignor to Foseco Trading A.G., Chur, Switzerland**

**Filed Oct. 2, 1973, Ser. No. 402,780**

**Claims priority, application United Kingdom, Oct. 19, 1972, 48248/72**

**Int. Cl.² C04B *35/80***

**U.S. Cl. 106—65** **6 Claims**

**1.** A refractory heat insulating slab formed of a composition comprising by weight:

84-35% of a heavy refractory filler,

6-35% of a refractory fibrous material selected from the class consisting of mineral wool, slag wool, rock wool and glass fiber,

0.5-10% of a high swelling clay,

1-10% of a binding agent selected from the class consisting of urea formaldehyde resins and phenol formaldehyde resins,

0.01-2% of a flocculating agent for the clay and

0-10% of lightweight refractory filler, the slab being at least substantially free of cellulosic fiber.

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**3,933,514**

## HIGH STRENGTH, WATER RESISTANT SILICATE FOAM

**William P. Banks; Jon R. Carlson, and Donald E. Becker, all of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.**

**Filed Apr. 30, 1973, Ser. No. 356,027**

**Int. Cl.² C04B *35/16***

**U.S. Cl. 106—75** **1 Claim**

**1.** A composition for producing a fire-resistant, high strength, low shrinkage silicate foam having high water resistance being an aqueous silicate dispersion mixed with about 45-60 parts water on the basis of 100 parts by weight of foam comprising the following ingredients mixed with said water;

a. about 25-36 parts water soluble alkali metal silicate;

b. about 8-20 parts cementing agent selected from the group consisting of sodium silicofluoride, zinc carbonate, magnesium carbonate, aluminum phosphate, zinc acetate and a mixture thereof;

c. about 0.2-6 parts gelling agent selected from the group consisting of low molecular weight amide and a mixture of amide and haloalcohol;

d. about 0.1–10 parts fibrous filler;
e. about 0.1–20 parts particulate filler selected from the group consisting of vermiculite, perlite and a mixture thereof;

with the water soluble alkali metal silicate, the cementing agent, the gelling agent, the fibrous filler and the particulate filler being uniformly mixed with the water forming a foamed aqueous suspension in aqueous silicate.

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**3,933,515**

## THERMAL SHOCK RESISTANT ASBESTOS-CEMENT COMPOSITIONS AND THEIR PREPARATION

**Julie Chi-Sun Yang, Somerset, N.J., assignor to Johns-Manville Corporation, Denver, Colo.**

**Continuation of Ser. No. 289,035, Sept. 14, 1972, abandoned. This application Sept. 6, 1974, Ser. No. 503,906**
**Int. Cl.² C04B** *7/02*
**U.S. Cl. 106—99** **8 Claims**

**1.** A thermal shock resistant asbestos-cement composition consisting essentially of the following ingredients, in percentage by weight on a dry solids basis:

a. 10 to 50% asbestos fibers;
b. silica in a percentage in the range of 20 to 40% less the percentage of the organic porosity-enhancing additive of (d) below;
c. 25 to 65% hydraulic cement; and
d. 1 to 30% of an organic fibrous porosity-enhancing additive selected from the group consisting of nylon fibers, orlon fibers and sisal fibers, said additive being of the type which will prevent surface cracking of a product made of said composition when said product is saturated with water and then subjected to temperatures on the order of 700°C for a period of one hour.

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**3,933,516**

## PHOTOGRAPHIC ELEMENT OF IMPROVED ANTISTATIC AND SLIPPAGE PROPERTIES CONTAINING CALCIUM STEARATE DISPERSION AND STEARAMIDO-PROPYL DIMETHYL-BETA-HYDROXY-ETHYL AMMONIUM NITRATE; GELATINOUS COMPOSITION, AND METHOD, FOR PREPARING SAID ELEMENT

**E. Scudder Mackey, Binghamton, N.Y., assignor to GAF Corporation, New York, N.Y.**

**Filed Dec. 9, 1974, Ser. No. 531,140**
**Int. Cl.² C08L** *89/00*; **G03C** *1/78*
**U.S. Cl. 106—131** **15 Claims**

**1.** A gelatin-containing composition for a photographic film, comprising (a) about 1% to about 2,5% by weight, based upon the total gelatin solids content of said composition, of an aqueous dispersion of a salt of a metal selected from the group consisting of Li, Na, K, Mg, Ca, Ba, Sr, and Al and of a $C_{12}$–$C_{32}$ organic fatty acid wherein the average particle size of the solids suspended in said dispersion is about 1 micron and the specific viscosity of said dispersion is about 350 cps to about 750 cps; and (b) about 2.5 to about 5% by weight, based upon the total gelatin solids content of said composition, of a quaternary ammonium compound of the formula:

$$RCONH(CH_2)_3N^+R_1R_2R_3.NO_3^-$$

wherein R is $C_7$–$C_{17}$ alkyl, $R_1$ is hydroxyalkyl having from 1 to 6 carbon atoms, and $R_2$ and $R_3$ are each $C_1$–$C_6$ alkyl.

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**3,933,517**

## COMPOSITIONS FOR REFLOWING ORGANIC SURFACES

**Thomas A. Vivian, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.**

**Continuation-in-part of Ser. No. 34,527, May 4, 1970, abandoned. This application Oct. 7, 1974, Ser. No. 512,784**
**Int. Cl.² C08K** *5/02*
**U.S. Cl. 106—311** **8 Claims**

**1.** A composition suitable for use as a superheated vapor for vapor reflowing plastic surfaces consisting essentially of about 50 to 99 percent of methylene chloride, 0 to 49 percent of one or more 1,2-dichloroethane, 1,1,1- and 1,1,2-trichloroethane, 1,2-cis- and trans-dichloroethene, trichloroethene, tetrachloroethene or a mixture thereof boiling below about 200° C., and about 1 to 20 percent of an alkylene glycol alkanoate, alkylene glycol ether alkanoate or a mixture thereof having a boiling point below 200°C.

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**3,933,518**

## COMPOSITIONS FOR REFLOWING ORGANIC SURFACES

**Thomas A. Vivian, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.**

**Continuation-in-part of Ser. No. 34,527, May 4, 1970, abandoned. This application Dec. 19, 1974, Ser. No. 534,243**
**Int. Cl.² C08K** *5/02*
**U.S. Cl. 106—311** **4 Claims**

**1.** A vapor reflow composition consisting essentially of about 80 to 99 percent of chlorinated aliphatic hydrocarbon boiling below about 200°C., and about 1 to 20 percent of an alkylene glycol alkanoate, alkylene glycol ether alkanoate or mixture thereof having a boiling point below about 200°C. and a stabilizing amount of propylene oxide, butylene oxide, dimethoxymethane, nitromethane or mixtures thereof.

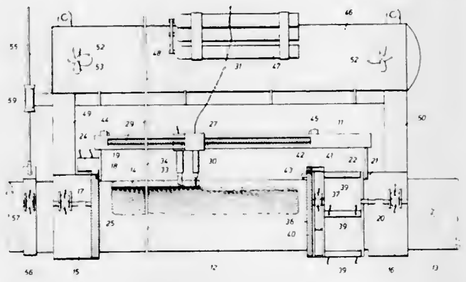
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**3,933,519**

## SUB-SEA PIPE CLEANING APPARATUS AND METHOD

**George C. Koch; Paul M. Collins, and William E. White, Jr., all of Houston, Tex., assignors to HydroTech International, Inc., Houston, Tex.**

**Filed Apr. 25, 1974, Ser. No. 464,037**
**Int. Cl.² F16L** *55/18*; **B08B** *3/02*; **F16L** *55/18*
**U.S. Cl. 134—34** **15 Claims**



**1.** In a method of cleaning the exterior surface of pipe in a sub-sea location, the combination of steps comprising:

supporting a high pressure nozzle on a frame for longitudinal movement thereon;
supporting said frame in spaced parallel relationship with the longitudinal axis of said pipe and said nozzle with the discharge end directed against said pipe;
supplying high pressure fluid to said nozzle to thereby effect cleaning of said pipe;
moving said nozzle longitudinally along said frame while supplying said fluid to said nozzle to thereby clean in a generally longitudinal direction along said pipe surface;



and moving said frame and nozzle circumferentially of said pipe, to thereby clean said pipe.

**6.** In apparatus for cleaning the exterior surface of a pipe in fixed position, the combination comprising:

a longitudinal frame;
means rigidly attachable to said pipe for supporting said frame in spaced parallel alignment with the longitudinal axis of said pipe;
means disposable radially outwardly of said exterior pipe surface for selectively rotating said frame about the entire circumference of said pipe while the said pipe remains in said fixed position;
a carriage mounted on said frame for longitudinal traverse therealong;
means for driving said carriage longitudinally along said frame;
a high pressure nozzle supported by said carriage for traverse therewith and having the discharge end thereof directed toward said surface of said pipe;
and means for supplying pressurized fluid to said nozzle to thereby direct a high pressure stream of fluid into contact with said surface of said pipe to clean said pipe.

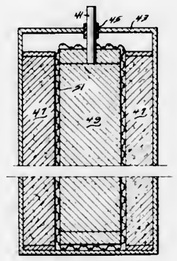
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**3,933,520**

## METHOD OF PREPARING ELECTRODES WITH POROUS CURRENT COLLECTOR STRUCTURES AND SOLID REACTANTS FOR SECONDARY ELECTROCHEMICAL CELLS

**Eddie C. Gay, Park Forest, and Fredric J. Martino, Riverdale, both of Ill., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.**

**Filed Apr. 3, 1975, Ser. No. 565,021**
**Int. Cl.² H01M** *35/00*, *43/00*
**U.S. Cl. 136—6 LF** **16 Claims**



**1.** A method of preparing an electrode for use in a high-temperature, secondary, electrochemical cell comprising distributing solid, particulate, electrode, reactant material over an upper surface of an electrically conductive, porous substrate; vibrating said substrate to impregnate said reactant material into a portion of the void volume of said porous substrate; and filling substantially all of the remaining void volume of said substrate with molten electolytic salt.

**8.** In a secondary, high-temperature, electrochemical cell including an alkali metal alloy reactant in the negative electrode, a metal sulfide reactant in the positive electrode, and a molten electrolyte containing ions of said alkali metal, the improvement wherein at least one of said electrodes comprises an integral, porous substrate of electrically conductive material impregnable by said molten electrolyte and having solid particles of reactant distributed throughout the void volume of said substrate.

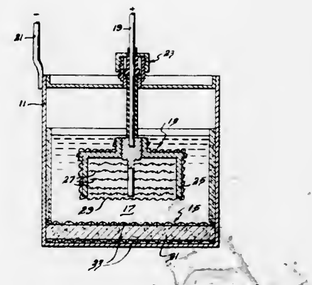
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**3,933,521**

## ANODE FOR A SECONDARY, HIGH-TEMPERATURE ELECTROCHEMICAL CELL

**Donald R. Vissers, Naperville, and Benjamin S. Tani, Chicago, both of Ill., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.**

**Filed Feb. 13, 1975, Ser. No. 549,635**
**Int. Cl.² H01M** *43/00*, *35/00*
**U.S. Cl. 136—6 LF** **10 Claims**



**1.** In a secondary electrochemical cell comprising an anode containing lithium metal, a cathode containing a chalcogen material and an electrolytic salt between said anode and cathode, the improvement wherein said anode comprises a porous base structure with open interstitial crevices, cobalt coating on surfaces of said interstitial crevices and said lithium metal impregnated into said interstitial crevices in contact with said cobalt coating.

**8.** A method of preparing an anode for use within an electrochemical cell including said anode, a cathode and an electrolytic salt, said method comprising cleaning a mass of metallic wool comprising entangled metallic fibers, depositing a cobalt metal coating onto said metallic fibers, compacting said metallic wool to form a porous substrate, and sorbing molten lithium metal onto said porous substrate.

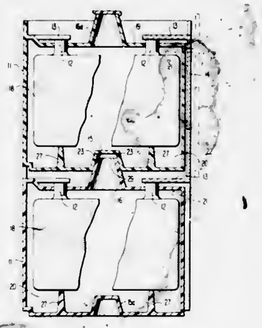
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**3,933,522**

## ACCUMULATOR CELL

**Hans Steig, Soest, Germany, assignor to Accumulatorenfabriken Wilhelm Hagen AG, Germany**

**Filed June 4, 1974, Ser. No. 476,322**
**Int. Cl.² H01M** *10/00*
**U.S. Cl. 136—6 R** **27 Claims**



**1.** A storage battery comprising a plurality of cells supported one upon another, each cell including a cuboid housing of non-conducting material with a liquid electrolyte and positive and negative plate elements therein, the top and bottom sides of said housings having shapes that are complementary

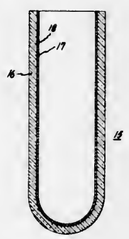
to each other in such a way that said cells stack compactly one upon another, means for providing an open communication path between the liquid electrolyte in said housings of adjoining cells, and electrically conducting means including positive and negative terminal conductors extending through said housings in liquid-sealing relation thereto and electrical conductors outside the housings of said cells interconnecting plate elements of like polarity of adjoining cells.

**20.** A storage battery comprising a plurality of cells supported one upon another, each cell including a cuboid housing of non-conducting material with a liquid electrolyte and positive and negative plates therein, the top and bottom sides of said housings having shapes that are complementary to each other in such a manner that said cells stack compactly one upon another, means for providing an open communication path between the liquid electrolyte in said housings of adjoining cells terminal connecting means interconnecting plates of the same polarity in each cell and including cylindrical lead members extending through the top sides of said housings and sealed fluid-tightly therein by injected lead bushings, and means including electrical conductors outside the housings of said cells interconnecting plates of like polarity of adjoining cells.

**25.** A storage battery cell comprising a cuboid housing of non-conducting material with a liquid electrolyte and positive and negative plates therein, the top and bottom sides of the housing having shapes that are complementary to each other in such manner that the cell may be stacked compactly upon or under another cell of similar construction means in said housing providing open communication between the liquid electrolyte therein and the liquid electrolyte in the housing of an adjoining cell of similar construction, terminal means interconnecting plates of like polarity in said cell and including cylindrical lead members extending through the top side of said housing and sealed therein by injected lead bushings, a member on the top said of said housing, outside the dividing line between the material of said top side of said housing and said lead bushings, provided with internally threaded portions concentric with and radially spaced from said cylindrical lead members, and annular means threaded into said internally threaded portions for exerting sealing pressure at said dividing line.

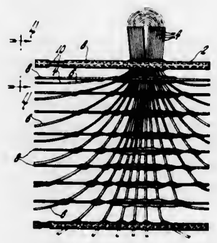
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**3,933,523**
**SOLID SODIUM ION-CONDUCTIVE ELECTROLYTE WITH LIQUID METALLIC LAYER**
**Robert R. Dubin, Schenectady; Fritz G. Will, Scotia, and William L. Mowrey, Burnt Hills, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.**
**Continuation of Ser. No. 451,965, March 18, 1974, abandoned. This application Feb. 24, 1975, Ser. No. 552,556**
**Int. Cl.² H01M** *43/06*
**U.S. Cl. 136—6 FS** **7 Claims**



**1.** A composite article consisting of a solid sodium ion-conductive electrolyte, and a liquid mercury-indium alloy layer adhering intimately to one major surface of the electrolyte.

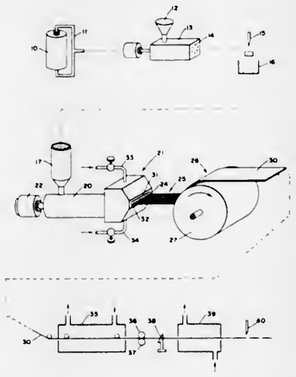
**3,933,524**
**ANTIMONY PLATING OF LEAD-ACID STORAGE BATTERIES GRIDS**
**Thomas J. Hughel, Royal Oak, and Richard H. Hammar, Utica, both of Mich., assignors to General Motors Corporation, Detroit, Mich.**
**Continuation of Ser. No. 256,508, May 24, 1972, abandoned. This application Apr. 5, 1974, Ser. No. 458,066**
**Int. Cl.² H01M** *35/08*
**U.S. Cl. 136—64** **2 Claims**



**1.** A grid for a Faure-type lead-acid storage battery positive plate comprising a substantially nonantimonial lead alloy substructure having an antimony deposit on its surface, said deposit density being at least about 0.0002 grams per square centimeter but less than about 0.00132 grams per square centimeter of said surface.

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**3,933,525**
**BATTERY SEPARATOR MANUFACTURING PROCESS**
**Nigel Innes Palmer, Lexington, and Nathan Sugarman, Needham Heights, both of Mass., assignors to W. R. Grace & Co., Cambridge, Mass.**
**Division of Ser. No. 317,487, Dec. 21, 1972, Pat. No. 3,870,567. This application Dec. 27, 1974, Ser. No. 537,052**
**Int. Cl.² H01M** *2/14*
**U.S. Cl. 136—146** **1 Claim**

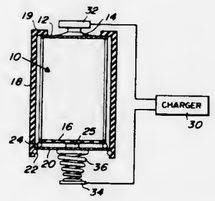


**1.** A battery with a positive plate, a negative plate and a separator of polymeric resin having a degree of undesirable hydrophobia, solid below 180°F, extrudable as a hot melt and resistant to degradation by at least either acids or alkalies positioned between said plates, said separator comprising a nonwoven mat of fibers, said fibers comprised of said polymeric resin and a wetting agent in an amount of 0.5–20 percent by weight based on the weight of the resin with said amount (a) being incompatible with the resin below the resin's melting point such that the wetting agent will bloom over a period of time at ambient temperatures in a battery yet (b) being compatible with the resin at the extrusion temperature and (c) bringing about blooming to the surface of said fibers when said fibers are subjected to heat and pressure.



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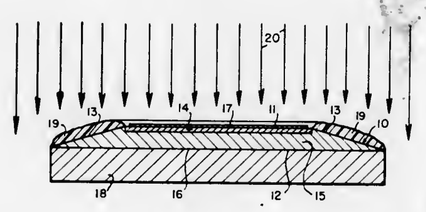
**3,933,526**
**HOUSING FOR BATTERY CELL WITH PROTECTION FOR PRESSURE AND TEMPERATURE**
**Mark H. Rackin, Sunrise, Fla., assignor to Motorola, Inc., Chicago, Ill.**
**Filed Sept. 9, 1974, Ser. No. 504,210**
**Int. Cl.² H01M** *6/50*
**U.S. Cl. 136—166** **6 Claims**




**1.** A housing for a rechargeable battery cell having first and second electrodes, including in combination:
a tubular member having first and second ends;
a closure for said first end having a first conducting contact thereon connected to a first electrode of the battery;
a conducting inner closure for said second end connected to the second electrode of the battery; and
a conducting outer closure for said second end having a second conducting contact thereon, said outer closure being movable from a first normal position in which said outer closure makes electrical connection with said inner closure to a second position in which said outer closure is spaced from said inner closure, said outer closure being responsive to a rise in temperature in the battery cell to move to said second position to open the circuit from said first and second conducting contacts to the electrodes of the battery.

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**3,933,527**
**FINE TUNING POWER DIODES WITH IRRADIATION**
**Krishan S. Tarneja; John Bartko, and Joseph E. Johnson, all of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.**
**Filed Mar. 9, 1973, Ser. No. 339,699**
*Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.*
**Int. Cl.² H01L** *21/263*
**U.S. Cl. 148—1.5** **4 Claims**



**1.** A method of fine tuning a diode of a type of diodes comprising the steps of:
A. determining the minority carrier radiation damage factor for the type of diode with a given electron radiation source of intensity between about 1 and 3 Mev;
B. measuring the nominal minority carrier lifetime in the anode region of the type of diode;
C. establishing the nominal minority carrier lifetime desired in the anode region of the type of diode;
D. thereafter determining the radiation dosage from the given electron radiation source to obtain the desired nominal minority carrier lifetime by the relationship $1/\tau = 1/\tau_o + K\phi$

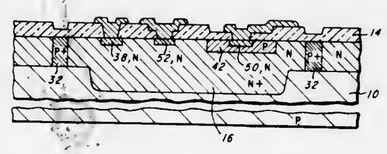
where

$\tau$ is the established nominal minority carrier lifetime,
$\tau_o$ is the measured nominal minority carrier lifetime,
$K$ is the minority carrier radiation damage factor, and
$\phi$ is the electron radiation dosage; and

E. irradiating a major surface of at least one diode of the type of diodes with the given radiation source to the determined radiation dosage.

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**3,933,528**
**PROCESS FOR FABRICATING INTEGRATED CIRCUITS UTILIZING ION IMPLANTATION**
**Benjamin Johnston Sloan, Jr., Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.**
**Filed July 2, 1974, Ser. No. 485,199**
**Int. Cl.² H01L** *21/265*
**U.S. Cl. 148—1.5** **10 Claims**



**1.** A method of fabricating a semiconductor device having a semiconductor substrate with a surface of one conductivity type on which is disposed an insulating layer, including the steps of
a. forming a patterned layer on said insulating surface, said patterned layer having defined therein a plurality of critically spaced apertures;
b. removing at least a portion of the thickness of said insulating layer in areas defined by said apertures in said patterned layer to define self-aligned control areas in said insulating layer;
c. covering at least a first one of said control areas in said insulating layer by barrier material to prevent ion implantation therethrough and implanting dopant ions of conductivity type opposite to that of said semiconductor surface through at least second and third of said control areas to define first and second regions of said opposite conductivity type in said semiconductor surface;
d. covering said second control area with barrier material to prevent ion implantation therethrough and implanting further dopant ions of said opposite conductivity type into said first region to reduce the sheet resistivity of said first region;
e. introducing impurities of said one conductivity type into a reduced area of said first region to form therein a third region of said one conductivity type, and through a third one of said control areas into a further area of said semiconductor surface to form a fourth region of said one conductivity type.

**3,933,529**

## PROCESS FOR THE PRODUCTION OF A PAIR OF COMPLEMENTARY FIELD EFFECT TRANSISTORS

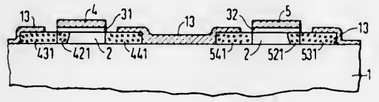
**Karl Goser, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany**

**Filed July 10, 1974, Ser. No. 487,153**

**Claims priority, application Germany, July 11, 1973, 2335333**

**Int. Cl.² H01L** *21/265*

**U.S. Cl. 148—1.5** **6 Claims**




**6.** A process as claimed in claim **5**, in which the metal layers which serve as a protection from implantation consist of aluminum.

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**3,933,530**

## METHOD OF RADIATION HARDENING AND GETTERING SEMICONDUCTOR DEVICES

**Charles William Mueller, Princeton; Edward Curtis Douglas, Princeton Junction, and Chung Pao Wu, Trenton, all of N.J., assignors to RCA Corporation, New York, N.Y.**

**Filed Jan. 28, 1975, Ser. No. 544,702**

**Int. Cl.² H01L** *21/265*

**U.S. Cl. 148—1.5** **7 Claims**

**1.** A method of radiation hardening and gettering a layer of silicon dioxide formed on a body of semiconductor material during the manufacture of a semiconductor device, said method comprising the steps of:

providing a source of molecular aluminum halide ions, and

accelerating said molecular aluminum halide ions towards said body, on an impact course, with a kinetic energy that is greater than the molecular binding energy of said molecular aluminum halide ions so that each of said molecular aluminum halide ions breaks up into Al ions and halide ions upon impact, whereby each of said Al ions and halide ions assumes an ion-implantation energy substantially proportional to the ratio of its mass to the mass of said molecular aluminum halide ions.

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**3,933,531**

## METHOD OF RUST-PREVENTING FOR COPPER AND COPPER ALLOY

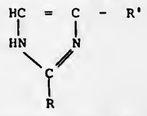
**Natsuo Sawa, 651 Horie, Tadotsu-cho, and Masahiro Hoda, 321-3 Minamikamo, Tadotsu-cho, both of Nakatado, Kagawa, Japan**

**Continuation-in-part of Ser. No. 243,048, April 11, 1972, abandoned, which is a continuation-in-part of Ser. No. 3,482, Jan. 16, 1970, abandoned. This application June 24, 1974, Ser. No. 482,165**

**Int. Cl.² C23F** *11/00*

**U.S. Cl. 148—6.14 R** **21 Claims**

**1.** A method for preventing discoloration of copper or copper alloy, subsequently exposed to a gaseous atmosphere containing sulfur compounds, which method comprises surface-treating the copper or copper alloy with at least one compound selected from the group consisting of alkylimidazoles represented by the general formula:




wherein R is a long straight chain alkyl group having 5–21 carbon atoms and R′ is a hydrogen atom or a lower alkyl group, and acid addition salts of said alkylimidazoles thereby to coat said surface with micelles of said alkylimidazoles which act to prevent discoloration of said copper or copper alloy.

**16.** Copper or copper alloy which is resistant to discoloration when exposed to a gaseous atmosphere containing sulfur compounds and whose surface has been treated with at least one compound selected from the group consisting of alkylimidazoles represented by the general formula




wherein R is a long straight chain alkyl group having 5–21 carbon atoms and R′ is a hydrogen atom or a lower alkyl group, and acid addition salts of said alkylimidazoles.

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**3,933,532**

## METHOD FOR EXPOSING SURFACE DEFECTS ON HOT STEEL BLANKS

**Klaus Glomb, Pumpchen, Germany, assignor to Eschweiler Bergwerks-Verein Aktiengesellschaft, Kohlscheid, Aachen, Germany**

**Continuation-in-part of Ser. No. 393,712, Sept. 4, 1973, abandoned. This application Jan. 24, 1975, Ser. No. 543,671**

**Claims priority, application Germany, Sept. 20, 1972, 2246157**

**Int. Cl.² C21D** *1/82*; **C23F** *7/04*

**U.S. Cl. 148—6.35** **5 Claims**

**1.** A method for exposing surface defects on steel blanks having a given hot working temperature, comprising the following steps:

a. employing blanks heated to a temperature within the range of about 500° to 1100°C whereby such temperature is kept below said given hot working temperature of the particular steel blank,

b. rapidly descaling the heated blank by exposing the heated blank to cold water under pressure within the range of about 100 atm to 500 atm (gauge) thereby limiting the exposing to a duration of about $1.10^{-4}$ seconds to $3.10^{-2}$ seconds so that any substantial chilling of the blank is avoided, and

c. controlling the cooling of the thus descaled blank with a cooling rate within the range of about 10°C/minute to about 100°C/minute, to thereby produce an oxidation film on the descaled surface which oxidation film makes said surface defects visible.

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**3,933,533**

## METHOD AND APPARATUS FOR INITIATING SCARFING

**Youtaro Uchida; Goro Miya; Kazuo Kobayashi; Masayuki Oguni; Tomokazu Yoshimura; Naoteru Yonemori, all of Tokai, and Teruo Kameyama, Gifu, all of Japan, assignors to Nippon Steel Corporation, Japan**

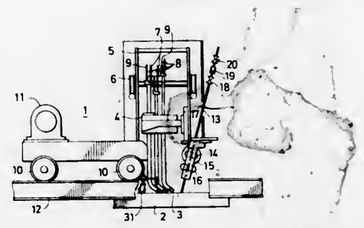
**Filed Apr. 18, 1974, Ser. No. 462,175**

**Claims priority, application Japan, Apr. 18, 1973, 48-43943; Aug. 6, 1973, 48-87630; Aug. 6, 1973, 48-87631; Aug. 6, 1973, 48-87634; Aug. 6, 1973, 48-88178; Aug. 6, 1973, 48-88180**

**Int. Cl.² B23K** *7/06, 7/08*

**U.S. Cl. 148—9.5** **10 Claims**

**1.** In the method of scarfing surface defects of to-be-surfaced metal material as said material is moving relative to the scarfing machine with scarfing nozzles, the improvement, which comprises a step of supplying oxygen into a consumable electrode pipe so provided as to be directed to a scarfing point detected on the surface of said to-be-scarfed metal material for jetting the oxygen from the tip of said electrode pipe; a step of lowering said electrode pipe until its tip contacts said metal material; a step of heating rapidly the contacting portion, respectively, of said electrode pipe and of said metal material with electrical energy and heat of oxidation so that the temperature of such portion may rise to the scarfing start




temperatue; and a step of initiating the scarfing process instantaneously from such temperature rising portion with the oxygen jetted from said scarfing nozzles.

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**3,933,534**

## CONTINUOUS HEAT TREATING PROCESS FOR LOW CARBON STRUCTURAL STEELS IN BAR FORM

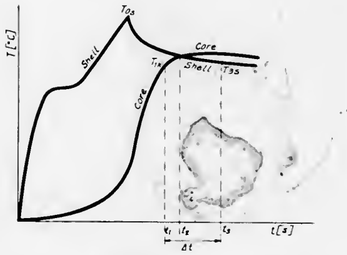
**Ludwig Ettenreich, Vienna, Austria; Otto Reimann, Dusseldorf-Oberkassel, and Klaus Greulich, Erkrath, über Dusseldorf, both of Germany, assignors to Bau-Stahlgewebe GmbH, Dusseldorf-Oberkassel, Germany**

**Filed May 11, 1972, Ser. No. 252,690**

**Claims priority, application Germany, May 13, 1971, 2123687. The portion of the term of this patent subsequent to Mar. 5, 1991, has been disclaimed.**

**Int. Cl.² C21D** *1/18*

**U.S. Cl. 148—12 B** **20 Claims**




**1.** In a process for preparing a structural steel in which the steel is rapidly heated and thereafter quenched, said steel having a maximum carbon content of 0.26 weight percent, the balance comprising iron, the improvement which comprises heating said steel only in its shell to a temperature between its incipient pearlite transformation and 1300°C such that its core heats up at an average rate of at least 100°C/sec. to a temperature between the incipient pearlite transformation and 900°C and commencing quenching in less than 5 seconds from passing the incipient pearlite transformation point, and performing the quenching operation prior to the attainment of equilibrium with respect to the carbon content and effecting said quenching prior to reduction of the shell surface temperature to a value below 650°C, so that the more carbon rich portions are transformed to a substantially martensite free structure throughout the transverse cross-section thereof.

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**3,933,535**

## METHOD FOR PRODUCING LARGE AND/OR COMPLEX PERMANENT MAGNET STRUCTURES

**Joseph J. Becker, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.**

**Continuation of Ser. No. 437,311, Jan. 28, 1974, abandoned. This application May 12, 1975, Ser. No. 576,597**

**Int. Cl.² H01F** *1/02*

**U.S. Cl. 148—103** **4 Claims**

**1.** A method of producing a large and/or complex magnetized permanent magnet structure having a surface area greater than 4 square inches with predetermined magnetic properties and geometry and having a flux determined by its shape and consisting essentially of premagnetized modules comprising forming a powder consisting essentially of a permanent magnet type cobalt-rare earth alloy having an average particle size up to about 10 microns, subjecting said powder to a magnetic field to magnetically align it along its easy axis of magnetization, pressing the aligned powder into a compact having a density of at least 70%, coating said compact with a non-magnetic protective coating selected from the group consisting of a plastic or metal, and magnetizing said coated compact along its easy axis of magnetization producing a premagnetized module, said premagnetized module being characterized by an intrinsic coercive force $H_{ci}$ at least 30% higher than its ordinary coercive force $H_c$, a demagnetization curve substantially in the form of a straight line and a recoil line substantially identical to its demagnetization curve when its remanent flux is driven to zero, producing a plurality of said premagnetized modules of substantially the same size and having substantially the same properties, and bonding together a plurality of said premagnetized modules to produce said magnetized permanent magnet structure, said premagnetized modules being bonded so that only north poles of bonded modules form the surface of the north pole of said magnetized permanent magnet structure and only south poles of bonded modules form the surface of the south pole of said magnetized permanent magnet structure, said bonding always including external physical means.

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**3,933,536**

## METHOD OF MAKING MAGNETS BY POLYMER-COATING MAGNETIC POWDER

**Manfred Doser, Edmore, Mich., and Daniel Edwin Floryan, Pittsfield, Mass., assignors to General Electric Company, Schenectady, N.Y.**

**Filed Nov. 3, 1972, Ser. No. 303,424. The portion of the term of this patent subsequent to Dec. 20, 1991, has been disclaimed.**

**Int. Cl.² H01F** *1/02*

**U.S. Cl. 148—105** **5 Claims**

**1.** The method of making a permanent magnet which comprises:

dissolving in a solvent an organic polymer which is a binder for magnetic particles;

adding particles of magnetic powder to the resulting solution;

adding to said solution a vehicle in which said polymer is insoluble until the polymer precipitates onto the particles; and

hot pressing the polymer-coated particles into a compact to form a magnet.

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**3,933,537**

## METHOD FOR PRODUCING ELECTRICAL STEEL SHEETS HAVING A VERY HIGH MAGNETIC INDUCTION

**Takuichi Imanaka, and Takahiro Kan, both of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan**

**Filed Nov. 23, 1973, Ser. No. 418,671**

**Claims priority, application Japan, Nov. 28, 1972, 47-118524**

**Int. Cl.² H01F** *1/04*

**U.S. Cl. 148—112** **1 Claim**

**1.** In a method for producing electrical steel sheets having a very high magnetic induction in which an electrical steel raw material is hot rolled, annealed at a temperature of 750°–1200°C the sheet is subjected to at least one cold rolling including, at least a final cold rolling, at a reduction rate of 40–89% to produce a steel sheet having a final gage of 2–4mm, with said 750°–1200°C annealing occurring before said final cold rolling, said cold rolled sheet being subjected to a decarburizing annealing and a final annealing to develop the secondary cyrstallized grain of (110) [001]; the improvement comprising utilizing an electrical steel raw material consisting of less than 4.5% Si, less than 0.06% C, 0.025–0.035% of Sb, 0.01–0.035% of soluble Al, 0.02–0.20% of Mn with the re-

mainder of the composition comprising iron and incidental impurities and the improvement further comprising subjecting the sheet to a final annealing at a temperature of 800°–950°C for from 5 to 120 hours to develop the secondary recrystallized grains of (110) [001] orientation and then subjecting said sheet to a subsequent purifying annealing at a temperature higher than 1000°C to remove the impurities.

### 3,933,538
### METHOD AND APPARATUS FOR PRODUCTION OF LIQUID PHASE EPITAXIAL LAYERS OF SEMICONDUCTORS

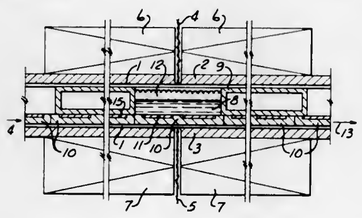
**Shin-ichi Akai; Hideki Mori; Nobuo Takahashi, and Shin-ichi Iguchi, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan**

**Filed Jan. 10, 1973, Ser. No. 322,522**

**Claims priority, application Japan, Jan. 18, 1972, 47-7040; Jan. 19, 1972, 47-7828; Jan. 19, 1972, 47-7829; Jan. 28, 1972, 47-10645**

**Int. Cl.² H01L** *7/38*

**U.S. Cl. 148—171** **13 Claims**



1. A method for successively growing single crystal epitaxial layers of semiconductors which have the ternary or more multi-component homogeneous composition and/or uniform doping level in the binary or more multi-component semiconductors on suitable substrates from the liquid phase comprising the steps of:

applying heat to a molten metallic solvent solution of a source material of said semiconductor and thereby establishing a temperature gradient therein with a high temperature region and a low temperature region;

contacting a solid source material with the high temperature region of said solution and thereby dissolving said source material into said high temperature region of said solution with at least a portion of said solid source material always at an undissolved state;

contacting at least one substrate surface with the low temperature region of said solution and thereby growing the epitaxial layers on the substrates by diffusion of the dissolved source material through said solution and supersaturation of said material in the low temperature region;

maintaining the temperatures in said solution constant during said epitaxial growth;

controlling the composition and/or doping level of said epitaxial layers by selecting substantially equal composition and/or doping level of the undissolved solid source material to said semiconductor to be grown;

removing said treated substrate from contact with said solution after a predetermined time and contacting at least one more substrate surface with said same solution for successive growth of epitaxial layers on a plurality of different substrate portions.

### 3,933,539
### SOLUTION GROWTH SYSTEM FOR THE PREPARATION OF SEMICONDUCTOR MATERIALS

**William W. Gartman, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.**

**Filed Dec. 26, 1973, Ser. No. 427,861**

**Int. Cl.² H01L** *7/38*

**U.S. Cl. 148—171** **24 Claims**

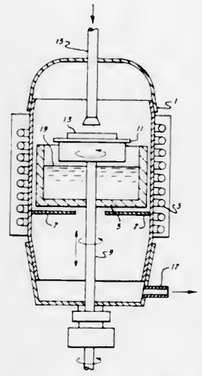
1. A method of solution growth of a Group III–V semiconductor material onto a substrate comprising the steps of

a. providing a melt comprising a saturated solution of a Group III–V semiconductor compound in a Group III solvent for said compound,

b. lowering a substrate into said melt,

c. passing a vapor stream of a halide of said Group V element in contact with the melt and withdrawing a predetermined amount of said solvent from said melt as Group III halide vapor to cause deposition of said compound onto said substrate; and

d. maintaining a uniform, constant temperature throughout the melt during the complete deposition period.



### 3,933,540
### METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE

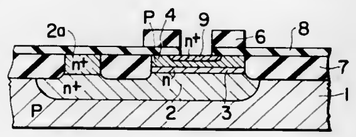
**Hiroyuki Kondo, Hinode; Atsuo Hotta, Higashiyamato; Akio Hayasaka, Kodaira, and Michio Suzuki, Hino, all of Japan, assignors to Hitachi, Ltd., Japan**

**Filed Aug. 8, 1974, Ser. No. 495,789**

**Claims priority, application Japan, Oct. 17, 1973, 48-115821**

**Int. Cl.² H01L** *21/22*

**U.S. Cl. 148—187** **10 Claims**



1. A method of manufacturing a semiconductor device comprising the steps of:

a. forming a first semiconductor region of a first conductivity type into a first surface portion of a semiconductor substrate of a second conductivity type, opposite said first conductivity type;

b. forming a first semiconductor layer having said first conductivity type on said substrate and said first region formed therein;

c. introducing a first impurity of said second conductivity type to a prescribed depth into the surface of said first semiconductor layer, thereby forming a second semiconductor region of said second conductivity type in said first semiconductor layer;

d. selectively oxidizing prescribed portions of said first semiconductor layer down through said layer and reaching said substrate and said first semiconductor region, thereby forming an oxide film for isolating elements from one another; and

e. introducing a second impurity of said first conductivity type into a selected surface portion of said second semiconductor region.



### 3,933,541
### PROCESS OF PRODUCING SEMICONDUCTOR PLANAR DEVICE

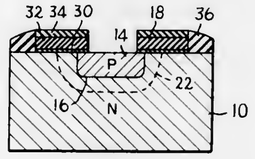
**Hiroyasu Hagino; Yasuya Kajiwara, and Seiichi Nagai, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan**

**Filed Jan. 20, 1975, Ser. No. 542,251**

**Claims priority, application Japan, Jan. 22, 1974, 49-9868; Feb. 16, 1974, 49-18936**

**Int. Cl.² H01L** *21/322*

**U.S. Cl. 148—187** **8 Claims**



1. A process of producing a semiconductor planar device comprising the steps of immersing a main face of an N type silicon substrate into a selected one of aqueous hydrogen peroxide and a mixture of aqueous hydrogen peroxide and a chemical compound including an amino radical, successively depositing a silicon dioxide film and a silicon nitride film on the main face of the silicon substrate processed in the preceding step through the chemical vapor deposition, selectively removing those portions of said silicon dioxide film and said silicon nitride film underlaid by a predetermined area of said main face of said silicon substrate where a P type semiconductor region is formed thereby to expose said predetermined area of said main face of said silicon substrate, and diffusing a P type impurity into said predetermined exposed area of said main face to form a said P type semiconductor region with a PN junction formed therebetween to terminate at said main face of said silicon substrate.

### 3,933,542
### ROCKET PROPELLANT WITH ACRYLATE BINDER AND DIFLUOROAMINO PLASTICIZER

**Lewis B. Childs, Jr., Vienna, and James D. Martin, Alexandria, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed June 16, 1972, Ser. No. 263,892**

**Int. Cl.² C06D** *5/06*

**U.S. Cl. 149—19.3** **14 Claims**

1. A solid rocket propellant comprising (1) about 25–55 weight percent of a binder which comprises (a) about 2–25 weight percent of a polymer which comprises about one to about 20 weight percent acrylic acid with the remainder comprising a lower alkyl acrylate and (b) about 75–98 weight percent of an energetic difluoroamino group containing plasticizer, selected from the group consisting of 1,2,3-tris[α,β-bis (difluoroamino) ethoxy] propane, hexakis (difluoroamino) propylether, 1,2-di[2,2,3-tris(difluoroamino) propoxy]-1,2-bis(difluoroamino)ethane, 1,2,4,5-tetrakis(difluoroamino)amyl methacrylate and mixtures thereof, (2) about 0–15 weight percent of a fuel selected from the group consisting of aluminum, boron and mixtures thereof, (3) about 45–75 weight percent of an oxidizer, and (4) about ½–5 weight percent curing agent, provided that the amount of oxidizer present be sufficient to provide for complete oxidation of said binder and said fuel.

### 3,933,543
### PROPELLANT COMPOSITIONS CONTAINING A STAPLE METAL FUEL

**Dale A. Madden, Fairfax County, Va., assignor to Atlantic Research Corporation, Alexandria, Va.**

**Filed Jan. 15, 1964, Ser. No. 337,955**

**Int. Cl. C06b** *15/00*

**U.S. Cl. 149—21** **20 Claims**

1. In a propellant composition comprising an oxidizing component selected from the group consisting of inorganic perchlorates or nitrates, metal peroxides, hydrazine nitroformate, and mixtures thereof, a non-metal fuel component selected from the group consisting of inert fuels and fuels rendered active by molecularly combined nitroso, nitro, nitrite or nitrate groups, and mixtures thereof and a metal fuel component, the improvement in which the metal is selected from the group consisting of aluminum, beryllium, zirconium, magnesium, titanium, tungsten, alloys thereof, and mixtures thereof, and is in the form of staple having a maximum thickness of about 0.001 inch, a maximum ratio of thickness to width of about 1 to 4, a minimum length of about 0.03 inch and a maximum ratio of width to length of about 1 to 1.

### 3,933,544
### METHOD OF ETCHING COPPER AND COPPER ALLOYS

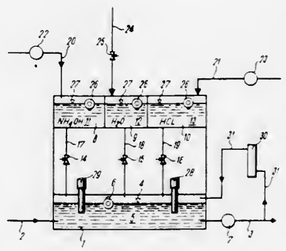
**Rainer Haas, Magstadt, Germany, assignor to Firma Hans Hollmuller, Maschinenbau, Herrenberg, Germany**

**Division of Ser. No. 230,871, March 1, 1972, Pat. No. 3,806,393. This application Aug. 6, 1973, Ser. No. 386,021**

**Claims priority, application Germany, Mar. 8, 1971, 2110950; Aug. 11, 1971, 2140215; Switzerland, Jan. 21, 1972, 1025/72**

**Int. Cl.² C23F** *1/00*

**U.S. Cl. 156—19** **3 Claims**



1. A method of etching copper and copper alloys, comprising:

forming an etching medium consisting of an ammoniacal etching solution containing chloride ions, thereby producing a copper-I compound;

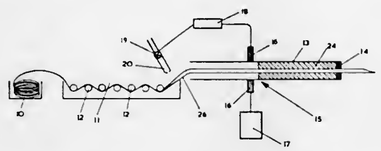
regenerating the copper-I compound formed during the etching process by reacting therewith a chloro compound selected from the group which consists of HCl, ammonium chloride and NaCl only during the etching process by the addition of the chloro compound to said solution at a rate corresponding to the rate of formation of said copper-I compound; and

supplying to said solution an amount of an ammoniacal compound selected from the group which consists of ammonium hydroxide and ammonia gas such that the pH-value of the latter is maintained at about 8.5 to 10.0, the copper content per liter of etching medium being maintained at a substantially constant value by the addition of water, the addition of the chloro compound to the etching medium to be regenerated being controlled in dependence upon the redox potential of the etching medium, while the molar ratio of the chloro compound to the ammoniacal compound amounts substantially to 1 to 2.

### 3,933,545
### CONTROL OF LACE PRODUCTION

**Kenneth Edward Wilkinson, Hertford, England; John Howard Davis, deceased, late of Hertford, England (by Barabara Davis, executrix), and by Richard C. Harwood, executor, Chalfont St. Giles, England, assignors to Imperial Chemical Industries Limited, London, England**

**Filed May 29, 1974, Ser. No. 474,425**
**Claims priority, application United Kingdom, June 6, 1973, 26983/73**
**Int. Cl.² G01B** *7/26, 7/08*
**U.S. Cl. 156—64** **6 Claims**



1. A process for the production of a lace by drawing a lace precursor which includes powdered thermoplastic polymer through a heated tube to melt the polymer and then through a die to consolidate the product into lace and remove excess polymer which accumulates as a melt pool in the tube, said process including the further steps of detecting the presence or absence of the melt pool at a suitable location in the tube and correspondingly adjusting the input of polymer to the lace precursor so that the amount of polymer is varied depending on whether molten polymer is present or absent at the chosen location whereby a lace of uniform composition is produced and wastage of polymer is minimized.

### 3,933,546
### METHOD FOR DRAINING WATER OR MOISTURE FROM SUBSTRATUM FOR WATERPROOFING LAYER

**Hidekiyo Gohda, Osaka, and Takashi Kiku, Kobe, both of Japan, assignors to Sumitomo Chemical Company, Limited, Japan**

**Filed July 19, 1974, Ser. No. 489,891**
**Claims priority, application Japan, July 25, 1973, 48-84352**
**Int. Cl.² E04F** *17/00*
**U.S. Cl. 156—71** **7 Claims**

1. A method for draining water or moisture from a substratum for a waterproofing layer in buildings, which comprises applying to the substratum a sintered product of a thermoplastic resin, having a capillary structure comprising numeral, fine and interconnecting pores and voids of 20 to 70 percent, selected from the group consisting of a sintered plate and a sintered hollow product in the form of a belt or tube, wherein at least a part of the sintered product is protruded into the atmosphere, and applying thereto a waterproofing layer, and thereby making the water or moisture contained in the substratum evaporate through the sintered product.

### 3,933,547
### METHOD FOR FIXING A PATTERN DESCRIBED ON THE SURFACE OF THERMOPLASTIC RESIN ARTICLES

**Masafumi Yoshida, and Akira Esaka, both of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan**

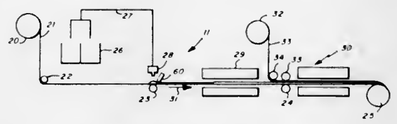
**Filed Feb. 11, 1974, Ser. No. 441,392**
**Claims priority, application Japan, Feb. 14, 1973, 48-17513**
**Int. Cl.² B32B** *31/20, 31/26*
**U.S. Cl. 156—77** **8 Claims**

5. A method for fixing a pattern described on a surface of thermoplastic resin sheet, which comprises stretching a thermoplastic resin composition sheet containing **30** to **90** percent by weight of finely divided inorganic filler based on the weight of resin composition sheet so as to form a fine interconnected open-cell structure in the stretched sheet; impressing a pattern with inks or colors on the surface of said stretched sheet; and heating under pressure the pattern bearing surface to a temperature above the melting point of said thermoplastic resin so as to cover the pattern-bearing surface with a thin film of resin formed from the original surface layer resin of the sheet.

### 3,933,548
### PRODUCTION OF URETHANE FOAMS AND LAMINATES THEREOF

**Harry M. Anderson, Jr., Marblehead, and Charles K. Knisely, Boxford, both of Mass., assignors to Beatrice Foods Co., Peabody, Mass.**

**Filed Aug. 19, 1974, Ser. No. 498,584**
**Int. Cl.² B32B** *5/20, 5/18*
**U.S. Cl. 156—78** **11 Claims**



1. A method of forming a flexible polyurethane foam layer having uniform controlled film layer thickness,
said method comprising,
spreading a layer of a polyurethane reactants containing mixture over a carrier surface in a uniform layer thickness,
said polyurethane reactants consisting essentially of an isocyanate and a hydroxyl terminated polyol having from 1 to 9% by weight thereof of an inorganic carbon dioxide producing blowing agent incorporated therein,
and heating said layer to a temperature in the range of from 260°F to 390°F to cause release of carbon dioxide in said mixture and formation of polyurethane foam in a uniform thickness final product.

### 3,933,549
### LAMINATED FLOOR MANUFACTURING METHOD

**Fred G. Heimann, Mt. Clemens, and Richard Abbott, Dearborn, both of Mich., assignors to Fruehauf Corporation, Detroit, Mich.**

**Filed Mar. 15, 1974, Ser. No. 451,440**
**Int. Cl.² B32B** *5/18*
**U.S. Cl. 156—79** **3 Claims**



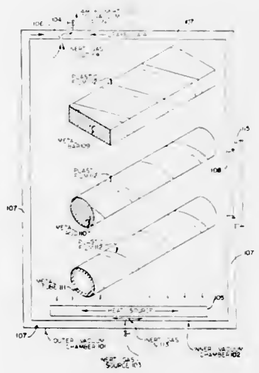
1. The method of manufacturing a laminated panel or the like which includes synchronously moving forwardly and securing together a pair of spaced parallel sheets of paneling material and an interposed core sheet having a transversely crenelated cross section which defines longitudinal channels, said forward movement being parallel to the longitudinal channels, severing the same transversely to form individual panels, closing the forward ends of the channels, moving each panel laterally to a position wherein each channel is in alignment with a foam-filling lance and then in a reverse longitudinal direction onto overfitting relation with respect to the lances, moving the panel and lances together laterally farther in the same lateral direction to a position of alignment with a delivery station, and then injecting a foaming agent through the lances into the hollow core while the panel is moving longitudinally in the forward direction off of the lances to a delivery position.



### 3,933,550
### HEAT BONDING FLUOROCARBON AND OTHER PLASTIC FILMS TO METAL SURFACES

**Ransome W. Erwin, Ogden, Utah, assignor to Austral-Erwin Engineering Co., Houston, Tex.**

**Continuation-in-part of Ser. No. 311,137, Dec. 1, 1972, Pat. No. 3,841,937, which is a continuation of Ser. No. 41,375, May 28, 1970, abandoned, and a continuation-in-part of Ser. No. 246,220, April 21, 1972, Pat. No. 3,837,956, which is a division of Ser. No. 41,375, and a continuation-in-part of Ser. No. 371,346, June 19, 1973, which is a division of Ser. No. 246,220, April 21, 1972. This application Sept. 28, 1973, Ser. No. 401,656**
**Int. Cl.² B32B** *15/08*
**U.S. Cl. 156—85** **35 Claims**



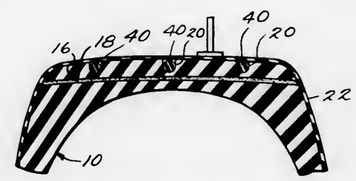
1. The method of adhering a preformed continuous pliable film of heat bondable and porous fluorocarbon plastic polymeric material to a flat or convex metal surface which comprises heating both the metal surface and a layer of the plastic material superposed upon the metal surface in a gaseous environment of reduced pressure sufficiently to soften the plastic film and bond the same to the metal surface without rupturing the film employing multiple, successive steps of heating, bonding and cooling without application of compressive pressure to the outer surface of the heated plastic film to form a bonded metal-plastic combination without entrapment of gas.

### 3,933,551
### STABILIZATION OF TREAD STRIP DURING BONDING TO TIRE

**Edwin T. Brodie, and Ronald Seiler, both of Muscatine, Iowa, assignors to Bandag Incorporated, Muscatine, Iowa**

**Filed Nov. 30, 1973, Ser. No. 420,577**
**Int. Cl.² B29H** *5/04, 17/36*
**U.S. Cl. 156—96** **4 Claims**

1. In the method of bonding the circumference of a tire casing to a prevulcanized rubber tread strip having a continuous undertread portion integral with tread ribs which are spaced apart by grooves by interposing a cold-vulcanizable bonding medium between the tread strip and the tire casing, engaging the outer surface of the tread ribs with a pressing element which is essentially free of engagement with the surfaces of the grooves and forcing the pressing element simultaneously against the entire outermost surface of the tread ribs in order to press the tread strip against the tire casing and to expel entrapped air from between the tread strip and the tire casing, while heating the bonding medium to effect vulcanization thereof, the improvement which comprises placing in at least one of the tread grooves a temporary pressure-transmitting support member which engages the bottom and at least a substantial portion of the side wall of the groove and which extends at least a major proportion of the length of the groove,

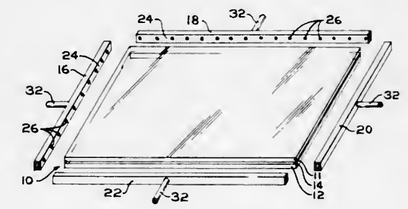


thereafter effecting the engagement of the outer surface of the tread ribs with the pressing element, said temporary support member being engaged by the pressing element and transmitting the pressing action of the pressing element to the bottom wall of the groove so as to aid in applying pressure uniformly over the undertread portion of the tread strip, and thereafter removing said pressing element and said support member.

### 3,933,552
### PREPARING TRANSPARENT ASSEMBLIES FOR LAMINATION

**Lyle L. Shumaker, Natrona Heights, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.**

**Filed July 10, 1974, Ser. No. 487,333**
**Int. Cl.² C03C** *27/10*
**U.S. Cl. 156—104** **10 Claims**

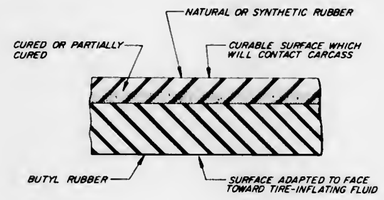


1. In a method of laminating safety glass assemblies comprising a sheet of flexible interlayer material and at least one sheet of relatively rigid, transparent material having at least a portion of its major surface in a non-smooth condition comprising assembling said sheet of flexible interlayer material intermediate two sheets of relatively rigid, transparent material with a non-smooth surface of said relatively rigid transparent material facing a surface of said interlayer material, prepressing said assembly by roll forming and subjecting said assembly to elevated heat and pressure to complete the lamination, the improvement comprising enclosing said assembly within a peripheral evacuation chamber thinner than the thickness of said assembly and disposed entirely inward of the outer major surfaces of said assembly to form a package, said evacuation chamber communicating with the interfacial surface between said rigid sheet and said interlayer, heating said package to a temperature sufficient to soften said interlayer material, evacuating said evacuation chamber to withdraw any air, gas and/or moisture from the interfacial surfaces, maintaining a pair of nipper rolls spaced apart a distance approximately equal to the thickness of the assembly, and passing said package between said nipper rolls so spaced while said interlayer material is sufficiently hot to be softened and while continuing said evacuation of said peripheral chamber to prepress said assembly and prepare said assembly for final

lamination at elevated temperature and pressure in an autoclave.

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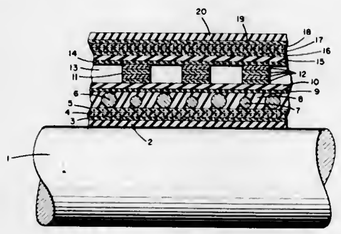
**3,933,553**
**TIRES, ETC**
**Theophilus K. Seiberling, Akron, Ohio, assignor to Mildred Kelley Seiberling, Arkon, Ohio, a part interest**
**Continuation of Ser. No. 321,421, Jan. 5, 1973, abandoned, which is a continuation-in-part of Ser. No. 838,512, July 2, 1969, abandoned. This application Sept. 7, 1973, Ser. No. 395,346**
**Int. Cl.² B29H** *17/16*
**U.S. Cl. 156—123** **3 Claims**




**1.** The method of making a liner for a pneumatic tire, which liner is composed of a plurality of rubber layers, which method comprises curing or partially curing the surface and the underlying stratum of a layer of the liner without curing the inner layer of the liner which layer is a butyl rubber and which is adapted to face toward subsequent tire-inflating fluid, and without completely curing the surface of the liner which is adapted to contact the tire carcass and laminating the layers, the uncured inner layer and the surface which is adapted to contact the tire carcass being otherwise suitable to be joined by a good seal when the ends of the liner are united.

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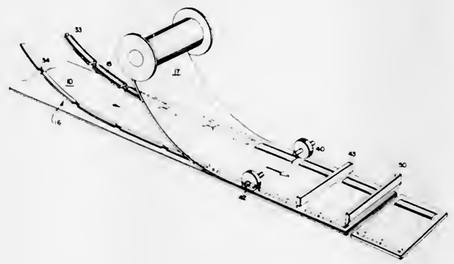
**3,933,554**
**PROCESS FOR MANUFACTURING FLEXIBLE HOSES OF ELASTOMERIC MATERIAL HAVING A CAVITY WALL**
**Flavio Torghele, Milan, Italy, assignor to Treg S.p.A., Veniano, Italy**
**Filed June 13, 1974, Ser. No. 479,166**
**Claims priority, application Italy, June 13, 1973, 25297/73**
**Int. Cl.² B31C** *13/00*; **B65H** *81/00*; **F16L** *11/12*
**U.S. Cl. 156—143** **4 Claims**



**1.** A process for manufacturing reinforced hoses of elastomeric material having a hollow space in their wall, comprising the steps of:
- building up about a rigid support a first continuous tubular layer of elastomeric material containing a reinforcing structure;
- positioning about said first tubular layer a helicoid with a hollow space existing between each adjacent coil, said helicoid being of a structural shape of elastomeric material reinforced in such a way as to be practically indeformable to pressure stresses in the direction of its thickness;
- building up a second continuous tubular layer about the helicoid of structural shape, said tubular layer being in contact with the outer surface of said structural shape;
- filling the hollow space between each adjacent coil of said helicoid with incompressible material, inert to the effects of vulcanization;
- curing the obtained unit in an autoclave under pressure;
- removing in liquid state the inert material filling the hollow space.

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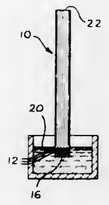
**3,933,555**
**METHOD OF MANUFACTURING PHOTOGRAPHIC FILM UNIT**
**Rogers B. Downey, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.**
**Continuation-in-part of Ser. No. 140,537, May 5, 1971, Pat. No. 3,752,722. This application July 2, 1973, Ser. No. 375,340**
**Int. Cl.² B32B** *31/08*; **G03C** *3/00*
**U.S. Cl. 156—155** **10 Claims**



**1.** A method of forming an integral diffusion transfer photographic film unit which comprises first and second sheet elements adhered to one another in opposed relationship, at least one of said sheet elements comprising a layer comprising image-forming materials and at least one of said sheet elements comprising an image-receiving layer, which method comprises:
- securing adjacent a longitudinal edge of an extended length of said first sheet element, sequentially, a multiplicity of rupturable containers retaining diffusion transfer processing composition so that upon the application of compressive force to a container the contents thereof will be directed toward the longitudinal edge of said first sheet element opposed to the edge adjacent to which said containers are secured;
- superposing an extended length of said second sheet element over said first sheet element and securing said second sheet element to said first sheet element by sealing said sheet elements each to the other along at least the longitudinal edge of said superposed elements opposed to the edge adjacent to which said rupturable containers are secured, and sealing the transverse areas normal to said longitudinal seal lying between said sequentially secured containers of processing composition, thereby establishing a composite film unit capable of retaining distributed processing composition; and
- severing said composite film units from said extended lengths of said first and second sheet elements through sealed traverse areas.



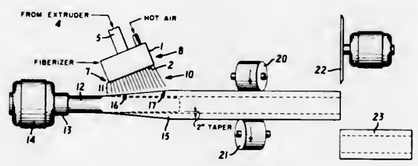
**3,933,556**
**FIBER OPTIC IMAGE SHAPE CONVERTER AND METHOD OF MAKING THE SAME**
**Richard R. Strack, Southbridge, Mass., assignor to American Optical Corporation, Southbridge, Mass.**
**Filed Jan. 10, 1974, Ser. No. 432,274**
**Int. Cl.² B32B** *17/04*; **G02B** *5/14*
**U.S. Cl. 156—155** **7 Claims**




**1.** The method of making a fused glass clad glass image transporting and shape converting device from a section of fused glass optical fiber conduit having a multiplicity of juxtapositioned individually flexible light-conducting fibers all rigidly fused together with a leachable glass matrix and said fibers being substantially indentically geometrically patterned at least at opposite ends of said conduit wherein said method comprises the steps of:
- leaching said glass matrix away from said fibers adjacent a first end of said conduit;
- replacing said leached matrix with a non-leachable bonding material;
- covering the opposite second end of said conduit with a protective cap of non-leachable material to protect the fused glass clad glass integrity thereof;
- leaching said matrix away from said fibers throughout the extent of said conduit between said non-leachable bonding material and said cap to render said fibers of said conduit and said conduit as a whole intermediately flexible;
- separating said fibers into a plurality of groups at said first end of said conduit each group being of a preselected size and shape by cutting between said fibers longitudinally thereof through said non-leachable bonding material;
- assembling said groups of fibers into a predetermined pattern differing in geometrical configuration from that of said first end of said conduit; and
- removing said cap at any preselected stage of said method following said last mentioned leaching step.

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**3,933,557**
**CONTINUOUS PRODUCTION OF NONWOVEN WEBS FROM THERMOPLASTIC FIBERS AND PRODUCTS**
**David B. Pall, Roslyn Estates, N.Y., assignor to Pall Corporation, Glen Cove, N.Y.**
**Filed Aug. 31, 1973, Ser. No. 393,688**
**Int. Cl.² D04H** *3/16*
**U.S. Cl. 156—167** **18 Claims**




**1.** A process for forming nonwoven webs of thermoplastic fibrous material in a seamless cylindrical configuration and in continuous lengths, which comprises spinning molten thermoplastic material from a multiplicity of orifices arranged at an angle to a rotating mandrel so that some orifices are at a greater distance from the mandrel than others, and some fibers travel over a greater distance than others, before they are collected on the mandrel, applying a gas blast at the orifices of the spinning die directed generally in the direction of projection of the fibers from the orifices, so as to attenuate and disrupt the fibers into discrete lengths; collecting and winding the resulting discrete lengths of fibers directly on a rotating mandrel to form thereon a generally spirally wound cylindrical layer of randomly oriented heterogeneously intertwined spun fibers of controlled density, and moving the resulting seamless spirally wound cylindrical fibrous layer in a continuous length axially on the mandrel away from the trajectory of fibers.

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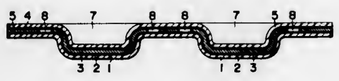
**3,933,558**
**METHOD OF PROCESSING LAMINATED DECORATIVE SHEET FOR IMPARTING PERMANENT SHAPE THERETO**
**Yasushi Takahata; Akira Karimori, hoth of Fuji; Toshiya Kato, Nagoya, and Katsuo Nomura, Inuyama, all of Japan, assignors to Kohjin Co., Ltd., Tokyo and Aika Kogyo Co., Ltd., Aichi, both of, Japan**
**Filed May 25, 1973, Ser. No. 364,186**
**Claims priority, application Japan, May 29, 1972, 47-52445**
**Int. Cl.² B31F** *1/00*; **B44C** *1/24*
**U.S. Cl. 156—209** **7 Claims**

**1.** A method of processing a laminated decorative sheet composed of two layers comprising a surface layer and a support layer for imparting a permanent shape thereto, which comprises the steps of:
- a. preparing a support layer by impregnating a first base paper with a synthetic rubber latex and/or a synthetic resin emulsion selected from the group consisting of styrene-butadiene copolymer, acrylonitrilebutadiene copolymer, methyl methacrylate-butadiene copolymer, polyvinyl acetate, polyvinyl chloride, polyacrylate and mixtures thereof; or by incorporating said synthetic rubber latex and/or said synthetic resin emulsion into a pulp slurry for the base paper by wet end addition, wherein said support layer contains the synthetic rubber and/or synthetic resin emulsion in an amount of at least 22.72 percent by weight;
- b. preparing a surface layer by impregnating a second base paper with a thermosetting resin selected from the group consisting of diallyl phthalate resin, benzoguanamine resin, unsaturated polyester resin and mixtures thereof; or by coating said thermosetting resin on the support layer obtained in a) above, the thickness of said surface layer being such that the laminate is flexible and capable of being embossed at pressures as low as 10 kg/cm²;
- c. laminating said surface layer and said support layer at a temperature of from 100° to 200°C under a pressure of from about 4 to about 15 kg/cm² to cure the thermosetting resin in said surface layer and thereby obtain a laminated decorative sheet; and
- d. embossing the laminated decorative sheet using a plane sheet embossing press under the following conditions: temperature within the range of 100°C to 200°C and pressure within the range of 10 kg/cm² to 13 kg/cm²; or embossing the laminated decorative sheet using a roll embosser under the following conditions: temperature within the range of 100°C to 200°C, and pressure within the range of 10 kg/cm to 30 kg/cm.

### 3,933,559
### PROCESS FOR MANUFACTURING A BODY OF MOISTURE-PROOF CONTAINER FOR PACKAGING

Tetsuo Watanabe, Kokubunji, Japan, assignor to Dai Nippon Printing Company Limited, Tokyo, Japan

Filed Dec. 26, 1973, Ser. No. 428,410
Claims priority, application Japan, Aug. 7, 1973, 48-88030. The portion of the term of this patent subsequent to July 15, 1992, has been disclaimed.
Int. Cl.² B29C *17/03*; B32B *3/30*; B65D *85/42*
U.S. Cl. 156—211 15 Claims




1. A process for manufacturing a body of a moisture-proof container having at least two recesses for packaging purposes which comprises adhering a metal foil to a first thermoplastic resin film with a hot melt-type adhesive to form a laminated sheet, forming at least two closed blank portions in said laminated sheet by cutting only the metal foil, adhering a second thermoplastic resin film on the surface of the metal foil and stretch-forming said closed blank portions of the laminated sheet at a temperature wherein the hot melt-type adhesive and the thermoplastic resin films are softened, thereby forming said recesses.

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### 3,933,560
### TAG WICKET

William H. Muttera, Walnut Creek, Calif., assignor to Dennison-Eastman Corporation, Richmond, Calif.

Filed July 23, 1973, Ser. No. 381,491
Int. Cl.² B31F *23/10*
U.S. Cl. 156—227 4 Claims




1. A method for forming a tag fastener without substantial waste and securing a tag thereto, comprising the steps: cutting a web of sheet-like material into a multiplicity of continuous thin nestable strips of material, each said strip comprising a pair of spaced, generally parallel end sections and an intermediate connector strip, the ends of said intermediate connector strip being integrally joined to one end of each end section to form a generally Z shaped configuration; folding each said strip at a point along the intermediate connector strip between the parallel end sections, thereby forming a generally triangular configuration having a base and an apex; and bonding a tag to the base of said triangular configuration.

### 3,933,561
### PROCESS FOR MANUFACTURING ULTRATHIN POLYMER MEMBRANES AND PRODUCTS DERIVED THEREFROM

Roy E. Larson, St. Paul, and Ralph H. Forester, Jr., Minneapolis, both of Minn., assignors to North Star Research Institute, Minneapolis, Minn.

Filed Mar. 27, 1974, Ser. No. 455,059
Int. Cl.² B32B *31/00*
U.S. Cl. 156—246 10 Claims



1. A method for making unsupported ultrathin polymer film having autogenous bonding characteristics when moist comprising the steps of:
a. floating an ultrathin polymer film having an ultrathin caliper less than 2.5 microns on the surface of a liquid bath capable of supporting said ultrathin polymer film;
b. contacting a surface of the floating ultrathin polymer film with a surface of a flexible release substrate to form a flexible separable composite comprising said film having an exposed surface and said release substrate;
c. at least partially drying said separable composite;
d. applying a particulate anti-blocking agent to the exposed surface of said ultrathin polymer film portion of said composite and separating said ultrathin polymer film from said release substrate; and
e. retrieving the thus-separated, unsupported ultrathin polymer film in bulk form.

10. A method for making unsupported ultrathin polymer film having autogenous bonding characteristics when moist comprising the steps of:
a. floating an ultrathin polymer film having an ultrathin caliper less than 2.5 microns on the surface of a liquid bath capable of supporting said ultrathin polymer film;
b. contacting a surface of the floating ultrathin polymer film with a surface of a flexible release substrate to form a flexible separable composite comprising said film having an exposed surface and said release substrate;
c. at least partially drying said separable composite;
d. separating said ultrathin polymer film from said release substrate; and
e. retrieving the thus-separated, unsupported ultrathin polymer film in bulk form by feeding said ultrathin polymer film to a driven roller at a linear feed rate which alternatively is increased and decreased with respect to the linear speed of the periphery of the resulting convoluted roll.

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### 3,933,562
### METHOD OF LAMINATING A PLASTIC SHEET ONTO A SURFACE OF A HOLLOW BODY

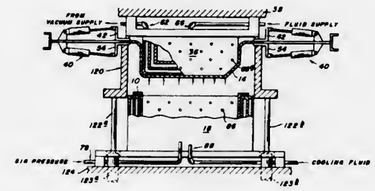
Ira G. Cruckshank, Kensington, Conn., and Thomas J. Snodgrass, Lake Forest, Ill., assignors to United States Steel Corporation, Pittsburgh, Pa.

Division of Ser. No. 54,533, July 13, 1970, Pat. No. 3,753,830. This application Mar. 1, 1973, Ser. No. 337,254
Int. Cl.² B32B *31/04*
U.S. Cl. 156—250 35 Claims

1. A method of making a two-piece laminated article wherein a first plastic sheet is formed into the shape of and secured to the inner surface of a hollow article, said method including the steps of:
a. loading said hollow article into a female die;



b. securing said plastic sheet in a clamping means;
c. heating said clamped sheet to its softening temperature;
d. moving said clamped heated sheet into registry with a male die and said female die;
e. sealing said female die in a sealed chamber one boundary of which is formed by said clamped sheet;
f. moving said male die toward said clamped heated sheet to form said clamped heated sheet about said male die;



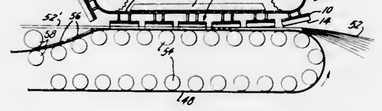

g. moving said male die and said clamped formed heated sheet against said surface of said hollow article in said female die; and
h. applying a fluid pressure differential to said clamped formed heated sheet to transfer said clamped formed heated sheet to said surface of said hollow article.

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### 3,933,563
### METHOD OF SEVERING AND EDGE-SEALING THERMOPLASTIC SETS OF FILMS

Richard S. Carlisle, 1051 Broadway, Thornwood, N.Y. 10594

Continuation-in-part of Ser. No. 256,850, May 25, 1972, abandoned. This application Jan. 24, 1973, Ser. No. 326,278
Int. Cl.² B32B *31/18*, *7/06*, *31/20*
U.S. Cl. 156—251 2 Claims

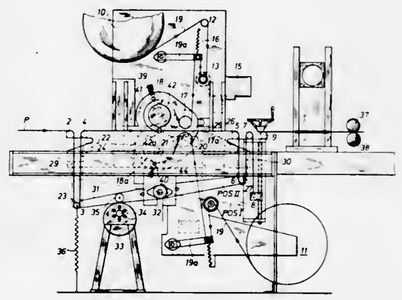


1. The method of making plural articles concurrently wherein each article comprises a set of films of thermoplastic material edge-sealed together, including the steps of forming a stack of multiple sets of heat-sealable thermoplastic films and at least one seal-inhibiting layer interposed between each set of films and the next, the seal-inhibiting layer being of a thermoplastic material laminated to a face of at least one of the films of each set, heating a blade well above the fusion temperature of the thermoplastic material, applying the blade with pressure against the stack while so heated and while supporting the stack against such pressure, the amount of pressure and the sharpness of the blade being less than that needed to effect die cutting of the stack in the absence of heat, the seal-inhibiting layer being of a material readily penetrated by the heated blade witn less pressure than that needed for cold-cutting such layer, thus severing said sets of films and forming edge seals between the severed edges of each set of said films, and applying opoosed pressure to the stack of severed sets of films at least adjacent the severed margins thereof while the material of said seals is in heat-softened condition for enhancing the seals.

### 3,933,564
### METHOD OF AFFIXING LABELS TO A WEB OF SHEET OR FILM MATERIAL AND APPARATUS FOR CARRYING OUT SAID METHOD

Ole Roger Jensen, Copenhagen N, Denmark, assignor to A/S Rolles Fabriker, Denmark

Filed Apr. 10, 1973, Ser. No. 349,814
Claims priority, application Denmark, Aug. 22, 1972, 4155/72; Sept. 26, 1972, 4748/72
Int. Cl.² B32B *31/04*
U.S. Cl. 156—265 6 Claims



1. A method of affixing labels to a web of sheet or film material comprising the steps of:
stepwise advancing a film web into and out of said apparatus,
moving said advanced film web in synchronism with a label being affixed thereto by pivoting a tilting lever mounted to said apparatus, said tilting lever having rollers at each end thereof about which said film web is positioned,
feeding a web of labels to a vacuum roller,
attracting said labels to the surface of said vacuum roller,
cutting each label from the web of labels after each label is attracted to the surface of said vacuum roller, and
rotating said vacuum roller by said tilting lever slightly faster than the rate at which said web of labels is fed thereto to thereby separate the cut label from said web of labels, and
moving said vacuum roller against said film web and urging while rotating a label arranged peripherally thereon against said film web to affix the label to the film web with a pure rolling motion and compressive action.

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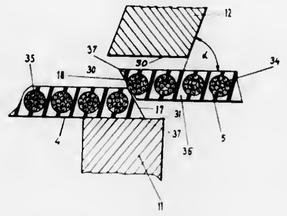
### 3,933,565
### METHOD AND APPARATUS FOR BUTT CONNECTION OF PLIES FORMED OF PLASTIC DEFORMABLE MATERIAL, ESPECIALLY RUBBERIZED STEEL CORD PLIES

Gerhard Printz, Vienna, and Ralf Haase, Wien-Mauer, both of Austria, assignors to Semperit Aktiengesellschaft, Vienna, Austria

Filed Nov. 19, 1973, Ser. No. 417,398
Claims priority, application Switzerland, Nov. 20, 1972, 16846/72
Int. Cl.² B65H *69/06*
U.S. Cl. 156—266 13 Claims

1. A method for the butt connection of plies formed of plastic deformable material, comprising the steps of beveling substantially parallel to one another cut surfaces of the plies which are to be interconnected, positioning such beveled cut surfaces of the plies so as to be in slight overlapping relationship with respect to one another and with the plies located in

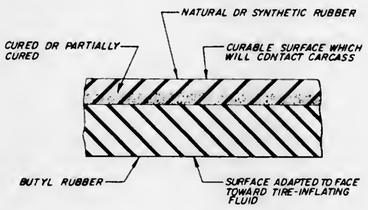
different substantially horizontal planes, and then connectably joining together the plies by the application of a force to said



plies, said force being exerted at an inclination with respect to said plies.

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**3,933,566**
**TIRES, ETC.**
**Theophilus K. Seiberling, Akron, Ohio, assignor to Mildred Kelley Seiberling, Akron, Ohio, a part interest**
**Division of Ser. No. 395,346, Sept. 7, 1973, Continuation of Ser. No. 321,421, Jan. 5, 1973, which is a continuation-in-part of Ser. No. 838,512, July 2, 1969. This application Mar. 25, 1974, Ser. No. 454,207**
**Int. Cl.² B29H** *19/02, 5/02*
**U.S. Cl. 156—272** **32 Claims**

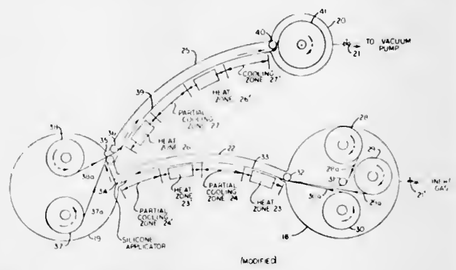



1. The method of making a liner for a pneumatic tire which liner is composed of a plurality of layers which method comprises, without completely curing the outer surface of the liner which is the surface adapted to contact the carcass of the tire, curing or only partially curing by irradiation at least a portion of one layer of the liner and thereby rearranging the molecular structure thereof, all without curing the inner layer which is the layer adapted to face toward subsequent tire-inflating fluid, which portion is substantially coextensive with the layer and thereby rearranging the molecular structure thereof, and laminating said layers.

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**3,933,567**
**APPARATUS FOR HEAT BONDING FLUOROCARBON AND OTHER PLASTIC FILMS TO METAL SURFACES**
**Ransome W. Erwin, Ogden, Utah, assignor to Austral-Erwin Engineering Co., Houston, Tex.**
**Division of Ser. No. 401,656, Sept. 28, 1973, and a continuation-in-part of Ser. No. 311,137, Dec. 1, 1972, which is a continuation of Ser. No. 41,375, May 28, 1970, abandoned. This application Aug. 1, 1974, Ser. No. 493,890**
**Int. Cl.² B32B** *15/08*
**U.S. Cl. 156—382** **11 Claims**

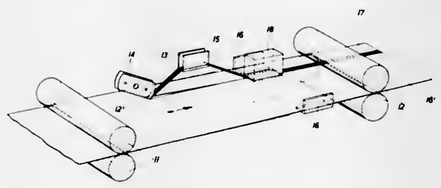
1. Apparatus for bonding a plastic film to a metal surface comprising a fluid-tight closed system including first, second and third fluid-tight containers or vessels, a first fluid-tight conduit connecting the first and second containers and a second fluid-tight conduit connecting the second and third containers, means for supplying vacuum to the entire system including the containers and conduits, a continuous roll for supplying thin sheet metal mounted within the first container, means for passing the strip of metal continuously from the first container through the first conduit to the second container then through the second conduit to the third container, means for supplying at least one layer of plastic film to one side of the metal strip from the first container and means for passing it with the metal strip through the conduits and second con-




tainer to the third container, means within the second container for supplying at least one layer of thin plastic film to the other side of the metal strip, means for passing the same with the metal strip to the third container and heating means including first and second heating members for applying heat to the first and second conduits respectively, sufficient to bond the plastic film to the metal sheet.

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**3,933,568**
**APPARATUS FOR MANUFACTURING A WRAPPER WEB PROVIDED WITH A TEAR-OPEN STRIP**
**Alfred Schmermund, 62 Kornerstrasse, 5820 Gevelsberg, Germany**
**Filed Oct. 3, 1973, Ser. No. 403,306**
**Claims priority, application Germany, Oct. 18, 1972, 2250932**
**Int. Cl.² B32B** *31/20, 35/00*
**U.S. Cl. 156—512** **5 Claims**

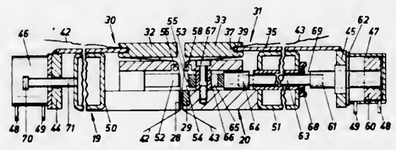


1. Apparatus to manufacture a wrapper web provided with a tear-open strip, the apparatus comprising, in combination:
feeder means to feed a web of wrapper material in a given direction along a first path including a planar portion;
cutter means comprising two cutter elements disposed at a predetermined spacing apart in a direction perpendicular to said given direction and adapted to make mutually parallel longitudinally extending incisions in said web of wrapper material to sever therefrom a strip having its width defined by said predetermined spacing and on each of mutually opposite sides of said incisions to leave a respective web piece having a width substantially greater than that of said strip;
first guide means comprising means protruding from said planar portion of said first path to define a ramp surface extending from and inclined at an acute angle with respect to said planar portion to cause a portion of said web traversing said protruding means to be guided along said ramp surface and out of the plane of said planar portion of said first path and to guide said strip along a second path, said second path being convergent with said planar portion of said first path downstream of said first guide means, said cutting means co-operating with said protruding means to make said incisions in said web;
second guide means having respective guide elements spaced apart in a direction perpendicular to said given direction at a distance substantially equal to the sum of the respective widths of said web pieces, said guide elements being operatively associated with said planar portion of said first path downstream of said first guide means to guide said web pieces into mutually abutting edge-to-edge relationship;
third guide means operatively associated with said planar portion of said first path downstream of said first guide means to guide said strip into overlapping relationship with longitudinally extending and mutually next adjacent edge portions of each of said web pieces in said planar portion of said first path; and
connector means to connect said strip — when in said overlapping relationship — to each of said edge portions.



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**3,933,569**
**TOOL FOR WELDING TOGETHER TWO PLASTICS FILMS WRAPPING AN OBJECT**
**Halvor Gråsvoll, Stigbergsliden 16, S-414 63 Goteburg, Swekov, ulitsa Lenina, 26, kv. 21, Efremov, all of U.S.S.R.**
**Filed Mar. 18, 1974, Ser. No. 452,212**
**Claims priority, application Sweden, Mar. 19, 1973, 7303772**
**Int. Cl.² B65B** *9/12, 51/30*
**U.S. Cl. 156—515** **5 Claims**

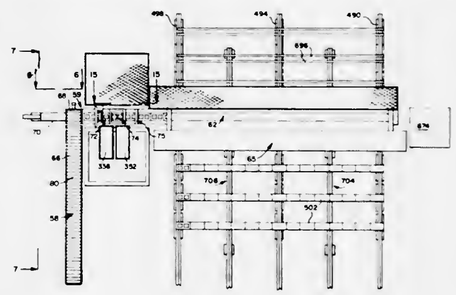


1. An improved tool for interconnecting by means of welding two webs of a weldable and preferably also extensible plastics film enclosing a package of goods, said webs being reeled off two separate supply rolls, said tool comprising two tool sections arranged to be pressed against one another, a face on each tool section being positioned adjacent said goods, a clamping jaw on each said section face, two welding units positioned on one of said sections externally of said clamping jaw as seen from the direction of said goods, and a severing means intermediate said welding units, the improvement comprising an additional pair of clamping jaws on each said tool section, said additional clamping jaws arranged to securely clamp the associated film web at a point between the supply roll of the latter and the intended welding point, and also means for releasing said film from said additional two pairs of clamping jaws immediately after or exactly during the joining together of said tool sections, said welding units being arranged to thereafter initiate the welding operation.

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**3,933,570**
**PANEL MANUFACTURING MACHINE AND METHOD**
**Lawrence W. Wright, Scottsdale; Leon H. Tolleson; Daniel P. Abrahamson, both of Phoenix; Paul M. Thomas, Paradise Valley, and Eugene E. Crile, Phoenix, all of Ariz., assignors to The Thomas 1970 Trust, Phoenix, Ariz.**
**Continuation of Ser. No. 132,788, April 9, 1971, abandoned, which is a division of Ser. No. 138,949, April 30, 1971, Pat. No. 3,789,101. This application Oct. 3, 1973, Ser. No. 403,056**
**Int. Cl.² E04G** *21/14*
**U.S. Cl. 156—558** **27 Claims**

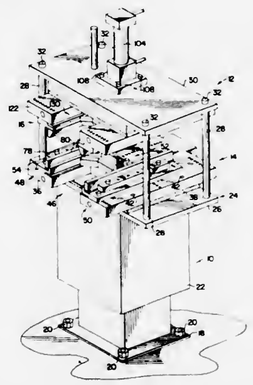
1. In a wall panel manufacturing machine the combination of: a frame, an elongated makeup table adapted to support an elongated course of blocks including a plurality of concrete blocks in end-to-end relation with each other on said table; first means for progressively conveying blocks on to one end of said makeup table; second means for progressively inserting mortar between the adjacent ends of said blocks for forming head joints therebetween; third means for placing mortar on the upper surfaces of said blocks to form bed joints thereon; fourth means for progressively advancing a plurality of said



blocks with said head joints and bed joint mortar in a direction longitudinally along said makeup table until an entire course of blocks has been assembled and mortared together thereon; and fifth means for transferring said last-mentioned course of mortared blocks on to an upper surface of previously assembled course or the like.

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**3,933,571**
**SEALING APPARATUS UTILIZING ADJUSTABLE JAW PORTIONS**
**Charles E. Studen, Highland Heights, Ohio, assignor to Donray Products Company, Cleveland, Ohio**
**Division of Ser. No. 183,102, Sept. 23, 1971, abandoned. This application May 21, 1973, Ser. No. 361,977**
**Int. Cl.² B30B** *7/04;* **B32B** *3/02, 31/20*
**U.S. Cl. 156—583** **5 Claims**



1. Apparatus for forming sealed foam plastic envelopes of a given desired size comprising:
a. a pair of platens having opposed faces;
b. support means for supporting said platens with their opposed faces generally parallel and in alignment;
c. power means for producing relative movement between said platens to permit them to be selectively moved from a first position wherein their opposed faces are spaced a substantial distance apart to a second position wherein their opposed faces are relatively closely spaced;
d. adjustable jaw assembly means carried on each of said platens, each of said jaw assembly means including at

least three margin defining jaw portions fixed in desired relation on each platen, the jaw portions including one pair of elongated jaw portions in side-by-side parallel alignment on each platen and arranged to mate in face-to-face relation when the platens are moved to the second position, and an intermediate jaw portion mounted on each platen in face-to-face relation with its opposing intermediate jaw portion and extending between the elongated jaw portions to define therewith opposed co-operating jaw assemblies of generally U-shaped and desired size;

e. adjusting means for permitting the spacing between the parallel elongated jaw portions to be selectively varied for envelopes of different size; and,

f. means for causing the jaw portions to impart energy to plastic sheets positioned therebetween to bond said sheets into an envelope of desired size.

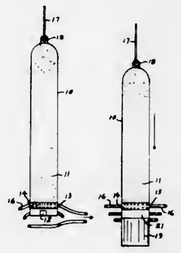
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**3,933,572**

## METHOD FOR GROWING CRYSTALS

**Joseph R. O'Connor, Waquoit, Mass., and Leonard J. Small, Sunnyvale, Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.**

**Filed Dec. 11, 1973, Ser. No. 423,857**
**Int. Cl.² B01J** *17/10*
**U.S. Cl. 156—608** **7 Claims**



**1.** A method of growing a single crystal from a material which exhibits large supercooling, said method comprising the steps of positioning a foraminous susceptor above and adjacent to a seed crystal and below and in contact with a column of crystal feed material selected from the group consisting of compounds represented by the formulas $M_3AB_3$ and $M_4A_2B_5$, wherein A is P, As or Sb; B is S, Se or Te; and M is Na, K, Li, Ba, Ca, Mg, Be, Zr, Mn, Zn, Ce, Fe, Co, Ni, Cd, Pb, Sn, Cu, Ag, Au or Pt; inductively heating the susceptor so as to melt the top of the seed crystal and a layer of the column of the crystal feed material adjacent the susceptor; passing crystal feed material melt through openings in the susceptor into contact with the melted seed crystal, thereby commencing crystal growth; lowering the column toward the heated susceptor so as to melt the end of the column; passing the resulting melt through openings in the susceptor to provide material for continued crystal growth; and maintaining the temperature of the susceptor at a temperature such that the height of the melt on which the susceptor floats as measured between the lower surface of the susceptor and the interface between the melt and the grown crystal is in the range of about 2 to 10 millimeters.

**3,933,573**

## ALUMINUM NITRIDE SINGLE CRYSTAL GROWTH FROM A MOLTEN MIXTURE WITH CALCIUM NITRIDE

**Cortland O. Dugger, Newton, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.**

**Continuation-in-part of Ser. No. 419,459, Nov. 27, 1973, abandoned. This application Mar. 27, 1975, Ser. No. 563,008**
**Int. Cl.² C01F** *7/00*; **B01J** *17/06*
**U.S. Cl. 156—624** **4 Claims**

**1.** A method for growing aluminum nitride single crystals which comprises the steps of forming a mixture of (a) from about 8 to 40 mole percent of aluminum nitride, and (b) from about 92 to 60 mole percent calcium nitride; heating said mixture to a temperature above about 1525°C. and maintaining said temperature for a time sufficient to form a homogeneous molten solution thereof; slowly cooling the molten solution to a temperature above its freezing point at a rate of about 0.5° to about 3.0°C./hr. in order to effect the precipitation of single crystals of said aluminum nitride.

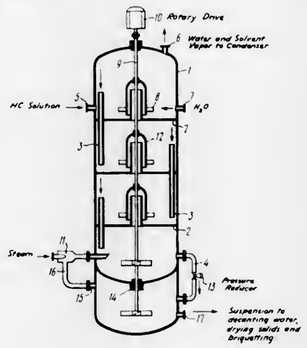
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**3,933,574**

## METHOD OF AND DEVICE FOR ISOLATION OF RUBBER-LIKE POLYMERS FROM HYDROCARBON SOLUTIONS

**Alexandr Fedorovich Zinoviev, ulitsa Scherbakovskaya, 9, kv. 59; Boris Sergeevich Korotkevich, Fortunatovskaya ulitsa, 31/35, kv. 71; Sergei Timofeevich Petukhov, Fortunatovskaya ulitsa, 31/35, kv. 9; Izmail Mikhailovich Basiev, Zverinetskaya ulitsa, 14, kv. 58; Jury Alexandrovich Shmuk, Leninsky prospekt, 13, kv. 31; Ulchar Ashraf ogly Mamedov, ulitsa Radio, 20, kv. 26; Ilya Yakovlevich Poznyak, ulitsa Scherbakovskaya, 9, kv. 120; Naum Mikhailovich Starominsky, ulitsa Scherbakovskaya, 11, kv. 116; Nikolai Pavlovich Shmarovoz, ulitsa Lermontova, 34, kv. 58, all of Moscow; Vladimir Alexandrovich Volnakov, ulitsa Lenina, 27/40, kv. 38, Efremov; Viktor Georgievich Minaev, ulitsa Sverdlova 63, kv. 6, Efremov, and Alexei Semenovich Strukov, ulitsa Lenina, 26, kv. 21, Efremov, all of U.S.S.R.**

**Filed Aug. 7, 1973, Ser. No. 386,383**
**Int. Cl.² B01D** *1/14, 1/26, 1/00*; **C07D** *211/00*
**U.S. Cl. 159—16 S** **5 Claims**




**1.** A method for isolating a rubber-like polymer from a solution thereof in a hydrocarbon solvent comprising adding water and vapor to the polymer solution with agitation at a temperature of 80°–180°C. to form an aqueous suspension of polymer granules and to evaporate the bulk of the solvent in a first steaming step; continuously delivering the suspension from the first steaming step to at least one intermediate steaming step wherein the suspension is agitated and treated with vapor at a temperature of 115°–180°C and then to a final flashing step wherein the vapor treated suspension from the intermediate step is agitated at a temperature of 90°–110°C. to remove final traces of solvent; discharging the polymer suspension from the final flashing step; separating the polymer from water; and drying the polymer; and wherein the solvent vapors and steam are continuously withdrawn in each step counterflow to the flow of the polymer suspension.



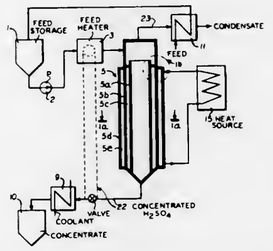
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**3,933,575**

## SEPARATION OF CORROSIVE LIQUID MIXTURES

**Hans Guth, Berg. Neukirchen; Hans-Joachim Kaiser; Klaus Kleine-Weischede, both of Leverkusen; Hermann Wieschen, Cologne, all of Germany, and Hans L. Kuhnlein, Fullinsdorf, Switzerland, assignors to HCH. Bertrams Aktiengesellschaft, Basel, Switzerland and Bayer Aktiengesellschaft, Leverkusen, Germany**

**Filed Feb. 15, 1974, Ser. No. 442,937**
**Claims priority, application Germany, Mar. 6, 1973, 2311085**
**Int. Cl.² B01D** *1/22, 1/00*; **C01B** *17/90*; **B41D** *3/00*
**U.S. Cl. 159—DIG. 19** **7 Claims**




**1.** In the processing of aqueous sulfuric acid of about 50 to 80% concentration by its passage over one surface of a wall of inert heat resistant material, and heating the opposite surface of said wall, thereby to evaporate water from said sulfuric acid, the improvement which comprises heating the opposite surface of said wall by contact with a molten metal which is normally solid at ambient temperature and which is inert with respect to sulfuric acid, heating said molten metal indirectly through heat exchange with a molten salt which is normally solid at ambient temperature, and heating and re-circulating said salt, whereby in the event of perforation of said wall the sulfuric acid is kept separate from the molten salt by said molten metal.

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**3,933,576**

## EVAPORATION OF RADIOACTIVE WASTES

**William E. Rushton, South Holland, Ill., assignor to Whiting Corporation, Harvey, Ill.**

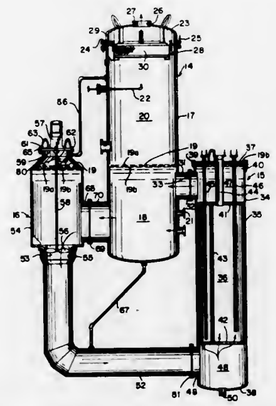
**Filed May 17, 1973, Ser. No. 361,208**
**Int. Cl.² B01D** *1/26, 1/100, 1/06*; **C09K** *3/00*
**U.S. Cl. 159—27 A** **13 Claims**

**1.** An evaporator system for liqueform material for operation within a radiation shield providing access to the system from overhead, said evaporator system comprising, in combination:

chamber means for said liqueform material, said chamber means defining first and second apertures on a top portion thereof, and said liqueform material having maximum and minimum operating levels within said chamber means;

means comprising a vertical heat exchanger for heating said fluid, said heat exchanger including a first top plate removably mounted over said first aperture in said chamber means and a steam chest suspended from first said top plate, said steam chest being submerged in said chamber means below said minimum liquid operating level and being removable from said system through said aperture;

means comprising a circulation pump for circulating said liqueform material through said system, said circulation pump including a second top plate removably mounted over said second aperture in said chamber means, a motor mounted on said second top plate, a propeller, flow confining means in said chamber means below said minimum liquid level for said propeller, a shaft depending from said motor for supporting said propeller within said flow confining means below said minimum operating level, said propeller and shaft being removable from said system through said second aperture, said first and second apertures being above said maximum liquid operating level and of sufficient dimensions to enable said circulation pump and said heat exchanger to be removed from said system from overhead, and a vapor exhaust port in said chamber means above said maximum liquid level.



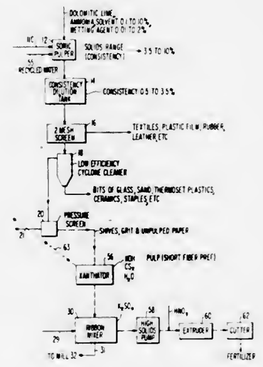
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**3,933,577**

## PROCESS OF SONICALLY TREATING MUNICIPAL WASTE TO PRODUCE HIGH QUALITY PAPER PULP AND FERTILIZER

**Ronald A. Penque, Glen Ridge, N.J., assignor to Biocel Corporation, New York, N.Y.**

**Continuation-in-part of Ser. No. 105,123, Jan. 8, 1971, Pat. No. 3,850,771. This application Oct. 9, 1973, Ser. No. 404,305**
**Int. Cl. D21b** *1/32*; **D21c** *5/02*
**U.S. Cl. 162—4** **35 Claims**




**34.** A process of treating paper and paper products containing contaminants to produce light long fiber pulp comprising subjecting the paper and paper products to pulping to prevent shearing of the fibers in the presence of water, a calcium or

magnesium compound or mixtures thereof, an ammonium compound, a solvent for the contaminants and a wetting agent at an alkaline pH to form a slurry of paper pulp and the added chemicals, reacting the slurry with phosphate ions to form a precipitate of calcium or magnesium ammonium phosphate or mixtures thereof carrying the contaminants therewith, and separating the pulp slurry from the precipitate, the pulp slurry containing long fiber decontaminated pulp.

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**3,933,578**

## METHOD OF RECOVERING PRESSURE SENSITIVE COPYING PAPER WASTE PAPER

**Tsuneo Kasugai; Makoto Shimizu, and Shinichiro Ohara, all of Fujinomiya, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan**

**Filed May 30, 1974, Ser. No. 474,634**
**Claims priority, application Japan, May 30, 1973, 48-60457**
**Int. Cl.² D21C** *5/02*
**U.S. Cl. 162—5** **6 Claims**

**1.** In a method of recovering waste, pressure sensitive copying paper, which includes a paper having micro capsules containing an electron donative color former dissolved in an organic solvent and a paper with an electron attractive clay, including difibration processing for regenerating said waste paper, the improvement comprising: defibrating said paper in an aqueous alkaline solution of pH greater than 7.5, said aqueous alkaline solution containing a surface active agent in an amount of 0.01% to 20% by weight based on the weight of the waste paper to form a pulp, wherein color production in the pulp during defibration is inhibited.

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**3,933,579**

## VESICULATED POLYMER GRANULES

**Robert William Kershaw; Frederick John Lubbock, and Livia Polgar, all of Victoria, Australia, assignors to Dulux Australia Limited, Melbourne, Australia**

**Continuation-in-part of Ser. No. 877,498, Nov. 17, 1969, abandoned. This application Aug. 4, 1971, Ser. No. 169,116**
**Claims priority, application Australia, June 28, 1971, 5329/71**
**Int. Cl.² D21D** *3/00;* **D21H** *3/30;* **C08J** *9/00*
**U.S. Cl. 162—164** **28 Claims**

**1.** Vesiculated polymer granules, said vesiculated granules having a plurality of discrete internal vesicles whose walls are provided by said polymer, said granules having a mean diameter of 1–500 micron, the ratio of granule diameter to the mean vesicle diameter being at least 5:1, the maximum diameter of the vesicles being 20 micron and the volume of the vesicles being from 5–95% of the volume of the granules and further characterized in that the vesicles contain particulate solids at a concentration not exceeding 60% of the vesicle volume.

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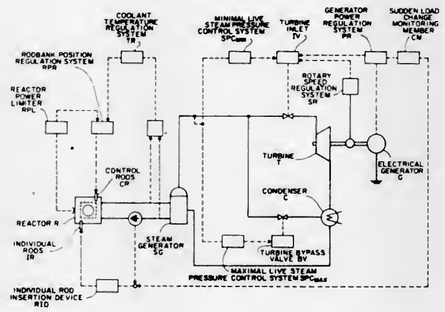
**3,933,580**

## LIMIT REGULATION SYSTEM FOR PRESSURIZED WATER NUCLEAR REACTORS

**Werner Aleite, Erlangen, and Heinz-Wilhelm Bock, Erlangen-Bruck, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany**

**Continuation of Ser. No. 125,742, March 8, 1971, abandoned. This application Apr. 9, 1973, Ser. No. 349,280**
**Int. Cl.² G21C** *7/00, 17/00*
**U.S. Cl. 176—20 R** **7 Claims**

**1.** In a system for controlling by turbine inlet valves and control rods power delivered by a nuclear reactor of a nuclear power plant of the pressurized water type, the plant including a steam turbine, a turbogenerator, operating control means for controlling the system in the normal working range, and emergency means to shut down the reactor; the improvement comprising means to control intermediate disturbances in the range between and not controlled by the operating control means and the shut down means, minimal steam pressure control means for controlling the turbine inlet valves when the steam pressure drops below a certain value, turbogenerator protecting means, maximal steam pressure control means connected for activating the turbogenerator protecting means when the steam pressure exceeds a predetermined value, reactor protecting means and reactor control means for activating the reactor protecting means when the reactor output exceeds a predetermined value, a power controlling system comprising a rod control system responsive directly to reactor




coolant temperature means to position control rods and thereby control reactor output, and a reactor power limiting system for taking over control of the system to control the action of the rod control system when a limit value which is below the value of the reactor output which controls the activation of the reactor protecting means is exceeded thereby limiting the reactor output power to a permissible value via the control rods.

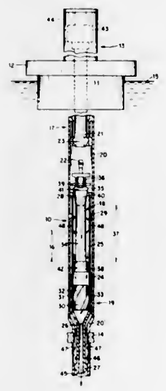
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**3,933,581**

## CONTROL ROD DRIVE FOR REACTOR SHUTDOWN

**Ernest R. McKeehan, Los Gatos; Bruce M. Shawver; Donald J. Schiro, both of San Jose, and William E. Taft, Los Gatos, all of Calif., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.**

**Filed June 4, 1974, Ser. No. 476,173**
**Int. Cl.² G21C** *7/12, 7/16*
**U.S. Cl. 176—36 R** **5 Claims**



**1.** In combination, a control rod drive for scramming a nuclear reactor comprising: a control rod assembly; a latch mechanism for retaining and releasing said control rod assembly; a drive shaft assembly operatively connected to said latch



mechanism; and a control drive assembly operatively connected to said drive shaft assembly, said control rod assembly and said latch mechanism being positioned within an outer casing extending through a reactor core; said drive shaft assembly extending through a reactor closure; and said control drive assembly being located on a side of said reactor closure opposite said outer casing; said control rod assembly being composed of a control rod region, a piston connected at one end of said control rod region and having a cross-section larger than an adjacent cross-section of said control rod region, a damper mechanism connected to said control rod region at an end opposite said piston, and a coupling head connected to said damper mechanism, said coupling head being releasably retained in said latch mechanism; said control rod assembly being movably positioned within a guide tube mounted within said outer casing and defining a high pressure fluid annulus therebetween, wherein fluid passes from the high pressure plenum through apertures in the core support structure and flows upwardly along said annulus, said fluid being vented through apertures in said guide tube located adjacent the control rod region and into the upper portion of said control rod region, said fluid passing therethrough for cooling said control rod assembly during normal operating conditions and for producing hydraulic pressures on the upper surface of said piston of said control assembly for driving said control rod assembly into the reactor core upon release of said control assembly by said latching mechanism, and said fluid thereafter passing through openings in said piston into the lower end of the control rod region and being vented to the low pressure plenum.

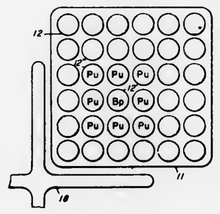
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**3,933,582**

## PLUTONIUM FUEL ADJACENT BURNABLE POISON

**William V. MacNabb, Rockville, Md., assignor to General Electric Company, San Jose, Calif.**

**Continuation of Ser. No. 156,454, Dec. 30, 1970, abandoned, which is a continuation of Ser. No. 762,946, Sept. 26, 1968, abandoned. This application Sept. 10, 1973, Ser. No. 395,827**
**Int. Cl. G21c** *3/32*
**U.S. Cl. 176—78** **2 Claims**




**1.** A fuel assembly for use in a nuclear reactor core comprising: a plurality of spaced apart elongated fuel elements, burnable poison in at least one of said fuel elements, fissile plutonium in all of the fuel elements which are adjacent said one of said fuel elements, the initial fissile fuel in the fuel elements which are more remote from said one of said fuel elements than said adjacent fuel elements consisting of fissile uranium whereby the initial power in said fuel adjacent said one of fuel elements in said core is increased relative to the initial power in said more remote fuel elements as compared to a similar fuel assembly wherein all of the initial fissile fuel consists of uranium.

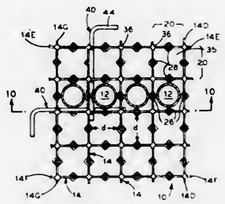
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**3,933,583**

## NUCLEAR FUEL ROD FRAME WITH FUEL RODS POSITIONED BY MOVEABLE MEMBER

**Felix Stanley Jabsen, Lynchburg, Va., assignor to The Babcock & Wilcox Company, New York, N.Y.**

**Division of Ser. No. 774,148, Nov. 7, 1968, Pat. No. 3,665,586. This application Jan. 11, 1971, Ser. No. 105,388**
**Int. Cl.² G21C** *3/34*
**U.S. Cl. 176—78** **2 Claims**




**1.** In combination with a frame having resilient means for holding at least one movable nuclear fuel bearing member in place within a nuclear reactor wherein the resilient means is adapted to firmly hold the fuel member in a predetermined position with respect to the frame, the improvement comprising means other than the fuel bearing member for temporarily deflecting the resilient means to enable the fuel bearing member subsequently to be freely moved within the frame, said means further comprising at least one element inserted within the frame and rotatable therewithin and having portions thereon to selectively engage and deflect said resilient means in response to said rotation.

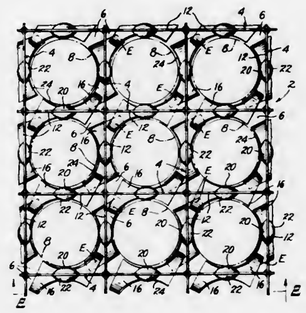
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**3,933,584**

## GRID FOR NUCLEAR FUEL ASSEMBLY

**Kenneth C. Litt, Silver Spring, Md., assignor to Nuclear Fuel Services, Inc., Rockville, Md.**

**Filed Apr. 23, 1973, Ser. No. 353,448**
**Int. Cl. G21c** *3/18, 3/34*
**U.S. Cl. 176—78** **9 Claims**



**1.** A grid structure for a nuclear reactor fuel assembly comprising a plurality of members arranged to define the side walls of a plurality of adjacent open-ended grid cells through which elongated elements are adapted to extend;

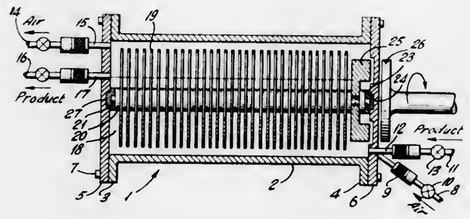
each of said side walls having an opening therethrough and extending across a major portion of the width thereof and communicating with an adjacent cell; and

substantially planar tabs of a length equal to a major portion of the width of said walls extending from edges of said openings into adjacent cells and extending oblique to the axes of said cells whereby to cause helical flow of a coolant flowing through said cells and intercell coolant mixing through said openings.

### 3,933,585
### PROCESS FOR PRODUCTION OF VACCINES

William J. McAleer, Ambler, Pa. 19002; Raymond E. Spier, Guildford, Surrey, England, and Kenneth L. Posch, Lansdale, Pa. assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 262,825, June 14, 1972, abandoned. This application May 31, 1974, Ser. No. 475,063
Int. Cl.[2] A61K *39/12*; C12B *1/00*; C12K *7/00*
U.S. Cl. 195—1.1 5 Claims




1. A process for the production of a vaccine wherein the improvement comprises growing a desired virus in a rotating multiplate propagator having a plate diameter to internal tank diameter ratio of from about 0.80 to about 0.90.

3. A process for the production of a vaccine wherein the improvement comprises growing a desired virus in a rotating multiplate propagator having a distance of from about one-half inch to about three-fourths inch between the edge of the plates and the tank wall and having a plate diameter to internal tank diameter ratio of from about 0.80 to about 0.90.

4. A process for the production of a vaccine wherein the improvement comprises growing a desired virus in a multiplate propagator having a surface area to volume ratio of from about 1.7 $cm.^2$/ml. to 2.2 $cm.^2$/ml and having a plate diameter to internal tank diameter ratio of from about 0.80 to about 0.90.

### 3,933,586
### METHOD OF MAKING L-ASPARTIC ACID FROM FUMARIC ACID

Nguyên-Công Duc, Nesle, France, assignor to Les Produits Organiques du Santerre Orsan, Paris, France

Continuation-in-part of Ser. No. 394,868, Sept. 6, 1973, abandoned. This application Nov. 26, 1973, Ser. No. 418,863
Claims priority, application France, Sept. 7, 1972, 72.31655; Dec. 8, 1972, 72.43684
Int. Cl.[2] C12D *13/06*, *13/10*
U.S. Cl. 195—65 22 Claims

1. A method of production insitu of an amino-transferase which is non thermolabile and has little sensitivity to the physical-chemical conditions of the conversion media and being able to transform furmaric acid into L-aspartic acid at a high rate, comprising cultivating under aerobic conditions Pseudomonas PO 7111 (ATCC No. 21973) in a nutritive medium containing a source of carbon, a source of phosphorous, a source of nitrogen and oligo-elements.

### 3,933,587
### METHOD FOR PRODUCTION OF IMMOBILIZED ENZYME

Hidekatsu Maeda, Chiba; Aizo Yamauchi, Yokohama; Hideo Suzuki, and Akira Kamibayashi, both of Chiba, all of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Nov. 23, 1973, Ser. No. 418,264
Claims priority, application Japan, Dec. 7, 1972, 47-122860
Int. Cl. C07g *7/02*
U.S. Cl. 195—68 5 Claims

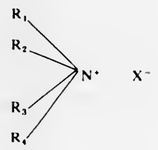
1. A method for the production of an immobilized enzyme, which comprises adding a radioresistant enzyme to the aqueous solution of a polyvinyl type high molecular compound selected from the group consisting of polyvinyl alcohol and polyvinyl pyrrolidone and irradiating the resultant mixture with ionizing radiant rays for thereby gelling the mixture.

### 3,933,588
### ENZYME TREATMENT

Robert G. Dworschack, Clinton, Iowa; William H. White, Fulton, Ill., and James C. Chen, Clinton, Iowa, assignors to Standard Brands Incorporated, New York, N.Y.

Continuation-in-part of Ser. No. 191,817, Oct. 22, 1971, abandoned. This application Aug. 23, 1974, Ser. No. 499,818
Int. Cl.[2] C07G *7/02*
U.S. Cl. 195—68 9 Claims

1. A method of improving the storage stability of enzymes which are immobilized intracellularly or immobilized in or on an inert carrier comprising treating an immobilized enzyme preparation consisting essentially of immobilized enzymes and water with an amount of a compound having the following formula:




where $R_1$ is a radical containing at least 10 carbon atoms, $R_2$ is a radical containing from 1 to 20 carbon atoms, and $R_3$ and $R_4$ are radicals containing not more than 6 carbon atoms, the radicals being selected from the group consisting of alkyl, substituted alkyl, alkene, aryl, substituted aryl, aralkyl, and saturated and unsaturated cyclic wherein the cyclic radical is formed by joining $R_3$ and $R_4$, and when the cyclic radical is unsaturated, there is no $R_2$, the amount of the compound being sufficient to increase the storage stability of said immobilized enzymes as compared to the storage stability of immobilized enzymes which have not been treated with said compound.

### 3,933,589
### CHEMICAL IMMOBILIZATION OF ENZYMES

Melvin H. Keyes, Sylvania, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Mar. 20, 1975, Ser. No. 560,308
Int. Cl.[2] C07G *7/02*
U.S. Cl. 195—68 19 Claims

1. In the process for immobilizing an enzyme on a support, wherein an enzyme, a support and a chemical immobilizing agent are maintained in contact at a temperature and for a time sufficient to chemically immobilize said enzyme, the improvement wherein said chemical immobilizing agent comprises a preformed reaction solution of an alkane diamine and alkane dihalide.

### 3,933,590
### METHOD OF CONTINUOUSLY CULTURING YEAST

Takeshi Oguma; Shunji Shiba; Nobuo Moritani, all of Gotsu, and Yoichi Takeuchi, Hosoyama, all of Japan, assignors to Sanyo-Kokusaku Pulp Co., Ltd., Tokyo, Japan

Filed June 25, 1974, Ser. No. 482,908
Claims priority, application Japan, Nov. 6, 1973, 48-124030
Int. Cl.[2] C12B *1/00*
U.S. Cl. 195—91 3 Claims

1. A method of continuously culturing yeast in a vapor condensate, comprising:
adding a neutralizing agent and nutritive agents to the vapor condensate produced from the evaporation of spent sulfite liquor;



inoculating said vapor condensate with a sulfurous acid resistant strain of Candida, Pichia or Hansenula yeast;
continuously culturing said yeast in said inoculated vapor condensate at a pH of 4.5 to 5.5; and
continuously supplying unsterilized vapor condensate to control the sulfurous acid concentration and the pH of said inoculated vapor condensate, wherein the concentration of sulfurous acid in said vapor condensate is from 0.02 to 0.20%.

### 3,933,591
### PROCESS FOR PREPARING INTRACELLULAR SUBSTANCES OF MICROBIAL ORIGIN

Jaroslav Dasek, Yverdon, and Knut Rude Traelnes, Renens, both of Switzerland, assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed Apr. 27, 1973, Ser. No. 355,014
Claims priority, application Switzerland, May 3, 1972, 6589/72
Int. Cl.[2] C12B *1/00*
U.S. Cl. 195—96 8 Claims

1. In a process for preparing intracellular substances of microbial origin, which comprises culturing a microorganism in a suitable nutrient medium therefor, mechanically rupturing the walls of at least a part of the microorganism cells and recovering the intracellular substances released by such rupture, the improvement which comprises adding to said medium at least one antibiotic in an amount sufficient to weaken the walls of the microorganism cells but insufficient to arrest growth of the microorganism cells or to induce discharge of intracellular substances into said medium, whereby cells exhibiting such weakened cell walls are cultured.

### 3,933,592
### METHOD OF DETECTING LIVING MICROORGANISMS

John R. Clendenning, Washington, D.C., assignor to Hazleton Laboratories, Incorporated, Vienna, Va.

Continuation of Ser. No. 433,488, Feb. 17, 1965, abandoned. This application Oct. 5, 1970, Ser. No. 78,241
Int. Cl.[2] C12K *1/04*
U.S. Cl. 195—103.5 R 18 Claims

1. A method for testing an unknown sample of material, said sample containing substantially no adenosine triphosphate which is not in living microorganisms therein, and said material being suspected to contain living microorganisms which comprises:
a. treating said sample to render adenosine triphosphate in any living microorganisms present therein available for reaction,
b. contacting said sample with an adenosine triphosphate-reactive mixture comprising luciferin, luciferase, and a cation in the presence of oxygen, and
c. measuring the light emission from any ensuing reaction, said light emission being indicative of the presence and amount of living microorganisms in said sample.

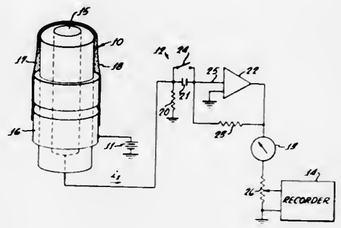
### 3,933,593
### RATE SENSING BATCH ANALYSIS METHOD

James C. Sternberg, Fullerton, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Division of Ser. No. 117,632, Feb. 22, 1971, abandoned, which is a division of Ser. No. 618,859, Feb. 27, 1967. This application Aug. 9, 1972, Ser. No. 279,011
Int. Cl. G01h *31/14*
U.S. Cl. 195—103.5 R 46 Claims

1. A method of determining the concentration or activity of a material present in a sample which is chemically reacted in batch comprising:
monitoring a property or characteristic of a component or product of said reaction related to concentration of a substance in said batch;
generating a first electrical signal related to said concentration of said substance;
differentiating said first signal to obtain an output signal proportional to the instantaneous time rate of change of concentration of said substance; and
measuring said output signal to determine the concentration or activity of said material.

27. A method of directly determining the activity of an enzyme comprising:

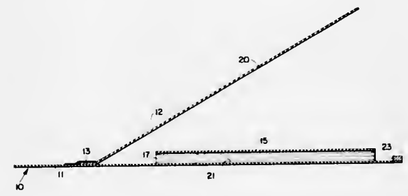



reacting said enzyme with an excess of substrate;
monitoring a property or characteristic of a component or product of the reaction related to concentration of a substance therein and generating a first electrical signal related to said concentration;
differentiating said first electrical signal to produce an output signal proportional to the instantaneous time rate of change of said concentration; and
measuring said output signal to determine the activity of said enzyme.

### 3,933,594
### METHOD AND DEVICE FOR DETERMINING THE CONCENTRATION OF A SUBSTANCE IN A FLUID

Terry W. Milligan, Belmont, and Richard F. Wright, Acton, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Aug. 16, 1974, Ser. No. 498,022
Int. Cl.[2] G01N *31/14*
U.S. Cl. 195—103.5 R 10 Claims

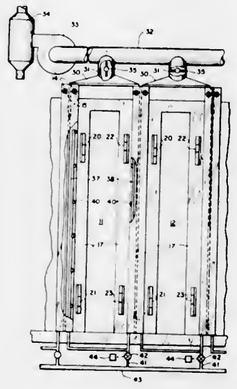


1. A device for determining concentrations of a substance in a fluid which comprises:
a first sheet carrying deformable support members;
said support members carrying an absorbent fluid receiving medium spaced apart from said first sheet;
a second sheet pivotally attached at one end to said first sheet and adapted to be superposed over said absorbent fluid receiving means; at least one of said first and second sheets is transparent, and said first sheet carrying one or more reagents; said reagents being present in a predetermined concentration and adapted to react with said substance to provide a visual indication of the concentration of said substance.

## 3,933,595
## OVEN DOOR FUME COLLECTION SYSTEM

**Gerome Gordon, Harding Township, Morris County, and Paul V. Faber, Morristown, both of N.J., assignors to Wilputte Corporation, Murray Hill, N.J.**

**Filed June 21, 1974, Ser. No. 481,665**
**Int. Cl.² C10B** *27/00, 25/02*
**U.S. Cl. 201—2** **8 Claims**

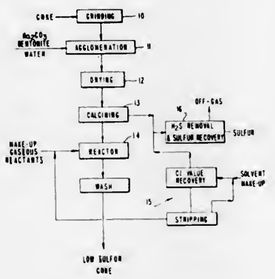


1. In a battery of coke ovens provided with a plurality of upright outwardly extending buckstays positioned along a side thereof and a plurality of vertically elongated door openings positioned between the buckstays the improvement comprising a pair of upright fluid conductors one positioned along each side of a door opening outside thereof between the door opening and its adjoining buckstay and within the outward extent of the buckstay, a fluid supply main connected therewith, a plurality of fluid nozzles spaced from each other along each fluid conductor and directed inwardly toward the door opening and upwardly, a fume hood positioned above the door opening, and suction-producing means connected therewith.

## 3,933,596
## DESULFURIZATION OF COKE

**Raymond H. Long, Morristown, and Morgan C. Sze, Upper Montclair, both of N.J., assignors to The Lummus Company, Bloomfield, N.J.**

**Filed Apr. 1, 1974, Ser. No. 457,118**
**Int. Cl.² C10B** *57/00*
**U.S. Cl. 201—17** **13 Claims**

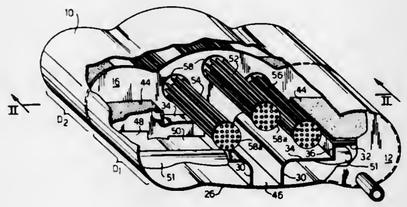



1. A process for desulfurizing coke, comprising:
a. heating coke in admixture with a desulfurizing amount of sodium carbonate at a coke temperature of from about 1600°F. to about 2400°F. for a period of at least 0.5 hour to calcine the coke, and
b. thereafter contacting the coke from step (a) with a desulfurizing gas comprising a member selected from the group consisting of phosgene and a mixture of carbon monoxide and chlorine, said contacting being effected at a coke temperature from about 1200°F. to about 1800°F. to produce a coke with a sulfur content of no greater than 0.85 percent.

## 3,933,597
## MULTISTAGE FLASH EVAPORATOR FOR PRODUCING SOFT WATER FROM A SALINE WATER

**Diego Barba; Antonino Germana; Giuseppe Liuzzo; Giovanni Tagliaferri, and Giancarlo Spizzichino, all of Rome, Italy, assignors to Societa' Italiana Resine S.p.A., Milan, Italy**

**Filed Dec. 18, 1974, Ser. No. 533,805**
**Int. Cl.² B01D** *3/02, 3/10*
**U.S. Cl. 202—173** **9 Claims**



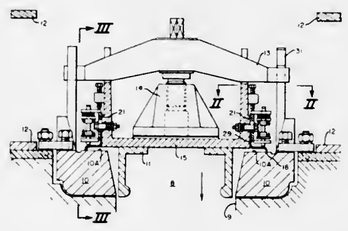
1. In a multistage flash-evaporator for producing soft water from a saline water comprising: a horizontal, uninterrupted rectilinear tubular shell having a pair of transverse end walls; a plurality of longitudinally spaced transverse partition walls in the shell subdividing the inside of the latter into a series of consecutive distilling units; a longitudinally extending hood in each unit subdividing the inside of the unit into an evaporation chamber and a condensation chamber, said longitudinally extending hood including a filtering zone pervious to steam through which the evaporation chamber communicates with its associated condensation chamber in the unit; normally submerged passageways in each partition wall allowing a continuous flow of saline water through the evaporation chambers in the consecutive units; and a condenser in each unit comprising a rectilinear bundle of heat exchange tubes extending longitudinally in the condensation chamber; the cross-sectional shape of both the said shell and chambers being constant throughout the length of the shell and symmetrical with respect to a vertical longitudinal mid-plane of the evaporator, and the condensers in the distillation units being serially connected therebetween; the improvement comprising:
a — the said shell forming a pair of lobes at opposite sides of said longitudinal mid-plane enclosing therebetween a spinal portion defined by an upwardly arched top wall and a downwardly arched bottom wall;
b — the cross-sectional shape of both said top wall and said bottom wall being a circular arc having its centre of curvature on the said mid-plane;
c — the cross-sectional shape of each of said lobes consisting of a continuous polycentric curve which is concave towards the spinal portion and is connected by its branches to the respective circular arcs mentioned at (a);
d — a pair of said longitudinally extending hoods provided in each distillation unit at opposite sides of said mid-plane, each of the hoods comprising a roof wall which includes the aforementioned filtering zone and is located in its corresponding lobe and in an adjacent part of the spinal portion of the shell, and a side wall connecting the roof wall to the bottom wall of the spinal portion in an arrangement wherein said side walls of the hoods form therebetween a distillate-collecting channel extending longitudinally of the distilling unit between a pair of evaporating chambers underlying their respective hoods;
e — the said normally submerged passageways in each of the partition walls located in regions surrounded by the respective lobes of the shell.



## 3,933,598
## COKE OVEN DOOR

**Erich E. Pries, Bochum, Germany, assignor to Dr. C. Otto & Comp. G.m.b.H., Bochum, Germany**

**Filed May 1, 1973, Ser. No. 356,086**
**Claims priority, application Germany, Feb. 23, 1973, 2309032**
**Int. Cl.² C10B** *1/06, 25/06*
**U.S. Cl. 202—248** **6 Claims**



1. A door structure in combination with a door frame surrounding an opening at an end of a longitudinally extending chamber of a coke oven, said door structure comprising:
a door forming an enclosure for the opening defined by said door frame;
a packing strip having an angular S-shape in respect to the transverse cross section thereof, said packing strip having one longitudinal edge arranged to extend along the peripheral surface of said door, said packing strip defining an extended edge resiliently arranged outwardly of the door for contact with said door frame,
clamp means at closely spaced-apart locations about the periphery of said door for clamping said packing strip onto the door, said clamp means being arranged to engage the S-shaped packing strip only at the inner edge from which said extended edge is resiliently-arranged outwardly thereof,
adjustable means carried by said door to position each of the clamp means and thereby adjust the extended edge surface of said packing strip relative to said door,
guide means secured to said clamp means and movable therewith when adjusting the extended edge of the packing strip relative to the door,
a push rod slideably supported by said guide means, and
a resilient member for urging said push rod into engagement with said packing strip with a sufficient force to urge the resilient extended edge for the packing strip into a sealing relation with said door frame when the door defines an enclosure for the opening to the chamber of the coke oven.

## 3,933,599
## NITROSYL CHLORIDE AS A POLYMERIZATION INHIBITOR FOR VINYL AROMATIC COMPOUNDS

**James M. Watson, Big Spring, Tex., assignor to Cosden Technology, Inc., Big Spring, Tex.**

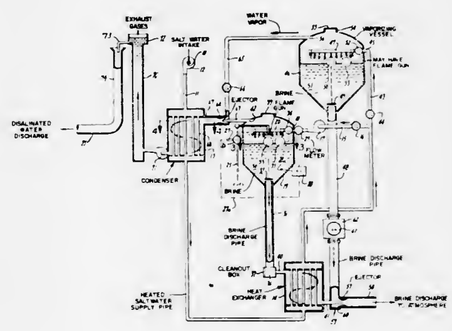
**Filed Dec. 9, 1974, Ser. No. 530,988**
**Int. Cl.² B01D** *3/34*
**U.S. Cl. 203—9** **8 Claims**

1. A process for the distillation of a readily polymerizable vinyl aromatic compound, which comprises subjecting such compound to distillation conditions in the presence of nitrosyl chloride (NOCl) as a polymerization inhibitor and in the substantial absence of oxygen.

## 3,933,600
## METHOD AND APPARATUS FOR DESALINIZATION OF WATER

**Adiel Y. Dodge, deceased, late of Oakland, Calif., by Dorian Dodge Crocker, executrix, San Francisco, Calif., assignors to Dorian Dodge Crocker; Sherwood Dodge, Jr.; Dorian Dodge Robinson and Crocker Nat'l Bank in trust for Dariel Dodge & Betty Dodge Malone, all of, Calif.**

**Filed May 17, 1974, Ser. No. 471,120**
**Int. Cl.² F24H** *1/20;* **B01D** *1/16, 1/14, 3/34, 3/00*
**U.S. Cl. 203—10** **8 Claims**

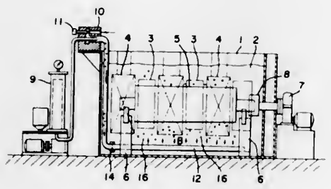



1. Process of desalinizing water which comprises the steps of:
injecting saline water as a spray substantially free of solid particles into a closed vaporization zone;
burning fuel within the zone to form a flame positioned to directly contact the injected water to thereby vaporize a part of the water while collecting in the lower part of said zone a remainder of unvaporized water having a higher salt content than the injected water;
ejecting from the zone a mixture of water vapor and gaseous combustion products;
condensing water from the withdrawn mixture; and
ejecting the remainder having increased salt content from the zone;
injecting saline water as a spray into a second vaporization zone at a temperature above 130° F., the second zone being maintained at subatmospheric pressure, and thereby vaporizing a part of the water while collecting a residue of unvaporized water having increased salt content as a pool in the lower part of the second zone;
discharging the residue from the second zone downwardly through a column of water to produce at the bottom of said column a pressure greater than than the pressure within the second zone and controlling the discharge so as to maintain said pool within the second zone;
withdrawing vaporized water from the second zone;
maintaining the first-mentioned zone at a superatmospheric pressure; and
raising the pressure of vapor withdrawn from the second zone by eduction by using the mixture ejected from the first-mentioned zone as the driving gas.

### 3,933,601
### ELECTROPLATING METHOD AND APPARATUS

Motochika Ishibashi; Takahiko Inuzuka, and Tetsuo Maegawa, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 13, 1975, Ser. No. 558,137
Claims priority, application Japan, Mar. 13, 1974, 49-29306
Int. Cl.² C25D 7/04; C10G 17/06
U.S. Cl. 204—25 16 Claims



1. An electroplating method which comprises the steps of:
rotating a substrate submerged within an electrolytic solution and under the influence and application of ultrasonic waves;
entraining bubbles within a portion of said solution; and
causing said portion of said electrolytic solution to be ejected toward said substrate in a direction substantially opposite the direction of rotation of the substrate.

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### 3,933,602
### PALLADIUM ELECTROPLATING BATH, PROCESS, AND PREPARATION

Rene Henzi; Andre Meyer, both of Geneva, Switzerland, and Pierre Lalanne, Gex, France, assignors to Oxy Metal Industries Corporation, Detroit, Mich.

Filed Apr. 19, 1974, Ser. No. 462,484
Claims priority, application Switzerland, Apr. 27, 1973, 6142/73
Int. Cl.² C25D 3/50, 3/52, 3/56
U.S. Cl. 204—44 7 Claims

1. An aqueous electroplating bath suitable for obtaining deposits of palladium and its alloys wherein the palladium present consists essentially of a dissolved palladium complex of the formula $Pd(SO_3)(NH_3)_3$ in an amount from 1 g/l to 50 g/l of palladium, said bath exhibiting a pH of from 7 to 12.

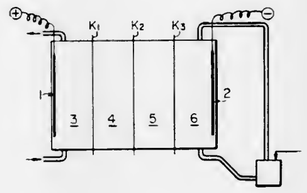
2. The bath of claim 1 containing an atomic ratio of halide to palladium not in excess of 10.

3. The bath of claim 2 additionally comprising, in electrodepositable form, at least 1 mg/l of at least one metal selected from the group consisting of Cd, Cr, Co, Cu, Ga, Au, In, Fe, Pb, Mo, Ni, Ag, Sn, Zn, As, Sb, Bi, Pt, Rh, Ru, Ir and Os.

### 3,933,603
### ELECTROLYSIS OF ALKALI METAL CHLORIDE

Yoshio Ishida, Asahi; Hiroshi Ono, and Reiji Takemura, both of Miyazaki, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Apr. 23, 1974, Ser. No. 463,366
Claims priority, application Japan, Apr. 25, 1973, 48-46107; Dec. 28, 1973, 48-1247
Int. Cl.² C25B 1/16, 1/26
U.S. Cl. 204—98 8 Claims



4. A process as in claim 1 wherein the alkali metal chloride is sodium chloride.

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### 3,933,604
### METHOD OF ELECTROLYTICALLY EXTRACTING GALLIUM FROM ALUMINATE SOLUTIONS

Colin George Honey, Hazlemore, and Stanley Leonard Jones, Gerrards Cross, both of England, assignors to The British Aluminium Company Limited, London, England

Filed July 19, 1974, Ser. No. 490,034
Claims priority, application United Kingdom, July 19, 1973, 34480/73
Int. Cl.² C25C 1/22
U.S. Cl. 204—123 10 Claims

1. A method of extracting gallium from aluminate liquor obtained in the course of the recovery of aluminate from aluminate ores which comprises electrolysing the liquor with a current density of at least 0.002 A/cm² and a cathodic potential relative to a saturated calomel electrode of at least 1.5 volts, using an anode made from a metal which does not produce undesirable impurities in the aluminate liquor under the conditions of electrolysis and a solid cathode made of a metal into which gallium diffuses, while maintaining the temperature of the aluminate solution in the range 25°to 80°C until the gallium has diffused into the cathode to give a gallium content in the surface layers of at least 0.10%.

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### 3,933,605
### NON-POLLUTING PICKLING METHOD

Thomas J. Butler, Monroeville; Robert M. Hudson, Churchill, and Clair J. Warning, Plum, all of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 415,084, Nov. 12, 1973, abandoned. This application June 20, 1974, Ser. No. 481,011
Int. Cl.² B01D 13/02
U.S. Cl. 204—151 8 Claims

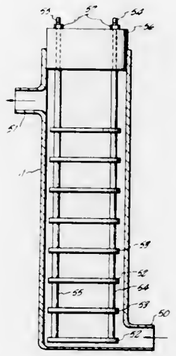
1. Method of pickling steel comprising contacting the steel with a pickling solution consisting of fluoboric acid, subjecting the spent fluoboric acid to electrodialysis by introducing the spent acid into the cathode compartment of a cell having said cathode compartment separated from an anode compartment by anion exchange membrane, recovering the iron on the cathode thereof and recycling the acid from the anolyte.



### 3,933,606
### WATER TREATMENT PROCESS AND APPARATUS

Harry Keith Harms, Woodland Hills, Calif., assignor to Saul Gealer, Los Angeles, Calif.

Filed Dec. 3, 1973, Ser. No. 421,225
Int. Cl.² C02B 1/82
U.S. Cl. 204—152 15 Claims



1. A process for electrolytically treating contaminated water containing suspended and dissolved impurities comprising the steps of:
passing the contaminated water vertically upward through an upright column having a water inlet port adjacent the lower end thereof and a water outlet port adjacent the upper end thereof, wherein between the inlet and outlet port, a plurality of electrically conductive perforate plates are disposed in the column in a plane essentially perpendicular to the longitudinal axis thereof and electrically insulated therefrom, the transverse dimensions of the plate approximating those of the column so that essentially all of the contaminated water being passed through the column passes through perforations in the plates;
generating variable pulsating electrical signals of opposite signs; and,
supplying a variable pulsating electrical signal of a first sign to individual ones of a first set of the plates while simultaneously supplying a variable pulsating electrical signal of the opposite sign to individual ones of a second, alternating set of the plates to create a pulsating electrical field between the plates.

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### 3,933,607
### SENSITIZED VAPOR PHASE PHOTO-GRAFTING OF MONOMERS ONTO SURFACES

Howard L. Needles, and Rita P. Seiber, both of Davis, Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Aug. 22, 1973, Ser. No. 390,574
Int. Cl.² C08F 8/00; C08L 1/12
U.S. Cl. 204—159.15 11 Claims

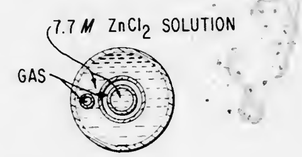
1. A vapor phase method for forming a graft copolymer in the presence of low energy irradiation comprising the steps of depositing a wetting agent onto the surface of a polyamide polymeric substrate; and contacting said substrate with an unhalogenated vinyl monomer from a vapor source, said monomer including substituted groups selected from the group consisting of organic acids and their derivatives, organic and inorganic esters and ethers and cyanide in the presence of light energy, the majority of which comprises photons having wavelengths over 3000 S., and contacting said wetted substrate with a volatile photosensitive compound from a vapor source, said photosensitive compound being capable of activation by exposure to said light to a state sufficient to create grafting sites on said polymeric substrate to there by graft polymerize said monomer at said sites, said wetting agent having an affinity for said polymeric substrate, monomer and photosensitive compound.

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### 3,933,608
### METHOD FOR THE DECOMPOSITION OF HYDROGEN SULFIDE

Larry A. Haas, Burnsville; Sanaa E. Khalafalla, Minneapolis, and Carl F. Anderson, Roseville, all of Minn., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Aug. 27, 1974, Ser. No. 501,002
Int. Cl.² C01B 17/02; B01K 1/00
U.S. Cl. 204—164 8 Claims



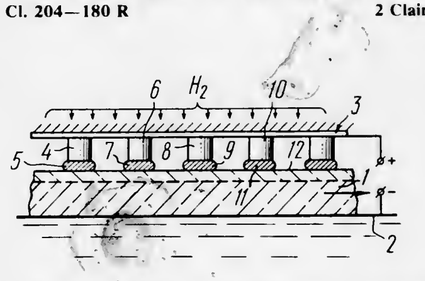

1. A method for the decomposition of hydrogen sulfide into elemental sulfur and hydrogen which comprises exposing a gas comprising $H_2S$ to a silent electrical discharge derived from a voltage sufficient to effect said decomposition said decomposition being effected in the presence of polychlorotrifluoroethylene oil vapor.

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### 3,933,609
### METHOD OF MAKING COLOURED PHOTOMASKS

Jury Sergeevich Bokov, K-482, korpus 338a, kv. 61; Valery Nikolaevich Gurzheev, K-498, korpus 406, kv. 56; Vladimir Ivanovich Zakharov, K-498, korpus 440, kv. 188; Vladimir Sergeevich Korsakov, K-482, korpus 350, kv. 24; Vadim Petrovich Lavrischev, K-460, ploschad Junosti, 4, kv. 22; Alla Grigorievna Goron, K-498, korpus 440, kv. 231, all of Moscow; Mark Leonovich Glikman, ulitsa Kommunarnaya, 11, kv. 45, Saratov; Nikolai Nikolaevich Semenov, ulita Zagorodnaya, 15, Kv. 56, Saratov, and Viktor Yakovlevich Matvienko, ulitsa Tupikovaya, 1, Saratov, all of U.S.S.R.

Filed June 25, 1974, Ser. No. 482,841
Int. Cl.² B01K 5/00; C03C 17/00
U.S. Cl. 204—180 R 2 Claims



1. A method of making colored photomasks, consisting in doping a first surface of a flat glass substrate with a staining metal, selected from the group, consisting of copper, gold, silver and indium, moving a second surface of said glass substrate over an electrically conducting melt, said doping being effected by virtue of an electric diffusion of the ions of said staining metal occurring from the melt of lead with said staining metal, followed by reduction of said staining metal and by subsequent doping of said first surface of mentioned glass substrate by way of a repeated electric diffusion of the ions of said staining metal occurring from the melt of said staining metal with the metal selected from the group, consisting of

lead, tin, bismuth and thallium, followed by reduction of said staining metal, forming a protective layer on the stained layer of said glass substrate, corresponding to a predetermined pattern, and removing the unprotected portions of said stained layer and elimination of said protective layer, said photomasks having a substantially high optical density and minimum stained layer thickness, said photomasks having substantially large effective area.

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**3,933,610**

## DESALINATION PROCESS BY IMPROVED MULTISTAGE ELECTRODIALYSIS

**Leo Ehara, Yokosuka; Takafumi Miwa, Saitama, and Masami Kamaya, Kawasaki, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan**

**Filed Mar. 14, 1975, Ser. No. 558,378**

**Claims priority, application Japan, Mar. 30, 1974, 49-35867**

**Int. Cl.² B01D** *13/02*

**U.S. Cl. 204—180 P** **15 Claims**

1. An electrodialysis process for the desalination of aqueous salt solutions in which two or more stages for electrodialysis are connected in series to effect dilution by reduction of total ion content in progressive stages, each stage having multiple pairs of anionic and cationic membranes alternately placed therein to divide said stage into alternate dilution and concentration chambers containing dilution and concentration streams, said salt solution containing at least one divalent anion and at least one divalent cation capable of forming an insoluble salt in said concentration stream which comprises selectively retaining at least one of said divalent cations or anions in the dilution stream by conducting electrodialysis through an ion exchange membrane which forms one boundary of said dilution chamber and has a divalent ion permselectivity coefficient which is sufficiently less than one so that the concentration ratio of said selectively retained divalent cation or anion to monovalent ion of the same charge in the dilution chamber is increased and the concentration product of divalent cations and anions which are capable of forming said insoluble salt in the concentration chamber does not exceed the solubility product of the insoluble salt.

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**3,933,611**

## APPARATUS AND METHOD FOR CONTINUOUS ELECTROCOATING

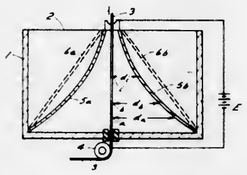
**Michael Alan Dudley, Beaconsfield, Canada, assignor to Canada Wire and Cable Limited, Toronto, Canada**

**Filed Nov. 14, 1974, Ser. No. 523,920**

**Claims priority, application Canada, May 3, 1974, 198850**

**Int. Cl.² C25D** *13/00*; **B01D** *13/02*

**U.S. Cl. 204—181** **8 Claims**



1. An apparatus for continuously electrocoating a conducting substrate with essentially non-conductive material, comprising: means for continuously passing said substrate through an electrocoating bath; and at least one electrode facing at least a portion of the substrate, said electrode converging towards the substrate in the direction of travel of the substrate so that the rate of deposition of the coating material onto the substrate remains substantially constant throughout the electrocoating operation.

**3,933,612**

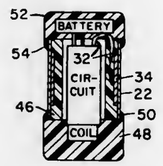
## GLASS ELECTRODE STRUCTURE FOR RADIO CAPSULE

**David J. Fischer, Corning, N.Y.; Hans J. Kunz, and Thomas E. Norby, both of Raleigh, N.C., assignors to Corning Glass Works, Corning, N.Y.**

**Continuation-in-part of Ser. No. 158,293, June 30, 1971, abandoned. This application May 13, 1974, Ser. No. 469,079**

**Int. Cl.² G01N** *27/36*; **A61B** *5/04*

**U.S. Cl. 204—195 G** **13 Claims**




1. In a radio capsule for measuring concentration of an ionic species in an ion containing solution, said capsule being of the type comprising

a housing,

an electrode structure for providing a voltage dependent on the activity of said ionic species in said solution, said electrode structure being so disposed in said housing that a portion thereof is adapted to be exposed to said solution,

an oscillator circuit for generating an rf signal which is modulated by the voltage provided by said electrode structure,

means for providing an operating voltage for said oscillator circuit, and

means for providing a reference potential for said electrode structure,

said electrode structure being characterized in that it comprises

a cylindrically shaped membrane of glass sensitive to said ionic species, said membrane having inner and outer surfaces, said outer surface of said membrane being adapted to be exposed to said solution,

a thin film conductive electrode disposed on at least a portion of the inner surface of said membrane,

conductive means for connecting said conductive electrode to said oscillator circuit, and

a mass of non-conductive backing material adherent to the inner surface of said conductive electrode and to that portion of the inner surface of said membrane adjacent to said conductive electrode, the thermal coefficient of expansion of said backing material being greater than that of said glass membrane and said glass membrane being in a state of compression.

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**3,933,613**

## ELECTRODE FIXTURE FOR PLATING BATH

**Dennis Robert Turner, Chatham Township, Morris County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**

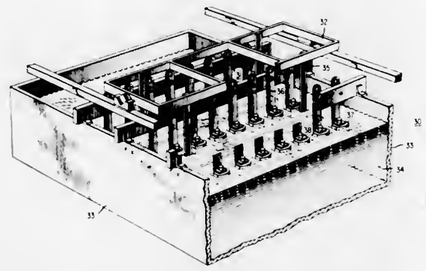
**Filed Dec. 27, 1974, Ser. No. 536,736**

**Int. Cl.² C25D** *17/10*, *17/00*

**U.S. Cl. 204—242** **5 Claims**

1. A cell for electroplating metals on a surface having an anode assembly and cathode assembly in which the anode assembly comprises an anode rod, an anode hook attached to the anode rod, means for attaching the anode hook to the anode rod, a consumable anode, and means for attaching the consumable anode to the anode hook, characterized in that the anode rod and anode hook are made of a flat stock material which consists essentially of titanium and the anode rod has a width between 1 and 3 inches and a thickness between one-eighth and 1 inch; and the anode hook has a width between 1 and 3 inches and a thickness between one-eighth and 1 inch and has an L shape with the short dimension of the L shape between 1 and 3 inches and the long dimension of the





L shape between 3 and 12 inches and in which the long part of the L shape has a slot of uniform width slanting inwardly and upwardly for attachment to the anode rod.

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**3,933,614**

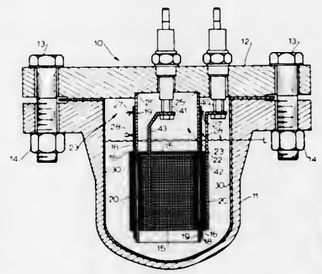
## PRESSURE VESSEL FOR HYDROGEN GENERATOR

**Julian W. Bunn, Jr., Raleigh, N.C., assignor to Trienco, Inc., Raleigh, N.C.**

**Filed July 7, 1975, Ser. No. 593,751**

**Int. Cl.² C25B** *1/02*, *1/04*, *1/10*

**U.S. Cl. 204—266** **4 Claims**



1. In an electrolytic hydrogen or oxygen generator apparatus of the type having a pressure tank adapted to contain an electrolytic solution including water and an electrolyte, and having a water inlet, an oxygen outlet and a hydrogen outlet, the improved pressure tank assembly comprising, in combination:

a. a metal tank member having a closed bottom and an open top;

b. a cover member hermetically secured to the open top of said tank member, said cover member providing openings for said water inlet, oxygen outlet and hydrogen outlet;

c. a thin-wall integral cylindrical tube member having electrically insulating surfaces and positioned centrally inside of said tank member, the upper end portion of said tube member being connected to said cover member in a gas-tight seal and having a lower open end portion terminating immediately above the closed bottom surface of said tank member and including openings cut therein;

d. a woven, cylindrical asbestos curtain covering said tube openings and adapted to act as an impervious barrier to hydrogen and oxygen gas flow while allowing the passage of ions and electrolytic solution therethrough;

e. oxygen electrode means mounted inside said tank member and having electrically conducting means extending through said cover, said oxygen electrode means comprising a fine mesh screen electrode wrapped in close spaced relation around said asbestos curtain and covering said tube openings;

f. hydrogen electrode means mounted inside said tank member and having electrically conducting means extending through said cover, said hydrogen electrode means comprising a fine mesh screen electrode positioned inside of said tube and being coaxial with said tube in a close spaced relation therewith and having a height sufficient to cover said tube openings; and

g. an electrically insulating coating impervious to and inert with respect to hydrogen, oxygen, and sodium hydroxide applied to the entire interior side and bottom wall surfaces of said tank member.

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**3,933,615**

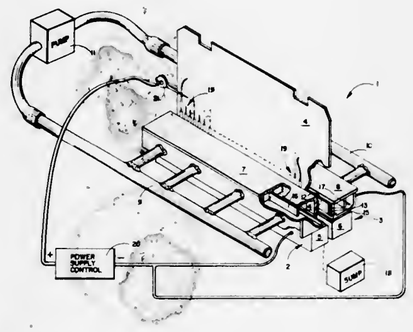
## FLUID FLOW STRIPPING AND PLATING SYSTEM

**Elliott R. Levenson, Mission Viejo, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.**

**Filed June 9, 1969, Ser. No. 831,325**

**Int. Cl.² C25B** *9/00*

**U.S. Cl. 204—275** **6 Claims**




1. A fluid flow stripping and plating system for removable circuit boards and having a fluid source containing a fluid therein, comprising in combination:

Electrical contact means for connection to a removable circuit board having terminal contacts adapted to be energized with a voltage of one polarity;

First cavity means having a first opening therein said first opening being in a side of the first cavity means;

A first electrode connected to said first cavity means and extending the length of said first cavity means;

Means for spacing said first cavity means from said circuit board for permitting said fluid to flow from the first opening between said first electrode and said circuit board and across said terminal contacts when said circuit board is inserted in said system;

A second cavity means having a second opening therein, said second opening being in a side of said second cavity means and having a length of at least equal to that of said first cavity means;

A second electrode connected to said second cavity means and extending the length of said second cavity means;

said first and second electrodes being adapted to be energized with a voltage of the opposite polarity; and

A second means for spacing said second cavity means from said circuit board for permitting said fluid to flow from the second opening between said second electrode and said circuit board and across said terminal contacts when said circuit board is interposed between said first and second electrodes, said first and second electrodes being composed of carbon.

### 3,933,616
### COATING OF PROTECTED ELECTROCATALYTIC MATERIAL ON AN ELECTRODE

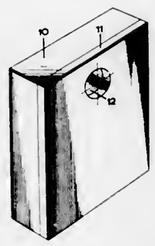
**Henri Bernard Beer, Kalmthout, Belgium, assignor to Chemnor Corporation, Panama City, Panama**

**Continuation of Ser. No. 144,907, May 19, 1971, abandoned, which is a continuation-in-part of Ser. No. 702,695, Feb. 2, 1968, Pat. No. 3,632,498. This application Sept. 24, 1973, Ser. No. 400,120**

**Claims priority, application United Kingdom, Feb. 10, 1967, 6490/67**

**Int. Cl.² C25B** *11/08, 11/10*

**U.S. Cl. 204—290 F** **3 Claims**



1. An electrode for use in an electrolytic reaction comprising a base of electrically conductive film-forming metal in solid form having thereon a mixed coating material of an electrically conductive coating material effective for carrying out electrolysis and protecting coating material consisting of at least one metal oxide of a single film-forming metal, the protecting coating material acting during electrolysis in a cell to protect the conductive coating material against the cell conditions, the conductive coating material being at least one material from the group consisting of gold, silver, platinum, palladium, iridium, ruthenium, osmium, rhodium, iron, nickel, chromium, copper, lead, manganese, and nitrides, carbides and sulfides thereof, and said group further consisting of oxides of gold, silver, iron, nickel, chromium, copper, lead and manganese.

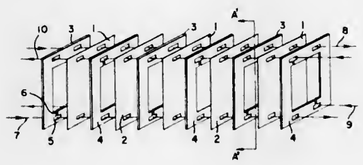
### 3,933,617
### ELECTRODIALYSIS APPARATUS

**Tosinori Yamamoto; Takeo Utunomiya, both of Chiba, and Sigeharu Otuka, Tokyo, all of Japan, assignors to Asahi Glass Co., Ltd., Tokyo, Japan**

**Filed Jan. 25, 1974, Ser. No. 436,678**

**Int. Cl.² B01D** *13/02*

**U.S. Cl. 204—301** **7 Claims**



1. A filter-press type electrodialysis apparatus comprising:
a plurality of alternately arranged anion exchange membranes and cation membranes having cell frames interposed between said membranes, said membranes and frames being arranged and fastened between a pair of electrodes;
said cell frames include a central opening, conduits for feeding or discharging the liquid to be electrodialyzed to or from said cell frames, and passages connecting said conduits to said central openings; and
wherein the portion of said frame defining said passages comprise inserts formed separately from the body of said cell frame and which are of a rigid material having a thickness less than the thickness of said cell frame body which is made of an elastic material.

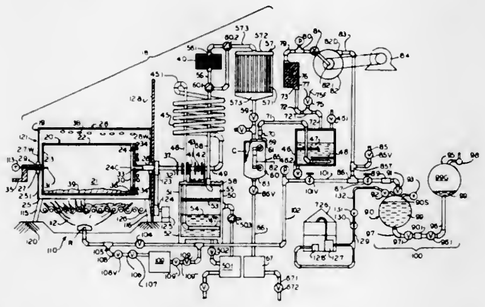
### 3,933,618
### GAS GENERATION APPARATUSES AND PROCESSES

**Colonel E. Patton, Farmington, N. Mex., assignor to Blue Ember Flame Corporation, Farmington, N. Mex.**

**Filed Mar. 11, 1974, Ser. No. 449,715**

**Int. Cl.² C10G** *1/00*

**U.S. Cl. 208—8** **4 Claims**



1. Apparatus for generating combustible gas mixtures and liquid gasoline from coal comprising, in operative combination, a retort assembly, a washer assembly, a condenser assembly, a pump and storage assembly and a heating assembly;
said retort assembly comprising a gas-tight retort tank and a hood, said gas-tight retort tank comprising a horizontally extending rigid imperforate cylindrical wall and one vertically extending side wall firmly attached thereto on one side thereof and another side wall removably yet firmly attached to another side of said cylindrical wall, a support for journal means for rotatably supporting said retort tank near said one side wall thereof, another support for journal means for rotatably supporting said retort tank adjacent to said other side wall; one shaft means fixed to and extending horizontally from said one side wall to said journal means on said one of said supports and rotatably supported thereon, and another shaft means fixed to and extending from the other of said side walls to the journal means on said other support and rotatably supported thereon, a retort discharge channel extending through said removably attached side wall and shaft connected thereto, and one end of a cooling coil operatively connected to said retort discharge channel; a grid support, a grid thereon, said grid below said retort tank, a gas burner being located below said grid, and the hood of said retort tank comprises a lower base and an upper perforated shell, said lower base being a rigid frame open at its top and bottom, said frame surrounding the periphery of the retort tank and, on removal of said removably attached side wall from said horizontally extending cylindrical wall, said rigid imperforate cylindrical wall of said retort tank and one vertical side wall being pivotal about a horizontal axis on said one support and said horizontally extending imperforate cylindrical wall being tiltable to a sloped position whereby to empty the content of said retort tank on to said grid,
said washer assembly comprising a cooling coil and a washer tank, said cooling coil comprising a vertically extending coil, one, lower, end of said cooling coil operatively attached to said retort discharge channel, the other, discharge, end of said cooling coil operatively attached to said washer tank and extending thereinto, said washer tank comprising a vertically elongated gastight tank with



top, bottom and side walls joined together and enclosing a gas-tight chamber therebetween, said discharge end of the cooling coil extending towards the bottom wall thereof, said washer tank having an upper outlet line operatively connected to the top thereof and to the chamber therein and extending to the inlet of a condenser;
said condenser assembly comprising a condenser and a collection tank, said condenser connected via a vertically extending tube therebelow to said collection tank, which has an upper discharge outlet and a lower discharge outlet, said lower discharge outlet connected to a collection discharge line and said collection discharge line feeding to a gasoline collector tank, said gasoline collector tank located below said collection tank;
said collection tank upper discharge outlet operatively connected to a gas-tight gas treatment chamber,
said pump and storage assembly comprising a pump and a first storage tank, said collection tank upper discharge line connected via said gas treatment chamber to the inlet of said pump, a power means operatively attached to said pump, and a discharge outlet on said pump, a pump discharge line operatively connected to said pump discharge outlet, a first tee connected to said pump discharge line, one arm of said tee connected to said first storage tank through a first throttle valve and another arm of said tee operatively connected to the inlet of a second throttle valve, said second throttle valve having an outlet, said second throttle valve outlet connected to said burner below said retort tank by a line, and comprising also a second tee in said line from said first tee to said burner between said burner and said second throttle valve, two arms of which tee are connected to said line and a reserve gas storage compartment having a cut-off valve operatively connected thereto and a gas storage compartment discharge line operatively connects said cut-off valve to a third arm of said second tee whereby said burner is operatively connected to said reserve gas storage compartment.

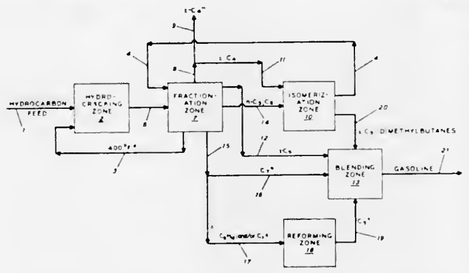
### 3,933,619
### GASOLINE PRODUCTION PROCESS

**Robert H. Kozlowski, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.**

**Filed Oct. 12, 1973, Ser. No. 405,993**

**Int. Cl.² C10G** *37/10*

**U.S. Cl. 208—60** **5 Claims**




1. A process for producing high octane low lead content or unleaded gasoline from a hydrocarbon feedstock which comprises
hydrocracking the hydrocarbon feedstock, thereby obtaining a hydrocracking effluent comprising singly branched hexanes and $C_7$+ hydrocarbons;
fractionating the hydrocracking effluent in a fractionation zone, thereby obtaining a stream rich in singly branched hexanes;
isomerizing the singly branched hexanes to doubly branched hexanes in an isomerization zone operated at a reaction temperature below 300°F.; and
combining the doubly branched hexanes with $C_7$+ hydrocarbons derived from the hydrocracking effluent, thereby obtaining a high octane gasoline or gasoline blending stock.

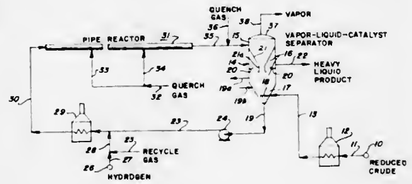
### 3,933,620
### PROCESS FOR HYDROPROCESSING HEAVY HYDROCARBON FEEDSTOCKS IN A PIPE REACTOR

**Leonard W. Russum, Highland, Ind., and Gerald B. Hoekstra, South Holland, Ill., assignors to Standard Oil Company, Chicago, Ill.**

**Filed Aug. 16, 1973, Ser. No. 388,802**

**Int. Cl.² C10G** *13/00*

**U.S. Cl. 208—108** **6 Claims**




1. A process for the hydroprocessing of a heavy petroleum hydrocarbon fraction in a system employing a pipe reactor, which process comprises: heating said hydrocarbon fraction to a temperature of at least 600°F. to obtain a preheated heavy hydrocarbon fraction; introducing said preheated heavy hydrocarbon fraction into the bottom zone of a vapor-liquid-catalyst separator having three zones, a top zone wherein vapor is separated from liquid and catalyst, said vapor, said liquid, and said catalyst having been introduced into said top zone as effluent from said pipe reactor, an intermediate zone wherein said catalyst separates from said liquid, and a bottom zone wherein said preheated heavy hydrocarbon fraction is introduced into said bottom zone and mixed with said catalyst to form a heavy-hydrocarbon-catalyst slurry; withdrawing said heavy-hydrocarbon-catalyst slurry from the bottom of said bottom zone; heating said heavy-hydrocarbon-catalyst slurry to a temperature of at least 700°F. to obtain a heated heavy-hydrocarbon-catalyst slurry; passing said heated heavy-hydrocarbon-catalyst slurry through said pipe reactor in the presence of hydrogen under conditions suitable for the hydroprocessing of heavy petroleum hydrocarbons, including a temperature of about 600° to about 1,000°F. and a hydrogen partial pressure of about 300 psia to about 3,000 psia, while controlling the temperature in said pipe reactor by a means for temperature control; withdrawing effluent from said pipe reactor and passing said effluent into said top zone of said vapor-liquid-catalyst separator; withdrawing vapor product from said top zone of said vapor-liquid-catalyst separator; withdrawing liquid product from said intermediate zone; and obtaining usable products from said vapor product and said liquid product, said catalyst being suitable for the hydroprocessing of heavy petroleum hydrocarbons.

### 3,933,621
### CATALYTIC CRACKING PROCESS USING STEAMED COGELLED SILICA ALUMINA CATALYST

**Robert J. White, Pinole; Donald A. Hickson, Irvine, and Charles E. Rudy, Jr., El Cerrito, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.**

**Filed Oct. 24, 1972, Ser. No. 300,081**

**Int. Cl.² C10G** *11/04*

**U.S. Cl. 208—120** **5 Claims**

1. A process for catalytic cracking of a hydrocarbon feedstock which comprises contacting the feedstock with a catalyst which consists essentially of a simultaneously cogelled synthetic silica-alumina containing 56 to 90 weight percent

alumina, said catalyst having been steamed at about 1,400°F, and said process producing relatively high yields of $C_3$ and $C_4$ olefins.

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### 3,933,622
### TRIMETALLIC HYDROCARBON CONVERSION CATALYST

**Howard Lee Mitchell, III, and James Richard Hays, both of Baton Rouge, La., assignors to Exxon Research and Engineering Company, Linden, N.J.**

**Filed Dec. 4, 1973, Ser. No. 421,515**
**Int. Cl.² C10G** *35/08; B01J 27/06, 23/68*
**U.S. Cl. 208—139** **29 Claims**

**10.** A reforming catalyst consisting essentially of a composite of alumina, platinum in concentration ranging from about 0.1 to about 1 percent, rhenium in concentration ranging from about 0.1 to about 1 percent, silver in concentration ranging from about 0.005 to about 5 percent, chlorine in concentration ranging from about 0.3 to about 1.5 percent, and sulfur in concentration ranging from about 0.001 to about 2 percent, based on the total weight of the catalyst.

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### 3,933,623
### DESULFURIZATION PROCESS

**Joseph A. Durkin, Fishkill, and Jitendra A. Patel, Wappingers Falls, both of N.Y., assignors to Texaco Inc., New York, N.Y.**

**Filed Aug. 9, 1974, Ser. No. 495,968**
**Int. Cl.² C10G** *23/02*
**U.S. Cl. 208—216** **12 Claims**

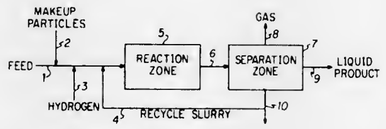
**1.** A process for the hydrodesulfurization of a petroleum oil fraction having an initial boiling point of at least about 500°F. which comprises contacting said fraction in the presence of added hydrogen under hydrodesulfurization conditions including a temperature between about 750° and 850°F. and a space velocity between about 3 and 10 v/v/hr. with a catalyst comprising an iron group metal, oxide or sulfide and a Group VI metal, oxide or sulfide supported on a base comprising a refractory inorganic oxide support selected from the group consisting of alumina, magnesia and zirconia and mixtures thereof and containing between 0 and 5 weight percent silica, said catalyst also containing from 0.1 to 5 percent noble metal by weight based on the catalyst composite.

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### 3,933,624
### SLURRY SYSTEM FOR REMOVAL OF CONTAMINANT FROM SYNTHETIC OIL

**Gary A. Myers, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.**

**Filed Jan. 23, 1974, Ser. No. 435,637**
**Int. Cl.² C10G** *17/00*
**U.S. Cl. 208—253** **15 Claims**



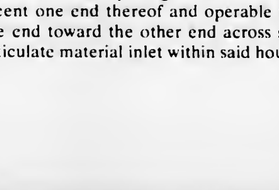

**1.** A method of removing a nonmetallic contaminant comprising at least one of arsenic and selenium in elemental or combined form from a synthetic hydrocarbonaceous fluid obtained from normally solid coal, oil shale or tar comprising mixing said hydrocarbonaceous fluid with (1) particles of a material selected from the group consisting of iron, cobalt, nickel, at least one oxide of said metals, at least one sulfide of said metals and a combination thereof; said particles being of a size sufficient to form a slurry with said hydrocarbonaceous fluid; and (2) hydrogen; heating at an elevated pressure said slurry and hydrogen mixture in a reaction zone to a temperature sufficient to effect in conjunction with said elevated pressure removal of said contaminant from said hydrocarbonaceous fluid and deposition of said contaminant on said particles; said temperature being less than that which substantially alters the character of said hydrocarbonaceous fluid; and recovering a liquid product stream comprising said hydrocarbonaceous fluid essentially free of said contaminant from the thus treated slurry.

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### 3,933,625
### ELECTRICAL PRECONDITIONING IN A SELECTIVE FLOTATION OF SULFIDE ORES

**Ikuo Nagano, Hino, and Kozo Saitoh, Tokyo, both of Japan, assignors to Mitsui Mining & Smelting Co., Ltd., Tokyo, Japan**

**Filed Jan. 9, 1974, Ser. No. 431,926**
**Claims priority, application Japan, Nov. 14, 1973, 48-127188**
**Int. Cl.² B03B** *1/00*
**U.S. Cl. 209—9** **8 Claims**




**1.** A method of ore separation which comprises: electrically preconditioning an ore pulp containing mixed metal sulfide ore particles selected from the group consisting of (1) mixtures of zinc sulfide and iron sulfide, (2) mixtures of molybdenum sulfide and copper sulfide, (3) mixtures of lead sulfide and copper sulfide, and (4) mixtures of lead sulfide and zinc sulfide, by applying DC current to said ore pulp from electrodes inserted in said pulp, at a current density of from 0.002 to 20 A/dm² and at a voltage of from 0.5 to 750 V, for a period of time effective to depress the flotability of iron sulfide in the case of mixture (1), copper sulfide in the case of mixtures (2) and (3), and lead sulfide in the case of mixture (4) relative to the remaining metal sulfides in the respective mixtures whereby to improve their separation characteristics; discontinuing application of said DC current; and then adding flotation agent to said electrically preconditioned pulp and subjecting said electrically preconditioned pulp to froth flotation in a flotation cell, and recovering from the flotation cell a concentrate of zinc sulfide in the case of mixture (1), molybdenum sulfide in the case of mixture (2), lead sulfide in the case of mixture (3), and zinc sulfide in the case of mixture (4).

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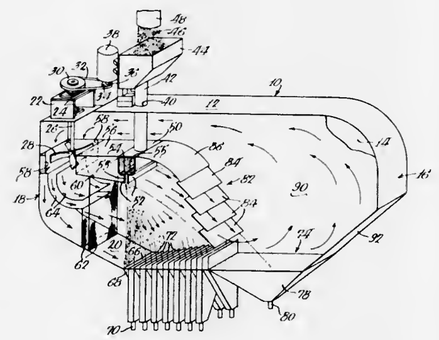
### 3,933,626
### CLASSIFIER FOR PARTICULATE MATERIAL

**James Stukel, and Robert G. Rentz, both of Ottawa, Ill., assignors to Ottawa Silica Company, Ottawa, Ill.**

**Filed July 12, 1973, Ser. No. 379,004**
**Int. Cl. B07b** *4/02*
**U.S. Cl. 209—134** **5 Claims**

**3.** Air classifying apparatus for particulate material comprising: a generally horizontally elongated, substantially closed housing having an upper side, a bottom side, a pair of side walls, and means defining end walls; means in said bottom wall intermediate the ends thereof defining a plurality of individual particle outlets, said outlets extending transversely of said housing and being arranged serially in the direction of elongation thereof; an air impelling device located within said housing adjacent one end thereof and operable to direct air from said one end toward the other end across said particle outlets; a particulate material inlet within said housing including an elongated metering orifice within said housing extending transversely of said housing through which particulate material may be introduced into said housing, said orifice being located directly above or upstream of the particulate outlet nearest said housing one end so that particulate material flowing therefrom will be entrained in a current of air generated by said air impelling device with the heavier particles dropping more directly downwardly under the influence of gravity than the lighter particles; means downstream of said impeller and upstream of said orifice for establishing a laminar air flow characteristic in the current of air generated by said air impeller prior to the impingement of said current of air on a stream of particles emanating from said orifice; light particle





directing means within said housing for directing extremely light particles entrained in said current of air toward at least the particle outlet nearest the other end of said housing; and said housing including an enlarged chamber downstream of said particle outlet nearest said other end, said chamber being sufficiently large that a current of air passing therethrough is at a relatively low velocity to substantially preclude particles entrained in said current of air from passing through said chamber; means associated with said chamber for directing particles entrained in air reaching said chamber toward one of said particle outlets; and means associated with said chamber for redirecting air therefrom toward said air impelling device to define a closed air circulation path.

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### 3,933,627
### PROCESS FOR BIOLOGICALLY ELIMINATING ORGANIC WASTE MATTER

**Pierre Fusey, Paris, France, assignor to Banque pour l'Expansion Industrielle "Banexi", Paris, France**

**Continuation of Ser. No. 259,850, June 5, 1972, abandoned.**
**This application Feb. 15, 1974, Ser. No. 442,897**
**Claims priority, application France, June 28, 1971, 71.23459**
**Int. Cl.² B01J** *13/00*
**U.S. Cl. 210—11** **3 Claims**

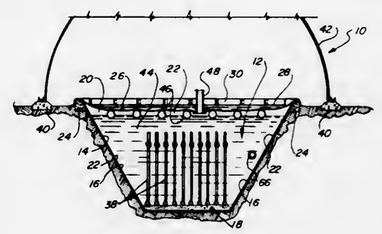
**1.** A process for the elimination of petroleum residues by biodegradation, comprising adding to 100 parts by weight of said residue, 70 to 200 parts by weight of a composition consisting essentially of 40 to 60% by weight of vinasse, a substantial amount up to 12% by weight of an ammonium compound selected from the group consisting of ammonium nitrate, ammonium sulphate and ammonium phosphate, 3 to 8% by weight of a phosphate selected from the group consisting of alkali phosphate and alkaline earth phosphate, 25 to 40% by weight of a carbonate selected from the group consisting of alkali carbonate and alkaline earth carbonate, and 1 to 3% by weight of glue, mixing said composition with 10 to 30 times its weight of water to form an emulsion, and aerating said emulsion.

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### 3,933,628
### METHOD AND APPARATUS FOR THE ANAEROBIC DIGESTION OF DECOMPOSABLE ORGANIC MATERIALS

**Frederick T. Varani, Golden, Colo., assignor to Bio-Gas of Colorado, Inc., Denver, Colo.**

**Filed July 10, 1974, Ser. No. 487,039**
**Int. Cl.² C02C** *1/14;* **F24J** *3/02*
**U.S. Cl. 210—12** **11 Claims**



**1.** An anaerobic digestion system which comprises: an open-topped reaction vessel having biodegradable organic reactants therein; a liquid and gas impervious lid sealing the reactants therein; a liquid heat exchange medium covering the lid and cooperating therewith to define a pond; means insulating said pond from the reactants so as to minimize the direct exchange of heat therebetween; translucent roof-forming means covering said pond effective to transmit solar energy to the heat exchange medium contained therein; means associated with said bond for withdrawing the heat exchange medium therefrom and adjusting the temperature thereof to a predetermined level; and, heat transfer means connected to take the heat exchange medium with its temperature thus adjusted and circulate same in heat exchange relation through the reactants to maintain the temperature thereof at a relatively constant level effective to promote fermentation.

**7.** The method of anaerobically digesting decomposable organic material which comprises: introducing bio-degradable organic reactants into an open-topped reaction vessel, covering said reaction vessel with a fluid-filled pond exposed to the sun so as to produce a sealed chamber therein, insulating said pond from the reactants so as to minimize the direct exchange of heat from the sun-warmed liquid to said reactants, fermenting the reactants within said sealed chamber so as to generate a gas therefrom, removing the sun-warmed liquid from the pond and adjusting the temperature thereof, passing the liquid with its temperature thus adjusted in heat-exchange relation to the fermenting reactants in a manner to maintain same at a near constant pre-selected temperature effective to promote anaerobic digestion, and removing the gas thus generated.

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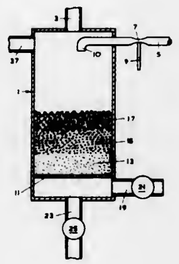
### 3,933,629
### FILTRATION

**Kenneth Cecil Smith, Roydon, England, assignor to BOC International Limited, London, England**

**Filed June 14, 1974, Ser. No. 479,514**
**Claims priority, application United Kingdom, June 14, 1973, 28327/73**
**Int. Cl.² C02C** *1/04*
**U.S. Cl. 210—17** **7 Claims**

**1.** A process for filtering an aqueous effluent material by introducing the effluent above a graded density filter bed wherein said bed includes layers of particulate material in which the smallest particles are of the most dense material and are at the lowest level and the largest particles are the least dense material and are at the uppermost level, and passing the same downward through the filter bed in which micro-organisms are supported wherein the micro-organisms are supplied with oxygen by substantially dissolving substantially pure oxygen gas in water to form oxygenated water and passing the

thus oxygenated water downwardly through the filter bed whereby the bio-availability of oxygen to the organisms is inhanced without significant disturbance of the graded density



of the filter bed thereby promoting the biological activity of the micro-organisms, and removing accumulated waste material from the filter bed by back flushing with attendant establishment of the graded density of the filter bed.

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**3,933,630**

## PURIFICATION OF WASTE WATER CONTAINING PHTHALIC ESTERS

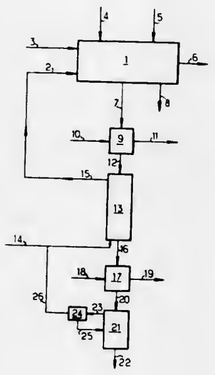
**Jacques Helgorsky, Fretillon, and Michel Auroy, Chauny, both of France, assignors to Rhone-Progil, Courbevoie, France**

**Filed Sept. 3, 1974, Ser. No. 502,899**

**Claims priority, application France, Sept. 12, 1973, 73.32732**

**Int. Cl.² B01D** *11/00*

**U.S. Cl. 210—21** **11 Claims**



**1.** A process for the purification of waste water resulting from the production of phthalic esters by esterification of phthalic acid or anhydride with alcohols having more than 4 carbon atoms, which comprises acidifying the waste water with a strong acid to attain a free acidity of the waste water greater than 0.05 N and extracting the acidified water with an alcohol having more than 4 carbon atoms for removal of organic impurities from the acidified water.

**3,933,631**

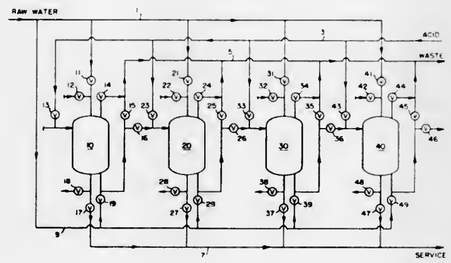
## METHOD OF OPERATING ION EXCHANGE SYSTEM

**Ralph C. Adams, Midland Park, N.J., assignor to The Permutit Company, Inc., Paramus, N.J.**

**Filed May 6, 1974, Ser. No. 467,135**

**Int. Cl.² B01D** *15/06*

**U.S. Cl. 210—34** **3 Claims**




**1.** A method of operating an ion exchange system having four vessels, each of which contains a bed of ion exchange resin that remains in the vessel during exhaustion and regeneration, and valve and conduit means for connecting said vessels for both series and parallel flow, comprising:

a. connecting a first vessel containing a partially exhausted bed in parallel with a second vessel containing a partially exhausted bed that is less exhausted than the bed in said first vessel to form a first service group, passing fluid to be treated in parallel through said first and second vessels and, at the same time, passing regenerant through a third vessel containing a partially regenerated bed and then through a fourth vessel containing an exhausted bed until the bed in said third vessel is regenerated and the bed in said fourth vessel is partially regenerated;

b. connecting said third vessel in series with said first vessel, with said third vessel downstream from said first vessel and said first and third vessels in parallel with said second vessel, to form a second service group, and passing the fluid to be treated through said second service group until the bed in said first vessel is exhausted;

c. removing said first vessel from service, connecting said second and said third vessel in parallel to form a third service group, passing the fluid to be treated in parallel through said second and third vessels and, at the same time, passing regenerant through said fourth vessel and then through said first vessel until the bed in the fourth vessel is regenerated and the bed in the first vessel is partially regenerated;

d. connecting said fourth vessel in series with said second vessel, with said fourth vessel downstream from said second vessel and the fourth and second vessels in parallel with the third vessel, to form a fourth service group, and passing the fluid to be treated through the fourth service group until the bed in the second vessel is exhausted;

e. removing said second vessel from service, connecting said third and fourth vessels in parallel to form a fifth service group, passing the fluid being treated in parallel through said third and fourth vessels and, at the same time, passing regenerant through said first vessel and then through said second vessel until the bed in said first vessel is regenerated and the bed in said second vessel is partially regenerated;

f. connecting said first vessel in series with said third vessel, with said first vessel downstream from said third vessel and the third and first vessels in parallel with the fourth vessel, to form a sixth service group, and passing the fluid to be treated through this service group until the bed in said third vessel is exhausted;



g. removing said third vessel from service, connecting said fourth vessel and said first vessel in parallel to form a seventh service group, passing the fluid to be treated in parallel through said fourth and first vessels and, at the same time, passing regenerant through said second vessel and then through said third vessel until the bed in the second vessel is regenerated and the bed in the third vessel is partially regenerated;

h. connecting said second vessel in series with the fourth vessel, with the second vessel downstream from the fourth vessel and the fourth and second vessels in parallel with said first vessel, to form an eighth service group, and passing the fluid being treated through said service group until the bed in the fourth vessel is exhausted; and

i. repeating the foregoing sequence.

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**3,933,632**

## REMOVAL OF IMMISCIBLE FLUIDS FROM WATER SURFACES AND LAKE BEDS

**Earl C. Peterson, Minneapolis, Minn., assignor to Electrolysis Pollution Control Inc., Minneapolis, Minn.**

**Continuation-in-part of Ser. No. 362,317, May 21, 1973, abandoned, which is a continuation-in-part of Ser. No. 296,789, Oct. 12, 1972, abandoned, which is a continuation-in-part of Ser. No. 143,713, May 26, 1971, abandoned. This application June 7, 1974, Ser. No. 477,276**

**Int. Cl.² C02B** *9/02*

**U.S. Cl. 210—36** **5 Claims**

**1.** The method of removing oil spills from the surface of bodies of water comprising:

a. placing an adsorbant compound on the water surface and in direct contact with said immiscible fluid and maintaining contact between said immiscible fluid and said adsorbant compound until said immiscible fluid is adsorbed by said adsorbant compound; and

b. thereafter removing said adsorbant compound and adsorbed material from said water surface;

c. said adsorbant compound consisting of an admixture of from between about 30% and 70% by weight of particulate lead slag mineral wool, balance of from between about 70% and 30% rock flour, said lead slag mineral wool having a film of an oil soluble hydrophobic film thereon, said rock flour being selected from the group consisting of trap rock, basalt and gabbro, and having a particle size of up to about 50 mesh.

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**3,933,633**

## METHOD FOR SEPARATING VINYL CHLORIDE

**Kozo Saitoh, Tokyo, and Sumio Izumi, Kokubunji, all of Japan, assignors to Mitsui Mining & Smelting Co., Ltd., Tokyo, Japan**

**Filed May 14, 1974, Ser. No. 469,922**

**Claims priority, application Japan, Dec. 15, 1973, 48-140909**

**Int. Cl.² C02B** *1/18*

**U.S. Cl. 210—44** **6 Claims**

**1.** A method for separating vinyl chloride from a mixture of vinyl chloride with other non-plastic substances selected from the group consisting of soil, sand, metals, glass, rubber and a mixture thereof, which comprises introducing gas bubbles into a dispersion of the vinyl chloride mixture in an aqueous liquid medium, and adding to said dispersion a flotation agent selected from the group consisting of pine oil, kerosene, cresylic acid, eucalyptus oil, camphor oil, a higher alcohol, methyl isobutyl carbinol, pyridine, o-toluidine and a mixture thereof thereby to float the vinyl chloride due to the adherence of the gas bubbles thereto.

**3,933,634**

## METHOD OF TREATMENT OF SLUDGES WITH SIZE-ADJUSTED CARBON

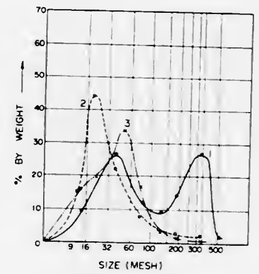
**Toru Seki, No. 558, Kami-kizaki, Urawa, Saitama, Japan**

**Filed Aug. 9, 1972, Ser. No. 279,267**

**Claims priority, application Japan, Aug. 13, 1971, 46-60968; Aug. 13, 1971, 46-60969**

**Int. Cl.² C02B** *1/20*

**U.S. Cl. 210—46** **6 Claims**




**5.** A process for concentrating and separating solids from solid/liquid mixtures in the treatment of sewage sludge which comprises incorporating into such sludge 2 to 10% by weight of fine dust coal or lignite particles having a size distribution such that 30 to 50% by weight of the whole particles have a finer size not greater than 100 mesh and 70 to 50% by weight of the whole particles have a coarser size exceeding 100 mesh; wherein the size distribution of the particles is such as to correspond with the size distribution curve (1) of FIG. 1 of the drawings, mixing the sewage sludge and fine dust coal or lignite particles under agitation, incorporating into this mixture a coagulant comprising a mixture of iron and aluminum salts in an amount of from 1/50 to 1/10 by weight of the fine dust coal or lignite particles when 5 to 20 minutes have passed since the addition of said fine dust coal or lignite particles, allowing the resultant mixture to stand still for 20 minutes to 2 hours to separate it into a supernatant liquor and a coal-containing concentrated sludge, feeding the coal-containing concentrated sludge onto a continuously moving filter cloth disposed so that it crosses at a predetermined inclined angle, the surface of the coal-containing concentrated sludge, thereby to form on the filter cloth at first a precoat layer of coarser particles of the fine dust coal or lignite and then a layer of coagulates composed of finer particles of the fine dust coal or lignite and sludge solid, and conducting vacuum suction filtration from the back surface of the filter cloth thereby to remove water from said layer.

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**3,933,635**

## METHOD FOR REMOVING SOLUBLE SELENIUM FROM ACIDIC WASTE WATER

**Wayne N. Marchant, Salt Lake City, Utah, assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.**

**Filed July 15, 1975, Ser. No. 596,117**

**Int. Cl.² C02C** *5/02*

**U.S. Cl. 210—50** **4 Claims**

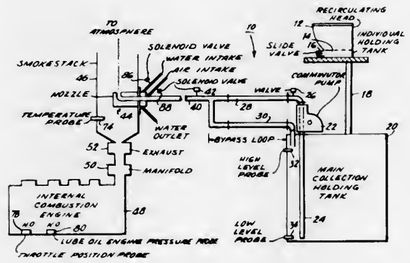
**1.** A method for removing selenium from zinc smelter effluent comprising reacting the effluent with a metallic reducing agent at a temperature of about 25° to 85° C for a time sufficient to reduce a substantial portion of the soluble selenium to insoluble metallic selenium.

**3,933,636**

## APPARATUS AND METHOD FOR DISPOSING OF SOLID HUMAN EXCREMENT IN AN ENGINE-DRIVEN CONVEYANCE

**Robert A. Daniels, 520 E. 72nd St., New York, N.Y. 10021**

**Filed Mar. 28, 1975, Ser. No. 563,157**
**Int. Cl.² B01D** *21/24*; **F01N** *3/02*
**U.S. Cl. 210—71** **13 Claims**




**1.** On a conveyance, a disposal system for sewage including solid waste and liquid, said system comprising:

a. a recirculation toilet bowl employing a reusable chemical flushing liquid and having an individual holding tank in which solid waste is substantially separated from liquid and said waste and liquid are accumulated, said bowl having means for discharging said individual holding tank after several flushes,

b. a main collection holding tank,

c. means for leading the discharge from the individual holding tank to the main collection holding tank,

d. a comminutor pump, said pump having

i. an outlet and

ii. an inlet,

e. means connecting the inlet to adjacent the bottom of the main collection holding tank,

f. means connecting the outlet to the main collection holding tank so that when the pump is in operation a closed cycle is provided for withdrawing liquid and solid waste from the main collection holding tank, macerating it in the pump and returning it to the main collection holding tank whereby after a length of time the material in the main collection holding tank will assume a geltinous consistency,

g. an internal combustion engine furnishing a source of power for propelling the conveyance, said engine having an exhaust through which exhaust gases from the engine are discharged,

h. an exhaust-gas conduit to receive exhaust gases discharged from the engine and to eject them into the atmosphere,

j. a nozzle in the exhaust gas conduit,

k. a bleed-off conduit leading from the comminutor discharge to the nozzle,

m. a valve in said conduit,

n. means for energizing said pump while said valve is closed so as to convert the liquid and waste in the main collection holding tank to a gelatinous consistency,

o. means for opening the valve after said material is reduced to a gelatinous consistency and for discharging said material through the bleed-off conduit and out of the nozzle,

p. means for injecting air under pressure into the material leaving the nozzle so as to atomize the same,

q. said pump-actuating means being under the regulation of the following triggering conditions:

i. the temperature of exhaust gases in the exhaust gas conduit,

ii. the level of material in the main collection holding tank, and

iii. the condition of the engine

iv. such that the comminutor pump is not actuated unless the temperature of the exhaust gases in the stack is at least 600°F, the level of the material in the main collection holding tank is at least at a predetermined high elevation, and the engine is running, is not idling and is operating under conditions sufficient to engender a volume of exhaust gases that will substantially fully evaporate, incinerate and combust the vaporized gelatinous material in the smoke stack with the aid of the injected air,

r. said valve in the bleed-off conduit being closed during operation of the comminutor pump, and

s. time delay means for opening the valve after a period of time sufficient to reduce the material in the main collection holding tank to a gelatinous consistency while the said triggering conditions still prevail.

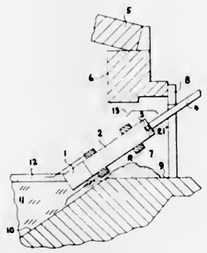
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**3,933,637**

## FLUID HANDLING AND SEPARATING

**Jan-Erik Ostberg, Torps Sateri, 640 33 Bettna, Sweden**

**Continuation-in-part of Ser. No. 286,831, Sept. 6, 1972, abandoned. This application Nov. 14, 1974, Ser. No. 523,736**
**Int. Cl.² B01D** *21/26*; **C21B** *3/04, 7/14*
**U.S. Cl. 210—83** **6 Claims**



**1.** A method of separating a mixture of metal melt and slag which comprises introducing the mixture into the lower end of a hollow cylinder body mounted to rotate about a slanting axis, rotating the body about such axis at a sufficient speed to draw the mixture upwardly in the body to form the slag into a truncated paraboloid of revolution with its lower end surrounded by the melt to separate the melt from the slag, preventing upward movement of the melt in the cylinder body beyond a predetermined point by limiting the upward movement thereof and simultaneously permitting discharge of the melt downwardly, and preventing downward movement of the slag which has been separated from the melt, while permitting the escape of the slag at the upper end of said body.

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**3,933,638**

## LIQUID FUEL PURIFICATION SYSTEM

**Walter F. Isley, Grosse Pointe, Mich., assignor to Teledyne Industries, Inc., Los Angeles, Calif.**

**Filed June 7, 1974, Ser. No. 477,538**
**Int. Cl.² B01D** *33/40*
**U.S. Cl. 210—97** **7 Claims**

**1.** In a liquid fuel flow system wherein fuel flowing through said system under pressure between a source of fuel and a user of such fuel is freed from contaminants, the improvement which comprises the combination of

a. a centrifuge having an inlet port in liquid communication with said source, an outlet port in liquid communication with said user, and a rotatable cylindrical drum adapted to effect the packing of particulate matter against the inside wall thereof;

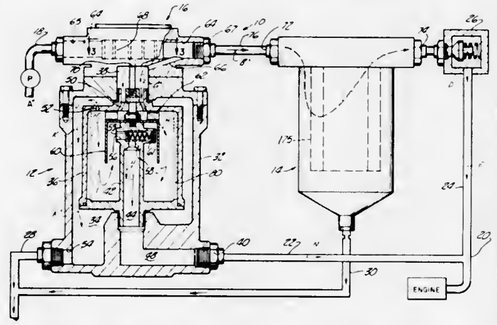


b. means for rotating said centrifuge;

c. a filter having an inlet port in liquid communication with said source, and an outlet port in liquid communication with said user; and

d. bypass means to effect the flow of fuel through either said centrifuge or said filter, said means comprising a first valve responsive to centrifugal force to effect the flow of fuel through said centrifuge and a second valve responsive to fuel pressure above a predetermined level for effecting the flow of fuel through said filter, and

e. wherein flow of fuel through said centrifuge reduces the pressure of said fuel below said predetermined pressure.



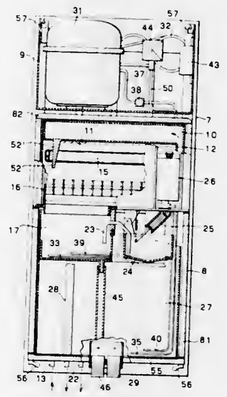

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**3,933,639**

## APPARATUS FOR PREPARING BEVERAGES

**Livio Pollastri, and Franco Tessarolo, both of Pordenone, Italy, assignors to Industrie A. Zanussi S.p.A., Pordenone, Italy**

**Filed Feb. 15, 1974, Ser. No. 443,103**
**Claims priority, application Italy, Feb. 16, 1973, 20518/73**
**Int. Cl.² B01D** *9/00, 3/42*
**U.S. Cl. 210—149** **10 Claims**



**1.** An automatic household type machine for preparing beverages, more particularly artificial mineral water, comprising water feeding means, a demineralizing device provided with means for the fractional crystallization of the fed-in water, a mineralizing device for introducing into the demineralized water the ions which are characteristic of the mineral water to be obtained, a tank for receiving and storing the mineralized water, controlled dispensing means for mineralized water in the tank and control means for automating the machine operation, the demineralizing device comprising a refrigeration circuit including a compressor, a principal evaporator which is U-shaped and arranged horizontally, said principal evaporator having a vertical cross-section in a vertically elongated tubular form which gradually tapers downwards, an auxiliary evaporator and a capillary tube with restrictor function, shower diffusion means formed by a boxlike container equipped at is bottom with a plurality of holes which are placed directly above the U-shaped principal evaporator to diffuse by dripping the fed-in water onto the outer surface of the principal evaporator, a tray located below the principal evaporator to collect the water dripping therefrom, circulating means for sending to the shower diffusion means at least a part of the water collected in the tray, first heating means associated with an upper portion of the principal evaporator to cause stripping of the ice formed on the principal evaporator and chute means located below the principal evaporator to collect the ice stripped from the principal evaporator and convey it towards an ice melting container in which at least a part of the capillary tube is housed, siphoning means being provided for transferring at least a fraction of the melted ice through the mineralizing device to the mineralized water storing tank and second heating means being housed in the tank together with the auxiliary evaporator and controlled by the control means so as to maintain the stored water, in combination with the auxiliary evaporator, at a pre-selected temperature.

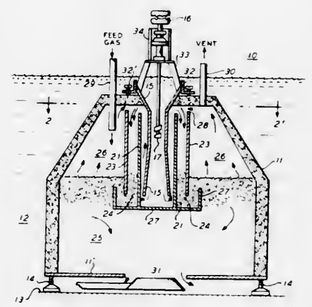
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**3,933,640**

## METHODS AND APPARATUS FOR TREATING WASTEWATER

**Bradley S. Kirk, North Plainfield, and Raymond M. Chappel, Mendham, both of N.J., assignors to Airco, Inc., Montvale, N.J.**

**Continuation-in-part of Ser. No. 413,409, Nov. 6, 1973. This application Sept. 20, 1974, Ser. No. 507,847**
**Int. Cl.² C02C** *1/02*; **C02B** *3/08*
**U.S. Cl. 210—197** **13 Claims**




**1.** Apparatus for oxygenating a body of wastewater containing organic solids comprising a generally enclosed oxygenating chamber having top, bottom and sidewalls and emplaceable in said body of wastewater and having an aperture defined in said bottom wall of said chamber; means for pumping wastewater under treatment into said chamber through an inlet thereof; means for creating a turbulent condition in said pumped wastewater in a mixing zone in said chamber and for contacting said turbulent wastewater with said oxygenating gas to thereby dissolve oxygen and entrain oxygenating gas in said turbulent wastewater; liquid accumulation means disposed within said chamber for receiving oxygenated wastewater from said mixing zone and for dissipating said turbulence to enable disentrainment and recovery within said chamber of undissolved oxygenating gas entrained in said wastewater in said mixing zone; and nozzle means for discharging said oxygenated wastewater into said body of wastewater at a velocity such that said body of wastewater is sufficiently stirred to maintain said organic solids suspended therein, the improvement comprising said nozzle means having a plate member

and a rim portion extending at a downward angle from the periphery of the plate member which has an area smaller than the area of said aperture and a geometry corresponding to the geometry of said aperture; and means for supporting said plate member and rim portion spaced away from said bottom wall at said aperture such that oxygenated wastewater is discharged from said chamber in a predetermined, multi-directional pattern into said body of wastewater.

**12.** Apparatus for oxygenating a body of wastewater containing organic solids comprising a generally enclosed oxygenating chamber having top, bottom and sidewalls and emplaceable in said body of wastewater; means for pumping wastewater under treatment into said chamber; means for creating a turbulent condition in said pumped wastewater in a mixing zone in said chamber and for contacting said turbulent wastewater with said oxygenating gas to thereby dissolve oxygen and entrain oxygenating gas in said turbulent wastewater; liquid accumulation means disposed within said chamber for receiving oxygenated wastewater from said mixing zone and for dissipating said turbulence to enable disentrainment and recovery within said chamber of undissolved oxygenating gas entrained in said wastewater in said mixing zone; and nozzle means for discharging said oxygenated wastewater into said body of wastewater at a velocity such that said body of wastewater is sufficiently stirred to maintain said organic solids suspended therein, the improvement comprising said nozzle means including an aperture defined in the lower portion of at least one of said sidewalls; top and bottom plate members spaced apart from one another and disposed above and below said aperture, respectively, and extending from said sidewall into said body of wastewater; and adjustable cover means adapted to slidably engage said top plate member and extend downwardly therefrom such that the passage between said top and bottom plate members, through which passage said discharged oxygenated wastewater may flow, is controlled in dependence upon the vertical position of said adjustable cover means.

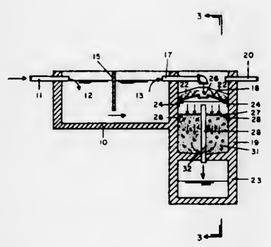
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**3,933,641**

**SEWAGE TREATMENT AND RECYCLING SYSTEM**

**Lyall C. Hadden, and Charles T. Benjamin, both of Honeybrook, Pa., assignors to Environs Engineering Enterprises, Inc., Honeybrook, Pa.**

**Filed Mar. 4, 1974, Ser. No. 447,496**
**Int. Cl.² B01D** *35/00*
**U.S. Cl. 210—205** **6 Claims**



**1.** Sewage treatment apparatus comprising, in combination, a first container and a second container, inlet means in an upper portion of the sidewall of said first container, means for aerating liquid in said first container, outlet means in an upper portion of the sidewall of said first container oppositely spaced from said inlet, said outlet means comprising a conduit with a first open end located within said first container and a second open end located in and approximately centrally of said second container, fluid distributor structure comprising a trough with a bottom and sidewalls, said trough being located beneath said second open conduit end for the reception of fluid therefrom, downwardly sloping sidewalls peripherally arranged around said trough with the inner peripheral ends thereof in fluid communication with said trough whereby excess fluid received by said trough is caused to flow over the surfaces of said sloping sidewalls, apertures distributed in the surface of said sloping sidewalls with baffle structure adjacent thereto constructed and arranged to divert liquid into said apertures, first filter means comprising a perforated support means supporting filter media horizontally located within said second compartment beneath said apertures, second filter means comprising a mixture of sand, humus and alluvial deposites located within said second container beneath said first filter means, filtered fluid collection means located beneath said second filter means in fluid communication therewith, and means in fluid communication with said fluid collection means for the removal of filtered fluid therefrom.

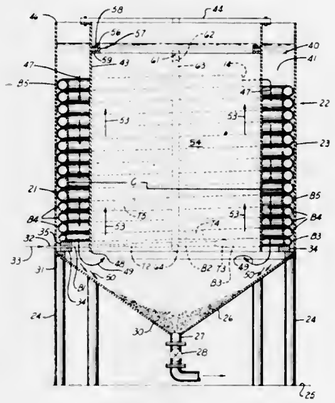
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**3,933,642**

**FLOCCULATION APPARATUS**

**George E. Wilson, 1231 McClaren Drive, Carmichael, Calif. 95608**

**Filed Mar. 18, 1974, Ser. No. 451,862**
**Int. Cl.² C02B** *1/20*
**U.S. Cl. 210—206** **2 Claims**



**1.** A flocculation apparatus for the treatment of a fluid, said apparatus comprising:

a. a conductor capable of carrying the fluid and a coagulant mixed therewith from an upstream inlet end at a first relatively high pressure head to a downstream outlet end at a second relatively low pressure head, the dimensions and configuration of said conductor being predetermined so that the rate of energy dissipation at any location throughout said conductor is such as to effect flocculation of particle aggregates to any given size in the minimum time;
   1. said conductor being a pipe including a plurality of discrete sections, each section having a predetermined diameter and length, and a plurality of transition members of predetermined length connecting adjacent pipe sections, said discrete sections being of progressively larger diameters in a downstream direction;
   2. said pipe being helically wound into a coil of predetermined diameter;
b. a vertical, right circular cylindrical tank encompassing said coil;
c. an inverted conical closure depending from the lower end of said tank and forming the bottom of said tank;
d. a vertical, right circular cylindrical divider wall defining an interior compartment, said divider wall being coaxially disposed within said tank and forming an annular vertical passageway with the walls of said tank;



   1. said pipe coil being supported on said tank and located within said annular passageway with the outlet end of said pipe discharging into said annular passageway, the bottom end of said annular passageway overlying said inverted conical bottom of said tank so that the heavier flocculation clusters in the treated fluid descend through said annular passageway into contact with said inverted conical bottom and are downwardly and inwardly deflected thereby toward the apex of said inverted conical bottom; and
e. means for periodically draining the accumulated flocculation clusters from the apex area of said inverted conical bottom of said tank.

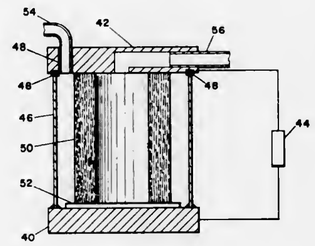
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**3,933,643**

**ELECTRICALLY CONDUCTING FILTER MEDIA FOR FLUIDS**

**Floyd E. Colvin, Tell City; John R. Mummert, Indianapolis, and Franklin George Gilbert, Lebanon, all of Ind., assignors to The Carborundum Company, Niagara Falls, N.Y.**

**Filed Sept. 10, 1971, Ser. No. 179,399**
**Int. Cl.² B01D** *35/06*
**U.S. Cl. 210—243** **12 Claims**



**1.** A filter element, said filter element including:

a. a fluid permeable body composed of electrically conductive carbonaceous material disposed throughout said body for defining an electrical pathway therethrough;
b. an external terminal means; and
c. electrical conductive means in electrical contact with said carbonaceous material and with said external terminal means for defining an electrical pathway there between.

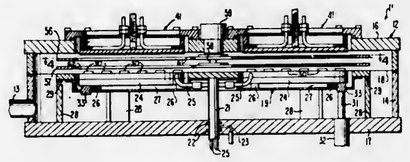
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**3,933,644**

**SPUTTER COATING APPARATUS HAVING IMPROVED TARGET ELECTRODE STRUCTURE**

**James R. Skinner, Cupertino, and Albert Lang, Jr., Palo Alto, both of Calif., assignors to Varian Associates, Palo Alto, Calif.**

**Continuation of Ser. No. 237,566, March 23, 1972, abandoned, which is a continuation of Ser. No. 875,657, Nov. 12, 1969, abandoned. This application May 24, 1973, Ser. No. 363,449**
**Int. Cl.² C23c** *15/00*
**U.S. Cl. 204—298** **8 Claims**



**1.** In a coating apparatus for sputtering material from a target electrode structure by a gaseous discharge for deposition onto a substrate surface, comprising a chamber defining a controlled environment for said sputtering and deposition, a target electrode structure having a surface within said chamber of the material to be sputtered, means within said chamber for supporting a substrate object at a location for deposition thereon of said material, and means for initiating and sustaining a gaseous discharge within said chamber to sputter said material from said target electrode structure for deposition onto said substrate object; THE IMPROVEMENT WHEREIN said target electrode structure comprises a metallic target electrode plate having an inner surface facing the interior of said chamber and an outer surface facing outwardly of said chamber, said chamber having a metallic wall portion adjacent said target electrode structure and having an aperture in said wall portion, a tubular dielectric member having one end hermetically sealed to said target electrode plate adjacent the periphery of said target electrode plate, the other end of said tubular dielectric member having a hermetic seal connection to said wall portion, said aperture being large enough to permit said target electrode plate and said tubular dielectric member to be inserted through the aperture from the outside of said chamber, and the inner surface of said target electrode plate being positioned inside said chamber whereby the inner surface of said target electrode plate can be covered with either dielectric or metallic sputter material, the inner surface of said target electrode plate extending into said chamber no further than to the position at which said inner surface of said target plate is substantially coplanar with the inner surface of said adjacent wall portion of said chamber, and said adjacent wall portion of said chamber being closely adjacent the periphery of said target electrode plate to prevent sputtering from the periphery of said target electrode plate.

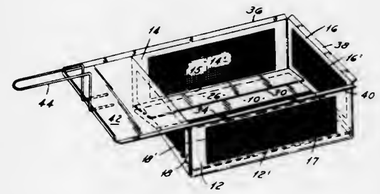
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**3,933,645**

**DEEP FAT FRYER TRAP**

**John D. Keramidas, 1214 Fort St., Lincoln Park, Mich. 48146**

**Filed July 8, 1974, Ser. No. 486,524**
**Int. Cl.² B01D** *23/26*
**U.S. Cl. 210—305** **5 Claims**



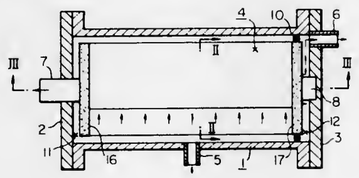
**1.** A deep fat fryer trap having bottom, side and end walls connected to form a box-like structure, said bottom wall sloping upwardly from the opposite side wall to a ridge portion along the medial area thereby defining a pair of crumb traps along opposite sides of the ridge portion of the bottom wall, said bottom wall being imperforate except for the ridge portion, a crumb strainer screen disposed along said ridge portion, said side and end walls being largely open and having crumb strainer screens extending across the open areas thereof, baffle means extending over the pair of traps and spaced upwardly therefrom in substantially parallel relation with the bottom wall to isolate crumbs in the traps from cooking oil above the baffles, an apron connected to and extending laterally from the upper edge of one of the end walls, the upper edges of the remaining end and side walls flaring laterally outwardly to substantially meet the walls of a fryer well when the trap is placed therein, and a lifting handle connected to said apron and projecting outwardly there beyond.

**3,933,646**

## REVERSE OSMOSIS SEPARATION APPARATUS

**Naokatsu Kanamaru, Kyoto, and Hisaaki Fujino, Otsu, both of Japan, assignors to Toray Industries, Inc., Tokyo, Japan**

**Filed May 9, 1974, Ser. No. 468,545**
**Claims priority, application Japan, May 14, 1973, 48-52573**
**Int. Cl.² B01D** *31/00*
**U.S. Cl. 210—321 R** **4 Claims**



1. In a reverse osmosis separation apparatus comprising a cylindrical chamber having a membrane module disposed with the axis thereof coaxial to the axis of said chamber, said module comprising a hollow mandrel having at least one hole at the outer circumference thereof and at least one pair of membrane sheets spaced apart from each other by spacing layers and spirally wound about said mandrel to form a first spiral passage for a permeated solution between the opposite inner surfaces of said sheets and to form a second spiral passage for a feed solution between the opposite outer surfaces of said sheets, said first passage being closed at the outer edges of the entire lengths of said sheets and having an outlet opening elongated in the axial direction at the inner edges of the entire lengths of said sheets to communicate with with the interior of said mandrel through said hole thereof, means for supplying said feed solution into said chamber to allow the solution to flow into said second passage, means for discharging the nonpermeated solution which flows out of said membrane module from said chamber, and means for discharging said permeated solution which flows into the interior of said mandrel from said chamber, the improvement comprising: said second passage having an inlet opening elongated in the axial direction at the outer edges of the entire lengths of said sheets and an axiaal outlet opening at the spiral edges of said sheets in the vicinity of the surface of said mandrel; said first and second passages being closed at the opposite edges of said sheets over most of the spiral lengths except where said axial outlet opening is formed, and; said supplying means for said feed solution being provided so that said feed solution is forced to flow transversely into said chamber in a direction perpendicular to the axis of said chamber, whereby said feed solution is forced to flow into said second passage through said inlet opening thereof and to flow spirally around said mandrel through said second passage and said nonpermeated solution is forced to flow out of said membrane module through said axial outlet opening of said second passage, said permeated solution flowing spirally in said first spiral passage and being discharged via said hole in the mandrel into the interior of said mandrel.

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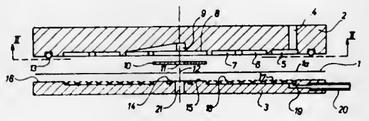
**3,933,647**

## APPARATUS FOR THE SEPARATION OF LIQUID MIXTURES BY MEANS OF PERMEABILITY SELECTIVE SEPARATION MEMBRANES

**Fritz Müller, Avully, Switzerland, assignor to Louis Schleiffer AG, Feldbach, Switzerland**

**Filed June 17, 1974, Ser. No. 480,192**
**Claims priority, application Switzerland, June 19, 1973, 8849/73**
**Int. Cl.² B01D** *31/00*
**U.S. Cl. 210—346** **12 Claims**

1. An apparatus for the separation of liquid mixtures by means of permselective separation membranes, comprising at least one separation module composed of a distributor plate, a collector plate and an intermediate situated separation membrane, said separation membrane having oppositely situated faces, one of said faces defining an effective membrane surface, the distributor plate being provided at the region of the effective membrane surface with at least one throughpassage opening arranged at the periphery thereof for the mixture to be separated and at least one open flow channel extending from said throughpassage opening towards the center of the membrane, said flow channel being arranged such that the mixture along one face of the membrane is subjected to a turbulent flow for the successive flushing of the membrane surface, said membrane being provided with an axial throughflow opening into which opens said flow channel, the collector plate comprising a body of imporous material formed with an axial bore, a substantially ring-shaped recess arranged oppo-



site the flow channel, and at least one collecting channel leading from the ring-shaped recess towards the outside, and the collector plate also comprising a highly porous carrier element arranged in the ring-shaped recess for substantially uniformly supporting the membrane at a discharge side thereof defined by the other face, the carrier element being pressure resistant and highly porous to an extent sufficient to allow for a rapid unhindered flow-off of the permeate which flows through and out of the membrane via the ring-shaped recess to the collecting channel without any appreciable pressure drop and at the same time opposing any bending-through of the membrane, and sealing means provided at the distributor plate and the collector plate for sealing the flow channel and the ring-shaped recess at the center and at the periphery of the membrane from one another and from the surroundings against high pressure and vacuum.

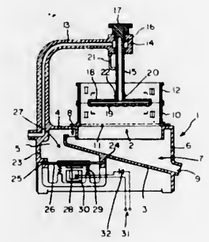
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**3,933,648**

## SCREENING APPARATUS

**Kiyoshi Urayama, Kyoto, Japan, assignor to Kabushiki Kaisha Hosokawa Funtai Kogaku Kenkyusho, Osaka, Japan**

**Filed Oct. 23, 1973, Ser. No. 408,750**
**Claims priority, application Japan, Oct. 25, 1972, 47-106995**
**Int. Cl.² B01D** *35/20*
**U.S. Cl. 210—355** **4 Claims**



1. In a screening apparatus, the combination comprising:
housing means provided with horizontal shelf portion means;
means defining an opening in said shelf portion means;
open ended frame means disposed about said means defining an opening;
said frame means extending upwardly therefrom;
screen means disposed at the lower end of said frame means and adapted to cover said means defining the opening;
means for supplying liquid to said screen from a position above said screen means;
plate means disposed below said screen means and inclined relative to said screen means to provide a drainage conduit for said liquid; and
air pulsation means disposed below and protected by said plate means, said pulsation means communicating with said screen means by an outlet above said plate means but below said screen means.



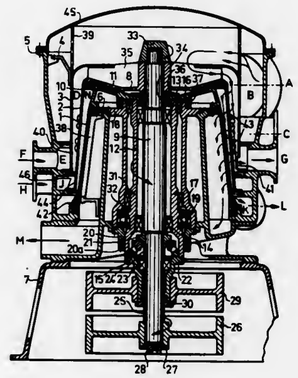
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**3,933,649**

## APPARATUS FOR PURIFYING AND FRACTIONATING PARTICLE SUSPENSIONS

**Sten Eskil Einarsson Ahlfors, Asgatan 65, 776 00 Hedemora, Sweden**

**Continuation of Ser. No. 225,487, Feb. 11, 1972, abandoned. This application June 20, 1974, Ser. No. 481,233**
**Claims priority, application Sweden, Mar. 31, 1971, 2528/71**
**Int. Cl.² B01D** *21/26*
**U.S. Cl. 210—378** **13 Claims**



1. In an apparatus for purifying and fractionating a fiber suspension, said apparatus including an outer annular chamber (D) having an inlet (A) for the fiber suspension to be purified and fractioned, said chamber being radially outwardly defined by a stationary shell (3) and radially inwardly by a rotatable first screening drum (2) having a circular cross-section, said first drum being provided with pulsating means (43) and screen openings and an inner annular chamber (N) with an outlet (L) for impurities, the reject, the inner chamber being radially outwardly defined by said first screening drum (2) and radially inwardly by a second screening drum (1) for finely screening the fiber suspension, and further including a passage located inside the second screening drum (1) and arranged to receive the purified fiber suspension, i.e., the accept, and communicating with an outlet (M), therefor, the improvement wherein the pulsating means of said first screening drum (2) is fixed to said drum, and wherein said first screening drum is provided with openings which are considerably larger than are the screen openings in the second screening drum (1) to enable the fiber suspension to pass through the first drum (2), while separating from the suspension the coarser and heavier impurities thereof, to the second screening drum (1), and through passage through which the suspension is purified.

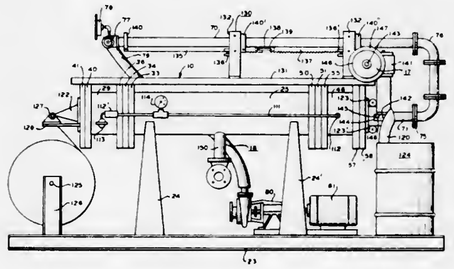
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**3,933,650**

## APPARATUS FOR FILTERING FLUIDS

**Morgan Lentz, 60 Addison Ave., Rutherford, N.J. 07070**

**Continuation of Ser. No. 379,994, July 17, 1973. This application Jan. 13, 1975, Ser. No. 540,490**
**Int. Cl.² B01D** *33/00*
**U.S. Cl. 210—387** **7 Claims**



1. An apparatus for filtering fluids, which comprises:
a. a housing, comprising
1. a filter chamber including a first end wall having an opening, a second end wall having an opening, and a first enclosing side wall having a filtrate opening;
2. a first sealing chamber including the first end wall, a third end wall having an opening, and a second enclosing side wall; and
3. a second sealing chamber including the second end wall, a fourth end wall having an opening, and a third enclosing side wall;
b. a tubular fluid inlet member slidably movable through the openings in the end walls in the housing, which includes at a first end a first section, a second section, and a perforated medial section which is located intermediate the first section and second section;
c. tubular filter media extendable through the openings in the end walls in the housing;
d. means for displacing the tubular fluid inlet member and the tubular filter media so that during filtration the first end of the tubular fluid inlet member extends into the housing through the tubular filter media for positioning the first section in the first sealing chamber, the medial section in the filter chamber, and the second section in the second sealing chamber, and after filtration the length of tubular filter media in which the filtered solids are retained and the second section and medial section of the tubular fluid inlet member are displaced from the housing; and
e. means for sealing the filter chamber which cooperate with the first section and second section of the tubular fluid inlet member to seal the filter chamber.

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**3,933,651**

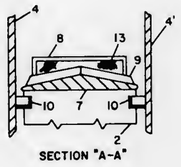
## RECOVERING BITUMEN FROM LARGE WATER SURFACES

**Harold L. Erskine, Devon, Pa., assignor to Great Canadian Oil Sands Limited, Toronto, Canada**

**Filed Oct. 7, 1974, Ser. No. 512,371**
**Int. Cl.² B01D** *35/08*
**U.S. Cl. 210—400** **1 Claim**

1. An endless belt apparatus for recovering thick, tarry, bituminous froth from the surface of a body of water and delivering said froth to a discharge area above said body of water, said apparatus comprising in combination a frame supporting at least two rollers constructed and arranged to support an endless belt in an inclined position from the surface of said body of water to discharge area above said body of water, said belt comprising a downwardly sloping outer surface extending from a longitudinal raised central portion of the belt to its periphery, a plurality of screen-bottom buckets

supported by said belt on the outer surface thereof along its peripheral length, said screen bottoms having a mesh size in the range of 3.0 to 30.0 millimeters to selectively retain said bituminous froth in said bucket, passing fluids through said screen bottoms while moving from said body of water to said




discharge area, baffle means located on the outer surface of said belt adjacent to each of said buckets, whereby fluid passing through said buckets is deflected toward said downwardly sloping surface of each side of said belt, and a means for rotating said belt.

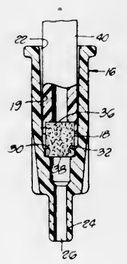
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**3,933,652**

## PROCESS OF MANUFACTURING A POROUS, STAINLESS STEEL FILTER ELEMENT AND SEALING IT IN A TUBULAR FITTING, AND RESULTING FILTER

**Theodore E. Weichselbaum, Normandy, and William W. Gusky, Florissant, both of Mo., assignors to Sherwood Medical Industries Inc., St. Louis, Mo.**

**Filed Apr. 25, 1973, Ser. No. 354,309**
**Int. Cl.² B01D** *39/02*; **B22F** *3/16*, *7/02*
**U.S. Cl. 210—446** **22 Claims**




**1.** A process for manufacturing a sintered, porous stainless steel filter for use in medical injection and infusion equipment and the like; said filter being manufactured from stainless steel particles having an irregular or dendritic shape with arm-like projections extending outwardly therefrom; said process comprising the steps of:

screening dendritic stainless steel particles to obtain particles of a predetermined size;

mixing the screened particles with a lubricant;

loading the particle-lubricant mixture into a mold of desired shape;

compacting the particle-lubricant mixture in the mold at a predetermined compaction pressure to cause the arm-like projections on the particles to engage and interlock with one another and form a self-supporting, porous, green filter;

heating the green filter at a predetermined temperature to burn off the lubricant; and

sintering the filter to form a sintered, porous, stainless steel filter.

**3,933,653**

## MEMBRANES OF ACRYLONITRILE POLYMERS FOR ULTRAFILTER AND METHOD FOR PRODUCING THE SAME

**Yasuo Hashino, Matsudoshi; Masatsugu Yoshino; Hitoshi Sawabu, both of Tokyo, and Sukeo Kawashima, Osaka, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan**

**Filed Apr. 26, 1973, Ser. No. 354,786**
**Claims priority, application Japan, Apr. 28, 1972, 47-42751**
**Int. Cl.² B01D** *31/00*, *13/00*
**U.S. Cl. 210—500 M** **6 Claims**




**1.** Membranes of acrylonitrile polymers for ultrafilter, comprising:

1. a porous layer or layers existing near and on at least one of the surfaces of said membranes, the average sizes of pores contained in said porous layer or layers and existing on each of assumptive parallel planes to the surfaces of said membranes, having a gradient in that said average sizes become smaller toward the surfaces of said membranes, and
2. a reticulate porous layer adjacent to said porous layer or layers (**1**) and containing therein a succession of voids of cylindrical shape or revolving ellipsoid shape having diameters of 5–50 $\mu$ and lengths of at least 10 $\mu$ and less than the thickness of said membranes, said membranes being prepared by dissolving an acrylonitrile polymer containing at least 84% by weight of acrylonitrile units in a solution of nitric acid having a concentration of 65–95% by weight, extruding the resulting solution, introducing the resulting extrudate into a solidifying bath consisting of water or an aqueous solution of nitric acid having a concentration of 30% by weight or less.

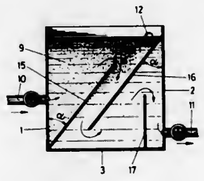
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**3,933,654**

## OIL SEPARATOR FOR SEPARATING OIL LIGHTER THAN THE PURIFIED LIQUID BEING IN A VERY PURE STATE

**Cornelis Gerardus Middelbeek, Nootdorp, Netherlands, assignor to Frederic R. Harris (Holland) B.V., Netherlands**

**Filed June 19, 1973, Ser. No. 371,349**
**Claims priority, application Netherlands, June 21, 1972, 7208503**
**Int. Cl.² B01D** *17/02*
**U.S. Cl. 210—521** **10 Claims**




**1.** A device for separating oil from an oil laden liquid comprising:

a. a tank having oil laden liquid, side walls and a bottom with an inlet in a first side wall below the surface of said oil laden liquid for introducing the oil laden liquid and an outlet in a second side wall for the purified liquid;

b. means for separating oil from an oil laden liquid comprising at least two parallel inclined plates spaced from each other in the tank;

c. one of the parallel plates extending at an incline from and having one edge fixed to the first side wall to define a space with said first side wall adjacent the inlet to minimize the turbulence of the incoming liquid;

d. the other parallel plate extending from and having one edge fixed to the second side wall to define a second space adjacent the outlet;

e. each plate having a free edge opposite its fixed edge, one free edge pointed upwardly and the other free edge pointed downwardly;

f. oil discharge means near the top of the tank for removal of the separated oil whereby oil laden liquid entering into said tank through the inlet has the turbulence thereof almost completely eliminated before entry into one end of said separating means wherein the oil is separated from the oil laden liquid so that the separated oil gathers near the top of the tank and is discharged therefrom through said discharge means and the purified liquid then flows from the other end of the separating means and is discharged through the outlet.



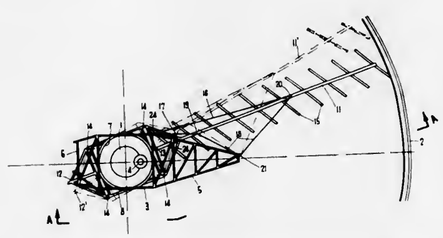
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**3,933,655**

## CABLE-CONTROLLED THICKENER

**Anthony Grzina, Artarmon, Australia, and John Henry Ephraim Fedeler, Southbury, Conn., assignors to Warman Equipment International, Artarmon, Australia**

**Filed Mar. 12, 1974, Ser. No. 450,496**
**Int. Cl.² B01D** *21/18*
**U.S. Cl. 210—528** **7 Claims**




**1.** A cable-controlled thickener of the central column type having at least one cable supported rake arm with scraper blades attached thereto for shifting the contents in a settling tank on rotation of said rake arm around said central column, said thickener comprising a drive cage having at least one drag arm extending therefrom and being rotatably mounted on said column above the highest liquid level in said tank, driving means for said drive cage, a lower cage freely rotatably mounted below said drive cage above the highest liquid level in said tank in alignment with said drive cage, said lower cage near its lower end having hinge means to hinge at least one rake arm to said lower cage, said hinge means permitting movement of said rake arm only in a vertical plane, cable means connecting the drag arm of the drive cage with said rake arm; said cable means comprising a pair of support cables with the first ends of each fixedly connected to spaced apart points on the corresponding rake arm, a drag cable passing around a pulley located at the end of each drag arm opposite the drive cage and with its opposite ends connected to said support cable spaced apart points on the rake arm whereby, with changes in load on the rake arm and pivotal movement upward in a vertical plane relative rotational movement between the upper drive cage and freely rotatable lower cage maintains loading on the support cables and equalized pull on the drag cable.

**3,933,656**

## LUBRICATING OIL WITH FLUOROCARBON ADDITIVE

**Franklin G. Reick, Westwood, N.J., assignor to Michael Ebert, Mamaroneck, N.Y., a part interest**

**Continuation of Ser. No. 377,931, July 10, 1973. This application Jan. 16, 1975, Ser. No. 541,579**
**Int. Cl.² C10M** *1/10*, *3/02*, *1/50*, *7/02*
**U.S. Cl. 252—25** **7 Claims**

**1.** A modified oil lubricant suitable for a combustion engine provided with an oil filter, said lubricant comprising major amounts of a liquid lubricating oil intermingled with minor amounts of a dispersion of polytetrafluoroethylene particles in the sub-micron range and a charge neutralizing agent stabilizing the dispersion to prevent agglomeration and coagulation of the particles, whereby the lubricant is capable of passing through said oil filter without separation of the particles from the oil.

**2.** A modified oil lubricant as set forth in claim **1**, wherein said agents are selected from the group consisting of silanes and silizanes.

**4.** A modified oil lubricant as set forth in claim **1**, wherein said agent is fumed $Al_2O_3$.

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**3,933,657**

## LUBRICANT WITH SYNERGISTIC EXTREME PRESSURE ADDITIVES

**Leonard S. Seni; Arnold C. Witte, and Richard L. Coleman, all of Port Arthur, Tex., assignors to Texaco Inc., New York, N.Y.**

**Filed Sept. 12, 1974, Ser. No. 505,432**
**Int. Cl.² C10M** *1/10*, *3/02*, *5/02*, *7/02*
**U.S. Cl. 252—29** **9 Claims**

**1.** A grease comprising

a. a major amount of a lubricating oil,

b. a thickener,

c. polyethylene of density ranging between 0.910 and 0.925 g/cc and

d. conventional extreme pressure agents.

**2.** A grease as in claim **1** wherein the conventional extreme pressure agents comprise molybdenum disulfide, lime, graphite and antimonydiamyldithiocarbamate.

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**3,933,658**

## METALWORKING ADDITIVE AND COMPOSITION

**John P. G. Beiswanger, Easton, and Asadullah Nassry, Bethlehem, both of Pa., assignors to GAF Corporation, New York, N.Y.**

**Continuation of Ser. No. 72,871, Sept. 16, 1970, abandoned. This application Nov. 29, 1974, Ser. No. 528,466**
**Int. Cl.² C10M** *3/06*, *1/44*, *3/38*, *5/24*
**U.S. Cl. 252—31** **23 Claims**

**1.** An additive composition for imparting a combination of extreme pressure, antiwear and corrosion-inhibiting properties to a metalworking composition, said additive comprising:

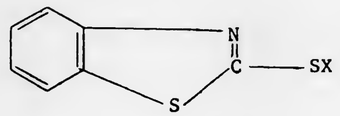
a. a phosphate ester having the following formula:

$$[RO-(EO)_n]_a-\overset{\overset{O}{\|}}{P}-[OX]_b$$

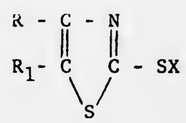
wherein EO is ethylene oxide; R is selected from the group consisting of linear or branched chain alkyl groups having from 6 to 30 carbon atoms, phenyl, alkylphenyl, wherein the alkyl group has from 1 to 10 carbon atoms, and dialkyl phenyl wherein the alkyl groups have a total of from 2 to 20 carbon atoms; X is selected from hydrogen, ammonium, amines and metals from groups I-A, I-B, II-A and II-B of the periodic table; n is a number from 0 to 50; *a* is 1, 2 or 3, and *b* is 0, 1 or 2 with the proviso that said a plus said *b* equals 3; and

b. a sulphur-containing compound selected from the group consisting of elemental sulphur; sulphurized mineral oils; 2-mercaptobenzothiazole; 5-substituted, 6-substituted

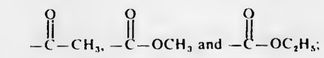
and 7-substituted 2-mercaptobenzothiazole wherein the substituent is selected from the group consisting of chloro, bromo, sulfonic acid, amido, methyl, carboxylic acid, and ethoxy; 2-mercaptobenzothiazole derivatives having the following formula:



wherein X is selected from hydrogen, hydroxymethyl and metals of groups I-A, I-B, II-A and II-B of the periodic table; derivatives of 2-mercaptothiazole having the formula:



wherein X is selected from hydrogen, hydroxymethyl and metals from groups I-A, I-B, II-A and II-B of the periodic table; R is selected from hydrogen and an alkyl group having from 1 to 10 carbon atoms; and $R_1$ is selected from hydrogen, an alkyl group having from 1 to 10 carbon atoms, carboxy,



2,2′-dithiobisthiazole and derivatives thereof having the following formula:



wherein $R_2$, $R_3$, $R_4$ and $R_5$ are selected from the group consisting of hydrogen and an alkyl group having from 1 to 10 carbon atoms; 2,2′-dithiobis(benzothiazole) and 5,5′, 6,6′, and 7,7′ substituted derivatives thereof wherein the substituent is taken from a group consisting of dichloro, dibromo, disulfonic acid, diamido, dimethyl, dicarboxylic acid, and diethoxy; 2-mercaptonaphthiazole; 2,2′-dithiobis(naphthothiazole); diphenyl sulfide; diphenyl disulfide and di-tert-butyl sulfone, the weight ratio of said phosphate ester to said sulphur-containing compound being in a range of from about 25:1 to about 1:1 based on the weight of sulphur in said sulphur-containing compound, said additive composition containing at least about 0.005% sulphur by weight, based on the total weight of said additive composition.

**3,933,659**

## EXTENDED LIFE FUNCTIONAL FLUID

**Richard E. Lyle, El Cerrito, and Edward G. Foehr, San Rafael, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.**

**Filed July 11, 1974, Ser. No. 484,914**
**Int. Cl.² C10M** *1/48, 3/42, 5/24*
**U.S. Cl. 252—32.7 E** **10 Claims**

I. A lubricating oil composition comprising:

a. a major amount of an oil of lubricating viscosity, and

B. an effective amount of each of the following:

1. an alkenyl succinimide,
2. a Group II metal salt of a dihydrocarbyl dithiophosphoric acid,
3. a friction modifier selected from the group consisting of (a) fatty acid esters of polyhydric alcohols, (b) oil-soluble oxyalkylated derivatives of fatty acid esters of dihydric alcohols, (c) oil-soluble oxyalkylated derivatives of fatty acid esters of polyhydricalcohols, (d) fatty acid amides of low molecular weight amino acids, (e) N-fatty alkyl-N,N-diethanol amines, (f) N-fatty alkyl-N,N-di-(ethoxyethanol) amines, (g) N-fatty alkyl-N,N-di-poly(ethoxy)ethanol amines, and (h) mixtures thereof, and
4. a basic sulfurized alkaline earth metal alkyl phenate.

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**3,933,660**

## ROLLING OILS

**Hachiro Tadenuma, Tokyo; Takashi Kato, Yokosuka; Ryoji Kaneda, Zushi; Fumio Ando, Yokosuka, and Makoto Yoshino, Yokohama, all of Japan, assignors to Toho Chemical Industry Co., Ltd., Tokyo, Japan**

**Filed Aug. 13, 1974, Ser. No. 497,042**
**Int. Cl.² C10M** *1/44, 3/38, 5/24, 7/24*
**U.S. Cl. 252—32.5** **7 Claims**

1. A reducing hot rolling oil for copper and copper alloys comprising 1000 parts by weight of water, 6 – 200 parts by weight of at least one member selected from the group consisting of carboxylic acid type, sulfate type and phosphate type anionic surface active agents, and 0.8 – 200 parts by weight of at least one hydroxyl group-containing compound selected from the group consisting of alcohols, alkylene glycols and glycol ethers.

6. A reducing rolling oil according to claim 1, which consists of 1000 parts by weight of water, 20 parts by weight of rapeseed oil fatty acid potassium salt (a 1% aqueous solution of which has a pH of 11.0), 5 parts by weight of poly(oxyethylene) lauryl ether phosphoric acid mono- and diester triethanolamine salt (monoester ca. 60% diester ca. 40%, ethylene oxide addition mole number 2), 7 parts by weight of isopropyl alcohol and 3 parts by weight of ethylene glycol monobutyl ether.

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**3,933,661**

## AQUEOUS BASE POST PICKLING AND COLD ROLLING FLUID

**Ellis Abrams, Harleysville, and Sidney Barber, Philadelphia, both of Pa., assignors to E. F. Houghton and Company, Philadelphia, Pa.**

**Filed Apr. 21, 1975, Ser. No. 569,662**
**Int. Cl.² C10M** *1/40, 3/34, 5/22, 7/38*
**U.S. Cl. 252—32.5** **8 Claims**

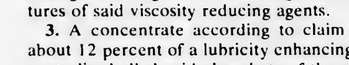
1. A concentrate for addition to water to form an aqueous base lubricant composition particularly useful as a post pickle and rolling fluid for steel comprising (1) from about 50 to about 92 percent, by weight, of a water miscible fluid which is the condensation product of an aliphatic monocarboxylic acid containing from 10 to 20 carbon atoms, or glyceride thereof, and a dialkanolamine selected from the group consisting of diethanolamine and diisopropanolamine, the mole ratio of dialkanolamine to carboxylic acid being not less than about 1.5 to 1, and (2) from about 8 to about 50 percent of an agent for reducing the viscosity of aqueous base lubricant composi-



tions containing said concentrate, said viscosity reducing agent being selected from the group consisting of (a) a sulfonate of the general formula

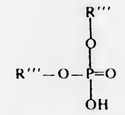


in which R is an alkyl arylene group containing from 20 to 30 carbon atoms and X is Na, K, $NH_4$ or an amino group, (b) a mono alkyl ether of a lower alkylene glycol of the formula



in which R′ is an alkyl group containing from 1 to 4 carbon atoms, R″ is H or $CH_3$, and y is an integer of from 1 to 3, (c) a glycol selected from the group consisting of dipropylene glycol, tripropylene glycol, 1,5-pentane diol, 2-ethyl-1,3-hexane diol, and hexylene glycol, and (d) a monohydroxy oxyethylene oxy 1,2-propylene aliphatic monoether in which the ethylene oxide and 1,2-propylene oxide are combined therein as oxyethylene and oxy 1,2-propylene groups, said monoether having an average molecular weight of at least 300, and mixtures of said viscosity reducing agents.

3. A concentrate according to claim 1 containing up to about 12 percent of a lubricity enhancing agent comprising a neutralized alkyl acid phosphate of the general formula



in which R‴ is an alkyl group containing from 10 to 12 carbon atoms.

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**3,933,662**

## LUBRICATING OIL COMPOSITIONS

**Warren Lowe, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.**

**Continuation of Ser. No. 413,144, Nov. 5, 1973, Pat. No. 3,856,687, which is a continuation of Ser. No. 142,838, May 10, 1971, abandoned, which is a continuation-in-part of Ser. No. 45,567, June 11, 1970, Pat. No. 3,711,406. This application July 11, 1974, Ser. No. 485,470**
**Int. Cl.² C10M** *1/40, 3/34, 5/22, 7/38*
**U.S. Cl. 252—33.4** **4 Claims**

1. A lubricating oil composition comprising:

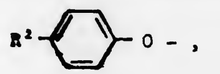
a major amount of a hydrocarbon oil of lubricating viscosity;

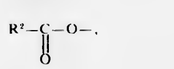
from about 0.01 to 5 weight percent of at least one oil-soluble acid neutralization accelerating compound of the formula

$Y-(R^1O)_nH$

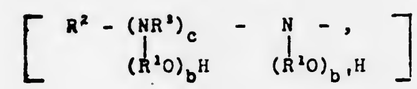
wherein $R^1$ is an ethylene or propylene radical and a is in the range from 1 to about 12,

and wherein Y is selected from the group consisting of



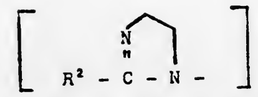






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HO—(R¹O)ₐ—(CH—CH₂O)ₐ—.
|
CH₃



wherein $R^2$ is an aliphatic hydrocarbyl radical of molecular weight in the range from about 100 to about 2,000, $R^4$ is an ethylene radical, *d* is in the range from 0 to about 70 and *e* is in the range from 1 to about 12, and sufficient alkaline earth metal carbonate dispersed in said hydrocarbon oil to provide an alkalinity value of from 0.5 to 100 mg.KOH/g.

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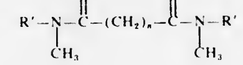
**3,933,663**

## TERTIARY DIAMIDE AS SWELLING AGENT FOR ELASTOMERIC SEAL

**Robert M. Thompson, Wilmington, Del., and Francois E. Didot, Chadds Ford, Pa., assignors to Sun Ventures, Inc., St. Davids, Pa.**

**Continuation-in-part of Ser. No. 293,984, Oct. 2, 1972, abandoned. This application Dec. 10, 1973, Ser. No. 423,390**
**Int. Cl.² C10M** *1/36, 3/30*
**U.S. Cl. 252—51.5 A** **8 Claims**

6. A power transmitting and lubricating liquid comprising about 0.5 –20 volume percent of at least one tertiary diamide having the following formula:



wherein

n = 4-12

R′= $CH_3-(CH_2)_m-\underset{\underset{R}{|}}{\overset{H}{C}}-(CH_2)_x-$

wherein

R = H, alkyl radical having $C_1$–$C_5$

*m* = 2–8

*x* = 1–5

said diamide imparting to the liquid the property of swelling seals and thereby preventing leakage.

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**3,933,664**

## ORGANIC PHOTOCONDUCTIVE TONER MATERIALS

**Shinichiro Nagashima, and Kaichi Tsuchiya, both of Tokyo, Japan, assignors to Canon Inc., Tokyo, Japan**

**Division of Ser. No. 314,519, Dec. 13, 1972, Pat. No. 3,852,208, which is a division of Ser. No. 888,886, Dec. 29, 1969, Pat. No. 3,721,554. This application Nov. 6, 1974, Ser. No. 521,372**

**Claims priority, application Japan, Dec. 30, 1968, 43-96404; May 12, 1969, 44-36431. The portion of the term of this patent subsequent to Oct. 29, 1991, has been disclaimed.**
**Int. Cl.² G03G** *9/00, 9/02*
**U.S. Cl. 252—62.1** **3 Claims**

3. In a toner for developing an electrostatic latent image, the improvement which comprises that the effective component of the toner is the reaction product obtained by condensing

a. an organic photoconductive compound selected from the group consisting of oxydiazole compounds, oxazole compounds, thiazole compounds, imidazole compounds, carbazole compounds and polycarbazole compounds; and

b. a colored substance selected from the group consisting of azomethine pyrazolone dyes, azo pyrazolone dyes, azo dyes, azomethine dyes and anthraquinone dyes.

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**3,933,665**

## MANUFACTURE OF AN ELECTROSTATIC TONER MATERIAL

**Jozef Leonard Van Engeland, St. Katelijne-Waver; Noel Jozef De Volder, Edegem, and Daniel Maurice Timmerman, Mortsel, all of Belgium, assignors to AGFA-GEVAERT N.V., Mortsel, Belgium**

**Continuation-in-part of Ser. No. 162,303, July 13, 1971, abandoned. This application Jan. 18, 1974, Ser. No. 434,686**

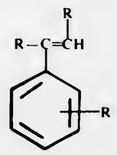
**Claims priority, application United Kingdom, June 8, 1971, 61855/71**

**Int. Cl.² G03G** *9/00*

**U.S. Cl. 252—62.1 P** **8 Claims**

**1.** A particulate composition of matter adapted for developing electrostatic images consisting essentially of finely divided particles comprising by weight 5 to 15 % of a colored material and 95 to 85 % of a resin mixture consisting essentially of:

A. 40 to 60 % by weight of a polymer having about 50 % of the recurring units thereof derived from at least one styrene monomer of the formula:



wherein:

R is hydrogen or methyl, and the balance of such recurring units derived from at least one alkyl methacrylate monomer wherein alkyl comprises 1–4 carbon atoms,

B. 20 to 40 % by weight of a homopolymer of butyl acrylate or butyl methacrylate or a copolymer of butyl acrylate or butyl methacrylate with up to 80 % by weight of methyl acrylate or methyl methacrylate, and

C. 5 to 20 % by weight of a polymeric plasticizer selected from polyvinyl butyral, polyethylene and co(-vinylacetate/ethylene), said particles having a diameter between 1 and 30 microns.

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**3,933,666**

## INSULATION MATERIAL

**Hiroshi Yoneno, Osaka, and Akira Inami, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan**

**Filed July 17, 1974, Ser. No. 489,835**

**Claims priority, application Japan, July 20, 1973, 48-81804; July 20, 1973, 48-81807**

**Int. Cl.² H01B** *3/30;* **C09K** *3/28;* **C08J** *3/20*

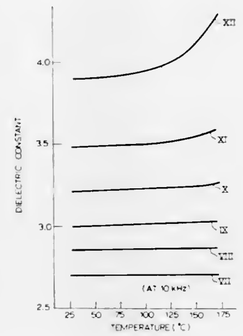
**U.S. Cl. 252—62** **3 Claims**

**1.** An electrical insulation material which comprises:

a. a major amount of 1,2-polybutadiene,

b. from 10 to 150 parts by weight of styrene or styrene derivative selected from the group consisting of chlorostyrene, divinylbenzene, vinyltoluene and ethylvinylbenzene,

c. from 15 to 150 parts by weight of 2,4,6-tribromophenylacrylate per 100 parts by weight of the mixture of said 1,2-polybutadiene and said styrene or styrene derivative, and




d. from 100 to 300 parts by weight of talc powder per 100 parts by weight of said 2,4,6-tribromophenylacrylate.

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**3,933,667**

## DOUBLE DISPERSION ACRYLATE OR METHACRYLATE WET DEVELOPER

**Hazime Machida, and Zenjiro Okuno, both of Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan**

**Filed Mar. 12, 1973, Ser. No. 340,111**

**Claims priority, application Japan, Mar. 11, 1972, 47-24986**

**Int. Cl.² G03G** *9/00*

**U.S. Cl. 252—62.1 L** **7 Claims**

**1.** A wet developer for use in electrophotography comprising a carrier liquid having an electrical resistance of at least $10^9$ ohm cm. and a dielectric constant up to 3, there being two types of particles disposed therein, particles A and particles B;

1. said particles A having a particle size of from 0.1 to 10 $\mu$ and comprising pigment particles coated with at least one member of the polymers selected from the group consisting of Group (a);
2. said particles B being adhesive, having a particle size of from 0.01 to 10 $\mu$ and comprising at least one member selected from the group consisting of Resin 1, Resin 2 and Resin 3;

Resin 1 comprising a mixture containing at least one member of the polymers selected from the group consisting of Group (a), at least one member of the polymers selected from the group consisting of Group (b), and at least one member of the polymers selected from the group consisting of Group (c);

Resin 2 comprising a mixture containing at least one member of the polymers selected from the group consisting of Group (a), and at least one members of the polymers selected from the group consisting of Group (b); and

Resin 3 comprising a mixture containing at least one member of the polymers selected from the group consisting of Group (b), and at least one member of the polymers selected from the group consisting of Group (c):

the said polymer Groups (a), (b), and (c) being defined as:

Polymer Group (a):

Polymers selected from the group consisting of:

1. copolymers containing at least one monomer selected from the group consisting of styrene, chlorostyrene, hydroxystyrene, vinyl benzoate, aminostyrene, nitrostyrene, dimethyl aminostyrene and methylstyrene together with at least one monomer selected from the group consisting of:



a. alkyl acrylates and methacrylates wherein the alkyl group contains 1 to 6 carbon atoms,

b. alkyl acrylates and methacrylates wherein the alkyl group contains 7 to 12 carbon atoms (there being up to 20 mol % of such monomer in a copolymer),

2. alkyl acrylate polymers and copolymers wherein the alkyl group contains 1 to 6 carbon atoms,
3. alkyl methacrylate polymers and copolymers wherein the alkyl group contains 1 to 6 carbon atoms,
4. alkyl acrylate-alkyl methacrylate copolymers wherein the alkyl group contains 1 to 6 carbon atoms,
5. styrene-butadiene copolymers containing more than 70 mol % styrene,
6. polystyrene,
7. polyvinyl toluene,
8. phenol resins,
9. epoxy resins,
10. petroleum resins
11. rosin denatured alkyd resins,
12. polyamides, and
13. waxes:

Polymer Group (b):

Polymers selected from the group consisting of:

1. copolymers selected from the group consisting of styrene, chlorostyrene, hydroxystyrene, vinyl benzoate, aminostyrene, nitrostyrene, dimethyl amino styrene, and methylstyrene, together with at least one monomer selected from the group consisting of:
   a. alkyl acrylates and methacrylates wherein the alkyl group contains from 7 to 12 carbon atoms (there being more than 30 mol % of said monomer in a copolymer),
2. alkyl acrylate polymers and copolymers wherein the alkyl group contains 7 to 12 carbon atoms,
3. alkyl methacrylate polymers and copolymers wherein the alkyl group contains 7 to 12 carbon atoms,
4. styrene-butadiene copolymers containing up to 55 mol % of styrene,
5. chlorinated isobutylene-isoprene copolymers, and
6. butyl rubber:

Polymer Group (c):

Polymers selected from the group consisting of:

1. copolymers containing at least one monomer selected from the group consisting of:
   a. hydroxy and epoxy alkyl acrylates and methacrylates wherein the alkyl group contains from 1 to 4 carbon atoms, acrylonitrile, and acrylic and methacrylic acid together with at least one monomer selected from the group consisting of alkyl acrylates and methacrylates wherein the alkyl group contains from 1 to 12 carbon atoms.

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**3,933,668**

## INTERGRANULAR INSULATION TYPE POLYCRYSTALLINE CERAMIC SEMICONDUCTIVE COMPOSITION

**Yasunori Takahashi, Tokyo; Nobutatsu Yamaoka, Takasaki; Yoshifumi Yamaoka, Haruna, and Shuichi Kakubari, Shibukawa, all of Japan, assignors to Sony Corporation and Taiyo Yuden Co., Ltd., both of, Japan**

**Filed July 10, 1974, Ser. No. 487,306**

**Claims priority, application Japan, July 16, 1973, 48-79284; July 16, 1973, 48-79285**

**Int. Cl.² H01B** *3/02*

**U.S. Cl. 252—63.5** **5 Claims**

**1.** An intergranular insulation type semiconductive ceramic composition comprising from 90.68 to 99.88% by weight of polycrystalline $SrTiO_3$, from 0.07 to 5.32% by weight of either $Nb_2O_5$ or $Ta_2O_5$, from 0.05 to 4.00% by weight of either $GeO_2$ or ZnO, and having diffused therein either $Bi_2O_3$ or a mixture of $Bi_2O_3$, PbO, and $B_2O_3$, the diffused material providing a substantially uniform insulating layer about the grain boundaries of the polycrystalline $SrTiO_3$.

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**3,933,669**

## FUNCTIONAL FLUID COMPOSITIONS

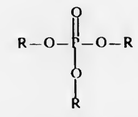
**Paul D. Fowlkes, Glen Ellyn, Ill., assignor to Monsanto Company, St. Louis, Mo.**

**Continuation-in-part of Ser. No. 406,422, Oct. 15, 1973, abandoned. This application Dec. 23, 1974, Ser. No. 535,328**

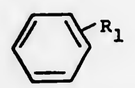
**Int. Cl.² C10M** *1/46, 3/40*

**U.S. Cl. 252—78** **4 Claims**

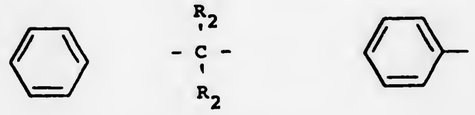
**1.** A functional fluid composition comprising (1) from about 10% to about 50% by weight based on the total weight of the composition, of a phosphate ester represented by the formula



wherein each R is individually an alkyl group containing from 2 to 12 carbon atoms; an alkoxy alkyl group, containing from 2 to 12 carbon atoms in the alkyl group; phenyl; alkyl substituted phenyl group having the general structure



wherein $R_1$ is an alkyl radical of 1 to 18 carbon atoms; or an aryl alkyl phenyl group having the general structure and



wherein each $R_2$ is individually an alkyl of 1 to about 18 carbon atoms, and (2) 10% to about 50% by weight based on the total weight of the composition, of hydrogenated quaterphenyl, 25 to 50% hydrogenated.

**3.** A composition according to claim **2** wherein 5% to about 80% of the hydrogenated quaterphenyl is replaced with a petroleum derived hydrocarbon oil.

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**3,933,670**

## PROCESS FOR MAKING AGGLOMERATED DETERGENTS

**John B. Brill, St. Paul; Charles A. Morris, New Brighton, and Soo-Duck Moon, Bloomington, all of Minn., assignors to Economic Laboratories, Inc., St. Paul, Minn.**

**Filed Nov. 12, 1973, Ser. No. 414,766**

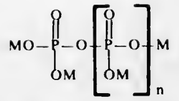
**Int. Cl.² C11D** *7/56*

**U.S. Cl. 252—99** **17 Claims**

**1.** A continuous single-stage agglomeration process for producing an agglomerated detergent composition comprising the steps of:

a. distributing substantially non-agglomerated particles onto a generally planar, inclined, rotating, sliding bed of particles of detergent ingredients, said substantially non-agglomerated particles consisting essentially of:

1. an at least partially hydrated condensed phosphate salt capable of sequestering hardness-causing metal ions and capable of retaining all of its water of hydration until heated at least to a decomposition temperature above 45°C., said condensed phosphate salt being a sodium or potassium salt of the formula



wherein M is hydrogen, sodium, or potassium, at least one M being sodium or potassium, and *n* is a number ranging from 1 to about 6;

2. a solid chlorine-releasing agent selected from the group consisting of chlorinated isocyanuric acid; a sodium salt of said acid; a potassium salt of said acid; and sodium and potassium double salts, crystalline complex salts, and hydrated salts of said acid;
3. a hydratable detergent builder salt capable of forming a hydrate salt which decomposes and releases at least some of its water of hydration at a decomposition temperature below said decomposition temperature of said condensed phosphate salt; said hydratable detergent builder salt being selected from the group consisting of the following sodium and phosphate salts: the carbonates, bicarbonates, orthophosphates, pyrophosphates, borates, metasilicates, and silicates with a higher silica/sodium or potassium oxide ratio than metasilicate, said ratio ranging up to 3.25:1;

b. continuing the rotation of said bed and contacting said substantially non-agglomerated particles with water in an amount at least sufficient to:
1. form a partially hydrated detergent builder salt, and
2. cause said substantially non-agglomerated particles to agglomerate to form enlarged, composite particles;

c. conveying said enlarged composite particles, after a residence time on said bed of less than 15 minutes, to a heating zone in which the heating conditions are sufficient to raise said enlarged composite particles to a peak temperature at least equal to a temperature below said decomposition temperature of said phosphate salt, at which the hydrated detergent builder salt resulting from said step

b. will converted to a lower level of hydration which is stable under normal storage and handling conditions;

d. discharging said enlarged, composite particles from said heating zone into a relatively cooler environment no earlier than the time said lower level of hydration has been reached but before said chlorine-releasing agent has decomposed and become ineffective as a chlorine source.

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**3,933,671**
**GERMICIDAL CLEANING COMPOSITION AND METHOD**
**Bernard Joseph Heile, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio**
**Filed Feb. 27, 1974, Ser. No. 446,460**
**Int. Cl.² C11D** *3/065, 3/48, 9/50*
**U.S. Cl. 252—107** **1 Claim**

**1.** A concentrated, physically stable, aqueous germicidal cleaning composition which provides cidal activity against bacteria of the family Pseudomonodaceae consisting of:

| | |
|---|---|
| Soft Water | 66.7 parts |
| Potassium Hydroxide | 0.1 part |
| Coconut Fatty Acids | 0.36 part |
| Potassium Toluene Sulfonate | 11.0 parts |
| Tetra Potassium Pyrophosphate | 13.2 parts |
| Sodium Salt of the Sulfuric Acid Ester of the Reaction Product of 1 mole of Coconut Fatty Alcohol with about 3 moles of Ethylene Oxide ($NaAE_3S$) | 1.3 parts |
| Sodium n-decyl diphenyl ether disulfonate | 1.0 parts |
| Isopropanol | 2.0 parts |
| 4-chloro-2-cyclopentyl phenol (CCPP) | 3.0 parts |
| Sodium Sulfite | 1.0 parts |

said parts being by weight.

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**3,933,672**
**CONTROLLED SUDSING DETERGENT COMPOSITIONS**
**Guiseppe Bartolotta; Nicolaas Tieme de Oude, and Alfred Alexander Gunkel, all of Brussels, Belgium, assignors to The Procter & Gamble Company, Cincinnati, Ohio**
**Filed July 23, 1973, Ser. No. 381,659**
**Claims priority, application United Kingdom, Aug. 1, 1972, 35877/72**
**Int. Cl.² C11D** *3/12, 3/37, 9/36, 17/06*
**U.S. Cl. 252—116** **22 Claims**

**1.** A detergent composition having a controlled suds pattern consisting essentially

i. from about 0.01 to about 10% by weight of a suds controlling agent comprising an intimate mixture of silicone and silica having a surface area greater than 50 $m^2$/gram releaseably incorporated in a water-soluble or water-dispersible, substantially non-surface active, detergent-impermeable carrier selected from the group consisting of gelatin, agar, gum arabic, algae gel and the condensation products of tallow alcohol and 25 moles or more of ethylene oxide; and

from about 5 to about 95% by weight of a detergent component selected from the group consisting of anionic, nonionic, zwitterionic, ampholytic and cationic detergent compound;

wherein the silicone is in a weight ratio to the silica of from about 19:1 to about 1:2 and the carrier is from about 0.1 to about 99% by weight of the suds controlling agent and the carrrier material.

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**3,933,673**
**DETERGENT COMPOSITIONS CONTAINING POLYMERIC BUILDERS**
**Richard Llewelyn Davies, Bebington, England, assignor to Lever Brothers Company, New York, N.Y.**
**Filed Dec. 22, 1970, Ser. No. 100,780**
**Claims priority, application United Kingdom, Jan. 8, 1970, 925/70**
**Int. Cl.² C11D** *3/37*
**U.S. Cl. 252—135** **6 Claims**

**3.** A dry detergent composition comprising a detergent active compound selected from the group consisting of anionic, nonionic, zwitterionic, amphoteric compounds and mixtures thereof and as a builder therefore a partial alkali metal salt of a polymeric aliphatic carboxylic acid containing at least 50 percent by weight of monomeric units from at least one carboxylic acid selected from the group consisting of acrylic acid, and maleic acid, said polymeric aliphatic carboxylic acid having a molecular weight of from about 5,000 to about 1,000,000, the partial salt being neutralised to the extent of not more than about 60 percent by weight, and the ratio of the detergent active compound to the partial salt being from about 3:1 to about 1:10 parts by weight.



**3,933,674**
**CLEANING COMPOSITION**
**Albert M. Farnsworth, 616 N. Arizona Ave., Chandler, Ariz. 85224**
**Filed Feb. 7, 1975, Ser. No. 547,786**
**Int. Cl.² C11D** *7/50*
**U.S. Cl. 252—171** **9 Claims**

**1.** A composition for removing contaminating resinous, gummy or tarry residues from surfaces without adversely affecting paints or varnishes, said composition being substantially non-irritating to the skin and eyes of human beings, which comprises, in combination, the following ingredients in weight proportions, as indicated, based on the weight of the whole composition:

A. about 5 to 92% of a base hydrocarbon oil of substantially the boiling range of kerosene, which is substantially free of objectionable odor and having not more than 5% of sulfonatable constituents,
B. about 5 to 90% of a limonene type citrus distillate having high solvency for the contaminant and having a refractive index between about 1.4718 and 1.4722 at 20° C., with a specific gravity between about 0.838 and 0.843, having a resin content not more than about 0.10% and aldehyde content not in excess of about 0.90%,
C. 0.5 to 6.0% of a skin lubricant selected from the class which consists of lanolin and wool grease, and
D. 0.5 to 3% of a surface active agent to promote wetting of the contaminant by the composition.

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**3,933,675**
**CURING AGENTS**
**Joseph Theodore Willett, Clayton, Mich., assignor to Anderson Development Company, Adrian, Mich.**
**Filed Apr. 3, 1974, Ser. No. 457,488**
**Int. Cl.² C08G** *71/04*
**U.S. Cl. 252—182** **6 Claims**

**1.** A curing agent for polyurethane prepolymers which is a mixture consisting essentially of (A) methylene-bis-orthochloroaniline; (B) 4,4'-diamino-2-chloro-2'-carbo-lower-alkoxydiphenylmethane; and (C) methylene-bis-lower-alkylanthranilate.

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**3,933,676**
**STABILIZED AQUEOUS SOLUTIONS OF SODIUM BOROHYDRIDE**
**Robert C. Wade, Ipswich, Mass., assignor to Ventron Corporation, Beverly, Mass.**
**Filed Apr. 8, 1974, Ser. No. 459,058**
**Int. Cl.² C09K** *3/00;* **D21C** *3/04*
**U.S. Cl. 252—188** **2 Claims**

**1.** A stabilized aqueous sodium borohydride solution comprising from about 35 to about 46.9 percent of sodium hydroxide, from about 9.35 to about 12.9 percent sodium borohydride, zinc in an amount of 0.5 to 3 percent in the form of dissolved sodium zincate, and the balance water.

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**3,933,677**
**PREPARATION OF AQUEOUS DISPERSIONS OF BLOCKED AROMATIC POLYISOCYANATES**
**Carl Albert Aufdermarsh, Jr., Newark, Del., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.**
**Filed May 24, 1974, Ser. No. 473,160**
**Int. Cl.² C09K** *3/00;* **B23B** *27/00;* **C08L** *61/06;* **C07C** *79/46*
**U.S. Cl. 252—188.3 R** **7 Claims**

**1.** A process for the production of an aqueous dispersion of an aromatic polyisocyanate blocked with a phenolic compound which comprises mixing (a) an aromatic polyisocyanate dissolved in a water-soluble organic solvent that is nonreactive with the aromatic polyisocyanate, and (b) an aqueous solution containing a dissolved phenolic compound selected from the class consisting of phenol and resorcinol, the number of moles of the phenolic compound being at least equal to the number of equivalents of isocyanate groups present, said mixing taking place in the presence of a catalytic amount of an alkali metal hydroxide at a temperature of 25° to 75°C.

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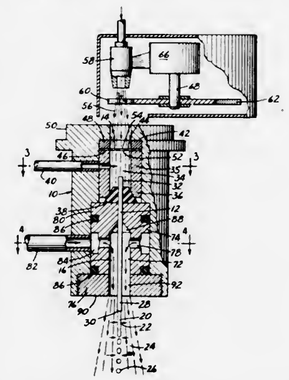
**3,933,678**
**OPTICALLY CLEAR ORGANOSILICON COMPOUNDS**
**Craig E. Graham, Saginaw, Mich., assignor to Dow Corning Corporation, Midland, Mich.**
**Continuation-in-part of Ser. No. 402,221, Oct. 1, 1973, abandoned. This application July 29, 1974, Ser. No. 492,577**
**Int. Cl.² F21V** *9/00*
**U.S. Cl. 252—300** **8 Claims**

**1.** A composition having a light transmission of at least 80% at 550 milli micron wave length, consisting essentially of

1. a phenylmethylsiloxane fluid have a refractive index at 25°C. of from 1.42 to 1.47 said phenyl and methyl groups being essentially all of the substituents on the silicon atoms of said siloxane,
2. a silica thickener having a surface area of at least 100 square meters per gram as measured by the BET Method in amount of from 5 to 25 parts by weight based on 100 parts by weight of (1), and
3. a polyether soluble in (1) and being of the group consisting of polyethylene oxide, polypropylene oxide, copolymers of polyethylene oxide and polypropylene oxide, copolymers of ethylene oxide and siloxanes, copolymers of propylene oxide and siloxanes and copolymers of ethylene oxide, propylene oxide and siloxanes, the substituents on the silicon in the siloxane portion of the copolymers being of the group consisting of lower aliphatic hydrocarbon and phenyl radicals, there being at least 25% by weight of said alkylene oxides in the copolymers, the proportion of (3) being from 1 to 30 parts by weight based on 100 parts by weight of (1).

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**3,933,679**
**UNIFORM MICROSPHEROIDAL PARTICLE GENERATING METHOD**
**William H. Weitzel, and Lee D. La Grange, both of San Diego, Calif., assignors to Gulf Oil Corporation, San Diego, Calif.**
**Continuation-in-part of Ser. No. 217,853, Jan. 14, 1972, Pat. No. 3,731,851. This application May 8, 1973, Ser. No. 358,410**
**Int. Cl. C09k** *3/00*
**U.S. Cl. 252—301.1 S** **5 Claims**



**1.** In a sol-gel process for the manufacture of solid microspheres of inorganic oxides, carbides or nitrides in which a liquid sol of the inorganic material is dispersed into droplets, the droplets are solidified to a form-stable condition by contact with a gelling fluid for the sol and the gelled, solidified droplets are subsequently sintered to provide solid microspherical particles, the improvement comprising carrying out in combination the steps of providing a jetstream of a liquid

sol feedstock having a viscosity of from about 10 to about 60 centistokes, inducing uniformly periodic varicose instabilities in the jetstream having a wavelength of at least about pi times the unperturbed diameter of the jetstream, providing a concurrent, coaxial stripping flow of a first fluid surrounding the jetstream to enhance the varicose instabilities in order to cause the uniform dispersion of the jetstream into uniform spherical droplets, said first fluid being substantially inert with respect to causing the solidification of said sol, and subsequently contacting said droplets with a gelling fluid compatible with said first fluid and which is interactive with the sol to solidify the droplets.

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**3,933,680**

## STABILIZING COMPOSITIONS FOR POLYVINYLCHLORIDE

**Anatole Wowk, Edison, N.J., assignor to M & T Chemicals Inc., Greenwich, Conn.**

**Continuation-in-part of Ser. No. 43,230, June 3, 1970, abandoned. This application July 16, 1971, Ser. No. 163,451**

**Int. Cl.² C08J** *3/20*

**U.S. Cl. 252—406** **1 Claim**

**1.** A novel composition for stabilizing a homopolymer or copolymer of vinyl chloride against the deteriorative effects of heat which comprises (1) a first stabilizer selected from the group consisting of butylchlorotin S,O mercaptoacetate, butylchlorotin S,O mercaptopropionate and butylchlorotin S,O mercaptobenzoate and (2) a second stabilizer selected from the group consisting of dibutyltin S,S′ bis (isooctyl mercaptoacetate) and dibutyltin S,S′ di(lauryl mercaptide).

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**3,933,681**

## ACTIVATION OF COPPER SALT PHENOL OXIDATION CATALYSTS

**David A. Hutchings, Stow, and Michael F. Farona, Cuyahoga Falls, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio**

**Filed Mar. 13, 1974, Ser. No. 450,946**

**Int. Cl.² B01J** *27/32, 27/28*; **C07C** *49/62*

**U.S. Cl. 252—413** **3 Claims**

**1.** A method of reactivating a deactivated phenol oxidation catalyst complex resulting from the oxidation of phenol in methanol solution to form benzoquinone, said oxidation catalyst selected from the group consisting of copper(I) or copper-(II) salts of halogen ions, thiocyanate ions and cyanide ions comprising

a. separating the inactive complex from the reaction solution

b. mixing said inactive catalyst complex with phenol and methanol

c. adding to said mixture from .001 mole to 1.0 mole per gram of inactive complex of at least one acid selected from the group consisting of sulfuric, hydrochloric, nitric, trifluoroacetic, phosphoric, perchloric and toluene sulfonic acid to the inactive catalyst and

d. heating the resulting mixture until the complex dissolves.

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**3,933,682**

## PHOTOPOLYMERIZATION CO-INITIATOR SYSTEMS

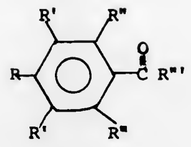
**Anthony J. Bean, East Rutherford, N.J., assignor to Sun Chemical Corporation, New York, N.Y.**

**Continuation-in-part of Ser. No. 328,442, Jan. 31, 1973, abandoned. This application Oct. 31, 1974, Ser. No. 519,579**

**Int. Cl.² B01J** *31/02, 31/12*

**U.S. Cl. 252—431 R** **2 Claims**

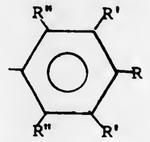
**1.** A photopolymerization co-initiator system which consists essentially of (a) about 1–30 parts of at least one compound having the formula



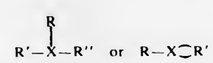
wherein R, R′, and R″ is each hydrogen, $C_{1-14}$ alkyl, aryl, alkylaryl, alkoxy, aryloxy, halogen, halogenated $C_{1-14}$ alkyl, halogenated aryl, amino, or amino N-substituted with alkyl, aryl, β-alkanol, or a combination of these, and may be the same or different; and R‴ is hydrogen, $C_{1-14}$ alkyl, halogenated alkyl, aryl, —OZ where Z is $C_{1-14}$ alkyl or aryl;



where Y is hydrogen, $C_{1-14}$ alkyl, aryl, or alkylaryl and Q is hydrogen, $C_{1-14}$ alkyl, aryl, alkylaryl, alkoxy, or aryloxy; or



wherein R, R′, and R″ is each hydrogen, $C_{1-14}$ alkyl, aryl, alkylaryl, alkoxy, aryloxy, halogen, halogenated $C_{1-14}$ alkyl, halogenated aryl, amino, or amino N-substituted with alkyl, aryl, β-alkanol, or a combination of these, and may be the same or different; (b) about 1–30 parts of at least one compound having the formula



wherein X is nitrogen, phosphorus, arsenic, bismuth, or antimony and R, R′, and R″ is each alkyl, hydroxyalkyl, aryl, aralkyl, or alkaryl and may be the same or different and one or both of R and R″ may be hydrogen; and (c) 1–30 parts of at least one halogenated hydrocarbon.

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**3,933,683**

## PRETREATMENT OF CATALYST EMPLOYED IN THE HYDROGENATION OF HYDROCARBONS

**Lee Hilfman, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.**

**Filed Nov. 23, 1973, Ser. No. 418,700**

**Int. Cl.² B01J** *27/04*

**U.S. Cl. 252—439** **3 Claims**

**1.** In a method for the activation of a mass of a hydrogenation catalyst containing cobalt and molybdenum components present in an oxidized form, the steps of:

a. intimately contacting said mass of catalyst with gaseous hydrogen, containing a sulfur compound, at a temperature within the range of from about 550°F. to about 800°F. for a sufficient time to effect the reduction and sulfiding of a major proportion of said metallic components; and,

b. stripping the resulting reduced and sulfided catalyst with substantially pure hydrogen at a temperature within the range of from about 750°F. to about 900°F.



**3,933,684**

## METHOD OF FORMING PALLADIUM OXIDE AND PALLADIUM PARTICLES

**Henry G. Petrow, Cambridge, and Robert J. Allen, Saugus, both of Mass., assignors to Prototech Company, Newton Highlands, Mass.**

**Continuation of Ser. No. 215,149, Jan. 3, 1972, abandoned. This application Sept. 7, 1973, Ser. No. 395,182**

**Int. Cl.² B01J** *21/18*

**U.S. Cl. 252—447** **4 Claims**

**1.** A method of forming a particulated catalytic structure, that comprises, contacting a substantially $NO_2$ free — substituted therefor aqueous solution of palladium dissolved in concentrated chloride-free nitric acid with a water-immiscible high molecular weight amine in amount sufficient to bring the pH of the aqueous phase to substantially 3.0 and extracting the aqueous phase, thereby producing an aqueous colloidal sol of palladium oxide particles substantially in the range of 20–40 A in particle size.

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**3,933,685**

## METHOD FOR PRODUCING CATALYST IMPREGNATED ALUMINA EXTRUDATES

**Galen K. Madderra, and William C. Ziegenhain, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.**

**Filed July 19, 1974, Ser. No. 489,959**

**Int. Cl.² B01J** *21/04, 23/16, 23/74*

**U.S. Cl. 252—464** **7 Claims**

**1.** In a method for producing catalyst impregnated alumina extrudates by admixing acid, said acid being selected from the group consisting of inorganic acid, aliphatic carboxylic organic acid containing from 1 to 3 carbon atoms, halogenated aliphatic carboxylic acid containing from 2 to 3 carbon atoms and mixtures thereof, water and alpha alumina monohydrate to form an extrudable mixture, extruding the mixture to produce green alpha alumina monohydrate extrudates and drying and calcining said green extrudates, the improvement comprising; impregnating said green extrudates prior to said drying with an aqueous solution of a catalytic metal compound selected from the group consisting catalytic metal salt, catalytic metal oxide, catalytic metal hydroxide, catalytic metal acid and mixtures thereof in an amount sufficient to impregnate substantially the entire volume of said extrudates with said catalytic metal compound thereby improving the extrudate properties.

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**3,933,686**

## CATALYST FOR THE PRODUCTION OF ACRYLONITRILE, ACRYLIC ACID AND ACROLEIN

**Natale Ferlazzo, Milan; Gian Fausto Buzzi, Arona (Novar), and Marcello Ghirga, Bresso (Milan), all of Italy, assignors to Societa' Italiana Resine S.p.A., Milan, Italy**

**Filed Nov. 29, 1973, Ser. No. 420,351**

**Claims priority, application Italy, Nov. 30, 1972, 32280/72**

**Int. Cl.² B01J** *23/16, 23/64*

**U.S. Cl. 252—467** **1 Claim**

**1.** A catalyst for use in the production of acrylonitrile, acrylic acid, and acrolein consisting of silver oxide and molybednum oxide in a molar ratio of silver oxide to molybdenum oxide in the range of from about 0.1:1 to 2.0:1.

**3,933,687**

## METHOD OF MANUFACTURING CARBON BRUSHES FOR ELECTRICAL MACHINES

**Walter Holl, and Martin Scholpp, both of Stuttgart, Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany**

**Filed Jan. 23, 1974, Ser. No. 435,959**

**Claims priority, application Germany, Feb. 28, 1973, 2309834**

**Int. Cl.² H01B** *1/06*

**U.S. Cl. 252—511** **5 Claims**

**1.** Method of manufacturing carbon brushes for use in electrical machinery, comprising the steps of:

mixing carbon particles together with particles of a binder,

pressing the mixture in a mold to form a brush blank,

removing the pressed blank from the mold and sintering it at a temperature between 300°C and 500°C,

said binder being pressed in an amount which is between 0.5 and 50% by weight of the amount of carbon in said mixture, said binder consisting of a material that is a readily flowing and chemically stable liquid at the temperature of sintering, and is selected from the group consisting of polyaryl sulfides and polyaryl ethers.

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**3,933,688**

## METHOD FOR LITHIATING METAL CHALCOGENIDES AND INTERCALATED PRODUCTS THEREOF

**Martin B. Dines, Westfield, N.J., assignor to Exxon Research and Engineering Company, Linden, N.J.**

**Continuation-in-part of Ser. No. 487,860, July 12, 1974, abandoned. This application Sept. 30, 1974, Ser. No. 510,383**

**Int. Cl.² H01B** *1/02*

**U.S. Cl. 252—520** **9 Claims**

**1.** A method of lithiating metal chalcogenides of the formula $MZ_y$ wherein: y

M is an element selected from Group IVB, Group VB elements of the Periodic Table of the Elements, molybdenum, tungsten, technetium, platinum, rhenium, germanium, tin and lead;

y is a numerical value between about 1.0 and about 4.0; and

Z is an element selected from the group consisting of sulfur, selenium and tellurium, provided that when M is vanadium and y is 2, Z is selected from selenium and tellurium only; comprising

adding at least a stoichrometric amount of a lithium compound to said metal chalcogenide, said lithium compound being selected from the group consisting of $LiR_1$, $LiC(R_1)_3$, $LiN(R_1)_2$, $LiBH(R_1)_3$, $LiR_1.R_3$ and $LiAlH_4.R_2$ wherein:

$R_1$ is a hydrocarbon radical having from 1 to 8 carbon atoms and $R_2$ is a chelating polyamine.

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**3,933,689**

## FIRE RETARDANT COMPOSITIONS

**Neil Hunter Ray; Bryan Shaw, and Bruce Cochran Lane, all of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England**

**Filed May 23, 1973, Ser. No. 363,158**

**Claims priority, application United Kingdom, June 8, 1972, 26806/72; Jan. 16, 1973, 2190/73**

**Int. Cl.² C08K** *3/32, 3/40*

**U.S. Cl. 260—2.5 FP** **26 Claims**

**1.** A reinforced thermosetting composite material of improved fire retardance containing a thermosetting resin matrix, between 2 and 60% by weight, based on the weight of thermosetting resin matrix component, of a low softening point inorganic oxide glass having a transformation temperature not greater than 300°C and from 2 to 20% by weight, based on the weight of the thermosetting resin matrix component, of at least one blowing agent, which decomposes upon heating above a temperature between 150°C and 400°C with evolution of a non-flammable gas, the combination of said glass and blowing agent improving the fire retardance of the thermosetting resin matrix.

### 3,933,690
### DIHALOBUTENEDIOL CONTAINING URETHANE FOAM COMPOSITIONS

**Gaetano F. D'Alelio, South Bend, Ind., and Erich Kuehn, Wilmington, Del., assignors to ICI United States Inc., Wilmington, Del.**

**Division of Ser. No. 123,109, March 10, 1971, Pat. No. 3,812,047. This application Dec. 13, 1973, Ser. No. 426,728**
**Int. Cl.² C08G** *18/14, 18/32, 18/48*
**U.S. Cl. 260—2.5 AM** **5 Claims**

1. A flame-retardant polyurethane foam composition formed in the presence of a blowing agent which comprises the product formed by the reaction of an organic di- or polyisocyanate and a polyol blend comprised of a mixture of 2,3-dihalo-2-butene-1,4-diol and a polyhydroxy compound selected from the group consisting of sorbitol, mono- and di-saccharides and alkoxylated sorbitol and mono- and di-saccharides containing up to 10 oxyalkylene or oxyarylene groups per hydroxyl groups of the sorbitol and mono- and di-saccharide wherein the hydroxyl number of said blend is from about 300 to about 600 and said 2,3-dihalo-2-butene-1,4-diol is present at a concentration of from about 15% to 40% based on the weight of the polyol blend.

### 3,933,691
### CRUSHED FOAM-BACKED FABRICS AND EMULSIONS FOR PRODUCING THE SAME

**Martin K. Lindemann, Greenville, S.C., assignor to Chas. S. Tanner Co., Greenville, S.C.**

**Filed Jan. 16, 1974, Ser. No. 433,634**
**Int. Cl.² C08J** *9/12*
**U.S. Cl. 260—2.5 L** **14 Claims**

1. A pigmented foam comprising an aqueous emulsion comprising an aqueous medium having colloidally suspended therein an emulsion copolymer consisting essentially of from 15–40% ethylene, from 3–9% of cross-linking monomers, balance vinyl acetate, said copolymer having a molecular weight of at least about 300,000, said emulsion containing dispersed pigment in a pigment to binder weight ratio of from 0.1:1 to 2:1 and surfactant to stabilize the same, said emulsion having whipped therein air in an amount increasing the volume of said emulsion from about 5 to about 10-fold its original volume.

### 3,933,692
### URETHANE FOAM CATALYST

**Bernard G. Kushlefsky, Edison, and Kenneth Treadwell, Rahway, both of N.J., assignors to M & T Chemicals Inc., Greenwich, Conn.**

**Filed Mar. 14, 1974, Ser. No. 451,204**
**Int. Cl.² C08G** *18/16*
**U.S. Cl. 260—2.5 AC** **13 Claims**

1. The process of making a cellular polyurethane which comprises reacting a polyalkylene polyol having reactive hydrogen atoms as determined by the Zerewitinoff method, an organic poly-functional isocyanate, water, and a gel catalyst, said reaction being carried out in the presence of a gel catalyst and a blowing catalyst comprising at least one compound selected from those of the formulae:




wherein R is a hydrocarbon, and R′ is selected from the group consisting of hydrogen, halogens, and hydrocarbons.

### 3,933,693
### PRODUCTION OF FLAME RETARDANT FLEXIBLE POLYURETHANE FOAMS

**David C. Priest, Charlotte, N.C., and John E. Brandien, deceased, late of Mooresville, N.C. (by Helen Brandien, executrix), assignors to Reeves Brothers Inc., New York, N.Y.**

**Filed June 24, 1974, Ser. No. 482,151**
**Int. Cl.² C08G** *18/32*; **B62D** *25/14*
**U.S. Cl. 260—2.5 AJ** **7 Claims**

1. In a process for producing flexible polyurethane foams having a porosity in the range from about 0.5 to about 10 cubic feet per minute, in which an isomeric mixture of 2,4- and 2,6-tolylene diisocyanate is reacted with a polyether polyol in the presence of a small amount of water and a catalytic amount of a polymerization catalyst, the improvement which comprises:
   a. reacting the polyether polyol with a sufficient amount of an isomeric mixture of tolylene diisocyanate which contains not more than about 76 percent by weight of the 2,4-isomer, and
   b. incorporating into the reaction mixture prior to polymerization from about 1 to about 8 percent by weight of dibromoneopentyl glycol based on the weight of the polyether polyol used in the polymerization reaction.

### 3,933,694
### LOW SMOKE-OUTPUT POLYURETHANE AND POLYISOCYANURATE FOAMS

**Donald C. Wysocki, Pittsburgh, Pa., assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio**

**Filed July 10, 1974, Ser. No. 487,416**
**Int. Cl.² C08G** *18/14*
**U.S. Cl. 260—2.5 AW** **4 Claims**

1. A low smoke output, polyurethane or polyisocyanurate-urethane foam composition formed by reacting, in an NCO-/OH ratio of from 1/1 to 50/1, one or more compounds having reactive —NCO groups with one or more polyols having reactive —OH groups; the foam composition containing 0.5 to 25.0% of at least one organosulfur compound, based on the weight of foam composition wherein the organosulfur compound is a sulfide or a thiocarbonate.

### 3,933,695
### HYDROXYALKENYLSILOXANE RIGID POLY URETHANE FOAM STABILIZERS

**George M. Omietanski, and Vincent T. Chuang, both of Marietta, Ohio, assignors to Union Carbide Corporation, New York, N.Y.**

**Division of Ser. No. 319,786, Dec. 29, 1972, Pat. No. 3,842,112. This application July 17, 1974, Ser. No. 489,125**
**Int. Cl.² C08G** *18/14*
**U.S. Cl. 260—2.5 AH** **3 Claims**

1. A method for producing a rigid polyurethane foam by reacting and foaming a foam formulation comprising (a) a polyether containing at least two hydroxyl groups and having a hydroxyl number from about 200 to about 1000, (b) an organic polyisocyanate, (c) a catalyst for the reaction of (a) and (b) to produce the polyurethane, (d) a blowing agent and (e) a hydroxyalkenylsiloxane consisting essentially of (A) at least one hydroxyalkenylsiloxane unit having the formula:



$$\left[HO(R)_nR'C_2H_2-\right]_b \quad -SiO_{4-(b+c)/2}^{R^\circ_c}$$

wherein R is a divalent hydrocarbon group free of aliphatic carbon to carbon multiple bonds, R′ is an arylene group, a cycloalkylene group that has no hydrogen bonded to the carbon atom attached to the $C_2H_2$ group and that is free of aliphatic carbon to carbon multiple bonds or a divalent-$CR''_2$- group, R″ and R° are each monovalent hydrocarbon groups free of aliphatic carbon to carbon multiple bonds and having from 1 to 10 inclusive carbon atoms, $C_2H_2$ is a -CH=CH- or a

$$-C{=}CH_2$$

group, each hydroxyalkenylsiloxane group has no more than 20 carbon atoms, a has a value of 0 or 1, b has a value of 1, 2 or 3, c has a value of 0, 1 or 2, and (b+c) has a value of 1, 2 or 3; and (B) at least three hydrocarbylsiloxane units represented by the formula:

$$R_d^{\circ\circ}SiO_{\frac{4-d}{2}}$$

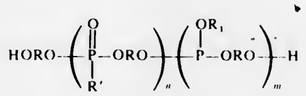
wherein $R^{\circ\circ}$ is a monovalent hydrocarbon group free of aliphatic carbon to carbon multiple bonds and having from 1 to 10 inclusive carbon atoms and d has a value of 1, 2 or 3, the molecular weight of the siloxane portion of the hydroxyalkenylsiloxane being from about 250 to about 1300 inclusive, and, when dihydrocarbylsiloxane units $R_2^{\circ\circ}SiO$ units) are present, the ratio of hydroxyalkenylsiloxane units to dihydrocarbylsiloxane units is at least 0.5 to 1.0.

### 3,933,696
### POLYALKYLENE GLYCOL POLY-PHOSPHORUS COMPOUNDS IN POLYURETHANE FOAMS

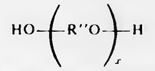
**Kyung Sup Shim, Irvington, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.**

**Division of Ser. No. 198,006, Nov. 11, 1971, Pat. No. 3,840,622. This application July 22, 1974, Ser. No. 490,525**
**Int. Cl.² C08G** *18/14, 18/50*
**U.S. Cl. 260—2.5 AR** **7 Claims**

1. A flame retardant polyurethane foam containing as a chemically bonded integral part thereof the residue of a polyphosphorus compound having the formula:




wherein R is a polyalkylene glycol residue defined as that portion remaining after two hydroxyl groups have been removed from a glycol having the formula:

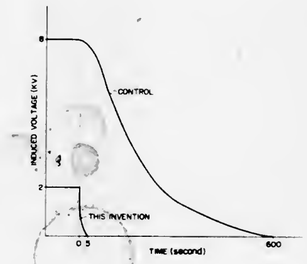



wherein R″ is an alkylene group of from 2 to about 20 carbon atoms, which is straight chain, branch chain, or a mixture thereof, and X designates the number of repeating alkylene ether units and is from 2 to about 20; $R_1$ is a $C_1$–$C_{10}$ alkyl residue; R′ is an allylic residue formed from a compound selected from the group consisting of allyl bromide, allyl chloride, 3,4-dichlorobutene-1, 1,2,3-trichloropropene and 1,4-dichlorobutene-2; *m* is a number in the range from 0 to about 25; and *n* is a number in the range from 1 to about 25 with the proviso that the sum of *m*+*n* is in the range of from about 2 to about 50.

### 3,933,697
### METHOD FOR PREPARING A POLYURETHANE FOAM COMPRISING QUATERNARY AMMONIUM SALT AS ANTISTATIC AGENT

**Osamu Fujii, Kounosu; Toshio Kishimoto, Kawagoe; Hisao Kosuge, Kawagoe; Ryoji Nagamine, Kawagoe, and Sumio Shimada, Kawagoe, all of Japan, assignors to Toyo Rubber Chemical Industrial Corporation, Tokyo, Japan**

**Filed July 30, 1974, Ser. No. 493,056**
**Claims priority, application Japan, July 31, 1973, 48-86143**
**Int. Cl.² C08G** *18/14*; **C08J** *9/00, 9/40*
**U.S. Cl. 260—2.5 A** **5 Claims**

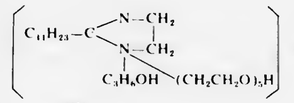


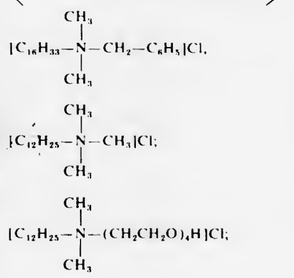

1. A method for preparing an antistatic polyurethane foam comprising reacting polyol with polyisocyanate to form a polyurethane foam in the presence of about 0.05 to 10 parts by weight based on 100 parts by weight of the polyol of a quaternary ammonium salt as an antistatic agent selected from the group consisting of:
$[C_{12}H_{25}N(CH_3)_3]ClO_4$;
$[C_{12}H_{25}N(CH_3)_2C_2H_4OH]ClO_4$;

$$[C_{12}H_{25}N(CH_3)_2C_2H_4OH]CH_3\text{-}\langle\rangle\text{-}SO_3;$$

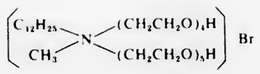
$[C_{12}H_{25}N(CH_3)_2C_2H_4OH]Br$;

$$[C_{12}H_{25}N(CH_3)_2CH_2\text{-}\langle\rangle]Cl;$$




and



and a mixture thereof.

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**3,933,698**
**PREPARATION OF LOW FRIABILITY RIGID POLYURETHANE FOAM**
**Stephen Fuzesi, and Allan H. Syrop, both of Hamden, Conn., assignors to Olin Corporation, New Haven, Conn.**
**Filed Sept. 23, 1974, Ser. No. 508,542**
**Int. Cl.² C08G *18/14*, *18/50***
**U.S. Cl. 260—2.5 AS** **18 Claims**

**1.** In a process of preparing a rigid polyurethane foam from a reaction mixture comprised of a polyether polyol reactant, an organic polyisocyanate reactant, a reaction catalyst and a forming agent, said polyether polyol reactant having a hydroxyl number of about 150–800 and being the product of condensing 4,4,4-trichloro-1,2-epoxybutane with a mixture selected from the group consisting of a mixture of dextrose and water, a mixture of dextrose and an aliphatic diol or triol, and a mixture of dextrose, water and an aliphatic diol or triol, the improvement of including in said reaction mixture a second polyol, in a proportion which is effective in reducing the surface friability of said foam, said second polyol characterized by having a hydroxyl number of about 100–800 and being an adduct of ethylene oxide and an amine selected from the group consisting of an aliphatic amine having 1–8 carbon atoms, an aromatic primary amine having 6–8 carbon atoms, an alkanolamine in which each alkanol group contains 2–5 carbon atoms, and a mixture thereof.

**3.** The process of claim **1** wherein said amine is selected from the group consisting of ethylene diamine, toluene diamine, an ethanolamine, and a mixture thereof.

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**3,933,699**
**CATALYST-REACTANT SYSTEMS FOR THE PREPARATION OF CARBODIIMIDE FOAMS**
**Peter T. Kan, Plymouth, and Moses Cenker, Trenton, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.**
**Filed Oct. 2, 1974, Ser. No. 511,113**
**Int. Cl.² C08G *18/14*, *18/18*, *18/20***
**U.S. Cl. 260—2.5 BF** **12 Claims**

**1.** A process for the preparation of rigid cellular foams characterized by carbodiimide linkages, consisting essentially of:

catalytically condensing an organic polyisocyanate in the presence of a catalytically sufficient amount of carbodiimide catalyst and an effective amount of an exotherm generating reactant which is either (a) an enamine which is the reaction product of a secondary amine and an aldehyde or a ketone or (b) an oxazolidine.

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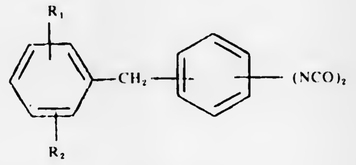
**3,933,700**
**MODIFIED POLYURETHANE FOAMS CONTAINING IMIDE GROUPS**
**John K. Allen, Batavia, Ill., assignor to Standard Oil Company, Chicago, Ill.**
**Continuation-in-part of Ser. No. 340,354, March 12, 1973, which is a continuation-in-part of Ser. No. 119,876, March 1, 1971, abandoned, which is a continuation-in-part of Ser. No. 770,394, Oct. 24, 1968, abandoned. This application Dec. 10, 1974, Ser. No. 531,234**
**Int. Cl.² C08J *9/06***
**U.S. Cl. 260—2.5 AT** **4 Claims**

**1.** In combination with a thermally stable and flame resistant rigid foam composition comprising the reaction product of one equivalent based on hydroxyl of a polyol having an average hydroxyl functionality of at least three and a molecular weight below 2000 and from about 0.5 to about 12 equivalents based on isocyanate of a polyarylpolyisocyanate-containing component, the improvement which comprises the polyarylpolyisocyanate-containing component being the monomeric imide-containing polyarylpolyisocyanate derivative prepared by pre-reacting a mixture consisting essentially of a polyarylpolyisocyanate consisting of 2–10 benzene or methyl-, ethyl-, or propyl-substituted benzene rings linked by methylene groups, said benzene rings having one isocyanate functional group per ring, and a compound selected from the group consisting of phthalic anhydride, tetrachlorophthalic anhydride and tetrabromophthalic anhydride, in a weight ratio of said polyarylpolyisocyanate to said anhydride of about 2:1 to 10:1 and at a temperature between 210°C. and 300°C. until a liquid product of the desired viscosity is obtained, to thereby convert from about 25 to 75 percent of the original anhydride groups to imide groups and to thereby incorporate an imide into the rigid form composition.

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**3,933,701**
**HIGH RESILIENCE POLYURETHANE FOAM**
**John E. Puig, Wallingford, and Ralph A. Colafati, III, New Haven, both of Conn., assignors to Olin Corporation, New Haven, Conn.**
**Filed Jan. 29, 1975, Ser. No. 545,255**
**Int. Cl.² C08G *18/14***
**U.S. Cl. 260—2.5 AT** **17 Claims**

**1.** In a process for preparing polyurethane foam from a reaction mixture comprised of an organic polyisocyanate, a polyether polyol reactant characterized by (1) a molecular weight of at least about 4,000, (2) an aliphatic alcohol nucleus having from about 2 to about 8 hydroxyl groups, (3) polyoxyalkylene chain segments attached to said nucleus, and (4) a ratio of primary to secondary hydroxyl end groups ranging from about 1.5:1 to about 5.5:1, a foaming agent and a reaction catalyst, the improvement which comprises including in said reaction mixture a foam stabilizing proportion of a methylene-bridged diaryl polyisocyanate of the formula:



wherein $R_1$ is NCO or halogen, and
$R_2$ is H or an alkyl having 1–4 carbon atoms,
with the proviso that when $R_1$ is halogen, $R_2$ is an alkyl having 1–4 carbon atoms.

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**3,933,702**
**AQUEOUS RELEASE COATING COMPOSITIONS FOR PRESSURE SENSITIVE ADHESIVES**
**Ronald J. Caimi, Somerset, and Walter F. Schlauch, Somerville, both of N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.**
**Filed July 10, 1974, Ser. No. 487,159**
**Int. Cl.² C08L *1/28*, *43/04***
**U.S. Cl. 260—17 R** **6 Claims**

**1.** A release coating composition suitable for use with pressure sensitive adhesives in rolled form comprising:

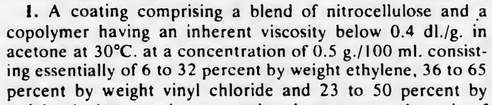
A. a hydrocolloid stabilized aqueous emulsion of a film forming vinyl polymer having a $T_g$ of from 0° to 60°C. and selected from the group consisting of:

i. a crosslinkable copolymer from at least one crosslinkable monomer with at least one member of the group consisting of vinyl acetate; vinyl acetate and at least one member selected from the group consisting of $C_2$–$C_{18}$ alkyl esters of acrylic and methacrylic acid, $C_1$–$C_8$ dialkyl esters of maleic, fumaric or itaconic acid, ethylene and vinyl chloride; styrene and at least one $C_2$–$C_{18}$ alkyl ester of acrylic or methacrylic acid; and vinyl chloride and at least one $C_2$–$C_{18}$ alkyl ester of acrylic or methacrylic acid; and

ii. an emulsion polymer selected from the group consisting of vinyl acetate homopolymers; copolymers of vinyl acetate and at least one member selected from the group consisting of $C_2$–$C_{18}$ alkyl esters of acrylic and methacrylic acid, $C_1$–$C_{18}$ dialkyl esters of maleic, fumaric or itaconic acid, ethylene and vinyl chloride; copolymers of styrene and at least one $C_2$–$C_{18}$ alkyl ester of acrylic and methacrylic acid; and copolymers of vinyl chloride and at least one $C_2$–$C_{18}$ alkyl ester of acrylic and methacrylic acid; said emulsion polymer containing a thermosetting resin to effect crosslinking; and

B. from about 0.5 to 20 percent by weight of the emulsion polymer solids, of a release promoting compound selected from the group consisting of:

i. polysiloxanes of the general formula:



wherein R is H or an aryl, higher alkyl or alkyl substituted aryl group containing less than 20 carbon atoms, and x, y and z are integers ranging from 1 to 4; and

ii. organofunctional silicones of one of the following general formulas:

II(a)



or

II(b)



wherein R is an organic spacer other than alkyleneoxy or polyalkyleneoxy, R′ is an alkyl or alkoxy group, X is a reactive member selected from the group consisting of hydroxy, mercapto, amino, carboxyl, chloroalkyl, and vinyl, and x and y are integers of from 1 to 4.

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**3,933,703**
**BLENDS OF ETHYLENE/VINYL CHLORIDE/VINYL ACETATE COPOLYMER WITH NITROCELLULOSE**
**Armand Di Giacomo; Charles Vincent Murphy, both of Wilmington, Del., and Paul Swithin Pinkney, West Chester, Pa., assignors to E. I. Du Pont de Nemours & Company, Wilmington, Del.**
**Filed Dec. 20, 1974, Ser. No. 535,136**
**Int. Cl.² C08L *1/18***
**U.S. Cl. 260—17 R** **11 Claims**

**1.** A coating comprising a blend of nitrocellulose and a copolymer having an inherent viscosity below 0.4 dl./g. in acetone at 30°C. at a concentration of 0.5 g./100 ml. consisting essentially of 6 to 32 percent by weight ethylene, 36 to 65 percent by weight vinyl chloride and 23 to 50 percent by weight vinyl acetate in an organic solvent system, the ratio of nitrocellulose to copolymer being 80:20 to 20:80.



**3,933,704**
**MANUFACTURE OF WOOD MATERIALS CONTAINING WOOD PROTECTANT**
**Manfred Siegler, Frankenthal, and Otto Froede, Ludwigshafen, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany**
**Filed Oct. 17, 1974, Ser. No. 515,551**
**Claims priority, application Germany, Oct. 17, 1973, 2352052**
**Int. Cl.² C08L *1/00***
**U.S. Cl. 260—17.2** **2 Claims**

**1.** In an improved process for the production of waterproof chipboard which also contains wood protectants by mixing wood chips, a binder selected from the group consisting of alkaline phenol formaldehyde resins, urea/formaldehyde resins, melamine/formaldehyde resins and urea/melamine/formaldehyde resins, a water repellent and a wood protectant and heating under pressure, the improvement which consists in blending together molten paraffin as the water repellent and the sodium salt of N-nitroso-N-cyclohexylhydroxylamine as the wood protectant, emuslifying the blend in water, mixing the emulsion with the wood chips and binder and curing the resultant blend under heat and pressure.

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**3,933,705**
**RAPID-SETTING POLYURETHANES PREPARED IN THE PRESENCE OF A FATTY MATERIAL AND AN ALIPHATIC LIQUID HYDROCARBON**
**Franciszek Olstowski, Freeport, Tex., assignor to The Dow Chemical Company, Midland, Mich.**
**Continuation-in-part of Ser. No. 449,873, March 11, 1974, abandoned, which is a continuation-in-part of Ser. No. 392,590, Aug. 29, 1973, abandoned. This application Nov. 7, 1974, Ser. No. 521,592**
**Int. Cl.² C08K *5/01***
**U.S. Cl. 260—18 TN** **21 Claims**

**1.** A solid, rigid, non-cellular, non-porous polyurethane having a density of at least about 1 g/cc, a percent elongation of < 100, resulting from the admixture of the components of a polyurethane-forming composition, which can be demolded within 5 minutes after admixture of said components, said polyurethane-forming composition comprising

A. a polyether polyol having a functionality of from 2 to about 8 and a hydroxyl equivalent weight of from about 60 to less than about 250;

B. an organic polyisocyanate;

C. a modifier composition consisting essentially of

1. from about 85 to about 30 percent by weight of a liquid aliphatic hydrocarbon having a boiling point of at least about 150°C and

2. from about 15 to about 70 percent by weight of a liquid fatty acid, fatty oil or mixture thereof having a boiling point of at least about 150°C; and

D an organo-metallic catalyst for urethane formation;

wherein components (A) and (B) are present in quantities so as to provide an NCO:OH ratio of from about 0.8:1 to about 2:1; component (C) is present in quantities of from about 10 to about 50 percent by weight of the sum of components (A), (B) and (C); Component (D) is present in quantities of from about 0.1 to about 10 percent by weight of the sum of the weights of components (A), (B) and (C); with the proviso that when component (A) is an amine initiated polyether polyol, the quantity of component (D) may be zero and when component (A) is a difunctional polyether polyol, then the average NCO-functionality of component (B) is at least about 2.5.

### 3,933,706
### NONFLAMMABLE BINDER COMPOSITION

**Iwao Momiyama, and Tatsuo Fukushima, both of Hiratsuka, Japan, assignors to Kansai Paint Company, Ltd., Japan**

**Filed Oct. 8, 1974, Ser. No. 513,044**
**Claims priority, application Japan, Oct. 12, 1973, 48-114532; Oct. 24, 1973, 48-118938**
**Int. Cl.² C09D** *1/04, 3/76, 5/18*
**U.S. Cl. 260—22 S** **9 Claims**

**1.** A nonflammable binder composition which comprises (A) 30 to 80 weight percent of water-soluble silicate represented by the formula:

$$M_2O.xSiO_2$$

wherein M is an alkali metal or a nitrogen-containing basic group selected from the group consisting of $N(CH_2OH)_4$, $N(C_2H_4OH)_4$, $N(C_2H_4OH)_3$ and $C(NH_3)_2NH$, and $x$ is a positive number not less than 0.5, and (B) 70 to 20 weight percent of vinyl polymer emulsion which is the emulsion polymerization product of polymerizable vinyl monomer using, as an emulsifying agent, a neutralized product of water-soluble resin containing carboxyl groups and having an acid value of 20–350 in an amount such that the theoretical acid value relative to the total solids contained in the resultant vinyl polymer emulsion is about 5–150.

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### 3,933,707
### DYEABLE POLYMERS OF ALPHA-OLEFINS CONTAINING A NICKEL SALT AND A TEREPHTHALIC ESTER

**Ronald D. Mathis, Mauldin, S.C.; John H. Underwood, Charlotte, N.C., and James S. Dix, Taylors, S.C., assignors to Phillips Petroleum Company, Bartlesville, Okla.**

**Filed Mar. 11, 1971, Ser. No. 123,384**
**Int. Cl.² C08K** *3/10, 5/12*
**U.S. Cl. 260—23 H** **12 Claims**

**1.** A dyeable α-olefin polymer composition comprising an α-olefin polymer, a nickel compound selected from the class consisting of nickel salts of aliphatic organic acids, and a di-ester of terephthalic acid, said nickel compound being present in an amount of from 0.05 to 5.0 parts per 100 parts by weight of said α-olefin polymer, and said di-ester being present in an amount of from 0.1 to 4.0 parts per 100 parts by weight of said α-olefin polymer.

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### 3,933,708
### CRAYON WAX COMPOSITION

**Robert B. Brinkman, Farmington, Mich., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.**

**Filed May 24, 1973, Ser. No. 363,781**
**Int. Cl.² C08L** *9/100*
**U.S. Cl. 260—23 H** **5 Claims**

**1.** An improved crayon wax composition containing a base wax, stearic acid, and a pigment wherein the improvement consists essentially of an additive mixture of:

a. polyethylene having a molecular weight of about 500,000–6,000,000 wherein the polyethylene is in the amount of about 0.10%–10% by weight of the total composition; and

b. paraffin wax having a melting point of about 120°F–140°F.

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### 3,933,709
### PROCESSING AIDS FOR POLY(VINYL CHLORIDE) RESINS

**Erwin Aron, Clifton, N.J., assignor to Technical Processing, Inc., Paterson, N.J.**

**Division of Ser. No. 407,033, Oct. 16, 1973, Pat. No. 3,856,547. This application June 17, 1974, Ser. No. 480,041**
**Int. Cl.² C08L** *23/04, 23/12, 27/06, 91/00*
**U.S. Cl. 260—23 XA** **9 Claims**

**1.** An improved method for processing a synthetic thermoplastic resin which is the product of the addition polymerization of an olefinically unsaturated monomer wherein particulate resin is admixed with a primary plasticizer and the resulting mixture is fabricated into a finished article, wherein the improvement comprises mixing said resin and primary plasticizer with a composition having as essential ingredients

a. at least about 50 weight percent of at least one monoalkyl phenoxy polyethylene glycol having from about 8 to about 12 carbons in the alkyl group thereof and from about 3 to about 7 ethyleneoxy units;

b. a minor proportion up to about 25 weight percent of at least one amine or ammonium salt of an organic acid having a vapor pressure of not greater than 1 mm Hg at 20°C selected from the group consisting of monoamine salts of monohydric organic acids of molecular weight of at least 136 and polyethylene polyamide salts of such acids where said polyethylene polyamide has at least 4 ethyleneamine units, there being one acid residue for each amine nitrogen of said polyalkylene polyamine; and

c. a minor proportion up to about 25 weight percent of at least one amide having a vapor pressure of not greater than about 1 mm Hg at 20°C selected from the group consisting of N-lower alkyl and N-hydroxy lower alkyl substitued higher amides of from 11 to about 24 carbons and amides of monohydric organic acids of molecular weight of at least 136 and polyethylene polyamines having at least 4 ethyleneamine units, there being one acid residue for each amine nitrogen,

said composition being present in an amount of from about 1 to about 10 weight percent, based upon said resin, so as to improve the flow and shear characteristics of said resin during fabrication thereof, and said primary plasticizer being present in an amount of at least 1 weight percent.

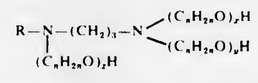
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### 3,933,710
### ASPHALT COMPOSITION

**Naobumi Fukushi, Tokyo; Hideaki Nakazawa, Yokohama; Junichi Soshizaki, Tokyo, and Tetsuo Iikuni, Yokohama, all of Japan, assignors to Toyo Sodo Manufacturing Co., Ltd., Japan**

**Filed June 26, 1974, Ser. No. 483,398**
**Claims priority, application Japan, June 29, 1973, 48-73446**
**Int. Cl.² C08L** *91/00*
**U.S. Cl. 260—28.5 AS** **9 Claims**

**1.** A latex-asphalt emulsion composition which comprises a cationic latex prepared by emulsion-polymerizing a diene in the presence of an emulsifier of an inorganic or organic acid salt of an N-alkylpropylene diaminepolyglycol ether having the formula



wherein R represents a $C_{12\text{-}20}$ saturated or unsaturated aliphatic hydrocarbon radical, $x$, $y$ and $z$ represent 0 or an integer such that $0 < x + y + z \leq 3$, $n$ represents the integers 2 or 3; an alumina sol, and asphalt or an asphalt emulsion.

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### 3,933,711
### FORMING SIZE OF AQUEOUS POLYVINYLACETATE

**Donald L. Motsinger, Forest City; Charles E. Nalley, Shelby, and Joe B. Lovelace, Forest City, all of N.C., assignors to PPG Industries, Inc., Pittsburgh, Pa.**

**Continuation-in-part of Ser. No. 302,611, Oct. 31, 1972, abandoned. This application July 23, 1974, Ser. No. 491,730**
**Int. Cl.² C08L** *31/04*
**U.S. Cl. 260—29.6 MM** **4 Claims**

**1.** An aqueous sizing composition for glass fiber strand whose ingredients other than water consists essentially of: 70 to 90 percent by weight based on total weight of the size solution solids of a polyvinyl acetate film former; 4 to 7 percent by weight based on solids fatty acid amide lubricant; 3 to 6 percent by weight solids gamma-ethylene diamine propyl trialkoxy silane; and 2 to 6 percent by weight solids methacrylic acid chromic halide coupling agent; said sizing composition having been adjusted to a pH of about 6.2 to 6.4, and said composition having 7.0 to 7.5 percent by weight solids.



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### 3,933,712
### NOVEL ENCAPSULATING MATERIAL AND METHOD

**John J. Vanaglash, Jr., Tucson, Ariz., assignor to Burr-Brown Research Corporation, Tucson, Ariz.**

**Continuation-in-part of Ser. No. 465,316, April 29, 1974, abandoned. This application Mar. 24, 1975, Ser. No. 561,209**
**Int. Cl.² C08L** *83/04;* **C08J** *3/00*
**U.S. Cl. 260—29.1 SB** **6 Claims**

**1.** The method of making an encapsulating material comprising the steps:

a. forming a mixture of organopolysiloxane polymer, a polydimethyl siloxane fluid diluent, sodium borate and a filler taken from the group consisting of:
1. hollow glass beads,
2. aluminum oxide,
3. silica,
4. calcium carbonate,
5. glass fiber,

said mixture having a polymer to diluent ratio of about 1:0.2 to 1:1.5 by weight and having a polymer to filler ratio of about 1:1 by volume;

b. adding sufficient methyl hydrogen siloxane catalyst to substantially completely polymerize said polymer;

c. controlling the amount of sodium in said mixture and catalyst to a total sodium content of from about 125 ppm to about 300 ppm by weight of the total mixture and catalyst; and

d. curing said mixture for a time and at a temperature sufficient to substantially completely polymerize said polymer.

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### 3,933,713
### METHOD FOR PREPARING AROMATIC POLYESTERS

**Lev Borisovich Sokolov, ulitsa Truda, 18, kv. 35, and Tatyana Vladimirovna Kudim, ulitsa Feigina, 16, kv. 10, both of Vladimir, U.S.S.R.**

**Filed Sept. 24, 1974, Ser. No. 508,914**
**Int. Cl.² C08G** *63/40;* **C08L** *67/02*
**U.S. Cl. 260—29.2 E** **3 Claims**

**1.** A method for preparing aromatic polyesters consisting in the interaction between bis-phenols and dihalogenanhydrides of aromatic dicarboxylic acids taken at the molar ratio from 0.9 to 1.1, at a temperature from −10° to +30°C, in the presence of alkali taken in the quantity of 2 – 2.5 mole per mole of bis-phenols, in the system water-organic liquid at their molar ratio from 0.2 to 5; said organic liquid is capable of dissolving dihalogenanhydrides of dicarboxylic acids, is chemically inactive towards the starting components, and is miscible with water in the quantity not less than 25 per cent; the said starting components are reacted in the presence of water-soluble salts of metals selected from the first and second groups of the Periodic System and taken in the quantity from 5 to 45 per cent by weight with respect to the quantity of water; as a result a reaction mixture containing the end product is obtained.

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### 3,933,714
### DIP FORMULATION ADDITIVE FOR PROTECTION OF ADHESIVE-COATED FABRICS AND SINGLE END CORDS

**Hansford Tyson Adams, Leesville, S.C., assignor to Uniroyal Inc., New York, N.Y.**

**Division of Ser. No. 385,200, Aug. 2, 1973, Pat. No. 3,876,457. This application Oct. 21, 1974, Ser. No. 539,357**
**Int. Cl.² C08L** *61/12, 9/08*
**U.S. Cl. 260—29.3** **3 Claims**

**1.** An adhesive dip formulation for application to fabric or single end cord made from a polyamide, polyester or rayon cord which is subsequently to be adhered to rubber in vulcanized shaped rubber articles comprises a dip of a resorcinol-formaldehyde condensate and a latex of vinyl pyridine-butadiene-styrene rubbery terpolymer or butadiene-styrene rubbery copolymer and from about 1 to about 10 weight percent of N,N′-ethylene bis-stearamide, based on the dry weight of rubber in resin-rubber mixture.

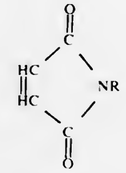
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### 3,933,715
### N-SUBSTITUTED MALEIC IMIDE PRESERVATIVE FOR AQUEOUS DISPERSIONS OF POLYMERS DERIVED FROM α, β-ETHYLENICALLY UNSATURATED MONOMERS

**Franz Botsch, Burgkirchen, Alz; Helmut Braun, Hofheim, Taunus; Walter Fink, Frankfurt am Main; Friedrich Heller, Burghausen, and Karl Heinz Wallhausser, Hofheim, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany**

**Filed Feb. 12, 1973, Ser. No. 331,856**
**Claims priority, application Germany, Feb. 16, 1972, 2207199**
**Int. Cl.² C08L** *25/14, 35/06;* **C09D** *5/14*
**U.S. Cl. 260—29.6 MN** **12 Claims**

**1.** A preserved aqueous synthetic resin dispersion which comprises a polymer or copolymer of α,β-ethylenically unsaturated monomers and from 0.05 to 1.0 weight %, relative to the dispersion, of at least one N-substituted maleic imide derivative of the formula (I)



where R is an alkyl, cycloalkyl or aryl radical having from 3 to 8 carbon atoms, a 2-chloroethyl radical, a 4-nitrophenyl radical or a 2-naphthyl radical.

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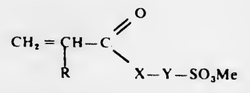
### 3,933,716
### AQUEOUS DISPERSIONS OF VINYLESTER/ETHYLENE/ETHYLENICALLY UNSATURATED SULFONIC ACID OR DERIVATIVE THEREOF COPOLYMERS

**Dieter Kuhlmann, Cologne, and Herbert Bartl, Odenthal-Hahnenberg, both of Germany, assignors to Bayer Aktiengesellschaft, Germany**

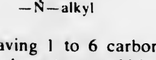
**Filed Oct. 9, 1973, Ser. No. 404,664**
**Claims priority, application Germany, Oct. 14, 1972, 2250517**
**Int. Cl.² C08L** *41/00*
**U.S. Cl. 260—29.6 TA** **3 Claims**

**1.** The composition consisting essentially of a storage stable aqueous copolymer dispersion having a solids content of from 45 to 65% by weight and prepared by the process consisting essentially of continuously introducing ethylene, a vinyl ester selected from the group consisting of vinyl acetate, vinyl propionate, vinyl laurate, vinyl stearate and mixtures thereof

and an aqueous phase in a ratio by weight of vinyl ester to ethylene of from 100:2 to 100:250 and a weight ratio of vinyl ester to aqueous phase of from 3:1 to 0.3:1, into a reaction zone maintained at a temperature of from 0° to 90°C. and under an ethylene pressure of from 5 to 120 atmospheres and at a pH of from 3 to 7 for an average residence time of from 3 to 12 hrs. and continuously removing said aqueous copolymer dispersion together with unreacted monomers from said reaction zone, said aqueous phase containing a catalytic amount of a free radical catalyst and from 0.3 to 3% by weight, based on the weight of water in said aqueous phase, of an anionic emulsifier and from 0.1 to 15% by weight, based on the weight of water in said aqueous phase, of a compound of the formula



wherein R is hydrogen or methyl, X is —O—, —NH— or



having 1 to 6 carbon atoms, Y is ethylene having 2 to 10 carbon atoms and Me is an ammonium or alkali metal radical.

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**3,933,717**

## WATER SOLUBLE LINEAR MACROAMINE POLYMERS AND METHOD OF PRODUCING THEM

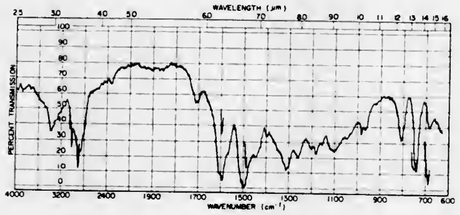
**Isao Shinohara, and Juro Aoyagi, both of Tokyo, Japan, assignors to B. R. Chemical Co., Ltd., Tokyo, Japan**

**Continuation-in-part of Ser. No. 323,731, Jan. 18, 1973, abandoned, Continuation-in-part of Ser. No. 345,122, March 26, 1973, abandoned. This application June 17, 1974, Ser. No. 479,631**

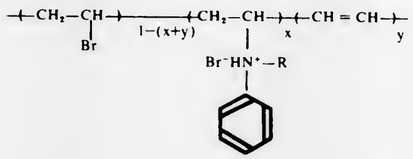
**Claims priority, application Japan, Jan. 25, 1972, 47-8729; Mar. 28, 1972, 47-30334**

**Int. Cl.² C08L** *23/00*; **C08F** *114/02, 114/16*

**U.S. Cl. 260—29.6 R** **13 Claims**




**1.** A water soluble linear macroamine polymer consisting essentially of a structural unit shown by the following formula:



wherein R represents alkyl group containing 1 to 4 carbon atoms, $x$ is a mol decimal fraction between about 0.65 and 0.95, and $y$ is a mol decimal fraction between about 0.23 and 0.04.

**3,933,718**

## LOW VISCOSITY EMBEDDING MEDIUM

**Arthur R. Spurr, Davis, Calif., assignor to The Regents of the University of California, Berkeley, Calif.**

**Continuation of Ser. No. 208,926, Dec. 16, 1971, abandoned, which is a continuation of Ser. No. 2,386, Jan. 12, 1970, abandoned. This application Apr. 23, 1974, Ser. No. 463,318**

**Int. Cl.² C08K** *5/15*

**U.S. Cl. 260—30.4 EP** **6 Claims**

**1.** In an embedding medium for infusing the cells of biological specimens, polymerizable to a hard, tough, transparent polymer without disruption of said cells, the improvement comprising employing in said medium about 10 parts by weight of a polymerizable cycloaliphatic diepoxide having a viscosity of less than about 8 centipoise at 25° C., about 4 to 8 parts by weight of an epoxy resin flexibilizer product, derived from the condensation of a polypropylene glycol having a degree of polymerization of from about 2 to 6 with epichlorohydrin, and having a viscosity of less than about 60 centipoises at 25° C., about 26 parts by weight of an anhydride hardener having a viscosity of less than about 120 centipoises at 25° C., and about 0.2 to 1.0 parts by weight of an alkyl alkanol amine accelerator having a viscosity of less than about 4 centipoises at 25° C.

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**3,933,719**

## POLYCHLOROPRENE-BASE ADHESIVE COMPOSITION

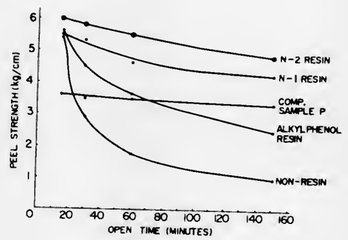
**Sakuya Iwai, Tokyo, and Takao Hirose, Kamakura, both of Japan, assignors to Nippon Oil Company Ltd., Tokyo, Japan**

**Filed Mar. 1, 1974, Ser. No. 447,160**

**Claims priority, application Japan, Mar. 7, 1973, 48-26738**

**Int. Cl.² C08K** *5/01, 5/02, 5/10*

**U.S. Cl. 260—31.2 MR** **8 Claims**




**1.** A polychloroprene-base adhesive composition which consists of:

1. from 1 to 70 parts by weight of a resinous material containing indene and having a softening point of 145°C. or higher which is obtained by polymerizing a cracked fraction produced as a by-product of thermal or catalytic cracking of crude petroleum or petroleum distillates;
2. 100 parts by weight of a polychloroprene;
3. from 1 to 40 parts by weight of a metallic oxide selected from the group consisting of zinc oxide and an alkaline earth metal oxide;
4. 0 to 5 parts by weight of an antioxidant;
5. 0 to 70 parts by weight of an alkylphenol resin, coumarone-indene resin, terpenephenol resin or polyterpene resin; and
6. A volatile organic solvent selected from the group consisting of an aromatic hydrocarbon, a chlorinated aliphatic hydrocarbon, a lower alkyl ester of acetic acid, a saturated aliphatic hydrocarbon and mixtures thereof.



**3,933,720**

## POLYCHLOROPRENE TYPE ADHESIVE COMPOSITIONS

**Sakuya Iwai, Tokyo, and Takao Hirose, Kamakura, both of Japan, assignors to Nippon Oil Company Ltd., Tokyo, Japan**

**Filed Apr. 2, 1974, Ser. No. 457,276**

**Claims priority, application Japan, Apr. 7, 1973, 48-39146**

**Int. Cl.² C08K** *5/01, 5/02, 5/09*

**U.S. Cl. 260—31.2 MR** **10 Claims**

**1.** An adhesive composition comprising, by weight, (1) 1–100 parts of an acid-modified hydrocarbon resin selected from the group consisting of aliphatic hydrocarbon resins, aromatic hydrocarbon resins, and mixtures thereof, (2) 100 parts of polychloroprene, (3) 1–40 parts of a metal oxide and 0–5 parts of an anti-aging agent, (4) 0–100 parts of at least one supplemental resin, and (5) 100–1000 parts of a volatile organic solvent, the acid-modified resin (1) having been prepared by reacting 100 parts of a starting hydrocarbon resin having a softening point of about 100° to about 157°C, obtained by the polymerization of a cracked petroleum oil fraction selected from the group consisting of a fraction boiling at 20°–140°C, a fraction boiling at 140°–280°C, and mixtures thereof, with 0.1–30 parts of an unsaturated polybasic acid material selected from the group consisting of unsaturated polybasic acids and anhydrides thereof.

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**3,933,721**

## FLAME RETARDANT PLASTICIZED COMPOSITIONS

**Alfred P. Wilson, St. Charles, Ill., assignor to Standard Oil Company, Chicago, Ill.**

**Filed Oct. 23, 1973, Ser. No. 408,804**

**Int. Cl.² C07C** *69/82*; **C08K** *5/12*; **C08L** *27/08*

**U.S. Cl. 260—31.8 HA** **7 Claims**

**1.** A composition comprising a resinous polymer of vinyl chloride, wherein at least 50 mol percent of the polymer contains vinyl chloride units, and a plasticizing concentration of a dialkyl 2,5-dibromoterephthalate ester containing from 4 to 24 carbon atoms in each alkyl group.

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**3,933,722**

## MEET EXTRUDABLE POLYACETYLENE COPOLYMER BLENDS

**Charles M. Krutchen, Elnora, N.Y., assignor to General Electric Company, Schenectady, N.Y.**

**Division of Ser. No. 352,923, April 20, 1973, Pat. No. 3,852,235, which is a continuation-in-part of Ser. No. 86,280, Nov. 2, 1970, abandoned. This application Aug. 15, 1974, Ser. No. 497,526**

**Int. Cl.² C08F** *45/28, 19/20*; **C01B** *31/07*

**U.S. Cl. 260—32.4** **4 Claims**

**1.** Polyacetylene blends which are melt extrudable at temperatures of from 100°C to 180°C, comprising by weight (A) from 20% to 50% by weight polyacetylene having an intrinsic viscosity of 0.5 to 1.5 in orthodichlorobenzene at 120°C, and (B) from 80 to 50% of organic solvent selected from the class consisting of paradichlorobenzene, ortho-dichlorobenzene, nitrobenzene, and halogenated aryl hydrocarbons having an average weight percent of chlorine from about 12 to 75% based on the total weight of halogen, carbon and hydrogen where said blends can be in the form of a free flowing powder, a wet granulated mixture, or paste and where the polyacetylene is a terpolymer consisting essentially of

i. 74 to 86 mole percent of meta-diethynylbenzene units,
ii. 4 to 9 mole percent of para-diethynylbenzene units,
iii. 5 to 15 mole percent of diethynylalkane units, where the sum of (i), (ii) and (iii) units are 100 mole percent.

**3,933,723**

## SYNTHETIC RUBBER SOLUTIONS

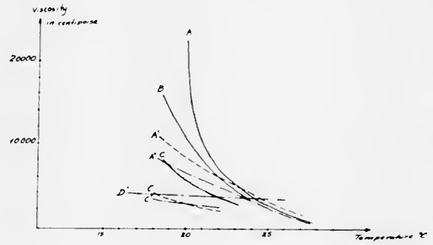
**Torbjorn Grenness, 24, Danas Plads, Copenhagen, Denmark**

**Continuation of Ser. No. 376,583, July 5, 1973, abandoned. This application Nov. 11, 1974, Ser. No. 522,727**

**Claims priority, application United Kingdom, July 5, 1972, 31498/72**

**Int. Cl.² C08K** *5/01*

**U.S. Cl. 260—33.6 A** **2 Claims**




**1.** A solution for the production of rubber-like articles by dipping, comprising an elastomer of the block-copolymer type selected from the group consisting of styrene-butadiene copolymer and styrene-isoprene copolymer, chosen from the thermoplastic rubbers which do not need vulcanization, extended with 15 to 35% by weight of a naphthenic oil extender, the extended block-copolymer being dissolved in 200 to 1200% by weight of petrol, all of the percentages being per 100 parts of said elastomer, and a member selected from the group consisting of zinc dibutyl-dithiocarbamate and 1,3,5-trimethyl-2,4,6-tris-(3,5-di-tert.-butyl-4-hydroxy-benzyl)-benzene at a ratio of about 0.1 to 3.0 parts by weight per 100 parts by weight of said elastomer.

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**3,933,724**

## SEALING COMPOUNDS

**Ronald G. Mixell, Muncie, Ind., assignor to Ball Corporation, Muncie, Ind.**

**Continuation of Ser. No. 99,529, Dec. 18, 1970, abandoned. This application Dec. 4, 1974, Ser. No. 529,446**

**Int. Cl.² C08K** *5/01*; **C08L** *9/06, 45/02*

**U.S. Cl. 260—33.6 A** **14 Claims**

**1.** A can end sealant composition for food containers which imparts substantially no odor or taste to food packaged in said container consisting essentially of from 80 to 100 parts by weight of styrenebutadiene rubber with from about 20% to 25% bound styrene; from about 50 to 80 parts by weight of a resin selected from the group consisting of a coumarone-indene type resin and a polycyclopentadiene, said resin having a melting point from about 100°C. to 145°C, the total amount of said styrene-butadiene rubber and said resin being not more than 160 parts by weight of said composition; from about 45–75 parts by weight of a filler having an average particle size of about 10 microns and being selected from the group consisting of silica and clay; and about 2 to 5 parts by weight of charcoal to protect against taste and odor transfer to food packaged in said container.

## 3,933,725
## PREPARATION OF ISOCYANATE TERMINATED PREPOLYMER

**Thomas J. Dearlove, Troy; Gregory A. Campbell, Romeo, and Richard P. Atkins, Royal Oak, all of Mich., assignors to General Motors Corporation, Detroit, Mich.**

**Filed Sept. 26, 1974, Ser. No. 509,638**
**Int. Cl.² C08G *18/08*; C08K *5/01***
**U.S. Cl. 260—33.6 UB** **5 Claims**

**1.** An improved process of forming a partially crosslinked, plasticized, polyurethane moisture curable sealant prepolymer having an isocyanate to hydroxyl equivalent ratio in the range of about 1.4:1 to about 1.5:1, a free isocyanate content in the range of about 1.2% to about 1.8% by weight based on the total prepolymer composition, a Brookfield viscosity at 25° C. in the range of about 25,000 to about 100,000 cp., and a molecular weight (Mw) in the range of about 15,000 to about 25,000, comprising:

a. stirring together until uniformly blended at a temperature in the range of from about 40° C. to about 100° C.:
   **1.** about 1 equivalent of a diisocyanate selected from the group consisting of toluene diisocyanate and diphenyl methane diisocyanate,
   **2.** about 0.50 to about 0.55 equivalent of a dihydroxy terminated polyoxypropylene, having a molecular weight (Mn) in the range of about 1,000 to about 2,000,
   **3.** about 0.08 to about 0.13 equivalent of a polypropylene ether triol, having a molecular weight (Mn) in the range of from about 1,500 to about 4,500, and
   **4.** about 5% to 15% by weight based on the total composition of a plasticizer that is miscible and compatible with said diisocyanate and said polyols, until a solution is achieved, and then as said solution is being stirred,
b. catalyzing the polymerization reaction of said diisocyanate and said polyols to form said prepolymer by mixing into said solution a solution comprising from about 0.08 to about 0.12 weight parts per each 250 weight parts of said diisocyanate of a tin-based urethane polymerization catalyst dissolved in about 5% to about 10% by weight based on the total composition of additional plasticizer, and
c. continuing to stir said reacting mixture for a period of minutes to maintain a relatively uniform distribution of reacting species until the free isocyanate content of said solution is within the range of from about 1.2% to about 1.8% by weight based on the total composition, thereby forming said prepolymer substantially free of gel particles.

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## 3,933,726
## HEAT VULCANIZABLE POLYSILOXANE COMPOSITIONS CONTAINING ASBESTOS

**Frank J. Glaister, Ballston Spa, N.Y., assignor to General Electric Company, Waterford, N.Y.**

**Continuation of Ser. No. 134,438, April 15, 1971, Pat. No. 3,715,329. This application Aug. 28, 1972, Ser. No. 284,121**
**Int. Cl.² C08L *83/04***
**U.S. Cl. 260—37 SB** **9 Claims**

**1.** A process for forming a cured silicone rubber with exceptionally high tensile strength comprising mixing an organopolysiloxane polymer having a viscosity of at least 100,000 centipoise at 25°C of the formula,

$$(R)_nSiO \qquad (1)$$

with an asbestos fiber, a peroxide curing catalyst and an acrylic ester selected from the group consisting of

$$E{-}R,\quad E{-}R^2{-}E,\quad E(C_xH_{2x}O)_z{-}R^2{-}O{-}E,$$

$$R{-}\begin{matrix}CH_2{-}E\\ CH_2{-}E\\ CH_2{-}E\end{matrix} \quad \text{and} \quad E{-}CH_2{-}\begin{matrix}CH_2{-}E\\ C\\ CH_2{-}E\end{matrix}{-}CH_2{-}E$$

where E represents the radical

$$CH_2{=}\overset{R'}{\underset{|}{C}}{-}\overset{O}{\overset{\|}{C}}{-}O{-},$$

where at least 50% by weight of the R radicals in Formula (1) are alkyl and at least 0.1% by weight of the R radicals in Formula (1) are alkenyl and the remaining R radicals in Formula (1) may be selected from the class consisting of aryl, aralkyl, cycloalkyl and cyanoalkyl, where the R radicals in the acrylic ester formulas are lower alkyl, where R′ is selected from the class consisting of alkyl, aryl, alkenyl, cycloalkyl and hydrogen, $R^2$ is a divalent hydrocarbon radical, a varies from 1.95 to 2.01, inclusive, *n* is a whole number that varies from 2 to 4 and x varies from 1 to 10, and heating the resulting mixtuure to a temperature in the range of 80° to 650°C.

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## 3,933,727
## METHOD OF PRODUCING POLYURETHANE-BASED CORES AND MOULDS ACCORDING TO THE SO-CALLED COLD-BOX PROCEDURE

**Hermann Pius Schmid, Karlskoga, Sweden, assignor to AB Bofors, Bofors, Sweden**

**Filed Sept. 13, 1973, Ser. No. 397,186**
**Claims priority, application Sweden, Sept. 26, 1972, 12377/72**
**Int. Cl.² C08G *18/28***
**U.S. Cl. 260—37 N** **3 Claims**

**1.** In a method for producing "cold-box" polyurethane cores and molds which are useful for the casting of iron, steel or light metals, the improvement which comprises:

admixing sand with a bonding agent, wherein said bonding agent comprises the combination of a polyisocyanate with at least two and up to six isocyanate groups per molecule and a polyhydroxy compound, wherein said polyhydroxy compound consists of at least one aliphatic or aromatic polyether-polyol in combination with 5 – 50 percent by weight as calculated on the amount of polyether of an aromatic hydroxy compound for initiating the catalyzation, said hydroxy compound having at least 2 OH-groups which directly or via one methylene group are linked to a carbon atom in the aromatic nucleus, said polyether-polyol consisting of one or more polyadducts of ethylene oxide, propylene oxide or tetrahydrofuran, respectively, to an aliphatic diamine or an aliphatic or aromatic polyol with 2 – 6 hydroxy groups per molecule, and wherein the ratio between the polyisocyanate compound and the polyhydroxy compound corresponds to an NCO/OH ratio of 0.8 – 3.0, said polyadducts having a molecular weight of approximately 100 – 10,000, afterwhich the mixture is given the form desired and is hardened by means of a polyurethane catalyst.



## 3,933,728
## MOULDING COMPOSITION

**Richard George Cleveland Henbest, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England**

**Filed May 13, 1974, Ser. No. 469,664**
**Claims priority, application United Kingdom, May 15, 1973, 23044/73**
**Int. Cl.² C08L *75/06*, *75/04***
**U.S. Cl. 260—37 N** **30 Claims**

**1.** A moulding composition which is formed by partially reacting a fluid mixture comprising

a. from 10% to 90% by weight of polyurethane precursors comprising at least one polyfunctional compound containing at least two isocyanate-reactive groups, at least one polyisocyanate, and at least one ethylenically unsaturated compound containing at least one group reactive with the polyfunctional compound and/or with the polyisocyanate, the ethylenically unsaturated compound being copolymerisable with the ethylenically unsaturated monomer in (b) and having a molecluar weight of not greater than 750, and;
b. from 90% to 10% by weight of polyester resin precursors comprising at least one ethylenically unsaturated polyester and at least one ethylenically unsaturated monomer copolymerisable therewith, in the mixture

the polyfunctional compound, the polyisocyanate and the ethylenically unsaturated compound being reacted with each other, the ethylenically unsaturated monomer being substantially uncopolymerised with the ethylenically unsaturated compound and with ethylenically unsaturated polyester, wherein the ethylenically unsaturated compound of (a) is different from said ethylenically unsaturated monomer of said polyester precursor, in which the molar proportion of isocyanate groups in the diisocyanate to groups reactive with isocyanate groups in the polyfunctional compound plus ethylenically unsaturated polyester is in the range 0.8:1 to 1.2:1 and in which the amount of the ethylenically unsaturated compound in the polyurethane precursors is such that the number of equivalents of ethylenic unsaturation provided by the compound to the number of moles of polyurethane precursors is in the range 0.1 to 0.6.

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## 3,933,729
## ORGANOPOLYSILOXANE COMPOSITIONS WHICH VULCANISE AT AMBIENT TEMPERATURE AND ABOVE TO YIELD ELASTOMERS WHICH ADHERE TO THE MOST DIVERSE SUPPORTS

**Michel Letoffé, Ste-Foy-les-Lyon, France, assignor to Rhone-Poulenc S.A., Paris, France**

**Filed May 10, 1974, Ser. No. 468,871**
**Claims priority, application France, May 11, 1973, 73.17157**
**Int. Cl.² C08L *83/00***
**U.S. Cl. 260—37 SB** **6 Claims**

**1.** An organopolysiloxane composition vulcanisable at ambient temperature and above, comprising in parts by weight:

A. 100 parts of an α,ω-dihydroxydiorganopolysiloxane polymer, of viscosity 500 cPo at 25°C to 1 million cPo at 25°C, in which the organic radicals bonded to the silicon atoms, which may be the same or different, each is an alkyl radical with 1 to 3 carbon atoms, a hologenoalkyl radical with 3 or 4 carbon atoms, a vinyl radical, an aryl radical with 6 to 8 carbon atoms, a halogenoaryl radical with 6 or 7 carbon atoms or a cyanoalkyl radical with 3 or 4 carbon atoms; at least 60% of these organic radicals being methyl radicals;
B. 10 to 50 parts of a methylpolysiloxane resin consisting of units of the formulae $R(CH_3)_2SiO_{0.5}$ and units of formula $SiO_2$, wherein R represents an alkyl radical with 1 to 3 carbon atoms or a vinyl radical, and the value of the ratio of the number of $R(CH_3)_2SiO_{0.5}$ units to the number of $SiO_2$ units is 0.4:1 to 1.2:1, these polymers containing at least 0.5% but not more than 3.5% by weight of hydroxyl groups bonded to the silicon atoms,
C. 10 to 70 parts of a filler;
D. 0.5 to 15 parts of an aminoorganosilicon compound which is an aminoorganosilane of the formula (i) $(R''O)_{3-p}R'_pSi[(CH_2)_nO]_m(CH_2)_tNHQ$ in which R′ represents an alkyl group with 1 to 4 carbon atoms, a vinyl group or a phenyl group, R″ represents a methyl, ethyl or methoxyethyl radical, Q represents a hydrogen atom or the radical $-(CH_2)_2NH_2$, *p* and *m* represent 0 or 1, *n* represents 1, 2, 3 or 4, and t represents 2 or 3, or an aminoorganopolysiloxane produced by reacting the aminoorganosilane (i) above, in which *p* is 0, with a hydroxylic methylpolysiloxane polymer (ii) containing at least 2% by weight of hydroxyl groups bonded to the silicon atoms, or viscosity 1 cPo at 25°C to 1,000 cPo at 25°C, of the average general formula $(CH_3)_a(HO)_bSiO_{(4-a-b)}$ in which *a* represents any number from 1.6 to 2.3 and *b* represents any number ranging from 0.1 to 1; the amounts of aminoorganosilane (i) and hydroxylic methylpolysiloxane polymer (ii) being such that there are 0.4 and 1.2 mols of (i) per gram-(hydroxyl group) (that is to say 17g) of (ii); and, 0–10 parts of at least one compound selected from the group consisting of alkylsilicates and alkylpolysilicates in which the alkyl radical has 1–3 carbon atoms.

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## 3,933,730
## THERMALLY STABLE TRANSLUCENT POLYCARBONATE COMPOSITION

**Thomas J. Hoogeboom, Evansville, Ind., assignor to General Electric Company, Pittsfield, Mass.**

**Filed Aug. 9, 1974, Ser. No. 496,129**
**Int. Cl.² C08L *69/00***
**U.S. Cl. 260—37 PC** **3 Claims**

**1.** A thermally stable translucent polycarbonate composition comprising in admixture, an aromatic carbonate polymer and from 0.01 to about 5.0 weight percent based on the weight of the polycarbonate composition of a mixture of a poly(dimethylsiloxane) gum and finely divided silica having a surface area in the range of 50 to 380 $cm^2/g$; wherein the mixture of poly(dimethylsiloxane) gum and finely divided silica is present in a ratio of from about 30 to about 120 parts of the silica to 100 parts of the poly(dimethylsiloxane) gum.

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## 3,933,731
## PLASTIC COMPOSITION LIBERATING REDUCED AMOUNTS OF TOXIC GAS

**Sueo Machi, Takasaki; Yasushi Matui, Satte; Takayuki Shinano, Yokohama; Taiji Aono, Ichihara; Yoshiharu Hibi, Yokohama; Shozo Oshima, Iwatsuki, and Masayuki Kashiki, Soka, all of Japan, assignors to Japan Atomic Energy Research Institute, Tokyo; Maruzen Oil Co. Ltd., Osaka and Mitsubishi Kakoki Kaisha Ltd., Tokyo, all of, Japan**

**Filed Sept. 5, 1973, Ser. No. 394,419**
**Claims priority, application Japan, Sept. 5, 1972, 47-88338**
**Int. Cl.² C08L *67/00*; C08K *3/06***
**U.S. Cl. 260—40 R** **5 Claims**

**1.** A composite comprising (1) from about 2 to about 50 parts by weight of a plastic material selected from the group consisting of thermoplastic resins and thermosetting resins, and (2) from about 50 to about 98 parts by weight of a filler composition comprising (i) gypsum and/or calcium sulfite and (ii) an additive of calcium hydroxide in an amount of from about 0.5 to about 60% by weight based on the total weight of said filler composition, characterized in that said composite is improved in that, due to the presence of said additive it emits very little or substantially no sulfur dioxide when it is burned, and also emits very little or substantially no hydrogen sulfide when the ash of said composite remaining after combustion thereof is contacted with water, in spite of the fact that like composites of the prior art usually emit toxic gases when burned or when their ash is contacted with water.

### 3,933,732
### FLUOROELASTOMER COMPOSITION AND CURING PROCESS

Walter Werner Schmiegel, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 294,794, Sept. 28, 1972, abandoned, which is a continuation-in-part of Ser. No. 212,669, Dec. 27, 1971, abandoned. This application May 14, 1974, Ser. No. 469,840

Int. Cl.² C08F 27/06, 29/16

U.S. Cl. 260—42.27 12 Claims

1. A fluoroelastomer composition comprising (A) an elastomeric copolymer of vinylidene fluoride and at least one other fluorine-containing monomer, and (B) as a vulcanization agent, a carboxylic acid ester of 4,4′-sulfonyldiphenol in which 25–100% of the equivalents of hydroxyl groups of said diphenol have been converted to carboxylic acid ester groups, said carboxylic acid being selected from the group: aliphatic and aromatic carboxylic acids having up to 26 carbon atoms.

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### 3,933,733
### PHOSPHITE STABILIZED POLYVINYL CHLORIDE CONTAINING RESINS

Osamu Kimura, Toyonaka; Katsuhiro Mukai, Oita; Minoru Osada, Sagamihara; Shizuo Nara, Kamifukuoka; Yoshitaka Tanaka, Sagamihara, and Masuo Yukitomi, Fuchu, all of Japan, assignors to Kyodo Chemical Company, Limited, Tokyo and Sumitomo Chemical Company, Limited, Osaka, both of, Japan

Continuation-in-part of Ser. No. 307,634, Nov. 17, 1972, abandoned. This application May 9, 1974, Ser. No. 468,586

Claims priority, application Japan, Nov. 18, 1971, 46-92524

Int. Cl.² C08K 5/52

U.S. Cl. 260—45.7 PH 7 Claims

1. A composition consisting essentially of a polyvinyl chloride containing resin composition, stabilized with a stabilizing amount of a phosphite selected from the group consisting of 2-(n-butoxy)-ethyldiphenyl phosphite, 4-methoxybutyldiphenyl phosphite, 2-(n-butoxydiethylenoxy)ethyldiphenyl phosphite, 3-(2-ethyl-hexyloxy) propyldiphenyl phosphite, 2-oleyloxyethyldiphenyl phosphite, 2-ricinoleyloxyethyldiphenyl phosphite, 2-benzyloxyethyldiphenyl phosphite, octyl di(2-butoxyethyl)phosphite, 2-(2-butoxyethoxy)ethyldiphenyl phosphite, 2-butoxyethyl p-chlorophenylolcyl phosphite and 2-isopropylbenzyloxyethyldiphenyl phosphite.

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### 3,933,734
### FLAME RETARDANT POLYCARBONATE COMPOSITION

Victor Mark, and Thomas J. Hoogeboom, both of Evansville, Ind., assignors to General Electric Company, Pittsfield, Mass.

Filed Dec. 28, 1973, Ser. No. 429,643

Int. Cl.² C08K 5/42

U.S. Cl. 260—45.7 S 8 Claims

1. A flame retardant carbonate polymer composition comprising in admixture an aromatic carbonate polymer and a minor amount of a metal salt of a monomeric aromatic sulfonic acid or mixtures thereof, wherein said metal salts thereof are selected from the group consisting of the alkali metal salts and the alkali earth metal salts and mixtures thereof.

### 3,933,735
### 4-PIPERIDONE DERIVATIVES, THEIR PREPARATION AND THEIR USE AS STABILIZERS

Keisuke Murayama; Susumu Higashida; Katsuaki Matsui; Tomoyuki Kurumada; Noriyuki Ohta, and Hisayu Ohsawa, all of Tokyo, Japan, assignors to Sankyo Company Limited, Japan

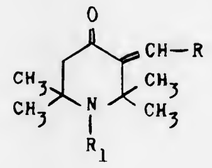
Division of Ser. No. 325,742, Jan. 22, 1973. This application May 15, 1974, Ser. No. 470,309

Claims priority, application Japan, Jan. 26, 1972, 47-9670; Feb. 22, 1972, 47-18346

Int. Cl.² C08K 5/00

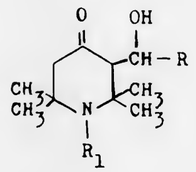
U.S. Cl. 260—45.8 N 7 Claims

1. A synthetic polymer composition stabilized against photo- and thermal-deterioration wherein there is incorporated, in a sufficient amount to prevent said deterioration, a compound selected from the group consisting of the 4-piperidone derivatives having the formulae



(I)

and



(II)

wherein R represents a phenyl or naphthyl group which may be substituted with nitro, lower alkyl, halogen, hydroxy, lower alkyl hydroxy, hydroxy lower alkyl or formyl or a 5— or 6—membered heterocyclic group having as a hetero atom a member selected from the group consisting of oxygen, sulfur and nitrogen and $R_1$ represents hydrogen atom or an alkyl group of 1 to 4 carbon atoms.



### 3,933,736
### POLYOLEFIN COMPOSITION

Toshio Yoshikawa; Nagayoshi Sakamoto, and Tomitada Nagamori, all of Ichihara, Japan, assignors to UBE Industries, Ltd., Yamaguchi, Japan

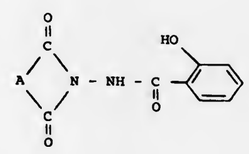
Filed Aug. 14, 1974, Ser. No. 497,302

Claims priority, application Japan, Feb. 26, 1974, 49-21945

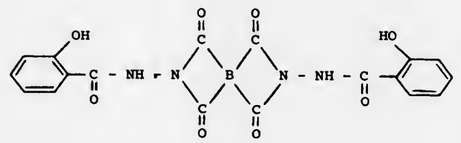
Int. Cl.² C08L 23/00

U.S. Cl. 260—45.8 R 19 Claims

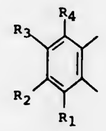
1. A polyolefin composition which comprises 100 weight parts of a polyolefin selected from the class consisting of homopolymers and copolymers of ethylene, propylene, butene-1, isobutene, pentene-1 and 4-methylpentene-1, copolymers of these olefins and ethyl acrylate, copolymers of these olefins and vinyl acetate, mixtures of these polymers, liquid amorphous polypropylene and liquid amorphous polybutene, and 0.001 ~5 weight parts of N-(salicyloylamino)imide represented by the formula



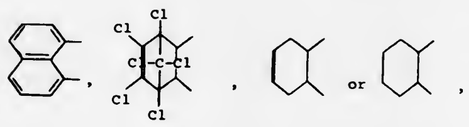
or



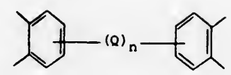
in which A represents a group



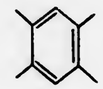
in which $R_1$ – $R_4$ represent hydrogen atoms, halogen atoms, nitro groups, amino groups, carboxyl groups, hydroxyl groups, phenyl groups, phenylthio groups, or straight or branched alkyl, halogenated alkyl, alkoxyl, alkylthio, alkylamino or acylamino groups each having 1 to 5 carbon atoms,



and B represents a group



in which Q represents an oxygen atom, a sulfur atom, a methylene group, a carbonyl group, a phenylene group, a phthaloyl group, an isophthaloyl group or a terephthaloyl group, and *n* is an integer of 0 or 1 or



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### 3,933,737
### POLYMER COMPOSITION FOR BONDING TO COPPER

Fritz Glander, Isernhagen NB, and Bernd Eilhardt, Vinnhorst, both of Germany, assignors to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hannover, Germany

Division of Ser. No. 171,198, Aug. 12, 1971, Pat. No. 3,806,358. This application Apr. 22, 1974, Ser. No. 462,791

Claims priority, application Germany, Aug. 22, 1970, 2041785

Int. Cl.² C08G 6/00

U.S. Cl. 260—45.9 NC 23 Claims

1. An improved composition for bonding to copper, comprising: a polymer selected from the group consisting of nonionic copolymers and ionic copolymers of ethylene and an $\alpha,\beta$-monoethylenically unsaturated hydrocarbon carboxylic acid, said polymer including a copper deactivating amount of a copper stabilizer.

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### 3,933,738
### FLAME RETARDANT ADDUCT OF CYCLOPHOSPHONITRILIC CHLORIDE AND HEXAMETHYLPHOSPHORAMIDE

Robert M. Murch, Ashton, and Eldon E. Stahly, Ellicott City, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 436,779, Jan. 25, 1974, abandoned. This application May 23, 1975, Ser. No. 580,451

Int. Cl.² C08J 3/20

U.S. Cl. 260—45.9 NP 6 Claims

1. An epoxy resin having enhanced fire retardancy properties which comprises an epoxy resin and an additive selected from the class consisting of $(PNCl_2)_3$,$[(CH_3)_2N]_3PO$, $(PNCl_2)_3$·$[(CH_3)_2N]_3PO$, and mixtures thereof in a flame retardant amount.

### 3,933,739
### N-ISOPROPYL-N'-5-METHYL-3-HEPTYL-P-PHENYLENEDIAMINE ANTIOZONANT FOR RUBBER

**Gene Ray Wilder, Medina, Ohio, assignor to Monsanto Company, St. Louis, Mo.**

**Filed Oct. 10, 1974, Ser. No. 513,713**
**Int. Cl.² C08G 6/00**
**U.S. Cl. 260—45.9 QB** **3 Claims**

1. Vulcanizable diene rubber having incorporated therein a stabilizing amount of N-isopropyl-N'-5-methyl-3-heptyl-p-phenylenediamine.

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### 3,933,740
### HALOGEN CONTAINING POLYMERIC RESINS HAVING IMPROVED HEAT AND LIGHT STABILITY

**George C. Hopkins, Clarence, and D. Bruce Merrifield, Williamsville, both of N.Y., assignors to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.**

**Filed Jan. 2, 1974, Ser. No. 430,115**
**Int. Cl.² C08G 6/00**
**U.S. Cl. 260—45.75 W** **5 Claims**

1. A heat and light stable polymer composition comprising a vinyl polymer containing more than 5 weight percent halogen substituent and a stabilizing amount of a salt of a di- or trivalent metal selected from the group consisting of calcium, zinc, cadmium, barium, and tin, with the reaction product of an alpha-olefin of 3 to 60 carbon atoms and maleic anhydride or a mono-substituted maleic anhydride, wherein said reaction product is prepared from reaction of 1 to about 20 moles of said olefin per mole of said anhydride and the substituent of the substituted anhydride is alkyl or alkoxy.

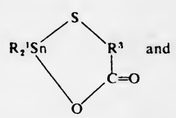
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### 3,933,741
### STABILIZED VINYL CHLORIDE POLYMER COMPOSITIONS

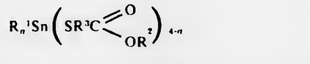
**William A. Larkin, Morristown, and Robert C. Ringwood, Jr., Sewaren, both of N.J., assignors to M & T Chemicals Inc., Greenwich, Conn.**

**Continuation-in-part of Ser. No. 290,994, Sept. 20, 1972, abandoned, which is a continuation-in-part of Ser. No. 732,027, May 27, 1968, abandoned. This application Sept. 17, 1974, Ser. No. 506,708**
**Int. Cl.² C08J 3/20**
**U.S. Cl. 260—45.75 S** **6 Claims**

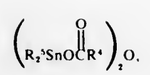
1. An improved two-component heat stabilizer for vinyl chloride polymers, said stabilizer consisting essentially of a sulfur-containing organotin compound and a non-sulfur-containing organotin compound, the weight ratio of the sulfur-containing compound to the non-sulfur-containing compound being between 4:1 and 1:4, respectively, wherein the sulfur-containing organotin compound exhibits a formula selected



and



and the non-sulfur-containing organotin compound exhibits a formula selected from the group consisting of $R_2^4R_2^5Sn$, $R_3^4R^5Sn$ and



wherein $R^1$ and $R^2$ are individually selected from the group consisting of alkyl radicals containing between 1 and 20 carbon atoms, cycloalkyl, aryl, alkaryl and aralkyl radicals, $R^3$ is a methylene or ethylene radical, $R^4$ and $R^5$ are selected from the same group as $R^1$, with the proviso that $R^4$ and $R^5$ are not identical when both are bonded directly to a tin atom and a represents the integer 1 or 2.

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### 3,933,742
### SMOKE RETARDANT VINYL CHLORIDE AND VINYLIDENE CHLORIDE POLYMER COMPOSITIONS

**Elmer D. Dickens, Jr., Richfield, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio**

**Filed Feb. 10, 1975, Ser. No. 548,560**
**Int. Cl.² C08G 6/00**
**U.S. Cl. 260—45.75 N** **11 Claims**

1. A smoke retardant composition comprising a vinyl chloride or vinylidene chloride polymer together with (A) at least one nickel compound selected from the group consisting of $NiCO_3$ and nickel citrate and (B) ZnO, said compounds (A) and (B) being present in a total amount from about 0.25 to about 20 weight parts per 100 weight parts of polymer.

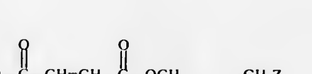
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### 3,933,743
### ORGANOTIN THERMAL STABILIZERS FOR PVC RESINS

**Harold Coates, Wombourne; John Desmond Collins, Albrighton, and Iftikhar Hussain Siddiqui, Birmingham, all of United Kingdom, assignors to Albright & Wilson Limited, Oldburg near Birmingham, United Kingdom**

**Division of Ser. No. 359,177, May 10, 1973, abandoned. This application July 22, 1974, Ser. No. 490,241**
**Claims priority, application United Kingdom, May 10, 1972, 21828/72; May 10, 1972, 21829/72**
**Int. Cl.² C08J 3/20**
**U.S. Cl. 260—45.75 J** **6 Claims**

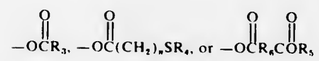
1. A stabilized polymer composition which comprises at least one resin containing at least 40% by weight of chlorine and selected from the group consisting of homopolymers of vinyl chloride and vinylidene chloride, post-chlorinated polyolefins and copolymers of vinyl chloride or vinylidene chloride with up to 25%, based on the weight of total monomers, of one or more copolymerizable monomers, and, as stabilizer therefor, 0.01 - 10% by weight (based on the weight of the resin) of an organotin compound of the formula



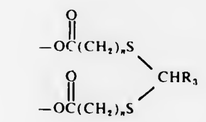
wherein each $R_1$ and $R_2$, which are the same or different is an alkyl group of 1 to 20 carbon atoms, a cycloalkyl or a phenyl group, $Q_1$ is of formula



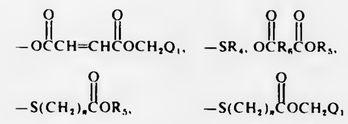
wherein $Q_2$ is hydrogen, an alkyl group of 1 to 6 carbon atoms, or $CH_2Z_3$, wherein $Z_3$ is as defined for $Z_1$ or $Z_2$ below, and each of $Z_1$ and $Z_2$, which are the same or different, is of formula



or a pair of radicals selected from the group consisting of $Z_1$, $Z_2$ and $Z_3$ forms a group of formula



wherein $R_3$ is an alkyl group of 1 to 20 carbon atoms, a substituted or unsubstituted phenyl group or an alkyl phenyl group, which is substituted or unsubstituted, or two $R_3$ groups form a single bond between two carbon atoms, an alkylene group of 1 to 20 carbon atoms, an alkenylene group of 2 to 20 carbon atoms or a substituted or unsubstituted phenyl group; $R_4$ is an alkyl group of 1 to 20 carbon atoms, a substituted or unsubstituted phenyl alkyl group with 1 to 6 carbon atoms in the alkyl group, or two $R_4$ groups are bonded together to form an alkylene group of 1 to 20 carbon atoms which is unsubstituted or substituted by at least one phenyl group, or an alkenylene group of 2 to 20 carbon atoms or a cycloalkylene group of 5 or 6 carbon atoms, $R_5$ is an alkyl group of 1 to 20 carbon atoms, a substituted or unsubstituted phenyl group or an alkylphenyl group which is substituted or unsubstituted, or two $R_5$ groups are bonded together to form an alkylene group of 1 to 20 carbon atoms, $R_6$ is a single bond, an alkenylene group of 1 to 20 carbon atoms or an alkenylene group of 2 to 20 carbon atoms, or a substituted or unsubstituted phenylene group, n is an integer of 1 to 6 and Y is of formula



or Y and the group $-OCOCH{=}CH{=}COOCH_2Q_1$ together form a group of formula



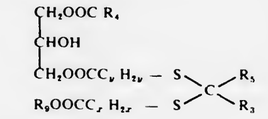


### 3,933,744
### ESTERS AND MIXTURES THEREOF WITH ORGANOTIN COMPOUNDS USEFUL AS POLYMER STABILIZERS

**Harold Coates, Wombourne; John Desmond Collins, Albrighton, and Iftikhar H. Siddiqui, Edgbaston, all of England, assignors to Albright & Wilson Limited, Oldbury near Birmingham, England**

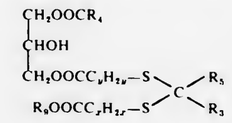
**Division of Ser. No. 442,874, Feb. 15, 1974. This application June 16, 1975, Ser. No. 586,955**
**Claims priority, application United Kingdom, Feb. 19, 1973, 7984/73**
**Int. Cl.² C08J 3/20**
**U.S. Cl. 260—45.75 S** **21 Claims**

1. An ester of the general formula

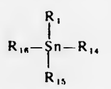


wherein,
each of x and y, which are the same or different, is an integer of 1–6
each of $R_4$ and $R_9$, which are the same or different, is selected from the group consisting of alkyl groups of 1 to 21 carbon atoms, alkenyl groups of 2–21 carbon atoms, cycloalkyl groups, aromatic hydrocarbylgroups, aralkyl hydrocarbyl groups and aralkenyl hydrocarbyl groups, each of $R_3$ and $R_5$, which are the same or different, is as defined above for $R_4$ and $R_9$, or is hydrogen or $R_3$ and $R_5$, together with the carbon atom to which they are attached, forms a cycloalkyl ring.

**21.** A polymeric material which comprises a halogen-containing resin and, as stabilizer therefor a composition consisting of 1) an ester of the general formula



wherein each of *x* and *y*, which are the same or different, is an integer of 1–6, each of $R_4$ and $R_9$, which are the same or different, is selected from the group consisting of alkyl groups of 1 to 21 carbon atoms, alkenyl groups of 2–21 carbon atoms, cycloalkyl groups, aromatic hydrocarbyl groups, aralkyl hydrocarbyl groups and aralkenyl hydrocarbyl groups, each of $R_3$ and $R_5$, which are the same or different, is as defined above for $R_4$ and $R_9$, or is hydrogen or $R_3$ and $R_5$, together with the carbon atom to which they are attached, forms a cycloalkyl ring, and 2) an organotin compound of the formula



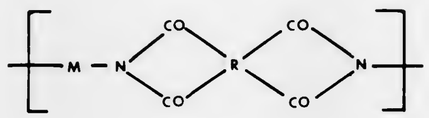
wherein $R_1$ is selected from the group consisting of alkyl groups of 1 to 12 carbon atoms, cycloalkyl groups, aromatic hydrocarbyl groups or aralkyl hydrocarbyl groups, $R_{14}$ is as defined for $R_1$ or each of $R_{14}$, $R_{15}$ and $R_{16}$, which are the same or different, is selected from the group consisting of groups of formula $-OOCR_4$, $-OOCR_{17}COOR_9$, $-SC_xH_{2x}COOR_9$ and $-SR_4$, or $R_{15}$ and $R_{16}$ together is selected from the group consisting of groups of formula —S—, $-OOCR_{17}COO-$, and $-SC_xH_{2x}COO-$, or $R_{15}$ and $R_{16}$ together represent —S— and $R_{14}$ represents —SH, wherein $R_4$, $R_9$ and x are as defined in claim 1 and $R_{17}$ represents a group selected from the group consisting of alkylene, alkenylene, cycloalkylene and arylene groups.

### 3,933,745
### IMIDE COPOLYMERS POSSESSING HYDROXYL GROUPS

**Michel Bargain, Lyon, and Maurice Ducloux, Irigny, both of France, assignors to Rhone-Poulenc S.A., Paris, France**

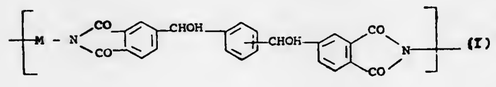
**Filed Oct. 24, 1972, Ser. No. 299,731**
**Claims priority, application France, Oct. 26, 1971, 71.38425**
**Int. Cl.² C08G** *73/10*
**U.S. Cl. 260—47 CP** **10 Claims**

**1.** An adhesive imide copolymer consisting essentially of recurring units of the formula:



(II)

and at least 20% of recurring units of the formula;



(I)

in which M represents an aliphatic or aromatic divalent radical and R represents a tetravalent aromatic radical.

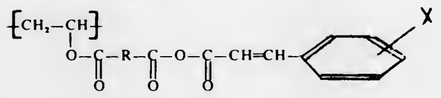
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### 3,933,746
### PHOTOPOLYMERIZABLE POLYMERS HAVING ANHYDRIDE-CONTAINING GROUPS

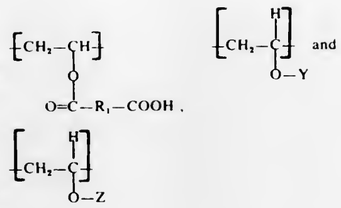
**Fred W. Steele, Delaware, Ind., assignor to Ball Corporation, Muncie, Ind.**

**Filed June 14, 1973, Ser. No. 370,258**
**Int. Cl.² C08F** *116/06*
**U.S. Cl. 260—47 C** **4 Claims**

**1.** A polymer comprising as a recurring unit an anhydride-containing group represented by the structure:



wherein —CO—R—CO— is a residue of a dibasic acid selected from the group consisting of aliphatic dicarboxylic acids and aromatic dicarboxylic acids, and X is selected from the group consisting of hydrogen, halogen, lower alkoxy, lower alkyl and nitro, the remaining recurring unit being non-anhydride unit selected from the group consisting of:



and



wherein $-CO-R_1-COOH$ is the residue of a dibasic acid selected from the group consisting of aliphatic dicarboxylic acids and aromatic dicarboxylic acids, Y is a member selected from the group consisting of hydrogen, lower acyl, lower alkyl and lower hydroxalkyl, and Z is a member selected from the group consisting of cinnamoyl, halocinnamoyl, lower alkoxy cinnamoyl, lower acyl cinnamoyl, lower hydroxalkyl cinnamoyl, and nitro cinnamoyl.

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### 3,933,747
### REVERSIBLE CROSS-LINKING OF MALEIC ANHYDRIDE COPOLYMERS

**Robert M. Nowak, Midland; Kenneth J. Guilette, Menominee, and Eugene R. Moore, Midland, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.**

**Continuation-in-part of Ser. No. 672,981, Oct. 5, 1967, abandoned. This application Apr. 2, 1971, Ser. No. 130,840**
**Int. Cl.² C08F** *27/12, 15/02*
**U.S. Cl. 260—47 UP** **4 Claims**

**1.** In a process for thermally reversing cross-links in a cross-linked composition by heating to about 175° to 300°C. and then cooling to reform a cross-linked composition wherein said composition comprises an intimate mixture of a vinyl interpolymer having reactive anhydride groups and a polyfunctional cross-linking agent, the improvement which comprises employing a cross-linking agent selected from the group consisting of hydrogenated 4,4′-isopropylidene diphenol, hydroxyalkyl diethers of 4,4′-isopropylidene diphenol and hydroxyalkyl diethers of hydrogenated 4,4′-isopropylidene diphenol wherein said hydroxyalkyl ether group in each case contains from 2 to 4 carbon atoms, employing a vinyl copolymer having from about 5 to 25 mole percent of an unsaturated dicarboxylic acid anhydride and employing a catalytic amount of a monoalkyl or a dialkyl phosphoric acid wherein the alkyl group contains from about 5 to 18 carbon atoms; said cross-linking agent present in an amount to provide about 0.05 to 0.5 moles of hydroxyl per mole of anhydride.

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### 3,933,748
### ANAEROBIC ADHESIVE CONTAINING TETRAHYDROQUINOLINE AND BENZOSULFIMIDE

**Hideaki Matsuda, and Takanori Okamoto, both of Kagawa, Japan, assignors to Okura Kogya Kabushiki Kaisha, Japan**

**Filed Aug. 16, 1974, Ser. No. 498,207**
**Claims priority, application Japan, Aug. 21, 1973, 48-92904**
**Int. Cl.² C08F** *218/14*; **C08G** *81/00*; **C08F** *120/02*
**U.S. Cl. 260—47 EP** **4 Claims**

**1.** An anaerobic adhesive composition comprising an anaerobic mixture consisting of (a) at least one polyvalent metal salt of a carboxylate compound of the formula





wherein $R_1$ is hydrogen or methyl, $R_2$ is an aliphatic, alicyclic or aromatic polyhydric alcohol residue, and $R_3$ is an aliphatic, alicyclic or aromatic polybasic carboxylic acid residue,

(b) a solvent compound having in its molecule an acrylic or methacrylic group, and (c) from 0.01 to 5%, by weight of the mixture, of benzosulfimide, from 0.1 to 10%, by weight of the mixture, of an organic peroxide and from .005 to 15%, by weight of the mixture, of a tetrahydroquinoline.

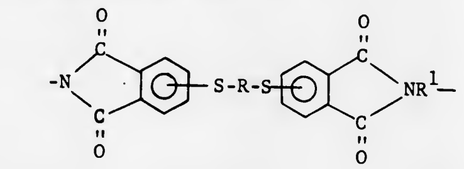
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### 3,933,749
### POLYTHIOETHERIMIDES AND METHOD OF PREPARATION

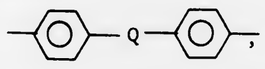
**Frank J. Williams, III, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.**

**Filed Aug. 23, 1974, Ser. No. 500,135**
**Int. Cl.² C08G** *73/10*
**U.S. Cl. 260—47 CP** **13 Claims**

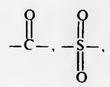
**1.** Polythioetherimide consisting essentially of chemically combined units of the formula



where R is a divalent aromatic organic radical having from 6–30 carbon atoms and R¹ is a divalent organic radical selected from the class consisting of (a) aromatic hydrocarbon radicals having from 6–20 carbon atoms and halogenated derivatives thereof, (b) alkylene radicals and cycloalkylene radicals having from 2–20 carbon atoms, $C_{(2-8)}$ alkylene terminated polydiorganosiloxane, and (c) divalent radicals included by the formula,



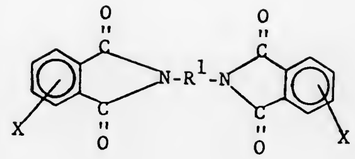
where Q is a member selected from the class consisting of divalent radicals of the formulas, $-C_yH_{2y}-$,



—O—, and —S—, and y is a whole number from 1 to 5 inclusive.

**13.** A process which comprises

1. effecting reaction under anhydrous conditions at a temperature in the range of from 25° to 150°C between a bis nitrophthalimide of the formula



in the presence of a dipolar aprotic organic solvent with a dithiophenoxide salt of the formula,

$M-S-R-S-M$,

where R and R¹ are as previously defined as in claim 1, M is an alkali metal and X is a displaccable radical selected from the class consisting of nitro, chloro, fluoro and bromo.

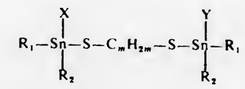
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### 3,933,750
### NOVEL STABILIZED POLYMER COMPOSITIONS

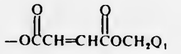
**Harold Coates, Wombourne; John Desmond Collins, Albrighton, and Iftikhar Hussain Siddiqui, Birmingham, all of England, assignors to Albright & Wilson Limited, Oldbury near Birmingham, England**

**Division of Ser. No. 359,176, May 10, 1973, abandoned. This application July 22, 1974, Ser. No. 490,240**
**Int. Cl.² C08G** *6/00*
**U.S. Cl. 260—45.75 S** **6 Claims**

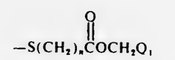
**1.** A stabilized polymer composition which comprises at least one resin containing at least 40% by weight of chlorine and selected from the group consisting of homopolymers of vinyl chloride and vinylidene chloride, postchlorinated polyolefins and copolymers of vinyl chloride or vinylidene chloride with up to 25%, based on the total weight of monomers, of other copolymerizable monomers, and as stabilizer therefor 0.01 – 10% by weight (based on the weight of the polymer) of an organothiotin compound of the formula



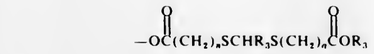
wherein each of $R_1$ and $R_2$, which are the same or different, is an alkyl group of 1–20 carbon atoms, a cycloalkyl or phenyl group; *m* is an integer of 1–8; each of X and Y, which are the same or different exhibits the formula



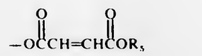
or



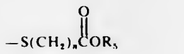
or



or



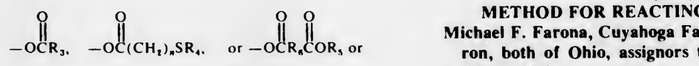
or and optionally not more than one of either X or Y may be $SR_4$



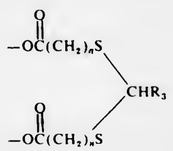
wherein $Q_1$ is of formula



and $Q_2$ is hydrogen, an alkyl group of 1 to 6 carbon atoms or $CH_2Z_3$, in which $Z_3$ is as defined for $Z_1$ or $Z_2$ below, and each of $Z_1$ and $Z_2$, which are the same or different, exhibits the formula



a pair of radicals selected from the group consisting of $Z_1$, $Z_2$ and $Z_3$ forms a group of formula



wherein $R_3$ is an alkyl group of 1 to 20 carbon atoms, a substituted or unsubstituted phenyl group or an alkyl phenyl group, which is substituted or unsubstituted, or two $R_3$ groups form a single bond between two carbon atoms, an alkylene group of 1 to 20 carbon atoms, an alkenylene group of 2 to 20 carbon atoms or a substituted or unsubstituted phenyl group; $R_4$ is an alkyl group of 1 to 20 carbon atoms or a substituted or unsubstituted phenylalkyl group with 1 to 6 carbon atoms in the alkyl group, or two $R_4$ groups are bonded together to form an alkylene group of 1 to 20 carbon atoms which is unsubstituted or substituted by at least one phenyl group, or an alkenylene group of 2 to 20 carbon atoms or a cycloalkylene group of 5 or 6 carbon atoms; $R_5$ is an alkyl group of 1 to 20 carbon atoms, a substituted or unsubstituted phenyl group or an alkylphenyl group which is substituted or unsubstituted, or two $R_5$ groups are bonded together to form an alkylene group of 1 to 20 carbon atoms; $R_6$ is a single bond, an alkylene group of 1 to 20 carbon atoms or an alkenylene group of 2 to 20 carbon atoms or a substituted or unsubstituted phenylene group and each of *a* and *n*, which are the same or different, is an integer of 1 to 6.

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**3,933,751**

## PROMOTED CATALYSTS FOR THE OXIDATION OF OLEFINS

**James L. Callahan, Bedford Heights; Robert K. Grasselli, Cleveland, and Warren R. Knipple, Bedford, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio**

**Continuation-in-part of Ser. No. 638,639, May 15, 1967, abandoned, which is a continuation-in-part of Ser. No. 604,118, Dec. 23, 1966, Pat. No. 3,431,292, which is a continuation-in-part of Ser. No. 311,657, Sept. 26, 1963, Pat. No. 3,328,315. This application May 7, 1971, Ser. No. 141,389**

**Int. Cl. C07c** *45/04*

**U.S. Cl. 260—604 R** **10 Claims**

**1.** The process for the manufacture of unsaturated aldehydes which comprises the step of contacting in the vapor phase, at a temperature in the range of 500° to 1100°F, a mixture of oxygen and an olefin selected from the group consisting of propylene and isobutylene, said mixture having a molar ratio of oxygen to olefin of from about 0.5:1 to about 5:1 with a promoted catalyst composition consisting essentially of a base catalyst, a support and a promoter component, said base catalyst consisting essentially of the oxides of antimony and uranium, the Sb:U atomic ratio being within the range of about 1:50 to 99:1, said support being silica and said promoter component consisting essentially of an oxide of at least one element selected from the group consisting of iron, magnesium, bismuth, copper, zinc, arsenic, and cesium.

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**3,933,752**

## METHOD FOR REACTING ORGANIC HALIDES

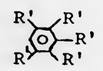
**Michael F. Farona, Cuyahoga Falls, and James F. White, Akron, both of Ohio, assignors to The University of Akron, Akron, Ohio**

**Division of Ser. No. 339,637, March 9, 1973, Pat. No. 3,832,403. This application Apr. 10, 1974, Ser. No. 459,482**

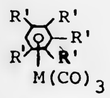
**Int. Cl.² C08G** *16/02, 61/00, 75/20*

**U.S. Cl. 260—61** **10 Claims**

**1.** The copolymerization of an organic dihalide with an aromatic substrate to form a copolymer comprising the steps of: charging a reaction vessel with a metallic hexacarbonyl compound having the general formula $M(CO)_6$ wherein M is selected from the group consisting of Cr, Mo and W, adding aromatic substrate monomers having the general formula



wherein R′ is selected from the group consisting of alkyl groups having from 1 to about 6 carbon atoms, alkoxide groups having from 1 to about 4 carbon atoms, and hydroxide, reacting said metallic hexacarbonyl compound with part of said aromatic substrate to yield an arene metal tricarbonyl catalyst having the general formula

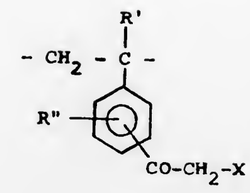




charging the reaction vessel with organic dihalide monomers having the general formula

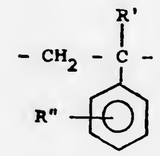


wherein R is selected from the group consisting of an alkylene group having from 1 to about 20 carbon atoms, alkoxide groups having from 1 to about 4 carbon atoms, haloalkylene, aldehyde groups having from 1 to about 4 carbon atoms and sulfonyl, and X is selected from the group consisting of bromine, chlorine and fluorine, heating said reaction vessel from ambient temperatures to a temperature sufficient to cause said catalyst to copolymerize said aromatic substrate monomers and said organic dihalide monomers by removing the dihalide from said organic dihalide monomers to form active organic monomers having carbonium ions which said active organic monomers initiate and continue the copolymerization to form the copolymer.



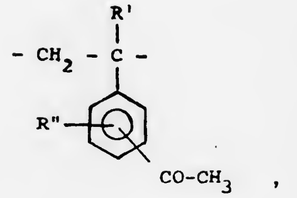
(IV)

and



(V)

and



(VI)

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**3,933,753**

## ALKENYLAROMATIC POLYMERS WITH α-KETOALHYDIC GROUPS

**Emile Kuntz, and Jean Pierre Quentin, both of Rhone, France, assignors to Rhone-Poulenc S.A., Paris, France**

**Filed Feb. 1, 1973, Ser. No. 328,591**

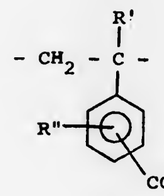
**Claims priority, application France, Feb. 4, 1972, 72.03804**

**Int. Cl.² C08G** *2/38, 10/06*

**U.S. Cl. 260—63 R** **18 Claims**

**1.** An alkenylaromatic polymer consisting essentially of:

a. 50–100% of recurring units of the formula:



(VII)

or recurring units of formula (VII) and recurring units selected from units of the formula:

at least 0.01% of the recurring units being recurring units of formula (VII); and

b. 0–50% of recurring units of a non-aromatic ethylenically unsaturated monomer,

in which R′ represents a hydrogen atom or a methyl radical, R″ represents a hydrogen atom or a methyl or ethyl radical and X represents a halogen atom;

at least one of the aromatic rings in the recurring units of formulae (VII), (IV), (V), and (VI) optionally being substituted by halogen.

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**3,933,754**

## INSOLUBLE CHLOROPRENE POLYMER

**Chojiro Kitagawa; Ichiro Fukuoka, both of Tokyo; Takashi Kadowaki, Niigata; Shoji Kimura, Machida; Takehiko Nishimura, Tokyo, and Kanehisa Hanabusa, Niigata, all of Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan**

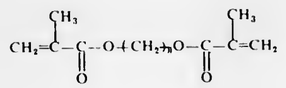
**Division of Ser. No. 289,915, Sept. 18, 1972, Pat. No. 3,876,732, which is a division of Ser. No. 753,705, Aug. 19, 1968, Pat. No. 3,714,296. This application July 24, 1974, Ser. No. 491,427**

**Int. Cl.² C08F** *15/26*; **C08G** *2/26*

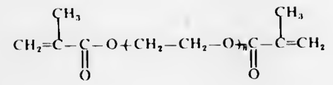
**U.S. Cl. 260—63 HA** **20 Claims**

**1.** A toluene-insoluble gel polymer having a crosslinking density of at least $2.4 \times 10^{-6}$ obtained by polymerizing chloro-

prene or a mixture of chloroprene with a small amount of at least one copolymerizable monomer to a monomer conversion of at least 80 percent in the presence of a crosslinking agent selected from the group consisting of a compound represented by the following formula:



wherein $n$ is integer of from 1 to 8,



wherein $n$ is integer of from 2 to 4, divinylbenzene and diallyl phthalate.

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**3,933,755**

## MELAMINE, FORMALDEHYDE, THIOUREA AND DIOL ETHER THERMOSETTING RESIN AND METHOD OF PREPARING THE SAME

**Horst Michaud; Josef Seeholzer, both of Trostberg; Ludwig Pentzel, Tacherting, and Josefa Mangs, Trostberg, all of Germany, assignors to Suddeutsche Kalkstickstoff-Werke AG, Trostberg, Germany**

**Continuation of Ser. No. 387,444, Aug. 10, 1973, abandoned, which is a continuation of Ser. No. 130,458, April 1, 1971, abandoned. This application May 22, 1974, Ser. No. 472,152**

**Claims priority, application Germany, June 2, 1970, 2027085**

**Int. Cl.² C08G** *12/32, 12/38*

**U.S. Cl. 260—67.6 R** **3 Claims**

**1.** A thermosetting resin composition capable of bonding paper to clipboard within two minutes at a temperature of 160°C and a pressure of 20 kg/cm² when mixed with 0.05% formamidinesulfinic acid, the resulting bond between said paper and said clipboard being stable at said temperature at atmospheric pressure, said resin composition essentially consisting of a liquid condensation mixture obtained by heating melamine, formaldehyde, thiourea, and a diol ether at 80° – 100°C and pH 8.6 – 8.8 until the condensation mixture first becomes turbid at 20°C when diluted with water to a solids content of 10% – 50%, said diol ether being of the formula $HO-(CH_2)_m-O-(CH_2)_m-OH$, wherein $m$ is 2 or 3, the amount of said thiourea being 0.08 to 0.12 mole, the amount of said formaldehyde being 2 moles, and the amount of said diol ether being between 0.06 and 0.13 mole, said amounts being per mole of melamine.

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**3,933,756**

## PROCESS OF PREPARATION OF SYNTHETIC RESINS BY REACTING A CROSS-LINKED ISOCYANATE POLYADDITION PRODUCT WITH LOW MOLECULAR WEIGHT POLYISOCYANATE FOLLOWED BY REACTION WITH AN AMINO ALKYL SILANE

**Kuno Wagner, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen Bayerwerk, Germany**

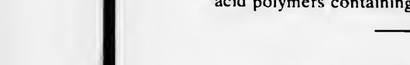
**Continuation of Ser. No. 380,421, July 18, 1973, abandoned. This application Feb. 3, 1975, Ser. No. 546,492**

**Claims priority, application Germany, Aug. 5, 1972, 2238741**

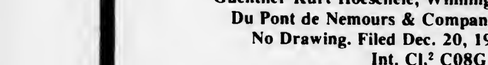
**Int. Cl.² C08G** *18/08*

**U.S. Cl. 260—75 NE** **9 Claims**

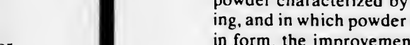
**1.** A process for the preparation of a synthetic resin capable of being cross-linked by moisture which comprises reacting, in a first step, a high molecular weight isocyanate polyaddition product cross-linked via allophanate, biuret or uretone imine groups in a polar solvent with a low molecular weight polyisocyanate at a temperature of 90° to 200°C and then reacting the resulting linearized product with an amino alkyl silane selected from a group consisting of

(I) 

or

(II) 

or

(III) 

wherein

R represents a $C_1$-$C_{18}$ alkyl or $C_4$-$C_{14}$ cycloalkyl radical or a phenyl radical,

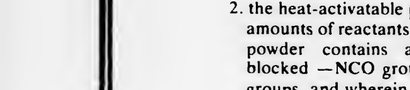
R′ represents an optionally halogenated or cyanosubstituted $C_1$-$C_{10}$ alkyl, $C_4$-$C_{10}$ cycloalkyl or $C_6$-$C_{10}$ aryl radical,

R″ represents a hydrogen atom or a methyl or phenyl radical,

R‴ represents a hydrogen atom or an optionally halogenated or cyanosubstituted $C_1$-$C_{18}$ alkyl, $C_4$-$C_{14}$ cycloalkyl or $C_6$-$C_{14}$ aryl radical,

$R^{IV}$ represents a divalent aliphatic, cycloaliphatic, araliphatic or aromatic hydrocarbon radical containing 2 to 16 carbon atoms,

$R^{V}$ represents hydrogen or



$a=0$, 1 or 2 and $n=1$–7,

said polar solvent being selected from the group consisting of dimethyl formamide, dimethyl acetamide, tetramethyl urea, dimethyl sulphoxide, N-methyl pyrrolidone, glycol carbonate, caprolactone and butylactone.

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**3,933,757**

## DICYCLOPENTADIENE THERMOSETTING POLYESTER

**Ivor Pratt, Medina, and Ulrich Boschert, Tallmadge, both of Ohio, assignors to SCM Corporation, New York, N.Y.**

**Continuation-in-part of Ser. No. 330,474, Feb. 8, 1973, Pat. No. 3,883,612. This application Oct. 21, 1974, Ser. No. 516,447**

**Int. Cl.² C08G** *63/46*

**U.S. Cl. 260—75 A** **4 Claims**

**1.** A method of synthesizing a thermosetting dicyclopentadiene terminated polyester from glycol, dicarboxylic acid, and dicyclopentadiene, said polyester suitable for mixing with



sytrene to provide a thermosettable polyester resin, the improvement comprising:

reacting an excess molar equivalent of dicarboxylic acid with glycol to produce an acid terminated partial polymer having carboxyl groups;

reacting about 0.1–0.4 mols of dicyclopentadiene per mol of unsaturated dicarboxylic acid with said acid terminated partial polymer at temperatures between about 290°–310°F. until substantially all of said dicyclopentadiene is esterified with said carboxyl groups.

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**3,933,758**

## IMINOIMIDAZOLIDINEDIONE AND PARABANIC ACID POLYMERS CONTAINING IMIDE GROUPS

**Tad L. Patton, Baytown, Tex., assignor to Exxon Research and Engineering Company, Linden, N.J.**

**Filed Oct. 26, 1973, Ser. No. 409,964**

**Int. Cl.² C08G** *18/00*

**U.S. Cl. 260—77.5 CH** **14 Claims**

**1.** As a composition of matter a new class of polymers which are iminoimidazolidinedione polymers containing imide groups or their hydrolysis derivatives, which are parabanic acid polymers containing imide groups.

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**3,933,759**

## HEAT-ACTIVATABLE, STORAGE-STABLE POLYURETHANE POWDERS

**Guenther Kurt Hoeschele, Wilmington, Del., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.**

**No Drawing. Filed Dec. 20, 1974, Ser. No. 535,135**

**Int. Cl.² C08G** *18/80*

**U.S. Cl. 260—77.5 TB** **30 Claims**

**1.** In a process of forming a heat-activatable polyurethane powder characterized by low-melt viscosity upon initial melting, and in which powder the particles are essentially bead-like in form, the improvement wherein

1. the melt viscosity is achieved by preparing a reaction product of
   a. one mole of a polymeric glycol having a molecular weight of 400–4,000,
   b. X moles of a diol having a molecular weight of less than 250 wherein X equals 0–20,
   c. Y moles of an organic diisocyanate wherein Y equals 1.03 (1 + X) to 1.60 (1 + X),
   d. 0.03 (1 + X) to 0.60 (1 + X) moles of a monofunctional isocyanate blocking agent, and
   e. Y - X - 1 moles of a difunctional active hydrogen compound, wherein
2. the heat-activatable property is achieved by selecting the amounts of reactants (d) and (e) so that the polyurethane powder contains about stoichiometric amounts of blocked —NCO groups and active hydrogen-containing groups, and wherein
3. the size and shape of bead particle is achieved by initially emulsifying reactants (a) and (b) in an inert organic solvent with the aid of a surfactant, followed by converting said emulsion to a dispersion of finely divided polyurethane beads and recovering the latter.

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**3,933,760**

## LOW TEMPERATURE CURING CORROSION RESISTANT POLYURETHANE COATINGS

**Kazys Sekmakas, and Paul Petrovich, both of Chicago, Ill., assignors to DeSoto, Inc., Des Plaines, Ill.**

**Filed Apr. 19, 1974, Ser. No. 462,564**

**Int. Cl.² C08G** *18/62*

**U.S. Cl. 260—77.5 CR** **9 Claims**

**1.** A low temperature curing polyurethane coating system comprising a liquid mixture of a solution copolymer of from 55–85% of styrene with the balance of the copolymer consisting essentially of monoethylenically unsaturated hydroxy functional monomer, said copolymer being in solution in inert water-free organic solvent, and an organic polyisocyanate in at least a stoichiometric proportion with respect to the hydroxy functionality in said copolymer.

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**3,933,761**

## NITROGEN-CONTAINING ESTER AND LUBRICANT CONTAINING THE SAME

**Lester Earl Coleman, Willoughby Hills, Ohio, assignor to The Lubrizol Corporation, Cleveland, Ohio**

**Continuation-in-part of Ser. No. 125,380, March 17, 1971, abandoned, and a continuation-in-part of Ser. No. 125,401, March 17, 1971, Pat. No. 3,702,300, said Ser. No. 125,380, is a division of Ser. No. 867,915, Oct. 20, 1969, abandoned, said Ser. No. 125,401, is a continuation-in-part of Ser. No. 867,915, Oct. 20, 1969, abandoned, said Ser. No. 867,915, is a continuation-in-part of Ser. No. 785,735, Dec. 20, 1968, abandoned. This application Aug. 10, 1972, Ser. No. 279,421**

**Int. Cl.² C08F** *8/14, 8/32, 222/22*

**U.S. Cl. 260—78.5 T** **15 Claims**

**1.** An oil-soluble nitrogen-containing mixed ester of a carboxy-containing interpolymer having low-temperature viscosity improving properties and a reduced specific viscosity of from about 0.05 to about 2, said ester being substantially free of titratable acidity and being characterized by the presence within its polymeric structure of at least one of each of three pendant polar groups:

A. a relatively high molecular weight carboxylic ester group having at least eight aliphatic carbon atoms in the ester radical,

B. a relatively low molecular weight carboxylic ester group having no more than seven aliphatic carbon atoms in the ester radical, and

C. a carbonyl-polyamino group derived from a polyamino compound having one primary or secondary amino group,

wherein the molar ratio of (A):(B):(C) is (60–90):(10–30):-(2–15).

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**3,933,762**

## HOT MELT ADHESIVES FROM LACTAM COPOLYAMIDES

**Nagayoshi Naito; Sadakatu Hashimoto; Yoshiyuki Komuro; Tutomu Suyama, and Yukio Yonekura, all of Nagoya, Japan, assignors to Toray Industries, Inc., Tokyo, Japan**

**Filed June 19, 1974, Ser. No. 480,627**

**Claims priority, application Japan, June 27, 1973, 48-71650; July 17, 1973, 48-79854**

**Int. Cl.² C08G** *77/02, 69/14*; **C09J** *3/16*

**U.S. Cl. 260—78 L** **5 Claims**

**1.** Hot-melt adhesives for fibers consisting essentially of a copolyamide prepared by copolymerizing the following four monomer:

A. more than 5 and less than 20% by weight on the basis of the total amount of monomers of laurolactam and

B. resulting portion of comonomers consisting essentially of
   a. 30 to 75% by weight of ε-caprolactam
   b. 5 to 40% by weight of hexamethylenediammonium adipate
   c. 20 to 65% by weight of hexamethylenediammonium sebacate,

wherein the total of (a), (b), and (c) is 100% by weight.

### 3,933,763
### POLYMERIZATION OF MALEIC ANHYDRIDE AND VINYL ACETATE

**Louis A. Goretta, Naperville, and John D. Newkirk, Downers Grove, both of Ill., assignors to Nalco Chemical Company, Chicago, Ill.**

**Filed July 18, 1974, Ser. No. 489,806**
**Int. Cl.² C08F 2/06**
**U.S. Cl. 260—78.5 R** **5 Claims**

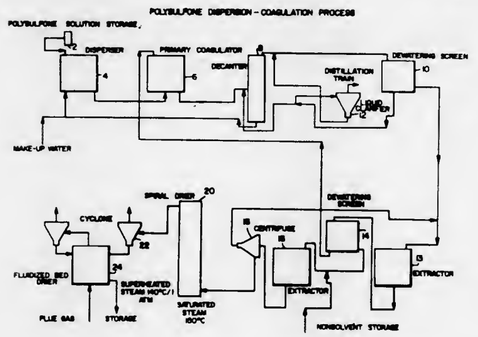
1. A method of polymerizing maleic anhydride and vinyl acetate in a solvent selected from the group consisting of toluene and benzene comprising carrying the polymerization out in the presence of a stabilizing agent comprising a copolymer of maleic anhydride and an alpha-olefin containing from four to 18 carbon atoms, the amount of stabilizing agent being from 0.5 to 6% by weight of maleic anhydride.

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### 3,933,764
### COAGULATIVE RECOVERY OF POLYSULFONE RESINS FROM SOLUTIONS THEREOF

**Lee P. McMaster, Long Valley, N.J., assignor to Union Carbide Corporation, New York, N.Y.**

**Filed July 25, 1974, Ser. No. 491,845**
**Int. Cl.² C08G 75/20**
**U.S. Cl. 260—79.3 M** **15 Claims**




1. Method for the coagulative recovery of normally solid polyarylene polyether polysulfone thermoplastic resin from a solution thereof which comprises:

A. Dispersing a solution of about 5–40% by weight solids content of normally solid polyarylene polyether polysulfone thermoplastic resin dissolved in an organic solvent having a solubility parameter, δ, of about 7 to about 11 with a fractional polarity of about 0.04 to 0.4 in a continuous carrier liquid phase as discrete droplets having a Sauter mean diameter of about 50 to about 250 microns.

B. Contacting the dispersion of (A) with an aliphatic hydrocarbon having five to about 10 carbon atoms and a solubility parameter, δ, of about 7 to about 8 in a turbulent shear field so that each discrete droplet of resin solution coalesces with and is surrounded by said aliphatic hydrocarbon;

C. Continuing agitation of the contacted dispersion until sufficient organic solvent has diffused out of the resin droplets and sufficient aliphatic hydrocarbon has diffused into the resin droplets whereby normally solid, porous, non-agglomerated polyarylene polyether polysulfone thermoplastic particles are obtained;

D. Isolating from the continuous carrier liquid phase normally solid resin particles containing a mixture of organic solvent and aliphatic hydrocarbon;

E. Removing organic solvent and aliphatic hydrocarbon not trapped within the pores of the normally solid resin particles from said resin particles;

F. Extracting residual organic solvent from the normally solid resin particles with an aliphatic hydrocarbon having five to 10 carbon atoms and a solubility parameter, δ, of about 7 to about 8; and

G. Reducing the level of liquids in the extracted normally solid resin particles to less than 500 ppm.

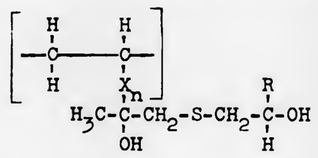
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### 3,933,765
### POLYMERS CONTAINING THIOGLYCOL GROUPS

**Herbert Naarmann, Wattenheim, and Heinz Pohlemann, Limburgerhof, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany**

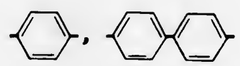
**Filed Mar. 21, 1974, Ser. No. 453,376**
**Claims priority, application Germany, Mar. 31, 1973, 2316299**
**Int. Cl. C08f 3/84**
**U.S. Cl. 260—79.7** **1 Claim**

1. Polymers containing units of the general formula:



in which

X denotes $-CH_2-$, $-CH_2-CH_2-$,



or divalent $C_{3-10}$ cycloalkyl,

$n$ is 0 or 1 and

R denotes H, $C_{1-10}$ alkyl or aryl.

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### 3,933,766
### MANUFACTURE OF INSOLUBLE AND ONLY SPARINGLY SWELLABLE POLY-N-VINYLPYRROLIDONE-2 OR COPOLYMERS OF N-VINYLPYRROLIDONE WITH OTHER N-VINYLLACTAMS

**Ernst Hofmann, and Karl Herrle, both of Ludwigshafen, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhein), Germany**

**Filed Nov. 9, 1973, Ser. No. 414,330**
**Claims priority, application Germany, Nov. 11, 1972, 2255263**
**Int. Cl.² C08F 2/04, 226/10**
**U.S. Cl. 260—80.3 R** **3 Claims**

1. A process for the manufacture of insoluble cross-linked and only sparingly swellable copolymers of N-vinylpyrrolidone-2 consisting essentially of: heating to at least 80°C monomeric N-vinylpyrrolidone-2 in an aqueous solution containing from 0.5 to 10% by weight, based on monomeric N-vinylpyrrolidone-2, of a cyclic acid amide containing at least 2 ethylenically unsaturated groups of which at least one is attached to an amide nitrogen atom to initiate the polymerization reaction of said N-vinyl-pyrrolidone-2 and said cyclic acid amide and thereafter completing the reaction at the boiling temperature of water.

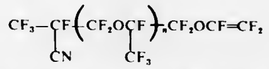


### 3,933,767
### CYANOPERFLUOROETHER ACID FLUORIDES AND COPOLYMERS DERIVED THEREFROM

**James E. Nottke, Greenville, N.C., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.**

**Division of Ser. No. 262,590, June 14, 1972, Pat. No. 3,852,326. This application May 22, 1974, Ser. No. 472,420**
**Int. Cl.² C08F 214/18, 214/20, 214/22, 214/26**
**U.S. Cl. 260—80.76** **3 Claims**

1. A copolymer of at least one cyanoperfluoro(vinyl ether) of the formula



where $n$ is an integer from 0 to 4 and at least one member of the group

vinylidene fluoride, tetrafluoroethylene, chlorotrifluoroethylene, hexafluoropropylene,

1,1,1,2,3-pentafluoropropylene and

$CF_2=CF-O-R_f$, where $R_f$ is perfluoroalkyl of one to three carbons.

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### 3,933,768
### METHOD OF PRODUCING DIHALOCYCLOPROPANE FUNCTIONAL MULTICOMPONENT COPOLYMERS

**Toshio Yukuta; Takao Aoki; Kazuo Haga; Takashi Ohashi, all of Kodaira, and Masumi Saito, Tanashi, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan**

**Filed Aug. 28, 1972, Ser. No. 283,956**
**Claims priority, application Japan, Sept. 2, 1971, 46-67016**
**Int. Cl.² C08F 236/22, 8/24; C08C 19/18**
**U.S. Cl. 260—80.78** **2 Claims**

1. A dihalocyclopropane functional multi-component copolymer containing dihalocyclopropane functional groups in the side chain or in the cyclic group in the main chain, which is obtained by subjecting a multi-component copolymer prepared from at least two alpha olefins having 2–8 carbon atoms and at least one non-conjugated diolefin compound to the reaction with dihalocarbene generated from halogenated hydrocarbon in the presence of a cation surfactant catalyst selected from the group consisting of tetraalkylammonium chloride, tetraalkylammonium bromide, trialkylbenzylammonium chloride, trialkylbenzylammonium bromide, alkylpyridinium chloride and alkylpyridinium bromide by using an alkali-aqueous solution to introduce dihalocyclopropane functional groups into said said chain or said cyclic group.

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### 3,933,769
### SULFUR VULCANIZABLE INTERPOLYMERS

**Joginder Lal, Akron, and Paul H. Sandstrom, Tallmadge, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio**

**Filed Dec. 9, 1974, Ser. No. 530,917**
**Int. Cl.² C08F 4/52, 36/20, 136/20, 236/20**
**U.S. Cl. 260—80.78** **8 Claims**

1. Sulfur vulcanizable unsaturated interpolymers prepared from at least one terminally unsaturated monoolefin selected from the group consisting of 1-butene and α-olefins containing from five to 12 carbon atoms with a nonconjugated diolefin wherein said nonconjugated diolefin is a mixture of 4- and 5-methyl-1,4-hexadienes in which said 5-methyl-1,4-hexadiene is at least 15 mole percent of said nonconjugated diolefin mixture and in which said terminally unsaturated monoolefin comprises from about 98 to about 70 mole percent of the total monomer charged.

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### 3,933,770
### METHOD OF PREPARING TRANSITION METAL COMPLEX CATALYSTS

**Sakuji Ikeda; Atsumu Ozaki; Makoto Okawara, all of Tokyo; Tsutomu Mizoroki, Yokohama; Masahiro Uchino, Tokyo; Hideki Shirakawa, Yokohama, and Noboru Kawata, Kawasaki, all of Japan, assignors to Tokyo Institute of Technology, Tokyo, Japan**

**Filed Mar. 20, 1974, Ser. No. 452,839**
**Claims priority, application Japan, Sept. 13, 1973, 48-103678**
**Int. Cl.² C08F 8/30, 8/40, 8/42**
**U.S. Cl. 260—87.5 R** **2 Claims**

1. A method for preparing transition metal complex catalysts combined with organic high polymers, comprising mixing a halogenated high polymer selected from the group consisting of chlorinated, brominated and iodinated polystyrene and chlorinated, brominated and iodinated styrene-divinylbenzene copolymer with a complex of transition metal selected from the group consisting of nickel, palladium and platinum in an organic solvent, said transition metal being in a low oxidation state.

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### 3,933,771
### COMPOSITION OF AND METHOD OF OBTAINING SMALL PARTICLE SIZE POLYMERS AND COPOLYMERS OF VINYL CHLORIDE HAVING A FUSED SURFACE

**David W. Eastman, Angola; Anthony L. Lemper, Tonawanda; Victor A. Pattison, Clarence Center; George C. Hopkins, Clarence; Henry Kahn, Williamsville, all of N.Y., and Jack L. Nickels, Willingboro, N.J., assignors to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.**

**Continuation-in-part of Ser. No. 379,886, July 16, 1973, abandoned, which is a continuation of Ser. No. 172,546, Aug. 17, 1971, abandoned. This application June 24, 1974, Ser. No. 482,111**
**Int. Cl.² C08F 3/30, 15/06**
**U.S. Cl. 260—87.1** **8 Claims**

1. A process for preparing vinyl chloride polymer or copolymer particles having a fused, glassy surface which comprises:

1. polymerizing a monomer or monomers in a first stage at a temperature of about 30° to about 80°C and in contact with at least one of an additive selected from the group consisting of

A. an inorganic or organic, inert, fine particle size material, solid at least at reaction temperature and insoluble in said monomer or monomers, said material having an average particle size in the range of about 0.001 to about 50 microns and said material being present in the amount of 0.001 to 5 percent based upon said monomer or monomers present in said first stage, and

B. a surface active agent in an amount of 0.01 to 5 percent by weight based upon the monomer or monomers present in said first stage

during which the reaction mixture is subjected to high speed agitation until about 3 percent to about 15 percent by weight of said monomer or monomers have been converted to polymer particles, and

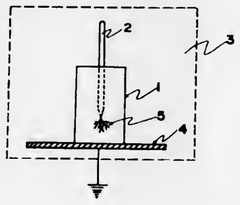
2. continuing the preparation of polymer particles by polymerization in a second stage during which said reaction mixture is subjected to low speed agitation at a temperature of about 30° to about 80° centigrade and completing the reaction by increasing the temperature of the reaction mixture to about 60° to about 95° centigrade, the increase in temperature being in the range of about 10° to about 65° centigrade, so that at least 10 to about 50 percent of monomer or monomers present in said second stage are polymerized to provide on the surface of the polymer particles a low molecular weight, glassy, fused coating of polymer.

3,933,772

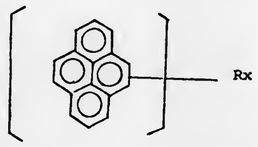
## DIELECTRIC POLYOLEFIN COMPOSITIONS

Masaaki Takahashi; Akira Ito, both of Tokyo; Yuriko Igarashi, Mitaka; Shichiro Kawada, Hitachi; Jiro Ogura, Hitachi, and Ryoichi Ito, Hitachi, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed June 20, 1974, Ser. No. 481,256
Claims priority, application Japan, July 3, 1973, 48-74364
Int. Cl.² C08F 210/00, 212/00, 218/00; H01B 3/00
U.S. Cl. 260—87.3 7 Claims




1. A dielectric composition comprising a polyolefin and an alkylpyrene of the formula




wherein R represents an alkyl group containing from 1 to 4 carbon atoms and x is an integer of 1 to 4, provided that when x is an integer of 2 or greater, R may be the same or different; said alkylpyrene being present in an amount of at least 0.5 parts by weight per 100 parts by weight of said polyolefin.

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3,933,773

## THERMOPLASTIC ELASTOMERIC COPOLYMERS AND TERPOLYMERS OF TETRAFLUOROETHYLENE AND PROPYLENE AND METHOD OF MAKING THE SAME

Rolf F. Foerster, Lawrenceville, N.J., assignor to Thiokol Corporation, Newtown, Pa.

Continuation-in-part of Ser. No. 260,795, June 8, 1972, abandoned. This application Dec. 6, 1973, Ser. No. 422,132
Int. Cl.² C08F 2/32, 214/26
U.S. Cl. 260—87.5 B 8 Claims

1. In a process for copolymerizing tetrafluoroethylene and propylene in an emulsion polymerization reaction mixture in a reactor at a temperature of 5° to 120°C. and at a pressure of 100 to 1,000 p.s.i.g., the improvement which consists in initially charging said reactor with an emulsion polymerization reaction mixture consisting essentially of tetrafluoroethylene and propylene in a molar ratio of 1.0:0.01 to 1.0:0.087, adding an initiator to said mixture to cause said tetrafluoroethylene and propylene to form an initial copolymer having a molar ratio of tetrafluoroethylene units to propylene units of at least 1.0:0.54 and thereafter continually feeding to said reactor a monomer mixture having a molar ratio of tetrafluoroethylene to propylene that is substantially the same as the ratio of tetrafluoroethylene units to propylene units in the initially formed copolymer within the reactor and at a feed rate to maintain the reactor pressure substantially constant to cause the monomers within the reactor to be replenished at approximately the same rate as they are consumed in the polymerization reactor and thereby produce a copolymer having a molar ratio of tetrafluoroethylene units to propylene units of from 1.0:0.11 to 1.0:0.54.

2. In a process for preparing a terpolymer of tetrafluoroethylene, propylene and a cure site monomer in an emulsion polymerization reaction mixture in a reactor at a temperature of 5° to 120°C. and a pressure of 100 to 1,000 p.s.i.g., the improvement which consists in initially charging said reactor with an emulsion polymerization reaction mixture consisting essentially of tetrafluoroethylene and propylene in a molar ratio of 1.0:0.01 to 1.0:0.087 and up to 10 mole percent of a cure site monomer, adding an initiator to said mixture to cause said tetrafluoroethylene, propylene and cure site monomer to form an initial terpolymer having a molar ratio of tetrafluoroethylene units to propylene units of at least 1.0:0.54, thereafter continually feeding to said reactor a monomer mixture of tetrafluoroethylene, propylene and cure site units in a molar ratio that is substantially the same as the ratio of tetrafluoroethylene units, propylene units and cure site units in the initially formed copolymer within the reactor and at a feed rate to maintain the reactor pressure substantially constant to cause the monomers within the reactor to be replenished at approximately the same rate as they are consumed in the polymerization reaction and thereby produce a copolymer having a molar ratio of tetrafluoroethylene units to propylene units of from 1.0:0.11 to 1.0:0.54.

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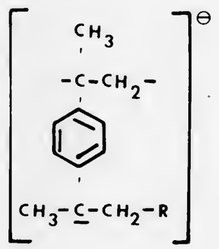
3,933,774

## MODIFIED POLYMERS OF DIISOPROPENYLBENZENE

Franz Neumayr, Weisenheim; Gerhard Fahrbach, Schwetzingen, and Erhard Seiler, Freiburg, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Mar. 21, 1974, Ser. No. 453,375
Claims priority, application Germany, Apr. 7, 1973, 2317602
Int. Cl.² C08F 210/00, 212/00, 236/04, 136/02
U.S. Cl. 260—88.2 8 Claims

1. Modified copolymers of from 99 to 50% by weight of a vinyl aromatic compound or diene hydrocarbon and from 1 to 50% by weight of diisopropenylbenzene and having a content of at least 0.2% by weight of a group of the general formula:




in which R is alkyl, aryl or cycloalkyl of up to 36 carbon atoms, said copolymers having been modified by reaction with organo-alkali metal compounds.

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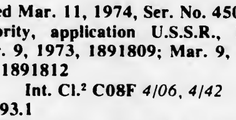
3,933,775

## 2[(1-CYANO-1-METHYLETHYL)AZO]-2-METHYLPROPIONAMIDE

Earl P. Moore, Jr., Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 357,524, May 7, 1973. This application Mar. 5, 1974, Ser. No. 448,364
Int. Cl.² C08F 118/08, 120/44, 114/06, 120/12
U.S. Cl. 260—89.1 8 Claims

1. A method for the emulsion polymerization of ethylenically unsaturated compounds selected from butadiene, isoprene, esters of acrylic acid and methacrylic acid, acrylonitrile, methacrylontirile, vinyl acetate, vinyl chloride, vinylidene chloride, styrene and alpha methyl styrene which comprises initiating the polymerization of the ethylenically unsaturated compound across the ethylenically unsaturated double bond in an aqueous solution with at least 0.01% by weight of




based on the weight of the ethylenically unsaturated compound.



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3,933,776

## BULK POLYMERIZATION OF VINYL CHLORIDE

Francis Fournel, Chauny, and Salomon Soussan, St-Fons, both of France, assignors to Rhone-Progil, Courbevoie, France

Filed Apr. 2, 1974, Ser. No. 457,193
Claims priority, application France, Apr. 3, 1973, 73.11938
Int. Cl.² C08F 3/30, 15/30
U.S. Cl. 260—92.8 R 8 Claims

1. A process for preparing polymers and copolymers of vinyl chloride by bulk polymerization, which comprises feeding to a reaction zone of a vessel maintained at the polymerization temperature ($t_1$) a solution (A) comprising monomeric material to be polymerized and at least one polymerization initiator, solution (A) being prepared by preheating at least 50% of the monomeric material in the absence of catalyst to a temperature ($t_2$) within 20°C of the temperature ($t_1$) and immediately prior to being fed to the reaction zone, mixing the preheated constituent (B) and a solution (C) of the initiator or initiators in an organic solvent including the remainder, if any, of the monomeric material.

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3,933,777

## METHOD FOR PREPARING POLYALKENAMERS

Boris Davidovich Babitsky, ulitsa Krasnogo Kursanta, 7, kv. 9; Tamara Trofimovna Denisova, ulitsa Zaitseva, 6, kv. 71; Vitaly Abramovich Kormer, ulitsa Zheleznovodskaya, 62, kv. 2; Irina Moiseevna Lapuk, Narvsky prospekt, 8, kv. 18; Mark Iosifovich Lobach, prospekt Annikova, 28, kv. 52; Nadezhda Pavlovna Simanova, ulitsa Kolomenskaya, 22, kv. 57, all of Leningrad; Kim Sergeevich Soloviev, Golovinskoe shosse, 4, kv. 17, Moscow; Tamara Yakovlevna Chepurnaya, Bulvar Novatorov, 88, kv. 39, and Tatyana Lvovna Jufa, ulitsa Tipanova, 29, kv. 513, both of Leningrad, all of U.S.S.R.

Filed Mar. 11, 1974, Ser. No. 450,226
Claims priority, application U.S.S.R., Mar. 9, 1973, 1891808; Mar. 9, 1973, 1891809; Mar. 9, 1973, 1891810; Mar. 9, 1973, 1891812
Int. Cl.² C08F 4/06, 4/42
U.S. Cl. 260—93.1 2 Claims

1. A method for the preparation of a polyalkenamer by homopolymerization comprising subjecting an alicyclic unsaturated compound having from 4 to 5 and 7 to 12 carbon atoms and from 1 to 4 double bonds in the ring to polymerization with ring opening in the presence of a catalyst consisting of three components: a) a compound selected from the group of a transition metal compound comprising $\pi$-complexes of transition metals having the general formula

$$A_aM_1X_pL_k$$

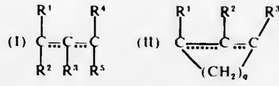
wherein:

$M_1$ is a transition metal selected from groups IV–VIII of the Periodic System;

X is a ligand selected from the group consisting of halogen, acetate, alkoxyl, cyanide, cyclopentadienyl, acetylacetonate, alkyl- and arylsulfonate group;

L represents a ligand selected from the group consisting of carbonyl, cyclopentadienyl, cyclooctadiene, benzene, cycloheptatriene, cyclododecatriene, trihalogenphosphine, triphenylphosphine, triphenylphosphite;

A stands for a ligand selected from $\pi$-allylic ligands having the general formula




wherein:

$R^1,R^2,R^3,R^4,R^5$ are ligands selected from the group consisting of hydrogen, halogen, alkyl, cyanoalkyl and aryl having from 1 to 10 carbon atoms;

$n$=0-4; $p$=0-3; $k$=0-6; $m$=1-2; $q$=1-9;

and transition metal compounds of the general formula

$$M_2R_aX_bY_c$$

wherein:

$M_2$ is molybdenum or tungsten;

R is a ligand selected from a group consisting of halogen, aliphatic and aromatic substituent having from 1 to 10 carbon atoms;

X represents a ligand selected from a group consisting of halogen, acyl, alkoxy-, aryloxy- and acetylacetonate groups;

Y stands for a ligand selected from the group comprising ether and amine;

$a$=0-6; $b$=0-6; $c$=0-3;

$a + b = a$ valence of $M_2$ metal;

b. a compound of a metal selected from Groups I–VI of the Periodic System having the general formula $M_3U_dZ_eP_f$

wherein:

$M_3$ is a metal selected from Groups I–VI of the Periodic System;

U is a ligand selected from the group consisting of hydrogen, halogen and alkoxy-group;

Z represents a ligand selected from the group consisting of halogen, aliphatic and aromatic ligands having from 1 to 18 carbon atoms;

P stands for a ligand selected from the group comprising ether and amine;

$d$ = 0-4; $e$ = 0-4; $g$ = 1-2; $f$ = 0-2; and

c. an activator selected from the group consisting of quinones, halogenated quinones and an acid halide of sulfur-containing acid having the general formula

$$R_kSO_sQ_t$$

wherein:

R is a ligand selected from the group consisting of halogen, alkyl, aryl, nitro- and amino-group;

Q is a ligand selected from the group of halogens;

S represents sulfur;

O stands for oxygen;

$k$=0-1; $n$=1-2; $t$=1-2; wherein the molar ratio of the catalyst components $a:b:c$ is 1:0.1-50:0.1-10 and the molar ratio of the monomer to the transition metal compound is within the limits 100-20,000:1.

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3,933,778

## PROCESS FOR THE POLYMERISATION OF CYCLOOCTADIENE

Gottfried Pampus; Günther Lehnert, both of Leverkusen, and Josef Witte, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

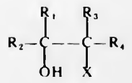
Filed June 20, 1974, Ser. No. 481,208
Claims priority, application Germany, June 27, 1973, 2332565
Int. Cl.² C08F 4/22
U.S. Cl. 260—93.1 5 Claims

1. A process for producing polyoctadienamers having 20 to 85 percent of the double bonds in the transconfiguration which comprises polymerizing cyclooctadiene-(1,5) in the presence of a catalyst comprising:

a. a tungsten salt;

b. at least one member selected from the group consisting of

i. a halo alcohol of the formula



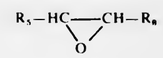
wherein

X is chlorine, bromine or iodine;

$R_1$ and $R_2$, when taken separately, are the same or different and are each selected from the group consisting of hydrogen, alkyl having 1 to 6 carbon atoms, aryl having 6 to 10 carbon atoms and alkaryl having 1 to 6 carbon atoms in the alkyl moiety and 6 to 10 carbon atoms in the aryl moiety;

$R_3$ and $R_4$ may be the same or different and are each selected from the group consisting of chlorine, bromine, iodine, hydrogen, alkyl having 1 to 6 carbon atoms, aryl having 6 to 10 carbon atoms and alkaryl having 1 to 6 carbon atoms in the alkyl moiety and having 6 to 10 carbon atoms in the aryl moiety, and $R_1$ and $R_2$, when taken together with the carbon atoms to which they are attached, form a hydrocarbon ring containing at least 5 carbon atoms;

ii. an epoxide of the formula

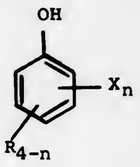


wherein

$R_5$ is hydrogen, alkyl having 1 to 6 carbon atoms, aryl having 6 to 10 carbon atoms or alkaryl having 1 to 6 carbon atoms in the alkyl moiety and having 6 to 10 carbon atoms in the aryl moiety; and

$R_6$ is hydrogen, alkyl, chloroalkyl, bromoalkyl or iodoalkyl, each having 1 to 6 carbon atoms in the alkyl moiety, aryl having 6 to 10 carbon atoms or aralkyl having 6 to 10 carbon atoms in the aryl moiety and having 1 to 6 carbon atoms in the alkyl moiety; and

iii. a halo phenol of the formula



wherein X is aforesaid, R is alkyl having 1 to 6 carbon atoms, aryl having 6 to 10 carbon atoms or a condensed aromatic group, and *n* is an integer of from 1 to 4;

c. an aluminum organic compound, an aluminum halide or a mixture thereof,

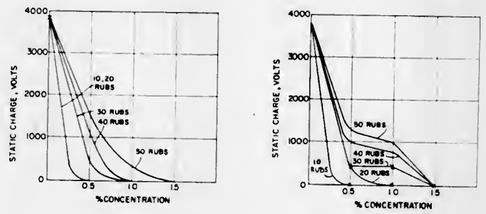
said catalyst containing 0.05 to 10 mmol of tungsten per 100 gm of cyclooctadiene-(1,5), 1 to 6 mols of (b) per mol of tungsten and 0.05 to 30 mol of (c) per mol of tungsten.

**3,933,779**

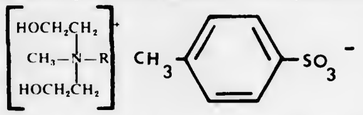
## ANTISTATIC POLYMER BLEND

**Seymour Baron, Wayne, N.J., and H. Harald Lutzmann, Cleveland, Ohio, assignors to Fine Organics Inc., Cleveland, Ohio**

**Filed Feb. 21, 1974, Ser. No. 444,560**
**Int. Cl.² C08K** *5/19*; **C08F** *12/08, 112/08*
**U.S. Cl. 260—93.5 A** **11 Claims**




**1.** A synthetic polymer having incorporated therewith an antistatically effective amount of a compound of the formula:



wherein R is alkyl of 4 to 18 carbon atoms unsubstituted or substituted by halogen or aryl.

**3,933,780**

## HIGH SOLIDS SOAPS OF FATTY ACIDS AND FATTY OIL DERIVED POLYCARBOXYLIC ACIDS

**Benjamin F. Ward, Charleston, S.C., assignor to Westvaco Corporation, New York, N.Y.**

**Filed May 21, 1973, Ser. No. 361,939**
**Int. Cl.² C09F** *1/04*
**U.S. Cl. 260—97.5** **1 Claim**

**1.** A soap composition consisting essentially of,

a. from 10 to 90 percent by weight of a polycarboxylic acid soap consisting of a fatty acid or oil from the group consisting essentially of soya fatty acid, tall oil fatty acid, cotton seed fatty acid, tallow fatty acid, corn oil, tung oil and linseed oil modified by reacting with a maleyl compound from the group consisting essentially of maleic anhydride and maleic acid at a temperature between 180°C. and 300°C. for between 30 minutes and 6 hours and neutralized with a member of the group consisting essentially of potassium, sodium and ammonium, and

b. 10 to 90 percent by weight of a soap from the group consisting essentially of tall oil fatty acid, oleic acid, tallow, coconut fatty acids and soya fatty acid.

**3,933,781**

## PROCESS FOR THE PREPARATION OF α-L-ASPARTYL-L-PHENYLALANINE ALKYL ESTERS

**Gerald L. Bachman; Marvin L. Oftedahl, and Billy D. Vineyard, all of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.**

**Filed Nov. 5, 1973, Ser. No. 412,928**
**Int. Cl.² C07C** *103/52*; **A23L** *1/22*
**U.S. Cl. 260—112.5** **14 Claims**

**1.** A process comprising reacting an N-protected-L-aspartic anhydride with L-phenylalanine to form N-protected-α-L-aspartyl-L-phenylalanine wherein the N-protecting group is selected from the group consisting of formyl, acetyl, benzoyl, substituted and unsubstituted carbobenzoxy, t-butoxycarbonyl and the hydrohalide salts, removing the protecting group from the N-protected-α-L-aspartyl-L-phenylalanine to form α-L-aspartyl-L-phenylalanine and esterifying the α-L-aspartyl-L-phenylalanine with an alkanol having from 1 to 3 carbon atoms to form the corresponding α-L-aspartyl-L-phenylalanine alkyl ester which is recovered.



**3,933,782**

## (N-ACETYL)-PRO-D-PHE-TRP-SER-TYR-D-ALA-LEU-ARG-PRO-NHET AND INTERMEDIATES

**John P. Yardley, King of Prussia, Pa., assignor to American Home Products Corporation, New York, N.Y.**

**Filed Nov. 14, 1974, Ser. No. 523,953**
**Int. Cl.² C07C** *103/52*; **A61K** *37/00*
**U.S. Cl. 260—112.5 LH** **6 Claims**

**1.** A compound selected from the group consisting of (N-Acetyl)-L-Pro-D-Phe-L-Trp-L-Ser-L-Tyr-D-Ala-L-leu-L-Arg-L-Pro-NHEt and its non-toxic salts.

**3,933,783**

## FORMATION OF PEPTIDE BONDS IN THE PRESENCE OF ISONITRILES

**Naohiko Yasuda, Kawasaki; Yasuo Ariyoshi, and Koji Toi, both of Yokohama, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan**

**Division of Ser. No. 317,921, Dec. 26, 1972, Pat. No. 3,872,099. This application Dec. 9, 1974, Ser. No. 530,494**
**Claims priority, application Japan, Dec. 27, 1971, 46-1997; Nov. 27, 1972, 47-115332**
**Int. Cl.² C07C** *103/52*
**U.S. Cl. 260—112.5 R** **11 Claims**

**1.** A method of producing a peptide which comprises contacting a first compound having an amino group masked by a masking group conventional in peptide chemistry and an available carboxyl group with a second compound having a carboxyl group masked by a masking group conventional in peptide chemistry and an available amino group in a liquid reaction medium including an amount of an isonitrile effective for causing formation of a peptide by condensation of the available amino and carboxyl groups of said first and second compounds, said compounds being members of the group consisting of amino acids and oligopeptides, and being contacted until said peptide is formed as a reaction product.

**3,933,784**

## DES-(SER[13])-SRIF AND INTERMEDIATES

**Dimitrios Sarantakis, Chester, Pa., assignor to American Home Products Corporation, New York, N.Y.**

**Filed Jan. 27, 1975, Ser. No. 544,252**
**Int. Cl.² C07C** *103/52*; **A61K** *37/00*
**U.S. Cl. 260—112.5 R** **6 Claims**

**1.** A tridecapeptide selected from those of the formula

H—Ala—Gly—Cys—Lys—Asn—Phe—

Phe—Trp—Lys—Thr—Phe—Thr—Cys—OH,

H—Ala—Gly—Cys—Lys—Asn—Phe—

—Phe—Trp—Lys—Thr—Phe—Thr—Cys—OH

and the non-toxic acid addition salts thereof, said amino acid residues in said tridecapeptide having an asymmetric α-carbon atom being of the L-configuration.

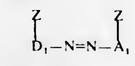
**3,933,785**

## AZO COMPOUNDS

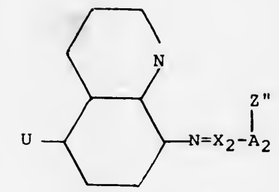
**Gerhard Back, Lorrach, Germany, and Alfred Fasciati, Bottmingen, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland**

**Continuation-in-part of Ser. No. 377,841, July 9, 1973, abandoned, which is a continuation of Ser. No. 63,034, Aug. 11, 1970, abandoned. This application Oct. 29, 1973, Ser. No. 410,748**
**Claims priority, application Switzerland, Aug. 14, 1969, 12432/69**
**Int. Cl.² C09B** *45/18, 45/48*; **D06P** *1/10, 3/02*
**U.S. Cl. 260—145 B** **17 Claims**

**1.** A chromium complex containing one molecule each of the following formula:



and



$D_1$ is phenyl or naphthyl, or phenyl or naphthyl substituted by chloro, bromo, lower alkyl, aryl, lower alkoxy, aryloxy, nitro, sulfo, sulfonamido, sulfonamido substituted by lower alkyl, lower hydroxyalkyl, lower alkoxyalkyl, lower cyanoalkyl, aralkyl, $C_5$–$C_9$-cycloalkyl or aryl, lower alkoxyalkylsulfonyl lower hydroxy-, chloro-, cyano-, or alkoxyalkylsulfonyl, arylsulfonyl, arylazo, lower alkanoyl, benzoyl and acylamino, wherein "lower" means "containing 1 to 5 carbon atoms", "aryl" designates naphthyl or phenyl, or phenyl or naphthyl substituted by chloro, bromo, nitro, sulfo, carboxy, lower alkyl, lower alkoxy and acylamino and "acylamino" means $-NH_2$ substituted by lower alkanoyl, lower alkoxycarbonyl, lower alkylsulfonyl, benzoyl, chloro-, nitro- or methylbenzoyl, phenylsulfonyl, chloro-, nitro- or methylphenyl-sulfonyl or chloro, bromo- or sulfatosubstituted lower alkanoyl or alkylsulfonyl, lower alkenoyl or lower alkenoyl substituted by chloro or bromo, chloro- or bromo-substituted triazinyl and pyrimidyl, 2,6-dichloropyrimidine-5-carbonyl, 2,3-dichlorochinoxaline-7-carbonyl-, 1,4-dichlorophthalazine-7-carbonyl;

$A_1$ and $A_2$ are each independently phenyl or phenyl substituted by lower alkyl, acetylamino, propionylamino, ethoxycarbonylamino, methylsulfonylamino, benzoylamino, chloro-, nitro- or methyl-benzoylamino, benzoylamino, phthaloylamino, phenylsulfonylamino, chloro-, nitro- or methylphenylsulfonylamino, chloroacetylamino, α,β-dibromopropionylamino, β-sulfatoethylsulfonylamino, acryloylamino, α-bromoacryloylamino, 2,4-dichlorotriazinylamino, 2-chloro-4-methoxytriazinylamino, 2-chloro-4-isopropoxytriazinylamino, 2,4,5-trichloropyrimidylamino, sulfo, $-NH_2$, hydroxy, lower alkanoyl and arylazo, naphthyl or naphthyl substituted by sulfo, hydroxy, acylamino, sulfonamido, $-NH_2$, phenylamino and sulfo- or $-NH_2$ -substituted anilino, or 3-methyl-pyrazolyl bound to the azo group in position 4, carrying the OH-group in position 5 and substituted in position 1 by phenyl or naphthyl or phenyl or naphthyl substituted by chloro, lower alkyl, lower alkoxy, $-NH_2$, nitro, sulfonamido, sulfonamido

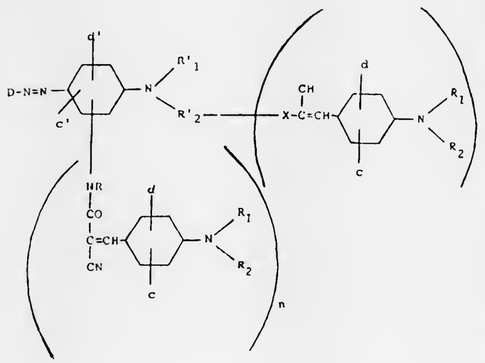
substituted by lower alkyl, lower hydroxyalkyl, lower alkoxyalkyl, lower cyanoalkyl, aralkyl, $C_5$-$C_9$-cycloalkyl or aryl and lower alkyl-lower hydroxyalkyl-, lower chloroalkyl-, lower alkoxy-alkyl- or lower cyanoalkylsulfonyl, or the residue of acetoacetanilide or acetoacetanilide substituted in the anilide nucleus by lower alkyl, lower alkoxy, sulfo, lower alkyl-, lower hydroxyalkyl-, lower alkoxyalkyl- or lower cyanoalkylsulfonyl, sulfonamido, substituted sulfonamido, chloro or $-NH_2$, wherein "lower", "aryl" and "acylamino" are defined as above; and

U is hydrogen, sulfo, chloro, bromo, nitro, acylamino or arylazo, the meanings of the latter terms being the same as defined above.

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**3,933,786**
**HETEROCYCLIC-AZO-PHENYL COMPOUNDS CONTAINING A STYRL GROUP**
**Richard Peter, and Hans-Joerg Angliker, both of Basel, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland**
**Division of Ser. No. 56,954, July 21, 1970, Pat. No. 3,717,625. This application Nov. 20, 1972, Ser. No. 308,211**
**Claims priority, application Switzerland, Aug. 5, 1969, 11883/69**
**Int. Cl.² C09B** *29/00*
**U.S. Cl. 260—156** **14 Claims**

1. A dyestuff of the formula



wherein

X is - phenylene — $SO_2$—, [—OCO—$N(CH_2C_6H_5)$—CO-] —OCO—, —$N(CH_2C_6H_5)$— or -$N(C_1$-$C_2$-alkyl)—OC—;

*c*, *d* and *d'* each is hydrogen, chlorine, $C_1$-$C_2$ alkyl, $C_1$-$C_2$ alkoxy, phenyl, phenoxy or phenylthio;

*c'* is the same as *c*, *d* or *d'* or is bromine, trifluoromethyl [$C_{1\text{-}10}$-hydrocarbylcarbonylamino, $C_1$-$C_6$ hydrocarbylsulfonylamino, $C_1$-$C_8$-hydrocarbyloxycarbonylamino or $C_1$-$C_8$ -hydrocarbylaminocarbonylamino, acylamino- or N-methyl-acylamino wherein acyl represents formyl, acetyl, propionyl, butyryl, benzoyl, methylsulfonyl, ethylsulfonyl, p-tolylsulfonyl, methoxycarbonyl, phenoxycarbonyl, aminocarbonyl or butylaminocarbonyl

R is hydrogen or $C_1$-$C_2$ alkyl,

$R_1$, $R_2$, $R'_1$ and $R'_2$ each are, independently $C_1$-$C_5$-alkyl or $C_2$-$C_5$ oxaalkyl and $C_1$-$C_5$-alkyl or $C_2$-$C_5$ oxaalkyl substituted by chlorine, fluorine, hydroxy, $C_1$-$C_5$ alkylcarbonyloxy cyano, bromine, phenyl, phenoxy, phenylmercapto, dichlorophenylmercapto, methoxycarbonyl-thienyl-2-carbonyloxy, benzoyloxy, methoxycarbonyl-benzoyloxy, methoxy-benzoyloxy, $C_1$-$C_5$-alkylaminocarbonyloxy, phenylaminocarbonyloxy, $C_1$-$C_5$-alkylaminocarbonylamino, $C_1$-$C_5$-alkoxycarbonyloxy or $C_1$-$C_5$-alkoxycarbonyl,

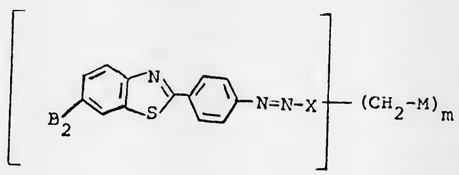
*m* and *n* are each 0 or 1, not only of said *m* and *n* being zero at any one time, and with the proviso that when *m* is 1, $R^o_2$ represents $C_2$-$C_4$ alkylene or $C_2$-$C_4$, oxaalkylene, said alkylene and oxaalkylene being unsubstituted or substituted by chloro, and

D is selected from the group consisting or thiazolyl, thiadiazolyl, benzthiazolyl, isothiazolyl, pyrazolyl, indazolyl, pyridyl, quinolyl, benzisothiazolyl and triazolyl which is unsubstituted or substituted with one to three substituents selected from the group consisting of cyano lower alkyl, lower alkoxy, chloro, thiocyano, nitro, carbethoxy, methylsulphonyl, benzyl, phenyl, methoxyphenyl, chlorophenyl and pyridyl-(2); and the N-methyl chloride or N-methyl methylsulfate quaternary salt thereof.

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**3,933,787**
**SUBSTITUTED 4-(2-BENZOTHIAZOLYL)PHENYLAZO DYES HAVING A QUATERNARY AMMONIUM, HYDRAZINIUM OR OPTIONALLY SUBSTITUTED AMINO SUBSTITUENT**
**Helmut Moser, Reinach, Basel-Land, Switzerland, assignor to Sandoz Ltd., (Sandoz AG), Basel, Switzerland**
**Division of Ser. No. 790,903, Jan. 10, 1969**
**This application Jan. 12, 1973, Ser. No. 323,300**
**Int. Cl.² C09B** *29/10, 29/32, 29/38*; **D21H** *1/46*
**U.S. Cl. 260—158** **14 Claims**

1. A dye of the formula



wherein

$B_2$ is hydrogen or methyl,

M is



or





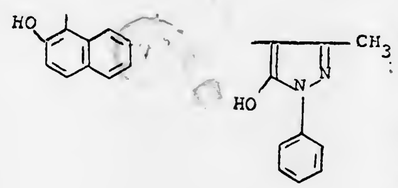
wherein each of $R_8$ and $R_9$ is independently methyl, ethyl or 2-hydroxyethyl,

$R_{10}$ is methyl, ethyl, 2-hydroxyethyl or 2-carbamoylethyl,

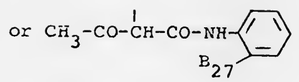
each of $R_{11}$ and $R_{12}$ is independently hydrogen, methyl, ethyl or 2-hydroxyethyl, and

$A^{\ominus}$ is an anion,

X is



or



wherein $B_{27}$ is hydrogen, methyl or methoxy, and *m* is 1 to 3.

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**3,933,788**
**POLYSACCHARIDE AND BACTERIAL FERMENTATION PROCESS FOR ITS PREPARATION**
**Kenneth Suk Kang; George T. Veeder, III, and Danny D. Richey, all of San Diego, Calif., assignors to Kelco Company, San Diego, Calif.**
**Continuation-in-part of Ser. No. 197,941, Nov. 11, 1971, abandoned. This application June 26, 1973, Ser. No. 373,724**
**Int. Cl.² C08B** *37/00*
**U.S. Cl. 260—209 R** **1 Claim**

1. Heteropolysaccharide-10, said heteropolysaccharide containing about 3% by weight of protein and about 97% by weight carbohydrate, the carbohydrate portion of which contains about 19% by weight of a uronic acid, about 39% by weight of glucose, about 29% by weight of galactose, and about 13% by weight of fucose, said heteropolysaccharide being compatible with Methylene Blue chloride dye, being substantially insoluble in dimethylsulfoxide and soluble in water, having an acetyl content of about 4.5%, and a specific rotation of $[\alpha]_D = +106°$ (c 0.25, $H_2O$).

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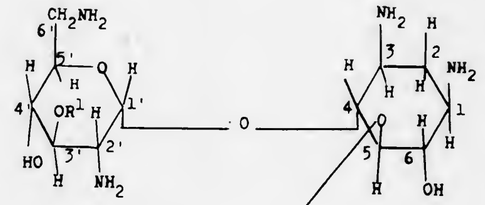
**3,933,789**
**EXTRACTION OF STEROLINS FROM PLANT MATERIAL**
**Karl Heinrich Pegel, Durban, South Africa, assignor to Roelof Wilke Liebenberg, Johannesburg, South Africa**
**Filed Mar. 5, 1973, Ser. No. 338,057**
**Claims priority, application South Africa, Mar. 17, 1972, 72/1855**
**Int. Cl.² C07J** *9/00*
**U.S. Cl. 260—210.5** **5 Claims**

1. In a method for manufacturing a sterolin-rich product consisting essentially of the steps of, comminuting a plant material containing sterolins, and deactivating the sterolin-specific degradative enzymes systems by heating the material at a stage not later than immediately following comminution to a temperatuare of at least 60°C.: the improvement comprising extracting the sterolins from the comminuted material in aqueous solution by boiling the comminuted material in water for a continuous period of at least thirty minutes, separating the extract solution from the comminuted material, and concentrating the extract solution.

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**3,933,790**
**PHOSPHORYLXYLOSTASIN**
**Seizi Igarasi, and Makoto Kida, both of Hyogo, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan**
**Filed July 8, 1974, Ser. No. 486,454**
**Claims priority, application Japan, July 9, 1973, 48-77260**
**Int. Cl.² C07H** *15/22*
**U.S. Cl. 260—210 AB** **3 Claims**

1. A compound selected from the group consisting of compounds of the formula

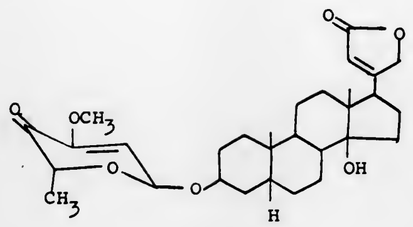


wherein $R^1$ and $R^2$, independently of each other, represent hydrogen or phosphono, with the proviso that $R^1$ and $R^2$ are not both hydrogen.

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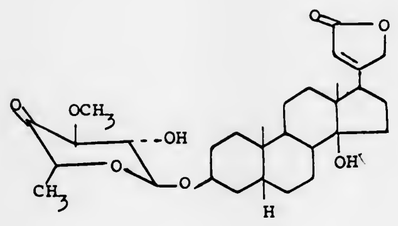
**3,933,791**
**OBTENTION OF DIGITOXIGENIN FROM NERIIFOLIN AND 2'-ACETYLNERIIFOLIN**
**Joseph M. Muchowski, and Jose Iriarte, both of Mexico D. F., Mexico, assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.**
**Filed Sept. 16, 1974, Ser. No. 506,362**
**Int. Cl.² C07J** *19/00*
**U.S. Cl. 260—210.5** **9 Claims**

1. A process for obtaining digitoxigenin which consists essentially of hydrolyzing a compound of the formula:

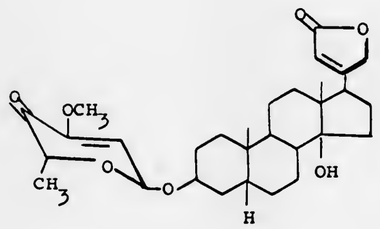


with dilute sulfuric acid in methanol solution and separating the digitoxigenin thus obtained.

**8.** A compound of the formula:



**9.** A compound of the formula:



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**3,933,792**

**PLATE AND FRAME TYPE FILTERING APPARATUS**

**John R. Schneider, 26 Cove Road, Belvedere, Calif. 94920**

**Continuation-in-part of Ser. No. 282,070, Aug. 21, 1972, Pat. No. 3,850,812. This application Nov. 4, 1974, Ser. No. 520,233. The portion of the term of this patent subsequent to Nov. 26, 1991, has been disclaimed.**

**Int. Cl.² B01D** *25/12*

**U.S. Cl. 210—231** **5 Claims**

1. A liquid filtering apparatus comprising:

a plurality of plate and frame sections arranged in an alternating sequence;

means for supporting said sections in a generally upright vertical position;

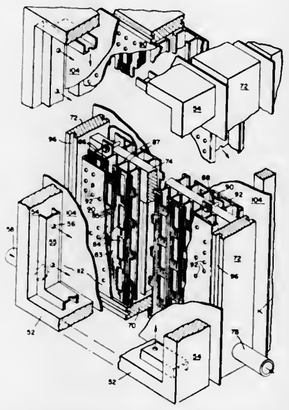
linking means for connecting said sections together while allowing them to be separated a predetermined amount to facilitate the insertion of filter media between adjacent plate and frame sections;

controllable actuator means for pressing said sections together when filtering is being accomplished and for separating the sections when filter media is being changed;

an inlet conduit for supplying liquid to be filtered and means for connecting it in parallel to said frame sections;

an outlet conduit for removing filtered liquid connected in parallel to said plate sections;

all of said plate and said frame sections having peripheral members surrounding a central space, said members being formed by solid structure having a generally rectangular cross-section and connected together at their ends in a rectangular frame-like configuration;



base means in each plate section for supporting a layer of filter media;

all of said frame sections having hollow peripheral cavities within said central space with openings spaced along the inner surfaces of said cavities communicating with said central space;

said hollow peripheral cavities of said frame sections being formed by channel structure having a generally U-shaped cross-section joined at the open end thereof to the interior surfaces of said peripheral members and extending along substantially three sides of said peripheral members;

said inlet conduit communicating with a fluid conduit defined by the interior of said frame section channel structure in combination with the interior surfaces said peripheral members enclosed thereby;

said outlet conduit communicating with the central space defined by said plate section peripheral member.

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**3,933,793**

**THERAPEUTICALLY ACTIVE 2-AMINOALKYLTHIO-3H-1.5-BENZODIAZEPINES AND PROCESS FOR PREPARING THEM**

**Dante Nardi; Elena Massarani, both of Milan, and Ludwig Degen, Rome, all of Italy, assignors to Recordati S.A. Chemical and Pharmaceutical Company, Chiasso, Switzerland**

**Filed Oct. 10, 1972, Ser. No. 296,045**

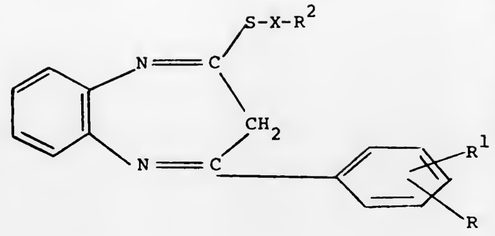
**Claims priority, application Italy, Oct. 19, 1971, 30018/71; May 18, 1972, 24509/72**

**Int. Cl.² C07D** *243/12*

**U.S. Cl. 260—239 BD** **15 Claims**

1. A compound having the following formula





wherein

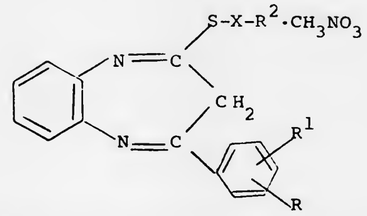
R represents hydrogen, halogen, methoxy, phenylthio or alkythio group containing 1 to 12 carbon atoms;

$R^1$ represents hydrogen, halogen, methyl, phenyl, phenoxy, alkylthio group containing 1 to 12 carbon atoms, cyclohexylthio, benzylthio or phenylthio;

$R^2$ represents a dimethylamino or diethylamino group, a morpholino, piperidino pyrrolidino or 4-methylpiperazino group; and

X represents an alkylene chain containing 2 or 3 carbon atoms; a salt of addition of said compound with hydrochloric acid, citric acid or tartaric acid, and a quaternary ammonium salt of said compound formed by reaction with a methyl halide, benzyl halide or methyl nitrate.

**2.** Methylnitrates of 2-aminoalkylthio-3H-1,5-benzodiazepines according to claim **1** having the formula



wherein R, $R^1$, $R^2$ and X have the same meanings as in claim **1**.

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**3,933,794**

**2-(2-ALKYNYLAMINO)-3H-1,4-BENZODIAZEPINES**

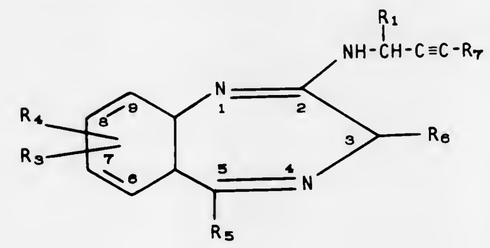
**Jackson B. Hester, Jr., Galesburg, Mich., and Arthur R. Hanze, deceased, late of Kalamazoo, Mich. (by Janice W. Hanze, administratrix), assignors to The Upjohn Company, Kalamazoo, Mich.**

**Division of Ser. No. 169,091, Aug. 4, 1971, abandoned. This application Sept. 10, 1973, Ser. No. 395,510**

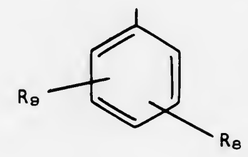
**Int. Cl.² G07D** *243/20, 401/04*

**U.S. Cl. 260—239 BD** **3 Claims**

1. A compound of the formula:



wherein $R_1$ and $R_6$ are each selected from the group consisting of hydrogen and alkyl of 1 to 3 carbon atoms, inclusive; $R_3$ and $R_4$ are each selected from the group consisting of hydrogen, halogen, nitro, trifluoromethyl, alkylthio in which the carbon chain moieties are of 1 to 3 carbon atoms, inclusive; $R_5$ is selected from the group consisting of pyridyl and a phenyl radical of the formula



in which $R_8$ and $R_9$ each have the same meaning as given above for $R_3$ and $R_4$; and $R_7$ is selected from the group consisting of hydrogen, methyl and ethyl.

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**3,933,795**

**UREIDOACETAMIDO-PENICILLINS**

**Hans Disselnkotter, Cologne, and Karl Georg Metzger, Wuppertal-Elberfeld, all of Germany, assignors to Hans-Bodo Konig; Wilfried Schrock, both of Wuppertal-Elberfeld and Bayer Aktiengesellschaft, Germany**

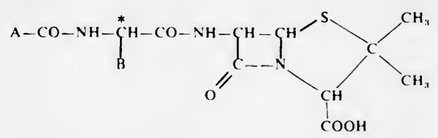
**Division of Ser. Nos. 145,809, , and Ser. No. 145,877, May 21, 1971, abandoned. This application Dec. 19, 1973, Ser. No. 426,187**

**Claims priority, application Germany, May 25, 1970, 2025414; May 25, 1970, 2025415**

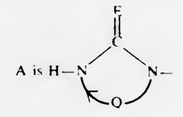
**Int. Cl.² C07D** *499/44*

**U.S. Cl. 260—239.1** **37 Claims**

1. A penicillin of the formula:

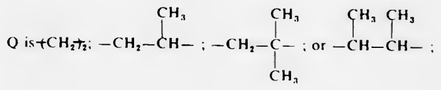


or a pharmaceutically acceptable non-toxic salt thereof wherein



wherein

E is oxygen or sulphur;



B is thienyl, phenyl or phenyl substituted by lower alkyl, mono- or di-halogen, lower alkoxy, lower alkylthio, hydroxy or methylcarbonylamino; and

C can have either of the two possible R- and S- stereoisomeric configurations or it can be a mixture of such diastereomers.

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**3,933,796**

## ANTIBIOTICS

**Arthur Coates Parker, Uxbridge, and Susan Elizabeth Staniforth, London, both of England, assignors to Glaxo Laboratories Limited, Greenford, England**

**Filed June 11, 1974, Ser. No. 478,309**

**Claims priority, application United Kingdom, June 15, 1973, 28690/73**

**Int. Cl.² C07D** *499/68*

**U.S. Cl. 260—239.1** **1 Claim**

1. An anhydrate of ampicillin having an infrared spectrum substantially as characterised in FIG. 1 of the accompanying drawings.

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**3,933,797**

## 6-[α-(ω-QUANIDINOALKANOYLAMIDO)ACYLAMIDO]PENICILLANIC ACIDS

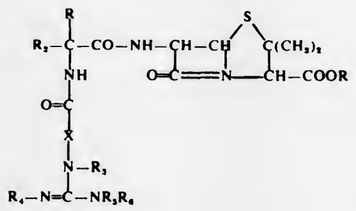
**Ernest S. Hamanaka, Groton, Conn., assignor to Pfizer Inc., New York, N.Y.**

**Division of Ser. No. 228,344, Feb. 22, 1972, Pat. No. 3,870,709. This application Sept. 23, 1974, Ser. No. 508,070**

**Int. Cl.² C07D** *499/44*

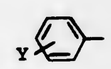
**U.S. Cl. 260—239.1** **7 Claims**

1. A compound of the formula



and the pharmaceutically acceptable acid addition salts thereof wherein R is selected from the group consisting of hydrogen and acyloxy lower alkyl wherein acyloxy is selected from the group consisting of lower alkanoyloxy, benzoyloxy and substituted benzoyloxy wherein the substituent is selected from the group consisting of chloro, bromo, fluoro, lower alkyl, lower alkoxy and trifluoromethyl;

$R_1$ is selected from the group consisting of hydrogen, alkyl of from 1 to 14 carbon atoms, cycloalkyl of from 3 to 6 carbon atoms, 1,4-cyclohexadienyl, naphthyl, benzyl, phenethyl, furyl, thienyl, and



wherein Y is selected from the group consisting of hydrogen, nitro, di(lower alkyl)amino, lower alkanoylamino, lower alkyl, lower alkoxy, hydroxy, sulfamyl, chloro, bromo, fluoro, iodo, and trifluoromethyl;

$R_2$ is selected from the group consisting of hydrogen and lower alkyl;

$R_1$ and $R_2$ when taken together with the carbon atom to which they are attached are cycloalkylidene of 3 to 10 carbon atoms;

each of $R_3$ and $R_6$ is selected from the group consisting of hydrogen, lower alkyl, benzyl, and phenyl;

$R_4$ and $R_5$ when taken together with the quanyl moiety to which they are attached form a 5-membered heterocyclic ring selected from the group consisting of 2-imidazolyl, and 2-(2-imidazolinyl) and

X is selected from the group consisting of alkylene having from 1 to 7 carbon atoms, phenylene, cycloalkylene having from 3 to 9 carbon atoms, propenylene whose $-CH_2$ group is bound to the adjacent nitrogen; vinylenephenylene, methylene oxyphenylene and phenylenemethylene, each of whose phenylene group is bound to the adjacent nitrogen.

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**3,933,798**

## NOVEL BIS-PYRAZOLONE OXONOL DYES

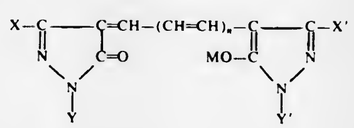
**Harris L. Curtis, Needham, and James W. Foley, Andover, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.**

**Filed Aug. 27, 1974, Ser. No. 500,842**

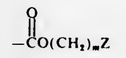
**Int. Cl.² C07D** *231/42, 233/00, 235/00, 261/16*

**U.S. Cl. 260—239.9** **4 Claims**

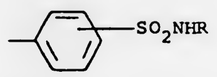
1. A compound of the formula:



wherein X and X′ are the same and each represents an ester group of the formula:



wherein Z is hydrogen, hydroxy or lower alkoxy and *m* is the integer 2 or 3; Y and Y′ are the same and represent an alkyl sulfonamidophenyl group of the formula:



wherein R is an alkyl group having from 3 to 8 carbon atoms, the $-SO_2NHR$ group being in ortho-, para- or meta-position on the phenyl nucleus; M is hydrogen, $Na^+$, $K^+$ or pyridinium; and *n* is 0, 1 or 2.



**3,933,799**

## 11β-HALO-9,12-UNSUBSTITUTED-$C_{19}$ -STEROIDS

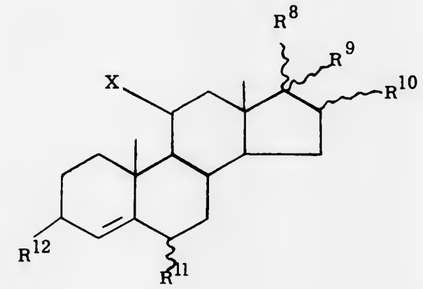
**Gordon Hanley Phillipps, Greenford, England, assignor to Glaxo Laboratories Limited, Greenford, England**

**Continuation of Ser. No. 795,065, Jan. 29, 1969, abandoned. This application July 13, 1971, Ser. No. 162,261**

**Int. Cl.² C07J** *17/00*

**U.S. Cl. 260—239.55 R** **8 Claims**

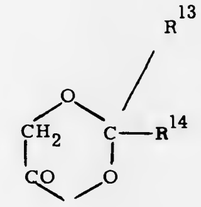
1. 9α,12-unsubstituted $C_{19}$-steroid of the androstane or pregnane series of the formula:



wherein X represents a chlorine or bromine atom, $R^8$ represents a member selected from the group consisting of an acetyl group; a hydroxyacetyl group; a hydroxyacetyl group esterified by a group selected from an aliphatic acyl, group having 1–9 carbon atoms in said aliphatic group, a benzoyl group, a phosphate group; and a saturated or unsaturated aliphatic hydrocarbon group which is unsubstituted or substituted by a chlorine atom;

$R^9$ represents a hydrogen atom, a hydroxy group or an aliphatic acyloxy group having 1–9 carbon atoms in the aliphatic portion, a cycloaliphatic acyloxy group having up to 7 carbon atoms in the cycloaliphatic portion, a benzoyloxy group;

or $R^8$ and $R^9$ together represent a grouping of the formula:



wherein $R^{13}$ represents a member selected from the group consisting of an alkyl group with 1–5 carbon atoms and an alkoxy group with 1–5 carbon atoms and $R^{14}$ represents an alkyl group with 1–5 carbon atoms or a hydrogen atom;

$R^{10}$ represents a member selected from the group consisting of a methyl group, a methylene group and a hydrogen atom;

$R^{11}$ represents a member selected from a hydrogen atom, a chlorine atom, a fluorine atom and a methyl group and;

$R^{12}$ represents an oxo group, and wherein the additional double bonds may be present at positions selected from the 1,2-position and the 6,7-position and, dienol ethers or esters thereof.

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**3,933,800**

## NEW 3-FORMYLRIFAMYCIN SV DERIVATIVES

**Renato Cricchio, Varese, and Giancarlo Lancini, Pavia, both of Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy**

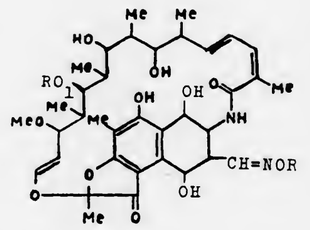
**Continuation of Ser. No. 256,297, May 24, 1972, abandoned. This application Oct. 23, 1974, Ser. No. 517,272**

**Claims priority, application Italy, June 7, 1971, 25493/71; June 24, 1971, 89607/71**

**Int. Cl.² C07D** *491/04, 521/00*

**U.S. Cl. 260—239.3 P** **6 Claims**

1. O-Substituted oximes of 3-formylrifamycin SV having the formula



(I)

wherein R is selected from the group consisting of 4 to 12 carbon atom alkyl, 4 to 12 carbon atom alkenyl, propynyl, 2-heptyn-1-yl, cyclohexyl, cycloheptyl, 2-methoxyethyl, 2-ethoxyethyl, 2-propoxyethyl, 2-isopropoxyethyl, 2-butoxyethyl, 3-methoxypropyl, 3-ethoxypropyl, 3-propoxypropyl, 3-butoxypropyl, 3-methoxybutyl, 4-methoxybutyl, 4-ethoxybutyl, 4-propoxybutyl, 4-isopropoxybutyl, 2-hydroxyethyl, 4-hydroxy-butyl, 6-hydroxyhexyl, 8-hdyroxyoctyl, 1-carboxyisobutyl, 1-carboxyisopentyl, carboisobutoxymethyl, 1-carboisobutoxyethyl, 2-phenoxy-ethyl, 4-phenoxybutyl, 6-phenoxyhexyl, 8-phenoxyoctyl, 10-phenoxydecyl, 2-(4-hydroxyphenoxy)ethyl, 2-(3,4-dichlorophenoxy)ethyl, 2-(2,6-dichlorophenoxy)ethyl, 3-(4-carboxyphenoxy)propyl, 3-(4-dimethylaminophenoxy)propyl, 4-(4-carboxyphenoxy)butyl, 2-benzyloxyethyl, 3-benzyloxypropyl, 4-benzyloxybutyl, 3-(8-quinolinoxy)propyl, 2-methylaminoethyl, 2-ethylaminoethyl, 3-methylaminopropyl, 3-ethylaminopropyl, 2-dimethylaminoethyl, 2-diethylaminoethyl, 2-dipropylaminoethyl, 2-dibutylaminoethyl, 3-dimethylaminopropyl, 3-diethylaminopropyl, 3-dipropylaminopropyl, 3-dibutylaminopropyl, 4-dimethylaminobutyl, 4-diethylaminobutyl, 4-dipropylaminobutyl, 4-dibutylaminobutyl, 4-bromobenzyl, 2,3,6-trichlorobenzyl, α-carbethoxybenzyl, 2-carboxybenzyl, α-phenylbenzyl, α,α-(diphenyl)benzyl, 4-carboxybenzyl, 2,4-dichlorobenzyl, 2-phenethyl, 3-phenylpropyl, 3-(3-nitro-4-hydroxyphenyl)propyl, 4-carboxyphenethyl, 3-(4-carboxymethoxyphenyl)propyl, 2-(2,6-dimethoxy-4-carboxy-phenyl)-propyl, 3-carboxy-3-phenylpropyl, 4-carboxyphenethyl, α-carboxyphenethyl, 2-pyrrolidinylethyl, 2-piperidinylethyl, 2-(4-methylpiperazine-1-yl)ethyl, 3-(1-piperidino)propyl, 4-(2-furyl)butyl, 4-pyridylmethyl, 3-(4-pyridyl)propyl, 3-(2-thienyl)propyl, 2-(3-isoxazolyl)ethyl, bis-(4-pyridyl)methyl; $R_1$ is H or $CH_3CO$; and derivatives of the same oximes hydrogenated in the positions 16, 17; 18, 19; 28, 29.

### 3,933,801
### PROCESS FOR PREPARING RIFAMYCIN S BY HYDROLYSIS OF RIFAMYCIN O

**Carmine Pasqualucci, Milan; Giuseppe Scarpitta, Pavia, and Giovanni Bonfanti, Milan, all of Italy, assignors to Archifar Industrie Chimiche Del Trentino S.p.A., Rovereto, Italy**

**Filed Oct. 24, 1974, Ser. No. 517,834**
**Claims priority, application Italy, Nov. 29, 1973, 31928/73**
**Int. Cl.² C07D** *515/20, 515/10*
**U.S. Cl. 260—239.3 P** **4 Claims**

1. A process for preparing a rifamycin S comprising the steps of dissolving rifamycin O at a concentration higher than 60,000γ/ml in a mixture of a water immiscible chlorinated organic solvent and a water miscible alcohol at a temperature in the range of about 0°–30°C and which mixture forms a heterogeneous phase, adding a strong mineral acid in a ratio of about 1:10–1.5:1 by weight to the amount of treated rifamycin O to the mixture then hydrolyzing said rifamycin O in said heterogeneous phase while thoroughly stirring the reaction mass for a time in the range of about 40 minutes to about 3.5 hours and at a temperature in the above range, washing the reaction mass with water and then vacuum concentrating the reaction mass to dryness, the solid obtained then being taken up with a water miscible alcohol, and finally cooling to crystallize rifamycin S.

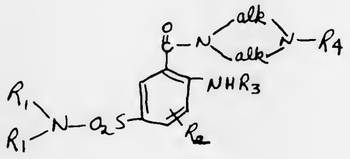
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### 3,933,802
### SULPHAMOYLBENZOIC ACID AMIDES

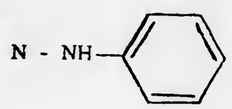
**Pier Giorgio Ferrini, Binningen; Georges Haas, and Alberto Rossi, both of Oberwil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.**

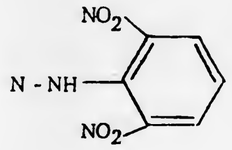
**Filed May 22, 1974, Ser. No. 472,333**
**Claims priority, application Switzerland, May 28, 1973, 7643/73; Apr. 1, 1974, 4507/74**
**Int. Cl.² C07D** *237/00, 239/00, 241/00, 251/00*
**U.S. Cl. 260—239.7** **16 Claims**

1. A 2-amino-5-sulphamoylbenzoic acid amide of the general formula



and





; and

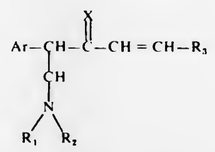
wherein $R_1$ denotes identical lower alkyl groups with 1 to 4 C atoms, $R_2$ denotes hydrogen, lower alkyl or lower alkoxy with up to 4 C atoms or halogen up to atomic number 17, $R_3$ denotes hydrogen, hydroxyl or lower alkyl with 1 to 4 C atoms, $R_4$ denotes a group of the formula —COOR′ or —COR′ wherein R′ denotes lower alkyl with 1 to 4 C atoms, lower alkenyl with 3 or 4 C atoms or phenyl, benzyl or phenylethyl which are optionally monosubstituted or disubstituted in the phenyl part by lower alkyl or lower alkoxy with 1 to 4 C atoms in each case, halogen up to atomic number 17 or nitro, and alk denotes 1,2-alkylene with 2–4 C atoms.

### 3,933,803
### NEW BETA-AMINOKETONE DERIVATIVES

**Elso Manghisi; Giuseppe Cascio, and Liliana Bastianini, all of Milan, Italy, assignors to Instituto Luso Farmaco d'Italia S.r.l., Italy**

**Filed July 16, 1973, Ser. No. 379,812**
**Claims priority, application Italy, July 26, 1972, 27473/72**
**Int. Cl.² C09B** *23/00;* **C07C** *97/10*
**U.S. Cl. 260—240 G** **9 Claims**

1. 5-substituted 1-amino-2-aryl-4-pentene-3-ones and the pharmaceutically acceptable salts thereof of the general formula (I):



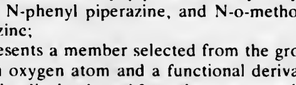
wherein:

Ar represents an aryl radical which may be substituted with at least one member selected from the group consisting of halogen atoms, polyhalogenated alkyl radicals, nitro radicals, sulphonamide radicals, hydroxyl radicals, alkoxy radicals, methylene-dioxy radicals and mixtures thereof;



represents an amino radical selected from the group consisting of methyl amino, ethyl amino, propyl amino, isopropyl amino, benzyl amino, phenethyl amino, dimethyl amino, diethyl amino, diethanol amino, dibenzyl amino, morpholine, pyrrolidine, piperidine, 4,4-disubstituted piperidine, N-methyl piperazine, N-hydroxy ethyl piperazine, N-phenyl piperazine, and N-o-methoxy-phenyl piperazine;

X represents a member selected from the group consisting of an oxygen atom and a functional derivative of a carbonyl radical, selected from the group consisting of NOH, $N—NH_2$, $N—NH—CO—NH_2$,



$R_3$ represents a radical selected from the group consisting of methyl, ethyl, isopropyl, benzyl, phenethyl, cinnamyl, furyl-vinyl, phenyl, tolyl, xylyl, chloro-phenyl, nitro-phenyl, hydroxyphenyl, carboxy-phenyl, naphthyl, furyl, nitro-furyl, thienyl, pyrryl, pyridyl, imidazolyl and nitroimidazolyl.

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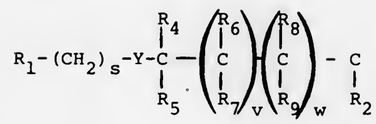


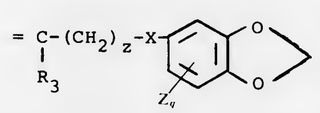
### 3,933,804
### INSECTICIDAL 1,3-BENZODIOXOL DERIVATIVES

**Hans-Peter Schelling, Oberwil, and Fritz Schaub, Basel, both of Switzerland, assignors to Sandoz, Ltd., Basel, Switzerland**

**Continuation-in-part of Ser. No. 207,633, Dec. 13, 1971, Pat. No. 3,829,442. This application May 21, 1974, Ser. No. 472,013**
**Claims priority, application Switzerland, Dec. 14, 1970, 18472/70; Sept. 17, 1971, 13599/71; Oct. 6, 1971, 14521/71; Nov. 11, 1971, 16357/71**
**Int. Cl.² C07D** *317/64*
**U.S. Cl. 260—240 H** **10 Claims**

1. A compound of the formula:



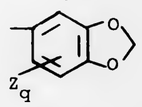


wherein

Z is alkyl of 1 to 5 carbon atoms, alkenyl of 2 to 12 carbon atoms, alkoxy of 1 to 5 carbon atoms, alkenyloxy of 2 to 12 carbon atoms, formyl, alkyl carbonyl of 2 to 6 carbon atoms, alkoxy carbonyl of 2 to 6 carbon atoms, mono- or di-alkyl substituted carbamoyl in which each alkyl is of 1 to 5 carbon atoms, alkoxy methylene of 2 to 6 carbon atoms, alkylthio of 1 to 5 carbon atoms, fluorine, chlorine, bromine, cyano or nitro,

$q$ is 0 or 1,

$R_1$ is cycloalkyl or cycloalkenyl of 4 to 7 carbon atoms, unsubstituted or substituted by alkyl of 1 to 5 carbon atoms or



$R_2$, $R_3$, $R_4$, $R_5$, $R_6$, $R_7$, $R_8$ and $R_9$, which may be the same or different, are each hydrogen, alkyl of 1 to 5 carbon atoms or alkenyl of 2 to 6 carbon atoms,

Y is oxygen or sulfur,

X is oxygen, sulfur, $—OCH_2—$ or $—SCH_2—$,

$s$, $v$ and $w$, which may be the same or different, are each 0 or 1, and

$z$ is 1, 2 or 3.

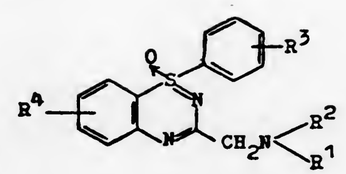
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### 3,933,805
### S(IV)-BENZO-1,2,4-THIADIAZINE COMPOUNDS AND PROCESS FOR THEIR PREPARATION

**Erich Cohnen, Hamburg, Germany, assignor to Biersdorf, Akteingesellschaft, Hamburg, Germany**

**Filed Apr. 22, 1974, Ser. No. 462,593**
**Claims priority, application Germany, Apr. 30, 1973, 2321786**
**Int. Cl.² C07D** *285/24*
**U.S. Cl. 260—243 R** **12 Claims**

1. An S (IV)-benzo-1,2,4-thiadiazine compound of the formula (I)



(I)

in which $R^1$ is hydrogen, lower alkyl or hydroxy lower alkyl; $R^2$ is lower alkyl, lower hydroxy alkyl, methoxy lower alkyl, cyclopentyl or cyclohexyl; or $R^1$ and $R^2$ together with the nitrogen to which they are attached form a pyrrolidino, piperidino, hexamethylenimino or morpholino radical, $R^3$ is hydrogen, halogen, lower alkyl, nitro or amino; and $R^4$ is hydrogen, halogen, lower alkyl, methoxy or dilowеralkylamino; and physiologically acceptable acid addition salts of said compound.

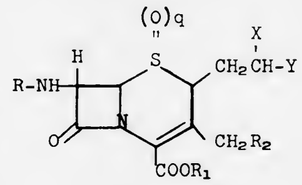
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### 3,933,806
### CEPHALOSPORIN MICHAEL ADDUCTS

**Douglas O. Spry, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.**

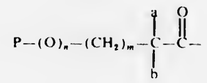
**Filed July 17, 1973, Ser. No. 380,011**
**Int. Cl.² C07D** *501/20*
**U.S. Cl. 260—243 C** **13 Claims**

1. A compound of the formula



wherein

R is hydrogen, $C_1$-$C_4$ alkanoyl, benzoyl, or a group represented by the formula:



wherein

P is 2-thienyl, 3-thienyl, 2-furyl, 3-furyl, phenyl or phenyl substituted by amino, protected amino, halogen, hydroxy, protected hydroxy, $C_1$-$C_4$ lower alkyl, or $C_1$-$C_4$ lower alkoxy;

$a$ is hydrogen or $C_1$-$C_3$ alkyl;

$b$ is hydrogen, $C_1$-$C_3$ alkyl, amino, protected amino, hydroxy, or protected hydroxy;

$m$ is 0 or an integer from 1 to 3;

$n$ is 0 or 1;

subject to the limitation that when

$n$ is 1,

$p$ is phenyl or phenyl substituted by amino, protected amino, halogen, hydroxy, protected hydroxy, $C_1$-$C_4$ lower alkyl or $C_1$-$C_4$ lower alkoxy; and

$b$ is hydrogen or $C_1$-$C_3$ alkyl;

$R_1$ is hydrogen, a carboxylic acid protecting group, or an alkali metal or alkaline earth metal cation;

$R_2$ is hydrogen, $C_2$-$C_5$ alkanoyloxy, or $C_1$-$C_4$ alkoxy;

$q$ is 0 or 1; and

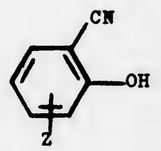
X and Y are independently hydrogen, acetyl, benzoyl, carboethoxy, carbomethoxy, cyano, nitro and 2,2,2-trichlorocarboethoxy;

subject to the limitations that when one of X and Y is hydrogen, the other is cyano or nitro.

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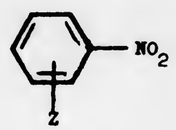
**3,933,807**
**PREPARATION OF CYANOPHENOLS**
**John Henry Gorvin, London, England, assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.**
**Continuation of Ser. No. 255,186, May 19, 1972, abandoned. This application Feb. 15, 1974, Ser. No. 442,912**
**Claims priority, application United Kingdom, May 21, 1971, 16197/71**
**Int. Cl.² C07D** *279/34*
**U.S. Cl. 260—243 A** **13 Claims**

**1.** In a process for the preparation of the compound of formula (I)



(I)

wherein Z is a substituent in the 4- or 6-position with respect to the hydroxy group and is selected from a cyano group and a group Y.X —, wherein X is selected from the carbonyl group and the sulphonyl group and Y is selected from N-phenyl-N-(lower alkyl) amino, furanyl, thienyl, N-(lower alkyl) pyrrolyl, cyclopentadienyl and phenyl, where the phenyl may be joined at the 2-position thereof with respect to X to the benzene ring in formula (I) at a position therein adjacent X either by a bond or by a methylene, carbonyl, thio, sulphinyl, sulphonyl, oxy or monoalkylamino group, and wherein Y is optionally substituted by one or more groups selected from halogen, aryl which is selected from the group consisting of phenyl, halogenophenyl, xylyl, salicyl and tolyl, phenoxy lower alkoxy, cyano, trifluoromethyl and carboloweralkoxy and wherein lower alkyl and alkoxy herein have 1 to 4 carbon atoms provided that when Y is N-phenyl-N-(lower alkyl) amino only the phenyl moiety may be substituted; and wherein in the compound of formula (I) there is no other substituent in the benzene ring, which comprises reacting cyanide ions in dipolar aprotic solvent with a nitrobenzene of formula (II)



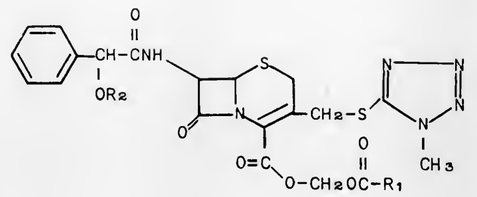
(II)

wherein Z is a substituent in the 4- or 6-position with respect to the nitro group and is defined as above.

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**3,933,808**
**CEPHALOSPORIN ESTERS**
**William J. Wheeler, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.**
**Filed May 20, 1974, Ser. No. 471,528**
**Int. Cl.² C07D** *501/20*
**U.S. Cl. 260—243 C** **7 Claims**

**1.** The compound of the formula

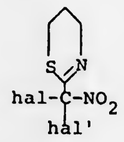


wherein:
$R_1$ is $C_1$–$C_4$ alkyl;
$R_2$ is hydrogen or $C_1$–$C_4$ alkanoyl.

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**3,933,809**
**2-(DIHALONITROMETHYL)-5,6-DIHYDRO-4H-1,3-THIAZINES**
**James E. Powell, Modesto, Calif., assignor to Shell Oil Company, Houston, Tex.**
**Filed Nov. 1, 1974, Ser. No. 520,191**
**Int. Cl.² C07D** *279/06*
**U.S. Cl. 260—243 R** **2 Claims**

**1.** A compound of the formula

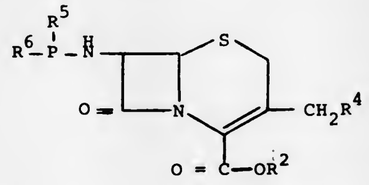


wherein hal represents chlorine, bromine or fluorine, and hal' represents chlorine or bromine.

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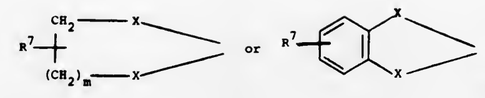
**3,933,810**
**INTERMEDIATES FOR PRODUCING SEMI-SYNTHETIC CEPHALOSPORINS**
**John H. Sellstedt, King of Prussia, Pa., assignor to American Home Products Corporation, New York, N.Y.**
**Division of Ser. No. 385,024, Aug. 2, 1973, which is a division of Ser. No. 197,142, Nov. 9, 1971, Pat. No. 3,859,298. This application Dec. 18, 1974, Ser. No. 534,004**
**Int. Cl.² C07D** *501/18*
**U.S. Cl. 260—243 C** **6 Claims**

**1.** A compound having the following formula which is useful as an intermediate for obtaining non-toxic cephalosporins having antibacterial activity against gram positive and/or gram negative microorganisms:



wherein: $R^2$ is a member selected from the class consisting of hydrogen, alkali metal and a tertiary amine; $R^4$ is a member selected from the class consisting of hydrogen, (lower)alkanoyloxy containing two to eight carbon atoms, and a quaternary ammonium radical; $R^5$ and $R^6$ are each selected from the class consisting of (lower)-alkyl, phenyl, naphthyl, phenyl(-lower)alkyl and naphthyl(lower)-alkyl; and $R^5$ and $R^6$ when joined together with the phosphorus atom form the ring:



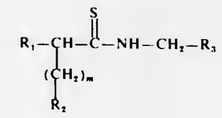


wherein: X is selected from the class consisting of oxygen, methylene and sulfur; *m* is an integer from 1 to 6; $R^7$ is selected from the class consisting of hydrogen and (lower)alkyl.

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**3,933,811**
**N-AMINOMETHYL-2-AMINO(AND 2-AMINO-METHYL)-2-(2-QUINOLYL)-THIOACETAMIDES**
**L. Martin Brenner, Upper Darby, and Bernard Loev, Broomall, both of Pa., assignors to SmithKline Corporation, Philadelphia, Pa.**
**Division of Ser. No. 266,024, June 26, 1972, Pat. No. 3,853,865. This application Sept. 18, 1974, Ser. No. 507,107**
**Int. Cl.² C07D** *295/10, 295/12*
**U.S. Cl. 260—246 B** **4 Claims**

**1.** A compound of the formula:



in which
*m* is 0 or 1;
$R_1$ is 2-quinolyl; and
$R_2$ and $R_3$ are di-lower alkylamino, N-lower Alkyl-N-phenylamino, piperidino, pyrrolidino or morpoholino
or a pharmaceutically acceptable acid addition salt thereof.

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**3,933,812**
**CERTAIN 1,4-BIS-(MORPHOLINO)-2-BUTENE-CONTAINING CONDENSATION PRODUCTS AND THEIR PREPARATION**
**Harold A. Green, Havertown, Pa.; John J. Merianos, Jersey City, and Alfonso N. Petrocci, Glen Rock, both of N.J., assignors to Millmaster Onyx Corporation, New York, N.Y.**
**Division of Ser. No. 511,759, Oct. 3, 1974, which is a continuation-in-part of Ser. No. 425,931, Dec. 18, 1973, Pat. No. 3,874,870. This application July 7, 1975, Ser. No. 593,736**
**Int. Cl.² C07D** *295/12*
**U.S. Cl. 260—246 B** **4 Claims**

**1.** A product formed by the condensation of a mixture of difunctional tertiary amines and a molar quantity of 1,4-dichloro-2-butene that is substantially equal to the molar sum of the mixture of the difunctional tertiary amines, said mixture of difunctional tertiary amines being selected from the group consisting of (a) 1,4-bis-(morpholino)-2-butene and N,N'-di-lower alkyl piperazine, (b) 1,4-bis-(dimethylamino)-2-butene and 1,4-bis-(N-morpholino)-2-butene, and (c) 1,4-bis-(dimethylamino)-2-butene, N,N'-di-lower alkyl piperazine and 1,4-bis-(N-morpholino)-2-butene.

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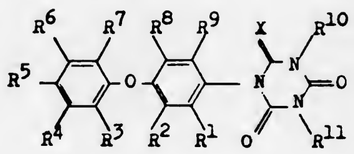
**3,933,813**
**PROCESS FOR THE PRODUCTION OF MERCAPTOETHYL CONTAINING COMPOUNDS**
**Helmut Beschke; Heribert Offermanns, both of Grossauheim, and Wilhelm-Alfons Schuler, Bad Homburg, all of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Germany**
**Filed Dec. 29, 1972, Ser. No. 319,848**
**Claims priority, application Germany, Jan. 14, 1972, 2201633**
**Int. Cl.² C07D** *331/02*; **C07C** *149/24, 153/09*
**U.S. Cl. 260—247.1 R** **17 Claims**

**1.** A process for the production of a compound containing a mercaptoethyl group comprising reacting an aqueous alkali metal thiocyanate solution containing 126 cc to 500 cc of water per mole of thiocyanate with ethylene oxide to form ethylene sulfide, said reaction being carried out in the presence of an inert water immiscible organic solvent for ethylene sulfide, said solvent having a specific gravity below 1 and being used in an amount of 0.5 to 5 parts by weight per part by weight of thiocyanate, separating the organic phase containing the ethylene sulfide from the aqueous phase and reacting the ethylene sulfide in the organic phase with an ethylene sulfide reactable polar organic compound selected from the group consisting of primary amines, secondary amines, alcohols, mercaptans, carboxylic acids, carboxylic acid anhydrides and carboxylic acid halides.

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**3,933,814**
**1-(4-PHENOXYPHENYL)-1,3,5-TRIAZINES**
**Axel Haberkorn, Wuppertal; Heinrich Kolling, Haan, Rheinland; Eckart Kranz, Wuppertal, and Jurgen Schramm, Dormagen, all of Germany, assignors to Bayer Aktiengesellschaft, Germany**
**Filed Sept. 17, 1973, Ser. No. 397,812**
**Claims priority, application Germany, Sept. 20, 1972, 2246109**
**Int. Cl.² C07D** *251/26*
**U.S. Cl. 260—248 NS** **22 Claims**

**1.** A 1-(4-phenoxy-phenyl)-1,3,5-triazine of the formula:



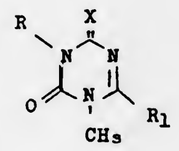
or a pharmaceutically acceptable nontoxic salt thereof wherein
$R^1$, $R^2$, $R^3$, $R^4$, $R^5$, $R^6$, $R^7$, $R^8$ and $R^9$ are the same or different and are each hydrogen, straight or branched chain lower alkyl, trifluoromethyl, halogen, nitro, cyano, amino, lower alkanoylamine, lower alkoxycarbonylamine, carboxyl, lower alkoxycarbonyl, aminocarbonyl, lower alkylcarbonyl, lower alkylsulphonyl, or aminosulphonyl;
$R^{10}$ is hydrogen, straight or branched chain lower alkyl, cyclohexyl, haloalkyl of one or two carbon atoms in the alkyl moiety and one halo moiety, lower alkoxy lower alkyl, lower alkenyl, lower alkinyl, lower alkoxycarbonyl, thiolower alkylcarbonyl, lower alkoxy, dilower alkylamino, piperidyl, morpholino, benzyl unsubstituted or substituted by one or two halogen moieties, or phenyl unsubstituted or substituted by halogen;
$R^{11}$ is hydrogen or lower alkyl; and
X is oxygen or sulfur.

### 3,933,815
### TRIFLUOROMETHYL TRIAZINES

Hermanus L. Ploeg, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

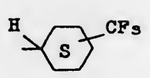
Filed June 24, 1974, Ser. No. 482,792
Int. Cl.² C07D *263/46*
U.S. Cl. 260—248 NS 6 Claims

I. A compound of the formule

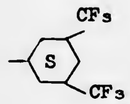


I

where
R is



or



;

$R_1$ is $-OCH_3$, $-SCH_3$, $-NHCH_3$, or $-N(CH_3)_2$; and X is oxygen or sulfur.

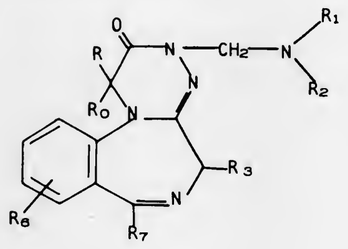
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### 3,933,816
### 3-(SUBSTITUTED AMINOMETHYL)-7-SUBSTITUTED-3,5-DIHYDRO-AS-TRIAZINO[4,3-A][1,5]BENZODIAZEPINES

Jacob Szmuszkovicz, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

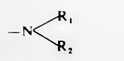
Filed Sept. 12, 1974, Ser. No. 505,507. The portion of the term of this patent subsequent to May 6, 1992, has been disclaimed.
Int. Cl.² C07D *251/72*
U.S. Cl. 260—248 AS 15 Claims

1. A compound of the formula II

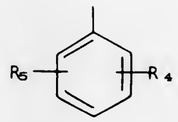


II

wherein R, $R_0$, and $R_3$ are hydrogen or alkyl of 1 to 3 carbon atoms, inclusive; wherein $R_1$ and $R_2$ are alkyl defined as above, or the group



together is pyrrolidino, piperidino, morpholino and N-methylpiperazino; wherein $R_7$ is 2-pyridyl or a phenyl radical of the formula



wherein $R_4$ is hydrogen, fluoro, or chloro; wherein $R_5$ is hydrogen or fluoro, with the proviso that $R_5$ is not fluoro, when $R_4$ is chloro; and wherein $R_6$ is hydrogen, chloro, fluoro, bromo, trifluoromethyl, or nitro.

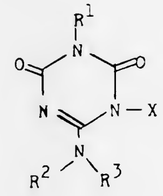
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### 3,933,817
### TRIAZINE-DIONES

Ian Trevor Kay, Wokingham, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Oct. 15, 1974, Ser. No. 515,090
Claims priority, application United Kingdom, Nov ·, 1973, 50827/73; Feb. 15, 1974, 6959/74
Int. Cl.² C07D *251/46*
U.S. Cl. 260—249.5 3 Claims

1. A triazine-dione compound of the formula:



wherein $R^1$ is an alkyl radical of 1 to 8 carbon atoms and either (a) $R^2$ is a carboxylic acyl radical of formula $R^4.CO$ — wherein $R^4$ is a carboxy group, an alkoxycarbonyl group, an alkoxy group of 1 to 6 carbon atoms, an alkyl group of 1 to 6 carbon atoms, or a phenyl radical and $R^3$ is a hydrogen atom or an alkyl radical of 1 to 6 carbon atoms, or (b) $R^2$ is a hydrogen atom or an alkyl radical of 1 to 6 carbon atoms and $R^3$ together with the group X, forms a divalent radical Z linking the exocyclic nitrogen atom to which $R^3$ is attached to the nitrogen atom in the triazine ring, so as to form a second 5- or 6-membered ring, the radical Z being selected from the group consisting of oxalyl (—CO.CO—), 1,2-dihydroxyethylene (—CH(OH)—CH(OH)—), ethylene ($—CH_2CH_2—$), trimethylene ($—CH_2CH_2CH_2—$), and radicals of the formula $—CH_2NR^5CH_2—$ wherein $R^5$ is phenyl, an alkyl group of 1 to 10 carbon atoms or hydrogen; and X is a hydrogen atom, a salt-forming cation or an alkyl radical of 1 to 6 carbon atoms, or together with $R^3$ forms the divalent group Z.

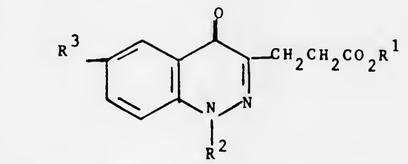


### 3,933,818
### HETEROCYCLIC COMPOUNDS

Geraint Jones, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

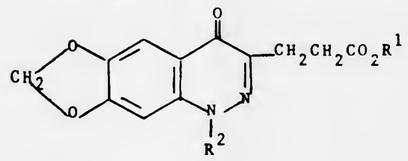
Filed Aug. 6, 1974, Ser. No. 495,217
Claims priority, application United Kingdom, Sept. 7, 1973, 42173/73
Int. Cl.² C07D *237/28*
U.S. Cl. 260—250 C 5 Claims

I. A cinnoline derivative of the formula:-



Ia

or



Ib

wherein $R^1$ stands for hydrogen or a $C_{1-6}$-alkyl, $R^2$ stands for hydrogen or a $C_{1-5}$-alkyl or $C_{3-5}$-alkenyl, and $R^3$ stands for hydrogen or a $C_{1-5}$-alkyl, $C_{1-5}$-alkoxy, phenyl or benzyloxy, or a non-toxic pharmaceutically-acceptable salt thereof.

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### 3,933,819
### FLUORINATED AROMATIC AND HETEROCYCLIC SULFIDES

Sameeh Said Toukan, Phoenixville, and Murray Hauptschein, Glenside, both of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 171,325, Aug. 21, 1971. This application Sept. 12, 1973, Ser. No. 396,649
Int. Cl.² C07D *239/00*
U.S. Cl. 260—251 6 Claims

1. A fluorinated alkyl sulfide compound represented by the structure $[R_f(CH_2)_nS]_zQ$ where $R_f$ is selected from the class consisting of perfluoroalkyl, perfluoroisoalkoxyalkyl and perfluoromonochloroalkyl radicals having from 5 to 13 carbon atoms, Q is selected from the group consisting of pyridyl, pyrimidyl, triazinyl, piperazinyl, piperidinyl and quinolinyl, *n* is an integer of 2 or 3, and *z* is 1 or 2.

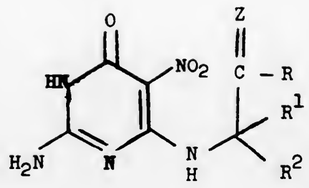
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### 3,933,820
### 5-NITROPYRIMIDINES

Hamish Christopher Swan Wood, Bearsden, Scotland, and Kyuji Ohta, Tokyo, Japan, assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

Filed July 30, 1973, Ser. No. 383,699
Claims priority, application United Kingdom, Aug. 1, 1972, 35816/72; Feb. 1, 1973, 5190/73
Int. Cl.² C07D *239/22*
U.S. Cl. 260—256.4 C 12 Claims

1. A compound of the formula



wherein R is phenoxyloweralkyl or phenoxy lower alkyl which is substituted by one or more lower alkoxy, amino, lower alkyl, hydroxyl or halogen and $R^1$ and $R^2$ are the same or different and each is lower alkyl or $R^1$ and $R^2$, having in total 4 to 6 carbon atoms, form a spirocycloalkyl group together with the carbon atom substituted by said $R^1$ and $R^2$ Z is an oxygen atom or a protecting group therefore, or a tautomeric form thereof, and wherein in the above lower alkyl and lower alkoxy have 1 to 4 carbon atoms.

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### 3,933,821
### DIRECT PRODUCTION OF 1,9-ANTHRAPYRIMIDINE-2-CARBOXYLIC ACID-1'-ANTHRAQUINONYLAMIDE IN PIGMENTARY FORM

Heinrich Hiller, Mannheim; Wolfgang Jentzsch, Frankenthal, and Alfred Schuhmacher, Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Dec. 19, 1973, Ser. No. 426,367
Claims priority, application Germany, Jan. 2, 1973, 2300019
Int. Cl.² C07D *239/84*
U.S. Cl. 260—256.4 Q 7 Claims

1. A process for the direct production of 1,9-anthrapyrimidine-2-carboxylic acid-1'-anthraquinonylamide in pigmentary form which comprises the step of condensing 1,9-anthrapyrimidinecarboxylic acid chloride with 1-aminoanthraquinone in N-methylpyrrolidone.

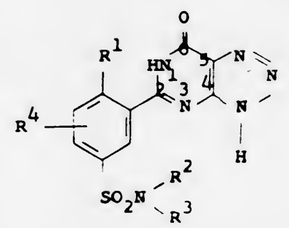
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### 3,933,822
### AZAPURINONES

Barbara Joyce Broughton, Croydon; Bryan John Large, Ilkley; Stuart Malcolm Marshall, Stanford-le-Hope; David Lord Pain, Upminster, and Kenneth Robert Harry Wooldridge, Brentwood, all of England, assignors to May & Baker Limited, Essex, England

Filed June 11, 1974, Ser. No. 478,387
Claims priority, application United Kingdom, June 12, 1973, 27920/73
Int. Cl.² C07D *239/00*
U.S. Cl. 260—256.5 R 13 Claims

1. An 8-azapurin-6-one derivative of the formula:



wherein $R^1$ represents hydroxy, or alkoxy or alkylthio each containing 1 to 10 carbon atoms, $R^2$ represents hydrogen,

alkyl of 1 to 10 carbon atoms, alkyl of 1 to 10 carbon atoms carrying one or more substituents selected from the group consisting of hydroxy and phenyl, cycloalkyl containing 3 to 8 carbon atoms, phenyl, or phenyl carrying one or more substituents selected from the group consisting of alkyl or alkoxy each containing 1 to 6 carbon atoms, halogen, nitro and trifluoromethyl, $R^3$ represents hydrogen, alkyl of 1 to 10 carbon atoms, or alkyl of 1 to 10 carbon atoms carrying one or more substituents selected from the group consisting of hydroxy and phenyl, or cycloalkyl containing 3 to 8 carbon atoms, and $R^4$ represents hydrogen, methyl or ethyl, or a pharmaceutically acceptable salt thereof.

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**3,933,823**

## ISOXAZOLOPYRIDINE KETONE DERIVATIVES

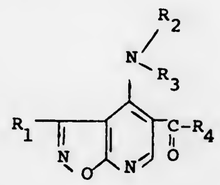
**Theodor Denzel, Nurnberg, and Hans Hoehn, Tegernheim, both of Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.**

**Division of Ser. No. 129,198, March 29, 1971, Pat. No. 3,736,327. This application Mar. 5, 1973, Ser. No. 337,776**

**Int. Cl.² C07D** *295/12*

**U.S. Cl. 260—268 BC** **5 Claims**

**1.** A compound of the formula



wherein $R_1$ is hydrogen or lower alkyl;



is $R_7$-piperidino or $R_7$-piperazinyl; $R_4$ is lower alkyl, cyclo-lower alkyl or phenyl; and $R_7$ is hydrogen, lower alkyl or hydroxy-lower alkyl, and physiologically acceptable acid addition salts thereof.

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**3,933,824**

## PIPERAZINOBUTYROPHENONE DERIVATIVES

**Hisao Yamamoto, Nishinomiya; Masaru Nakao; Kikuo Sasajima, both of Toyonaka; Isamu Maruyama, Minoo, and Shigenari Katayama, Takarazuka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan**

**Continuation-in-part of Ser. No. 119,426, Feb. 26, 1971, abandoned. This application Jan. 22, 1973, Ser. No. 325,372**

**Claims priority, application Japan, Mar. 6, 1970, 45-19458; May 14, 1970, 45-41495**

**Int. Cl.² C07D** *295/12*

**U.S. Cl. 260—268 PH** **2 Claims**

**1.** A compound having the name γ-(4-o-methoxyphenyl-piperazino)-2-acetylamino-4-fluorobutyrophenone or its non-toxic pharmaceutically acceptable acid addition salt.

**2.** A compound having the name γ-(4-o-methoxyphenyl-piperzino)-2-amino-4-fluorobutyrophenone or its non-toxic pharmaceutically acceptable acid addition salt.

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**3,933,825**

## AMINE SALTS OF ACYL LACTYLIC ACIDS

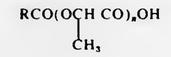
**Anthony J. Fiscella, Holmdel, N.J., and Leonard Mackles, New York, N.Y., assignors to Bristol-Myers Company, New York, N.Y.**

**Filed May 14, 1973, Ser. No. 360,238**

**Int. Cl.² C07D** *211/12*

**U.S. Cl. 260—268 R** **4 Claims**

**1.** Water soluble, organic solvent soluble piperidine or pyrralidine salts of acyl lactylic acids of formula



wherein RCO is the acyl radical of a saturated or unsaturated fatty acid having eight to 24 carbon atoms, and *n* is a number from 1 to 10.

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**3,933,826**

## PROTOBERBERINE DERIVATIVES

**Tetsuji Kametani, Sendai, Japan, assignor to Nippon Chemiphar Co., Ltd., Tokyo, Japan**

**Filed Nov. 20, 1973, Ser. No. 417,492**

**Claims priority, application Japan, Nov. 20, 1972, 47-115706**

**Int. Cl.² C07D** *215/16*

**U.S. Cl. 260—287 C** **1 Claim**

**1.** A protoberbine derivative which is 5,6,13,13a-tetrahydro-2,3,11-trimethoxy-10-acetoxy-8H-dibenzo [a,g]quinolizine.

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**3,933,827**

## 9-ACYLOXY-5,11-DIMETHYL-6H-PYRIDO[4,3-B]CARBAZOLES

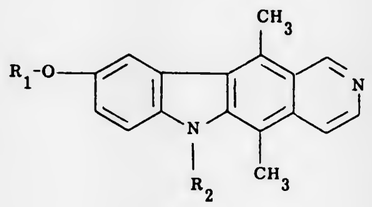
**Arnold Brossi, Riehen, Switzerland; Robert William Guthrie, Fairfield, and Richard Wightman Kierstead, North Caldwell, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.**

**Filed Oct. 29, 1974, Ser. No. 518,308**

**Int. Cl.² C07D** *471/04*

**U.S. Cl. 260—287 C** **13 Claims**

**1.** A compound of the formula



wherein $R_1$ is alkanoyl of 1 to 18 carbon atoms, alicyclic alkanoyl of 3 to 12 carbon atoms, benzoyl, 3,4,5-trimethoxybenzoyl, 4-chlorobenzoyl, or 4-methylbenzoyl and $R_2$ is hydrogen or lower alkyl of 1 to 7 carbon atoms, or a pharmaceutically acceptable acid addition salt thereof.



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**3,933,828**

## QUINONE DERIVATIVES AND COMPOSITIONS CONTAINING THE SAME

**Hideo Kano, Ibaraki; Masaru Ogata, Kobe, and Hisajiro Yukinaga, Kusatsu, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan**

**Division of Ser. No. 220,708, Jan. 25, 1972, Pat. No. 3,855,168. This application Nov. 29, 1973, Ser. No. 419,970**

**Claims priority, application Japan, Feb. 9, 1971, 46-5389; Feb. 9, 1971, 46-5390; Feb. 9, 1971, 46-5393; Mar. 31, 1971, 46-19410**

**Int. Cl.² C07D** *215/20*

**U.S. Cl. 260—288 R** **2 Claims**

**1.** The compound 6-hydroxy-7-benzimidoyl-5,8-dihydroquinoline-5,8-dione.

**2.** The compound 6-benzimidoyl-7-hydroxy-5,8-dihydroquinoline-5,8-dione.

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**3,933,829**

## 4-AMINOQUINOLINE DERIVATIVES

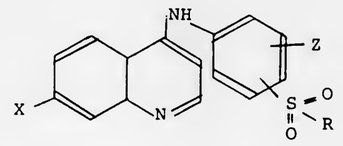
**John Leheup Archibald, Windsor; John Terence Arnott Boyle, and John Christopher Saunders, both of Maidenhead, all of England, assignors to John Wyeth & Brother Limited, Maidenhead, England**

**Filed Aug. 22, 1974, Ser. No. 499,746**

**Int. Cl.² C07D** *215/44*

**U.S. Cl. 260—288 R** **9 Claims**

**1.** A compound selected from those of the formula



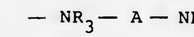
(I)

and their pharmaceutically acceptable acid addition salts, where

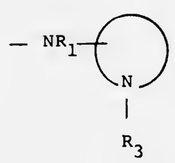
i. x is selected from chlorine and bromine;

ii. Z is a member of the group consisting of hydrogen, lower alkoxy, nitro and chlorine;

iii. R is a member of the group consisting of

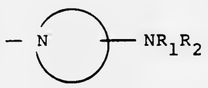


(II)



(IIIa)

and



(IIIb)

wherein

a. in formula II, A represents a chain of 1 to 5 methylene groups;

b. in formulae IIIa and IIIb the ring denotes a piperidine or pyrrolidine ring;

c. $R_1$ is a member of the group consisting of hydrogen and lower alkyl;

d. $R_2$ represents a member of the group consisting of lower alkyl and benzoyl; and

e. $R_3$ represents a member of the group consisting of hydrogen, cycloalkyl of 5 to 7 carbon atoms, lower alkyl and benzyl.

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**3,933,830**

## PROCESS FOR THE SYNTHESIS OF 4-(2-PYRIDYLAMIDO ETHYL) PIPERIDINES

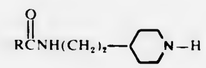
**Wayne E. Barth, East Lyme, and Donald E. Kuhla, Gales Ferry, both of Conn., assignors to Pfizer Inc., New York, N.Y.**

**Filed Sept. 10, 1974, Ser. No. 504,826**

**Int. Cl.² C07D** *211/02*

**U.S. Cl. 260—293.52** **14 Claims**

**1.** A process for preparing a 4-(2-pyridylamidoethyl)piperidine of the structure



wherein R is selected from the group consisting of 3-(2-methoxy) pyridyl, 3-(2-ethoxy)pyridyl and 2-(4-chloro)pyridyl comprising contacting the corresponding 4-(2-pyridylamidoethyl)pyridine in reaction-inert solvent with hydrogen at about 25 to 75 psig. and about 15° to 40°C. in the presence of noble metal catalyst and a substantially equimolar portion of acid until reaction is substantially complete.

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**3,933,831**

## PERFLUORINATED TERTIARY AMINES

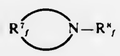
**Ralph J. De Pasquale, and Keith B. Baucom, both of Gainesville, Fla., assignors to PCR, Inc., Gainesville, Fla.**

**Filed Nov. 7, 1973, Ser. No. 413,440**

**Int. Cl.² C07D** *211/00*

**U.S. Cl. 260—293.51** **2 Claims**

**1.** Perfluorinated tertiary amine of the formula



wherein $R^7_f$

a. is $-C_{n3}F_{2n3+}$, wherein $n_3$ is 2–20, and $R^8_f$ is a perfluorinated aryl group, wherein any substituents on the aryl ring are perfluorinated alkyl substituents, wherein $R^8_f$ contains about 6–12 carbon atoms.

### 3,933,832
### N-(1-(ω-PHENYL-ALKYL)-PIPERIDYL-4)-N-(α-PYRIDYL)-CARBOXYLIC ACID AMIDES AND SALTS THEREOF

**Adolf Langbein; Herbert Merz, both of Ingelheim am Rhein; Gerhard Walther, and Klaus Stockhaus, both of Bingen (Rhine), all of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany**

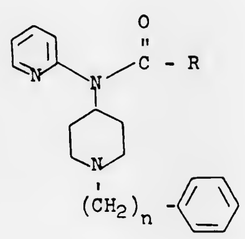
**Filed Aug. 14, 1974, Ser. No. 497,455**

**Claims priority, application Germany, Aug. 20, 1973, 2341965**

**Int. Cl.² C07D** *211/58*

**U.S. Cl. 260—293.69** **3 Claims**

1. A compound of the formula



wherein

R is alkyl of 1 to 3 carbon atoms, alkoxy of 1 to 2 carbon atoms or phenyl, and

*n* is an integer from 2 to 4, inclusive,

or a non-toxic, pharmacologically acceptable acid addition salt thereof.

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### 3,933,833
### PHENYL -THIOUREA, -CARBOTHIOAMIDE AND -CARBONOTHIOAMIDE DERIVATIVES

**Donald L. Trepanier, and Thomas C. Britton, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.**

**Filed May 30, 1974, Ser. No. 474,506**

**Int. Cl.² C07D** *211/42*

**U.S. Cl. 260—293.73** **9 Claims**

1. A compound selected from the group consisting of N-(2,4-dimethylphenyl)-3-hydroxy-1-pyrrolidinecarbonothioamide, N-(2,4-dimethylphenyl)-3-hydroxy-1-piperidinecarbonothioamide, N-(2,4-dimethylphenyl)-N′-(2-methoxyethyl)thiourea, N-(2,4-dimethylphenyl)-N′-(2-ethoxyethyl)thiourea, 2-(2-hydroxy-2-methylpropyl)-2-methyl-N-phenylhydrazinecarbothioamide, N-(2,4-dimethylphenyl)-1-(2-hydroxyethyl)hydrazinecarbothioamide, N-(2,2-dimethoxyethyl)-N′-(2,4-dimethylphenyl)thiourea and N-(2,4-dimethylphenyl)-N′-(2-hydroxy-2-phenylethyl)thiourea.

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### 3,933,834
### UNSYMMETRICAL ESTERS OF N-SUBSTITUTED 1,4-DIHYDROPYRIDINE 3,5-DICARBOXYLIC ACID

**Horst Meyer, Wuppertal; Friedrich Bossert, Wuppertal-Elberfeld; Wulf Vater, Opladen, and Kurt Stoepel, Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Germany**

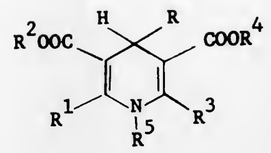
**Continuation-in-part of Ser. No. 336,605, Feb. 28, 1973, Pat. No. 3,883,540. This application Aug. 13, 1974, Ser. No. 496,972**

**Claims priority, application Germany, June 3, 1972, 2210672**

**Int. Cl.² C07D** *213/55*

**U.S. Cl. 260—294.8 D** **11 Claims**

1. A compound of the general formula:



in which

R is thienyl or furyl, unsubstituted or substituted by lower alkyl, lower alkoxy or halo;

$R^1$ and $R^3$, independent of the other, is hydrogen methyl, ethyl or propyl;

$R^2$ and $R^4$ are different from one another and are lower alkyl, lower alkenyl, lower alkynyl, lower alkoxy(lower alkyl) or cycloalkyl of 3 to 6 carbon atoms, unsubstituted or substituted by hydroxy;

$R^5$ is lower alkyl or benzyl, or a pharmaceutically acceptable acid addition salt thereof.

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### 3,933,835
### NEW ALIPHATICALLY SUBSTITUTED ARYL-CHALCOGENO-HYDROCARBON DERIVATIVES

**Georges Haas, Oberwil; Roland Jaques, Allschwil; Alberto Rossi, Oberwil, and Martin Ruegg, Fullinsdorf, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.**

**Filed Oct. 24, 1973, Ser. No. 409,192**

**Claims priority, application Switzerland, Nov. 1, 1972, 15923/72; Sept. 18, 1973, 13386/73**

**Int. Cl.² C07D** *213/55*

**U.S. Cl. 260—295.5 T** **11 Claims**

1. A compound of the formula

$R_1 — Ph — X — alk — R_2$

wherein $R_1$ is adamantyl, Ph is unsubstituted phenylene, or phenylene substituted by nitro, lower alkyl, lower alkoxy, halogen or trifluoromethyl, X is oxy, alk is alkylene with up to 10 carbon atoms which may be branched in the α-position with respect to $R_2$ or alkenylene with up to 7 carbon atoms the double bond of which extends from the carbon atoms in α- or β-position to $R_2$ and which may be branched in the β-position with respect to $R_2$ and $R_2$ is carboxyl, lower alkoxycarbonyl, pyridyloxycarbonyl, pyridylcarbonyloxy or pyridylmethoxycarbonyl, or therapeutically acceptable salts thereof.

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### 3,933,836
### PYRIDINYLIDENE GUANIDINES

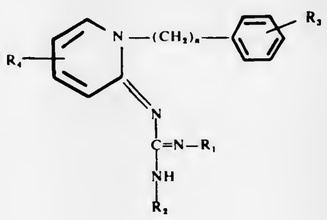
**Harry L. Yale, New Brunswick, and James Arthur Bristol, Mercerville, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.**

**Filed Sept. 26, 1974, Ser. No. 509,513**

**Int. Cl.² C07D** *213/06, 213/26*

**U.S. Cl. 260—296 R** **14 Claims**

1. A compound having the structure



or a pharmaceutically acceptable salt thereof, wherein $R_1$ and $R_2$ are the same or different and are alkyl, cycloalkyl, aryl or arylalkyl; $R_3$ is hydrogen, halogen, trifluoromethyl, alkoxy, aryloxy or dialkylamidosulfonyl; $R_4$ is hydrogen, halogen, alkyl, alkoxy or aryl; and *n* is 1 or 2; wherein alkyl and alkoxy refer to groups having 1 to 6 carbon atoms; cycloalkyl refers to groups having 3 to 6 carbon atoms; and aryl refers to phenyl or phenyl substituted with 1 or 2 alkyl, alkoxy, halogen or trifluoromethyl groups.



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### 3,933,837
### 3,4-METHYLENEDIOXYPHENOXY-ALKYL DIKETONES AND KETO-ESTERS

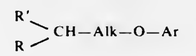
**Joseph C. Collins, East Greenbush, and Guy D. Diana, Stephentown, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.**

**Filed July 23, 1973, Ser. No. 381,406**

**Int. Cl.² C07D** *317/06*

**U.S. Cl. 260—340.5** **10 Claims**

1. A compound of the formula



wherein:

Alk is alkylene of 3 to 10 carbon atoms and having 3 to 7 carbon atoms intervening between the terminal bonds;

R is alkanoyl of 2 to 6 carbon atoms;

R′ is alkanoyl of 2 to 6 carbon atoms or carboalkoxy of 2 to 6 carbon atoms;

and Ar is phenyl substituted by 3,4-methylenedioxy.

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### 3,933,838
### 5-SUBSTITUTED 2-AMINO-4-ARYLTHIAZOLES

**Elso Manghisi, Monza (Milan); Aldo Salimbeni, and Giancarlo Fregnan, both of Milan, all of Italy, assignors to Instituto Luso Farmaco d'Italia S.r.l., Milan, Italy**

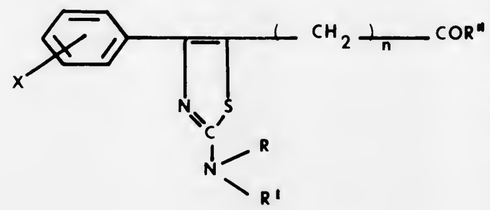
**Filed Feb. 23, 1973, Ser. No. 335,255**

**Claims priority, application Italy, Feb. 25, 1972, 21086/72; Feb. 9, 1973, 20231/73**

**Int. Cl.² C07D** *277/46, 277/42*

**U.S. Cl. 260—306.8 R** **13 Claims**

1. A 5-substituted 2-amino-4-arylthiazole of the formula



in which X represents hydrogen, halogen or methoxy; R is hydrogen or ethyl; R′ is phenyl unsubstituted or substituted with halogen, and when R is hydrogen, R′ can be —CO—R‴, where R‴ is methyl or phenylamino; R″ is hydroxy, ethoxy or 2-diethylaminoethylamino, and *n* is 1, 2 or 3.

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### 3,933,839
### THIADIAZOLYLIMIDAZOLINES

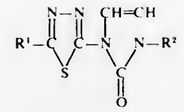
**John Krenzer, Oak Park, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.**

**Filed Mar. 11, 1974, Ser. No. 449,817**

**Int. Cl.² C07D** *285/12*

**U.S. Cl. 260—306.8 D** **6 Claims**

1. A compound of the formula



wherein $R^1$ is selected from the group consisting of lower alkyl, lower alkenyl, lower chloroalkyl, trifluoromethyl, lower alkoxy, lower alkylthio, lower alkylsulfonyl, lower alkylsulfinyl and cycloalkyl of from 3 to 7 carbon atoms optionally substituted with from 1 to 2 substituents selected from the group consisting of lower alkyl, lower alkoxy, chlorine, bromine and fluorine; and $R^2$ is lower alkyl.

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### 3,933,840
### AZOLE DERIVATIVES

**Johann Dahm, Eschollbrucken; Joachim Borck, Darmstadt; Albrecht Wild, Darmstadt, and Jan Willem Hovy, Darmstadt, all of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany**

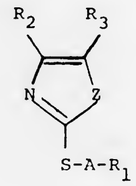
**Filed June 6, 1972, Ser. No. 260,307**

**Claims priority, application Germany, June 11, 1971, 2129012**

**Int. Cl.² C07D** *263/46*

**U.S. Cl. 260—307 R** **19 Claims**

1. An antiphlogistic compound of the formula



wherein $R_1$ is carboxyl, a physiologically acceptable $C_{1-12}$ alkyl ester thereof, $—CONH_2$ or —CN; $R_2$ and $R_3$ each are phenyl or phenyl mono- or di- substituted by at least one member selected from the group consisting of alkyl, alkoxy, alkylmercapto, monoalkylamino, dialkylamino or alkanoylamino wherein the alkyl, alkoxy and alkanoyl each are of up to 4 carbon atoms; F, Cl, Br, I, $CF_3$, OH, methylenedioxy, $NH_2$ and $NO_2$; A is $C_nH_{2n}$ wherein n is an integer from 1 to 10 inclusive; and Z is O or S, and the physiologically acceptable salts thereof.

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### 3,933,841
### 2-PHENOXY, -PHENYLTHIO-, AND -PHENYL-AMINO-BENZOXAZOLES HAVING AN ISOTHIOCYANO SUBSTITUENT

**Paul Brenneisen, Basel; Thomas Wenger, Riehen; Jean-Jacques Gallay, Magden, Aargau, and Wolfgang Schmid, Neuallschwil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.**

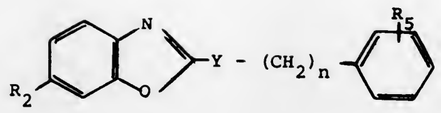
**Division of Ser. No. 255,334, May 22, 1972, Pat. No. 3,840,550. This application July 24, 1974, Ser. No. 491,584**

**Claims priority, application Switzerland, May 24, 1971, 7542/71**

**Int. Cl.² C07D** *263/58*

**U.S. Cl. 260—307 D** **3 Claims**

1. An isothiocyano-benzoxazole compound of the formula



wherein one of $R_2$ and $R_5$ is isothiocyano and the other is selected from the group consisting of hydrogen, isothiocyano, methyl, methoxy, chlorine and nitro; Y is oxygen, sulphur or

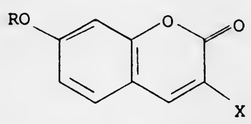


in which R is hydrogen or methyl; and *n* is 0 or 1.

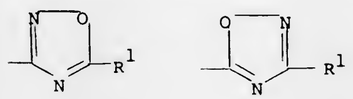
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**3,933,842**
**3-OXADIAZOLYL COUMARINS**
**Hugh Davidson, Ledston; Keith Trevor Johnson, Carleton; Brian Ernest Leggeter, Sandal, and Anthony John Moore, Leeds, all of England, assignors to Hickson & Welch Limited, England**
**Filed Sept. 5, 1973, Ser. No. 394,494**
**Claims priority, application United Kingdom, Sept. 6, 1972, 41416/72**
**Int. Cl.² C07D** *271/06, 271/10*
**U.S. Cl. 260—307 G** **8 Claims**

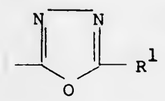
**1.** A compound of the formula:



wherein R is $C_1$-$C_6$ alkyl, $C_5$-$C_7$ cycloalkyl or phenyl alkyl in which the alkyl moiety is of 1 to 6 carbon atoms or any of these groups substituted by a non-chromophoric group; and X is a 1,2,4- or 1,3,4-oxadiazolyl group of the formula:



or



wherein $R^1$ is $C_1$-$C_6$ alkyl; $C_1$-$C_6$ alkyl substituted by a non-chromophoric group; phenyl or phenyl substituted by a non-chromophoric group; or when said compound possesses a basic nitrogen atom a salt thereof with an acid or a quaternary salt thereof wherein said acid or quaternary salt are non-chromophoric.

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**3,933,843**
**CERTAIN 1-SUBSTITUTED-4-OXO-3-SUBSTITUTED PHENYL-1,2,3-TRIAZOLIUM COMPOUNDS**
**Marwan J. Abu-El-Haj, Groton, and James W. McFarland, Lyme, both of Conn., assignors to Pfizer Inc., New York, N.Y.**
**Division of Ser. No. 395,713, Sept. 10, 1973, which is a continuation-in-part of Ser. No. 170,996, Aug. 11, 1971, abandoned. This application Dec. 13, 1974, Ser. No. 532,496**
**Int. Cl.² C07D** *249/06, 471/04, 513/04*
**U.S. Cl. 260—308 A** **2 Claims**

**1.** 4-oxo-1-t-butyl-3(2,4-dichlorophenyl)-1,2,3-triazole.

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**3,933,844**
**BENZOPYRANYLTETRAZOLES**
**Joachim Augstein, Linford; Hugh Cairns, Loughborough; Dennis Hunter, Loughborough, and John King, Loughborough, all of England, assignors to Fisons Limited, England**
**Filed Aug. 26, 1971, Ser. No. 175,394**
**Claims priority, application United Kingdom, Aug. 26, 1970, 41009/70; Jan. 13, 1971, 1642/71; July 1, 1971, 30827/71**
**Int. Cl.² C07D** *405/04, 405/14, 409/04, 409/14*
**U.S. Cl. 260—308 D** **5 Claims**

**1.** The compound 5-(4-Oxo-4H-1-thiabenzopyran-2-yl)tetrazole.

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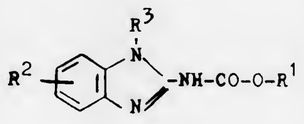
**3,933,845**
**BENZOPYRANYLTETRAZOLES**
**Joachim Augstein, Linford; Hugh Cairns, Loughborough; Dennis Hunter, Loughborough, and John King, Loughborough, all of England, assignors to Fisons Limited, England**
**Filed Aug. 26, 1971, Ser. No. 175,392**
**Claims priority, application United Kingdom, Aug. 26, 1970, 41009/70; Jan. 13, 1971, 1642/71; July 1, 1971, 30827/71**
**Int. Cl.² C07D** *405/04, 405/14, 413/14*
**U.S. Cl. 260—308 D** **3 Claims**

**1.** The compound 5-[5-(2-Hydroxypropoxy)-4-oxo-4H-1-benzopyran-2-yl]tetrazole.

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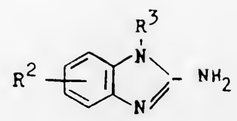
**3,933,846**
**PREPARATION OF BENZIMIDAZOL-2-YL-CARBAMIC ACID ALKYL ESTERS**
**Werner Daum, Krefeld-Bockum, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany**
**Filed May 24, 1973, Ser. No. 363,673**
**Claims priority, application Germany, June 8, 1972, 2227919**
**Int. Cl.² C07D** *235/32*
**U.S. Cl. 260—309.2** **10 Claims**

**1.** A process for the preparation of a benzimidazol-2-yl-carbamic acid alkyl ester of the formula



consisting essentially of reacting a 2-amino-benzimidazole of the formula





with a compound of the formula

$$R^4-O-R^1 \quad \text{(III)}$$

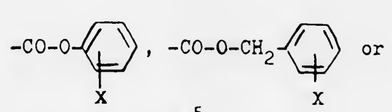
in which

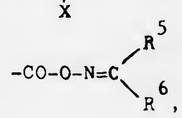
$R^1$ is alkyl of 1 to 12 carbom atoms optionally substituted by lower alkoxy, lower alkylmercapto, lower alkenyl, lower alkynyl, nitrile, carbamide or halogen,

$R^2$ is hydrogen, halogen, lower alkyl or lower alkoxy,

$R^3$ is hydrogen or alkyl of 1 to 8 carbon atoms,

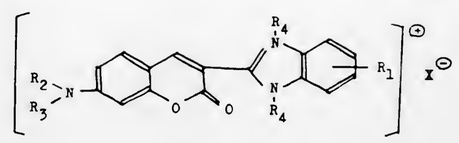
$R^4$ is



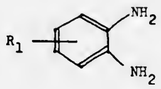


$R^5$ and $R^6$ each independently is alkyl or aryl each with up to 10 carbon atoms, and

X is halogen, nitro, or alkyl or alkoxy each of 1 to 3 carbon atoms.



wherein $R_1$, $R_2$ and $R_3$ are as defined above, $R_4$ is a $C_1$–$C_2$ alkyl or benzyl group and $X^-$ is an anion, which comprises reacting a diamine of the formula (II),



(II)

wherein $R_1$ is as defined above, with a compound of the formula (III),

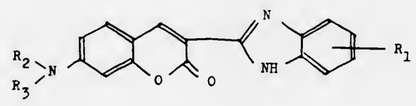
$$X-CH_2-Y \quad \text{(III)}$$

wherein X and Y may be the same or different, and are each a carboxyl, carbamoyl, alkoxycarbonyl or cyano group, in a 10 to 70% sulfuric acid to prepare a benzimidazolyl acetic acid of the formula (IV),

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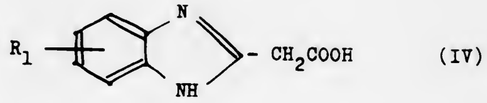
**3,933,847**
**METHOD RELATING TO MANUFACTURE OF COUMARIN DERIVATIVES**
**Masaaki Ohkawa, Takatsuki, and Koichi Ishii, Kobe, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan**
**Filed Dec. 19, 1973, Ser. No. 426,346**
**Claims priority, application Japan, Dec. 25, 1972, 48-2181**
**Int. Cl.² C07D** *405/04*
**U.S. Cl. 260—309.2** **10 Claims**

**1.** A method for preparing a coumarin dye of the formula (Ia),

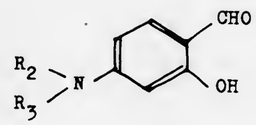


(Ia)

wherein $R_1$ is a hydrogen or chlorine atom, or a $C_1$ – $C_2$ alkyl group, $R_2$ and $R_3$ are each a hydrogen atom or a $C_1$ – $C_4$ alkyl group, or a quarternary salt of the dye (Ia) of the formula (Ib),



wherein $R_1$ is as defined above, and then reacting the compound thus obtained with a hydroxybenzaldehyde of the formula (V),



(V)

wherein $R_2$ and $R_3$ are as defined above, to obtain the dye of the formula (Ia), or reacting the resulting dye of the formula (Ia) with an alkylating agent to obtain the dye of the formula (Ib).

### 3,933,848
### PROCESS FOR THE PREPARATION OF PHENYLAMINES AND CARBAZOLES

**Allen I. Feinstein, Wheaton, and Ellis K. Fields, River Forest, both of Ill., assignors to Standard Oil Company, Chicago, Ill.**

**Filed July 28, 1971, Ser. No. 167,021**
**Int. Cl.² C07D** *209/86*
**U.S. Cl. 260—315** **5 Claims**

**1.** A thermal process for the preparation of diphenylamines, phenyl carbazoles, and biphenyls as major products which comprises heating above about 400°C. a compound selected from the group consisting of nitrosobenzene and nitrosobenzene substituted with a material selected from the group consisting of halogen, cyano, aryl, and alkyl groups up to $C_8$ for a time sufficient to produce diphenylamines, phenyl carbazoles, and biphenyls.

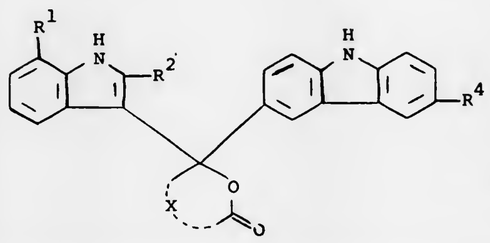
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### 3,933,849
### 3,3-DISUBSTITUTED PHTHALIDES AND NAPHTHALIDES

**Paul S. Huyffer, West Boxford, Mass., assignor to Polaroid Corporation, Cambridge, Mass.**

**Continuation-in-part of Ser. No. 202,555, Nov. 26, 1971, Pat. No. 3,816,120. This application Apr. 26, 1974, Ser. No. 464,995**
**Int. Cl.² C07D** *209/86*
**U.S. Cl. 260—315** **19 Claims**

**1.** An indicator dye of the formula:



wherein one of $R^1$ and $R^2$ is hydrogen and the other is a hydrogen-bonding group forming a 5-, 6- or 7-membered intramolecular hydrogen-bonded ring with the adjacent —NH— and selected from carboxy, hydroxy, o-hydroxyphenyl, bis trifluoromethyl carbinol, sulfonamido and sulfamoyl; $R^4$ is hydrogen or alkyl containing 1 to 20 carbon atoms; and X represents the carbon atoms necessary to complete a ring-closing moiety selected from phthalide and naphthalide.

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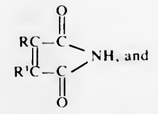
### 3,933,850
### METHOD FOR MAKING N,N'-METHYLENE BISMALEIMIDES AND PRODUCTS MADE THEREFROM

**John R. Ladd, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.**

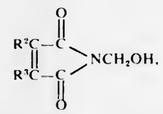
**Division of Ser. No. 246,287, April 21, 1972, Pat. No. 3,833,609. This application May 28, 1974, Ser. No. 473,429**
**Int. Cl.² C07D** *207/44*
**U.S. Cl. 260—326.26** **3 Claims**

**1.** A method which comprises, (1) saturating with boron trifluoride at temperature of from 0°C to 60°C a maleimide mixture selected from

a. a mixture of formaldehyde, an organic solvent and about two moles, per mole of formaldehyde of a maleimide of the formula,



b. A mixture of substantially equal moles of said maleimide of (a) and an N-methanolmaleimide of the formula,



in the presence of an organic solvent, and

2. recovering an N,N'-methylene bismaleimide from the mixture of (1), where R, $R^1$, $R^2$ and $R^3$ are the same or different monovalent radicals selected from the class consisting of hydrogen, methyl, ethyl, propyl, butyl, pentyl, hexyl, cyclobutyl, cyclopentyl, cyclohexyl, cycloheptyl, and halogen.

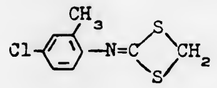
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### 3,933,851
### PREPARATION OF AROMATIC 2-IMINO-1,3-DITHIETANES

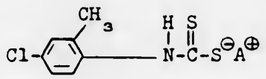
**David William Reger, and Matthew Michael Nigro, both of Trenton, N.J., assignors to American Cyanamid Company, Stamford, Conn.**

**Filed Feb. 6, 1974, Ser. No. 440,112**
**Int. Cl.² C07D** *339/00*
**U.S. Cl. 260—327 M** **13 Claims**

**1.** A method for preparing a compound of the formula:



which comprises the steps of: reacting at a temperature ranging from 0°C. to 35°C. 1 mole of (a) a compound of the formula:



wherein $A^+$ represents a member selected from the group consisting of a tertiary alkyl ($C_1$–$C_4$)-substituted ammonium ion and (b) with from 1.0 to 3.0 molar equivalents of a methylene halide, in the presence of an inorganic or organic base and a sulfide ion having the formula: $Ha'SM_{(2-a')}$, wherein a' represents an integer selected from the group consisting of 0, 1 and 2; M represents a member selected from the group consisting of alkali metal, ammonium and primary, secondary, and a tertiary alkyl ($C_1$–$C_4$)-substituted quaternary ammonium ion; in a ($C_3$–$C_6$) ketonic solvent selected from the group consisting of acetone, methyl ethyl ketone, methyl propyl ketone, methyl isopropyl ketone, methyl n-butyl ketone, methyl isobutyl ketone, cyclohexanone and mixtures of water and said ($C_3$–$C_6$) ketonic solvent, and recovering the desired product.



### 3,933,852
### PROCESS FOR MAKING N-METHYL NITROPHTHALIMIDES

**Newell C. Cook, Schenectady, and Gary C. Davis, Albany, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.**

**Filed May 8, 1974, Ser. No. 468,012**
**Int. Cl.² C07D** *209/34*
**U.S. Cl. 260—326 N** **7 Claims**

**1.** In the process for isolating a mixture of N-methyl-3-nitrophthalimide and N-methyl-4-nitrophthalimide from a solution of the latter in concentrated sulfuric acid, the improvement which comprises extracting the aforesaid two nitrophthalimides with methylene chloride as the extractant.

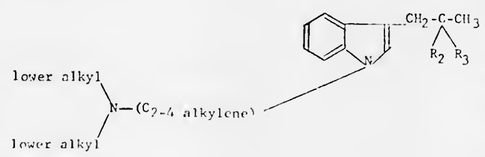
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### 3,933,853
### INDOLE DERIVATIVES

**Henri Demarne, Montpellier, France, assignor to Clin Midy, France**

**Filed Feb. 16, 1973, Ser. No. 333,344**
**Claims priority, application France, Feb. 16, 1972, 72.05197**
**Int. Cl.² C07D** *209/14*
**U.S. Cl. 260—326.15** **4 Claims**

**1.** A 1, 3-disubstituted indole of the formula



wherein $R_2$ is H and $R_3$ is OH.

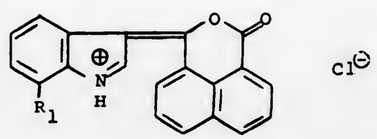
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### 3,933,854
### 3-(INDOL-3-YL)DEHYDRONAPHTHALIDE HYDROCHLORIDES

**Yunn H. Chiang, Woburn, Mass., assignor to Polaroid Corporation, Cambridge, Mass.**

**Filed Dec. 3, 1973, Ser. No. 420,931**
**Int. Cl.² C07D** *209/18, 209/20*
**U.S. Cl. 260—326.13 R** **4 Claims**

**1.** A compound of the formula:



wherein $R_1$ is hydrogen or a group selected from o-hydroxyphenyl, bis-trifluoromethylcarbinol, nitro, cyano and —COX wherein X is —OR' or —NR''R''' and each of said R', R'' and R''' is hydrogen or a hydrocarbon group slected from alkyl containing 1 to 20 carbon atoms, phenyl, naphthyl, phenyl-substituted alkyl containing up to 20 carbon atoms and alkyl-substituted phenyl containing up to 20 carbon atoms.

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### 3,933,855
### PRODUCTION OF ORGANIC SULPHOXIDES

**Bernard Tramier, Pau, France, assignor to Societe Nationale des Petroles d'Aquitaine, Paris, France**

**Filed June 29, 1973, Ser. No. 375,163**
**Claims priority, application France, June 30, 1972, 72.23668**
**Int. Cl.² C07D** *333/48*
**U.S. Cl. 260—329 R** **9 Claims**

**1.** In a process for producing an organic sulphoxide by reacting the corresponding sulphide with an organic sulphoxide having a lower molecular weight than the desired sulphoxide in the presence of a catalyst at elevated temperature equal to or below the boiling point of the reaction mixture, the improvement which comprises employing 1–3 percent by volume based on the volume of said lower molecular weight sulphoxide of an aqueous acidic solution of a strong electrolyte as the catalyst wherein said aqueous solution contains 0.1–10 mols per liter of a strong acidic electrolyte selected from the group consisting of perchloric acid, hydrochloric acid, hydrofluoric acid, hydriodic acid, nitric acid, and the ammonium salts thereof.

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### 3,933,856
### METHOD FOR PREPARING TETRAHYDROTHIOPHEN

**Vazikh Kashapovich Khairullin, ulitsa Sibirsky trakt, 22, kv. 24, and Margarita Alexandrovna Vasyanina, ulitsa 50 let Oktyabrya, 18, kv. 7, both of Kazan, U.S.S.R.**

**Filed Nov. 8, 1973, Ser. No. 413,950**
**Int. Cl.² C07D** *333/10*
**U.S. Cl. 260—332.8** **4 Claims**

**1.** A method for preparing tetrahydrothiophen comprising reacting tetrahydrofuran with a sulphidation agent selected from the group consisting of elementary sulphur and sulphides of phosphorus taken in a stoichiometric ratio of the said substances, at a temperature of from 175° to 215°C, and separating said tetrahydrothiophen from the reaction mixture by distillation at 116°–122°C at atmospheric pressure.

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### 3,933,857
### POLYMERIZABLE CYCLOACETAL RESINOUS COMPOSITION

**Toshiaki Hanyuda, Yokohama, and Eiichiro Takiyama, Tokyo, both of Japan, assignors to Showa Highpolymer Co., Ltd., Japan**

**Filed Oct. 18, 1973, Ser. No. 407,626**
**Int. Cl.² C07D** *317/04*; **C08F** *24/00*
**U.S. Cl. 260—340.7** **2 Claims**

**1.** A polymerizable cycloacetal composition, prepared by reacting 1 equivalent of (I) diallylidenepentaerythritol with 0.8–2.0 equivalents of (II) polyhydric alcohol-unsaturated monocarboxylic acid ester having one alcoholic hydroxyl group and at least one substituent selected from methacrylyl, acrylyl and crotonyl groups, with or without a solvent, in the

presence of a free radical polymerization inhibitor and an addition reaction catalyst.

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**3,933,858**

## PHENYL CARBAMATES

**Erwin Nikles, Liestal; Volker Dittrich, and Ladislaus Pinter, both of Basel, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland**

**Division of Ser. No. 402,650, Oct. 1, 1973, Pat. No. 3,856,816, which is a division of Ser. No. 197,474, Nov. 10, 1971, Pat. No. 3,781,301, which is a continuation of Ser. No. 2,445, Jan. 12, 1970, abandoned, which is a continuation-in-part of Ser. No. 782,335, May 13, 1968, abandoned, which is a division of Ser. No. 493,256, Oct. 5, 1965, abandoned. This application Oct. 10, 1974, Ser. No. 513,607**

**Claims priority, application Switzerland, Oct. 8, 1964, 13113/64**

**Int. Cl.² C07D** *319/06*

**U.S. Cl. 260—340.7** **1 Claim**

1. ortho-(1,3-Dioxan-2-yl)-phenyl-N-methylcarbamate.

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**3,933,859**

## DIHYDROCOUMARIN DERIVATIVES

**Ado Kaiser, Neu-Frenkendorf; Wolfgang Koch, Riehen; Marcel Scheer, Basel, and Uwe Wolcke, Bottmingen, all of Switzerland, assignors to Hoffmann-La Roche, Inc., Nutley, N.J.**

**Division of Ser. No. 191,358, Oct. 21, 1971, abandoned. This application June 12, 1974, Ser. No. 478,654**

**Claims priority, application Switzerland, Oct. 30, 1970, 16041/70**

**Int. Cl.² C07D** *311/20*

**U.S. Cl. 260—343.2 R** **4 Claims**

1. L-3-formamido-6,7-dihydroxyhydrocoumarin.

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**3,933,860**

## 3-(N-ACYL-N-ARYLAMINO) LACTONES

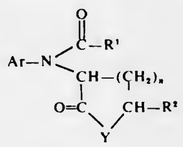
**David Cheong King Chan, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.**

**Filed Feb. 10, 1975, Ser. No. 548,660**

**Int. Cl.² C07D** *309/30*

**U.S. Cl. 260—343.5** **8 Claims**

1. A compound of the formula



wherein Ar is phenyl or phenyl substituted with 1 to 3 of the same or different substituents selected from fluoro, chloro, bromo, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms or nitro; $R^1$ is alkyl of 1 to 6 carbon atoms, haloalkyl of 1 to 3 carbon atoms and 1 to 5 of the same or different halogen selected from fluoro, chloro or bromo, phenyl, or phenyl substituted with 1 to 3 of the same or different substituents selected from fluoro, chloro, bromo, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms or nitro; $R^2$ is hydrogen or alkyl of 1 to 6 carbon atoms; Y is 0 and n is 1 or 2.

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**3,933,861**

## PRODUCTION OF TETRAHYDROFURANS

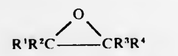
**Victor P. Kurkov, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.**

**Filed Jan. 7, 1974, Ser. No. 431,258**

**Int. Cl.² C07D** *307/08*

**U.S. Cl. 260—346.1** **11 Claims**

1. A process for producing tetrahydrofurans which comprises codimerizing in the gaseous or liquid phase an alkene oxide of 2 to 6 carbon atoms of the formula



with an alkene of 2 to 6 carbon atoms of the formula $R^5R^6C{=}CR^7R^8$ wherein $R^1$, $R^2$, $R^3$, $R_4$, $R^5$, $R^6$, $R^7$, and $R^8$ represent hydrogen or an alkyl group of 1 to 4 carbon atoms, in the presence of catalytic amounts of a Group VIII noble transition metal compound of the formula $M(L)_n(X)_m$, wherein M represents Ru, Rh, Pd, Os, Ir or Pt; $n$ is 0 to 5 inclusive; $m$ is 0 to 3 inclusive; $n + m$ is 3 to 6 inclusive; L represents non-ionic organic ligands complexed to M selected from the group consisting of water, carbon monoxide, olefin and hydrocarbyl phosphine, arsine, stibine, and bismuthine; and X represents inorganic ions bonded to M selected from the group consisting of halide, hydride and nitrite, and an iodide promoter selected from the group consisting of iodine, hydrogen iodide, alkyl iodide and iodohydrin, at a temperature from 100°C to 250°C.

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**3,933,862**

## AROMATIC DITHIO DIANHYDRIDES

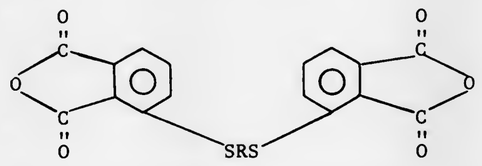
**Frank J. Williams, III, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.**

**Filed Aug. 23, 1974, Ser. No. 500,136**

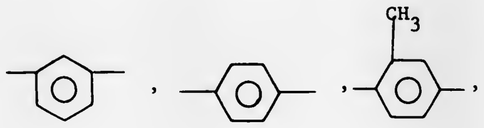
**Int. Cl.² C07D** *307/89*

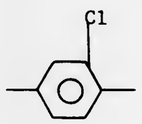
**U.S. Cl. 260—346.3** **5 Claims**

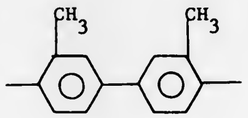
1. A dithioanhydride having the formula



where R is a radical selected from the class consisting of







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**3,933,863**

## 3-FURYL CHALCOGEN ALKYL SULFIDES

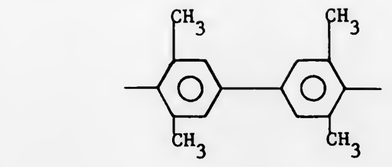
**William J. Evers, Middletown; Igor A. Pelse, Long Branch, and Manfred Hugo Vock, Locust, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.**

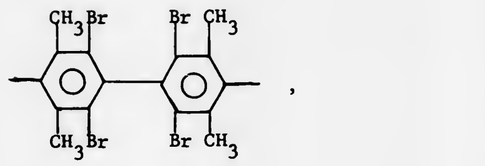
**Filed Jan. 21, 1975, Ser. No. 542,830**

**Int. Cl.² C07D** *307/64*

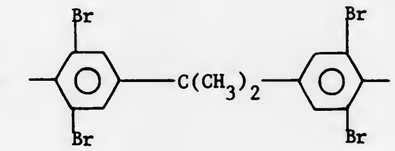
**U.S. Cl. 260—347.2** **7 Claims**

1. A 3-furyl beta-chalcogenalkyl sulfide having the structure:

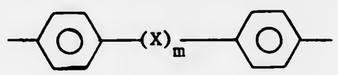




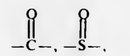
and



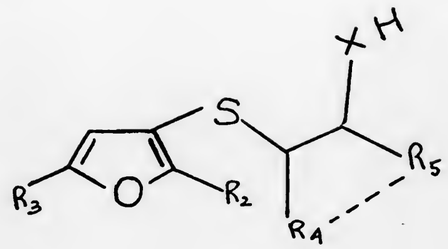
and divalent organic radicals of the general formula



where X is a member selected from the class consisting of divalent radicals of the formulas, $-C_yH_{2y}-$,



—O—, and —S—, where $m$ is 0 or 1, $y$ is a whole number from 1 to 5.



wherein X is a chalcogen selected from the group consisting of oxygen and sulfur; $R_2$ and $R_3$ are each selected from the group consisting of methyl and hydrogen, at least one of $R_2$ or $R_3$ being methyl and hydrogen, at least one of $R_2$ or $R_3$ being methyl; and $R_4$ and $R_5$, taken separately, are each methyl.

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**3,933,864**

## PROCESS FOR PREPARING GLYCIDONITRILES

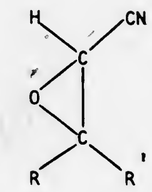
**David R. White, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.**

**Filed Dec. 10, 1974, Ser. No. 531,431**

**Int. Cl.² C07D** *303/46*

**U.S. Cl. 260—348 R** **8 Claims**

1. A process for preparing a glycidonitrile of the formula



wherein R is aromatic and

R′ is an aliphatic group,

which comprises reacting a ketone or aldehyde of the formula



where R and R′ are as defined above with chloroacetonitrile in the presence of a solid form alkali metal or alkaline earth metal hydroxide in a solvent mixture containing at least about 3 percent by liquid volume of a dipolar aprotic, organic solvent under substantially anhydrous conditions.

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**3,933,865**

## ARTHROPOD MATURATION INHIBITORS

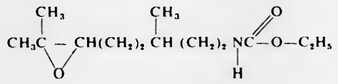
**Meyer Schwarz, Kensington; Philip E. Sonnet, Bowie, and Nobel Wakabayashi, New Carrollton, all of Md., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.**

**Division of Ser. No. 348,843, April 6, 1973, which is a division of Ser. No. 104,781, Jan. 7, 1971, Pat. No. 3,824,319. This application Jan. 15, 1975, Ser. No. 541,317**

**Int. Cl.² C07D** *303/46*

**U.S. Cl. 260—348 A** **1 Claim**

**1.** A Compound of the formula



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**3,933,866**

## PROCESS FOR THE MANUFACTURE OF AMINO-ANTHRAQUINONES

**Zdenek Seha, Basel, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland**

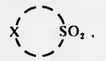
**Filed Sept. 26, 1973, Ser. No. 400,759**

**Claims priority, application Switzerland, Oct. 5, 1972, 14562/72**

**Int. Cl.² C07C** *87/64*

**U.S. Cl. 260—382** **5 Claims**

**1.** A process for the manufacture of 1-aminoanthraquinone which may be substituted with halogen or lower alkyl from corresponding nitroanthraquinone, wherein the nitroanthraquinone is reacted with ammonia in dipolar aprotic solvents that are inert towards ammonia and nitroanthraquinones and having a dielectric constant of at least 30 and of the formula

$R_1 - SO_2 - R_2$ or 

wherein $R_1$ and $R_2$ each are straight or branched alkyl with 1 to 4 carbon atoms or phenyl or phenyl substituted with lower alkyl, halogen or nitro, X is a straight or branched hydrocarbon chain with 4 to 10 carbon atoms which may be substituted with halogen or acetoxy, in a temperature range between 20°C and 250°C.

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**3,933,867**

## PROCESS FOR THE PREPARATION OF 1-AMINOANTHRAQUINONE

**Karl-Werner Thiem, Cologne; Wolfgang Auge, Odenthal, and Rutger Neeff, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen Bayerwerk, Germany**

**Filed Mar. 22, 1974, Ser. No. 453,971**

**Claims priority, application Germany, Mar. 22, 1973, 2314218**

**Int. Cl.² C07C** *97/24*

**U.S. Cl. 260—382** **6 Claims**

**1.** Process for the preparation of 1-aminoanthraquinone comprising reacting at 100°–220°C and superatmospheric pressure 1-nitroanthraquinone with ammonia in a molar ratio of ammonia: 1-nitroanthraquinone of at least 2:1 in at least one organic solvent selected from the group consisting of aliphatic ether, cycloaliphatic ether, aromatic ether, aliphatic hydrocarbon, cycloaliphatic hydrocarbon, aromatic hydrocarbon and alkyl-substituted aromatic hydrocarbon.

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**3,933,868**

## PROCESS FOR THE PREPARATION OF 1,5- AND 1,8-DIAMINO-ANTHRAQUINONE

**Karl-Werner Thiem, Cologne; Wolfgang Auge, Odenthal; Rutger Neeff, Leverkusen, and Heinz Scheiter, Leverkusen-Steinbuechel, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Germany**

**Filed Mar. 22, 1974, Ser. No. 453,810**

**Claims priority, application Germany, June 14, 1973, 2330230**

**Int. Cl.² C07C** *97/24*

**U.S. Cl. 260—382** **4 Claims**

**1.** Process for the preparation of 1,5- and/or 1,8-diaminoanthraquinone which comprises reacting at 100°–220°C and a pressure of at least 20 atmospheres 1,5- and/or 1,8-dinitroanthraquinone with at least 4 mols of ammonia per mol of dinitroanthraquinone in an organic solvent selected from the group consisting of ethers, aliphatic hydrocarbons, cycloaliphatic hydrocarbons, aromatic hydrocarbons, alkyl-substituted aromatic hydrocarbons, and mixtures thereof.

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**3,933,869**

## PREPARATION OF ORGANIC RADIOHALOGEN COMPOUNDS

**Paul-Eberhard Schulze, Chemiker, Germany, assignor to Schering Aktiengesellschaft, Berlin, Germany**

**Filed Dec. 5, 1973, Ser. No. 421,818**

**Claims priority, application Germany, Dec. 8, 1972, 2260933**

**Int. Cl. C07c** *169/20*

**U.S. Cl. 260—397.4** **31 Claims**

**1.** A process for the production of organic radiohalogen compounds from radioinactive the corresponding organic halogen compounds by halogen exchange, which comprises heating in the liquid phase a radio-inactive organic halogen compound under non-aqueous conditions with an alkali metal halogenide or alkaline earth halogenide wherein the halogenide is fluorine-18, chlorine-38, bromine-82 or iodine-123, -125, -131 or -132.

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**3,933,870**

## SYNTHESIS OF A-RING AROMATIC STEROIDS

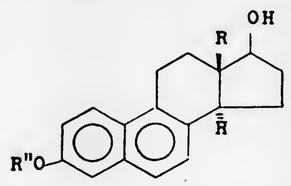
**Noal Cohen, Montclair, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.**

**Division of Ser. No. 375,558, July 2, 1973, which is a continuation-in-part of Ser. No. 295,032, Oct. 4, 1972, abandoned. This application Sept. 30, 1974, Ser. No. 510,262**

**Int. Cl.² C07J** *9/00, 1/00*

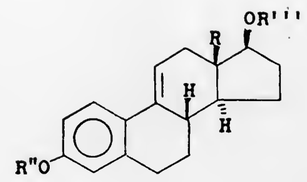
**U.S. Cl. 260—397.5** **4 Claims**

**1.** A process for the preparation of a compound of the formula



wherein R is lower alkyl and R″ is lower alkyl, tertiary lower alkyl, benzyl, diphenylmethyl, or trityl, which comprises contacting a compound of the formula





wherein R and R″ are as above and R‴is tertiary lower alkyl,
with a strong acid selected from the group consisting of mineral acids, organic sulfonic acids and trifluoroacetic acid and, where trifluoroacetic acid is employed, hydrolyzing the 17-trifluoroacetate of reaction product with aqueous base.

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**3,933,871**

## FABRIC SOFTENER COMPOUND AND PROCESSES FOR PREPARING AND USING THE SAME

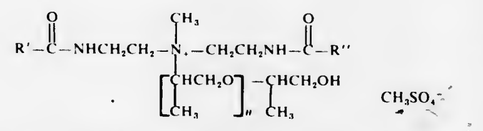
**Leonard J. Armstrong, Janesville, Wis., assignor to Armstrong Chemical Company, Inc., Janesville, Wis.**

**Filed Nov. 12, 1973, Ser. No. 415,143**

**Int. Cl.² C07C** *103/38*

**U.S. Cl. 260—401** **5 Claims**

**1.** A compound having the following formula:



wherein R′ and R″ are alkyl or alkylene radicals having from 10 to 20 carbons in their carbon chains and $n + 0$ to 4.

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**3,933,872**

## METHOD FOR PREPARING FATTY HYDROXAMATES

**James A. Hartlage, Worthington, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.**

**Continuation-in-part of Ser. No. 10,589, Feb. 11, 1970, abandoned, which is a continuation-in-part of Ser. No. 569,850, Aug. 3, 1966, abandoned. This application Apr. 20, 1973, Ser. No. 353,166**

**Int. Cl.² C07C** *83/08, 91/26*

**U.S. Cl. 260—404** **7 Claims**

**1.** A process for the preparation of an alkali metal salt of a fatty hydroxamic acid which comprises the steps:

1. reacting an anhydrous slurry of hydroxylamine sulfate and a lower alkanol solution of a lower alkyl ester of a $C_6$–$C_{26}$ fatty acid with dimethylamine to provide an alcoholic solution of the corresponding fatty hydroxamic acid;
2. neutralizing the fatty hydroxamic acid of step (1) with a lower alkanol solution of an alkali metal hydroxide or lower alkoxide; and
3. recovering the resultant fatty hydroxamate.

**5.** A process for the preparation of ammonium fatty hydroxamates which comprises the steps:

1. reacting an agitated anhydrous slurry of hydroxylamine sulfate and a lower alkanol solution of a lower alkyl ester of a $C_6$–$C_{26}$ fatty acid with dimethylamine to provide an alcoholic solution of the ammonium salt of the corresponding fatty hydroxamic acid; and
2. recovering the resultant ammonium fatty hydroxamate.

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**3,933,873**

## PREPARATION OF OMEGA-AMINOALKANOIC ACIDS

**Richard F. Love, Fishkill; Mahmoud S. Kablaoui, Wappinger Falls, and Roger G. Duranleau, Ardonia, all of N.Y., assignors to Texaco Inc., New York, N.Y.**

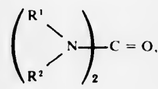
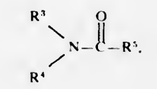
**Continuation-in-part of Ser. No. 206,197, Dec. 8, 1971, Pat. No. 3,816,404. This application June 10, 1974, Ser. No. 477,712**

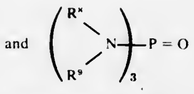
**Int. Cl.² C07C** *99/00*

**U.S. Cl. 260—404** **27 Claims**

**1.** A method for preparing omega-aminoalkanoic acids which conprises:

a. simultaneously contacting at a temperature between about 0° to 40°C. a solution containing a $C_7$ to $C_{20}$ cycloalkene, a denitrating agent and an aprotic organic solvent with dinitrogen tetroxide and oxygen, wherein said denitrating agent is selected from the group consisting of 2-pyrrolidinones,

 ,  ,

 and 

where $R^1$, $R^2$, $R^6$, $R^7$, $R^8$ and $R^9$ are alkyl of from 1 to 5 carbons and $R^3$, $R^4$ and $R^5$ are hydrogen or alkyl of from 1 to 5 carbons, where the mole ratio of cycloalkene to denitrating agent is above about 0.5:1 to about 2:1, thereby forming 2-nitrocycloalkanone,

b. contacting 2-nitrocycloalkanone with an alcohol, wherein said alcohol is a primary or secondary alcohol corresponding to the formula R′OH where R′ is an alkyl group of from 1 to 20 carbon atoms, in a non-aqueous environment at a temperature of from about 20° to 200°C. thereby forming an alkyl omega-nitroalkanoate,

c. contacting said alkyl omega-nitroalkanoate with hydrogen and a Group VIII metal catalyst at a temperature of from 20° to 300°C. under a hydrogen pressure of 500 to 1500 p.s.i.g. thereby forming an alkyl omega-aminoalkanoate, and

d. contacting said alkyl omega-aminoalkanoate with water at a temperature of from 150° to 300°C.

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**3,933,874**

## METHOD FOR PREPARING OF β-ANILINO-β-HYDRAZINOACRYLATES

**Atsuaki Arai, Minami-ashigara; Daijiro Nishio, Odawara; Mitsugu Tanaka, Minami-ashigara; Yoshikazu Fujita, and Hisao Suzuki, both of Odawara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan**

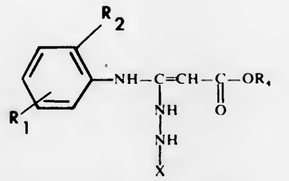
**Filed Dec. 13, 1974, Ser. No. 532,577**

**Claims priority, application Japan, Dec. 13, 1973, 48-140963**

**Int. Cl.² C09F** *7/00*; **C07C** *149/40, 79/46*

**U.S. Cl. 260—404.5** **7 Claims**

**1.** A β-anilino-β-hydrazinoacrylate represented by the following general formula (I)



(I)

wherein $R_1$ represents an acylamino group, an alkylsulfamoyl group, an arylsulfamoyl group or an alkoxycarbonyl group; $R_2$ represents a halogen atom, an alkyl group or an alkoxy group; $R_4$ represents an alkyl group; and X represents an aryl group.

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### 3,933,875
### OPAQUE POLYESTER COPOLYMER COATED ARTICLES

**Horst Brose; Karl Dieter Depping, both of Hiltrup; Dietrich Hentschel, Wolbeck; Bernard Kostevc, Munster, and Klaus Schmidt, Hiltrup, all of Germany, assignors to BASF Farben & Fasern AG, Hamburg, Germany**

**Filed Mar. 1, 1973, Ser. No. 337,063**

**Claims priority, application Germany, Mar. 11, 1972, 2211899; Apr. 1, 1972, 2216052; Apr. 22, 1972, 2219847**

**Int. Cl.² B32B** *27/38*, *27/00*

**U.S. Cl. 428—413** **5 Claims**

**1.** In a process for the production of opaque coated articles comprising applying and conventionally curing on the surface of said articles normally transparent coating compositions containing unsaturated polyesters (I), copolymerizable monomers (II), catalysts and additives, the improvement comprising: said coating composition containing said unsaturated polyester (I) and said copolymerizable monomers (II) in a relationship of about 3 –45 weight percent (I) and about 55 – 97 weight percent (II), and additionally 0.1 to 15 weight percent related to the content of unsaturated polyesters of synthetic resins selected from the group consisting of nitrocellulose, cellulose-acetobutyrate, alkyd resins, ketone resins, saturated polyester resins, poly-adipates, epoxide resins, polyurethane resins, amine-aldehyde resins, phenolic resins, acrylic resins, methacrylic resins, vinylchloride polymers, vinylacetate polymers and vinylpropionate polymers.

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### 3,933,876
### HYDRIDE COMPLEXES OF METALS OF GROUPS IVB AND VB

**Frederick Nye Tebbe, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.**

**Continuation-in-part of Ser. No. 191,902, Oct. 22, 1971, abandoned. This application July 2, 1974, Ser. No. 485,317**

**Int. Cl.² C07F** *7/00*, *7/28*

**U.S. Cl. 260—429 R** **22 Claims**

**1.** Hydrides of the formula

$(PR_3)_x(R_1'PR''PR_2')_yMH_z$

wherein:

M is Nb, Ta, Ti, Zr, or Hf

R is alkyl, aryl, alkaryl or aralkyl of up to 8 carbon atoms

R′ is alkyl, aryl, alkaryl or aralkyl of up to 8 carbon atoms

R″ is alkylene of up to 3 carbon atoms, or o-phenylene

with the provisos that: when

M is Nb or Ta,

$x = 0, 1, 2$ or 4; $y = 0, 2$ or 3; $z = 1, 3$ or 5; and $2x + 4y + z = 13$; and

when,

M is Ti, Zr of Hf,

$x = 0$, $y = 1$, and $z = 3$.

### 3,933,877
### HYDROPHILIC AND DIFFICULTLY VOLATILE BIOCIDAL TRIORGANOMETALLIC COMPOUNDS

**Hermann Otto Wirth; Hans Joachim Lorenz, both of Bensheim-Auerbach, and Hans-Helmut Friedrich, Lindenfels, Odenwald, all of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.**

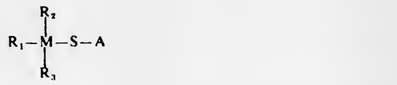
**Continuation-in-part of Ser. No. 382,633, July 25, 1973. This application July 31, 1974, Ser. No. 493,304**

**Claims priority, application Germany, Aug. 4, 1972, 2238360; July 6, 1973, 2334383**

**Int. Cl.² C07F** *7/22*

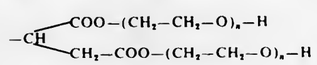
**U.S. Cl. 260—429.7** **8 Claims**

**1.** A triorganometallic compound of the general formula I



(I)

wherein M represents tin or lead and $R_1$, $R_2$, and $R_3$ each independently represents a linear or branched aliphatic group with 1 to 16 carbon atoms, which can be saturated or singly olefinically unsaturated, the cyclopentyl-, cyclohexyl-, or phenyl group, the sum of the carbon atoms of the substituents $R_1$, $R_2$, and $R_3$ being at most 18 and wherein A represents a strongly hydrophilic group of the formula II



(II)

wherein $n$ is a number from 2 to 15.

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### 3,933,878
### LIGAND COMPLEXES OF CU(1)SALTS

**William E. Tyler, III, Berkeley Heights, and Martin B. Dines, Mountainside, both of N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.**

**Division of Ser. No. 259,079, June 2, 1972, Pat. No. 3,776,972. This application Aug. 10, 1973, Ser. No. 387,445**

**Int. Cl.² C07F** *1/08*

**U.S. Cl. 260—438.1** **5 Claims**

**2.** Compositions of matter having the general formula $CuAlCl_4.L$ wherein L is a phosphine having the formula $R_1R_2R_3P$, wherein $R_1$, $R_2$ and $R_3$ are independently selected from the group consisting of alkyl radicals having from 1–30 carbon atoms and which form 1:1 liquid adducts with $CuAlCl_4$ moiety under ambient conditions.

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### 3,933,879
### CHELATED LITHIUM ALUMINUM COMPOUNDS

**Arthur W. Langer, Jr., Watchung, and Thomas A. Whitney, Roselle, both of N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.**

**Continuation-in-part of Ser. No. 808,328, March 18, 1969, Pat. No. 3,734,963. This application Mar. 23, 1973, Ser. No. 344,230. The portion of the term of this patent subsequent to May 22, 1990, has been disclaimed.**

**Int. Cl.² C07F** *5/06*

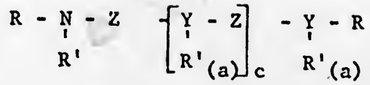
**U.S. Cl. 260—448 R** **8 Claims**

**1.** A complex comprising: (a) a lithium hydrido aluminate having a lattice energy less than 210 kilocalories per mole at 18°C and (b) a monomeric or polymeric polyfunctional chelating tertiary hydrocarbyl amine containing at least 2 nitrogen atoms.

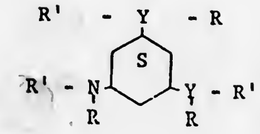
**2.** A complex according to claim **1** wherein the amines are chelating polyfunctional Lewis bases, said bases being ones selected from the group consisting of tris-(2-$C_1$-$C_4$ dialkylaminoethyl)-amine and those compounds having the formulas:



(I)



(II)



wherein $c$ is an integer of 0 to 10,000 inclusive: Y is one selected from the group consisting of N and O; $a$ is an integer equal to 0 or 1 depending on whether Y is N or O; R is the same of different $C_1$-$C_4$ alkyl radical; R′ is the same or different $C_1$-$C_4$ alkyl radical or $C_6$-$C_{10}$ aryl or aralkyl radical; and Z is a nonreactive radical selected from the group consisting of:

1. $C_4$-$C_{10}$ cycloaliphatic or aromatic radicals and their lower alkyl derivatives wherein said radicals are attached to the N atoms in Formula I at 1,2 positions on the aromatic rings or 1,2 or 1,3 positions on the cycloaliphatic rings; and
2. 1 to 4 methylenic radicals, wherein each methylenic radical contains 0 to 2 monovalent hydrocarbon radicals of 1 to 6 carbon atoms.

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### 3,933,880
### METHOD OF PREPARING A PLATINUM CATALYST INHIBITOR

**Floyd A. Bergstrom; Chi-Long Lee, and Myron T. Maxson, all of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.**

**Filed Dec. 2, 1974, Ser. No. 528,961**

**Int. Cl.² C07F** *7/02*, *7/08*, *7/18*

**U.S. Cl. 260—448.2 E** **7 Claims**

**1.** A method of reacting an acetylenic alcohol with a siloxane compound having at least three silicon-bonded-hydrogen atoms bonded to at least three different silicon atoms in the presence of a platinum catalyst to provide an olefinic siloxane compound wherein the olefinic siloxane compound is an inhibitor for the platinum catalyst

comprising continuously passing a liquid mixture of the acetylenic alcohol and the siloxane compound having at least three silicon-bonded-hydrogen atoms in the presence of a platinum catalyst through a heating means wherein the liquid mixture is heated to a temperature which is above 100°C. and which is also above the temperature at which the olefinic siloxane compound is no longer an inhibitor for the reaction, but the temperature and residence time of the liquid mixture in the heating means being sufficient to produce the olefinic siloxane compound without substantial decomposition of reactants and product, said liquid mixture is under sufficient pressure to maintain the reactants and product in a liquid state at least until the mixture has passed through the heating means, said product being an olefinic siloxane compound which is, below 100°C., an inhibitor for the reaction between the acetylenic alcohol and the siloxane compound having at least three silicon-bonded-hydrogen atoms in the presencc of a platinum catalyst.

### 3,933,881
### PROCESS FOR THE MANUFACTURE OF β-CHLOROETHYL-METHYL-DICHLOROSILANE

**Werner Fŏry, Basel, and Hermann Kny, Fullinsdorf, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.**

**Filed Dec. 12, 1974, Ser. No. 532,143**

**Claims priority, application Switzerland, Dec. 15, 1973, 17556/73**

**Int. Cl.² C07F** *7/12*

**U.S. Cl. 260—448.2 E** **5 Claims**

**1.** A process for the manufacture of β-chloroethyl-methyl-dichlorosilane by addition of HCl to methylvinyl-dichlorosilane in the presence of $AlCl_3$ and distilling off the resultant end product from the reaction mixture, wherein the isolation of the β-chloroethyl-methyl-dichlorosilane by distillation is effected in the presence of at least 1 mole of alkali metal chloride or of ammonium chloride, relative to $AlCl_3$, at a bath temperature above 30°C in vacuo.

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### 3,933,882
### TUBE METHOD FOR THE PREPARATION OF OLEFINIC SILOXANE COMPOUNDS

**Chi-Long Lee, and Myron T. Maxson, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.**

**Filed Dec. 2, 1974, Ser. No. 528,960**

**Int. Cl.² C07F** *7/02*, *7/08*, *7/18*

**U.S. Cl. 260—448.2 E** **14 Claims**

**1.** A method of reacting an acetylenic alcohol with a siloxane compond having at least three silicon-bonded hydrogen atoms bonded to at least three different silicon atoms in the presence of a platinum catalyst to provide an olefinic siloxane compound wherein the olefinic siloxane compound is an inhibitor for the platinum catalyst

comprising passing a vaporized mixture of acetylenic alcohol, a soluble platinum catalyst and siloxane compound having at least three silicon-bonded hydrogen atoms through a tube heated at a temperature of from 210°C. to 450°C. and collecting a reaction product which is an olefinic siloxane compound which is, below 100°C., an inhibitor for the reaction between the acetylenic alcohol and the siloxane compound having at least three silicon-bonded-hydrogen atoms in the presence of a platinum catalyst, said mixture containing from 0.01 to 2 parts by weight platinum per one million parts by weight mixture.

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### 3,933,883
### METHANATION CATALYST AND PROCESS OF USE

**R. Parthasarathy, Silver Spring, Md., assignor to W. R. Grace & Co., New York, N.Y.**

**Filed Apr. 14, 1975, Ser. No. 567,630**

**Int. Cl.² C07C** *1/04*

**U.S. Cl. 260—449 M** **5 Claims**

**1.** A method for converting a feed gas stream containing principally carbon monoxide, hydrogen and methane to a product gas stream containing essentially completely methane, comprising passing said feed gas stream in fluidized contact with a catalyst consisting of an alumina support having a purity of more than 99 percent by weight alumina, of which at least 70 percent by weight is present as gamma alumina and impregnated with nickel and cobalt in a nickel to cobalt atomic ratio of 1 to 1.5 and containing about 3 to 10 percent by weight metal values, said catalyst having a surface area of about 100 to 200 $m^2/g$, pores in a pore diameter range of 35 to 200A, with an average pore diameter of 100 to 115A and a pore volume of 0.25 to 0.7 cc/g; at a pressure of 100 to 2,000 psig and at a temperature of 120° to 650°C.

### 3,933,884
### PROCESS FOR PREPARING THIOL ESTERS

John F. Knifton, Poughquag, N.Y., assignor to Texaco Inc., New York, N.Y.

Filed Oct. 10, 1973, Ser. No. 405,190
Int. Cl.² C07C *153/09*
U.S. Cl. 260—455 R 7 Claims

1. A process for converting unsaturated aliphatic 1-alkenes containing 2 to 30 carbon atoms to linear saturated aliphatic thiol esters of carboxylic acids in good yield and relatively uncontaminated with non-linear thiol esters and by-products, by a process of:

a. admixing each mole of 1-alkene to be converted to said thiol ester, with at least a catalytic amount of a palladium catalyst selected from the group consisting of:
$PdCl_2[P(C_6H_5)_3]_2—SnCl_2$
$PdCl_2[P(p\text{-}CH_3O.C_6H_4)_3]_2—SnCl_2$
$PdCl_2[P(CH_3)_2C_6H_5]_2—SnCl_2$
$PdCl_2[P(C_6H_5)_3]_2—GeCl_2$
$PdCl_2[As(C_6H_5)_3]_2—SnCl_2$ and
$PdCl_2[P(C_6H_5)_3]_2—SnCl_4$
in the presence of at least a molar equivalent of mercaptan coreactant selected from the group consisting of saturated aliphatic mercaptans containing 1 to 10 carbon atoms, and

b. pressurizing said reaction mixture with sufficient carbon monoxide to satisfy the stoichiometry of the carbonylation reaction;

c. heating said pressurized reaction mixture to between 20° and 120°C, until conversion of the aliphatic 1-alkene substrate to said linear saturated aliphatic esters of carboxylic acids takes place, and

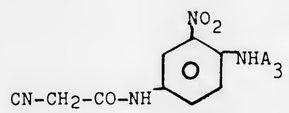
d. isolating said saturated thiol ester contained therein.

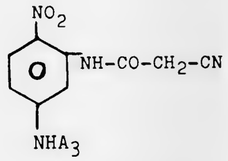
### 3,933,886
### DIAMINO-NITRO-BENZENE COMPOUNDS

Ferdi Saygin, Dusseldorf, Germany, assignor to Henkel & Cie GmbH, Dusseldorf, Germany

Continuation of Ser. No. 272,383, July 17, 1972, abandoned. This application May 16, 1974, Ser. No. 470,385
Claims priority, application Germany, Oct. 4, 1971, 2149467; Feb. 18, 1972, 2207683
Int. Cl.² C07C *121/78*
U.S. Cl. 260—465 D 3 Claims

1. A compound of the formulae selected from the group consisting of



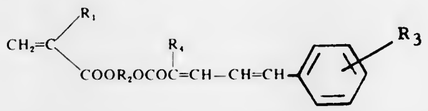


### 3,933,885
### CINNAMYLIDENEACETIC ACID ESTERS

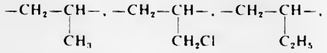
Masato Satomura, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Feb. 12, 1974, Ser. No. 441,782
Claims priority, application Japan, Feb. 13, 1973, 48-17716
Int. Cl.² C07C *69/76*, *121/70*
U.S. Cl. 260—465 D 2 Claims

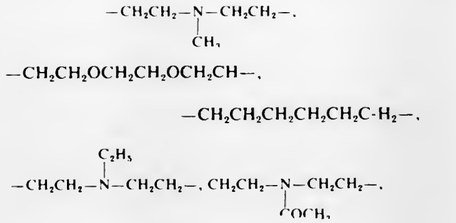
1. A monomer represented by the following formula



wherein $R_1$ represents a hydrogen atom or a methyl group; $R_2$ represents $—CH_2CH_2—$, $—CH_2CH_2CH_2—$, $—CH_2CH_2CH_2CH_2—$,



$—CH_2CH_2OCH_2CH_2—$,



$—CH_2CH_2SCH_2CH_2—$, $—C_6H_{10}—$, $—C_6H_4—$, $—CH_2C_6H_4CH_2—$, or $—CH_2C_6H_{10}CH_2—$; $R_3$ is a hydrogen atom, a halogen atom, a methoxy group, a nitro group or a methyl group; $R_4$ is a hydrogen atom, a cyano group or a carbamoyl group.

### 3,933,887
### PROCESS FOR PREPARING 4-AMINO-2,5-DIALKOXYBENZONITRILES

Kurt Gengnagel, Offenbach (Main), Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed July 22, 1974, Ser. No. 490,414
Claims priority, application Germany, July 26, 1973, 2337951
Int. Cl.² C07C *121/78*
U.S. Cl. 260—465 F 1 Claim

1. A process for preparing a 4-amino-2,5-di($C_1$-$C_4$) alkoxybenzonitrile which comprises first brominating a 1-acylamino-2,5-dialkoxybenzene with hydrogen bromide in the presence of an oxidizing agent in aqueous solution or with bromine in sulfuric acid, then converting the 1-acylamino-2,5-dialkoxy-4-bromo-benzene so obtained, by the reaction with



wherein $A_3$ is a member selected from the group consisting of hydrogen, alkyl of 1 to 4 carbon atoms, hydroxyalkyl of 1 to 4 carbon atoms, alkanoyl of 2 to 10 carbon atoms, cyano alkanoyl of 2 to 10 carbon atoms in the alkanoyl and acyl of aromatic hydrocarbon carboxylic acids having 7 to 15 carbon atoms.



copper-I-cyanide in an inert solvent and in the presence of a dissolving promotor for the copper-cyanide to the 4-acylamino-2,5-dialkoxy-benzonitrile, and subsequently hydrolyzing the acylamino group.

### 3,933,888
### PRODUCTION OF UNSATURATED ACIDS, ESTERS AND NITRILES, AND CATALYST THEREFOR

Francis W. Schlaefer, Pennsauken, N.J., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Oct. 6, 1972, Ser. No. 295,743
Int. Cl.² C07C *120/00*, *69/52*, *69/54*, *57/02*
U.S. Cl. 260—465.9 12 Claims

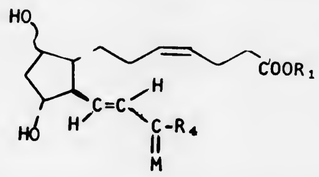
1. A process for the production of $\alpha,\beta$-ethylenically unsaturated acids, esters of said acids having 4 to 15 carbon atoms and nitriles which comprises reacting formaldehyde with an alkanoic acid, an ester of said acid having 3 to 14 carbon atoms, or an alkyl nitrile in the presence of a catalyst consisting of pyrogenic silica, with a total surface area of 150 to 300 square meters per gram, a total porosity volume of 3 to 15 cubic centimeters per gram and a pore size distribution such that pores having a diameter in excess of 100,000 A. and pores between 100,000 and 10,000 A. total at least 50% of the total pore content and less than 30% total pore content is of pores having a diameter of less than 1,000 A., with the remainder of pores in the range of 10,000 to 1,000 A., calcined with a base activating agent and where the reaction is carried out at a temperature of 330° to 390°C. with an alkanoic acid, ester or alkyl nitrile to formaldehyde molar concentration in the range of about 0.3–3.0:1.

### 3,933,889
### 4,5-CIS-DIDEHYDRO-PGF$_{1\alpha}$ ANALOGS

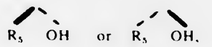
Barney J. Magerlein, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 247,993, April 27, 1972, abandoned. This application Feb. 7, 1974, Ser. No. 440,629
Int. Cl.² C07C *61/38*, *69/74*
U.S. Cl. 260—468 D 10 Claims

1. An optically active compound of the formula



or a racemic compound of that formula and the mirror image thereof, wherein M is



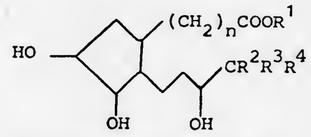
wherein $R_5$ is hydrogen, methyl, or ethyl; wherein $R_1$ is hydrogen or alkyl or one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive; and wherein $R_4$ is alkyl of 6 to 10 carbon atoms, inclusive, substituted with zero to 2 fluoro, inclusive; including the lower alkanoates thereof, and the pharmacologically acceptable salts thereof when $R_1$ is hydrogen.

### 3,933,890
### 10,11,15-TRIHYDROXYPROSTANOIC ACID

Michael Peter Lear Caton, Upminster, and Trevor Parker, Romford, both of England, assignors to May & Baker Limited, England

Division of Ser. No. 332,660, Feb. 15, 1973. This application Dec. 7, 1973, Ser. No. 423,376
Claims priority, application United Kingdom, Feb. 18, 1972, 7640/72
Int. Cl.² C07C *61/38*, *69/74*
U.S. Cl. 260—468 D 10 Claims

1. A cyclopentane of the formula:



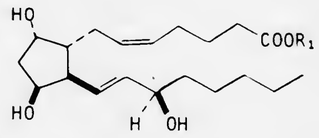
wherein $R^1$ represents hydrogen or alkyl of 1 through 12 carbon atoms, $R^2$ and $R^3$ represent hydrogen or alkyl of 1 through 4 carbon atoms, $R^4$ represents alkyl of 1 through 10 carbon atoms, and $n$ represents 4 or 6, and, where $R^1$ represents hydrogen, non-toxic salts thereof.

### 3,933,891
### 11$\beta$,15$\beta$-PGF$_{2\alpha}$ COMPOUNDS

John E. Pike, and William P. Schneider, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 403,094, Oct. 3, 1973, Pat. No. 3,890,371, June 17, 1975, which is a division of Ser. No. 159,478, July 2, 1971, Pat. No. 3,772,350, Nov. 13, 1973, which is a continuation-in-part of Ser. No. 71,390, Nov. 11, 1970, now abandoned. This application July 8, 1974, Ser. No. 486,353
Int. Cl.² C07C *61/38*, *69/74*
U.S. Cl. 260—468 D 3 Claims

1. The compound of the formula



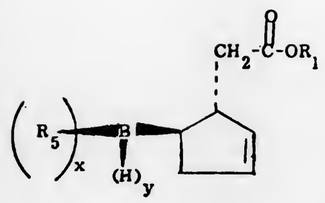
wherein $R_1$ is hydrogen, alkyl of 1 to 8 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl or phenyl substitued with 1, 2, or 3 chloro or alkyl of 1 to 4 carbon atoms, inclusive, and the pharmacologically acceptable salts thereof when $R_1$ is hydrogen.

### 3,933,892
### ASYMMETRIC SYNTHESIS OF OPTICALLY ACTIVE PROSTAGLANDINS

Naresh Kumar Chadha, Nutley; John Joseph Partridge, Jr., and Milan Radoje Uskokovic, both of Upper Montclair, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 331,931, Feb. 12, 1973, abandoned. This application Jan. 18, 1974, Ser. No. 434,539
Int. Cl.² C07F *5/02*
U.S. Cl. 260—468 J 3 Claims

1. An optically active compound of the formula:

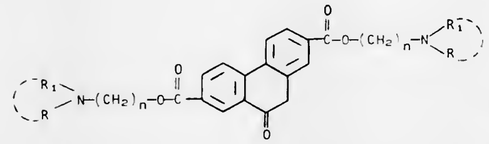


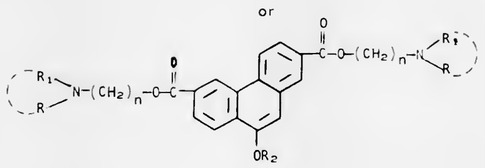
wherein $R_1$ is phenyl, benzyl or lower alkyl; $R_5$ is an optically active organo hydrocarbyl radical; $x$ is an integer from 1 to 2; $y$ is an integer of from 0 to 1 with the proviso that the sum of $x$ and $y$ is 2;
or its optically active antipode.

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**3,933,893**
**DERIVATIVES OF 9-PHENANTHRENE**
**Donald R. Meyer, and Arthur D. Sill, both of Cincinnati, Ohio, assignors to Richardson-Merrell Inc., Wilton, Conn.**
**Division of Ser. No. 317,146, Dec. 21, 1972, Pat. No. 3,859,312. This application Sept. 13, 1974, Ser. No. 505,661**
**Int. Cl.² C07C** *93/20*
**U.S. Cl. 260—468.5** **4 Claims**

**1.** A derivative of 9-phenanthrone having the formula:



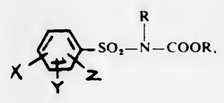


wherein $n$ is an integer of from 2 to 6; R and $R_1$ are each selected from the group consisting of hydrogen, lower alkyl having from 1 to 6 carbon atoms, cycloalkyl having from 3 to 6 carbon atoms, alkenyl having from 3 to 6 carbon atoms in which the unsaturation is in a position other than in the 1-position of the alkenyl group, and when R and $R_1$ are taken together with the nitrogen atom to which they are attached represent the pyrrolidinyl, piperidino or morpholino radical; $R_2$ is selected from the group consisting of hydrogen or lower alkyl having from 1 to 4 carbon atoms; and the pharmaceutically acceptable acid addition salts thereof.

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**3,933,894**
**N-ARYLSULFONYL CARBAMATES**
**John A. Stephens, St. Louis County, Mo., assignor to Monsanto Company, St. Louis, Mo.**
**Division of Ser. No. 547,376, May 3, 1966, Pat. No. 3,799,760, which is a continuation-in-part of Ser. No. 266,513, March 20, 1963, abandoned, which is a continuation-in-part of Ser. No. 256,840, Feb. 7, 1963, abandoned. This application Dec. 10, 1973, Ser. No. 423,330**
**Int. Cl.² C07C** *149/40*
**U.S. Cl. 260—470** **4 Claims**

**1.** An amine salt, alkali metal salt or alkaline earth metal salt of a N-benzenesulfonyl carbamate of the formula



where X, Y, and Z are selected from the group consisting of hydrogen, chloro, bromo, iodo, nitro, and lower alkyl; where R is selected from the group consisting of hydrogen, alkyl, cycloalkyl, alkenyl, alkynyl, aryl, alkaryl, aralkyl having up to 8 carbon atoms and lower alkanoyl; and where $R_1$ is selected from the group consisting of alkyl, cycloalkyl, alkenyl, alkynyl, aryl, alkaryl and aralkyl having up to 8 carbon atoms.

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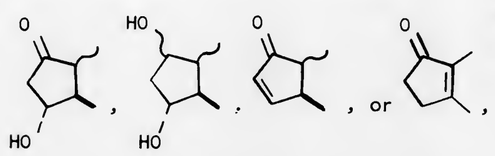
**3,933,895**
**OXA-PHENYLENE COMPOUNDS**
**Norman A. Nelson, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.**
**Continuation-in-part of Ser. No. 302,567, Oct. 30, 1972, abandoned, which is a continuation-in-part of Ser. No. 121,572, March 5, 1971, abandoned. This application July 18, 1974, Ser. No. 489,846**
**Int. Cl.² C07C** *65/22, 61/76*
**U.S. Cl. 260—473 A** **5 Claims**

**1.** An optically active compound of the formula:

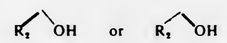




or a racemic mixture of that compound and its enantiomer, wherein D is one of the four carbocyclic moieties:



wherein ~ indicates attachment of the hydroxyl or the side chain to the cyclopentane ring in alpha or beta configuration; wherein V is (1) $C_gH_{2g}$ or (2) —CH=CH—$C_jH_{2j}$ wherein $C_gH_{2g}$ represents a valence bond or alkylene of one to 4 carbon atoms, inclusive, with one or 2 chain carbon atoms between —$CH_2$— and the phenylene ring, and wherein $C_jH_{2j}$ represents a valence bond or alkylene of one to 2 carbon atoms with one chain carbon atom between —CH=CH— and the phenylene ring; wherein $C_nH_{2n}$ is alkylene of one to 4 carbon atoms, inclusive; wherein $C_pH_{2p}$ represents a valence bond or alkylene of one to 4 carbon atoms, inclusive, with one or 2 chain carbon atoms between the ring and the —O—; wherein $C_gH_{2g}$ and $C_pH_{2p}$ together represent zero to 8 carbon atoms, inclusive, with total chain lengths zero to 3 carbon atoms, inclusive; wherein Q is

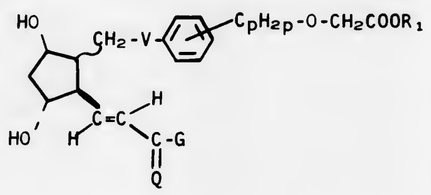


wherein $R_2$ is hydrogen or alkyl of one to 4 carbon atoms, inclusive; wherein $R_1$ is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive; and wherein $R_5$ is alkyl of one to 4 carbon atoms, inclusive, substituted with zero, one, 2, or 3 fluoro; including the lower alkanoates thereof and the pharmacologically acceptable salts thereof when $R_1$ is hydrogen.

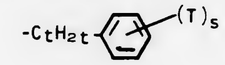
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**3,933,896**
**PGF$_1$ $\beta$ -OXA PHENYLENE COMPOUNDS**
**Norman A. Nelson, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.**
**Continuation-in-part of Ser. No. 302,567, Oct. 30, 1972, abandoned, which is a continuation-in-part of Ser. No. 121,572, March 5, 1971, abandoned. This application July 18, 1974, Ser. No. 489,847**
**Int. Cl.² C07C** *65/92, 69/76*
**U.S. Cl. 260—473 A** **32 Claims**

**1.** An optically active compound of the formula



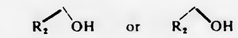
or a racemic mixture of that compound and the enantiomer thereof, wherein V is (1) $C_gH_{2g}$ or (2) —CH=CH—$C_jH_{2j}$ wherein $C_gH_{2g}$ represents a valence bond or alkylene of one to 4 carbon atoms, inclusive, with one or 2 chain carbon atoms between —$CH_2$— and the phenylene ring and wherein $C_jH_{2j}$ represents a valence bond or alkylene of one or 2 carbon atoms with one chain carbon between —CH=CH— and the phenylene ring; wherein $C_pH_{2p}$ represents a valence bond or alkylene of one to 4 carbon atoms, inclusive, with one or 2 chain carbon atoms between the ring and the —O—; wherein $C_gH_{2g}$ and $C_pH_{2p}$ together represent zero to 8 carbon atoms, inclusive, with total chain lengths zero to 3 carbon atoms, inclusive; wherein G is (1) alkyl of 2 to 10 carbon atoms, inclusive, substituted with zero, one, 2, or 3 fluoro or (2) a monovalent moiety of the formula



wherein $C_tH_{2t}$ represents a valence bond or alkylene of one to 10 carbon atoms, inclusive, substituted with zero, one, or 2 fluoro, with one to 7 carbon atoms, inclusive, between



and the ring, wherein T is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or —$OR_6$, wherein $R_6$ is hydrogen or alkyl of one to 4 carbon atoms, inclusive, and wherein $s$ is zero, one, 2, or 3, with the proviso that not more than two T's are other than alkyl; wherein Q is

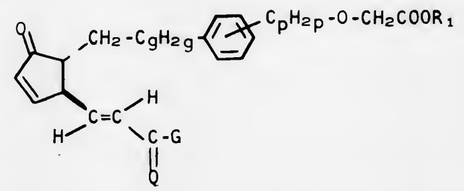


wherein $R_2$ is hydrogen or alkyl of one to 4 carbon atoms, inclusive; wherein $R_1$ is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive, wherein ~ indicates attachment of the side chain to the cyclopentane ring in alpha or beta configuration; including the lower alkanoates thereof and the pharmacologically acceptable salts thereof when $R_1$ is hydrogen.

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**3,933,897**
**PGA$_1$-OXA-PHENYLENE COMPOUNDS**
**Norman A. Nelson, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.**
**Continuation-in-part of Ser. No. 302,567, Oct. 30, 1972, abandoned, which is a continuation-in-part of Ser. No. 121,572, March 5, 1971, abandoned. This application July 18, 1974, Ser. No. 489,849**
**Int. Cl.² C07C** *65/22, 69/76*
**U.S. Cl. 260—473 A** **30 Claims**

**1.** An optically active compound of the formula:



or a racemic mixture of that compound and the enantiomer thereof, wherein $C_gH_{2g}$ represents a valence bond or alkylene of one to 4 carbon atoms, inclusive, with one to 4 carbon atoms, inclusive, with one or 2 chain carbon atoms between —$CH_2$— and the ring; wherein $C_pH_{2p}$ represents a valence bond or alkylene of one to 4 carbon atoms between the ring and the —O—; wherein $C_gH_{2g}$ and $C_pH_{2p}$ together represent zero to 8 carbon atoms, inclusive, with total chain lengths zero to 3 carbon atoms, inclusive; wherein G is (1) alkyl of 2 to 10 carbon atoms, inclusive, substituted with zero, one, 2, or 3 fluoro or (2) a mono-valent moiety of the formula



wherein $C_tH_{2t}$ represents a valence bond or alkylene of one to 10 carbon atoms, inclusive, substituted with zero, one, or 2 fluoro, with one to 7 carbon atoms, inclusive, between



and the ring, wherein T is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or —$OR_6$, wherein $R_6$ is hydrogen or alkyl of one to 4 carbon atoms, inclusive, and wherein $s$ is zero, one, 2, or 3, with the proviso that not more than two T's are other than alkyl; wherein Q is



wherein $R_2$ is hydrogen or alkyl of one to 4 carbon atoms, inclusive; and wherein $R_1$ is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive; including the lower alkanoates thereof and the pharmacologically acceptable salts thereof when $R_1$ is hydrogen.

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**3,933,898**

**PGE$_1$-OXA PHENYLENE COMPOUNDS**

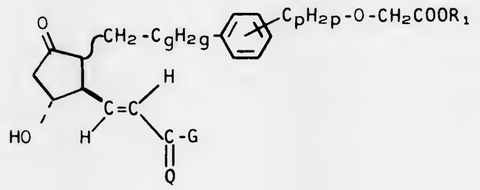
**Norman A. Nelson, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.**

**Continuation-in-part of Ser. No. 302,567, Oct. 30, 1972, abandoned, which is a continuation-in-part of Ser. No. 121,572, March 5, 1971, abandoned. This application July 18, 1974, Ser. No. 489,932**

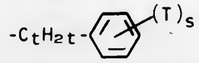
**Int. Cl.$^2$ C07C** *65/22, 69/76*

**U.S. Cl. 260—473 A** **66 Claims**

**1.** An optically active compound of the formula:



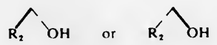
or a racemic mixture of that compound and the enantiomer thereof, wherein $C_gH_{2g}$ represents a valence bond or alkylene of one or 4 carbon atoms, inclusive, with one or 2 chain carbon atoms between —$CH_2$—and the ring; wherein $C_pH_{2p}$ represents a valence bond or alkylene of one to 4 carbon atoms, inclusive; with one or 2 chain carbon atoms between the ring and —O—; wherein $C_gH_{2g}$ and $C_pH_{2p}$ together represent zero to 8 carbon atoms, inclusive, with total chain lengths zero to 3 carbon atoms, inclusive; wherein G is (1) alkyl of 2 to 10 carbon atoms, inclusive, substituted with zero, one, 2, or 3 fluoro or (2) a monovalent moiety of the formula



wherein $C_tH_{2t}$ represents a valence bond or alkylene of one to 10 carbon atoms, inclusive, substituted with zero, one, or 2 fluoro, with one to 7 carbon atoms, inclusive, between



and the ring, wherein T is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or —$OR_6$, wherein $R_6$ is hydrogen or alkyl of one to 4 carbon atoms, inclusive, and wherein s is zero, one, 2, or 3, with the proviso that not more than two T's are other than alkyl; wherein Q is



wherein $R_2$ is hydrogen or alkyl of one to 4 carbon atoms, inclusive; wherein $R_1$ is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive, wherein ~ indicates attachment of the side chain to the cyclopentane ring in alpha or beta configuration; including the lower alkanoates thereof and the pharamcologically acceptable salts thereof when $R_1$ is hydrogen.

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**3,933,899**

**PGE$_2$-OXA-PHENYLENE COMPOUNDS**

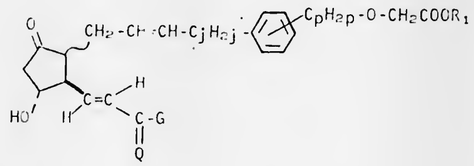
**Norman A. Nelson, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.**

**Continuation-in-part of Ser. No. 302,567, Oct. 30, 1972, abandoned, which is a continuation-in-part of Ser. No. 121,572, March 5, 1971, abandoned. This application July 18, 1974, Ser. No. 489,933**

**Int. Cl.$^2$ C07C** *65/22, 69/76*

**U.S. Cl. 260—473 A** **31 Claims**

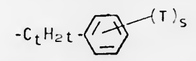
**1.** An optically active compound of the formula:



or a racemic mixture of that compound and the enantiomer thereof, wherein $C_jH_{2j}$ represents a valence bond or alkylene of one or 2 carbon atoms, with one chain carbon atom between —CH=CH— and the phenylene ring; wherein $C_pH_{2p}$ represents a valence bond or alkylene of one to 4 carbon atoms, inclusive, with one or 2 chain carbon atoms between the ring and —O—; wherein $C_jH_{2j}$ and $C_pH_{2p}$ together repre-



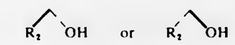
sent zero to 6 carbon atoms, inclusive, with total chain lengths zero to 3 carbon atoms, inclusive; wherein G is (1) alkyl of 2 to 10 carbon atoms, inclusive, substituted with zero, one, 2, or 3 fluoro or (2) a monovalent moiety of the formula



wherein $C_tH_{2t}$ represents a valence bond or alkylene of one to 10 carbon atoms, inclusive, substituted with zero, one, or 2 fluoro, with one to 7 carbon atoms, inclusive, between



and the ring, wherein T is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or —$OR_6$, wherein $R_6$ is hydrogen or alkyl of one to 4 carbon atoms, inclusive, and wherein $s$ is zero, one, 2, or 3, with the proviso that not more than two T's are other than alkyl; wherein Q is



wherein $R_2$ is hydrogen or alkyl of one to 4 carbon atoms, inclusive; wherein $R_1$ is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive, wherein ~ indicates attachment of the side chain to the cyclopentane ring in alpha or beta configuration; including the lower alkanoates thereof and the pharmacologically acceptable salts thereof when $R_1$ is hydrogen.

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**3,933,900**

**PGE$_0$ OXA-PHENYLENE COMPOUNDS**

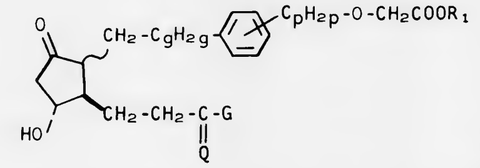
**Norman A. Nelson, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.**

**Continuation-in-part of Ser. No. 302,567, Oct. 30, 1972, abandoned, which is a continuation-in-part of Ser. No. 121,572, March 5, 1971, abandoned. This application July 18, 1974, Ser. No. 489,935**

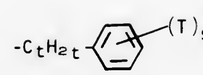
**Int. Cl.$^2$ C07C** *65/22, 69/76*

**U.S. Cl. 260—473 A** **31 Claims**

**1.** An optically active compound of the formula:



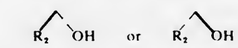
or a racemic mixture of that compound and the enantiomer thereof, wherein $C_gH_{2g}$ represents a valence bond or alkylene of one to 4 carbon atoms, inclusive, with one or 2 chain carbon atoms between —$CH_2$— and the phenylene ring; wherein $C_pH_{2p}$ represents a valence bond or alkylene of one to 4 carbon atoms, inclusive, with one or 2 chain carbon atoms between the ring and the —O—; wherein $C_gH_{2g}$ and $C_pH_{2p}$ together represent zero to 8 carbon atoms, inclusive, with total chain lengths zero to 3 carbon atoms, inclusive; wherein G is (1) alkyl of 2 to 10 carbon atoms, inclusive, substituted with zero, one, 2, or 3 fluoro or (2) a monovalent moiety of the formula



wherein $C_tH_{2t}$ represents a valence bond or alkylene of one to 10 carbon atoms, inclusive, substituted with zero, one, or 2 fluoro, with one to 7 carbon atoms, inclusive, between



and the ring, wherein T is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, —$OR_6$, wherein $R_6$ is hydrogen or alkyl of one to 4 carbon atoms, inclusive, and wherein $s$ is zero, one, 2, or 3, with the proviso that not more than two T's are other than alkyl; wherein Q is



wherein $R_2$ is hydrogen or alkyl of one to 4 carbon atoms, inclusive; wherein $R_1$ is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive; wherein ~ indicates attachment of the side chain to the cyclopentane ring in alpha or beta configuration; including the lower alkanoates thereof and the pharmacologically acceptable salts thereof when $R_1$ is hydrogen.

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**3,933,901**

**PRECURSORS FOR PROSTAGLANDIN E$_1$**

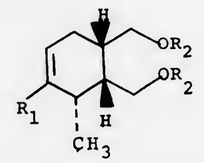
**Zbigniew S. Zelawski, Piscataway, and Norman L. Wendler, Summit, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.**

**Filed May 2, 1973, Ser. No. 356,528**

**Int. Cl.$^2$ C07C** *43/18, 69/08, 69/16, 69/28*

**U.S. Cl. 260—488 R** **5 Claims**

**1.** A compound of the formula



wherein $R_1$ is lower alkoxy, and $R_2$ is hydrogen or lower alkanoyl.

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**3,933,902**

**METHOD FOR THE OPTICAL RESOLUTION OF DL-α-PHENYLGLYCINE**

**Teiko Watanabe, Tokyo; Shigeyoshi Hayashi, Kurhshiki; Shunji Ouchi, Tokyo, and Saburo Senoo, Shiki, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan**

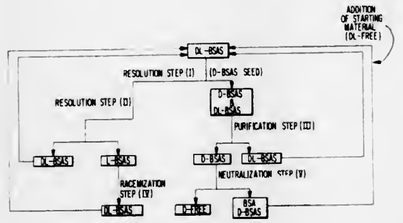
**Filed Dec. 11, 1972, Ser. No. 313,729**

**Int. Cl.$^2$ C07C** *143/26*

**U.S. Cl. 260—501.12** **14 Claims**

**1.** A method for obtaining an optically active α-phenylglycine benzenesulfonate by optical resolution which comprises dissolving DL-α-phenylglycine benzenesulfonate in an aqueous solution of benzenesulfonic acid having a concentration greater than 5g of benzenesulfonic acid per 100 g of water, rendering the solution supersaturated, selectively crystallizing either optically active D- or L-α-phenylglycine benzenesulfon-

ate, crystallization at least being initiated in the presence of a seed of either D- or L-α-phenylglycine benzensulfonate corresponding optically to the optically active α-phenylglycine benzenesulfonate to be crystallized out, and separating the




resulting crystals from the liquid phase before initiation of crystallization of the optically active α-phenylglycine benzenesulfonate having an optical activity opposite to that of the crystallized optically active α-phenylglycine benzenesulfonate.

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**3,933,903**

**PROCESS FOR THE PREPARATION OF CYCLOALKYLALKANE CARBOXYLIC ACID**

**Reginoldus Havinga, Schalkhaar, and Antoon Wildschut, Bathmen, both of Netherlands, assignors to Akzo N.V., Arnhem, Netherlands**

**Filed June 3, 1974, Ser. No. 475,875**

**Claims priority, application Netherlands, June 12, 1973, 7308108**

**Int. Cl.² C07C** *61/38*

**U.S. Cl. 260—514 R** **8 Claims**

**1.** A process for preparing cyclopentylpropionic acid comprising reacting cyclopentanone or cyclopentanol

with molten alkali metal hydroxide in two successive heating steps at temperatures ranging from 200° to 270°C and from 290° to 350°C respectively and

subsequently converting the alkali metal soap of cyclopentylpropionic acid formed into the free acid.

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**3,933,904**

**11,15-DIHYDROXY-9,13-PROSTADIENOIC ACID**

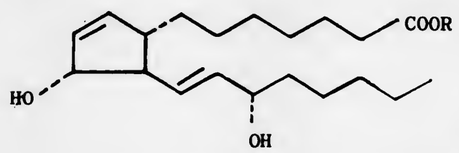
**Donald P. Strike, Saint Davids, Pa., assignor to American Home Products Corporation, New York, N.Y.**

**Filed Sept. 13, 1974, Ser. No. 505,804**

**Int. Cl.² C07C** *61/38*; **C07c** *69/74*

**U.S. Cl. 260—514 D** **2 Claims**

**1.** A chemical compound of the structure:




wherein R is hydrogen or alkyl of from 1 to 6 carbon atoms.

**3,933,905**

**(5-OXO-10,11-DIHYDRODIBENZO[A,D]-CYCLOHEPT-EN-2-YL)-ALKANOIC ACIDS**

**Jean-Paul Brunet, Creteil, and Andre Cometti, Paris, both of France, assignors to Rhone-Poulenc S.A., Paris, France**

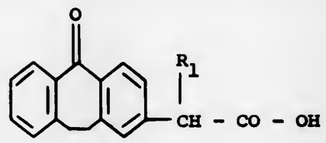
**Filed Feb. 28, 1974, Ser. No. 447,059**

**Claims priority, application France, Mar. 2, 1973, 73.07508; Oct. 19, 1973, 73.37404; Jan. 23, 1974, 74.02214**

**Int. Cl.² C07C** *65/20*

**U.S. Cl. 260—515 R** **4 Claims**

**1.** A dibenzo[a,d]cycloheptene of the formula:




wherein $R_1$ is hydrogen, methyl or ethyl, or the pharmaceutically acceptable non-toxic alkali metal, alkaline earth metal, ammonium and amine salts thereof.

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**3,933,906**

**3,4-BISAMINO-5-SULFAMOYLBENZOIC ACIDS**

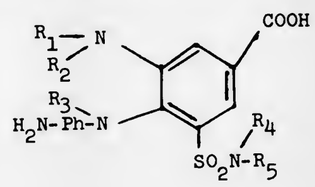
**Lincoln Harvey Werner, Summit, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.**

**Continuation-in-part of Ser. No. 297,531, Oct. 13, 1972. This application Aug. 8, 1973, Ser. No. 386,651**

**Int. Cl.² C07C** *143/52*

**U.S. Cl. 260—518 R** **4 Claims**

**1.** A compound corresponding to the formula




in which $R_1$ is lower alkyl, lower alkenyl, lower alkynyl, (monocyclic, 3 to 7 ring-membered cycloalkyl, cycloalkenyl, 2- or 7-norbornanyl or 2-norborn-5-enyl)-$C_mH_{2m}$, Ph is 1,2-, 1,3- or 1,4-phenylene, unsubstituted or substituted by one member of lower alkyl, hydroxy, lower alkoxy, halogeno or trifluoromethyl, $m$ is an integer from 0 to 4, $R_2$ is hydrogen, lower alkyl, lower alkenyl or lower alkynyl, each of $R_3$ and $R_4$ is hydrogen or lower alkyl, and $R_5$ is hydrogen, lower alkyl or Ph-$NH_2$, or the therapeutically useful ammonium, alkali or alkaline earth metal or acid addition salts thereof.

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**3,933,907**

**THIOPHOSPHORUS ACID AMIDES**

**Stanley Ashton; Vijay Ratna Sharma, and John Anthony Taylor, all of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England**

**Filed Jan. 17, 1974, Ser. No. 434,302**

**Claims priority, application United Kingdom, Jan. 23, 1973, 3348/73. The portion of the term of this patent subsequent to Jan. 13, 1993, has been disclaimed.**

**Int. Cl.² C07C** *145/02*

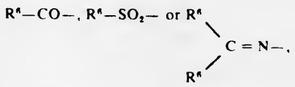
**U.S. Cl. 260—551 P** **6 Claims**

**1.** An amide of the formula:






wherein R is alkyl of up to 18 carbon atoms, alkenyl of up to 18 carbon atoms, cycloalkyl containing 5–6 carbon atoms, phenyl, naphthyl, tolyl, β-methoxyethyl, β-cyanoethyl, 2-formylprop-2-yl, 4-chlorophenyl, 4-methoxyphenyl, 4-dimethylaminophenyl, 2-nitrophenyl, 4-nitrophenyl, 2,3,4,5,6-pentachlorophenyl, 2-methoxycarbonylphenyl or 4-phenylsulphonylphenyl, $R^1$ is hydrogen, alkyl of up to 18 carbon atoms, alkenyl of up to 18 carbon atoms, cycloalkyl containing 5–6 carbon atoms, phenyl, naphthyl, tolyl, β-methoxyethyl, β-cyanoethyl, 2-formylprop-2-yl, 4-chlorophenyl, 4-methoxyphenyl, 4-dimethylaminophenyl, 2-nitrophenyl, 4-nitrophenyl, 2,3,4,5,6-pentachlorophenyl, 2-methoxycarbonylphenyl or 4-phenylsulphonylphenyl or a group of the formula




wherein $R^6$ is hydrogen or one of the values of R given above, one of $R^2$ and $R^3$ is R — S — $NR^1$ — and the other is R — S — $NR^1$ —, halogen, a value as recited for R or —OR wherein R and $R^1$, in each instance, have the meaning given above.

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**3,933,908**

**SUBSTITUTED BENZOYL UREAS**

**Kobus Wellinga, and Rudolf Mulder, both of Weesp, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.**

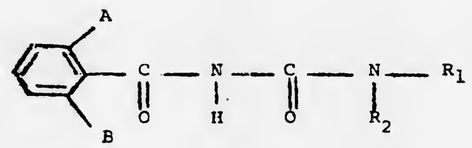
**Division of Ser. No. 143,668, May 14, 1971, Pat. No. 3,748,356. This application Apr. 25, 1973, Ser. No. 354,393**

**Claims priority, application Netherlands, May 15, 1970, 7007040**

**Int. Cl.² C07C** *127/22*

**U.S. Cl. 260—553 E** **25 Claims**

**1.** A compound of the formula




wherein A and B are each moieties selected from the group consisting of hydrogen and halogen with the proviso that A and B do not both represent hydrogen, $R_1$ is a moiety selected from the group consisting of hydrogen and lower alkyl and $R_2$ is a moiety selected from the group consisting of phenyl, halogen substituted phenyl and halogenated alkyl substituted phenyl.

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**3,933,909**

**METHOD FOR PRODUCING SULFONYL SEMICARBAZIDES**

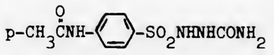
**John E. Herweh, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.**

**Filed July 19, 1974, Ser. No. 490,039**

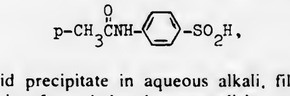
**Int. Cl.² C07C** *133/02*, *159/00*

**U.S. Cl. 260—554** **2 Claims**

**1.** A process for the manufacture of a sulfonyl semicarbazide of the formula




which comprises forming a precipitate by reacting in a dipolar aprotic solvent an azobisformamide of the formula $H_2NCON = NCONH_2$ with a free sulfinic acid of the formula




dissolving said precipitate in aqueous alkali, filtering said alkaline solution formed thereby, neutralizing said alkaline solution and recovering said sulfonyl semicarbazide.

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**3,933,910**

**PROCESS FOR THE PRODUCTION OF KETAZINES**

**Helmut Waldmann, Leverkusen; Hermann Seifer, Cologne; Wulf Schwerdtel, Leverkusen; Wolfgang Swodenk, Odenthal-Gloebusch, and Kurt-Wilheim Eichenhofer, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

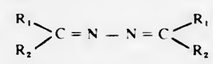
**Filed May 14, 1974, Ser. No. 469,939**

**Claims priority, application Germany, May 19, 1973, 2325460**

**Int. Cl.² C07C** *119/00*

**U.S. Cl. 260—561 A** **8 Claims**

**1.** In the production of a ketazine corresponding to the general formula

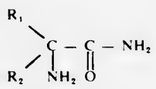



in which

$R_1$ and $R_2$ are independently linear or branched alkyl radicals of from 1 to 8 carbon atoms, a phenyl radical, a cyclic alkyl radical with 5 to 8 carbon atoms, or taken together with the carbon atoms to which they are attached represent a carbocyclic ring with 5 to 8 carbon atoms, by reacting ammonia, hydrogen peroxide, a -CN containing compound and a ketone of the general formula

$R_1$ - CO - $R_2$

in which $R_1$ and $R_2$ are as defined above, the improvement which comprises using hydrocyanic acid as said -CN containing compound and effecting said reaction at from -20°C to 100°C, whereby said ketazine is produced along with an α-amino carboxylic acid amide of the formula




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**3,933,911**

**1-ARYL-2-AMIDOALKYLAMINOETHANOL DERIVATIVES**

**Brian Geoffrey Main, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England**

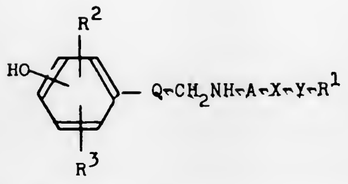
**Filed July 5, 1974, Ser. No. 485,994**

**Claims priority, application United Kingdom, July 19, 1973, 34465/73**

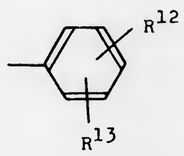
**Int. Cl.² C07C** *103/38*

**U.S. Cl. 260—562 N** **7 Claims**

**1.** A phenylethylamine derivative selected from compounds of the formula:



wherein A is alkylene of up to 6 carbon atoms, wherein Q is carbonyl or hydroxymethylene, wherein $R^1$ is alkyl or cycloalkyl each of up to 6 carbon atoms, or aryl of the formula:



wherein $R^2$, $R^3$, $R^{12}$ and $R^{13}$, which may be the same or different, each is hydrogen, halogen, hydroxy, amino or hydroxymethyl, alkyl, alkoxy or acylamino each of up to 6 carbon atoms, or aryl of up to 12 carbon atoms, wherein X is NHCO and wherein Y is a direct link, or is alkylene or alkylenoxy each of up to 6 carbon atoms; and the acid-addition salts thereof.

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**3,933,912**

## SUBSTITUTED PHENYLTHIOAMIDINES

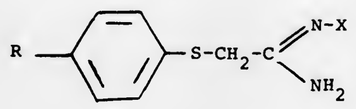
**Earl R. Bockstahler, Indianapolis, Ind., assignor to The Dow Chemical Company, Midland, Mich.**

**Division of Ser. No. 401,475, Sept. 27, 1973, which is a division of Ser. No. 257,940, May 30, 1972, Pat. No. 3,775,478. This application July 8, 1974, Ser. No. 486,705**

**Int. Cl.² C07C** *123/00*

**U.S. Cl. 260—564 G** **2 Claims**

**1.** A substituted phenylthio amidine compound selected from the group consisting of compounds corresponding to the formula



wherein R represents tertiary butyl and X represents hydroxyl, and the salts thereof of pharmaceutically acceptable acids.

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**3,933,913**

## N,N'-BIS[2-(3-SUBSTITUTED-4-HYDROXYPHEYL)-2-HYDROXYETHYL)]-POLYMETHYLENEDIAMINES

**Donald F. Colella, Philadelphia, Pa., and Carl Kaiser, Haddon Heights, N.J., assignors to SmithKline Corporation, Philadelphia, Pa.**

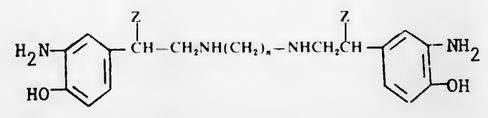
**Continuation-in-part of Ser. No. 148,912, June 1, 1971, abandoned. This application Sept. 8, 1972, Ser. No. 287,399**

**Claims priority, application South Africa, May 25, 1972, 72/3611**

**Int. Cl.² C07C** *91/22*

**U.S. Cl. 260—570.6** **2 Claims**

**1.** A chemical compound of the formula:



or a pharmaceutically acceptable acid addition salt of said compound, wherein:

*n* is a positive whole integer from 4 to 8; and

Z is hydroxy.

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**3,933,914**

## ORGANIC DYE HAVING FLUOROALIPHATIC SUBSTITUENT

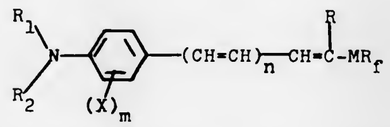
**Robert F. Coles, and Ivan H. Skoog, both of Lake Elmo, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.**

**Filed Oct. 25, 1972, Ser. No. 300,752**

**Int. Cl.² C07C** *87/52*

**U.S. Cl. 260—577** **8 Claims**

**1.** A compound having the general formula



wherein $R_1$ and $R_2$ are hydrogen, alkyl, haloalkyl, phenyl, or benzyl, *n* is the integer zero, 1 or 2, X is hydrogen, halogen, alkyl having from 1-3 carbon atoms, nitro, or alkoxy having from 1-3 carbon atoms, and *m* is the integer 1 to 3, M is a divalent bridging radical selected from the group consisting of sulfonyl, carbonyl, and carbonyloxy, $R_f$ is a monovalent saturated perfluoroalkyl radical having from 1 to 8 carbon atoms, R is a monovalent radical selected from the group consisting of, alkylcarbonyl, perfluoroalkyl, alkylsulfonyl, phenylsulfonyl, nitro, sulfonyl fluoride, sulfonyl chloride, and $MR_f$ wherein M and $R_f$ are as defined above.

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**3,933,915**

## INSECT REPELLENT COMPOSITIONS AND PROCESS HAVING AN N-SUBSTITUTED HYDROXYALKYL AMINE AS AN ACTIVE INGREDIENT

**Carl Bordenca, Rocky River, Ohio; Kenneth P. Dorschner, Vienna, Va., and Robert P. Johnson, Baton Rouge, La., assignors to SCM Corporation, Cleveland, Ohio**

**Continuation of Ser. No. 265,673, June 23, 1972, abandoned, which is a continuation-in-part of Ser. No. 189,464, Oct. 14, 1971, abandoned. This application May 16, 1974, Ser. No. 470,632**

**Int. Cl.² C07C** *91/04, 91/06*

**U.S. Cl. 260—584 R** **5 Claims**

**1.** A hydroxyalkyl amine selected from the group consisting of: N-(2-hydroxy-1,1-dimethylethyl)-di(3,7-dimethyloctyl) amine, N-(2-hydroxy-1,1-dimethylethyl) geranyl amine, N-(2-hydroxy-1,1-dimethylethyl) digeranyl amine, and N-(2-hydroxyethyl) geranyl amine.



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**3,933,916**

## PURIFICATION OF CYCLOHEXANONE

**Pierre Lejeune, Wilrijk; Jan Van Esbroeck, and Pol Bamelis, both of Kalmthout, all of Belgium, assignors to Bayer Aktiengesellschaft, Germany**

**Filed Sept. 13, 1973, Ser. No. 397,143**

**Claims priority, application Germany, Sept. 20, 1972, 2246103**

**Int. Cl.² C07C** *45/24*

**U.S. Cl. 260—586 R** **5 Claims**

**1.** A process for recovering cyclohexanone produced by the air oxidation of cyclohexane or by the hydrogenation of phenol which comprises the steps of dissolving the reaction product of the aforesaid oxidation or hydrogenation in a solvent for cyclohexanone which is readily separated from cyclohexanone by distillation and which is selected from the group consisting of aromatic, aliphatic and cycloaliphatic hydrocarbons of 5 to 15 carbon atoms, alkanols and cycloalkanols of 1 to 10 carbon atoms and their corresponding linear and cyclic ethers having a total of 4 to 15 carbon atoms, treating said solvent solution for up to 30 minutes with an acid at a temperature which is above the solidification point of the solution and up to 150°C. in an amount of from 1 ppm to 1 part by weight of acid per 100 parts by weight of cyclohexanone solution, said acid being selected from the group consisting of mineral acids which do not have an oxidizing effect under said treatment conditions; acidic salts thereof; aliphatic, cycloaliphatic, aromatic and araliphatic carboxylic acids; aliphatic, cycloaliphatic, aromatic and araliphatic sulfonic acids; acid ion exchange resins containing carboxyl groups and acid ion exchange resins containing sulfonyl groups and subsequently distilling said treated solution to recover cyclohexanone.

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**3,933,917**

## PRODUCTION OF DIMETHYLBENZOPHENONE

**Ernst Schaffner, Ludwigshafen; Heinz Eilingsfeld, Frankenthal, and Manfred Patsch, Ludwigshafen, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany**

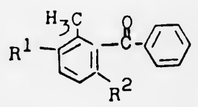
**Filed Aug. 29, 1973, Ser. No. 392,822**

**Claims priority, application Germany, Sept. 2, 1972, 2243283**

**Int. Cl.² C07C** *49/76*

**U.S. Cl. 260—591** **6 Claims**

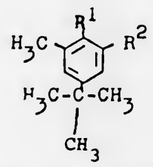
**1.** A process for the production of dimethylbenzophenone of the formula



(II)

in which one of the two radicals $R^1$ and $R^2$ is hydrogen and the other is methyl, which process comprises:

a. reacting a benzoyl halide in a first benzoylation step with a tert.-butylxylene of the formula



(I)

in which one of $R^1$ and $R^2$ is hydrogen and the other is methyl, in the presence of a catalytic amount of about 0.5 to 7% by weight of ferric chloride, with reference to the benzoyl halide, at a temperature of −10°C. to +220°C.; and

b. reacting in a second dealkylation step the reaction mixture thus formed in said first step in the presence of about 1 to 1.5 moles of aluminum chloride per mole of the initial compound (I) at a temperature of 30°C. to 150°C.

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**3,933,918**

## 2-ALLYLOXY-4-CHLORO-ACETOPHENONE

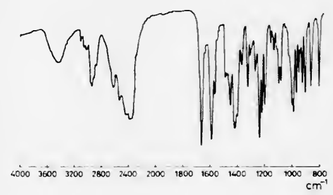
**Arihiro Yamada, Takaishi, and Kyoichi Fujii, Sakai, both of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan**

**Filed Sept. 3, 1974, Ser. No. 502,776**

**Claims priority, application Japan, Sept. 4, 1973, 48-98923**

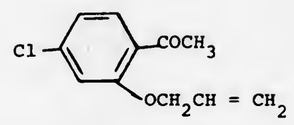
**Int. Cl.² C07C** *49/78*

**U.S. Cl. 260—592** **1 Claim**





**1.** A compound of the formula:



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**3,933,919**

## HYDROFORMYLATION OF MONO-α-OLEFINS AND MONO-α-ACETYLENES

**Geoffrey Wilkinson, 6 Tennul Close, London W. 2, England**

**Continuation of Ser. No. 821,521, Feb. 10, 1968, abandoned, Division of Ser. No. 541,118, Dec. 15, 1965, abandoned. This application Mar. 4, 1974, Ser. No. 447,827**

**Claims priority, application United Kingdom, Dec. 15, 1964, 50984/64; Feb. 16, 1965, 6676/65; Oct. 5, 1965, 42138/65**

**Int. Cl.² C07C** *45/10*

**U.S. Cl. 260—604 HF** **3 Claims**

**1.** A hydroformylation process comprising reacting hydrogen and carbon monoxide with a mono-α-olefinically or mono-α-acetylenically unsaturated aliphatic hydrocarbon, said process being carried out at a temperature in the range of 50°–150° C at a pressure of 5 to 100 atmospheres and in the presence of a liquid reaction medium having dissolved therein a catalytic quantity of a catalyst having the formula $L_nM'X_v$, wherein L is a ligand molecule having a donor atom selected from the class consisting of phosphorus and arsenic, said donor atom having a pair of electrons available for donation to metal atom M; *n* is the number of ligand molecules present and is a positive integer having a value of at least one and less than 4; M is a metal atom selected from the class consisting of ruthenium, osmium, rhodium, iridium, palladium and platinum, *v* is the valency state of said metal atom and is a positive integer having a value of from 1 to 4; X is a halogenoid moiety selected from the class consisting of halogen, cyanide, cyanate and thiocyanate; Y is the number of halogenoid moieties present and is an integer having a value of from 1 to 3.

3,933,920

## PRODUCTION OF α, ω-DIALDEHYDES

Hans Juergen Nienburg, Heidelberg, and Rudolf Kummer, Frankenthal, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Mar. 12, 1974, Ser. No. 450,284
Claims priority, application Germany, Mar. 24, 1973, 2314694
Int. Cl.² C07C 47/12
U.S. Cl. 260—604 HF 7 Claims

1. An improved process for the production of an α,ω-dialdehyde by reaction of a linear α,ω-diolefin having isolated double bonds with carbon monoxide and hydrogen at elevated temperature and at superatmospheric pressure in the presence of a cobalt carbonyl complex, wherein the improvement comprises supplying the cobalt to the reaction in the form of cobalt carbonyl hydride which is dissolved in the α,ω-diolefin to be used or in an inert organic solvent and carrying out the reaction at a temperature of from 70° to 130°C.

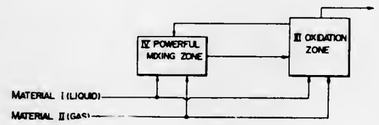
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3,933,921

## PROCESS FOR THE PRODUCTION OF HYDROPEROXIDES

Hideaki Suda, Takaishi; Iwao Dohgane, Nishinomiya; Takashi Chinuki, Toyonaka; Kenji Tanimoto; Hirokazu Hosaka, both of Minoo; Yukimichi Nakao, Kobe; Yuji Ueda, Izumiotsu; Seiya Imada, Sakai; Hideki Yanagihara, Toyonaka, and Kunihiko Tanaka, Ibaragi, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed June 18, 1973, Ser. No. 370,673
Claims priority, application Japan, June 23, 1972, 47-63510
Int. Cl.² C07C 179/02, 179/04
U.S. Cl. 260—610 B 6 Claims




1. In a process for the production of hydroperoxides by the oxidation of an aromatic hydrocarbon having at least one tertiary carbon atom selected from the group consisting of cumene, cymene, butylbenzene, diisopropyltoluene, diisopropylbenzene, isopropylnaphthalenes and diisopropylnaphthalenes with oxygen or an oxygen containing gas in the presence of an aqueous alkaline solution, at a temperature of 80° to 150°C and at pH of 5 to 12, the improvement which comprises conducting the oxidation by forming an emulsion phase by powerfully mixing at least part of said aromatic hydrocarbons and said aqueous alkaline solution, said mixing being performed by powerfully mixing an intermediate reaction mixture obtained after the oxygen has initially reacted with the aromatic hydrocarbon and containing said aqueous alkaline solution.

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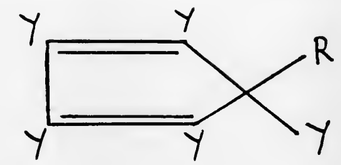
3,933,922

## SUBSTITUTED POLYHALOGENATED CYCLOPENTADIENES

Victor Mark, Ransomville, N.Y., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 135,391, April 19, 1971, Pat. No. 3,799,994, Continuation-in-part of Ser. No. 786,429, Dec. 23, 1968, abandoned, which is a continuation-in-part of Ser. No. 44,890, July 25, 1960, Pat. No. 3,478,117. This application Dec. 6, 1973, Ser. No. 422,246
Int. Cl.² C07C 43/18
U.S. Cl. 260—611 R 3 Claims

1. Compound of the formula




wherein Y is a halogen of atomic weight between 35 and 80; R is alkoxyalkyl having at least 2 and a maximum of 6 carbon atoms.

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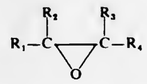
3,933,923

## PROCESS FOR THE MANUFACTURE OF VICINAL GLYCOLS

Rainer Osberghaus, Dusseldorf-Urdenbach, and Werner Stein, Erkrath-Unterbach, both of Germany, assignors to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany

Filed Nov. 7, 1973, Ser. No. 413,690
Claims priority, application Germany, Nov. 20, 1972, 2256907
Int. Cl.² C07C 29/00, 41/02
U.S. Cl. 260—615 R 9 Claims

1. In the process for the preparation of higher vicinal diols and/or higher vicinal polyols comprising hydrolyzing the corresponding epoxides of the formula




in which $R_1$, $R_2$, $R_3$ and $R_4$ are each selected from the group consisting of hydrogen, alkyl having 1 to 28 carbon atoms, haloalkyl having 1 to 28 carbon atoms, alkoxyalkyl having 2 to 28 carbon atoms, epoxyalkyl having 3 to 28 carbon atoms, haloepoxyalkyl having 3 to 28 carbon atoms, alkoxyepoxyalkyl having from 4 to 28 carbon atoms, and mixtures thereof, with the proviso that the total number of carbon atoms in the epoxide is from 4 to 30 carbon atoms, with an aqueous solution of a catalyst, and recovering said diols and/or polyols; the improvement which comprises carrying out said hydrolysis with a catalyst consisting of an aqueous solution of salts selected from the group consisting of alkali metal salts, alkaline earth salts and mixtures thereof, of carboxylic acids selected from the group consisting of (a) alkanoic acids having from 8 to 22 carbon atoms with at least 0.5 parts by weight per part by weight of said epoxides of dissolving intermediaries, (b) alkanedioic acids having 3 to 24 carbon atoms, (c) alkenedioic acid having 4 to 24 carbon atoms, and (d) a mixture of at least one monocarboxylic acid selected from the group consisting of an alkanoic acid having 1 to 24 carbon atoms and an alkenoic acid having 3 to 24 carbon atoms with at least one dicarboxylic acid selected from the group consisting of an alkanedioic acid having 3 to 24 carbon atoms and an alkenedioic acid having 4 to 24 carbon atoms, at a temperature above 100°C, optionally in the presence of further dissolving intermediaries, said aqueous solution of said salts containing 1% to 20% of said salts and being present in an amount of at least 0.5 parts by weight of said salt solution per part by weight of said epoxide, said dissolving intermediaries being selected from the group consisting of water-soluble alkanones and water-soluble cyclic hydrocarbon ethers,.



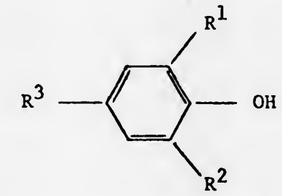
3,933,924

## PROCESS FOR PREPARING HYDROXYDIPHENYL

Oskar Weissel, Krefeld; Horst Köller, Krefeld-Veeberg, and Hans-Helmut Schwarz, Krefeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 11, 1974, Ser. No. 450,252
Claims priority, application Germany, Mar. 26, 1973, 2314950
Int. Cl.² C07C 37/06
U.S. Cl. 260—620 5 Claims

1. In the process for the production of hydroxydiphenyl, which comprises dehydrogenating a starting material comprising completely or partly hydrogenated hydroxydiphenyl in the gaseous phase in the presence of a dehydrogenation catalyst containing nickel, chromium, aluminum, copper and an alkali compound selected from the group of alkali metal sulfate and alkali metal carbonate, the improvement which comprises adding a stabilizer having the formula (I):




(I)

wherein:

$R^1$, $R^2$ and $R^3$, which may be the same or different, each represents a linear or optionally branched alkyl radical having up to 6 carbon atoms, in addition to which $R^3$ can also represent a hydrogen atom, to the starting material before it comes into contact for the first time with oxygen-containing gases and the dehydrogenation catalyst.

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3,933,925

## HYDROLYSIS OF TOLUENE DIAMINES TO PRODUCE METHYL RESORCINOLS

Nicholas P. Greco, Edgewood, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 267,525, June 29, 1972, Pat. No. 3,862,247, which is a continuation-in-part of Ser. No. 16,545, March 4, 1970, abandoned. This application Jan. 17, 1975, Ser. No. 542,087
Int. Cl.² C07C 39/08
U.S. Cl. 260—621 M 7 Claims

1. A method of making methyl resorcinol comprising:

a. contacting toluene diamine with ammonium bisulfate in an aqueous solution that contains 4 to 12 moles of ammonium bisulfate per mole of toluene diamine and 40 to 120 moles of water per mole of toluene diamine and that is at a temperature of 200° to 300°C. for a period of one-half to eight hours to hydrolyze said toluene diamine to methyl resorcinol,

b. cooling said hydrolysis reaction mixture, and

c. extracting said methyl resorcinol from said solution with a water-immiscible organic solvent.

3. The method of making methyl resorcinol comprising:

a. contacting toluene diamine with ammonium bisulfate in an aqueous solution that contains 4 to 12 moles of ammonium bisulfate per mole of toluene diamine and 40 to 120 moles of water per mole of toluene diamine and that is at a temperature of 200° to 260°C. for a period of one-half to eight hours to hydrolyze said toluene diamine to methyl resorcinol.

b. cooling said hydrolysis reaction mixture,

c. extracting said methyl resorcinol from said solution with an inert water-immiscible organic solvent, thereafter

d. evaporating the water from said solution to obtain a residue consisting essentially of ammonium sulfate and ammonium bisulfate, and

e. heating said residue to an elevated temperature of 210° to 450°C. to convert said ammonium sulfate to ammonium bisulfate for reuse to hydrolyze more toluene diamine to methyl resorcinol.

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3,933,926

## PREPARATION OF NITROPHENOLS

David Anthony Salter, 35, Roseacres, Takely, Essex, England, and Robert John James Simkins, 3, Upper Park, Harlow, Essex, England

Continuation of Ser. No. 880,981, Nov. 28, 1969, abandoned. This application May 30, 1973, Ser. No. 365,208
Claims priority, application United Kingdom, Nov. 29, 1968, 56724/68; Aug. 27, 1969, 42571/69
Int. Cl.² C07C 79/26, 79/30
U.S. Cl. 260—622 P 10 Claims

1. A process for the preparation of polynitrophenols comprising adding over a period of time sufficient to form said polynitrophenols, a liquid suspension containing from about 4 to about 20 percent weight/volume of a nitrosated phenol selected from the group consisting of nitrosated phenol, nitrosated m-cresol, nitrosated resorcinol, nitrosated phloroglucinol, nitrosated 3,5,dimethyl phenol, nitrosated 3-methoxy phenol and nitrosated naphthol to a nitric acid solution containing between 45 and 100 percent by weight of nitric acid, said solution being maintained at a temperature in the range from about 45° to 100°C., said nitrosated compound containing at least one nitroso group, said polynitrophenol containing at least the same number of nitro groups as nitroso groups on said nitrosated compound.

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3,933,927

## PHENOL TRANSALKYLATION PROCESS

Lloyd E. Goddard, Orangeburg, S.C., assignor to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 20,115, March 16, 1970, abandoned. This application Apr. 13, 1973, Ser. No. 351,015
Int. Cl.² C07C 39/06
U.S. Cl. 260—624 E 2 Claims

1. A process for selectively ortho-transalkylating phenol, said process comprising mixing said phenol with 2,6-di-sec-butylphenol and about 0.01 to 0.1 mole parts per mole part of phenol and 2,6-di-sec-butylphenol of an aluminum phenoxide and heating the mixture in a closed system to a temperature of about 100°–350°C whereby a sec.-butyl group from the 2,6-di-sec-butyl phenol is thereby transferred selectively to an ortho position of the phenol.

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3,933,928

## METHOD FOR PRODUCING 2,6-DI-TERT.-BUTYL-4-CUMYL PHENOL

Kunio Hanauye; Tsutomu Takase, both of Nagoya; Mitsuhiro Iwasa, Tokai, and Mizuo Ito, Nagoya, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Aug. 21, 1974, Ser. No. 499,546
Claims priority, application Japan, Aug. 27, 1973, 48-95139
Int. Cl.² C07C 39/06
U.S. Cl. 260—626 R 6 Claims

1. A method for producing 2,6-di-tert.-butyl-4-cumyl phenol by reacting p-cumyl phenol with isobutylene which comprises conducting the reaction in the presence of p-toluene sulfonic acid in an amount of from 0.01 to 20% by weight based upon the amount of p-cumyl phenol and at a reaction temperature of from 40° to 120°C.

3,933,929
## PROCESS FOR THE PURIFICATION OF P-NITROPHENOL

Gilbert Colovray, Peage-du-Roussillon, France, assignor to Rhone-Poulenc S.A., Paris, France

Filed May 14, 1973, Ser. No. 360,097
Claims priority, application France, May 15, 1972, 72.17254
Int. Cl.² C07C *37/22, 37/40*
U.S. Cl. 260—627 G 9 Claims

1. In a process for the purification of p-nitrophenol resulting from the nitration of phenol with nitric acid which comprises the steps of:

i. separating the crude mixture of nitrophenols from the residual aqueous solution of nitric acid;
ii. steam distilling ortho-nitrophenol from the crude mixture to produce a crude aqueous solution of impure p-nitrophenol;
iii. treating at least one of the crude aqueous solution of p-nitrophenol and the crude mixture of nitrophenols with an aqueous solution of sodium bisulphite under condition such that the crude solution or crude mixture contains more than 0.5% by weight of sodium bisulphite and is at pH 5.4 to 6.4;
iv. crystallising p-nitrophenol by cooling the treated solution of step (iii), the improvement which comprises:
v. stirring the crystalline p-nitrophenol from step (iv) in water at a temperature of 55° to 85°C., the proportions of water and p-nitrophenol being such that, at that temperature there is a 10 to 40% by weight excess of p-nitrophenol relative to the amount of p-nitrophenol which is soluble in the water at that temperature,
vi. separating by decantation the liquid mixture resulting from step (v) at a temperature of 55° to 85°C., into a more concentrated solution of p-nitrophenol in water, which forms the lower layer, and a less concentrated solution of p-nitrophenol in water, which forms the upper layer,
vii. cooling the upper layer, obtained in step (vi) to a temperature of 40° to 50°C., separating the resulting liquid mixture by decantation into two non-miscible phases and separating the more concentrated solution of p-nitrophenol in water, from the less concentrated solution of p-nitrophenol in water,
viii. cooling the more concentrated solution from step (vii), to below 30°C. to cause p-nitrophenol to crystallise, and then filtering off and drying the crystals of p-nitrophenol.

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3,933,930
## HEXANEDIOL FROM CYCLOHEXANE

Edward F. Dougherty, and Charles C. Hobbs, Jr., both of Corpus Christi, Tex., assignors to Celanese Corporation, New York, N.Y.

Filed Mar. 6, 1975, Ser. No. 555,920
Int. Cl.² C07C *29/00*
U.S. Cl. 260—635 D 6 Claims

1. In a process for the production of 1,6-hexanediol from cyclohexane wherein:

a. cyclohexane is oxidized in the liquid phase in the presence of molecular oxygen and an oxidation catalyst at elevated temperatures and superatmospheric pressures to produce an oxidation product;
b. said oxidation product is separated into a non-acid fraction comprising cyclohexanol or cyclohexanone or mixtures thereof and an acid fraction comprising $C_1$ to $C_6$ monocarboxylic and dicarboxylic acids, substantially adipic acid and 6-hydroxyhexanoic acid and also 1,4-dihydroxycyclohexane and/or precurrors thereof;
c. said acid fraction is esterified by reacting same in the liquid phase with a $C_2$-$C_{10}$ monohydric or dihydric alkane alcohol under esterification conditions so as to esterify at least a portion of the adipic acid and 6-hydroxyhexanoic acid contained in said acid fraction;
d. the ester product obtained by esterifying said acid fraction is reacted while in a liquid phase with molecular hydrogen under hydrogenolysis conditions including elevated temperature and superatmospheric pressure and in the presence of a catalytic amount of a hydrogenolysis catalyst to hydrogenolyze the esters of adipic acid and 6-hydroxyhexanoic acid so as to form 1,6-hexanediol and said alkane alcohol; and
e. separating 1,6-hexanediol from the product of said hydrogenolysis;

the improvement which comprises a prehydrogenation of said acid fraction prior to esterification thereof by reacting said acid fraction while in a liquid phase with molecular hydrogen at temperatures within the range of about 100° to 350°C and pressures within the range of about 50 to 400 atmospheres absolute, and in the presence of a metallic hydrogenation catalyst of copper, cobalt, platinum or palladium or mixtures thereof sufficient to convert a substantial portion of said 1,4-dihydroxycyclohexane to cyclohexanol, cyclohexane and/or cyclohexene, but insufficient to appreciably hydrogenolyze the adipic acid and 6-hydroxyhexanoic acid therein.

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3,933,931
## PROCESS FOR PREPARING PERFLUOROALKYL IODIDES

Yoshio Oda, and Manabu Suhara, both of Yokohama, Japan, assignors to Asahi Glass Co., Ltd., Tokyo, Japan

Filed Oct. 8, 1971, Ser. No. 187,867
Claims priority, application Japan, Oct. 9, 1970, 45-88337
Int. Cl.² C07C *17/04, 19/07*
U.S. Cl. 260—653 11 Claims

1. A process for preparing perfluoroethyl iodide by the reaction of iodine, iodine pentafluoride and tetrafluoroethylene, in which the molar ratio of iodine to iodine pentafluoride is at least 1 : 1 and the molar ratio of tetrafluoroethylene to iodine pentafluoride is at least 3 : 1 and the reaction is carried out in the presence of a catalyst selected from the group consisting of niobium fluoride, tantalum fluoride, boron fluoride, and molybdenum fluoride and at a temperature of from 0°C to 150°C. and a pressure of from atmospheric pressure to 200 atmospheres, and wherein said reaction is carried out in the liquid phase in a liquid inert medium wherein liquid iodine pentafluoride or perfluoroalkyl iodide and catalysts are first introduced into the reaction zone and then tetrafluoroethylene is added.

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3,933,932
## METHOD OF OXYDEHYDROGENATION OF ETHYL BENZENE

G. Edwin Vrieland, Midland, Mich., and Hans R. Friedli, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 28, 1974, Ser. No. 474,126
Int. Cl.² C07C *5/48*
U.S. Cl. 260—669 R 7 Claims

1. A method of oxydehydrogenating ethyl benzene to styrene comprising feeding a mixture of from about 0.5 to about 4.0 moles of oxygen per mole of ethyl benzene, into admixture with a catalyst consisting essentially of lanthanum phosphate, lanthanum pyrophosphate, a rare earth phosphate having a predominant amount of lanthanum in the metal moiety or a rare earth pyrophosphate having a predominant amount of lanthanum in the metal moiety, at a reaction temperature of from about 450° to about 650°C., and a space velocity of from about 55 to about 2500 and recovering styrene from the effluent.



3,933,933
## OXIDATIVE DEHYDROGENATION PROCESSES

Brent J. Bertus, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 245,382, April 19, 1972, Pat. No. 3,821,324. This application Mar. 15, 1974, Ser. No. 451,476
Int. Cl.² C07C *5/48*
U.S. Cl. 260—680 E 4 Claims

1. A process for the oxidative dehydrogenation of a dehydrogenatable hydrocarbon feedstock having from 2 to 12 carbon atoms which comprises contacting said feedstock under dehydrogenation conditions in the presence of molecular oxygen with a catalyst consisting of titanium, molybdenum, lead and combined oxygen, said catalyst characterized by the expression

$$TiMo_xPb_yO_z$$

wherein $x$ and $y$ are numbers in the range of about 0.01 to about 5 and $z$ is a number determined by the valence requirements of said titanium, molybdenum and lead.

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3,933,934
## FABRICATION OF ATACTIC WAXES OF POLYOLEFIN

Jean Claude Bailly; Daniel Durand, and Pierre Mangin, all of Martigues, France, assignors to Naphtachimie, Paris, France

Filed Jan. 18, 1973, Ser. No. 324,898
Claims priority, application France, Jan. 20, 1972, 72.01829
Int. Cl.² C07C *3/21*
U.S. Cl. 260—683.15 D 9 Claims

1. A process for the manufacture of atactic waxes which are substantially completely soluble in boiling n-heptane by polymerizing propylene alone or with the addition of not more than 30% by weight monoolefins having the general formula $CH_2$ = CHR in which R is hydrogen or an alkyl radical containing 2 to 8 carbon atoms in which the polymerization is carried out at low pressure and in a hydrocarbon solvent in the presence of a catalytic system formed of (a) a catalyst prepared in a one step reaction between magnesium, an alkyl halide and a titanium compound having the general formula $TiX_{4-m}(OR')_m$ in which Ti represents titanium, X represents a halogen atom, R′ represents an alkyl radical having from 2 to 8 carbon atoms and $m$ is a number within the range of 1 to 4, in which the titanium compound is present in an amount to provide 0.5 to 2 milligram-atoms of titanium per liter of solvent, and (b) a co-catalyst in the form of an organo aluminum compound having the formula $AlR''_nX_{3-n}$, in which R″ represents an alkyl radical having from 1 to 12 carbon atoms, some of which may be replaced by hydrogen atoms, X is a halogen atom and n is a number within the range of 1 to 3, the organo aluminum compound being present in an amount such that the atomic ratio of aluminum to titanium in the catalyst is within the range of 2 to 10.

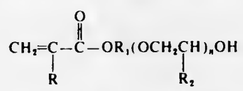
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3,933,935
## FLEXIBLE VINYL ESTER RESIN COMPOSITIONS

George Zachariades, Alvin, and Rhetta Q. Davis, Clute, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 8, 1974, Ser. No. 495,710
Int. Cl.² C08L *63/00*
U.S. Cl. 260—836 8 Claims

1. A thermosettable resin composition which comprises the reaction about equivalent proportions of a polyepoxide and a dicarboxylic acid half ester of a monomer having the formula



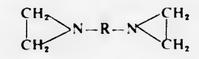
where R is H or methyl, $R_1$ is an alkylene group having two to four carbon atoms, $R_2$ is H, methyl or ethyl and $n$ has an average value of 3 to 6.

3,933,936
## RAPID SETTING ADHESIVE COMPOUNDS

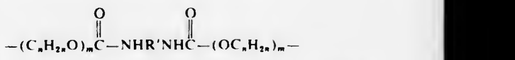
Harry A. Smith, and Erwin H. Kobel, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 20, 1973, Ser. No. 334,059
Int. Cl.² C08L *63/00*
U.S. Cl. 260—841 11 Claims

1. An adhesive composition comprising a curable phenolic-formaldehyde resin and from about 0.5 to about 20 parts by weight of an organic diaziridine, wherein said phenolic-formaldehyde resin is a novolac or a resole obtained by reacting formaldehyde with a monohydric or dihydric phenol or mixture thereof having at least two aromatic ring positions ortho or para to a phenolic hydroxyl group unsubstituted and capable of reaction with formaldehyde in the presence of a basic, neutral, or acidic condensation catalyst wherein said diaziridine has the formula



and R is a radical represented by the formula



wherein $m$ is zero or one, $n$ is two or three, and R′ is an alkylene radical of 2—10 carbon atoms, an arylene hydrocarbon radical or 6–14 carbon atoms, or the residue of the compound obtained by the reaction of two moles of an aromatic or aliphatic diisocyanate with a diol, the diol being ethylene glycol, propylene glycol, a corresponding polyglycol or molecular weight up to about 1000, Bisphenol A, or the adduct of Bisphenol A with two to about 20 moles of ethylene oxide or propylene oxide.

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3,933,937
## MOLDING-GRADE POLYURETHANE

Richard D. Rhodes, Jr., Somersworth, and William M. Humphrey, Jr., Dover, both of N.H., assignors to McCord Corporation, Detroit, Mich.

Filed May 15, 1974, Ser. No. 469,946
Int. Cl.² C08L *27/00*
U.S. Cl. 260—859 R 5 Claims

1. An injection molding-grade thermoplastic polyurethane having good low temperature properties made by reacting the following:

| | |
|---|---|
| Grafted polyol, PBW | 100 |
| Aromatic Polyisocyanate, to FNCO of | 7 to 15 |
| $C_2$–$C_6$ alkane diol, PBW | 5 to 30 |

wherein:

said grafted polyol is a 2000 to 5000 molecular weight copolymer of:
a. 70 to 90 weight percent of a 1000 to 4000 molecular weight poly (oxy $C_1$–$C_4$ alkene) diol, reacted by free radical polymerization with
b. 10 to 30 weight percent of a monomer mixture of 1 part by weight of a vinylaromatic and 0.1 to 9 parts of an olefinic $C_2$–$C_6$ nitrile.

### 3,933,938
### GRAFTED POLYETHER DIOL-BASED THERMOPLASTIC URETHANE ELASTOMER

**Richard D. Rhodes, Jr., Somersworth, and William M. Humphrey, Jr., Dover, both of N.H., assignors to McCord Corporation, Detroit, Mich.**

**Filed May 15, 1974, Ser. No. 469,959**
**Int. Cl.² C08L 27/00**
**U.S. Cl. 260—859 R** **5 Claims**

**1.** An injection molding-grade thermoplastic polyurethane having good low temperature properties made by reacting the following:

| | Parts by weight |
|---|---|
| Grafted polyol | 100 |
| poly alkane ether diol | 2 to 70 |
| Aromatic polyisocyanate | 40 to 100 |
| $C_2$–$C_4$ alkane diol | 10 to 40 |

Wherein:

said grafted polyol is a **2000** to **5000** molecular weight copolymer of:

a. 70 to 90 weight percent of a 1000 to 4000 molecular weight poly (oxy $C_1$–$C_4$ alkene) diol, reacted by a free radical polymerization with

b. 10 to 30 weight percent of a monomer mixture of 1 part by weight of a vinylaromatic and 0.1 to 9 parts of an olefinic $C_2$–$C_6$ nitrile, and

said polyalkylane ether diol has a molecular weight in the range of 500 to 2500.

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### 3,933,939
### POLYESTER WITH EPOXY MONOMER, AND A CROSS-LINKING MONOMER

**Osamu Isozaki, and Selgo Iwase, both of Hiratsuka, Japan, assignors to Kansai Paint Company, Ltd., Japan**

**Filed June 10, 1974, Ser. No. 477,642**
**Claims priority, application Japan, June 13, 1973, 48-65795**
**Int. Cl.² C08L 67/06**
**U.S. Cl. 260—872** **9 Claims**

**1.** A liquid unsaturated resin composition which comprises (A) 60 to 95% by weight of liquid resin and (B) 5 to 40% by weight of polyvinyl monomer having high boiling point, wherein said liquid resin is produced by adding 1.5 to 2 molecules of a compound having both epoxy group and polymerizable unsaturated group to each molecule of a linear polyester of 500 to 5000 in number average molecular weight and having terminal carboxyl groups, and said linear polyester is produced by condensation of (a) 10 to 25% by weight of aromatic dibasic acid or its acid anhydride and (b) 75 to 90% by weight of aliphatic saturated compounds which consist of saturated aliphatic dibasic acid and saturated aliphatic glycol, and further 10 to 60% by weight of said aliphatic saturated compounds are alicyclic saturated dibasic acid or its acid anhydride, and wherein said polyvinyl monomer is at least one member selected from the group consisting of trimethylolpropane triacrylate, trimethylolethane trimethacrylate, ethylene glycol diacrylate, ethylene glycol dimethacrylate, 1,3 -butylene glycol diacrylate, 1,3-butylene glycol dimethacrylate, 1,6-hexanediol diacrylate and 1,6-hexanediol dimethyacrylate.

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### 3,933,940
### MERCAPTAN BLOCKED THERMOSETTING COPOLYMERS

**Carl C. Anderson, Hartland, Wis., and Rostyslaw Dowbenko, Gibsonia, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.**

**Filed Feb. 8, 1973, Ser. No. 330,815**
**Int. Cl.² C08F 22/00; C08G 75/00; C08L 67/06**
**U.S. Cl. 260—873** **14 Claims**

**1.** A method which comprises the steps of:

A. esterifying a polyester resin with a hydroxyl functional mercaptan having a hydrocarbon chain containing up to about 18 carbon atoms or a carboxyl functional mercaptan having a hydrocarbon chain containing up to about 18 carbon atoms in a molar amount sufficient to block at least two polyester functional groups of said polyester resin to provide a mercapto-terminated reaction product; and

B. reacting said mercapto-terminated reaction product in the presence of molecular oxygen with one or more ethylenically-unsaturated monomers to produce a thermosetting block copolymer coating composition.

**7.** A method which comprises the steps of:

A. esterifying a polyol with a carboxyl functional mercaptan having a hydrocarbon chain containing up to about 18 carbon atoms to provide a mercapto-terminated reaction product; and

B. reacting said mercapto-terminated reaction product in the presence of molecular oxygen with one or more ethylenically unsaturated monomers to produce a thermosetting block copolymer coating composition.

**10.** A method of producing a thermosetting block copolymer coating composition which comprises the steps of:

A. esterifying polycaprolactone polyal with mercaptoacetic acid to provide a mercapto-terminated reaction product; and

B. reacting said reaction product of (A) in the presence of molecular oxygen with diacetone acrylamide, 2-hydroxyethyl acrylate, acrylic acid and methyl methacrylate to provide a block copolymer.

**11.** The method which comprises the steps of:

A. reacting a polyester resin or polyol with an organoalkoxysilane selected from the group consisting of alpha-acryloxyalkoxysilane and alpha-methacryloxyalkoxysilane to produce a product having at least two functional groups present for reaction with a hydroxyl functional mercaptan or a carboxyl functional mercaptan;

B. reacting said product with a hydroxyl functional mercaptan having a hydrocarbon chain containing up to about 18 carbon atoms or a carboxyl functional mercaptan having a hydrocarbon chain containing up to about 18 carbon atoms in an amount sufficient to block at least two polyester functional groups to provide a mercapto-terminated reaction product; and

C. reacting said mercapto-terminated reaction product in the presence of molecular oxygen with one or more ethylenically-unsaturated monomers to produce a thermosetting block copolymer coating composition.

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### 3,933,941
### THERMOPLASTIC BLENDED COMPOSITION COMPRISING POLYPHENYLENE ETHER, AROMATIC POLYCARBONATE AND STYRENE RESIN

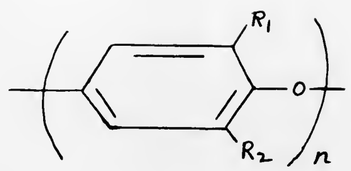
**Eiichi Yonemitsu, Kashiwa; Akitoshi Sugio, Tokyo; Masanobu Masu, Tokyo; Masaharu Kimura, Tokyo, and Masao Okabe, Tokyo, all of Japan, assignors to Mitsubishi Gas Chemical Co., Ltd., Japan**

**Continuation-in-part of Ser. No. 269,891, July 7, 1972, abandoned. This application May 1, 1974, Ser. No. 466,282**
**Claims priority, application Japan, July 9, 1971, 46-50248; United Kingdom, July 6, 1972, 31999/72; Germany, July 10, 1972, 2233896; France, July 10, 1972, 72.24957; Italy, July 8, 1972, 26813/72; Netherlands, July 7, 1972, 7209516; Belgium, July 7, 1972, 119624; Canada, July 7, 1972, 146646**
**Int. Cl.² C08G 39/10**
**U.S. Cl. 260—873** **7 Claims**

**1.** A thermoplastic blended resin composition comprising the following resin components:

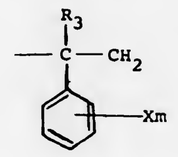
1. 15 to 80% by weight of a polyphenylene ether having a polymer unit of the general formula





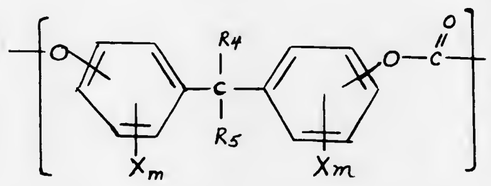
wherein $R_1$ and $R_2$ may be in the same or different and represent a methyl or ethyl group and n is a positive integer of at least 50;

2. 5 to 60% by weight of a styrene resin of at least one member selected from the group consisting of styrene homopolymers, styrene copolymers, rubber-modified polystyrenes and high impact polystyrenes and containing at least 70% of structural units of the general formula



wherein $R_3$ is a hydrogen atom or lower alkyl group, X is a halogen atom selected from chlorine and bromine, and m is zero or integer of 1 or 2; and

3. 2–15% by weight of an aromatic polycarbonate composed of recuring units of the general formula



wherein $R_4$ and $R_5$ may be the same or different, and represent a hydrogen atom or a lower alkyl group, and X and m are the same as defined above; the total amount of (1), (2) and (3) being 100% by weight based on the total weight of the resin.

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### 3,933,942
### PROCESS FOR GRAFT POLYMERIZATION

**Joseph P. Kennedy, Akron, Ohio, and Francis P. Baldwin, Summit, N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.**

**Continuation-in-part of Ser. No. 700,324, Jan. 8, 1968, which is a continuation-in-part of Ser. No. 568,001, July 26, 1966, abandoned, which is a continuation-in-part of Ser. No. 364,295, May 1, 1964, abandoned. This application Oct. 17, 1972. Ser. No. 298,306. The portion of the term of this patent subsequent to Sept. 9, 1992, has been disclaimed.**
**Int. Cl.² C08L 23/16; C08F 255/04, 257/02, 259/00**
**U.S. Cl. 260—878 R** **23 Claims**

**1.** A graft polymer comprising a cationically polymerizable monomer grafted to a halogen containing polymer backbone wherein said halogen containing polymer is a substantially saturated polymer containing before grafting at least 0.01 mole % reactive halogen, said monomer being polymerized and grafted to the backbone at the original location of said reactive halogen.

### 3,933,943
### GRAFT COPOLYMERS BASED ON METHYL METHACRYLATE POLYMERS

**Gerhard Fahrbach, Schwetzingen; Erhard Seiler, Ludwigshafen, and Dieter Stein, Limburgerhof, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany**

**Filed Oct. 24, 1973, Ser. No. 409,257**
**Claims priority, application Germany, Oct. 26, 1972, 2252508**
**Int. Cl.² C08L 9/06**
**U.S. Cl. 260—887** **4 Claims**

**1.** A process for the manufacture of graft copolymers based on methyl methacrylate polymers, wherein a polymer of methyl methacrylate (A) containing at least 10% by weight of polymerized units of methyl methacrylate is reacted with a high molecular weight organic compound (B) produced by reacting at least one alkylene oxide unit having an alkali metal alcoholate end group and at least one polymer block selected from the group consisting of polydiolefin, polyvinyl aromatic and diolefin-vinyl aromatic copolymer, said reaction being carried out in an anhydrous inert organic solvent by mixing solutions of components A and B at from −50° to +100°C.

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### 3,933,944
### α,α′-BIS(PHOSPHONO)DICARBOXYLIC ACID DERIVATIVES

**Jerry P. Moreau; Leon H. Chance; Gordon J. Boudreaux, all of New Orleans, and George L. Drake, Jr., Metairie, all of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.**

**Filed Dec. 4, 1972, Ser. No. 311,609**
**Int. Cl.² C07F 9/40**
**U.S. Cl. 260—932** **3 Claims**

**1.** Dimethyl α,α′-bis(diethylphosphono)adipate.

**2.** α,α′-Bis(diethylphosphono)adipamide.

**3.** Bis(N,N′-hydroxymethyl)α,α′-bis(diethylphosphono)adipamide.

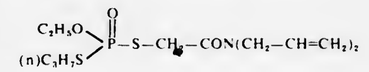
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### 3,933,945
### O-ETHYL-S-(N)-PROPYL-S-DIALLYLCARBAMOYLMETHYL DITHIOPHOSPHATE

**Ernst Beriger, Allschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.**

**Division of Ser. No. 315,973, Dec. 18, 1972, Pat. No. 3,845,171. This application Aug. 9, 1974, Ser. No. 496,423**
**Claims priority, application Switzerland, Dec. 24, 1971, 18909/71; Nov. 3, 1972, 16041/72**
**Int. Cl. C07f 9/16; A01n 9/36**
**U.S. Cl. 260—943** **1 Claim**

**1.** The compound of the formula



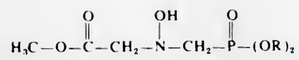
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### 3,933,946
### N-HYDROXY-N-PHOSPHONOMETHYLGLYCINATES

**Van Russell Gaertner, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.**

**Filed Nov. 19, 1974, Ser. No. 525,269**
**Int. Cl.² C07F 9/32; A01N 9/36**
**U.S. Cl. 260—944** **3 Claims**

**1.** A compound of the formula



wherein R represents methyl or allyl.

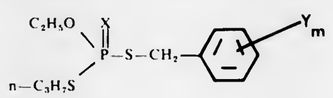
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**3,933,947**
**O-ETHYL-S-PROPYL-S-BENZYL-PHOSPHORODITHIOLATES**

**Shigeo Kishino, Tokyo; Akio Kudamatsu, and Kozo Shiokawa, both of Kanagawa, all of Japan, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

**Division of Ser. No. 127,415, March 23, 1971, abandoned. This application Aug. 8, 1973, Ser. No. 386,674**
**Claims priority, application Japan, Mar. 25, 1970, 45-24438**
**Int. Cl.² C07F 9/165; A01N 9/36**
**U.S. Cl. 260—949** **6 Claims**

1. Phosphoric acid esters of the general formula



(I)

in which
X stands for an oxygen or sulfur atom,
Y stands for lower alkyl mercapto or lower alkylsulfinyl group, and
*m* is 0, 1, 2 or 3.

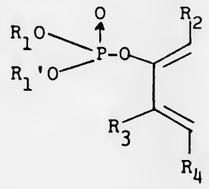
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**3,933,948**
**DIENYLPHOSPHATES**

**Kaspar F. Burri, West Caldwell, N.J.; Frank Kienzle, Therwill, Switzerland, and Perry Rosen, North Caldwell, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.**

**Filed Aug. 15, 1974, Ser. No. 497,598**
**Int. Cl.² C07F 9/09; A01N 9/36**
**U.S. Cl. 260—957** **5 Claims**

1. A compound of the formula



wherein each of $R_1$ and $R_1'$ is lower alkyl, aryl or benzyl, and each of $R_2$, $R_3$ and $R_4$ is hydrogen or lower alkyl.

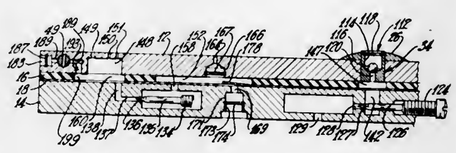
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**3,933,949**
**CHARGE FORMING APPARATUS**

**John C. Woody, Toledo, Ohio, assignor to Borg-Warner Corporation, Chicago, Ill.**

**Filed May 3, 1974, Ser. No. 466,605**
**Int. Cl.² F02M 17/04**
**U.S. Cl. 261—35** **9 Claims**

1. Charge forming apparatus for use with a two cycle internal combustion engine including a body construction provided with a fuel and air mixing passage and a fuel chamber, a fuel inlet valve, means for controlling the inlet valve, a throttle valve in the mixing passage, the mixing passage having an air induction zone and a fuel dispersion zone, the fuel dispersion zone including main aperture means for delivering fuel into the mixing passage, an engine idling aperture means for delivering fuel into the mixing passage, a supplemental chamber in said body construction in communication with the engine idling aperture means, additional aperture means independent of the main aperture means and engine idling aperture means for delivering fuel into the mixing passage, laminar means associated with the body construction having perforate regions, one of said perforate regions providing an elongated fluid flow channel, said elongated channel being in communication with the supplemental chamber, a port in said body construction establishing communication between the fuel chamber and the elongated channel accommodating flow of



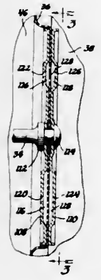
fuel from the fuel chamber into the elongated channel, said additional aperture means being in communication with said elongated channel, a a pulse pressure passage means establishing communication between the crankcase of the engine and the supplemental chamber, valve means associated with said throttle valve operable when the throttle valve is moved to open position for establishing pulse pressure in said elongated channel for projecting fuel through the additional aperture means into the mixing passage, and check valve means associated with said port for preventing reverse flow of fuel from the elongated channel into the fuel chamber.

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**3,933,950**
**AIR VALVE CARBURETOR**

**Louis L. Cuttitta, Lapeer, Mich., and Walter S. Falen, Rochester, N.Y., assignors to General Motors Corporation, Detroit, Mich.**

**Filed May 2, 1974, Ser. No. 466,204**
**Int. Cl.² F02M 19/02**
**U.S. Cl. 261—50 A** **3 Claims**



1. A carburetor comprising a mixture conduit having an air inlet and a mixture outlet, a throttle disposed in said outlet for controlling flow therethrough, an air valve disposed in said air inlet and movable between closed and open positions, means biasing said air valve toward said closed position, a diaphragm connected to said air valve for moving said air valve toward said open position against the bias of said biasing means, one side of said diaphragm being exposed to the pressure in said air inlet upstream of said air valve, and means associated with the other side of said diaphragm for defining therewith an enclosed chamber connected to said mixture conduit between said air valve and said throttle, whereby said diaphragm and said biasing means are effective to position said air valve to establish a selected pressure differential thereacross, and wherein said diaphragm has an opening extending therethrough to permit air to flow continuously from said air inlet upstream of said air valve through said opening and said chamber to said mixture conduit downstream of said air valve to thereby purge fuel from said chamber and inhibit accumulation of fuel in said chamber and a plate overlying said opening and having a calibrated hole restricting air flow through said opening to control the rate thereof.

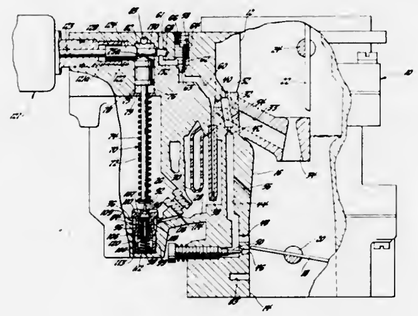


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**3,933,951**
**CARBURETOR**

**Earl R. Fischer, Rochester, and Roland S. Taylor, Fairport, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.**

**Filed July 1, 1974, Ser. No. 484,705**
**Int. Cl.² F02M 7/20**
**U.S. Cl. 261—67** **1 Claim**



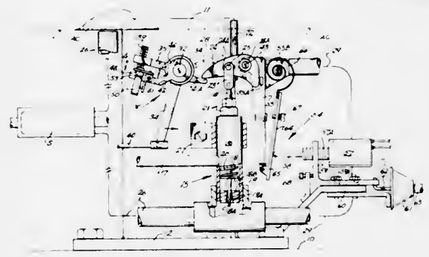
1. A carburetor comprising an air inlet for air flow to an engine, a throttle disposed in said air inlet for controlling flow therethrough, a fuel bowl, an idle fuel passage extending from said fuel bowl to said air inlet adjacent said throttle for delivering fuel thereto, a bleed passage opening from the atmosphere to said idle fuel passage for bleeding air to said idle fuel passage to create an air-fuel emulsion therein, a main fuel passage extending from said fuel bowl to said air inlet upstream of said throttle for delivering fuel thereto, valve means in said main fuel passage, said valve means having a lean position permitting the rate of fuel flow through said main fuel passage to said air inlet which will create a part throttle air-fuel mixture leaner than stoichiometric, an intermediate position permitting the rate of fuel flow through said main fuel passage to said air inlet which will create a part throttle air-fuel mixture slightly richer than stoichiometric, and a rich position permitting the rate of fuel flow through said main fuel passage to said air inlet which will create a full throttle air-fuel mixture substantially richer than stoichiometric, a pressure responsive piston for positioning said valve means, a spring biasing said piston to position said valve means in said rich position, a signal passage subjecting said piston to the pressure in said air inlet downstream of said throttle whereby said piston overcomes the bias of said spring to position said valve means in said lean position when such pressure is below a selected value and to position said valve means in said intermediate position when such pressure is above said selected value but below another value, an arm reciprocable between lean and rich modes, said arm having an actuator portion engageable with said piston when said arm is in said rich mode for causing said piston to position said valve means in said intermediate position even through the pressure in said air inlet downstream of said throttle may be below said selected value, said arm further having a valve portion receivable in said bleed passage when said arm is in said rich mode for obstructing air flow therethrough to thereby enrich the off-idle air-fuel mixture created by fuel flow through said idle fuel passage to said air inlet, and means for reciprocating said arm between said lean mode and said rich mode whereby when said arm is in said rich mode said actuator portion causes said piston to position said valve means in said intermediate position to provide a part throttle air-fuel mixture slightly richer than stoichiometric and said valve portion obstructs said bleed passage to provide an enriched off-idle air-fuel mixture, whereby when said arm is in said lean mode said actuator portion permits said piston to position said valve means in said lean position to provide a part throttle air-fuel mixture leaner than stoichiometric and said valve portion permits air flow through said bleed passage to provide a leaned off-idle air-fuel mixture, and whereby said piston may position said valve means in said rich position to provide a full throttle air-fuel mixture substantially richer than stoichiometric irrespective of the mode of said arm.

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**3,933,952**
**FUEL-AIR MIXING APPARATUS FOR VEHICLES**

**Gerald C. Elmore, P.O. Box 337, Lakeside, Oreg. 97449**

**Filed Dec. 5, 1974, Ser. No. 529,813**
**Int. Cl.² F02M 1/10, 31/04**
**U.S. Cl. 261—145** **13 Claims**

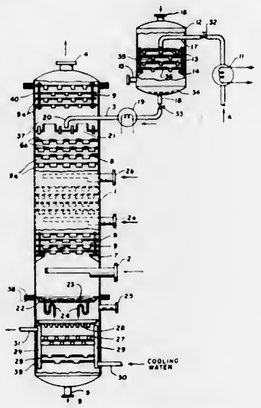


1. A fuel-air mixing apparatus for an internal combustion engine providing for the initial mixing of fuel with an airflow with the mixture subsequently being discharged into an induction airflow whereat final mixing occurs to vaporize the fuel, said apparatus comprising,
fuel metering means including a positionable core,
air conduit means in communication with said metering means providing a heated airflow into which fuel is metered to accomplish first stage mixing, said conduit means in downstream communication at a remote point with an induction airflow to the engine,
a nozzle arrangement discharging the fuel-air mixture into the induction airflow,
fuel and air linkage including a fuel-air control lever operated by the vehicle driver via throttle linkage, fuel and air regulating components actuated by said control, said fuel regulating component operable during open throttle conditions to regulate said fuel metering means, said air regulating component associated with an induction regulation valve whereby actuation of the fuel-air control will simultaneously regulate both a metered flow of fuel into the heated airflow and the flow of induction air with second stage mixing occurring in the induction airflow,
an idle assembly regulating said fuel metering means during both idling and other closed throttle conditions, said idle assembly comprising,
an idle arm for actuation of said positionable core of the fuel metering means,
combination solenoid and vacuum responsive means acting on said idle arm to sequentially position the core for regulating fuel discharge during engine starting and the subsequent engine idling,
temperature responsive means modifying the action of said combination of said idle arm under different temperature conditions, and
said vacuum responsive means operable under closed throttle, high intake manifold vacuum conditions occurring during vehicle deceleration to close said fuel metering means to affect fuel conservation.

### 3,933,953
### APPARATUS FOR DEODORIZING FATS AND OILS

Max Leva, 5118 Hayes St., Hollywood, Fla. 33021

Filed June 6, 1972, Ser. No. 260,209
Int. Cl.² B01D 3/22
U.S. Cl. 261—148 9 Claims




1. Apparatus for stripping volatile materials, such as fatty acids and glycerine, and for removing objectionable odors or flavors from oils and fats, comprising, a chamber enclosing a plurality of vertically stacked, parallely disposed, horizontally extending plates, means for introducing relatively oxygen-free heated oil at the top of said plates, each plate having a plurality of apertures wherein the distance between said apertures is less than the maximum width of said apertures, chimneys extending only downwardly from the perimeters of said apertures, the top surfaces of said plates being devoid of upwardly extending projections, said apertures being devoid of obstructions, whereby thin films of heated oil are formed on said plates, means for introducing superheated steam in the lower portion of said chamber so as to rise through said chimneys and apertures counter-currently of said oil and flow over said films of heated oil to boil out fatty acids and volatile odor-forming matter, and means for evacuating said fatty acids and odor-forming matter from the upper portion of said chamber.

### 3,933,954
### PREPARATION OF POWDERS HAVING SPHERICAL-SHAPED PARTICLES FROM IONOMER RESINS AND ETHYLENE/CARBOXYLIC ACID COPOLYMER RESINS

John Charles Gebhard, Jr., West Chester, Pa.; Marion Glen Waggoner, and James Lang Webster, both of Parkersburg, W. Va., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 28, 1973, Ser. No. 419,894
Int. Cl.² B01J 2/18
U.S. Cl. 264—8 23 Claims

1. A method of producing spherical-shaped copolymer particles having a surface covered with hemispherical bumps which comprises

a. shearing under pressure sufficient to keep water in the liquid state in a closed shear zone of a shear device water, ammonia and a copolymer of alpha-olefins of the formula $R—CH=CH_2$, where R is a radical selected from the class consisting of hydrogen and alkyl radicals having from 1 to 8 carbon atoms, and alpha, beta-ethylenically unsaturated carboxylic acids having from 3 to 8 carbon atoms, said copolymer having from 0% to 90% of the carboxylic acid groups ionized by neutralization with metal ions, and said metal ions having an ionized valence of from one to three inclusive when the unsaturated acid is a monocarboxylic acid and an ionized valence of one when the unsaturated acid is a dicarboxylic acid and said metal ions being selected from the group consisting of uncomplexed and complexed metal ions, said copolymer being a direct copolymer of the alpha-olefins and unsaturated carboxylic acid in which the carboxylic acid groups are randomly distributed over all molecules and in which

1. the alpha-olefin content of the copolymer is at least 50 mol percent, based on the alpha-olefin-acid copolymer,
2. the unsaturated carboxylic acid content of the copolymer is from 0.2 to 25 mol percent, based on the alpha-olefin-acid copolymer, and
3. any other monomer component optionally copolymerized in said copolymer is monoethylenically unsaturated,



at a temperature above the melting point, but below the thermal degradation point, of the copolymer until a homogeneous aqueous slurry is formed wherein the copolymer particle size has been reduced to an average particle size of less than 100 microns, the slurry containing at least 0.6% by weight ammonia as $NH_3$ and up to 50% by weight of said copolymer;

b. agitating the slurry under pressure at a temperature above the copolymer freezing point for at least 0.5 minute to make the copolymer particles spherical;

c. agitating while under said pressure and cooling the slurry to below the copolymer freezing point in a period of at least 0.3 minute, thereby forming on the surface of said particles hemispherical bumps about 0.1 micron in diameter;

d. reducing said pressure of said slurry to atmospheric pressure; and

e. separating the copolymer particles.

### 3,933,955
### PROCESS FOR PRODUCING MICROSPHERES

Wayne M. Lysher, Richland, Wash., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

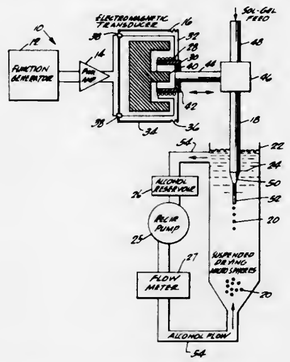
Division of Ser. No. 98,975, Dec. 17, 1970, Pat. No. 3,729,278. This application July 26, 1972, Ser. No. 275,236
Int. Cl.² B01J 2/06
U.S. Cl. 264—9 9 Claims

1. A process for producing microspheres, which comprises the steps of:

immersing a lower portion of a generally vertical sol-gel feed tube comprising a lower end portion including a generally vertical microsphere formation nozzle in a column of drying liquid of predetermined viscosity, said nozzle being hollow and having an open bottom end;

feeding a sol-gel solution at a predetermined rate into an upper end portion of said feed tube and axially out said bottom end of said nozzle, said drying liquid being a nonsolvent of said sol-gel; and

vibrating said nozzle at a predetermined amplitude and frequency whereby said bottom end of said nozzle is displaced over a predetermined travel in a generally horizontal direction and said sol-gel being emitted in a generally vertical direction therefrom coacts functionally with said drying liquid in a breaking action to produce



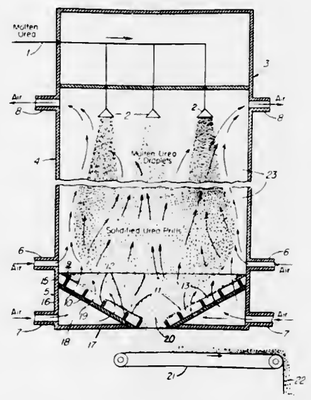

formed microspheres which are uniform in size and at least partially dried in falling through said column.



### 3,933,956
### PROCESS FOR PRILLING UREA

Ivo Mavrovic, 530 E. 72nd St., New York, N.Y. 10021

Continuation of Ser. No. 255,760, May 22, 1972, Pat. No. 3,836,611, which is a continuation-in-part of Ser. No. 104,998, Jan. 8, 1971, abandoned. This application June 18, 1974, Ser. No. 480,376
Int. Cl.² B01J 2/04
U.S. Cl. 264—14 4 Claims




1. In a process for prilling urea, comprising:

a. spraying molten, substantially anhydrous urea downwardly as droplets in a prilling tower through a solidification zone therein generally toward the bottom of said tower;

b. contacting said droplets with a substantially inert gas passed into said zone to cool and solidify said droplets as anhydrous prills; and

c. collecting said prills at a centrally located bottom of said zone;

the improvement comprising:

d. passing said gas through a hollow, perforated, inverted frustum trough countercurrently to said downwardly falling prills and maintaining gas flow, gas velocity and the angle of said trough through which said gas is so passed as a fine dispersion, so as to divert said downwardly flowing prills from a substantially vertical path to an oblique path toward said bottom of said zone and to prevent substantially all of said prills from contacting said trough.

### 3,933,957
### PROCESS FOR PRODUCING SHAPED ARTICLES FROM AN ACETYLENIC POLYMER

Dwain M. White, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sept. 4, 1973, Ser. No. 394,168
Int. Cl.² B29C 25/00; C08K 5/03
U.S. Cl. 264—29 12 Claims

1. The process of making a shaped object from a mixture consisting essentially of:

A. an acetylenic polymer having at least 10 repeating units which are

a. 80–95% units having the formula

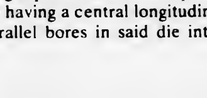
$$—C\equiv C—R—C\equiv C—,$$

and

b. 5–20% units having the formula

$$+C\equiv C—CH_2—O—R'+X—R'+_nO—CH_2—C\equiv C+$$

where $n$ is 0or 1, R is phenylene having from 0–4 halo or lower alkyl substituents, said phenylene being 0–12% p-phenylene, and the balance being m-phenylene and R′ is phenylene having 0–4 halo or lower alkyl substituents and X is a direct bond joining the two R′ groups,



where R″ is lower alkyl, and

B. a nitrobenzene, a halobenzene, òr a mixture thereof solvent having a boiling point greater than 100°C. at 760 mm., which at room temperature, is entirely

a. liquid, or

b. crystalline,

which comprises

1. heating a mixture of (A) and (B) to a temperature where the mixture forms a stable, homogeneous solution contaning at least 4% by weight of (A) and thereafter cooling the hot mixture in contact with at least one shaping surface to a temperature where the mixture congeals to a solid containig both (A) and (B), subject to the proviso that said solid have a maximum material thickness of 250 mils when (B) is crystalline at room temperature, and thereafter

2. removing the nitrobenzene, the halobenzene, or the mixture thereof contained in said solid by contacting said mixture of (A) and (B) with

C. an acetone extraction solvent which is (a) a nonsolvent for said acetylenic polymer (A), and (b) a solvent for said (B) solvent, or by sublimating said (B) solvent wherein the resulting shaped object is isotropically shrunk during said removing.

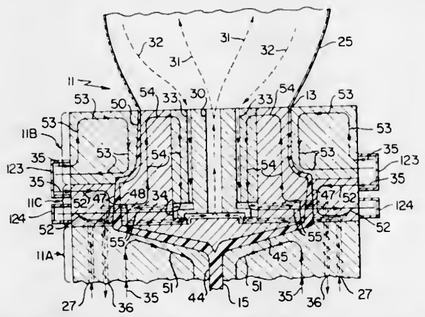
### 3,933,958
### METHOD OF MAKING TUBULAR PLASTIC FILM

Donald R. Hinrichs, Waynesboro, Va., assignor to Reynolds Metals Company, Richmond, Va.

Division of Ser. No. 126,831, March 22, 1971, Pat. No. 3,752,635. This application July 12, 1973, Ser. No. 378,531. The portion of the term of this patent subsequent to Oct. 30, 1990, has been disclaimed.
Int. Cl.² B29D 23/04; B29F 3/08
U.S. Cl. 264—40 7 Claims

7. A method of making polyvinyl chloride film comprising the steps of, feeding a plastic melt under pressure to an inlet of an extrusion die having a central longitudinal axis, dividing the melt using parallel bores in said die into a plurality of

spaced melt strands arranged parallel to said axis and thereafter recombining it at the outlets of said bores in a single combining chamber to form an annulus of plastic melt concentrically around said axis, extruding the melt annulus through a die orifice to define a plastic tube, closing said tube at a position spaced from said outlet, supplying a gas through said die into said tube causing inflation thereof to form a plastic bubble which is used to define said film, and heating and continuously feeding a heat transfer fluid through the die and circulating part of the fluid adjacent the outside of the melt annulus and part of the fluid adjacent the inside of the melt annulus



with that part of the fluid circulating adjacent the inside of the melt annulus passing through passages which extend substantially radially through said die between several adjacent pairs of said plurality of melt strands to reach and return from adjacent the inside of the melt annulus, said fluid passing between adjacent pairs of strands toward the inside of the melt annulus passing on at least one side of each of said strands, said fluid passing through said substantially radially extending passages serving to control the temperature of said die between said strands to thereby control the temperature and flow of the melt defining said strands.

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**3,933,959**

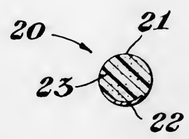
**PREPARATION OF DUNNAGE MATERIAL**

**Richard E. Skochdopole, and Keith R. Denslow, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.**

**Continuation-in-part of Ser. No. 95,705, Dec. 7, 1970, abandoned, which is a division of Ser. No. 732,270, May 27, 1968, Pat. No. 3,723,240. This application Sept. 5, 1972, Ser. No. 286,305**

**Int. Cl.² B29D** *27/00*; **B65D** *65/44*

**U.S. Cl. 264—45.5** **6 Claims**



1. A method for the preparation of foamed dunnage in the form of particles, the method comprising

providing a heat plastified mass of synthetic resinous material containing an expanding agent, the heat plastified mass being capable of expansion to form a mass containing a plurality of closed gas-filled cells,

maintaining the heat plastified foamable material under pressure, subsequently

cooling the heat plastified mass below the foaming temperature thereof, to provide a cooled heat plastified mass

extruding the cooled heat plastified mass to form elongate strands, the mass being extruded from a shaping configuration without significant foaming occurring in the strands, subsequently

severing the strands to form a plurality of elongate elements of relatively high bulk density

the elongate elements being heatable to an elevated temperature sufficient to cause them to expand and form foamed strandular particles having a plurality of gas-filled cells therein, the improvement which comprises

introducing, prior to severing, asymmetric foamability into the strandular particles involving altering the cross-sectional expansibility of these particles to cause one side of the strand to expand to a lesser degree, if at all, than the other, to thereby cause curling to a desired degree to form a generally nonlinear configuration upon subjecting the elements to foaming conditions.

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**3,933,960**

**METHOD OF EXTRUDING FIBER REINFORCED PLURAL LAYERED PLASTIC TUBES**

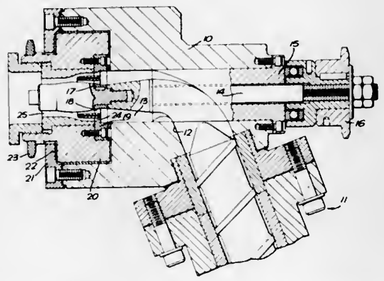
**James Brisbane Cameron, and Bernard Piet Walton Knight, both of London, England, assignors to BTR Industries Limited, London, England**

**Continuation-in-part of Ser. No. 178,610, Sept. 8, 1971, abandoned. This application Nov. 30, 1973, Ser. No. 420,637**

**Claims priority, application United Kingdom, Sept. 11, 1970, 43611/70**

**Int. Cl.² B29D** *23/04*

**U.S. Cl. 264—108** **15 Claims**



1. A method of making a reinforced tube comprising continuously extruding under laminar flow conditions at least one viscous material having reinforcing fibres through two concentric sets of converging discrete passages, said passages dividing said material flow into two spaced apart concentric sets of plural spaced streams having a lineal flow and causing the lineal flow rate of viscous material to gradually increase as it enters the passages to orient the fibres along the length of the passages, while maintaining laminar flow and bringing together said material from the respective passages so as to form two layers of material one within the other having fibres lying on helices of opposite hands respectively extruding the layers as a tube and hauling-off the extruded tube through a resizing die at a regulated rate to control the angle of the helices on which the fibres lie, and allowing said layers to consolidate into a single tube.

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**3,933,961**

**TABLETTING SPHERICAL DENTAL AMALGAM ALLOY**

**Charles Francis Burns, Lansdowne, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.**

**Filed Dec. 13, 1974, Ser. No. 532,438**

**Int. Cl.² B22F** *1/02, 3/02*

**U.S. Cl. 264—111** **7 Claims**

1. The process for treating spherical alloy particles to enable them to be tabletted in a compacting press comprising:

contacting spherical dental amalgam alloy particles with a hydrochloric acid solution of cupric chloride for a time sufficient to react with the alloy surface and grow cubical crystals containing copper thereon said hydrochloric acid ranging in concentration from about 10 volume percent to about 30 volume percent concentrated hydro chloric acid and said cupric chloride ranging in concentration from about 0.1 grams to about 1 gram per 100 milliliters of hydrochloric acid solution;

separating the hydrochloric acid solution of cupric chloride from the spherical alloy particles;

washing the separated spherical alloy particles with water to remove the residual hydrochloric acid solution of cupric chloride;

drying the washed spherical alloy particles to remove residual water; and finally

compacting the dried spherical alloy particles into a solid form.



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**3,933,962**

**MANUFACTURE OF CONSTRUCTIONAL COMPONENTS**

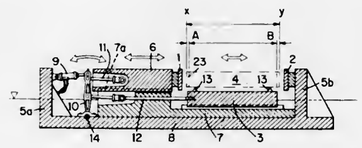
**Peter Meier, Cham, Switzerland, assignor to Credelca A.G., Zug, Switzerland**

**Filed Sept. 11, 1972, Ser. No. 287,644**

**Claims priority, application United Kingdom, Sept. 14, 1971, 42701/71; Apr. 4, 1972, 15301/72**

**Int. Cl.² B32B** *31/121*; **B28B** *3/10*

**U.S. Cl. 264—134** **2 Claims**



1. A method of imparting, to a constructional component for a room element, dimensional accuracy between opposed faces of the component, the component having been initially manufactured undersize as regards said dimension, which method comprises, (a) applying to at least part of both of said opposed faces, a layer of settable material capable of adhering to said opposed faces, (b) disposing the component with the applied settable material between opposed abutments, two of said abutments constituting reference surfaces, with the settable material disposed between each reference surface and a different adjacent one of the opposed faces of the component, (c) effecting relative approach between the abutments so as to squeeze and reduce in thickness the layers of settable material, (d) terminating said approach at a position giving desired dimensional accuracy, and (e) allowing or causing the material to set before removal of the component from between the opposed abutments.

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**3,933,963**

**SPINNING PROCESS**

**John Clark Norman, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.**

**Filed Dec. 13, 1974, Ser. No. 532,610**

**Int. Cl.² D01F** *6/00*

**U.S. Cl. 264—170** **2 Claims**

1. In the spinning of an anisotropic spin dope of poly(p-phenylene terephthalamide) in concentrated sulfuric acid wherein the spin dope is passed through a filter and a spinneret pack and extruded, the improvement comprising using a polymer having an inherent viscosity of at least 3 and containing at least $90-[10\ (I.V.)]$ meq. of amine end groups per kg. of polymer, wherein (I.V.) is the inherent viscosity of the polymer whereby filter and spinneret pack life is extended.

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**3,933,964**

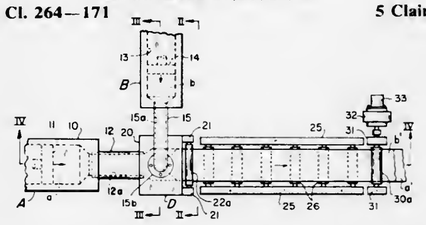
**RESIN LAMINATE AND METHOD OF MAKING**

**Bernard W. Brooks, R.D. No. 3, Great Barrington, Mass. 02138**

**Filed Apr. 26, 1971, Ser. No. 137,342**

**Int. Cl.² B32B** *27/30, 27/08*

**U.S. Cl. 264—171** **5 Claims**



1. A process of the character shown and described for forming an improved extrudate resin laminate for glazing utilizations that is relatively unbreakable, that has the property of toughness and visual clearness and of light transmission without adverse reaction to ultraviolet light, and that is capable of being shaped, formed and used without danger of separating its layers with respect to each other which comprises, pressure-energizing and advancing a continuous flowing stream of acrylic resin in a molten condition as a strip-like section within and along an extrusion flow path within a die, simultaneously pressure-energizing and advancing a continuous flowing stream of a polycarbonate resin in a fully molten condition as a strip-like section of greater thickness than the acrylic strip-like section within and along a second extrusion flow path within the die; as the resins issue from the first and second-mentioned flow paths and without exposing them to the atmosphere, applying the acrylic resin as a strip-like flat face layer of lesser thickness upon the polycarbonate resin as a strip-like flat base layer of greater thickness within a final extrusion flow path within the die, pressure-energizing and advancing the two molten resin streams in wide face abutment with respect to each other within and along the final extrusion flow path to outwardly exit from the die as an extruded layered flow stream, and substantially immediately adjacent the exit of the layered stream from the die subjecting it to cooling and solidification and forming a molecularly bonded-together composite strip-like member; in furtherance of the process, advancing the polycarbonate resin material as a centrally disposed streamlike base layer; advancing the acrylic resin material in the form of two streamlike layers of strip-like section, each of lesser thickness than the polycarbonate strip-like section within the die and applying them in an aligned abutting relation to opposite faces of the base layer; and forming a composite resin member length having a base layer of the polycarbonate resin material and opposed facing layers of the acrylic resin material.

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**3,933,965**

**PROCESS FOR THE MANUFACTURE OF RODS OF THERMOPLASTIC MATERIAL, HAVING INTERNAL CAPILLARY DUCTS, FOR THE PREPARATION OF PEN NIBS INCORPORATING CAPILLARY INK DUCTS**

**Ermenegildo Gallone, and Francesco Mazzier, Settimo Torinese, both of Italy, assignors to Global Control Corporation, Luxemburg**

**Filed May 13, 1974, Ser. No. 469,682**

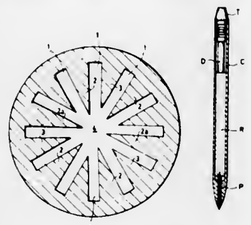
**Claims priority, application Italy, May 11, 1973, 68354/73; Oct. 30, 1973, 70200/73**

**Int. Cl.² B28B** *21/52*; **B43K** *8/02*; **D01D** *5/12*

**U.S. Cl. 264—177 F** **7 Claims**

1. A process for manufacturing a pen nib with capillary ink passages which is capable of providing a fine script without vibration, comprising heating a mass of thermoplastic material to a temperature higher than that at which it fuses, extruding

from said mass of thermoplastic material a rod through a die so shaped as to form inside the rod a longitudinal opening of star-shaped cross section characterized by a plurality of substantially parallel sided ducts that communicate with each other at the center of said cross section, said ducts being separated by wedge-shaped segments of said thermoplastic material, said segments being spaced from each other and being alternately long and short and at least two diametrically opposed long segments being even longer than the other long



segments, said variations in segment length resulting in the disposition of the inner points of said segments at different distances from the center of said rod, cooling the extruded rod to a temperature lower than at which the thermoplastic material fuses, and mechanically drawing the cooled rod to reduce its outside diameter and also to reduce the width of said channels until said channels have a wedge-like shape tapering toward the central axis of the rod and at least said two segments contact each other.

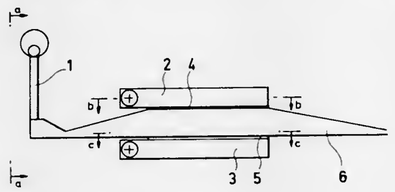
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**3,933,966**

## METHOD AND DEVICE FOR SPRAYING FLUID INTO A HEADBOX

**Veikko Kaarlo Tapio Waris, Kotka, and Frey Viking Sundman, Karhula, both of Finland, assignors to A. Ahlstrom Osakeyhtio, Finland**

**Continuation-in-part of Ser. No. 369,853, June 14, 1973, abandoned. This application May 13, 1974, Ser. No. 469,058**
**Int. Cl.² D21F** *1/08, 1/66*
**U.S. Cl. 162—183** **15 Claims**



**1.** A method of feeding fiber suspension to the web-forming part of a paper machine while avoiding flocculation and avoiding the use of rollers, which comprises (1) feeding a thick suspension of fibers to a head box, (2) spraying a fluid which is at least one of water and steam into said thick suspension in order to dilute the same to the desired thickness before feeding it to the web-forming part and create turbulence therein to mix the suspension and thereby disperse fiber clusters, the supply box for spraying said fluid being mounted immediately adjacent to the head box wall and being separated from the inner part of the center portion of the head box by a perforated plate, the turbulence being of such intensity in the head box to disperse the fiber clusters, (3) then allowing the suspension to settle, under a turbulence of small intensity, in the lip part of the head box whereby said suspension is fed essentially free from the large scale turbulence to the web-forming part, said lip part being of sufficient length to reduce the turbulence of the suspension and (4) distributing the fiber suspension into a flow extending over the entire width of the web-forming part.

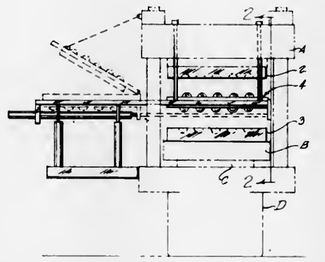
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**3,933,967**

## METHOD OF MAKING SEAMLESS HOLLOW MOLDED ARTICLES

**Don A. Taylor, 216 Mill St., Wadsworth, Ohio 44281**

**Continuation-in-part of Ser. No. 333,872, Feb. 20, 1973, abandoned. This application Apr. 1, 1974, Ser. No. 456,529**
**Int. Cl.² B29H** *7/02*
**U.S. Cl. 264—248** **7 Claims**



**1.** The method of forming a hollow article from moldable settable material by molding the material about a core in a segmental pressure mold having complementary parting surfaces, respectively, and comprising:

charging with unset settable moldable material a segmental mold having a cavity shaped to impart a predetermined exterior configuration to the article and in which cavity a removable core having a shape to impart a predetermined interior configuration to the article is supported, said core having a portion disposed between at least a portion of said parting surfaces and shaped to impart to at least part of the article at its periphery, aligned spaced mateable edges, respectively, from between which the core can be withdrawn from the article when mold pressure is relieved and the mold is opened sufficiently, and at least one of which edges, at each aligned unit of the length of said edges, is disposed beyond the adjacent complementary parting surfaces of the mold segments themselves, after removal of the core, a distance sufficient so that after removal of the core, the spaced mateable edges will be juxtaposed in face to face relation under pressure by movement of the mold segments to fully closed positions;

confining and molding the material by the mold segments and core under predetermined molding pressure in the space between the walls of the cavity and core;

subjecting the confined material, except for a small edge forming portion, which edge portion begins at the mateable faces of said edges and continues therefrom for a slight depth, to a predetermined temperature required for effecting the setting reaction of the material, continuously until the reaction has proceeded to a high degree which is beyond the scorch stage of the material and is sufficient to create a skin over the molding surfaces and impart structural and dimensional stability thereto;

concurrently maintaining said edge forming portion of the material at a lesser temperature so as to initiate the setting reaction thereof and carry said setting reaction to a lesser degree, which lesser degree is below the skin forming stage so that the mateable edges are free from skin effect, are firm enough to transmit substantial pressure upon closure of the mold, and are fusible and bondable;

then opening the mold and immediately removing the core therefrom, and immediately reclosing the mold under molding pressure;



immediately after reclosure of the mold, subjecting all of said material, including said edge forming portion, to said predetermined temperature;

continuing the application of heat until the setting reaction of all of the material is carried to completion; and

then opening the mold and removing the molded material from the mold.

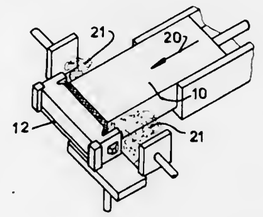
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**3,933,968**

## METHOD OF MOULDING ARTICLES FROM A PASTE LIKE MATERIAL

**Pierre Sorbier, Rue de Brancas, Pernes-les-Fontaines, France**

**Continuation of Ser. No. 204,660, Dec. 3, 1971, abandoned, which is a division of Ser. No. 794,631, Jan. 28, 1969, Pat. No. 3,664,797. This application Jan. 14, 1974, Ser. No. 433,415**
**Claims priority, application France, Jan. 29, 1968, 68.49590; July 29, 1968, 68.50254**
**Int. Cl.² B29J** *5/04*
**U.S. Cl. 264—297** **1 Claim**



**1.** A method of moulding an article from a paste-like substance comprising the steps of:

a. automatically placing an insert in an open end of a moulding tunnel so as to close the end of said tunnel,

b. locking said insert in its closing position,

c. delivering a charge of material into said moulding tunnel,

d. advancing a first part of a composite piston toward said insert to compress the material between said first part of said piston and said insert to perform a first moulding operation,

e. advancing a plurality of additional pistons into said moulding tunnel adjacent said insert in directions normal to the direction of movement of said composite piston so as to compress the material disposed between said composite piston and said additional pistons,

f. advancing a second part of the composite piston toward said insert to compress the material between said second part of said piston and said insert to perform a second moulding operation,

g. unlocking said insert,

h. pushing the moulded article and insert into a curing tunnel by further advancement of said composite piston,

i. automatically separating said moulded article from said insert after traversing said curing tunnel, and

j. automatically returning said insert to said moulding tunnel.

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**3,933,969**

## HOLLOW REINFORCED CONCRETE FENCE POST AND METHOD AND APPARATUS FOR MAKING THE SAME

**Frank R. Robinson, and Frank S. Robinson, both of Rte. 2, Box 336, Dallas, Oreg. 97338**

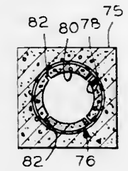
**Filed Apr. 15, 1974, Ser. No. 460,759**
**Int. Cl.² B28B** *1/20*
**U.S. Cl. 264—312** **1 Claim**

**1.** A method of making wire reinforced hollow concrete fence posts, comprising

placing a mandrel in an elongated horizontally positioned form having the general external shape of a fence post to be made;

placing a cylindrical tube of wire mesh over said mandrel and supporting said tube remote from the surface of said mandrel on spacers attached longitudinally to said surface of said mandrel, said tube being formed with means for engaging said spacers on said surface of said mandrel upon rotation thereof;

injecting concrete into said form between said mandrel and said form while simultaneously rotating said mandrel together with said tube of wire mesh, said tube being rotated with said mandrel by positive engagement of one of said spacers on said surface of said mandrel with said engaging means on said tube,



said form remaining stationary, to cause said concrete thoroughly to fill the interstices in said mesh, said injecting and said rotating continuing until the space between said mandrel and said form is filled with said concrete;

longitudinally withdrawing said mandrel from said form while retaining said concrete and said tube of wire mesh within said form; and

pushing said concrete and said tube of wire mesh longitudinally out of said form onto a receiving means, said mesh supporting said concrete until the same has set.

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**3,933,970**

## SHAPED PRESS-FORGED NORMALLY FRANGIBLE INORGANIC CRYSTALS

**King H. Rosette, Chagrin Falls, and Herbert Packer, Cleveland Heights, both of Ohio, assignors to The Harshaw Chemical Company, Cleveland, Ohio**

**Filed Nov. 20, 1972, Ser. No. 307,939**
**Int. Cl.² B29D** *11/00*
**U.S. Cl. 264—320** **2 Claims**

**1.** A process for press-forging a melt-grown ingot of an ionic salt selected from an alkali metal halide and an alkaline earth metal halide comprising maintaining said ingot at a temperature below its melting point, but greater than one-half its melting point measured in degrees Centigrade, gradually pressing said ingot at said temperature between opposed spaced-apart surfaces exerting sufficient pressure to move one surface closer to the other to provide a deformation ratio of at least 1.5, maintaining the physical and optical integrity of said ingot, effecting a general deformation of said ingot regardless of the theoretical number of individual slip systems characteristic of its lattice structure or the orientation of said ingot between said surfaces, and simultaneously effecting transformation of the essentially monocrystalline ingot to a polycrystalline form.

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**3,933,971**

## MOLYBDENUM RECOVERY

**Everett Ira Baucom, Kennett Square, Pa., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.**

**Continuation-in-part of Ser. No. 436,949, Jan. 28, 1974, abandoned. This application Feb. 18, 1975, Ser. No. 550,851**
**Int. Cl.² C01G** *39/00*
**U.S. Cl. 423—54** **10 Claims**

**1.** A process for the recovery of metal values from acidic aqueous solutions comprising ions of molybdenum, iron and sulfate and wherein nitrate is less than one gram per liter of solution comprising (a) contacting said aqueous solution with an extractant consisting essentially of a substantially water-insoluble liquid hydrocarbon having at least 0.15 moles per

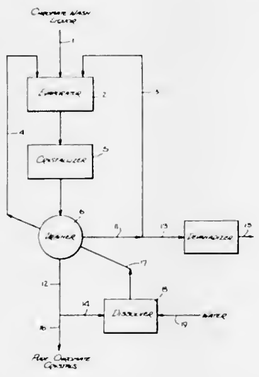
liter of hydrocarbon of an alkyl amine dissolved therein while maintaining said aqueous solution at a pH of less than about 1.3 to selectively extract molybdenum and sulfate ions into the organic phase and thereafter separating the aqueous phase from the organic phase, (b) contacting the organic phase from step (a) with an aqueous solution maintained at a pH in the range of about 1.3 to about 4.5 to selectively strip sulfate ions from the organic phase and thereafter separating the aqueous phase from the organic phase, (c) contacting the organic phase from step (b) with an aqueous solution maintained at a pH of at least about 4.5 to strip the molybdenum values from said organic phase.

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### 3,933,972
### PROCESS FOR PREPARING PURE SODIUM BICHROMATE

**Robert Bauwens, Saint-Leu-La Foret; Robert Lefrancois, Paris, both of France, and Michel Gabriel, Casablanca, Morocco, assignors to Products Chimiques Ugine Kuhlmann, Paris, France**

**Filed Feb. 11, 1974, Ser. No. 441,652**
**Int. Cl.² C01G** *37/14*
**U.S. Cl. 423—57** **10 Claims**



**1.** A process for preparing sodium bichromate substantially free of vanadium and chlorine which comprises concentrating a sodium chromate liquor obtained from chrome-bearing minerals to form crystals of sodium chromate tetrahydrate, separating the tetrahydrate crystals from the liquor and recovering the crystals, treating the separated crystals with sulfuric acid to form the bichromate and recovering the sodium bichromate after separation of insoluble sodium sulfate formed.

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### 3,933,973
### TREATMENT OF LEAD SULPHIDE BEARING MATERIAL

**David John Ivor Evans, North Edmonton, and Ian M. Masters, Edmonton, both of Canada, assignors to Sherritt Gordon Mines Limited, Toronto, Canada**

**Filed Oct. 16, 1973, Ser. No. 406,979**
**Int. Cl.² C01G** *21/14*; **C22B** *13/04*
**U.S. Cl. 423—93** **11 Claims**

**11.** A method of treating finely divided material containing predominantly lead sulphide which comprises the steps of: dispersing said material in an aqueous medium to formm a first slurry; providing in said first slurry free acetate ions; reacting said first slurry at a temperature of between about 60°C. and about 120°C. with a free oxygen-bearing gas under a partial pressure of oxygen of between about 20 and 60 p.s.i.; continuing said reaction to oxidize said lead sulphide and to convert it to soluble lead acetate with concurrent production of insoluble elemental sulphur; separating solids from solution containing soluble lead acetate; adjusting the pH of said first slurry during said reaction and up to said separation step to below about 5.1; forming a second slurry of said solids in an aqueous ammoniacal solution in the presence of a free oxygen-bearing gas and adjusting the molar ratio of ammonia to any lead sulphate in said second slurry to between about 8 to about 10 to convert any lead values contained in said solids to lead sulphides; thence separating undissolved residue from said second slurry and recycling said undissolved residue to said first slurry.

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### 3,933,974
### PROCESS FOR THE PREPARATION OF FERRIERITE

**Bruce H. C. Winquist, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.**

**Filed Feb. 18, 1975, Ser. No. 550,307**
**Int. Cl.² C01B** *33/28*
**U.S. Cl. 423—118** **10 Claims**

**1.** A method for the preparation of ferrierite which comprises maintaining at a temperature from about 170° to about 215°C an aqueous starting mixture of amorphous silica-alumina having a silica/alumina ratio from about 9 to about 25 and a mixture of sodium and potassium compounds until ferrierite crystals are formed, provided that in the starting mixture:

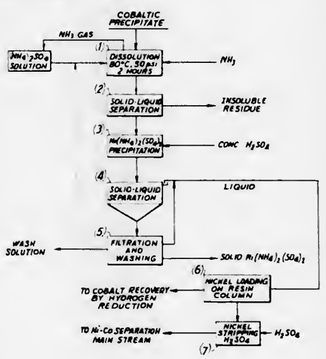
a. the amount of total sodium and potassium concentration expressed as $Na_2O + K_2O = X_2O$, when expressed as the molar ratio $X_2O/Al_2O_3$ is from about 2.5 to about 7.5;
b. from about 65 to about 90 mol % of the total sodium and potassium, expressed as $X_2O$, originates from sodium and/or potassium salts of polybasic acids having a pK value greater than 10° at 18°C for the highest dissociation step;
c. the potassium ion fraction is from about 0.1 to about 0.45; and
d. the molar ratio $H_2O/Al_2O_3$ is from about 225 to about 315.

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### 3,933,975
### NICKEL-COBALT SEPARATION

**Cvetko B. Nikolic; Weldon P. Zundel, both of Golden, and Robert S. Rickard, Lakewood, all of Colo., assignors to Amax Inc., New York, N.Y.**

**Filed Feb. 8, 1974, Ser. No. 441,179**
**Int. Cl.² C01G** *53/06*, *51/00*
**U.S. Cl. 423—139** **4 Claims**



**1.** A method of separating nickel and cobalt from a mainstream nickel-cobalt solution containing nickelous and cobaltous ions, which comprises,

providing a mainstream nickel-cobalt solution in which the nickel-to-cobalt ratio ranges from about 5:1 to about 200:1,



removing an aliquot portion of said nickel-cobalt solution from said mainstream,

said aliquot portion containing enough nickel which when oxidized to the nickelic state is at least sufficient to oxidize subsequently the cobalt in the mainstream solution to the cobaltic state,

precipitating said nickel from said aliquot portion as a nickelous precipitate by the addition of a precipitating agent selected from the group consisting of a mixture of $CO_2$ and $NH_3$, and $NH_3$ alone, the temperature of precipitation with $NH_3$ alone used being over 50°C,

oxidizing said nickelous precipitate to the nickelic state,

separating said oxidized nickel precipitate from solution,

contacting the mainstream solution with said oxidized precipitate for a time sufficient to oxidize cobaltous ions in said solution to the cobaltic state and thus precipitate the cobalt from solution and reduce the nickelic ion to the nickelous state, the temperature of oxidation being over 50°C, the cobaltic precipitate also containing nickel,

and whereby the nickel in the mainstream solution is enriched substantially relative to the cobalt content,

dissolving said cobaltic precipitate in an ammonium sulfate solution containing at least about 100 grams per liter of $(NH_4)_2SO_4$ and at least about 50 grams per liter of $NH_3$ at a temperature ranging from about 80°C to 120°C under a pressure of at least about 20 psi gage,

acidifying said solution to a pH of about 1.5 to 3.0 and cooling said solution to produce a nickel-ammonium sulfate precipitate highly enriched in nickel,

separating said precipitate from said solution which solution contains said cobalt and residual nickel,

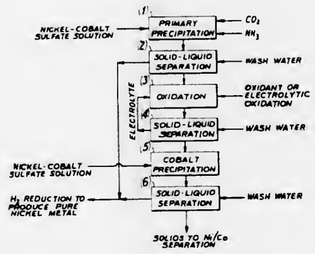
passing said solution through an ion exchange column selective to the removal of said residual nickel, thereby leaving a solution containing said cobalt substantially free of nickel, and then passing said solution to cobalt recovery.

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### 3,933,976
### NICKEL-COBALT SEPARATION

**Cvetko B. Nikolic, Golden; Robert S. Rickard, Lakewood, and Weldon P. Zundel, Golden, all of Colo., assignors to Amax Inc., New York, N.Y.**

**Filed Feb. 8, 1974, Ser. No. 441,180**
**Int. Cl.² C01G** *51/00*, *53/00*
**U.S. Cl. 423—144** **2 Claims**



**1.** A method of producing a nickel-rich solution from nickel-cobalt solutions containing nickelous and cobaltous ions which comprises,

providing a mainstream nickel-cobalt solution in which the nickel-to-cobalt ratio ranges from about 5:1 to about 200:1, removing an aliquot portion of said nickel-cobalt solution from said mainstream,

said aliquot portion containing enough nickel which when oxidized to the nickelic state is at least sufficient to oxidize subsequently the cobalt in the mainstream to the cobaltic state,

precipitating said nickel from said aliquot portion as a nickelous precipitate by adding $NH_3$ sufficient to provide in the solution an $NH_3/Ni$ mol ratio of about 1.5:1 to 2.5:1 with the pH ranging from about 7 to 7.5 and by bubbling $CO_2$ through the solution to produce an easily filterable nickelous carbonate precipitate containing cobalt,

oxidizing said nickelous precipitate to the nickelic state,

separating said oxidized nickel precipitate from solution,

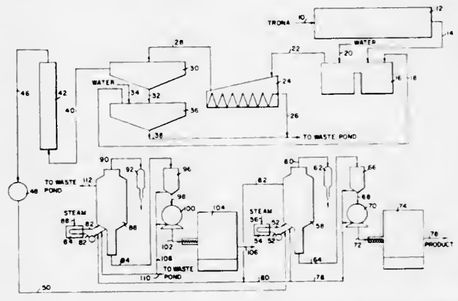
and contacting the mainstream solution with said oxidized precipitate for a time sufficient to oxidize cobaltous ions in said solution to the cobaltic state and thus precipitate the cobalt from solution and reduce the nickelic ion to the nickelous state, the temperature of oxidation being over 15°C, whereby the nickel in the mainstream solution is enriched substantially relative to the cobalt to provide a nickel:cobalt ratio in said solution of over **2000:1.**

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### 3,933,977
### PROCESS FOR PRODUCING SODIUM CARBONATE

**Joseph M. Ilardi, Kendall Park; John Walden, Hightstown, and Eric Rau, Trenton, all of N.J., assignors to Intermountain Research and Development Corporation, Greenriver, Wyo.**

**Filed Jan. 11, 1974, Ser. No. 432,467**
**Int. Cl.² C01D** *7/12*, *7/24*, *7/40*
**U.S. Cl. 423—206 T** **7 Claims**



**1.** In the process of producing high bulk density sodium carbonate from crude trona, crude trona is calcined at a temperature and for a time sufficient to convert the crude trona into crude sodium carbonate, the crude sodium carbonate is dissolved in water to form an aqueous solution of crude sodium carbonate containing suspended insolubles and soluble organic impurities, the coarse suspended insolubles are separated from the crude sodium carbonate solution, the crude sodium carbonate solution is clarified and treated to remove a substantial portion of the remaining suspended insolubles and soluble organic impurities from the crude sodium carbonate solution, a portion of water from the clarified sodium carbonate solution is evaporated in a monhydrate crystallizer and sodium carbonate monohydrate crystals are formed, the sodium carbonate monohydrate crystals are then separated from the monohydrate crystallizer liquuor containing organic impurities, and the separated sodium carbonate monohydrate crystals are calcined to form dense sodium carbonate and 0 percent to 100 percent of the separated monohydrate crystallizer liquor containing organic impurities is recycled to the monohydrate crystallizer for further monohydrate crystal recovery therefrom, wherein the improvement comprises: bleeding a portion of the monohydrate crystallizer liquor to maintain the concentration of the organic impurities in the monohydrate crystallizer below about 300 ppm carbon based on the sodium carbonate solution present in the monohydrate crystallizer, evaporating a portion of the bleed liquor at a temperature above about 109°C in an anhydrous crystallizer and crystallizing anhydrous sodium carbonate crystals, purging a portion of the anhydrous crystallizer liquor to maintain the concentration of the organic impurities in the anhydrous crystallizer below 4,000 ppm carbon based on the sodium carbonate solution present in the anhydrous crystallizer, separating the anhydrous sodium carbonate crystals from the

anhydrous crystallizer liquor, and drying the separated anhydrous sodium carbonate crystals to form high bulk density sodium carbonate.

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**3,933,978**

## METHOD OF FILTERING DUST-LADEN GASES

**Adolf Margraf, Im Haberkamp 196, 4961 Wendthagen, Germany**

**Continuation-in-part of Ser. No. 230,721, March 1, 1972, Pat. No. 3,834,123. This application Mar. 22, 1973, Ser. No. 343,803**

**Claims priority, application Germany, Mar. 28, 1972, 2215065. The portion of the term of this patent subsequent to Sept. 10, 1991, has been disclaimed.**

**Int. Cl.² B01D** *53/34*

**U.S. Cl. 423—215.5** **5 Claims**

1. A method of filtering a contaminated gas containing fine dust particles and sulphur or chlorine compounds which comprises the steps of:

feeding the contaminated gas to a pocket-type filter and through the filter;

collecting particles from said contaminated gas on said filter;

releasing collected particles from the surface of said filter;

recycling dust released from the filter surface in an amount of 2 to 100 times the amount of fine dust contained in the contaminated gas and entering the filter per unit time to the contaminated gas immediately prior to the passage thereof through the filter whereby both recycled dust and the original dust in the contaminated gas are carried onto said surface;

discharging a portion of the released dust equal to the amount of fine dust contained in the contaminated gas and entering the filter per unit time; and

feeding a chemical additive substance reactive with said compounds to form filterable products to the recycled dust prior to its introduction into the contaminated gas.

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**3,933,979**

## GAS PURIFYING METHOD

**Karl-Heinz Eisenlohr, Buchschlag; Berthold Scholz, Weisskirchen, and Ernest Kapp, Frankfurt am Main, all of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany**

**Filed Aug. 23, 1973, Ser. No. 390,826**

**Claims priority, application Germany, Sept. 22, 1972, 2246722**

**Int. Cl.² B01D** *53/34*

**U.S. Cl. 423—239** **8 Claims**

1. A method for purifying hydrogen-containing gases which also contain nitrogen oxides to remove the nitrogen oxides from such gas which comprises adjusting the sulfur content of the hydrogen containing gas to 0.05 to 8 g/Nm³ or more by adding sulfur or sulfur compounds thereto and passing this adjusted gas over a hydrogenation catalyst at a temperature between 100° and 400°C.

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**3,933,980**

## PROCESS FOR REMOVING ETHYLENICALLY UNSATURATED CHLORINATED HYDROCARBONS FROM GAS STREAMS

**Lawrence A. Smalheiser, Spring Valley, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.**

**Filed Dec. 19, 1974, Ser. No. 534,522**

**Int. Cl.² B01D** *53/34*

**U.S. Cl. 423—245** **12 Claims**

1. A method for controlling the amount of ethylenically unsaturated chlorinated hydrocarbons in gas streams which comprises forming a gas mixture containing the ethylenically unsaturated chlorinated hydrocarbon and ozone in a reaction zone and maintaining the gas mixture in the reaction zone for a sufficient length of time for the ozone to react with the ethylenically unsaturated chlorinated hydrocarbon to reduce the amount of ethylenically unsaturated chlorinated hydrocarbon in the gas stream.

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**3,933,981**

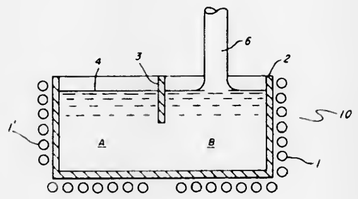
## TIN-LEAD PURIFICATION OF SILICON

**Gene Felix Wakefield, Richardson, and H. S. Nagaraja Setty, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.**

**Filed Nov. 30, 1973, Ser. No. 420,484**

**Int. Cl.² C01B** *33/02*

**U.S. Cl. 423—348** **2 Claims**




1. The method of purifying silicon in a refiner containing liquid tin-lead alloy at varying temperatures, comprising the steps of:

a. introducing impure solid silicon into a molten tin-lead alloy, said alloy having a composition ranging between 80% tin - 20% lead and 50% tin-50% lead, and said impure silicon being introduced into a first compartment of said refiner, the temperature of said first compartment being sufficiently high to cause the silicon to go into solution with said alloy;

b. circulating said solution of liquid alloy and silicon from said high temperature zone into a second compartment of said refiner maintained at a low temperature zone, the temperature range of said low temperature zone being sufficiently lower than the high temperature zone of said first compartment to cause said silicon to become supersaturated and to begin to crystallize; and

c. removing purified solid silicon from said low-temperature zone as said silicon crystallizes, leaving impurities of said silicon behind in said liquid alloy.

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**3,933,982**

## METHOD OF STABILIZING ACID AQUEOUS SOLUTIONS OF HYDROGEN PEROXIDE

**Kazuyoshi Kushibe, Fuji, Japan, assignor to Tokai Denka Kogyo Kabushiki Kaisha, Tokyo, Japan**

**Filed Nov. 26, 1973, Ser. No. 419,028**

**Claims priority, application Japan, Feb. 21, 1973, 48-20194**

**Int. Cl.² C01B** *15/02*

**U.S. Cl. 423—272** **11 Claims**

1. In the method of stabilizing hydrogen peroxide in an acid aqueous solution of hydrogen peroxide containing copper ion capable of catalytically decomposing hydrogen peroxide by incorporating a stabilizer to said aqueous solution, the improvement which comprises using as the stabilizer at least one glycol ether represented by the general formula $R(OCH_2CH_2)_n$—OH wherein R is an alkyl group containing 1 to 4 carbon atoms and n is an integer from 1 to 2.



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**3,933,983**

## METHOD OF INCREASING THE THERMAL STABILITY OF CRYSTALLINE ZEOLITES

**Curtis H. Elliott, Jr., Baltimore, Md., assignor to W. R. Grace & Co., New York, N.Y.**

**Continuation of Ser. No. 150,780, June 7, 1971, abandoned, which is a continuation-in-part of Ser. No. 803,117, Feb. 27, 1969, Pat. No. 3,594,331. This application Nov. 12, 1973, Ser. No. 415,861. The portion of the term of this patent subsequent to July 20, 1988, has been disclaimed.**

**Int. Cl.² C01B** *33/28*

**U.S. Cl. 423—328** **15 Claims**

1. A method of producing highly stable fluorided crystalline aluminosilicate zeolites comprising:

a. contacting at least once a crystalline aluminosilicate zeolite in the alkali metal form with a sufficient quantity of a solution of a soluble fluorine compound which in solution yields available fluoride ions to provide from about 2 to 22 grams of available fluoride per 10,000 grams (dry basis) of zeolite, and a slurry pH of about 3 to 11 for a sufficient length of time to allow said solution to thoroughly contact and diffuse into said zeolite;

b. separating and washing the fluoride treated crystalline aluminosilicate zeolite;

c. exchanging the alkali ions in said fluoride treated crystalline aluminosilicate zeolite with an aqueous solution selected from the group consisting of ammonium salt solutions, rare earth salt solutions, alkaline earth salt solutions and transition metal salt solutions and mixtures thereof, to a final alkali content of less than about 6 percent by weight calculated as the alkali oxide; and

d. recovering said highly stable crystalline aluminosilicate zeolite.

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**3,933,984**

## PROCESS OF MANUFACTURING WHISKER CRYSTALLINE SILICON CARBIDE

**Isao Kimura, Suita, and Hidetsugu Habata, both of Osaka, Japan, assignor to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan**

**Filed Mar. 18, 1971, Ser. No. 125,469**

**Claims priority, application Japan, Mar. 27, 1970, 45-26397; Mar. 27, 1970, 45-26398; Apr. 16, 1970, 45-32823**

**Int. Cl. C01b** *31/36*

**U.S. Cl. 423—345** **10 Claims**

1. A process of manufacturing whisker crystalline silicon carbide which comprises heating a reaction system containing

1. a solid phase consisting essentially of fine solid particles of silicon dioxide-containing inorganic material, and

2. a gaseous mixture consisting essentially of chlorine-containing material and aliphatic hydrocarbon,

said chlorine-containing material being selected from the group consisting of chlorine, hydrogen chloride, tetrachloromethane and phosgene,

the reaction system being heated to a reaction temperature of 800° to 2200°C in the substantial absence of oxygen and nitrogen to produce crystalline silicon carbide whiskers.

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**3,933,985**

## PROCESS FOR PRODUCTION OF POLYCRYSTALLINE SILICON

**Michael A. Rodgers, Tempe, Ariz., assignor to Motorola, Inc., Chicago, Ill.**

**Filed Sept. 24, 1971, Ser. No. 183,584**

**Int. Cl.² C01B** *33/00, 33/02, 33/08*

**U.S. Cl. 423—350** **4 Claims**

1. In a process producing polycrystalline silicon by the hydrogen reduction of trichlorosilane with hydrogen to produce silicon, unreacted trichlorosilane, and silicon tetrachloride and separating the trichlorosilane from the silicon tetrachloride, the improvement which comprises mixing the separated silicon tetrachloride with hydrogen to form a mixture consisting essentially of silicon tetrachloride and hydrogen; reacting said mixture in the absence of any other reactive material or catalyst at a temperature between 900° and 1100°C, at a dwell time of the order of several seconds and directly thereafter separating the trichlorosilane from the resultant product therefrom for use in the production of polycrystalline silicon.

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**3,933,986**

## PROCESS FOR PRODUCING CARBON FIBERS

**Yasuo Matsumura; Soichiro Kishimoto, and Masahiko Ozaki, all of Okayama, Japan, assignors to Japan Exlan Company Limited, Japan**

**Filed Apr. 11, 1974, Ser. No. 460,147**

**Claims priority, application Japan, Apr. 25, 1973, 48-47010**

**Int. Cl.² C01B** *31/07*

**U.S. Cl. 423—447** **13 Claims**

1. A process for producing carbon fibers which comprises (a) treating preoxidized fibers produced by heating acrylonitrile fibers in an oxygen-containing atmosphere at a temperature between 150°C and 400°C with a reducing liquid containing at least one compound selected from the group consisting of thiosulfuric acid, polythionic acid, dithionic acid, sulfurous acid, pyrosulfurous acid dithionous acid ($H_2S_2O_4$) and their salts, and (b) thereafter carbonizing or graphitizing the thus treated fibers in a non-oxidizing atmosphere at a temperature above 800°C.

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**3,933,987**

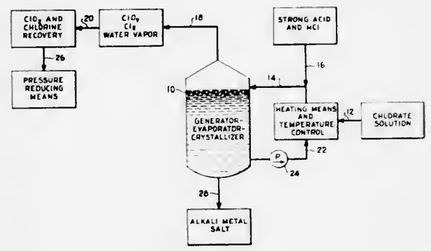
## SIMULTANEOUS PRODUCTION OF CHLORINE DIOXIDE AND A SALT OF A STRONG ACID

**Arthur C. Schulz, North Tonawanda, and Herbert J. Rosen, Yonkers, both of N.Y., assignors to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.**

**Continuation-in-part of Ser. No. 589,114, Oct. 24, 1966, abandoned. This application Sept. 17, 1970, Ser. No. 72,941**

**Int. Cl.² C01B** *11/02*

**U.S. Cl. 423—478** **7 Claims**




1. In a continuous process for the production of chlorine dioxide, chlorine and an inorganic salt wherein a reducing agent is continuously introduced into an aqueous reaction solution maintained from about 1–12 normal in mineral acid and from 0.005 to about 3.5 molar in chlorate at a temperature between 30° to about 90° centigrade to produce chlorine dioxide and a solid inorganic salt, the improvement which comprises conducting said continuous process by introducing hydrochloric acid as the reducing agent into a unilocular zone containing said reaction solution under reduced pressure of from 50 to about 600 millimeters mercury absolute, wherein said pressure is coordinated with the temperature of the reaction solution to effect the evaporation of water from said aqueous reaction solution at a rate sufficient to maintain a substantially constant volume of reaction solution, whereby chlorine dioxide and chlorine are continuously generated and removed from said zone in admixture with said evaporated water and said inorganic salt is crystallized from said aqueous reaction solution in said unilocular zone and recovered.

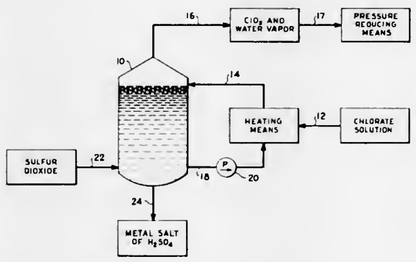
### 3,933,988
### METHOD OF SIMULTANEOUSLY PRODUCING CHLORINE DIOXIDE AND A SULFATE SALT

**Herbert J. Rosen, Yonkers, N.Y., assignor to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.**

**Continuation-in-part of Ser. No. 589,113, Oct. 24, 1966, abandoned. This application Sept. 17, 1970, Ser. No. 72,924**

**Int. Cl.² C01B** *11/02*

**U.S. Cl. 423—480** **8 Claims**




**1.** In a continuous process for the production of chlorine dioxide and a sulfate salt wherein a reducing agent is continuously introduced into an aqueous reaction solution maintained from about 1–12 normal in sulfuric acid and from 0.005 to about 3.5 molar in chlorate at a temperature between 50° to 95° centigrade to produce chlorine dioxide and solid sulfate salt, the improvement which comprises conducting said continuous process by introducing $SO_2$ as the reducing agent into a unilocular zone containing said reaction solution under reduced pressure of from 50 to about 700 millimeters mercury absolute, wherein said pressure is coordinated with the temperature of the reaction solution to effect the evaporation of water from said aqueous reaction solution at a rate sufficient to maintain a substantially constant volume of reaction solution, whereby chlorine dioxide is continuously generated and removed from said zone in admixture with said evaporated water and said sulfate salt is crystallized from said aqueous reaction solution in said unilocular zone and recovered.

### 3,933,989
### METHOD FOR DISPOSAL OF WASTE SYNTHETIC HIGH POLYMER

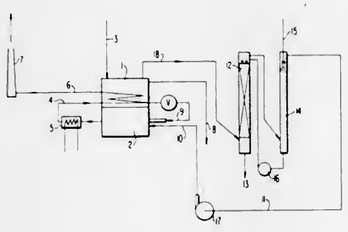
**Hayami Itoh; Mamoru Yamada, and Yasuo Nozaki, all of Kobe, Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan**

**Division of Ser. No. 231,532, Mar. 3, 1972. This application Jan. 11, 1974, Ser. No. 432,728**

**Claims priority, application Japan, Mar. 4, 1971, 46-12001**

**Int. Cl.² C01B** *7/08*; **F23G** *7/00*

**U.S. Cl. 423—481** **6 Claims**



**1.** A method for the disposal treatment of a mixture of a relatively thermally stable waste synthetic high polymer which is fusible at temperatures below 500°C and a thermally unstable waste synthetic high polymer which includes chlorine containing materials, which comprises:

a. providing a heating vessel;

b. heating said waste synthetic high polymer in said vessel at a temperature of 200° to 500°C, thereby to melt said thermally stable portion thereof to form a hot molten bath in said vessel; and

c. simultaneously with step (b) deomposing said thermally unstable portion of said waste synthetic high polymer to form hydrogen chloride and to form hydrocarbon gas and removing said hydrogen chloride and hydrocarbon gas from said vessel;

d. separating the removed hydrogen chloride from the hydrocarbon gas and burning at least a portion of said hydrocarbon gas as fuel for heating said waste synthetic high polymer in step (b); and

e. after substantially all the chlorine has been removed from said waste synthetic high polymer, disposing of said hot molten bath.

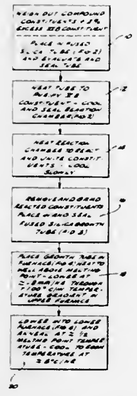
### 3,933,990
### SYNTHESIZATION METHOD OF TERNARY CHALCOGENIDES

**Anthony L. Gentile, Thousand Oaks, and Oscar M. Stafsudd, Los Angeles, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.**

**Filed Aug. 11, 1969, Ser. No. 849,001**

**Int. Cl.² C01B** *19/00, 17/00*; **B01J** *17/08*

**U.S. Cl. 423—508** **25 Claims**



**1.** A method for synthesizing a single crystal selected from the ternary chalcogenides consisting of the IB-As-VIB and Tl-As-VIB Groups of the Periodic Table of Elements, where the IB elements consist of copper and silver and where the VIB elements consist of sulfur, selenium and tellurium, said ternary chalcogenides having a single stable solid phase between room temperature and their melting points, comprising the steps of:

utilizing a purification tube of fused silica having a reaction chamber, a sublimation chamber, and an open neck portion connecting the chambers,

placing stoichiometric quantities of the arsenic constituent of the crystal in the sublimation chamber and the remaining consitutents of the crystal in the reaction chamber and placing an approximate additional 3% quantity of the VIB constituent in excess of stoichiometry in the reaction chamber,

evacuating the purification tube to approximately $10^{-6}$ Torr and sealing the purification tube,

placing the sublimation chamber and its contained arsenic constituent in a furnace while leaving the reaction chamber and its contained constituents outside the furnace,



heating the sublimation chamber and its arsenic constituent sufficient for permitting substantially complete vaporization and movement of the resulting arsenic vapors into the reaction chamber through the open neck portion,

cooling the purification tube and sealing off the reaction chamber at the neck portion,

placing the sealed reaction chamber in a furnace and uniformly heating the crystal constituents contained in the reaction chamber to at least the reaction temperature of the contained crystal contituents for a time sufficient for obtaining full reaction of the contained crystal constituents,

cooling the reacted crystal constituents uniformly,

breaking the reaction chamber and removing the crystal material therefrom,

grinding the crystal material,

placing the ground crystal material in a fused silica crystal growth tube having an elongated nucleation neck portion at one end thereof,

evacuating the growth tube to approximately $10^{-6}$ Torr, backfilling the growth tube with approximately 250 Torr pure helium, and sealing the growth tube,

placing the sealed growth tube and its contained crystal material in a furnace apparatus comprising two furnace parts having a separation therebetween, the first furnace part having a temperature profile comprising an isothermal temperature portion and a decreasing temperature gradient of at least 100°C per inch and the second furnace part having an isothermal temperature profile at a temperature above the lowest temperature of the decreasing temperature gradient,

heating the crystal material in the first furnace part within the isothermal temperature portion thereof to a temperature substantially above the melting point of the crystal material for forming a melt therefrom,

lowering and rotating the growth tube and its contained crystal material melt from the first furnace isothermal temperature portion and through the decreasing temperature gradient at approximately 1.8 millimeters per hour for nucleating and growing the single crystal,

further lowering the growth tube and its contained single crystal into the second furnace part within the isothermal temperature profile thereof and stopping movement therein for a time sufficient for annealing the single crystal,

cooling the second furnace part, the growth tube and the annealed crystal at a rate of approximately 5°C per hour to room temperature, and

dissolving the growth tube in hydrofluoric acid without applying mechanical pressure to the crystal for removing the single crystal.

### 3,933,991
### SULFURIC ACID CONTACT PROCESS

**Ludwig Dorn, Cologne; Gerhard Heinze, Schildgen; Jürgen Wokulat, Leverkusen; Wilhelm Möller, Leverkusen, and Franz Rübsam, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

**Division of Ser. No. 229,163, Feb. 24, 1972, Pat. No. 3,793,230, which is a continuation of Ser. No. 36,234, May 11, 1970, abandoned. This application Aug. 3, 1973, Ser. No. 385,378**

**Claims priority, application Germany, May 23, 1969, 1926564**

**Int. Cl.² C01B** *17/78*

**U.S. Cl. 423—535** **3 Claims**

**1.** In a process of producing sulfur trioxide by contacting sulfur dioxide, oxygen and a catalyst at an elevated temperature in a fluidized bed process the improvement which comprises utilizing as the catalyst, a silica gel bonded bead form catalyst comprising a siliceous support having at least 97% by weight silica and a finite amount up to 8% by weight of $V_2O_5$ and 3.1 to 12.4% by weight of $K_2O$, based on the weight of the catalyst, said catalyst having a proportion of pores with diameters from about 100 to 1500 A of at least 80% of the total pore volume present, said catalyst having an abrasion resistance of from about 0 to 3% by weight.

### 3,933,992
### PROCESS FOR AUTOMATED REGULATION OF SULFUR PRODUCTION UNITS

**Guillaume Andral, Pau; Michel Carmassi, Mazeres-Lezons; Bernard Louvel, Buros; Jacques Maurice, Mourenx, and Georges Vandesande, Argagnon, all of France, assignors to Societe Anonyme dite: Societe Nationale Des Petroles D'Aquitaine, Paris, France**

**Continuation of Ser. No. 207,790, Dec. 14, 1971, abandoned. This application Apr. 8, 1974, Ser. No. 458,900**

**Claims priority, application France, Dec. 18, 1970, 70.45812**

**Int. Cl.² C01B** *17/02*

**U.S. Cl. 423 -573** **5 Claims**

**1.** A process for regulating the production of sulphur in a sulphur unit producing sulphur by oxidation of hydrogen sulfide by means of a free oxygen-containing gas and liberating residual gases containing $H_2S$ and $SO_2$, said method comprising the steps of:

a. feeding a hydrogen sulfide-containing gas and a free oxygen-containing gas to the inlet of the sulphur unit;

b. automatically analyzing the hydrogen sulfide-containing gas fed to the sulphur unit for its hydrogen sulfide content and providing electrical signals indicative of said $H_2S$ content,

c. electronically computing from said electrical signals the theoretical flow of oxygen-containing gas needed to oxidize the hydrogen sulfide of the hydrogen sulfide-containing gas to sulphur to keep the $H_2S : SO_2$ molar ratio in the residual gases to a predetermined value and providing a signal representative of said theoretical flow,

d. automatically analyzing the residual gases obtained from the sulphur unit for their $H_2S$ and $SO_2$ contents and providing residual gas electronic signals indicative of said residual gas contents,

e. electronically computing from said residual $H_2S$ and $SO_2$ content electronic signals the instantaneous value of the $H_2S : SO_2$ molar ratio in the residual gases and deriving from the difference of said instantaneous and predetermined values a correction signal representative of the correction flow of oxygen-containing gas to bring back the instantaneous value of the $H_2S : SO_2$ molar ratio in the residual gases to the predetermined value,

f. electronically adding the signals representative of the theoretical flow of oxygen containing gas and the correction flow signal for providing a resulting signal, and

g. adjusting the ratio of the flow of $H_2S$ containing gas to the flow of oxygen-containing gas by varying the flow of oxygen-containing gas in response to the resulting signal, whereby the instantaneous value of the $H_2S : SO_2$ molar ratio in the residual gas is adjusted to the predetermined value.

### 3,933,993
### USE OF CONCENTRATED CHELATED IRON REAGENT FOR REDUCING POLLUTANT CONTENT OF A FLUID

**Robert M. Salemme, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.**

**Filed June 28, 1974, Ser. No. 484,216**

**Int. Cl.² C01B** *17/04*; **B01D** *53/34*

**U.S. Cl. 423—573** **9 Claims**

**1.** A method for reducing the pollutant content of a gas stream wherein the pollutant is at least one member of the group of hydrogen sulfide and mercaptans, comprising the steps of:

a. bringing the gas stream into intimate contact with an aqueous solution having a pH from greater than 7 to about pH 10 consisting essentially of water, a chelate of

ferric iron with ethylenediaminetetraacetic acid (EDTA), and a buffering agent, said solution having a ratio of EDTA to Fe of greater than 1:1, the concentration of the Fe being at least about 0.5 moles per liter of the aqueous solution,

b. separating insolubles from the reacted aqueous solution,

c. bringing the reacted aqueous solution substantially free of insolubles into intimate contact with an oxygenating gas and

d. recirculating the regenerated aqueous solution for reaction with the gas stream as in step a).

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**3,933,994**

## PROCESS FOR DESULFURIZING GASES

**Gerald L. Rounds, Fontana, Calif., assignor to Kaiser Steel Corporation, Fontana, Calif.**

**Filed Mar. 20, 1974, Ser. No. 452,988**

**Int. Cl.² C01B** *17/04*

**U.S. Cl. 423—575** **2 Claims**

1. A continuous process for desulfurizing the coke oven gas and sinter plant gas resulting from operation of an integrated steel mill and forming elemental sulfur which comprises,

a. conveying a stream of sinter plant gas from its source to a heat exchanger to extract heat from said gas;

b. contacting the cooled stream of sinter plant gas with a citric acid-containing solution to reduce the $SO_2$ content of said stream and increase the $SO_2$ content of said solution;

c. returning the resulting stream of gas to the said heat exchanger to return heat thereto;

d. discharging the resulting gas of increased temperature into a stack;

e. contacting a stream of coke oven gas free of by-product constituents with the solution resulting from step b) to reduce the $H_2S$ content of said coke oven gas stream and increase the $H_2S$ content of said solution;

f. the relative rates of flow of the two said gas streams being such that the amount of $H_2S$ and $SO_2$ contained in the solution resulting from step e) is substantially in the ratio of two moles of $H_2S$ to one mole of $SO_2$, whereby elemental sulfur precipitates out of the solution;

g. removing precipitated sulfur from the last said solution, and

h. passing at least a portion of the solution resulting from step f) to step a).

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**3,933,995**

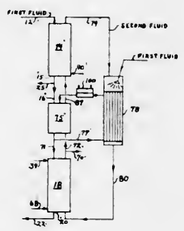
## DUAL TEMPERATURE ISOTOPE EXCHANGE SYSTEM

**Jerome S. Spevack, New Rochelle, N.Y., assignor to Deuterium Corporation, White Plains, N.Y.**

**Continuation of Ser. No. 828,926, July 16, 1959, abandoned, which is a continuation-in-part of Ser. No. 188,925, Sept. 29, 1950, Pat. No. 2,895,803. This application Mar. 12, 1971, Ser. No. 123,815**

**Int. Cl.² C01B** *5/02*

**U.S. Cl. 423—580** **6 Claims**



1. An improvement of a method of producing a substance containing concentrated therein an isotope of an element by exchanging, at two different temperatures, said isotope with another isotope of the same element between chemically different fluid substances which are physically separable from each other and which are capable of containing each of said isotopes, which method comprises, in combination, the steps of (a) establishing a countercurrent flow of the two substances in a series of at least two pairs of exchange units; (b) mixing said two fluids in each of said exchange units to cause an exchange of isotopes of the element between the two fluids; (c) maintaining a first unit of each pair at a temperature to cause the first fluid flowing therethrough to become enriched and the second fluid flowing therethrough to become impoverished with respect to said isotope; and (d) maintaining the second unit of each pair at a temperature to cause the second fluid flowing therethrough to become enriched and the first fluid flowing therethrough to become impoverished with respect to said isotope; (e) transferring a first part of the flow of enriched first fluid from the first unit of each pair to the second unit of said pair and (f) transferring a second part of the flow of enriched first fluid from the first unit of each pair except the last of said pairs to the first unit of the next succeeding pair; (g) transferring a first part of the flow of enriched second fluid from the second unit of each pair to the first unit of said pair and (h) transferring a second part of said flow of enriched second fluid from the second unit of each pair except the last to the second unit of the next succeeding pair of units; (i) transferring impoverished first fluid from the second unit of each pair of units except the first pair to the second unit of the next preceding pair of units; (j) transferring impoverished second fluid from the first unit of each pair of units except the first pair to the first unit of the next preceding pair of units; (k) delivering a flow of impoverished second fluid to the second unit of a pair of units; and (l) removing as product enriched fluid from the last pair of exchange units of said series; and in which said flows of first fluid are liquid flows; said improvement comprising the combination in said method of the cooperating steps of:

(m) establishing a liquid cyclic flow of enriched first fluid;

(n) passing the liquid cyclic flow of enriched first fluid established in step (m), and a flow of enriched first fluid being transferred from a first unit to a second unit of a pair of units in step (e), into direct contact with enriched second fluid being transferred from a second unit to a first unit of said pair of units in step (g);

(o) maintaining said liquid cyclic flow separated from said flows of second fluid except for the direct contact in step (n); and

(p) effecting heat transfer between the liquid cyclic flow of enriched first fluid established in step (m) and the flow of impoverished second fluid being delivered in step (k).

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**3,933,996**

## COMPOSITION COMPRISING RADIOACTIVE LABELED-FIBRINOGEN AND ALBUMIN

**John Cecil Charlton, and David Lawrence Gravett, both of Amersham, England, assignors to The Radiochemical Centre Limited, Amersham, England**

**Filed June 19, 1973, Ser. No. 371,529**

**Claims priority, application United Kingdom, June 22, 1972, 29401/72**

**Int. Cl.² A61K** *43/00, 35/16, 37/02*

**U.S. Cl. 424—1** **10 Claims**

1. A solid product comprising one part by weight of fibrinogen labelled with a radioactive iodine isotope, and from 1 to 1,000 parts by weight of albumin to reduce or prevent unwanted decomposition of the fibrinogen.



**3,933,997**

## SOLID PHASE RADIOIMMUNOASSAY OF DIGOXIN

**Leroy S. Hersh, Painted Post, and Sidney Yaverbaum, Big Flats, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.**

**Filed Mar. 1, 1974, Ser. No. 447,251**

**Int. Cl.² A61K** *43/00*; **G01T** *1/16, 1/167*; **G21H** *5/02*

**U.S. Cl. 424—1** **7 Claims**

1. A method of determining the concentration of digoxin in a solution comprising the steps of:

A. reacting the solution, a known amount of radioactively labelled digoxin, and a composite consisting of anti-digoxin antibodies coupled chemically through an intermediate silane coupling agent to magnetically responsive inorganic particles, to form immunochemical complexes;

B. magnetically separating the composite from the reaction solution;

C. counting the radioactivity of either the removed composite or the remaining solution; and

D. relating the count of step (C) to a standard to determine the digoxin concentration.

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**3,933,998**

## 4-[2-(ISOPROPYLAMINO)ETHYL]PYROCATECHOL INTRAOCULAR PRESSURE LOWERING PROCESS

**Richard J. Seidehamel, and Kendrick W. Dungan, both of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.**

**Filed Nov. 4, 1974, Ser. No. 520,388**

**Int. Cl.² A61K** *31/135*

**U.S. Cl. 424—28** **5 Claims**

1. A process for lowering elevated intraocular pressure in a patient suffering from primary open angle glaucoma comprising topically applying to said patient's eyes an effective ophthalmologically acceptable amount for lowering intraocular pressure of a compound selected from the group consisting of 4-[2-(isopropylamino)ethyl]pyrocatechol and ophthalmologically acceptable acid addition salts thereof.

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**3,933,999**

## ORGANIC COMPOUNDS

**Lucien Craps, Basel, Switzerland, assignor to Sandoz Ltd., (Sandoz AG), Basel, Switzerland**

**Filed Dec. 17, 1973, Ser. No. 425,121**

**Claims priority, application Switzerland, Dec. 22, 1972, 018770/72**

**Int. Cl.² A61K** *9/32, 9/58, 31/40, 31/415*

**U.S. Cl. 424—31** **15 Claims**

1. A pharmaceutical composition useful for the treatment of Rhinitis comprising as active agents

a. 1-methyl-2-[2-(α-methyl-p-chloro-diphenylmethyloxy)-ethyl]pyrrolidine in free base form or in pharmaceutically acceptable acid addition salt form, and b) a compound selected from the group consisting of 2-amino-1-phenylalkan-1-ol of 2 to 4 alkanol carbon atoms, napthylmethyl, or tetraline, or phenylalkyl of 1 to 3 carbon atoms, napthylmethyl or tetraline, mono, di or tri substituted by alkyl of 1 to 4 carbon atoms wherein the phenyl is unsubstituted or mono- or disubstituted by hydroxy and the amino is unsubstituted or mono- or disubstituted by alkyl of 1 to 4 carbon atoms and imidazoline substituted in the 2-position by phenylalkyl of 1 to 3 carbon atoms, wherein the weight ratio of active agent a) to active agent b) is from about 1:10 to about 1:60, and a pharmaceutically acceptable carrier therefor.

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**3,934,000**

## TOOTHPASTES

**Jordan B. Barth, East Brunswick, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.**

**Continuation-in-part of Ser. No. 301,934, Oct. 30, 1972, abandoned. This application Oct. 16, 1974, Ser. No. 515,272**

**Int. Cl.² A61K** *7/16*

**U.S. Cl. 424—49** **5 Claims**

1. A transparent toothpaste having improved body and texture, comprising a dental vehicle of aqueous humectant; about 3–7% silica thickeners; about 5–50% dental abrasive having an empirical $SiO_2$ content of at least 70%, a particle size of about 2 to 20 microns, an essentially amorphous X-ray structure, and an index of refraction which is about the same as that of the vehicle; said vehicle containing about 0.2–2% sodium carboxymethylcellulose having about 0.6 to 0.8 carboxymethyl groups per anhydroglucose unit, and about 1–10% polyethylene glycol having an average molecular weight of about 550–650, the graph of its molecular weight distribution being a bell-shaped curve, at least one-half by weight of said polyethylene glycol being molecular weights above 400 and below 800.

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**3,934,001**

## ORAL COMPOSITIONS CONTAINING GERMICIDALLY ACTIVE PLASTIC POWDERS

**Charles Andrew Watson, Ruislip, England, assignor to Lever Brothers Company, New York, N.Y.**

**Continuation of Ser. No. 836,217, June 12, 1969, abandoned, which is a continuation of Ser. No. 599,692, Dec. 7, 1966, abandoned. This application July 31, 1970, Ser. No. 64,126**

**Claims priority, application United Kingdom, Dec. 7, 1965, 51752/65**

**Int. Cl.² A61A** *7/16*

**U.S. Cl. 424—49** **6 Claims**

1. In a liquid mouthwash preparation having a liquid vehicle and an effective amount of a germicide suitable for use in oral hygiene, the improvement which comprises providing said germicide in the form of non-toxic, water-insoluble thermoplastic resinous particles having a size less than 50 microns, said particles being impregnated with said germicide suitable for use in oral hygiene in an amount of at least about 0.1 per cent of said particles by weight.

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**3,934,002**

## ORAL COMPOSITIONS FOR PLAQUE, CARIES AND CALCULUS RETARDATION WITH REDUCED STAINING TENDENCIES

**John William Haefele, St. Petersburg, Fla., assignor to The Procter & Gamble Company, Cincinnati, Ohio**

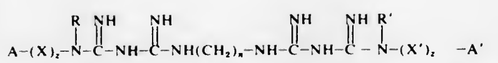
**Continuation-in-part of Ser. No. 429,254, Dec. 28, 1973, abandoned, which is a continuation-in-part of Ser. Nos. 338,464, March 6, 1973, and Ser. No. 338,472, March 6, 1973, abandoned, each is a continuation-in-part of Ser. No. 267,816, June 30, 1972, abandoned. This application Apr. 24, 1974, Ser. No. 463,495**

**Int. Cl.² A61K** *7/18, 6/24*

**U.S. Cl. 424—54** **36 Claims**

1. An oral composition effective in inhibiting the formation of plaque, caries and calculus comprising:

A. from about 0.01 to about 2.5% by weight of a bis-biguanide compound having the generic formula:



wherein A and A′ each represent either (1) a phenyl radical which can contain as a substituent up to two alkyl or alkoxy groups containing from 1 to about 4 carbon atoms, a nitro group, or a halogen atom; (2) an alkyl group containing from 1 to about 12 carbon atoms; or (3) alicyclic groups containing from 4 to about 12 carbon atoms; wherein X and X′ each represent an alkylene radical containing from 1 to 3 carbon atoms; wherein z and z′ each can be either 0 or 1; wherein R and R′ each represent either hydrogen, an alkyl radical containing from 1 to about 12 carbon atoms, or an aralkyl radical containing from 7 to about 12 carbon atoms; wherein *n* is an integer from 2 to 12 inclusive; and wherein the polymethylene chain $(CH_2)_n$ can be interrupted by up to 5 ether, thioether, phenyl or naphthyl moieties; or the pharmaceutically acceptable salts thereof;

B. from about 0.01 to about 10% by weight of an anti-calculus compound in excess over that which reacts with said bis-biguanide compound to form an insoluble salt where such reaction occurs, said anti-calculus compound being zinc phenolsulfonate;

c. balance, a carrier which is suitable for use in the oral cavity.

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**3,934,003**

**COSMETIC COMPOSITION CONTAINING AN ETHOXYLATED GLYCERIDE MIXTURE**

**Rudolf Tuma, Witten-Ruhr, and Fritz Neuwald, Brammer ueber Nortorf, Holstein, both of Germany, assignors to Chemische Werke Witten GmbH, Germany**

**Continuation of Ser. No. 645,618, June 13, 1967, abandoned, which is a continuation-in-part of Ser. No. 338,561, Jan. 20, 1964, abandoned. This application Jan. 23, 1973, Ser. No. 326,077**

**Claims priority, application Germany, Apr. 13, 1963, 29651**

**Int. Cl.² A61K** *7/42*

**U.S. Cl. 424—59** **32 Claims**

1. A water-soluble and fat-restoring composition which consists of an ethoxylated glyceridic mixture of saturated vegetable fatty acids of about 8 to 14 carbon atoms, said mixture comprising the monoglycerides and diglycerides of said acids having chemically linked thereto about 2 to 8 moles of ethylene oxide per free hydroxyl group, said ethoxylated glyceridic mixture having an acid number of from 0.1 to 0.2, a saponification number of from 65 to 120 and a hydroxyl number of from 130 to 260.

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**3,934,004**

**STAIN RESISTANT ANTI-PERSPIRANT COMPOSITION**

**Leonard J. Orren, 8408 Wornall Road, Kansas City, Mo. 64111**

**Filed Mar. 9, 1973, Ser. No. 339,934**

**Int. Cl.² A61K** *7/38*

**U.S. Cl. 424—68** **5 Claims**

1. In an anti-perspirant composition containing as the active ingredient an astringent aluminum salt and a dermatologically-acceptable vehicle, the improvement wherein the composition comprises a cosmetically-acceptable reducing agent in an amount of about 0.01 to 10 percent by weight, based on the total weight of the composition, and sufficient to inhibit staining of fabric in contact with the composition and with perspiration, the reducing agent being water dispersible, essentially odorless, non-irritating to skin and a member selected from the group consisting of:

a. ammonium sulfite, alkali-metal sulfite, alkaline-earth-metal sulfite, zinc sulfite or a mixture thereof;

b. ammonium bisulfite, alkali-metal bisulfite, alkaline-earth-metal bisulfite or a mixture thereof;

c. sodium dithionate, zinc dithionate or a mixture;

d. alkali-metal meta-bisulfite;

e. alkali-metal thiosulfate, alkaline-earth-metal thiosulfate or a mixture thereof;

f. 2-thiobarbituric acid mono-substituted-2-thiobarbituric acid in which a substituent is in the 2- or the 5-position, disubstituted-2-thiobarbituric acid in which each substituent is in one of the 2- and 5-positions or a mixture thereof;

g. 2-pyridinethione;

h. alkylamine bisulfite;

i. sodium formaldehyde bisulfite;

j. sodium formaldehyde sulfoxylate, zinc formaldehyde sulfoxylate or a mixture thereof;

k. acetone sodium bisulfite;

l. cysteine, homocysteine, N-acetyl cysteine, N-acetyl homocysteine, homocysteine thiolactone, S-cysteine sulfonate sodium, cysteine-S-phosphate sodium or a mixture thereof;

m. penicillamine;

n. thiomalic acid;

o. thiosalicylic acid;

p. 2-mercaptoethylamine hydrochloride;

q. dithiothreitol;

r. thiourea dioxide;

s. thiazolidine-2-carboxylic acid;

t. ammonium hypophosphite, alkali-metal hypophosphite, alkaline-earth-metal hypophosphite or a mixture thereof;

u. ammonium phosphite, alkali-metal phosphite, alkaline-earth-metal phosphite or a mixture thereof;

v. tetrakis(hydroxymethyl)phosphonium chloride; and

w. dermatologically-acceptable stannous salt.

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**3,934,005**

**REDUCED SPRAY DRIFT METHOMYL COMPOSITIONS**

**Robert Eyer Albert, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.**

**Filed Apr. 4, 1974, Ser. No. 457,912**

**Int. Cl.² A61K** *31/74*; **A01N** *9/06*, *9/20*

**U.S. Cl. 424—78** **3 Claims**

1. A single-phase liquid methomyl composition consisting essentially of 15 to 40 percent by weight of methomyl; 0.03 to 1.5 percent by weight of polyoxyethylene having a molecular weight of one million to 7 million; 0 to 50% by weight of water; and a solvent selected from the group consisting of methanol, acetone, cyclohexanone, and cyclohexanol.

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**3,934,006**

**PHARMACEUTICAL COMPOSITIONS COMPRISING SACCHARASE INHIBITORS**

**Werner Frommer; Walter Puls, and Delf Schmidt, all of Wuppertal, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

**Division of Ser. No. 336,720, Feb. 28, 1973, Pat. No. 3,879,546. This application June 24, 1974, Ser. No. 482,661**

**Claims priority, application Germany, Mar. 1, 1972, 2209832**

**Int. Cl.² A61K** *27/00*

**U.S. Cl. 424—115** **6 Claims**

1. A pharmaceutical composition comprising as an active ingredient a therapeutically effective quantity of a saccharase inhibitor mixed with a pharmaceutical diluent, wherein said saccharase inhibitor is produced by a process which comprises subjecting to hydrolytic degradation a polysaccharidic or oligosaccharidic amylase inhibitor derived from microorganisms of the order Actinomycetales.



**3,934,007**

**METHOD OF REMOVING TOXIC SUBSTANCES FROM THE INTESTINAL TRACT BY THE USE OF A SURFACTANT AND A SORBENT**

**Robert Zalmon Gussin, Suffern, N.Y., and Lewis Smith Meriwether, Westport, Conn., assignors to American Cyanamid Company, Stamford, Conn.**

**Continuation-in-part of Ser. No. 373,068, June 25, 1973, abandoned. This application Mar. 27, 1974, Ser. No. 455,455**

**Int. Cl.² A61K** *31/225*, *33/43*

**U.S. Cl. 424—125** **5 Claims**

1. A method of facilitating the removal of urea, creatinine and ammonia from the intestinal tract of a warm-blooded animal which comprises orally administering to said animal an effective urea, creatinine and ammonia lowering amount of a composition of 1 part dioctyl sodium sulfosuccinate and from 10–10,000 parts of at least one sorbent selected from the group consisting of activated carbon, oxystarch and oxycellulose.

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**3,934,008**

**N-ACYL AND DESAMINO HUMAN CALCITONIN AND ANALOGS THEREOF**

**Werner Rittel, Basel; Max Brugger, Birsfelden; Bruno Kamber, Basel; Bernhard Riniker, Frenkendorf; Peter Sieber, Reinach, all of Switzerland, and Hendrik Marie Greven, Heesch, Netherlands, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.**

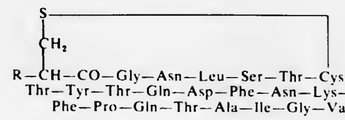
**Continuation of Ser. No. 850,254, Aug. 14, 1969, abandoned. This application July 14, 1972, Ser. No. 271,873**

**Claims priority, application Switzerland, Aug. 23, 1968, 12691/68; Aug. 27, 1968, 12811/68; Aug. 30, 1968, 13067/68; Oct. 10, 1968, 15147/68; Nov. 19, 1968, 17235/68**

**Int. Cl.² A61K** *37/00*; **C07C** *103/52*; **C07G** *7/00*

**U.S. Cl. 424—177** **19 Claims**

1. A peptide of the formula



Pro—$NH_2$ (I)

in which R is hydrogen or acylamino wherein acyl is a lower monobasic or dibasic alkanoyl, lower alkyloxycarbonyl, benzyloxycarbonyl, pyroglutamyl, carbamoyl, N-lower alkylcarbamoyl, N-phenylcarbamoyl, or N-phenylthiocarbamoyl, and, in addition, compounds of Formula I in which one or more of the asparagine and glutamine residues are exchanged for the aspartic acid or glutamic acid residue, respectively, or the aspartic acid residue is exchanged for the asparagine residue and, in addition, compounds of formula I in which R is amino and one or more of the asparagine and glutamine residues are exchanged for the aspartic acid or glutamic acid residue, respectively, or the aspartic acid residue is exchanged for the asparagine residue; as well as therapeutically acceptable acid addition salts and complexes with a member selected from the group consisting of zinc phosphate, zinc pyrophosphate, zinc hydroxide, gelatine, polyphloretin phosphate, and polyglutamic acid, with the proviso that all amino acid residues other than glycine and β-mercaptopropionic acid are of the L-configuration.

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**3,934,009**

**AGENTS FOR LOWERING THE LIPID LEVEL IN PLASMA**

**Karl Friedrich Gey, Reinach; Joseph Kiss, Arlesheim; Hans Lengsfeld, Reinach; Willy Schuep, Birsfelden, and Pierre-Charles Wyss, Muttenz, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.**

**Filed Jan. 9, 1975, Ser. No. 539,662**

**Claims priority, application Switzerland, Jan. 25, 1974, 1038/74**

**Int. Cl.² A61K** *31/70*

**U.S. Cl. 424—180** **7 Claims**

1. A composition useful for lowering the lipid level in plasma comprising N-nicotinoylglucosamine and a pharmaceutical carrier material.

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**3,934,010**

**INSECTICIDAL COMPOSITION AND METHOD UTILIZING PHOSPHORIC ACID PHENYLSULPHONAMIDE ESTERS**

**Jozef Drabek, Allschwil, and Denis Varsanyi, Arlesheim, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.**

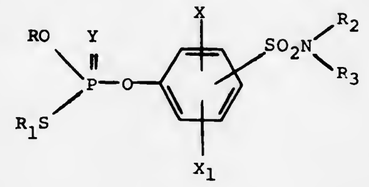
**Division of Ser. No. 310,507, Nov. 29, 1972, Pat. No. 3,855,362. This application Sept. 23, 1974, Ser. No. 508,592**

**Claims priority, application Switzerland, Dec. 3, 1971, 17619/71; Sept. 22, 1972, 13869/72**

**Int. Cl.² A01N** *9/36*

**U.S. Cl. 424—211** **8 Claims**

1. An insecticidal and acaricidal composition comprising an insecticidally and acaricidally effective amount of a compound of the formula



wherein R represents methyl or ethyl, $R_1$ represents propyl, n-butyl, n-pentyl or $C_2H_5OCH_2CH_2$—, $R_2$ represents hydrogen, methyl or ethyl, $R_3$ represents methyl or ethyl, X and $X_1$ each represents hydrogen or chlorine, and Y represents oxygen or sulphur, together with a suitable carrier therefor.

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**3,934,011**

**COMBATING INSECTS AND ACARIDS WITH S-DIPHENYLMETHYL-DITHIOPHOSPHATES**

**Odd Kristiansen, Reinach, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.**

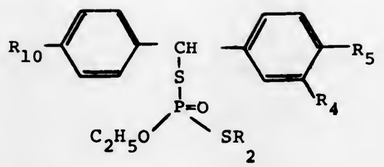
**Division of Ser. No. 437,414, Jan. 28, 1974, Pat. No. 3,884,998. This application Mar. 4, 1975, Ser. No. 555,207**

**Claims priority, application Switzerland, Feb. 7, 1973, 1755/73; Dec. 20, 1973, 17773/73**

**Int. Cl.² A01N** *9/36*

**U.S. Cl. 424—216** **10 Claims**

1. A composition for combatting pests selected from the group consisting of insects and acarids comprising (1) as active ingredient a pesticidally effective amount of a compound of the formula



wherein $R_2$ represents ethylthiomethyl or propargyl; and each of $R_4$, $R_5$ and $R_{10}$ represents hydrogen, chlorine or methoxy; and (2) an inert carrier.

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**3,934,012**

## METHOD OF SEPARATING HYDROGEN SULFIDE FROM CARBON DIOXIDE

**Vernon Hugo Schievelbein, Houston, Tex., assignor to Texaco Inc., New York, N.Y.**

**Continuation-in-part of Ser. No. 263,910, June 19, 1972, abandoned. This application Apr. 22, 1974, Ser. No. 462,906**

**Int. Cl.² B01D** *53/34*

**U.S. Cl. 423—232** **26 Claims**

**1.** A method for preferentially removing hydrogen sulfide from a gas mixture comprising hydrogen sulfide and carbon dioxide which comprises

treating the gas mixture at atmospheric pressure with an aqueous solution consisting of inert salts and bicarbonate ions in sufficient concentration to establish an equilibrium imbalance to prevent substantial dissolution of carbon dioxide.

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**3,934,013**

## PHARMACEUTICAL COMPOSITION

**Boyd J. Poulsen, Palo Alto, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.**

**Filed Feb. 21, 1975, Ser. No. 551,811**

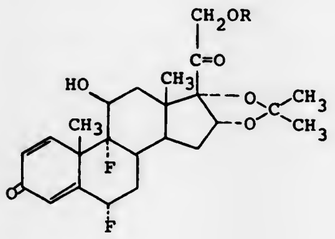
**Int. Cl.² A61K** *31/56*

**U.S. Cl. 424—239** **50 Claims**

**1.** A topical, anti-inflammatory, pharmaceutical composition which comprises

a. a pharmaceutically acceptable solvent and

b. at least two corticosteroids, each dissolved in said solvent at a concentration equal to the saturation solubility for each corticosteroid, said corticosteroids being chosen from the group represented by the following formulas:



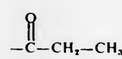
wherein

in compound (A) R is

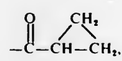


in compound (B) R is H,

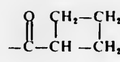
in compound (C) R is



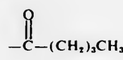
in compound (D) R is

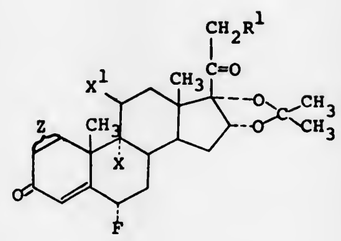


in compound (E) R is



in compound (F) R is



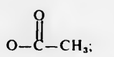


in compound (G) $R^1$ is F; X and $X^1$ both Cl, Z is a double bond;

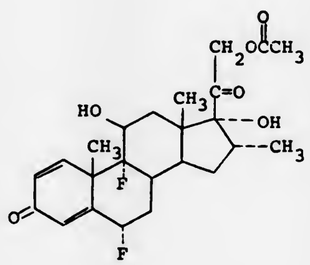
in compound (H) $R^1$ is OH; X and $X^1$ are both Cl, Z is a double bond;

in compound (I) $R^1$ is OH; X is H and $X^1$ is OH, Z is a single bond;

in compound (J) $R^1$ is



X is H, and $X^1$ is OH, Z is a double bond; and compound (K) is





**3,934,014**

## N-METHYL-IMIDAZOLE DERIVATIVES AS ANTI-MYCOTIC AGENTS

**Wilfried Draber; Karl Heinz Büchel; Erik Regel, and Manfred Plempel, all of Wuppertal-Elberfeld, Germany, assignors to Bayer Aktiengesellschaft, Germany**

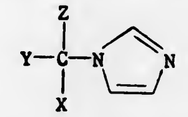
**Division of Ser. No. 310,423, Nov. 29, 1972. This application May 31, 1974, Ser. No. 474,873**

**Claims priority, application Germany, Mar. 23, 1970, 2013793**

**Int. Cl.² A61K** *31/505*

**U.S. Cl. 424—251** **16 Claims**

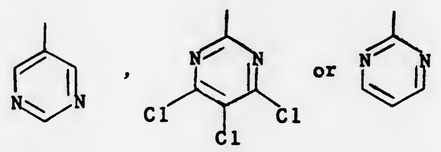
**1.** A pharmaceutical composition useful for treating mycotic infections in humans and animals which comprises an antimycotically effective amount of a compound of the formula:



or a pharmaceutically acceptable non-toxic salt thereof, wherein

X is





Y is phenyl or p-fluorophenyl, and

Z is phenyl,

in combination with a pharmaceutically acceptable non-toxic inert diluent or carrier.

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**3,934,015**

## ORAL MALE ANTIFERTILITY METHOD AND COMPOSITIONS

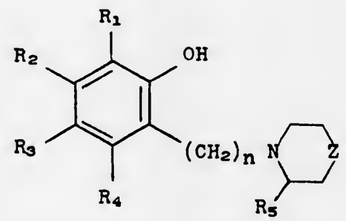
**Alfred Boris, Parsippany-Troy Hills, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.**

**Filed Nov. 5, 1970, Ser. No. 87,328**

**Int. Cl.² A61K** *31/445*

**U.S. Cl. 424—267** **8 Claims**

**1.** A method for inducing an antifertility effect in a male aves or mammal, which comprises orally or parenterally administering an antifertility effective amount of a compound of the formula



wherein

Z is —O— or —$CH_2$—, $R_1$ independently is hydrogen, N-piperidino-lower alkyl and N-α-pipecolino lower alkyl, $R_2$, $R_3$ and $R_4$ independently are hydrogen or lower alkyl, $R_1$, $R_2$, $R_3$ and $R_4$ taken together as adjacent pairs are lower alkyl having from 3 to 5 carbon atoms, $R_5$ is hydrogen or lower alkyl and *n* is 1 or 2

or the enantiomer or acid addition salts thereof to said aves or mammal.

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**3,934,016**

## PHARMACEUTICAL PREPARATION FOR PERCUTANEOUS TREATMENT OF LOCAL EDEMAS

**Claude Paul Roux, Paris, and Dieran Robert Torossian, Montrouge, both of France, assignors to Jouveinal, S.A., Val-de-Marne, France**

**Filed May 24, 1971, Ser. No. 146,298**

**Claims priority, application France, Apr. 15, 1971, 71.13326**

**Int. Cl.² A61K** *31/425*

**U.S. Cl. 424—270** **2 Claims**

**1.** A pharmaceutical composition for local percutaneous treatment of edemas which comprises an anhydrous ointment having the following composition:

10 parts of acetazolamide

75 parts of poly-oxy-ethylene glycol 1,500

15 parts of poly-oxy-ethylene glycol 300

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**3,934,017**

## ANTHELMINTIC COMPOSITION AND METHOD UTILIZING ISOTHIOCYANOBENZAZOLES ACTIVE INGREDIENTS

**Jean-Jacques Gallay, Magden; Rene Bosshard, Birsfelden, and Paul Brenneisen, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.**

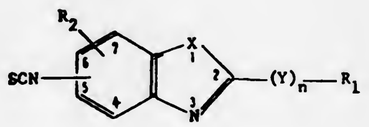
**Division of Ser. No. 311,987, Dec. 4, 1972, Pat. No. 3,849,431. This application Sept. 3, 1974, Ser. No. 502,480**

**Claims priority, application Switzerland, Dec. 7, 1971, 17875/71**

**Int. Cl.² A01N** *9/12, 9/18, 9/20, 9/28*

**U.S. Cl. 424—270** **8 Claims**

**1.** An anthelmintic composition comprising (a) as active ingredient, an anthelmintically effective amount of a compound of the formula



wherein the SCN-group is in the 4-, 5-, 6- or 7-position,

$R_1$ represents hydrogen, a straight-chain or branched alkyl or alkenyl radical having at most 17 carbon atoms, an alkyl or alkenyl radical having a total of at most 6 carbon atoms and substituted by halogen, —CN, —OH, $C_1$–$C_5$ alkoxy, $C_1$–$C_5$ alkylthio or di-($C_1$–$C_5$)alkylamino, an optionally $C_1$–$C_5$ alkyl-substituted mono-, bi- or tricyclic cycloalkyl or cycloalkenyl radical having 3 to 10 carbon atoms in the ring structure, which can also be bound by way of a $CH_2$-group to the substituent Y or to the 2-position of the heterocycle,

$R_2$ represents hydrogen, halogen or an alkyl or alkoxy radical having at most 4 carbon atoms,

X represents oxygen, sulphur or

$-NR_3$.

$R_3$ represents hydrogen, an alkyl or alkenyl radical having at most 5 carbon atoms, a phenyl or benzyl radical, a dimethylamino- or diethylamino-alkyl radical having 2 – 5 carbon atoms in the alkyl chain, an alkoxycarbonyl radical having 2 – 5 carbon atoms, acetyl, propionyl, trichloroacetyl, benzoyl, or a $C_4$–$C_7$ saccharide group,

Y represents oxygen, sulphur, —SO—, $—SO_2—$, or $—NR_4—$,

*n* is the number 0 or 1,

$R_4$ represents hydrogen, an alkyl or alkenyl radical having at most 5 carbon atoms, or together with the N-atom and the substituent $R_1$ a saturated or unsaturated heterocycle having 4 to 6 carbon atoms which may also contain a further hetero atom O or S selected from the group consisting of pyrrolidine, piperidine, 2-methylpiperidine, 4-methylpiperidine, piperazine, N′-methyl, N′,N′-dimethyl and N′-ethyl-piperazine, morpholine, isomorpholine, thiomorpholine and hexamethyleneimine, or the group

$-N-R_5$,

and

$R_5$ stands for hydrogen, methyl or ethyl,

or their acid addition salts non-toxic for warm-blooded animals together with (b) a carrier.

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**3,934,018**

**4,6-DIHYDRO-1,3-DIMETHYL-8-PHENYL-PYRAZOLO[4,3-e ] [1,4]DIAZEPIN-5-(1H)-ONE AND DERIVATIVES AS ANTI-INFLAMMATORY AGENTS**

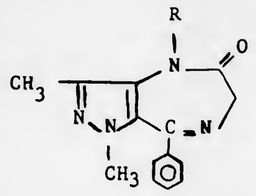
**Leo Ralph Swett, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.**

**Filed Sept. 3, 1970, Ser. No. 69,464**

**Int. Cl.² A61K** *31/415*

**U.S. Cl. 424—273** **4 Claims**

**1.** A method of relieving the symptoms of inflammation in a patient in need of such treatment by administering to said patient a therapeutically effective amount of a compound of the formula



where R is hydrogen or $C_1$–$C_7$ alkyl.

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**3,934,019**

**PESTICIDAL 4,5-BIS-(TRIFLUOROMETHYLIMINO)-DIAZOLES**

**Hans-Joachim Scholl, Cologne; Erich Klauke, Odenthal; Ferdinand Grewe, Burscheid, and Ingeborg Hammann, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

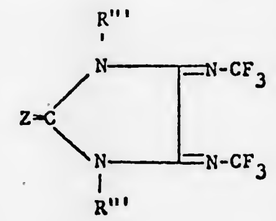
**Continuation-in-part of Ser. No. 206,159, Dec. 8, 1971, Pat. No. 3,787,435. This application Oct. 3, 1973, Ser. No. 403,296**

**Claims priority, application Germany, Dec. 18, 1970, 2062346**

**Int. Cl.² A01N** *9/22*

**U.S. Cl. 424—273** **18 Claims**

**1.** A fungicidal, insecticidal or acaricidal composition comprising a fungicidally, insecticidally or acaricidally effective amount of a compound of the formula



in which

Z is oxygen, R—N= or



and

R, R′, R″ and R‴ are each hydrogen; alkyl, alkenyl or alkynyl with up to 8 carbon atoms optionally substituted by halogen, cyano, lower alkoxy or alkylmercapto; optionally lower-alkyl-substituted cycloalkyl; carbalkoxy containing up to 5 carbon atoms in the alkoxy group; aralkyl with up to 2 carbon atoms in the alkyl moiety or aryl with up to 14 carbon atoms in the ring system, the aryl radicals optionally being substituted by halogen, cyano, nitro, lower alkyl, lower haloalkyl, lower alkoxy or lower alkylmercapto; or a radical which together with Z or an N-atom of the ring forms a further 5- or 6-membered ring containing two nitrogen atoms and optionally fused with a benzene ring which is optionally partially hydrogenated.

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**3,934,020**

**HALOPHENYL ACETAMIDINES AS ANXIOLYTIC ANTIDEPRESSANTS**

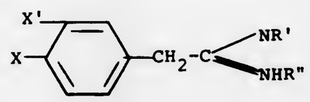
**Abdulmuniem H. Abdallah, and Philip J. Shea, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.**

**Filed Oct. 2, 1974, Ser. No. 510,958**

**Int. Cl. A61k** *31/155*

**U.S. Cl. 424—326** **7 Claims**

**1.** A method useful for alleviating symptoms of central nervous system depression and anxiety in an animal comprising administering to an animal an amount of a compound selected from the group consisting of a substituted amidine and a pharmacologically-acceptable salt thereof effective to alleviate said symptoms, the substituted amidine corresponding to the formula:



wherein X and X′ each independently represent halo, trifluoromethyl or hydrogen, with the proviso that at least one of X and X′ is halo or trifluoromethyl and R′ and R″ each independently represent loweralkyl.



**3,934,021**

**PREVENTION OF APPLE SCALD**

**Alan Stokoe Taylor, Croydon, Australia, assignor to ICI Australia Limited, Melbourne, Australia**

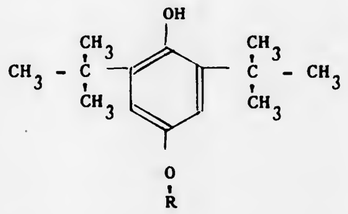
**Filed Apr. 1, 1975, Ser. No. 564,209**

**Claims priority, application Australia, Apr. 22, 1974, 7323/74**

**Int. Cl.² A23F** *1/06*; **C01B** *33/08*

**U.S. Cl. 424—341** **7 Claims**

**1.** A method for preventing or inhibiting scald on apples which method comprises applying to said apples an effective amount of a composition comprising as active ingredient a compound selected from the group consisting of the compounds of the formula



wherein R is methyl or ethyl, and salts thereof; and an inert carrier material therefore.

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**3,934,022**

**N-TRITYL-IMIDAZOLES AS PLANT FUNGICIDES**

**Karl Heinz Buchel, Wuppertal-Elberfeld; Erik Regel, Wuppertal-Cronenberg; Ferdinand Grewe, Burscheid; Hans Scheinpflug, and Helmut Kaspers, both of Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Germany**

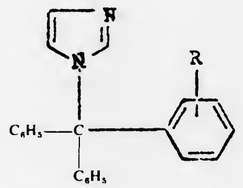
**Division of Ser. No. 789,601, Jan. 7, 1969, abandoned. This application Sept. 2, 1970, Ser. No. 69,110**

**Claims priority, application Germany, Jan. 29, 1968, 1670976**

**Int. Cl.² A01H** *9/22*

**U.S. Cl. 424—273** **14 Claims**

**1.** An antifungal composition useful against fungal plant diseases which comprises antifungal effective amount of a compound of the formula:



wherein R is o-methyl, p-methyl, o-ethyl, or o-isopropyl, in combination with a solid or liquid diluent or carrier.

**3,934,023**

**INSECTICIDAL D-CIS, TRANS-CHRYSANTHEMATES**

**Yoshitoshi Okuno, Toyonaka; Akira Toyoura, and Akio Higo, both of Nishinomiya, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan**

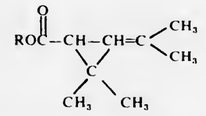
**Filed Sept. 26, 1973, Ser. No. 401,034**

**Claims priority, application Japan, Sept. 29, 1972, 47-98458**

**Int. Cl.² A01N** *9/22, 9/24, 9/28*

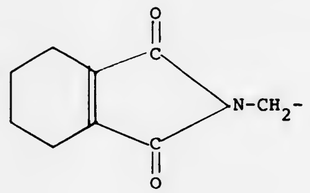
**U.S. Cl. 424—274** **19 Claims**

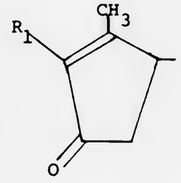
**1.** An insecticidal composition for use against mosquitoes, flies, cockroaches, leafhoppers and cut worms containing as an active ingredient an insecticidally effective amount of (+)-cis, transchrysanthemate of the formula,



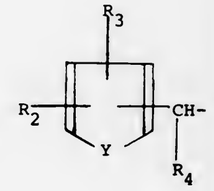
(I)

wherein R is a member selected from the group consisting of the radicals,





and



in which $R_1$ is allyl or propargyl, $R_2$ is propargyl, benzyl or phenoxy, $R_3$ is hydrogen or methyl, $R_4$ is hydrogen or ethynyl, and Y is —CH = CH— or oxygen, and an inert carrier, said (+)-cis, trans-chrysanthemate containing 10 to 30% by weight of (+)-cis-chrysanthemate and 70 to 90% by weight of (+)-trans-chrysanthemate.

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**3,934,024**

**METHOD OF PRODUCING ANALGESIA AND COMPOSITIONS USEFUL THEREIN**

**Raj Kumar Razdan, Belmont, and Harry George Pars, Lexington, both of Mass., assignors to Sharps Associates, Cambridge, Mass.**

**Continuation-in-part of Ser. No. 210,170, Dec. 20, 1971, Pat. No. 3,883,551, which is a continuation-in-part of Ser. No. 852,928, Aug. 25, 1969, abandoned. This application Feb. 18, 1975, Ser. No. 550,286**

**Int. Cl.² A61K** *31/38*

**U.S. Cl. 424—275** **2 Claims**

**1.** A method of relieving pain in a mammalian patient suffering therefrom comprising administering to said patient a therapeutically effective amount of 1,2-dihydro-5,5-dimethyl-10-hydroxy-8-(3-methyl-2-octyl)-3H,5H-thiopyrano[2,3-c][1]benzopyran.

3,934,025

## SYNERGISTIC COMPOSITIONS CONTAINING N-ALKYL ($C_{12}$40%, $C_{14}$-50%, $C_{16}$-10%)DIMETHYL BENZYL AMMONIUM CHLORIDE AND THEIR USE AS SLIMICIDES

**Paul Swered, and Mary Anne Girard, both of Philadelphia, Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.**

**Filed Jan. 30, 1975, Ser. No. 545,674**
**Int. Cl.² A01N 9/20**
**U.S. Cl. 424—298** **8 Claims**

**1.** A composition for the control of the microorganism AEROBACTER AEROGENES in aqueous systems comprising a mixture of 1,3-dichloroacetone oxime acetate, and n-alkyl ($C_{12}$40%, $C_{14}$50%, $C_{16}$10%) dimethyl benzyl ammonium chloride wherein the weight ratio of the acetate to the chloride ranges from about 95:5 to about 5:95 respectively.

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3,934,026

## COMBATING NEMATODES WITH ALKANESULFONIC ACID 2-BROMOETHYL ESTERS

**Karl Heinz Büchel, Wuppertal, and Bernhard Homeyer, Opladen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

**Filed Nov. 5, 1974, Ser. No. 521,117**
**Claims priority, application Germany, Nov. 21, 1973, 2358017**
**Int. Cl.² A01N 9/14**
**U.S. Cl. 424—303** **7 Claims**

**1.** A method of combating nematodes which comprises applying to the nematodes a nematocidally effective amount of an alkane-sulfonic acid 2-bromoethyl ester of the formula

$$R-SO_2-O-CH_2-CH_2-Br$$

in which

R is an alkyl radical with 1 to 5 carbon atoms.

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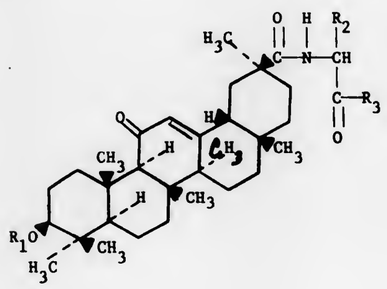
3,934,027

## 18β-GLYCYRRHETINIC ACID AMIDES USEFUL AS ANTIULCER AGENTS

**Hans-Jurgen E. Hess, Old Lyme, and Roger P. Nelson, Waterford, both of Conn., assignors to Pfizer Inc., New York, N.Y.**

**Division of Ser. No. 356,774, May 3, 1973, Pat. No. 3,859,328, which is a division of Ser. No. 195,475, Nov. 3, 1971, Pat. No. 3,766,206. This application June 24, 1974, Ser. No. 482,056**
**Int. Cl.² A61K 31/235**
**U.S. Cl. 424—309** **6 Claims**

**1.** A method for the control of peptic ulcers in animals in need of said treatment which comprises administering intraperitoneally or orally to the animals an effective antipeptic ulcer amount of a composition containing a diluent amount of a pharmaceutically-acceptable carrier and, as the essential active ingredient, an effective amount of a compound having the formula



wherein

$R_1$ is selected from the group consisting of hydrogen, alkanoyl having from two to six carbon atoms and ω-carboxyalkanoyl having a total of from 4 to 5 carbon atoms;

$R_2$ is selelcted from the group consisting of benzyl, 4-hydroxybenzyl, 3,4-dihydroxybenzyl, and 3,5-dibromo-4-hydroxybenzyl; and

$R_3$ is selected from the group consisting of hydroxy and alkoxy having from one to four carbon atoms; or a pharmaceutically-acceptable alkali metal salt thereof when the compound has at least one carboxy group.

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3,934,028

## ACNE AND PSORIASIS TREATMENT WITH RETINOIC ACID ANALOGS

**Kwan-hua Lee, San Francisco, Calif., assignor to The Regents of the University of California, Berkeley, Calif.**

**Filed Apr. 22, 1974, Ser. No. 463,078**
**Int. Cl.² A61K 31/20**
**U.S. Cl. 424—318** **5 Claims**

**1.** A method of alleviating acne in a patient in need thereof which comprises topically administering to said patient in an amount effective for remission of said acne of 11-(2,6', 6' trimethylcyclohex-1'enyl-1')-5,9-dimethylundeca-2,4,6,8,10-pentenoic acid.

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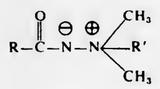
3,934,029

## CERTAIN AMINIMIDES USED TO CONTROL BACTERIA AND FUNGI

**Jon J. Kabara, Okemos, Mich., assignor to Michigan State University, East Lansing, Mich.**

**Filed Apr. 29, 1974, Ser. No. 465,120**
**Int. Cl.² A01N 9/20**
**U.S. Cl. 424—320** **7 Claims**

**1.** A method of inhibiting the growth of bacteria and fungi which comprises applying to said organisms or their loci an antimicrobially effective amount of a compound of the formula



wherein R is a $C_{11}$ – $C_{17}$ straight chain aliphatic hydrocarbon group and R' is methyl, 2-hydroxyethyl or 2-hydroxypropyl.

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3,934,030

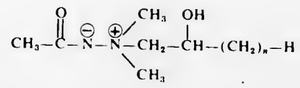
## CERTAIN AMINIMIDES USED TO CONTROL BACTERIA AND FUNGI

**Jon J. Kabara, Okemos, Mich., assignor to Michigan State University, East Lansing, Mich.**

**Filed Apr. 29, 1974, Ser. No. 465,118**
**Int. Cl.² A01N 9/20**
**U.S. Cl. 424—320** **5 Claims**

**1.** A method of inhibiting the growth of bacteria and fungi which comprises applying to said organisms or their loci an antimicrobially effective amount of a compound of the formula





wherein n is an integer of from 10–16.

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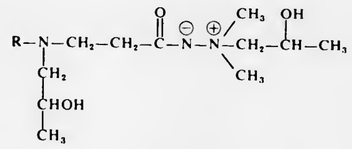
3,934,031

## CERTAIN AMINIMIDES USED TO CONTROL BACTERIA AND FUNGI

**Jon J. Kabara, Okemos, Mich., assignor to Michigan State University, East Lansing, Mich.**

**Filed Apr. 29, 1974, Ser. No. 465,119**
**Int. Cl.² A21N 9/20**
**U.S. Cl. 424—320** **4 Claims**

**1.** A method of inhibiting the growth of bacteria and fungi which comprises applying to said organisms or their loci an antimicrobially effective amount of a compound of the formula



wherein R is a $C_{12}$ – $C_{18}$ alkyl group.

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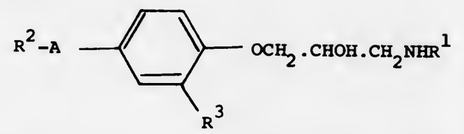
3,934,032

## ALKANOLAMINE DERIVATIVES FOR TREATING HYPERTENSION

**Arthur Michael Barrett, Leeds; John Carter, Macclesfield; Roy Hull, Macclesfield; David James Le Count, Macclesfield, and Christopher John Squire, Macclesfield, all of England, assignors to Imperial Chemical Industries Limited, London, England**

**Division of Ser. No. 233,781, March 10, 1972, Pat. No. 3,836,671, which is a continuation-in-part of Ser. No. 199,011, Nov. 15, 1971, abandoned, and Ser. No. 9,451, Feb. 6, 1970, Pat. No. 3,663,607. This application Apr. 15, 1974, Ser. No. 461,262**
**Claims priority, application United Kingdom, Feb. 21, 1969, 9445/69; Sept. 24, 1969, 47048/69; Nov. 19, 1970, 55028/70; Nov. 18, 1971, 53544/71**
**Int. Cl.² A61K 27/00**
**U.S. Cl. 424—324** **2 Claims**

**1.** A method for the treatment of hypertension in a warm-blooded animal in need of such treatment which comprises administering orally, parenterally or by inhalation to said animal an effective amount of at least one alkanolamine derivative selected from the group consisting of a compound of the formula:



wherein $R^1$ is isopropyl or t-butyl, $R^2$ is carbamoyl or alkylcarbamoyl of up to 4 carbon atoms, A is alkylene of 1 to 5 carbon atoms or alkenylene of 2 to 5 carbon atoms and $R^3$ is hydrogen, halogen or alkyl, alkenyl or alkoxy each of up to 4 carbon atoms; and a non-toxic, pharmaceutically acceptable acid-addition salt thereof.

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3,934,033

## METHOD FOR DISTRUPTING NORMAL INSECT MATURATION

**Morton Beroza, Silver Spring; Rafael Sarmiento, Laurel, and Terrence P. McGovern, Bowie, all of Md., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.**

**Division of Ser. No. 343,328, March 21, 1973, Pat. No. 3,873,724. This application Nov. 26, 1974, Ser. No. 527,320**
**Int. Cl.² A01N 9/24**
**U.S. Cl. 424—341** **7 Claims**

**1.** A method of protecting flour from insects selected from the group consisting of the yellow mealworm, *Tenebrio molitor* (L.) and the confused flour beetle, *Tribolium confusum* Jacquelin duVal comprising incorporating into said flour an effective maturation inhibiting amount of a compound selected from the group consisting of 7-ethoxy-1-(p-ethylphenoxy)-3,7-dimethyl-2-octene and 1-(p-ethylphenoxy)-3,7-dimethyl-7-propoxy-2-octene.

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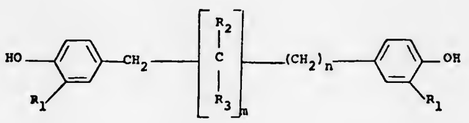
3,934,034

## HYDROXY SUBSTITUTED DIPHENYLALKYLS FOR TREATMENT OF LIPIDEMIA

**Robert E. Manning, Mountain Lakes, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.**

**Continuation-in-part of Ser. No. 282,316, Aug. 21, 1972, abandoned, which is a continuation-in-part of Ser. No. 153,416, June 15, 1971, abandoned, which is a continuation-n-part of Ser. No. 100,533, Dec. 21, 1970, abandoned, which is a continuation-in-part of Ser. No. 60,745, Aug. 3, 1970, abandoned. This application Aug. 9, 1973, Ser. No. 386,947**
**Int. Cl.² A61K 31/05**
**U.S. Cl. 424—346** **19 Claims**

**1.** A method for treating lipidemia, which comprises orally administering to a mammal in need of said treatment an anti-hyperlipidemic effective amount of a compound of the formula:



where

m is 0, 1 or 2;

n is 0 or 1;

$R_1$ represents hydrogen or hydroxy; and

$R_2$ and $R_3$ each independently represents hydrogen or methyl provided that when m is 0, n is 0 and that when m is 1 or 2, n is 1 and $R_1$ is hydroxy and that when m is 2 each $R_2$ can be the same or different and each $R_3$ can be the same or different or

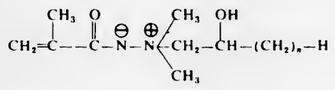
a pharmaceutically acceptable alkali or alkaline earth metal salt thereof.

### 3,934,035
### CERTAIN AMINIMIDES USED TO CONTROL BACTERIA AND FUNGI

**Jon J. Kabara, Okemos, Mich., assignor to Michigan State University, East Lansing, Mich.**

**Filed Apr. 29, 1974, Ser. No. 465,121**
**Int. Cl.² A01N 9/20**
**U.S. Cl. 424—320** **8 Claims**

**1.** A method of inhibiting the growth of bacteria and fungi which comprises applying to said organisms or their loci an antimicrobially effective amount of a compound of the formula



wherein n is an integer of from 1–16.

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### 3,934,036
### N-BENZENESULFONYL-β-ALANINE HYDRAZIDE USEFUL AS AN IMMUNOSUPPRESSIVE AGENT

**Tsutomu Irikura, Tokyo, Japan, assignor to Kyorin Seiyaku Kabushiki Kaisha, Japan**

**Filed Jan. 23, 1975, Ser. No. 543,772**
**Int. Cl.² A61K 31/18**
**U.S. Cl. 424—321** **5 Claims**

**1.** A pharmaceutical composition in oral dosage unit form comprising a pharmaceutical carrier and from about 20 to 400 mg per unit of N-benzenesulfonyl-β-alanine hydrazide.

**4.** A method of treating autoimmune disease in the human body comprising administering an effective amount of the composition of claim **1.**

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### 3,934,037
### FEED COMPOSITION AND METHOD USING 2,3-DIBROMOPROPANOL

**Joseph J. Lewis, and John E. Trei, both of West Chester, Pa., assignors to SmithKline Corporation, Philadelphia, Pa.**

**Filed May 2, 1974, Ser. No. 466,114**
**Int. Cl.² A61K 31/045**
**U.S. Cl. 424—343** **5 Claims**

**1.** A method for improving the feed utilization of ruminant animals comprising administering orally to such animals a quantity of 2,3-dibromopropanol which is within the range of about 0.1–6 g. per ruminant per day and which is effective for improving the feed efficiency of the animals but which does not have a toxic or noxious effect.

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### 3,934,038
### GLUTATHIONE COATED SHREDDED TRASH AS FISH FOOD

**Donald M. Kerr, Philadelphia, Pa., assignor to Total Disposal Systems, Inc., Fort Washington, Pa.**

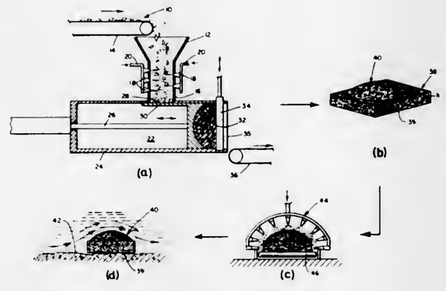
**Filed Nov. 6, 1972, Ser. No. 304,297**
**Int. Cl.² A01K 67/00**
**U.S. Cl. 426—1** **1 Claim**

**1.** A method for disposing of shreaded municipal trash while at the same time utilizing said trash to provide food for fish, said method comprising:

a. spraying the shreaded trash with a solution of glutathione;

b. compressing the sprayed shreaded trash into a bale having a rectangular base configuration and a semi-spherical upper portion configuration;

c. spraying the exterior surface of the bale with a solution



of glutathione; and

d. depositing said bale onto the ocean floor.

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### 3,934,039
### PROCESS FOR THE PRODUCTION OF MICROORGANISM LYSATES

**Giuliano Cardini, and Aldo Zotti, both of Milan, Italy, assignors to Societa' Italiana Resine S.p.A., Milan, Italy**

**Filed Nov. 29, 1973, Ser. No. 420,346**
**Claims priority, application Italy, Nov. 30, 1972, 32277/72**
**Int. Cl.² A23J 1/18**
**U.S. Cl. 426—7** **5 Claims**

**1.** A process for the production of microorganism lysates, which comprises preparing an aqueous suspension containing 5 to 15% by weight of the microorganisms cells; thermal shocking the microorganisms by spray-drying by introducing the aqueous suspension of the microorganisms into spraying, pulverising, or atomizing equipment or prilling towers, feeding air or an inert gas as the evaporating medium into said equipment, said gas being preheated to a temperature of from about 150° to 400°C, for a contact time of from about 1 to 40 seconds to reduce the water content of the suspension of microorganisms to below about 10% by weight; suspending the product resulting from the spray-drying treatment in water and subjecting the microorganisms suspended in water to autolysis by heating said suspension to a temperature of from about 30° to 50°C for a time of from about 10 to 48 hours.

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### 3,934,040
### BAKERY PRODUCT AND PROCESS

**Louis J. Smerak, Wayne, and Jason A. Miller, Dover, both of N.J., assignors to Caravan Products Co., Inc., Totowa, N.J.**

**Filed Oct. 18, 1973, Ser. No. 407,453**
**Int. Cl.² A21D 8/04, 2/22, 2/24**
**U.S. Cl. 426—20** **11 Claims**

**1.** An additive composition for a flour containing dough, said additive composition consisting essentially of the following ingredients:

a. L-cysteine; and

b. ascorbic acid,

wherein the proportions of said ingredients are based upon the weight of 100 pounds of said flour in said dough and are in the following amounts:

a. 0.001 to .012 pound; and

b. 0.0015 to .04 pound,

including in said composition enzymes selected from the group consisting of fungal alpha amylase enzyme; fungal protease enzyme; bromelain enzyme; and, papain enzyme.



### 3,934,041
### LIQUID RUMINANT FEED SUPPLEMENT

**Frank M. Snyder, Omaha, Nebr., assignor to Liquid Feed Commodities Inc., Fremont, Nebr.**

**Continuation-in-part of Ser. No. 293,308, Sept. 29, 1972, abandoned. This application Oct. 30, 1972, Ser. No. 301,789**
**Int. Cl.² A23K 1/22**
**U.S. Cl. 426—69** **5 Claims**

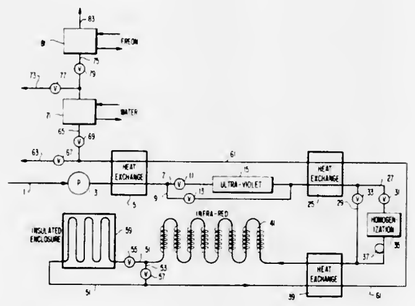
**1.** A method for the preparation of a liquid feed supplement composition for ruminants, comprising the steps of reacting a reaction mixture consisting essentially of water, urea and a lower aliphatic aldehyde selected from the group consisting of formaldehyde, acetaldehyde, propionaldehyde and mixtures thereof, wherein the mole ratio of the aldehyde to the urea ranges up to 5.5, in the presence of molasses and 0.001 to 1.0 parts by weight of a catalyst selected from the group consisting of phosphoric acid, ammonium sulfate, ammonium phosphate and ammonium polyphosphate per part by weight of urea for a time sufficient to permit the urea to react with the aldehyde.

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### 3,934,042
### METHOD AND APPARATUS FOR THE IRRADIATIVE TREATMENT OF BEVERAGES

**William Patrick De Stoutz, Chateau de Larringens, Larringes-sur-Evian, Haute Savoie, France**

**Filed July 13, 1973, Ser. No. 378,996**
**Claims priority, application Switzerland, July 13, 1973, 10499/73**
**Int. Cl.² A21D 6/00**
**U.S. Cl. 426—248** **6 Claims**




**1.** A method for the irradiation of beverages, comprising passing the beverage through transparent tubing of circular cross-section, exposing the beverage to ultra-violet irradiation through said transparent tubing, applying infra-red radiation to the beverage in said transparent tubing, passing the beverage in indirect heat exchange with itself before the ultra-violet irradiation and after the exposure to the infra-red radiation, thereby to warm the entering beverage and cool the exiting beverage, maintaining the beverage out of contact with the air during at least said heat exchange and ultra-violet and infra-red exposure, maintaining the beverage at a pressure of 1.5 to 15 kgs/cm² during the exposures, and homogenizing the beverage, said homogenization being conducted between the ultra-violet exposure and the infra-red exposure.

### 3,934,043
### PROCESS FOR MANUFACTURING HOLLOW PASTRIES

**Franz Haas, Gerstlgasse 25; Franz Haas, Deublergasse 29, both of Vienna 21, and Johann Haas, Wiener Strasse 209, Spillern, N.O., all of Austria**

**Filed Mar. 22, 1974, Ser. No. 454,019**
**Claims priority, application Austria, Mar. 23, 1973, 2602/73**
**Int. Cl.² A23G 3/00**
**U.S. Cl. 426—283** **15 Claims**

**1.** In a process for producing hollow filled pastries by the steps of providing a soft baked pastry strip, winding said pastry strip in an overlapping spiral about a spindle thereby providing said strip with a shape having a hollow interior, and filling said pastry with a moist filling, the improvement comprising the step of:

insulating the interior of said pastry strip from softening and dissolving effects of said filling by applying an insulating coating to said pastry strip prior to the step of winding said strip, so as to produce an insulating layer on said interior of said wound pastry strip;

whereby said insulating coating remains impervious and the soft filling cannot penetrate into the baked pastry.

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### 3,934,044
### REDUCING LEVELS OF SURFACE CONTAMINATION ON MEAT

**Wayne A. Busch, Allison, Iowa; Robert E. Taylor, Glenview, and Robert B. Tompkin, La Grange, both of Ill., assignors to Swift and Company Limited, Chicago, Ill.**

**Filed Dec. 6, 1974, Ser. No. 530,177**
**Int. Cl.² A23L 1/31**
**U.S. Cl. 426—326** **10 Claims**

**1.** A process for treating meat to destroy substantial amounts of psychrotrophic spoilage bacteria carried on the surfaces thereof, said process comprising contacting all surfaces of said meat with an aqueous solution of acetic acid having an acid concentration of from about 1–2.5% by weight, and having a temperature of from about 140°F. to 180°F. for a time period of from about 5 to 60 seconds.

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### 3,934,045
### PROCESS FOR PRESERVING BREAD AND BAKERY PRODUCTS WITH SORBIC ACID

**Hans Fernholz, Fischbach, Taunus, and Hermann Neu, Neu-Isenburg, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany**

**Filed June 27, 1974, Ser. No. 483,677**
**Claims priority, application Germany, June 29, 1973, 2333142**
**Int. Cl.² A21D 2/14**
**U.S. Cl. 426—331** **5 Claims**

**1.** A process for preserving bread and bakery products made from flour containing dough which comprises incorporating in said dough at least about 0.1% of crystalline sorbic acid of particle size ranging from about 100 to about 1000 μm, said percent being by weight of flour in said dough, and baking said dough to make bread or a bakery product.

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### 3,934,046
### WATER LEACHING PRE-FRIED POTATO SLICES

**Merle L. Weaver, Martinez, and Masahide Nonaka, Moraga, both of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.**

**Filed Apr. 6, 1973, Ser. No. 348,568**
**Int. Cl.² A23L 1/20**
**U.S. Cl. 426—418** **6 Claims**

**1.** A process for enabling the preparation of fried potato products of improved properties from raw potato pieces which exhibit excessive browning tendencies, which comprises -

a. pre-frying pieces of raw potato in oil at a temperature about from 325° to 375°F. for a time which is not long enough to cause said pieces to turn brown and which falls within the range of about 5 to 120 seconds, and
b. leaching the pre-fried pieces in water for a period about from 1 to 30 minutes, and
c. preparing said leached slices for consumption by frying.

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**3,934,047**

## TASTE MODIFIER FOR ARTIFICIAL SWEETENERS

**Hans Robert Schade, Richland, Mich., assignor to General Foods Corporation, White Plains, N.Y.**

**Filed Apr. 2, 1974, Ser. No. 457,283**
**Int. Cl.² A23L** *1/236*
**U.S. Cl. 426—548** **21 Claims**

**1.** A modified sweetening composition which comprises a dipeptide sweetener and a minor amount of a taste modifier selected from the group consisting of aluminum potassium sulfate, Naringin and mixtures thereof effective to modify the lingering sweet aftertaste of the dipeptide sweetener.

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**3,934,048**

## MULTIFUNCTIONAL SWEETENING COMPOSITION

**Ivan Furda, Pleasantville, and Jerome F. Trumbetas, Tarrytown, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.**

**Filed Nov. 21, 1973, Ser. No. 417,855**
**Int. Cl.² A23L** *1/236*
**U.S. Cl. 426—548** **9 Claims**

**1.** A process for producing a low calorie sweetening composition which is readily soluble in aqueous systems, low in hygroscopicity and devoid of aftertaste which alters the sweetness thereof which comprises:
a. forming an aqueous solution of a carbohydrate selected from the group consisting of maltose and dextrins having dextrose equivalent greater than 20;
b. heating the carbohydrate solution until the carbohydrate is completely solubilized;
c. adding a catalytic amount of phosphoric acid to the heated solution in order to catalyze the polymerization of the carbohydrate;
d. vacuum drying the acidified heated solution to form an acidified carbohydrate syrup;
e. vacuum heating the acidified carbohydrate syrup to obtain a polymer residue;
f. forming an aqueous solution of dipeptide sweetener with the polymer in a respective weight ratio range of about 1:19 to about 3:7.
g. drying the dipeptide sweetener/polymer solution.

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**3,934,049**

## GELLING AGENT FOR COLD SET PUDDING COMPOSITIONS

**Robert M. Lauck, New City, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.**

**Filed May 13, 1974, Ser. No. 469,156**
**Int. Cl.² A23L** *1/187*
**U.S. Cl. 426—573** **22 Claims**

**1.** A gelling agent combination for use in preparing a cold set milk pudding with a milk protein which comprises in combination:
a. an aqueous soluble alkali metal pyrophosphate;
b. an aqueous soluble alkaline earth metal orthophosphate;
c. an aqueous soluble alkali metal carbonate, wherein said alkali metal in said carbonate is sodium or potassium; and
d. a thickening agent selected from the group consisting of pregelatinized starch, gums, or mixtures thereof.

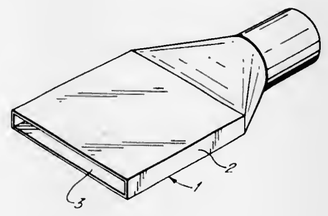
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**3,934,050**

## PROCESS FOR THE MANUFACTURE OF A COOKED FIBROUS RESTRUCTURED MEAT PRODUCT

**Arthur Ernest Hawkins, Bedford, England, assignor to Lever Brothers Company, New York, N.Y.**

**Continuation of Ser. No. 495,955, Aug. 9, 1974, abandoned. This application Feb. 20, 1975, Ser. No. 551,801**
**Int. Cl.² A22C** *18/00*
**U.S. Cl. 426—645** **2 Claims**



**1.** A process for the manufacture of a cooked fibrous restructured meat product comprising:
i. extruding a meat comminute in the form of a flat extrudate having the fibers thereof generally aligned in the direction of said extrusion;
ii. interposing said extrudate, before cooking, between two layers of heat-stable absorbent crepe paper which are capable of holding the liquors released from said extrudate during cooking, at least one of said layers having a grained surface in intimate contact with said extrudate;
iii. cooking said extrudate to produce a temperature of at least 65°C therein while so interposed between and in intimate contact with said layers whereby said crepe paper layers remain separable from the cooked product and, upon separation therefrom, leave the surface thereof with a grained appearance resembling that of a slice of meat cut in the direction of the muscle fibers; and
iv. removing said separable layers from said cooked product to form a final cooked product.

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**3,934,051**

## PRODUCTION OF DRIED SODIUM CASEINATE WITH UNIFORM CONTENT OF TRACING COMPOUND FOR USE IN SAUSAGE

**William C. Eastin, Sebastopol, Calif., assignor to Western Dairy Products Division of Chelsea Industries, Inc., San Francisco, Calif.**

**Filed Aug. 2, 1974, Ser. No. 494,047**
**Int. Cl.² A23L** *1/31*
**U.S. Cl. 426—652** **7 Claims**

**1.** A method of producing a dried sodium caseinate product for use as a traceable additive in sausage, said product having a uniformly and stably dispersed content of tin in an amount of the order of about 0.05% by weight, comprising mixing together sodium caseinate in aqueous solution with tin in the form of a water soluble salt of tin, and spray or roller drying the resulting solution.



**3,934,052**

## METHOD FOR MANUFACTURING PASTRY

**Kurt Kautz, Dahlenburg, and Otto Daetz, Bleckede, both of Germany, assignors to Molkereigenossenschaft Dahlenburg eGmbH, Germany**

**Continuation-in-part of Ser. No. 397,361, Sept. 14, 1973, abandoned, which is a continuation of Ser. No. 264,715, June 21, 1972, abandoned. This application June 6, 1974, Ser. No. 476,945**
**Claims priority, application Germany, July 17, 1971, 2135842**
**Int. Cl.² A23G** *3/00*
**U.S. Cl. 426—659** **9 Claims**

**1.** A method for manufacturing a composition for baking which comprises mixing sugar and fat, the ratio of sugar to fat being from about 2.5:1 to 3.5:1, with water in an amount from about 10 to 25 per cent by weight of the total mixture, boiling the mixture at about atmospheric pressure for a period of time sufficient to remove most of the moisture while allowing sufficient moisture to remain to avoid charring or burning of the remaining components, drying the boiled mixture to a residual moisture content of from about 1 to 2.5 per cent by weight based on the total weight of the final mixture under conditions whereby charring does not occur, and then powdering the dried mixture, said powdered mixture being capable of being baked without the necessity of adding any additional liquid.

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**3,934,053**

## CANDY FILLING WITH STABILIZED AROMA

**John A. Kitson, Summerland, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Canada**

**Filed Mar. 5, 1975, Ser. No. 556,501**
**Claims priority, application Canada, Mar. 8, 1974, 194449**
**Int. Cl.² A23G** *3/00*
**U.S. Cl. 426—659** **21 Claims**

**1.** A process for the preparation of fondant or flavoured syrup which comprises the steps of heating a sugars-containing mixture to a temperature and for a period of time sufficient to cause formation of a sugar polymers base but insufficient to cause browning or caramelization, diluting the resultant sugar polymers base with hot water to a total sugars content of from about 85 to about 95%, cooling the sugar polymers base and working same to a smooth paste, and blending with said paste desired flavour and aroma essences.

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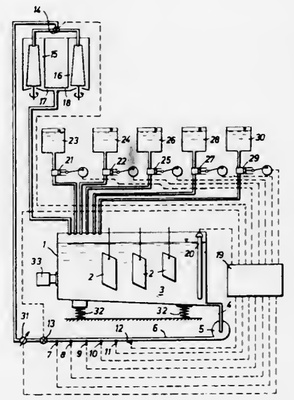
**3,934,054**

## ELECTROLESS METAL PLATING

**Edith-Luise Schmeling, Cologne-Dellbruck; Herbert Friebe, Cologne-Lindenthal, and Ulrich Reininghaus, Cologne-Nippes, all of Germany, assignors to Electro Chemical Engineering GmbH, Zug, Schweiz, Switzerland**

**Continuation-in-part of Ser. No. 852,685, Aug. 25, 1969, abandoned. This application Dec. 3, 1973, Ser. No. 421,106**
**Int. Cl.² C23C** *3/02*
**U.S. Cl. 427—8** **15 Claims**

**1.** An improved process for the electroless plating of a metal from an aqueous plating solution containing plating metal ions reducible to free metal, a reducing agent and an anticatalytic substance, the free metal depositing onto an article to be plated by being immersed into the plating solution contained in a container forming part of a suitable plating apparatus said apparatus including a supporting structure, while minimizng the random plating out of plating metal on those portions of the apparatus which come into contact with the plating solution, and maintaining an anticatalytic substance dissolved in the plating solution in concentrations from about 0.000001 mol per liter to about 0.1 mol per liter, the improvement consisting of: moving the apparatus relative to its supporting structure and said solution such as to maintain a relative speed of at least about 0.9 meter per second between the plating solution and portions of the container with which the plating solution comes into contact, while maintaining a relative speed of less than 0.9 meter per second between the plating



solution and the article immersed therein in order to obtain proper plating of said article with the plating metal.

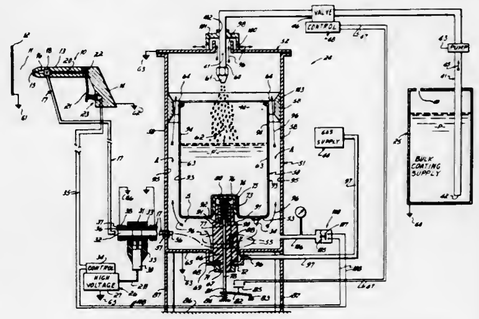
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**3,934,055**

## ELECTROSTATIC SPRAY METHOD

**Simon Z. Tamny, Lorain, Ohio, assignor to Nordson Corporation, Amherst, Ohio**

**Division of Ser. No. 465,539, April 30, 1974, Pat. No. 3,892,357. This application Jan. 23, 1975, Ser. No. 543,249**
**Int. Cl.² B05D** *1/06*
**U.S. Cl. 427—8** **9 Claims**



**1.** A method of electrostatically coating articles with electrically conductive material on a continuous basis with apparatus having all exposed surfaces thereof electrically grounded comprising:
transferring uncharged electrically conductive material from an electrically grounded bulk storage tank to an inner container which is enclosed by and supported in spaced relation to an electrically grounded outer container by an insulative support physically contacting both the inner and outer containers, without establishing an electrically conductive path between said bulk storage tank and said inner container,
transferring electrically conductive coating material through an electrically insulated conduit from said inner container to a spray device for emission thereby,
electrostatically charging electrically conductive coating material emitted by said spray device, and
sweeping a gas stream over said support while emitting electrostatically charged coating material to prevent deposition of a film of coating material on said support

sufficient to conduct a substantial level of electrical current from said inner container to said outer container.

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**3,934,056**

## RESIN COMPOSITIONS OF HIGH ADHESIVITY COMPRISING E/VA COPOLYMER, CHLORINATED OR CHLOROSULFONATED POLYETHYLENE, AN UNSATURATED ACID AND A PEROXY COMPOUND

**Masaharu Yoshida, Yokohama; Shigenobu Ishihara, Tokyo; Tsuyoshi Takahashi, and Hiroki Imakura, both of Yokohama, all of Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan**

**Filed Nov. 26, 1974, Ser. No. 527,428**
**Int. Cl.² C08L** *23/08, 23/28*
**U.S. Cl. 260—23.5 R** **28 Claims**

**1.** Resin compositions of high adhesivity comprising (A) 100 parts by weight of ethylene-vinyl acetate copolymer containing 1 to 40% by weight of vinyl acetate or said copolymer mixed with polyethylene; (B) 1 to 100 parts by weight of chlorinated or chlorosulfonated polyethylene; (C) 0.05 to 100 parts by weight of unsaturated carboxylic acids that are solid at room temperature; and (D) 0.005 to 10.0 parts by weight of organic peroxides.

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**3,934,057**

## HIGH SENSITIVITY POSITIVE RESIST LAYERS AND MASK FORMATION PROCESS

**Wayne M. Moreau, Wappinger Falls, and Chiu H. Ting, Hopewell Junction, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.**

**Filed Dec. 19, 1973, Ser. No. 426,403**
**Int. Cl.² B05D** *3/06*
**U.S. Cl. 427—43** **17 Claims**




**1.** A high sensitivity resist layer structure comprising plural layers of resist coated on a substrate, each resist layer comprising a radiation degradable organic polymer with each successive resist layer being slower dissolving in resist developer than the resist layer it overlies both before and after exposure of said structure to said radiation.

**8.** A process for forming a resist mask comprising:
coating on a substrate a first layer of resist, said layer comprising a radiation degradable polymer,
coating on said first layer a second layer of resist said second layer comprising a radiation degradable polymer which is slower dissolving in resist developer than the polymer of said first layer both before and after exposure of both layers to said radiation,
exposing portions of said layers to high energy radiation and developing to remove the exposed portions of said layers to uncover said substrate by treating said layers with a solvent which preferentially dissolves the exposed portions.

**3,934,058**

## METHOD OF STABILIZING THE HOT RESISTANCE OF CERAMIC POSITIVE TEMPERATURE COEFFICIENT RESISTORS

**Baerbel Seebacher, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany**

**Filed June 13, 1974, Ser. No. 478,855**
**Claims priority, application Germany, June 18, 1973, 2330908**
**Int. Cl.² B05D** *5/12*
**U.S. Cl. 427—89** **3 Claims**

**1.** A method of stabilizing the hot resistance of a ceramic positive temperature coefficient resistor consisting of a barium titanate based ferroelectric material having a Perowskite structure which is doped so as to render in semiconductive, said resistor being provided with non-blocking contact coatings comprised predominantly of silver applied on a thin film of an indium material selected from the group consisting of indium and indium-gallium comprising:
subjecting said positive temperature coefficient resistor to a heat-treatment over a period of time ranging from 1 to 40 hours at a temperature in the range of 400° to 500° C., said heat-treatment occurring at least after the application of said non-blocking contact coatings.

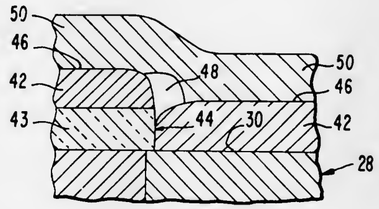
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**3,934,059**

## METHOD OF VAPOR DEPOSITION

**Murray Arthur Polinsky, Somerville, N.J., assignor to RCA Corporation, New York, N.Y.**

**Filed Feb. 4, 1974, Ser. No. 439,581**
**Int. Cl.² C23C** *13/02*
**U.S. Cl. 427—90** **6 Claims**




**1.** A method of vapor depositing a metallic material onto a substrate within an evacuated evaporation chamber comprising the steps of:
depositing a first layer of said metallic material onto said substrate while maintaining said substrate at a first temperature,
heating said substrate to a second temperature, and
depositing a second layer of said same metallic material onto said first layer while maintaining said substrate at said second temperature.

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**3,934,060**

## METHOD FOR FORMING A DEPOSITED SILICON DIOXIDE LAYER ON A SEMICONDUCTOR WAFER

**Dan L. Burt; Richard F. Taraci, both of Phoenix, and John E. Zavion, Mesa, all of Ariz., assignors to Motorola, Inc., Chicago, Ill.**

**Filed Dec. 19, 1973, Ser. No. 426,395**
**Int. Cl.² C23C** *11/08*
**U.S. Cl. 427—95** **6 Claims**

**1.** In a method for depositing a silicon dioxide layer onto a wafer from a gaseous TEOS source flowing through a furnace tube, and the furnace is provided with a means for heating, and is further provided with a first end through which the gaseous TEOS source is admitted into the tube, and is further provided with a second end from which the residual gaseous TEOS material is exhausted, the improvement comprising the steps of:
introducing a plurality of wafers into the furnace through the first end;
placing said plurality of wafers such that the broad surface of each of said wafers upon which the silicon dioxide material is to deposit is placed perpendicular to the direction of the gas flow;
spacing the wafers a minimum of 100 mils between adjacent surfaces;
heating the tube to a temperature for decomposing the TEOS;
exposing said TEOS to the effects of a vacuum for drawing the gaseous TEOS over the wafers while maintaining a vacuum level below 1000 microns of mercury for maintaining an acceptable gas flow through the tube;
continuing the flow of the gaseous TEOS for a predetermined period and then closing off the flow of said gaseous TEOS;
maintaining the vacuum level first established for withdrawing any residual TEOS remaining in the system; and
withdrawing said wafers from the furnace by said first end.

**4.** The method of claim **1** further comprising the step of initially exposing said gaseous TEOS source to a vacuum to vaporize impurities therefrom.

**6.** The method of claim **4** further comprising the step of establishing a vacuum at the exhaust end of the tube for removing impurities from said wafers prior to introducing the TEOS into the tube.



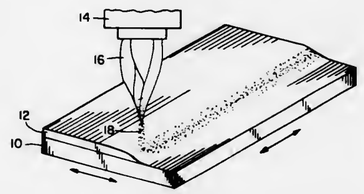
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**3,934,061**

## METHOD OF FORMING PLANAR OPTICAL WAVEGUIDES

**Donald B. Keck, Big Flats, and Peter C. Schultz, Painted Post, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.**

**Division of Ser. No. 239,701, March 30, 1972, Pat. No. 3,806,223. This application July 18, 1973, Ser. No. 380,482**
**Int. Cl.² C03C** *17/02, 17/04*; **G02B** *5/14*
**U.S. Cl. 427—165** **14 Claims**




**1.** A method of forming a planar optical waveguide for light propagation comprising the steps of:
providing a substantially flat glass substrate having a predetermined desired index of refraction,
applying a first coating of glass having an index of refraction greater than that of said glass substrate to at least a portion of one flat surface of said substrate to thereby form a film thereon, said first coating of glass having an outer exposed surface substantially parallel to said one flat surface of said substrate, the thickness of said first coating being defined by said surfaces, the width of said first coating being the dimension perpendicular to both said thickness and the light propagation axis of said first coating, and
applying a second coating of glass having an index of refraction less than that of said first coating of glass over at least said outer exposed surface of said first coating of glass to thereby form a film thereon, the thickness of said first coating of glass for any desired finite width thereof being equal to or less than the thickness $a$ of a coating having an infinite width, thickness $a$ being determined in accordance with one of the following equations

for $TM_{0m}$ modes where $m$ is an even integer

$$\frac{2a}{\lambda}(n_2^2-n_1^2)^{1/2} = m+1 + \frac{1}{\pi}\tan^{-1}\left(\frac{n_1^2-n_3^2}{n_2^2-n_1^2}\right)^{1/2}\left(\frac{n_2}{n_3}\right)^2$$

for $TM_{0m}$ modes where $m$ is an odd integer

$$\frac{2a}{\lambda}(n_2^2-n_1^2)^{1/2} = m+1 - \frac{1}{\pi}\cot^{-1}\left(\frac{n_1^2-n_3^2}{n_2^2-n_1^2}\right)^{1/2}\left(\frac{n_2}{n_3}\right)^2$$

for $TE_{0m}$ modes where $m$ is an even integer

$$\frac{2a}{\lambda}(n_2^2-n_1^2)^{1/2} = mG21 + \frac{1}{\pi}\tan^{-1}\left(\frac{n_1^2-n_3^2}{n_2^2-n_1^2}\right)^{1/2}$$

for $TE_{0m}$ modes where $m$ is an odd integer

$$\frac{2a}{\lambda}(n_2^2-n_1^2)^{1/2} = m+1 - \frac{1}{\pi}\cot^{-1}\left(\frac{n_1^2-n_3^2}{n_2^2-n_1^2}\right)^{1/2}$$

where $m \leq 10$ and is the highest mode order to be propagated within a waveguide the first coating of which has a thickness $a$ and an infinite width, $\lambda$ is the wavelength of light to be propagated within said waveguide the first coating of which has a thickness $a$ and an infinite width, $n_2$ is the index of refraction of said first coating, and one of $n_1$ and $n_3$ being the index of refraction of said substrate while the other of $n_1$ and $n_3$ being the index of refraction of said second coating of glass, said thickness of said first coating of glass being so determinable where the propagation constant of said waveguide is equal to or less than $K_1$, where $K_1$ is greater than $K_3$, where

$$K_1 = 2\pi n_1/\lambda,$$

and

$$K_3 = 2\pi n_3/\lambda$$

the thickness of each said substrate and said second coating of glass being at least about two times the thickness of said first coating of glass.

**11.** A method of forming a planar optical waveguide for light propagation comprising the steps of:
providing a substantially flat glass substrate having a predetermined desired index of refraction,
applying a first coating of a glass having an index of refraction greater than that of said glass substrate to at least a portion of one flat surface of said substrate to thereby form a film thereon, said first coating of glass having an outer exposed surface substantially parallel to said one flat surface of said substrate, the thickness of said first coating being defined by said surfaces, the width of said first coating being the dimension perpendicular to both said thickness and the light propagation axis of said first coating, and
applying a second coating of glass having an index of refraction substantially equal to that of said substrate over at least said outer exposed surface of said first coating of

glass to thereby form a film thereon,

the thickness of said first coating of glass for any desired finite width thereof being equal to or less than the thickness $a$ of a coating having infinite width, thickness $a$ being determined in accordance with the following equation

$$2a/\lambda\ (n_2^2 - n_1^2)^{1/2} = m+1,$$

where $m \leq 10$ and is the highest mode order to be propagated within a wave-guide the first coating of which has a thickness $a$ and an infinite width, $\lambda$ is the wavelength of light to be propagated within said waveguide the first coating of which has a thickness $a$ and an infinite width, $n_2$ is the index of refraction of said first coating, and $n_1$ is the index of refraction of said substrate and said second coating of glass, said thickness of said first coating of glass being so determinable where the propagation constant of said waveguide is equal to or less than $K_1$, where

$$K_1 = 2\pi n_1/\lambda,$$

and

the thickness of each said substrate and said second coating of glass being at least about two times the thickness of said first coating of glass.

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**3,934,062**

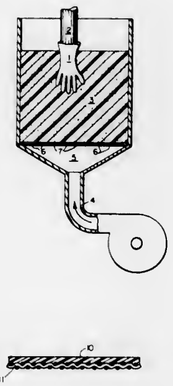
## METHOD FOR COATING FABRICS FORMED INTO HAND GLOVES

**Neil E. Tillotson, Dicksville Notch, N.H., and Sebastian A. Consoli, Lawrence, Mass., assignors to Tillotson Corporation, Needham, Mass.**

**Filed Dec. 6, 1972, Ser. No. 312,664. The portion of the term of this patent subsequent to June 28, 1991, has been disclaimed.**

**Int. Cl.² B44D** *1/094*; **A41D** *19/00*

**U.S. Cl. 427—185** **3 Claims**



**1.** A process for coating a yarn fabric with a thermoplastic resin which comprises:

impregnating the yarn of the fabric with a liquid plasticizer;

coating the impregnated fabric with a free-flowing solid thermoplastic resin powder which contains little or no plasticizer and which is capable of being plasticized by said plasticizer, said resin powder being selected from at least one of polyvinyl chloride, polyvinyl acetate, vinyl chloride-vinyl acetate copolymers and polyvinylidene chloride;

heating the resin to fuse the resin to said fabric,

said fabric being formed into a hand glove, including a plurality of fingers, to define an inside surface and an outside surface of said glove;

said fabric being contacted with said resin powder only on the outside surface of said glove;

said hand glove, in response to said impregnating, including a plurality of fingers impregnated with said plasticizer and wet therewith on said outside surface;

said free-flowing solid thermoplastic resin powder being provided by forming a fluidized mass of dispersed, solid thermoplastic resin powder; and

said coating being effected by

inserting said glove, while wet with said plasticizer, into said fluidized mass of solid thermoplastic resin powder with said fluidized mass providing dispersed, free-flowing solid resin powder beneath, between and laterally surrounding said fingers,

maintaining said glove inserted into said fluidized mass while said dispersed free-flowing solid thermoplastic resin powder thereof adhers to said wet, plasticizer impregnated outside surface of said glove,

withdrawing said glove out of said fluidized mass of dispersed, free-flowing solid thermoplastic resin powder with said solid resin powder adhering to said wet, plasticizer impregnated outside surface, and

the fluidized nature of said mass of solid thermoplastic resin powder effecting dispersion of said solid thermoplastic resin powder and facilitating said insertion of said glove into said mass of solid thermoplastic resin powder.

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**3,934,063**

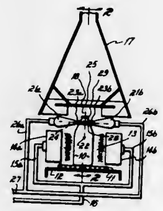
## FLAME MASKING OF GLASS ARTICLES FOR METAL OXIDE FILM DEPOSITION

**Roger D. Dubble, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio**

**Filed May 31, 1974, Ser. No. 475,288**

**Int. Cl.² B05D** *3/08*, *1/32*

**U.S. Cl. 427—223** **14 Claims**



**1.** A method of coating a selectively limited surface area of a glass article with an abrasion resistant metal oxide coating, comprising the steps of:

contacting the article with vapor of a metal compound which is pyrolysible to form an abrasion resistant metal oxide coating on the glass surface,

the said article during said contacting being at a temperature effective to cause said compound to pyrolyze on its surface and form said coating thereon, simultaneously isolating that portion of the article's surface area which is not to be coated, by a flame in which water vapor is produced as a product of combustion, the flame being directed on the article so that the flame acts as a barrier between the compound and the area not to be coated,

the flame barrier interacting with the compound, where the compound comes into contact with it, to deactivate the compound and render it inactive to react with said glass surface and thereby prevent said oxide coating from forming on the surface not to be coated.



**3,934,064**

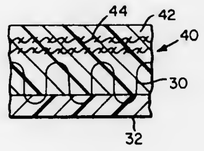
## COMPOSITE STRUCTURES OF KNITTED GLASS FABRIC AND THERMOPLASTIC POLYFLUOROETHYLENE RESIN SHEET

**Edwin Doll Lowthian, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.**

**Continuation-in-part of Ser. No. 201,862, Nov. 24, 1971, abandoned. This application Sept. 5, 1974, Ser. No. 503,464**

**Int. Cl.² B32B** *17/02*, *27/12*

**U.S. Cl. 428—36** **10 Claims**



**1.** A composite structure comprising a substantially flat thermoformable sheet of a melt-fabricable perhalopolyfluoroethylene polymer resin and a knitted fabric made of glass fiber yarn and at least one monofilament of a melt-fabricable perhalopolyfluoroethylene polymer resin, said fabric being partially embedded in a surface of said sheet.

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**3,934,065**

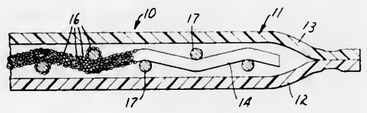
## RETROREFLECTIVE SHEET MATERIAL

**Chi Fang Tung, Mahtomedi, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.**

**Filed Aug. 1, 1973, Ser. No. 384,703**

**Int. Cl.² B44F** *1/00*

**U.S. Cl. 428—241** **7 Claims**



**1.** Retroreflective sheet material capable of reflecting under wet or dry conditions comprising (a) an envelope that comprises two overlaid sheets joined together around the edge of the envelope, at least one of the sheets being transparent, and (b) at least one light-transmissive retroreflective open web of filaments ensheathed within the envelope, the filaments being encased around their whole circumference at least over those parts of their length that define open spaces of the web by a monolayer of minute retroreflective microspheres.

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**3,934,066**

## FIRE-RESISTANT INTUMESCENT LAMINATES

**Robert Matthews Murch, Ashton, Md., assignor to W. R. Grace & Co., New York, N.Y.**

**Filed July 18, 1973, Ser. No. 380,386**

**Int. Cl.² B32B** *3/26*

**U.S. Cl. 428—248** **21 Claims**



**1.** An intumescent, fire retardant laminate system for application to a substrate to be protected from fire and heat comprising

a. an intumescent layer comprising at least one porous cellulosic sheet material selected from the group consisting of paper and fabric, impregnated with a water-soluble intumescent composition consisting essentially of

1. a heat-curable amino-aliphatic aldehyde condensation product as a resinous carbonific,
2. a non-resinous carbonific selected from the group consisting of carbohydrates and polyhydroxy alcohols, and
3. a spumific selected from the group consisting of monoammonium phosphate, di-ammonium phosphate, phosphoric acid, ammonium sulfate, ammonium bromide, sodium tungstate and mixtures thereof; and

b. a flexible, protective layer adhered to the outer surface of said intumescent layer, said protective layer being selected from the group consisting of organic thermoplastic resin layers and metallic foils.

**2.** A fire retardant laminate comprising:

a. an organic polymeric foam to be protected from fire and heat,

b. at least one intermediate barrier layer selected from the group consisting of a thermal barrier layer and a vapor barrier layer adhered to said foam, said thermal barrier layer consisting essentially of at least one heat insulative material that is thermally stable at least up to 200°C selected from the group consisting of mineral wool, glass wool, inorganic cements, expanded vermiculite, expanded perlite, wood, cardboard, cellulosic webs, and asbestos paper; and said vapor barrier layer consisting essentially of at least one vapor impermeable material that is thermally stable at least up to 200°C selected from the group consisting of metallic foils; and synthetic plastic films; and

c. an intumescent layer adhered to said intermediate barrier layer, said intumescent layer comprising at least one porous cellulosic sheet material selected from the group consisting of paper and fabric, impregnated with a water-soluble intumescent composition consisting essentially of

1. a heat-curable amino-aliphatic aldehyde condensation product as a resinous carbonific,
2. a non-resinous carbonific selected from the group consisting of carbohydrates and polyhydroxy alcohols, and
3. a spumific selected from the group consisting of monoammonium phosphate, di-ammonium phosphate, phosphoric acid, ammonium sulfate, ammonium bromide, sodium tungstate and mixtures thereof; and

d. a flexible, protective layer adhered to the outer surface of said intumescent layer, said protective layer being selected from the group consisting of organic thermoplastic resin layers and metallic foils.

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**3,934,067**

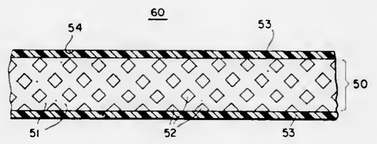
## LAMINAR STRUCTURE HAVING AN IMPREGNATED FIBROUS WEB

**Ira Bernard Goldman, Princeton Township, Mercer County, N.J., and John Francis Henrickson, Richmond, Va., assignors to Western Electric Company, Inc., New York, N.Y.**

**Filed July 17, 1974, Ser. No. 489,282**

**Int. Cl.² B32B** *27/38*, *15/08*

**U.S. Cl. 428—290** **4 Claims**



**1.** A laminar structure comprising:

a. an internal skeleton comprising a fabric support impregnated with an epoxy-polyester resin product produced by interreacting (1) a branched-chain, acid-terminated polyester of dicarboxylic acid, dihydroxy alcohol and a polyfunctional compound selected from the class consisting of polyhydric alcohols having at least three nontertiary hydroxyl groups and polybasic acids having at least three carboxyl groups not more than one-half of the total of said acids and alcohols containing aromatic rings, which polyester contains an average of 2.1 to 3.0 carboxyl groups per molecule, has an acid number of 15 to 125, a hydroxyl number of less than 10, and is free from ethylenic unsaturation in its skeletal chain, and (2) an epoxy compound containing on the average at least 1.3 reactive groups readily reactive with the carboxyl group in said polyester, at least one of which reactive groups is the oxirane group, said reactive groups being separated by a chain of at least two carbon atoms, the chain being free from ethylenic unsaturation said epoxy-polyester product being in a stage of full cure; and

b. a resin layer, on at least a portion of said internal skeleton, comprising said epoxy-polyester resin in (a) above cured to a partial cure stage.

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**3,934,068**

## GLASS FIBER REINFORCEMENT

**Kevin M. Foley, Hebron; Francesco M. Vigo, Heath, and Frank Paul McCombs, Granville, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio**

**Filed July 24, 1974, Ser. No. 491,442**

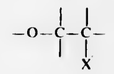
**Int. Cl.² B32B** *9/00, 25/20;* **D02G** *3/00*

**U.S. Cl. 428—292** **16 Claims**

1. Glass fibers having a thin coating on the surfaces thereof, said coating comprising the reaction product of (1) a silicon halide having the general formula

$$(R)_n\ Si\ X_{4-n}$$

wherein R is an organic group containing ethylenic unsaturation, X is halogen and n is 0 or 1 with (2) an aliphatic epoxide containing 10 to 25 carbon atoms and about 1 epoxide group per mole, with the mole ratio of silicon halide to the epoxide being within the range of 3.8 to 4.5, said reaction product containing beta-haloalkoxy groups of the formula



wherein X is halogen, said beta-haloalkoxy groups being attached directly to the silicon atom through the oxygen atom.

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**3,934,069**

## NON-SMUDGING PRESSURE-SENSITIVE COPYING MATERIAL

**Otto Atzrott, Ludwigshafen; Wolfgang Sliwka, Weinheim, and Heinz Hartmann, Mannheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany**

**Filed June 28, 1974, Ser. No. 484,081**

**Claims priority, application Germany, July 5, 1973, 2334227**

**Int. Cl.² B41M** *5/00, 5/02*

**U.S. Cl. 428—323** **11 Claims**

1. A non-smudging pressure-sensitive copying material which comprises: a sheet-like base and a coating on said base, said coating including microcapsules, said microcapsules containing as a core material a solution of a salt of a dye base and an aliphatic carboxylic acid of eight to thirty carbon atoms in an organic water-immiscible solvent, the ratio of organic carboxylic acid to dye base is from about 1:1 to equivalents.

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**3,934,070**

## RECORDING SHEET AND COLOR DEVELOPER THEREFOR

**Shiro Kimura; Sadao Ishige, both of Kanagawa; Hajime Kato, Fujinomiya; Takao Hayashi, Fujinomiya, and Akio Miyamoto, Fujinomiya, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan**

**Continuation of Ser. No. 192,594, Oct. 26, 1971, abandoned. This application Oct. 16, 1973, Ser. No. 406,994**

**Claims priority, application Japan, Oct. 23, 1970, 45-93247; Oct. 27, 1970, 45-94874; Dec. 10, 1970, 45-109872**

**Int. Cl.² B41M** *5/16*

**U.S. Cl. 428—342** **14 Claims**

1. A recording sheet comprising a support having coated thereon a color former layer containing an electron donating or proton accepting colorless color former and a color developer layer containing a zinc, aluminum or tin salt of an aromatic carboxylic acid having an OH-group at the ortho-position as a color developer capable of forming a distinct color when contacted with said color former.

# ELECTRICAL

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**3,934,071**

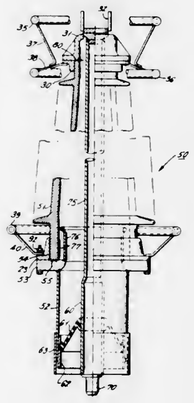
## AIR ENTRANCE BUSHING FOR GAS-INSULATED BUS

**Vasu H. Tahiliani, New Stanton, Pa., assignor to I-T-E Imperial Corporation, Spring House, Pa.**

**Filed Oct. 22, 1974, Ser. No. 516,995**

**Int. Cl.² H01B** *17/26;* **H02G** *15/22*

**U.S. Cl. 174—31 R** **6 Claims**



1. In combination, an air entrance bushing and a gas-insulated electric power transmission bus; said gas-insulated bus comprising an elongated, gas-filled conductive grounded housing having a given diameter, an elongated central bus conductor, and support means supporting said elongated central bus conductor within said housing; said bushing comprising a generally vertically disposed hollow elongated gas-filled insulation shell, a conductive flange ring connected to one end of said insulation shell, a central bushing conductor extending generally vertically along the axis of said insulation shell and having one end thereof fixed to the other end of said insulation shell; a hollow cylindrical extension secured at one end thereof to said conductive flange ring and being coaxial with said insulation shell; insulator support means mechanically connecting the opposite end of said hollow cylindrical extension to the opposite end of said bushing conductor; said insulator support means being disposed vertically below and being in communication with the interior volume of said insulation shell, whereby contamination particles within said insulation shell can fall onto and coat the surface of said insulator support means facing said interior volume; said hollow cylindrical extension, said conductive grounded housing and at least said one end of said insulation shell having substantially the same diameter; means coaxially connecting said opposite end of said hollow cylindrical extension to one end of said conductive grounded housing and forming a gas-sealed joint therebetween, and means connecting said opposite end of said bushing conductor to said elongated bus conductor; and an internal cylindrical member having one end fixed to and extending from said flange ring and having an outer diameter less than the opposing interior diameter of said insulation shell and less than the interior diameter of said hollow cylindrical extension and telescoping partly into said insulation shell to define a particle trap region.

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**3,934,072**

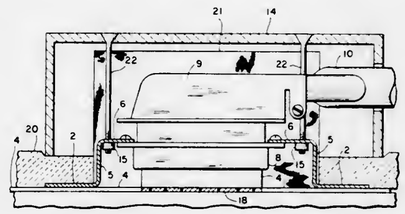
## APPARATUS AND METHOD FOR TERMINATING LINES RUNNING UNDER FLEXIBLE FLOOR COVERING

**John William Balde, Raritan Township, Hunterdon County, N.J., assignor to Western Electric Company, Inc., New York, N.Y.**

**Filed Feb. 24, 1975, Ser. No. 552,679**

**Int. Cl.² H02G** *3/08, 3/10*

**U.S. Cl. 174—48** **5 Claims**



1. Apparatus terminating a line running along a floor underneath a flexible floor covering said apparatus comprising:

a. a plate having a peripheral flange extending around the perimeter thereof, said peripheral flange extending underneath said floor covering and over said line, said plate having an opening extending therethrough and adapted to receive from below the plate the line to be terminated, said opening having a first edge and an opposed second edge;

b. a first upstanding leg on said plate adjacent the first edge of said opening, said first leg being located inwardly of said peripheral flange;

c. a first flange on the upper end of said first leg extending partially over said opening toward the second edge thereof;

d. a second leg on said plate adjacent the second edge of said opening, said second leg being located inwardly of said peripheral flange;

e. a second flange on the upper end of said second leg extending partially over said opening toward the first edge thereof;

f. said first and second legs extending through an opening in said floor covering;

g. a connector mounted between said first and second flanges and connected to said line;

h. cover means mounted to said plate and concealing said opening and said first and second legs and said first and second flanges.

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**3,934,073**

## MINIATURE CIRCUIT CONNECTION AND PACKAGING TECHNIQUES

**Frank J. Ardezzone, P.O. Box 242, Santa Clara, Calif. 93154**

**Continuation-in-part of Ser. No. 179,578, Sept. 10, 1971 now abandoned; which is a continuation-in-part of Ser. No. 1,929, Dec. 29, 1969, now abandoned. This application Sept. 5, 1973, Ser. No. 394,507**

**Int. Cl.² H02G** *13/08*

**U.S. C:. 174–52S** **5 Claims**

1. An interconnected semiconductor package, comprising: a semiconductor device having a plurality of pads on its

lower surface which are spaced inwardly from the edge thereof;

a substantially planar primary substrate having an upper and a lower surface and including a conductive lead pattern having tip portions corresponding to the configuration of pads on said device on its upper surface, at least the portions of said primary substrate underlying said tip portions being transparent to high energy welding beams;

a substantially planar secondary substrate having an upper and a lower surface and including a conductive pattern on its upper surface which is spaced from the edge thereof, the lower surface of said primary substrate being bondedly connected to the upper surface of said secondary substrate, the conductive pattern of said secondary substrate being arranged to be laterally spaced from said overlying tip portions, and at least the portions of said secondary substrate underlying said tip portions of said conductive lead pattern being transparent to high energy welding beams;

solderless and thermocompressionless connecting means extending solely through said primary substrate for interconnecting selected portions of said conductive lead pattern of said primary substrate with said conductive pattern of said second substrate; and

weld joints connecting the pads of said device to said tip portions of said conductive lead pattern of said primary substrate, whereby those pads connected to said selected portions of said lead pattern are interconnected through said conductive pattern of said secondary substrate.

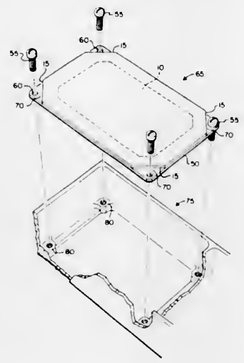
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**3,934,074**

## CERAMIC CIRCUIT BOARD MOUNTED IN HOUSING AND METHOD OF FABRICATION THEREOF

**Leon G. Evelove, Los Angeles County; John S. Leone, Orange County, and Don E. White, Los Angeles County, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.**

**Filed Apr. 22, 1974, Ser. No. 462,850**
**Int. Cl.² H05K** *5/00*
**U.S. Cl. 174—52 R** **23 Claims**



**1.** A ceramic circuit board structure, comprising:

a wafer of ceramic material, said wafer adapted to rigidly support electrical circuitry elements;

at least one metallic support member, at least a part of said support member being substantially planar, said part of said support member being rigidly secured to said wafer, at least a substantial portion of a surface of said part being in juxtaposition with at least a portion of a surface of said wafer, a portion of said member extending beyond the periphery of said wafer;

a rigid housing structure; and

mounting means selectively securing said support member to said housing structure, with no portion of said wafer being in contact with any portion of said mounting means or said housing structure to clarify the meaning of such phrase;

said support member being the sole support for said wafer.

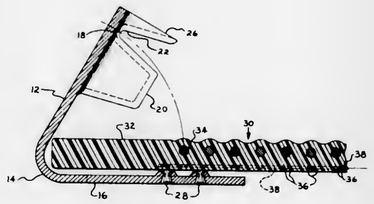
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**3,934,075**

## CLIP FOR SHIELDED MULTICONDUCTOR FLAT CABLE

**James John Dilliplane, Etters, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.**

**Filed Feb. 26, 1974, Ser. No. 446,516**
**Int. Cl.² H02G** *15/08*
**U.S. Cl. 174—75 R** **8 Claims**



**4.** In a shielded multiconductor flat cable, the improvement comprising a clip electrically interconnecting a shield and a conductor in the cable, comprising a pair of hingedly connected arms, one of the arms having means piercing the insulating material of the cable from one side and engaging a shield in the cable, and one of the arms having means piercing the insulating material from the opposite side of the cable and engaging a conductor in the cable.

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**3,934,076**

## MOISTURE PROOF CABLE SPLICE ENCLOSURE

**Donald J. Smith, Woodland Hills, Calif., assignor to Smith-Schrerer & Assoc., Inc., Woodland Hills, Calif.**

**Continuation-in-part of Ser. No. 171,570, Aug. 13, 1971, abandoned. This application Nov. 17, 1972, Ser. No. 307,593**
**Int. Cl.² H02G** *15/08*
**U.S. Cl. 174—87** **11 Claims**

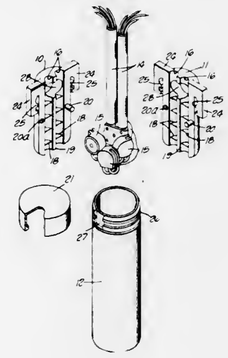
**1.** An enclosure for moisture proofing cable splices and cable ends associated therewith, comprising:

a vial, said vial having a mouth and an interior volume for accepting the cable splice;

a body of sealant contained in said vial for receiving the cable splice and the ends of the cables positioned in said vial;



a plug having means for accepting and rigidly fixing a plurality of cables relative to said plug in the immediate proximity for the cable splice, said plug fitting within and closing the mouth of said vial, said plug having a body capable of extending into said body of sealant thereby forcing said body of sealant to deform around said plug and cable ends to fill all passages leading from the enclosure, said plug comprising a plurality of mating elements positioned about said cables, said mating elements being provided with means for securely grasping said vial and said vial being provided with at least one circumferential ridge for cooperating with said grasping means of said mating elements.



**4.** A plug element for use in a cable splice enclosure, comprising:

a body portion having a plurality of central grooves formed therein for receiving cables, said grooves being separated by a ridge, said body portion further having a recess formed therein in a portion remote from said central groove;

a pair of arms extending outwardly from said body portion, each of said arms having a depending portion bearing a plurality of teeth directed toward said body portion; and

means on said body portion for aligning said element with a mating element.

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**3,934,077**

## VIEWING SYSTEM

**Kenneth E. Wood; James T. O'Farrell, both of Annapolis; William F. Parrish, Baltimore, and Gordon M. Roesler, Annapolis, all of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**Filed June 24, 1974, Ser. No. 482,189**
**Int. Cl.² H04N** *1/38, 3/24*
**U.S. Cl. 178—6** **11 Claims**

**1.** Apparatus for viewing a target area in a medium subject to backscatter, comprising:

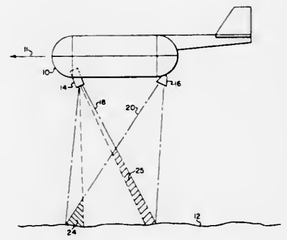
A. a TV camera adapted for movement relative to said target area;

B. means for illuminating at least a fixed portion of said target area in the field of view of said TV camera;

C. a TV monitor;

D. synchronizing generator means coupled to said TV camera and monitor for providing necessary operating signals;

E. circuit means for gating the same portion of the video



output of said TV camera during each TV frame during said movement and for displaying said portions on said TV monitor in juxtaposed positions;

F. said circuit means being operable to move said displayed portions on said TV monitor corresponding to movement of said TV camera relative to said target area;

G. said gated video output being indicative of scene information from an area of reduced backscatter.

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**3,934,078**

## KEY GENERATING SYSTEM

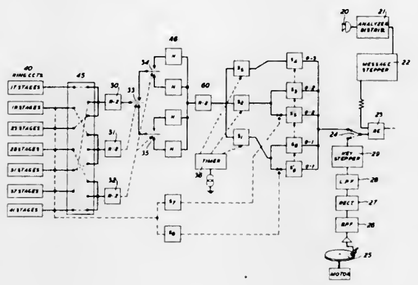
**Danforth K. Gannett, Mountain Lakes, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**

**Filed May 1, 1946, Ser. No. 666,281**
**Int. Cl.² H04L** *9/04*
**U.S. Cl. 178—22** **10 Claims**

**1.** In a key pulse generating circuit for producing key pulses varying in amplitude in highly irregular manner, said pulses occurring at a given rate, means to generate high speed off-on pulses at a rate many times higher than said given rate in a plurality of separate paths, means to hold over certain of said off-on pulses into subsequent of said high speed pulse times, means to combine the pulses so held over with pulses subsequently generated in certain of said paths to form combination of said high speed pulses, and means to select and combine with one another to form one of the final key pulses occurring at said given rate, individual ones of said last-mentioned high speed pulses occurring at instants of time separated from one another by several of said high speed pulses while discarding the intervening high speed pulses.

**6.** A pulse producing system comprising an initial portion operating at high frequency and a subsequent portion operating at low frequency, means to generate irregularly occurring pulses at high frequency in said initial portion, means in said subsequent portion to produce low frequency pulses each having a time period great enough to include many successive high frequency pulse periods, including means for selecting from among said high frequency pulses a plurality or pulses all occurring at different non-overlapping times within one low frequency pulse period and separated from one another in

time by a plurality of high frequency pulse periods, and means to combine each such plurality of selected pulses into a single



resultant low frequency pulse in said subsequent portion of said system.

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**3,934,079**

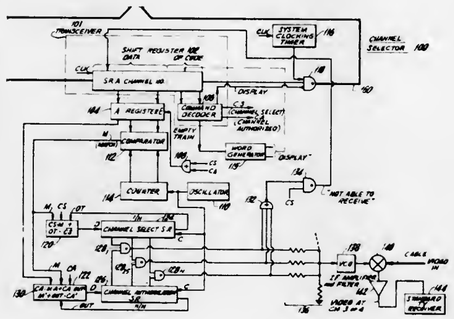
## BILATERAL COMMUNICATIONS SYSTEM FOR DISTRIBUTING COMMERICAL AND PREMIUM VIDEO SIGNALING ON AN ACCOUNTABLE BASIS

**Andrew Wayne Barnhart, Dresher, Pa., assignor to Jerrold Electronics Corporation, Horsham, Pa.**

**Filed Oct. 26, 1973, Ser. No. 409,820**

**Int. Cl.² H04N 1/44**

**U.S. Cl. 178—5.1** **29 Claims**



**1.** In combination, subscriber terminal means for selectively displaying one of plural video programs supplied thereto, each of the plural video programs occupying a differing, prescribed frequency allocation, a plural stage channel select shift register, means for loading a selected stage of said shift register with a predetermined binary character, for selecting a particular one of said plural video programs for viewing, a plural stage channel suthorization shift register, means for loading said channel authorization shift register to enable reception of selected of said plural video programs, plural coincidence logic means each connected to a differing, associated pair of the outputs of one of said channel select shift register stages and one of said channel authorization shift register stages, and video selection means responsive to the outputs of said coincidence logic means for selectively enabling reception of a particular one of the plural video programs wherein said subscriber terminal means includes channel selector, channel control, and subscriber control modules, each of said modules including a data transceiver, data bus interconnecting means for serially-loop connecting the transceivers in each of said channel control, subscriber control and channel selector modules, each of said modules including means for loading digital messages into the transceiver there contained and means for extracting messages therefrom, and means for serially propagating messages around the digital transmission loop comprising said module transceivers and

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**3,934,080**

## APPARATUS FOR READING A DISK-SHAPED RECORD CARRIER TO BE PLAYED ON A TURNTABLE

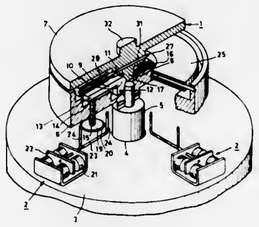
**Peter Johannes Michiel Janssen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.**

**Filed June 10, 1974, Ser. No. 477,904**

**Claims priority, application Netherlands, Feb. 28, 1974, 7402767**

**Int. Cl.² H04N 5/76; G11B 17/02**

**U.S. Cl. 178—6.6 R** **24 Claims**



**1.** An apparatus for reading a disk-shaped record carrier to be placed on a turntable, on which record carrier signals are stored in substantially circular tracks, which apparatus comprises a driven rotary shaft, a frame disposed on said rotary shaft, an electrical measuring system means for measuring the eccentricity of the tracks and for supplying a control signal corresponding to said eccentricity, at least two movable transmission elements which are drivable in mutually different directions, each transmission being movably connected to the frame, an electromagnetic drive means connected to each transmission element and to said electrical measuring system means for actuating said transmission elements in response to said control signals, first resilient means for biasing said transmission elements against said turntable, and at least one additional resilient element being disposed between the drive means and the transmission element, said resilient element coupling the motion of said electromagnetic drive means to said transmission element.



**3,934,081**

## METHOD AND APPARATUS FOR IMPROVING PHOTOMECHANICAL REPRODUCTION BY CONTRAST DECREASE

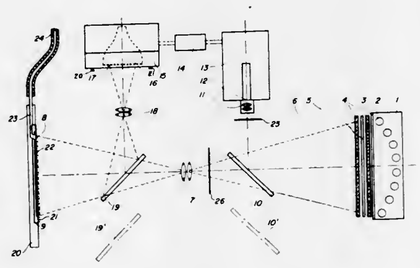
**Ernst E. Schumacher, Gruneburgweg 129, 6 Frankfurt am Main, Germany**

**Filed Apr. 1, 1974, Ser. No. 456,605**

**Claims priority, application Germany, Mar. 31, 1973, 2316273**

**Int. Cl.² H04N 7/18**

**U.S. Cl. 178—6.8** **7 Claims**



**1.** A method for reproducing black and white transparent copy and improving photomechanical reproduction thereof by contrast decrease comprising the steps:

a. Optically directing the projection of a main positive video image of the transparent copy along a first optical axis through a first process lens onto a first video-imaging plane,

b. Photographically recording said main positive video-image on a light-sensitive emulsion placed on said first video-imaging plane,

c. Optically directing the projection of a secondary positive video-image along a second optical axis onto the second imaging plane of a television camera lens,

d. Converting the secondary positive video-image therefrom on the photo-cathode of the picture tube in said TV camera to an electronic signal,

e. Electronically amplifying said electronic signal output from the TV camera in an amplifier,

f. Electronically inverting the amplified electronic signal from the amplifier so received to a negative electronic signal on an electronic signal image inverter,

g. Converting the negative electronic signal output from the electronic image inverter to a secondary negative video-image on the plane telescreen of the picture tube of a television monitor having optoelectronic image contrast and brightness control,

h. Optically directing the projection of the secondary negative video-image so contrasted and brightened through a second process lens onto the first video imaging plane in register with the main positive video-image thereon, and

i. Photographically recording said negative and positive video-images in mutually reciprocal registry on said light-sensitive emulsion.

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**3,934,082**

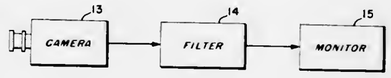
## POST DETECTION DEVICE FOR ELIMINATING BACKSCATTER

**Alan Gordon, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed Aug. 12, 1974, Ser. No. 496,598**

**Int. Cl.² H04N 7/18**

**U.S. Cl. 178—6** **2 Claims**




**1.** In a method for remote viewing in an underwater environment having high backscatter employing a television camera, illumination means displaced from said television camera, the improvement comprising:

causing the raster lines of said television camera to extend in a vertical direction at right angles to the direction of displacement of said illumination source from said television camera;

filtering the output of said television camera to prevent the passage of low frequencies; and

causing the raster lines of a monitor receiver effectively connected to said television camera to extend in the same direction as those of the camera, whereby backscatter from the illumination source is effectively reduced.

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**3,934,083**

## METHOD AND APPARATUS FOR PROCESSING THE INFORMATION CONTENT OF A PATTERN DRAWING IN CODED FORM

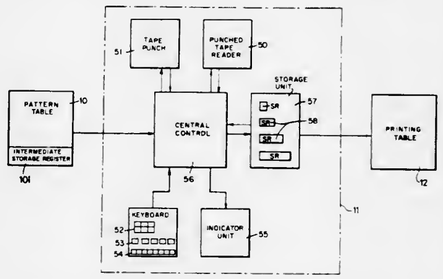
**Ernst Dieter Plath, Tailfingen, Germany, assignor to Mayer & Cie., Tailfingen, Germany**

**Continuation-in-part of Ser. No. 342,623, March 19, 1973, abandoned. This application May 10, 1973, Ser. No. 359,262**

**Claims priority, application Germany, Mar. 25, 1972, 2214787**

**Int. Cl.² H04N 5/76**

**U.S. Cl. 178—6.6 R** **8 Claims**




**1.** A method for processing the information content of a pattern drawing in coded form in preparation for application

of said content to a utilization device wherein the information of each discrete portion of a line of the pattern includes a unique characteristic such as color, which comprises the steps of scanning each line of the drawing in stepwise fashion so as to scan successive discrete areas in each line, illuminating and projecting each of said scanned areas of each line in succession upon a projection screen for observing the unique characteristics of said succession of areas, entering the unique characteristics of a scanned area then in registration with a prescribed location on the screen into the lowest order stage of a shift register that has a plurality of stages less than the number of discrete areas of each line of the pattern drawing, and selectively clearing the register and simultaneously outpulsing all the information stored therein when the register is filled and when the scanning of a line of the pattern drawing is complete.

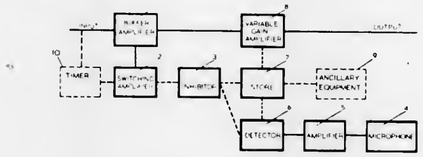
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**3,934,084**

## VARIABLE GAIN AMPLIFIER CONTROLLED BY AMBIENT NOISE LEVEL

**Robert Thomas Munson, St. Peter, and Philip Hodgson, St. Martin, both of Jersey, Channel Islands, assignors to Television Research Limited, St. Helier, Jersey, Channel Islands**

**Filed Mar. 27, 1974, Ser. No. 455,373**
**Int. Cl.² H03G *1/02***
**U.S. Cl. 179—1 VL** **4 Claims**




1. An audio amplifier system comprising a variable gain amplifier adapted to receive an input signal and produce an output audio signal therefrom in a signal processing channel, threshold means for detecting periods when the input singal falls below a predetermined level, sound transducer means arranged to provide a noise audio signal proportional to the sound level in the area or a part thereof covered by the system developing a gain control audio signal and gain control means connected for controlling the gain of said variable gain amplifier with said gain control signal, inhibitor means controlled by the threshold means connected to prevent the change of the gain of the variable gain amplifier in response to said noise signal except during periods when the input signal falls below the said predetermined level, a timer arranged to mute the input to the variable gain amplifier at predetermined intervals and further comprising means for resetting the timer each time the input signal falls below the said predetermined level.

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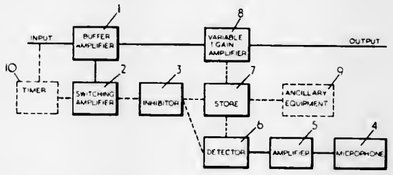
**3,934,085**

## AUDIO AMPLIFIER SYSTEMS

**Robert Thomas Munson, St. Clement, and Philip Hodgson, St. Martin, both of Jersey, Channel Islands, assignors to Television Research Limited, St. Helier, Jersey, Channel Islands**

**Continuation-in-part of Ser. No. 455,373, March 27, 1974.**
**This application July 29, 1974, Ser. No. 492,864**
**Claims priority, application United Kingdom, Mar. 28, 1973, 14951/73**
**Int. Cl.² H03G *3/00***
**U.S. Cl. 179—1 P** **11 Claims**

1. An audio amplifier system including a variable gain amplifier adapted to receive an input signal, means for detecting periods when the input signal falls below a predetermined level, sound transducer means arranged to provide a signal proportional to the ambient noise level in the area or a part thereof covered by the system for therewith controlling the gain of the amplifier, and inhibitor means controlled by said detecting means to prevent the change of the gain of said variable gain amplifier except during periods when the input signal falls below said predetermined level, wherein the sound transducer means comprises signal detecting means whose response time is short at the beginning of each said period and increases for the remainder thereof, and wherein the said latter signal detecting means comprises first and second capacitors arranged to be charged when the input signal falls below the said predetermined level and first and second level detectors arranged to detect when the voltage across the respective capacitors rises above a predetermined voltage level, the first capacitor charging at a faster rate than the second, and the first level detector controlling the response time of the signal detector of the sound transducer means.



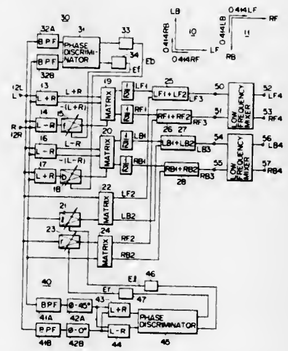

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**3,934,086**

## MATRIX FOUR-CHANNEL DECODING SYSTEM

**Susumu Takahashi, Tokyo, Japan, assignor to Sansui Electric Co., Ltd., Tokyo, Japan**

**Filed Aug. 16, 1974, Ser. No. 497,959**
**Claims priority, application Japan, Aug. 20, 1973, 48-93097**
**Int. Cl.² H04R *5/00***
**U.S. Cl. 179—1 GQ** **3 Claims**




1. In a matrix four-channel decoding system for converting first and second composite signals encoded with at least left-front, right-front, left-back and right-back directional audio input signals in preselected amplitude and phase relationships into left-front, right-front, left-back and right-back output signals, comprising matrix means for producing said output signals by combining said first and second composite signals, and means for detecting the level relationship between the directional audio input signals contained in said first and second composite signals and controlling said matrix means so as to produce said output signals while varying the mixing coefficients of said first and second composite signals in accordance with the instantaneous amplitude relationship between said directional audio input signals,

said matrix four-channel decoding system comprising

first and second mixers each having first and second input terminals and first and second output terminals,

said first mixer being connected to receive the left-front and right-front output signals from said matrix means at said first and second input terminals of said first mixer, respectively, for developing, when the first and second composite signals are in a first frequency range, a sum of the left-front and right-front output signals which is substantially a sum of the first and second composite signals at each of said first and second output terminals of said first mixer, and, when the first and second composite signals are in a second frequency range above the first frequency range, the left-front and right-front output signals at said first and second output terminals of said first mixer, respectively, and

said second mixer being connected to receive the left-back and right-back output signals from said matrix means at said first and second input terminals of said second mixer, respectively, for developing, when the first and second composite signals are in the first frequency range, a difference of the left-back and right-back output signals which is substantially a difference of the first and second composite signals at each of said first and second output terminals of said second mixer, and, when the first and second composite signals are in the second frequency range, the left-back and right-back output signals at said first and second output terminals of said second mixer, respectively.



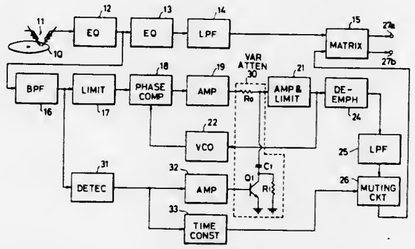
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**3,934,087**

## ANGLE MODULATED WAVE DEMODULATION SYSTEM

**Nobuaki Takahashi, Yamato; Yoshiki Iwasaki, Yokohama; Masao Kasuga, Sagamihara, and Yasuo Itoh, Tokyo, all of Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan**

**Filed Oct. 4, 1973, Ser. No. 403,635**
**Claims priority, application Japan, Oct. 7, 1972, 47-100300; Oct. 9, 1972, 47-101451**
**Int. Cl.² G11B *3/04***
**U.S. Cl. 179—100.4 ST** **4 Claims**




1. A system for demodulating an angle modulated wave signal which is included in a multiplex of signals reproduced from a multichannel record disc on which the multiplex of an angle modulated wave signal and a direct wave signal are recorded, said system comprising:

separator means responsive to the reproduced mutliplex of signals for individually separating the angle modulated wave signal and the direct wave signal from the reproduced multiplex of signals;

phase locked loop means comprising voltage controlled oscillator means; phase comparator means for generating an output signal representing a phase difference detected responsive to a comparison of the phase of the carrier wave of the separated angle modulated wave signal with the phase of a signal generated by said voltage controlled oscillator means; variable attenuation means responsive to the output signal of said phase comparator means foor variably attenuating audio frequency components in the output signal of said phase comparator means more than frequency components in the output signal which have frequencies that are lower than the audio frequencies so that the attenuation quantity of the audio frequency components is varied corresponding to an attenuation control signal applied thereto, the output signal of said variable attenuation means being a demodulation of the angle modulated wave signal; said voltage controlled oscillator means changing the frequency responsive to a part of the output signal of said variable attenuation means of the generated signal to follow the frequency of the carrier wave;

whereby said phase locked loop means has a first lock range within which the oscillation frequency of said voltage controlled oscillator means follows the frequency deviations of the carrier wave which are lower than the audio frequencies and a second lock range which is narrower than the first lock range and within which the oscillation frequency of said voltage controlled oscillator means follows the audio frequency deviations of the carrier wave and which second lock range is varied corresponding to the attenuation control signal;

detecting means responsive to the angle modulated wave signal separated by said separator means for detecting the envelope of the separated angle modulated wave signal to produce an output signal;

phase-inverting means responsive to the output signal of said detecting means for producing a phase-inverted output signal; and

rectifier means for rectifying the phase-inverted output signal to provide said control signal;

said variable attenuation means being responsive to the control signal from said rectifier means for varying the attenuation quantity of the audio frequency components corresponding to the level of the output signal of said rectifier means.

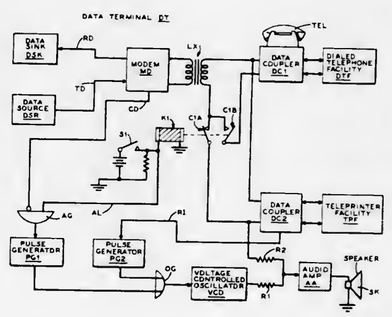
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**3,934,088**

## DATA TERMINAL FOR CONNECTION TO TELEPHONE OR TELEPRINTER FACILITIES

**Francis C. Marino, Dix Hills, N.Y., assignor to Redactron Corporation, Hauppauge, N.Y.**

**Filed June 13, 1974, Ser. No. 479,051**
**Int. Cl.² H04M *11/00*, *11/02***
**U.S. Cl. 179—2 DP** **2 Claims**




1. A data terminal comprising: a modem having a pair of signal transfer terminals, a data output terminal, a data input terminal, and a carrier output terminal for giving an indication when the modem is receiving a signal at the signal transfer terminals; a line transformer having first and second windings, said first winding being connected to said pair of signal transfer terminals; a first data coupler for connection to a dialed telephone facility, said first data coupler having a pair of signal transfer terminals, one of said signal transfer terminals being connected to one end of the second winding of said line transformer; a second data coupler for connection to a teleprinter facility, said second data coupler having a pair of signal transfer terminals, one of said signal tranfer terminals being connected to said one end of the second winding of said line

transformer, and having a ring indicating terminal for emitting a signal when the teleprinter facility sends a ringing signal; a switch means having switching means for alternately connecting the other signal transfer terminal of said first data coupler or said second data coupler to the other end of the second winding of said line transformer, and having output means for giving an indication when said first data coupler is connected across the second winding of said line transformer; and a signalling means comprising first means for giving an indication that a call between the data terminal and the dialed telephone facility is ended when the carrier output terminal of said modem is not giving an indication while the output means of said switch means is giving an indication that said first data coupler is connected across the second winding of said line transformer, and second means for giving a different indication upon receipt of a signal from the ring indicating terminal of said second data coupler.

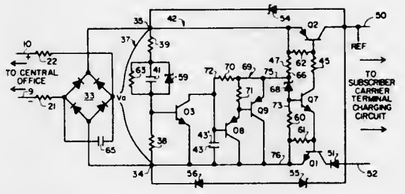
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**3,934,089**

## AUTOMATIC DISCONNECT CIRCUIT FOR SUBSCRIBER CARRIER TELEPHONE SYSTEM

**James A. Stewart, Menlo Park, Calif., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.**

**Filed Oct. 31, 1974, Ser. No. 519,719**
**Int. Cl.² H04H** *1/08*
**U.S. Cl. 179—2.5 R** **24 Claims**




**1.** In a disconnect circuit for a remote terminal in a subscriber carrier telephone system wherein the circuit has a pair of input terminals electrically connected to a central office battery voltage; a pair of output terminals; a first transistor which is a transistor switch having emitter and collector electrodes electrically connected to one input and one output terminal, respectively; first means having a pair of terminals electrically connected to associated other input and other output terminals for electrically connecting the latter together and having a third terminal; a second transistor which is a control transistor having a collector-emitter junction electrically connected between the first transistor base electrode and the third terminal of the first means; a timing capacitor having one terminal electrically connected to the one input terminal and having an other terminal; second means normally directly electrically connecting the other terminal of the timing capacitor to the second transistor base electrode, the timing capacitor being operative for storing a voltage controlling turn-on of the first and second transistors; third means for resistively coupling drive current from the other input terminal for application to the base electrode of the second transistor for selectively enabling the latter transistor and the first transistor to conduct and for charging the timing capacitor; and fourth means responsive to a prescribed voltage condition produced across the input terminals for selectively discharging the timing capacitor; the improvement wherein said second means comprises: fifth means for selectively bypassing away from the second transistor base electrode a constant current portion of the drive current from the third means and selectively passing it to the capacitor for charging the latter, and for bypassing away from the second transistor and the capacitor a variable portion of the drive current from the third means during charging of the capacitor to maintain a constant charge current to the capacitor during charging of the latter; at least part of the current from the third means that is passed by said fifth means during charging of the capacitor being passed by the second transistor when the charge voltage on the capacitor is sufficient to cause the voltage between the second transistor base electrode and the first transistor emitter electrode to exceed a threshold voltage related to conduction of the second transistor.

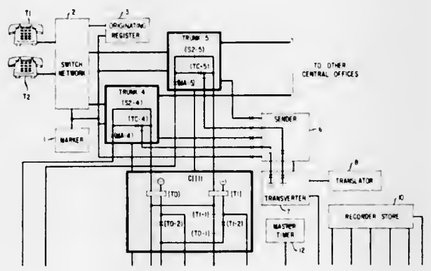
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**3,934,090**

## TELEPHONE MESSAGE TIMING SYSTEM

**Robert Bartlett Curtis, and Nelson Andrew Riedel, both of Columbus, Ohio, assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**

**Filed Oct. 21, 1974, Ser. No. 516,624**
**Int. Cl.² H04M** *15/18*
**U.S. Cl. 179—7.1 R** **10 Claims**




**1.** In a switching system wherein call charging times are recorded for usage of a communication facility and wherein the times recorded are subject to adjustment to allow for delay in accessing recording equipment, the combination comprising

means for measuring an interval of time since the recording equipment was last idle with no request for access thereto, and

means responsive to said measuring means for generating an allowance time signal to adjust the recording of the charge time in accordance with the access delay to the recording equipment.

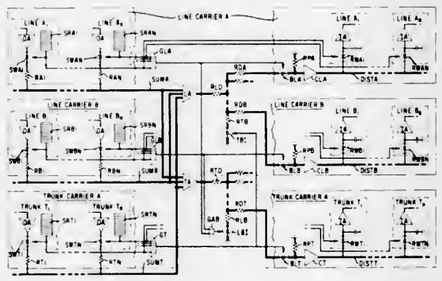
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**3,934,091**

## AUTOMATIC GAIN COMPENSATION IN TIME DIVISION SWITCHING SYSTEM

**James Richard Stidham, Broomfield, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**

**Filed Dec. 23, 1974, Ser. No. 535,487**
**Int. Cl.² H04J** *3/02*
**U.S. Cl. 179—15 AT** **8 Claims**




**1.** In a time division switching system in which port circuits served by different summing buses as well as port circuits served by the same summing bus may be interconnected by circuitry providing a specified amount of gain comprising



amplifier means for increasing the gain to port circuits when the port circuits involved on a connection are served by the same summing bus, and

switchable attenuation means for decreasing the gain when the port circuits involved on the connection are served by different summing buses.

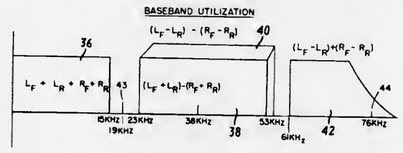
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**3,934,092**

## FOUR CHANNEL STEREOPHONIC BROADCASTING SYSTEM

**Antal Csicsatka, Utica, N.Y., assignor to General Electric Company, Syracuse, N.Y.**

**Continuation-in-part of Ser. No. 182,318, Sept. 21, 1971, abandoned. This application Dec. 1, 1972, Ser. No. 311,195**
**Int. Cl.² H04H** *5/00*
**U.S. Cl. 179—15 BT** **31 Claims**




**1.** A system capable of transmitting and receiving a broadcast signal containing four discrete stereophonically related audio frequency inputs including a transmitter and one or more receivers, wherein the transmitter comprises matrix means responsive to said four inputs for producing four matrix outputs each of which is a function of at least one of said inputs, means for generating a main carrier wave, means for frequency modulating the main carrier wave with the first matrix output, means for generating a first subcarrier wave, means for amplitude modulating the first subcarrier wave with the second matrix output, means for generating a second subcarrier wave at the same frequency as the first subcarrier wave and in quadrature relationship with the first subcarrier wave, means for amplitude modulating the second subcarrier wave with the third matrix output, means for suppressing the first and second subcarrier waves, means for frequency modulating the main carrier wave with the sidebands of the modulated first and second subcarrier waves, the frequency of the first and second subcarrier waves being such that there is a gap between the lower sidebands of the first and second subcarrier waves and the frequency band of the first matrix output, means for generating a pilot signal at a frequency that falls within said gap, means for frequency modulating said main carrier wave with the pilot signal, means for generating a third subcarrier wave at a frequency above that of the first and second subcarrier waves, means for amplitude modulating the third subcarrier wave in accordance with the fourth matrix output, means for depressing or suppressing the third subcarrier wave, means for reducing the amplitude of the modulation of the third subcarrier wave to a maximum level below the highest level that would exist in the absence of such a reducing operation, filter means for removing all but a relatively small portion of the upper sideband of the third subcarrier wave and for attenuating the uppermost portion of the lower sideband of the third subcarrier wave, a time equalizer means for equalizing the travel time of signals of different frequencies that pass through the filter means, and means for frequency modulating the main carrier wave with the remaining portions of the sidebands of the modulated third subcarrier wave, the frequency of the third subcarrier wave being such that the lower sideband of the third subcarrier wave is separated from the upper sidebands of the first and second subcarrier waves; and each receiver comprises means responsive to the pilot signal for regenerating and reinserting the first, second, and third subcarrier waves, means for detecting the four matrix outputs, and de-matrix means responsive to the four matrix outputs for reproducing said four discrete audio frequency inputs.

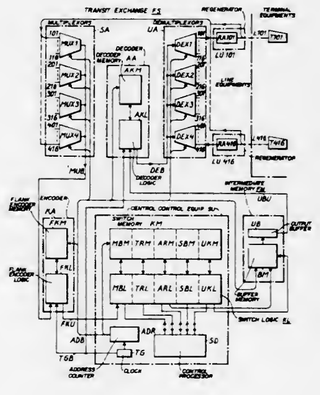
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**3,934,093**

## TRANSIT EXCHANGE FOR ASYNCHRONOUS DATA WITH UNKNOWN STRUCTURE

**Per-Olof Thyselius, Tyreso, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden**

**Filed July 24, 1974, Ser. No. 491,298**
**Claims priority, application Sweden, Aug. 10, 1973, 73109704**
**Int. Cl.² H04J** *3/00*
**U.S. Cl. 179—15 BA** **8 Claims**



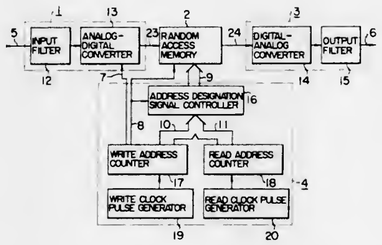

**1.** In a transit exchange for the relaying of asynchronous data signals having an unknown character structure and data rate from sending terminal equipments to receiving terminal equipments with the aid of a control equipment, containing a computer, and a sampling means, common to a number of sending terminal equipments and arranged to work according to the time division multiplex principle, for sampling with the aid of sampling pulses the instantaneous values of the data signals received on each of a number of incoming lines from sending terminal equipments, and encoder means arranged to work synchronously with said sampling device, for encoding by means of successive processing of the sampling pulses whether the data signals have changed said value between two consecutive sampling pulses and, in correspondence therewith, for delivering an indication signal in the form of a code word having a specific number of binary bits which indicate the time position for the sampling pulse occurring after such change, the improvement comprising an intermediate memory means for storing the data bits serially in an addressed location assigned to the receiving terminal equipment, a decoding means connected to said intermediate memory for successively processing the binary bits to form indication signals which alter their value in accordance with the time position indicated by the code words, regeneration means assigned to receiving terminal equipments, and a read-out means arranged to work synchronously with said decoding means, for transferring the values of the indication signals cyclically from said decoding means to said regeneration means, and said regeneration means including means for forming from the values of the received indication signals data signals which change value in synchronism with the indication signals.

**3,934,094**

## FREQUENCY BAND CONVERTER

**Masaharu Kobayashi, Hachioji; Tsuneji Koshikawa, Sayama, and Toshio Tanizoe, Hitachi, all of Japan, assignors to Hitachi, Ltd., Japan**

**Filed Aug. 27, 1973, Ser. No. 391,846**
**Claims priority, application Japan, Aug. 28, 1972, 47-85368**
**Int. Cl.² H04J** *7/00*
**U.S. Cl. 179—15.55 T** **5 Claims**




**1.** A frequency band converter for modifying time and pitch of a speech signal shifted in frequency, comprising:

random access memory means having storage addresses of a predetermined number;

control means for supplying to said random access memory means a write-in access control signal at a first rate as well as a read-out access control signal at a second rate so as to cause the respective storage addresses of said random access memory means to be accessed one after another in a predetermined cyclic order at the first rate in response to the write-in access control signal and also at the second rate in response to the read-out access control signal, respectively, one of the first and second rates being different and variable with respect to the other, said control means giving precedence to one of the write-in and read-out access control signals with respect to the other only when both said write-in and read-out access control signals are concurrently supplied to said random access memory means;

input means for receiving the frequency shifted speech signal and for intermittently writing sampled pieces of information of the frequency shifted speech signal in the respective storage addresses of said random access memory means which are accessed only in accordance with the write-in access control signal in the predetermined cyclic order at the first rate despite interchangeable access of the storage addresses of said random access memory means in accordance with the read-out access control signal so that each of the storage addresses of said random access memory means accessed in accordance with the write-in access control signal stores one sampled piece of information which is replaced with another sampled piece of information applied to the same address after cyclic access of said random access memory means; and

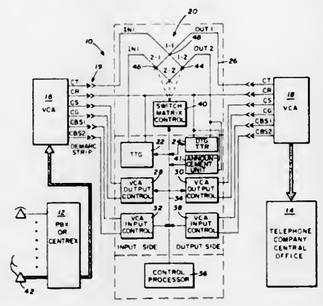
output means for intermittently reading out the pieces of information stored in said random access memory means from the storage addresses of said random access memory means which are accessed only in accordance with the read-out access control signal in the predetermined cyclic order at the second rate despite interchangeable access of the storage addresses of said random access memory means in accordance with the write-in access control signal, whereby the sampled pieces of information of the frequency shifted speech signal are successively written in said storage addresses of the random access memory means one after another by said input means independently of the reading operation of the thus stored piece of information from said storage addresses of the random access memory means one after another by said output means such that pieces of information read out by the output means are periodically discarded from the pieces of information stored when the first rate is faster than the second rate or pieces of information read out by the output means are periodically repeated in the pieces of information stored when the first rate is slower than the second rate, each discard or repetition being limited at most to the sampled pieces of information stored in the addresses of only one cyclic order.

**3,934,095**

## METHOD AND SYSTEM FOR SHORT TERM QUEUING OF TELEPHONE CALLS IN AUTOMATIC INTER-CITY TELEPHONE CALL CONNECTION SYSTEM

**Gordon H. Matthews, and Barry M. Epstein, both of Dallas, Tex., assignors to Action Communication Systems, Inc., Dallas, Tex.**

**Filed June 24, 1974, Ser. No. 483,061**
**Int. Cl.² H04Q** *3/64, 3/70*
**U.S. Cl. 179—18 D** **17 Claims**




**1.** A system for automatically controlling the connection of telephone calls between a user's dedicated telephone switching facility having a plurality of user terminals and a plurality of flat rate output telephone lines extending to a central office comprising:

means for receiving user authorization code numbers from said user terminals,

means for generating a tone signal only if said authorization code numbers meet a predetermined criterion,

means responsive to dialing signals from the authorized user terminals for selecting the most economical available one of said flat rate output telephone lines in accordance with a predetermined ranking of said flat rate telephone lines according to economy of use,

means for connecting, when flat rate output telephone lines are available, the authorized user terminals with the selected flat rate output telephone lines extending to said central office for completion of the dialed telephone calls, and

means for generating an audio message to the caller when no flat rate output telephone lines are available, said audio message requesting the caller to hold for a predetermined time interval during which the call is automatically connected if a flat rate output telephone line becomes available.

**12.** A method of controlling the connection of inter-city telephone calls between a plurality of input telephone lines at a user's facility and a plurality of leased output telephone lines extending to a central office comprising:

receiving a service request signal from the user's facility on one of said input telephone lines,

detecting dialing signals from the input telephone line,

selecting the most economical one of said leased output telephone lines for completing the dialed call in accordance with a predetermined ranking of said telephone lines according to economy of use and establishing a voice connection through said input telephone line through the selected leased output telephone line,

if no leased output telephone lines are available, generating an audio message to the caller via the input telephone lines requesting the caller to hold for a predetermined time interval,

if a leased output telephone line becomes available during the predetermined time interval, transmitting representations of the received dialing signals to the available leased output telephone line to establish connection with the desired called location through the central office, and

operating a switch matrix to connect the calling input telephone line with the available output telephone line.

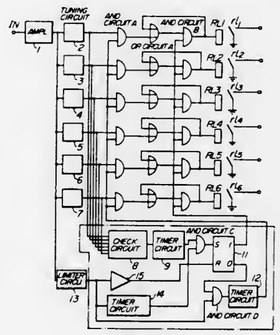


**3,934,096**

## MULTI-FREQUENCY SIGNAL RECEIVING CIRCUIT

**Goro Kusano, Fujisawa; Hiroshi Kosugi, and Yasuhiro Yamamura, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Japan**

**Filed Apr. 27, 1973, Ser. No. 355,276**
**Int. Cl.² H04M** *1/00*
**U.S. Cl. 179—84 VF** **6 Claims**




**1.** A multi-frequency signal receiving circuit having an input signal amplifier, a plurality of frequency detectors each including a tuning circuit for generating an output in response to a signal of selected frequency received from the output of the input signal amplifier, and output circuit means connected to the outputs of said frequency detectors for controlling the transmission of the received signal, which comprises:

check circuit means connected to said frequency detectors for detecting the existence of a predetermined number of outputs of said frequency detectors and for generating an output only when a predetermined number of outputs are detected;

first timing circuit means connected to the output of said check circuit means for delaying the transmission of the output thereof;

rectifying circuit means connected to the output of said input signal amplifier for cnverting the received signal energy to a direct-current signal;

second timing circuit means connected to the output of said rectifying circuit means for delaying the transmission of the output thereof;

first AND gate means connected to said first and second timing circuits and operating when simultaneously receiving the outputs of said first and second timing circuit means; and

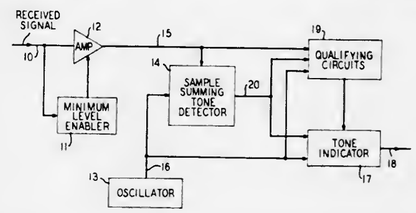
control means operating in response to the output of said AND gate means for controlling the transmission of the received signal in said output circuit means.

**3,934,097**

## MULTIFREQUENCY TONE DETECTION

**Robert Lawrence Carbrey, Boulder, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**

**Filed Aug. 12, 1974, Ser. No. 496,695**
**Int. Cl.² H04M** *1/50*
**U.S. Cl. 179—84 VF** **16 Claims**




**1.** In a multifrequency tone receiver capable of detecting in a received signal any one of $m$ different tones each a superposition of $n$ component signals having different frequencies, the method of detecting said tones comprising the steps of:

taking a sample of said received signal at some arbitrary starting time and at subsequent sampling times delayed therefrom by half-periods and combinations of half-periods of different ones of said commponent signals,

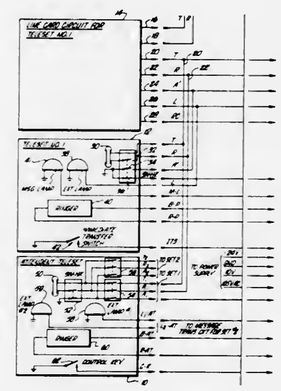
performing $m$ independent summations each summation associated with a different one of said tones, and including the starting time sample and $2^n-1$ additional samples delayed therefrom by half-periods and combinations of half-periods of the frequencies comprising the corresponding tone, the one summation having approximately zero value corresponding to the one of said tones present in the received signal.

**3,934,098**

## TELEPHONE MESSAGE TRANSFER CIRCUIT

**George A. Merritt, Jr., Tustin, Calif., assignor to San/Bar Corporation, Santa Ana, Calif.**

**Filed Apr. 1, 1974, Ser. No. 457,116**
**Int. Cl.² H04M** *1/64*
**U.S. Cl. 179—84 C** **9 Claims**



**1.** In a telephone system in which an attendant telephone set monitors the calls received by a plurality of principal telephone sets and transfers a message waiting signal to any selected one of the principal sets, the attendant set having means for seizing the line conductors associated with any of the

principal sets, and further having message control means for providing a message waiting signal to any selected principal set, the improvement of a message transfer circuit individually connected between each principal set and the attendant's set, each transfer circuit comprising:

means responsive to the seizure of the line conductors of the associated principal set by the attendant set for providing a message transfer enabling signal; and

gating means responsive to the message transfer enabling signal and to the message control means for transferring a message waiting signal to the principal set.

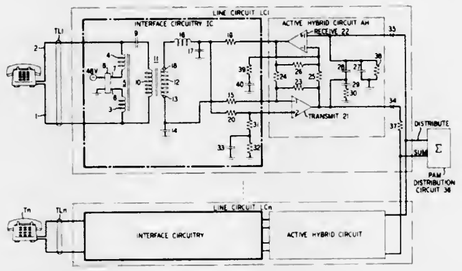
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**3,934,099**

## BIAS, FEEDBACK AND NETWORK ARRANGEMENTS FOR HYBRID CIRCUITS

**Joseph Marcus Elder, Jr., Boulder, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**

**Filed Aug. 16, 1974, Ser. No. 498,056**
**Int. Cl.² H04M 9/08; H04B 1/58**
**U.S. Cl. 179—170 NC** **20 Claims**




1. A hybrid circuit for coupling an incoming and an outgoing path to a bidirectional path in a communication system and comprising

a transmit and a receive amplifier each having input means and output means,

means for connecting said output means of said transmit amplifier to said outgoing path,

means for connecting said incoming path to said input means of said receive amplifier,

means for signal feedback from said output means of said transmit amplifier to said input means of said receive amplifier for cancelling transmitted communication signals conveyed from said transmit amplifier through said communication system to said input means of said receive amplifier,

means for signal feedback from said output means of said receive amplifier to said input means of said transmit amplifier for cancelling received communication signals conveyed from said receive amplifier output means to said input means of said transmit amplifier, and

means for coupling said bidirectional path to said input means of said transmit amplifier and said output means of said receive amplifier,

said coupling means including

first and second capacitors,

a transformer having a first winding connected to said bidirectional path in series with said first capacitor and a second winding connected in series with said second capacitor and

means connected to said second capacitor and deriving signal feedback from said second capacitor to said input means of said transmit amplifier.

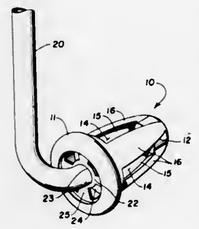
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**3,934,100**

## ACOUSTIC COUPLER FOR USE WITH AUDITORY EQUIPMENT

**Mas Harada, Minneapolis, Minn., assignor to Seeburg Corporation, Chicago, Ill.**

**Filed Apr. 22, 1974, Ser. No. 462,814**
**Int. Cl.² H04R 1/10**
**U.S. Cl. 179—182 R** **5 Claims**



1. An acoustic coupler for use with a sound carrying tube directed into the outer ear, said coupler comprising:

a. an elongated and tapered bulb-like hollow housing constructed and arranged to fit in the outer ear of a wearer and having a plurality of openings formed therein circumferentially disposed to define rib portions in said hollow housing;

b. said tapered hollow housing having a small end portion with a first opening formed therein substantially smaller in diameter than that of said bulb-like hollow housing;

c. and a flexible conduit having a first end adapted to be fitted to a sound transmitting device and having a second end extending through said hollow housing into acoustic sealing relationship with said first opening in said end portion.

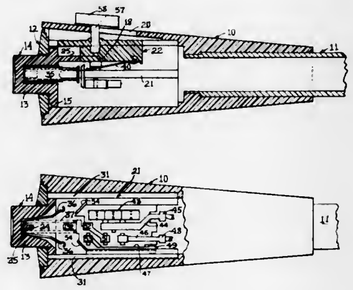
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**3,934,101**

## MULTIPLE CIRCUIT MULTIPLE SWITCH HAVING A PAIR OF MANUALLY MOVABLE ACTUATING ELEMENTS

**Wesley C. Jones, Waukegan, Ill., assignor to Cherry Electrical Products Corporation, Waukegan, Ill.**

**Filed Jan. 20, 1975, Ser. No. 542,506**
**Int. Cl.² H01H 9/26, 13/70, 15/08**
**U.S. Cl. 200—5 B** **8 Claims**



1. An electrical switch having an elongated tubular dielectric housing providing an open end and a partially open top including

a. means within the housing providing a plurality of spaced electrical conductors positioned beneath the open top and in longitudinal alignment with the open end of the housing,



b. a first and second switch actuator movable in the same plane through the housing and into circuit-making contact with said plurality of electrical conductors,

c. circuit-making contacts carried by said first and second actuators and movable therewith over and into contact with said plurality of electrical conductors,

d. means provided by said first actuator in contact with said second actuator for moving said second actuator in one direction through the housing,

e. means provided by said second actuator for moving said second actuator in either direction through the housing independently of the movement of said first actuator,

f. and means for yieldably maintaining said second actuator in a selected position as it is moved independently by said moving means and by movement of said first actuator over and into contact with certain of said plurality of electrical conductors.

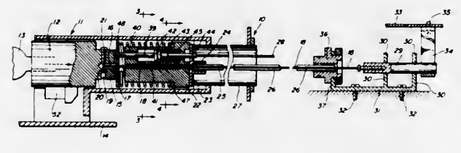
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**3,934,102**

## AUTOMOTIVE VEHICLE IGNITION LOCKING AND HOOD LATCHING APPARATUS

**Charles P. Barcik, Westchester, and Joseph J. Gagliardo, Chicago, both of Ill., assignors to Auto-Sentry Co., Chicago, Ill.**

**Filed Feb. 18, 1975, Ser. No. 550,469**
**Int. Cl.² H01H 27/00**
**U.S. Cl. 200—44** **2 Claims**



1. A combination automotive vehicle ignition system locking and hood latching apparatus comprising:

a. a generally cylindrical housing adapted to be mounted on the frame of an automotive vehicle and having

1. an axially outer end portion;

b. a key-controlled lock cylinder slidably mounted in the said axially outer end portion of the said housing and having

1. a reduced diameter axially inner end portion;

c. a central body slidably mounted in the said housing axially inwardly of the said key-controlled lock cylinder; and having therein

1. a first axially extending passage;

d. a hood latch control member slidably mounted in the said first axially extending passage in the said central body and having

1. an inner end portion attached to the said reduced diameter axially inner end portion of the said key-controlled lock cylinder, and having

2. an outer end portion extending axially outwardly of the said housing;

e. a hood latching member carried by the said outer end portion of the said hood latch control member and adapted to latchingly engage a hood latching member mounted on the inner surface of the hood of the said automotive vehicle when the said hood latch control member and the said hood latching member carried thereby are in outwardly extended position;

f. a second axially extending passage in the said central body and having slidably mounted therein

1. an electrically conductive member including

a. an inner end portion having thereon

b. a first electrically conductive contact head;

g. the said electrically conductive wire member having

1. an outer end portion to be electrically connected to an instrumentality in the ignition system of the said automotive vehicle, and having

2. an inner end portion projecting into the said housing and into the said second axially extending passage in the said central body, and having thereon

3. a body of electrically insulating material;

h. a second contact head on the said inner end portion of the said electrically conductive wire and slidably mounted in the said second axially extending passage in the said central body;

i. a first coil spring in the said housing normally urging the said key-controlled lock cylinder axially outwardly of the said housing and into open or unlocked position and normally urging the said hood latch control member and the said hood latching member carried thereby into unlatched position;

j. a generally annular retainer member in the said housing between the said reduced diameter inner end portion of the said key-controlled lock cylinder and the said first coil spring and adapted to engage the said first coil spring and the said first contact member when the said key-controlled lock member is manually moved axially inwardly in the said housing;

k. a second coil spring in the said second axially extending passage in the said central body and surrounding the said inner end portion of the said electrically conductive wire and normally urging the said second contact head on the said inner end portion of the said electrically conductive wire into electrical contacting engagement with the said first contact head on the said electrically conductive member.

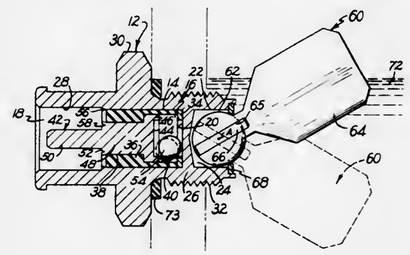
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**3,934,103**

## LIQUID LEVEL SENSING SWITCH

**Hidde Walstra, Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.**

**Filed June 3, 1974, Ser. No. 475,468**
**Int. Cl.² H01H 35/18**
**U.S. Cl. 200—84 C** **9 Claims**

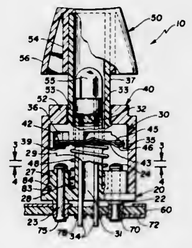


1. A liquid level sensing switch comprising an electrically conductive body having a chamber open at one end, electrical contact means, electrically insulating means mounting said contact means within said chamber in electrically insulated relation to said body with one end of said contact means in spaced relation to said body within said chamber and with an opposite end of said contact means extending from said chamber, an electrically conductive magnetizable ball movable within said chamber between a closed circuit position engaging said contact means and body and an open circuit position spaced from one of said contact means and body, a float mounted on said body exteriorly of said chamber for movement between first and second positions in response to change in level of a liquid to which said float is exposed, and magnet means movable with said float exteriorly of said chamber for moving said ball between said open and closed circuit positions within said chamber in response to movement of said float between said first and second positions exteriorly of said

chamber, said body having a bore at one end forming said chamber and having a bore at an opposite end forming a socket, said bores being separated by a wall portion of said body between said bores, said float having a ball portion at one end secured in said socket for permitting pivotal movement of said float on said body and having a bouyant portion at its opposite end to be exposed to a liquid, and said magnet means being mounted in said ball portion of said float.

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**3,934,104**
**PUSH-BUTTON SWITCH**
**Glenn M. Stout, 2000 Argonne Drive, Minneapolis, Minn. 55422**
**Filed Sept. 23, 1974, Ser. No. 508,228**
**Int. Cl.² H01H** *13/50*
**U.S. Cl. 200—159 R** **19 Claims**

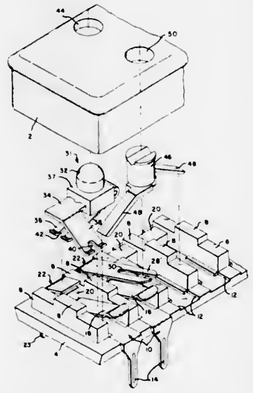


**1.** A push-button electric switch comprising, a base member having a lower surface adapted to rest on a circuit board, said base member having a center guide post and a raised upper surface with contact terminals positioned in said raised upper surface and extending through the base member being exposed on the upper surface, an actuating plunger having a head symmetrical with the raised upper surface of the base member and a hollow shaft section adapted to be positioned over the center guide post of the base for reciprocal movement thereon, contact means positioned on the under surface of the head having common wiper members adapted to contact diametrically positioned terminals in the base member, housing means having a center recess positioned over the acturating plunger and the raised upper surface of the base member with the center opening providing passage for the shaft section of the actuating plunger, means included in part on the housing means and in part on the base member to releasably secure the housing means to the base member, and key means positioned in part on the raised upper surface of the base member and in part on the head of the actuating plunger and on the housing means to permit the actuating plunger to be rotated a predetermined rotation with respect to the base member and bring the contact means on the head of the plunger into engagement and selectively with two pair of diametrically positioned terminals in the base member.

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**3,934,105**
**MINIATURE SWITCH WITH LIGHTED INDICATOR**
**Joseph Larue Lockard, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.**
**Continuation of Ser. No. 468,321, May 9, 1974, abandoned. This application Jan. 13, 1975, Ser. No. 540,784**
**Int. Cl.² H01H** *3/12*
**U.S. Cl. 200—317** **3 Claims**

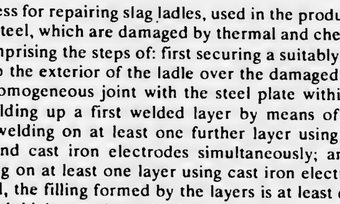
**1.** A momentary optical signal switch, for plugging into a printed circuit board, comprising:
a base,
a cover on said base,
a plurality of electrical contacts mounted in opposed rows along said base,
light emitting diodes having pairs of resilient electrical leads, said diodes being mounted in rows in said cover,
said pairs of leads resiliently bridging across and engaging first corresponding opposed pairs of said contacts,
an array of push buttons mounted in rows in said cover and having corresponding pairs of resilient fingers engaged on said base for resiliently biasing said push buttons to project outwardly from said cover,
said push buttons overlying second corresponding opposed pairs of said contacts and momentarily connecting second corresponding opposed pairs of contacts upon displacement of said pushbuttons toward said base, and
said rows of contacts projecting from said base for pluggable connection to electrical circuit means to enable bridging one of said first opposed pairs of contacts in series with one of said second opposed pairs of contacts, thereby to complete an electrical circuit through a corresponding diode as a corresponding push button is displaced to momentarily connect a second corresponding opposed pair of contacts.



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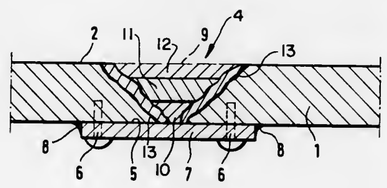
**3,934,106**
**MICROWAVE BROWNING MEANS**
**George H. MacMaster, Lexington, and Kenneth W. Dudley, Sudbury, both of Mass., assignors to Raytheon Company, Lexington, Mass.**
**Division of Ser. No. 395,469, Sept. 10, 1973, Pat. No. 3,857,009. This application Aug. 14, 1974, Ser. No. 497,445**
**Int. Cl.² H05B** *9/06*
**U.S. Cl. 219—10.55 E** **3 Claims**

**1.** A utensil for microwave heating comprising:
a base member having regions of alternately high and low dielectric constant characteristics to provide a fringing electric field pattern having a substantially **180°** phase differential adjacent to a surface of said member when exposed to radiating free space electromagnetic wave energy.



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**3,934,107**
**PROCESS FOR REPAIRING SLAG LADLES**
**Egon Evertz, Varlander Strasse, 23, 565 Solingen, Germany**
**Filed Apr. 23, 1974, Ser. No. 463,422**
**Claims priority, application Germany, May 2, 1973, 2321946**
**Int. Cl.² B23K** *9/04*; **B22D** *19/10*
**U.S. Cl. 219—76** **5 Claims**

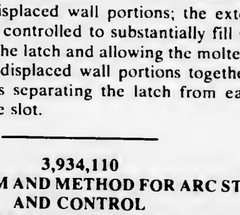


**1.** A process for repairing slag ladles, used in the production of iron and steel, which are damaged by thermal and chemical stresses, comprising the steps of: first securing a suitably sized steel plate to the exterior of the ladle over the damaged area; forming a homogeneous joint with the steel plate within the ladle by building up a first welded layer by means of steel electrodes; welding on at least one further layer using steel electrodes and cast iron electrodes simultaneously; and finally, welding on at least one layer using cast iron electrodes so that, in all, the filling formed by the layers is at least equal to the original thickness of the slag ladle at the location occupied by the layers.

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**3,934,108**
**LEAD BONDING METHOD AND APPARATUS**
**Norman A. Howard, Cupertino, Calif., assignor to Uthe Technology, Inc., Sunnyvale, Calif.**
**Filed Sept. 16, 1974, Ser. No. 506,245**
**Int. Cl.² B23K** *11/10*
**U.S. Cl. 219—85** **7 Claims**

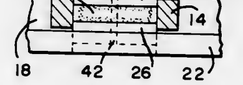
**5.** An improved lead bonding method of the type wherein a segment of electrically conductive wire is extended through a capillary tool having a bonding surface and is mechanically bonded by the capillary tool along different portions of its length to separate circuit points; wherein the improvement comprises the steps of
placing the length of wire in contact with a heat sink adjacent the bonding surface of the capillary tool and




producing an electric current of such shape and magnitude in a portion of the wire between the capillary tool and a select one of the circuit points to which the wire is bonded so as to resistively heat the wire portion and rupture it, forming integral balls on the ends of the wire at the capillary tool bonding surface and the circuit point.

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**3,934,109**
**LATCH PIVOT FOR LATCH NEEDLE**
**Richard W. Shepard, and Albert S. Ashmead, both of Torrington, Conn., assignors to The Torrington Company, Torrington, Conn.**
**Division of Ser. No. 265,706, June 25, 1972, Pat. No. 3,850,011. This application Feb. 7, 1974, Ser. No. 440,459**
**Int. Cl.² B23K** *27/00*
**U.S. Cl. 219—121 LM** **4 Claims**



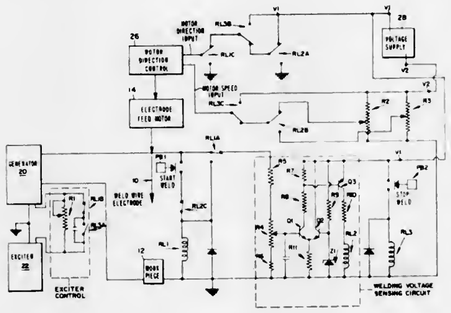
**1.** In a method of forming a latch pivot for the latch of a latch needle, having portions of the opposite walls of the slot in the needle displaced into a pivot hole of the latch, with a space between the displaced portions and with spaces separating the latch from each of the opposite walls of the slot, the improvement comprising the steps of: applying controlled heat from a high energy heat source against at least one of said displaced wall portions to at least melt a portion of said displaced wall portion so that molten metal is formed in the space between the two displaced wall portions; the extent of the molten metal being controlled to substantially fill said space without contacting the latch and allowing the molten metal to solidify to fuse the displaced wall portions together without changing the spaces separating the latch from each of the opposite walls of the slot.

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**3,934,110**
**WELDING SYSTEM AND METHOD FOR ARC STARTING AND CONTROL**
**Albert P. Denis, 2050 Brookview Road, Castleton, N.Y. 12033**
**Filed Mar. 11, 1974, Ser. No. 449,829**
**Int. Cl.² B23K** *9/12*
**U.S. Cl. 219—131 F** **2 Claims**

**1.** In a welding system including a welding power supply and an electrode feed motor, said power supply being adapted to be connected across a workpiece and a consumable electrode which is driven toward or away from said workpiece by said feed motor, the system for arc starting and control comprising:

means for initiating a welding operation,
first switch control means energized by said initiating means,
switchable voltage limiting means in said power supply and controlled by said first switch control means to limit the output of said power supply,
first switchable motor direction means controlled by said first switch control means for causing said feed motor to drive said consumable electrode toward said workpiece,
a circuit including said first switch control means which circuit is completed by the contact of said consumable electrode with said workpiece to de-energize said first switch control means thereby switching said switchable voltage limiting means to permit full output from said power supply and switching said first switchable motor direction means to cause said feed motor to drive said consumable electrode away from said workpiece,




a switchable voltage threshold device connected across said power supply by the de-energization of said first switch control means, said threshold device providing an output when the voltage across said power supply reaches a preset value,
second switch control means energized by the output of said threshold device,
second switchable motor direction means controlled by said second switch control means for causing said feed motor to drive said consumable electrode toward said workpiece, and
switchable motor speed means controlled by said second switch control means for causing said feed motor to feed said consumable electrode at a preset rate corresponding to the burn off rate.

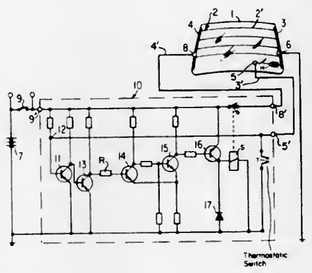
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### 3,934,111
### APPARATUS FOR HEATING A WINDOW

**Sergio Roselli, Pisa, Italy, and Gerd Sauer, Aachen-Laurensberg, Germany, assignors to Saint-Gobain Industries, Neuilly-sur-Seine, France**

**Filed Feb. 15, 1974, Ser. No. 442,831**
**Claims priority, application France, Feb. 16, 1973, 73.05468**
**Int. Cl.² H05B** *1/02*; **E06B** *7/12*
**U.S. Cl. 219—203** **9 Claims**

**1.** Apparatus for heating a vehicle window comprising a plurality of heating conductors applied to the window, a switch for connection of said conductors to a source of electrical energy, first means to close said switch in response to the presence of water at a first location adjacent the window, and second means at a second location to close said switch, independently of the operation of said first means, upon appearance of a temperature below a specified value at said second location, wherein said second location is inside the vehicle at a region sheltered from the space heater of the vehicle and



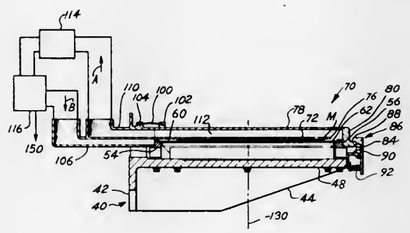

which reflects the temperature existing in the vicinity of said window.

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### 3,934,112
### DRYING AND FIXING TECHNIQUES FOR ELECTROGRAPHIC PRINTING SYSTEM

**Kishor M. Lakhani, Oklahoma City, Okla., assignor to Honeywell Information Systems, Inc., Waltham, Mass.**

**Filed Mar. 4, 1974, Ser. No. 447,700**
**Int. Cl.² H05B** *1/00*; **G03G** *15/00*
**U.S. Cl. 219—216** **21 Claims**



**1.** In an electrographic printing system including a print station for applying an electrostatic charge to a printing medium and a toner station for coating the printing medium with a toning liquid comprising a suspension of colored particles in a volatile carrier, the improved apparatus for evaporating the carrier from the medium and for fixing the colored particles permanently to the medium comprising in combination:
chamber means for defining a chamber having an inlet port and an opposed exit port;
means for moving the printing medium into the inlet port and out of the exit port in a predetermined direction at a predetermined speed;
platen means for supporting the printing medium in the chamber between the inlet port and the exit port, said platen means being substantially bisected by a first plane parallel to the predetermined direction and by a second plane perpendicular to the first plane, an inlet edge on the inlet side of the second plane adjacent the inlet port, an exit edge on the exit side of the second plane adjacent the exit port, a first side edge extended between the inlet edge and the exit edge on a first side of the first plane and a second side edge extending between the inlet edge and the exit edge on a second side of the first plane opposite the first side;
first electrical heater means for dissipating a first predetermined average quantity of electrical power per unit of area in a first side inlet area of the platen means located adjacent the first side edge between the inlet edge and the second plane;
second electrical heater means for dissipating a second predetermined average quantity of electrical power per unit of area in a first side exit area of the platen means located adjacent the first side edge between the exit edge and the second platen;
third electrical heater means for dissipating a third predetermined average quantity of electrical power per unit of area in a second side inlet area of the platen means located adjacent the second side edge between the inlet edge and the second plane;
fourth electrical heater means for dissipating a fourth predetermined average quantity of electrical power per unit of area in a second side exit area of the platen means located adjacent the second side edge between the exit edge and the second plane;
fifth electrical heater means for dissipating a fifth predetermined average quantity of electrical power per unit of area in a central inlet area of the platen means located between the first side inlet area and the second side inlet area on the inlet side of the second plane;
sixth electrical heater means for dissipating a sixth predetermined average quantity of electrical power per unit of area in a central exit area of the platen means located between the first side exit area and the second side exit area on the exit side of the second plane; and
circulation means for circulating a gas through the chamber at a predetermined rate, so that the vaporization rate of the carrier from the printing medium is maximized by the heater means and the concentration of carrier vapor in the chamber is maintained below a predetermined value by the circulation means.

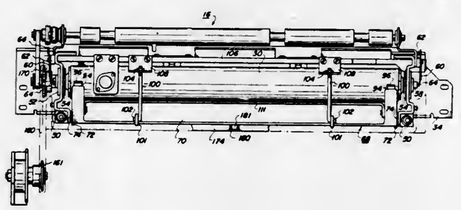


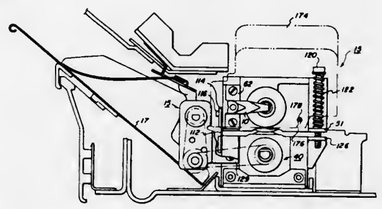
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### 3,934,113
### ROLL FUSER APPARATUS AND MOUNTING ARRANGEMENT THEREFOR

**Ari Bar-on, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.**

**Filed June 24, 1974, Ser. No. 482,677**
**Int. Cl.² H05B** *1/00*; **B21B** *27/06*
**U.S. Cl. 219—216** **9 Claims**





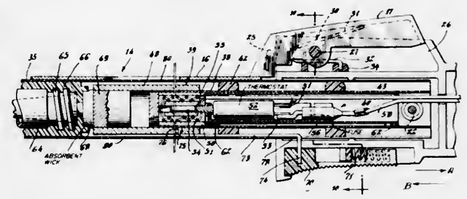
**1.** Fuser apparatus and support means therefor comprising:
a base member having a substantially planar portion;
means including a first pair of support brackets rigidly affixed to said base member;
a first fuser member supported only adjacent the ends thereof by said means including a first pair of support brackets;
means including a second pair of support brackets;
a second fuser member supported only adjacent the ends thereof by said means including a second pair of support brackets and independently of said first fuser member;
means for pivotally attaching said second pair of brackets to said first pair of brackets, said attaching means being disposed to one side of said fuser members adjacent the ends thereof;
said fuser members forming a nip through which copy sheets to be fused are moved, said nip being disposed intermediate said means for pivotally attaching said pairs of brackets; and
means for applying pressure contact between said fuser members, said pressure apply means being disposed to the opposite side of said fuser members from said attaching means.

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### 3,934,114
### HAIR STYLING DEVICE HAVING VAPOR GENERATING MEANS

**Siegfried Godel, Norwalk, and James J. Viola, Milford, both of Conn., assignors to Sperry Rand Corporation, Bridgeport, Conn.**

**Filed June 20, 1974, Ser. No. 481,215**
**Int. Cl.² H05B** *1/00*; **A45D** *1/02, 2/36*
**U.S. Cl. 219—222** **7 Claims**



**1.** An electric hair curling iron including means for selective generation of liquid vapors for styling the hair of the user therewith, comprising:
a. a handle casing and a hair curling body extending therefrom, said hair curling body including a heating chamber therein having openings in communication with an exterior surface of said body,
b. stationary heat generating means arranged in said handle casing and said body,
c. movable heat conducting means within said body disposed to receive heat from said stationary heat generating means,
d. liquid storage means spaced from said handle casing and at one end of said hair curling body and including liquid transfer means in communication with the liquid storage means,
e. said liquid transfer means being spaced from said movable heat conducting means to define therebetween a vaporization space within said heating chamber, said openings communicating with said vaporization space and
f. actuator means carried by the handle casing and operably associated with said movable heat conducting means for selectively bringing said movable heat conducting means into and out of engagement with said liquid transfer means to effect generation of vapors from the liquid in the liquid transfer means, whereby, vapors are formed in said vaporization space and pass exteriorly through said openings in the hair curling body.

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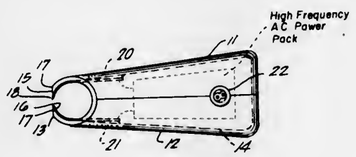
### 3,934,115
### METHOD AND APPARATUS FOR ELECTRIC SINGE CUTTING

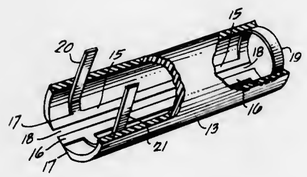
**Gerald H. Peterson, 650 Bush, San Francisco, Calif. 94108**

**Filed Sept. 25, 1973, Ser. No. 400,595**
**Int. Cl.² H05B** *3/02*; **B26D** *7/10*
**U.S. Cl. 219—223** **5 Claims**

**1.** The method of severing a thin material by the application of sufficient heat along a line on each of the opposite sides of said material in back-to-back relationship to sever such material along a line, that comprises inserting said material be-

tween two elongated, closely spaced strip electrical conductors, each having in opposition to the other a narrow edge, causing to travel along each of said conductors a high frequency current exhibiting in such travel the skin effect, and said edges of said conductors being sufficiently close enough together and the electron travel of each said currents being



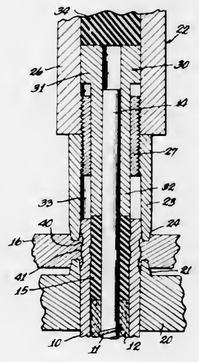
opposite one another at any instant such that the currents in said conductors exhibit the proximity effect whereby the current in each conductor is concentrated in the face of the edge of each conductor to heat the edges to the severing temperature for the material, and whereby said inserted material will be severed along such line by the heat generated along and between such opposed narrow edges.

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**3,934,116**
**ELECTRIC HEATER ASSEMBLIES**

**Donald M. Cunningham, Pittsburgh, and Ralph Santoro, Verona, both of Pa., assignors to Emerson Electric Co., St. Louis, Mo.**

**Division of Ser. No. 427,823, Dec. 26, 1973, Pat. No. 3,859,721. This application Oct. 23, 1974, Ser. No. 517,366**
**Int. Cl.² H05B** *1/00, 3/78*; **F24H** *1/00*
**U.S. Cl. 219—336** **4 Claims**



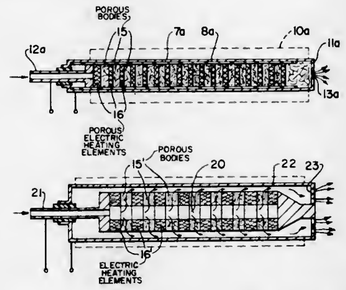
1. An electric heating element, comprising:
a metal tube,
a resistance member within said tube and insulating material within said tube to electrically insulate said resistance member from said tube,
a pair of metal terminal pins, each having one end within a respective tube end and mechanically and electrically connected to a respective end of said resistance member and having an opposite end extending outwardly of the respective tube end,
a metal mounting member for attaching said heating element to the wall of a container, said mounting member having a hole through which one end of said tube passes with close tolerance,
means holding said tube one end within said mounting member hole and providing a sealing connection therebetween, said means including metal deformation adjacent to said tube end and the surface defining the hole in said mounting member, and an elastomeric bushing closely fitting within said tube one end and closely around the terminal pin thereat, said bushing being locked within said tube one end under axial compression.

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**3,934,117**
**ELECTRIC FLUID HEATING DEVICE**

**Hermann J. Schladitz, Plantschweg 74, Munich, Germany**

**Filed Mar. 21, 1974, Ser. No. 453,497**
**Claims priority, application Germany, Mar. 27, 1973, 2315268**
**Int. Cl.² H05B** *3/10*; **F24H** *1/10*
**U.S. Cl. 219—382** **3 Claims**




1. An electric heating device for heating fluid media, comprising; disc-shaped porous bodies consisting of a plurality of felted together polycrystalline metal whiskers grown out of the gas phase and connected to one another at their points of contact, disc-shaped electric heating elements alternating with said bodies to form a column for connection to an electric voltage applying means, said disc-shaped bodies and elements being centrally apertured to form a central longitudinal passage along the column, means for delivering the medium to be heated to said passage, and a casing enclosing the column to form a surrounding space, the passage communicating with said space through at least the disc-shaped porous bodies, said space having an outlet for the heated medium, the total electrical resistance of said elements being greater than the total electrical resistance of said porous bodies.

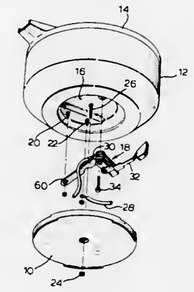
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**3,934,118**
**VARIABLE WATTAGE KETTLE**

**Morris E. Jorgenson, 67 Bythia St., Orangeville, Ontario; Paul B. Sheldon, 48 Tupper St., Brockville, Ontario; Jack A. Sherman, 23 Forest Park, and Peter S. Wardell, 63 Rustic Crescent, both of Orangeville, Ontario, all of Canada**

**Filed June 27, 1974, Ser. No. 483,892**
**Int. Cl.² F27D** *11/02*
**U.S. Cl. 219—442** **1 Claim**

1. An electric kettle comprising a covered metallic vessel having a lid sealedly attached thereto, said lid having a handle and spout formed integrally therein, a cavity formed in the lower surface of said vessel for housing a thermostatic device, said vessel having a sheath type heater sealedly mounted in the bottom of said vessel to heat water in said vessel, the ends of said heater passing in a sealed relation through the lower surface of said vessel into said cavity, a power supply cord also being supplied to said cavity, said cavity being covered by an insulating base plate, said power supply cord being connected in a circuit comprising said heater and said thermostatic device, said thermostatic device being mounted in good heat transfer relationship with the lower surface of said vessel so as



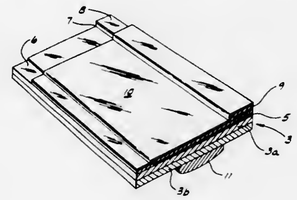
to sense the temperature of water in said vessel, said thermostatic device having handle means extending through said base plate so as to enable the operating temperature range of said thermostatic device to be conveniently adjusted from the exterior of said base plate.

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**3,934,119**
**ELECTRICAL RESISTANCE HEATERS**

**George Trenkler, East Providence, R.I., assignor to Texas Instruments Incorporated, Dallas, Tex.**

**Filed Sept. 17, 1974, Ser. No. 506,680**
**Int. Cl.² H05B** *3/16*
**U.S. Cl. 219—543** **7 Claims**



1. An electrical resistance heater on a flexible metal substrate comprising:
an insulating layer of a cured resin selected from the group consisting of polyimide and polyamide-imide resins bonded to a surface of said substrate;
a second layer having an electrical conductivity substantially greater than that of said insulating layer bonded at one side of said second layer to said insulating layer, said second layer comprising a cured resin selected from the group consisting of polyimide and polyamide-imide resins having dispersed therein at least approximately 60% by weight of graphite flakes, said second layer having spaced portions electrically connectable in an external electrical circuit for directing electrical current through said second layer; and
at least one electrically conductive stripe bonded to one of said spaced portions of said second layer for providing flexible electrical connection of said one portion of said second layer in said external electrical circuit, said stripe comprising a cured resin selected from the group consisting of polyimide and polyamide-imide resins having dispersed therein flakes of a conductive metal;
said layers being flexible and said second layer and stripe having electrical conductivities which are not substantially degraded during operation at temperatures of at least 200°C. for extended periods of time.



**3,934,120**
**DEVICE FOR ELECTROCONDUCTIVE CONNECTION AND READING**

**Nikolay Maymarev, 15, Kyrkogatan, Sundbyberg, Sweden (S-172 32)**

**Filed July 18, 1973, Ser. No. 380,468**
**Claims priority, application Sweden, July 21, 1972, 9601/72**
**Int. Cl.² G06K** *7/06, 19/06*
**U.S. Cl. 235—61.11 A** **12 Claims**

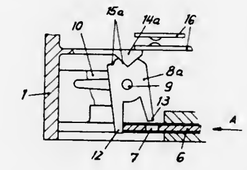
1. A data storage and retrieval memory device comprising:
a. at least one exchangable sheet of material which is electrically substantially non-conductive having a plurality of conductive paths and a plurality of data storage positions on at least one side, each data storage position defined by a gap between two conductive paths, at least one individual conductive path being provided for each data position, each data position adapted to be individually coded by the application on selected positions of marking material which is electrically substantially conductive;
b. a stationary pad on which said sheet is removably supported in overlying relationship having first means with a plurality of contacts for releasably engaging said side of said sheet said contacts including at least an individual one of said contacts contacting each said individual conductive paths provided for each data storage position;
c. second means coupled to said plurality of contacts providing an electrical readout device for sensing the presence and absence of said marking material at each of said data storage positions while said sheet is stationary on said stationary pad and said contracts are stationary; and
d. wherein said gaps defining data storage positions are located so as to be visibly exposed and available for coding even during sensing to permit a user to make marks closing said gaps using a conductive material as well as to open the gaps by removal of said material and can correlate marks on said sheet with a response of said electrical readout device by a visual inspection of said gaps.

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**3,934,121**
**COUNTER MEANS**

**Kurt Kratt, Aldingen; Josef Gruler, Aixheim; Guenther Hauser, Trossingen, and Reinhard Irion, Aldingen, all of Germany, assignors to J. Hengstler K.G., Aldingen, Germany**

**Filed July 12, 1974, Ser. No. 488,177**
**Claims priority, application Germany, July 18, 1973, 2336544**
**Int. Cl.² G06K** *7/04, 19/06*
**U.S. Cl. 235—61.6 R** **7 Claims**



1. Counter means for a counting of events which comprises:
a counter;
a code detector adapted to receive a coded punched card in a pre-determined position; and
counter control means operable to control said counter in response to the arrival of said card to said predetermined position;
said code detector comprising replaceable, pivoted code detector elements, which represent a pre-determined code and are adapted to enter holes in said punch card, if, and only if, said holes also represent said pre-determined code;

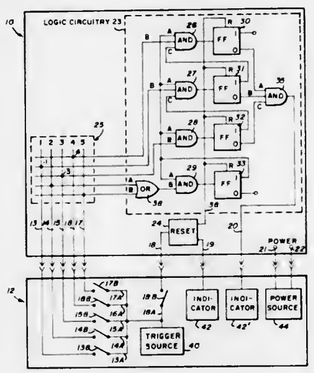
said code detector preventing movement of said card to said pre-determined position unless said code detector elements had entered said holes in said card;
said code detector comprising further a plastics material structure which carries resilient holders, said resilient holders disposed on opposite ends of said code detectors and formed with locating slots which said code detector elements snap in said slots and the axis of said code detector elements in pre-determined positions corresponding to said pre-determined code;
said plastic material structure designed to guide said card as it is moved toward said pre-determined position and carrying spring detents adapted to cooperate with said code detector elements to yieldably hold each code detector element in different angular positions;
said code detector element provided with peripheral notches and stub shafts located at its opposite ends; with each of said slots forming a bearing for rotatably mounting one of said stub shafts with its axis in a predetermined position; and
said spring detents adapted to enter said notches to yieldably hold said code detector elements in their angular position.

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## 3,934,122
## ELECTRONIC SECURITY CARD AND SYSTEM FOR AUTHENTICATING CARD OWNERSHIP

**James A. Riccitelli, 2257 Glenkirk Drive, San Jose, Calif. 95124**

**Filed Aug. 15, 1974, Ser. No. 497,734**
**Int. Cl.² G11C 7/00, 19/00**
**U.S. Cl. 235—61.7 B** **9 Claims**



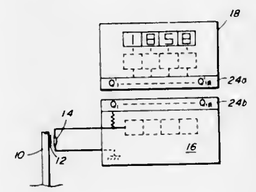

1. A system for authenticating the ownership of an electronic security card comprising:
a security card means including logic circuitry which is responsive to a plurality of input signals and is adapted to provide an output signal when said input signals are in a preselected sequence and to develop a feedback control signal which is applied to and deactivates said logic circuitry when said input signals are not in said preselected sequence; and
terminal means for receiving said security card means, said terminal means including a signal source operative to provide a plurality of input signals, a switch means for selectively interconnecting said signal source means to said logic circuitry so as to apply a sequence of said input signals to said logic circuitry when said security card means is received by said terminal means, and indicating means responsive to said output signal and operative to indicate that said selective interconnection occurs in a predetermined manner.

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## 3,934,123
## EVENT RECORDER WITH CODED REMOVABLE DISPLAY

**Gottfried Maurer, Needham; Patrick S. Harris, Medfield, and Wayne H. Ledder, Medway, all of Mass., assignors to Viable Systems, Inc., Needham, Mass.**

**Filed Feb. 11, 1974, Ser. No. 441,454**
**Int. Cl.² G07C 3/10; H03K 21/18**
**U.S. Cl. 235—92 PD** **5 Claims**



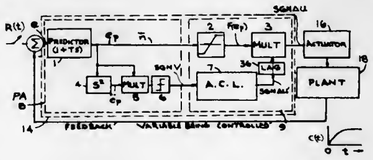

1. A recorder to count the number of events performed by a machine, which comprises in combination:
a. an event recorder which includes:
i. an interface circuit in electrical communication with the machine and adapted to provide a signal, which signal relates to an event performed by the machine;
ii. at least one digital counter in communication with the interface circuit to record the number of events;
iii. a first connector in communication with the counter; and
iv. a first power supply to effect the transfer of the signal from the circuit and to power the counter, which first power supply is isolated from the machine;
b. a display unit which includes:
i. a second connector adapted to be removably mated with the first connector;
ii. at least one decoder;
iii. means to display digitally the decoded information which reflects the status of the counter; and
iv. a second power supply disposed within the decoder to both power the counter to transfer the information stored therein and to drive the decoder in the display unit when the first and second connectors are mated.

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## 3,934,124
## SELF-ORGANIZING CONTROLLERS

**Edwin Z. Gabriel, 318-B South St., Eatontown, N.J. 07724**

**Filed June 24, 1974, Ser. No. 482,152**
**Int. Cl.² G05B 13/02**
**U.S. Cl. 235—150.1** **3 Claims**




1. In a plant controller of the type that includes:
a summing device responsive to command and feedback signals, respectively, to provide an output error signal *e;*
a predictor coupled to the output of said summing device for providing a predicted error signal *ep* as a function of said error signal e;
a differentiating means coupled to the output of said predicted error signal *ep;*
first multiplier means for producing a product of said predicted error signal *ep* and the output of said differentiated signal;



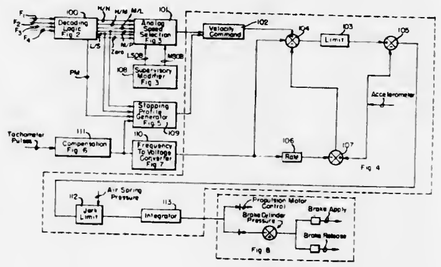
actuation correlation logic (ACL) for producing a pulse-width modulation (PWM) signal as a function of the output of said multiplier means, said PWM constituting the investigative part of a control action;
a lag circuit coupled to the output of the actuation correlation logic;
a second multiplier means responsive to lagged output of the said ACL and amplitude limited output of said predictor to produce an actuation logic output signal (ΔU), whereby said ACL enables said plant controller to be insensitive to relatively high frequency noise and to be more cautious in making a polarity decision,
the improvement in said plant controller that comprises:
said 1st and second multiplier means being analog multiplier means;
one input of said first multiplier means being directly coupled to the output of said predictor;
the second input of said first multiplier means being directly coupled to the output of said differentiating means; and
a bivalue function means coupled between the output of said first multiplier and input of said ACL.

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## 3,934,125
## AUTOMATIC VEHICLE OPERATION SYSTEM

**Samuel J. Macano, Macedon, N.Y., assignor to General Signal Corporation, Rochester, N.Y.**

**Filed Sept. 28, 1973, Ser. No. 401,727**
**Int. Cl.² G06F 15/48; B01L 3/08**
**U.S. Cl. 235—150.2** **14 Claims**



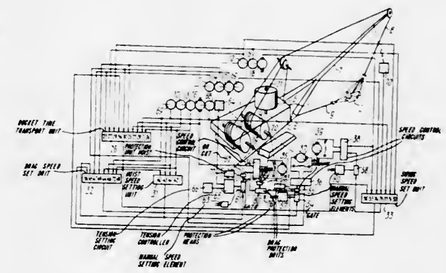

1. Vehicle control apparatus for accurately stopping a self-propelled vehicle within a predetermined distance at a predetermined point after receipt of a stop command by the automatic control of propulsion and braking apparatus on said vehicle including,
speed control means to control said vehicle to a velocity equal to a command velocity,
means for receiving said stop command,
digital registering means,
means for storing, responsive to receipt of said stop command for storing in said registering means a quantity lineraly related to said predetermined distance,
signal producing means responsive to vehicle wheel rotation for producing a signal related to wheel rotation,
decrementing means connected to said signal producing means for decrementing the quantity stored in said digital registering means in response to said signal, and
means connected to said registering means for generating a command velocity proportional to the value stored in said registering means.

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## 3,934,126
## CONTROL DEVICE FOR A DRAGLINE EXCAVATOR

**Oleg Alexandrovich Zalesov, Festivalnaya ulitsa, 7, kv. 134; Mikhail Sergeevich Lomakin, ulitsa Tkatskaya, 33/35, kv. 20; Vadim Nikolaevich Merkulov, Chernomorsky bulvar, 17, korpus 1, kv. 53; Leonid Davidovich Pevzner, ulitsa Udaltsova, 4, kv. 468; Gugo Borisovich Peters, Mosfilmovskaya ulitsa, 43/40, kv. 107; Vladimir Dmitrievich Potapov, Svobodny prospekt, 14-5, kv. 150; Vladimir Vasilievich Rzhevsky, Mosfilmovskaya ulitsa, 17-25, kv. 196; Lev Ivanovich Tolpezhnikov, Bolshaya Cheremushkinskaya ulitsa, 12, kv. 10; Anatoly Danilovich Yarizov, Starokonjushenny pereulok, 33, kv. 26, all of Moscow; Viktor Modestovich Mamkin, pereulok Druzhby, 6, kv. 60, Sverdlovsk; Veniamin Lvovich Raskin, ulitsa Khmeleva, 10, kv. 21, Sverdlovsk; Boris Ivanovich Satovsky, prospekt Ordzhonikidze, 3, kv. 77, Sverdlovsk, and Grigory Matveevich Yartsev, pereulok Druzhby, 6, kv. 60, Sverdlovsk, all of U.S.S.R.**
**Continuation of Ser. No. 429,700, Dec. 28, 1973, abandoned.**

**This application Sept. 23, 1974, Ser. No. 508,183**
**Int. Cl.² E02F 3/46; G06G 7/48**
**U.S. Cl. 235—150.2** **75 Claims**




1. A control device for a dragline excavator comprising a bucket, a hoist rope and a drag rope of said bucket, a platform, a mechanism for hoisting said bucket, a mechanism for dragging said bucket, and a mechanism for swinging said platform of the dragline excavator; wherein all of said mechanisms move the bucket in a digging operation and in the transportation of the bucket to the dumping point and to the point where the bucket is lowered on the face of an excavation; wherein the control device comprises: a transducer for sensing the length increments of said hoist rope as the bucket is transported from the breakout point on the face of said excavation to the dumping point; a transducer for sensing the length increments of said drag rope as the bucket is transported from the breakout point of the face of said excavation to the dumping point; a transducer for sensing the swing angle of said platform as the bucket is transported from the breakout point on the face of said excavation to the dumping point; a transducer for sensing the length increments of the hoist rope as the bucket is transported from the dumping point to the point where it is lowered on the face of said excavation; a transducer for sensing the length increments of the drag rope as the bucket is transported from the dumping point where it is lowered on the face of said excavation; a transducer for sensing the swing angle of the platform as the bucket is transported from the dumping point to the point where it is lowered on the face of said excavation; a transducer for sensing the speed of said bucket hoisting mechanism; a transducer for sensing the speed of said bucket dragging mechanism; a transducer for sensing the speed of said platform swinging mechanism; a speed control unit of the bucket hoisting mechanism for controlling the bucket hoisting mechanism; a speed control unit of the bucket dragging mechanism for controlling the bucked dragging mechanism; a speed control unit of the platform swinging mechanism for controlling the platform swinging mechanism; a bucket transportation time calculator unit hav-

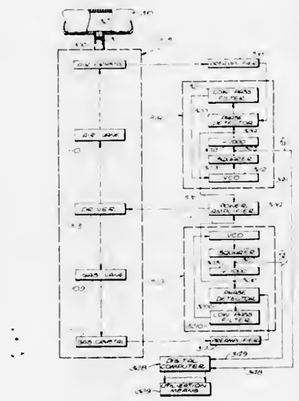
ing a plurality of inputs and an output; said inputs of the bucket transportation time calculator being connected to the output of said hoist rope length increment transducer as the bucket is transported from the breakout point on the face of said excavation to the dumping point, to the output of said drag rope length increment transducer as the bucket is transported from the breakout point on the face of said excavation to the dumping point, to the output of said platform swing angle transducer as the bucket is transported from the breakout point on the face of said excavation to the dumping point, to the output of said hoist rope length increment transducer as the bucket is transported from the dumping point to the point where it is lowered on the face of said excavation, to the output of said drag rope length increment transducer as the bucket is transported from the dumping point to the point where it is lowered on the face of said excavation, to the output of said platform swing angle transducer as the bucket is transported from the dumping point to the point where it is lowered on the face of said excavation, to the output of said bucket hoisting mechanism speed transducer, and to the output of said bucket dragging mechanism speed transducer; a bucket hoisting mechanism speed setter unit having a plurality of inputs and outputs; the first input of said setter being connected to the output of said bucket transportation time calculator, the second input of said setter being connected to the output of said hoist rope length increment transducer as the bucket is transported from the breakout point to the dumping point, the third input of said setter being connected to the output of said hoist rope length increment transducer as the bucket is transported from the dumping point to the point where it is lowered on the face of said excavation, and the fourth input of said setter being connected to the output of said bucket hoisting mechanism speed transducer, said output of the bucket hoisting mechanism speed setter being connected to said bucket hoisting mechanism speed control unit; a manual speed setting element of the dragging mechanism; a bucket dragging mechanism speed setter unit having a plurality of inputs and an output, the first input of said bucket dragging mechanism speed setter being connected to the output of said bucket transportation time calculator, the second input being connected to the output of said drag rope length increment transducer as the bucket is transported from the breakout point to the dumping point, the third input being connected to the output of said hoist rope length increment transducer as the bucket is transported from the breakout point to the dumping point, the fourth input being connected to the output of said drag rope length increment transducer as the bucket is transported from the dumping point to the point where it is lowered on the face of said excavation, the fifth input being connected to the output of said hoist rope length increment transducer as the bucket is transported from the dumping point to the point where it is lowered on the face of said excavation, the sixth input being connected to the output of said manual speed setting element of the dragging mechanism, the seventh input being connected to the output of said bucket hoisting mechanism speed setter, and said output of the bucket dragging mechanism speed setter being connected to said bucket dragging mechanism speed control unit; a platform swinging mechanism speed setter unit having a plurality of inputs and an output; the first input of said platform swinging mechanism speed setter being connected to the output of said bucket transportation time calculator, the second input of said platform swinging mechanism speed setter being connected to the output of said platform swing angle transducer as the bucket is transported from the breakout point to the dumping point, the third input of said platform swinging mechanism speed setter being connected to the output of said platform swing angle transducer as the bucket is transported from the dumping point to the point where it is lowered on the face of said excavation, the fourth input of said platform swinging mechanism speed setter being coupled to the output of said platform swinging speed transducer, and the output of said platform swinging mechanism speed setter being connected to said platform swinging mechanism speed contol unit.

**3,934,127**

## GRAVITOMETERS

**Gerald Lance Schlatter, and Charles Eveleigh Miller, both of Boulder, Colo., assignors to International Telephone and Telegraph Corporation, New York, N.Y.**

**Filed Oct. 23, 1974, Ser. No. 517,212**
**Int. Cl.² G01N 9/00; G06F 7/00**
**U.S. Cl. 235—151.34** **34 Claims**



1. A gravitometer comprising: a twin cell assembly having first and second chambers to house first and second fluids, respectively, of the same or different densities at substantially the same temperature and pressure; electromechanical feedback oscillator means including first and second vanes mounted in said first and second chambers, respectively, and means to oscillate both of said first and second vanes at the same or different first and second vibrational frequencies, respectively, said oscillator means having first and second output leads with first and second respective signals thereon of first and second respective frequencies directly proportional to said first and second vibrational frequencies, respectively, said first and second signals each having first annd second characteristic variables, said first and second variables of said first signal being the frequency $f_a$ thereof and the period $T_a$ thereof, respectively, said first and second variables of said second signal being the frequency $f_b$ thereof and the period $T_b$ thereof, respectively; and computer means connected from said oscillator means output leads having an output lead means for producing an output thereon directly proportional to the ratio of the density of said second fluid to that of said first fluid as a function of only the first variable of one signal and only the second variable of the other signal.

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**3,934,128**

## SYSTEM AND METHOD FOR OPERATING A STEAM TURBINE WITH IMPROVED ORGANIZATION OF LOGIC AND OTHER FUNCTIONS IN A SAMPLED DATA CONTROL

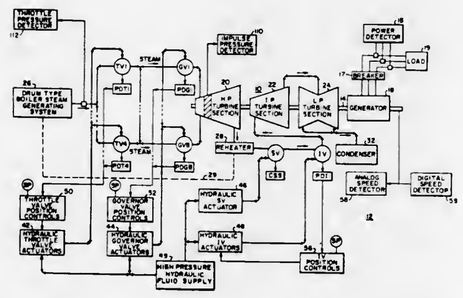
**Robert Uram, East Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**Continuation of Ser. No. 247,551, April 26, 1972, abandoned.**
**This application Oct. 16, 1973, Ser. No. 407,024**
**Int. Cl. F01d 17/02; G05b 15/00; G06f 15/06**
**U.S. Cl. 235—151.21** **16 Claims**

1. A system for operating a steam turbine in an electric power plant, said system comprising an arrangement of throttle and governor valves for supplying steam to the turbine, means for actuating said valves to position said valves in accordance with valve position signals, means for generating



signals representative of the turbine speed and the turbine load and other turbine variables, a digital controller having means for generating a speed setpoint and means for generating a load setpoint, means for coupling the turbine speed and load signals and the other turbine variable signals to said digital controller on a periodic or demand basis, means for registering the coupled speed and load and other turbine variables in said digital controller, said digital controller including a speed control for periodically generating valve position outputs in response to the turbine speed and speed setpoint during turbine startup, said digital controller further including a load control for periodically generating valve position outputs in response to the turbine load and load setpoint during turbine load operation, means for continuously generating the valve position signals in response to the valve position outputs, said coupling means including means for generating contact signals representative of predetermined turbine variables and for scanning such signals on a predetermined basis for registration in said digital controller, said coupling means further including means for converting input analog signals to digital signals and for periodically scanning the digital signals for registration in said digital controller, an operator panel having switching means for generating control mode and control parameter signals, means for coupling the operator panel signals to said digital controller and for registering such signals in said digital controller, said speed and load controls having a plurality of control elements and mode switching means for determining which elements are operative in the functioning of the controls, a logic control for generating mode control outputs for operating said mode switching means in response to the registered control mode panel signals and the registered turbine contact signals, said digital controller including means for generating synchronous outputs to trigger the operation of said speed and load controls on a periodic basis, and means for operating said logic control on demand in response to changes in the panel or turbine contact signals.



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**3,934,129**

## APPARENT WIND DIRECTION INDICATOR

**Lucian W. Taylor, Los Altos, and George J. Eilers, Redwood City, both of Calif., assignors to Velcon Filters, Inc., San Jose, Calif.**

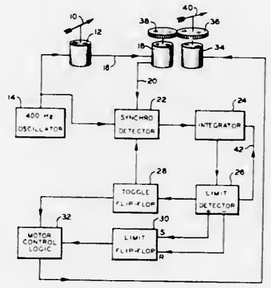
**Division of Ser. No. 347,380, April 3, 1973, Pat. No. 3,881,095. This application Aug. 21, 1974, Ser. No. 499,253**
**Int. Cl.² G01P 13/02; G06G 7/18**
**U.S. Cl. 235—151.34** **14 Claims**

1. An apparatus for indicating the average apparent wind direction, comprising:

a source for generating a signal representing instantaneous apparent wind direction;

a source of a reference signal;

means responsive to said instantaneous apparent wind direction signal, said reference signal and an average apparent wind direction indication for producing an average error signal; and



means responsive to said average error signal for indicating the average apparent wind direction.

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**3,934,130**

## DIGITAL DIFFERENTIAL ANALYZER

**Richard Lynn Friberg, Waynesboro, Va., assignor to General Electric Company, Salem, Va.**

**Filed Aug. 22, 1974, Ser. No. 499,509**
**Int. Cl.² G06J 1/02**
**U.S. Cl. 235—150.31** **11 Claims**



1. A digital differential analyzer circuit for generating an output signal representing an incremental change of an integral scaled by a factor other than powers of the radix of the number system employed comprising:

a. means for storing a first digital number representing the current value of a first variable;

b. means for storing a second digital number representing a selectable remainder size;

c. a memory register for storing a new remainder number;

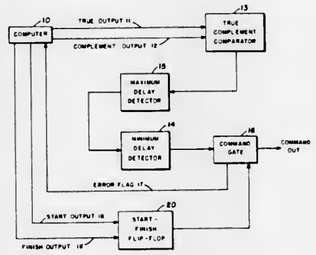
d. arithmetic and logic means responsive to an input signal representing an incremental change of a second variable for algebraically combining the first digital number and the number in the memory register to form a new remainder number, for comparing the magnitude of the new remainder number to the magnitude of the selected remainder size number, for causing said new remainder number to be stored in the memory register if the magnitude of the new remainder number is less than the magnitude of the remainder size number, for forming the difference between the magnitude of the new remainder number and the remainder size number if the magnitude of the new remainder number is greater than the magnitude of the remainder size number, and for storing said difference in the memory register; and

e. circuit means for generating said output signal when the magnitude of the new remainder number is greater than the magnitude of the remainder size number.

## 3,934,131
## OUTPUT CONTROLLER FOR INITIATING DELAYED OR CONDITIONAL COMMANDS VIA A GENERAL PURPOSE COMPUTER

**James A. Perschy, Laurel, Md., assignor to The Unites States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed Jan. 6, 1975, Ser. No. 538,657**
**Int. Cl.² G06F** *11/00*
**U.S. Cl. 235—153 A** **6 Claims**




**1.** A command controller for a computer system comprising, in combination,

a computer means for outputting a data signal corresponding to each desired command,

comparator means responsive to said data output signal for detecting data errors within said data signal,

timing error detecting means for checking said data signal corresponding to the desired command output for timing errors relative to a pair of preselected time limits corresponding respectively to minimum and maximum permitted times within said computer system for outputting of a command,

said computer means further generating a signal means demarcating the desired beginning and ending time limits for said desired output command, and

means responsive to said comparator means and said timing error detecting means for generating an error flag signal fed back to said computer means if a data or timing error is detected for said command output signal from said computer means.

## 3,934,132
## SHIFT NETWORK FOR DUAL WIDTH OPERANDS

**Daniel J. Desmonds, Roseville, Minn., assignor to Control Data Corporation, Minneapolis, Minn.**

**Filed June 10, 1974, Ser. No. 477,884**
**Int. Cl.² G06F** *7/00*
**U.S. Cl. 235—164** **1 Claim**

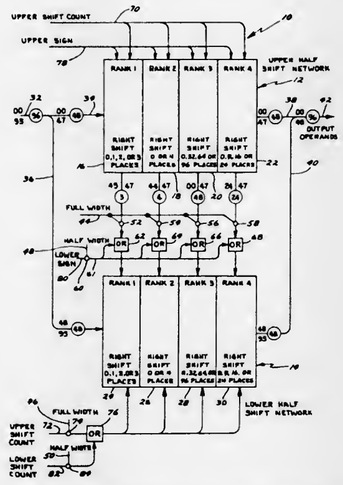
**1.** A shift network which may operate in two alternate shift modes, the shift mode being preselected, the first mode being the shifting of a single full width input operand and the second mode being the shifting of two independent one half width input operands, said network comprising

an upper half section,

said section being comprised of a plurality of ranks of logic gates which operate on individual bits of operands to switch said operand bits to different outputs corresponding to a partial shift to be performed by said rank, connected in serial order, each rank being responsive to a preselected control signal to perform the designated partial shift such that all of said ranks can perform any operand shift of a designated possible group of shifts, said upper half section receiving as an input in said first mode the upper half of full width operands and in said second mode the upper operand of a pair of operands, said input depending on the preselected shift mode,

a lower half section,

said section being comprised of a plurality of ranks of logic gates which operate on individual bits of operands to switch said operand bits to different outputs corresponding to a partial shift to be performed by said rank, connected in serial order each rank being responsive to a preselected control signal to perform a designated partial shift such that all of said ranks can perform any operand shift of a designated possible group of shifts, said lower half section receiving as an input in said first mode the



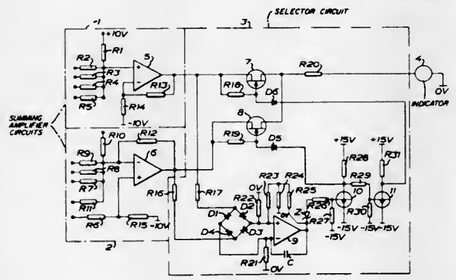

lower half of full width operands and in said second mode the lower operand of a pair of operands, said input depending on the preselected shift mode; and

means for connecting said upper and lower half sections comprised of logic gates responsive to control signals designating the preselected shift mode of said shift network to transfer bits of operands from the upper half section to the lower half section in the full width mode and to transfer sign extension bits in the half width mode to the lower half section.

## 3,934,133
## APPARATUS FOR THE CORRECTION OF SHEAR FORCES

**Leif Ragnvald Sten, Staffanstorp, and Nils Runol Gustav Ohlsson, Akarp, both of Sweden, assignors to Kockums Mekaniska Verkstads AB, Malmo, Sweden**

**Filed May 22, 1973, Ser. No. 362,992**
**Claims priority, application Sweden, May 30, 1972, 7069/72**
**Int: Cl.² G06G** *7/12*; **H04Q** *3/00*
**U.S. Cl. 235—193** **2 Claims**



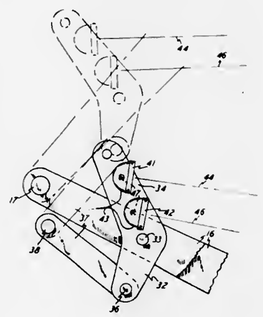

**1.** An apparatus for correcting a signal representing total shear force in a given cross-section of a ship for the distribution of shear forces within said section, comprising means for applying said signal to a first summing amplifier means means for applying a signal representing at least part of the entire cargo forward of the selected cross-section to said first summing amplifier means, means for applying said total shear force signal to a second summing amplifier means, means for applying a signal representing at least part of the cargo aft of the selected cross-section, to said second summing amplifier means, selector circuit means connected to said amplifier means and for passing on the numerically largest signal of the two output signals obtained from said amplifier means and means for indicating said largest signal.



## 3,934,134
## LAMP MOUNTING FOR A MATERIAL-HANDLING TRACTOR

**Hilary S. Wassel, Terre Haute, Ind., assignor to J. I. Case Company, Racine, Wis.**

**Filed Mar. 3, 1975, Ser. No. 554,756**
**Int. Cl.² B60Q** *1/00*
**U.S. Cl. 240—57** **8 Claims**



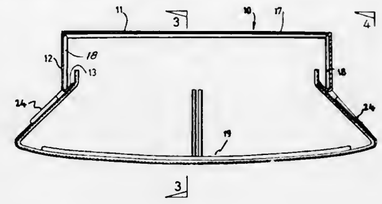
**1.** In a tractor-mounted material-handling bucket apparatus of the type including a tractor and a boom pivotally mounted on the tractor for up and down pivotal movement and a bucket pivotally supported by said boom and being movable between a lowered loading position and a raised dumping position, the improvement comprising a lamp mounting member movably connected with said boom for movement in response to and according to pivotal movement of said boom, an alignment member connected with said lamp mounting member for moving said lamp mounting member relative to said boom and thereby align said lamp mounting member according to but different from the various up and down pivoted positions of said boom on said tractor, and a lamp attached to said lamp mounting member for illuminating toward said bucket.

## 3,934,135
## FLUORESCENT LAMP FIXTURE

**Leon Szer, 35 Bealiba Road, South Caulfield, Victoria, 3162, Australia**

**Filed July 5, 1973, Ser. No. 376,359**
**Claims priority, application Australia, Feb. 1, 1973, 51683/73**
**Int. Cl.² F21S** *1/02*; **F21V** *3/02*
**U.S. Cl. 240—78 LD** **1 Claim**

**1.** A fluorescent light fitting adapted to be mounted on a surface for projecting light therefrom which includes: a base plate adapted for securement to said surface, said plate having inwardly-directed flanges; a removable diffuser for mounting to said base plate and for projecting said light in a predetermined manner, said diffuser having outwardly-directed flanges which are adapted to inter-engage said inwardly-directed flanges of said base plate so as to hold said diffuser in position with respect to said base plate; and end caps for mounting to the ends of said base plate, each of which have extensions complementary to said base plate for frictional inter-engagement with said base plate and where the end caps extend below the base plate and each has an inwardly-directed lower flange, which lower flange defines a required shape for the diffuser, the diffuser being flexible, and when located with its

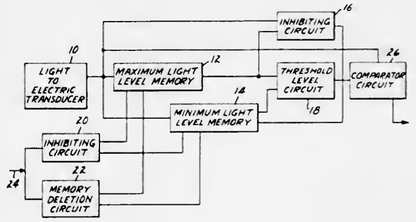


ends beneath the said lower flanges, assumes the required shape; wherein said diffuser has a main surface which lies beneath the lower flanges, an intermediate inwardly-directed flange along each edge of the main surface, and the outwardly-directed flange extends from the intermediate flanges; and wherein the lower flange of the end caps are so formed relative to the intermediate flanges of the diffuser, that the diffuser can hinge at either end of the lower flanges.

## 3,934,136
## THRESHOLD SIGNAL CIRCUITRY FOR SCANNING APPARATUS

**David J. Schoon, Marine on St. Croix, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.**

**Filed May 6, 1974, Ser. No. 466,976**
**Int. Cl.² H01J** *39/12*
**U.S. Cl. 250—214 R** **7 Claims**




**1.** A circuit for providing a scanning threshold signal for a scanning apparatus having a light to electric transducer, said signal determined in response to the output of said transducer produced during a threshold signal determining scan of a field comprising:

a first memory circuit portion connected to the output of the light to electric transducer for storing a signal indicative of the maximum output of the light to electric transducer during the threshold signal determining scan;

a second memory circuit portion connected to the output of the light to electric transducer for storing a signal indicative of the minimum output of the light to electric transducer during the threshold determining scan;

inhibiting circuit portion connected to said transducer, said first memory circuit portion and said second memory circuit portion for preventing said second memory circuit portion from responding to the output from the light to electric transducer that is less than a predetermined portion of the signal stored by said first memory circuit portion; and

a threshold level circuit portion connected for receiving said signal stored by said first memory circuit portion and said signal stored by said second memory circuit portion

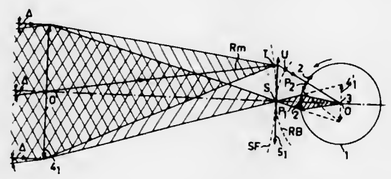
for providing a threshold level signal that is less than said signal stored by said first memory circuit portion and greater than said signal stored by said second memory circuit portion.

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**3,934,137**
**OPTICAL SCANNING DEVICE**

**Fernand René Loy, Choisy Le Roi, France, assignor to U.S. Philips Corporation, New York, N.Y.**

**Filed Aug. 5, 1974, Ser. No. 494,392**
**Claims priority, application France, Aug. 7, 1973, 73.28824**
**Int. Cl.² G02B** *27/17*; **H04N** *3/06*
**U.S. Cl. 250—236** **4 Claims**



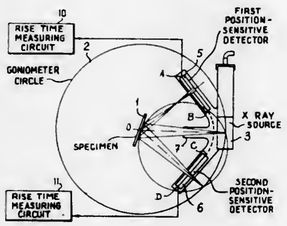

1. An optical scanning device in which radiation beams originating from different zones of a field of view are consecutively converged onto a radiation sensitive detector, which device comprises an objective, a rotatable opitcal cylinder, at least one optical convergence system on the circumference of the cylinder, the detector being disposed in the center of rotation of the cylinder, and an optical projection system means between the objective and the cylinder for directing a radiation beam which passes through the objective towards the detector and for optically conjugating the center of the objective with the center of rotation of said cylinder.

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**3,934,138**
**APPARATUS FOR MEASURING SURFACE STRESS BY X-RAY DIFFRACTION**

**Jeans Bens, Paris, France, assignor to Compagnie General de Radiologie, Paris, France**

**Filed Mar. 27, 1974, Ser. No. 455,513**
**Claims priority, application France, Mar. 30, 1973, 73.11617**
**Int. Cl.² G01N** *23/20*
**U.S. Cl. 250—278** **4 Claims**



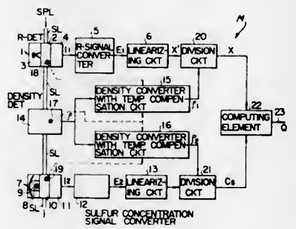

1. Apparatus for measuring stress on the surface of a polycrystalline body by X-ray diffraction, by means of measuring the variation of the interplanar spacings of a set of lattice planes as a function of the angle $\psi$ between the normal to the lattice planes diffracting the incident primary X-ray beam and the normal, at the point of impact of said primary beam to the surface of the body whose stress is to be measured, said apparatus comprising in combination: a single X-ray source for emitting a narrow primary X-ray beam rendered quasi-monochromatic by filtering and having a focal point whereon the X-ray beam originates; first and second position-sensitive radiation detectors having elongated collector electrodes for respectively simultaneously receiving two secondary X-ray beams diffracted by a single set of lattice planes at the surface of said body and for respectively delivering signals for simultaneously localizing, by means of an electronic measuring circuit, the respective points of penetration of said secondary beams into said detectors, said detectors being assembled fixedly and integrally with said X-ray source, summetrically to said X-ray source and primary X-ray beam and facing the same side of said body surface as said X-ray source; and means for pivotably mounting the integral assembly made up from said X-ray source and said symmetrically positioned detectors for rotation about an axis traversing said primary X-ray beam at said point of impact on said body surface, tangentially to said surface, and perpendicular to a plane defined by said focal point, said primary beam and said collector electrodes, combined with means for measuring the angular position of said focal point relatively to said normal to said body surface, whereby to simultaneously measure the differences of the interplanar spacings corresponding to two different angles $\psi$, preferably by means of one of two equivalent methods for obtaining the indication corresponding to absence of stress, i.e. either relatively to an unstressed first specimen of the same material as said body placed at the point of impact of said primary beam, or relatively to a position of said focal point where the primary beam is aligned with said normal to said body surface and where both angles $\psi$ are equal to zero, these differences indicating the magnitude of the stress to be measured, whose calibration is carried out by placing a second specimen of said same material, subjected to a known amount of stress, at said point of impact.

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**3,934,139**
**APPARATUS FOR MEASURING CALORIFIC POWER OF HYDROCARBON COMPOUNDS**

**Shuichi Ohata; Yoji Takeuchi, and Takeshi Ishiguro, all of Musashino, Japan, assignors to Yokogawa Electric Works, Ltd., Tokyo, Japan**

**Filed Sept. 19, 1973, Ser. No. 398,683**
**Claims priority, application Japan, Sept. 29, 1972, 47-98360**
**Int. Cl.² G01N** *23/00*
**U.S. Cl. 250—308** **11 Claims**




1. An apparatus for measuring the calorific power of a sample containing hydrocarbon compounds and sulfur, comprising:

means for generating gamma rays or x-rays at an energy level for which the mass absorption coefficient of carbon differs from that of hydrogen;

means for applying the gamma rays or x-rays to the sample;

means for detecting the absorption rate of the gamma rays or x-rays by the sample and for generating a signal varying with the samle density and with the concentrations of carbon, hydrogen and sulfur in the sample;

means for measuring the density of the sample and for generating a signal varying therewith;

means for measuring the concentration of sulfur in the sample and for generating a signal varying therewith, said means comprising means for generating gamma rays or x-rays at an energy level for which the mass absorption coefficient of carbon is about equal to that of hydrogen, means for applying the gamma rays or x-rays to the sample, an ionization chamber for generating a signal varying exponentially with the concentration of sulfur in the sample, and linearizing circuit means receiving the exponentially varying signal and generating a signal varying linearly with the concentration of sulfur in the sample, and

means for accepting the signal varying with density and the concentrations of carbon, hydrogen and sulfur, the signal varying with density, and the signal varying with sulfur concentration and for mathematically correlating said signals according to a predetermined arithmetic formula to directly obtain the calorific power of the sample.

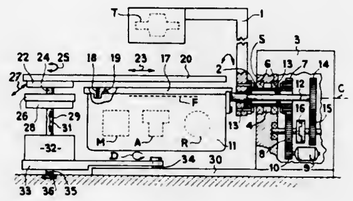


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**3,934,140**
**X-RAY DIAGNOSTIC APPARATUS IN PARTICULAR FOR EXAMINING THE INJURED**

**Christian Dutertre, and Jean Daugé, both of Argueil, France, assignors to Establissements Dutertre, Paris, France**

**Filed Oct. 9, 1974, Ser. No. 513,511**
**Claims priority, application France, Oct. 12, 1973, 73.36611**
**Int. Cl.² G03B** *5/17*
**U.S. Cl. 250—320** **5 Claims**



1. An X-ray diagnostic apparatus particularly intended for examining injured patients, comprising:

an X-ray source for emitting an X-ray beam;

a film-handling device for receiving said X-ray beam traversing said patient, for delivering a visible image thereof and including within a lightproof housing a mechanism for displacing the film it contains in substantially one direction to and from the exposure field irradiated by said X-ray beam;

an arm member for carrying said X-ray source at one end thereof and for locating said source at a predetermined distance from said exposure field;

a pair of coaxial, horizontal, independently rotatable shafts having a common horizontal axis, the first one of which having the other end of said arm member secured thereto and the second one supporting said film handling device in such a way that said common axis is located in the plane of the film in the exposure field and that said direction of film displacement is parallel to said common axis;

a framework including a mechanism for driving said coaxial shaft pair and for supporting it through a cylindrical opening thereof by means of bearings;

a first supporting plate fixed to the ground for carrying said framework thereon; and

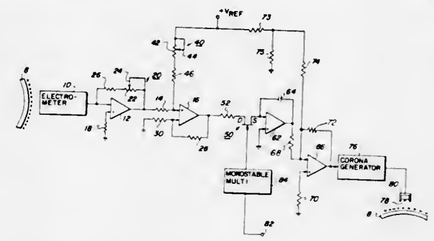
means for horizontally supporting a patient mounted on a second, movable supporting plate pivotable about a first vertical shaft secured to said first supporting plate, said first vertical shaft having an axis intersecting, at the center of said exposure field, with both said common axis and the central ray of said X-ray beam.

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**3,934,141**
**APPARATUS FOR AUTOMATICALLY REGULATING THE AMOUNT OF CHARGE APPLIED TO AN INSULATING SURFACE**

**Rudolph Vargas, Jr., Alhambra, Calif., assignor to Xerox Corporation, Stamford, Conn.**

**Filed July 3, 1974, Ser. No. 485,412**
**Int. Cl.² G03B** *15/02*
**U.S. Cl. 250—325** **12 Claims**




1. Apparatus for maintaining the electrostatic potential on the surface of an insulator at a predetermined value, a point on said insulator surface passing a fixed reference point in a periodic manner comprising:

first means for generating a first signal indicative of the magnitude of the electrostatic potential on said insulator surface,

second means for producing a reference signal which is proportional to said predetermined electrostatic potential,

third means coupled to said first means and said second means for producing an error signal indicative of the difference between said first signal and said reference signal,

integrator means connected to the output of said third means,

switching means interposed between the output of said third means and said integrator means whereby the output of said third means is directly coupled to said integrator means for a predetermined time period when said switching means is enabled,

means for applying a pulse of said predetermined time period to said switching means whereby said switching means is enabled,

a high voltage supply coupled to the output of said integrator means and controlled thereby, and

means for coupling the output of said high voltage supply to a corona electrode positioned adjacent said insulator surface, the charge on said insulator surface being controlled thereby during said predetermined time period thereby causing said insulator surface to be maintained at said predetermined electrostatic potential.

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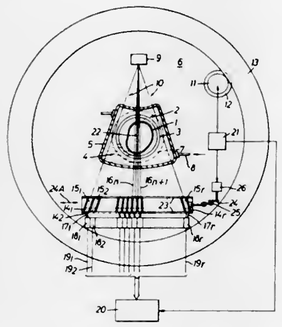
**3,934,142**
**RADIOGRAPHY**

**Godfrey Newbold Hounsfield, Newark, England, assignor to E M I Limited, Hayes, England**

**Filed July 17, 1974, Ser. No. 489,084**
**Claims priority, application United Kingdom, July 21, 1973, 34859/73**
**Int. Cl.² G03B** *41/16*
**U.S. Cl. 250—360** **8 Claims**

1. Radiographic apparatus comprising a source of penetrating radiation arranged to project a swath of radiation across a space for location of a body to be examined, means for collimating the radiation into a set of beams with gaps between adjacent beams, detector means for detecting the respective beams and for producing output signals dependent on the radiation transmitted in said beams, means for orbiting said source, said collimating means, and said detector means

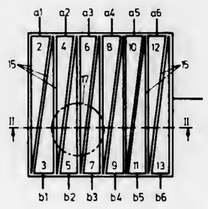
in the plane of said swath, and means for additionally displacing at least said collimating means relative to the source so



that the relative positions of the beams and the gaps are changed during the orbital movement.

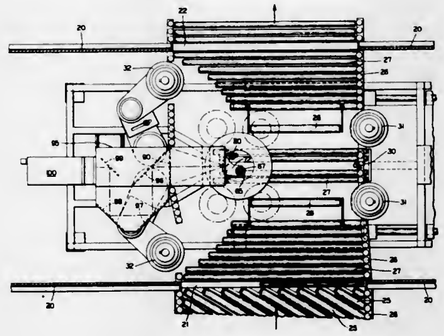
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**3,934,143**
**DETECTOR FOR IONIZING RADIATION**
**Rudolf Prag, Marloffstein, Germany, assignor to Siemens Aktiengesellschaft, Erlangen, Germany**
**Filed Nov. 2, 1973, Ser. No. 412,431**
**Claims priority, application Germany, Nov. 10, 1972, 2255095**
**Int. Cl. G01t** *1/24*
**U.S. Cl. 250—370** **5 Claims**



**1.** In a detector for ionizing radiation, comprising semiconductor plate means having a plurality of electrode strip means, said electrode strip means being positioned on the surface of said semiconductor plate means passed through by said radiation and extending from a first edge of said semiconductor plate means in the direction of the opposite edge thereof; and signal converting means connected to said electrode strip means, said signal converting means including computing means being adapted to compute and generate signals in response to signals tapped off from said electrode strip means indicative of the locations of focal points of radiation spots generated on said detector, the improvement comprising; said plurality of electrode strip means each varying in cross-section along the length thereof being positioned on said one surface of said semiconductor plate means and varying in cross-section along their longitudinal extensions in conformance with a predetermined function; a plurality of connectors each respectively connecting one of said electrode strip means to said signal converting means for separately transmitting the signals from each said electrode strip means to said signal converting means; and a common electrode means being positioned on the opposite surface of said semiconductor plate means and being dimensioned so as to cover substantially said entire surface said computing means being connected to derive a signal as a mathematical function of the signals on a plurality of said connectors.

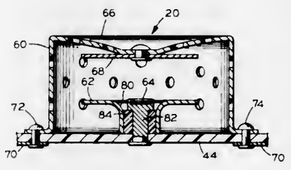
**3,934,144**
**X-RAY MACHINE FOR RAPID AND PRECISE INSPECTION OF MIXED SIZES OF PNEUMATIC TIRES**
**Donald T. Green, Mentor, and James L. Snarr, Eastlake, both of Ohio, assignors to United States Steel Corporation, Pittsburgh, Pa.**
**Filed Apr. 11, 1974, Ser. No. 459,895**
**Int. Cl.² G01N** *23/00*
**U.S. Cl. 250—358 T** **16 Claims**



**1.** In a tire inspection machine
a. means for sensing the presence of one side of the bead opening of a pneumatic tire in a predetermined position;
b. means for moving the one side of the bead opening toward the predetermined position;
c. means, responsive to the means for sensing, for terminating the motion of the side of the bead opening;
d. means for engaging one shoulder of the tread of the tire and opposing means for engaging the other shoulder, which means are positively driven toward one another at identical speeds axially of the tire for positioning the tire with its midplane coinciding with a predetermined plane;
e. means having a predetermined location with respect to the predetermined position and predetermined plane, for indicating the presence of structural irregularities in a tire and the location of the irregularities with respect to the predetermined plane.

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**3,934,145**
**IONIZATION SMOKE DETECTOR AND ALARM SYSTEM**
**John Dobrzanski, New Britain, and Ernest V. Hart, West Hartford, both of Conn., assignors to Emhart Corporation, Farmington, Conn.**
**Filed Oct. 25, 1973, Ser. No. 409,647**
**Int. Cl.² G01T** *1/18*
**U.S. Cl. 250—381** **13 Claims**



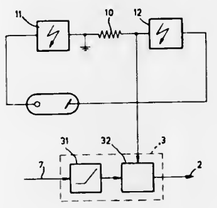
**1.** An ionization smoke detector having a sensing chamber comprised of:
a mounting board;
a perforated metallic shell defining an open interior space and supported at one side on the mounting board with the one side and the board in adjacent relationship;



an electrode mounted on the board and positioned within the open interior space of the metallic shell adjacent the one side in electrically insulated relationship to the metallic shell, the electrode having a surface facing away from the board and toward the side of the shell opposite the one side and defining an aperture in the middle of the surface; and
a radiation source supported from the mounting board in the aperture of the electrode for exposure within the interior space of the shell.

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**3,934,146**
**TIME-MEASURING DEVICE FOR AN X-RAY GENERATOR**
**Heinz Mester, and Gerd Vogler, both of Hamburg, Germany, assignors to U.S. Philips Corporation, New York, N.Y.**
**Filed Mar. 15, 1974, Ser. No. 451,535**
**Claims priority, application Germany, Mar. 22, 1973, 2314265**
**Int. Cl.² H05G** *1/00*
**U.S. Cl. 250—402** **10 Claims**

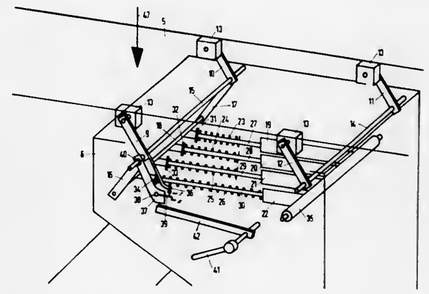


**1.** A time-measuring device for an x-ray generator of the type including a high voltage transformer for supplying anode current to an x-ray tube, a switch connected in the transformer primary circuit and an automatic exposure device for determining the radiation dose of an irradiated body comprising, means for effectively measuring time intervals, and means responsive to a switch-on pulse for the x-ray generator for effectively reducing the time interval measured by said time measuring means by an amount which varies with the anode current of the x-ray tube.

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**3,934,147**
**PATIENT SUPPORT WITH WEIGHT-SENSITIVE SPRING SCALE FOR CONTROLLING MOTOR OPERATION**
**Winfried Platz, Rathsberg; Ulrich Bar, Nurnberg, and Martin Schmidt, Eltersdorf, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany**
**Filed Feb. 8, 1974, Ser. No. 440,708**
**Claims priority, application Germany, Feb. 13, 1973, 2307044**
**Int. Cl. G01n** *23/00*
**U.S. Cl. 250—445** **8 Claims**

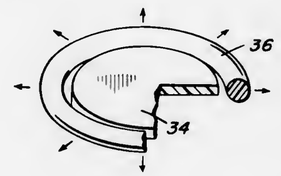
**1.** A device for supporting a patient for use with a medical apparatus, said device comprising a carrying member, a substantially horizontally extending support for the patient, a motor for varying the distance between said support and said medical unit, a supply circuit for said motor, and a spring scale between said support and said carrying member, said spring scale having a switching member shiftable depending upon the weight of a patient, said switching member having switching means for interrupting said supply circuit for said motor and



means adjusting the distance of said switching means from said switching member.

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**3,934,148**
**FLUORESCENT PLASTIC CONTROLLED DIRECTION LAMP**
**William O. Collins, 6258 N. Kensington St., McLean, Va. 22101**
**Filed May 28, 1974, Ser. No. 474,078**
**Int. Cl.² F21S** *11/00*; **G02B** *5/14*
**U.S. Cl. 250—458** **3 Claims**



**1.** A controlled light distributing unit comprising a fluorescent plastic member having a terminal light emitting surface emitting light therefrom in response to sunlight impinging upon a surface with the sunlight impinging surface being larger than the terminal light emitting surface, and a transparent, light collecting and distributing member having a curved surface in spaced, adjacent and aligned relation to the terminal light emitting surface of the fluorescent plastic member for receiving light emitted therefrom and a curved surface opposite from the terminal light emitting surface for emitting the received light therefrom, said fluorescent plastic member being a substantially flat circular sheet with the peripheral edge thereof defining the terminal light emitting surface, said light collecting and distributing member being an annular ring having a circular cross section disposed in adjacent spaced aligned concentric relation with the peripheral edge of the circular sheet and receiving light therefrom.

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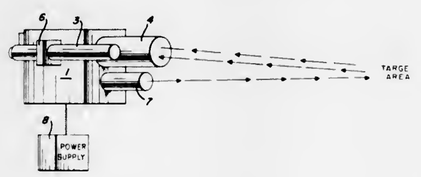
**3,934,149**
**METHOD OF IDENTIFYING ENEMY FORCES**
**Richard B. Nehrich, Jr., 4019 Marlesta Drive, San Diego, Calif. 92111, and David K. Forbes, 2216 Crownhill Road, San Diego, Calif. 92109**
**Continuation-in-part of Ser. No. 726,615, May 3, 1968, abandoned. This application Aug. 19, 1974, Ser. No. 498,354**
**Int. Cl.² G01N** *21/38*
**U.S. Cl. 250—459** **1 Claim**

**1.** A method of identifying infiltrators at a distance up to 150 yards in sunlight and nighttime conditions that have passed through a protected outdoor zone comprising the steps of:

depositing a tacky, high intensity, fluorescent material having a narrow spectral bandwidth in the range of 100 angstroms or less over a perimeter portion of the surface of said outdoor zone;

illuminating from a remote observation station infiltrators of said perimeter having contacted the fluorescent material with a beam of ultraviolet;

telescopically receiving at said station an image of said illuminated infiltrators;




spectroscopically analyzing at said station said telescopically received image of said illumination to observe the presence of said narrow bandwidth fluorescent material characterized by a sharp spike-like energy emission, enabling distinctive visual discrimination between the fluorescent light from the marked infiltrator and the fluorescent light of any reflected sunlight from the zone.

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**3,934,150**

## PHOTOGRAPHIC SHEET-LIKE FILM FEEDING DEVICE

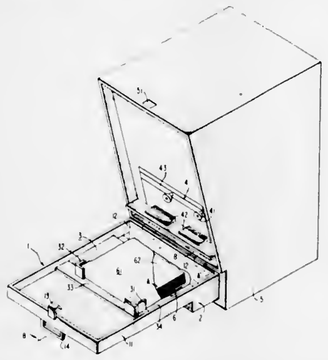
**Takaaki Matsumoto, and Kaoru Tamura, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan**

**Filed Aug. 13, 1974, Ser. No. 497,157**

**Claims priority, application Japan, Aug. 17, 1973, 48-96512[U]**

**Int. Cl.² G11B** *1/00*

**U.S. Cl. 250—468** **4 Claims**



**1.** A photographic sheet film feeding device comprising:

a film loading means for receiving stacked sheets of film, said film sheets being covered by an inverted U-shaped doupling plate and contained in an internally loaded bag in a light-tight condition and supporting said film sheets and said bag in an upright position, a cutter mechanism for cutting and unsealing the lower end of said internally loaded, upright bag, and a film discharging means for raising the upper end of said internally loaded bag and said U-shaped doubling plate covering the front, rear and upper edge of the upright film sheets in order to uncover the sheets of the film contained in said bag from the raised portion of said internally loaded bag.

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**3,934,151**

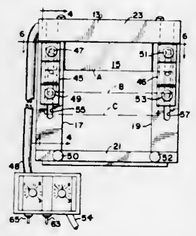
## CHOPPER ASSEMBLY FOR X-RAY MACHINE

**Ralph A. Stowe, 208 Frank, Joliet, Ill. 60435, and Joseph W. Howe, 1446 N. Webster St., Naperville, Ill. 60540**

**Filed Aug. 14, 1974, Ser. No. 497,324**

**Int. Cl.² G21K** *1/04*

**U.S. Cl. 250—505** **2 Claims**



**1.** An assembly for use in operating conjunction with an X-ray machine for obtaining X-ray photographs of a patient, a chopper subassembly comprising a frame mountable between the source of X-ray of the machine and the patient, said frame including an opening therein for permitting the X-rays to pass therethrough, at least two vertically movable chopper plates each slidably mounted for selectively covering a portion of said opening, said chopper plates movable downwardly by gravity, movable stop means comprising solenoids with each solenoid controlling and stopping downward movement of a respective chopper plate at least two time clocks electrically connected with the X-ray machine, said solenoids being respectively controllable by said clocks and said clocks being operable in conjunction with the machine to controllably actuate said solenoids to control the movement and positioning of said chopper plates.

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**3,934,152**

## ENCLOSURE FOR CONFINING RADIO-ACTIVE PRODUCTS OR WASTE

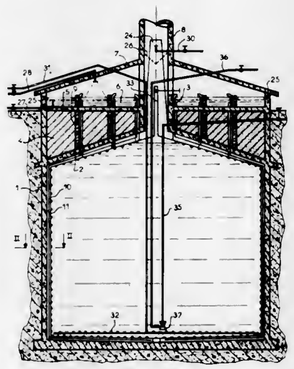
**Jean Alleaume, Saint Cloud, France, assignor to Technigaz, Paris, France**

**Filed Dec. 6, 1973, Ser. No. 422,415**

**Claims priority, application France, Dec. 13, 1972, 72.44346**

**Int. Cl. G21f** *7/00*

**U.S. Cl. 250—506** **15 Claims**



**1.** An enclosure for confining radio-active products, comprising in combination: a substantially fluid-tight outer rigid supporting shell structure made from reinforced concrete and buried in the ground and opening to the outside through a reinforced concrete chimney-stack; a first vessel containing said radio-active products which forms a primary barrier and consists of thin corrugated stainless steel sheet material formed with two orthogonally intersecting series of spaced parallel corrugations, a second vessel forming a secondary barrier made from thin corrugated stainless steel sheet material formed with two orthogonally intersecting series of spaced parallel corrugations and which is located between said rigid supporting shell structure and said first vessel; means for cooling said vessels through fluid flow circulation induced by natural convection within channels adjacent to at least one of said vessels and means for feeding and discharging said radio-active products into and from said first vessel.



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**3,934,153**

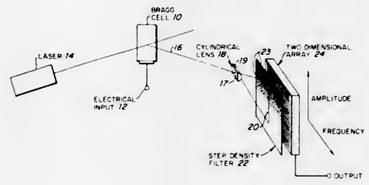
## ELECTRO-OPTIC SYSTEM WITH EXPANDED POWER RANGE

**John P. Lindley, Redwood City, and James Rieden, San Jose, both of Calif., assignors to Itek Corporation, Lexington, Mass.**

**Filed Jan. 10, 1975, Ser. No. 540,288**

**Int. Cl.² H01J** *39/12*

**U.S. Cl. 250—578** **7 Claims**




**4.** A system for measuring the distribution and intensity of a two dimensional radiation pattern having radiation signals spaced along an X axis and each radiation signal having a component extending along a Y axis substantially perpendicular to said X axis, and comprising:

a. two dimensional photodetector means for detecting radiation along both said X and Y axes;

b. means for directing said two dimensional pattern of radiation onto said two dimensional photodetector means, said radiation pattern having radiation signals spaced along said X axis and each radiation signal having a component extending along a Y axis substantially perpendicular to said X axis; and

c. a density filter means, positioned in the radiation path between said means for directing radiation and said two dimensional photodetector means, for varying the intensity of radiation along said Y axis such that the density filter means allows a substantial portion of the radiation to pass at one segment along the Y axis and allows less and less radiation to pass at other segments along the Y axis, whereby the output of the photodetector means defines the position of all signals along said X axis, and the amount of radiation detected along said Y axis by said photodetector means indicates the intensity of the detected radiation.

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**3,934,154**

## SOURCE OF ULTRAVIOLET LIGHT EMPLOYING A LASER PUMPED BORATE CRYSTAL

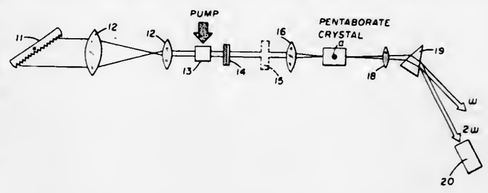
**William R. Cook, Jr., 684 Quilliams Road, Cleveland Heights, Ohio 44121**

**Continuation-in-part of Ser. No. 472,995, May 24, 1974, abandoned. This application Feb. 18, 1975, Ser. No. 550,526**

**Int. Cl.² G02F** *1/37*

**U.S. Cl. 307—88.3** **6 Claims**

**1.** A device for the generation of coherent light in the wavelength range from 2000 A to 2800 A comprising an optically nonlinear crystal element of a pentaborate compound of the formula $AB_5O_8.4H_2O$, with A from the group $NH_4$, K, Rb, or




Cs, and means to illuminate said crystal element with coherent light of at least wavelength greater than 2800 A.

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**3,934,155**

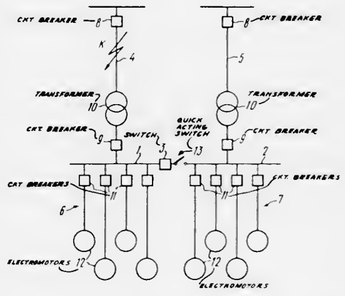
## POWER SUPPLY ARRANGEMENT

**Alexandr Avdeevich Galitsyn, ulitsa Osharskaya, 53, kv. 29, Gorky, U.S.S.R.**

**Filed Mar. 14, 1974, Ser. No. 451,156**

**Int. Cl.² H02H** *3/00*

**U.S. Cl. 307—112** **2 Claims**




**1.** A power supply arrangement comprising: sectionalized buses; a switch sectionalizing said buses; feeders feeding the bus sections; service lines connected to said bus sections; electromotors to which said service lines are connected; a quick-acting switch means connected in series with said sectionalizing switch for coupling the buses in case of a fault in one of said feeders, said switch means being adapted to act during the first cycle of hunting of said electromotors until the phases of said electromotors are in phase opposition with another of said feeders to which the electromotors are now connected by operation of said switch means.

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**3,934,156**

## MOVEMENT RESPONSIVE CONTROL APPARATUS

**Robert A. Galemmo; David S. Wilson, and Howard Burman, all of Montreal, Canada, assignors to Colonial Kinetics, Inc., Leonia, N.J.**

**Filed Mar. 18, 1974, Ser. No. 452,276**

**Int. Cl.² H01H** *36/00*

**U.S. Cl. 307—117** **8 Claims**

**1.** Apparatus for reducing the consumption of power by controlling the application and removal of power to and from a plurality of load circuits in response to the movement and absence of movement of an object within a prescribed area, each of said load circuits having a load connected therein and said loads being connectable to AC power sources of different phase, comprising:

transmitter means for producing and transmitting a sound wave having a substantially constant frequency to said area;

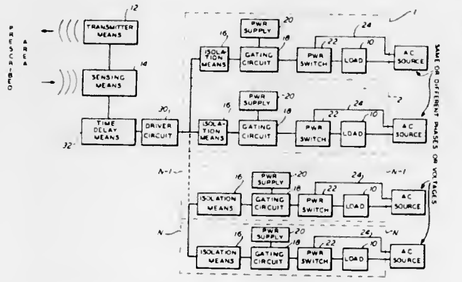
sensing means for receiving said sound wave and for producing an electrical output signal at a pair of output terminals in response to a doppler shift in the frequency

of the received sound wave caused by said movement of said object within said prescribed area;

a plurality of isolation means connected in parallal to said pair of output terminals, each of said isolation means connected in one of said load circuits intermediate said sensing means and said load connected in each of said load circuits, said isolation means isolating each of said load circuits from said sensing means and from each other, and each of said isolation means receiving said electrical output signal from said sensing means and producing a gating signal in response thereto;

a plurality of signal distribution means, each of said signal distribution means connected intermediate one of said isolation means and said pair of output terminals for evenly distributing said electrical output signal between said plurality of isolation means;

a plurality of gating circuits, each of said gating circuits connected in one of said load circuits intermediate the




isolation means and the load connected therein, each of said gating circuits receiving said gating signal and producing a switching signal in response thereto;

a plurality of isolated power supplies, each of said isolated power supplies connected to one of said gating circuits for operating said gating circuit; and

a plurality of switching means, each of said switching means connected in one of said load circuits intermediate the gating circuit and the load connected therein, said switching means receiving said switching signal and in response thereto completing an energization circuit between said load and one of said AC power sources, and upon the removal of said switching signal from said switching means, in response to said absence of movement of said object within said prescribed area and in response to the absence of any sensing of any doppler shift in said frequency of the received sound wave by said sensing means, said switching means removing said energization circuit between said load and said one of said AC power sources.

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**3,934,157**
**TTL CIRCUIT**

**William Joshua Evans, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**

**Filed Sept. 23, 1974, Ser. No. 508,081**
**Int. Cl.² H03K** *19/08, 5/01*
**U.S. Cl. 307—213** **6 Claims**

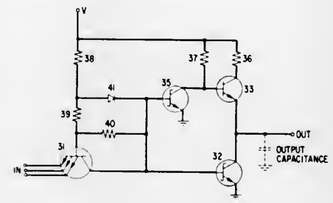
1. A logic gate comprising:

an input transistor having a base terminal, a collector terminal and at least one emitter terminal connected to an input node,

an output transistor having an emitter terminal adapted to be connected to ground, a base terminal connected directly to the collector terminal of the input transistor and a collector terminal connected to an output node,

an inverter transistor having an emitter terminal adapted to be connected to ground, a base terminal connected directly to the collector terminal of the input transistor and a collector terminal, and

a pull-up transistor having an emitter terminal connected to the output node, a base terminal connected to the collec-



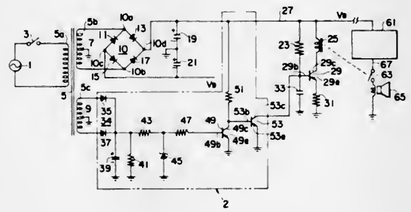

tor terminal of the inverter transistor and a collector terminal.

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**3,934,158**
**SWITCHING CIRCUIT**

**Masanobu Shinozaki, Yokohama, Japan, assignor to Victor Company of Japan, Limited, Japan**

**Filed Feb. 27, 1974, Ser. No. 446,320**
**Claims priority, application Japan, Mar. 3, 1973, 48-25562**
**Int. Cl.² H03K** *17/00*
**U.S. Cl. 307—239** **6 Claims**



1. In combination with a power amplifier having a loudspeaker, an a-c power source connected for supplying power to said power amplifier, including a power switch, a switching circuit for breaking a connection between a power amplifier and a loudspeaker upon cutting off an a-c power source by opening said power switch, which includes:

first rectifying means provided for converting a-c voltage received from said power source to a first rectified d-c voltage,

first filtering means connected to said first rectifying means and deriving said first rectified voltage therefrom for smoothing ripple variations thereof, to develop a first smoothed voltage, means supplying the first smoothed voltage to said power amplifier,

a relay control transistor connected to said first filtering means and supplied with a first preset potential therefrom to maintain the relay control transistor conductive when said power switch is closed, a relay connected to said relay control transistor controlled to make the connection when the relay control transistor remains conductive, the transition time being considerable for said first smoothed voltage to decrease below said first preset potential upon cutting off said a-c power source,

the improvement comprising:

switching means connected to said relay control transistor, said switching means including a circuit having means with a considerably short time constant in comparison with said transition time upon cutting off said a-c power source by opening of said power switch, said switching means having means controlling said first preset potential to maintain it constant while said power switch is closed and to rapidly reduce said first preset potential upon cutting off said a-c power source, which is achieved by said short time constant, including means rendering said relay control transistor non-conductive to rapidly break



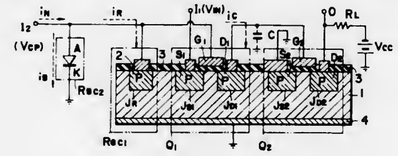
said connection between said amplifier and said loudspeaker by de-energizing of said relay.

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**3,934,159**
**SEMICONDUCTOR CIRCUIT DEVICES USING INSULATED GATE-TYPE FIELD EFFECT ELEMENTS HAVING PROTECTIVE DIODES**

**Kosei Nomiya, Tokyo; Toshihiko Kohisa, Sayama, and Isao Matsumura, Kodaira, all of Japan, assignors to Hitachi, Ltd., Japan**

**Filed Oct. 18, 1968, Ser. No. 768,794**
**Claims priority, application Japan, Nov. 13, 1967, 42-72629; Nov. 13, 1967, 42-72630; Nov. 13, 1967, 42-72631; Nov. 15, 1967, 42-73055; Nov. 15, 1967, 42-73056**
**Int. Cl.² H03K** *3/353*; **H02H** *7/20*
**U.S. Cl. 307—304** **20 Claims**




1. In a semiconductor device comprising:

an insulated gate-type field effect component including a semiconductor substrate of first conductivity type, source and drain regions of second conductivity type opposite to said first conductivity formed in a surface of said semiconductor substrate, and an insulated gate electrode disposed on said surface between said source and drain regions and insulated from said substrate by an insulating film; and

a protecting semiconductor diode formed integrally in said substrate and connected in parallel between said insulated gate electrode and said semiconductor substrate for protecting the insulating film interposed between said gate electrode and said substrate from breakdown; the improvement comprising

auxiliary means connected with said semiconductor device for preventing minority carriers from said protecting semiconductor diode from reaching said drain region through said semiconductor substrate when noise signals are applied to the protecting diode.

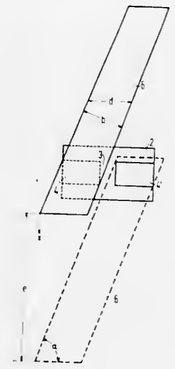
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**3,934,160**
**ARRANGEMENT FOR THE PRODUCTION OF ELECTRICAL SIGNALS BY WAY OF SEMICONDUCTOR COMPONENTS WHICH ARE DEPENDENT UPON A MAGNETIC FIELD**

**Ulrich Von Borcke, Regensburg, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany**

**Filed June 3, 1974, Ser. No. 475,955**
**Claims priority, application Germany, June 12, 1973, 2329845**
**Int. Cl.² H01L** *43/08*; **H03K** *17/90*
**U.S. Cl. 307—309** **4 Claims**

1. An arrangement for producing electrical signals by way of semiconductor component elements which are dependent upon a magnetic field, comprising: a magent having a pair of poles, a pole piece on one of said poles, a pair of magnetic field dependent semiconductor component elements arranged next to each other and spaced apart upon said pole piece, an iron member movable over said component elements, said iron member having a projection width onto the longitudinal plane of the magnetic field dependent elements which is at least equivalent to the length of the diagonal of a magnetic field dependent element, said iron member being inclined with respect to said magnetic field dependent component elements in its longitudinal direction with respect to the longitudinal direction of said elements lying at an angle which is sufficient to provide complete coverage of one of said elements while the other of said elements remains uncovered, the longitudinal



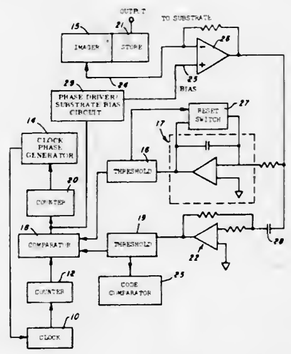
plane of the magnetic field dependent component elements positioned parallel to the plane of motion of said iron part.

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**3,934,161**
**ELECTRONIC SHUTTER FOR A CHARGE-COUPLED IMAGER**

**John Millard Caywood, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.**

**Filed Apr. 29, 1974, Ser. No. 465,198**
**Int. Cl.² H01L** *31/08*
**U.S. Cl. 307—311** **19 Claims**




1. An electronic shutter for a charge-coupled imager which comprises, in combination:

a. a charge-coupled imager comprising a substrate of semiconductor material of predetermined conductivity type, an insulating layer on a surface of said substrate, and plural transfer electrodes over said insulating layer such that radiation incident on said imager causes generation of minority carrier-majority carrier pairs in said substrate for storage of minority-carrier charge beneath said transfer electrodes during an integration period;

b. storage means coupled to said imager; and

c. means electrically connected to said substrate for responding to current flow induced by said majority carriers to cause transfer to said storage means of said minority carrier induced charge stored beneath said transfer electrodes and for terminating said integration period, at a predetermined level of said current.

### 3,934,162
### MINIATURIZED NUCLEAR BATTERY

**Karl Adler, Grenchen, and Georges Ducommun, Feldbrunnen, both of Switzerland, assignors to Biviator, S.A., Grenchen, Switzerland**

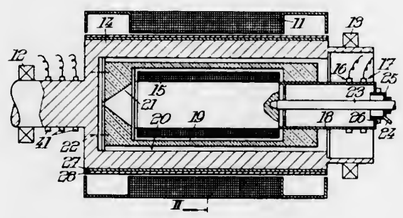
**Filed May 15, 1973, Ser. No. 360,565**
**Claims priority, application Switzerland, May 26, 1972, 7798/72**
**Int. Cl. G21d 7/00**
**U.S. Cl. 310—3 A** **27 Claims**

1. A nuclear battery comprising a plurality of in series connected, superposed cells, each cell including a generally flat support element acting as a positive pole, a $\beta$-emitter supported on one side of said support element, a radiation resisting insulation layer disposed on said support layer and completely overlying said $\beta$-emitter, an absorption layer atop said insulation layer, and a collector layer atop said absorption layer, wherein the support element of each superposed cell lies directly on the collector layer of its subjacent cell without space between them and the in series connected cells are disposed in an airtight case where a compact battery is obtained.

### 3,934,163
### POLYPHASE SYNCHRONOUS ELECTRICAL MACHINE WITH SUPERCONDUCTOR WINDING

**Alain Mailfert, Morsang-sur-Orge, France, assignor to Agence Nationale de Valorisation de la Recherche (ANVAR), France**

**Filed Feb. 15, 1974, Ser. No. 443,015**
**Claims priority, application France, Feb. 21, 1973, 73.06119**
**Int. Cl.² H02K 19/00**
**U.S. Cl. 310—10** **10 Claims**



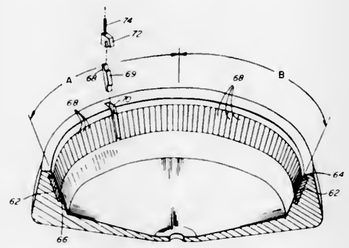
1. Polyphase synchronous electrical machine comprising polyphase stator coil means for conducting A.C. armature currents, a rotary assembly comprising a superconducting D.C. inductor winding, a shaft for transmitting mechanical power and polyphase auxiliary windings for providing a rotary field when conducting polyphase A.C. currents and circuit means for circulating, in response to unbalance of said polyphase armature currents, currents in said auxiliary windings to create a rotating magnetic field of such amplitude as to substantially compensate for the low frequency variations of the armature reaction field in unbalanced operation.

### 3,934,164
### X-RAY TUBE HAVING COMPOSITE TARGET

**Martin Braun, Stamford, and Joseph R. Suffredini, Darien, both of Conn., assignors to The Machlett Laboratories, Incorporated, Stamford, Conn.**

**Filed Feb. 14, 1975, Ser. No. 550,236**
**Int. Cl.² H01J 35/10**
**U.S. Cl. 313—60** **20 Claims**

13. An X-ray target of the rotating type comprising:
a cup-shaped body having an inner wall surface; and an annular focal track disposed on the inner wall surface and including a composite material made of an element



of the lanthanide series and a second element having an atomic number lower than 57.

### 3,934,165
### PROPORTIONAL COUNTER END EFFECTS ELIMINATOR

**John F. Meekins, Springfield, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed Oct. 25, 1974, Ser. No. 518,115**
**Int. Cl.² H01J 39/26, 39/29**
**U.S. Cl. 313—93** **3 Claims**



1. An improved proportional counter including a gas filled cathode housing with a coaxially disposed anode and an insulator substrate at each end of said housing, the improvement comprising;
a resistor conductor network of resistive material deposited upon said substrate at each end of said counter on the inner surface of each of said substrates with the ends of said resistive material secured electrically to the cathode and anode,
where the resistor-conductor network obeys the formula

$$\theta = \sqrt{\left(\frac{b}{r}\right)^2 - 1} - \cos^{-1}\left(\frac{r}{b}\right)$$

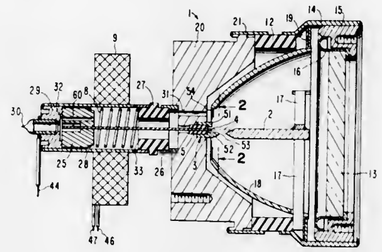
where b is the inner radius of the counter body, r is the radial distance from the center of the anode, and $\theta$ is the angle in radians.

### 3,934,166
### OFFSET STINGER FOR ARC LAMP

**William R. Stuart, San Carlos, Calif., assignor to Varian Associates, Palo Alto, Calif.**

**Division of Ser. No. 424,399, Dec. 13, 1973. This application Aug. 23, 1974, Ser. No. 500,204**
**Int. Cl.² H01J 1/02, 1/44, 1/52, 1/88**
**U.S. Cl. 313—146** **7 Claims**

1. An arc lamp electrode comprising a generally cylindrical metal structure, with a bore extending from one end thereof into the interior of said structure, said one end having a face circumferentially surrounding said bore, said face being generally planar except for an integral portion thereof which



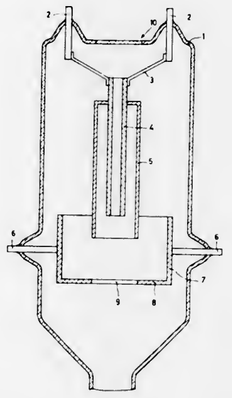
projects therefrom generally parallel to the axis of said cylindrical structure.



### 3,934,167
### GASEOUS ELECTRIC DISCHARGE TUBE HAVING A COAXIAL, HOLLOW CATHODE STRUCTURE

**Gijsbert Johannes Ponsen, Eindhoven, and Wilhelmus Jacobus Witteman, Geldrop, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.**

**Continuation of Ser. No. 332,121, Feb. 13, 1973, abandoned. This application Oct. 1, 1974, Ser. No. 511,077**
**Claims priority, application Netherlands, Apr. 24, 1970, 7005965**
**Int. Cl.² H01J 61/067, 61/12; H01S 3/02**
**U.S. Cl. 313—185** **3 Claims**

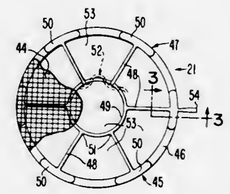


1. In a discharge tube having an anode and a cathode the improvement which comprises a generally cylindrical cathode having disposed thereabout in coaxial relationship a generally cylindrical auxiliary anode, said auxiliary anode having a diameter greater than said cathode and disposed with a first axial end portion overlapping a first axial end portion of said cathode, said auxiliary anode having an axial portion extending closer to the anode than said cathode to provide shielding for said cathode, said discharge tube being provided with an argon filling at a pressure between 0.05 and 5 Torr at a cathode current in the order of tenths of amperes, said cathode being non-activated and comprising inner and outer tubes of a material selected from the group consisting of tantalum and tungsten, said inner and outer tubes being disposed in coaxial relationship with at least a first axial extremity of said outer tube overlapping a first axial extremity of said inner tube, said inner and outer tubes being open at said first axial extremity which faces the discharge, the first axial extremity of said inner tube ending within the first axial extremity of the outer tube and the outer tube being carried on the circumference of the inner tube, and means for supporting said inner tube carried on said discharge tube.

### 3,934,168
### GRID SUPPORT MEANS FOR A PLANAR TUBE

**Wendell G. Hardman, and Werner Brunhart, both of Salt Lake City, Utah, assignors to Varian Associates, Palo Alto, Calif.**

**Filed July 18, 1974, Ser. No. 489,690**
**Int. Cl.² H01J 1/46, 21/10**
**U.S. Cl. 313—293** **9 Claims**

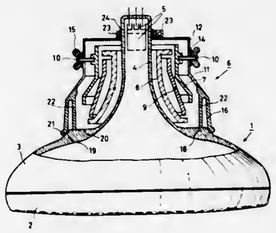


1. An electron tube comprising; an envelope, a plurality of substantially planar and parallel electrodes, support means for said electrodes, and means for electrical connection to said electrodes, said electrodes comprising an electron emissive cathode, an electron collective anode, and at least one electron permeable grid between said cathode and said anode, said grid comprising a circular frame and an array of spaced wires, said frame comprising an outer rim interconnected with a web of support elements, said support elements having cross sections larger than said wires, said web having planar faces parallel to said cathode, said support elements comprising a plurality of radial elements connected to said rim and interconnected by non-radial elements lying entirely within said rim to form at least three enclosed apertures within said rim, said array of wires being joined to the face of said web facing said cathode, and covering said apertures.

### 3,934,169
### PICTURE DISPLAY DEVICE AND DEFLECTION COIL BOTH HAVING SELF-ALIGNING SURFACES

**Adriaan Jacob Groothoff; Martin Clemens van der Heijde; Johannes Aloysius Van Leeuwen, and Constantius Johannes Waltherus Panis, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.**

**Filed Nov. 9, 1973, Ser. No. 414,376**
**Claims priority, application Netherlands, Aug. 20, 1973, 7311430**
**Int. Cl.² H01J 63/02, 29/54**
**U.S. Cl. 313—477** **11 Claims**



1. A picture display device tube having a longitudinal axis and comprising a conical central part, a neck mounted on said central part, means for generating at least one electron beam disposedin said neck, and means disposed on said central part

for self centering a deflection coil supporting cage with respect to the longitudinal axis of said tube, the said centering means comprising a centering edge integrally formed with the conical central part of the tube and which is disposed coaxially around the longitudinal axis of the tube, the centering edge having a centering surface which is conical relative to the longitudinal axis, the angle enclosed by the centering surface of the centering edge and the longitudinal axis is smaller than the angle enclosed by the one surface at the area of the centering edge and the longitudinal axis.

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**3,934,170**

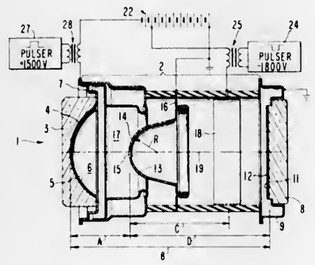
## IMAGE TUBE AND METHOD AND APPARATUS FOR GATING SAME

**Richard S. Enck, Jr., Mountain View, and James P. Sackinger, San Jose, both of Calif., assignors to Varian Associates, Palo Alto, Calif.**

**Continuation of Ser. No. 189,973, Oct. 18, 1971, abandoned. This application Feb. 11, 1974, Ser. No. 441,190**

**Int. Cl.² H01J** *29/70*

**U.S. Cl. 315—12** **12 Claims**




1. In an electron image tube, a photocathode disposed to receive a photon image for emitting into the tube an electron image corresponding to the received photon image, an output means spaced from said photocathode for receiving the emitted electron image, an accelerating anode electrode means interposed between said photocathode and said output means for accelerating and converging the image electrons, said anode means containing a central aperture small compared to said photocathode for passing said converged image electrons from said photocathode and focussing said electron image upon said output means, gating electrode means adjacent said output means for gating the electron image to said output means, said gating electrode means being radially spaced outside said electron image and means for periodically pulsing the potential difference between said gating electrode and said photocathode such that the potential of said gating electrode periodically becomes sufficiently negative with respect to the potential of said photocathode that said image electrons are returned to said anode.

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**3,934,171**

## DOUBLE GRID ELECTRON GUN SYSTEM AND METHOD OF USE

**Rudolf G. E. Hutter, New York, N.Y., and Herman O. Dressel, Lynnfield, Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.**

**Filed May 28, 1974, Ser. No. 473,540**

**Int. Cl.² H01J** *29/52*

**U.S. Cl. 315—30** **5 Claims**

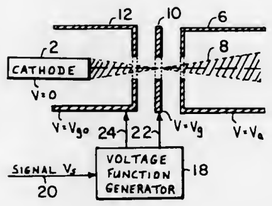
1. An electron gun system comprising

A. a cathode for emitting an electron beam,

B. an accelerating grid having a positive grid having a positive voltage impressed thereon with respect to the cathode for accelerating the electron beam,

C. first and second control grids located in the path of the electron beam between the cathode and the accelerating grid, and

D. means responsive to an input control signal bearing information concerning the desired intensity of the electron beam for generating first and second control voltages




both bearing said information and for respectively applying the first and second control voltages to the first and second control grids,

whereby the first and second control grids jointly control the intensity of the electron beam emitted from the cathode.

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**3,934,172**

## FLAT DISCHARGE PANEL USING D.C. DISCHARGE, AND METHOD OF DRIVING THE SAME

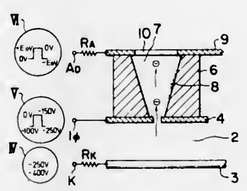
**Yukio Okamoto, Hachioji, Japan, assignor to Hitachi, Ltd., Japan**

**Filed Dec. 12, 1974, Ser. No. 532,176**

**Claims priority, application Japan, Dec. 12, 1973, 48-137782**

**Int. Cl.² H01J** *17/04, 61/06*

**U.S. Cl. 315—169 TV** **10 Claims**




1. A flat discharge panel comprising:

a plurality of cathodes which are parallel to one another;

a plurality of parallel intermediate electrodes the projection of each of which intersects said cathodes, each of said intermediate electrodes having priming holes respectively corresponding to its projection upon said cathodes;

parallel anodes which are disposed on the sides of said intermediate electrodes remote from said cathodes in a manner to be respectively parallel to said cathodes;

auxiliary discharge spaces provided for the corresponding cathodes and each of which is common to said intermediate electrodes;

main discharge spaces provided in said anodes in correspondence with the respective priming holes in said intermediate electrodes; and

a gas which is hermetically contained in said main and auxiliary discharge spaces.



**3,934,173**

## CIRCUIT ARRANGEMENT FOR GENERATING A DEFLECTION CURRENT THROUGH A COIL FOR VERTICAL DEFLECTION IN A DISPLAY TUBE

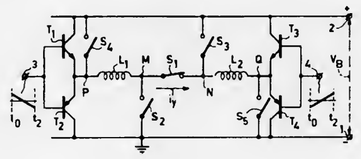
**Jan Abraham Cornelis Korver, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.**

**Filed Apr. 3, 1974, Ser. No. 457,563**

**Claims priority, application Netherlands, Apr. 9, 1973, 7304886**

**Int. Cl.² H01J** *29/70, 29/76*

**U.S. Cl. 315—408** **11 Claims**



1. A circuit for generating from a direct voltage source a sawtoothed shaped current having trace and retrace intervals through a coil having two halves, said circuit comprising an amplifier having an input means for receiving control signals and an output terminal, means for coupling said coil to said terminal, and switching means for coupling said coil halves in series with one another during said trace interval and for coupling each of said coil halves to said direct voltage source during said retrace interval.

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**3,934,174**

## SURGE VOLTAGE PROTECTION FOR TRANSFER SWITCHES FOR LOAD-TAP CHANGERS

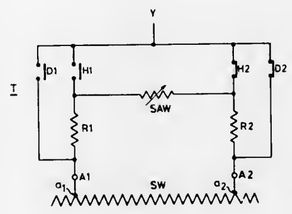
**Alexander Bleibtreu; Wolfgang Breuer, both of Regensburg, and Hans-Henning Mieske, Tegernheim, all of Germany, assignors to Maschinenfabrik Reinhausen Gebruder Scheubeck K.G., Regensburg, Germany**

**Filed Aug. 15, 1974, Ser. No. 497,606**

**Claims priority, application Germany, Nov. 16, 1973, 2357209**

**Int. Cl.² G05F** *1/14*

**U.S. Cl. 317—11 C** **2 Claims**




1. In a transfer switch for load-tap changers the combination of

a. a pair of terminals for connecting the contact means of the transfer switch to a pair of taps of a tapped transformer winding;

b. a pair of relatively movable switch-over contact means each arranged to connect selectively each of said pair of terminals to an outgoing load-current-carrying line;

c. a pair of switch-over resistors each interposed between one of said pair of terminals and one of said pair of switch-over contact means;

d. a pair of relatively movable current-carrying contact means each shunted across one of said pair of switch-over contact means to connect selectively each of said pair of terminals directly with said outgoing load-current-carrying line;

e. a tank with a body of insulating fluid therein housing said pair of switch-over contact means and said pair of current-carrying contact means; and

f. a non-linear surge voltage protective resistor arranged inside said tank submersed in said body of insulating fluid and interconnecting the ends of said pair of switch-over resistors remote from said pair of terminals and adjacent said pair of switch-over contact means so that in case of breakdown of said surge protective resistor the current resulting from a voltage applied across said pair of terminals is limited by said pair of switch-over resistors.

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**3,934,175**

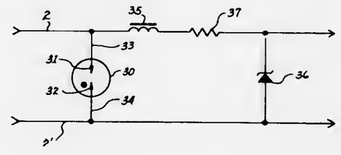
## POWER SURGE PROTECTION SYSTEM

**Oscar M. Clark, Tempe, Ariz., assignor to General Semiconductor Industries, Inc., Tempe, Ariz.**

**Continuation-in-part of Ser. No. 420,850, Dec. 3, 1973, abandoned. This application Oct. 17, 1974, Ser. No. 515,690**

**Int. Cl.² H02H** *9/06*

**U.S. Cl. 317—16** **10 Claims**



1. A surge suppressor for dissipating power surges impressed upon an electrical line, said suppressor comprising:

a. means for dissipating the bulk of the energy for a power surge on the electrical line, said dissipating means having an electrode connected to the electrical line;

b. an avalanche semiconductor element connected in parallel with said dissipating means, said avalanche semiconductor element clipping the remaining energy of the power surge impressed upon the electrical line;

c. a delay line comprising a series connected inductor and resistor for preventing said avalanche semiconductor element from clamping said dissipating means, said delay line being disposed intermediate said electrode of said dissipating means and said avalanche semiconductor element; whereby the bulk of the power surge impressed upon the electrical line is dissipated by said dissipating means and the remainder of the power surge is clipped by said avalanche semiconductor element.

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**3,934,176**

## SAFETY APPARATUS FOR ASSURING PROPER GROUNDING OF MINING MACHINERY OR THE LIKE

**Karappurath Vasudevan, Pittsburgh, Kans., and David J. Sloop, St. Ann, Mo., assignors to Atkinson Armature Works Co., Inc., Pittsburg, Kans.**

**Filed Oct. 16, 1974, Ser. No. 515,168**

**Int. Cl.² H02H** *3/16*

**U.S. Cl. 317—18 C** **5 Claims**

1. Safety control apparatus for use with an electric system of the class having a power unit provided with means presenting a source of electrical power available for distribution, means providing an electrical ground at the power unit, a working unit spaced from and moveable relative to the power unit which requires electrical coupling with said ground for safety purposes and is provided with means requiring electrical power for operation thereof, cable means extending between said units and provided with a grounding conductor for coupling said ground with the working unit, a pilot conductor and power conductors for coupling said power source presenting means at the power unit with said power requiring means at the working unit, a resistance component coupled between

the ends of said grounding and pilot conductors at the working unit, and electrically controllable power switching means at the power unit for interrupting the coupling of said power conductors to the power source presenting means, said apparatus including:

a resistance measuring bridge circuit having a pair of opposed end-points, a pair of opposed mid-points, an arm between each end-point and each mid-point respectively, and means applying a direct current voltage across said end-points;

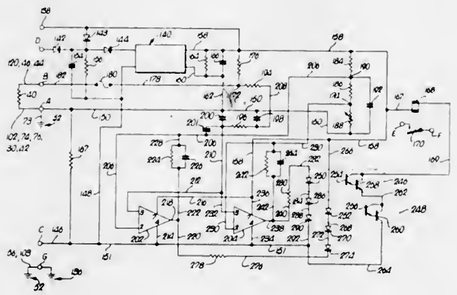
a first resistance component coupled in the arm of the bridge circuit between one end-point and one mid-point thereof;

means coupling the ends of said pilot and grounding conductors at the power unit with said one mid-point and the other end-point of said bridge circuit respectively;

an intermediate connection point in the arm of said bridge circuit between said one end-point and the other mid-point thereof;

a second resistance component coupled between said one end-point and said intermediate connection point and said other mid-point of said bridge circuit;

a third resistance component coupled between said intermediate connection point and said other mid-point of said bridge circuit;



a fourth resistance component coupled between said intermediate connection point and said other end-point of the bridge circuit;

first voltage comparator means having a pair of input terminals and an output terminal and adapted to produce at said output terminal a comparison result output dependent upon the relationship between electrical potentials applied to said input terminals thereof;

second voltage comparator means having a pair of input terminals and an output terminal and adapted to produce at said output terminal a comparison result output dependent upon the relationship between electrical potentials applied to said input terminals thereof;

means electrically coupling said one mid-point of said bridge circuit with one input terminal of each of said comparator means;

means electrically coupling said intermediate connection point of said bridge circuit with the other input terminal of said first comparator means;

means electrically coupling said other mid-point of said bridge circuit with the other input terminal of said second comparator means; and

control means operably coupled with said output terminals of said first and second comparator means and with said power switching means for controlling the latter in response to said comparison result outputs.

**3,934,177**

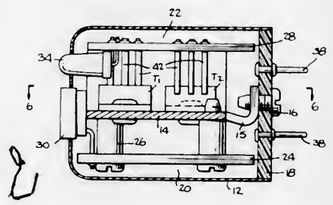
## HEAT SINK CASING FOR CIRCUIT BOARD COMPONENTS

**Stephen Horbach, 40 Glen Road, Mountain Lakes, N.J. 07046**

**Filed Jan. 9, 1975, Ser. No. 539,870**

**Int. Cl.² H05K** *7/20*

**U.S. Cl. 317—100** **12 Claims**



1. A manually adjustable electrical circuit support structure comprising:

a case,

a channel-shaped bracket having a main wall and two side walls, said main wall extending longitudinally and laterally through said case to divide the interior of said case into substantially first and second chambers, said side walls extending along attached to the inner walls of said case in thermal contact with said walls of said case,

a processing first circuit board spaced from said bracket and within said first chamber, said circuit board being mechanically supported by said bracket,

a second circuit board within said second chamber and mechanically supported by said bracket,

power transistors connected with said second circuit board said power transistors mounted directly on said bracket in said second chamber and in thermal contact with said bracket, said bracket acting as a heat sink for said transistors, and

a variable electrical element connected to said first circuit board, said variable element operable through an opening in a wall of said case to permit user adjustment of the electrical parameter of said element, a surface of said element bearing on an edge of said main bracket, said main bracket preventing said element from being pushed into said case.

**3,934,178**

## DEVICE FOR GENERATING A SIGNAL FOR A PREDETERMINED INTERVAL AFTER A POWER SWITCH IS OPENED

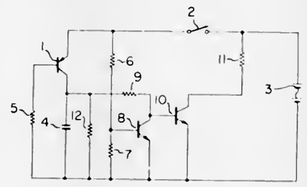
**Osamu Maida, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan**

**Filed Apr. 23, 1974, Ser. No. 463,246**

**Claims priority, application Japan, May 1, 1973, 48-47586; May 1, 1973, 48-47587**

**Int. Cl.² H01H** *47/18*

**U.S. Cl. 317—141 S** **6 Claims**



1. A circuit for generating a signal for a predetermined time interval after a power switch is opened, comprising a power switch, a capacitor coupled to be charged by current from a power source only when said power switch is closed, a transistor having a control electrode, and having a pair of principal conducting electrodes, means for applying a terminal voltage of said capacitor to said transistor control electrode to render said transistor conductive for a predetermined time interval after said power switch is opened, and a latching relay having first and second coils, having switch means biased in a first switch position when the first coil is energized and biased in a second switch position when the second coil is energized, and having means for supplying current alternately to the first and the second coils when the power switch is closed, wherein said second coil is connected in series with said principal conducting electrodes of said transistor and supplied with current through said transistor when the power switch is opened.



**3,934,179**

## TANTALUM ANODE FOR ELECTROLYTIC DEVICES

**James A. Pierret, Muskogee, Okla., assignor to Fansteel Inc., North Chicago, Ill.**

**Continuation of Ser. No. 290,624, Sept. 20, 1972, which is a division of Ser. No. 132,075, April 7, 1971, abandoned, which is a continuation of Ser. No. 756,357, Aug. 30, 1968, abandoned, which is a division of Ser. No. 701,870, Jan. 31, 1968, Pat. No. 3,418,106, which is a continuation-in-part of Ser. No. 369,039, May 17, 1967, abandoned. This application Mar. 5, 1975, Ser. No. 555,377**

**Int. Cl.² H01G** *9/00*

**U.S. Cl. 317—230** **16 Claims**

1. A pressed and sintered compact for use as a tantalum anode in electrolytic devices formed from a pressed compact of agglomerated tantalum ingot-hydride powder having a green density no greater than about 8 g./c. and sintered at a temperature of about 2,000°C for a period of about 30 minutes, said pressed and sintered anode exhibiting a specific capacity of at least 2,700 microfarad-volts per gram when formed to 200 volts in a 0.01 percent solution of phosphoric acid at 90°C at a constant current of 35 ma. per gram and when tested at full charge at 140 volts in a 0.01 percent solution of phosphoric acid.

**3,934,180**

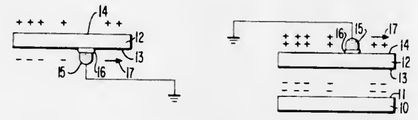
## METHOD OF REPRODUCING AN ELECTROSTATIC CHARGE PATTERN IN INTENSIFIED FORM

**Helmut Gustav Kiess, Zurich, Switzerland, and Albert Rose, Princeton, N.J., assignors to RCA Corporation, New York, N.Y.**

**Filed Aug. 12, 1974, Ser. No. 496,717**

**Int. Cl.² G03G** *13/00*

**U.S. Cl. 317—262 A** **5 Claims**



1. A method of reproducing, on an electrically insulating film, an electrostatic charge pattern in an intensified form conforming substantially in configuration to an original monopolar electrostatic charge pattern on an electrically insulating image-bearing surface, said method comprising the steps of:

a. placing one surface of said film into an area of influence of said original monopolar electrostatic charge pattern on said image-bearing surface,

b. applying momentarily a source of charge migration to all areas of the other surface of said film, whereby to induce on said other surface a monopolar electrostatic charge pattern of opposite polarity to that of the original monopolar electrostatic charge pattern,

c. removing said film from said image-bearing surface and applying momentarily a source of charge migration to said one surface of said film, whereby to induce an electrostatic charge pattern of the same polarity as that of said original monopolar electrostatic charge pattern thereon and to provide said film with a bipolar charge,

d. disposing said one surface of said film adjacent to said image-bearing surface so that the electrostatic charge patterns thereon of the same polarities are in register with each other, and,

e. applying momentarily a source of charge migration to all areas of said other surface of said film, whereby to induce on said other surface a monopolar electrostatic charge superimposed on said bipolar charge.

**3,934,181**

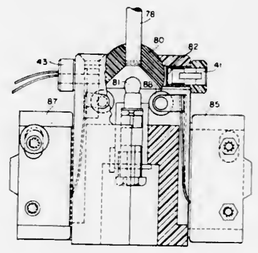
## SOLID STATE LIGHT RESPONSIVE CONTROL SYSTEM

**Ben J. Rosenthal, 9140 Kildare, Skokie, Ill. 60076**

**Continuation-in-part of Ser. No. 315,791, Dec. 17, 1972. This application Jan. 15, 1974, Ser. No. 433,549**

**Int. Cl.² B62D** *11/04*

**U.S. Cl. 318—53** **15 Claims**



1. A control system, including in combination:

light supply means;

a plurality of light responsive means having an electrical characteristic which changes with the light applied thereto;

electrical drive means operable in various modes in accordance with the electrical current applied thereto;

circuit means coupled to said light responsive means and to said drive means for supplying an electrical signal to said drive means which varies with the magnitude of light striking said light responsive means from said light supply means; and

mounting and masking means comprising a support defining a spherical receptacle surface portion and supporting said light responsive means in fixed spaced relationship adjacent said spherical receptacle surface, mask means comprising a spherical insert surface portion mounted within said spherical receptacle surface portion for universal movement relative thereto, said mask means defining a cavity within said spherical insert surface which receives light from said light supply means,

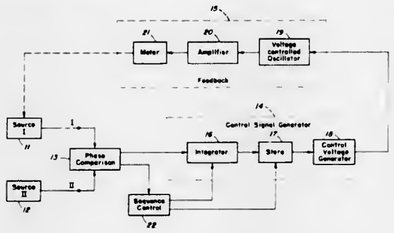
said spherical surface portions having areas of differing light transmitting characteristics which are in overlying relationship and shaped to cooperatively control the amount of light striking said light responsive means as a function of the relative positions of said cooperating spherical surface portions.

**3,934,182**

## SYNCHRONIZING APPARATUS

**James M. Donohue; Joseph R. Kramer, and Victor Rodek, all of Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.**

**Filed Nov. 16, 1970, Ser. No. 89,869**
**Int. Cl.² H02P** *5/50*
**U.S. Cl. 318—85** **4 Claims**




**1.** Apparatus for synchronizing the time of occurrence of a first pulse signal with the time of occurrence of a second pulse signal comprising:

first pulse signal generating means for generating said first pulse signal;

second pulse signal generating means for generating said second pulse signal;

first means coupled to said first and second pulse signal generating means and having a first state and a quiescent state, said first means being adapted to assume its first state when said first pulse signal is generated prior to the generation of said second pulse signal and to assume its quiescent state when said second pulse signal is generated, whereby the time duration of said first state is proportional to the time delay between said first and second pulse signals;

second means coupled to said first and second pulse signal generating means and having a first state and a quiescent state, said second means being adapted to assume its first state when said second pulse signal is generated prior to said first pulse signal and to assume its quiescent state when said first pulse signal is generated, whereby the time duration of said first state is proportional to the time delay between said second and first pulse signals;

first integrating means coupled to said first means for producing a first analog signal having an amplitude proportional to the integral of the time duration of the first state assumed by said first means;

second integrating means coupled to said second means for producing a second analog signal having an amplitude proportional to the integral of the time duration of the first state assumed by said second means;

first storage means coupled to said first integrating means for storing the maximum amplitude obtained by said first analog signal;

second storage means coupled to said second integrating means for storing the maximum amplitude obtained by said second analog signal;

combining means coupled to said first and second storage means for selectively producing a control signal above a predetermined threshold level in response to the maximum amplitude stored by said first storage means and below said predetermined threshold level in response to the maximum amplitude stored by said second storage means;

voltage controlled oscillating means coupled to said combining means for producing an oscillating signal having a frequency of oscillation determined by said control signal; and

modifying means coupled to said first pulse signal generating means and responsive to said oscillating signal for modifying the time of occurrence of said first pulse signal in accordance with the frequency of oscillation of said oscillating signal whereby the magnitude of said control signal obtains said predetermined threshold level.

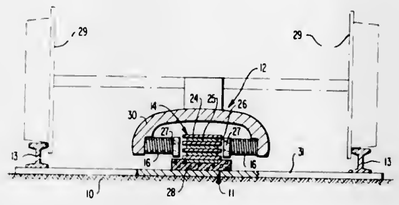
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**3,934,183**

## LINEAR RELUCTANCE MOTOR FOR THE PROPULSION OF RAIL TRANSPORTATION MEANS

**Helmut Säufferer, Esslingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany**

**Continuation-in-part of Ser. No. 200,088, Nov. 18, 1971, abandoned. This application Jan. 21, 1974, Ser. No. 434,968**
**Claims priority, application Germany, Nov. 18, 1970, 2056674**
**Int. Cl. H02k** *41/02*
**U.S. Cl. 318—135** **20 Claims**




**1.** A linear electric motor for the drive of rail transporting means, which comprises a primary part including at least one group of four double coil means, each double coil means of said group arranged one adjacent the other, a magnetic yoke joining each double coil means, and means for simultaneously feeding each double coil means with an alternating current, said group of double coil means disposed in said rail transporting means longitudinally in the drive direction; a rail-like secondary part disposed fixedly on the ground and substantially parallel to track of said rail means, said secondary part including a toothed rack means having teeth of ferromagnetic material and tooth gaps, with substantially the same dimensions in the longitudinal direction, disposed along said toothed rack means in the longitudinal direction, wherein each said double coil means of said group is disposed with one coil oppositely positioned on either side of said rack means, the axis of each coil of said double coil means being in line with one another and perpendicular to said rack means, and wherein said group of four double coil means corresponds in its operating width to the longitudinal dimensions of one tooth and one tooth gap of said rack means; and means for energizing pulse-wise each said double coil means of said group successively such that a magnetic field is produced cyclically opposite the drive direction and cooperating with said toothed rack means, characterized in that the teeth and tooth gaps of the toothed rack means have substantially the same dimensions in the longitudinal direction, and in that two double coil means of the primary part correspond in their operating width to the longitudinal dimensions of a tooth or tooth gap.

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**3,934,184**

## ARRANGEMENT FOR REGULATING THE SPEED OF AN ASYNCHRONOUS MOTOR

**Heinrich Bönig, Erlangen, and Hermann Waldmann, Welher, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany**

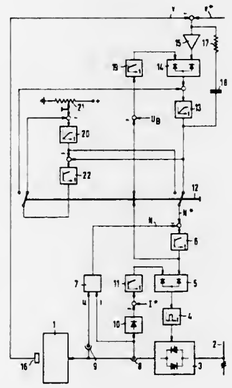
**Filed July 26, 1973, Ser. No. 382,883**
**Claims priority, application Germany, Aug. 14, 1972, 2239897**
**Int. Cl.² H02P** *5/40*
**U.S. Cl. 318—227** **6 Claims**

**1.** An arrangement for regulating the speed of an asynchronous motor which is supplied with power at a constant frequency and has associated with it a multi-loop regulating circuit comprising:

a. regulating means including means to develop from a commanded speed and actual speed, a first control signal;

b. means for measuring the real power being consumed by the asynchronous motor and providing a signal proportional thereto;





c. an real performance regulator including means to develop from said first control signal and from said signal proportional to the real power a second control signal; and

d. means responsive to said second control signal to control one of the voltage and current being supplied to the motor.

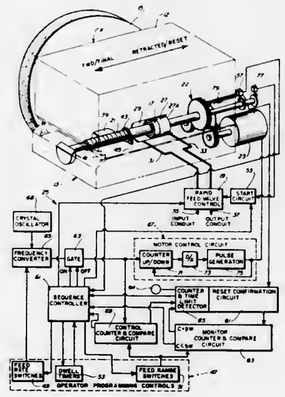
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**3,934,185**

## MACHINE TOOL CONTROL SYSTEM

**Stanley C. Schoonover, and Harrel, Jack D., both of Waynesboro, Pa., assignors to Landis Tool Company, Waynesboro, Pa.**

**Continuation of Ser. No. 322,468, Jan. 10, 1973, abandoned. This application May 30, 1974, Ser. No. 474,553**
**Int. Cl.² G05B** *23/00, 19/00*
**U.S. Cl. 318—565** **3 Claims**




**1.** A machine tool control system comprising a machine element,

means for advancing said machine element including a stepping motor, and

means for supplying a selected number of pulses to said stepping motor to advance said machine element from a retracted position within a predetermined zone, defined by a predetermined number of pulses, to an advanced position,

means for retracting said machine element including said stepping motor, and

means for supplying said selected number of pulses at a predetermined rate to said stepping motor,

reset confirmation means,

means for supplying pulses, representative of the actual position of said machine element to said reset confirmation means as said machine element is retracted from said advanced position to said retracted position,

timer means selectively set to time out after a time selected to correspond to the time required for said predetermined number of pulses plus one to be supplied to said reset confirmation means,

means for energizing said timer means when said machine element has been retracted to the proximate edge of said zone,

means for ascertaining whether said machine element is located within said zone when said timer times out, and

means for disabling said advancing means

when said machine element retraction terminates intermediate said advanced position and said proximate edge of the zone, or

when said machine element retraction terminates beyond said zone.

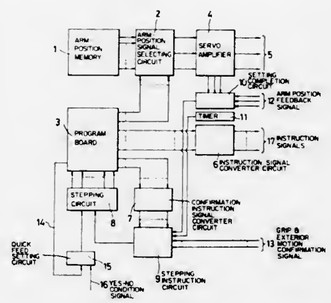
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**3,934,186**

## PROGRAM CONTROL SYSTEM FOR ROBOTS FOR INDUSTRIAL USE

**Kyohei Hayakawa, and Hiroshi Maeda, both of Nagoya, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Japan**

**Continuation-in-part of Ser. No. 232,441, March 7, 1972, abandoned. This application Oct. 19, 1973, Ser. No. 407,909**
**Int. Cl.² G05B** *19/10, 19/30, 19/18*
**U.S. Cl. 318—567** **6 Claims**




**1.** A program control system for use with an industrial robot having an arm for performing predetermined manipulations, said arm capable of grip control and said robot also capable of motion external to said arm, said system comprising:

memory means for determining arm position;

pin-board type means for programming the sequence of operations for said robot;

arm-position selecting means responsive to said memory means and programming means for supplying preselected servo control signals;

servo means responsive to said servo control signals for moving said arm, feedback signals being generated by said arm in response thereto;

comparator means responsive to feedback signals from said arm for detecting coincidence with said memory means;
means responsive to said programming means for generating arm grip and exterior motion instruction signals, grip and exterior motion confirmation signals being received from said robot in response thereto;
means responsive to said grip and exterior motion confirmation signals and to said comparator means and programming means for confirming that confirmation signals and comparator means output come within predetermined limits;
stepping means responsive to said confirmation means for advancing the programming means from one step to another; and
means for detecting those positions of said pinboard memory with inserted pins and those without pins, said stepping means for performing normal stepping operations corresponding to pin-inserted positions, and including jumping means for jumping positions without pin insertion.

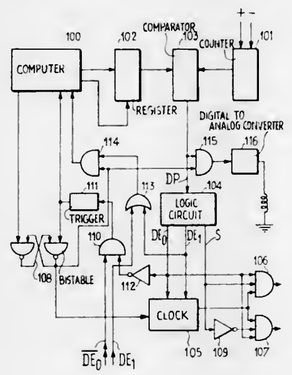
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**3,934,187**

## DEVICE FOR THE ACCURATE POSITIONING OF AN OBJECT HOLDER IN RELATION TO THE ELEMENTS OF A PARTICLE-TYPE OPTICAL SYSTEM, AND A PARTICLE-TYPE OPTICAL SYSTEM EQUIPPED WITH SAID DEVICE

**Jacques Trotel, Paris, France, assignor to Thomson-CSF, Paris, France**

**Filed Feb. 27, 1974, Ser. No. 446,504**
**Claims priority, application France, Mar. 2, 1973, 73.07540**
**Int. Cl.² G05B *1/06***
**U.S. Cl. 318—640** **6 Claims**




1. A system for the accurate positioning of a sample holder, in relation to the elements of a corpuscular optical system producing a particle beam, this system comprising two interferometers and two interference fringe counters, having respective outputs for measuring respectively the displacements of said sample holder in two mutually perpendicular directions, said system comprising in combination, for each of said directions: a digital comparator having two inputs and one output, a register recording the position required by a computer, said two inputs of said comparator being respectively connected to said counter output and said register output,; a logic circuit having an input connected to said comparator output, and three two state outputs, each of said two state outputs delivering respectively two logic voltage levels corresponding respectively to states "0" and "1", the state of said first input being significant of the sign of the correction to be made, a motor, a motor controlling speed device, for giving two said motor one of said direction and first and second predetermined speeds and for stopping said motor, said controlling device having a first and a second control input respectively connected to said second and said third output of said logic circuits and giving to said motor said first speed when both said outputs of said logic circuit are in the state 1, said second speed when only said third input is in state "1" and stopping said motor when both said outputs are in the "0" state, said respective states of said outputs being significant of the amplitude of the correction to be effected; said first output of said controlling device controlling the rotation direction of said motor.

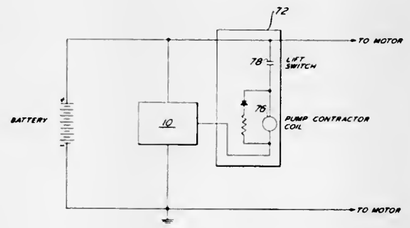
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**3,934,188**

## SELF-TESTING BATTERY DISCHARGE INDICATOR

**Robert A. York, Mechanicsburg, Pa., assignor to Flight Systems, Inc., Mechanicsburg, Pa.**

**Continuation-in-part of Ser. No. 536,134, Dec. 24, 1974. This application Feb. 4, 1975, Ser. No. 546,960**
**Int. Cl.² H02J *7/00*; G08B *21/00***
**U.S. Cl. 320—48** **19 Claims**




1. Apparatus for indicating the voltage level of a battery and for disabling a load connected to the battery, comprising:
means for generating a control signal which is representative of the battery voltage when a first signal representative of the battery voltage is applied to said generating means and which is representative of an independent voltage which decreases at a fixed rate when said second signal representative of said independent voltage is applied to said generating means;
means for selectively applying either said first signal or said second signal to said generating means so as to operate said apparatus in a battery testing or self-testing mode, respectively;
first indicator means responsive to said control signal for continually indicating the instantaneous level of said battery voltage when said apparatus is in said battery testing mode and the instantaneous level of said independent voltage when said apparatus is operating in said self-testing mode, said first indicator means being electrically connected to said generator means; and
second indicator means responsive to said control signal for indicating that said battery voltage has dropped below a first predetermined value when said apparatus is operating in said battery testing mode or that said independent voltage has dropped below a second predetermined value when said apparatus is operating in said self-testing mode, said second indicator means also for disabling the load after a predetermined time period has elapsed following a decrease in said battery voltage below said first predetermined value when said apparatus is operating in said battery testing mode or after a decrease in said independent voltage below said second predetermined level when said apparatus is operating in said self-testing mode, said second indicator means being electrically connected to said generator means.



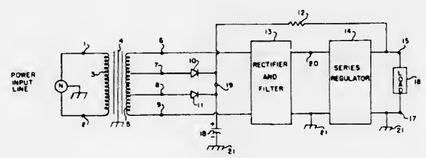
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**3,934,189**

## POWER SUPPLY REGULATOR HIGH-LINE SHUNT BYPASS

**Alfred H. Schamel, West Linn, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.**

**Continuation of Ser. No. 333,812, Feb. 20, 1972, abandoned. This application Feb. 20, 1974, Ser. No. 444,195**
**Int. Cl.² H02M *7/02***
**U.S. Cl. 321—11** **10 Claims**




1. A power supply regulator high-line shunt bypass circuit comprising:
a first voltage source means;
a second voltage source means of relatively higher magnitude than said first voltage source means, each of said voltage source means adapted for energization by a changing primary voltage;
output terminals;
resistance means having a value of resistance substantially higher than that of conductive wire connected between said first voltage source means and said output terminals for coupling a first voltage from said first voltage source means to said output terminals only when said first voltage source means is energized; and
voltage regulating means coupled between said second voltage source means and said output terminals for coupling a second voltage from said second voltage source means to said output terminals when said second voltage source means is energized and for coupling at least a portion of said second voltage to said output terminals when said first voltage source means is energized.

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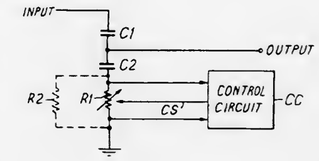
**3,934,190**

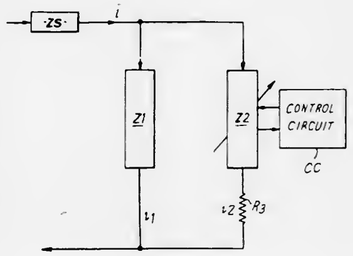
## SIGNAL COMPRESSORS AND EXPANDERS

**Ray Milton Dolby, London, England, assignor to Dolby Laboratories, Inc., New York, N.Y.**

**Continuation of Ser. No. 395,280, Sept. 7, 1973. This application Oct. 31, 1974, Ser. No. 519,631**
**Claims priority, application United Kingdom, Sept. 15, 1972, 42981/72**
**Int. Cl.² H04B *1/64***
**U.S. Cl. 323—8** **22 Claims**

1. A circuit for modifying the dynamic range of a signal, comprising an input terminal and an output terminal, a first reactive impedance coupling said input terminal to said output terminal, an intermediate terminal, a second reactive impedance coupling said output terminal to said intermediate terminal, and a variable resistance network coupled between said intermediate terminal and a point of reference potential, said first and second impedances being of like nature such that the impedance and voltage ratios of the impedance between said input and output terminals and the voltage produced thereacross, respectively, to the impedance between said output and intermediate terminals and the voltage produced thereacross are frequency independent, the resistance of the variable resistance network being responsive to the level of a signal in the circuit to change the value of the resistance as the




said level increases, in such a sense as to exclude increased level signal components from the dynamic range modification.

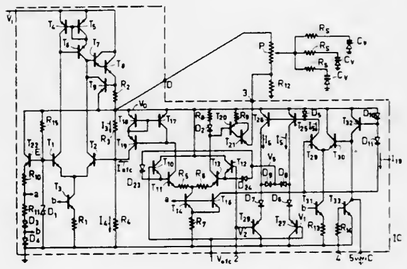
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**3,934,191**

## CIRCUIT ARRANGEMENT FOR GENERATING A STABILIZED DIRECT VOLTAGE WITH SUPERPOSITION OF A CONTROL VOLTAGE

**Arnoldus Garskamp, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.**

**Filed Nov. 15, 1973, Ser. No. 416,035**
**Claims priority, application Netherlands, Dec. 2, 1972, 7216406**
**Int. Cl.² H03J *3/18***
**U.S. Cl. 323—22 T** **11 Claims**

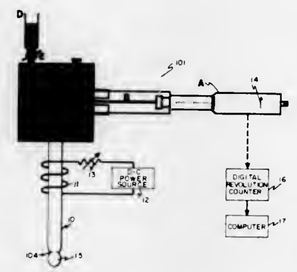


1. Circuit arrangement for generating a stabilized direct voltage upon which a control voltage is superposed for combined tuning and automatic frequency control of a receiver including a varactor diode, said circuit comprising a differential amplifier comprising first and second emitter-coupled transistor stages, a fixed reference voltage source coupled to the control electrode of the first transistor, a collector load for the second transistor, a passive resistive voltage divider having a first tapping coupled to the control electrode of the second transistor stage, a buffer amplifier coupled between the said collector load and the resistive voltage divider, and means for supplying a control current which produces the said control voltage to a second tapping on the resistive voltage divider for

superposing the control voltage on the direct voltage across the resistive voltage divider.

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**3,934,192**
**METHOD OF DETECTION OF IONS IN SOLUTION THAT ARE SUSCEPTIBLE TO AN APPLIED FORCE FIELD AND APPARATUS THEREFOR**
**Christopher de Latour, Arlington, Va., assignor to Massachusetts Institute of Technology, Cambridge, Mass.**
**Filed Apr. 25, 1974, Ser. No. 464,263**
**Int. Cl.² G01R** *33/12*
**U.S. Cl. 324—34 R** **32 Claims**




**1.** A method of determining the fractional content in a liquid solution of an ion susceptible to a gradient field of an applied force field, that comprises, forming at the end of a capillary tube a first drop of the solution containing the ion with no applied gradient field and noting at least one of the volume, $V_o$, and equivalently the weight, $W_o$, of the first drop that detaches from the capillary tube, forming at the end of the capillary tube a second drop of the solution containing the ion with a gradient field of an applied force field in the region occupied by the second drop and noting at least one of the volume, $V_f$, and equivalently the weight, $W_f$, of the second drop that detaches from the capillary tube in the presence of the gradient field, determining at least one of the volume change, $\Delta V$, between the first and second drop and the actual weight change, $\Delta W$, therebetween, and correlating at least one of the volume change, $\Delta V$, and the actual weight change, $\Delta W$, with the content in the drops of the susceptible ion.

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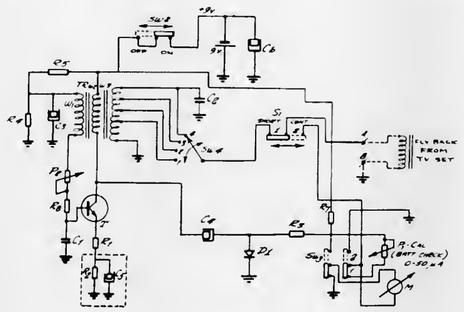
**3,934,193**
**ELECTROLYTIC CONDUCTIVITY DETECTOR**
**Randall C. Hall, West Lafayette, Ind., assignor to Purdue Research Foundation, Lafayette, Ind.**
**Filed Dec. 17, 1973, Ser. No. 425,116**
**Int. Cl.² G01N** *27/42*
**U.S. Cl. 324—30 B** **13 Claims**



**1.** A unitized separator and measuring cell, comprising: an outer electrode having a bore therethrough, said bore receiving a mixture that is separated into liquid and gas phases during passage through said bore; an inner electrode having at least a portion within said bore of said outer electrode to form a passageway therebetween, said separated liquid phase passing into said passageway; and insulating means for electrically isolating said inner and outer electrodes from one another so that said electrodes are utilized to measure the conductivity of said separated liquid phase while between said electrodes.

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**3,934,194**
**SOLID STATE FLYBACK TRANSFORMER CHECKER**
**Kazimierz Paprocki, 2325 W. Haddon Ave., Chicago, Ill. 60622**
**Filed Mar. 26, 1974, Ser. No. 454,974**
**Int. Cl.² G01R** *31/02*
**U.S. Cl. 324—51** **8 Claims**




**1.** An instrument for determining the relative impedance of a possibly defective transformer, of the type commonly used to develop the high voltage supply in a television receiver, compared with that of a normal transformer of that type, comprising:

an oscillator circuit for generating a bidirectional signal of a predetermined frequency and amplitude;

rectifying means coupled to said oscillator circuit for converting said bidirectional signal into a unidirectional signal;

display means responsive to said unidirectional signal for indicating the magnitude of said unidirectional signal;

calibration means, including a variable impedance coupled between said rectifying means and said display means for establishing a reference indication for said display means corresponding to the impedance of said normal transformer;

means for coupling the transformer to be tested in parallel with said oscillator circuit to supply the bidirectional signal to said transformer, whereby the loading on said oscillator circuit caused by the parallel impedance presented by said transformer systematically varies the magnitude of said unidirectional signal relative to said reference indication to thereby cause the display means to indicate whether or not the impedance of the transformer being tested corresponds to that of a normal transformer.

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**3,934,195**
**PORTABLE ELECTRIC CAPACITOR TESTER USING AN LED INDICATOR**
**Val Henry Shires, Biscayne Park, Fla., assignor to Surf Air Conditioning, Inc., Miami Beach, Fla.**
**Filed Feb. 4, 1974, Ser. No. 439,649**
**Int. Cl.² G01R** *31/02*, *11/52*
**U.S. Cl. 324—72.5** **1 Claim**

**1.** A portable electric tester for hand use comprising a casing having a cover portion and a demountable base portion,



a panel member secured within said cover portion including a printed circuit means on the underside thereof for providing circuit conductors for said tester, and three resistor means secured to said printed circuit means,

a battery means connected by a clip means and retained in said cover portion and connected in said circuit means,

a S.P.S.T. switch means secured on the said upper side of said printed circuit panel with the two terminals thereof connected in said circuit means and with the finger operator thereof extending through said cover portion of said casing,

a S.P.D.T. momentary contact switch means secured on the said upper said of said printed circuit panel with the three terminals thereof connected in said circuit means and with the push button operator thereof extending through said cover portion of said casing,

a LED indicator means secured to said printed circuit panel with the two terminals thereof connected in said circuit means,

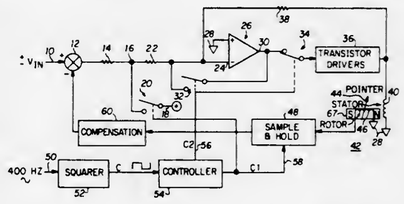
a transparent jeweled bullseye secured through said cover portion of said casing adjacent to said LED indicator means,



a tip probe means secured to said cover portion of said casing connected to said circuit means and a flexible test cord conductor means with one end of said test cord conductor means connected to said circuit means and the opposite end of said test cord conductor terminating in a clip probe means, both said probe means connected across a capacitor within a predetermined range of capacitances and the movement of said S.P.D.T. momentary contact switch means to the normally open position of said switch by said push button operator will energize said LED indicator and associated circuit means to produce a predetermined illuminance through said bullseye means with the said illuminance corresponding to the electrical condition of said capacitor under test and whereby when said push button operator of said S.P.D.T. momentary contact switch means is released to return to the normally closed position of said switch that said capacitor under test will discharge through said LED indicator and its associated circuit means to allow for subsequent testing of said capacitor and render said capacitor under test non-hazaradous to the user.

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**3,934,196**
**SERVOED INDICATING APPARATUS**
**Leon T. Gompert, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.**
**Filed Nov. 15, 1973, Ser. No. 415,876**
**Int. Cl.² G01R** *17/06*, *1/16*
**U.S. Cl. 324—99 R** **4 Claims**




**1.** Apparatus for positioning an indicator pointer in closed loop servo fashion in accordance with a control signal comprising, in combination:

prime movement means comprising a permanent magnet motor having a stator, a rotor, a control winding coupled with one of said stator and rotor, and a feedback winding coupled with the other of said stator and rotor;

indicator pointer means attached to said rotor for use in displaying apparatus input signals;

first means connected for, effectually, periodically initially applying a reference signal to said control winding and then applying a control error signal thereto for displacing the rotor in accordance with the error signal;

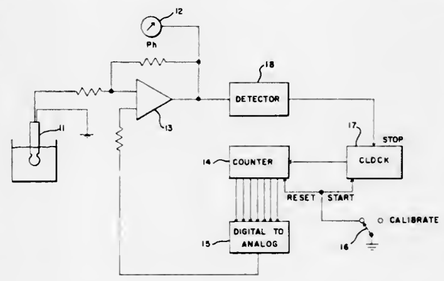
second means including sample and hold means for sampling a feedback signal from said feedback winding during the application of a reference signal to said control winding and providing as an output a position signal for a predetermined time;

apparatus input signal supplying means for supplying an input signal the value of which is to be displayed by said apparatus; and

means connected to said first means, said second means and said apparatus input signal supplying means for supplying an error signal to said first means indicative of a comparison between the position signal and the input signal.

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**3,934,197**
**AUTOMATIC CALIBRATION SYSTEM**
**Aage Pettersen, North Reading, and Herbert Schulkind, Natic, both of Mass., assignors to Corning Glass Works, Corning, N.Y.**
**Filed Dec. 3, 1973, Ser. No. 420,967**
**Int. Cl.² G01R** *1/02*
**U.S. Cl. 324—130** **2 Claims**




**1.** An automatic calibration system for an electronic pH measuring system of the type which produces a measurement voltage in a predetermined range, which represents the pH of

a sample being analyzed and which includes a fixed zero offset DC voltage comprising:
- a first difference amplifier, said measurement voltage being applied to one input to said difference amplifier,
- indicating means operable over the range and connected to the output of said first difference amplifier for producing an output indication representing the pH of a sample being analyzed, said indication being corrected for said fixed zero offset DC voltage,
- a source of clock pulses,
- a counter,
- switch means for resetting said counter at the start of a calibration and for supplying said clock pulses to said counter during said calibration,
- a digital-to-analog converter having its input connected to the output of said counter, the output of said converter being connected to the other input of said difference amplifier to algebraically add said output to said measurement voltage, and
- a detector connected to the output of said difference amplifier for stopping the supply of clock pulses to said counter when the algebraic sum of said measurement voltage and the output of said converter reaches a predetermined level.

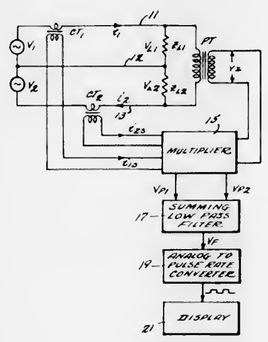
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**3,934,198**

## MULTI-WIRE ELECTRONIC KWH METER

**Miran Milkovic, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.**

**Filed Nov. 6, 1974, Ser. No. 521,299**
**Int. Cl.² G01R** *11/32*
**U.S. Cl. 324—142** **14 Claims**




1. In an N wire, single phase power consuming system, an electronic kWh meter for metering electrical energy comprising
- means for generating a first analog voltage representative of the voltage across the load impedance of said system,
- means for generating N−1 analog signals representative of the current flowing through each of N−1 wires,
- a multiplier means for simultaneously producing N−1 output signals representative of the product of said first analog voltage and each of said said N−1 current representative analog voltages, said product signals each being proportional to an instantaneous partial power consumed in said system,
- means receiving said product signals for deriving signals proportional to the average partial power consumed in said system, and
- means for summing said average partial power signals to derive the average power consumed in said N-wire single phase system.

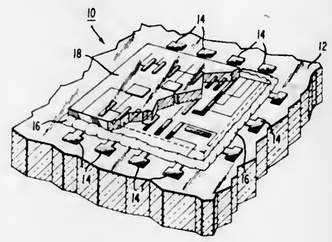
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**3,934,199**

## METHOD OF TESTING AN ELECTRICAL CIRCUIT

**Donald Jones Channin, East Windsor, N.J., assignor to RCA Corporation, N.Y.**

**Filed Mar. 28, 1974, Ser. No. 455,833**
**Int. Cl.² G01R** *31/22*
**U.S. Cl. 324—158 R** **4 Claims**



1. A method of testing an electrical circuit by observing birefringent changes in a layer of liquid crystals produced by electric fields in the circuit during the operation of the circuit, said method comprising the steps of:
- applying said layer of liquid crystals over said circuit with substantially all of the liquid crystal molecules oriented in the same direction,
- directing a beam of light through said layer with an optical system adapted to make said birefringent changes visible,
- energizing said circuit to produce said birefringent changes,
- observing said birefringent changes with said optical system, whereby the observed birefringent changes can be compared with birefringent changes produced by a normally operating circuit,
- said circuit having a passivating layer of insulating material thereon, and
- the step of applying said layer of liquid crystals over said circuit with substantially all of the liquid crystal molecules oriented in the same direction comprising:
- applying a surfactant to said passivating layer,
- drying said surfactant on said passivating layer, and
- applying said layer of liquid crystals over the dried surfactant.

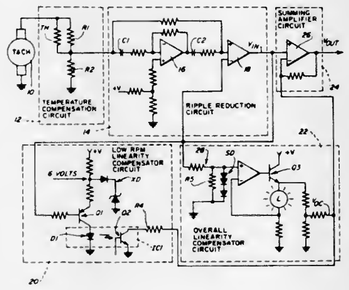
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**3,934,200**

## TACHOMETER CIRCUIT

**Stanley C. Schoonover, Waynesboro, and Michael D. McIntosh, South Mountain, both of Pa., assignors to Landis Tool Company, Waynesboro, Pa.**

**Filed Jan. 31, 1975, Ser. No. 545,993**
**Int. Cl.² G01P** *3/46*
**U.S. Cl. 324—163** **9 Claims**




1. A D.C. tachometer circuit comprising
- a non-linear D.C. tachometer which produces an output voltage having an A.C. ripple,
- a first current path from said D.C. tachometer including
- means for removing the D.C. component of the output voltage of the D.C. tachometer,
- means for inverting and isolating the A.C. voltage ripple,
- means for eliminating drift and the D.C. level of the inverted and isolated A.C. voltage ripple,
- means for mixing the original output voltage of the D.C. tachometer including the A.C. ripple and the inverted and isolated A.C. voltage ripple to establish a non-linear ripple-free output voltage, and
- means for linearizing said non-linear ripple-free output voltage.



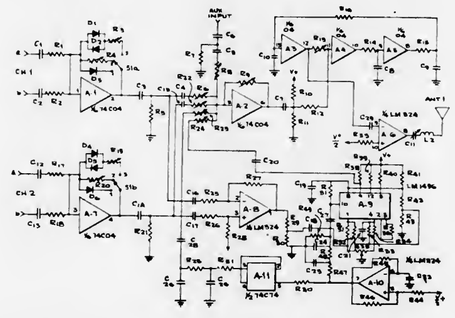
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**3,934,201**

## LOW POWER CONSUMPTION STEREO TRANSMITTER AND RECEIVER SYSTEM

**Richard L. Majefski, Rte. 1, Combs, Ark. 72721**

**Filed Mar. 22, 1974, Ser. No. 454,018**
**Int. Cl.² H04B** *1/00*
**U.S. Cl. 325—36** **11 Claims**



1. A low power consumption, highly compact portable stereo radio transmission and receiving system for multi-channel transmission of musical signals and the like from a pair of stereo pickup stations to a nearby receiver-amplifier to provide a high fidelity stereo amplified audio output, comprising a compact portable stereo radio transmitter unit including a pair of audio processing channels each comprising an audio processing amplifier circuit having plural inputs to each amplifier circuit, said audio processing amplifier circuits each having means providing one mode of undistorted amplification, one mode of even harmonic generation and one mode of odd harmonic generation wherein even harmonics and odd harmonics respectively are added to the waveforms at the amplifier input, selector switch means coupled to each said audio processing amplifier circuits permitting selection between said three modes, a difference amplifier circuit coupled to the outputs of said audio processing channels for producing a difference output signal which is the difference between the output signals from said two channels, a first oscillator for generating a first frequency waveform, a balanced mixer circuit to which are applied said difference output signal and said first frequency waveform to produce a double-sideband suppressed carrier signal centered on the frequency of said first frequency waveform, a second oscillator including amplifier means for generating a carrier frequency signal, means for modulating said carrier frequency signal with a modulating signal combined from the outputs from said two channels and said double-sideband suppressed carrier signal including a summing amplifier receiving the output signals from both of said channels and the double-sideband suppressed carrier signal from said balanced mixer and providing a combined output which is applied to said second oscillator to modulate the carrier frequency signal, divider means receiving said first frequency waveform for producing a pilot signal having a frequency which is one-half the frequency of the first frequency waveform, means for applying said pilot signal to said summing amplifier to be combined with output signals from both of said channels and said double-sideband suppressed carrier signal including low pass filter means connected to the output of said divider means for removing the harmonic content of said output from said divider means, and antenna means coupled to the modulated carrier frequency signal for radiating the same to the receiver-amplifier coupled to the transmitter only by a radio link.

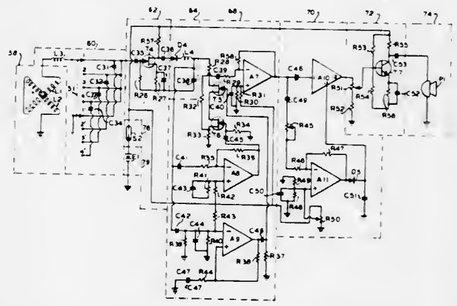
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**3,934,202**

## TOUR GUIDE SYSTEM INCLUDING MEANS FOR NOISE AND CROSSTALK SUPPRESSION

**John V. Missale, New York City, N.Y., assignor to Telesonic Systems, Inc., Fairfield, N.J.**

**Filed Mar. 25, 1974, Ser. No. 454,519**
**Int. Cl.² H04B** *5/00*
**U.S. Cl. 325—54** **10 Claims**



2. An improved, low power, multi-channel tour guide system comprising:
- a transmitter including:
  - a recording means, at least one channel means and a closed loop transmitting antenna, each channel means comprising:
  - an electronic compressor connected to said recording means,
  - an oscillator means,
  - a modulator means connected to said oscillator means and to said compressor, and
  - a coupling means for connecting said channe. means to said closed loop transmitting antenna, and
- at least one portable receiver including,
  - a receiving antenna,
  - a detector connected to said receiving antenna,
  - an expander having an input and an output terminal, said input terminal being connected to said detector, and an acoustical transducer means connected to the output of said expander means, said expander means further comprising:
  - an expander amplifier, and a feed forward circuit connected to the input terminal of said expander amplifier, said feed forward circuit comprising:
  - a first and second branch, each of said branches being in electronic parallel with the other and wherein said first branch includes an amplifier means therein and said second branch includes an inverting type amplifier therein,
  - a variable resistance means connected to both of said branches, said variable resistance means comprising a first and second field effect transistor with gates coupled together and with their cources and drains connected in series, said series combination of both having an expansion limiting resistance in shunt therewith, and wherein the gate of said first field effect transistor is connected to the output of said first branch and the

gate of said second field effect transistor is connected to the output of said second branch, and

an input resistor between said expander amplifier input terminal and said variable resistance means and forming a variable resistance voltage divider network therewith, wherein low amplitude level signals are substantially shunted to ground by said variable resistance means and high amplitude level signals are passed to said expander amplifier whereby higher amplitude level signals are amplified with more gain than lower amplitude signals.

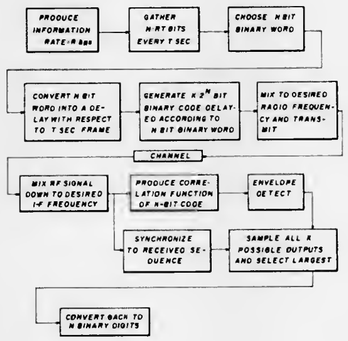
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**3,934,203**

## SPREAD SPECTRUM MODEM

**Maurice Leon Schiff, Fort Wayne, Ind., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed May 24, 1974, Ser. No. 473,120**
**Int. Cl.² H04B 15/00**
**U.S. Cl. 325—65** **1 Claim**




1. A method for transmitting and receiving digital data in spread spectrum communication systems and comprising the steps of:

at a transmitting station, producing digital information at a rate R-bits/second;

forming said information into N-bit words each T-seconds, where $N=RT$;

dividing said T-seconds into $K=2^N$ units;

converting said N-bit words into a delay with respect to said T-seconds;

generating a K-bit binary code in response to each of said N-bit words and delayed according to the particular N-bit word;

mixing said code to a selectively predetermined radio frequency and transmitting the resulting signal;

at a receiving station, heterodyning said signal down to a selectively predetermined IF frequency;

producing the correlation function of the K-bit code after it is heterodyned;

envelope detecting said correlation function;

sampling all K possible outputs and selecting the largest of said outputs; and,

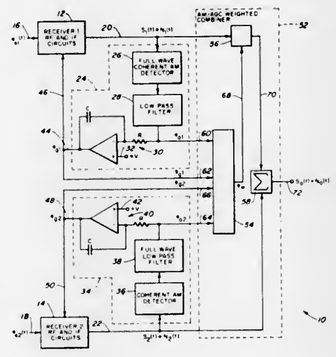
converting the selected output back to said N-bit word.

**3,934,204**

## AM/AGC WEIGHTED DIVERSITY COMBINER/SELECTOR

**Eugene R. Hill, Thousand Oaks, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed Oct. 4, 1974, Ser. No. 512,273**
**Int. Cl.² H04B 1/06**
**U.S. Cl. 325—304** **37 Claims**




1. In combination with a first and second receiver each having an automatic gain control circuit, each said automatic gain control circuit comprising a full-wave, coherent AM detector, a low pass filter, and an AGC integrator circuit, said AM detector being connected between said receiver and said low pass filter, said low pass filter being connected between said AM detector and said AGC integrator circuit, said AGC integrator circuit being connected between said low pass filter and said receiver, the signal from said low pass filter to said AGC integrator circuit being an amplitude modulated (AM) voltage which is a filtered, full-wave, coherent, AM detected signal, the signal from said AGC integrator circuit to said receiver being an automatic gain control (AGC) voltage, said AGC integrator circuit also being supplied with a direct current AGC bias voltage from an AGC bias voltage source, said AGC bias voltages being identical for both automatic gain control circuits; a predetection, weighted diversity combiner for combining a first and second received signal from said first and second receiver so as to maximize the signal-to-noise ratio of the received signals comprising:

a. first circuit means receiving said AM and AGC voltages and said first received signal for weighting said first received signal with a combining ratio that is a function of said AM and AGC voltages, said first circuit means having an output; and

b. summing circuit means having an output for summing said weighted first received signal and said second received signal, said output being said combiner output.

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**3,934,205**

## FREQUENCY LOCK LOOP EMPLOYING A GATED FREQUENCY DIFFERENCE DETECTOR HAVING POSITIVE, ZERO AND NEGATIVE THRESHOLD DETECTORS

**Warren D. Bogert, Fort Lee, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.**

**Filed Jan. 27, 1975, Ser. No. 544,425**
**Int. Cl.² H04B 1/16**
**U.S. Cl. 325—346** **6 Claims**

1. A gated frequency detector for a frequency lock loop circuit comprising:

a first source of a pulsed input signal;



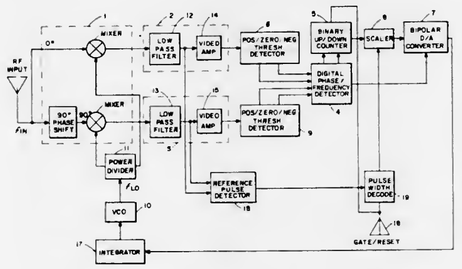
a second source of a variable frequency reference signal;

first means coupled to said first and second source for generating first and second phase quadrature frequency difference outputs;

means coupled to said first and second outputs for detecting the frequency difference between said first and second sources, said detecting means comprising:

a first threshold detector having first and second outputs, said first output being a logical pulse output which becomes high when said first phase quadrature frequency difference output is above a first predetermined threshold and remains high until said first difference output becomes zero, and said second output being a logical pulse output which becomes high when said first phase quadrature frequency difference output is below a second predetermined threshold and remains high until said second difference output becomes zero;

a second threshold detector having first and second outputs, said first output being a logical pulse output which becomes high when said second phase quadrature frequency difference output is above said first threshold and remains high until said second difference output becomes zero, and said second output is a logical pulse output which is high when said second phase quadrature frequency difference output is below said second threshold and remains high until said difference output becomes zero;




a digital phase frequency detector coupled to the output of said first and second threshold detectors for generating a first pulsed signal during the duration of said input pulse which corresponds to said frequency difference and a second signal which corresponds to the sense of said frequency difference;

counting means coupled to said first pulsed signal for counting the number of pulses;

second means coupled to said means for detecting for generating a DC voltage proportional to said frequency difference, said DC voltage applied to said second source for varying the output of said second source; and

a third source of a control gate pulse having an output coupled to said second means and synchronous with said first source for enabling and resetting the operation of said second means.

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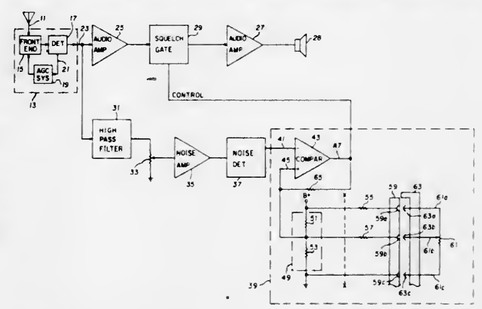
**3,934,206**

## RECEIVER WITH ADJUSTABLE SQUELCH

**C. Lloyd Holecek, Marion, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.**

**Filed Sept. 26, 1974, Ser. No. 509,519**
**Int. Cl.² H04B 1/10**
**U.S. Cl. 325—478** **13 Claims**

1. A radio receiver having, optionally, preset or adjustable squelch means and comprising: demodulator means; means connected to said demodulator means for processing the intelligence of the demodulator output, and having gating means; and squelch circuit means connected to said demodulator means and said gating means for controlling said gating means, said squelch circuit means comprising means for establishing and comparing a squelch drive signal and a reference signal, and including at least one voltage dividing circuit means for controlling, prior to their comparison, the amplitude of at least one of said signals, said voltage dividing circuit comprising first and second series connected resistive elements; and squelch control adjustment means comprising variable resistance circuit means connectable to said voltage dividing circuit for providing first and second variable resistance electrical paths respectively around said first and second resistive elements whereby, when said variable resistance circuit means is not connected to said voltage divider circuit, said squelch means is fully operative, and said receiver has a preset squelch threshold level, and when said variable resistance circuit means is connected to said voltage divider circuit, said squelch means is fully operative and said receiver has an adjustable squelch threshold level.



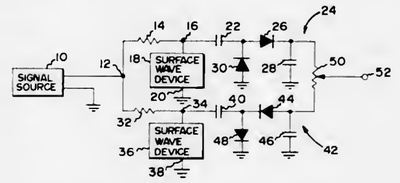

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**3,934,207**

## FREQUENCY DISCRIMINATOR UTILIZING SURFACE WAVE DEVICES

**Martin Fischman, and G. Norman Williams, both of Seneca Falls, N.Y., assignors to GTE Sylvania Incorporated, Stamford, Conn.**

**Filed Oct. 21, 1974, Ser. No. 516,175**
**Int. Cl.² H03D 3/16**
**U.S. Cl. 329—117** **9 Claims**




1. A frequency discriminator comprising:

a signal source having first and second terminals for providing a signal at said first terminal having frequencies that vary about a center frequency;

first and second surface wave devices each having a single transducer with first and second combs of interleaved electrodes disposed on a piezoelectric substrate, said first surface wave device having an impedance maximum at a frequency lower than said center frequency, and said second surface wave device having an impedance maximum at a frequency higher than said center frequency;

means connecting said first combs of electrodes of each of said first and second surface wave devices to said first terminal and said second combs of electrodes of each of said first and second surface wave devices to said second terminal;

first and second envelope detectors each having an input terminal connected to said first terminal and a common terminal connected to said second terminal for providing first and second output signals; and

means connected to said first and second envelope detectors for summing said first and second output signals to provide a signal having an amplitude representative of the frequency deviation of the signal provided by said signal source from said center frequency.

7. A frequency discriminator comprising:

a signal source having first and second terminals for providing a signal at said first terminal having frequencies that vary about a center frequency;

first and second surface wave devices each having a single transducer with first and second combs of interleaved electrodes disposed on a piezoelectric substrate, said first and second surface wave devices having impedance maximums at frequencies lower and higher, respectively, than said center frequency;

means connecting said first comb of electrodes of said first surface wave device of said first terminal, said second comb of electrodes of said first surface wave device to said first comb of electrodes of said second surface wave device, and said second comb of electrodes of said second surface wave device to said second terminal; and

first and second envelope detectors connected in parallel with said first and second surface wave devices, respectively, and further connected in series for providing an output signal having an amplitude representative of the frequency deviation of the signal provided by said signal source from said center frequency.

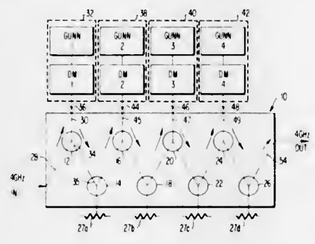
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**3,934,208**

## LOW NOISE MODULAR PARAMETRIC AMPLIFIER

**William J. Getsinger, Bethesda; Paul Koskos, and Su Min Chou, both of Potomac, all of Md., assignors to Communications Satellite Corporation (Comsat), Washington, D.C.**

**Filed May 31, 1974, Ser. No. 475,343**
**Int. Cl.² H03F 7/04**
**U.S. Cl. 330—4.5** **3 Claims**



1. A modular multi-stage parametric amplifier assembly, including a multi-port strip line circulator assembly having a plurality of series-coupled Y-junction circulators and further comprising a plurality of parametric amplifier modules connected to selected ones of said circulators, whereby failure of an amplifier module does not interrupt operation of the parametric amplifier assembly, and a quick-disconnect coupler between each amplifier module and a corresponding one of said selected circulators.

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**3,934,209**

## HIGH VOLTAGE DC COUPLED AMPLIFIER

**Alastair Valentine, West St. Paul, and Richard L. Dennison, Burnsville, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.**

**Filed Apr. 23, 1974, Ser. No. 463,251**
**Int. Cl.² H03F 3/42**
**U.S. Cl. 330—18** **15 Claims**

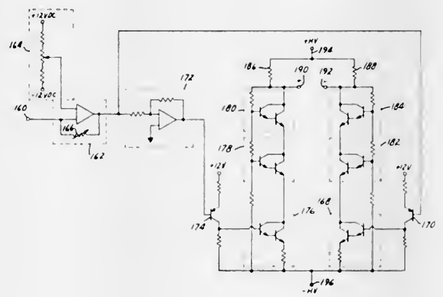
1. A DC voltage amplifier comprising:

a. means for receiving parallel binary coded input signal voltages,

b. means for converting said binary coded input signal voltages to a corresponding signal current,

c. an active network including a succession of serially connected transistors having substantially the same electrical characteristics for receiving said signal current in series through each of said transistors,

d. a load resistor for receiving such current as flows through said active network, and



e. a voltage divider network having successive nodes, each connected to the base electrode of one of the transistors to apply substantially equal Dc potentials between successive base electrodes when a DC voltage is applied across the active network, and to thus develop substantially equal potentials across each transistor,

thus establishing a signal voltage across the load resistor which increases in response to an increase in the input signal voltage, whereby the breakdown voltage rating of the amplifier is equal to the sum of the breakdown voltages of the transistors in the active network.

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**3,934,210**

## TUNING APPARATUS FOR AN OPTICAL OSCILLATOR

**J. Michael Yarborough, Tucson, Ariz., and James L. Hobart, Los Altos Hills, Calif., assignors to Coherent Radiation, Palo Alto, Calif.**

**Continuation-in-part of Ser. No. 365,317, May 30, 1973, Pat. No. 3,868,592. This application May 30, 1974, Ser. No. 474,305. The portion of the term of this patent subsequent to Feb. 25, 1992, has been disclaimed.**
**Int. Cl.² H01S 3/10**
**U.S. Cl. 331—94.5 C** **6 Claims**



1. A method of tuning or narrowing the output of an optical oscillator comprising:

placing a birefringent plate having an ordinary and an extraordinary index of refraction within the optical cavity of the optical oscillator at Brewster's angle with respect to light reflected within the optical cavity thereof; and

rotating said plate to effectively change the extraordinary index of refraction of said birefringent plate while the ordinary index of refraction thereof remains the same to obtain the desired output wavelength, while maintaining said birefringent plate at the same angle with respect to the reflected light.

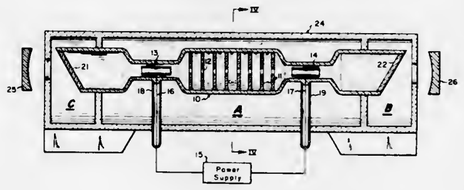


**3,934,211**

## METAL HALIDE VAPOR LASER

**Eugene W. Sucov, and Lelland A. C. Weaver, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**Continuation of Ser. No. 339,697, March 9, 1973, abandoned. This application Sept. 11, 1974, Ser. No. 505,400**
**Int. Cl.² H01S 3/22**
**U.S. Cl. 331—94.5 G** **14 Claims**



1. A method for obtaining pulsed metal vapor laser transitions at temperatures substantially below the metal vaporization temperature, said method comprising:

A. placing a metal halide of the desired metal within an enclosure;

B. vaporizing said metal halide by heating said metal halide to a temperature not substantially in excess of that required to provide a high molecular vapor pressure, said temperature level being such as to prevent substantial thermal dissociation of said metal halide;

C. at a temperature not substantially greater than said vaporizing temperature

i. collisionally dissociating the metal halide vapor with energized electrons to provide ground state metal atoms of sufficient number density to create resonance radiation trapping, and substantially simultaneously therewith

ii. creating a population inversion between a desired upper laser level and lower laser level of said metal by exciting ground state metal atoms with energized electrons and maintaining a sufficient number of metal atoms in the ground state to preserve said resonance radiation trapping,

said energized electrons of steps (i) and (ii) being produced by ionization and having a mean electron energy of at least that required to excite the upper laser level of said metal atom;

D. permitting said excited metal atoms to emit laser radiation by stimulated emission to low laser level and resonating said emission; and

E. permitting said metal atom to relax from said lower laser level to said ground state and repeating steps C, D and E.

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**3,934,212**

## GAS LASER WITH AN AMINE SEED GAS

**Ali Javan, Cambridge, and Jeffrey Steven Levine, Lexington, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.**

**Continuation-in-part of Ser. No. 335,820, Feb. 26, 1973, abandoned, which is a continuation-in-part of Ser. No. 301,894, Oct. 30, 1972, Pat. No. 3,826,997. This application Oct. 24, 1974, Ser. No. 517,771**
**Int. Cl.² H01S 3/22, 3/09**
**U.S. Cl. 331—94.5 PE** **35 Claims**

1. A laser comprising:

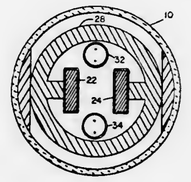
a volume of gas having a lasing constituent and a seed gas distributed throughout said lasing constituent,

said seed gas comprising an amine having the structure



where $R_1$, $R_2$, and $R_3$ represent alkyl groups and in which $R_2$ and $R_3$ may together form a cycloalkyl group, said seed gas having an ionization potential below that of said lasing constituent,

a light source arranged to emit light having ionizing photons for ionizing said seed gas, the effective photon energy spectrum of said ionizing photons lying below the ionization potential of said lasing constitutent and below the



level of photon absorption bands of said gas, said spectrum being selected to provide an average penetration depth of said ionizing photons into said gas of at least 1 cm., and

means comprising an electric field source for applying to said gas a voltage to produce a plasma energized to create a population inversion in said lasing constituent, and,

means for stimulating the emission of coherent radiation therein.

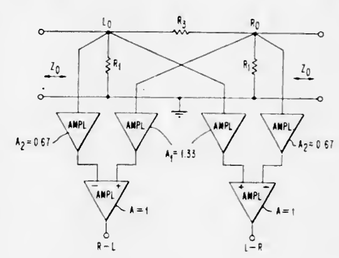
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**3,934,213**

## BROAD BAND DIRECTIONAL COUPLING CIRCUIT

**Paul E. Stuckert, Katonah, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.**

**Filed June 28, 1974, Ser. No. 484,190**
**Int. Cl.² H03H 7/48**
**U.S. Cl. 333—10** **21 Claims**



1. A broad band directional coupling circuit for insertion in a single-signal path or transmission line in which signals are propagated simultaneously in opposite directions, comprising:

a. an attenuator network employing linear, nonreactive impedance elements for insertion in said signal path or transmission line, said impedance elements forming at least first and second nodes;

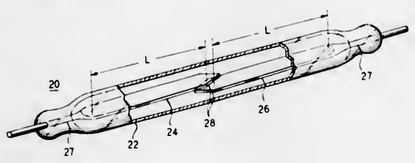
b. first signal combining means coupled to said first and second nodes for combining in a first predetermined ratio the signals at said first and second nodes to provide an output signal proportional to a signal propagating in a first direction only in said single-signal path or transmission line while providing substantially no output signal for a signal propagating in the opposite direction; and

c. a second signal combining means coupled to said first and second nodes for combining in a second predetermined ratio the signals at said nodes to provide an output signal

proportional to a second signal propagating in a second direction opposite to said first direction only in said single-signal path or transmission line while providing substantially no output signal for a signal propagating in said first direction.

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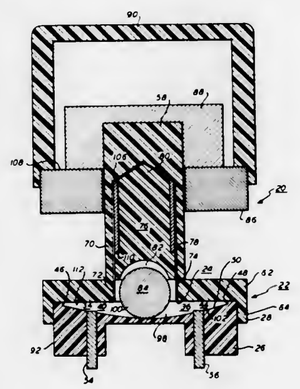
**3,934,214**
**SEALED CONTACT HAVING TAPERED REED TIPS**
**Wendel Edward Archer, Gahanna, Ohio, assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**
**Filed Mar. 31, 1975, Ser. No. 563,723**
**Int. Cl.² H01H** *51/28*
**U.S. Cl. 335—154** **3 Claims**




1. A magnetic reed contact comprising,
a capsule,
a pair of magnetic reeds, each reed having a fixed end sealed in the capsule and a flat movable end portion with side edges substantially parallel to one another for a predetermined length and tapered toward one another from the end of the predetermined length to the movable end,
the reeds are positioned with respect to one another so that the movable ends overlap one another by an overlap length and define an overlap area, and
the overlap area is less sensitive to variation in overlap length than the overlap area of a conventional reed contact having reeds cut substantially normal to the parallel side edges.

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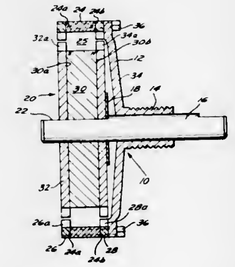
**3,934,215**
**SWITCH MECHANISMS**
**Donald S. Rich, Flanders, and Norman Rudnick, Piscataway, both of N.J., assignors to Inflo Systems, Inc., Chester, N.J.**
**Filed May 28, 1974, Ser. No. 474,038**
**Int. Cl.² H01H** *5/02*
**U.S. Cl. 335—207** **6 Claims**




1. Push-button operating means for operating magnetic responsive switch mechanisms of the type which is manually operated, said push-button operating means comprising:
a. means for housing the magnetic switch mechanism;
b. a magnet surrounding at least a part of said housing means;
c. keeper means for holding said magnet in a quiescent position;
d. push-button means for moving, in response to the manual operation, said magnet from said keeper with a predetermined initial force, said initial force being greater than that force necessary to continued movement of said magnet with respect to said switch housing, thereby stimulating tactile breakthrough and operating the switch mechanism; and
e. stop means for limiting the travel of said magnet.

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**3,934,216**
**MAGNETIC DETENT DEVICE**
**Frank L. Ward, Kensington, N.H., assignor to Clarostat Mfg. Co., Inc., Dover, N.H.**
**Filed Dec. 11, 1974, Ser. No. 531,757**
**Int. Cl.² H01F** *7/14*
**U.S. Cl. 335—272** **3 Claims**



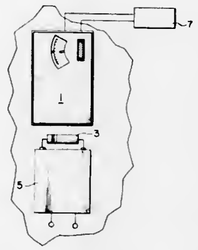

1. A multi-position rotary detent device including, in combination, a first rotary member, a first magnet of said first rotary member having first and second magnetic surfaces respectively oriented magnetic north and magnetic south, first and second pole members of said first rotary member respectively adjacent said first and second magnetic surfaces, and first and second pole members being in fixed relation with said first magnet and formed of a magnetic material, radially projecting first and second pole pieces of said first and second respective pole members, a second rotary member rotatably supported with respect to said first rotary member, a second magnet of said second rotary member having third and fourth magnetic surfaces respectively oriented magnetic south and magnetic north, third and fourth pole members of said second rotary member respectively adjacent said third and fourth magnetic surfaces, said third and fourth pole members being in fixed relation with said second magnet and formed of a magnetic material, radially projecting third and fourth pole pieces of said third and fourth respective pole members, said first and third pole pieces projecting toward each other, said second and fourth pole pieces projecting toward each other, and means for relatively rotating said first and second rotary members whereby the relative angular position of said first rotary member with respect to said second rotary member determines the magnetic flux paths between selected first and third pole pieces and selected second and fourth pole pieces.

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**3,934,217**
**THERMOSTAT CONTROL DEVICE**
**Ivo Brcic, Willowdale, Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest**
**Filed Aug. 9, 1974, Ser. No. 496,254**
**Int. Cl.² H01H** *61/02*
**U.S. Cl. 337—107** **2 Claims**

1. A thermostat offsetting device for controlling the operation of a thermostat having a selected setting thereon, said thermostat offsetting device comprising
an electric heating device in close proximity with a thermostat;
electrical energizing means for energizing the heating device, said energizing means including switch means for selectively activating the energizing of the heating device and deactivating the energizing of the heating device; and

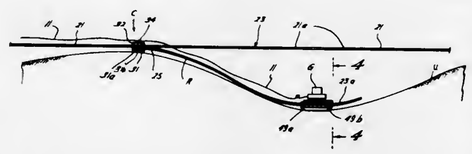





timer means coupled to the switch means for closing the switch means thereby energizing the heating device and raising the temperature in the area of the thermostat above room temperature by $\Delta T$ determined by the amount of heat generated by the heating device and the distance between the heating device and the thermostat and opening the switch means after a preselected period of time thereby deenergizing the heating device and lowering the temperature in the area of the thermostat to the room temperature whereby the thermostat controls the room temperature in accordance with the setting thereon.

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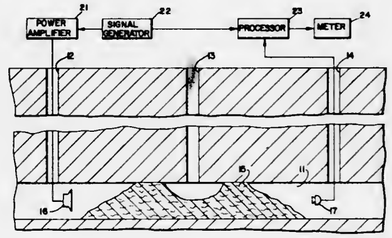
**3,934,218**
**APPARATUS AND METHOD FOR SEISMIC EXPLORATION**
**John J. Babb, Jackson, Miss., assignor to Seiscom Delta Inc., Houston, Tex.**
**Filed Aug. 17, 1971, Ser. No. 172,403**
**Int. Cl.² G01S** *9/66*
**U.S. Cl. 340—3 T** **3 Claims**




1. An apparatus for seismic exploration operations using seismic signals comprising:
a. geophone means for sensing the seismic signals during the exploration operations;
b. towing means for moving and placement of said geophone means in position for the exploration operations, said towing means comprising a towing sheet member having an aperture formed therein for permitting movement of said geophone means through said towing sheet member during movement and placement of said geophone means on surfaces; and
c. resilient means for isolating said geophone means from vibrations and the like in said towing means wherein more accurate exploration results are obtained, said resilient means comprising resilient strip means for mounting said geophone means with said towing sheet member preventing contact between said geophone means and said towing member to permit said resilient strip means to absorb the vibrations and the like induced in said towing sheet member during seismic exploration, wherein said geophone means is acoustically decoupled and isolated from the vibrations in said towing sheet member.

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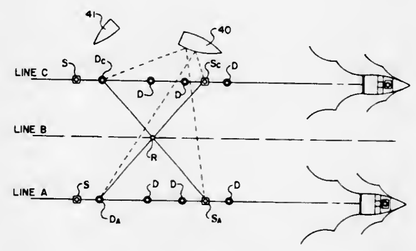
**3,934,219**
**ACOUSTIC METHOD AND APPARATUS FOR DETERMINING EFFECTIVENESS OF MINE PASSAGE SEAL**
**David A. Monaghan, Newton Center, Mass., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.**
**Filed Sept. 11, 1974, Ser. No. 504,468**
**Int. Cl.² H04B** *11/00*; **E21C** *37/00*, *41/00*, *45/00*
**U.S. Cl. 340—15** **15 Claims**




1. A method of determining the effectiveness of a seal tending to block an underground passage comprising transmitting acoustic energy in the passage toward the seal so that at least a portion of the energy impinges on the seal, a first component of the transmitted energy having a tendency to be transmitted through the seal, a second component of the transmitted energy having a tendency to be reflected from the seal, detecting one of said components of the transmitted acoustic energy, and in response to the amplitude of the detected acoustic energy determining the effectiveness of the seal.

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**3,934,220**
**METHOD OF SEISMIC EXPLORATION FOR PENETRATING DIFFRACTION BARRIERS AND/OR SURVEYING BENEATH OBSTACLES**
**JLee Davis, Ector, Tex., assignor to Avance Oil & Gas Company, Inc., Midland, Tex.**
**Continuation of Ser. No. 376,219, July 3, 1973, abandoned, which is a continuation-in-part of Ser. No. 145,811, May 21, 1971, Pat. No. 3,746,122. This application Jan. 22, 1975, Ser. No. 542,941**
**Int. Cl.² G01V** *1/20*
**U.S. Cl. 340—15.5 MC** **2 Claims**




1. A method for penetrating a seismic diffraction barrier created by objects in, in the neighborhood of, or above a geologic region of interest desired to be seismically explored comprising:

generating multiple pieces of data from a given reflecting point by means of disturbances created at source points and detectors located at detecting points such that at least some pairs, each pair comprising one source point and one detecting point, are aligned on azimuths which intersect at a vertical line passing through said reflecting point;
recording said multiple pieces of data, said data recordings containing diffraction signals masking a signal from said reflecting point in the geologic region of interest;
and combining data recordings containing data generated along a multiplicity of azimuths having a common intersection, whereby said diffraction signals in large part additively cancel one another and the signals from said reflecting point additively reinforce one another, to produce a composite recording containing a discernable signal representing said reflecting point.

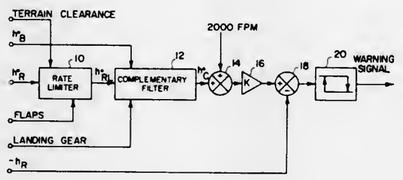
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**3,934,221**

## TERRAIN CLOSURE WARNING SYSTEM WITH ALTITUDE RATE SIGNAL CONDITIONING

**Charles Donald Bateman, Bellevue, and Hans Rudolf Muller, Kirkland, both of Wash., assignors to Sundstrand Data Control, Inc., Redmond, Wash.**

**Filed Mar. 6, 1975, Ser. No. 556,022**
**Int. Cl.² G01C** *5/00*
**U.S. Cl. 340—27 AT** **17 Claims**




**1.** In a terrain warning system for aircraft utilizing the comparison of an altitude above ground signal received from a radar altimeter with an altitude rate signal derived from the altitude above ground signal to generate a warning signal indicating excessive terrain closure rates, wherein the improvement comprises:
means for conditioning the altitude rate signal indicating a decrease in altitude; and means operatively connected to said conditioning means for limiting the altitude rate signal indicating an increase in altitude, in relation to the altitude rate signal indicating a decrease in altitude in order to increase the time response of the terrain warning system by decreasing the effects of the altitude rate signal indicating an increase in altitude.

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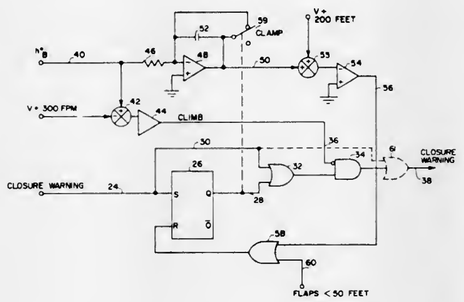
**3,934,222**

## TERRAIN CLOSURE WARNING SYSTEM WITH CLIMB INHIBIT AND ALTITUDE GAIN MEASUREMENT

**Charles Donald Bateman, Bellevue; Hans Rudolf Muller, Kirkland, and Frank Joseph Brem, Mountlake Terrace, all of Wash., assignors to Sundstrand Data Control, Inc., Redmond, Wash.**

**Filed Apr. 2, 1975, Ser. No. 564,512**
**Int. Cl.² G01C** *5/00*
**U.S. Cl. 340—27 AT** **21 Claims**

**1.** In a terrain closure warning system that generates a warning signal indicating an excessive rate to the terrain, wherein the improvement comprises:
means for indicating that the aircraft is climbing at a predetermined rate;
means for measuring the aircraft's gain in altitude;
means, responsive to said indicating means and said measuring means, for reactivating the warning signal when the aircraft has discontinued climbing at said predetermined




rate and has not gained a predetermined amount of altitude.

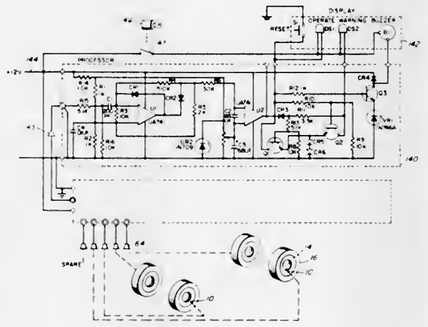
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**3,934,223**

## TIRE PRESSURE WARNING SYSTEM

**William A. Barabino, North Reading, Mass., assignor to Safety Research & Engineering Corporation, North Reading, Mass.**

**Filed Dec. 4, 1973, Ser. No. 421,538**
**Int. Cl.² B60C** *23/02*
**U.S. Cl. 340—58** **7 Claims**



**1.** A system for monitoring the pressure of a pneumatic tire for a vehicle having an ignition system, comprising
a. a pressure responsive acoustical signal generating device operatively connected to said tire, said device adapted to generate an acoustical signal whenever the pressure in said tire reaches a predetermined level,
b. acoustical signal sensing means mounted on said vehicle remote from said device,
c. alarm means operatively connected to said sensing means for providing an alarm output in response to the detection of a signal by said sensing means,
d. memory means operatively connected to said sensing means and said alarm means for passively storing a signal from said sensing means, and,
e. switch means connected to said memory means and to said alarm means and responsive to actuation of said ignition system for transferring signals from said memory means to said alarm means.

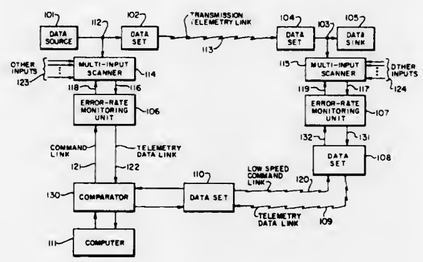


**3,934,224**

## APPARATUS FOR CONTINUOUS ASSESSMENT OF DATA TRANSMISSION ACCURACY IN A COMMUNICATION SYSTEM

**Ernest N. Dulaney, Clearwater, and Richard F. Elmhurst, Largo, both of Fla., assignors to Honeywell Information Systems, Inc., Waltham, Mass.**

**Filed Oct. 29, 1974, Ser. No. 518,538**
**Int. Cl.² G06F** *11/00;* **G08C** *25/02*
**U.S. Cl. 340—146.1 BA** **15 Claims**




**1.** An apparatus for in-service monitoring of the accuracy of electronic data transmitted over a first communication channel or telemetry link comprising:
a. first means, in a first system, for monitoring for accuracy a first unit of said data transmitted over said first communication channel;
b. second means, in a second system, for monitoring for accuracy a second unit of said data received over said communication channel;
c. third means, in said second system coupled to said second means, for transmitting substantially all of said second monitored unit of said data, which is a full version of the information in said second monitored unit of data, to said first system over a second communication channel;
d. fourth means, in said first system coupled to said first means, for comparing substantially all of said first unit of monitored data, which is a full version of the information in said first unit of monitored data, with substantially all of said second unit of monitored data; and
e. fifth means, coupled to said fourth means, for calculating a bit error rate (BER) of said data transmitted from said first system to said second system.

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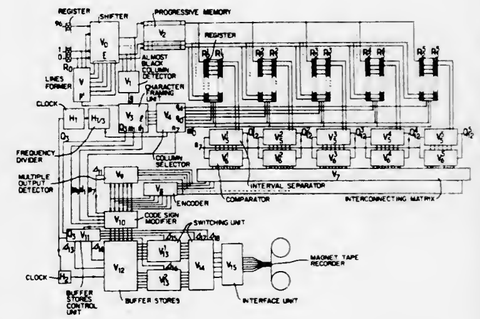
**3,934,225**

## SYSTEM FOR SCANNING AND IDENTIFYING STANDARDISED CHARACTERS AT HIGH SPEED

**Rene de Possel, 55, avenue du Panorama, 92340 Bourg la Reine, France**

**Filed Jan. 15, 1974, Ser. No. 433,438**
**Claims priority, application France, Jan. 19, 1973, 73.01923**
**Int. Cl.² G06K** *9/12*
**U.S. Cl. 340—146.3 J** **10 Claims**

**1.** A system for scanning and identifying characters in a document carrying a text made up of equidistant parallel lines of equal length placed one below another, some lines possibly being blank, the said system including means for scanning the text in successive transverse sweeps during each of which a transverse band covering a small number of lines of writing is scanned, the document being movable relative to the fixed position of the band so that, between one transverse sweep and the next, each line of writing comes into substantially the same position as the line before, each band being itself scanned at a frequency T in J equidistant columns, each of said columns being divided into a number N of small areas which form a line, the said scanning means supplying N electrical signals formed by a 0 or a 1 which correspond respectively to the whites and blacks or vice versa in the text, the system being characterised by the combination of means for extracting from each of the successive bands the signals corresponding to one line of writing in such a way that each line is extracted once and once only, means for extracting from each of the columns J in the band an interval containing a fixed number N′ of bits which forms a part-column G such that each column G extends over the whole height of the selected line of writing, a progressive store comprising N′ shift registers in which each bit moves up one position after each time T, means for feeding the part column G into said store, means to discover, for each of the characters encountered, which is the first and last of the columns G associated with this character before the said columns are fed into the progressive store, means for extracting for each character in the selected line of writing, a small number of columns from the columns G which cover the character, this number being calculated as a function of their total number and being intended for the identification of the character; a first group of registers and means to transfer the respective columns $G_1$, $G_2$ to them in parallel from said progressive store, a second group of registers and means to transfer the contents of said first group of registers to said second group of registers in parallel so as to free the latter which then receive the columns selected for the next character, which are selected in their turn from said progressive store, said registers in said second group being so arranged that means allow the length $A_j'$ of the part intervals $I'1, I'2 \ldots$ making up each of the columns $G'$, which are expressed as number of bits and which are formed from consecutive whites or consecutive blacks, to be extracted from them, so as to




correct for possible spots or missing areas, means for comparing these lengths with predetermined fixed numbers $C'_{j1}$ $C'_{j2}$ . . . , the said comparison means being arranged to allow one or more inequality tests which compare the lengths $A_j'$ with these fixed numbers $C'_{jm}$ to be associated with each of the characters $>|$ in the alphabet employed, so that, if the inequality conditions of one of these tests are satisfied in the case of an unknown character the latter is thus identified with $\Lambda$ , the said means enabling a length $>|\ j'$ to be compared with $C_{j,1}'$, $C_{j,2}'$ . . . , each time such a length is ascertained, in a time which is sufficiently short for the said means to be again usable when length $A_{j+1}'$ appears no matter how short this length may be, it also being possible for the comparisons for columns $G^1$, $G^2$ . . . to be carried out simultaneously, an identifying member incorporating an input device made up of locations corresponding to the indices $i$, $j$, $k$ of the constant $C_{j,k}'$, which each receive the result of a comparison in the form of an 0 or 1 bit as soon as the comparison has taken place, said identifying member further incorporating one or more output registers each of which is made up of locations corresponding to the different characters in the alphabet in question and means which use the inequality tests which have been associated with each character so that the character which is identified is indicated by a 0 (or a 1) at the location which corresponds to it and by a 1 (or a 0) at all the other locations in each of the output registers, this character being considered a valid one where the identifying member has only one output register, or, where the identifying member has a plurality of output regis-

ters, the inequalities employed for each of the characters calling into play pairs of inuices which are generally different from one register to another, identification being considered valid if all the output registers of said identifying member indicate the same character or if this character predominates and means for supplying the characters so identified in the form of coded signals.

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**3,934,226**

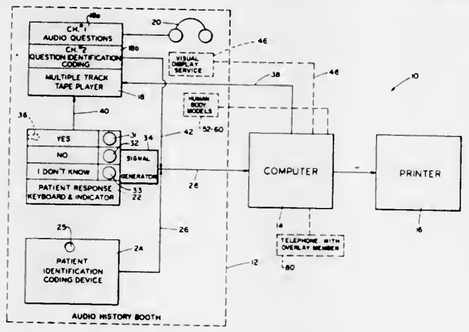
## AUTOMATED AUDIO HEALTH HISTORY ACQUISITION SYSTEM

**Stanford C. Stone, Deerfield, and Irwin H. Sommerfeld, Mount Prospect, both of Ill., assignors to International Health Systems, Inc., Rolling Meadows, Ill.**

**Continuation-in-part of Ser. No. 199,711, Nov. 17, 1971, abandoned. This application Nov. 23, 1973, Ser. No. 418,660**

**Int. Cl.² G06F** *3/16;* **G09B** *7/06*

**U.S. Cl. 340—172.5** **12 Claims**




**1.** An automated audio health history acquisition system for audibly presenting health history questions to a patient and recording responsive answers thereto, said system comprising:

A. a computer having a plurality of register circuits for storing code signals and transmitting code signal operation instructions,

B. a patient identification coding device for initally establishing and generating a patient identification code signal and transmitting the same to the computer for storage therein, the patient identification coding device including an actuating device for activating the computer,

C. a multi-channel recorder with audio output operable by signals generated by said computer after the patient identification code signal has been initiated, said recorder including

i. a first memory channel having said questions recorded thereon in a predetermined sequence to be audibly presented one question at a time to the patient,

ii. a simultaneously operable second memory channel having code signals recorded thereon to identify each question recorded on said first channel and transmit to the computer said question code signals,

D. at least one human figure model for visual display to the patient, the model having a front three-dimensional surface and a rear planar surface, the rear surface being formed with a matrix of electrical circuitry having junction points spread throughout the surface thereof, a plurality of energy transmitting conduits originating from selected ones of the junction points and terminating with light emitting elements at selected points proximate the front surface of the model, the matrix being controllably connected with the computer,

E. a patient response device for receiving the audio output of the first channel and including

i. a keyboard operable by the patient in response to the questions to selectively indicate answers to said questions by one of a series of predetermined answers,

ii. an answer code signal generator for generating code signals according to the patient indicated answer and transmitting the same to the computer for correlated storage with the respective question code signals, and

F. a read-out printer responsive to signals generated by the computer to produce a printed record of the signals stored in the computer,

whereby activation of the actuating device will cause the computer to start the recorder and audibly present questions seriatum to the patient and cause the light emitting elements to illuminate to display a desired simulated pain or discomfort pattern on the front surface of the model, the answer code signals to the audibly presented questions being stored in the computer together with the respective question code signals and patient identification code signal and thereafter the computer will cause the printer to produce a printed coordinated read-out of the accumulated information.

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**3,934,227**

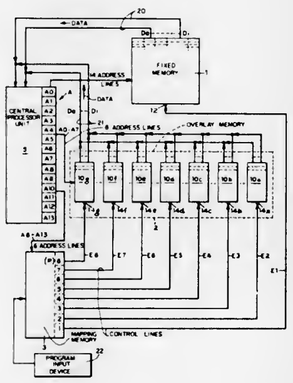
## MEMORY CORRECTION SYSTEM

**Bernard I. Worst, Flanders, N.J., assignor to Digital Computer Controls, Inc., Fairfield, N.J.**

**Filed Dec. 5, 1973, Ser. No. 421,959**

**Int. Cl.² G06F** *13/00*

**U.S. Cl. 340—172.5** **3 Claims**




**1.** A memory system for use with a central processor unit having an address register comprising:

a. a fixed memory having a plurality of fixed memory registers addressable by the address register of the central processor unit, and a control input for enabling or disabling the fixed memory in accordance with the state of the control input;

b. an overlay memory having a plurality of sections of overlay memory registers, corresponding registers in each section being addressable simultaneously by a first portion of the address in the address register of the central processor unit;

c. each section of the overlay memory having a control input for enabling or disabling such section in accordance with the state of its control input; and

d. a mapping memory having a plurality of mapping memory registers addressed by a second portion of the address of the address register of the central processor unit;

e. a first cell of each register of the mapping memory having a predetermined content and being connected to the control input of the fixed memory for establishing the state of such control input; and

f. the remaining cells of each register having predetermined contents and being respectively connected to the control inputs of the sections of the overlay memory for establishing the state of each of such sections whereby the contents of the first cell of the addressed memory register determines whether the fixed memory is enabled or disabled, and the contents of the remaining cells of the addressed memory register disables all of the sections when the fixed memory is enabled, and enables one and only one of the sections when the fixed memory is disabled.



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**3,934,228**

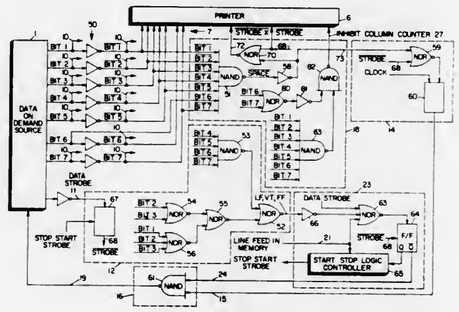
## PARALLEL INTERFACE WITH HIGH SPEED PRINTER

**Paul J. Moran, Waynesboro, Va., assignor to General Electric Company, Waynesboro, Va.**

**Continuation of Ser. No. 314,584, Dec. 13, 1972, abandoned. This application Dec. 10, 1973, Ser. No. 423,083**

**Int. Cl.² G06F** *3/12*

**U.S. Cl. 340—172.5** **19 Claims**




**1.** Apparatus for controlling the processing of output signals presented sequentially from a source and related to printing wherein said output signals comprise coded signal representing printable characters to be printed and SPACE commands to control the spacing of characters to be printed, said apparatus comprising,

a memory and a column counter associated with said memory,

means for sensing said presented signals to identify such signals as representing printable characters or SPACE commands, means for storing sensed signals identified as representing printable characters but not sensed signals identified as representing SPACE commands in said memory,

means for changing the count state of said column counter by a given count in response to each sensed signal identified as representing a printable character or SPACE command to produce count indicating signals,

means coupled to said column counter for storing in said memory a count indicating signal corresponding to each change in count of said column counter associated with a sensed signal identified as representing a printable character but not a sensed signal identified as representing a SPACE command,

means coupled to said source and responsive to a sensed signal identified as representing a printable character but not a SPACE command for delaying, by a first time interval, the presentation from said source of a subsequent occurring output signal,

and means coupled to said source and responsive to a sensed signal identified as representing a SPACE command for storing in said memory a sensed signal identified as representing a printable character without said first time interval delay.

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**3,934,229**

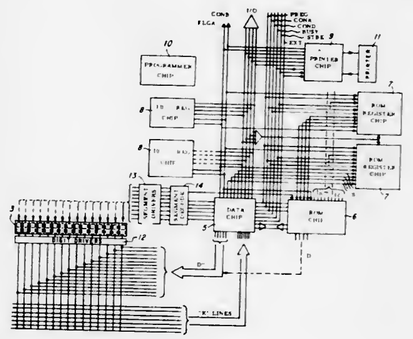
## EXTERNAL REGISTER MEMORY CHIP IN A CALCULATOR SYSTEM

**Michael J. Cochran, Richardson, and Charles P. Grant, Jr., Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.**

**Filed Dec. 10, 1973, Ser. No. 423,355**

**Int. Cl.² G06F** *15/00*

**U.S. Cl. 340—172.5** **10 Claims**




**1.** In a data processing system, implemented in at least one semiconductor chip having input means for entering data and functions, and control means for handling the data and functions, the improvement comprising:

a. timing means, for providing timing signals;

b. instruction memory means for storing instructions;

c. flag generating means connected and responsive to the instruction memory means for selectively generating a flag signal;

d. combining means connected to the timing means and to the flag generating means for combining the flag signal and any one of the timing signals into a unique store or read addressing signal; and

e. auxiliary storage means connected to and responsive to the combining means for storing in the storage means the input data and functions in address locations determined by the unique store addressing signals and for reading out of the storage means the data and functions from address locations determined by the unique read addressing signals.

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**3,934,230**

## AUTOMATIC SELECTOR FOR PERIPHERAL EQUIPMENT

**Yves Salle, Boulogne-sur-Seine, and Marcel Pincemin, Ris Orangis, both of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, France**

**Filed Dec. 28, 1973, Ser. No. 429,201**

**Claims priority, application France, Dec. 28, 1972, 72.46631**

**Int. Cl.² G06F** *3/00;* **H04Q** *3/00*

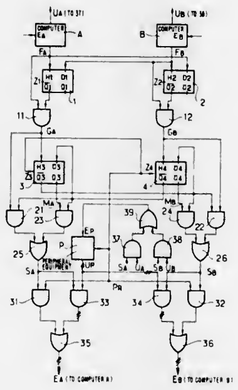
**U.S. Cl. 340—172.5** **8 Claims**

**1.** An automatic selector associated with a peripheral equipment capable of exchanging data with one or the other of first and second computers for connecting the peripheral equipment to the computer which is the first to request connection to the peripheral equipment and for maintaining that connection until the selected computer is finished exchanging data, comprising

a first selection stage including means responsive to address outputs representing request for connection to the peripheral equipment from said first and second computers for generating a first signal when said first computer request is the first received and for generating a second

signal when said second computer request is the first received,

a second selection stage connected to receive said first and second signals and including means responsive to a busy free output from said peripheral equipment representing the busy/free condition thereof and said first and second signals for generating a first selection signal when a first signal is received from said first selection stage and said



peripheral equipment is free and for generating a second selection signal when a second signal is received from said first selection stage and said peripheral equipment is free, and

coupler means for enabling the application of data from said first computer to said peripheral equipment in response to said first selection signal and for enabling the application of data from said second computer to said peripheral equipment in response to said second selection signal.

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## 3,934,231
## ADAPTIVE BOOLEAN LOGIC ELEMENT

**William Ward Armstrong, Montreal, Canada, assignor to Dendronic Decisions Limited, Montreal, Canada**

**Filed Feb. 28, 1974, Ser. No. 446,968**
**Int. Cl.² G06F** *15/18*
**U.S. Cl. 340—172.5** **10 Claims**

**1.** A digital logic circuit, hereinafter referred to as an element, which is a basic building block of learning machines formed by interconnection of a plurality of said elements into a network, which network under the control of an agent hereinafter referred to as a control unit, during a training period can learn a boolean function of $n$ variables, the latter applied by said control unit through a scheme of multiple connections and connections with inversion to certain inputs of said network, the action of each said element in forming the relationship between the said n variables and the network output being to process information as a two-input, one-output combinational circuit the logical operation of which depends on the internal state of said element, which internal state may be altered by the control unit's applying a training procedure to said network; and which element comprises:

input-and-output means comprising a first input lead, hereinafter referred to as the left input lead, a second input lead, hereinafter referred to as the right input lead, and an output lead;

control signal input means for receiving control signals, comprising a clock lead and a desired network output lead;

heuristic responsibility input-and-output means comprising a heuristic responsibility input lead, a left heuristic responsibility ouput lead, and a right heuristic responsibility output lead;

output computation means;

a first function value unit means;

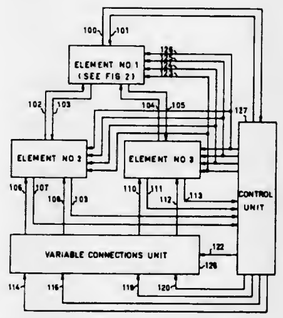
a second function value unit means;

a first heuristic responsibility unit means, hereinafter also referred to as the left heuristic responsibility unit means;

a second heuristic responsibility unit means, hereinafter also referred to as the right heuristic responsibility unit means; and

interconnection means for connecting the aforementioned means as hereinafter required comprising direct connections and connections through inverters; whereby

said output computation means is a combinational circuit receiving signals from said left input lead, said right input lead, said first function value unit, and said second function value unit, and sending its output signal directly to said output lead via said interconnection means, the value of said output signal being equal to $xy + xyv_{10} + xyv_{01}$, where $x$ is the value on said left input lead, $y$ is the value on said right input lead, $v_{10}$ is the value of the output of



said first function value unit means, and $v_{01}$ is the value of the output of said second function value unit means;

and whereby said first and second function value unit means are connected via said interconnection means to said control signal input means;

and whereby

said first function value unit means can change its internal state, which determines its output, only when a clock pulse occurs on said clock lead while $x$ is ONE and $y$ is ZERO, and said second function value unit means can change its internal state, which determines its output, only when a clock pulse occurs on said clock lead while $x$ is ZERO and $y$ is ONE;

and whereby

the output of said first heuristic responsibility unit means is connected via said interconnection means directly to said left heuristic responsibility output lead, and the output of said second heuristic responsibility unit means is connected via said interconnection means directly to said right heuristic responsibility output lead;

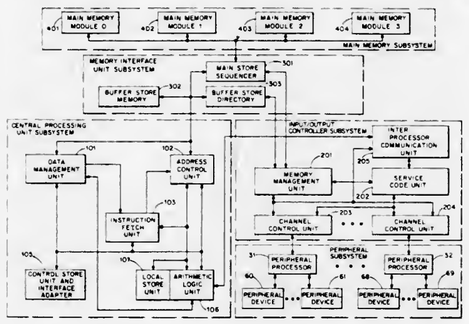
and whereby a change of state of said first and second function value unit means and said first and second heuristic responsibility unit means may occur only at the occurrence of a clock pulse on said clock lead while the value on said heuristic responsibility input lead is a certain fixed value indicating "heuristic responsibility" of said element for the current input $n$-tuple presented to the machine during training.



## 3,934,232
## INTERPROCESSOR COMMUNICATION APPARATUS FOR A DATA PROCESSING SYSTEM

**John L. Curley, Sudbury, and Roger R. Richard, Chelmsford, both of Mass., assignors to Honeywell Information Systems, Inc., Phoenix, Ariz.**

**Filed Apr. 25, 1974, Ser. No. 463,946**
**Int. Cl.² G06F** *9/18*
**U.S. Cl. 340—172.5** **8 Claims**



**1.** In a data processing system having at least two processing units, each processing unit having a plurality of common logical resources which may be utilized by the other processing unit, apparatus for enabling synchronization of the utilization of said common logical resources between said processing units, said apparatus comprising:

a plurality of pairs of bistable indicating means, each of said pairs of said plurality of bistable indicating means corresponding to a one of said resources, one bistable indicating means of each of said pairs corresponding to one processing unit, the other bistable indicating means of each of said pairs corresponding to the other processing unit,

first means responsive to said one processing unit for selecting one of said resources and for setting the corresponding one of said plurality bistable indicating means,

second means responsive to said other processing unit for selecting one of said resources and for setting the corresponding one of said plurality of bistable indicating means, and

third means responsive to said pairs of bistable indicating means for preventing said first means and said second means from setting the corresponding one of said pair of bistable indicating means for said one resource when the other of said pair of bistable indicating means is already set,

whereby priority for utilization of said resource is provided.

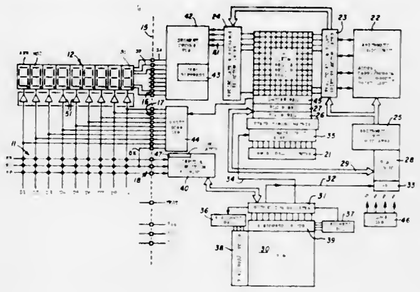
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## 3,934,233
## READ-ONLY-MEMORY FOR ELECTRONIC CALCULATOR

**Roger J. Fisher, and Gerald D. Rogers, both of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.**

**Filed Sept. 24, 1973, Ser. No. 400,471**
**Int. Cl.² G11C** *13/00*
**U.S. Cl. 340—173 R** **12 Claims**

**1.** In a small, portable, battery-operated electronic calculator of the type implemented in large-scale-integrated semiconductor means: a read-only-memory of storing a plurality of instruction words for defining the operation of the system, comprising an array of rows and columns of memory cells and row lines and column lines associated with the array, the column lines being partitioned in groups to provide bits of the instruction word on output lines, each group consisting of an output line and a ground line with a plurality of intermediate column lines between the output line and the ground line, there being only one ground line for each group of column lines, column select means receiving an address signal for selecting a particular column in each group and connecting the column line on one side of the selected column to the ground line for such group and connecting the column line on the other side of the selected column to an output line for such group, row select means receiving an address signal for selecting a particular row line including a precharged decode array isolated from all of the row lines except the selected one, and means for precharging the column lines prior to connection of a column line to a ground line.

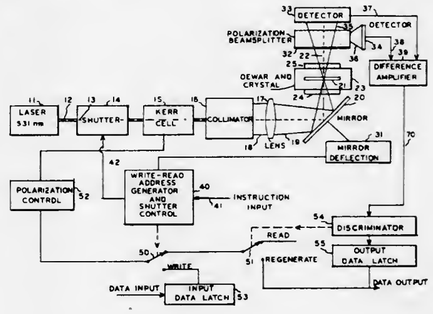


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## 3,934,234
## PHOTODICHROIC READOUT DEVICE USING CIRCULARLY POLARIZED LIGHT

**James Vinton Burt, Wilmington, Del., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed July 5, 1974, Ser. No. 486,126**
**Int. Cl.² G11C** *11/42, 13/04*
**U.S. Cl. 340—173 CC** **9 Claims**



**1.** An improved photodichroic readout device for detecting information stored in a photodichroic crystal memory unit comprising:

a. a source of a coherent light beam for projecting said beam along a first path;

b. means for circularly polarizing said coherent beam in said first path and for projecting said circularly polarized coherent beam in a controlled manner along a second path;

c. a material having photodichroic properties as a storage unit in said second path of said beam;

d. polarization beam splitter means positioned to receive said beam of light that has passed thru said photodichroic material and splitting said beam dependent upon said beam's vertical or horizontal polarization of said beam;

e. first and second detector means positioned to receive said horizontal or vertical beams, said detectors having electrical outputs;

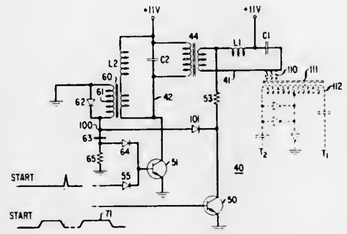
f. said electrical outputs coupled to a difference amplifier; and,
g. means for taking the output of said difference amplifier and displaying the information that is stored in said photodichroic material.

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**3,934,235**
**REACTIVE COUPLED DRIVE CIRCUIT FOR MAGNETIC BUBBLE MEMORIES**

**Andrew Henry Bobeck, Chatham; Donald Eugene Kish, Middlesex, and Roman Kowalchuk, Somerville, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**

**Filed Nov. 4, 1974, Ser. No. 520,611**
**Int. Cl.² G11C 11/14**
**U.S. Cl. 340—174 TF** **7 Claims**



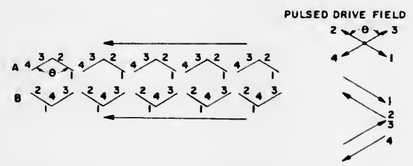

1. A combination comprising a field-access magnetic bubble memory in which bubbles may be made to move in a plane of movement and a driver circuit having first and second coils for providing a magnetic field reorienting in said plane, said driver circuit further comprising first and second tuned circuits, said first tuned circuit comprising a first capacitor and said first coil connected electrically in series, said second tuned circuit comprising a second capacitor and said second coil connected electrically in parallel, and means for reactively coupling said first and second tuned circuits.

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**3,934,236**
**PULSED FIELD ACCESSED BUBBLE PROPAGATION CIRCUITS**

**Howard H. Aiken, deceased, late of Ft. Lauderdale, Fla. (by Mary E. Aiken, executrix); Paul T. Bailey, Creve Coeur, Mo., and Robert C. Minnick, Houston, Tex., assignors to Monsanto Company, St. Louis, Mo.**

**Filed Jan. 11, 1974, Ser. No. 432,437**
**Int. Cl.² G11C 11/14, 19/08**
**U.S. Cl. 340—174 TF** **15 Claims**

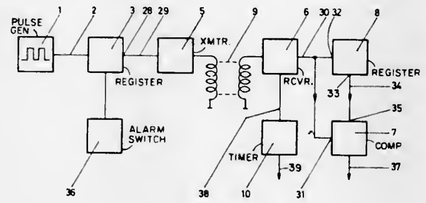



1. A magnetic bubble propagation system, comprising a field-accessed bubble overlay pattern and means for generating a repetitive sequence of reversing pairs of pulsed field orientations realigning consecutively with mutually oblique axes parallel to the plane of said overlay pattern.

**3,934,237**
**ALARM DEVICE**

**Bjorn Gysell, Huddinge, and Matz Pehrsson, Linkoping, both of Sweden, assignors to Bevaknings AB Securitas, Stockholm, Sweden**

**Filed Mar. 6, 1974, Ser. No. 448,579**
**Claims priority, application Sweden, Mar. 12, 1973, 7303450**
**Int. Cl.² G08B 26/00**
**U.S. Cl. 340—213 R** **4 Claims**




1. An alarm device comprising a first program mechanism at a monitored station and a second program mechanism at a central monitoring station, which program mechanisms are arranged to transmit control signals in accordance with a predetermined signal pattern to a signal comparison circuit arranged to generate an alarm signal when the received control signals differ from one another, the first and the second program mechamisms being provided with identical electric shift registers with a plurality of binary denominational steps and identically connected feed-back networks, each program mechanism being arranged to generate a binary one or zero signal in dependence on the content of the respective shift register, said binary signals constituting discrete control signals, the control signal from the first program mechanism being coupled to a transmitter at said monitored station arranged to transmit an analogous signal to a receiver at the central monitoring station, which receiver converts the analogous signal to an output signal identical with the original binary control signal, which output signal is coupled to the second program mechanism to step the shift register thereof to generate a control signal, which together with the output signal of the receiver, is coupled to the signal comparison circuit, and wherein a timing mechanism is arranged to generate an alarm signal in the absence of an output signal from the receiver after a predetermined period of time.

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**3,934,238**
**DIFFERENTIAL PRESSURE VISUAL AND AUDIBLE WARNING SIGNAL DEVICE FOR HYDRAULIC AND PNEUMATIC SYSTEMS**

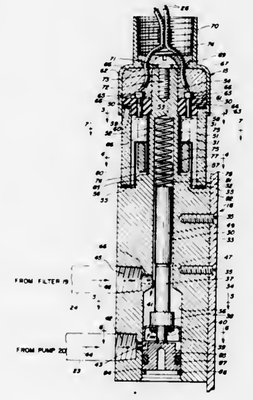
**George S. Pavlou, Madison, Wis., assignor to Ambac Industries, Inc., Carle Place, N.Y.**

**Filed Mar. 4, 1975, Ser. No. 555,158**
**Int. Cl.² G08B 21/00; B01D 35/14**
**U.S. Cl. 340—239 F** **13 Claims**

12. A differential pressure warning signal device for use in fluid power systems employing an hydraulic or pneumatic fluid power medium comprising:
a. a housing adapted to be arranged in and in communication with the fluid power system and including a body having therein
1. an internal cylindrical cavity;
2. a piston unit including a piston head movably mounted in the said cylindrical cavity;
3. a high pressure inlet in the said body of the said housing for the flow of the fluid power from the system into the said cylindrical cavity below the said piston head;
4. a low pressure inlet in the body of the said housing for the flow of the fluid power from the system into the said cylindrical cavity above the said piston head;



b. stationary electrical contact means in the said housing adapted to be connected to an electrical circuit which includes an electrically actuatable warning signal device;
c. a first magnetic means movably mounted in the said housing above and in coaxial alignment with the said piston unit;
d. a second and torroidal magnetic means movably mounted in the said housing radially outwardly of the said first magnetic means;
e. movable electrical contact means movably mounted in the said housing above the said second and torroidal magnetic means and movable by the said second and torroidal magnetic means into electrical contacting engagement with the said stationary electrical contact means to close the said electrical circuit to the said electrically actuatable warning signal device; and
f. spring means in the said housing above and in coaxial alignment with the said first magnetic means and with the said piston unit and coacting with the force of the fluid power entering the said cylindrical cavity from the system

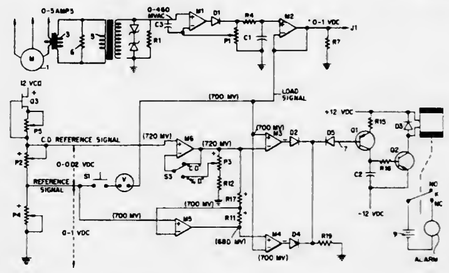



by way of the said low pressure inlet to urge the said piston unit downwardly in the said piston cylinder against the action of the upward force of the said fluid power entering the said cylindrical cavity from the system by way of the said high pressure inlet below the said piston head so as to maintain a static or balanced condition between the combined downward forces of the said spring means and the fluid power from the said low pressure unit tending to urge the said piston unit downwardly in the said cylindrical cavity against the upward force of the fluid power entering the said housing by way of the said high pressure fluid power tending to raise the said piston unit in the said cylindrical cavity whereby when the said static or balanced condition is maintained the said movable contact means is disposed out of electrical contacting engagement with the said stationary electrical contact means and the said electrical circuit to the said electrically actuatable warning signal device remains open and said electrically actuatable warning signal device remains inactive.

**3,934,239**
**ADJUSTABLE ELECTRONIC LOAD-ALARM RELAY**

**Charles H. Mason, Paducah, and Roy S. Sitton, Kevil, both of Ky., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.**

**Filed Sept. 27, 1974, Ser. No. 509,996**
**Int. Cl.² G08B 21/00**
**U.S. Cl. 340—248 A** **10 Claims**




1. An alarm circuit for monitoring an electrical current and actuating an alarm if the value of said current varies from a selected operating range comprising
a. means for generating a DC signal voltage continuously proportional to said current;
b. means for generating at an output a first constant DC reference voltage which exceeds a preselected value of said signal voltage by a selected amount;
c. a series circuit comprising a first resistor connected to a second resistor, one end of said series circuit being connected to the output of said means for generating the first reference voltage;
d. means for generating at an output a second constant DC reference voltage which is lower than said preselected value by a selected amount and for impressing the second reference voltage on the other end of said series circuit while maintaining the junction of the first and second resistors of said series circuit at a DC voltage equal to said signal voltage;
e. first comparator means for comparing the voltage at said one end of said series circuit with said signal voltage and generating a first output signal indicative of said load signal being higher than the first reference voltage;
f. second comparator means for comparing the voltage at said other end of said series circuit with said signal voltage and generating a second output signal indicative of said load signal being lower than the second reference voltage; and
g. means connected to the outputs of the first and second comparator means for rseponding to either of the first and second output signals by actuating an alarm.

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**3,934,240**
**TIMER FOR TELEPHONE TOLL CALLS AND THE LIKE**

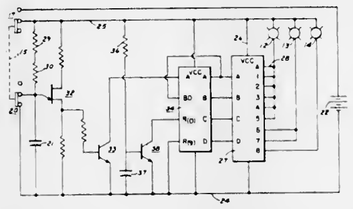
**Marshall F. Norling, 9195 E. Oxford Drive, Denver, Colo. 80201**

**Continuation of Ser. No. 231,554, March 3, 1972, abandoned. This application Sept. 28, 1973, Ser. No. 401,907**
**Int. Cl.² G08B 5/36**
**U.S. Cl. 340—309.4** **4 Claims**

1. As an article of manufacture, a self-contained timer unit for timing telephone toll calls and the like comprising a closed housing of a size readily usable on a desk or the like adjacent a telephone instrument, said article comprising:
first, second and third light emitting signal elements on said timer for indicating respectively and in order the beginning of a predetermined time period and the passage of an intermediate time period and the termination of said predetermined time period;

an electric battery mounted within said housing, timing means including solid state timing circuitry within said housing and utilizing said battery as its energy source for actuating said light emitting signal elements in order; and

switching means for initiating operation of said timing means, said switching means including a starting element mounted on said housing and accessible from the outside thereof, and said starting element upon actuation connecting said timing means to said battery for energization



first circuit connecting means in said timing means operative to energize said first signal element only immediately upon actuation of said switching means,

second circuit connecting means in said timing means operative after the passage of said intermediate time period simultaneously to deenergize said first signal element and to energize said second signal element only, and

third circuit connecting means in said timing means operative after the passage of said predetermined time period simultaneously to deenergize said second signal element and to energize said third signal element only.

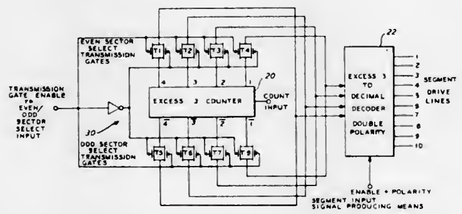
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**3,934,241**

**ANALOG DISPLAY UTILIZING LIQUID CRYSTAL MATERIAL AND FOR BEING MULTIPLEXED WHEREIN ONE GROUP OF ELECTRODES ARE ARRANGED OPPOSITE A GROUP OF COUNTER-ELECTRODES**

**Hans Weigert, Woodcliff Lake, N.J., assignor to Ragen Precision Industries, Inc., North Arlington, N.J.**

**Filed Nov. 13, 1974, Ser. No. 523,341**
**Int. Cl.² G02F 1/18**
**U.S. Cl. 340—324 R** **3 Claims**




1. Analog display utilizing liquid crystal material and for being multiplexed, comprising:

a plurality of groups of segments disposed adjacent to each other in a predetermined pattern, with regard to a predetermined direction, the segments in each group being disposed of in a sequence opposite to the sequence in which the segments of the next adjacent group are disposed, and each segment in each group corresponding to one of the segments in each of the other groups and all corresponding segments in all groups being connecting electrically in a series connection;

a plurality of sectors disposed adjacent to each other and in said predetermined pattern, each of said sectors disposed opposite to one of said groups of segments and displaced therefrom;

a body of liquid crystal material disposed between said plurality of groups of segments and said sectors;

a first plurality of input leads, each of said input leads being connected electrically with one of said series connections of said corresponding segments; and

a second plurality of input leads, each of said input leads being connected electrically to one of said sectors, wherein said body of liquid crystal material is in a first optical state and wherein each portion of said body of liquid crystal material disposed between one of said segments and one of said sectors is capable of changing into a second optical state upon an electric field being established thereacross by a first input signal being applied to said one segment and by a second input signal being applied to said one sector, and said analog display further comprising;

means for applying first input signals to said first plurality of input leads in a first predetermined sequence with regard to said predetermined direction upon a second input signal being applied to a predetermined one of said sectors, and for applying said first input signals to said first plurality of input leads in a sequence opposite to said first predetermined sequence and with regard to said predetermined direction upon said second input signal being applied to the sector next adjacent to said predtermined one of said sectors whereby the portions of said body of liquid crystal material disposed between said segments and said sectors change from said first optical state into said second optical state sequentially in said predetermined direction.

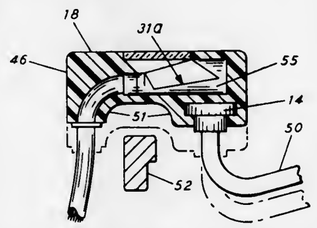
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**3,934,242**

**ALPHANUMERIC DISPLAY MEANS FOR COMPUTER-LINKED TYPEWRITER CONSOLES USING A MATRIX ARRAY OF LIQUID-CRYSTAL DEVICES**

**Thomas Delbert Mueller, Orinda, Calif., assignor to Chevron Research Company, San Francisco, Calif.**

**Filed Nov. 5, 1973, Ser. No. 413,112**
**Int. Cl.² G06F 3/14; G02F 1/18**
**U.S. Cl. 340—324 R** **2 Claims**




1. A device for displaying alphanumeric indicia at selected key buttons of a keyboard of a typewriter console forming an I/O link with a general-purpose digital computer, each alphanumeric indicium being related to a font operational characteristic resulting from movement of one of said selected key buttons under control of a human observer-user whereby said font operational characteristic is permanently recorded on paper at said typewriter console in full view of said human observer-user through mechanical button-font-paper interaction, comprising:

a. sets of liquid-crystal devices, each set being arranged to display at or adjacent to at least one of said selected key buttons said alphanumeric indicium associated with said font operational characteristic;

b. elongated rigid cantilevered frame means attached to and supportive of said sets of liquid-crystal device, said frame means including cooperative gripping means in contact with corresponding key buttons of said keyboard;

c. controller switch means connected to said sets of liquid-crystal devices and including digital controller-decoder means for repetitively generating a binary activation code



for each set at a rate sufficiently above the flicker fusion rate of the human eye to display said desired alphanumeric display indicium as a solid image to said observer-user, said displayed alphanumeric indicium being of sufficient intensity so as to be easily discernible to said human observer-user using said typewriter console irrespective of the background lighting environment thereabout.

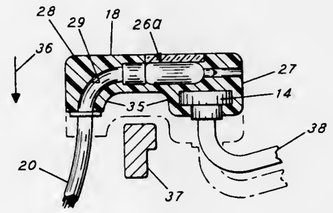
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**3,934,243**

**ALPHANUMERIC DISPLAY MEANS FOR COMPUTER-LINKED TYPEWRITER CONSOLES USING A PLURALITY OF GASEOUS GLOW INDICATOR TUBE MEANS CONTAINING AN IONIZABLE GAS**

**Thomas Delbert Mueller, Orinda, Calif., assignor to Chevron Research Company, San Francisco, Calif.**

**Filed Nov. 5, 1973, Ser. No. 413,113**
**Int. Cl.² G06F 3/14**
**U.S. Cl. 340—324 R** **2 Claims**




1. A device for displaying alphanumeric light-emanating indicia at selected key buttons on a keyboard of a typewriter console forming an I/O link with a general purpose digital computer, each light-emanating alphanumeric indicium being related to a font operational characteristic resulting from movement of one of said selected key buttons under control of a human observer-user whereby accurate permanent recordation on paper through mechanical button-font-paper interactions of said font characteristic occurs, comprising;

a. a set of gaseous glow indicator tube means each comprising a plurality of indicia-shaped indicator cathode electrodes stacked one above the other surrounding a single anode electrode, deployed within a transparent bulbous envelope containing an ionizable gas, said envelope being positioned to display at or adjacent to at least one of said selected key buttons to said observer-user said light-emanating alphanumeric indicium associated with said font operational characteristic;

b. elongated rigid cantilevered frame means attached to and supportive of each of said gaseous glow indicator tube means, said frame means including cooperative means in gripping contact with corresponding key buttons of said keyboard;

c. controller switch means operatively connected to said set of indicator tube means and including cooperative means for generating a series of signals for energization of selected cathode and anode electrodes of said indicator tube means so as to provide gas glow thereabout in patterns corresponding to said alphanumeric display indicia for which display is sought, said displayed alphanumeric indicia being of sufficient intensity so as to be easily discernible to said human observer-user using said typewriter console irrespective of the background lighting environment thereabout.

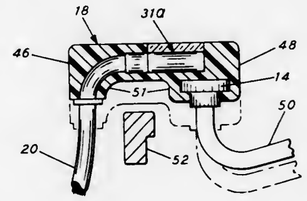
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**3,934,244**

**ALPHANUMERIC DISPLAY MEANS FOR COMPUTER-LINKED TYPEWRITER CONSOLES USING FLUORESCENT LUMINESCENT ALPHANUMERIC INDICATING MEANS**

**Thomas Delbert Mueller, Orinda, Calif., assignor to Chevron Research Company, San Francisco, Calif.**

**Filed Nov. 5, 1973, Ser. No. 413,114**
**Int. Cl.² G06F 3/14**
**U.S. Cl. 340—324 R** **2 Claims**




1. A device for displaying alphanumeric light-emanating indicia at selected key buttons of a keyboard of a typewriter console forming an I/O link with a general purpose digital computer, each light-emanating alphanumeric indicium being related to a font operational characteristic resulting from movement of one of said selected key buttons under control of a human observer-user whereby said font operational characteristic is permanently recorded on paper at said typewriter console in full view of said human observer-user through mechanical button-font-paper interaction, comprising:

a. a set of luminescent indicator means positioned at or adjacent to said selected key buttons, each of said set of luminescent indicator means comprising an elongated insulated base plate surrounded by transparent envelope means, anode means attached to said insulated plate and an array of separately-energizable fluorescent cathode segments arranged in a selected configuration on a common side of said insulated plate adjacent to said anode means;

b. elongated rigid cantilevered frame means attached to and supportive of each of said indicator means, said frame means including cooperative gripping means in contact with a corresponding key button of said keyboard;

c. controller switch means connected to said set of indicator means and including cooperative means for energizing selected cathode segments and anode means of at least one of said each indicator means so as to provide fluorescent glow therefrom in a pattern corresponding to said alphanumeric display indicia for which display is sought, said alphanumeric indicia also being of sufficient intensity so as to be easily discernible to said human observer-user using said typewriter console irrespective of the background lighting environment thereabout.

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**3,934,245**

**ALPHANUMERIC DISPLAY MEANS FOR COMPUTER-LINKED TYPEWRITER CONSOLES**

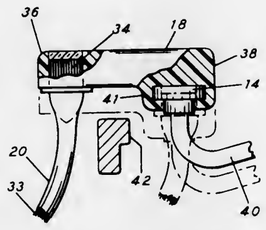
**Thomas Delbert Mueller, Orinda, Calif., assignor to Chevron Research Company, San Francisco, Calif.**

**Filed Nov. 5, 1973, Ser. No. 413,115**
**Int. Cl.² G06F 3/14**
**U.S. Cl. 340—324 R** **3 Claims**

1. A device for displaying alphanumeric light-emanating indicia at selected key buttons of a keyboard of a typewriter console forming an I/O link with a general-purpose digital computer, each light-emanating alphanumeric indicum being related to a font operational characteristic resulting from movement of one of said selected key buttons under control of a human observer-user whereby said font operational characteristic is permanently recorded on paper at said typewriter

console in full view of said human observer-user through mechanical button-font-paper interaction, comprising

a. an array of fiber optic, light-conducting members having near ends arranged to display at or adjacent to at least one of said selected key buttons said light-emanating alphanumeric indicium associated with said font operational characteristic, said alphanumeric indicium being of sufficient intensity so as to be easily discernible to said human observer-user using said typewriter console irrespective of the background lighting environment thereabout;




b. elongated rigid cantilevered frame means attached to and supportive of said array, said frame means including cooperative means in gripping contact with corresponding key buttons of said keyboard;

c. incandescent bulb means positioned at remote ends of said array of fiber optic, light-conducting members; and

d. optical encoding means operatively connected to said array of fiber optic members and including cooperative means for aiding in the controlled generation of a series of encoded light signals which fall on more remote ends of said fiber optic, light conducting members in a pattern corresponding to said alphanumeric indicium for which display is sought.

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**3,934,246**

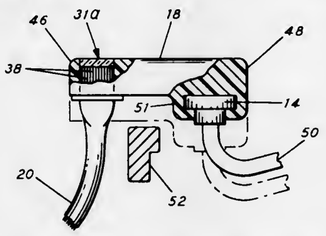
**ALPHANUMERIC DISPLAY MEANS FOR COMPUTER-LINKED TYPEWRITER CONSOLES USING LIGHT-EMITTING DIODES (LED'S) IN CONJUNCTION WITH SETS OF FIBER-OPTIC MATRIX MEMBERS**

**Thomas Delbert Mueller, Orinda, Calif., assignor to Chevron Research Company, San Francisco, Calif.**

**Filed Nov. 5, 1973, Ser. No. 413,145**

**Int. Cl.² G06F** *3/14*

**U.S. Cl. 340—324 R** **3 Claims**




1. A device for displaying alphanumeric light-emanating indicia at selected key buttons of a keyboard of a typewriter console forming an I/O link with a general purpose digital computer, each light-emanating alphanumeric indicium being related to a font operational characteristic resulting from movement of one of said selected key buttons under control of a human observer-user whereby said font operational characteristic is permanently recorded on paper at said typewriter console in full view of said human observer-user through mechanical button-font-paper interaction, comprising

a. an array of sets of fiber optic, light-conducting members having near ends arranged to display at or adjacent to at least one of said selected key buttons said light-emanating alphanumeric indicium associated with said font operational characteristic;

b. elongated rigid cantilevered frame means attached to and supportive of said near ends of said sets of fiber optic, light-conducting members, said frame means including cooperative support means in gripping contact with a corresponding key button of said keyboard;

c. a set of light-emitting diodes (LED's) positioned at opposite ends of said sets of fiber optic, light-conducting members, and

d. encoding means operatively connected to said sets of fiber optic members for controlling passage of light therealong and including cooperative drum means for aiding in the controlled generation of a series of encoded light signals corresponding to said alphanumeric indicium for which display is sought, said indicium being of sufficient intensity so as to be easily discernible to said human observer-user using said typewriter console irrespective of the background lighting environment thereabout.

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**3,934,247**

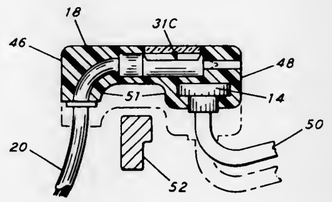
**ALPHANUMERIC DISPLAY MEANS FOR COMPUTER-LINKED TYPEWRITER CONSOLES USING A MATRIX ARRAY OF LIGHT-EMITTING DIODES (LED'S)**

**Thomas Delbert Mueller, Orinda, Calif., assignor to Chevron Research Company, San Francisco, Calif.**

**Filed Nov. 5, 1973, Ser. No. 413,280**

**Int. Cl.² G06F** *3/14*

**U.S. Cl. 340—324 R** **2 Claims**




1. A device for displaying alphanumeric light-emanating indicia at selected key buttons of a keyboard of a typewriter console forming an I/O link with a general-purpose digital computer, each light-emanating alphanumeric indicium being related to a font operational characteristic resulting from movement of one of said selected key buttons under control of a human observer-user whereby said font operational characteristic is permanently recorded on paper at said typewriter console in full view of said human observer-user through mechanical button-font-paper interaction, comprising

a. semiconductor, light-emitting diode means arranged to display at or adjacent to at least one of said selected key buttons said light-emanating alphanumeric indicium associated with said font operational characteristic;

b. cantilevered elongated rigid frame means attached to and supportive of said light-emitting diode means, said frame means including cooperative means in gripping contact with corresponding one or more key buttons of said keyboard;

c. controller switch means connected to said light-emitting diode means and including digital controller-decoder means for repetitively generating binary activation codes for said diode means at a rate sufficiently above the flicker fusion rate of the human eye to display said desired alphanumeric display indicium as a solid image to said observer-user, said displayed indicium being of sufficient intensity so as to be easily discernible to said human observer-user using said typewriter console irrespective of the background of lighting environment thereabout.



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**3,934,248**

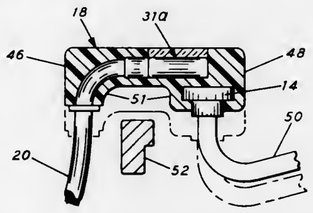
**ALPHANUMERIC DISPLAY MEANS FOR COMPUTER-LINKED TYPEWRITER CONSOLES USING A PLURALITY OF PLANAR GASEOUS DISCHARGE MEANS WITHIN A UNITARY ENVELOPE CONTAINING AN IONIZABLE GAS**

**Thomas Delbert Mueller, Orinda, Calif., assignor to Chevron Research Company, San Francisco, Calif.**

**Filed Nov. 5, 1973, Ser. No. 413,281**

**Int. Cl.² G06F** *3/14*

**U.S. Cl. 340—324 R** **2 Claims**




1. A device for displaying alphanumeric light-emanating indicia at selected key buttons of a keyboard of a typewriter console forming an I/O link with a general-purpose digital computer, each light-emanating alphanumeric indicium being related to a font operational characteristic resulting from movement of one of said selected key buttons under control of a human observer-user whereby said font operational characteristic is permanently recorded on paper at said typewriter console in full view of said human observer-user through mechanical button-font-paper interaction, comprising

a. a set of planar gas discharge means within transparent envelope means, each comprising at least a pair of side-by-side indicator segments aligned on one side of a common planar base plate formed of insulating material, each indicator segment including a plurality of cathodes deployed in a selected configuration of said base plate, and barrier-anode segments surrounding a selected number of said plurality of cathodes, for display at or adjacent to at least one of said selected key buttons said light-emanating alphanumeric indicia associated with said font operational characteristic of interest;

b. cantilevered elongated rigid frame means attached to and supportive of said planar gas discharge means, said frame means including cooperative means in gripping contact with a corresponding key button of said keyboard;

c. controller switch means connected to said set of planar gas discharge means and including cooperative means for generating a series of activation signals for energization of a selected cathode and barrier-anode segment pair of at least one of said each planar gas discharge means so as to provide a gas glow thereabout, in a pattern of light corresponding to said alphanumeric indicia sought to be displayed, said indicia being of sufficient intensity so as to be easily discernible to said human observer-user using said typewriter console irrespective of the background lighting environment thereabout.

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**3,934,249**

**BORDER FLASHERS**

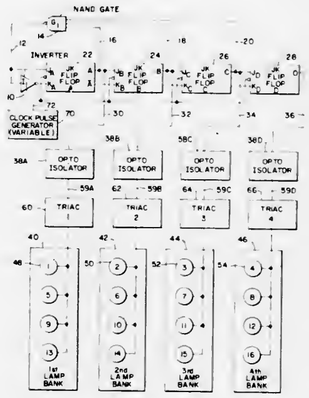
**James Sanjana, Mississauga, Canada, assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest**

**Filed Mar. 13, 1974, Ser. No. 450,737**

**Int. Cl.² G09F** *13/00*

**U.S. Cl. 340—340** **6 Claims**

1. A source of electric power, lamp means for connection to said source of electric power for being energized thereby to produce illumination, major electric and electric switch means connected to said source of electric power and said lamp means for controlling the flow of current to said lamp means, electronic gate means for blocking said current flow, and illumination control and regulating means connected to said lamp means and said major switch means for controlling the




turning on and off of said lamp means, timed pulse generating means, said control and regulating means being constructed and arranged for predetermining the timing and duration of said periods of turning on and off of said lamp means.

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**3,934,250**

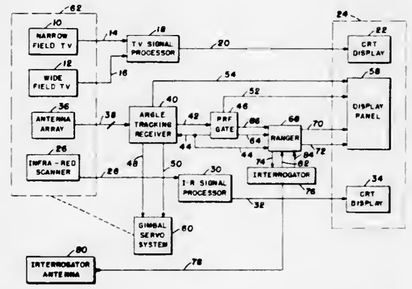
**HELICOPTER BLIND LANDING AND HOVER SYSTEM**

**Oscar M. Martin, Jr., Bethesda, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed June 7, 1974, Ser. No. 477,374**

**Int. Cl.² G01S** *9/56*

**U.S. Cl. 343—6 ND** **12 Claims**




1. A system providing information for pointing an aircraft at a selected location, comprising:

a gimbal having three-degrees of freedom mounted aboard said aircraft,

an interferometric antenna array mounted on said gimbal for receiving signals of a selected frequency.

said antenna array comprising a plurality of antenna elements arranged symmetrically in a right angle pattern having horizontal and vertical legs, with the antenna elements in each leg being selectively rendered effective in order to provide both coarse and fine directional information,

a radar receiver having inputs connected to said antenna array for producing angle signals indicating the line of sight to said selected location,

a transmitter connected to receive said angle signals from said receiver for transmitting a pulsed signal having a selected frequency,

a transponder placed at said selected location for receiving said pulsed signal from said transmitter and after a selected time delay retransmitting said pulsed signals at said selected frequency of said antenna array,

servo-mechanism means mechanically connected to said gimbal and connected to receive said angle signals for driving said gimbal to point along a line of sight from said aircraft to said selected location, and

indicator means located in said aircraft connected to receive said angle signals for indicating said line of sight to an operator of said aircraft.

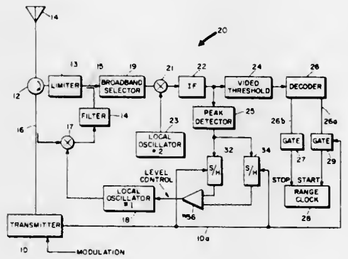
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**3,934,251**

## AUTOMATIC $T_0$ CONTROL FOR USE IN AIRBORNE DME SYSTEM

**Brendan J. Spratt, Boca Raton, Fla., assignor to The Bendix Corporation, Southfield, Mich.**

**Filed Nov. 7, 1974, Ser. No. 521,593**
**Int. Cl.² G01S 9/56**
**U.S. Cl. 343—6.5 R** **14 Claims**




**1.** In distance measuring equipment which includes a transmitter and antenna for transmitting on a first frequency an interrogation message to a remote station and a receiver operating on a second frequency for receiving messages which comprise responses from the remote station, wherein the time difference between the time of transmission of an interrogation and the receipt of a response thereto is a measure of the range between the transmitting station and the responding station, an improvement comprising:

means for sampling the transmitted message at a point relatively close to the antenna;

local oscillator means including means responsive to the sampled signal for transforming the sampled signal to a frequency related to the frequency of the expected response;

means for injecting the transformed signal into said receiver whereby the transformed signal will traverse through circuits of the receiver;

decoding means responsive to the transformed signal traversing the receiver circuits for generating a first signal; and,

processing means energized to a first state by said first signal, said processing means being subsequently energized to a second state by a second signal comprising a response from said remote station traversing the receiver circuits and decoded by said decoding means.

**14.** In distance measuring equipment which includes a transmitter and antenna for transmitting on a first frequency an interrogation message to a remote station, and a receiver means operating on a second frequency for receiving messages which comprise responses from the remote station, wherein the time difference between the time of transmission of an interrogation and the receipt of a response thereto is a measure of the range between the transmitting station and the responding station, an improvement comprising:

means for injecting a first signal corresponding to a sample of the first frequency into said receiver means whereby the first signal will traverse through circuits of said receiver;

first memory means responsive to the transmission of an interrogation message for memorizing a second signal corresponding to the signal strength of the first signal in said receiver means;

second memory means responsive for memorizing a third signal corresponding to the signal strength of a response in said receiver means; and,

means comparing the memorized second signal with the memorized third signal for adjusting the level of the injected first signal.

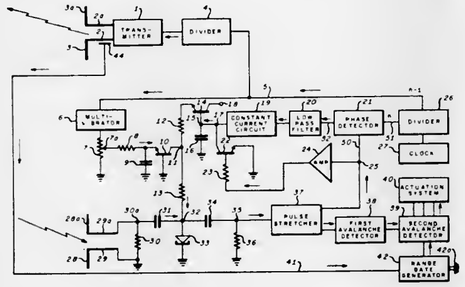
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**3,934,252**

## CLOSED LOOP TUNNEL DIODE RECEIVER FOR OPERATION WITH A BASE BAND SEMICONDUCTOR TRANSMITTER

**Gerald F. Ross, Lexington, and Kenneth W. Robbins, Wilmington, both of Mass., assignors to Sperry Rand Corporation, New York, N.Y.**

**Filed Apr. 8, 1974, Ser. No. 458,967**
**Int. Cl.² G01S 9/12; H04B 1/38**
**U.S. Cl. 343—7 VM** **7 Claims**




**1.** In a base band radio object detection system:

transmitter means for transmitting base band pulse signals toward an object,

wide band transmission line receiver means for receiving said base band pulse signals after reflection from said object and for propagating received base band pulses substantially without distortion thereof,

tunnel diode means having first and second terminal means coupled across said wide band transmission line receiver means and having first and second conductivity states, said tunnel diode means being characterized by shifting from said first to said second conductivity state in response to the presence of one of said propagating base band pulse signals at said first terminal means,

pulse shaping means having an input coupled to said first terminal means,

pulse phase detector means responsive to said pulse shaping means and to master synchronizer means for providing a control signal,

constant current circuit means responsive to said control signal for periodically charging capacitor means,

discharge circuit means responsive to said pulse shaping means for periodically discharging said capacitor means,

circuit means for coupling said capacitor means to said first terminal means for supplying a saw tooth wave form signal thereto,

range gate signal generator means responsive to said transmitter means for generating range gate signals,

detector means responsive to said pulse shaping means and to said range gate signal generator means for producing an actuating output when said one of said propagating base band pulses at said first terminal falls in time within one of said range gate signals, and

actuator means responsive to said actuating output.



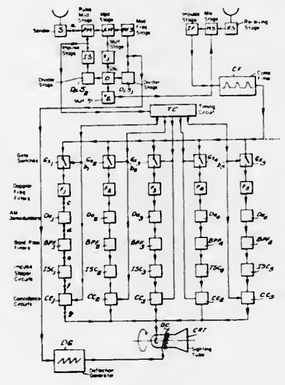
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**3,934,253**

## DOPPLER FREQUENCY RADAR SYSTEM WITH VERY SHORT PULSE MODULATED HIGH FREQUENCY CARRIER WAVES

**Kurt Wiedemann, Munich, and Karl-Ludwig Lenz, Munich-Solln, both of Germany, assignors to Siemens & Halske Aktiengesellschaft, Berlin & Munich, Germany**

**Filed Feb. 10, 1961, Ser. No. 88,581**
**Claims priority, application Germany, Feb. 11, 1960, 67062**
**Int. Cl.² G01S 9/42**
**U.S. Cl. 343—7.7** **9 Claims**



**1.** A doppler frequency radar system, comprising means for generating a high frequency carrier wave, means for amplitude modulating said carrier wave at a relatively low frequency, means for also amplitude modulating such carrier wave to produce short impulses of relatively high pulse sequence frequency, means for radiating said modulated carrier wave toward a moving object, means for receiving such wave as reflected from such a moving object, means for generating accurate timing pulses, means forming a plurality of distance measuring branch circuits, means operatively connected to said timing pulse generating means, and controlled by such pulses, for operatively connecting the receiving means to the respective branch circuits, operative to distribute said received impulses in accordance with the time relation of the received impulses to the timing pulses, means in each branch circuit for demodulating the pulses appearing therein and to form rough distance measuring pulses, means in each branch circuit forming a coincidence circuit and operatively connected to said timing pulse generating means whereby said coincidence circuit is operable to form, responsive to coincident occurrence of the respective rough distance measuring pulses and the timing pulses fine measuring pulses which assure unequivocal distance indication even in the presence of high pulse sequence frequency.

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**3,934,254**

## RELIABLE CYCLE SELECTION IN LORAN-C SYSTEM

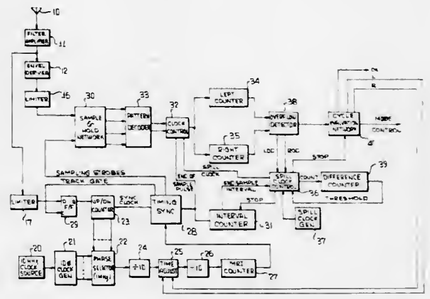
**William K. Vogeler, Springfield, and Donald E. Shorter, Leesburg, both of Va., assignors to Telcom, Inc., McLean, Va.**

**Filed Sept. 3, 1974, Ser. No. 502,551**
**Int. Cl.² G01S 1/24**
**U.S. Cl. 343—103** **15 Claims**

**15.** In a LORAN-C receiver, a method for locating and tracking with a tracking gate a particular zero crossover point in the carrier of a received LORAN-C pulse, said method being characterized by the steps of:

generating an envelope-derived signal from said received pulses wherein a carrier phase reversal is provided at said particular zero-crossover point;

repetitively sampling the same plurality of half cycles of said envelope-derived signal for multiple received LORAN-C pulses;



comparing said samples to pre-stored data to determine whether the tracking gate is earlier or later than said carrier phase reversal;

registering the difference between early and late determinations made during said multiple received pulses; and

re-positioning the tracking gate earlier or later in accordance with the size and sense of said difference.

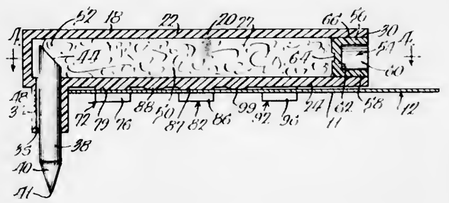
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**3,934,255**

## RECORDER PEN

**Guy A. Taylor, Batavia, Ill., assignor to Sanford Research Company, Bellwood, Ill.**

**Continuation of Ser. No. 392,968, Aug. 30, 1973, abandoned.**
**This application June 3, 1974, Ser. No. 475,957**
**Int. Cl.² G01D 15/16**
**U.S. Cl. 346—140 A** **19 Claims**

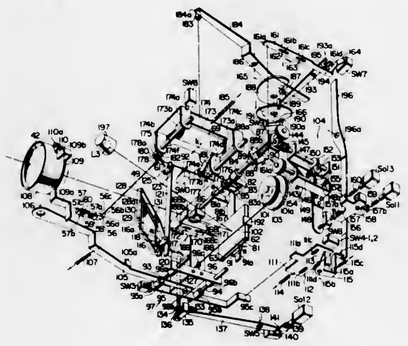


**1.** In a recorder pen for a recording instrument comprising a tube having a chamber, means for maintaining a supply of fluid in said chamber and a writing nib carried by the tube in communication with said fluid in combination with mounting means carried by said tube and having support walls spaced from said tube to provide an arm entering opening therebetween, said mounting means having web means extending into the opening between said tube and said support walls, whereby an arm end deflects a portion of said web means for securing said pen onto said arm.

## 3,934,256
## IDENTIFICATION CARD PRODUCING APPARATUS

**Kenji Isonaka, Tokorozawa; Saburo Hokari, Kawasaki; Tatsuya Watanabe, Yokohama, and Masamichi Furukawa, Kawasaki, all of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan**

**Filed May 21, 1973, Ser. No. 362,245**
**Claims priority, application Japan, May 23, 1972, 47-51010**
**Int. Cl.² G03G** *15/22*
**U.S. Cl. 354—3** **7 Claims**



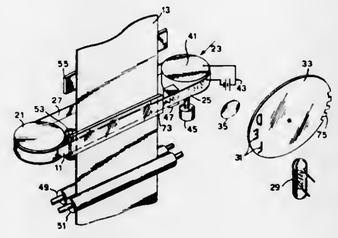
1. Apparatus for producing identification cards comprising: positioning means for placing a relatively stiff sheet of card material at a transfer-printing position, a substantially flat photoreceptor comprising a photoelectric material layer disposed on a conductive supporter, means for poositioning the photoreceptor at a photographing position, charging means for uniformly charging the photoconductive layer of said photoreceptor when the photoreceptor is at its photographing position, means for exposing the charged photoconductive material layer of the photoreceptor to an optical image to form an electrostatic latent image on the photoconductive material layer when the photoreceptor is at its photographing position, means for moving the charged and exposed photoconductive layer to a transfer-printing position at which it is adjacent to and facing the card material, transfer-printing means for pressing the photoreceptor and the card material against each other and for thereby transferring the electrostatic latent image from the photoreceptor to the card material to form an electrostatic latent image on the card material by transfer-printing, means for moving the photoreceptor and the card material apart and for moving the photoreceptor from the transfer-printing position to the photographing position after the latent image has been transferred to the card material, means for developing the latent image on the card material with a developing agent comprising a toner to thereby develop the last recited latent image into a visible toner image, and

including means defining a card material passage for inserting a card material forwardly from outside the apparatus toward said transfer printing position of the card material, stopper means and spring means urging the stopper means into the card material passage, said stopper means having an inclined edge for moving the stopper means out of the card material passage as a card material is inserted into the apparatus and having a straight edge facing the transfer-printing position of the card material, and push-back means for pushing the card material which has been inserted into the apparatus and has passed said stopper means back towards the stopper means and against said straight edge of the stopper means to thereby position the card at said transfer-printing position.

## 3,934,257
## NON-IMPACT PRINTER

**Arnaldo Pasini, Ivrea, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea (Torino), Italy**

**Filed Aug. 26, 1974, Ser. No. 500,826**
**Claims priority, application Italy, Aug. 28, 1973, 69571/73**
**Int. Cl.² B41B** *13/00*
**U.S. Cl. 354—5** **11 Claims**



1. Non-impact printing apparatus for printing on plain paper comprising:

a photoconductive element including a roller having a photoconductive peripheral surface;

a transparent belt having an insulating surface tracked over said roller and wherein a portion of said insulating surface is in contact with an area of said photoconductive element;

means for incrementally transporting said belt in a path from said roller across said paper with said insulating surface facing said paper;

means for sequentially exposing said photoconductive surface at said area to light images of the characters to be printed on said paper;

means for applying a voltage across said photoconductive surfaces and said portion of said transparent belt in contact therewith during the exposure of said element to said light images, said transporting means incrementing said belt after each exposure to the light image of a character for forming on said belt the electrostatic latent image of a line of characters to be printed on said paper;

developing means disposed between said roller and said paper for developing the latent images on said belt with a toner, the line of toner developed characters being visible through said transparent belt;

means for transferring said line of toner developed characters from said belt to said paper; and

means for line spacing said paper.

## 3,934,258
## EXPOSURE STORAGE DEVICE

**Shigeo Ono, Yokohama, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan**

**Filed Feb. 12, 1974, Ser. No. 441,854**
**Claims priority, application Japan, Feb. 10, 1973, 48-20491**[U]
**Int. Cl.² G03B** *7/08, 17/00*
**U.S. Cl. 354—60 R** **5 Claims**

1. An improved exposure value storage device for a photographic camera of the type having a metering circuit (**11**) for electrically measuring the brightness of an object to be photographed:

a storage circuit (**12**) for storing the output of said metering circuit (**11**);

a storage switch (**14**) for electrically disconnecting said metering circuit and said storage circuit (**12**) to cause said storage circuit (**12**) to store an exposure value;

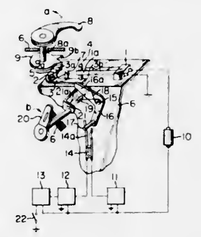
a control switch (**13**) for controlling exposure in accordance with the value stored in said storage circuit (**12**); and



a power switch (**1**) for supplying current from a power source (**10**) to said metering circuit (**11**) and said storage circuit (**12**), wherein the improvement comprises:

a first member (**3**) manually operable from exterior of the camera to actuate said power switch (**1**), said first member (**3**) being movable between a first position for opening said power switch and a second position for closing said power switch; and

a second member (**16**) manually operable from exterior of the camera to actuate said storage switch, said second member (**16**) being movable between a first position for

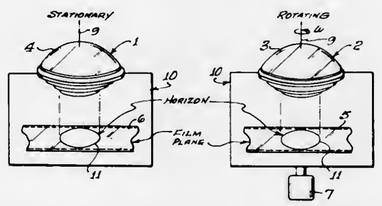


closing said storage switch (**14**) to electrically connect said metering circuit (**11**) and said storage circuit (**12**) and a second position for opening said storage switch (**14**) to electrically disconnect said metering circuit (**11**) and said storage circuit (**12**), the path of movement of said first member (**3**) and the path of movement of said second member (**16**) intersecting each other so that said first member (**3**) when in its first position lies in the path of movement of said second member (**16**) to prevent said second member (**16**) from moving from its first position to its second position.

## 3,934,259
## ALL-SKY CAMERA APPARATUS FOR TIME-RESOLVED LIGHTNING PHOTOGRAPHY

**Edmund Philip Krider, Tucson, Ariz., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed Dec. 9, 1974, Ser. No. 530,882**
**Int. Cl.² G03B** *37/00*
**U.S. Cl. 354—94** **6 Claims**




1. All-sky camera apparatus for time-resolved lightning photography comprising:

a pair of cameras disposed a spaced distance one from the other in a horizontal plane,

each of said cameras including:

a lens member and

a film member disposed in the focal plane of the lens member; both of said members having an axis of rotation pointed vertically and said lens members both being substantially identical to the extent that both are adapted to view substantially the entire sky for imaging in identical manners lightning discharges occurring in the sky on their respective film member, and

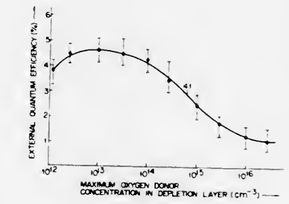
means for rotating the image formed in at least one of said cameras about said common rotational axis, said rotation being at a fixed angular velocity relative to image formed on the film member of said other camera,

whereby an image of a particular lightning discharge is recorded by both cameras simultaneously for permitting lightning data to be analyzed by measuring the film-recorded angular deviation produced by said relative rotation.

## 3,934,260
## RED LIGHT-EMITTING GALLIUM PHOSPHIDE DEVICE

**Akinobu Kasami, Yokohama, and Makoto Naito, Kamakura, both of Japan, assignors to Tokyo Shibaura Electric Company, Ltd., Kawasaki, Japan**

**Filed Oct. 10, 1974, Ser. No. 513,821**
**Claims priority, application Japan, Jan. 29, 1974, 49-11411**
**Int. Cl.² H01L** *33/00, 29/167, 29/207, 29/227*
**U.S. Cl. 357—17** **2 Claims**

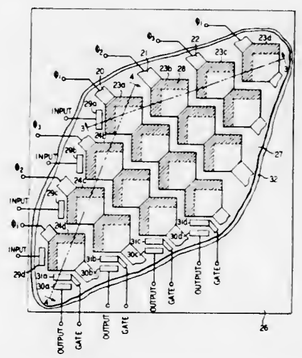



1. A red light-emitting gallium phosphide device wherein the maximum concentration of an oxygen donor in a depletion layer surrounding a p-n junction contributing to the emission of red light is chosen to range from $1 \times 10^{12}cm^{-3}$ to $5 \times 10^{14}cm^{-3}$

## 3,934,261
## TWO-DIMENSIONAL TRANSFER IN CHARGE TRANSFER DEVICES

**Carlo Heinrich Sequin, New Providence, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**

**Continuation of Ser. No. 357,590, May 7, 1973, abandoned. This application Feb. 13, 1975, Ser. No. 549,759**
**Int. Cl.² H01L** *29/78*
**U.S. Cl. 357—24** **7 Claims**




1. A charge transfer device comprising a semiconductor medium which is of a first conductivity type, an insulating layer covering at least a portion of the surface of said medium, a conductive pattern disposed upon said insulating layer comprising a series of conductive strips each formed in the shape of substantially quadrilateral members overlapping in their diagonal dimension placed such that the members form a two-dimensional array of rows and columns of electrodes with

each electrode being coupled along a diagonal dimension in common with all other electrodes in said diagonal dimension to one of a plurality of conduction paths extending over said insulating layer to which a suitable bias may be applied, and means included under a portion of each electrode for forming under each electrode an asymmetric potential well when a suitable bias is applied to said conduction paths, said electrodes being positioned with respect to said means for forming an asymmetric potential well so that said means extends under an area of each electrode bounding two adjacent sides of said electrode so as to define a plurality of parallel transfer paths in said medium in each of two noncollinear directions of movement of mobile charge carriers in a plane essentially parallel to said one surface of said medium, wherein the transfer paths in one direction are formed under the rows of said electrodes and the transfer paths in the other direction are formed under the columns of said electrodes and wherein for any electrode, an adjacent electrode in the row and an adjacent electrode in the column are coupled to different ones of said conduction paths.

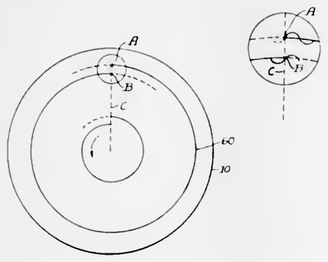
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**3,934,262**

**VIDEO DISC AND METHOD OF PLAYBACK**

**Paul A. Snopko, Chicago, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.**

**Filed July 2, 1974, Ser. No. 485,194**
**Int. Cl.² H04N** *5/76*
**U.S. Cl. 358—4** **5 Claims**




**1.** A video disc having a multi-turn spiral track in which is stored an angle-velocity-modulated carrier signal modulated by luminance, chroma subcarrier, and synchronizing information arranged as to amplitude, phase and frequency in accordance with the NTSC color signal specifications,

characterized by the fact that each convolution of said track contains two interlaced image fields constituting a single image frame with the chroma subcarrier being of substantially the same phase at the end and beginning points of all convolutions of said track,

and further characterized by the fact that the phase of the chroma subcarrier is continuous throughout the track.

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**3,934,263**

**VIDEO DISC RECORDING APPARATUS AND METHODS**

**Richard Claxton Palmer, Blawenburg, N.J., assignor to RCA Corporation, New York, N.Y.**

**Filed Nov. 12, 1974, Ser. No. 522,812**
**Int. Cl.² H04N** *5/84, 9/38*
**U.S. Cl. 358—4** **12 Claims**

**1.** In a video disc recording system, the combination comprising:

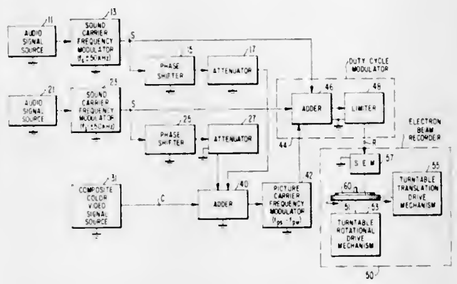
a source of composite video signals;

a source of audio signals;

means for modulating the frequency of a first carrier over a predetermined low frequency deviation range in accordance with the amplitude of audio signals from said audio signal source;

means for adding a frequency modulated carrier wave output of said first carrier modulating means to composite video signals from said composite video signal source;

means for modulating the frequency of a second carrier over a predetermined high frequency deviation range in accordance with the amplitude of the output of said adding means;




means for linearly combining a frequency modulated carrier wave output of said first carrier modulating means with a frequency modulated carrier wave output of said second carrier modulating means to form a combination signal;

clipping means responsive to said combination signal formed by said combining means for developing a clipped signal output; and

disc recording means for utilizing said clipped signal output of said clipping means as a recording signal

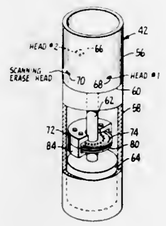
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**3,934,264**

**VIDEOTAPE RECORDER AND REPRODUCER EVERY LINE VELOCITY COMPENSATOR APPARATUS**

**Bert H. Dann, Los Altos, and Barrett E. Gulsinger, Saratoga, both of Calif., assignors to International Video Corporation, Sunnyvale, Calif.**

**Continuation-in-part of Ser. No. 439,093, Feb. 4, 1974. This application Mar. 15, 1974, Ser. No. 451,491**
**Int. Cl.² H04N** *5/76*
**U.S. Cl. 358—8** **10 Claims**




**1.** In a video tape recorder adapted for reproducing a recorded composite color video signal, said video tape recorder including a rotating head assembly having a plurality of video heads, adjacent heads reproducing at least a one horizontal sync pulse overlap of composite video information, said recorder reproducing an uncorrected composite color video signal having line-to-line velocity errors and time base errors, the combination comprising

error detector means continuously receiving the outputs of all said video heads for generating a plurality of error signals, one error signal for each video head corresponding to changes in phase of said uncorrected reproduced video signal from each video head in succeeding horizontal video lines,



means receiving said error signals for selecting one of said error signals as the error signal output, and

means receiving said error signal output for generating a ramp signal output proportional to said error signal.

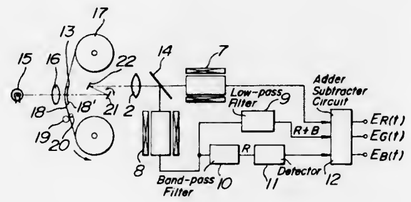
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**3,934,265**

**DITUBE TYPE COLOR TELEVISION CAMERA AND ITS APPLICATION TO AN APPARATUS FOR CONVERTING A COLOR FILM PICTURE IMAGE INTO A VIDEO SIGNAL**

**Syunpei Tanaka, Tama; Kozo Nakamizo, Sagamihara, and Akira Tamagawa, Fuchu, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan**

**Filed Aug. 29, 1973, Ser. No. 392,790**
**Int. Cl.² H04N** *9/07*
**U.S. Cl. 358—43** **5 Claims**




**1.** A ditube type color television camera in which the light emitted from an object to be reproduced is separated into a light for a brightness signal and a light for a chrominance signal and which comprises a first camera tube adapted to accept the light for said brightness signal and a second camera tube adapted to accept the light for said chrominance signal, whereby said brightness signal and chrominance signal are obtained from said first and second camera tubes, respectively, said camera comprising a striped filter arranged near said object to be reproduced and including a striped filter element for screening blue or red color light only and a striped filter element for passing all visible lights, both said striped filter elements being arranged alternately side by side and assembled into one integral body such that the horizontal scanning direction of said second camera tube is perpendicular to the lengthwise direction of both the respective striped filter elements, and a dichroic mirror arranged between said first camera tube and second camera tube and adapted to separate the incident light into a green color light and red and blue color lights, whereby said green light is accepted by said first camera tube and said red and blue color lights are accepted by said second camera tube to obtain a brightness signal and a chrominance signal, respectively.

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**3,934,266**

**DARK CURRENT CORRECTION CIRCUIT IN TWO-TUBE COLOR TELEVISION CAMERA**

**Takashi Shinozaki, Yokohama, and Seigo Kokufukata, Tokyo, both of Japan, assignors to Victor Company of Japan, Limited, Yohohama, Japan**

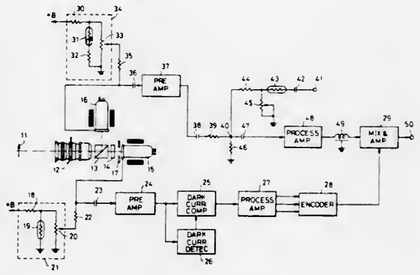
**Filed Dec. 26, 1974, Ser. No. 536,654**
**Claims priority, application Japan, Dec. 28, 1973, 49-133**
**Int. Cl.² H04N** *9/07*
**U.S. Cl. 358—44** **5 Claims**

**1.** In a two-tube color television camera having a first camera tube for chrominance signals and a second camera tube for luminance signals respectively producing chrominance and luminance signals as picked-up outputs upon receiving respective divided portions of incident light from an object to be image-picked up, a dark current correction circuit comprising:

a detection circuit provided in an output picked-up signal system of said first camera tube and operating to detect a dark current component from said output picked-up signal;

a compensation circuit provided in said output pickup signal system and operating to correct said dark current component in accordance with an output signal of said detection circuit;

a mixing circuit provided in an output picked-up luminance signal system of said second camera tube and operating to apply to said output picked-up luminance signal a horizontal blanking signal with inverse polarity and to mix the two signals; and




a first heat-sensitive resistance element which is provided in the vicinity of the face plate of said second camera tube and connected to a signal system for applying said horizontal blanking signal and operates to vary the resistance value thereof in accordance with temperature variation of the image pickup surface of said second camera tube and to vary the level of said horizontal blanking signal,

said first heat-sensitive resistance element being so adapted and connected as to operate in accordance with the resistance variation thereof to correct the dark current variation component in accordance with said temperature variation and to fix the black level of said output picked-up luminance signal.

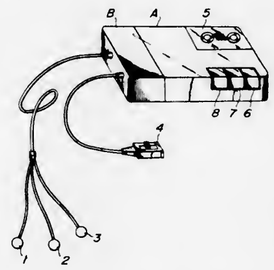
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**3,934,267**

**VITAL PHENOMENON RECORDING AND/OR REPRODUCING DEVICE**

**Shinya Kosaka, No. 1261, Wada, Tama, Tokyo; Kenji Furuta, and Akira Nakayama, both of No. 1847-1, Ohwada, Hachioji, Tokyo, all of Japan**

**Continuation of Ser. No. 374,955, June 29, 1973, abandoned. This application Mar. 26, 1975, Ser. No. 562,335**
**Claims priority, application Japan, June 30, 1972, 47-65753; June 30, 1972, 47-77424[U]; July 7, 1972, 47-67561; July 7, 1972, 47-79698[U]**
**Int. Cl.² G11B** *5/04, 1/00;* **A61B** *5/04*
**U.S. Cl. 360—6** **15 Claims**




**1.** An apparatus for recording and reproducing a bio-electrical signal produced by a living body comprises

a main unit including
a casing having a portion for accommodating a magnetic tape and a side wall with mechanically coupling means,
a recording and reproducing magnetic head,
means for driving said magnetic tape through said magnetic head,
signal input terminals provided on said side wall of said casing for receiving said bio-electrical signal to be recorded on said magnetic tape,
an amplifier connected to said signal input terminals for amplifying said bio-electrical signal,
a modulator connected to an output of said amplifier for modulating said amplified bio-electrical signal to produce a modulated bio-electrical signal which is recorded on said magnetic tape by means of said magnetic head,
signal output terminals provided on said side wall of said casing and connected to said magnetic head to supply the modulated bio-electrical signal reproduced by said magnetic head to the external of the main unit,
power supply input terminals provided on said side wall of the casing for receiving power supply for said tape driving means, amplifier and modulator, and
an operating member provided on said casing for selectively operating said main unit in a recording mode in which said magnetic tape is driven by said tape driving means and the bio-electrical signal received by said signal input terminals is amplified and modulated and then the modulated bio-electrical signal is recorded on said travelling magnetic tape by said magnetic head and in a reproducing mode in which said magnetic tape is driven by said tape driving means and the modulated bio-electrical signal is reproduced from said travelling magnetic tape by means of said magnetic head and the reproduced signal is supplied to said signal output terminals;
a recording attachement including
a casing having a side wall with mechanically coupling means which cooperate with said mechanically coupling means of said main unit to mechanically couple said recording attachment to said main unit at their side walls,
battery means installed in said casing,
signal output terminals provided on sakd side wall of the recording attachment, said signal output terminals being connected to said signal input terminals of said main unit when said recording attachment is mechanically coupled to said main unit at their side walls,
power supply output terminals provided on said side wall of said casing of the recording attachment and connected to said battery means, said power supply output terminals being connected to said power supply input terminals of said main unit when said recording attachment is mechanically coupled to said main unit at their side walls, and
a detector for detecting said bio-electrical signal from the living body and connected to said casing of the recording attachment through an electrical conductor which is further connected to said signal output terminals of the recording attachment;
a reproducing attachment including
a casing having a side wall with mechanically coupling means which cooperate with said mechanically coupling means of the main unit to mechanically couple said reproducing attachment to said main unit at their side walls,
signal input terminals provided on said side wall of the reproducing attachment, said signal input terminals being connected to said signal output terminals of the main unit when said reproducing attachment is mechanically coupled to said main unit at their side walls,
power supply output terminals provided on said side wall of the reproducing attachment, said power supply output terminals being connected to said power supply input terminals of the main unit when said reproducing attachment is mechanically coupled to said main unit at their side walls,
an amplifier having an input connected to said signal input terminals of the reproducing attachment for amplifying the modulated bio-electrical signal reproduced by said magnetic head of said main unit;
a power supply input conductor connected to said power supply output terminals of the reproducing attachment; and
a signal output conductor connected to an output of said amplifier of the reproducing attachment for supplying the modulated bio-electrical signal to the external of the reproducing attachment;
a demodulator energized by an A.C. power source and having an input connected to said signal output conductor of said reproducing attachment for demodulating said modulated bio-electrical signal to produce a demodulated bio-electrical signal which has the same waveform as the bio-electrical signal detected by said detector of said recording attachment;
a D.C. power source connected to said power supply input conductor of said reproducing attachment; and
a recorder energized by the A.C. power source and having an input connected to an output of said demodulator for graphically displaying said bio-electrical signal;
whereby only one of said recording and reproducing attachments can be coupled to said main unit at any one time at said side walls by means of said mechanically coupling means.

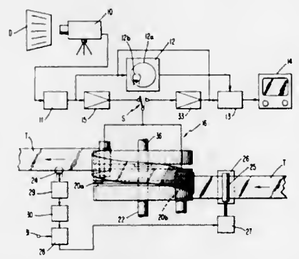
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**3,934,268**

## SYSTEM FOR MAGNETICALLY RECORDING AND REPRODUCING STILL VIDEO PICTURES AND AUDIO INFORMATION

**Saburo Uemura, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan**

**Filed July 31, 1968, Ser. No. 749,018**
**Claims priority, application Japan, Aug. 2, 1967, 42-49667; Aug. 2, 1967, 42-49668**
**Int. Cl.² G11B *21/02***
**U.S. Cl. 360—101** **2 Claims**



**1.** In a magnetic recording and reproducing system, a magnetic recording tape guided for movement in a predetermined path; means for effecting the controlled movement of said tape in said path so as to dispose a selected portion of the tape at rest at a recording and reproducing station adjacent said path, said path including a section at said station where said tape is wrapped at least partly around a cylindrical guide surface at an angle normal to planes normal to the axis of said surface; two video signal magnetic heads mounted at said station diametrically opposed to each other and spaced from each other in the direction of said axis; means imparting cyclical rotary movement to said heads to move said heads in first and second planes normal to said axis and across said path to scan repeatedly first and second elongated areas that extend obliquely across said selected portion of the tape while the latter is at rest; means to operate said heads for selectively recording and reproducing video signals in said elongated areas of the tape which are scanned thereby, first and second audio signal magnetic heads mounted at said station diametrically opposed to each other and axially spaced from each other and from said two video signal magnetic heads in the



direction of said axis; means operative when the tape is at rest to impart cyclical rotary movements to move said audio signal magnetic heads in respective third and fourth planes parallel to said first and second planes so as to scan third and fourth elongated areas of said selected portion which are parallel to, substantially of the same length as, and spaced from the first and second elongated areas; means to operate said audio signal magnetic heads for selectively recording and reproducing audio signals in the third and fourth elongated areas scanned thereby; and means synchronizing said cyclical movements of said audio signal magnetic heads at a speed of which the speed of said cyclical movements of the video signal magnetic heads is a whole multiple, whereby during each revolution of said audio signal heads the latter scan said third and fourth elongated areas of said selected portion of the tape while said video signal magnetic heads repeatedly traverse said first and second elongated areas of said selected portion of the tape scanned thereby.

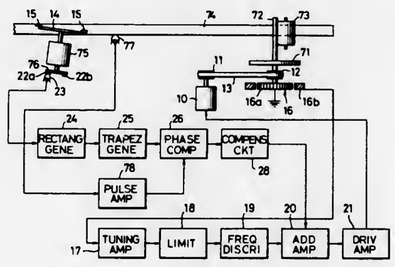
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**3,934,269**

## APPARATUS FOR CONTROLLING THE ROTATION OF A ROTATING BODY IN A RECORDING AND/OR REPRODUCING APPARATUS

**Mitsuo Fujita, Tokyo, and Naoaki Sakaki, Murayama, both of Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan**

**Filed Aug. 1, 1973, Ser. No. 384,681**
**Claims priority, application Japan, Aug. 3, 1972, 47-77814; Oct. 11, 1972, 47-101145; Jan. 26, 1973, 48-10887; Jan. 27, 1973, 48-10692**
**Int. Cl.² G11B *21/04, 21/02***
**U.S. Cl. 360—70** **11 Claims**




**1.** An apparatus for controlling the rotation of a rotating body in a recording and/or reproducing apparatus comprising:
a DC motor for driving said rotating body;
a first detecting means for detecting the rotational speed of said body as it is rotated by said DC motor, and for producing interrelatedly with the rotation of the body, an electrical signal of a frequency $n_1$ times (wherein $n_1 >> 1$) said rotational speed;
first error signal forming means for producing a first error signal having a magnitude which corresponds to the advance or lag in the phase of the output of said first detecting device as compared to the phase of a standard reference signal;
second detecting means for detecting a signal associated with the rotational phase of said rotating body;
second error signal forming means for producing a second error signal by comparing the phase of the output signal of said second detecting means with the phase of a reference signal;
control signal forming means for producing a control signal by combining said first and second error signals;
means for controlling the rotation of said DC motor responsive to the control signal from said control signal forming means;
said rotation controlling means for the DC motor comprising:
a circuit means for generating an AC signal having a constant period and a constant amplitude,
a circuit means for superposing said AC signal from said AC signal generating circuit and a control signal from said control signal forming means for slicing said superposed signal at a specific level,
a driving amplification circuit means for carrying out an on-off switching operation in response to the signal thus sliced and for producing an output rectangular wave, and
a circuit means for smoothing the output of said driving amplification circuit to produce a smoothed DC voltage and for applying said voltage to the DC motor.

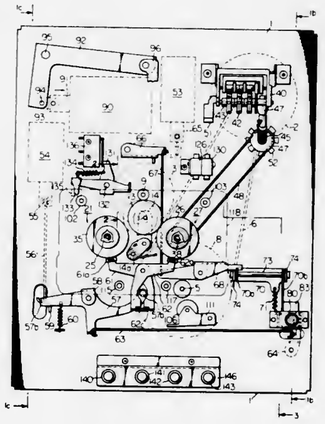
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**3,934,270**

## TWO-MOTOR CASSETT TYPE TAPE RECORDER

**Mitsuo Iwata, Yokohama, Japan, assignor to Victor Company of Japan, Limited, Japan**

**Filed Nov. 8, 1973, Ser. No. 413,942**
**Claims priority, application Japan, Nov. 10, 1972, 47-112767; May 8, 1973, 48-50275; May 10, 1973, 48-51926; May 10, 1973, 48-51927; May 14, 1973, 48-53376**
**Int. Cl. G11b *15/32, 23/04, 19/26***
**U.S. Cl. 360—96** **7 Claims**



**1.** A tape recording-reproducing apparatus, comprising;
a chassis receptive of a cassette having a tape for recording signals thereon and reproducing the signals;
a capstan rotatably mounted on said chassis; a motor on said chassis for driving said capstan at a constant peripheral speed for the recording and reproducing of signals;
a pinch roller movable between an active position in which the roller is in frictional engagement with the tape on the periphery of the capstan and an inactive position wherein the roller is withdrawn from the tape;
first clutch wheel means for driving a first tape wheel of the cassette to rewind the tape;

second and third clutch wheel means coaxially arranged for driving an second tape reel in the cassette to wind the tape in forward direction at different speeds;

an idler wheel mounted on said chassis and movable between a first active position in which said idler wheel is in frictional engagement with the periphery of said first clutch wheel means, a second active position in which said idler wheel is in frictional engagement with the periphery of said second clutch wheel means, and a third active position in which said idler wheel is in frictional engagement with periphery of said third clutch wheel means;

reversable motor means having a driving shaft in frictional driving engagement with the periphery of said idler wheel for moving that wheel in said first active position and, at different speeds, in said second and third active positions;

means for axially moving said idler wheel between said second and third active position; and

transducing means for the recording and reproducing of signals on the tape; whereby said reversable motor means and said motor for driving said capstan are enabled to drive the apparatus for rewinding the tape by said first tape reel and for playing and fast forward moving of the tape by said second tape reel.

# DESIGN PATENTS

## GRANTED JANUARY 20, 1976

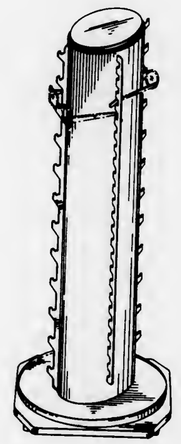
### ERRATA

| For CLASS | See PATENT NO. |
|---|---|
| 083-012.A | 238,456 |

# DESIGNS

JANUARY 20, 1976

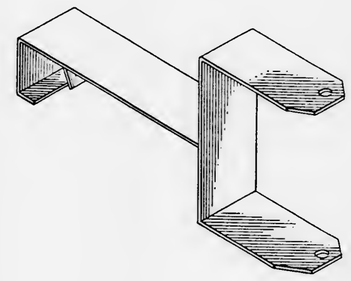
238,457
**DISPLAY STAND FOR EYEGLASSES OR THE LIKE**
Jay L. Blomquist, 306 Busse Highway,
Park Ridge, Ill. 60667
Filed July 16, 1973, Ser. No. 379,793
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—24



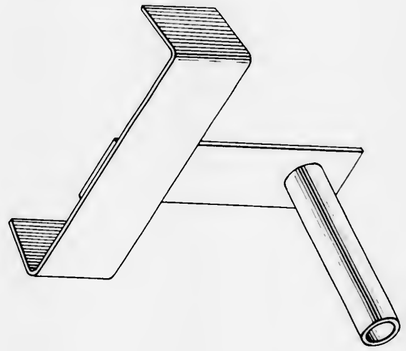
238,458
**ARMCHAIR**
Mario Cavallero Adrian, Rda. Gral. Mitre 126,
Barcelona, Spain
Filed June 6, 1974, Ser. No. 476,842
Claims priority, application Spain Dec. 10, 1973
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—67



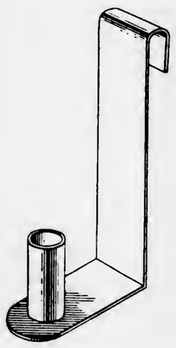
238,459
**TOILET TISSUE HOLDER**
Arthur E. Bauman, 764 Johnston St.,
Akron, Ohio 44306
Filed Nov. 1, 1973, Ser. No. 411,901
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—97



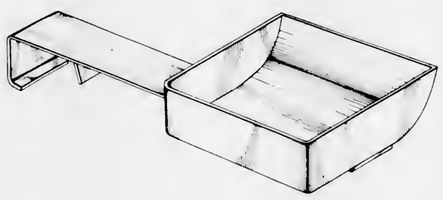
238,460
**TOILET TISSUE HOLDER**
Arthur E. Bauman, 764 Johnston St.,
Akron, Ohio 44306
Filed Nov. 1, 1973, Ser. No. 411,902
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—97



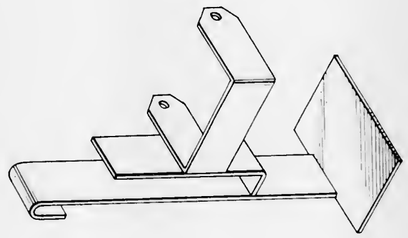
238,461
**TOILET TISSUE HOLDER**
Arthur E. Bauman, 764 Johnston St., Akron, Ohio 44306
Filed Nov. 1, 1973, Ser. No. 411,903
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—97



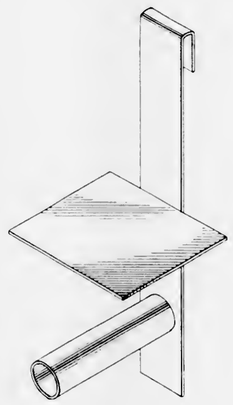
238,462
**TOILET TISSUE HOLDER**
Arthur E. Bauman, 764 Johnston St., Akron, Ohio 44306
Filed Nov. 1, 1973, Ser. No. 411,904
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—97



238,463
**TOILET TISSUE HOLDER**
Arthur E. Bauman, 764 Johnston St., Akron, Ohio 44306
Filed Nov. 1, 1973, Ser. No. 411,905
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—97

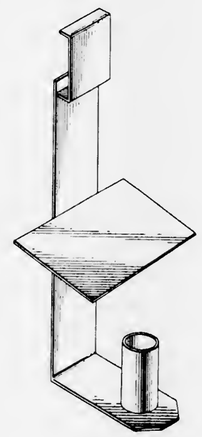


238,464
**TOILET TISSUE HOLDER**
Arthur E. Bauman, 764 Johnston St., Akron, Ohio 44306
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Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—97

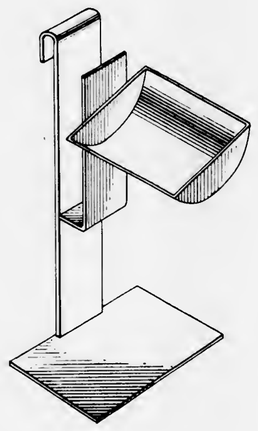




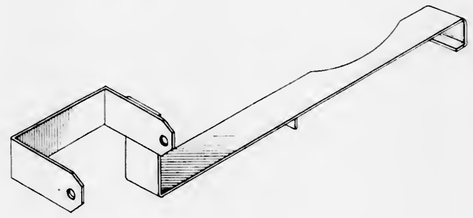
238,465
**TOILET TISSUE HOLDER**
Arthur E. Bauman, 764 Johnston St., Akron, Ohio 44306
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Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—97



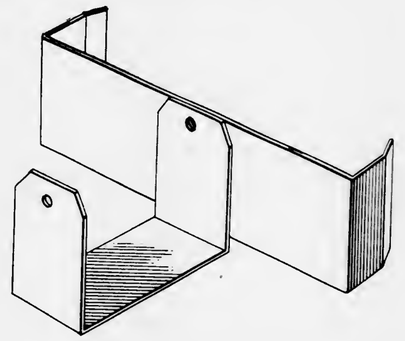
238,466
**TOILET TISSUE HOLDER**
Arthur E. Bauman, 764 Johnston St., Akron, Ohio 44306
Filed Nov. 1, 1973, Ser. No. 411,908
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—97



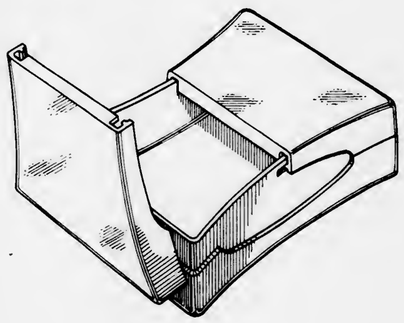
238,467
**TOILET TISSUE HOLDER**
Arthur E. Bauman, 764 Johnston St., Akron, Ohio 44306
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Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—97



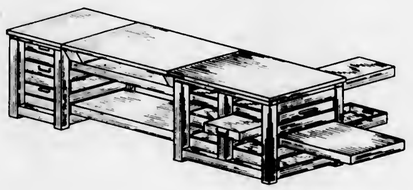
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**TOILET TISSUE HOLDER**
Arthur E. Bauman, 764 Johnston St., Akron, Ohio 44306
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Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—97



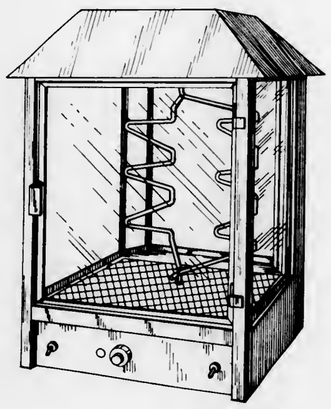
238,469
**DISPENSING CONTAINER FOR TISSUES**
Charles A. Lanius, Memphis, Tenn., assignor to Kimberly-Clark Corporation
Filed Nov. 7, 1974, Ser. No. 521,868
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—98



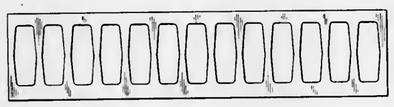
238,470
**WORKBENCH**
Kenneth H. Petersen, 821 Index Court NE., Renton, Wash. 98055
Original design application Nov. 24, 1971, Ser. No. 202,059, now Patent No. 232,610. Divided and this application Mar. 4, 1974, Ser. No. 447,999
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—162



238,471
**FOOD DISPLAY OVEN**
Ronald R. Roderick, Evergreen, Colo., assignor to National Equipment Corporation, Denver, Colo.
Filed Jan. 18, 1974, Ser. No. 434,446
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—172



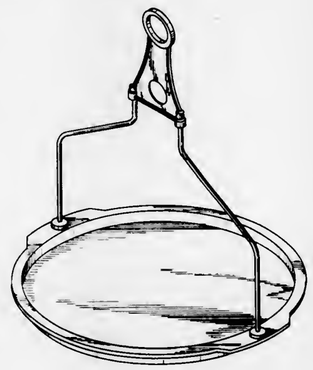
238,472
**COUNTER TOP DISPLAY PARTITION**
David M. Moore, Pittsburgh, Pa., assignor to Armstrong Store Fixture Corporation, Pittsburgh, Pa.
Filed Mar. 5, 1973, Ser. No. 338,315
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—193



238,473
**COVERED FOOD DISH**
William Finnegan, 7200 Beverly Blvd., Los Angeles, Calif. 91203
Filed July 22, 1974, Ser. No. 490,912
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—5



238,474
**TRAY**
Leland H. Logue, 150 S. Marion Parkway, Denver, Colo. 80209
Filed Apr. 19, 1974, Ser. No. 462,237
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—20



238,475
**TRAY**
Leland H. Logue, 150 S. Marion Parkway, Denver, Colo. 80209
Filed Apr. 19, 1974, Ser. No. 462,238
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—20

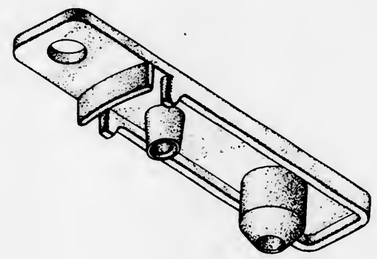




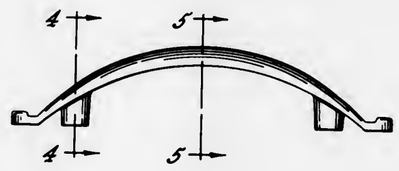
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**TRAY**
Leland H. Logue, 150 S. Marion Parkway, Denver, Colo. 80209
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Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—20



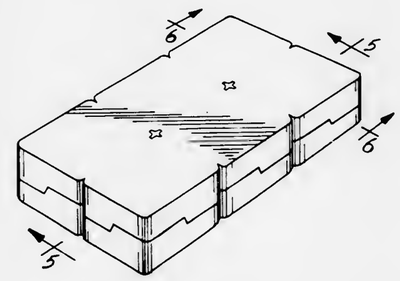
238,477
**CAN OPENER**
Charles H. Dow, 3125 La Travesia, Fullerton, Calif. 92635; Harold E. Johnson, P.O. Box 704, Rte. 1, Parker, Ariz. 85344; and Clement D. Shaw, Jr., 1166 Steele Drive, Brea, Calif. 92631
Filed Aug. 22, 1974, Ser. No. 499,500
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D8—40



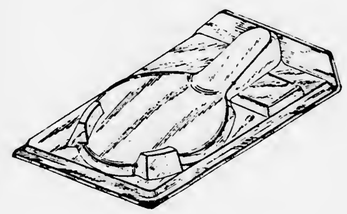
238,478
**PULL**
La Verne E. Clayton, Rockford, Ill., assignor to Amerock Corporation
Filed May 13, 1974, Ser. No. 469,395
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—173



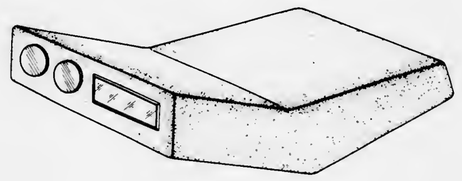

238,479
**SHIPPING CONTAINER FOR BOTTLES OR THE LIKE**
Maureen L. Swanson, 6706 Hartman, Omaha, Nebr. 68104
Filed Jan. 24, 1974, Ser. No. 436,347
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—184



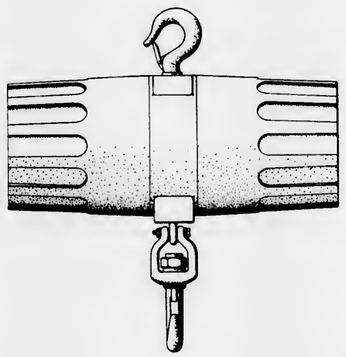

238,480
**CONTAINER FOR TABLE-TENNIS BAT**
Stig Gunnar Hjelmquist, Box 6, S–573 01, Tranas, Sweden
Filed Nov. 6, 1973, Ser. No. 413,263
Claims priority, application Sweden May 7, 1973
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—192



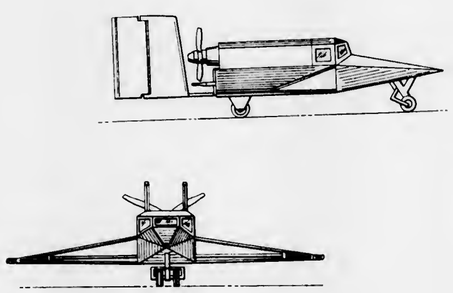
238,481
**INSTRUMENT CASE FOR A POROSIMETER**
Joel D. Ducommun, Chavannes, Switzerland, assignor to Baumgartner Papiers S.A.
Filed July 25, 1974, Ser. No. 491,924
Claims priority, application Switzerland Feb. 1, 1974
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—46



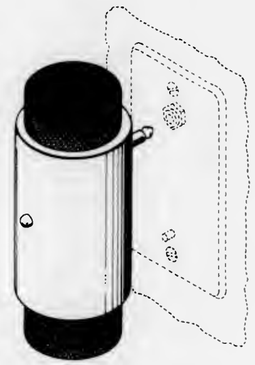
238,482
**POWER WINCH**
Dallas L. Pitts, Wynne, Ark., assignor to Pitts Drive, Inc., Wynne, Ark.
Filed Apr. 17, 1974. Ser. No. 461,616
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—54



238,483
**AIRPLANE**
Donald R. Swanson, 1880 Parkside Drive, Concord, Calif. 94520
Filed Oct. 15, 1974, Ser. No. 514,772
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D12—78



238,484
**PLUG-IN DETECTOR UNIT FOR SMOKE AND FIRE DETECTION SYSTEMS**
Roy R. Ludt II, 731 S. Chapel Ave., Alhambra, Calif. 91801
Filed Jan. 16, 1974, Ser. No. 433,683
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—106

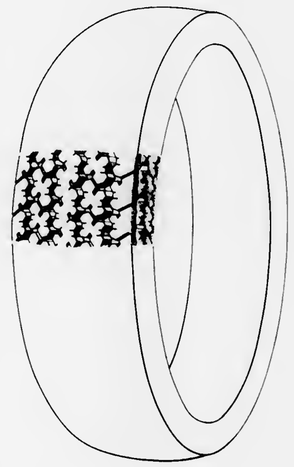


238,485
**QUADRICYCLE**
Charles David Baldwin, Toledo, Ohio, assignor to Toucon Manufacturing Inc., Toledo, Ohio
Filed Oct. 29, 1974, Ser. No. 518,482
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—107

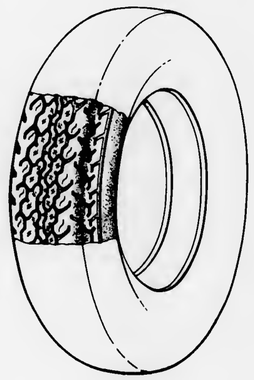




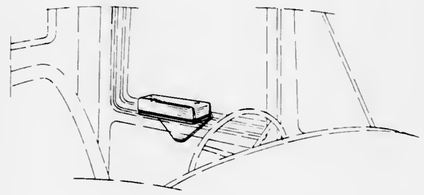
238,486
**PNEUMATIC TIRE TREAD AND BUTTRESS**
Gerassimos C. Candiliotis, Agawam, Mass., assignor to Uniroyal, Inc.
Filed Feb. 24, 1975, Ser. No. 552,512
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—143



238,487
**TIRE**
Jean-Claude Romand, Bourg-la-Reine, France, assignor to Pneumatiques Caoutchouc Manufacture et Plastiques Kleber-Colombes
Filed Nov. 14, 1974, Ser. No. 523,847
Claims priority, application France May 14, 1974
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—146



238,488
**VEHICLE ARM REST**
George W. Vinson, 2022 Windsor, Pekin, Ill. 61554
Filed Feb. 11, 1974, Ser. No. 441,113
Term of patent 14 years
Int. Cl. D6—*99*; D12—*16*
U.S. Cl. D12—155



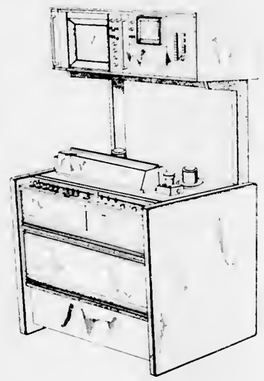
238,489
**VEHICLE DOOR BUMPER**
Henry H. Slingerland, Jr., 2800 Ramona Court, Wilmette, Ill. 60091
Filed Nov. 20, 1974, Ser. No. 525,629
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—167



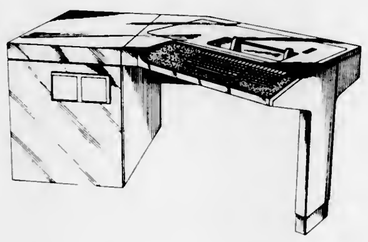
238,490
**SHOWER SPLASH GUARD**
William E. Blitch, Charlotte, N.C., assignor to The Webline Corporation
Filed Aug. 2, 1973, Ser. No. 385,184
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—69



238,491
**MAGNETIC TAPE TRANSPORT**
Darrell S. Staley, Santa Clara, Calif., assignor to Ampex Corporation, Redwood City, Calif.
Filed Jan. 2, 1974, Ser. No. 419,904
Term of patent 7 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



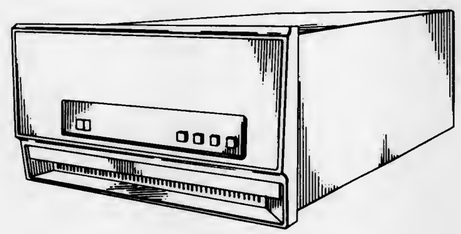
238,492
**CONSOLE FOR A DATA SYSTEM**
Richard G. Clayton, Detroit, Mich., assignor to Burroughs Corporation, Detroit, Mich.
Filed Jan. 28, 1974, Ser. No. 437,025
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



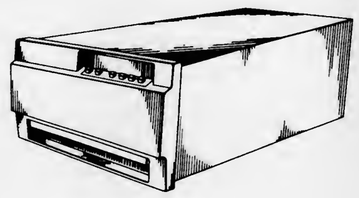
238,493
**CALCULATING MACHINE OR SIMILAR ARTICLE**
Hisashi Maeda, Nagaokakyo-shi, Japan, assignor to Omron Tateisi Electronics Co.
Filed Mar. 20, 1974, Ser. No. 452,930
Claims priority, application Japan Oct. 11, 1973
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D26—5 C



238,494
**CONTROL PANEL FOR A DISK FILE**
Robert Edward Kalvitis and Donald Agnew Robertson, Fairport, N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed July 29, 1974, Ser. No. 492,387
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

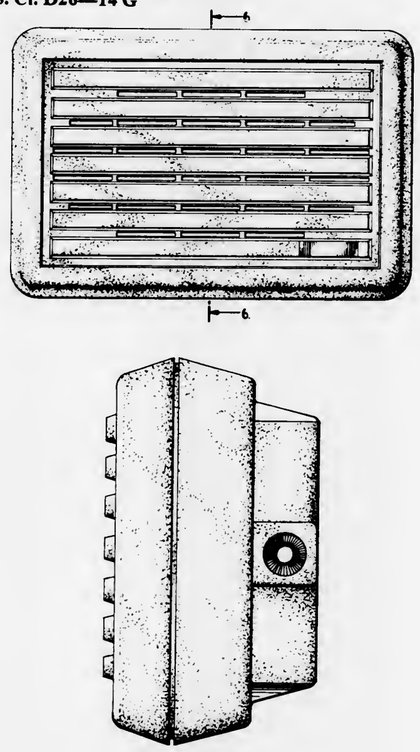


238,495
**DISK MEMORY MODULE FRONT PANEL**
Robert Edward Kalvitis and Donald Agnew Robertson, Fairport, N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed July 29, 1974, Ser. No. 492,388
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C





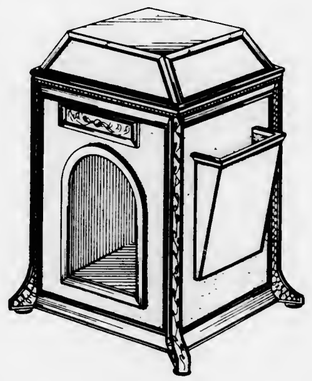
238,496
**AUDIO SPEAKER**
Gene T. Brown, Orlando, and Paul M. Bordas, Apoka, Fla., assignors to Scope Incorporated, Reston, Va.
Filed May 22, 1974, Ser. No. 472,114
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 G



238,497
**CABINET FOR AN INPUT-OUTPUT DEVICE FOR A DATA HANDLING SYSTEM**
Gregory Fossella, Marshfield, Mass., and John R. Bittner and Kenneth C. McCartney, Waynesboro, Va., assignors to General Electric Company, Waynesboro, Va.
Filed Jan. 2, 1974, Ser. No. 430,024
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



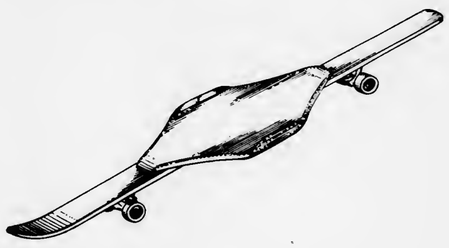
238,498
**PET HOUSE**
Katie H. Barr, 7121 Bull Run Post Office Road, Centerville, Va. 22020
Filed Apr. 22, 1974, Ser. No. 462,726
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—1



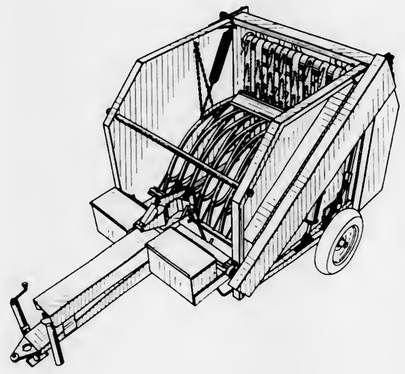
238,499
**GOLF CLUB HEAD OR SIMILAR ARTICLE**
Lee W. Prochnow, Oakbrook, Ill., assignor to Great American Resources Inc., Elmhurst, Ill.
Filed Mar. 13, 1974, Ser. No. 450,811
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH



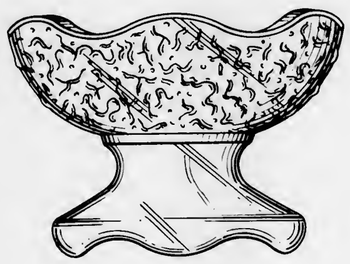
238,500
**SKATE COASTER**
Robert A. Candler, 2911 De La Vina St., Santa Barbara, Calif. 93105
Filed Aug. 23, 1974, Ser. No. 499,836
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ



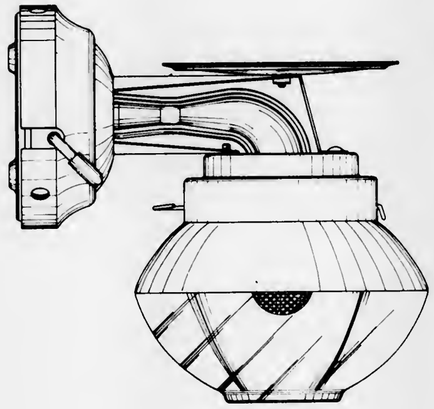
238,501
ROUND BALE FORMING MACHINE
Melvin Victor Gaeddert, Newton, and Bobby Dwayne McWhirt, Hesston, Kans., assignors to Hesston Corporation, Hesston, Kans.
Filed Oct. 4. 1974, Ser. No. 511,733
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D40—1 E



238,502
HOLDER FOR ARTICLES SUCH AS CANDLES, CANDY OR SIMILAR ARTICLES
James Lloyd Thrush, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio
Filed Oct. 23, 1973, Ser. No. 408,371
Term of patent 14 years
Int. Cl. D26—*01*
U.S. Cl. D48—2



238,503
GAS LIGHT
Stanley M. Loveless, Kalamazoo, Mich., assignor to General Gas Light Company, Kalamazoo, Mich.
Filed June 17, 1974, Ser. No. 479,779
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—4 B

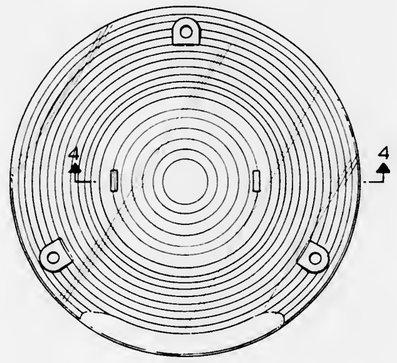


238,504
BASE
Amnon Michaeli, 135—03 73rd Terrace, Kew Gardens Hills, N.Y. 11415
Filed Sept. 16, 1974, Ser. No. 506,409
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—20 J

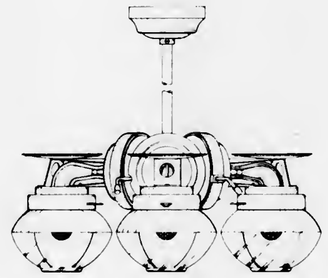




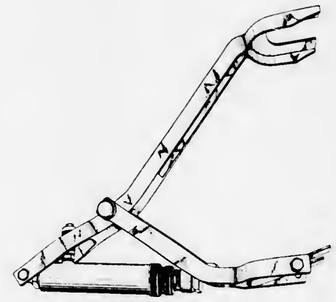
238,505
SIGNAL LAMP LENS
Robert I. Nagel, Skokie, Ill., assignor to Dominion Auto Accessories Limited, Toronto, Ontario, Canada
Filed Nov. 29, 1974, Ser. No. 528,165
Term of patent 14 years
Int. Cl. D10—*06;* D26—*06*
U.S. Cl. D48—32 A



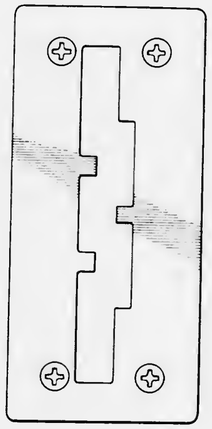

238,506
GAS LIGHT CLUSTER
Stanley M. Loveless, Kalamazoo, Mich., assignor to General Gas Light Company, Kalamazoo, Mich.
Filed June 17, 1974, Ser. No. 479,780
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—23 R



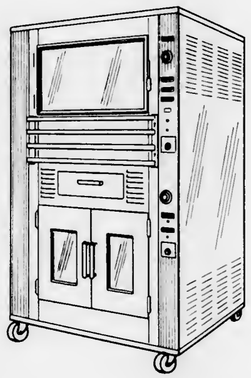
238,507
HYDRAULICALLY DRIVEN TOOL FOR COMPRESSING HELICAL SPRINGS
Kaare Heen, 7 Knausveien, 3100 Tonsberg, Norway
Filed Dec. 6, 1974, Ser. No. 530,474
Claims priority, application Norway June 10, 1974
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D54—13 R



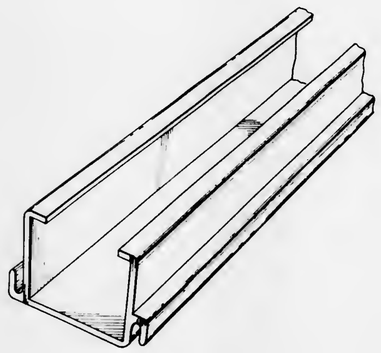
238,508
PANEL SUPPORTED TRANSMISSION SHIFT CONTROL MODULE FOR MOBILE OR STATIONARY EQUIPMENT
Peter D. Adams, La Canada, and Warner R. Lauper, San Pedro, Calif.; said Lauper assignor to Quadrastat Controls Corporation
Filed Apr. 19, 1974, Ser. No. 462,228
Term of patent 14 years
Int. Cl. D15—*01*
U.S. Cl. D55—1 G



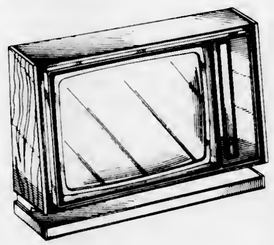
238,509
**DISPLAY OVEN**
Robert G. Wilson, 10 Chisolm Trail, Greenville, S.C. 29607
Filed July 12, 1974, Ser. No. 488,024
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D55—1 E



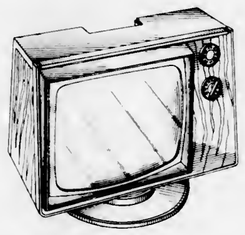
238,510
**SUPPORT RAIL FOR ROLLERS OF A GRAVITY CONVEYOR**
Charles P. Tabler, Hamilton, Ohio, assignor to Kornylak Corporation, Hamilton, Ohio
Filed Mar. 10, 1975, Ser. No. 556,950
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D55—1 C



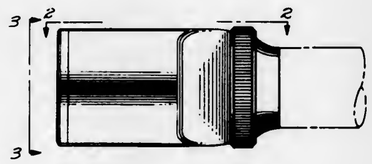
238,511
**TELEVISION RECEIVER**
Melvin H. Boldt, Glenview, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.
Filed Oct. 2, 1973, Ser. No. 402,875
Term of patent 7 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 D

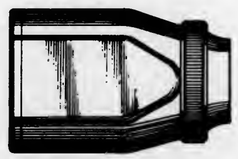


238,512
**TELEVISION RECEIVER**
Melvin H. Boldt, Glenview, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.
Filed Mar. 4, 1974, Ser. No. 448,137
Term of patent 7 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 D



238,513
**OCULAR ASSEMBLY FOR A RIFLESCOPE**
Gerrit A. Van Exel, Fullerton, Calif., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed June 6, 1974, Ser. No. 476,768
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 E



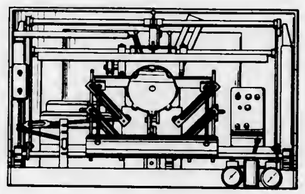



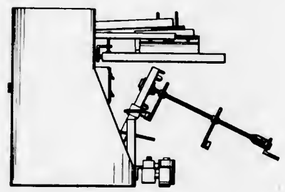


238,514
**COMPUTER OUTPUT MICROFILMER**
Maurice H. Artaud, Spring Valley, Calif., assignor to Stromberg-DatagraphiX, Inc., San Diego, Calif.
Filed May 23, 1974, Ser. No. 472,573
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1 Q



238,515
**SILK SCREEN PRINTING MACHINE**
Eugene Landesman, University City, Mo., assignor to Lawson Printing Machine Co., Inc., St. Louis, Mo.
Filed Apr. 25, 1974, Ser. No. 464,048
Term of patent 14 years
Int. Cl. D18—*02*
U.S. Cl. D64—11 R

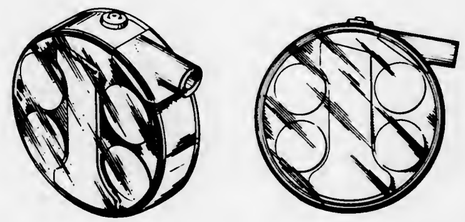




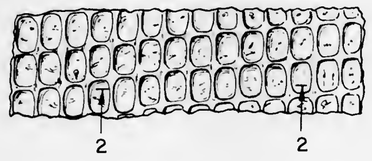
238,516
**CHAIN CANDLE**
Siegfried Steinhart, 14 Obere Ganshalde, 8908 Krumbach, Germany
Original design application Aug. 22, 1972, Ser. No. 282,659, now Patent No. 233,175. Divided and this application July 26, 1974, Ser. No. 492,355
Claims priority, application Germany Feb. 25, 1972; Mar. 10, 1972
Term of patent 14 years
Int. Cl. D26—*04*
U.S. Cl. D73—1 B



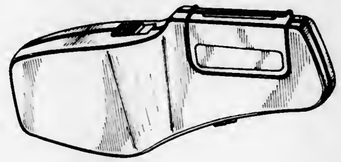
238,517
**IMPLANTABLE MEDICAL-ELECTRONIC CARDIAC PACER UNIT**
Howard J. Thompson, New Richmond, Wis., assignor to Medtronic, Inc., Minneapolis, Minn.
Filed Apr. 26, 1974, Ser. No. 464,487
Term of patent 14 years
Int. Cl. D24—*03*
U.S. Cl. D83—1 F



**238,518**
**PLASTIC SHEET MATERIAL**
**Thomas C. Hendrickson, South River, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.**
**Filed June 10, 1974, Ser. No. 477,607**
**Term of patent 14 years**
**Int. Cl. D5—*06***
**U.S. Cl. D87—3 G**




**238,519**
**HAIR CLIPPER**
**Petrus Jacobus Johanna Nagelkerke, Drachten, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.**
**Filed Feb. 11, 1974, Ser. No. 441,674**
**Claims priority, application Netherlands Aug. 29, 1973**
**Term of patent 14 years**
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**U.S. Cl. D95—3 A**



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| 94.5C | B 549,931 | E | Jan. 20, 1976 |
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| 174TF | B 476,681 | E | Jan. 13, 1976 |
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Bandy, Clyde. Barbecue grill construction. 3,933,144, Cl. 126-25.00R.
Banister Pipelines Ltd.: *See—*
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Banks, William P.; Carlson, Jon R.; and Becker, Donald E., to Continental Oil Company. High strength, water resistant silicate foam. 3,933,514, Cl. 106-75.000.
Banque pour l'Expansion Industrielle "Banexi": *See—*
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Bar-on, Ari, to Xerox Corporation. Roll fuser apparatus and mounting arrangement therefor. 3,934,113, Cl. 219-216.000.
Bar, Ulrich: *See—*
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Barabino, William A., to Safety Research & Engineering Corporation. Tire pressure warning system. 3,934,223, Cl. 340-58.000.
Barba, Diego; Germana, Antonino; Liuzzo, Giuseppe; Tagliaferri, Giovanni; and Spizzichino, Giancarlo, to Societa' Italiana Resine S.p.A. Multistage flash evaporator for producing soft water from a saline water. 3,933,597, Cl. 202-173.000.
Barber-Colman Company: *See—*
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Barber, Sidney: *See—*
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Barcik, Charles P.; and Gagliardo, Joseph J., to Auto-Sentry Co. Automotive vehicle ignition locking and hood latching apparatus. 3,934,102, Cl. 200-44.000.
Bargain, Michel; and Ducloux, Maurice, to Rhone-Poulenc S.A. Imide copolymers possessing hydroxyl groups. 3,933,745, Cl. 260-47.0CP.
Barnhart, Andrew Wayne, to Jerrold Electronics Corporation. Bilateral communications system for distributing commerical and premium video signaling on an accountable basis. 3,934,079, Cl. 178-5.100.
Baron, Seymour; and Lutzmann, H. Harald, to Fine Organics Inc. Antistatic polymer blend. 3,933,779, Cl. 260-93.50A.
Barrett, Arthur Michael; Carter, John; Hull, Roy; Le Count, David James; and Squire, Christopher John, to Imperial Chemical Industries Limited. Alkanolamine derivatives for treating hypertension. 3,934,032, Cl. 424-324.000.
Barrett, Frederick B.; and Nielsen, Peter A., to United States of America, Navy. Attachment devices for underwater salvage. 3,933,390, Cl. 294-94.000.
Bartels, Fred Willie, to Banister Pipelines Ltd. Ditcher. 3,933,053, Cl. 74-243.00R.
Barth, Jordan B., to Colgate-Palmolive Company. Toothpastes. 3,934,000, Cl. 424-49.000.
Barth, Wayne E.; and Kuhla, Donald E., to Pfizer Inc. Process for the synthesis of 4-(2-pyridylamido ethyl) piperidines. 3,933,830, Cl. 260-293.520.
Bartko, John: *See—*
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Bartolotta, Guiseppe; de Oude, Nicolaas Tieme; and Gunkel, Alfred Alexander, to Procter & Gamble Company, The. Controlled sudsing detergent compositions. 3,933,672, Cl. 252-116.000.
BASF Aktiengesellschaft: *See—*
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BASF Wyandotte Corporation: *See—*
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Bastiansen, Gunnar. Tool for cutting and graduating of plastic tubes. 3,932,937, Cl. 30-102.000.
Bateman, Charles Donald; and Muller, Hans Rudolf, to Sundstrand Data Control, Inc. Terrain closure warning system with altitude rate signal conditioning. 3,934,221, Cl. 340-27.0AT.
Bateman, Charles Donald; Muller, Hans Rudolf; and Brem, Frank Joseph, to Sundstrand Data Control, Inc. Terrain closure warning system with climb inhibit and altitude gain measurement. 3,934,222, Cl. 340-27.0AT.
Bau-Stahlgewebe GmbH: *See—*
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Bauwens, Robert; Lefrancois, Robert; and Gabriel, Michel, to Products Chimiques Ugine Kuhlmann. Process for preparing pure sodium bichromate. 3,933,972, Cl. 423-57.000.
Bayer Aktiengesellschaft: *See—*
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Bean, Anthony J., to Sun Chemical Corporation. Photopolymerization co-initiator systems. 3,933,682, Cl. 252-431.00R.

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Beaufrere, Albert H. Fuel slinger combustor. 3,932,988, Cl. 60-39.710.

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Beckman Instruments, Inc.: *See—*
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Beeghly, Bruce R., to Economy Engine Company, The. Capacitive discharge ignition system. 3,933,139, Cl. 123-148.00E.

Beer, Henri Bernard, to Chemnor Corporation. Coating of protected electrocatalytic material on an electrode. 3,933,616, Cl. 204-290.00F.

Beiswanger, John P. G.; and Nassry, Asadullah, to GAF Corporation. Metalworking additive and composition. 3,933,658, Cl. 252-31.000.

Belk, Earl H., to Kustom Fit Manufacturing Company. Convertible sofa bed. 3,932,902, Cl. 5-28.000.

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Bens, Jeans, to Compagnie General de Radiologie. Apparatus for measuring surface stress by X-ray diffraction. 3,934,138, Cl. 250-278.000.

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Bergstrom, Floyd A.; Lee, Chi-Long; and Maxson, Myron T., to Dow Corning Corporation. Method of preparing a platinum catalyst inhibitor. 3,933,880, Cl. 260-448.20E.

Beriger, Ernst, to Ciba-Geigy Corporation. O-ethyl-S-(n)propyl-S-diallylcarbmoylmethyldithiophosphate. 3,933,945, Cl. 260-943.000.

Beroza, Morton; Sarmiento, Rafael; and McGovern, Terrence P., to United States of America, Agriculture. Method for distrupting normal insect maturation. 3,934,033, Cl. 424-341.000.

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Bertus, Brent J., to Phillips Petroleum Company. Oxidative dehydrogenation processes. 3,933,933, Cl. 260-680.00E.

Beschke, Helmut; Offermanns, Heribert; and Schuler, Wilhelm-Alfons, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the production of mercaptoethyl containing compounds. 3,933,813, Cl. 260-247.10R.

Best, John S., to Dow Chemical Company, The. Method for suppressing the formation of ice in natural or man-made bodies of water. 3,932,997, Cl. 61-1.00R.

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Biondetti, Mario, to Escher-Wyss Limited. Controlled deflection roll. 3,932,921, Cl. 29-116.0AD.

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Bitgood, Andrew J.; and Bellavance, Roger T., to Raymond Lee Organization, Inc., The, a part interest. Portable scrubbing device. 3,932,908, Cl. 15-28.000.

Biviator, S.A.: *See—*
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Blom, Hubert P., to General Motors Corporation. Seat adjuster mechanism. 3,933,331, Cl. 248-425.000.

Blue Ember Flame Corporation: *See—*
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Bobeck, Andrew Henry; Kish, Donald Eugene; and Kowalchuk, Roman, to Bell Telephone Laboratories, Incorporated. Reactive coupled drive circuit for magnetic bubble memories. 3,934,235, Cl. 340-174.0TF.

BOC International Limited: *See—*
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Bock, Heinz-Wilhelm: *See—*
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Bockstahler, Earl R., to Dow Chemical Company, The. Substituted phenylthioamidines. 3,933,912, Cl. 260-564.00G.

Boehringer Ingelheim GmbH: *See—*
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Boge GmbH: *See—*
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Bogert, Warren D., to International Telephone and Telegraph Corporation. Frequency lock loop employing a gated frequency difference detector having positive, zero and negative threshold detectors. 3,934,205, Cl. 325-346.000.

Boggs, Beryl Aaron: *See—*
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Bohnsack, Gerhard; Geffers, Hans; Kallfass, Herbert; and Radt, Walter, to Bayer Aktiengesellschaft. Process for preventing corrosion and the formation of scale in water circulating system. 3,933,427, Cl. 21-2.70A.

Boise Cascade Corporation: *See—*
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Boisrayon, Gerard M.; Martin, Gilbert M.; and Delfosse, Gabriel M., to Etat Francais. Buoy releasable from a submarine. 3,933,109, Cl. 114-16.500.

Boivin, Joseph J. R., to Logging Development Corporation. Root shear feller. 3,933,188, Cl. 144-34.00R.

Bokov, Jury Sergeevich; Gurzheev, Valery Nikolaevich; Zakharov, Vladimir Ivanovich; Korsakov, Vladimir Sergeevich; Lavrischev, Vadim Petrovich; Goron, Alla Grigorievna; Glikman, Mark Leonovich; Semenov, Nikolai Nikolaevich; and Matvienko, Viktor Yakovlevich. Method of making coloured photomasks. 3,933,609, Cl. 204-180.00R.

Boles, Charles L.; and Flanigan, Richard J., to Powermatic/Houdaille, Inc. Noise reducing planter cutter head. 3,933,189, Cl. 144-117.00R.

Bonfanti, Giovanni: *See—*
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Bonig, Heinrich; and Waldmann, Hermann, to Siemens Aktiengesellschaft. Arrangement for regulating the speed of an asynchronous motor. 3,934,184, Cl. 318-227.000.

Boothroyd, Howard W., to United States of America, Army. Gyroscopic rate switch. 3,933,096, Cl. 102-70.20R.

Borck, Joachim: *See—*
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Bordenca, Carl; Dorschner, Kenneth P.; and Johnson, Robert P., to SCM Corporation. Insect repellent compositions and process having an N-substituted hydroxyalkyl amine as an active ingredient. 3,933,915, Cl. 260-584.00R.

Borg-Warner Corporation: *See—*
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Boris, Alfred, to Hoffmann-La Roche Inc. Oral male antifertility method and compositions. 3,934,015, Cl. 424-267.000.

Borroughs Tool & Equipment Corporation: *See—*
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Boschert, Ulrich: *See—*
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Bossert, Friedrich: *See—*
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Bosshard, Rene: *See—*
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Botsch, Franz; Braun, Helmut; Fink, Walter; Heller, Friedrich; and Wallhausser, Karl Heinz, to Hoechst Aktiengesellschaft. N-substituted maleic imide preservative for aqueous dispersions of polymers derived from $\alpha$, $\beta$-ethylenically unsaturated monomers. 3,933,715, Cl. 260-29.6MN.

Boudreaux, Gordon J.: *See—*
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Boyle, John Terence Arnott: *See—*
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Bozek, John S., to Continental Can Company, Inc. Closure with protective insert. 3,933,270, Cl. 220-270.000.

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Zimmer, Darrel E.; and Brace, Paul H., 3,933,197.

Bradley, Chester D.; and Tate, Malcolm C., to A. H. Emery Company, The. Weighing apparatus. 3,933,212, Cl. 177-209.000.

Bradley, William S.; Lea, James F., Jr.; and Macy, Robert L. Solubilizing and dispensing material. 3,933,308, Cl. 239-10.000.

Brady, G. Vincent; and Campbell, J. Les, to Kelsey-Hayes Company. Combination support frame and security means. 3,932,899, Cl. 4-3.000.

Brandien, Helen, executrix: *See—*
Priest, David C.; and Brandien, John E., deceased, 3,933,693.

Brandien, John E., deceased: *See—*
Priest, David C.; and Brandien, John E., deceased, 3,933,693.

Brangenberg, Ralf. Device for holding together a pair of skis. 3,933,365, Cl. 280-11.37A.

Brassette, Donald J., to Thomson International Company. Harvesting topper with curved deflectors. 3,932,984, Cl. 56-63.000.

Braun, Helmut: *See—*
Botsch, Franz; Braun, Helmut; Fink, Walter; Heller, Friedrich; and Wallhausser, Karl Heinz, 3,933,715.

Braun, Martin; and Suffredini, Joseph R., to Machlett Laboratories, Incorporated, The. X-ray tube having composite target. 3,934,164, Cl. 313-60.000.

Brcic, Ivo, to Raymond Lee Organization, Inc., The, a part interest. Thermostat control device. 3,934,217, Cl. 337-107.000.

Brechting, Frank J., Jr.: *See—*
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Brem, Frank Joseph: *See—*
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Brenneisen, Paul; Wenger, Thomas; Gallay, Jean-Jacques; and Schmid, Wolfgang, to Ciba-Geigy Corporation. 2-Phenoxy, -phenylthio-, and -phenyl-amino-benzoxazoles having an isothiocyano substituent. 3,933,841, Cl. 260-307.00D.

Brenneisen, Paul: *See—*
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Brenner, L. Martin; and Loev, Bernard, to SmithKline Corporation. N-aminomethyl-2-amino(and 2-amino-methyl)-2-(2-quinolyl)-thioacetamides. 3,933,811, Cl. 260-246.00B.

Bretz, Frank E., Jr., to Cleveland Hardware and Forging Company. Shock absorbing means for railway hand brake mechanism. 3,933,225, Cl. 188-33.000.

Breuer, Wolfgang: *See—*
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Bridgestone Tire Company Limited: *See—*
Yukuta, Toshio; Aoki, Takao; Haga, Kazuo; Ohashi, Takashi; and Saito, Masumi, 3,933,768.

Briggs, Anglis R.; and Maxwell, Thomas J., to Du Pont de Nemours, E. I., and Company. Method of preparation of lyophilized biological products. 3,932,943, Cl. 34-5.000.

Briles, Franklin S. High speed riveting system. 3,933,025, Cl. 72-391.000.

Brill, John B.; Morris, Charles A.; and Moon, Soo-Duck, to Economic Laboratories, Inc. Process for making agglomerated detergents. 3,933,670, Cl. 252-99.000.

Brinckmann, Eric Maria: *See—*
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Brinkman, Robert B., to Sun Oil Company of Pennsylvania. Crayon wax composition. 3,933,708, Cl. 260-23.00H.

Brinza, Joseph E.: *See—*
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Bristol, James Arthur: *See—*
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Bristol-Myers Company: *See—*
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British Aluminium Company Limited, The: *See—*
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British-American Tobacco Company Limited: *See—*
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British Gas Corporation: *See—*
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Britton, Thomas C.: *See—*
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Broad, Roy M., to Scott & Fetzer Company, The. High voltage cable coupler with termination adaptor and method of constructing cable termination. 3,932,933, Cl. 29-628.000.

Brodie, Edwin T.; and Seiler, Ronald, to Bandag Incorporated. Stabilization of tread strip during bonding to tire. 3,933,551, Cl. 156-96.000.

Brooks, Bernard W. Resin laminate and method of making. 3,933,964, Cl. 264-171.000.

Brose, Horst; Depping, Karl Dieter; Hentschel, Dietrich; Kosteve, Bernard; and Schmidt, Klaus, to BASF Farben & Fasern AG. Opaque polyester copolymer coated articles. 3,933,875, Cl. 428-413.000.

Brossi, Arnold; Guthrie, Robert William; and Kierstead, Richard Wightman, to Hoffmann-La Roche Inc. 9-Acyloxy-5,11-dimethyl-6H-pyrido[4,3-B]carbazoles. 3,933,827, Cl. 260-287.00C.

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Coates, Harold; Collins, John Desmond; and Siddiqui, Iftikhar H., to Albright & Wilson Limited. Esters and mixtures thereof with organotin compounds useful as polymer stabilizers. 3,933,744, Cl. 260-45.75S.
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Cook, Newell C.; and Davis, Gary C., to General Electric Company. Process for making N-methyl nitrophthalimides. 3,933,852, Cl. 260-326.00N.
Cook, William R., Jr. Source of ultraviolet light employing a laser pumped borate crystal. 3,934,154, Cl. 307-88.300.
Corning Glass Works: *See—*
Burke, Gerald E.; and DeLuca, Robert D., 3,933,453.
DeLuca, Robert D., 3,933,454.
Fischer, David J.; Kunz, Hans J.; and Norby, Thomas E., 3,933,612.
Hersh, Leroy S.; and Yaverbaum, Sidney, 3,933,997.
Keck, Donald B.; and Schultz, Peter C., 3,934,061.
Pettersen, Aage; and Schulkind, Herbert, 3,934,197.
Corrie, Nicholas John Byrom, to Martonair Limited. Pneumatic actuators. 3,933,080, Cl. 91-394.000.
Cosden Technology, Inc.: *See—*
Watson, James M., 3,933,599.
Costes, Didier, to Commissariat a l'Energie Atomique. System for sealing and heat-insulating a duct containing a hot fluid under pressure. 3,933,182, Cl. 138-149.000.
Costin, Darryl J., to Owens-Corning Fiberglas Corporation. Cobalt-base alloy. 3,933,484, Cl. 75-171.000.
Counts, W. Ray; and Schickedanz, Wayne M., to Transport Security Systems, Inc. Security lock. 3,933,382, Cl. 292-144.000.
Cowley, Robert I., to Xerox Corporation. Imaging composition for photoelectrophoretic imaging system. 3,933,487, Cl. 96-1.0PE.
Cox, Patrick Clement. Dispenser for expelling contents of collapsible tubes and method of using. 3,933,273, Cl. 222-1.000.
Craig, Coba C.: *See—*
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Craig, Coba C., Jr., to Jenkins, James E.; Moore, Joseph I.; and Craig, Coba C. Ladder leveler. 3,933,222, Cl. 182-204.000.
Cramer, Frank B., to Clean Energy Corporation. Steam generation with coal. 3,933,128, Cl. 122-4.00R.
Craps, Lucien, to Sandoz Ltd., (Sandoz AG). Organic compounds. 3,933,999, Cl. 424-31.000.
Credelca A.G.: *See—*
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Cresp, Michel M., to Poclain. Method of handling a pivoting cab of a public works machine and a public works machine applying said method. 3,933,262, Cl. 214-138.00R.
Cricchio, Renato; and Lancini, Giancarlo, to Gruppo Lepetit S.p.A. New 3-formylrifamycin SV derivatives. 3,933,800, Cl. 260-239.30P
Crile, Eugene E.: *See—*
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Crocker Nat'l Bank in trust for Dariel Dodge & Betty Dodge Malone: *See—*
Dodge, Adiel Y., deceased; and Crocker, Dorian Dodge, executrix, 3,933,600.
Crooks, Stanley R.; and Fish, Warren H., to Whirlpool Corporation. Structure for mounting air moving means in a vacuum cleaner. 3,932,911, Cl. 15-327.00D.
Cross, Barrington; and Arotin, Robert Louis, to American Cyanamid Company. Ester of (alkynyloxy)-, (alkenyloxy)-, and (cyanoalkoxy) carbanilic acids and their use as herbicides. 3,933,470, Cl. 71-111.000.
Cruickshank, Ira G.; and Snodgrass, Thomas J., to United States Steel Corporation. Method of laminating a plastic sheet onto a surface of a hollow body. 3,933,562, Cl. 156-250.000.
Csatary, Laszlo Kalman; and Pongracz, Frank Istvan. Intra-uterine contraceptive device. 3,933,153, Cl. 128-129.000.
Csicsatka, Antal, to General Electric Company. Four channel stereophonic broadcasting system. 3,934,092, Cl. 179-15.0BT.
Csicsery, Sigmund M., to Chevron Research Company. Fuel injection cold start and evaporative control system using a bimodal adsorbent bed. 3,933,130, Cl. 123-3.000.
Cugini, Edward T., to Grant Oil Tool Company. Removable packer and tesnion slip assembly. 3,933,376, Cl. 285-23.000.
Cunningham, Donald M., to Emerson Electric Co. Temperature conditioning means. 3,933,200, Cl. 165-64.000.
Cunningham, Donald M.; and Santoro, Ralph, to Emerson Electric Co. Electric heater assemblies. 3,934,116, Cl. 219-336.000.
Curley, John I.; and Richard, Roger R., to Honeywell Information Systems, Inc. Interprocessor communication apparatus for a data processing system. 3,934,232, Cl. 340-172.500.
Curtis, Harris L.; and Foley, James W., to Polaroid Corporation. Novel bis-pyrazolone oxonol dyes. 3,933,798, Cl. 260-239.900.
Curtis, Robert Bartlett; and Riedel, Nelson Andrew, to Bell Telephone Laboratories, Incorporated. Telephone message timing system. 3,934,090, Cl. 179-7.10R.
Cuttitta, Louis L.; and Falen, Walter S., to General Motors Corporation. Air valve carburetor. 3,933,950, Cl. 261-50.00A.
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Dahm, Johann; Borck, Joachim; Wild, Albrecht; and Hovy, Jan Willem, to Merck Patent Gesellschaft mit beschrankter Haftung. Azole derivatives. 3,933,840, Cl. 260-307.00R.
Dai Nippon Printing Company Limited: *See—*
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Daimler-Benz Aktiengesellschaft: *See—*
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D'Alelio, Gaetano F.; and Kuehn, Erich, to ICI United States Inc. Dihalobutenediol containing urethane foam compositions. 3,933,690, Cl. 260-2.5AM.
Dall'Argine, Gianfranco; and Ghiretti, Ermes. Squeezing-shredding machine for tomato pulp suitable for canning in the raw state. 3,933,084, Cl. 99-538.000.
Damm, David A.; Juvinall, John W.; and Scherf, Gerald F., to Owens-Illinois, Inc. Bird-swing detector. 3,933,248, Cl. 209-74.00M.
Dandini, Alessandro O. Spherical rolling hull marine vessel. 3,933,115, Cl. 115-19.000.
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Daniels, Robert A. Apparatus and method for disposing of solid human excrement in an engine-driven conveyance. 3,933,636, Cl. 210-71.000.
Dann, Bert H.; and Guisinger, Barrett E., to International Video Corporation. Videotape recorder and reproducer every line velocity compensator apparatus. 3,934,264, Cl. 358-8.000.
Dasek, Jaroslav; and Traelnes, Knut Rude, to Societe d'Assistance Technique pour Produits Nestle S.A. Process for preparing intracellular substances of microbial origin. 3,933,591, Cl. 195-96.000.
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Davidson, Hugh; Johnson, Keith Trevor; Leggeter, Brian Ernest; and Moore, Anthony John, to Hickson & Welch Limited. 3-Oxadiazolyl coumarins. 3,933,842, Cl. 260-307.00G.
Davies, Philip Henri, deceased; and by Savies, Bessie Snowden, executrix, to Allbook & Hashfield Holdings Limited. Sewing machines. 3,933,107, Cl. 112-256.000.
Davies, Richard Llewelyn, to Lever Brothers Company. Detergent compositions containing polymeric builders. 3,933,673, Cl. 252-135.000.
Davis, Barabara, executrix: *See—*
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Davis, John Howard, deceased: *See—*
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Davis, Rhetta Q.: *See—*
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Day, Ralph K. Window construction. 3,932,971, Cl. 52-171.000.
Dearlove, Thomas J.; Campbell, Gregory A.; and Atkins, Richard P., to General Motors Corporation. Preparation of isocyanate terminated prepolymer. 3,933,725, Cl. 260-33.6UB.
Decoflex Limited: *See—*
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Deere & Company: *See—*
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De Feudis, Sergio, to Aktiebolaget Svenska Flaktfabriken. Arrangement at central installations for pneumatic transport of packaged refuse. 3,933,393, Cl. 302-27.000.
Defilippi, Joseph D.; and Ratz, George A., to United States Steel Corporation. Vanadium stabilized martensitic stainless steel. 3,933,479, Cl. 75-128.00V.



Degen, Ludwig: *See—*
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de Gennes, Gerard, to Societe Anonyme Francaise du Ferodo. Brake having a braking member in the form of a ring, especially for automobile vehicles. 3,933,227, Cl. 188-76.000.
de Latour, Christopher, to Massachusetts Institute of Technology. Method of detection of ions in solution that are susceptible to an applied force field and apparatus therefor. 3,934,192, Cl. 324-34.00R.
Delfosse, Gabriel M.: *See—*
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DeLuca, Robert D., to Corning Glass Works. Method of making optical waveguides. 3,933,454, Cl. 65-3.000.
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Demarne, Henri, to Clin Midy. Indole derivatives. 3,933,853, Cl. 260-326.150.
Demetrescu, Mihai C. Resonant gas-expansion engine with hydraulic energy conversion. 3,932,989, Cl. 60-327.000.
Dempster, Thomas B., to Hoerner Waldorf Corporation. Loin box with locking cover. 3,933,300, Cl. 229-33.000.
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Denis, Albert P. Welding system and method for arc starting and control. 3,934,110, Cl. 219-131.00F.
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Babitsky, Boris Davidovich; Denisova, Tamara Trofimovna; Kormer, Vitaly Abramovich; Lapuk, Irina Moiseevna; Lobach, Mark Iosifovich; Simanova, Nadezhda Pavlovna; Soloviev, Kim Sergeevich; Chepurnaya, Tamara yakovlevna; and Jufa, Tatyana Lvovna, 3,933,777.
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Denzel, Theodor; and Hoehn, Hans, to E. R. Squibb & Sons, Inc. Isoxazolopyridine ketone derivatives. 3,933,823, Cl. 260-268.0BC.
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De Pasquale, Ralph J.; and Baucom, Keith B., to PCR, Inc. Perfluorinated tertiary amines. 3,933,831, Cl. 260-293.510.
Depoorter, Henri, and Schellekens, Jozef Remy, to AGFA-GEVAERT N.V. Spectral sensitization of direct-positive silver halide emulsions. 3,933,506, Cl. 96-101.000.
de Possel, Rene. System for scanning and identifying standardised characters at high speed. 3,934,225, Cl. 340-146.30J.
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Brose, Horst; Depping, Karl Dieter; Hentschel, Dietrich; Kosteve, Bernard; and Schmidt, Klaus, 3,933,875.
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DeSoto, Inc.: *See—*
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Sekmakas, Kazys; and Petrovich, Paul, 3,933,760.
Desrosiers, Wilfrid. Animal trap. 3,932,955, Cl. 43-81.000.
De Stoutz, William Patrick. Method and apparatus for the irradiative treatment of beverages. 3,934,042, Cl. 426-248.000.
Deurbrouck, Albert W.: *See—*
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Deuterium Corporation: *See—*
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Devillers, Julien, to International Trading Company. Control apparatus for a machine for grinding the edges of a workpiece. 3,932,962, Cl. 51-165.720.
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Dickens, Elmer D., Jr., to B. F. Goodrich Company, The. Smoke retardant vinyl chloride and vinylidene chloride polymer compositions. 3,933,742, Cl. 260-45.75N.
Dickson, James, to Airco, Inc. Method for recovering a usable alloy from titanium scrap. 3,933,473, Cl. 75-10.00R.
Didot, Francois E.: *See—*
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Di Giacomo, Armand; Murphy, Charles Vincent; and Pinkney, Paul Swithin, to Du Pont de Nemours, E. I., and Company. Blends of ethylene/vinyl chloride/vinyl acetate copolymer with nitrocellulose 3,933,703, Cl. 260-17.00R.
DiGilio, Philip; and Manetta, John. Ring with interchangeable setting 3,933,011, Cl. 63-29.00R.
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DiMatteo, Paul I., to Dynell Electronics Corporation. Method of generating and constructing three-dimensional bodies. 3,932,923, Cl. 29-407.000.
Dines, Martin B., to Exxon Research and Engineering Company. Method for lithiating metal chalcogenides and intercalated products thereof. 3,933,688, Cl. 252-520.000.
Dines, Martin B.: *See—*
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Di Peri, Leonard J. Gas separator for liquid supply. 3,933,448, Cl. 55-159.000.
Disselnkotter, Hans; and Metzger, Karl Georg, to Konig, Hans-Bodo; Schrock, Wilfried; and Bayer Aktiengesellschaft. Ureidoacetamidopenicillins. 3,933,795, Cl. 260-239.100.
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Dobrzanski, John; and Hart, Ernest V., to Emhart Corporation. Ionization smoke detector and alarm system. 3,934,145, Cl. 250-381.000.
Dochterman, Richard W., to General Electric Company. Method of making dynamoelectric machines and assemblies therefor. 3,932,930, Cl. 29-596.000.
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Dodge, Adiel Y., deceased; and by Crocker, Dorian Dodge, executrix, to Crocker, Dorian Dodge; Dodge, Sherwood, Jr.; Robinson, Dorian Dodge; and Crocker Nat'l Bank in trust for Dariel Dodge & Betty Dodge Malone. Method and apparatus for desalinization of water. 3,933,600, Cl. 203-10.000.
Dodge, Sherwood, Jr.: *See—*
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Donelian, Khatchik O. Hermatically sealed motor blower unit with stator inside hollow armature. 3,933,416, Cl. 417-354.000.
Donohue, James M.; Kramer, Joseph R.; and Rodek, Victor, to Xerox Corporation. Synchronizing apparatus. 3,934,182, Cl. 318-85.000.
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Doody, Richard D., to United States of America, Air Force. Tubular regenerator for a cryogenic refrigerator. 3,933,000, Cl. 62-6.000.
Doring, Edward J., to Onondaga Tool Corporation. Shearproof punch. 3,933,071, Cl. 83-637.000.
Dorn, Ludwig; Heinze, Gerhard; Wokulat, Jurgen; Moller, Wilhelm; and Rubsam, Franz, to Bayer Aktiengesellschaft. Sulfuric acid contact process. 3,933,991, Cl. 423-535.000.
Dornak, Henry E., Jr., to Exxon Research and Engineering Company. Marine vessel propulsion system. 3,933,113, Cl. 115-12.00R.
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Doser, Manfred; and Floryan, Daniel Edwin, to General Electric Company. Method of making magnets by polymer-coating magnetic powder. 3,933,536, Cl. 148-105.000.
Dotsko, Martin, to Singer Company, The. Method of making optical fiber mounting arrangement. 3,932,926, Cl. 29-447.000.
Dottinger, Konrad, to Busino & Co. Swimsuit. 3,932,896, Cl. 2-67.000.
Dougherty, Edward F.; and Hobbs, Charles C., Jr., to Celanese Corporation. Hexanediol from cyclohexane. 3,933,930, Cl. 260-635.00D.

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Drabek, Jozef; and Varsanyi, Denis, to Ciba-Geigy Corporation. Insecticidal composition and method utilizing phosphoric acid phenylsulphonamide esters. 3,934,010, Cl. 424-211.000.
Draber, Wilfried; Buchel, Karl Heinz; Regel, Erik; and Plempel, Manfred, to Bayer Aktiengesellschaft. N-methyl-imidazole derivatives as anti-mycotic agents. 3,934,014, Cl. 424-251.000.
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Dubin, Robert R.; Will, Fritz G.; and Mowrey, William L., to General Electric Company. Solid sodium ion-conductive electrolyte with liquid metallic layer. 3,933,523, Cl. 136-6.0FS.
Duc, Nguyen-Cong, to Les Produits Organiques du Santerre Orsam. Method of making L-aspartic acid from fumaric acid. 3,933,586, Cl. 195-65.000.
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Dudley, Kenneth W.; and MacMaster, George H., to Raytheon Company. Solid state solar to microwave energy converter system and apparatus. 3,933,323, Cl. 244-1.00R.
Dudley, Kenneth W.: *See—*
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Dudley, Michael Alan, to Canada Wire and Cable Limited. Apparatus and method for continuous electrocoating. 3,933,611, Cl. 204-181.000.
Dugge, Richard H., to ACF Industries, Incorporated. Hopper gate actuating mechanism. 3,933,100, Cl. 105-282.00P.
Dugger, Cortland O., to United States of America, Air Force. Aluminum nitride single crystal growth from a molten mixture with calcium nitride. 3,933,573, Cl. 156-624.000.
Dulaney, Ernest N.; and Elmhurst, Richard F., to Honeywell Information Systems, Inc. Apparatus for continuous assessment of data transmission accuracy in a communication system. 3,934,224, Cl. 340-146.1BA.
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Dunlop, James. Converter for guitars. 3,933,077, Cl. 84-318.000.
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Durkin, Joseph A.; and Patel, Jitendra A., to Texaco Inc. Desulfurization process. 3,933,623, Cl. 208-216.000.
Durrum Instrument Corporation: *See—*
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Dutertre, Christian; and Dauge, Jean, to Etablissements Dutertre. X-ray diagnostic apparatus in particular for examining the injured. 3,934,140, Cl. 250-320.000.
Du Vall, Wilbur E.; and Foster, Roger J. Apparatus and method for treating disorders in the region of the pubococcygeous muscle. 3,933,147, Cl. 128-2.00S.
Dworschack, Robert G.; White, William H.; and Chen, James C., to Standard Brands Incorporated. Enzyme treatment. 3,933,588, Cl. 195-68.000.
Dwyer, John Robert, Jr., to Black and Decker Manufacturing Company, The. Manually controlled air inflator adaptor. 3,933,177, Cl. 137-608.000.
Dynamation Enterprises, Inc.: *See—*
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Eastman, David W.; Lemper, Anthony L.; Pattison, Victor A.; Hopkins, George C.; Kahn, Henry; and Nickels, Jack L., to Hooker Chemicals & Plastics Corporation. Composition of and method of obtaining small particle size polymers and copolymers of vinyl chloride having a fused surface. 3,933,771, Cl. 260-87.100.
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Ebing, Winfried; and Pflugmacher, Jochen. Apparatus for automatically purifying extracts of vegetable and animal specimens for the determination free from interference of traces of selected extract constituents. 3,933,437, Cl. 23-253.00R.
Ebrecht, Dietrich Meyer, to U.S. Philips Corporation. Logarithmic resistance-to-frequency converter. 3,933,046, Cl. 73-362.0AR.
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Edwards, Robert B., to Nibco, Inc. Butterfly valve seat mold. 3,933,334, Cl. 249-57.000.
Egger, Hermann, to Quepar S.A. Device for the sterilization of packaging material. 3,933,428, Cl. 21-93.000.
Ehara, Leo; Miwa, Takafumi; and Kamaya, Masami, to Asahi Kasei Kogyo Kabushiki Kaisha. Desalination process by improved multistage electrodialysis. 3,933,610, Cl. 204-180.00P.
Eich, Edmund; Weber, Ewald; Gerner, Heinz; and Merkel, Rudolf, to Werkzeugmaschinenfabrik Adolf Waldrich Coburg. Metering apparatus for liquids containing granular solids, in particular lapping liquid. 3,933,178, Cl. 137-608.000.
Eichenhofer, Kurt-Wilheim: *See—*
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Elder, Joseph Marcus, Jr., to Bell Telephone Laboratories, Incorporated. Bias, feedback and network arrangements for hybrid circuits. 3,934,099, Cl. 179-170.0NC.
Electro Chemical Engineering GmbH: *See—*
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Ellson, Douglas G. Clamp for concrete forms. 3,933,333, Cl. 249-43.000.
Elmgren, Staffan, to Allmanna Svenska Elektriska Aktiebolaget. Press for treating products under high pressure. 3,933,418, Cl. 425-405.00H.
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Engeli, Federico, to Technical Arco Establishment-Schaan. Delayed action striking device which may be utilized for the priming of detonators. 3,933,095, Cl. 102-70.00R.
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Erwin Kampf Maschinenfabrik: *See—*
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Erwin, Ransome W., to Austral-Erwin Engineering Co. Heat bonding fluorocarbon and other plastic films to metal surfaces. 3,933,550, Cl. 156-85.000.
Erwin, Ransome W., to Austral-Erwin Engineering Co. Apparatus for heat bonding fluorocarbon and other plastic films to metal surfaces. 3,933,567, Cl. 156-382.000.
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Esposito, Vincent J.: *See—*
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Evans, David John Ivor; and Masters, Ian M., to Sherritt Gordon Mines Limited. Treatment of lead sulphide bearing material. 3,933,973, Cl. 423-93.000.
Evans, Ernest G., to Reamco, Inc. Stabilizer. 3,933,395, Cl. 308-4.00A.
Evans, Orde R. Centralizer for production string including support means for control lines. 3,933,203, Cl. 166-241.000.
Evans, William Joshua, to Bell Telephone Laboratories, Incorporated. TTL circuit. 3,934,157, Cl. 307-213.000.
Evelove, Leon G.; Leone, John S.; and White, Don E., to TRW Inc. Ceramic circuit board mounted in housing and method of fabrication thereof. 3,934,074, Cl. 174-52.00R.
Evers, William J.; Pelse, Igor A.; and Vock, Manfred Hugo, to International Flavors & Fragrances Inc. 3-Furyl chalcogen alkyl sulfides. 3,933,863, Cl. 260-347.200.
Evertz, Egon. Process for repairing slag ladles. 3,934,107, Cl. 219-76.000.
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Fahrbach, Gerhard; Seiler, Erhard; and Stein, Dieter, to BASF Aktiengesellschaft. Graft copolymers based on methyl methacrylate polymers. 3,933,943, Cl. 260-887.000.
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Fannin, Wayne V., to General Motors Corporation. Rebound control for energy absorber unit. 3,933,386, Cl. 293-70.000.
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Farnsworth, Albert M. Cleaning composition. 3,933,674, Cl. 252-171.000.
Farona, Michael F.; and White, James F., to University of Akron, The. Method for reacting organic halides. 3,933,752, Cl. 260-61.000.
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Fassler, Michael H.; and Perron, James S., to United Technologies Corporation. Method for fabricating shell molds for the production of superalloy castings. 3,933,190, Cl. 164-26.000.
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Feinstein, Allen I.; and Fields, Ellis K., to Standard Oil Company. Process for the preparation of phenylamines and carbazoles. 3,933,848, Cl. 260-315.000.
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Ferlazzo, Natale; Buzzi, Gian Fausto; and Ghirga, Marcello, to Societa' Italiana Resine S.p.A. Catalyst for the production of acrylonitrile, acrylic acid and acrolein. 3,933,686, Cl. 252-467.000.
Fernholz, Hans; and Neu, Hermann, to Hoechst Aktiengesellschaft. Process for preserving bread and bakery products with sorbic acid. 3,934,045, Cl. 426-331.000.
Ferrini, Pier Giorgio; Haas, Georges; and Rossi, Alberto, to Ciba-Geigy Corporation. New sulphamoylbenzoic acid amides. 3,933,802, Cl. 260-239.700.
Fidi, Werner; and Marschall, Otto, to AKG-Akustische und Kino Gerate GmbH. Zigzag arrangement of helical springs in devices for generating artificial reverberation. 3,933,345, Cl. 267-168.000.

Fields, Ellis K.: *See*—
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Fillmann, Walter; and Kalmbach, Werner, to Fr. Hesser Maschinenfabrik AG. Machine for multiple article packaging. 3,932,981, Cl. 53-124.00D.

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Fink, Walter: *See*—
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Fiscella, Anthony J.; and Mackles, Leonard, to Bristol-Myers Company. Amine salts of acyl lactylic acids. 3,933,825, Cl. 260-268.00R.

Fischer, Adolf, to BASF Aktiengesellschaft. Herbicidal mixture of a benzofuranyl methanesulfonate and a substituted pyridazone. 3,933,460, Cl. 71-88.000.

Fischer, Adolf, to BASF Aktiengesellschaft. Herbicide. 3,933,461, Cl. 71-91.000.

Fischer, Adolf, to BASF Aktiengesellschaft. Mixture of substituted benzothiadiazinones and benzonitriles as herbicides. 3,933,462, Cl. 71-91.000.

Fischer, Adolf, to BASF Aktiengesellschaft. Herbicide. 3,933,464, Cl. 71-92.000.

Fischer, Adolf, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Herbicide mixtures of 2-ethoxy-2,3-dihydro-3,3-dimethyl-5-benzofuranylmethane sulfonate. 3,933,465, Cl. 71-92.000.

Fischer, Adolf, to BASF Aktiengesellschaft. Uracil and carbamate herbicide mixtures. 3,933,466, Cl. 71-92.000.

Fischer, Adolf, to BASF Aktiengesellschaft. Substituted nitroanilines and substituted 1, 3, 5-triazines as herbicidal mixtures. 3,933,467, Cl. 71-93.000.

Fischer, David J.; Kunz, Hans J.; and Norby, Thomas E., to Corning Glass Works. Glass electrode structure for radio capsule. 3,933,612, Cl. 204-195.00G.

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Fischer, Earl R.; and Taylor, Roland S., to General Motors Corporation. Carburetor. 3,933,951, Cl. 261-67.000.

Fischer, Leewellyn C.; and Hunt, Heman Dowd, to Du Pont de Nemours, E. I., and Company. Fogged, direct positive silver halide emulsions containing a bleach inhibiting compound and a Dmin maintainer compound. 3,933,498, Cl. 96-64.000.

Fischman, Martin; and Williams, G. Norman, to GTE Sylvania Incorporated. Frequency discriminator utilizing surface wave devices. 3,934,207, Cl. 329-117.000.

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Foerster, Rolf F., to Thiokol Corporation. Thermoplastic elastomeric copolymers and terpolymers of tetrafluoroethylene and propylene and method of making the same. 3,933,773, Cl. 260-87.50B.

Foley, Gerard. Book strap. 3,933,287, Cl. 224-55.000.

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Forster, Eric O.; and Thomas, William R. L., to Exxon Research and Engineering Company. System for continuous monitoring of the density of cryogenic liquids via dielectric constant measurements. 3,933,030, Cl. 73-32.00R.

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Forsyth, Robert W.; and Forsyth, John P. Vehicular transportation system. 3,933,258, Cl. 214-85.000.

Fory, Werner; and Kny, Hermann, to Ciba-Geigy Corporation. Process for the manufacture of β-chloroethyl-methyl-dichlorosilane. 3,933,881, Cl. 260-448.20E.

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Fowler, Peter, to Cabot Corporation. Method and means for gas sampling in mass spectrometry. 3,933,047, Cl. 73-421.50R.

Fowlkes, Paul D., to Monsanto Company. Functional fluid compositions. 3,933,669, Cl. 252-78.000.

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Frew, Florence; and Indiveri, Janet. Easily cleansable container. 3,933,263, Cl. 215-13.00A.

Friberg, Richard Lynn, to General Electric Company. Digital differential analyzer. 3,934,130, Cl. 235-150.310.

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Friedrick, Spencer J.: *See*—
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Fries, Bernd, to Messrs. DEMAG Kunstofftechnik GmbH. Gating arrangement for the moulding working of plastics formed from a plurality of fluid constituents. 3,933,312, Cl. 239-413.000.

Frisbee, Claude M., to J. I. Case Company. Pivot ball assembly. 3,933,207, Cl. 172-804.000.

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Frommer, Werner; Puls, Walter; and Schmidt, Delf, to Bayer Aktiengesellschaft. Pharmaceutical compositions comprising saccharase inhibitors. 3,934,006, Cl. 424-115.000.

Frost, Wade W.; and Sandlin, William C. Shirt front assembly, method and apparatus. 3,933,105, Cl. 112-121.290.

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Fujii, Osamu; Kishimoto, Toshio; Kosuge, Hisao; Nagamine, Ryoji; and Shimada, Sumio, to Toyo Rubber Chemical Industrial Corporation. Method for preparing a polyurethane foam comprising quaternary ammonium salt as antistatic agent. 3,933,697, Cl. 260-2.50A.

Fujino, Hisaaki: *See*—
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Fujita, Mitsuo; and Sakaki, Naoaki, to Victor Company of Japan, Limited. Apparatus for controlling the rotation of a rotating body in a recording and/or reproducing apparatus. 3,934,269, Cl. 360-70.000.

Fujita, Yoshikazu: *See*—
Arai, Atsuaki; Nishio, Daijiro; Tanaka, Mitsugu; Fujita, Yoshikazu; and Suzuki, Hisao, 3,933,874.

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Fukushi, Naobumi; Nakazawa, Hideaki; Soshizaki, Junichi; and Iikuni, Tetsuo, to Toyo Sodo Manufacturing Co., Ltd. Asphalt composition. 3,933,710, Cl. 260-28.5AS.

Fukushima, Tatsuo: *See*—
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Furda, Ivan; and Trumbetas, Jerome F., to General Foods Corporation. Multifunctional sweetening composition. 3,934,048, Cl. 426-548.000.

Furukawa, Masamichi: *See*—
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Furukawa, Mitsuaki, to New Nippon Electric Co., Ltd. Magnetic recording and reproducing apparatus. 3,933,289, Cl. 226-178.000.

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Fusey, Pierre, to Banque pour l'Expansion Industrielle "Banexi". Process for biologically eliminating organic waste matter. 3,933,627, Cl. 210-11.000.

Fussleman, David Francis: *See*—
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Fuzesi, Stephen; and Syrop, Allan H., to Olin Corporation. Preparation of low friability rigid polyurethane foam. 3,933,698, Cl. 260-2.5AS.

G. Leblanc Corporation: *See*—
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Gabriel, Edwin Z. Self-organizing controllers. 3,934,124, Cl. 235-150.100.

Gabriel, Michel: *See*—
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Gaertner, Van Russell, to Monsanto Company. N-hydroxy-N-phosphonomethylglycinates. 3,933,946, Cl. 260-944.000.

GAF Corporation: *See*—
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Mackey, E. Scudder, 3,933,516.

Gagliardo, Joseph J.: *See*—
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Galemmo, Robert A.; Wilson, David S.; and Burman, Howard, to Colonial Kinetics, Inc. Movement responsive control apparatus. 3,934,156, Cl. 307-117.000.

Galitsyn, Alexandr Avdeevich. Power supply arrangement. 3,934,155, Cl. 307-112.000.

Gallay, Jean-Jacques; Bosshard, Rene; and Brenneisen, Paul, to Ciba-Geigy Corporation. Anthelmintic composition and method utilizing isothiocyanobenzazoles active ingredients. 3,934,017, Cl. 424-270.000.

Gallay, Jean-Jacques: *See*—
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Gallone, Ermenegildo; and Mazzier, Francesco, to Global Control Corporation. Process for the manufacture of rods of thermoplastic material, having internal capillary ducts, for the preparation of pen nibs incorporating capillary ink ducts. 3,933,965, Cl. 264-177.00F.

Gammelgaard, Niels. Bicycle having arched mounting tube for the steering member. 3,933,373, Cl. 280-278.000.

Gannett, Danforth K., to Bell Telephone Laboratories, Incorporated. Key generating system. 3,934,078, Cl. 178-22.000.

Gardner, Keith. Mechanical turning device for structural shapes. 3,933,253, Cl. 214-1.00Q.

Garskamp, Arnoldus, to U.S. Philips Corporation. Circuit arrangement for generating a stabilized direct voltage with superposition of a control voltage. 3,934,191, Cl. 323-22.00T.

Gartman, William W., to Texas Instruments Incorporated. Solution growth system for the preparation of semiconductor materials. 3,933,539, Cl. 148-171.000.

Gay, Eddie C.; and Martino, Fredric J., to United States of America, Energy Research and Development Administration. Method of preparing electrodes with porous current collector structures and solid reactants for secondary electrochemical cells. 3,933,520, Cl. 136-6.01F.

Gebhard, John Charles, Jr.; Waggoner, Marion Glen; and Webster, James Lang, to Du Pont de Nemours, E. I., and Company. Preparation of powders having spherical-shaped particles from ionomer resins and ethylene/carboxylic acid copolymer resins. 3,933,954, Cl. 264-8.000.

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Gengnagel, Kurt, to Hoechst Aktiengesellschaft. Process for preparing 4-amino-2,5-dialkoxybenzonitriles. 3,933,887, Cl. 260-465.00E.

Gentile, Anthony L.; and Stafsudd, Oscar M., to Hughes Aircraft Company. Synthesization method of ternary chalcogenides. 3,933,990, Cl. 423-508.000.

Gerardy, Guy V. A., to British-American Tobacco Company Limited. Tobacco-smoke filters. 3,933,160, Cl. 131-264.000.

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Getsinger, William J.; Koskos, Paul; and Chou, Su Min, to Communications Satellite Corporation (Comsat). Low noise modular parametric amplifier. 3,934,208, Cl. 330-4.500.

Gey, Karl Friedrich; Kiss, Joseph; Lengsfeld, Hans; Schuep, Willy; and Wyss, Pierre-Charles, to Hoffmann-La Roche Inc. Agents for lowering the lipid level in plasma. 3,934,009, Cl. 424-180.000.

Ghiretti, Ermes: *See*—
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Ghirga, Marcello: *See*—
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Gilbert, Franklin George: *See*—
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Girling Limited: *See*—
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Glaister, Frank J., to General Electric Company. Heat vulcanizable polysiloxane compositions containing asbestos. 3,933,726, Cl. 260-37.0SB.

Glander, Fritz; and Eilhardt, Bernd, to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft. Polymer composition for bonding to copper. 3,933,737, Cl. 260-45.9NC.

Glaxo Laboratories Limited: *See—*
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Glikman, Mark Leonovich: *See—*
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Global Control Corporation: *See—*
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Glomb, Klaus, to Eschweiler Bergwerks-Verein Aktiengesellschaft. Method for exposing surface defects on hot steel blanks. 3,933,532, Cl. 148-6.350.

Goddard, Lloyd E., to Ethyl Corporation. Phenol transalkylation process. 3,933,927, Cl. 260-624.00E.

Goddard, Murray C.; and Kicklighter, Ray S., to Eastman Kodak Company. Audio-visual learning system. 3,932,948, Cl. 35-9.00A.

Godel, Siegfried; and Viola, James J., to Sperry Rand Corporation. Hair styling device having vapor generating means. 3,934,114, Cl. 219-222.000.

Goffe, William L.; and Mammino, Joseph, to Xerox Corporation. Imaging system. 3,933,491, Cl. 96-1.500.

Gohda, Hidekiyo; and Kiku, Takashi, to Sumitomo Chemical Company, Limited. Method for draining water or moisture from substratum for waterproofing layer. 3,933,546, Cl. 156-71.000.

Gokoh, Yukihiro: *See—*
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Goldfarb, Adolph E.; and Benkoe, Erwin, to Brunswick Corporation. Reflex testing amusement device. 3,933,354, Cl. 273-1.00E.

Goldman, Ira Bernard; and Henrickson, John Francis, to Western Electric Company, Inc. Laminar structure having an impregnated fibrous web. 3,934,067, Cl. 428-290.000.

Gompert, Leon T., to Rockwell International Corporation. Servoed indicating apparatus. 3,934,196, Cl. 324-99.00R.

Goodman, David S., to International Telephone and Telegraph Corporation. Method of making multilayer printed circuit board. 3,932,932, Cl. 29-625.000.

Goodyear Tire & Rubber Company, The: *See—*
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Gordon, Alan, to United States of America, Navy. Post detection device for eliminating backscatter. 3,934,082, Cl. 178-6.000.

Gordon, Gerome; and Faber, Paul V., to Wilputte Corporation. Oven door fume collection system. 3,933,595, Cl. 201-2.000.

Gordon, Richard A. Animal exercise device. 3,933,126, Cl. 119-29.000.

Goretta, Louis A.; and Newkirk, John D., to Nalco Chemical Company. Polymerization of maleic anhydride and vinyl acetate. 3,933,763, Cl. 260-78.50R.

Goron, Alla Grigorievna: *See—*
Bokov, Jury Sergeevich; Gurzheev, Valery Nikolaevich; Zakharov, Vladimir Ivanovich; Korsakov, Vladimir Sergeevich; Lavrischev, Vadim Petrovich; Goron, Alla Grigorievna; Glikman, Mark Leonovich; Semenov, Nikolai Nikolaevich; and Matvienko, Viktor Yakovlevich, 3,933,609.

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Gorvin, John Henry, to Burroughs Wellcome Co. Preparation of cyanophenols. 3,933,807, Cl. 260-243.00A.

Goser, Karl, to Siemens Aktiengesellschaft. Process for the production of a pair of complementary field effect transistors. 3,933,529, Cl. 148-1.500.

Goss, William M.: *See—*
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Goto, Takashi: *See—*
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Gould, Richard H.; Ludwig, George; Walters, William J.; and VanOphem, Remy J., to Bendix Corporation, The. Altitude compensated vacuum regulating valve. 3,933,166, Cl. 137-102.000.

Graham, Craig E., to Dow Corning Corporation. Optically clear organosilicon compounds. 3,933,678, Cl. 252-300.000.

Graham, Frederick A., to Clark Equipment Company. Overhead guard for lift trucks. 3,933,371, Cl. 280-150.00C.

Granger, Maurice. Support apparatus for a portable shower head. 3,933,329, Cl. 248-295.000.

Grant, Charles P., Jr.: *See—*
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Grasselli, Robert K.: *See—*
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Grasvoll, Halvor. Tool for welding together two plastics films wrapping an object. 3,933,569, Cl. 156-515.000.

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Gray, Darby A.: *See—*
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Great Canadian Oil Sands Limited: *See—*
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Greco, Nicholas P., to Koppers Company, Inc. Hydrolysis of toluene diamines to produce methyl resorcinols. 3,933,925, Cl. 260-621.00M.

Green, Donald T.; and Snarr, James L., to United States Steel Corporation. X-ray machine for rapid and precise inspection of mixed sizes of pneumatic tires. 3,934,144, Cl. 250-358.00T.

Green, Harold A.; Merianos, John J.; and Petrocci, Alfonso N., to Millmaster Onyx Corporation. Certain 1,4-bis-(morpholino)-2-butene-containing condensation products and their preparation. 3,933,812, Cl. 260-246.00B.

Greene, Carole Oman: *See—*
Kolbensvik, Joel Robert; and Greene, Carole Oman, 3,933,399.

Grenness, Torbjorn. Synthetic rubber solutions. 3,933,723, Cl. 260-33.60A.

Grenon, Lawrence A.; and Coleman, Michael G., to Motorola, Inc. Scannable light emitting diode array and method. 3,932,927, Cl. 29-577.000.

Greulich, Klaus: *See—*
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Groothoff, Adriaan Jacob; van der Heijde, Martin Clemens; Van Leeuwen, Johannes Aloysius; and Panis, Constantius Johannes Walterus, to U.S. Philips Corporation. Picture display device and deflection coil both having self-aligning surfaces. 3,934,169, Cl. 313-477.000.

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Grunewalder, Werner; and Frotscher, Herbert, to Henkel & Cie GmbH. Method of cleaning textiles. 3,933,425, Cl. 8-142.000.

Gruppo Lepetit S.p.A.: *See—*
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Grzesik, Marian F.: *See—*
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Grzina, Anthony; and Fedeler, John Henry Ephraim, to Warman Equipment International. Cable-controlled thickener. 3,933,655, Cl. 210-528.000.

GTE Automatic Electric Laboratories Incorporated: *See—*
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GTE Laboratories Incorporated: *See—*
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GTE Sylvania Incorporated: *See—*
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Guala, Piergiacomo, to S.A.S. Angelo Guala di Piergiacomo e Roberto Guala & C. Security bottle closure device. 3,933,284, Cl. 222-500.000.

Guerci, Carlo: *See—*
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Guibord, Georges E.; and Guibord, Marcel P. All terrain pleasure vehicle. 3,933,214, Cl. 180-9.20R.

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Gulf Oil Corporation: *See—*
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Gulf Research & Development Company: *See—*
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Gunderson, Philip D., to Motorola, Inc. Zero crossing circuit for electronic ignition system. 3,933,141, Cl. 123-148.00E.

Gunkel, Alfred Alexander: *See—*
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Gurtler, Rudolf, to Mahle GmbH. Combustion chamber protection means. 3,933,143, Cl. 123-193.00P.

Gurzheev, Valery Nikolaevich: *See—*
Bokov, Jury Sergeevich; Gurzheev, Valery Nikolaevich; Zakharov, Vladimir Ivanovich; Korsakov, Vladimir Sergeevich; Lavrischev, Vadim Petrovich; Goron, Alla Grigorievna; Glikman, Mark Leonovich; Semenov, Nikolai Nikolaevich; and Matvienko, Viktor Yakovlevich, 3,933,609.

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Gussin, Robert Zalmon; and Meriwether, Lewis Smith, to American Cyanamid Company. Method of removing toxic substances from the intestinal tract by the use of a surfactant and a sorbent. 3,934,007, Cl. 424-125.000.

Gutehoffnungshutte Sterkrade Aktiengesellschaft: *See—*
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Guth, Hans; Kaiser, Hans-Joachim; Kleine-Weischede, Klaus; Wieschen, Hermann; and Kuhnlein, Hans L., to HCH. Bertrams Aktiengesellschaft; and Bayer Aktiengesellschaft. Separation of corrosive liquid mixtures. 3,933,575, Cl. 159-.19..

Guthrie, Robert William: *See—*
Brossi, Arnold; Guthrie, Robert William; and Kierstead, Richard Wightman, 3,933,827.

Gwin, Edward S., to General Motors Corporation. Latch mechanism. 3,933,330, Cl. 248-371.000.

Gynn, George E., to Syncro Corporation. Capacitive discharge ignition adapter. 3,933,140, Cl. 123-148.0CC.

Gyromat Corporation, The: *See—*
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Gysell, Bjorn; and Pehrsson, Matz, to Bevaknings AB Securitas. Alarm device. 3,934,237, Cl. 340-213.00R.

H. Gertsch & Co. Aktiengesellschaft: *See—*
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H. Jungheinrich & Co.: *See—*
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Haag, Charles W., to Whirlpool Corporation. Refrigeration apparatus enclosure structure. 3,933,398, Cl. 312-214.000.

Haas, Franz; Haas, Franz; and Haas, Johann. Process for manufacturing hollow pastries. 3,934,043, Cl. 426-283.000.

Haas, Franz: *See—*
Haas, Franz; Haas, Franz; and Haas, Johann, 3,934,043.

Haas, Georges; Jaques, Roland; Rossi, Alberto; and Ruegg, Martin, to Ciba-Geigy Corporation. New aliphatically substituted aryl-chalcogeno-hydrocarbon derivatives. 3,933,835, Cl. 260-295.50T.

Haas, Georges: *See—*
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Haas, Johann: *See—*
Haas, Franz; Haas, Franz; and Haas, Johann, 3,934,043.

Haas, Larry A.; Khalafalla, Sanaa E.; and Anderson, Carl F., to United States of America, Interior. Method for the decomposition of hydrogen sulfide. 3,933,608, Cl. 204-164.000.

Haas, Rainer, to Hans Hollmuller, Maschinenbau, Firma. Method of etching copper and copper alloys. 3,933,544, Cl. 156-19.000.

Haase, Ralf: *See—*
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Habata, Hidetsugu: *See—*
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Haberkorn, Axel; Kolling, Heinrich; Kranz, Eckart; and Schramm, Jurgen, to Bayer Aktiengesellschaft. 1-(4-Phenoxyphenyl)-1,3,5-triazines. 3,933,814, Cl. 260-248.0NS.

Hack, Helmuth: *See—*
Munz, Ferdinand; Hack, Helmuth; and Eue, Ludwig, 3,933,463.

Hadden, Lyall C.; and Benjamin, Charles T., to Environs Engineering Enterprises, Inc. Sewage treatment and recycling system. 3,933,641, Cl. 210-205.000.

Haefele, John William, to Procter & Gamble Company, The. Oral compositions for plaque, caries and calculus retardation with reduced staining tendencies. 3,934,002, Cl. 424-54.000.

Haga, Kazuo: *See—*
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Hagino, Hiroyasu; Kajiwara, Yasuya; and Nagai, Seiichi, to Mitsubishi Denki Kabushiki Kaisha. Process of producing semiconductor planar device. 3,933,541, Cl. 148-187.000.

Halbig, Walter A.: *See—*
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Hall, Randall C., to Purdue Research Foundation. Electrolytic conductivity detector. 3,934,193, Cl. 324-30.00B.

Hallerback, Stig Lennart; and Lachonius, Leif, to SKF Industrial Trading and Development Company, B.V. Method of making a sectioned stator for a dynamoelectric machine. 3,932,929, Cl. 29-596.000.

Halley, James L., to Tesco Chemicals, Inc. Jet action chemical feeding apparatus. 3,933,169, Cl. 137-268.000.

Hallmark Findings Inc.: *See—*
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Ham, John L.; and Gorsuch, John G., to Norton Company. Leech alloying. 3,933,474, Cl. 75-10.00R.

Ham, William C.; Dodd, Francis J.; and Friedrick, Spencer J. Ultrasonic calibration standard. 3,933,026, Cl. 73-1.00R.

Hamanaka, Ernest S., to Pfizer Inc. 6-[α-(ω-quanidinoalkanoylamido)acylamido]penicillanic acids. 3,933,797, Cl. 260-239.100.

Hammann, Ingeborg: *See—*
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Hanauye, Kunio; Takase, Tsutomu; Iwasa, Mitsuhiro; and Ito, Mizuo, to Mitsui Toatsu Chemicals, Incorporated. Method for producing 2,6-di-tert.-butyl-4-cumyl phenol. 3,933,928, Cl. 260-626.00R.

Hanes, Donald M. Sharpener for rotary electric razor. 3,932,967, Cl. 51-358.000.

Hans Hollmuller, Maschinenbau, Firma: *See—*
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Hanyuda, Toshiaki; and Takiyama, Eiichiro, to Showa Highpolymer Co., Ltd. Polymerizable cycloacetal resinous composition. 3,933,857, Cl. 260-340.700.

Hanze, Arthur R., deceased: *See—*
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Hanze, Janice W., administratrix: *See—*
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Hara, Toshitsugu; Uchida, Motokazu; Kashiwabara, Yasushige; and Yanadori, Michio, to Hitachi, Ltd. Heat transfer device. 3,933,198, Cl. 165-32.000.

Harada, Mas, to Seeburg Corporation. Acoustic coupler for use with auditory equipment. 3,934,100, Cl. 179-182.00R.

Harding, George W., to Poly-San Corporation. Method of making chemical toilet cabana. 3,932,925, Cl. 29-428.000.

Hardman, Wendell G.; and Brunhart, Werner, to Varian Associates. Grid support means for a planar tube. 3,934,168, Cl. 313-293.000.

Hare, Peter Edgar, to Durrum Instrument Corporation. Constant flow system for detection of amino acids. 3,933,430, Cl. 23-230.00R.

Harms, Harry Keith, to Gesler, Saul. Water treatment process and apparatus. 3,933,606, Cl. 204-152.000.

Harmsen, Ulf O.; and Pottken, Wolfgang S., to Dr. Eugene Durrwachter DODUCO. Method for manufacturing a ductile silver metallic oxide semi-product. 3,932,935, Cl. 29-630.00C.

Harmsen, Ulf O.; Pottken, Wolfgang; and Oertel, Egon, to Dr. Eugene Durrwachter DODUCO. Method of manufacturing a ductile silver metallic oxide semi-finished product contacts. 3,932,936, Cl. 29-630.00C.

Harrel, Jack D.: *See—*
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Harris, Patrick S.: *See—*
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Hart, Ernest V.: *See—*
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Hartmann, Heinz: *See—*
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Harwood, Richard C., executor: *See—*
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Hashino, Yasuo; Yoshino, Masatsugu; Sawabu, Hitoshi; and Kawashima, Sukeo, to Asahi Kasei Kogyo Kabushiki Kaisha. Membranes of acrylonitrile polymers for ultrafilter and method for producing the same. 3,933,653, Cl. 210-500.00M.

Hastings, Thomas C., to Colemap Company, Inc., The. Portable single burner campstove. 3,933,146, Cl. 126-38.000.

Hauptschein, Murray: *See—*
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Haverstock, Charles B. Skin closure means. 3,933,158, Cl. 128-335.000.

Havinga, Reginoldus; and Wildschut, Antoon, to Akzo N.V. Process for the preparation of cycloalkylalkane carboxylic acid. 3,933,903, Cl. 260-514.00R.

Hawkins, Arthur Ernest, to Lever Brothers Company. Process for the manufacture of a cooked fibrous restructured meat product. 3,934,050, Cl. 426-645.000.

Hay, Wayne W., to Airco, Inc. Anesthesia breathing circuit with positive end expiratory pressure valve. 3,933,171, Cl. 137-493.700.

Hayakawa, Kyohei; and Maeda, Hiroshi, to Mitsubishi Jukogyo Kabushiki Kaisha. Program control system for robots for industrial use. 3,934,186, Cl. 318-567.000.

Hayasaka, Akio: *See—*
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Heehler, Valentine, IV. Water and concentrate supply valves for proportioning mixer-dispenser. 3,933,179, Cl. 137-635.000.
Hedgewick, Peter; and Birrell, Stewart H., to Reflex Corporation of Canada Limited. Triangular signalling device. 3,933,119, Cl. 116-63.00P.
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Heimann, Fred G.; and Abbott, Richard, to Fruehauf Corporation. Laminated floor manufacturing method. 3,933,549, Cl. 156-79.000.
Heintzelman, William J.; and Naiman, Michael L., to Petrolite Corporation. Polishes containing wax-anhydride compounds. 3,933,511, Cl. 106-10.000.
Heintzelman, William J.; and Naiman, Michael L., to Petrolite Corporation. Carbon paper inks containing wax-anhydride compounds. 3,933,512, Cl. 106-22.000.
Heinze, Gerhard: *See—*
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Heirich, William C. Wall paneling system. 3,932,968, Cl. 52-74.000.
Helgeson, Peter L., to Raytheon Company. Revolving kitchen package. 3,933,400, Cl. 312-223.000.
Helgorsky, Jacques; and Auroy, Michel, to Rhone-Progil. Purification of waste water containing phthalic esters. 3,933,630, Cl. 210-21.000.
Heller, Friedrich: *See—*
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Henbest, Richard George Cleveland, to Imperial Chemical Industries Limited. Moulding composition. 3,933,728, Cl. 260-37.00N.
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Henzi, Rene; Meyer, Andre; and Lalanne, Pierre, to Oxy Metal Industries Corporation. Palladium electroplating bath, process, and preparation. 3,933,602, Cl. 204-44.000.
Herd, David P.; McCaskill, John W.; and Childers, Thomas W., to Exxon Production Research Company. Balanced stem fail-safe valve system. 3,933,338, Cl. 251-63.600.
Herndon, Robert R. Trailer stabilizer. 3,933,372, Cl. 280-150.500.
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Hess, Hans-Jurgen E.; and Nelson, Roger P., to Pfizer Inc. 18β-Glycyrrhetinic acid amides useful as antiulcer agents. 3,934,027, Cl. 424-309.000.
Hester, Jackson B., Jr.; and Hanze, Arthur R., deceased (by Hanze, Janice W., administratrix), to Upjohn Company, The. 2-(2-Alkynylamino)-3H-1,4-benzodiazepines. 3,933,794, Cl. 260-239.0BD.
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Hilfman, Lee, to Universal Oil Products Company. Pretreatment of catalyst employed in the hydrogenation of hydrocarbons. 3,933,683, Cl. 252-439.000.
Hill, Eugene R., to United States of America, Navy. AM/AGC weighted diversity combiner/selector. 3,934,204, Cl. 325-304.000.
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Hofmann, Ernst; and Herrle, Karl, to BASF Aktiengesellschaft. Manufacture of insoluble and only sparingly swellable poly-N-vinylpyrrolidone-2 or copolymers of N-vinylpyrrolidone with other N-vinyllactams. 3,933,766, Cl. 260-80.30R.
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Hoogeboom, Thomas J., to General Electric Company. Thermally stable translucent polycarbonate composition. 3,933,730, Cl. 260-37.0PC.
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Hopkins, George C.; and Merrifield, D. Bruce, to Hooker Chemicals & Plastics Corporation. Halogen containing polymeric resins having improved heat and light stability. 3,933,740, Cl. 260-45.75W.
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Houck, Theodore B., to Parker Drilling Company, Inc. Deep drilling machine demountable for helicopter transport. 3,933,059, Cl. 74-661.000.
Hounsfield, Godfrey Newbold, to E M I Limited. Radiography. 3,934,142, Cl. 250-360.000.
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Hughes, Merfyn Jones; Shorten, Derek William; and Smith, Graham Westley, to Bakelite Xylonite Limited. Shrink-wrapping of articles. 3,933,244, Cl. 206-497.000.
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Huston, Victor; and Huston, James R. Toilet water saver. 3,932,900, Cl. 4-63.000.
Hutchings, David A.; and Farona, Michael F., to Goodyear Tire & Rubber Company, The. Activation of copper salt phenol oxidation catalysts. 3,933,681, Cl. 252-413.000.
Hutchins, Alma A. Straight line abrading tool. 3,932,963, Cl. 51-170.0TL.
Hutchins, Marvin H. Musical instrument capo. 3,933,073, Cl. 84-318.000.
Hutter, Rudolf G. E.; and Dressel, Herman O., to GTE Laboratories Incorporated. Double grid electron gun system and method of use 3,934,171, Cl. 315-30.000.
Hutzenlaub, Armin S. P., to Erwin Kampf Maschinenfabrik. Improved gripper return means for a machine for simultaneously biaxially stretching thermoplastic film. 3,932,919, Cl. 26-57.00R.
Huyffer, Paul S., to Polaroid Corporation. 3,3-Disubstituted phthalides and naphthalides. 3,933,849, Cl. 260-315.000.
Hwang, Sang-Hak: *See—*
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Hyer, Frank S., to Hyer Industries, Inc. Bulk material level measuring system. 3,933,041, Cl. 73-290.00R.
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Igarasi, Seizi; and Kida, Makoto, to Takeda Chemical Industries, Ltd. Phosphorylxylostasin. 3,933,790, Cl. 260-210.0AB.
Iguchi, Shin-ichi: *See—*
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Iikuni, Tetsuo: *See—*
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Ikeda, Sakuji; Ozaki, Atsumu; Okawara, Makoto; Mizoroki, Tsutomu; Uchino, Masahiro; Shirakawa, Hideki; and Kawata, Noboru, to Tokyo Institute of Technology. Method of preparing transition metal complex catalysts. 3,933,770, Cl. 260-87.50R.
Ikeda, Tadashi: *See—*
Shiba, Keisuke; Takei, Haruo; Sato, Akira; and Ikeda, Tadashi, 3,933,510.
Ilardi, Joseph M.; Walden, John; and Rau, Eric, to Intermountain Research and Development Corporation. Process for producing sodium carbonate. 3,933,977, Cl. 423-206.00T.

Imada, Seiya: *See—*
Suda, Hideaki; Dohgane, Iwao; Chinuki, Takashi; Tanimoto, Kenji; Hosaka, Hirokazu; Nakao, Yukimichi; Ueda, Yuji; Imada, Seiya; Yanagihara, Hideki; and Tanaka, Kunihiko, 3,933,921.

Imakura, Hiroki: *See—*
Yoshida, Masaharu; Ishihara, Shigenobu; Takahashi, Tsuyoshi; and Imakura, Hiroki, 3,934,056.

Imanaka, Takuichi; and Kan, Takahiro, to Kawasaki Steel Corporation. Method for producing electrical steel sheets having a very high magnetic induction. 3,933,537, Cl. 148-112.000.

Imperial Chemical Industries Limited: *See—*
Ashton, Stanley; Sharma, Vijay Ratna; and Taylor, John Anthony, 3,933,907.
Barrett, Arthur Michael; Carter, John; Hull, Roy; Le Count, David James; and Squire, Christopher John, 3,934,032.
Henbest, Richard George Cleveland, 3,933,728.
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Kay, Ian Trevor, 3,933,817.
Main, Brian Geoffrey, 3,933,911.
Ray, Neil Hunter; Shaw, Bryan; and Lane, Bruce Cochran, 3,933,689.
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Inui, Kanji; Sakamoto, Jun-Ichi; and Gokoh, Yukihiro, to Matsushita Electric Industrial Co., Ltd. Flush toilet bowl. 3,932,901, Cl. 4-79.000.

Inuzuka, Takahiko: *See—*
Ishibashi, Motochika; Inuzuka, Takahiko; and Maegawa, Tetsuo, 3,933,601.

Ireland, Thomas R., to Hallmark Findings Inc. Earring having pivoted one-piece earwire with means for limiting lateral shift. 3,933,009, Cl. 63-12.000.

Iriarte, Jose: *See—*
Muchowski, Joseph M.; and Iriarte, Jose, 3,933,791.

Irikura, Tsutomu, to Kyorin Seiyaku Kabushiki Kaisha. N-benzenesulfonyl-β-alanine hydrazide useful as an immunosuppressive agent. 3,934,036, Cl. 424-321.000.

Irion, Reinhard: *See—*
Kratt, Kurt; Gruler, Josef; Hauser, Guenther; and Irion, Reinhard, 3,934,121.

Irving, Alasdair John, to J. I. Case Company. Side-shift backhoe. 3,933,259, Cl. 214-138.00C.

Irwin, Gordon A., to Steiger Tractor Inc. Vehicle with aligned intake and exhaust pipes. 3,933,216, Cl. 180-54.00R.

Iseman, Walter J., to Sundstrand Corporation. Toroidal traction drive. 3,933,054, Cl. 74-200.000.

Ishibashi, Motochika; Inuzuka, Takahiko; and Maegawa, Tetsuo, to Mitsubishi Denki Kabushiki Kaisha. Electroplating method and apparatus. 3,933,601, Cl. 204-25.000.

Ishida, Yoshio; Ono, Hiroshi; and Takemura, Reiji, to Asahi Kasei Kogyo Kabushiki Kaisha. Electrolysis of alkali metal chloride. 3,933,603, Cl. 204-98.000.

Ishige, Sadao: *See—*
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Ishiguro, Shoji: *See—*
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Isley, Walter F., to Teledyne Industries, Inc. Liquid fuel purification system. 3,933,638, Cl. 210-97.000.

Isonaka, Kenji; Hokari, Saburo; Watanabe, Tatsuya; and Furukawa, Masamichi, to Ricoh Co., Ltd. Identification card producing apparatus. 3,934,256, Cl. 354-3.000.

Isozaki, Osamu; and Iwase, Seigo, to Kansai Paint Company, Ltd. Polyester with epoxy monomer, and a cross-linking monomer. 3,933,939, Cl. 260-872.000.

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Ito, Mizuo: *See—*
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Ito, Ryoichi: *See—*
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Itoh, Hayami; Yamada, Mamoru; and Nozaki, Yasuo, to Kawasaki Jukogyo Kabushiki Kaisha. Method for disposal of waste synthetic high polymer. 3,933,989, Cl. 423-481.000.

Itoh, Yasuo: *See—*
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Iwai, Sakuya; and Hirose, Takao, to Nippon Oil Company Ltd. Polychloroprene-base adhesive composition. 3,933,719, Cl. 260-31.2MR.

Iwai, Sakuya; and Hirose, Takao, to Nippon Oil Company Ltd. Polychloroprene type adhesive compositions. 3,933,720, Cl. 260-31.2MR.

Iwasa, Mitsuhiro: *See—*
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Iwata, Mitsuo, to Victor Company of Japan, Limited. Two-motor cassett type tape recorder. 3,934,270, Cl. 360-96.000.

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J. Bobst & Fils S.A.: *See—*
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Jabsen, Felix Stanley, to Babcock & Wilcox Company, The. Nuclear fuel rod frame with fuel rods positioned by moveable member. 3,933,583, Cl. 176-78.000.

Jacobson, Nils Bertil: *See—*
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Jagenberg-Werke Aktiengesellschaft: *See—*
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Jamieson, Robert S. Plural-hull sailing craft and methods for sailing craft. 3,933,110, Cl. 114-39.000.

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Janssen, Peter Johannes Michiel, to U.S. Philips Corporation. Apparatus for reading a disk-shaped record carrier to be played on a turntable. 3,934,080, Cl. 178-6.60R.

Jansson, Ake: *See—*
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Janu, George J.; and Fischer, Donn R., to Johnson Service Company. Fluidic machine cycle control. 3,933,065, Cl. 83-62.000.

Japan Atomic Energy Research Institute: *See—*
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Japan Exlan Company Limited: *See—*
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Jaques, Roland: *See—*
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Javan, Ali; and Levine, Jeffrey Steven, to Massachusetts Institute of Technology. Gas laser with an amine seed gas. 3,934,212, Cl. 331-94.5PE.

Jekl, Frantisek: *See—*
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Jentzsch, Wolfgang: *See—.*
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Jerrold Electronics Corporation: *See—*
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Joerns Furniture Company: *See—*
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Johansson, Goran R. Dust collecting bag. 3,933,451, Cl. 55-367.000.

John Kistler & Associates, Inc.: *See—*
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Johns-Manville Corporation: *See—*
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Johnson, George Beldon; and Johnson, Virginia M. Personal self-powered scrub brush. 3,932,909, Cl. 15-29.000.

Johnson, Joseph F.: *See—*
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Johnson, Keith Trevor: *See—*
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Johnson, Larry K., to Lawrence Brothers Inc. Pivot assembly. 3,932,913, Cl. 16-130.000.

Johnson, Robert E., to Whirlpool Corporation. Vacuum cleaner. 3,932,912, Cl. 15-410.000.

Johnson, Robert P.: *See—*
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Johnson Service Company: *See—*
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Johnson, Virginia M.: *See—*
Johnson, George Beldon; and Johnson, Virginia M., 3,932,909.

Johnson, Walter E. Collapsible boat. 3,932,906, Cl. 9-2.00C.

Johnson, William H., to Research Corporation. Modular tobacco handling and curing system and method. 3,932,946, Cl. 34-201.000.

Johnston, Charles, to Mizzy Inc. Pressure injector apparatus having improved trigger mechanism. 3,933,155, Cl. 128-173.00H.

Jones, Geraint, to Imperial Chemical Industries Limited. Heterocyclic compounds. 3,933,818, Cl. 260-250.00C.

Jones, Roy D., to Resource Products, Inc. Mill for comminuting ore material. 3,933,316, Cl. 241-170.000.

Jones, Stanley Leonard: *See—*
Honey, Colin George; and Jones, Stanley Leonard, 3,933,604.

Jones, Wesley C., to Cherry Electrical Products Corporation. Multiple circuit multiple switch having a pair of manually movable actuating elements. 3,934,101, Cl. 200-5.00B.

Jorgenson, Morris E.; Sheldon, Paul B.; Sherman, Jack A.; and Wardell, Peter S. Variable wattage kettle. 3,934,118, Cl. 219-442.000.

Jouveinal, S.A.: *See—*
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Oehlerking, A. Dean; and Stoner, Charles G., 3,933,404.

Judd, William James, to Decoflex Limited. Bags for containing bank notes. 3,933,304, Cl. 229-62.000.

Judelshon Industries, Inc.: *See—*
Stoffels, Carl A., 3,933,063.
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Jufa, Tatyana Lvovna: *See—*
Babitsky, Boris Davidovich; Denisova, Tamara Trofimovna; Kormer, Vitaly Abramovich; Lapuk, Irina Moiseevna; Lohach, Mark Iosifovich; Simanova, Nadezhda Pavlovna; Soloviev, Kim Sergeevich; Chepurnaya, Tamara yakovlevna; and Jufa, Tatyana Lvovna, 3,933,777.

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Kabara, Jon J., to Michigan State University. Certain aminimides used to control bacteria and fungi. 3,934,029, Cl. 424-320.000.

Kabara, Jon J., to Michigan State University. Certain aminimides used to control bacteria and fungi. 3,934,030, Cl. 424-320.000.

Kabara, Jon J., to Michigan State University. Certain aminimides used to control bacteria and fungi. 3,934,031, Cl. 424-320.000.

Kabara, Jon J., to Michigan State University. Certain aminimides used to control bacteria and fungi. 3,934,035, Cl. 424-320.000.

Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft: *See—*
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Kablaoui Mahmoud S.: *See—*
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Kabushiki Kaisha Komatsu Seisakusho: *See—*
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Kabushiki Kaisha Ricoh: *See—*
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Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See—*
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Kaelin, Joseph Richard. Disc-shaped aerospacecraft. 3,933,325, Cl. 244-23.00C.

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Kaiser, Ado; Koch, Wolfgang; Scheer, Marcel; and Wolcke, Uwe, to Hoffmann-La Roche, Inc. Dihydrocoumarin derivatives. 3,933,859, Cl. 260-343.20R.

Kaiser, Carl: *See—*
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Kaiser, Hans-Joachim: *See—*
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Kaiser Steel Corporation: *See—*
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Kajita, Yoshio. Check valve. 3,933,173, Cl. 137-527.800.

Kajiwara, Yasuya: *See—*
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Kakigami, Hideo: *See—*
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Kametani, Tetsuji, to Nippon Chemiphar Co., Ltd. Protoberberine derivatives. 3,933,826, Cl. 260-287.00C.

Kameyama, Teruo: *See—*
Uchida, Youtaro; Miya, Goro; Kobayashi, Kazuo; Oguni, Masayuki; Yoshimura, Tomokazu; Yonemori, Naoteru; and Kameyama, Teruo, 3,933,533.

Kamibayashi, Akira: *See—*
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Kanamaru, Hisanobu: *See—*
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Kanamaru, Naokatsu; and Fujino, Hisaaki, to Toray Industries, Inc. Reverse osmosis separation apparatus. 3,933,646, Cl. 210-321.00R.

Kaneda, Ryoji: *See—*
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Kaneko, Yuichiro; Teraoka, Fuminori; Kubota, Tatsushi; and Nishikawa, Takehiko, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Safety belt devices for vehicles. 3,933,369, Cl. 280-150.0SB.

Kanesa, Tadashi: *See*—
Uno, Motohiko; Noma, Shigeaki; Ujiie, Hideo; Masui, Kazuo; and Kanesa, Tadashi, 3,933,137.

Kang, Kenneth Suk; Veeder, George T., III; and Richey, Danny D., to Kelco Company. Polysaccharide and bacterial fermentation process for its preparation. 3,933,788, Cl. 260-209.00R.

Kano, Hideo; Ogata, Masaru; and Yukinaga, Hisajiro, to Shionogi & Co., Ltd. Quinone derivatives and compositions containing the same. 3,933,828, Cl. 260-288.00R.

Kanomata, Kunihiko, to Sanko Engineering & Construction Co., Ltd. Valve with a pulsation damping device. 3,933,174, Cl. 137-557.000.

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Kaplan, Burton H.; Poole, Forrest R.; and Flagg, John E., to David Clark Company Incorporated. Medical pneumatic trouser for emergency autotransfusion. 3,933,150, Cl. 128-24.00R.

Kapp, Ernest: *See*—
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Karkas, Esko Kullerno. Pin cushion and method of making same. 3,933,286, Cl. 224-28.00P.

Karlan, Jac H. Bottle closure. 3,933,265, Cl. 215-260.000.

Kasami, Akinobu; and Naito, Makoto, to Tokyo Shibaura Electric Company, Ltd. Red light-emitting gallium phosphide device. 3,934,260, Cl. 357-17.000.

Kashiki, Masayuki: *See*—
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Kay, Ian Trevor, to Imperial Chemical Industries Limited. Triazinediones. 3,933,817, Cl. 260-249.500.

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Kelly, Edward A., to Merrow Machine Company, The. Cutting mechanism for sewing machine. 3,933,104, Cl. 112-121.200.

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Kerfoot, Oliver C.; Clark, Charles R.; and Kennedy, Carl D., to Continental Oil Company. Method using overbased branched-chain alkylaromatic sulfonates as waterflood additives. 3,933,201, Cl. 166-275.000.

Kerr, Donald M., to Total Disposal Systems, Inc. Glutathione coated shredded trash as fish food. 3,934,038, Cl. 426-1.000.

Kershaw, Robert William; Lubbock, Frederick John; and Polgar, Livia, to Dulux Australia Limited. Vesiculated polymer granules. 3,933,579, Cl. 162-164.000.

Ketchum, Lewis A., to TRW Inc. Torque absorber for submergible pumps. 3,933,012, Cl. 64-23.000.

Keyes, Melvin H., to Owens-Illinois, Inc. Chemical immobilization of enzymes. 3,933,589, Cl. 195-68.000.

Khairullin, Vazikh Kashapovich; and Vasyanina, Margarita Alexandrovna. Method for preparing tetrahydrothiophen. 3,933,856, Cl. 260-332.800.

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Kilgore, Roy L., to Lockheed Aircraft Corporation. Method and apparatus for supplying a temperature conditioned airflow to an open compartment in an explosion sustaining ambient surrounding. 3,933,199, Cl. 165-42.000.

Kimball, David V. Cantilever driver bar. 3,933,033, Cl. 73-71.600.

Kimura, Isao; and Habata, Hidetsugu. Process of manufacturing whisker crystalline silicon carbide. 3,933,984, Cl. 423-345.000.

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Kimura, Shiro; Ishige, Sadao; Kato, Hajime; Hayashi, Takao; and Miyamoto, Akio, to Fuji Photo Film Co., Ltd. Recording sheet and color developer therefor. 3,934,070, Cl. 428-342.000.

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King, George E. S., to United States of America, Navy. Method of insulating stator coils. 3,932,928, Cl. 29-596.000.

King, Hugh R. Method for demonstrating optical aberration formation. 3,932,949, Cl. 35-19.00B.

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Kirby, Raymond L., Jr., to Monarch Marking Systems, Inc. Printing apparatus. 3,933,092, Cl. 101-105.000.

Kirby, Thomas E., Jr., to Reynolds Metals Company. Carton and blank for making same. 3,933,303, Cl. 229-52.00B.



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Kishishita, Keiji, to Isuzu Motors Limited. Another liquid-mixing injection system for internal-combustion engine. 3,933,132, Cl. 123-25.00C.

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Kitagawa, Chojiro; Fukuoka, Ichiro; Kadowaki, Takashi; Kimura, Shoji; Nishimura, Takehiko; and Hanabusa, Kanehisa, to Denki Kagaku Kogyo Kabushiki Kaisha. Insoluble chloroprene polymer. 3,933,754, Cl. 260-63.0HA.

Kitson, John A., to Canadian Patents and Development Limited. Candy filling with stabilized aroma. 3,934,053, Cl. 426-659.000.

Klaeger, Joseph H. Closed loop booster system pneumatic actuator for oil wells. 3,932,990, Cl. 60-369.000.

Klaeger, Joseph H. Snifter valve useful in control means for a piston in a cylinder. 3,933,175, Cl. 137-595.000.

Klapp, Hartmut, to Jagenberg-Werke Aktiengesellschaft. Apparatus for placing folded boxes or the like in shipping cartons. 3,932,982, Cl. 53-244.000.

Klauke, Erich: *See*—
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Kolev, Konstantin Nikolaev; and Malinowski, Jordan Petrov, to Zlafop pri Ban. Direct-positive photographic material and method for its production. 3,933,496, Cl. 96-48.00R.

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Kondo, Hiroyuki; Hotta, Atsuo; Hayasaka, Akio; and Suzuki, Michio, to Hitachi, Ltd. Method of manufacturing semiconductor device. 3,933,540, Cl. 148-187.000.

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Kosaka, Kenzo; Morioka, Shin; Shibata, Kunio; Goto, Takashi; and Takahashi, Eizi, to Mitsubishi Rayon Co., Ltd. Method for manufacturing a textured synthetic multifilament yarn having alternately grouped S and Z twists. 3,932,986, Cl. 57-157.0TS.

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Kronlokken, Loren; and Lehmann, Guenter Fritz, to Marion Power Shovel Co., Inc. Hoist system for power shovels. 3,933,260, Cl. 214-138.00R.

Krull, Frank B. Method of and apparatus for dry mixing. 3,933,340, Cl. 259-14.000.

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Lachonius, Leif: *See—*
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Ladd, John R., to General Electric Company. Method for making N,N'-methylene bismaleimides and products made therefrom. 3,933,850, Cl. 260-326.260.

Laffargue, Jacquy-Pierre: *See—*
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Lakhani, Kishor M., to Honeywell Information Systems, Inc. Drying and fixing techniques for electrographic printing system. 3,934,112, Cl. 219-216.000.

Lal, Joginder; and Sandstrom, Paul H., to Goodyear Tire & Rubber Company, The. Sulfur vulcanizable interpolymers. 3,933,769, Cl. 260-80.780.

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Langbein, Adolf; Merz, Herbert; Walther, Gerhard; and Stockhaus, Klaus, to Boehringer Ingelheim GmbH. N-(1-(ω-phenyl-alkyl)-piperidyl-4)-N-(α-pyridyl)-carboxylic acid amides and salts thereof. 3,933,832, Cl. 260-293.690.

Langer, Arthur W., Jr.; and Whitney, Thomas A., to Exxon Research and Engineering Company. Chelated lithium aluminum compounds. 3,933,879, Cl. 260-448.00R.

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Lapuk, Irina Moiseevna: *See—*
Babitsky, Boris Davidovich; Denisova, Tamara Trofimovna; Kormer, Vitaly Abramovich; Lapuk, Irina Moiseevna; Lobach, Mark Iosifovich; Simanova, Nadezhda Pavlovna; Soloviev, Kim Sergeevich; Chepurnaya, Tamara yakovlevna; and Jufa, Tatyana Lvovna, 3,933,777.

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Larson, Roy E.; and Forester, Ralph H., Jr., to North Star Research Institute. Process for manufacturing ultrathin polymer membranes and products derived therefrom. 3,933,561, Cl. 156-246.000.

Larsson, Goran K.: *See—*
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Ledoux, Claude; Raoul, Pierre; and Thomas, Jean-Claude, to Rhone-Progil. Artificial habitats. 3,933,124, Cl. 119-2.000.

Lee, Chi-Long; and Maxson, Myron T., to Dow Corning Corporation. Tube method for the preparation of olefinic siloxane compounds. 3,933,882, Cl. 260-448.20E.

Lee, Chi-Long: *See—*
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Lee, Kwan-hua, to University of California, The Regents of the. Acne and psoriasis treatment with retinoic acid analogs. 3,934,028, Cl. 424-318.000.

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Leiber, Hans-Jurgen, to Kummer Freres S.A., Fabrique de machines. Automatic lathe. 3,933,060, Cl. 82-5.000.

Lejeune, Pierre; Van Esbroeck, Jan; and Bamelis, Pol, to Bayer Aktiengesellschaft. Purification of cyclohexanone. 3,933,916, Cl. 260-586.00R.

Lemelson, Jerome H. Extruded fence. 3,933,311, Cl. 239-276.000.

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Letoffe, Michel, to Rhone-Poulenc S.A. Organopolysiloxane compositions which vulcanise at ambient temperature and above to yield elastomers which adhere to the most diverse supports. 3,933,729, Cl. 260-37.0SB.

Leva, Max. Apparatus for deodorizing fats and oils. 3,933,953, Cl. 261-148.000.

Levenson, Elliott R., to United States of America, Air Force. Fluid flow stripping and plating system. 3,933,615, Cl. 204-275.000.

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Lewis, Joseph J.; and Trei, John E., to SmithKline Corporation. Feed composition and method using 2,3-dibromopropanol. 3,934,037, Cl. 424-343.000.

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Limberger, Walter, deceased; by Limberger, Jurgen, heir; and by Limberger, Ursula, heir, to Lumoprint Zindler KG. Electrostatic copying machine. 3,933,414, Cl. 355-3.00R.

Lindemann, Martin K., to Chas. S. Tanner Co. Crushed foam-backed fabrics and emulsions for producing the same. 3,933,691, Cl. 260-2.50L.

Lindley, John P.; and Rieden, James, to Itek Corporation. Electro-optic system with expanded power range. 3,934,153, Cl. 250-578.000.

Link, Helmut. Apparatus for hydraulically operating the chuck of the hollow spindle of a lathe. 3,933,061, Cl. 82-30.000.

Lippmann, Seymour A.; and Oblizajek, Kenneth L., to Uniroyal Inc. Tread-wear prediction. 3,933,036, Cl. 73-146.000.

Liquid Feed Commodities Inc.: *See—*
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List, Hans; Cichocki, Rainer; Kirchweger, Karl; and Steinwandter, Friedrich, to List, Hans. Internal combustion engine, particularly a diesel engine. 3,933,142, Cl. 123-188.00M.

Lith-Kem Corporation: *See—*
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Litt, Kenneth C., to Nuclear Fuel Services, Inc. Grid for nuclear fuel assembly. 3,933,584, Cl. 176-78.000.

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Long, James D., to Du Pont de Nemours, E. I., and Company. Methods for increasing crop yields. 3,933,469, Cl. 71-100.000.

Long, Raymond H.; and Sze, Morgan C., to Lummus Company, The. Desulfurization of coke. 3,933,596, Cl. 201-17.000.

Looney, Catharine Elizabeth, to Du Pont de Nemours, E. I., and Company. Azoic dyeing of leather. 3,933,423, Cl. 8-13.000.

Loper, D. Roger; and Fauerso, Walter E., to Chevron Research Company. Method and apparatus for monitoring temperatures during catalytic regeneration. 3,933,044, Cl. 73-355.00R.

Lorenz, Hans Joachim: *See—*
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Love, Richard F.; Kablaoui Mahmoud S.; and Duranleau, Roger G., to Texaco Inc. Preparation of omega-aminoalkanoic acids. 3,933,873, Cl. 260-404.000.

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Lowe, Warren, to Chevron Research Company. Lubricating oil compositions. 3,933,662, Cl. 252-33.400.

Lowthian, Edwin Doll, to Du Pont de Nemours, E. I., and Company. Composite structures of knitted glass fabric and thermoplastic polyfluoroethylene resin sheet. 3,934,064, Cl. 428-36.000.

Loy, Fernand Rene, to U.S. Philips Corporation. Optical scanning device. 3,934,137, Cl. 250-236.000.

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Lynch, James Edward; and Fussleman, David Francis, to AMP Incorporated. Method of connecting terminal posts of a connector to a circuit board. 3,932,934, Cl. 29-628.000.
Lyons, John H.; Little, Steven M.; and Esposito, Vincent J., to United States of America, Navy. Chemiluminescent signal device. 3,933,118, Cl. 116-63.00P.
Lysher, Wayne M., to McDonnell Douglas Corporation. Process for producing microspheres. 3,933,955, Cl. 264-9.000.
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Larkin, William A.; and Ringwood, Robert C., Jr., 3,933,741.
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Macano, Samuel J., to General Signal Corporation. Automatic vehicle operation system. 3,934,125, Cl. 235-150.200.
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Madderra, Galen K.; and Ziegenhain, William C., to Continental Oil Company. Method for producing catalyst impregnated alumina extrudates. 3,933,685, Cl. 252-464.000.
Maeda, Hidekatsu; Yamauchi, Aizo; Suzuki, Hideo; and Kamibayashi, Akira, to Agency of Industrial Science & Technology. Method for production of immobilized enzyme. 3,933,587, Cl. 195-68.000.
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Maier, Christian, to Ciba-Geigy Corporation. Aerosol dispenser for fluid products comprising a piston pump assembly for generating compressed air. 3,933,279, Cl. 222-193.000.
Maier, Elmar, to Hilti Aktiengesellschaft. Explosion-driven bolt setting gun with drum magazine. 3,933,290, Cl. 227-9.000.
Maietta, Peter J. Vehicle distress warning device. 3,933,117, Cl. 116-28.00R.
Mailfert, Alain, to Agence Nationale de Valorisation de la Recherche (ANVAR). Polyphase synchronous electrical machine with superconductor winding. 3,934,163, Cl. 310-10.000.
Main, Brian Geoffrey, to Imperial Chemical Industries Limited. 1-Aryl-2-amidoalkylaminoethanol derivatives. 3,933,911, Cl. 260-562.00N.
Majefski, Richard L. Low power consumption stereo transmitter and receiver system. 3,934,201, Cl. 325-36.000.
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Manghisi, Elso; Salimbeni, Aldo; and Fregnan, Giancarlo, to Instituto Luso Farmaco d'Italia S.r.l. 5-Substituted 2-amino-4-arylthiazoles. 3,933,838, Cl. 260-306.80R.
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Manning, Robert E., to Sandoz, Inc. Hydroxy substituted diphenylalkyls for treatment of lipidemia. 3,934,034, Cl. 424-346.000.
Marchant, Wayne N., to United States of America, Interior. Method for removing soluble selenium from acidic waste water. 3,933,635, Cl. 210-50.000.
Margraf, Adolf. Method of filtering dust-laden gases. 3,933,978, Cl. 423-215.500.
Marino, Francis C., to Redactron Corporation. Data terminal for connection to telephone or teleprinter facilities. 3,934,088, Cl. 179-2.0DP.
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Mark, Victor, to Monsanto Company. Substituted polyhalogenated cyclopentadienes. 3,933,922, Cl. 260-611.00R.
Markum, Arvel Dean, to General Dynamics Corporation. Cryostat control. 3,933,003, Cl. 62-85.000.
Marlinski, Edward J., to Stromberg-Carlson Corporation. Controlled epoxy dispensing technique as related to transistor chip bonding. 3,933,187, Cl. 141-392.000.
Marostica, Jerome L.; and McLaughlin, William L., to BHB Corporation. Construction equipment. 3,933,261, Cl. 214-138.00R.
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Marsh, Charles M. Game device for two or more persons which is used with the feet. 3,933,353, Cl. 272-70.000.
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Martin, Marion A. Apparatus for welding. 3,933,292, Cl. 228-49.000.
Martin, Oscar M., Jr., to United States of America, Navy. Helicopter blind landing and hover system. 3,934,250, Cl. 343-6.0ND.
Martini, Bruno; Pusch, Gunter; Rossler, Erich; and Walz, Dieter, to Ciba-Geigy Corporation. Process for making textiles containing cellulose crease-resistant. 3,933,426, Cl. 8-183.000.
Martino, Fredric J.: *See*—
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Maruyama, Nobuo; and Sakaguchi, Yasuo, to Kureha Kagaku Kogyo Kabushiki Kaisha. Casting mold for metals. 3,933,335, Cl. 249-114.000.



Maruyama, Shoji; and Enomoto, Takamichi, to Kabushiki Kaisha Ricoh. Novel photoconductive substances and their application. 3,933,492, Cl. 96-1.500.
Maruzen Oil Co. Ltd.: *See*—
Machi, Sueo; Matui, Yasushi; Shinano, Takayuki; Aono, Taiji; Hibi, Yoshiharu; Oshima, Shozo; and Kashiki, Masayuki, 3,933,731.
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Massoubre, Jean-Marie, to Compagnie Generale des Etablissements Michelin, raison sociale Michelin & Cie. Thin, continuous steel wires. 3,933,441, Cl. 29-183.500.
Masters, Ian M.: *See*—
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Mastrovito, Donald, to Family Products, Inc. Handle assembly for chest. 3,933,269, Cl. 220-94.00R.
Masu, Masanobu: *See*—
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Mateju, Vladimir; Zabrodsky, Zdenek; Vasek, Vitezslav; and Jekl, Frantisek, to Vyzkumny ustav bavlnarsky. Method of and weft inserter for eliminating a chain formation of wefts not transferred into the beat-up position in travelling-wave shedding looms. 3,933,183, Cl. 139-12.000.
Mateju, Vladimir; Zabrodsky, Zdenek; Vasek, Vitezslav; and Bleha, Josef, to Vyzkumny ustav bavlnarsky. Method of and weft inserter for eliminating a chain formation of wefts not transferred into the beat-up position in travelling-wave shedding looms. 3,933,184, Cl. 139-12.000.
Mathis, Ronald D.; Underwood, John H.; and Dix, James S., to Phillips Petroleum Company. Dyeable polymers of alpha-olefins containing a nickel salt and a terephthalic ester. 3,933,707, Cl. 260-23.00H.
Matovich, Edwin. High temperature chemical reactor. 3,933,434, Cl. 23-252.00R.
Matras, Thad E. Ferrocement structures and method. 3,932,969, Cl. 52-86.000.
Matsuda, Hideaki; and Okamoto, Takanori, to Okura Kogya Kabushiki Kaisha. Anaerobic adhesive containing tetrahydroquinoline and benzosulfimide. 3,933,748, Cl. 260-47.0EP.
Matsuda, Masakata: *See*—
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Matsumoto, Takaaki; and Tamura, Kaoru, to Fuji Photo Film Co., Ltd. Photographic sheet-like film feeding device. 3,934,150, Cl. 250-468.000.
Matsumura, Isao: *See*—
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Mattos, Manuel A. Baler wire carton and system. 3,933,087, Cl. 100-1.000.
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Mayer, Robert, to Sun Oil Company of Pennsylvania. Pulse flow detector. 3,933,039, Cl. 73-204.000.
Maymarev, Nikolay. Device for electroconductive connection and reading. 3,934,120, Cl. 235-61.11A.
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McFarland, James W.: *See*—
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McGhie, Russell Park, to Colgate-Palmolive Company. Captive cap. 3,933,271, Cl. 220-335.000.
McGovern, Terrence P.: *See*—
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McKeehan, Ernest R.; Shawver, Bruce M.; Schiro, Donald J.; and Taft, William E., to United States of America, Energy Research and Development Administration. Control rod drive for reactor shutdown. 3,933,581, Cl. 176-36.00R.
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Meenan, Vincent D.; and Meenan, Thomas P. File folder with a rigid spine. 3,933,294, Cl. 229-1.50R.
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Mehall, Francis J. Apparatus and method for proving meters. 3,933,027, Cl. 73-3.000.

Meier, Peter, to Credelca A.G. Manufacture of constructional components. 3,933,962, Cl. 264-134.000.
Mellows, Vincent Edward, to Foseco Trading A.G. Refractory heat insulating materials. 3,933,513, Cl. 106-65.000.
Menashi, Wilson P.; Wenckus, Joseph F.; and Castonguay, Roger A., to Arthur D. Little, Inc. Apparatus for direct melt synthesis of compounds containing volatile constituents. 3,933,435, Cl. 23-252.00R.
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Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, to Bayer Aktiengesellschaft. Unsymmetrical esters of N-substituted 1,4-dihydropyridine 3,5-dicarboxylic acid. 3,933,834, Cl. 260-294.80D.
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Michelbrink, Peter Werner. Apparatus for receiving refuse. 3,933,328, Cl. 248-146.000.
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Mignano, Frank J. Paper insert feeder. 3,933,350, Cl. 271-10.000.
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Mikkelsen, Verner Johannes, deceased (by Mikkelsen, Aase Foght, executrix), to Aktieselskabet"Volund". Sluice for combustion furnaces as rotary kilns. 3,933,103, Cl. 110-165.00R.
Milkovic, Miran, to General Electric Company. Multi-wire electronic kWh meter. 3,934,198, Cl. 324-142.000.
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Momiyama, Iwao; and Fukushima, Tatsuo, to Kansai Paint Company, Ltd. Nonflammable binder composition. 3,933,706, Cl. 260-22.00S.
Monaghan, David A., to United States of America, Interior. Acoustic method and apparatus for determining effectiveness of mine passage seal. 3,934,219, Cl. 340-15.000.
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Moore, Earl P., Jr., to Du Pont de Nemours, E. I., and Company. 2[(1-Cyano-1-methylethyl)azo]-2-methylpropionamide. 3,933,775, Cl. 260-89.100.
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Moran, Paul J., to General Electric Company. Parallel interface with high speed printer. 3,934,228, Cl. 340-172.500.
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Moses, Adolph. Door lock attachment. 3,933,014, Cl. 70-416.000.
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Motsinger, Donald L.; Nalley, Charles E.; and Lovelace, Joe B., to PPG Industries, Inc. Forming size of aqueous polyvinylacetate. 3,933,711, Cl. 260-29.6MM.
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Mueller, Thomas Delbert, to Chevron Research Company. Alphanumeric display means for computer-linked typewriter consoles. 3,934,245, Cl. 340-324.00R.
Mueller, Thomas Delbert, to Chevron Research Company. Alphanumeric display means for computer-linked typewriter consoles using light-emitting diodes (LED's) in conjunction with sets of fiber-optic matrix members. 3,934,246, Cl. 340-324.00R.
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Mullen, Patrick E. Article holding and dispensing container. 3,933,245, Cl. 206-498.000.
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Murch, Robert Matthews, to W. R. Grace & Co. Fire-resistant intumescent laminates. 3,934,066, Cl. 428-248.000.
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Murphy, Joseph M.; and Lafler, Robert E., to United States Envelope Company. Substrate having colored indicia thereon for read-out by infrared scanning apparatus. 3,933,094, Cl. 101-426.000.
Murphy, Richard F.; and Chierici, Osvaldo F., to Holland Company. Railroad car uncoupling lever with antifriction slideway arrangement. 3,933,252, Cl. 213-166.000.
Murray, Ian S., to Singer Company, The. Presser device for overedge sewing machines. 3,933,106, Cl. 112-235.000.
Muska, Allen V., to Airco, Inc. Distributing a carbon dioxide slurry. 3,933,001, Cl. 62-47.000.
Muttera, William H., to Dennison-Eastman Corporation. Tag wicket. 3,933,560, Cl. 156-227.000.
Myers, Gary A., to Atlantic Richfield Company. Slurry system for removal of contaminant from synthetic oil. 3,933,624, Cl. 208-253.000.

Naarmann, Herbert; and Pohlemann, Heinz, to BASF Aktiengesellschaft. Polymers containing thioglycol groups. 3,933,765, Cl. 260-79.700.
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Nakada, Masahiko; and Kobayashi, Nobuyuki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Automatic choke valve control arrangement for an internal combustion engine. 3,933,307, Cl. 237-12.30B.
Nakagawa, Nobuyuki: *See*—
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Naono, Toyohiko, to Nihon Denshi Kabushiki Kaisha. Automatic analyzing apparatus. 3,933,436, Cl. 23-253.00R.
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Nardi, Dante; Massarani, Elena; and Degen, Ludwig, to Recordati S.A. Chemical and Pharmaceutical Company. Therapeutically active 2-aminoalkylthio-3H-1.5-benzodiazepines and process for preparing them. 3,933,793, Cl. 260-239.0BD.
Nassry, Asadullah: *See*—
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Nilsson, Jan Ove Lennart; and Risberg, Carl Nils Erik, to Stockamollan AB. Fork lift truck. 3,933,224, Cl. 187-9.00R.
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Ohata, Shuichi; Takeuchi, Yoji; and Ishiguro, Takeshi, to Yokogawa Electric Works, Ltd. Apparatus for measuring calorific power of hydrocarbon compounds. 3,934,139, Cl. 250-308.000.
Ohi, Reiichi: *See*—
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Ohkawa, Masaaki; and Ishii, Koichi, to Sumitomo Chemical Company, Limited. Method relating to manufacture of coumarin derivatives. 3,933,847, Cl. 260-309.200.
Ohkubo, Kinji; and Masuda, Takao, to Fuji Photo Film Co., Ltd. Heat developable light-sensitive materials. 3,933,508, Cl. 96-114.100.
Ohlsson, Nils Runol Gustav: *See*—
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Okuno, Yoshitoshi; Toyoura, Akira; and Higo, Akio, to Sumitomo Chemical Company, Limited. Insecticidal d-cis, trans-chrysanthemates. 3,934,023, Cl. 424-274.000.
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Ollis, Murrell W. Alarm for deep freezer. 3,933,120, Cl. 116-103.000.
Olson, John W., Jr., to C & D Valve Manufacturing Company. Apparatus for securing a line tap valve to the exterior of a tubing line. 3,933,170, Cl. 137-318.000.
Olstowski, Franciszek, to Dow Chemical Company, The. Rapid-setting polyurethanes prepared in the presence of a fatty material and an aliphatic liquid hydrocarbon. 3,933,705, Cl. 260-18.0TN.
Olympus Optical Co., Ltd.: *See*—
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Omietanski, George M.; and Chuang, Vincent T., to Union Carbide Corporation. Hydroxyalkenylsiloxane rigid poly urethane foam stabilizers. 3,933,695, Cl. 260-2.5AH.
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Ormsby, George S. Rotating machine wear gauge means. 3,932,941, Cl. 33-181.00R.
Orr, Lavern G.; and Stone, Etric Lee, to TRE Corporation. Method for stretch wrapping of panels. 3,933,020, Cl. 72-297.000.
Orren, Leonard J. Stain resistant anti-perspirant composition. 3,934,004, Cl. 424-68.000.
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Ostberg, Jan-Erik. Fluid handling and separating. 3,933,637, Cl. 210-83.000.
Ostrowski, Stanislaw. Helicopter with opposite rotating torque cancelling horizontal propeller. 3,933,324, Cl. 244-17.230.
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Palmer, Nigel Innes; and Sugarman, Nathan, to W. R. Grace & Co. Battery separator manufacturing process. 3,933,525, Cl. 136-146.000.
Palmer, Richard Claxton, to RCA Corporation. Video disc recording apparatus and methods. 3,934,263, Cl. 358-4.000.
Palsson, Jan F.: *See—*
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Paskert, Joseph H., to Eaton Corporation. Releasably attachable clip. 3,932,918, Cl. 24-260.000.
Pasqualucci, Carmine; Scarpitta, Giuseppe; and Bonfanti, Giovanni, to Archifar Industrie Chimiche Del Trentino S.p.A. Process for preparing rifamycin S by hydrolysis of rifamycin O. 3,933,801, Cl. 260-239.30P.
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Patton, Colonel E., to Blue Ember Flame Corporation. Gas generation apparatuses and processes. 3,933,618, Cl. 208-8.000.
Patton, Tad L., to Exxon Research and Engineering Company. Iminoimidazolidinedione and parabanic acid polymers containing imide groups. 3,933,758, Cl. 260-77.5CH.
Pavlou, George S., to Ambac Industries, Inc. Differential pressure visual and audible warning signal device for hydraulic and pneumatic systems. 3,934,238, Cl. 340-239.00F.
PCR, Inc.: *See—*
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Pearce, Donald. Simulated tennis game. 3,933,355, Cl. 273-85.00R.
Pecar, Milan. System for producing work using a small temperature differential. 3,932,995, Cl. 60-531.000.
Peck, William H.: *See—*
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Penque, Ronald A. Process of sonically treating municipal waste to produce high quality paper pulp and fertilizer. 3,933,577, Cl. 162-4.000.
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Percevaut, Emile Henri Gabriel. Purifier for the physical-chemical treatment of combustion gases and other gases containing polluting or noxious constituents. 3,933,450, Cl. 55-223.000.
Permutit Company, Inc., The: *See—*
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Pessagno, Mary A., to Raymond Lee Organization, Inc., The, a part interest. Newspaper and magazine storage device. 3,933,088, Cl. 100-34.000.
Peter, Richard; and Angliker, Hans-Joerg, to Ciba-Geigy AG. Heterocyclic-azo-phenyl compounds containing a styrl group. 3,933,786, Cl. 260-156.000.
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Peterson, Earl C., to Electrolysis Pollution Control Inc. Removal of immiscible fluids from water surfaces and lake beds. 3,933,632, Cl. 210-36.000.
Peterson, Gerald H. Method and apparatus for electric singe cutting. 3,934,115, Cl. 219-223.000.
Peterson, Roy E., to Elco Industries, Inc. Self-drilling fastener and method of making same. 3,933,075, Cl. 85-41.000.
Peterson, Warren J., to Joerns Furniture Company. Drawer with removable front panel. 3,933,402, Cl. 312-330.000.
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Platz, Winfried; Bar, Ulrich; and Schmidt, Martin, to Siemens Aktiengesellschaft. Patient support with weight-sensitive spring scale for controlling motor operation. 3,934,147, Cl. 250-445.000.
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Plumb, Rex V., to Fruehauf Corporation. Bulk cargo unloader aerator. 3,933,280, Cl. 222-193.000.
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Pontigny, Jacques. Separable coupling between two tubes and its production process. 3,933,379, Cl. 285-381.000.
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Portalier, Pierre Louis, to Societe Nationale des Poudres et Explosifs. Solid cylindrical centripetally burning propellant with four convex arced lobes. 3,933,098, Cl. 102-99.000.
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Poulsen, Boyd J., to Syntex (U.S.A.) Inc. Pharmaceutical composition. 3,934,013, Cl. 424-239.000.
Powell, James F., to Shell Oil Company. 2-(Dihalonitromethyl)-5,6-dihydro-4H-1,3-thiazines. 3,933,809, Cl. 260-243.00R.
Powermatic/Houdaille, Inc.: *See*—
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PPG Industries, Inc.: *See*—
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Motsinger, Donald L.; Nalley, Charles E.; and Lovelace, Joe B., 3,933,711.
Shumaker, Lyle L., 3,933,552.
Prag, Rudolf, to Siemens Aktiengesellschaft Detector for ionizing radiation. 3,934,143, Cl. 250-370.000.
Pratt, Ivor; and Boschert, Ulrich, to SCM Corporation. Dicyclopentadiene thermosetting polyester. 3,933,757, Cl. 260-75.00A.
Preco Corporation: *See*—
Walters, Wally Z., 3,933,489.
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Limberger, Walter, deceased; Limberger, Jurgen, heir; Limberger, Ursula, heir; Prick von Wely, Francois; and Winzentsen, Uwe, 3,933,349.
Pries, Erich F., to Dr. C. Otto & Comp. G.m.b.H. Coke oven door. 3,933,598, Cl. 202-248.000.
Priest, David C.; and Brandien, John E., deceased (by Brandien, Helen, executrix), to Reeves Brothers Inc. Production of flame retardant flexible polyurethane foams. 3,933,693, Cl. 260-2.5AJ.
Printz, Gerhard; and Haase, Ralf, to Semperit Aktiengesellschaft. Method and apparatus for butt connection of plies formed of plastic deformable material, especially rubberized steel cord plies. 3,933,565, Cl. 156-266.000.
Procter & Gamble Company, The: *See*—
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Haefele, John William, 3,934,002.
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Prototech Company: *See*—
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Pugsley, Kenneth N. Carton structure and blank therefor. 3,933,301, Cl. 229-41.00B.
Puig, John E.; and Colafati, Ralph A., III, to Olin Corporation. High resilience polyurethane foam. 3,933,701, Cl. 260-2.5AT.
Pulido, Miguel L.: *See*—
Buckman, Stanley J.; Fenyes, Joseph G. E.; Flanagan, Kenneth J.; Pera, John D.; and Pulido, Miguel L., 3,933,472.
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Rabenecker, Horst; and Spahrbier, Horst, to Dragerwerk Aktiengesellschaft. Gas detector with automatically operable fan switch. 3,933,029, Cl. 73-23.000.
Rackin, Mark H., to Motorola, Inc. Housing for battery cell with protection for pressure and temperature. 3,933,526, Cl. 136-166.000.
Radiochemical Centre Limited, The: *See*—
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Radt, Walter: *See*—
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Randmere, Uno; and Halbig, Walter A., to Stromberg-Carlson Corporation. Control circuit for subscriber station in video telephone system. 3,933,233, Cl. 179-2.0TV.
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Rawlings, Robert K., to U.S. Reduction Co. Method and apparatus for melting metals. 3,933,343, Cl. 266-16.000.
Ray, Neil Hunter; Shaw, Bryan; and Lane, Bruce Cochran, to Imperial Chemical Industries Limited. Fire retardant compositions. 3,933,689, Cl. 260-2.5FP.
Raymond Lee Organization, Inc., The: *See*—
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Pessagno, Mary A., 3,933,088.
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Helgeson, Peter L., 3,933,400.
MacMaster, George H.; and Dudley, Kenneth W., 3,934,106.
Razdan, Raj Kumar; and Pars, Harry George, to Sharps Associates. Method of producing analgesia and compositions useful therein. 3,934,024, Cl. 424-275.000.
RCA Corporation: *See*—
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Kiess, Helmut Gustav; and Rose, Albert, 3,934,180.
Mueller, Charles William; Douglas, Edward Curtis; and Wu, Chung Pao, 3,933,530.
Palmer, Richard Claxton, 3,934,263.
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Rector, Norwood H.; and Fredericks, Rodney G., to United States of America, Navy. Water level gauge. 3,933,042, Cl. 73-304.00C.
Redactron Corporation: *See*—
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Reese, Burkhart; and Schick, Lothar, to Boge GmbH. Process or method of producing a small opening in a relatively thick metallic or pipe wall. 3,933,021, Cl. 72-327.000.
Reeves Brothers Inc.: *See*—
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Reger, David William; and Nigro, Matthew Michael, to American Cyanamid Company. Preparation of aromatic 2-imino-1,3-dithietanes. 3,933,851, Cl. 260-327.00M.
Reich, Harry. Recirculating barbeque device. 3,933,145, Cl 126-25.00R.
Reick, Franklin G., to Ebert, Michael, a part interest. Lubricating oil with fluorocarbon additive. 3,933,656, Cl. 252-25.000.
Reid, Francis R.; and Leezer, James R., to Pillsbury Company, The. Cylindrical fiber container with display label. 3,933,302, Cl. 229-51.0BP.
Reilly, Joseph R.; and Sincock, Thomas F., to Monsanto Company. Apparatus for forming multiaxially oriented containers. 3,933,417, Cl. 425-326.00B.
Reimann, Otto: *See*—
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Reinert, Guido Georg. Microscope-illuminating system. 3,933,408, Cl. 350-87.000.
Reininghaus, Ulrich: *See*—
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Rejsa, Jack J., to Pillsbury Company, The. Trim removal belt for dough cutting apparatus. 3,933,068, Cl. 83-168.000.
Rejsa, Jack J., to Pillsbury Company, The. Potato coring machine. 3,933,085, Cl. 99-544.000.
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REPA GmbH Feinstanzwerk: *See*—
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Reynolds Metals Company: *See*—
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Kirby, Thomas E., Jr., 3,933,303.
Rhodes, Richard D., Jr.; and Humphrey, William M., Jr., to McCord Corporation. Molding-grade polyurethane. 3,933,937, Cl. 260-859.00R.
Rhodes, Richard D., Jr.; and Humphrey, William M., Jr., to McCord Corporation. Grafted polyether diol-based thermoplastic urethane elastomer. 3,933,938, Cl. 260-859.00R.
Rhone-Poulenc S.A.: *See*—
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Brunet, Jean-Paul; and Cometti, Andre, 3,933,905.
Colovray, Gilbert, 3,933,929.
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Helgorsky, Jacques; and Auroy, Michel, 3,933,630.
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Riccitelli, James A. Electronic security card and system for authenticating card ownership. 3,934,122, Cl. 235-61.70B.
Rich, Donald S.; and Rudnick, Norman, to Inflo Systems, Inc. Switch mechanisms. 3,934,215, Cl. 335-207.000.
Richard, Roger R.: *See*—
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Richardson-Merrell Inc.: *See*—
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Riggi, Giovanni. Cooling apparatus particularly for medical-surgical use. 3,933,156, Cl. 128-303.100.
Ringler, Lloyd H. Ball inflating apparatus and method. 3,932,977, Cl. 53-7.000.
Ringwall, Carl Gustave, to General Electric Company. Closed loop fluidic angular rate gyro. 3,933,051, Cl. 74-5.60B.
Ringwood, Robert C., Jr.: *See*—
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Robbins, Kenneth W.: *See*—
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Roberson, Cletis L., to Owens-Corning Fiberglas Corporation. Apparatus for packaging glass fibers. 3,933,456, Cl. 65-11.00W.
Robert Bosch G.m.b.H.: *See*—
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Roberts, Alvin M.; and Roberts, Kenneth E. Guy crane jib tip prop. 3,933,250, Cl. 212-58.00R.
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Robinson, Dorian Dodge: *See*—
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Robinson, Frank R.; and Robinson, Frank S. Hollow reinforced concrete fence post and method and apparatus for making the same. 3,933,969, Cl. 264-312.000.
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Roch, Roger Henri, to J. Bobst & Fils S.A. Installation for continuous measurement of the elastic coefficient of a traveling strip, wire or ribbon. 3,933,035, Cl. 73-95.500.
Rockwell International Corporation: *See*—
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Rodgers, Michael A., to Motorola, Inc. Process for production of polycrystalline silicon. 3,933,985, Cl. 423-350.000.
Roesler, Gordon M.: *See*—
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Roscoe, William A. Reed container. 3,933,242, Cl. 206-314.000.
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Roselli, Sergio; and Sauer, Gerd, to Saint-Gobain Industries. Apparatus for heating a window. 3,934,111, Cl. 219-203.000.
Rosen, Herbert J., to Hooker Chemicals & Plastics Corporation. Method of simultaneously producing chlorine dioxide and a sulfate salt. 3,933,988, Cl. 423-480.000.
Rosen, Herbert J.: *See*—
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Rosenthal, Ben J. Solid state light responsive control system. 3,934,181, Cl. 318-53.000.
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Rosette, King H.; and Packer, Herbert, to Harshaw Chemical Company, The. Shaped press-forged normally frangible inorganic crystals. 3,933,970, Cl. 264-320.000.
Ross, Gerald F.; and Robbins, Kenneth W., to Sperry Rand Corporation. Closed loop tunnel diode receiver for operation with a base band semiconductor transmitter. 3,934,252, Cl. 343-7.0VM.
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Rossman, Rudolph J. Stair construction. 3,932,972, Cl. 52-183.000.
Rotterman, Robert. Conveyor for a transit warehouse for parcelled cargo to be stored, particularly for goods transported on pallets. 3,933,237, Cl. 198-37.000.
Rounds, Gerald L., to Kaiser Steel Corporation. Process for desulfurizing gases. 3,933,994, Cl. 423-575.000.
Roux, Claude Paul; and Torossian, Dieran Robert, to Jouveinal, S.A. Pharmaceutical preparation for percutaneous treatment of local edemas. 3,934,016, Cl. 424-270.000.
Roverc, Virgilio. Grinding mill. 3,933,317, Cl. 241-246.000.
Rubesamen, Erich; and Wehling, Karl. Adaptor for feeding current to electrical contact rails. 3,933,403, Cl. 339-22.00R.
Rubsam, Franz: *See*—
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Rushton, William E., to Whiting Corporation. Evaporation of radioactive wastes. 3,933,576, Cl. 159-27.00A.
Ruskin, Bryan Ernest Sydney; and Webber, Peter James, to Lunch Locker Systems Limited. Packaging containers. 3,933,296, Cl. 229-2.500.
Russum, Leonard W.; and Hoekstra, Gerald B., to Standard Oil Company. Process for hydroprocessing heavy hydrocarbon feedstocks in a pipe reactor. 3,933,620, Cl. 208-108.000.
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Zalesov, Oleg Alexandrovich; Lomakin, Mikhail Sergeevich; Merkulov, Vadim Nikolaevich; Pevzner, Leonid Davidovich; Peters, Gugo Borisovich; Potapov, Vladimir Dmitrievich; Rzhevsky, Vladimir Vasilievich; Tolpezhnikov, Lev Ivanovich; Yarizov, Anatoly Danilovich; Mamkin, Viktor Modestovich; Raskin, Ve-

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Sachleben, Harold Gerard, Sr.; Montgomery, Everett Gray; Forman, Clarence Albert; Carr, Robert David; Cary, Lawrence Edward; Boggs, Beryl Aaron; Burnley, Harold George, Jr.; and Chafer, Alistair James, to Allied Chemical Corporation. Vertical spindle winder. 3,933,319, Cl. 242-18.00R.
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Sakuma, Kenichi; and Tanahashi, Ryozi, to Nippon Gakki Seizo Kabushiki Kaisha. Ski having a hollow core. 3,933,362, Cl. 280-11.13L.
Salemme, Robert M., to General Electric Company. Use of concentrated chelated iron reagent for reducing pollutant content of a fluid. 3,933,993, Cl. 423-573.000.
Salera, Edmond A.; and Salera, Edmond E. Anisothermal differentiator. 3,933,149, Cl. 128-2.00H.
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Salle, Yves; and Pincemin, Marcel, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Automatic selector for peripheral equipment. 3,934,230, Cl. 340-172.500.
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Sandford, Phillip A.; and York, John D., to Ford Motor Company. Quick-connect tubing coupling. 3,933,378, Cl. 285-319.000.
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Sanford Research Company: *See*—
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Sanford, Robert L.; and Wesolek, Casimer J., to General Motors Corporation. Resilient filler and bumper support arrangement. 3,933,385, Cl. 293-63.000.
Sanjana, James, to Lawrence Peska Associates, Inc., a part interest. Border flashers. 3,934,249, Cl. 340-340.000.
Sanko Engineering & Construction Co., Ltd.: *See*—
Kanomata, Kunihiko, 3,933,174.
Sankyo Company Limited: *See*—
Murayama, Keisuke; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Ohsawa, Hisayu, 3,933,735.
Sansing, James Earl: *See*—
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Sansui Electric Co., Ltd.: *See*—
Takahashi, Susumu, 3,934,086.
Santoro, Ralph: *See*—
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Sanyo-Kokusaku Pulp Co., Ltd.: *See*—
Oguma, Takeshi; Shiba, Shunji; Moritani, Nobuo; and Takeuchi, Yoichi, 3,933,590.
Sarantakis, Dimitrios, to American Home Products Corporation. Des-(ser[13])-srif and intermediates. 3,933,784, Cl. 260-112.50R.
Sarmiento, Rafael: *See*—
Beroza, Morton; Sarmiento, Rafael; and McGovern, Terrence P., 3,934,033.
Sasajima, Kikuo: *See*—
Yamamoto, Hisao; Nakao, Masaru; Sasajima, Kikuo; Maruyama, Isamu; and Katayama, Shigenari, 3,933,824.
Sato, Akira: *See*—
Shiba, Keisuke; Takei, Haruo; Sato, Akira; and Ikeda, Tadashi, 3,933,510.
Sato, Yohta; Matsuda, Masakata; Ohi, Yukio; and Matsumori, Toyomi, to Nippon Yakin Kogyo Company Limited. Method of producing ferro-nickel or metallic nickel. 3,933,477, Cl. 75-82.000.
Satomura, Masato, to Fuji Photo Film Co., Ltd. Cinnamylideneacetic acid esters. 3,933,885, Cl. 260-465.00D.
Satovsky, Boris Ivanovich: *See*—
Zalesov, Oleg Alexandrovich; Lomakin, Mikhail Sergeevich; Merkulov, Vadim Nikolaevich; Pevzner, Leonid Davidovich; Peters, Gugo Borisovich; Potapov, Vladimir Dmitrievich; Rzhevsky, Vladimir Vasilievich; Tolpezhnikov, Lev Ivanovich; Yarizov, Anatoly Danilovich; Mamkin, Viktor Modestovich; Raskin, Veniamin Lvovich; Satovsky, Boris Ivanovich; and Yartsev, Grigory Matveevich, 3,934,126.
Satzinger, Roland. Method and apparatus for the unwinding of bands. 3,933,322, Cl. 242-55.000.
Sauer, Gerd: *See*—
Roselli, Sergio; and Sauer, Gerd, 3,934,111.
Saufferer, Helmut, to Daimler-Benz Aktiengesellschaft. Linear reluctance motor for the propulsion of rail transportation means. 3,934,183, Cl. 318-135.000.
Saunders, John Christopher: *See*—
Archibald, John Leheup; Boyle, John Terence Arnott; and Saunders, John Christopher, 3,933,829.
Savies, Bessie Snowden, executrix: *See*—
Davies, Philip Henri, deceased; and Savies, Bessie Snowden, executrix, 3,933,107.
Sawa, Natsuo; and Hoda, Masahiro. Method of rust-preventing for copper and copper alloy. 3,933,531, Cl. 148-6.14R.
Sawabu, Hitoshi: *See*—
Hashino, Yasuo; Yoshino, Masatsugu; Sawabu, Hitoshi; and Kawashima, Sukeo, 3,933,653.
Saygin, Ferdi, to Henkel & Cie GmbH. Diamino-nitro-benzene compounds. 3,933,886, Cl. 260-465.00D.
Scarpitta, Giuseppe: *See*—
Pasqualucci, Carmine; Scarpitta, Giuseppe; and Bonfanti, Giovanni, 3,933,801.
Schade, Hans Robert, to General Foods Corporation. Taste modifier for artificial sweeteners. 3,934,047, Cl. 426-548.000.
Schaffner, Ernst; Eilingsfeld, Heinz; and Patsch, Manfred, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of dimethylbenzophenone. 3,933,917, Cl. 260-591.000.
Schamel, Alfred H., to Tektronix, Inc. Power supply regulator high-line shunt bypass. 3,934,189, Cl. 321-11.000.
Schaub, Fritz: *See*—
Schelling, Hans-Peter; and Schaub, Fritz, 3,933,804.
Schauffler, Peter P. Observation/interpretation system. 3,933,326, Cl. 244-33.000.
Scheer, Marcel: *See*—
Kaiser, Ado; Koch, Wolfgang; Scheer, Marcel; and Wolcke, Uwe, 3,933,859.
Scheffler, Norman E., to Dow Chemical Company, The. Protective housing for a liquid sample container. 3,933,186, Cl. 141-97.000.
Scheinpflug, Hans: *See*—
Buchel, Karl Heinz; Regel, Erik; Grewe, Ferdinand; Scheinpflug, Hans; and Kaspers, Helmut, 3,934,022.
Scheiter, Heinz: *See*—
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Schellekens, Jozef Remy: *See*—
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Schelling, Hans-Peter; and Schaub, Fritz, to Sandoz Ltd., (Sandoz AG). Insecticidal 1,3-benzodioxol derivatives. 3,933,804, Cl. 260-240.00H.
Scherf, Gerald F.: *See*—
Damm, David A.; Juvinall, John W.; and Scherf, Gerald F., 3,933,248.
Schering Aktiengesellschaft: *See*—
Schulze, Paul-Eberhard, 3,933,869.
Scheuerle, Willy, to Willy Scheuerle.Fahrzeugfabrik. Digital system for controlling the wheels of a heavy-duty commercial vehicle. 3,933,215, Cl. 180-23.000.
Schick, Lothar: *See*—
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Schickedanz, Wayne M.: *See*—
Counts, W. Ray; and Schickedanz, Wayne M., 3,933,382.
Schievelbein, Vernon Hugo, to Texaco Inc. Method of separating hydrogen sulfide from carbon dioxide. 3,934,012, Cl. 423-232.000.
Schiff, Maurice Leon, to United States of America, Navy. Spread spectrum modem. 3,934,203, Cl. 325-65.000.
Schiro, Donald J.: *See*—
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Schladitz, Hermann J. Electric fluid heating device. 3,934,117, Cl. 219-382.000.
Schlaefer, Francis W., to Rohm and Haas Company. Production of unsaturated acids, esters and nitriles, and catalyst therefor. 3,933,888, Cl. 260-465.900.
Schlatter, Gerald Lance; and Miller, Charles Eveleigh, to International Telephone and Telegraph Corporation. Gravitometers. 3,934,127, Cl. 235-151.340.
Schlauch, Walter F.: *See*—
Caimi, Ronald J.; and Schlauch, Walter F., 3,933,702.
Schlegel Manufacturing Company, The: *See*—
Smoot, Edward H., 3,932,947.
Schmedemann, Walter. X-ray examination apparatus comprising a counter-weight for the image section. 3,933,251, Cl. 250-439.000.
Schmeiser, Kurt: *See*—
Valentin, Hans Wilhelm; Schmeiser, Kurt; and Beuth, Paul, 3,933,038.
Schmeling, Edith-Luise; Friebe, Herbert; and Reininghaus, Ulrich, to Electro Chemical Engineering GmbH. Electroless metal plating. 3,934,054, Cl. 427-8.000.
Schmermund, Alfred. Apparatus for manufacturing a wrapper web provided with a tear-open strip. 3,933,568, Cl. 156-512.000.
Schmid, Hermann Pius, to AB Bofors. Method of producing polyurethane-based cores and moulds according to the so-called cold-box procedure. 3,933,727, Cl. 260-37.00N.
Schmid, Peter, to Mettler Instrumente AG. Buoyancy balance. 3,933,211, Cl. 177-207.000.
Schmid, Wolfgang: *See*—
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Schmidt, Delf: *See*—
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Schmidt, Klaus: *See*—
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Schmidt, Martin: *See*—
Platz, Winfried; Bar, Ulrich; and Schmidt, Martin, 3,934,147.
Schmiegel, Walter Werner, to Du Pont de Nemours, E. I., and Company. Fluoroelastomer composition and curing process. 3,933,732, Cl. 260-42.270.
Schneckenburger, Donald R.: *See*—
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Schneider, John R. Plate and frame type filtering apparatus. 3,933,792, Cl. 210-231.000.
Schneider, William P.: *See*—
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Scholes, Addison B., to Ball Corporation. Apparatus and method for treating vitreous surfaces. 3,933,457, Cl. 65-60.000.
Scholl, Hans-Joachim; Klauke, Erich; Grewe, Ferdinand; and Hammann, Ingeborg, to Bayer Aktiengesellschaft. Pesticidal 4,5-bis-(trifluoromethylimino)-diazoles. 3,934,019, Cl. 424-273.000.
Scholpp, Martin: *See*—
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Scholz, Berthold: *See*—
Eisenlohr, Karl-Heinz; Scholz, Berthold; and Kapp, Ernest, 3,933,979.
Schonberg, Herman. Carrier for transferring images. 3,933,503, Cl. 96-85.000.
Schoon, David J., to Minnesota Mining and Manufacturing Company. Threshold signal circuitry for scanning apparatus. 3,934,136, Cl. 250-214.00R.
Schoonover, Stanley C.; and Harrel, Jack D., to Landis Tool Company. Machine tool control system. 3,934,185, Cl. 318-565.000.
Schoonover, Stanley C.; and McIntosh, Michael D., to Landis Tool Company. Tachometer circuit. 3,934,200, Cl. 324-163.000.
Schoppee, Lawrence W., to Package Machinery Company. Gum slab feed apparatus. 3,933,064, Cl. 83-11.000.
Schramm, Arthur G. Ore processing furnace. 3,933,342, Cl. 266-15.000.
Schramm, Jurgen: *See*—
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Schrock, Wilfried: *See*—
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Schuep, Willy: *See*—
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Schuhmacher, Alfred: *See*—
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Schuhmann, Siegfried: *See*—
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Schuler, Wilhelm-Alfons: *See*—
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Schuller, James J.; and Marsh, Ronald W., to Pullman Incorporated. Anti-pilferage locking device. 3,933,384, Cl. 292-285.000.
Schultz, Peter C.: *See*—
Keck, Donald B.; and Schultz, Peter C., 3,934,061.
Schulz, Arthur C.; and Rosen, Herbert J., to Hooker Chemicals & Plastics Corporation. Simultaneous production of chlorine dioxide and a salt of a strong acid. 3,933,987, Cl. 423-478.000.
Schulze, Paul-Eberhard, to Schering Aktiengesellschaft. Preparation of organic radiohalogen compounds. 3,933,869, Cl. 260-397.400.
Schumacher, Ernst E. Method and apparatus for improving photomechanical reproduction by contrast decrease. 3,934,081, Cl 178-6.800.
Schurman, Peter T., to Plastic Forming Company, Inc., The. Support and storage tray. 3,933,243, Cl. 206-349.000.
Schurman, Peter T., to Plastic Forming Company, Inc., The. Plastic container and latch. 3,933,381, Cl. 292-57.000.
Schwartz, Robert E.: *See*—
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Schwarz, Hans-Helmut: *See*—
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Schwarz, Meyer; Sonnet, Philip E.; and Wakabayashi, Nobel, to United States of America, Agriculture. Arthropod maturation inhibitors. 3,933,865, Cl. 260-348.00A.
Schweizer, Gottfried; and Svoboda, Josef, to Gertsch AG. Safety ski binding. 3,933,363, Cl. 280-11.35T.
Schwerdtel, Wulf: *See*—
Waldmann, Helmut; Seifer, Hermann; Schwerdtel, Wulf; Swodenk, Wolfgang; and Eichenhofer, Kurt-Wilheim, 3,933,910.
SCM Corporation: *See*—
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Pratt, Ivor; and Boschert, Ulrich, 3,933,757.
Scordato, Emil A., to Medical Laboratory Automation, Inc. Pipettes. 3,933,048, Cl. 73-425.600.
Scott, Ellery A.: *See*—
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Scott & Fetzer Company, The: *See*—
Broad, Roy M., 3,932,933.
Scott, Louie B.; and Scott, Ellery A. Trench digging machinery. 3,932,951, Cl. 37-86.000.
Scrine, Gerald Robin: *See*—
Carter, William Derrick Marshall; and Scrine, Gerald Robin, 3,933,004.
Seals, Harold, to Kline, Larry Harold. Spill collection device. 3,933,185, Cl. 141-88.000.
Searle, Brian Christopher; and Ritter, Glenn Richard, to Tiltman Langley Ltd. Coin validator. 3,933,232, Cl. 194-100.00A.
Seebacher, Baerbel, to Siemens Aktiengesellschaft. Method of stabilizing the hot resistance of ceramic positive temperature coefficient resistors. 3,934,058, Cl. 427-89.000.
Seeburg Corporation: *See*—
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Seeholzer, Josef: *See*—
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Seha, Zdenek, to Ciba-Geigy AG. Process for the manufacture of amino-anthraquinones. 3,933,866, Cl. 260-382.000.
Seiber, Rita P.: *See*—
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Seiberling, Mildred Kelley: *See*—
Seiberling, Theophilus K., 3,933,553.
Seiberling, Theophilus K., 3,933,566.
Seiberling, Theophilus K., to Seiberling, Mildred Kelley, a part interest. Tires, etc. 3,933,553, Cl. 156-123.000.
Seiberling, Theophilus K., to Seiberling, Mildred Kelley, a part interest. Tires, etc. 3,933,566, Cl. 156-272.000.
Seidehamel, Richard J.; and Dungan, Kendrick W., to Mead Johnson & Company. 4-[2-(Isopropylamino)ethyl]pyrocatechol intraocular pressure lowering process. 3,933,998, Cl. 424-28.000.
Seifer, Hermann: *See*—
Waldmann, Helmut; Seifer, Hermann; Schwerdtel, Wulf; Swodenk, Wolfgang; and Eichenhofer, Kurt-Wilheim, 3,933,910.
Seiler, Erhard: *See*—
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Neumayr, Franz; Fahrbach, Gerhard; and Seiler, Erhard, 3,933,774.
Seiler, Ronald: *See*—
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Seiscom Delta Inc.: *See*—
Babb, John J., 3,934,218.
Seki, Toru. Method of treatment of sludges with size-adjusted carbon. 3,933,634, Cl. 210-46.000.
Sekmakas, Kazys; and Petrovich, Paul, to DeSoto, Inc. Low temperature curing corrosion resistant polyurethane coatings. 3,933,760, Cl. 260-77.5CR.
Sellstedt, John H., to American Home Products Corporation. Intermediates for producing semi-synthetic cephalosporins. 3,933,810, Cl. 260-243.00C.
Semenov, Nikolai Nikolaevich: *See*—
Bokov, Jury Sergeevich; Gurzheev, Valery Nikolaevich; Zakharov, Vladimir Ivanovich; Korsakov, Vladimir Sergeevich; Lavrischev, Vadim Petrovich; Goron, Alla Grigorievna; Glikman, Mark Leonovich; Semenov, Nikolai Nikolaevich; and Matvienko, Viktor Yakovlevich, 3,933,609.
Semperit Aktiengesellschaft: *See*—
Printz, Gerhard; and Haase, Ralf, 3,933,565.
Seni, Leonard S.; Witte, Arnold C.; and Coleman, Richard L., to Texaco Inc. Lubricant with synergistic extreme pressure additives. 3,933,657, Cl. 252-29.000.

Senoo, Saburo: *See—*
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Sensormatic Electronics Corporation: *See—*
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Sequin, Carlo Heinrich, to Bell Telephone Laboratories, Incorporated. Two-dimensional transfer in charge transfer devices. 3,934,261, Cl. 357-24.000.

Seto, Kunihira: *See—*
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Setty, H. S. Nagaraja: *See—*
Wakefield, Gene Felix; and Setty, H. S. Nagaraja, 3,933,981.

Shamlian, Ralph B.; and Hollingsworth, Ashley J., to Farallon Industries, Inc. Decompression indicating instrument for divers. 3,933,049, Cl. 73-432.00R.

Shank, Harvey T.: *See—*
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Sharma, Vijay Ratna: *See—*
Ashton, Stanley; Sharma, Vijay Ratna; and Taylor, John Anthony, 3,933,907.

Sharp, Richard William. Extensible shafts and fishing spears. 3,932,953, Cl. 43-6.000.

Sharps Associates: *See—*
Razdan, Raj Kumar; and Pars, Harry George, 3,934,024.

Shaw, Bryan: *See—*
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Shawver, Bruce M.: *See—*
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Shea, Philip J.: *See—*
Abdallah, Abdulmuniem H.; and Shea, Philip J., 3,934,020.

Shee, William S., to Signal Office Products Co. Key holder and rack therefor. 3,933,017, Cl. 70-456.00R.

Shekleton, Jack R., to International Harvester Company. Rotating cup fuel injector. 3,933,133, Cl. 123-30.00C.

Sheldon, Paul B.: *See—*
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Shell Oil Company: *See—*
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Knapp, Randolph H., 3,933,204.
Powell, James E., 3,933,809.
Winquist, Bruce H. C., 3,933,974.

Shepard, Richard W.; and Ashmead, Albert S., to Torrington Company, The. Latch pivot for latch needle. 3,934,109, Cl. 219-121.0LM.

Sherman, Jack A.: *See—*
Jorgenson, Morris E.; Sheldon, Paul B.; Sherman, Jack A.; and Wardell, Peter S., 3,934,118.

Sherritt Gordon Mines Limited: *See—*
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Sherwood Medical Industries Inc.: *See—*
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Shiba, Keisuke; Furutachi, Nobuo; Katsuyama, Harumi; Hirose, Takeshi; Aono, Toshiaki; and Ishiguro, Shoji, to Fuji Photo Film Co., Ltd. Color photographic light-sensitive material. 3,933,500, Cl. 96-74.000.

Shiba, Keisuke; Hinato, Masanao; and Ohi, Reiichi, to Fuji Photo Film Co., Ltd. Fogged, direct positive silver halide emulsion containing a nitro-substituted fluorene desensitizer. 3,933,505, Cl. 96-101.000.

Shiba, Keisuke; Takei, Haruo; Sato, Akira; and Ikeda, Tadashi, to Fuji Photo Film Co., Ltd. Spectrally sensitized silver halide photographic emulsion. 3,933,510, Cl. 96-124.000.

Shiba, Shunji: *See—*
Oguma, Takeshi; Shiba, Shunji; Moritani, Nobuo; and Takeuchi, Yoichi, 3,933,590.

Shibata, Akira, to Chugai Denki Kogyo Kabushiki-Kaisha. Electrical contact material. 3,933,485, Cl. 75-173.00A.

Shibata, Akira, to Chugai Denki Kogyo Kabushiki-Kaisha. Silver-metal oxide composite and method of manufacturing the same. 3,933,486, Cl. 75-173.00A.

Shibata, Kunio: *See—*
Kosaka, Kenzo; Morioka, Shin; Shibata, Kunio; Goto, Takashi; and Takahashi, Eizi, 3,932,986.

Shibata, Yoshiki; Kakigami, Hideo; and Takeda, Syuzo, to Toray Industries, Inc. Method and apparatus for determining the total oxygen demand of combustible materials in aqueous dispersion. 3,933,429, Cl. 23-230.0PC.

Shields, John J.: *See—*
Tu, Robert S.; and Shields, John J., 3,933,407.

Shim, Kyung Sup, to Stauffer Chemical Company. Polyalkylene glycol poly-phosphorus compounds in polyurethane foams. 3,933,696, Cl. 260-2.5AR.

Shimada, Katsuji; and Shimada, Katsuyuki. Backward openable container with a device to prevent its inner tray from being slipped downward. 3,933,299, Cl. 229-20.000.

Shimada, Katsuyuki: *See—*
Shimada, Katsuji; and Shimada, Katsuyuki, 3,933,299.

Shimada, Sumio: *See—*
Fujii, Osamu; Kishimoto, Toshio; Kosuge, Hisao; Nagamine, Ryoji; and Shimada, Sumio, 3,933,697.

Shimizu, Makoto: *See—*
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Shimoda, Kazuho, to Konishiroku Photo Industry Co., Ltd. Toner cleaning apparatus in electrophotographic copying machine. 3,932,910, Cl. 15-301.000.

Shinano, Takayuki: *See—*
Machi, Sueo; Matui, Yasushi; Shinano, Takayuki; Aono, Taiji; Hibi, Yoshiharu; Oshima, Shozo; and Kashiki, Masayuki, 3,933,731.

Shinohara, Isao; and Aoyagi, Juro, to B. R. Chemical Co., Ltd. Water soluble linear macroamine polymers and method of producing them. 3,933,717, Cl. 260-29.60R.

Shinozaki, Masanobu, to Victor Company of Japan, Limited. Switching circuit. 3,934,158, Cl. 307-239.000.

Shinozaki, Takashi; and Kokufukata, Seigo, to Victor Company of Japan, Limited. Dark current correction circuit in two-tube color television camera. 3,934,266, Cl. 358-44.000.

Shiokawa, Kozo: *See—*
Kishino, Shigeo; Kudamatsu, Akio; and Shiokawa, Kozo, 3,933,947.

Shionogi & Co., Ltd.: *See—*
Kano, Hideo; Ogata, Masaru; and Yukinaga, Hisajiro, 3,933,828.

Shipowners Refrigerated Cargo Research Association: *See—*
Carter, William Derrick Marshall; and Scrine, Gerald Robin, 3,933,004.

Shirakawa, Hideki: *See—*
Ikeda, Sakuji; Ozaki, Atsumu; Okawara, Makoto; Mizoroki, Tsutomu; Uchino, Masahiro; Shirakawa, Hideki; and Kawata, Noboru, 3,933,770.

Shires, Val Henry, to Surf Air Conditioning, Inc. Portable electric capacitor tester using an LED indicator. 3,934,195, Cl. 324-72.500.

Shmarovoz, Nikolai Pavlovich: *See—*
Zinoviev, Alexandr Fedorovich; Korotkevich, Boris Sergeevich; Petukhov, Sergei Timofeevich; Basiev, Izmail Mikhailovich; Shmuk, Jury Alexandrovich; Mamedov, Ulchar Ashraf ogly; Poznyak, Ilya Yakovlevich; Staromінsky, Naum Mikhailovich; Shmarovoz, Nikolai Pavlovich; Volnakov, Vladimir Alexandrovich; Minaev, Viktor Georgievich; and Strukov, Alexei Semenovich, 3,933,574.

Shmuk, Jury Alexandrovich: *See—*
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Shook, William B., to Thurston, Inc. Saddle seat mount with special support post and cooperating clamp assembly. 3,933,391, Cl. 297-195.000.

Shorten, Derek William: *See—*
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Shorter, Donald E.: *See—*
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Showa Denko Kabushiki Kaisha: *See—*
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Showa Highpolymer Co., Ltd.: *See—*
Hanyuda, Toshiaki; and Takiyama, Eiichiro, 3,933,857.

Shuler, Bernard R., to American Air Filter Company, Inc. Air quality sensing apparatus. 3,933,043, Cl. 73-336.000.

Shumaker, Lyle L., to PPG Industries, Inc. Preparing transparent assemblies for lamination. 3,933,552, Cl. 156-104.000.

Sickles, Ralph A. Drive mechanism for a spiral array of individual film photographs. 3,933,413, Cl. 353-110.000.

Siddiqui, Iftikhar H.: *See—*
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Sinn, Helmut, to Roland Offsetmaschinenfabrik Faber & Schleicher AG. Sheet pile delivery for printing presses. 3,933,352, Cl. 271-189.000.

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Skinner, James R.; and Lang, Albert, Jr., to Varian Associates. Sputter coating apparatus having improved target electrode structure. 3,933,644, Cl. 204-298.000.

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Smith, Colin Howard Stanwell, to Automatic Revenue Controls (Europa) Ltd. Coin feeding devices. 3,933,162, Cl. 133-1.00R.

Smith, Donald J., to Smith-Schrerer & Assoc., Inc. Moisture proof cable splice enclosure. 3,934,076, Cl. 174-87.000.

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Smith, Jack L.; Gray, Darby A.; and Sullivan, Brian R., to Honeywell Information Systems, Inc. Document handling assembly for a printer. 3,933,234, Cl. 197-127.00R.

Smith, Kenneth Cecil, to BOC International Limited. Filtration. 3,933,629, Cl. 210-17.000.

Smith, Nathan R., to Micro Component Technology, Inc. High speed magnetic core handler. 3,933,247, Cl. 209-73.000.

Smith, Russel I. Rotary engine. 3,933,131, Cl. 123-8.470.

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Spooner, Robert J.; and Dillon, Oscar W., to Cashin Systems Corporation. Dual speed stacker paddle assembly. 3,933,066, Cl. 83-92.000.

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Spratt, Brendan J., to Bendix Corporation, The. Automatic $t_0$ control for use in airborne DME system. 3,934,251, Cl. 343-6.50R.

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Spurr, Arthur R., to University of California, The Regents of the. Low viscosity embedding medium. 3,933,718, Cl. 260-30.4EP.

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Stephens, John A., to Monsanto Company. N-arylsulfonyl carbamates. 3,933,894, Cl. 260-470.000.
Stephenson, Robert Edgar. Ear tag inserting pliers. 3,933,291, Cl. 227-67.000.
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Stevens, Frederick F., Jr., to Hoff-Stevens, Inc. Universal tavern unit for keg tapping device. 3,933,282, Cl. 222-400.700.
Stewart, James A., to GTE Automatic Electric Laboratories Incorporated. Automatic disconnect circuit for subscriber carrier telephone system. 3,934,089, Cl. 179-2.50R.
Stidham, James Richard, to Bell Telephone Laboratories, Incorporated. Automatic gain compensation in time division switching system. 3,934,091, Cl. 179-15.0AT.
Stock, Arthur J.; Christofer, Donald E.; and Brinza, Joseph E., to Stock Equipment Company. Apparatus for inserting closure means into a container. 3,932,979, Cl. 53-76.000.
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Stowe, Ralph A.; and Howe, Joseph W. Chopper assembly for x-ray machine. 3,934,151, Cl. 250-505.000.
Strack, Richard R., to American Optical Corporation. Fiber optic image shape converter and method of making the same. 3,933,556, Cl. 156-155.000.
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Sucov, Eugene W.; and Weaver, Lelland A. C., to Westinghouse Electric Corporation. Metal halide vapor laser. 3,934,211, Cl. 331-94.50G.
Suda, Hideaki; Dohgane, Iwao; Chinuki, Takashi; Tanimoto, Kenji; Hosaka, Hirokazu; Nakao, Yukimichi; Ueda, Yuji; Imada, Seiya; Yanagihara, Hideki; and Tanaka, Kunihiko, to Sumitomo Chemical Company, Limited. Process for the production of hydroperoxides. 3,933,921, Cl. 260-610.00B.
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Szmuszkovicz, Jacob, to Upjohn Company, The. 3-(Substituted aminomethyl)-7-substituted-3,5-dihydro-as-triazino[4,3-a][1,5]benzodiazepines. 3,933,816, Cl. 260-248.0AS.
Taber, George J., to Tractioneers, Inc. Footwear with non-slip tread. 3,932,950, Cl. 36-59.00R.
Tadenuma, Hachiro; Kato, Takashi; Kaneda, Ryoji; Ando, Fumio; and Yoshino, Makoto, to Toho Chemical Industry Co., Ltd. Rolling oils. 3,933,660, Cl. 252-32.500.
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Tahiliani, Vasu H., to I-T-E Imperial Corporation. Air entrance bushing for gas-insulated bus. 3,934,071, Cl. 174-31.00R.
Taig, Alistair Gordon, to Bendix Westinghouse Limited. Slack adjusters. 3,933,056, Cl. 74-399.000.
Taiyo Yuden Co., Ltd.: *See—*
Takahashi, Yasunori; Yamaoka, Nobutatsu; Yamaoka, Yoshifumi; and Kakubari, Shuichi, 3,933,668.
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Takahashi, Nobuaki; Iwasaki, Yoshiki; Kasuga, Masao; and Itoh, Yasuo, to Victor Company of Japan, Limited. Angle modulated wave demodulation system. 3,934,087, Cl. 179-100.4ST.
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Takahata, Yasushi; Karimori, Akira; Kato, Toshiya; and Nomura, Katsuo, to Kohjin Co., Ltd.; and Aika Kogyo Co., Ltd. Method of processing laminated decorative sheet for imparting permanent shape thereto. 3,933,558, Cl. 156-209.000.
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Tanaka, Toshie, to Nifco Inc. Screw grommet. 3,933,076, Cl. 85-80.000.
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Thiem, Karl-Werner; Auge, Wolfgang; Neeff, Rutger; and Scheiter, Heinz, to Bayer Aktiengesellschaft. Process for the preparation of 1,5- and 1,8-diamino-anthraquinone. 3,933,868, Cl. 260-382.000.
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Thompson, Robert M.; and Didot, Francois E., to Sun Ventures, Inc. Tertiary diamide as swelling agent for elastomeric seal. 3,933,663, Cl. 252-51.50A.
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Trujillo, Patricio E.; Campbell, Evan E.; and Eutsler, Bernard C., to United States of America, Energy Research and Development Administration. Method and apparatus for sampling atmospheric mercury. 3,933,431, Cl. 23-232.00R.
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Tung, Chi Fang, to Minnesota Mining and Manufacturing Company. Retroreflective sheet material. 3,934,065, Cl. 428-241.000.
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Uemura, Saburo, to Sony Corporation. System for magnetically recording and reproducing still video pictures and audio information. 3,934,268, Cl. 360-101.000.
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| B 252,947 | 3,923,803 | Dec. 2, 1975 | B 305,881 | 3,923,478 | Dec. 2, 1975 |
| B 254,211 | 3,917,677 | Nov. 4, 1975 | B 306,829 | 3,925,411 | Dec. 9, 1975 |
| B 254,708 | 3,923,878 | Dec. 2, 1975 | B 306,938 | 3,916,050 | Oct. 28, 1975 |
| B 255,756 | 3,923,781 | Dec. 2, 1975 | B 307,677 | 3,915,276 | Oct. 28, 1975 |
| B 256,334 | 3,924,988 | Dec. 9, 1975 | B 308,661 | 3,924,349 | Dec. 9, 1975 |
| B 256,936 | 3,925,513 | Dec. 9, 1975 | B 308,892 | 3,919,624 | Nov. 11, 1975 |
| B 258,687 | 3,914,221 | Oct. 21, 1975 | B 309,207 | 3,914,743 | Oct. 21, 1975 |
| B 259,236 | 3,924,874 | Dec. 9, 1975 | B 309,499 | 3,922,002 | Nov. 25, 1975 |
| B 259,274 | 3,928,688 | Dec. 23, 1975 | B 309,681 | 3,927,374 | Dec. 16, 1975 |
| B 260,455 | 3,925,634 | Dec. 9, 1975 | B 309,755 | 3,919,468 | Nov. 11, 1975 |
| B 260,945 | 3,925,250 | Dec. 9, 1975 | B 309,756 | 3,914,136 | Oct. 21, 1975 |
| B 261,378 | 3,913,468 | Oct. 21, 1975 | B 309,860 | 3,922,485 | Nov. 25, 1975 |
| B 261,828 | 3,925,551 | Dec. 9, 1975 | B 310,149 | 3,924,705 | Dec. 9, 1975 |
| B 262,241 | 3,925,528 | Dec. 9, 1975 | B 310,271 | 3,923,689 | Dec. 2, 1975 |
| B 262,287 | 3,921,209 | Nov. 18, 1975 | B 311,313 | 3,925,142 | Dec. 9, 1975 |
| B 262,378 | 3,914,410 | Oct. 21, 1975 | B 311,317 | 3,918,975 | Nov. 11, 1975 |
| B 264,257 | 3,928,665 | Dec. 23, 1975 | B 311,413 | 3,925,515 | Dec. 9, 1975 |
| B 264,833 | 3,923,566 | Dec. 2, 1975 | B 311,910 | 3,924,357 | Dec. 9, 1975 |
| B 265,369 | 3,925,245 | Dec. 9, 1975 | B 311,911 | 3,925,233 | Dec. 9, 1975 |
| B 265,727 | 3,914,479 | Oct. 21, 1975 | B 312,139 | 3,925,530 | Dec. 9, 1975 |
| B 265,862 | 3,915,915 | Oct. 28, 1975 | B 312,477 | 3,923,714 | Dec. 2, 1975 |
| B 266,195 | 3,923,599 | Dec. 2, 1975 | B 313,098 | 3,925,045 | Dec. 9, 1975 |
| B 269,673 | 3,914,377 | Oct. 21, 1975 | B 313,531 | 3,925,548 | Dec. 9, 1975 |
| B 270,089 | 3,923,875 | Dec. 2, 1975 | B 313,594 | 3,924,626 | Dec. 9, 1975 |
| B 271,104 | 3,925,400 | Dec. 9, 1975 | B 313,900 | 3,915,932 | Oct. 28, 1975 |
| B 274,945 | 3,924,992 | Dec. 9, 1975 | B 314,049 | 3,920,588 | Nov. 18, 1975 |
| B 275,426 | 3,925,168 | Dec. 9, 1975 | B 314,255 | 3,923,764 | Dec. 2, 1975 |
| B 276,271 | 3,916,028 | Oct. 28, 1975 | B 314,271 | 3,921,845 | Nov. 25, 1975 |
| B 276,560 | 3,916,030 | Oct. 28, 1975 | B 314,489 | 3,925,016 | Dec. 9, 1975 |
| B 277,449 | 3,924,048 | Dec. 2, 1975 | B 314,800 | 3,930,087 | Dec. 30, 1975 |
| B 278,491 | 3,921,170 | Nov. 18, 1975 | B 314,977 | 3,923,459 | Dec. 2, 1975 |
| B 278,991 | 3,914,469 | Oct. 21, 1975 | B 315,363 | 3,920,673 | Nov. 18, 1975 |
| B 279,583 | 3,923,749 | Dec. 2, 1975 | B 315,397 | 3,923,963 | Dec. 2, 1975 |
| B 280,015 | 3,925,378 | Dec. 9, 1975 | B 315,731 | 3,914,108 | Oct. 21, 1975 |
| B 280,395 | 3,919,604 | Nov. 11, 1975 | B 316,014 | 3,920,861 | Nov. 18, 1975 |
| B 281,341 | 3,920,643 | Nov. 18, 1975 | B 316,239 | 3,913,546 | Oct. 21, 1975 |
| B 281,943 | 3,924,013 | Dec. 2, 1975 | B 316,917 | 3,925,494 | Dec. 9, 1975 |
| B 282,081 | 3,913,483 | Oct. 21, 1975 | B 317,080 | 3,925,324 | Dec. 9, 1975 |
| B 282,252 | 3,924,997 | Dec. 9, 1975 | B 317,347 | 3,923,552 | Dec. 2, 1975 |
| B 283,124 | 3,923,512 | Dec. 2, 1975 | B 317,624 | 3,925,167 | Dec. 9, 1975 |
| B 283,300 | 3,925,011 | Dec. 9, 1975 | B 318,195 | 3,915,699 | Oct. 28, 1975 |
| B 284,297 | 3,913,722 | Oct. 21, 1975 | B 318,618 | 3,915,365 | Oct. 28, 1975 |
| B 285,200 | 3,923,680 | Dec. 2, 1975 | B 318,640 | 3,925,186 | Dec. 9, 1975 |
| B 285,796 | 3,914,303 | Oct. 21, 1975 | B 318,745 | 3,916,571 | Nov. 4, 1975 |
| B 286,499 | 3,914,129 | Oct. 21, 1975 | B 319,226 | 3,925,082 | Dec. 9, 1975 |
| B 286,614 | 3,924,696 | Dec. 9, 1975 | B 319,339 | 3,916,056 | Oct. 28, 1975 |
| B 286,913 | 3,928,696 | Dec. 23, 1975 | B 319,402 | 3,919,568 | Nov. 11, 1975 |
| B 287,164 | 3,914,139 | Oct. 21, 1975 | B 319,414 | 3,928,666 | Dec. 23, 1975 |
| B 287,270 | 3,924,825 | Dec. 9, 1975 | B 320,261 | 3,924,033 | Dec. 2, 1975 |
| B 287,275 | 3,925,141 | Dec. 9, 1975 | B 320,452 | 3,925,083 | Dec. 9, 1975 |
| B 287,373 | 3,918,568 | Nov. 11, 1975 | B 320,603 | 3,915,571 | Oct. 28, 1975 |
| B 288,018 | 3,925,239 | Dec. 9, 1975 | B 321,018 | 3,921,623 | Nov. 25, 1975 |
| B 288,627 | 3,916,179 | Oct. 28, 1975 | B 321,101 | 3,917,163 | Nov. 4, 1975 |
| B 288,638 | 3,925,132 | Dec. 9, 1975 | B 321,938 | 3,923,889 | Dec. 2, 1975 |
| B 289,175 | 3,924,309 | Dec. 9, 1975 | B 322,182 | 3,925,390 | Dec. 9, 1975 |





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| DOCUMENT NUMBER | PATENT NUMBER | ISSUE DATE | DOCUMENT NUMBER | PATENT NUMBER | ISSUE DATE |
|---|---|---|---|---|---|
| B 322,239 | 3,920,973 | Nov. 18, 1975 | B 346,901 | 3,915,583 | Oct. 28, 1975 |
| B 322,564 | 3,914,373 | Oct. 21, 1975 | B 348,083 | 3,923,774 | Dec. 2, 1975 |
| B 322,611 | 3,920,863 | Nov. 18, 1975 | B 348,383 | 3,923,452 | Dec. 2, 1975 |
| B 322,777 | 3,924,382 | Dec. 9, 1975 | B 348,495 | 3,914,654 | Oct. 21, 1975 |
| B 323,127 | 3,923,967 | Dec. 2, 1975 | B 348,558 | 3,914,109 | Oct. 21, 1975 |
| B 323,191 | 3,914,566 | Oct. 21, 1975 | B 349,141 | 3,915,363 | Oct. 28, 1975 |
| B 323,203 | 3,916,165 | Oct. 28, 1975 | B 349,177 | 3,914,033 | Oct. 21, 1975 |
| B 323,568 | 3,920,536 | Nov. 18, 1975 | B 349,231 | 3,915,831 | Oct. 28, 1975 |
| B 323,666 | 3,924,568 | Dec. 9, 1975 | B 349,321 | 3,916,103 | Oct. 28, 1975 |
| B 324,495 | 3,928,664 | Dec. 23, 1975 | B 349,948 | 3,914,557 | Oct. 21, 1975 |
| B 324,503 | 3,928,524 | Dec. 23, 1975 | B 350,025 | 3,927,415 | Dec. 16, 1975 |
| B 324,505 | 3,925,294 | Dec. 9, 1975 | B 350,143 | 3,924,419 | Dec. 9, 1975 |
| B 324,739 | 3,924,990 | Dec. 9, 1975 | B 350,219 | 3,917,802 | Nov. 4, 1975 |
| B 324,879 | 3,923,538 | Dec. 2, 1975 | B 350,245 | 3,914,331 | Oct. 21, 1975 |
| B 325,102 | 3,924,355 | Dec. 9, 1975 | B 350,523 | 3,924,726 | Dec. 9, 1975 |
| B 325,262 | 3,921,304 | Nov. 25, 1975 | B 350,589 | 3,927,419 | Dec. 16, 1975 |
| B 326,514 | 3,925,080 | Dec. 9, 1975 | B 350,708 | 3,923,871 | Dec. 2, 1975 |
| B 327,109 | 3,925,350 | Dec. 9, 1975 | B 350,843 | 3,915,461 | Oct. 28, 1975 |
| B 327,363 | 3,923,504 | Dec. 2, 1975 | B 351,055 | 3,914,074 | Oct. 21, 1975 |
| B 327,612 | 3,925,620 | Dec. 9, 1975 | B 351,218 | 3,914,186 | Oct. 21, 1975 |
| B 327,674 | 3,918,540 | Nov. 11, 1975 | B 351,222 | 3,921,179 | Nov. 18, 1975 |
| B 327,899 | 3,925,674 | Dec. 9, 1975 | B 351,348 | 3,923,563 | Dec. 2, 1975 |
| B 328,164 | 3,914,703 | Oct. 21, 1975 | B 351,421 | 3,914,733 | Oct. 21, 1975 |
| B 328,200 | 3,916,031 | Oct. 28, 1975 | B 351,493 | 3,914,758 | Oct. 21, 1975 |
| B 328,205 | 3,914,106 | Oct. 21, 1975 | B 351,535 | 3,915,239 | Oct. 28, 1975 |
| B 328,210 | 3,914,275 | Oct. 21, 1975 | B 351,665 | 3,919,701 | Nov. 11, 1975 |
| B 328,870 | 3,916,486 | Nov. 4, 1975 | B 351,672 | 3,914,000 | Oct. 21, 1975 |
| B 329,115 | 3,924,727 | Dec. 9, 1975 | B 351,735 | 3,913,385 | Oct. 21, 1975 |
| B 329,476 | 3,920,562 | Nov. 18, 1975 | B 351,863 | 3,914,700 | Oct. 21, 1975 |
| B 329,612 | 3,925,128 | Dec. 9, 1975 | B 351,883 | 3,924,657 | Dec. 9, 1975 |
| B 329,787 | 3,920,688 | Nov. 18, 1975 | B 351,926 | 3,914,133 | Oct. 21, 1975 |
| B 329,816 | 3,923,947 | Dec. 2, 1975 | B 351,939 | 3,913,480 | Oct. 21, 1975 |
| B 330,536 | 3,925,452 | Dec. 9, 1975 | B 352,445 | 3,928,746 | Dec. 23, 1975 |
| B 330,828 | 3,913,589 | Oct. 21, 1975 | B 352,934 | 3,913,692 | Oct. 21, 1975 |
| B 331,417 | 3,914,157 | Oct. 21, 1975 | B 352,950 | 3,922,590 | Nov. 25, 1975 |
| B 331,557 | 3,916,577 | Nov. 4, 1975 | B 352,965 | 3,921,926 | Nov. 25, 1975 |
| B 331,895 | 3,916,403 | Oct. 28, 1975 | B 353,317 | 3,916,446 | Nov. 4, 1975 |
| B 332,527 | 3,924,017 | Dec. 2, 1975 | B 353,387 | 3,924,404 | Dec. 9, 1975 |
| B 332,811 | 3,924,359 | Dec. 9, 1975 | B 353,546 | 3,913,273 | Oct. 21, 1975 |
| B 333,876 | 3,921,208 | Nov. 18, 1975 | B 354,008 | 3,925,081 | Dec. 9, 1975 |
| B 333,928 | 3,927,172 | Dec. 16, 1975 | B 354,098 | 3,925,547 | Dec. 9, 1975 |
| B 334,251 | 3,924,719 | Dec. 9, 1975 | B 354,145 | 3,927,279 | Dec. 16, 1975 |
| B 334,868 | 3,919,469 | Nov. 11, 1975 | B 354,296 | 3,914,580 | Oct. 21, 1975 |
| B 334,985 | 3,923,912 | Dec. 2, 1975 | B 354,510 | 3,928,658 | Dec. 23, 1975 |
| B 335,670 | 3,928,686 | Dec. 23, 1975 | B 354,889 | 3,913,204 | Oct. 21, 1975 |
| B 335,741 | 3,925,615 | Dec. 9, 1975 | B 354,979 | 3,914,251 | Oct. 21, 1975 |
| B 335,773 | 3,920,953 | Nov. 18, 1975 | B 355,095 | 3,925,656 | Dec. 9, 1975 |
| B 336,129 | 3,923,606 | Dec. 2, 1975 | B 355,269 | 3,914,561 | Oct. 21, 1975 |
| B 336,243 | 3,925,422 | Dec. 9, 1975 | B 355,510 | 3,913,704 | Oct. 21, 1975 |
| B 336,345 | 3,925,179 | Dec. 9, 1975 | B 355,595 | 3,925,649 | Dec. 9, 1975 |
| B 336,652 | 3,914,211 | Oct. 21, 1975 | B 355,876 | 3,925,685 | Dec. 9, 1975 |
| B 336,902 | 3,918,897 | Nov. 11, 1975 | B 356,032 | 3,928,636 | Dec. 23, 1975 |
| B 336,946 | 3,919,425 | Nov. 11, 1975 | B 356,253 | 3,925,025 | Dec. 9, 1975 |
| B 336,978 | 3,923,968 | Dec. 2, 1975 | B 356,602 | 3,927,393 | Dec. 16, 1975 |
| B 337,235 | 3,919,386 | Nov. 11, 1975 | B 356,724 | 3,924,586 | Dec. 9, 1975 |
| B 337,409 | 3,925,258 | Dec. 9, 1975 | B 357,039 | 3,924,406 | Dec. 9, 1975 |
| B 337,442 | 3,913,658 | Oct. 21, 1975 | B 357,057 | 3,913,738 | Oct. 21, 1975 |
| B 337,703 | 3,914,690 | Oct. 21, 1975 | B 357,131 | 3,924,453 | Dec. 9, 1975 |
| B 337,787 | 3,923,506 | Dec. 2, 1975 | B 357,402 | 3,914,180 | Oct. 21, 1975 |
| B 339,057 | 3,924,822 | Dec. 9, 1975 | B 357,682 | 3,924,973 | Dec. 9, 1975 |
| B 339,218 | 3,925,121 | Dec. 9, 1975 | B 357,803 | 3,919,470 | Nov. 11, 1975 |
| B 339,699 | 3,933,527 | Jan. 20, 1976 | B 358,174 | 3,924,958 | Dec. 9, 1975 |
| B 339,838 | 3,930,221 | Dec. 30, 1975 | B 358,244 | 3,913,411 | Oct. 21, 1975 |
| B 340,212 | 3,922,645 | Nov. 25, 1975 | B 358,311 | 3,923,561 | Dec. 2, 1975 |
| B 340,833 | 3,925,208 | Dec. 9, 1975 | B 358,939 | 3,924,713 | Dec. 9, 1975 |
| B 341,579 | 3,913,363 | Oct. 21, 1975 | B 359,174 | 3,914,117 | Oct. 21, 1975 |
| B 342,084 | 3,928,694 | Dec. 23, 1975 | B 359,187 | 3,924,525 | Dec. 9, 1975 |
| B 342,423 | 3,925,334 | Dec. 9, 1975 | B 359,540 | 3,915,235 | Oct. 28, 1975 |
| B 342,886 | 3,923,507 | Dec. 2, 1975 | B 359,791 | 3,929,430 | Dec. 30, 1975 |
| B 343,136 | 3,919,453 | Nov. 11, 1975 | B 359,825 | 3,921,344 | Nov. 25, 1975 |
| B 343,240 | 3,925,693 | Dec. 9, 1975 | B 359,946 | 3,914,132 | Oct. 21, 1975 |
| B 343,506 | 3,916,021 | Oct. 28, 1975 | B 359,947 | 3,914,653 | Oct. 21, 1975 |
| B 343,577 | 3,921,165 | Nov. 18, 1975 | B 360,208 | 3,923,750 | Dec. 2, 1975 |
| B 344,203 | 3,928,719 | Dec. 23, 1975 | B 360,296 | 3,916,720 | Nov. 4, 1975 |
| B 344,479 | 3,924,042 | Dec. 2, 1975 | B 360,719 | 3,915,715 | Oct. 28, 1975 |
| B 345,060 | 3,916,018 | Oct. 28, 1975 | B 360,910 | 3,925,696 | Dec. 9, 1975 |
| B 345,384 | 3,916,146 | Oct. 28, 1975 | B 361,265 | 3,923,569 | Dec. 2, 1975 |
| B 345,422 | 3,914,392 | Oct. 21, 1975 | B 361,443 | 3,927,405 | Dec. 16, 1975 |
| B 345,527 | 3,927,365 | Dec. 16, 1975 | B 361,569 | 3,914,554 | Oct. 21, 1975 |
| B 345,567 | 3,913,985 | Oct. 21, 1975 | B 361,604 | 3,922,702 | Nov. 25, 1975 |
| B 346,165 | 3,913,293 | Oct. 21, 1975 | B 361,734 | 3,915,764 | Oct. 28, 1975 |
| B 346,210 | 3,916,142 | Oct. 28, 1975 | B 362,589 | 3,914,012 | Oct. 21, 1975 |
| B 346,350 | 3,915,824 | Oct. 28, 1975 | B 363,205 | 3,923,744 | Dec. 2, 1975 |
| B 346,487 | 3,927,406 | Dec. 16, 1975 | B 363,337 | 3,928,639 | Dec. 23, 1975 |
| B 346,585 | 3,913,820 | Oct. 21, 1975 | B 363,457 | 3,922,595 | Nov. 25, 1975 |
| B 346,613 | 3,923,545 | Dec. 2, 1975 | B 363,674 | 3,929,716 | Dec. 30, 1975 |

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| DOCUMENT NUMBER | PATENT NUMBER | ISSUE DATE | DOCUMENT NUMBER | PATENT NUMBER | ISSUE DATE |
|---|---|---|---|---|---|
| B 363,892 | 3,913,395 | Oct. 21, 1975 | B 387,790 | 3,925,380 | Dec. 9, 1975 |
| B 363,962 | 3,921,826 | Nov. 25, 1975 | B 387,818 | 3,918,935 | Nov. 11, 1975 |
| B 364,022 | 3,913,499 | Oct. 21, 1975 | B 388,580 | 3,923,712 | Dec. 2, 1975 |
| B 364,163 | 3,916,092 | Oct. 28, 1975 | B 389,070 | 3,914,171 | Oct. 21, 1975 |
| B 364,241 | 3,916,668 | Nov. 4, 1975 | B 389,285 | 3,914,631 | Oct. 21, 1975 |
| B 364,334 | 3,924,670 | Dec. 9, 1975 | B 389,327 | 3,924,504 | Dec. 9, 1975 |
| B 364,528 | 3,919,510 | Nov. 11, 1975 | B 389,639 | 3,914,626 | Oct. 21, 1975 |
| B 364,786 | 3,921,673 | Nov. 25, 1975 | B 389,726 | 3,921,010 | Nov. 18, 1975 |
| B 364,910 | 3,925,335 | Dec. 9, 1975 | B 389,807 | 3,922,623 | Nov. 25, 1975 |
| B 365,490 | 3,918,527 | Nov. 11, 1975 | B 389,932 | 3,913,268 | Oct. 21, 1975 |
| B 365,834 | 3,914,702 | Oct. 21, 1975 | B 389,933 | 3,913,267 | Oct. 21, 1975 |
| B 365,841 | 3,925,628 | Dec. 9, 1975 | B 390,679 | 3,913,668 | Oct. 21, 1975 |
| B 365,855 | 3,917,258 | Nov. 4, 1975 | B 390,732 | 3,913,878 | Oct. 21, 1975 |
| B 366,287 | 3,924,946 | Dec. 9, 1975 | B 391,184 | 3,914,214 | Oct. 21, 1975 |
| B 366,402 | 3,928,053 | Dec. 23, 1975 | B 391,210 | 3,914,220 | Oct. 21, 1975 |
| B 366,589 | 3,914,719 | Oct. 21, 1975 | B 391,437 | 3,915,416 | Oct. 28, 1975 |
| B 367,021 | 3,914,752 | Oct. 21, 1975 | B 391,509 | 3,925,175 | Dec. 9, 1975 |
| B 367,040 | 3,924,775 | Dec. 9, 1975 | B 391,675 | 3,916,017 | Oct. 28, 1975 |
| B 367,661 | 3,914,158 | Oct. 21, 1975 | B 392,154 | 3,923,809 | Dec. 2, 1975 |
| B 367,739 | 3,923,648 | Dec. 2, 1975 | B 392,242 | 3,926,636 | Dec. 16, 1975 |
| B 367,812 | 3,924,789 | Dec. 9, 1975 | B 392,696 | 3,916,175 | Oct. 28, 1975 |
| B 368,081 | 3,924,691 | Dec. 9, 1975 | B 392,732 | 3,914,903 | Oct. 21, 1975 |
| B 368,387 | 3,924,923 | Dec. 9, 1975 | B 392,753 | 3,916,341 | Oct. 28, 1975 |
| B 368,392 | 3,913,812 | Oct. 21, 1975 | B 392,894 | 3,914,763 | Oct. 21, 1975 |
| B 368,397 | 3,914,677 | Oct. 21, 1975 | B 393,163 | 3,914,535 | Oct. 21, 1975 |
| B 368,862 | 3,925,549 | Dec. 9, 1975 | B 393,970 | 3,914,638 | Oct. 21, 1975 |
| B 369,563 | 3,924,449 | Dec. 9, 1975 | B 394,088 | 3,914,740 | Oct. 21, 1975 |
| B 369,607 | 3,923,786 | Dec. 2, 1975 | B 394,188 | 3,924,591 | Dec. 9, 1975 |
| B 369,997 | 3,913,533 | Oct. 21, 1975 | B 394,300 | 3,914,159 | Oct. 21, 1975 |
| B 370,706 | 3,925,242 | Dec. 9, 1975 | B 394,712 | 3,916,306 | Oct. 28, 1975 |
| B 371,073 | 3,930,135 | Dec. 30, 1975 | B 395,478 | 3,922,577 | Nov. 25, 1975 |
| B 371,085 | 3,923,783 | Dec. 2, 1975 | B 395,496 | 3,919,435 | Nov. 11, 1975 |
| B 371,787 | 3,921,217 | Nov. 18, 1975 | B 395,671 | 3,920,418 | Nov. 18, 1975 |
| B 371,805 | 3,914,433 | Oct. 21, 1975 | B 395,889 | 3,913,190 | Oct. 21, 1975 |
| B 371,836 | 3,923,541 | Dec. 2, 1975 | B 396,025 | 3,913,869 | Oct. 21, 1975 |
| B 372,823 | 3,924,660 | Dec. 9, 1975 | B 396,551 | 3,921,929 | Nov. 25, 1975 |
| B 373,297 | 3,924,436 | Dec. 9, 1975 | B 397,027 | 3,923,736 | Dec. 2, 1975 |
| B 373,326 | 3,920,433 | Nov. 18, 1975 | B 397,527 | 3,913,488 | Oct. 21, 1975 |
| B 373,428 | 3,915,511 | Oct. 28, 1975 | B 397,990 | 3,914,848 | Oct. 28, 1975 |
| B 375,220 | 3,920,417 | Nov. 18, 1975 | B 398,262 | 3,913,481 | Oct. 21, 1975 |
| B 375,652 | 3,921,303 | Nov. 25, 1975 | B 398,551 | 3,924,924 | Dec. 9, 1975 |
| B 376,504 | 3,914,570 | Oct. 21, 1975 | B 398,597 | 3,913,743 | Oct. 21, 1975 |
| B 376,654 | 3,922,513 | Nov. 25, 1975 | B 398,625 | 3,920,996 | Nov. 18, 1975 |
| B 376,742 | 3,924,392 | Dec. 9, 1975 | B 399,292 | 3,914,810 | Oct. 28, 1975 |
| B 376,799 | 3,913,955 | Oct. 21, 1975 | B 399,304 | 3,919,567 | Nov. 11, 1975 |
| B 377,172 | 3,918,255 | Nov. 11, 1975 | B 399,349 | 3,925,694 | Dec. 9, 1975 |
| B 377,683 | 3,924,433 | Dec. 9, 1975 | B 399,766 | 3,915,667 | Oct. 28, 1975 |
| B 377,833 | 3,913,884 | Oct. 21, 1975 | B 400,080 | 3,925,163 | Dec. 9, 1975 |
| B 377,869 | 3,917,002 | Nov. 4, 1975 | B 400,293 | 3,923,719 | Dec. 2, 1975 |
| B 378,621 | 3,923,840 | Dec. 2, 1975 | B 400,310 | 3,915,507 | Oct. 28, 1975 |
| B 379,038 | 3,923,994 | Dec. 2, 1975 | B 401,133 | 3,924,443 | Dec. 9, 1975 |
| B 379,172 | 3,914,379 | Oct. 21, 1975 | B 401,992 | 3,924,898 | Dec. 9, 1975 |
| B 379,282 | 3,913,462 | Oct. 21, 1975 | B 402,065 | 3,925,413 | Dec. 9, 1975 |
| B 379,955 | 3,913,157 | Oct. 21, 1975 | B 402,555 | 3,914,688 | Oct. 21, 1975 |
| B 380,014 | 3,921,915 | Nov. 25, 1975 | B 403,140 | 3,913,486 | Oct. 21, 1975 |
| B 380,141 | 3,925,161 | Dec. 9, 1975 | B 403,355 | 3,913,352 | Oct. 21, 1975 |
| B 380,310 | 3,921,048 | Nov. 18, 1975 | B 403,990 | 3,914,684 | Oct. 21, 1975 |
| B 380,312 | 3,913,953 | Oct. 21, 1975 | B 403,996 | 3,916,016 | Oct. 28, 1975 |
| B 380,338 | 3,924,873 | Dec. 9, 1975 | B 404,290 | 3,924,918 | Dec. 9, 1975 |
| B 380,446 | 3,923,836 | Dec. 2, 1975 | B 404,437 | 3,915,200 | Oct. 28, 1975 |
| B 380,900 | 3,913,307 | Oct. 21, 1975 | B 405,136 | 3,915,565 | Oct. 28, 1975 |
| B 380,926 | 3,925,095 | Dec. 9, 1975 | B 405,137 | 3,915,566 | Oct. 28, 1975 |
| B 381,074 | 3,919,583 | Nov. 11, 1975 | B 405,160 | 3,924,821 | Dec. 9, 1975 |
| B 381,632 | 3,914,732 | Oct. 21, 1975 | B 405,248 | 3,926,294 | Dec. 16, 1975 |
| B 381,847 | 3,921,152 | Nov. 18, 1975 | B 405,305 | 3,922,111 | Nov. 25, 1975 |
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| B 382,261 | 3,914,991 | Oct. 28, 1975 | B 405,938 | 3,920,109 | Nov. 18, 1975 |
| B 382,290 | 3,924,717 | Dec. 9, 1975 | B 406,065 | 3,914,199 | Oct. 21, 1975 |
| B 382,783 | 3,919,527 | Nov. 11, 1975 | B 406,357 | 3,924,529 | Dec. 9, 1975 |
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# LIST OF REISSUE PATENTEES

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NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

American District Telegraph Company: *See*—
Highstone, Raymond J., deceased; and Muehter, Manfred W., Re. 28,692

Baile, Clifton A.; Gallagher, Gregory; McLaughlen, Carol L.; and Webb, Robert Lee, to SmithKline Corporation. Methods and compositions for increasing feed intake of animals using tertiary alcohols. Re. 28,691, Cl. 424-343.000.

Carding Specialists (Canada) Limited: *See*—
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Cook, Paul M., to Raychem Corporation. Solid heat-flowable dispersed phase in a crosslinked elastomer. Re. 28,688, Cl. 260-4.000.

Coulthard, John. Measurement of fluid flow rates. Re. 28,686, Cl. 73-194.00E.

Doi, Tetsuo; and Sagae, Shoji, to Hiatchi, Ltd. Image transfer recording apparatus with resin coated drum. Re. 28,693, Cl. 346-74.0ES.

Gallagher, Gregory: *See*—
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Highstone, Raymond J., deceased; and Muehter, Manfred W., to American District Telegraph Company. Monitoring apparatus and method for electrical protection systems. Re. 28,692, Cl. 340-276.000.

Ideal Industries, Inc.: *See*—
Metcalf, Irving R., Re. 28,687.

Kataoka, Hiroshi, to Overhead Door Corporation. Apparatus for automatically connecting shutter slat and preventing its disengagement. Re. 28,684, Cl. 29-208.00D.

Lehmann, Hans-Gunter, Gibian, Heinz; Wiechert, Rudolf; and Neumann, Friedmund, to Schering Aktiengesellschaft. 17α-Ethinyl-18-methyl-19-nortestosterone esters. Re. 28,690, Cl. 424-238.000.

McLaughlen, Carol L.: *See*—
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Turner, Lloyd S. Method of molding a building structure by spraying a foamed plastic on the inside of an inflatable form. Re. 28,689, Cl. 264-46.600.

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Webb, Robert Lee: *See*—
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Baldwin, Charles D., to Toucon Mfg. Inc. Quadricycle. 238,485, 1-20-76, Cl. D12—107.

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197R 3,933,445
3,933,446
210 3,933,447

**CLASS 49**
75 3,932,959

**CLASS 51**
5D 3,932,960
165.72 3,932,962
165.8 3,932,961
170TL 3,932,963
220 3,932,964
281 3,932,965
356 3,932,966
358 3,932,967

**CLASS 52**
74 3,932,968
86 3,932,969
169 3,932,970
171 3,932,971
183 3,932,972
216 3,932,973
235 3,932,974
282 3,932,975
309 3,932,976

**CLASS 53**
7 3,932,977
37 3,932,978
76 3,932,979
111 3,932,980
124D 3,932,981
244 3,932,982
252 3,932,983

**CLASS 55**
159 3,933,448
218 3,933,449
223 3,933,450
367 3,933,451
499 3,933,452

**CLASS 56**
63 3,932,984

**CLASS 57**
77.4 3,932,985
156 Re.28,685
157TS 3,932,986

**CLASS 60**
39.05 3,932,987
39.71 3,932,988
327 3,932,989
369 3,932,990
431 3,932,991
3,932,992
3,932,993
531 3,932,994
3,932,995
650 3,932,996

**CLASS 61**
1R 3,932,997
45D 3,932,998
53.5 3,932,999

**CLASS 62**
6 3,933,000
47 3,933,001
56 3,933,002
85 3,933,003
199 3,933,004
228 3,933,005
231 3,933,006
401 3,933,007
3,933,008

**CLASS 63**
12 3,933,009
15.6 3,933,010
29R 3,933,011

**CLASS 64**
23 3,933,012

**CLASS 65**
3 3,933,453
3,933,454
4 3,933,455
11W 3,933,456
60 3,933,457

**CLASS 66**
177 3,933,013

**CLASS 70**
49 3,933,015
149 3,933,016
416 3,933,014
456R 3,933,017

**CLASS 71**
27 3,933,458
34 3,933,459
88 3,933,460
91 3,933,461
3,933,462
92 3,933,463
3,933,464
3,933,465
3,933,466
93 3,933,467
95 3,933,468
100 3,933,469
111 3,933,470
120 3,933,471
121 3,933,472

**CLASS 72**
7 3,933,018
114 3,933,019
297 3,933,020
327 3,933,021
342 3,933,022
359 3,933,023
364 3,933,024
391 3,933,025

**CLASS 73**
1R 3,933,026
3 3,933,027
23 3,933,028
3,933,029
32R 3,933,030
40.5R 3,933,031
67.1 3,933,032
71.6 3,933,033
88.5R 3,933,034
95.5 3,933,035
146 3,933,036
170R 3,933,037
194E Re.28,686
194R 3,933,038
204 3,933,039
208 3,933,040
290R 3,933,041
304C 3,933,042
336 3,933,043
355R 3,933,044
359 3,933,045
362AR 3,933,046
421.5R 3,933,047
425.6 3,933,048
432R 3,933,049
488 3,933,050

**CLASS 74**
5.6B 3,933,051
18.1 3,933,052
200 3,933,054
242.11S 3,933,055
243R 3,933,053
399 3,933,056
476 3,933,057
501M 3,933,058
661 3,933,059

**CLASS 75**
10R 3,933,473
3,933,474
21 3,933,475
68R 3,933,476
82 3,933,477
101R 3,933,478
128V 3,933,479
129 3,933,480
135 3,933,481
159 3,933,482
170 3,933,483
171 3,933,484
173A 3,933,485
3,933,486

**CLASS 81**
9.5A Re.28,687

**CLASS 82**
5 3,933,060
30 3,933,061
38A 3,933,062
85 3,933,063

**CLASS 83**
11 3,933,064
62 3,933,065
92 3,933,066
155 3,933,067
168 3,933,068
210 3,933,069
529 3,933,070
637 3,933,071

**CLASS 84**
1.01 3,933,072
318 3,933,073
3,933,077
387 3,933,078
388 3,933,079

**CLASS 85**
32T 3,933,074
41 3,933,075
80 3,933,076

**CLASS 91**
394 3,933,080
411R 3,933,081
485 3,933,082

**CLASS 92**
12.2 3,933,083

**CLASS 96**
1PE 3,933,487
1R 3,933,488
1.4 3,933,489
3,933,490
1.5 3,933,491
3,933,492
29D 3,933,493
29R 3,933,494
33 3,933,495
48R 3,933,496
49 3,933,497
64 3,933,498
68 3,933,499
74 3,933,500
3,933,501
84R 3,933,502
85 3,933,503
88 3,933,504
101 3,933,505
3,933,506
114.1 3,933,507
3,933,508
115P 3,933,509
124 3,933,510

**CLASS 99**
538 3,933,084
544 3,933,085
646R 3,933,086

**CLASS 100**
1 3,933,087
34 3,933,088
53 3,933,089

**CLASS 101**
38A 3,933,090
40 3,933,091
105 3,933,092
120 3,933,093
426 3,933,094

**CLASS 102**
70R 3,933,095
70.2P 3,933,097
70.2R 3,933,096
99 3,933,098

**CLASS 104**
88 3,933,099

**CLASS 105**
282P 3,933,100
366B 3,933,101

**CLASS 106**
10 3,933,511
22 3,933,512
65 3,933,513
75 3,933,514
99 3,933,515
131 3,933,516
311 3,933,517
3,933,518

**CLASS 108**
111 3,933,102

**CLASS 110**
165R 3,933,103

**CLASS 112**
121.2 3,933,104
121.29 3,933,105
235 3,933,106
256 3,933,107

**CLASS 114**
.5D 3,933,108
16.5 3,933,109
39 3,933,110
219 3,933,111

**CLASS 115**
1R 3,933,112
12R 3,933,113
17 3,933,114
19 3,933,115
35 3,933,116

**CLASS 116**
28R 3,933,117
63P 3,933,118
3,933,119
103 3,933,120
124.2R 3,933,121

**CLASS 118**
49 3,933,122
421 3,933,123

**CLASS 119**
2 3,933,124
28 3,933,125
29 3,933,126

**CLASS 122**
1R 3,933,127
4R 3,933,128
156 3,933,129

**CLASS 123**
3 3,933,130
8.47 3,933,131
25C 3,933,132
30C 3,933,133
32EA 3,933,135
32SP 3,933,134
41.58 3,933,136
119CE 3,933,137
146.5R 3,933,138
148CC 3,933,140
148E 3,933,139
3,933,141
188M 3,933,142
193P 3,933,143

**CLASS 126**
25R 3,933,144
3,933,145
38 3,933,146

**CLASS 128**
2H 3,933,149
2R 3,933,148
2S 3,933,147
24R 3,933,150
52 3,933,151
129 3,933,152
3,933,153
134 3,933,154
173H 3,933,155
303.1 3,933,156
303.14 3,933,157
335 3,933,158

**CLASS 131**
94 3,933,159
264 3,933,160

**CLASS 132**
40 3,933,161

**CLASS 133**
1R 3,933,162

**CLASS 134**
34 3,933,519
96 3,933,163

**CLASS 135**
1R 3,933,164

**CLASS 136**
6FS 3,933,523
6LF 3,933,520
3,933,521
6R 3,933,522
64 3,933,524
146 3,933,525
166 3,933,526

**CLASS 137**
102 3,933,166
106 3,933,167
253 3,933,168
268 3,933,169
318 3,933,170
493.7 3,933,171
494 3,933,172
527.8 3,933,173
557 3,933,174
595 3,933,175
596 3,933,176
608 3,933,177
3,933,178
625.48 3,933,165
635 3,933,179

**CLASS 138**
89 3,933,180
105 3,933,181
149 3,933,182

**CLASS 139**
12 3,933,183
3,933,184

**CLASS 141**
88 3,933,185
97 3,933,186
392 3,933,187

**CLASS 144**
34R 3,933,188
117R 3,933,189

**CLASS 148**
1.5 3,933,527
3,933,528
3,933,529
3,933,530
6.14R 3,933,531
6.35 3,933,532
9.5 3,933,533
12B 3,933,534
103 3,933,535
105 3,933,536
112 3,933,537
171 3,933,538
3,933,539
187 3,933,540
3,933,541

**CLASS 149**
19.3 3,933,542
21 3,933,543

**CLASS 156**
19 3,933,544
64 3,933,545
71 3,933,546
77 3,933,547
78 3,933,548
79 3,933,549
85 3,933,550
96 3,933,551
104 3,933,552
123 3,933,553
143 3,933,554
155 3,933,555
3,933,556
167 3,933,557
209 3,933,558
211 3,933,559
227 3,933,560
246 3,933,561
250 3,933,562
251 3,933,563
265 3,933,564
266 3,933,565
272 3,933,566
382 3,933,567
512 3,933,568
515 3,933,569
558 3,933,570
583 3,933,571
608 3,933,572
624 3,933,573

**CLASS 159**
27A 3,933,576
160S 3,933,574

**CLASS 162**
4 3,933,577
5 3,933,578
164 3,933,579
183 3,933,966

**CLASS 164**
26 3,933,190
54 3,933,191
89 3,933,192
146 3,933,193
160 3,933,194

**CLASS 165**
1 3,933,195
3,933,196
2 3,933,197
32 3,933,198
42 3,933,199
64 3,933,200

**CLASS 166**
182 3,933,202
241 3,933,203
275 3,933,201
295 3,933,204
308 3,933,205

**CLASS 169**
26 3,933,206

**CLASS 172**
804 3,933,207

**CLASS 173**
1 3,933,208
80 3,933,209
132 3,933,210

**CLASS 174**
31R 3,934,071
48 3,934,072
52R 3,934,074
52S 3,934,073
75R 3,934,075
87 3,934,076

**CLASS 176**
20R 3,933,580
36R 3,933,581
78 3,933,582
3,933,583
3,933,584

**CLASS 177**
207 3,933,211
209 3,933,212

**CLASS 178**
5.1 3,934,079
6 3,934,077
3,934,082
6.6R 3,934,080
3,934,083
6.8 3,934,081
22 3,934,078

**CLASS 179**
1GQ 3,934,086
1VL 3,934,084
1P 3,934,085
2DP 3,934,088
2TV 3,933,233
2.5R 3,934,089
7.1R 3,934,090
15AT 3,934,091
15BA 3,934,093
15BT 3,934,092
15.55T 3,934,094
18D 3,934,095
84VF 3,934,096
3,934,097
84C 3,934,098
100.4ST 3,934,087
170NC 3,934,099
182R 3,934,100

**CLASS 180**
5R 3,933,213
9.2R 3,933,214
23 3,933,215
54R 3,933,216
70R 3,933,217
79.1 3,933,218

**CLASS 181**
144 3,933,219

**CLASS 182**
3 3,933,220
172 3,933,221
204 3,933,222

**CLASS 184**
7R 3,933,223

**CLASS 187**
9R 3,933,224

**CLASS 188**
33 3,933,225
72.5 3,933,226
76 3,933,227
218XL 3,933,228

**CLASS 190**
41B 3,933,229

**CLASS 192**
70.28 3,933,230

**CLASS 194**
1R 3,933,231
100A 3,933,232

**CLASS 195**
1.1 3,933,585
65 3,933,586
68 3,933,587
3,933,588
3,933,589
91 3,933,590
96 3,933,591
103.5R 3,933,592
3,933,593
3,933,594

**CLASS 197**
127R 3,933,234
187 3,933,235

**CLASS 198**
32 3,933,236
37 3,933,237
189 3,933,238
287 3,933,239

**CLASS 200**
5B 3,934,101
44 3,934,102
84C 3,934,103
159R 3,934,104
317 3,934,105

**CLASS 201**
2 3,933,595
17 3,933,596

**CLASS 202**
173 3,933,597
248 3,933,598

**CLASS 203**
9 3,933,599
10 3,933,600

**CLASS 204**
25 3,933,601
44 3,933,602
98 3,933,603
123 3,933,604
151 3,933,605
152 3,933,606
159.15 3,933,607
164 3,933,608
180P 3,933,610
180R 3,933,609
181 3,933,611
195G 3,933,612
242 3,933,613
266 3,933,614
275 3,933,615
290F 3,933,616
298 3,933,644
301 3,933,617

**CLASS 206**
1.5 3,933,240
223 3,933,241
314 3,933,242
349 3,933,243
497 3,933,244
498 3,933,245
520 3,933,246

**CLASS 208**
8 3,933,618
60 3,933,619
108 3,933,620
120 3,933,621
139 3,933,622
216 3,933,623
253 3,933,624

**CLASS 209**
9 3,933,625
73 3,933,247
74M 3,933,248
75 3,933,249
134 3,933,626

**CLASS 210**
11 3,933,627
12 3,933,628
17 3,933,629
21 3,933,630
34 3,933,631
36 3,933,632
44 3,933,633
46 3,933,634
50 3,933,635
71 3,933,636
83 3,933,637
97 3,933,638
149 3,933,639
197 3,933,640
205 3,933,641
206 3,933,642
231 3,933,792
243 3,933,643
305 3,933,645
321R 3,933,646
346 3,933,647
355 3,933,648
378 3,933,649
387 3,933,650
400 3,933,651
446 3,933,652
500M 3,933,653
521 3,933,654
528 3,933,655

**CLASS 212**
58R 3,933,250

**CLASS 213**
166 3,933,252

**CLASS 214**
1Q 3,933,253
6DS 3,933,254
8.5K 3,933,255
15R 3,933,256
16.4A 3,933,257
85 3,933,258
138C 3,933,259
138R 3,933,260
3,933,261
3,933,262

**CLASS 215**
13A 3,933,263
254 3,933,264
260 3,933,265
316 3,933,266
350 3,933,267

**CLASS 219**
10.55E 3,934,106
76 3,934,107
85 3,934,108
121LM 3,934,109
131F 3,934,110
203 3,934,111
216 3,934,112
3,934,113
222 3,934,114
223 3,934,115
336 3,934,116
382 3,934,117
442 3,934,118
543 3,934,119

**CLASS 220**
23.4 3,933,268
94R 3,933,269
270 3,933,270
335 3,933,271

**CLASS 222**
1 3,933,272
3,933,273
56 3,933,285
94 3,933,274
131 3,933,275
146HE 3,933,276
178 3,933,277
182 3,933,278
193 3,933,279
3,933,280
200 3,933,281
400.7 3,933,282
402.13 3,933,283
500 3,933,284

**CLASS 224**
28P 3,933,286
55 3,933,287

**CLASS 225**
49 3,933,288

**CLASS 226**
178 3,933,289

**CLASS 227**
9 3,933,290
67 3,933,291

**CLASS 228**
49 3,933,292
117 3,933,293

**CLASS 229**
1.5R 3,933,294
2.5 3,933,295
3,933,296
3.1 3,933,297
5.6 3,933,298
20 3,933,299
33 3,933,300
41B 3,933,301
51BP 3,933,302
52B 3,933,303
62 3,933,304

**CLASS 235**
61.11A 3,934,120
61.6R 3,934,121
61.7B 3,934,122
70A 3,933,305
92PD 3,934,123
150.1 3,934,124
150.2 3,934,125
3,934,126
150.31 3,934,130
151.21 3,934,128
151.34 3,934,127
3,934,129
153A 3,934,131
164 3,934,132
193 3,934,133

**CLASS 236**
49 3,933,306

**CLASS 237**
12.3B 3,933,307

**CLASS 239**
10 3,933,308
171 3,933,309
265.43 3,933,310
276 3,933,311
413 3,933,312
587 3,933,313

**CLASS 240**
57 3,934,134
78LD 3,934,135

**CLASS 241**
60 3,933,314
166 3,933,315
170 3,933,316
246 3,933,317

**CLASS 242**
18R 3,933,319
35.5R 3,933,320
43R 3,933,321
55 3,933,322
154 3,933,318

**CLASS 244**
1R 3,933,323
17.23 3,933,324
23C 3,933,325
33 3,933,326
134B 3,933,327

**CLASS 248**
146 3,933,328
295 3,933,329
371 3,933,330
425 3,933,331

**CLASS 249**
42 3,933,332
43 3,933,333
57 3,933,334
114 3,933,335
177 3,933,336

**CLASS 250**
214R 3,934,136
236 3,934,137
278 3,934,138
308 3,934,139
320 3,934,140
325 3,934,141
358T 3,934,144
360 3,934,142
370 3,934,143
381 3,934,145
402 3,934,146
439 3,933,251
445 3,934,147
458 3,934,148
459 3,934,149
468 3,934,150
505 3,934,151
506 3,934,152
578 3,934,153

**CLASS 251**
34 3,933,337
63.6 3,933,338
176 3,933,339

**CLASS 252**
25 3,933,656
29 3,933,657
31 3,933,658
32.5 3,933,660
3,933,661
32.7E 3,933,659
33.4 3,933,662
51.5A 3,933,663
62 3,933,666
62.1L 3,933,667
62.1P 3,933,665
62.1 3,933,664
63.5 3,933,668
78 3,933,669
99 3,933,670
107 3,933,671
116 3,933,672
135 3,933,673
171 3,933,674
182 3,933,675
188 3,933,676
188.3R 3,933,677
300 3,933,678
301.1S 3,933,679
406 3,933,680
413 3,933,681
431R 3,933,682
439 3,933,683
447 3,933,684
464 3,933,685
467 3,933,686
511 3,933,687
520 3,933,688

**CLASS 259**
14 3,933,340
174 3,933,341

**CLASS 260**
2.5AC 3,933,692
2.5AH 3,933,695
2.5AJ 3,933,693
2.5AM 3,933,690
2.5AR 3,933,696
2.5AS 3,933,698
2.5AT 3,933,700
3,933,701
2.5AW 3,933,694
2.5BF 3,933,699
2.5FP 3,933,689
2.5A 3,933,697
2.5L 3,933,691
4 Re.28,688
17R 3,933,702
3,933,703
17.2 3,933,704
18TN 3,933,705
22S 3,933,706
23XA 3,933,709
23H 3,933,707
3,933,708
23.5R 3,934,056
28.5AS 3,933,710
29.1SB 3,933,712
29.2E 3,933,713
29.3 3,933,714
29.6MM 3,933,711
29.6MN 3,933,715
29.6TA 3,933,716
29.6R 3,933,717
30.4EP 3,933,718
31.2MR 3,933,719
3,933,720
31.8HA 3,933,721
32.4 3,933,722
33.6UB 3,933,725
33.6A 3,933,723
3,933,724
37PC 3,933,730
37SB 3,933,726
3,933,729
37N 3,933,727
3,933,728
40R 3,933,731
42.27 3,933,732
45.7PH 3,933,733
45.7S 3,933,734
45.75J 3,933,743
45.75N 3,933,742
45.75S 3,933,741
3,933,744
3,933,750
45.75W 3,933,740
45.8N 3,933,735
45.8R 3,933,736
45.9NC 3,933,737
45.9NP 3,933,738
45.9QB 3,933,739
47CP 3,933,745
3,933,749
47EP 3,933,748
47UP 3,933,747
47C 3,933,746
61 3,933,752
63HA 3,933,754
63R 3,933,753
67.6R 3,933,755
75NE 3,933,756
75A 3,933,757
77.5CH 3,933,758
77.5CR 3,933,760
77.5TB 3,933,759
78L 3,933,762
78.5R 3,933,763
78.5T 3,933,761
79.3M 3,933,764
79.7 3,933,765
80.3R 3,933,766
80.76 3,933,767
80.78 3,933,768
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87.1 3,933,771
87.3 3,933,772
87.5B 3,933,773
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88.2 3,933,774
89.1 3,933,775
92.8R 3,933,776
93.1 3,933,777
3,933,778
93.5A 3,933,779
97.5 3,933,780
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112.5R 3,933,783
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210.5 3,933,789
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239BD 3,933,793
239.1 3,933,794
3,933,795
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247.1R 3,933,813
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248NS 3,933,814
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256.4Q 3,933,821
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268BC 3,933,823
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287C 3,933,826
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288R 3,933,828
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293.51 3,933,831
293.52 3,933,830
293.69 3,933,832
293.73 3,933,833
295.5T 3,933,835
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306.8R 3,933,838
307D 3,933,841
307G 3,933,842
307R 3,933,840
308A 3,933,843
308D 3,933,844
3,933,845
309.2 3,933,846
3,933,847
315 3,933,848
3,933,849
326N 3,933,852
326.13R 3,933,854
326.15 3,933,853
326.26 3,933,850
327M 3,933,851
329R 3,933,855
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340.7 3,933,857



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348R 3,933,864
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397.5 3,933,870
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429.7 3,933,877
438.1 3,933,878
448R 3,933,879
448.2E 3,933,880
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3,933,882
449M 3,933,883
455R 3,933,884
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465E 3,933,887
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468D 3,933,889
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3,933,891
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468.5 3,933,893
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3,933,898
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3,933,900
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621M 3,933,925
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50A 3,933,950
67 3,933,951
145 3,933,952
148 3,933,953

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8 3,933,954
9 3,933,955
14 3,933,956
29 3,933,957
40 3,933,958
45.5 3,933,959
46.6 Re 28,689
108 3,933,960
111 3,933,961
134 3,933,962
170 3,933,963
171 3,933,964
177F 3,933,965
248 3,933,967
297 3,933,968
312 3,933,969
320 3,933,970

**CLASS 266**
15 3,933,342
16 3,933,343

**CLASS 267**
64A 3,933,344
168 3,933,345

**CLASS 269**
4 3,933,346
31 3,933,347
303 3,933,348

**CLASS 271**
10 3,933,349
3,933,350
183 3,933,351
189 3,933,352

**CLASS 272**
70 3,933,353

**CLASS 273**
1E 3,933,354
85R 3,933,355
108 3,933,356
141R 3,933,357

**CLASS 277**
170 3,933,358

**CLASS 280**
6H 3,933,359
11.13B 3,933,361
11.13L 3,933,362
11.13S 3,933,360
11.35T 3,933,363
11.37A 3,933,365
11.37D 3,933,364
47.31 3,933,366
104.5A 3,933,367
124F 3,933,368
150AB 3,933,370
150SB 3,933,369
150C 3,933,371
150.5 3,933,372
278 3,933,373
408 3,933,374

**CLASS 281**
34 3,933,375

**CLASS 285**
23 3,933,376
61 3,933,377
319 3,933,378
381 3,933,379

**CLASS 292**
57 3,933,381
144 3,933,382
175 3,933,380
262 3,933,383
285 3,933,384

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63 3,933,385
70 3,933,386
71R 3,933,387

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64R 3,933,388
88 3,933,389
94 3,933,390

**CLASS 297**
195 3,933,391

**CLASS 301**
98 3,933,392

**CLASS 302**
27 3,933,393
57 3,933,394

**CLASS 307**
88.3 3,934,154
112 3,934,155
117 3,934,156
213 3,934,157
239 3,934,158
304 3,934,159
309 3,934,160
311 3,934,161

**CLASS 308**
4A 3,933,395
6C 3,933,396
180 3,933,397

**CLASS 310**
3A 3,934,162
10 3,934,163

**CLASS 312**
214 3,933,398
223 3,933,399
3,933,400
330SM 3,933,401
330 3,933,402

**CLASS 313**
60 3,934,164
93 3,934,165
146 3,934,166
185 3,934,167
293 3,934,168
477 3,934,169

**CLASS 315**
12 3,934,170
30 3,934,171
169TV 3,934,172
408 3,934,173

**CLASS 317**
11C 3,934,174
16 3,934,175
18C 3,934,176
100 3,934,177
141S 3,934,178
230 3,934,179
262A 3,934,180

**CLASS 318**
53 3,934,181
85 3,934,182
135 3,934,183
227 3,934,184
565 3,934,185
567 3,934,186
640 3,934,187

**CLASS 320**
48 3,934,188

**CLASS 321**
11 3,934,189

**CLASS 323**
8 3,934,190
22T 3,934,192

**CLASS 324**
30B 3,934,193
34R 3,934,192
51 3,934,194
72.5 3,934,195
99R 3,934,196
130 3,934,197
142 3,934,198
158R 3,934,199
163 3,934,200

**CLASS 325**
36 3,934,201
54 3,934,202
65 3,934,203
304 3,934,204
346 3,934,205
478 3,934,206

**CLASS 329**
117 3,934,207

**CLASS 330**
4.5 3,934,208
18 3,934,209

**CLASS 331**
94.5PE 3,934,212
94.5C 3,934,210
94.5G 3,934,211

**CLASS 333**
10 3,934,213

**CLASS 335**
154 3,934,214
207 3,934,215
272 3,934,216

**CLASS 337**
107 3,934,217

**CLASS 339**
22R 3,933,403
45M 3,933,404
48 3,933,405
91R 3,933,406

**CLASS 340**
3T 3,934,218
15 3,934,219
15.5MC 3,934,220
27AT 3,934,221
3,934,222
58 3,934,223
146.1BA 3,934,224
146.3J 3,934,225
172.5 3,934,226
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3,934,230
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213R 3,934,237
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248A 3,934,239
276 Re 28,692
309.4 3,934,240
324R 3,934,241
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3,934,245
3,934,246
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3,934,248
340 3,934,249

**CLASS 343**
6ND 3,934,250
6.5R 3,934,251
7VM 3,934,252
7.7 3,934,253
103 3,934,254

**CLASS 346**
74ES Re 28,693
140A 3,934,255

**CLASS 350**
61 3,933,407
87 3,933,408
96B 3,933,409
96C 3,933,410

**CLASS 351**
160 3,933,411

**CLASS 352**
130 3,933,412

**CLASS 353**
110 3,933,413

**CLASS 354**
3 3,934,256
5 3,934,257
60R 3,934,258
94 3,934,259

**CLASS 355**
3R 3,933,414

**CLASS 357**
17 3,934,260
24 3,934,261

**CLASS 358**
4 3,934,262
3,934,263
8 3,934,264
43 3,934,265
44 3,934,266

**CLASS 360**
6 3,934,267
70 3,934,269
96 3,934,270
101 3,934,268

**CLASS 401**
145 3,933,415

**CLASS 417**
354 3,933,416

**CLASS 423**
54 3,933,971
57 3,933,972
93 3,933,973
118 3,933,974
139 3,933,975
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348 3,933,981
350 3,933,985
447 3,933,986
478 3,933,987
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481 3,933,989
508 3,933,990
535 3,933,991
573 3,933,992
3,933,993
575 3,933,994
580 3,933,995

**CLASS 424**
1 3,933,996
3,933,997
28 3,933,998
31 3,933,999
49 3,934,000
3,934,001
54 3,934,002
59 3,934,003
68 3,934,004
78 3,934,005
115 3,934,006
125 3,934,007
177 3,934,008
180 3,934,009
211 3,934,010
216 3,934,011
238 Re 28,690
239 3,934,013
251 3,934,014
267 3,934,015
270 3,934,016
3,934,017
273 3,934,018
3,934,019
3,934,022
274 3,934,023
275 3,934,024
298 3,934,025
303 3,934,026
309 3,934,027
318 3,934,028
320 3,934,029
3,934,030
3,934,031
3,934,035
321 3,934,036
324 3,934,032
326 3,934,020
341 3,934,021
3,934,033
343 Re 28,691
3,934,037
346 3,934,034

**CLASS 425**
326B 3,933,417
405H 3,933,418

**CLASS 426**
1 3,934,038
7 3,934,039
20 3,934,040
69 3,934,041
248 3,934,042
283 3,934,043
326 3,934,044
331 3,934,045
418 3,934,046
548 3,934,047
3,934,048
573 3,934,049
645 3,934,050
652 3,934,051
659 3,934,052
3,934,053

**CLASS 427**
8 3,934,054
3,934,055
43 3,934,057
89 3,934,058
90 3,934,059
95 3,934,060
165 3,934,061
185 3,934,062
223 3,934,063

**CLASS 428**
36 3,934,064
241 3,934,065
248 3,934,066
290 3,934,067
292 3,934,068
323 3,934,069
342 3,934,070
413 3,933,875

**CLASS 431**
66 3,933,419
202 3,933,420

## CLASSIFICATION OF DESIGNS

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| D6— | 24 | 238,457 | | | 238,468 | D9— | 184 | 238,479 | D23— | 69 | 238,490 | | 15AJ | 238,500 | | G | 238,508 |
| | 67 | 238,458 | | 98 | 238,469 | | 192 | 238,480 | D26— | 5C | 238,491 | D40— | 1E | 238,501 | D56— | 4D | 238,511 |
| | 97 | 238,459 | | 162 | 238,470 | D10— | 46 | 238,481 | | | 238,492 | D48— | 2 | 238,502 | | | 238,512 |
| | | 238,460 | | 172 | 238,471 | | 106 | 238,484 | | | 238,493 | | 4B | 238,503 | D57— | 1E | 238,513 |
| | | 238,461 | | 193 | 238,472 | D12— | 54 | 238,482 | | | 238,494 | | 20J | 238,504 | D61— | Q | 238,514 |
| | | 238,462 | D7— | 5 | 238,473 | | 78 | 238,483 | | | 238,495 | | 23R | 238,506 | D64— | 11R | 238,515 |
| | | 238,463 | | 20 | 238,474 | | 107 | 238,485 | | | 238,497 | | 32A | 238,505 | D73— | 1B | 238,516 |
| | | 238,464 | | | 238,475 | | 143 | 238,486 | | 14G | 238,496 | D54— | 13R | 238,507 | D83— | F | 238,517 |
| | | 238,465 | | | 238,476 | | 146 | 238,487 | D30— | 1 | 238,498 | D55— | 1C | 238,510 | D87— | 3G | 238,518 |
| | | 238,466 | D8— | 40 | 238,477 | | 155 | 238,488 | D34— | 5GH | 238,499 | | E | 238,509 | D95— | A | 238,519 |
| | | 238,467 | | 173 | 238,478 | | 167 | 238,489 | | | | | | | | | |

## CLASSIFICATION OF PLANTS

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P. — | 26 | 3,825 | P. — | 28 | 3,824 | | | | | | | | | | | | |

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| 1 | : | 3,933,050 | | 3,933,202 | | 3,934,122 | 10 | : | 3,932,915 | | 3,933,154 | | 3,933,746 |
| 2 | : | 3,933,261 | | 3,933,245 | | 3,934,129 | | | 3,932,943 | | 3,933,179 | | 3,933,806 |
| | | 3,934,001 | | 3,933,258 | | 3,934,141 | | | 3,933,423 | | 3,933,197 | | 3,933,808 |
| 4 | : | 3,932,909 | | 3,933,281 | | 3,934,149 | | | 3,933,663 | | 3,933,206 | | 3,933,912 |
| | | 3,932,927 | | 3,933,282 | | 3,934,153 | | | 3,933,677 | | 3,933,225 | | 3,933,998 |
| | | 3,933,342 | | 3,933,295 | | 3,934,166 | | | 3,933,703 | | 3,933,252 | | 3,934,134 |
| | | 3,933,413 | | 3,933,305 | | 3,934,170 | | | 3,933,732 | | 3,933,254 | | 3,934,193 |
| | | 3,933,570 | | 3,933,327 | | 3,934,204 | | | 3,933,759 | | 3,933,270 | | 3,934,203 |
| | | 3,933,674 | | 3,933,337 | | 3,934,210 | | | 3,933,775 | | 3,933,293 | 19 | : | 3,933,207 |
| | | 3,933,712 | | 3,933,354 | | 3,934,242 | | | 3,933,815 | | 3,933,315 | | | 3,933,300 |
| | | 3,933,985 | | 3,933,376 | | 3,934,243 | | | 3,933,876 | | 3,933,336 | | | 3,933,314 |
| | | 3,934,060 | | 3,933,383 | | 3,934,244 | | | 3,933,963 | | 3,933,378 | | | 3,933,358 |
| | | 3,934,175 | | 3,933,390 | | 3,934,245 | | | 3,934,005 | | 3,933,384 | | | 3,933,389 |
| | | 3,934,259 | | 3,933,434 | | 3,934,246 | | | 3,934,064 | | 3,933,411 | | | 3,933,551 |
| 5 | : | 3,932,951 | | 3,933,439 | | 3,934,247 | | | 3,934,234 | | 3,933,478 | | | 3,933,588 |
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| | | Re.28,689 | | 3,933,468 | | 3,934,264 | | | 3,933,592 | | 3,933,521 | | | 3,934,196 |
| | | 3,932,902 | | 3,933,560 | 8 | : | 3,933,152 | 12 | : | 3,932,897 | | 3,933,576 | | | 3,934,206 |
| | | 3,932,906 | | 3,933,581 | | | 3,933,382 | | | 3,932,976 | | 3,933,620 | 20 | : | 3,933,150 |
| | | 3,932,932 | | 3,933,593 | | | 3,933,628 | | | 3,933,091 | | 3,933,626 | | | 3,934,176 |
| | | 3,932,942 | | 3,933,600 | | | 3,933,975 | | | 3,933,116 | | 3,933,669 | 21 | : | 3,932,983 |
| | | 3,932,963 | | 3,933,606 | | | 3,933,976 | | | 3,933,240 | | 3,933,683 | | | 3,933,043 |
| | | 3,932,989 | | 3,933,607 | | | 3,934,091 | | | 3,933,264 | | 3,933,700 | | | 3,933,222 |
| | | 3,933,000 | | 3,933,615 | | | 3,934,097 | | | 3,933,526 | | 3,933,721 | | | 3,933,367 |
| | | 3,933,003 | | 3,933,619 | | | 3,934,099 | | | 3,933,831 | | 3,933,760 | | | 3,934,239 |
| | | 3,933,016 | | 3,933,621 | | | 3,934,127 | | | 3,933,915 | | 3,933,763 | 22 | : | 3,932,914 |
| | | 3,933,020 | | 3,933,642 | | | 3,934,240 | | | 3,934,002 | | 3,933,839 | | | 3,932,984 |
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# PATENT AND TRADEMARK OFFICE NOTICES

## Filing of Non-English Language Applications

This notice is in response to inquiries regarding the filing of applications in a language other than English. The Office has received a few such applications in the past in emergency situations where the filing of a non-English language specification was the only possibility of saving a foreign priority date or preventing the running of a statutory bar. In such situations the Office practice has been to accord the application a filing date if it includes all of the component parts required by 35 U.S.C. 111, and to require applicant to submit a verified translation of the previously filed application within two months.

In view of the inquiries received, it is considered appropriate that the Office clarify and publicize its practice in this area to avoid misunderstandings.

Accordingly, beginning February 1, 1976, the Office will accord a filing date to an application meeting the requirements of 35 U.S.C. 111 even though some or all of the application papers, including the written description and the claims, is in a language other than English and hence does not comply with 37 CFR 1.52, *provided:*

(1) the oath or declaration is signed and physically attached to the specification and claims to which it refers; and

(2) the application papers are accompanied by a statement, in English, from the applicant, his attorney or agent, certifying that is has been considered necessary to file the non-English language application in order to save a foreign priority date or prevent the running of a statutory bar.

A verified English translation of the non-English language papers should either accompany the application papers or be filed in the Office no later than two months after a notice requesting the translation has been mailed by the Office.

A subsequently filed verified English translation must contain the complete identifying data for the application in order to permit prompt association with the papers initially filed. Accordingly, it is strongly recommended that the original application papers be accompanied by a cover letter and a self-addressed return post card, each containing the following identifying data in English: (*a*) applicant's name(s); (*b*) title of invention; (*c*) number of pages of specifications, claims, and sheets of drawings; (*d*) whether oath or declaration was filed and (*e*) amount and manner of paying the filing fee.

The translation must be a literal translation verified as such by the translator, and must be accompanied by a signed request from the applicant, his attorney or agent, asking that the verified English translation be used as the copy for examination purposes in the Office. If the verified English translation does not conform to idiomatic English and United States practice it should be accompanied by a preliminary amendment making the necessary changes without the introduction of new matter prohibited by 35 U.S.C. 132. In the event the verified literal translation is not timely filed in the Office the application will be regarded as abandoned.

It should be recognized that this practice is intended for emergency situations to prevent loss of valuable rights and should not be routinely used for filing applications. There are at least two reasons why this should not be used on a routine basis. First, there are obvious dangers to applicant and the public if he fails to obtain a correct literal translation. Second, the filing of a large number of applications under the procedure will create significant administrative burdens on the Office.

The practice will be closely monitored to determine whether or not it should be continued.

C. MARSHALL DANN,
Dec. 31, 1975. *Commissioner of Patents and Trademarks.*

## Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds, should be furnished the Commissioner of Patents and Trademarks on or before March 1, 1976.

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## Second Trial Voluntary Protest Program

A Second Trial Voluntary Protest Program will be conducted during the coming months. It will be increased in scale and somewhat modified in procedure from the first such program. Announcement of and description of the rules for the first program appeared in 923 O.G. 2 on June 4, 1974.

As before, the objective is to gain experience in carrying out such a program and to determine the extent of interest by the public in participating and in supplying pertinent references. To the extent there is participation, the program should be beneficial by bringing new art to the attention of the Office, preventing inadvertent issuance of invalid patents, and increasing confidence in the strength of those patents which survive the protest proceedings.

The first Trial Voluntary Protest Program showed a considerable interest by applicants and the public in taking part in protest proceedings. A summary of the results will be published soon in this Gazette. The second Trial Voluntary Protest Program is designed to gain additional information as to public participation and also to follow more closely the procedures which would be required in a continuing, permanent protest program.

### *Applications Involved*

In the second Trial Voluntary Protest Program, a Request to Participate and Waiver of Confidentiality form (PTOL–224 Temp.) will be sent to each applicant to whom a Notice of Allowance is mailed during a selected three week period, probably in October, 1975. The total number of requests mailed will be about 4,500. Applications for plant patents will be excluded from the program. The reason for this exclusion is the high cost of printing colored drawings and the relatively limited prior art available. No other applications will be excluded from the trial program, regardless of subject matter, type of application or earlier proceedings.

### *Waiver of Confidentiality*

Two copies of the form letter requesting voluntary waiver of confidentiality (form PTOL–224 Temp.) will be mailed in the same envelope along with the Notice of Allowance. An additional copy of the form letter will be made of record in each application at the time of mailing. The applicant will have three months from the notice of allowance date in which to either (1) elect to participate in the Trial Voluntary Protest Program by filing a signed waiver of confidentiality, or (2) elect not to participate in the program by paying the issue fee. If he does neither, the application will become abandoned, as provided in 37 C.F.R. 1.316. The waiver of confidentiality is a part of form PTOL–224 Temp. This procedure will avoid any increase in pendency time for those applications in which an election is made not to participate in the program. An early filing of a waiver of confidentiality by the applicant will result in early publication of the application.

### *Publication*

If the applicant decides not to participate in the protest program and payment of the issue fee is timely made, the patent will issue routinely without delay.

If the applicant elects to participate in the protest program and a signed waiver of confidentiality is filed in the Office within 3 months of the notice of allowance date, the Notice of Allowance will be vacated. In such a case the issue fee should not be filed, as it will not be accepted and applied if filed with a signed waiver of confidentiality. An additional Notice of Allowance will be issued after the protest proceedings have been completed if only allowable claims remain in the application.

After a signed waiver has been filed, the application will be printed in the form of a patent and be available for sale as in the first Trial Voluntary Protest Program. At least one claim and a drawing figure, if any, will be printed in the OFFICIAL GAZETTE. These published applications will appear in about 6 to 9 issues of the OFFICIAL GAZETTE early in 1976. Advance notice will be given in the OFFICIAL GAZETTE of the dates on which applications will be published under this program.

### *Inspection of Files*

The Patent and Trademark Office files of the published applications will be available for inspection by the public for a period of three months after publication. The application files will be retained in a single location in the Patent Issue Division during the protest period. This single location will be staffed with personnel to process papers directed to these files, supervise inspection of the files by the public, provide copies of file contents when ordered, and perform other related duties. A coin operated copying machine will also be available at this location.

### *Filing of Protests*

Protests relating to the patentability of any published application must be filed in writing in the Patent and Trademark Office no later than three months after publication of the application. No extension of the three month protest period will be granted. Each protest must be filed in duplicate (one copy will be forwarded to the applicant and the other copy will be placed in the application file) and must indicate the grounds for protesting the allowance of any claim contained in the published application. If the protest involves prior art not of record in the application, two copies of the alleged prior art, together with an explanation of the relevance of such prior art to the allowed claims, should be included. The protester may also comment on the prior art record in the application and the manner in which it was applied.

In those applications where prima facie evidence of prior public use or sale the claimed invention is presented in accordance with 37 C.F.R. 1.292, public use proceedings will give the protester an opportunity to present evidence.

Should claims be copied from a published application for interference purposes, the applicant copying claims must also file a notice of such copying in the file of the published application to avoid the possibility of inadvertent issuance of the published application as a patent before conclusion of any interference proceedings.

For easy identification, all protests should be headed, "Protest Under Trial Voluntary Protest Program" and be addressed to:

Commissioner of Patents and Trademarks
Box TVPP
Washington, D.C. 20231

The protester should fully identify himself and include his mailing address so that communications may be addressed to him. In view of administrative problems encountered in the first Trial Voluntary Protest Program in protecting the confidentiality of the identity of protesters, no attempt will be made by the Office to maintain the confidentiality of any protester under the new program.



If no protests are received during the protest period, the application file will be rerouted for the mailing of a new Notice of Allowance. The file will not be returned to the examining group except for consideration of matters which normally require return of an allowed file.

If one or more protests are filed in an application, the application file and the protest(s) will be returned to the examining group for consideration.

### *Consideration of Protest*

The examining group will acknowledge receipt of all protests. The authority for deciding whether or not the evidence submitted constitutes a prima facie showing of unpatentability of any allowed claim will reside with the Group Director. If the Group Director decides that no such showing has been made, the application will be forwarded to the Patent Issue Division for mailing of a new Notice of Allowance. Protesters will be notified in such cases that prosecution has not been reopened, and the applicant will be sent a duplicate copy of all protests. The decision of the Group Director will be final and will not be subject to petition by a protester.

If the Group Director decides that the submitted evidence constitutes a prima facie showing of unpatentability of any allowed claim, prosecution of the application will be reopened. The decision to reopen prosecution will be communicated to the applicant by means of an Office action, signed by a primary examiner, rejecting any claim considered unpatentable. The duplicate copy of each protest will be mailed to the applicant with the Office action. Protesters who submitted evidence on which the rejection is based will be identified in the Office action and will also receive copies of this and subsequent Office actions. Other protesters will be notified that prosecution has been reopened, but based on evidence and for reasons other than those submitted by them and that, consequently, no further correspondence will be directed to them. The applicant will normally be given a three month shortened statutory period to respond to the Office action.

### *Response by the Applicant to Subsequent Office Actions*

During this period, the applicant may present amended or new claims which will be subject to further consideration by the primary examiner. In order to allow protesters who submitted evidence on which a rejection in the Office action is based to participate in later prosecution and to comment upon further proceedings, applicant will be required to serve by mail upon each protester identified in the Office action, a copy of any response filed, including any appeal brief. Indication of such service will be a required component of a complete response. Applicant need only reply to the rejections and objections made in the Office action. There need be no specific response to any other points raised by the protesters.

### *Comment on Applicant's Response by the Protester*

Each protester served will be allowed one month, running from the date applicant's response or brief is received in the Patent and Trademark Office, to file comments relating thereto. All communications from protesters must be in writing. Examiner interviews with the protesters will not be permitted. No extensions of the one month period will be granted.

Any appeal by the applicant to the Board of Appeals in a protested application will be made special and will be taken up out of order.

### *Conclusion of Prosecution*

If, after further prosecution, the application is found to be allowable, all protesters still participating at that time will be notified and the application will be forwarded to the Patent Issue Division for mailing of a new Notice of Allowance. A decision of the primary examiner to allow an application will not be subject to petition or appeal by any protester.

C. MARSHALL DANN,
*Commissioner of Patents and Trademarks.*

Sept. 16, 1975.

[938 O.G. 945]

## Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

**2,762,777,** Went, Van Oosterhout and Gorter, PERMANENT MAGNET AND METHOD OF MAKING THE SAME; **2,762,778,** Gorter, Rathenau and Stuyils, METHOD OF MAKING MAGNETICALLY-ANISOTROPIC PERMANENT MAGNETS, **filed** Sept. 3, 1975, United States Court of Appeals, Sixth Circuit, Ohio (Cincinnati), Doc. 75–1131, *U.S. Philips Corporation* v. *Ferro Corporation*. Judgment of District Court affirmed, Sept. 3, 1975.

**2,762,778.** (See 2,762,777.)

**2,795,022,** N. Shaw, METHOD OF MAKING MOULDS; **2,811,760,** C. Shaw, METHOD FOR THE PRODUCTION OF CASTING MOULDS; **2,911,310,** N. Shaw, INVESTMENT MATERIALS FOR CASTING MOULDS; **2,931,081,** A. Dunlop, MOULD STRUCTURE AND ITS PRODUCTION; **2,935,772,** C. Shaw, PREVENTION OF SCALE FORMATION ON CASTINGS; **2,979,790,** I. J. Lubalin, MOLDS; **3,022,555,** N. Shaw, same, **filed** Sept. 2, 1975, D.C., S.D.N.Y., Doc. 75–C–4317. *Arnet Shaw* v. *Manco Products, Inc.*

**2,811,760.** (See 2,795,022.)

**2,911,310.** (See 2,795,022.)

**2,931,081.** (See 2,795,022.)

**2,935,772.** (See 2,795,022.)

**2,959,298,** E. Pope, SANITARY TRAY RACK, **filed** Sept. 8, 1975, D.C., W.D. Tenn. (Jackson), Doc. 75–72–E, *Stander International Corporation* v. *Kolpak Industries, Inc. and Blair E. Stentz.*

**2,979,790.** (See 2,795,022.)

**3,022,555.** (See 2,795,022.)

**3,228,423,** W. C. Moog, FLUID CONTROL VALVE IN WHICH A MECHANICAL MOTION IS TRANSMITTED FROM A DRY REGION TO A PRESSURIZED FLUID FILLED REGION, **filed** Sept. 5, 1975, United States Court of Appeals, Sixth Circuit, Ohio (Cincinnati), Doc. 74–2190, *Moog, Inc.* v. *Pegasus Laboratories, Inc.* The judgment of the District Court is affirmed, Sept. 5, 1975.

**3,271,858,** J. J. Simmons, REMOVABLE DENTAL APPLIANCES AND METHODS OF MAKING SAME; **3,486,230,** same, DENTAL APPLIANCE, **filed** Aug. 28, 1975, D.C., N.D. Iowa (Cedar Rapids), Doc. C–75–48, *Iowa Development Company* v. *Dental Prosthetic Services, Inc. and Paul L. Jones, Jr.*

**3,358,577,** Q. R. Thomson, AIR DIFFUSING REGISTER, **filed** Sept. 17, 1975, D.C., N.D. Tex. (Dallas), Doc. CA–3–75–1146 G, *Lear-Seigler, Inc., Krueger Division* v. *David Pulley and Associates, Inc. and David Pulley, an individual.*

**3,437,149,** Cugini and Jeannerett, CABLE FEED-THROUGH MEANS AND METHOD FOR WELL HEAD CONSTRUCTIONS, **filed** Sept. 12, 1975, D.C., C.D. Calif. (Los Angeles), Doc. CV–75–3103–IH, *Seaboard Pipe & Equipment Company, Inc.* v. *Alex Sipowicz, doing business as Sipp Machine & Tool Co. and Sipp Tool Corporation.*

**3,486,230.** (See 3,271,585.)

**3,570,733,** B. W. Allen, POWER-ACTUATED PLATE GLASS CUTTER'S TABLE; **3,787,040,** B. W. Allen, TILTABLE GLASS CUTTER'S TABLE WITH RETRACTABLE SHEET SUPPORTING PEGS, **filed** Sept. 16, 1975, D.C., N.D. Tex. (Dallas), Doc. CA3–75–1140, *Ernest Evans Roberts, Jr.* v. *Rod Spence and Rod Spence and Company.*

**3,725,266,** J. M. Haviland, PROCESS FOR REMOVING METAL COMPOUND CONTAMINANTS FROM WASTE WATER, **filed** Sept. 16, 1975, D.C., C.D. Pa. (Philadelphia), Doc. 75–2625, *Haviland Products Company* v. *A. M. Lavin Machine Works, Inc. and Wm. F. Lotz, Inc.*

**3,783,772,** R. J. Fay, SANDWICH MACHINE, **filed** Sept. 17, 1975, D.C., M.D.N.C. (Greensboro), Doc. C–75–390–WS, *J. W. Fay & Son, Inc.* v. *Royal Cake Company, Inc.*

**3,787,404.** (See 3,570,733.)

**3,799,762,** B. E. Cass, SLAG CONDITIONERS FOR IRON AND STEEL PROCESSES, **filed** Sept. 10, 1975, D.C., W.D. Pa. (Pittsburgh), Doc. 75–1147, *National Briquette Corp. and A. C. Miller Corporation* v. *Carad Inc.*

**3,862,506,** Drenten and Breiner, LABEL HOLDER, **filed** Sept. 16, 1975, D.C., S.D.N.Y., Doc. 75–C–4533, *Supreme Equipment & Systems Corp.* v. *Steel Case, Inc.*

**D. 220,644,** L. D. Robinson, MONEY BOX, **filed** Aug. 7, 1975, D.C., E.D. Calif. (Fresno), Doc. F–75–144–C, *L. Elsworth Robinson and Leva Delores Robinson, individually and doing business as Cash Caddy Corporation* v. *Interstate Restaurant Supply Company, Inc.* **Same, filed** Aug. 8, 1975, D.C., C.D. Calif. (Los Angeles), Doc. CV–75–2691–F, *L. Elsworth Robinson* v. *"Hooser-Wolf."*

# PATENT NOTICES

## Certificates of Correction for the Week of Jan. 27, 1976

| | | | |
|---|---|---|---|
| D. 235,988 | 3,890,910 | 3,901,481 | 3,908,612 |
| D. 236,431 | 3,891,472 | 3,901,564 | 3,909,981 |
| 3,513,004 | 3,891,661 | 3,901,568 | 3,910,114 |
| 3,729,593 | 3,891,787 | 3,901,650 | 3,910,201 |
| 3,742,042 | 3,892,187 | 3,901,730 | 3,910,301 |
| 3,816,376 | 3,892,647 | 3,901,804 | 3,910,876 |
| 3,819,892 | 3,893,137 | 3,902,592 | 3,911,114 |
| 3,833,559 | 3,893,422 | 3,903,118 | 3,911,173 |
| 3,840,018 | 3,893,498 | 3,903,509 | 3,911,250 |
| 3,843,529 | 3,893,906 | 3,904,631 | 3,911,405 |
| 3,848,633 | 3,894,987 | 3,905,035 | 3,911,443 |
| 3,849,196 | 3,895,017 | 3,905,398 | 3,911,587 |
| 3,849,218 | 3,895,719 | 3,905,574 | 3,912,199 |
| 3,850,345 | 3,896,092 | 3,905,926 | 3,912,389 |
| 3,852,077 | 3,896,572 | 3,906,327 | 3,912,511 |
| 3,853,574 | 3,897,199 | 3,906,340 | 3,912,522 |
| 3,853,876 | 3,897,385 | 3,906,850 | 3,912,738 |
| 3,854,919 | 3,897,636 | 3,906,851 | 3,912,845 |
| 3,854,971 | 3,898,267 | 3,907,019 | 3,912,942 |
| 3,858,291 | 3,898,268 | 3,907,046 | 3,913,150 |
| 3,858,752 | 3,898,378 | 3,907,518 | 3,913,340 |
| 3,859,419 | 3,898,553 | 3,907,663 | 3,913,829 |
| 3,859,539 | 3,899,431 | 3,907,812 | 3,913,991 |
| 3,873,382 | 3,899,544 | 3,907,912 | 3,914,018 |
| 3,876,582 | 3,899,779 | 3,907,924 | 3,914,061 |
| 3,876,680 | 3,899,805 | 3,907,934 | 3,914,125 |
| 3,880,540 | 3,900,219 | 3,907,966 | 3,914,596 |
| 3,881,454 | 3,900,520 | 3,908,087 | 3,914,744 |
| 3,889,424 | 3,900,635 | 3,908,126 | 3,915,299 |
| 3,890,401 | 3,900,823 | 3,908,207 | 3,917,876 |
| 3,890,596 | 3,900,895 | 3,908,384 | |

## Department of the Treasury
## U.S. Customs Service

(TMK-2-R : E : R)

*Notice of Application for Recordation of Trade Name*

EUROTIME

Application has been filed pursuant to section 133.12, Customs Regulations (19 CFR 133.12), for recordation under section 12 of the Act of July 5, 1946, as amended (15 U.S.C. 1124), of the trade name EUROTIME used by Eurotime Corporation, a corporation organized under the laws of the State of New York, located at 212 Fifth Avenue, New York, New York 10010.

The application states that the trade name is applied to watches and clocks and components for each, manufactured in Switzerland, West Germany, France and Hong Kong. The application states further that no foreign person, partnership, association or corporation is authorized to use the trade name sought to be recorded. Appropriate accompanying papers were submitted with the application.

Before final action is taken on the application, consideration will be given to any relevant data, views, or arguments submitted in writing by any person in opposition to the recordation of this trade name. Any such submission should be addressed to the Commissioner of Customs, Washington, D.C. 20229, in time to be received not later than 30 days from the date of publication of this notice in the Federal Register.

Notice of the action taken on the application for recordation of the trade name will be published in the Federal Register.

LEONARD LEHMAN,
*Assistant Commissioner, Regulations and Rulings.*



# PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

## CONDITION OF PATENT APPLICATIONS AS OF JANUARY 3, 1976

| PATENT EXAMINING GROUPS | Actual Filing Date of Oldest New Case Awaiting Action |
|---|---|
| **CHEMICAL EXAMINING GROUPS** | |
| GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices. | 3-19-75 |
| GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides. | 1-2-75 |
| HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes. | 1-13-75 |
| COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography. | 2-3-75 |
| SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes. | 1-21-75 |
| **ELECTRICAL EXAMINING GROUPS** | |
| INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales. | 12-23-74 |
| SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material. | 2-13-75 |
| INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts. | 5-1-75 |
| RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating. | 7-7-75 |
| ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring. | 4-10-75 |
| DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts. | 7-23-74 |
| **MECHANICAL EXAMINING GROUPS** | |
| HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment. | 3-7-75 |
| MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks. | 4-15-75 |
| AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination. | 6-2-75 |
| HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication. | 2-19-75 |
| GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines. | 6-4-75 |

**Expiration of patents:** The patents within the range of numbers indicated below expire during January 1976, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,866,973 to 2,871,478 inclusive
Plant Patents..... Numbers 1,792 to 1,804 inclusive

# PATENT APPLICATIONS

## PUBLISHED JANUARY 27, 1976
## UNDER THE SECOND TRIAL VOLUNTARY PROTEST PROGRAM

NOTE- A copy of the notice setting forth the details of the Second Trial Voluntary Protest Program may be found in the Patent and Trademark Notices section of this issue.

Any protests relating to the patentability of these published applications must be filed in writing before April 27, 1976. These applications are available for inspection in the Allowed Files Branch, Crystal Plaza, Room 2-10C28. All correspondence should be addressed to:

Commissioner of Patents and Trademarks
Box TVPP
Washington, D.C. 20231

Printed copies of the published applications may be purchased from the Patent and Trademark Office at 50 cents each.

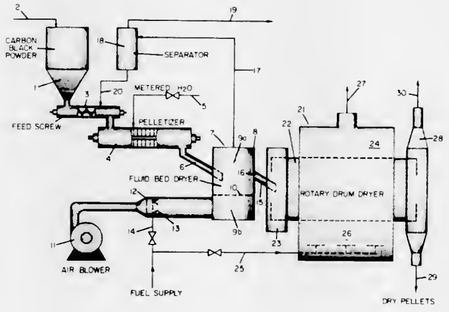
An "Index of Applicants and Assignees of Published Applications" and a concordance entitled "Classification of Published Patent Applications" are located in the back of this issue.

## GENERAL AND MECHANICAL APPLICATIONS

**B 163,463**
**APPARATUS FOR DRYING CARBON BLACK PELLETS**
**Claude V. Myers, El Dorado, Ark., assignor to Cities Service Company, Tulsa, Okla.**
**Division of Ser. No. 47,085, June 17, 1970, Pat. No. 3,740,861. This application July 16, 1971, Ser. No. 163,463**
**Int. Cl.² C09C *1/58***
**U.S. Cl. 425—222** **5 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 245,980 | 8/1881 | Smith | 34/133 |
| 2,117,822 | 5/1938 | Pehrson et al. | 34/10 |
| 3,238,634 | 3/1966 | Goins | 34/10 |
| 3,282,577 | 11/1966 | Cottle | 34/57 R X |
| 3,309,780 | 3/1967 | Goins | 34/57 R |
| 3,469,323 | 9/1969 | Jongbloed et al. | 34/57 R X |
| 3,513,560 | 5/1970 | Lamare | 34/10 |




1. Apparatus for producing dry pellets of carbon black comprising:
a. carbon black wet pelletizer,
b. a fluid bed dryer adapted to receive pellets which are discharged from said pelletizer, a conduit connecting said pelletizer and said dryer for directing said pellets from the pelletizer to the fluid bed dryer
c. a rotary drum dryer adapted to receive pellets which are discharged from said pelletizer and a conduit connecting said fluid bed dryer and said rotary drum dryer for directing said pellets from the fluid bed dryer to the rotary drum dryer.

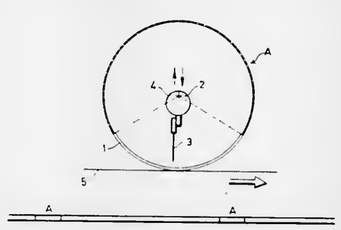
**B 416,589**
**METHOD AND DEVICE FOR PRINTING A WEB OR A RECTANGULAR PIECE OF MATERIAL**
**Jacobus Gerardus Vertegaal, Boxmeer, Netherlands, assignor to Stork Amsterdam N.V., Amstelveen, Netherlands**
**Continuation-in-part of Ser. No. 173,970, Aug. 23, 1971, abandoned. This application Nov. 16, 1973, Ser. No. 416,589**
**Claims priority, application Netherlands, Oct. 7, 1970, 7014707**
**Int. Cl.² B41F *15/10*, *15/42***
**U.S. Cl. 101—129** **2 Claims**

**References Cited**
UNITED STATES PATENTS

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|---|---|---|---|
| 2,893,310 | 7/1959 | Johnson | 101/182 |
| 3,541,953 | 11/1970 | Rochford | 101/219 X |
| 3,718,086 | 2/1973 | Vertegaal | 101/120 X |
| 3,774,533 | 11/1973 | Ichinose | 101/119 |
| 3,774,534 | 11/1973 | Ichinose | 101/119 |
| 3,834,307 | 9/1974 | Zimmer | 101/119 X |

FOREIGN PATENTS OR APPLICATIONS

| | | | |
|---|---|---|---|
| 2,054,570 | 5/1971 | Germany | 101/116 |




1. In the process of printing a design on material using a rotary thin-walled cylindrical screen stencil having a squeegee therein wherein the design to be printed has a repeat length greater than the circumference of the stencil, the steps of forming on the screen surface of the stencil an impermeable area extending along a portion of the circumference of the stencil and the remaining portion of the stencil defining a screened area, conveying the material to be printed past the stencil, and vertically moving the squeegee during rotation of the stencil during the time interval that the impermeable area is contiguous with the material to be printed so that fading out and fading in of color during lifting and lowering of the squeegee is prevented, the stencil selectively does not print the material when the squeegee is out of contact with the screen surface and when the impermeable area is contiguous with the material and the stencil prints only when its squeegee is lowered and the screened area passes in contact with the material whereby a design having a repeat length greater than the circumference of the stencil can be printed.

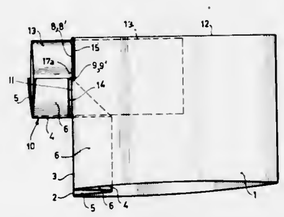




**B 429,157**
**PLASTIC BAG WITH ZIG ZAG PLIES**
**van den Beld, Paul Christiaan Herman; Robert Jan Hoogenboom, both of Hardenberg, and Willem Zweers, Coevorden, all of Netherlands, assignors to Wavin B.V., Zwolle, Netherlands**
**Filed Dec. 28, 1973, Ser. No. 429,157**
**Claims priority, application Netherlands, Jan. 6, 1973, 7300211**
**Int. Cl.² B65D *31/14***
**U.S. Cl. 229—62.5** **10 Claims**

**References Cited**
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| 1,819,425 | 8/1931 | Kronmiller | 229/62.5 |
| 2,340,546 | 2/1944 | Meaker | 229/62.5 X |
| 2,959,343 | 11/1960 | Rosander | 229/62.5 |
| 3,004,698 | 10/1961 | Ashton | 229/62.5 |
| 3,167,241 | 1/1965 | Woerner | 229/62.5 |



1. A plastic bag obtained from a tubular foil and having in the flattened condition longitudinal edges, there being an inward fold (4) along one longitudinal edge to define first and second longitudinal plies (5,6) having ply longitudinal edges (2,3), a transverse sealed joint (12) on said tubular foil to define an end of the bag, there being first and second longitudinal incisions (8,8') in said plies (5,6) said incisions extending from said bag end and terminating at respective incision end points (9,9') on said longitudinal ply edges (2,3) to define a foil flap (10), said foil flap (10) being folded outwardly and a tubular filling valve (13) inserted in the opening defined by said outwardly folded foil flap, a first sealed joint (14) extending from said end points in a direction away from said bag end transverse sealed joint to connect said foil flap with said tubular filling valve, and a second sealed joint (15) from said end points extending to said end transverse joint connecting said tubular filling valve to the edges of said foil adjacent said incisions to close the tubular foil.



**B 433,094**
**VEHICLE AUXILIARY HYDROSTATIC DRIVE SYSTEM**
**Billie Gene Hunck, and James Henry Kress, both of Cedar Falls, Iowa, assignors to Deere & Company, Moline, Ill.**
**Filed Jan. 14, 1974, Ser. No. 433,094**
**Int. Cl.² B60K *17/30***
**U.S. Cl. 180—49** **4 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 3,129,781 | 4/1964 | Stein | 180/44 F |
| 3,458,005 | 7/1969 | Malm et al. | 180/60 |
| 3,473,442 | 10/1969 | Farmer et al. | 60/494 |
| 3,506,081 | 4/1970 | Rumsey | 180/44 F |
| 3,511,131 | 5/1970 | Kress | 91/176 |
| 3,640,066 | 2/1972 | Marshall | 60/466 |
| 3,641,765 | 2/1972 | Hancock | 180/44 F |
| 3,672,167 | 6/1972 | Griesenbrock | 180/66 R |
| 3,811,525 | 5/1974 | Stuart | 180/66 R |

1. A vehicle having an engine, a pair of main drive wheels, variable ratio transmission means for transmitting driving torque from the engine to the main drive wheels, a pair of steerable wheels, and an auxiliary hydrostatic drive system for the steerable wheels including a fluid pump, a reservoir providing a supply of fluid for the pump, at least one reversible reciprocating piston type motor drivingly connected to the steerable wheels, said motor having first and second ports and a drive chamber port, first fluid line means interconnecting the pump and reservoir with the first and second ports in the motor, and motor control valve means interposed in the first fluid line means movable to either side of a neutral, fluid blocking position to deliver fluid from the pump to either the first or second ports in the motor, characterized in that a second valve has first and second sides, second fluid line means connects the drive chamber port with the first side of the second valve, additional fluid line means interconnects the reservoir, the second side of the three-way valve and the first fluid line means between the motor and motor control valve means, first check valve means are interposed in the additional fluid line means to prevent flow of fluid from the first fluid line means to the additional fluid line means, further fluid line means separate from the additional fluid line means interconnects the first fluid line means between the motor and motor control valve means with the second side of the three-way valve, second check valve means are interposed in the further fluid line means to prevent flow of fluid from the further fluid line means to the first fluid line means, and the three-way valve is movable between a first neutral position in which it interconnects the further fluid line means with the second fluid line means to destroke the motor and at least one additional position in which it interconnects the additional fluid line means with the second fluid line means to vent the drive chamber port to the reservoir.

**B 465,145**

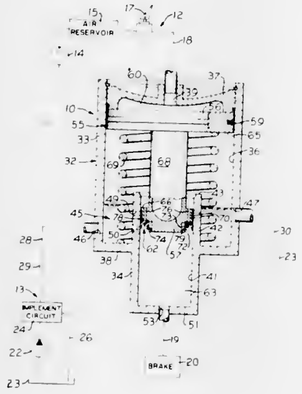
## COMBINED FLUID MOTOR AND PUMPING APPARATUS

**Walter L. McLuckie, Coal City, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.**

**Filed Apr. 29, 1974, Ser. No. 465,145**
**Int. Cl.² F15B 7/10**
**U.S. Cl. 60—592** **7 Claims**

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| 136,091 | 6/1875 | Overend | 417/498 |
| 2,517,952 | 8/1950 | Welling | 417/498 |
| 2,990,687 | 7/1961 | McCrea | 60/547 |
| 3,199,298 | 9/1965 | Brown | 60/552 |
| 3,407,601 | 10/1968 | Beck | 60/547 X |
| 3,550,379 | 12/1970 | Cox, Jr. | 60/547 |
| 3,635,014 | 1/1972 | Kress | 60/543 |
| 3,768,608 | 10/1973 | Fulmer | 60/547 X |


1. A combined fluid motor and pumping apparatus for pressurizing a closed hydraulic circuit work system upon selective actuation of such apparatus by a source of pressurized air, comprising;

piston means having a pair of axially spaced motor and pump piston ends;

an upright housing providing a predetermined upper motor portion having said motor piston end of said piston means slidably mounted therein and a lower pumping portion having said pump piston end slidably mounted therein, said motor portion being provided with a lower end and said pumping portion being provided with a predetermined upper segment extended into said motor portion and having an open upper end disposed a predetermined distance above said lower end of the motor portion, said upper segment having a size diametrically smaller than said motor portion to define an annular chamber disposed in surrounding relation to said upper segment of the pumping portion for providing an oil makeup reservoir;

means for selectively communicating said reservoir with said pumping portion; and

means for automatically replenishing any oil consumed from said reservoir so that the reservoir is continuously maintained with a sufficient amount of oil for recharging said work system as required.

**B 481,600**

## AUTOMATIC PRINT GAP ADJUSTMENT ARRANGEMENT

**Roy D. Thomas, Wenonah, N.J., and Ross W. Johnston, Norristown, Pa., assignors to Sperry Rand Corporation, Blue Bell, Pa.**

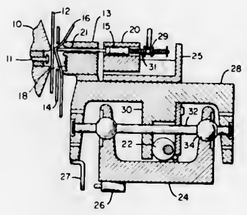
**Division of Ser. No. 401,524, Sept. 27, 1973, abandoned. This application June 21, 1974, Ser. No. 481,600**
**Int. Cl.² B41J 1/20**
**U.S. Cl. 101—93.14** **7 Claims**

**References Cited**
UNITED STATES PATENTS

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|---|---|---|---|
| 2,831,424 | 4/1958 | MacDonald | 101/111 X |
| 3,408,930 | 11/1968 | Chamness et al. | 101/111 X |
| 3,623,427 | 11/1971 | Buehrmann et al. | 101/111 X |
| 3,730,082 | 5/1973 | Perry | 101/93 C |
| 3,742,848 | 7/1973 | Huntoon et al. | 101/93 C |
| 3,750,792 | 8/1973 | Liles | 197/1 R |
| 3,793,951 | 2/1974 | Denley | 101/111 |
| 3,828,669 | 8/1974 | Bonafino et al. | 101/111 |

OTHER PUBLICATIONS

IBM Technical Disclosure Bulletin, Vol. 13, No. 12, May 1971, p. 3643, *Carpenter, et al.*

1. A printer device of the type wherein a print hammer is separated from a print band and the print hammer is directed toward the print band comprising,

a. a print head means including the print hammer;

b. a print form wherein both the print head means and form are located on a fixed carriage, said print form having a variable thickness depending upon whether it is a single or multi-part form;

c. a movable print type band;

d. a ribbon wherein both said band and ribbon are located on a movable carriage, said ribbon having a thickness which is variable upon replacement;

e. means located in proximity to said movable carriage for simulating the print hammer striking said ribbon and form;

f. means responsive to said simulation of the print hammer for positioning said print band the required distance from said print hammer.



**B 487,260**

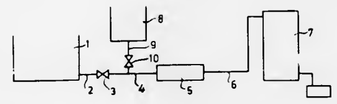
## INSTALLATION FOR FEEDING A CURD/WHEY MIXTURE IN THE CORRECT RATIO TO A CHEESE STUFFING MACHINE

**Geert de Boer, Lippenhuizen, Netherlands, assignor to Stork Amsterdam B.V., Amstelveen, Netherlands**

**Filed July 10, 1974, Ser. No. 487,260**
**Claims priority, application Italy, July 18, 1973, 10020/73**
**Int. Cl.² B67D 5/52**
**U.S. Cl. 222—136** **1 Claim**

**References Cited**
UNITED STATES PATENTS

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|---|---|---|---|
| 1,327,990 | 1/1920 | French | 222/136 |
| 2,065,128 | 12/1936 | Eisinger | 222/136 X |
| 2,758,566 | 8/1956 | Talbott | 222/136 X |

1. An installation for proportioning and mixing whey and curd and passing the resultant mixture to a cheese stuffing machine, said installation comprising a cheese stuffing machine, a collecting reservoir for curd and whey, a second reservoir for whey only, a volumetric pump with a suction pipe and a pressure pipe, said collecting reservoir being connected to the pump suction pipe, and a conduit connecting said second reservoir for whey to the suction pipe of said pump, and a valve in said conduit for controlling the flow of whey therethrough, the pressure pipe of said pump being connected to said cheese stuffing machine for the passage of the mixture of whey and curd thereto.

**B 490,067**

## MICROFICHE FILM PACK

**James Michael Marsh, Yorba Linda, and William R. Swift, Placentia, both of Calif., assignors to Addressograph-Multigraph Corporation, Cleveland, Ohio**

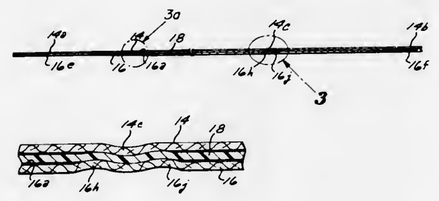
**Filed July 19, 1974, Ser. No. 490,067**
**Int. Cl.³ B65D 85/00; G03B 17/26, 41/18**
**U.S. Cl. 206—455** **4 Claims**

**References Cited**
UNITED STATES PATENTS

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|---|---|---|---|
| 1,536,341 | 5/1925 | Hodgson | 250/478 |
| 2,663,418 | 12/1953 | Grunwald | 206/455 |
| 3,338,400 | 8/1967 | Edgworth et al. | 206/484 X |

FOREIGN PATENTS OR APPLICATIONS

| | | | |
|---|---|---|---|
| 1,076,834 | 3/1960 | Germany | 250/475 |
| 231,487 | 11/1925 | United Kingdom | 206/455 |


1. A microfiche film pack comprising in combination:

a pair of oppositely disposed opaque covers one of which is formed with an offset portion providing a three-sided pocket;

a sheet of photosensitive material between said covers and partially enclosed within said pocket;

means sealing together said covers along the sides of said pocket; and

a light trap formed by means of parallel cooperating indentations in said covers and said sheet extending the width of said oppositely disposed covers adjacent that portion of said photosensitive material not enclosed within said pocket.

**B 496,999**

## PRINTING DEVICE OPERATING WITH A CYCLOIDAL PRINTING MOTION FOR DATA PROCESSING MACHINES

**Joachim Thienemann, Hamburg, Germany, assignor to U. S. Philips Corporation, New York, N.Y.**

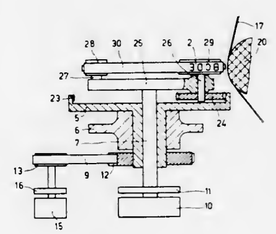
**Filed Aug. 13, 1974, Ser. No. 496,999**
**Claims priority, application Germany, Aug. 16, 1973, 2341347**
**Int. Cl.² B41J 1/20, 7/36**
**U.S. Cl. 101—93.13** **3 Claims**

**References Cited**
UNITED STATES PATENTS

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|---|---|---|---|
| 823,080 | 6/1906 | Richards | 197/18 |
| 3,144,820 | 8/1964 | Wales, Jr. | 197/18 X |

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Western Electric Technical Digest, No. 28, 10–1972, Endless Carrier Printers, p. 23.

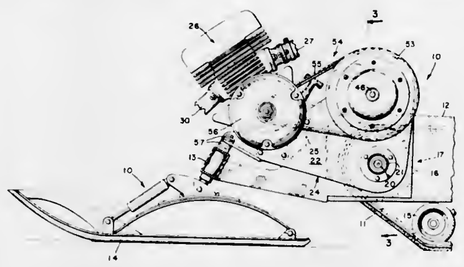



1. A printing device operating with a cycloidal printing motion and having a revolving type carrier, the types of which are guided over cycloidal paths by a planetary gear drive having two degrees of freedom, a selected character being printed at the stationary points of the cycloidal path, comprising a sun gear mounted for rotation about a first axis, a connection member fixed to said first axis, a second axis rotatably carried at one end of said connection member, a planet gear mounted for rotation about said second axis in engagement with said sun gear, a pressure roller coupled to said planet gear and mounted for rotation about said second axis, a third axis carried by said connection member spaced from said first end, a guide roller mounted to said connection member for rotation about said third axis, and an elastic band carrying type arranged about said pressure and guide rollers.

**B 499,171**
**ENGINE AND DRIVE TRAIN SUSPENSION SYSTEM FOR SNOWMOBILES**
**Donald G. Samuelson, Anoka, and Charles A. Baxter, Minneapolis, both of Minn., assignors to Textron, Inc., Providence, R.I.**
**Filed Aug. 21, 1974, Ser. No. 499,171**
**Int. Cl.² B62M *27/02***
**U.S. Cl. 180—5 R** **15 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 1,068,883 | 7/1913 | Frank | 180/5 R |
| 3,756,334 | 9/1973 | Williams | 180/5 R |
| 3,794,131 | 2/1974 | Freedman | 180/5 R |
| 3,822,755 | 7/1974 | Hine | 180/5 R |

**1.** In a snowmobile including a rearward track and forward ski members:
a housing enclosing said track;
a track drive member passing through said housing;
a source of mechanical energy of rotation coupled to said drive member external to said housing;
and cradle means including a pair of spaced rigid plate members resiliently mounting said source and said drive member on said housing.

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**B 499,227**
**INVESTMENT CASTING MOLD AND PROCESS**
**Douglas R. Hayes, Vernon, Conn., and Charles M. Phipps, Ridgewood, N.J., assignors to United Technologies Corporation, Hartford, Conn.**
**Filed Aug. 21, 1974, Ser. No. 499,227**
**Int. Cl.² B22C *7/02, 9/22***
**U.S. Cl. 164—26** **15 Claims**

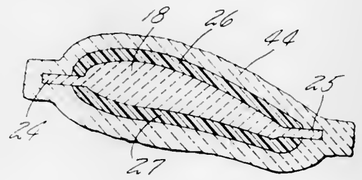
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| 2,782,476 | 2/1957 | Brennan | 164/338 |
| 2,912,729 | 11/1959 | Webb | 106/38.9 X |
| 3,627,015 | 12/1971 | Giamei | 164/23 X |
| 3,669,177 | 6/1972 | Ingalls et al. | 164/34 X |

FOREIGN PATENTS OR APPLICATIONS

| | | | |
|---|---|---|---|
| 678,035 | 8/1952 | United Kingdom | 164/34 |


**1.** In the manufacture of a mold for use in precision casting of mating thin walled parts from high temperature alloys, the steps of
providing a precast, high strength central mold element of adequate strength to avoid deformation during heating and casting of the said mold element having article forming surfaces on opposite surfaces thereof and edge flanges extending beyond the article forming surfaces and the wax patterns,
positioning individual wax patterns on opposite sides of the element, one on each article forming surface of the element,
forming a shell mold around the assembled mold element including the edge flanges and the patterns on the element by successively dipping the element with the patterns thereon in a ceramic slurry, stuccoing with refractory particles to form a coating and drying the coating to form the desired shell thickness, and



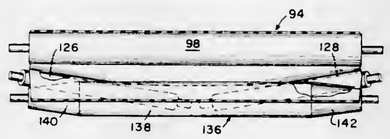
heating the shell mold to harden it and to melt out the wax patterns in readiness for making a casting therein, the central mold element retaining its shape and dimension during such heating.

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**B 499,352**
**BELT TRACKING SYSTEM FOR A BALER**
**Carmen S. Phillips, and Charles D. Mecklin, both of Memphis, Tenn., assignors to International Harvester Co., Chicago, Ill.**
**Filed Aug. 21, 1974, Ser. No. 499,352**
**Int. Cl.² B65G *15/62***
**U.S. Cl. 198—202** **9 Claims**

**References Cited**
UNITED STATES PATENTS

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|---|---|---|---|
| 2,480,294 | 8/1949 | Hume | 198/208 |
| 2,568,174 | 9/1951 | Staacke | 198/202 |
| 2,966,065 | 12/1960 | Renner | 198/202 |
| 3,132,785 | 5/1964 | Kunz | 198/202 |
| 3,240,321 | 3/1966 | Lo Presti et al. | 198/202 |
| 3,710,927 | 1/1973 | Alsted | 198/202 |
| 3,722,197 | 3/1973 | Vermeer | 56/341 |

**1.** In a baler having an endless drivable belt upon which an incoming stream of hay is adapted to be rolled into a cylindrical bale, a support and tracking system for the belt comprising:
a generally horizontal frame extending fore-and-aft of the baler;
a power-drivable roller journaled on a forward portion of said frame;
a tightener roller journaled on a rearward portion of said frame, said belt being trained about said rollers so as to be disposed therebetween in upper and lower runs, said drivable roller being adapted to move said lower run in a forward direction;
a pair of guiding rollers journaled on said frame in a V-configuration relative to each other as viewed in transverse vertical section and in horizontal plan to engage and support said lower run in a transverse trough-like configuration, thereby maintaining said belt in centered relation on said driving and tightening rollers;
a compensating roller journaled on said frame in engagement with said lower run between said guiding rollers and said drivable roller, said compensating roller having a cylindrical central portion and outwardly tapered end portions for engaging the troughed lower run as received from said guiding rollers to dispose the lower run uniformly into contact with said drivable roller.

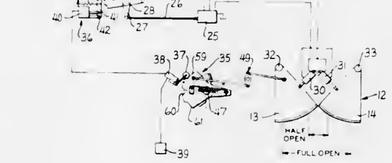


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**B 510,588**
**WAGON DOOR CONTROL SYSTEM AND DUAL CAM THEREFOR**
**Bernard E. Proeschl; Ralph C. Schell, both of Decatur, and James M. Stanley, Oreana, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.**
**Filed Sept. 30, 1974, Ser. No. 510,588**
**Int. Cl.² B60P *1/56***
**U.S. Cl. 298—35 M** **12 Claims**

**References Cited**
UNITED STATES PATENTS

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|---|---|---|---|
| 2,927,541 | 3/1960 | Lunde | 298/35 M X |
| 3,289,546 | 12/1966 | Erickson | 91/358 A |
| 3,427,075 | 2/1969 | Kress et al. | 298/35 M |

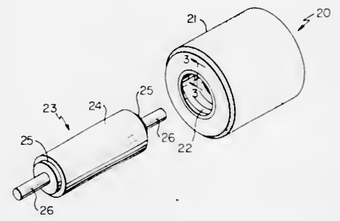

**1.** In a wagon having a movable dump door means, the improvement comprising: control means selectively manually positionable in an Open position and a Close position; power means responsive to the positioning of the control means in the Open position to move the door means to an open position and to the positioning of the control means in the Close position to move the door means to a closed position; powered means for throwing the control means to a Hold position from either of said Open and Close positions; and cam means responsive to the movement of the door means by said power means to either of said open and closed positions to operate said powered means to throw said control means to said Hold position thereby stopping further movement of the door means in the selected door position, said cam means including means for selectively arranging a camming portion thereof to operate said powered means to throw said control means to said Hold position selectively when said door reaches a preselected partially open position intermediate said closed and open positions.

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**B 510,855**
**TEXTILE COT**
**Walter L. Dodson, 122 Old Clyde Road, Canton, N.C. 28716**
**Filed Sept. 30, 1974, Ser. No. 510,855**
**Int. Cl.² B21B *31/08***
**U.S. Cl. 29—127** **15 Claims**

**References Cited**
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| 954,055 | 4/1910 | Smith | 29/127 X |
| 1,092,775 | 4/1914 | Kempshall | 29/132 |
| 2,046,136 | 6/1936 | St. Claire | 29/127 |
| 2,046,137 | 6/1936 | Prentis | 29/127 |
| 2,597,858 | 5/1952 | Freedlander | 29/130 |
| 2,960,749 | 11/1960 | Robertson et al. | 29/127 X |
| 3,173,172 | 3/1963 | Pasquetti | 29/200 B |
| 3,229,352 | 1/1966 | Balkin et al. | 29/132 |
| 3,308,523 | 3/1967 | Ivester et al. | 29/127 |
| 3,593,398 | 7/1971 | Hess et al. | 29/132 |

**1.** A textile cot comprising an elastomeric outer portion and a rigid core bonded to and supporting said outer portion, said core comprised of a continuous interlocking tube capable of being expanded radially a sufficient amount to provide a press fit against an associated cylindrical supporting structure, said tube formed of elongated helically wound strip means having mechanically interlocking projections.

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**B 511,156**
**WELL TUBING PARAFFIN CUTTING APPARATUS AND METHOD OF OPERATION**
**Darrell G. Warner, New Orleans, and William D. Loth, Covington, both of La., assignors to Exxon Production Research Company, Houston, Tex.**
**Filed Oct. 2, 1974, Ser. No. 511,156**
**Int. Cl.² E21B *21/00, 37/02***
**U.S. Cl. 166—311** **16 Claims**

**References Cited**
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|---|---|---|---|
| 2,117,836 | 5/1938 | Brown | 166/173 |
| 2,205,739 | 6/1940 | Wilson | 166/173 |
| 2,636,565 | 4/1953 | Williams | 166/170 |
| 2,720,925 | 10/1955 | Lynch | 166/176 |
| 2,825,411 | 3/1958 | Keltner | 166/173 |
| 2,981,331 | 4/1961 | Arterbury | 166/311 |
| 3,016,094 | 1/1962 | Abbott | 166/226 |
| 3,072,194 | 1/1963 | Winders | 166/170 |
| 3,376,936 | 4/1968 | Tomlin | 166/226 |
| 3,394,763 | 7/1968 | Page | 166/311 |
| 3,791,445 | 2/1974 | True | 166/224 A |


**1.** A paraffin cutter for use in removing paraffin from a well tubing comprising a stationary wireline operated subsurface safety valve;
means for releasably connecting said paraffin cutter to said subsurface safety valve and
for permitting sufficient tension to be applied to said subsurface safety valve to maintain said subsurface safety valve

open while said paraffin cutter and said subsurface safety valve remain connected together.

**11.** A method for cutting paraffin from a tubing containing a wireline operated subsurface safety valve comprising the steps of:

lowering paraffin cutting apparatus containing cutting elements engageable with the wall of said tubing through said tubing on a wireline;

connecting said paraffin cutting apparatus to said safety valve;



applying sufficient tension to said wireline to open said safety valve and maintain said safety valve open;

manipulating said wireline to disconnect said paraffin cutting apparatus from said safety valve and to expose cutting elements on said paraffin cutting apparatus for engagement with the wall of said tubing; and

pulling said paraffin cutting apparatus upwardly through said tubing by said wireline with said cutting elements in engagement with the wall of said tubing.

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**B 511,346**
**ATTITUDE CONTROL SYSTEM**

**George L. von Pragenau, and Charles C. Rupp, Huntsville, both of Ala., assignors to The United States of America as represented by the National Aeronautics and Space Administration, Washington, D.C.**

**Filed Oct. 2, 1974, Ser. No. 511,346**
**Int. Cl.² B64G *1/20***
**U.S. Cl. 244—169** **1 Claim**

**References Cited**
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|---|---|---|---|
| 3,132,828 | 5/1964 | Edinger et al. | 244/3.2 X |
| 3,301,508 | 1/1967 | Yamron | 244/3.2 X |
| 3,395,874 | 8/1968 | Bartoli et al. | 244/32 |

FOREIGN PATENTS OR APPLICATIONS

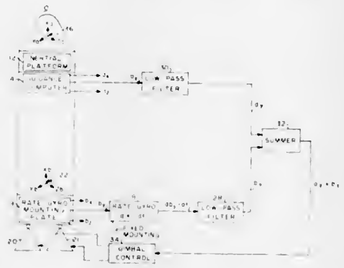
| | | | |
|---|---|---|---|
| 952,267 | 3/1964 | United Kingdom | 244/3.2 |

**1.** In an attitude control system for a space vehicle including at least one aft mounted and gimbaled motor, a motor gimbal control, the guidance means positioned in the forward region of said vehicle having an inertial reference platform and computing means for computing and providing attitude error signals in terms of a fixed inertial set of axes, the improvement comprising:

angular rate sensing means comprising at least one rate gyro fixedly mounted on said vehicle in the aft end region of said vehicle for providing at least one set of rate signals representative of the rate of rotation of said vehicle about at least one axis, said rate signals increasing in amplitude with increasing frequency and having a relatively low output at frequencies below the lowest resonance of said vehicle;

summing means responsive to attitude error signals from said guidance means and rate signals from said angular rate sensing means for summing said rate signals and said error signals;

low-pass filter means responsive to summed signals from said summing means for applying an integrating and



attenuating effect to said summed signals above the lowest resonant frequency of said vehicle and providing the control signals to said motor gimbal control; and

whereby for conditions of absence of vibrational frequencies higher than said lowest vehicle resonance, said control signals are dominated by attitude error filtered signals from said guidance means, and during the occurrence of vibrational frequencies of a freqency higher than said lowest vehicle resonant frequency, said control signals are dominated by filtered signals derived from said rate sensing means.

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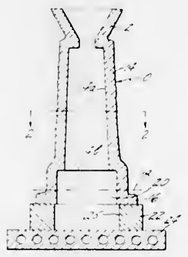
**B 511,885**
**METHOD AND APPARATUS FOR DIRECTIONAL SOLIDIFICATION**

**Douglas R. Hayes, Vernon, and James S. Perron, Chester, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.**

**Filed Oct. 3, 1974, Ser. No. 511,885**
**Int. Cl.² B22D *25/06***
**U.S. Cl. 164—60** **10 Claims**

**References Cited**
UNITED STATES PATENTS

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|---|---|---|---|
| 3,514,069 | 5/1970 | Daley | 249/111 |
| 3,532,155 | 10/1970 | Kane et al. | 164/60 |
| 3,678,988 | 7/1972 | Tien et al. | 164/49 |



**1.** Apparatus for making columnar grained articles including,



a chill plate for controlling the cooling of the mold and alloy therein,

a ceramic mold including an article portion having a cavity and a base portion having a cavity communicating with the cavity in the article portion,

a spacer ring of preformed ceramic material separate from the mold and positioned on said chill plate and on which the mold is positioned with the base portion resting on the spacer,

said spacer ring and mold providing a continuous cavity from the chill plate through the spacer and into and including the article portion cavity,

means surrounding the mold for heating the mold to a temperature substantially as high as the melting point of the alloy to be cast, and

the material and thickness of said spacer ring such that said ring is particularly resistant to damage by the steep thermal gradients developed during heating of the mold resting on the ring and simultaneous chilling of the ring by the chill plate, and said spacer ring serving to space the mold from the chill plate to reduce the thermal gradients therein.

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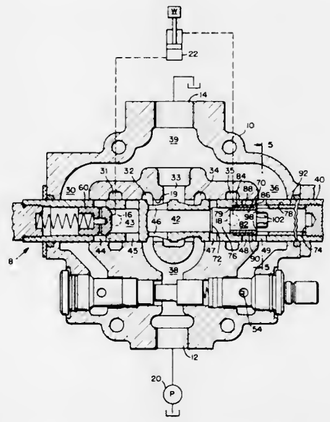
**B 514,687**
**HYDRAULIC CONTROL VALVE**

**Robert B. Janvrin, Kalamazoo, Mich., assignor to General Signal Corporation, Rochester, N.Y.**

**Filed Oct. 15, 1974, Ser. No. 514,687**
**Int. Cl.² F15B *13/04***
**U.S. Cl. 137—596.12** **14 Claims**

**References Cited**
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| 2,949,097 | 8/1960 | Vander Kaay | 137/625.68 |
| 2,101,758 | 12/1937 | Shaffer | 220/200 |
| 2,613,012 | 10/1952 | Taylor | 220/296 |
| 3,023,924 | 3/1962 | Boyer | 220/288 |
| 3,343,697 | 10/1967 | Roberts | 215/220 |
| 3,589,486 | 6/1971 | Kelch | 192/46 |
| 3,616,960 | 11/1971 | Miller | 220/304 |
| 3,666,137 | 5/1972 | Blau | 220/288 |
| 3,667,642 | 6/1972 | Blau | 220/288 |
| 3,682,343 | 8/1972 | Landen | 215/9 |
| 3,715,075 | 2/1973 | Blau | 220/288 |
| 3,815,776 | 1/1971 | Mac Millan | 220/288 |
| 3,820,680 | 1/1975 | Friend | 220/203 |
| 3,831,801 | 1/1975 | Rodgers | 220/39 |



**1.** In a hydraulic control valve comprising a housing having inlet and exhaust ports and first and second motor ports, passageways interconnecting said ports, and a shiftable valve element having an internal flow passage, said valve element having four operative positions for controlling flow through said passageways, a first position in which said inlet and exhaust ports are interconnected and each motor port is isolated from the other of said ports, second and third positions in which said inlet port is isolated from said exhaust port and is connected with said first and second motor ports, respectively, while the exhaust port is connected with said second and first motor ports, respectively, and a fourth position in which said two motor ports are interconnected, and this interconnection is in restricted communication with said exhaust port, a check valve in said internal flow passage for preventing flow from said first motor port to said exhaust port when said valve element is moved between the first and second positions to said first position, the improvement comprising:

valve means associated with said shiftable valve element for preventing fluid communication between said second motor port and said exhaust port when said shiftable valve element is moved from between the first and third positions.

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**B 516,032**
**TORQUE LIMITER MECHANISM**

**Claude A. Smith, Sandusky, and Donald L. Williams, Port Clinton, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.**

**Continuation-in-part of Ser. No. 476,657, June 5, 1974. This application Oct. 18, 1974, Ser. No. 516,032**
**Int. Cl.² B65D *41/04***
**U.S. Cl. 220—288** **1 Claim**

**References Cited**
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| 2,613,012 | 10/1952 | Taylor | 220/296 |
| 3,023,924 | 3/1962 | Boyer | 220/288 |
| 3,343,697 | 10/1967 | Roberts | 215/220 |
| 3,589,486 | 6/1971 | Kelch | 192/46 |
| 3,616,960 | 11/1971 | Miller | 220/304 |
| 3,666,137 | 5/1972 | Blau | 220/288 |
| 3,667,642 | 6/1972 | Blau | 220/288 |
| 3,682,343 | 8/1972 | Landen | 215/9 |
| 3,715,075 | 2/1973 | Blau | 220/288 |
| 3,815,776 | 1/1971 | Mac Millan | 220/288 |
| 3,820,680 | 1/1975 | Friend | 220/203 |
| 3,831,801 | 1/1975 | Rodgers | 220/39 |



**1.** A torque release clutch mechanism comprising cover means having a top portion and a continuously formed circumferential flange thereon, a plurality of circumferentially spaced cam surfaces on the interior of said flange, each of said surfaces including a cam ramp and a cam notch having a land portion formed therebetween, a curved peak joining each of said ramps to an adjacent cam notch, a driven member having a head portion thereon with a peripheral flange received within said cover for rotation relative thereto, means for connecting said cover means and driven member against axial separation, a plurality of fingers formed integrally with said peripheral flange and of material tending toward a cold set distortion under prolonged stress, each finger having a root directed radially outwardly of said peripheral flange, each of said fingers including an arcuate segment joined to said root and having a tip biased radially outwardly of said peripheral flange and compressible radially inwardly toward said peripheral flange, each of said tips including a flat radially inwardly directed stop surface thereon engageable with said cam notches to interlock said cover with said driven member upon a first relative rotation therebetween, each of said tips further

including an inclined surface thereon, a sharp radius curve on said tip joining said stop surface and said inclined surface, said sharp radius curve being mateable with each of said cam ramps and movable thereacross to produce a limited resistance to relative rotation between said cover and said driven member upon rotation of said cover in a direction opposite to said first relative rotation and a torque release between said curved peaks and said sharp radius curves, to assure movement of said fingers radially outwardly to an unstressed park position on said land portion following movement of said fingers radially inwardly on said cam ramps, said inclined surface and said cam ramp having an angle of inclination whose tangent exceeds the coefficient of friction between said inclined surface and said cam ramp whereby said fingers will slip radially outwardly on said cam ramps if they are located thereon following cap tightening to assume an unstressed park position on said land portions following cap tightening, said flange having lugs formed integrally thereof at spaced circumferential points thereon to space said finger roots from said cover means, a plurality of ribs formed on said driven member engageable with said cover to space said finger tips axially of said cover means whereby said fingers are free to flex between said peripheral flange and said cam surfaces during movement thereof across said cam surfaces between torque released positions on said cam ramps and unstressed park positions on said land portions.

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**B 520,384**

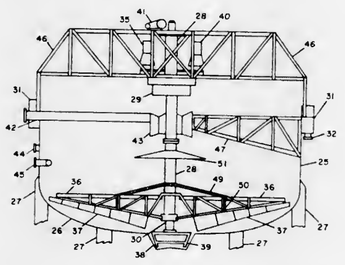
## HOT WATER EXTRACTION CELL CONTAINING TWO OR MORE DEFLECTION BAFFLES

**Robert A. Baillie, West Chester, Pa.; H. James Davitt, Edmonton, and David E. Rose, Calgary, both of Canada, assignors to Great Canadian Oil Sands Limited, Toronto, Canada**

**Filed Nov. 4, 1974, Ser. No. 520,384**
**Int. Cl.² B01D *11/02*; C10G *1/04***
**U.S. Cl. 196—14.52** **1 Claim**

**References Cited**
UNITED STATES PATENTS

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|---|---|---|---|
| 2,502,490 | 4/1950 | Sweet | 210/528 X |
| 3,245,543 | 4/1966 | Levendusky et al. | 210/521 |
| 3,530,042 | 9/1970 | Graybill et al. | 196/14.52 |
| 3,847,789 | 11/1974 | Cymbalisty | 208/11 |



1. In a hot water process separation cell suitable for recovering bituminous froth from tar sands comprising;
   a. a tank;
   b. a rotatable center shaft running on the vertical axis of the tank from the top toward the bottom of the tank;
   c. a means for rotating said shaft;
   d. middlings outlets connected to the side and communicating with the interior of the tank for withdrawing middlings from the cell;
   e. a tar sands pulp inlet means to the tank, said means having an inlet at one end and communicating with the exterior of said cell and a discharge outlet located within said tank at the opposite end of said inlet means and having a feed well at its discharge end;
   f. a sand discharge outlet at the bottom of the tank for withdrawing sand tailings from the cell;
   g. an overflow means connected at the side of the tank and positioned adjacent to the tank to receive bituminous froth;
   h. a sand rake connected to said center shaft to rotate with the shaft and positioned to move settled sand toward said sand discharge outlet; the improvement which comprises
      i. and inverted saucer shaped baffle affixed immediately above said sand rakes and extending from and concentric with said shaft and having a skirt affixed to the outer periphery of said baffle and extending downward to a point between said baffle and the bottom of said tank; and
      ii. a second inverted saucer shaped baffle extending from said shaft and concentric therewith located immediately below the outlet of said feed well.

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**B 520,543**

## CENTER COOLED LASER MIRROR

**Laurence R. Peters, Peoria, and William E. Streight, East Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.**

**Filed Nov. 4, 1974, Ser. No. 520,543**
**Int. Cl.² G02B *5/08***
**U.S. Cl. 350—310** **8 Claims**

**References Cited**
UNITED STATES PATENTS

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|---|---|---|---|
| 3,488,110 | 1/1970 | Evoy | 350/310 X |
| 3,817,606 | 6/1974 | Locke et al. | 350/310 |
| 3,861,787 | 1/1975 | Locke et al. | 350/310 X |



1. A mirror apparatus comprising:
body means defining a reflective surface, and further defining internal chamber means, the body means further defining a wall which substantially divides the chamber means into a first, inner chamber positioned generally centrally of the reflective surface, and a second chamber positioned about the first chamber, the wall means defining passage means therethrough for providing communication between the first and second chambers;
said body means defining first port means communicating with the first chamber, and second port means communicating with the second chamber;
whereby a fluid can flow through one of the first and second port means, into the chamber communicating therewith, through the wall passage means, into the chamber communicating with the other of first and second port means, and from the other of the first and second port means.



**B 521,600**

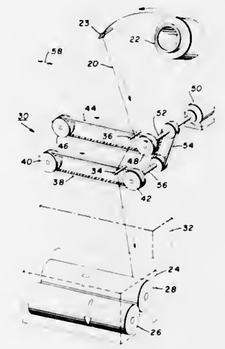
## SINGLE PIN GUIDE TRAVERSE

**Lawrence W. Rogers, Brewton, Ala., assignor to Monsanto Textiles Company, Pensacola, Fla.**

**Continuation-in-part of Ser. No. 236,535, March 8, 1972, abandoned. This application Nov. 7, 1974, Ser. No. 521,600**
**Int. Cl.² B65H *54/30***
**U.S. Cl. 242—43 R** **6 Claims**

**References Cited**
UNITED STATES PATENTS

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|---|---|---|---|
| 2,340,436 | 2/1944 | Stone et al. | 242/158 B |
| 3,633,836 | 1/1972 | Haag | 242/43 |



1. In apparatus wherein yarn is fed from a yarn source to a yarn winding means rotating about an axis, yarn traversing means for traversing said yarn in a plane generally parallel to said axis, said traversing means comprising:
   a. a yarn-engaging finger extending through said plane;
   b. support means supporting said finger for movement in a closed path in said plane and between said yarn source and said yarn winding means, said path including first and second generally parallel straight segments connected by first and second arcuate end segments, said first and said second segments being generally parallel to said axis, the only contact between said yarn and an element supported by said support means being contact between said yarn and said finger;
   c. and guide means for maintaining said yarn in continuous contact with the external surface of said finger at one side of a plane coinciding with the axis of said finger.

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**B 521,620**

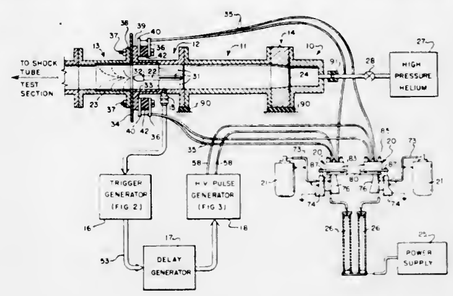
## ANNULAR ARC ACCELERATOR SHOCK TUBE

**James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Lewis P. Leibowitz, Arcadia, Calif.**

**Filed Nov. 6, 1974, Ser. No. 521,620**
**Int. Cl.² G01M *9/00***
**U.S. Cl. 73—147** **9 Claims**

**References Cited**
OTHER PUBLICATIONS
"Development of an Annular Arc Accelerator Shock Tube Driver", Leibowitz, Jan. 1973, pp. 679–689, of Proceedings of the Ninth International Shock Tube Symposium, Stanford University.

1. In an annular arc accelerator shock tube having a section for initiating a shock wave in a test gas, said shock wave traveling into a test section through electrode sections where energy stored in a bank of capacitors is discharged into the test gas to accelerate the shock wave, the improvement comprising means not interfering with gas flow for detecting said shock wave passing into said electrode sections before discharging said capacitors into said test gas and means responsive to said detecting means for triggering discharge of said energy stored in said bank of capacitors into said test gas immediately behind said shock wave, whereby said test gas is arc heated to accelerate said shock wave into said test section.



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**B 533,968**

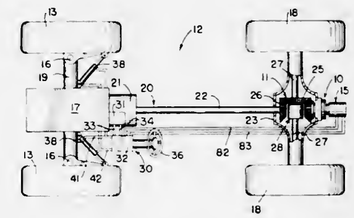
## DIFFERENTIAL COUPLED PARKING BRAKE AND STEERING PUMP ASSEMBLY

**Curtis F. Cummins, Decatur; Kenneth W. Kelly, Warrensburg, and Harold N. Lantz, Decatur, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.**

**Division of Ser. No. 398,387, Sept. 18, 1973, abandoned. This application Dec. 18, 1974, Ser. No. 533,968**
**Int. Cl.² B62D *5/06***
**U.S. Cl. 180—79.2 R** **4 Claims**

**References Cited**
UNITED STATES PATENTS

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|---|---|---|---|
| 1,694,020 | 12/1928 | Price | 192/4 B |
| 3,323,389 | 6/1967 | Hause | 74/710.5 |
| 3,334,703 | 8/1967 | Zeller | 180/53 R |
| 3,334,711 | 8/1967 | Anderson | 192/4 B X |
| 3,363,728 | 1/1968 | Stengelin | 192/4 B X |
| 3,424,262 | 1/1969 | Kunz | 180/79.2 R |
| 3,500,970 | 3/1970 | Schilling | 188/170 |
| 3,532,177 | 10/1970 | Herrman | 180/66 R |
| 3,536,230 | 10/1970 | Williams | 188/170 |
| 3,547,234 | 12/1970 | Cummins | 188/170 |
| 3,642,103 | 2/1972 | Schott | 192/4 A |



1. In a vehicle having differential means for transmitting engine torque to ground engaging wheels and having fluid actuated primary steering means; auxiliary steering fluid supply means for supplying fluid under pressure to said steering means in response to rotation of said ground engaging wheels, said steering fluid supply means including adjunctive pinion means for directly engaging an operative component of said differential means and for causing said differential means to drive said auxiliary steering fluid supply means upon rotation

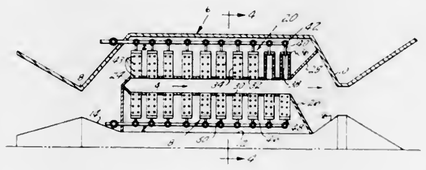
of said ground engaging wheels, parking brake assembly means having means for directly acting upon said adjunctive pinion means to selectively permit or restrain rotation of said adjunctive pinion means to respectively permit or prevent said differential means component from rotating and allowing rotation of said ground engaging wheels, said parking brake assembly means including a first plurality of friction plates connected to a portion of said adjunctive pinion means, and a second plurality of friction discs selectively engageable with said first plurality of friction plates for permitting or restraining movement thereof.

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**B 534,313**
**CERAMIC BURNER CONSTRUCTION**
**Eugene J. Szetela, South Windsor, Conn., assignor to United Technologies Corporation, Hartford, Conn.**
**Filed Dec. 19, 1974, Ser. No. 534,313**
**Int. Cl.² F23C *5/28***
**U.S. Cl. 431—175** **12 Claims**

**References Cited**
UNITED STATES PATENTS

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| 2,060,993 | 11/1936 | Keith | 431/180 |
| 2,777,291 | 1/1957 | Darling | 60/39.65 |
| 3,247,884 | 4/1966 | McFadden et al. | 431/351 |
| 3,425,675 | 2/1969 | Twine | 431/328 |
| 3,671,171 | 6/1972 | Doyle | 60/39.65 |
| 3,856,455 | 12/1974 | Otway et al. | 431/351 |

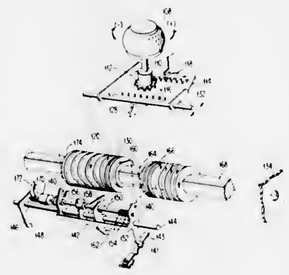


1. A burner construction including:
a substantially cylindrical surrounding outer wall;
an inner wall spaced from and enclosed by said outer wall, said inner wall having a plurality of holes therein; and
a plurality of individual burner cans mounted on said inner wall, each burner can having a perforate sidewall and having a fuel nozzle opening at one end, and having the other end attached to one of the openings in the inner wall with the axis of each individual burner extending substantially at right angles to the inner wall, said burners being totally within the cylindrical outer wall.

**B 535,391**
**NON RETURN TO HOME RACK SHIFT SELECTION MECHANISM FOR A SINGLE ELEMENT PRINTER**
**William A. Abell, Jr.; Thomas R. Field; Ralph A. Haus, and Iraj D. Shakib, all of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.**
**Filed Dec. 23, 1974, Ser. No. 535,391**
**Int. Cl.² B41J *23/04***
**U.S. Cl. 197—18** **1 Claim**

**References Cited**
UNITED STATES PATENTS

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|---|---|---|---|
| 3,352,398 | 11/1967 | Crutcher et al. | 197/16 |
| 3,559,791 | 2/1971 | Waldenburger | 197/55 |
| 3,572,486 | 3/1971 | Hebel et al. | 197/55 X |
| 3,596,745 | 8/1971 | Waldenburger | 197/55 |
| 3,666,070 | 5/1972 | Schaefer | 197/18 |
| 3,738,471 | 6/1973 | Werff et al. | 197/16 X |
| 3,876,053 | 4/1975 | Giolitti et al. | 197/18 |



1. A printer having a type element mounted for rotation to present different characters to a print position, a pinion connected to said type element for rotation therewith, a drive device comprising a pair of rack members alternately positionable to engage diametrically opposite portions of said pinion, and means for driving an engaged rack member a measured distance wherein the improvement comprises:
a rack selection mechanism for shifting said rack members into and out of engagement, said rack selection mechanism comprising a pivot member spacially fixed with respect to said printhead;
a first cam follower means pivotally mounted on said pivot member;
a second cam follower pivotally supported on said pivot member;
a third cam follower pivotally supported on said pivot member;
said first cam follower means supporting for monoaxial displacement relative thereto, a selectably displaceable member for coupling said first cam follower means alternatively with said second and said third cam followers;
said first cam follower means positively engaging said drive device to impart bidirectional movement to said drive device;
a first cam, rotationally engageable with said first cam follower;
second cam rotationally engageable with said second cam follower, said first and second cam followers spacially displaced such that said first and second followers can not be simultaneously engaged by the respective first and second cams;
third cam engageable with said third cam follower to shift said first cam follower about said pivot member when said displaceable member is engaged with said third follower, said cams being axially movable into and out of engagement with said respective followers.



**B 535,466**
**PATIENT STIMULATING PACER ELECTRODE**
**Robert Lee Cannon, Waltham, Mass., assignor to American Optical Corporation, Southbridge, Mass.**
**Filed Dec. 23, 1974, Ser. No. 535,466**
**Int. Cl.² A61N *1/04***
**U.S. Cl. 128—419 P** **2 Claims**

**References Cited**
UNITED STATES PATENTS

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| 2,895,479 | 7/1959 | Lloyd | 128/417 |
| 3,476,116 | 11/1969 | Parsonnet et al. | 128/419 P |
| 3,478,746 | 11/1969 | Greatbatch | 128/419 PG |
| 3,533,403 | 10/1970 | Woodson | 128/419 P |
| 3,572,344 | 3/1971 | Bolduc | 128/419 P |
| 3,749,101 | 7/1973 | Williamson | 128/419 P |
| 3,804,098 | 4/1974 | Friedman | 128/419 P |

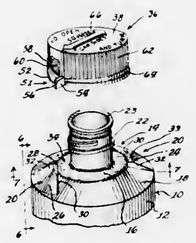
2. An electrode system capable of use with an electronic heart pacer, said system comprising at least one insulated electrical conductor whose distal ends are electrically connected between electrical output of said pacer and tissue of said heart, said tissue-connected distal end comprising electrically conductive porous means having point contact-welded metallic dust particles for conducting current from said pacer into said tissue in a manner to simultaneously decrease polarization losses and increase current density at the interface of said tissue and said conducting means.

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**B 541,015**
**SAFETY CLOSURE MEANS**
**Efrem M. Ostrowsky, 3600 W. Pratt Ave., Chicago, Ill. 60645**
**Filed Jan. 14, 1975, Ser. No. 541,015**
**Int. Cl.² B65D *55/02***
**U.S. Cl. 215—216** **12 Claims**

**References Cited**
UNITED STATES PATENTS

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|---|---|---|---|
| 3,854,622 | 12/1974 | McKirnan | 215/216 |
| 3,877,597 | 4/1975 | Montgomery | 215/216 |



1. Safety closure means comprising, a container and a closure cap therefor, said container having a neck and a shoulder, a locking lug on said shoulder, said cap having a top end wall and a depending annular inner wall and a depending outer annular skirt spaced from said inner wall, said inner wall having means engaging the neck of the container to secure said cap to said container in a closed position, said outer skirt having a radially extending locking lug adjacent the lower end thereof, said cap locking lug adapted when the cap is rotated to cap closing position to pass inwardly of said container locking lug and to be compressed radially inward during said passage and as it moves past the container locking lug to be released from its compressed state so that it extends outwardly beyond the engaging edge of said container locking lug to lock therewith and prevent counter-rotation of said cap, said outer skirt of said cap adapted to be manually engaged and pressed radially inward adjacent said cap locking lug to permit said cap lug to clear the engaging edge of the container lug and ride inwardly of the inside surface of said container lug when the cap is rotated in counter-rotation to permit removal of the cap from the container neck.

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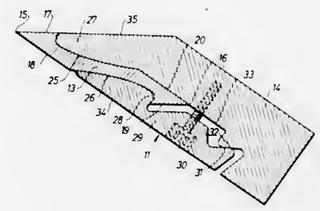
**B 545,630**
**KNIFE ASSEMBLY**
**Erik Wilhelm Sundström, Sandviken, Sweden, assignor to Sandvik Aktiebolag, Sandviken, Sweden**
**Filed Jan. 30, 1975, Ser. No. 545,630**
**Claims priority, application Sweden, Feb. 2, 1974, 7401608**
**Int. Cl.² B27G *13/00***
**U.S. Cl. 144—241** **6 Claims**

**References Cited**
UNITED STATES PATENTS

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| 715,378 | 12/1902 | Heath | 144/230 |

FOREIGN PATENTS OR APPLICATIONS

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| 220,880 | 4/1962 | Austria | 241/292.1 |



1. Cutting insert for knife assembly, said insert having two longitudinal cutting edges (**15, 16**), the insert being symmetrical after turning on a longitudinal axis (**40**) for fastening in a holder (**14, 29**) and exposing one cutting edge at a time for cutting purposes, the cutting edges forming in cross section the acute corners of a parallellogram, the insert also having two longitudinal grooves (**27, 28**) occupying each of the two obtuse corners of said cross section each of said grooves having a hooked cross section in order to establish a hooked engagement between the cutting insert and the holder.

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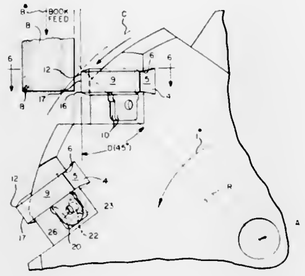
**B 545,935**
**PRECISION BOOK CUTTER WITH INCLINED BIT**
**Richard H. Barbour, Jr., Milton, Mass., assignor to Comstock & Wescott, Inc., Cambridge, Mass.**
**Filed Jan. 31, 1975, Ser. No. 545,935**
**Int. Cl.² B26D *7/06*; B23D *57/00*; B26D *1/12***
**U.S. Cl. 83—425** **8 Claims**

**References Cited**
UNITED STATES PATENTS

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|---|---|---|---|
| 3,297,067 | 1/1967 | Zaichkowsky | 144/235 X |
| 3,726,167 | 4/1973 | Barbour, Jr. | 83/37 |
| 3,822,626 | 7/1974 | Aspinwall | 83/925 A X |

1. A book cutter for books fed parallel to a cutting plane comprising:
a wheel rotating about an axis normal to the book cutting plane, the wheel forming a plurality of cutting bit sockets inclined at a predetermined angle to the book cutting plane,
cutting bits for respective sockets, each bit having a body received in one of the sockets and a cutting edge bevel at one end of the body inclined to the body at said predetermined angle, the cutting edge formed by the bevel being disposed parallel to the book cutting plane and facing in the direction of book feed at a substantial angle to a radius of the wheel through the edge so as to slice pro-

gressively into the book in the direction of book feed with each rotation of the wheel, and

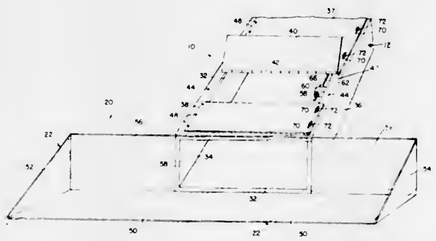



means for securing each bit in its socket with the bevel parallel to the cutting plane.

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**B 549,244**
**LEVELING MECHANISM FOR HARVESTER HEADERS**
**Dathan R. Kerber, Bettendorf, Iowa; Thomas A. Hocking, Colona, and John L. Vande Wiele, Moline, both of Ill., assignors to International Harvester Company, Chicago, Ill.**
**Filed Feb. 12, 1975, Ser. No. 549,244**
**Int. Cl.² A01D *41/04***
**U.S. Cl. 56—14.5** **8 Claims**

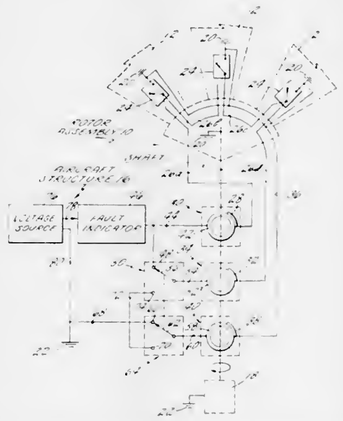
**References Cited**
UNITED STATES PATENTS
3,537,243 11/1970 Bichel ..... 56/14.6



**1.** In an agricultural implement, the combination with a feeder having a generally rectilinear tubular housing provided with a rectangular forward open rim, said housing including a transverse bottom wall, upstanding side walls, and a transverse top wall having a proximate edge fixedly secured to the upper edge of one of said side walls and a free distal edge disposed in longitudinal register with the upper edge of the other side wall, and a crop-gathering header including a bottom wall and an upstanding rear wall which extends across said open rim and is secured thereto, cooperating means on the free distal edge region of said top wall and the adjacent side wall for regulably shifting such region longitudinally along the upper edge of such side wall in either direction to thereby distort the forward rim region of the housing and effect relative vertical shifting movement of forward edge regions of the side walls and consequent rocking movement of the header casing bodily as a unit.

**B 549,394**
**ELECTRICAL INTERCONNECTION CIRCUITRY FROM A ROTATING BODY TO A RELATIVELY STATIONARY BODY**
**Harry Thomas Jensen, Milford, Conn., assignor to United Technologies Corporation, Hartford, Conn.**
**Filed Feb. 12, 1975, Ser. No. 549,394**
**Int. Cl.² B64C *27/32***
**U.S. Cl. 416—61** **4 Claims**

**References Cited**
UNITED STATES PATENTS
1,780,431 11/1930 McCarroll ..... 416/41
2,551,649 5/1951 Taylor ..... 416/61 X
2,838,694 6/1958 Hider ..... 307/145
3,317,759 5/1967 Grobel ..... 307/145
3,547,555 12/1970 Jensen ..... 416/61
3,793,533 2/1974 Ginsberg ..... 307/113
3,896,446 7/1975 Kondoh et al. ..... 416/61 X




**1.** An electric system including relatively rotating parts with apparatus providing a highly reliable interconnection therebetween, comprising:

first and second bodies each having electrical ground;

means including a plurality of rotary electrical connection means for disposing one of said bodies for rotation on the other of said bodies with electrical contact therebetween;

a power source having first and second outputs and disposed on a first one of said bodies, said first output connected to ground of said first body;

electric utilization means disposed on said first body having a first terminal connected to said second output, and having a second terminal;

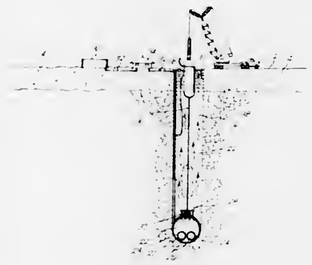
electrical sensing means disposed on the second one of said bodies for sensing a condition on said second body and interconnected from ground on said second body to a group of said plurality of rotary electrical connection means; and

circuitry connected to said second terminal of said utilization means, including switch means having an operating position and a test position and being settable to either of said positions alternatively, said circuitry connecting said utilization means to said sensing means through all of said rotary electrical connection means in said group in parallel when said switch means is in said operating position and connecting said utilization means to said sensing means through one of said rotary electrical connection means in said group and connecting said sensing means through at least another one of said rotary electrical connection means in said group to ground of said first body when said switch means is in said test position.



**B 554,283**
**QUICK EGRESS FROM DEEP UNDERGROUND**
**Nelson Edward Funston, Mercer Island, Wash., assignor to The Boeing Company, Seattle, Wash.**
**Filed Feb. 28, 1975, Ser. No. 554,283**
**Int. Cl.² B65G *5/00, 53/00***
**U.S. Cl. 61—.5** **9 Claims**

**References Cited**
UNITED STATES PATENTS
3,608,636 9/1971 Dixon ..... 61/.5 X
FOREIGN PATENTS OR APPLICATIONS
1,059,494 2/1967 United Kingdom ..... 61/.5



**1.** A method for storing and accessing a container in an environment highly resistive to damage from nuclear attack or other explosive conditions comprising the steps of:

a. excavating a shaft into the earth, said shaft being of a diameter sufficient to allow debris descending in said shaft to bypass a container rising in said shaft and also sufficient to allow said container to negotiate any bends and discontinuities in said shaft, said shaft being of a depth sufficient to provide protection from nuclear blasts for objects buried at said depth;

b. placing first means for the storage of water at the bottom of said shaft, saif first means for the storage of water having means for directing water into said shaft substantially at the bottom thereof;

c. placing pressure means at the bottom of said shaft, said pressure means being in communication with said first means for the storage of water causing water contained in said first means for the storage of water to be discharged through said means for directing water into said shaft when said pressure means is activated;

d. filling said first means for the storage of water with water;

e. affixing a storage container to the bottom of said shaft by tether means, said tether means being able to allow said storage container to rise to the top of said shaft and further being able to draw said storage container to the bottom of said shaft, said storage container being of a density when loaded less than that of quicksand;

f. filling said shaft with saturated sand;

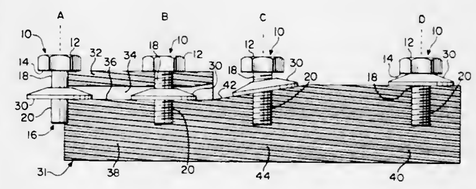
g. using said water contained in said first means for the storage of water to fluidize said saturated sand into quicksand to access said storage container by allowing said storage container to float up to the surface of said quicksand and drawing said storage container down against the buoyant force of said quicksand with said tether means; and,

h. allowing said quicksand to de-fluidize and return to the state of being saturated, compacted sand with said storage container at the bottom of said shaft to store said storage container in a nuclear explosion proof environment.

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**B 575,757**
**APPARATUS FOR ASSEMBLING A SCREW AND COMPRESSIBLE WASHER**
**Gerald Dean Barth, Elgin, and David Prugh Wagner, Geneva, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.**
**Division of Ser. No. 474,502, May 30, 1974, Pat. No. 3,906,567. This application May 8, 1975, Ser. No. 575,757**
**Int. Cl.² B21H *3/06***
**U.S. Cl. 72—88** **8 Claims**

**References Cited**
UNITED STATES PATENTS
2,283,494 5/1942 Erdman ..... 72/88 X
2,371,463 3/1945 Olson ..... 72/469
3,163,196 12/1964 Hanneman ..... 72/88 X
FOREIGN PATENTS OR APPLICATIONS
19,847 3/1971 Japan ..... 72/88
1,469,156 12/1965 France ..... 10/155 A




**1.** A thread rolling die assembly for fabricating a telescoping screw and compressible washer assembly "which includes an axially compressible washer positioned on a screw blank having an unthreaded shank comprising upper and lower regions and a radially enlarged head", said die assembly comprising a workpiece engageable face with a first longitudinal section having an upper portion with screw blank swaging means, slot means extending inwardly from the workpiece engageable face and located directly beneath the upper blank swaging means, the slot means including a ledge adapted to receive and support said compressible washer on the unthreaded screw shank while the upper region of the shank is swaged by the upper swaging means, ramp means adapted to move the washer upwardly on the screw shank as the screw-washer assembly moves longitudinally of the workpiece engageable face and, a second longitudinal die section having thread swaging surfaces adapted to deform the lower region of the

shank into a helical thread form with a crest diameter greater than the inner diameter of the compressible washer.

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**B 584,520**
**HYDRAULIC CASCADE DRIVE SYSTEM**
**Richard M. Rice, c/o Reynolds Metals Company Reynolds Metals Bldg., Richmond, Va. 23261**
**Continuation of Ser. No. 433,838, Jan. 15, 1974, abandoned. This application June 6, 1975, Ser. No. 584,520**
**Int. Cl.² F15B *11/16***
**U.S. Cl. 60—424** **18 Claims**

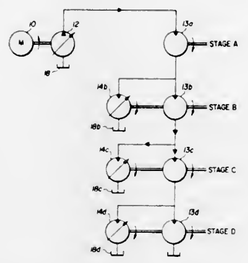
**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 2,846,849 | 8/1958 | Levetus et al. | 60/384 |
| 3,038,312 | 6/1962 | Marsh | 60/420 |
| 3,348,624 | 10/1967 | Just et al. | 60/484 X |

FOREIGN PATENTS OR APPLICATIONS

| | | | |
|---|---|---|---|
| 271,662 | 2/1951 | Switzerland | 60/484 |


1. A cascase fluid drive system comprising:
a power supply having a variable displacement fluid pump and means for driving said pump;
a plurality of fluid motors arranged in series flow circuit with each other and said fluid pump so that a change in the output of said pump tends to cause a change in the output speeds of said fluid motors; and
variable fluid-displacement means for selectively varying the amount of fluid directed to at least one of said fluid motors to change its speed without changing the output speed ratio between said one fluid motor and an adjacent fluid motor in said series flow circuit; said variable fluid-




displacement means being effective for synchronously changing the output speed of the remaining subsequent fluid motors in said series flow circuit to maintain the same speed ratio between said one fluid motor and each of said subsequent fluid motors as the speed of said one fluid motor is changed.

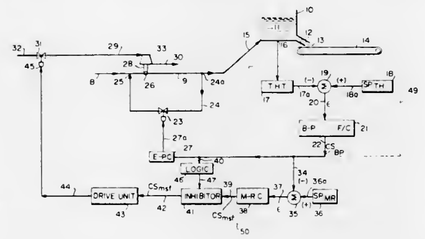
# CHEMICAL APPLICATIONS

**B 150,142**
**APPARATUS AND METHOD FOR CONTROLLING THE STOCK FLOW TO A PAPER MACHINE HEADBOX**
**Abdul-Rahman A. Al-Shaikh, Mount Kisco, N.Y., assignor to Westvaco Corporation, New York, N.Y.**
**Continuation-in-part of Ser. No. 888,431, Dec. 29, 1969, abandoned. This application June 4, 1971, Ser. No. 150,142**
**Int. Cl.² D21F *1/06, 1/08***
**U.S. Cl. 162—198** **34 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 3,562,104 | 2/1971 | Taylor | 162/258 X |

OTHER PUBLICATIONS
Pearson, J. H., "Automatic Headbox Operation" Tappi, Vol. 46, No. 10 (10–1963), pp. 192A–195A.
McKnight, I. M., "Dev. in the Wider Appl. of Control to P.M. Flow Boxes" Paper Technology, Vol. 7, No. 1, (1966), pp. 45–52.


1. In a paper machine headbox system including a headbox, a stock pump, a main stock line from said stock pump which branches into a by-pass line which shunts said main stock line and a headbox stock flow line through which stock may flow from said main stock line to said headbox, an apparatus for controlling the stock flow rate in said headbox stock flow line which comprises:
a. first means for providing by-pass flow control signals related to a desired headbox stock flow rate;
b. a by-pass flow control valve in said by-pass line and responsive to said by-pass flow control signals;
c. second means for providing main stock flow control signals;
d. third means, responsive to said main stock flow control signals, for controlling the stock flow rate in said main stock flow line; and
e. logic-inhibit means, logically responsive to said by-pass flow control signals, for inhibiting said third means response to said main stock flow control signals until said by-pass flow control valve exceeds predetermined limits.

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**B 301,143**
**HALOAMINE TRANSFER**
**Jaroslav Vit, Belle Mead, N.J., assignor to National Patent Development Corporation, New York, N.Y.**
**Filed Oct. 26, 1972, Ser. No. 301,143**
**Int. Cl.² C07C *85/04***
**U.S. Cl. 260—534 R** **12 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 3,137,728 | 6/1964 | Reid | 260/534 R |


1. A method of forming a first N-monohaloamine comprising reacting in aqueous solution a second N-monohaloamine with a N-halo free amine corresponding to said first N-haloamine, said second N-haloamine having a stability in aqueous solution substantially equal to or greater than the stability of the first N-monohaloamine and being selected from the group consisting of N-haloamines containing a hydroxy group, a sulfonic acid group, a carboxylic acid group and an N-acetyl group, said N-halo-free amine having 2–11 carbon atoms and containing a carboxylid acid group, and said halogen having an atomic weight of 35 to 127.

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**B 308,659**
**METHOD FOR RECLAIMING WATERLOGGED PLASTIC INSULATED CONDUCTOR CABLE**
**Stanley Kaufman, Flanders, and Raffaele Antonio Sabia, Lincroft, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**
**Division of Ser. No. 208,420, Dec. 15, 1971, Pat. No. 3,733,426. This application Nov. 22, 1972, Ser. No. 308,659**
**Int. Cl.² H01B *11/02, 3/30***
**U.S. Cl. 264—36** **4 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 2,889,883 | 6/1959 | Santora | 61/36 R |
| 3,248,472 | 4/1966 | Montesano | 264/272 X |
| 3,427,393 | 2/1969 | Masterson | 264/45 X |

OTHER PUBLICATIONS
"Removing Water From Buried PIC Cable" from Bell Labratories Record, Sept. 1961, pp. 324–326.


1. A method of purging water present in the interstices of multipair sheathed plastic-insulated conductor telephone cable and for thereafter sealing said cable against further entry of water, comprising the steps of:
pumping into said cable a nongelling purgant characterized by complete miscibility in the water present; and thereafter
purging said nongelling purgant and included water therein by
pumping into said cable a gelling purgant characterized by complete miscibility with said first purgant
said gelling purgant characterized by an initial viscosity at the time of said pumping of less than 100 centipoises at any temperature between 35° and 90° Fahrenheit and a capability to gel in a predetermined period of the order of 24 hours after entering into said cable, and wherein said gelling purgant consists of an aromatic solvent oil containing greater than 90 weight percent aromatic molecules and equal amount by weight of a first and a second material, said first material consisting of from 25 to 150 grams of isocyanate prepolymer per liter of solution and said second material consisting of from 80 to 120 grams of hydroxyl-terminated polybutadiene per liter of solution and substantially 4 grams per liter of solution of dibutyl tin dilaurate.

**B 349,370**

## METHOD OF MAKING R-S (O) C NR,R, COMPOUNDS

**Harry Tilles, El Cerrito, Calif., assignor to Stauffer Chemical Company, Westport, Conn.**

**Continuation of Ser. No. 280,388, Aug. 14, 1972, abandoned. This application Apr. 9, 1973, Ser. No. 349,370.**

**Int. Cl.² C07D** *211/16, 223/02, 217/06*

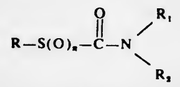
**U.S. Cl. 260—239 A** **2 Claims**

**References Cited**

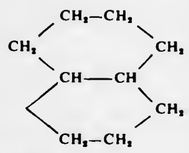
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 3,326,663 | 6/1967 | Soloway et al. | 71/103 |

1. A process of manufacturing a pesticidal active compound corresponding to the following formula:

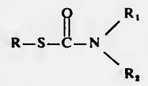


wherein *n* is 1 or 2; R is selected from the group consisting of lower alkyl and lower haloalkyl; $R_1$ and $R_2$ taken together form an alkylene group having 2 to 10 carbon atoms, said alkylene group being unsubstituted or substituted with alkyl groups having 1–2 carbon atoms, or $R_1$ and $R_2$ taken together form



comprising the steps of:

a. combining an oxidizing agent selected from peracetic acid and m-chloroperoxybenzoic acid and a thiocarbamate compound in a solvent system; said thiocarbamate having the following formula:



b. maintaining the temperature between −25°C. and 60°C.;

c. said oxidizing agent being present in an amount of at least one stoichiometric equivalent and not more than two stoichiometric equivalents.

**B 373,354**

## PLASTIC SHEET ADHERED TO POLYURETHANE IONOMER LATEX FOAM

**Paul J. Bocks, Viersen; Jürgen Grammel, Cologne, and Hermann Neumaier, Leichlingen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

**Filed June 25, 1973, Ser. No. 373,354**

**Claims priority, application Germany, June 27, 1972, 2231411**

**Int. Cl.² B32B** *3/26*

**U.S. Cl. 428—315** **7 Claims**

**References Cited**

UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 3,437,197 | 4/1969 | Wirfel | 161/160 |
| 3,461,103 | 8/1969 | Kerberle et al. | 117/132 |

1. A composite material comprising layers of

a. a plastic sheet with a weight per square meter or 20–300 g/m² and a tensile strength of at least 40 kg/cm² adhered to

b. a polyurethane ionomer latex foam having a gross density of 0.04 to 0.40 g/cm³ produced from aqueous air whipped ionomeric polyurethane dispersions which have

i. a solids content of 45 to 62 % by weight of polyurethane,

ii. a viscosity of 10 to 70 seconds outflow time from a Ford measuring cup with a 4 mm nozzle,

iii. a particle diameter of 0.05 to 1.0 $\mu$

iv. an ionic group content of 3 to 40 milliequivalents per 100 g of polyurethane solids of ions selected from the group consisting of $\geqslant N\pm$, $-COO^-$, $-SO_3^-$, and



wherein R is hydrogen or a lower alkyl group, and

v. a tensile strength of at least 40 kg/cm² when dried to a homogeneous polyurethane foil,

and which contain

i. 1–10% by weight of a foam stabilizing agent, based on the weight of solid polyurethane,

ii. 0–100% by weight of inorganic fillers based on the weight of solid polyurethane,

iii. 0–30% by weight of crosslinking agent based on the weight of solid polyurethane, and

iv. 0.1 to 10% by weight of thickener based on the weight of solid polyurethane.

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**B 374,588**

## METHOD OF INHIBITING GROWTH OF TRANSPLANTED TUMOR CELLS

**Gordon H. Svoboda, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.**

**Continuation of Ser. No. 268,406, July 3, 1972, abandoned, which is a continuation-in-part of Ser. No. 46,811, June 16, 1970, abandoned, which is a continuation-in-part of Ser. No. 840,114, June 18, 1969, abandoned, which is a continuation-in-part of Ser. No. 536,905, March 23, 1966, abandoned. This application June 28, 1973, Ser. No. 374,588**

**Int. Cl.² A61K** *31/435*

**U.S. Cl. 424—257** **3 Claims**

**References Cited**

OTHER PUBLICATIONS

Chemical Abstracts 45:5696(e) (1951).
Chemical Abstracts 45:9369(f) (1951).
Chemical Abstracts 47:3862(b) (1953).

1. A method of inhibiting the growth of malignant transplanted tumor cells selected from the group consisting of adenocarcinoma, Ad-755; plasma cell myeloma, X-5563; Mecca lymphosarcoma, MLS; B-82 leukemia; C-1498 myelogenous leukemia; Sarcoma 180; Ridgeway osteogenic sarcoma and Shionogi carcinoma which comprises administering to a mouse in whose body the tumor is present and proliferating an effective oncolytic quantity of acronycine.



**B 378,513**

## ELECTRICAL GENERATOR

**David L. Purdy, Indiana, Pa., assignor to Coratomic Inc., Indiana, Pa.**

**Filed July 12, 1973, Ser. No. 378,513**

**Int. Cl.² G21H** *1/10*

**U.S. Cl. 136—202** **22 Claims**

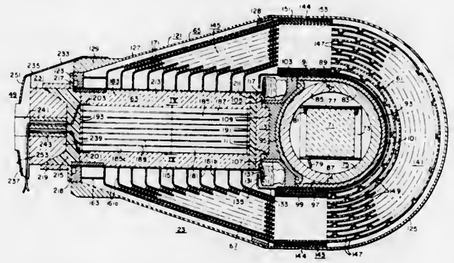
**References Cited**

UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 3,076,051 | 1/1963 | Haba | 136/201 X |
| 3,262,820 | 7/1966 | Whitelaw | 136/202 |
| 3,481,794 | 12/1969 | Kasschau | 136/208 |
| 3,533,913 | 10/1970 | Botts et al. | 136/202 UX |
| 3,607,443 | 9/1971 | Purdy | 136/202 |
| 3,663,306 | 5/1972 | Des Champs et al. | 136/202 |
| 3,668,015 | 6/1972 | Streb et al. | 136/202 |
| 3,697,329 | 10/1972 | Bunker et al. | 136/202 |
| 3,758,346 | 9/1973 | Falkenberg et al. | 136/202 |
| 3,818,304 | 6/1974 | Hursen et al. | 136/202 |

OTHER PUBLICATIONS

Transactions of A.N.S., Vol. 13, No. 2, Nov. 13, 1970, (pp. 504, 505), Article Entitled, *A Radioisotope Fueled Vapor Cycle Power Supply For An Artificial Heart* by Huffman et al.



1. An electrical generator including a container, a heat source and a thermoelectric unit of the solid-state type having a hot-junction and a cold-junction within said container, means within said container, contacting substantially the whole outer surface of said unit, for applying stress of the hydrostatic type to said unit, and means connecting said hot-junction in heat-deriving relationship with said source.

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**B 379,177**

## PROCESS FOR HYDROGEN ISOTOPE CONCENTRATION BETWEEN LIQUID WATER AND HYDROGEN GAS

**William H. Stevens, Deep River, Canada, assignor to Atomic Energy of Canada Limited, Ottawa, Canada**

**Continuation-in-part of Ser. No. 104,291, Jan. 6, 1971, abandoned. This application July 13, 1973, Ser. No. 379,177**

**Claims priority, application Canada, Jan. 28, 1970, 73320**

**Int. Cl.² B01D** *5/02*

**U.S. Cl. 423—580** **13 Claims**

**References Cited**

UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 2,540,599 | 2/195[illegible] | Segura | 252/430 |
| 2,575,577 | 11/1951 | Beauchamp | 117/135.5 |
| 2,690,379 | 9/1954 | Urey et al. | 423/580 |
| 2,722,504 | 11/1955 | Fleck | 208/110 |
| 2,976,253 | 3/1961 | Edwards | 252/430 |

1. In an isotope exchange process for hydrogen isotope concentration between liquid water and hydrogen gas, comprising:

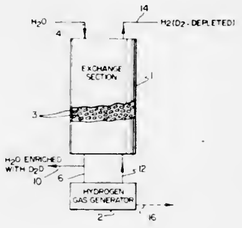
a. contacting at a temperature in the range 15°C to 70°C, in an exchange section, liquid feed water and hydrogen gas from a reaction vessel, with one another and with a catalyst consisting of at least one catalytically active metal selected from Group VIII of the Periodic Table so that the deuterium isotope of hydrogen is transferred to and concentrated in the liquid water passing through and leaving the exchange section in either counter-current or cocurrent flow,

b. passing the liquid water thus enriched with the deuterium isotope of hydrogen concentrated therein to the reaction vessel wherein the hydrogen gas for the exchange section is generated from a portion of the enriched water and then passed through the exchange section, and

c. removing a portion of the water enriched in the exchange section, the improvement comprising:

d. the catalyst is provided in the exchange section as at least one catalyst assembly comprising the catalyst and a substantially liquid-water-repellent organic polymer or resin coating thereon selected from the group consisting of polyfluorocarbons, hydrophobic hydrocarbon polymers of medium to high molecular weight and silicones, and which is permeable to water vapour and hydrogen gas, whereby:

e. the or each catalyst assembly causes hydrogen isotope exchange and concentration in the exchange section as follows:




$$HD\ gas + H_2O\ vapour \xrightarrow{catalyst} H_2\ gas + HDO\ vapour,$$

and

$$HDO\ vapour + H_2O\ liquid \underset{surface}{\overset{liquid\ water}{\rightleftharpoons}} HDO\ liquid + H_2O\ vapour$$

so that direct contact between the catalyst metal and liquid water and wetting of the catalyst is retarded by the coating thereby retarding poisoning of the catalyst by the liquid water.

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**B 384,330**

## REACTOR TRIP ON TURBINE TRIP INHIBIT CONTROL SYSTEM FOR NUCLEAR POWER GENERATING SYSTEM

**Jose Marcelo Torres, Simsbury, and Charles Ronald Musick, Vernon, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.**

**Filed July 31, 1973, Ser. No. 384,330**

**Int. Cl.² G21C** *19/00*

**U.S. Cl. 176—20 R** **10 Claims**

**References Cited**

UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 3,425,903 | 2/1969 | Bevilacqua | 176/20 |
| 3,671,390 | 6/1972 | Hogle | 176/20 |
| 3,791,922 | 2/1974 | Musick | 176/20 |

1. A nuclear power generating system comprising:

coolant vapor generating apparatus including a nuclear reactor;

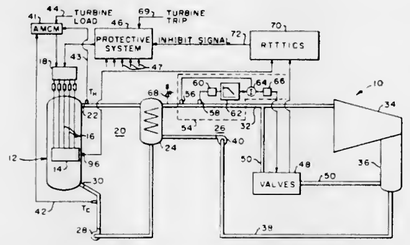
a turbine for receiving coolant vapor produced by said vapor generating apparatus;

coolant circuitry for said coolant vapor generating apparatus and said turbine including means for delivering vapor to said turbine;

a plurality of coolant vapor relief valves in said coolant circuitry, at least one of said valves being operable automatically to divert coolant vapor from said turbine;

a protective system independently responsive to a plurality of signals to cause said nuclear reactor to trip, at least one of said signals being indicative of the occurrence of a turbine trip;

means responsive to the power of said nuclear reactor for producing a power signal commensurate with the power of said nuclear reactor;




means for producing a capability signal commensurate with the capability of said coolant vapor relief valves to divert coolant vapor;

means responsive to a plurality of inputs including said power signal and said capability signal for producing an inhibit signal only when the capability of said coolant vapor relief valves is greater than the power of said nuclear reactor; and

means responsive to said inhibit signal for preventing said protective system from responding to a signal indicative of a turbine trip.

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**B 385,631**

## PROCESS FOR PRODUCING CARBIDE ADDITION AGENTS

**Frederick H. Perfect, Wyomissing, Pa., assignor to Reading Alloys, Inc., Robesonia, Pa., a part interest**

**Division of Ser. No. 147,018, May 26, 1971. This application Aug. 6, 1973, Ser. No. 385,631**

**Int. Cl.² B22F 9/00; C21C 7/00; C22B 47/00; C22C 1/04**

**U.S. Cl. 75—.5 BA** **6 Claims**

**References Cited**

UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 1,947,206 | 2/1934 | Kelley | 75/1 |
| 2,686,117 | 8/1954 | Wulff | 75/203 |
| 3,013,875 | 12/1961 | Triffleman | 75/203 |
| 3,334,992 | 8/1967 | Downing et al. | 75/.5 |
| 3,488,291 | 1/1970 | Haroy et al. | 252/301.1 |
| 3,504,093 | 3/1970 | Persson | 13/26 |

OTHER PUBLICATIONS

Reiffenstein et al., "Monatshefte Fur Chemie," Vol. 96, No. 5, pp. 1543–1546, (1965).

Schwarzkopf et al., "Refractory Hard Metals," 1953, pp. 187–197.

1. A process for preparing carbide addition agents comprising combining in a finely-divided state

a. carbon

b. an oxide of at least one metal selected from the group consisting of vanadium and columbium, and

c. an oxide of at least one metal selected from the group consisting of iron and manganese into a uniform mixture, compacting said mixture, sintering and reducing said compact mixture at a temperature of from about 1200° to about 1400° C. under a reducing atmosphere, and about atmospheric pressure to form said carbide addition agent the proportional relationship between *a*, *b*, and *c* being such that a point representing the composition of said carbide addition agent, expressed in atomic percent, lies substantially within the area PQRS of FIG. 1.

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**B 389,304**

## PROCESS FOR FELT PROOFING AND DIMENSIONALLY STABILIZING TEXTILES MADE OF FIBERS WHICH CONTAIN KERATIN

**Karl Schäfer, Opladen; Hans Schuster, Schildgen, and Dieter Dieterich, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

**Filed Aug. 17, 1973, Ser. No. 389,304**

**Claims priority, application Germany, Sept. 1, 1972, 2243159**

**Int. Cl.² D06M 3/06, 3/08, 3/02, 15/52, 15/10**

**U.S. Cl. 8—115.7** **10 Claims**

**References Cited**

UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 3,498,740 | 3/1970 | Cain | 8/127.6 |
| 3,558,264 | 1/1971 | Habib | 8/127.6 |
| 3,686,026 | 8/1972 | Schafer et al. | 117/141 |
| 3,687,605 | 8/1972 | Farmer | 8/127.6 |
| 3,814,578 | 6/1974 | Pittman et al. | 8/127.6 |
| 3,832,133 | 8/1974 | Culbertson et al. | 8/127.6 |

1. A single-bath process for imparting dimensional stability and feltproofing to textiles containing at least some keratinous fibers which comprises treating said textile with an aqueous bath which contains salts of sulphurous acid or pyrosulphites as reducing agents and a polyurethane polymer having no free isocyanate groups which contains onium groups.

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**B 394,248**

## PREPARATION OF AROMATIC NITROSO COMPOUNDS

**John Mathers Woolley, Manchester, England, assignor to Imperial Chemical Industries Ltd., London, England**

**Filed Sept. 4, 1973, Ser. No. 394,248**

**Claims priority, application United Kingdom, Sept. 14, 1972, 42693/72**

**Int. Cl.² C07C 81/00, 81/02, 81/06**

**U.S. Cl. 260—647** **7 Claims**

**References Cited**

UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 3,578,720 | 5/1971 | Dodman et al. | 260/467 |

1. In the process for manufacture of nitroso compounds of the benzene series by heating an aromatic nitrobenzene compound with a reducing agent in the presence of a catalyst having a lattice consisting of a heavy metal selected from antimony, bismuth, cerium, chromium, cobalt, copper, germanium, gold, iron, lanthanum, lead, manganese, mercury, molybdenum, neodymium, nickel, rhenium, silver, tantalum, thallium, thorium, tin, titanium, tungsten, vanadium and zirconium, in association with oxygen atoms or hydroxyl, carbonate or phosphate ions and having at least one other of said heavy metals forming impurity in the lattice, the improvement comprising using as the sole reducing agent a member selected from the group consisting of lower aliphatic primary alcohols.



**B 409,848**

## COMPOSITION FOR BOUNDARY LUBRICANT AND METHOD

**James J. Licari, Whittier, and Robert Willing, Anaheim, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.**

**Filed Oct. 26, 1973, Ser. No. 409,848**

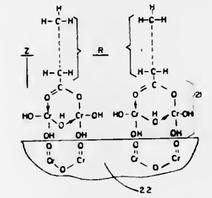
**Int. Cl.² C23C 1/10**

**U.S. Cl. 427—372** **9 Claims**

**References Cited**

OTHER PUBLICATIONS

*Metal Organic Compounds*, "Chromium Complexes" Hauserman; 1959 ACS, pp. 339–356.



1. A method of boundary lubricating a wear surface, said method compirising:

forming a chlorine-free metallic coordination complex of a long chain fatty acid, wherein said fatty acid is selected from an homologous carboxylic series and wherein the metallic constituent is a transition metal capable of forming coordination complexes selected from Cr, Mn, Fe, Co, Ni, and Al, by;

reducing an oxide of said transition metal to an acetate of said transition metal,

hydrating said acetate of said transition metal, olating the product of said hydrating step,

forming a coating of said chlorine-free metallic coordination complex on said wear surface; and

heating the coated wear surface to polymerize said metallic coordination complex and to anchor said complex to said wear surface.

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**B 423,883**

## CHARGED PARTICLE MODULATOR DEVICE AND IMPROVED IMAGING METHODS FOR USE THEREOF

**John D. Blades, Chagrin Falls, and Jerome E. Jackson, Shaker Heights, both of Ohio, assignors to Addressograph-Multigraph Corporation, Cleveland, Ohio**

**Filed Dec. 12, 1973, Ser. No. 423,883**

**Int. Cl.² G03G 13/044**

**U.S. Cl. 96—1 R** **30 Claims**

**References Cited**

UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 3,615,395 | 10/1971 | Yamaji et al. | 96/1 R |
| 3,625,604 | 12/1971 | Pressman | 96/1 R |
| 3,645,614 | 2/1972 | McFarlane et al. | 96/1 R |
| 3,666,365 | 5/1972 | Tanaka et al. | 96/1 R |
| 3,680,954 | 8/1972 | Frank | 96/1 R |
| 3,694,200 | 9/1972 | Pressman | 96/1 R |

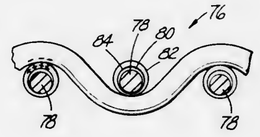
1. The method of making a developable image from a graphic original by creating a charge pattern on a dielectric medium through the use of a modulator adapted to selectively transmit charged particles in the presence of an electric field comprising the steps of:

1. creating a charge distribution system on said modulator wherein said modulator comprises a transparent insulating layer overlying a photoconductive medium deposited on a conductive screen by carrying out the steps of:

a. simultaneously applying a blanket electrostatic charge and exposing the insulating layer to electromagnetic radiation;

b. projecting a pattern of light and shadow on the surface of the insulating layer of the modulator simultaneous with the application of AC corona charge; and

c. illuminating the insulating layer overall with electromagnetic radiation, and which charge distribution system persists on the modulator in the presence of radiation in the visible portion of the spectrum;




2. directing charged particles of one polarity against the conductive screen while said screen is connected to a reference potential;

3. positioning an electrode on the side of the modulator opposite the side against which the charged particles are directed, said electrode being connected to a high voltage source which is opposite in polarity to said charged particles;

4. removably affixing said dielectric medium to said electrode whereby said charged particles are selectively transmitted through certain portions of said modulator to produce a developable image on said dielectric medium.

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**B 430,334**

## OXIDATIVE HAIR DYE COMPOSITIONS CONTAINING N-SUBSTITUTED O-PHENYLENEDIAMINES AND METHOD FOR THEIR USE

**Alexander Halasz, Norwalk, Conn.; Frederick Brody, deceased, late of Greenwich, Conn., and by Richard Newman, executor, New York, N.Y., assignors to Clairol Incorporated, New York, N.Y.**

**Filed Jan. 2, 1974, Ser. No. 430,334**

**Int. Cl.² A61K 7/13**

**U.S. Cl. 8—10.2** **26 Claims**

**References Cited**

UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 923,635 | 6/1909 | Erdmann | 8/10.2 |
| 3,200,040 | 8/1965 | Lange | 8/10.2 X |
| 3,210,252 | 10/1965 | Blanke et al. | 8/10.2 |
| 3,236,891 | 2/1966 | Seemuller | 8/10.2 X |
| 3,337,411 | 8/1967 | Wilmsmann et al. | 8/10.2 |
| 3,415,608 | 12/1968 | Tucker | 8/10.2 |

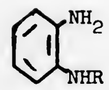
FOREIGN PATENTS OR APPLICATIONS

| | | | |
|---|---|---|---|
| 518,199 | 2/1931 | Germany | 8/10.2 |

OTHER PUBLICATIONS

Heilingotter, Parfumerie Modern, Vol. 48, (1955), pp. 55–60.

1. An oxidation hair dyeing composition comprising a water containing hair dye carrier and a tinctorially effective amount of an o-phenylenediamine of the formula:



wherein R is alkyl having 1 to 4 carbon atoms.

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**B 437,596**

## HIGH QUALITY BLENDED JET FUEL COMPOSITION

**Merritt C. Kirk, Jr., McKinney, Tex., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.**

**Filed Jan. 30, 1974, Ser. No. 437,596.**
**Int. Cl.² C10L *1/04***
**U.S. Cl. 208—15** **9 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 3,146,186 | 8/1964 | Leas et al. | 208/15 |
| 3,231,489 | 1/1966 | Mahar | 208/15 |
| 3,242,066 | 3/1966 | Myers | 208/15 |
| 3,507,776 | 4/1970 | Hann | 208/15 |
| 3,594,307 | 7/1971 | Kirk | 208/15 |
| 3,788,971 | 1/1974 | Kirk | 208/15 |


**1.** A composition having a freezing point lower than −40°F, comprising a blend of (A) a straight-run paraffinic kerosene in which the aromatic hydrocarbons have been reduced to provide a smoke point greater than 28 and (B) in the range of 23.5 to 40 volume percent of n-decane.

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**B 452,883**

## PROCESS FOR MAKING A STABLE, RELATIVELY HIGH CONCENTRATION, SOLUTION OF AN ORGANIC COLOR-REACTIVE COLORLESS DYE IN OIL

**Minoru Murata; Koichi Sugiyama, both of Hiratsuka, and Hisao Ikeda, Fujisawa, all of Japan, assignors to NCR Corporation, Dayton, Ohio**

**Filed Mar. 20, 1974, Ser. No. 452,883**
**Claims priority, application Japan, Apr. 16, 1973, 48-43005**
**Int. Cl.² C09D *11/06***
**U.S. Cl. 106—27** **11 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 2,755,202 | 7/1956 | Balon | 117/36.2 |
| 2,755,203 | 7/1956 | Stallmann | 117/36.2 |
| 3,447,944 | 6/1969 | Werner | 117/36.8 |
| 3,653,945 | 4/1972 | Davis | 117/36.8 |


**1.** A stable, colorless, liquid ink composition comprising an organic peroxide compound dissolved in substantially water insoluble organic oil and complexed with a color reactive dye material.

**B 453,759**

## METHOD FOR PREPARING SILICONE RUBBER MOLDS

**Leonard Bretz Bruner, Manchester, Mich., and Kenneth Elmon Koch, Jr., Chelmsford, Mass., assignors to SWS Silicones Corporation, Adrian, Mich.**

**Filed Mar. 22, 1974, Ser. No. 453,759**
**Int. Cl.² B29C *1/02***
**U.S. Cl. 264—225** **11 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 3,190,947 | 6/1965 | Norcross | 264/225 |
| 3,222,443 | 12/1965 | Dames, Jr. et al. | 264/337 |
| 3,303,246 | 2/1967 | Forrest | 264/225 |
| 3,504,079 | 3/1970 | Hall | 264/225 |
| 3,792,147 | 2/1974 | Wohlfarth et al. | 264/225 |
| 3,825,618 | 7/1974 | Pepe | 260/37 SB |

OTHER PUBLICATIONS

"Flexible Urethane Molds for the Furniture Industry," SPE Journal, June 1969, Vol. 25, pp. 53–55.


**1.** A method for preparing a silicone mold having dimensional stability which comprises (1) applying to that portion of a stationary pattern which is vulnerable to high stress a room temperature curable silicone composition (a) having a 5 minute Williams plasticity value of from 60 to 140, said silicone composition (a) is prepared by forming a mixture containing a hydroxylterminated organopolysiloxane having a 30 second Williams plasticity value above about 100, sufficient filler to provide a 5 minute Williams plasticity value of from 60 to 140, a cross-linking agent and a catalyst capable of curing the silicone composition to an elastomeric solid at room temperature, (2) applying a room temperature curable silicone composition (b) which is compatible with silicone composition (a) and has a viscosity of from 5,000 to 80,000 cs. at 25°C. to the remainder of the pattern, said silicone composition (b) is prepared by forming a mixture containing a hydroxyl-terminated organoplysiloxane having a viscosity of from 100 to 40,000 cs. at 25°C., sufficient filler to provide a viscosity of from 5,000 to 80,000 cs. at 25°C., a cross-linking agent and a catalyst capable of curing the silicone composition to an elastomeric solid at room temperature, (3) curing the silicone compositions at ambient temperature and thereafter (4) removing the silicone mold from the pattern.

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**B 457,862**

## CERTAIN BROMOACETOXY ACETYLENES USED AS BACTERICIDES

**Don R. Baker, Orinda, Calif., assignor to Stauffer Chemical Company, Westport, Conn.**

**Continuation of Ser. No. 299,990, Oct. 24, 1972, abandoned, which is a division of Ser. No. 853,950, Aug. 28, 1969, Pat. No. 3,711,271. This application Apr. 4, 1974, Ser. No. 457,862**
**Int. Cl.² A01N *9/24***
**U.S. Cl. 424—311** **4 Claims**

**References Cited**
UNITED STATES PATENTS

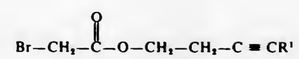
| | | | |
|---|---|---|---|
| 2,931,754 | 4/1960 | Baldridge | 260/487 |
| 3,711,271 | 1/1973 | Baker | 424/311 X |

OTHER PUBLICATIONS

Chemical Abstracts, 61:5509f (1964).


**1.** A method of killing bacteria comprising applying thereto a bactericidally effective amount of a compound having the formula





in which $R^1$ is selected from the group consisting of methyl and ethyl.

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**B 460,388**

## OVERPRINT OF SOLVENT ON TOTAL SOLVENT COATING

**Walter J. Bohrn, 1924 Ridgeview Ave., Lancaster, Pa. 17603**

**Filed Apr. 12, 1974, Ser. No. 460,388**
**Int. Cl. D44d *1/02***
**U.S. Cl. 8—14** **3 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 705,977 | 7/1902 | Timme | 26/2 R |
| 2,681,867 | 6/1954 | Miller | 8/114.5 |
| 3,402,988 | 9/1968 | Reeves et al. | 8/114 |
| 3,567,548 | 3/1971 | Miller | 117/72 |
| 3,830,683 | 8/1974 | Bohrn | 161/63 |
| 3,849,157 | 11/1974 | Polmer et al. | 156/277 |
| 3,849,158 | 11/1974 | Polmer et al. | 156/277 |
| 3,849,159 | 11/1974 | Polmer et al. | 156/277 |
| 3,856,598 | 12/1974 | Gregorian et al. | 156/85 |


**1.** The method of forming an embossed pattern effect on pile fabric material which consists of the steps of:

a. first providing a carpet material with a backing and a pile upper face surface, the pile face surface containing fibers which may be shrunk by a selected solvent while the backing material will be unaffected by the solvent solution,

b. applying a first solvent solution to the total fiber face surface of the carpet to saturate the full length of the fibers with solvent solution, said solvent solution applied being of a concentration that can cause shrinkage of the pile face surface fibers,

c. subsequently applying to only selected areas of the fiber face in a desired pattern a second solution which will dilute the total originally applied solvent-containing solution in the pattern areas to the point that the solvent now in the total solution will have little or no effect upon the fibers of the pile surface to shrink the fibers, and

d. thereafter subjecting the pile fabric to heat to cause the yarns in the fiber face surface which have been only wetted by the first solvent-containing solution to shrink and present a desired embossed pattern appearance since in those areas where there has been the printing of the second solution, the solvent concentration has been diluted to the point that the solvent has very little or no shrinkage effect upon the fibers of the pile surface and, therefore, a two-level pile surface results.

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**B 465,688**

## THERMOPLASTIC MOULDING COMPOSITIONS

**Richard Prinz, Leverkusen; Salah Elabd Elghani, Cologne; Winfried Fischer, Cologne, and Heinrich Alberts, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

**Filed Apr. 30, 1974, Ser. No. 465,688**
**Claims priority, application Germany, May 4, 1973, 2322435**
**Int. Cl.² C08L *67/06***
**U.S. Cl. 260—873** **12 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 3,164,651 | 1/1965 | Chu | 260/33.4 R |
| 3,597,498 | 8/1971 | Christensen | 260/873 |
| 3,855,353 | 12/1974 | Alberts et al. | 260/878 R |

FOREIGN PATENTS OR APPLICATIONS

| | | | |
|---|---|---|---|
| 917,499 | 2/1963 | United Kingdom | 260/878 R |


**1.** A thermoplastic molding composition comprising

i. from 5 to 95 percent by weight of at least one polycarbonate derived from a divalent phenol and

ii. from 95 to 5 percent by weight of at least one graft copolymer comprising

a. from 10 to 70 percent by weight of an ethylene/vinyl acetate copolymer containing from 25 to 75 percent by weight of vinyl acetate having grafted thereon

b. from 90 to 30 percent by weight of a copolymer prepared from a monomer mixture comprising

1. from 15 to 85 parts by weight of acrylonitrile, methacrylonitrile or a mixture thereof and

2. from 10 to 85 parts by weight of styrene, α-methylstyrene or a mixture thereof.

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**B 466,929**

## METHOD OF CONTROLLING BACTERIA

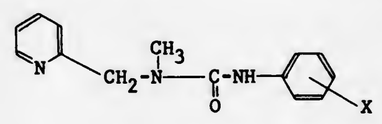
**Alexander Mihailovski, Berkeley, Calif., assignor to Stauffer Chemical Company, Westport, Conn.**

**Filed May 6, 1974, Ser. No. 466,929**
**Int. Cl.² A01N *9/22***
**U.S. Cl. 424—263** **4 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 3,700,678 | 10/1972 | Mihailovski | 260/245 E |


**1.** A method of inhibiting the growth of bacteria selected from the group consisting of *Bacillus cereus*, *Brevibacterium ammoniagenes*, *Staphylococcus aureus* and *Desulfovibrio desulfuricans* comprising contacting the bacteria with an effective amount of a compound having the formula:



wherein X is selected from the group consisting of 4-trifluoromethyl, 3-nitro and 3-trifluoromethyl.

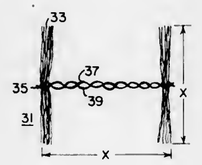
**B 480,702**
**MASS OR HEAT TRANSFER**
**Bernard J. Lerner, 727 Orchard Hill Drive, Pittsburgh, Pa. 15238**
**Filed June 19, 1974, Ser. No. 480,702**
**Int. Cl.² B01F** *3/04*
**U.S. Cl. 261—98** **9 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 1,700,126 | 1/1929 | Goodloe | 55/477 |
| 1,848,576 | 3/1932 | Sandel | 55/249 X |
| 2,027,906 | 1/1936 | Hand | 55/477 |
| 2,143,015 | 1/1939 | Kleinschmidt | 261/96 |
| 2,528,303 | 10/1950 | Gillespie | 55/477 X |
| 2,610,893 | 9/1952 | Collins et al. | 261/94 X |
| 2,615,699 | 10/1952 | Dixon | 261/94 X |
| 3,135,592 | 6/1964 | Fairs et al. | 261/95 X |
| 3,243,170 | 3/1966 | Ellis et al. | 261/94 |
| 3,385,574 | 5/1968 | Lohman | 261/92 |
| 3,410,057 | 11/1968 | Lerner | 55/97 |
| 3,700,590 | 10/1972 | Burton | 210/150 X |
| 3,777,457 | 12/1973 | Laube | 55/259 X |
| 3,885,929 | 5/1975 | Lyon et al. | 55/259 X |

FOREIGN PATENTS OR APPLICATIONS

| | | | |
|---|---|---|---|
| 828,545 | 12/1969 | Canada | 55/527 |




1. In a column for mass and/or heat transfer by counterflow of a liquid and gas, a plurality of bodies forming a bed, each body having an axial support form which a large number of bristles extend radially, said bodies being disposed at random with reference to each other with the bristles of contiguous bodies interlocked whereby the number of bristles per unit volume of said column varies spatially in all directions from point to point of said bed throughout said bed.

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**B 483,606**
**FLAME RETARDANT POLYURETHANE FOAM CONTAINING POLYALKYLENE GLYCOL ALKYL POLY-PHOSPHITES**
**Silvio L. Giolito, Whitestone, N.Y., assignor to Stauffer Chemical Company, Dobbs Ferry, N.Y.**
**Continuation of Ser. No. 322,595, Jan. 10, 1973, abandoned, which is a continuation-in-part of Ser. No. 166,295, July 26, 1971, abandoned. This application June 27, 1974, Ser. No. 483,606**
**Int. Cl.² C08G** *18/14*, *18/50*
**U.S. Cl. 260—2.5 AR** **4 Claims**

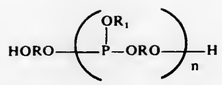
**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 3,263,001 | 7/1966 | Friedman | 260/2.5 AR |
| 3,354,241 | 11/1967 | Larrison | 260/929 |
| 3,850,859 | 11/1974 | Wortmann | 260/2.5 AJ |

FOREIGN PATENTS OR APPLICATIONS

| | | | |
|---|---|---|---|
| 945,340 | 12/1963 | United Kingdom | |
| 978,285 | 12/1964 | United Kingdom | |

1. A flame retardant polyurethane foam containing, as a chemically bonded, integral part thereof, the residue of a polyalkylene glycol polyphosphite having the formula:




wherein $R_1$ is an alkyl residue, R is a polyalkylene glycol residue and *n* is a number from about 4 to about 50.

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**B 485,401**
**VACUUM STRIPPING OF AMMONIA**
**Louis I. Blaine, South Orange, N.J., assignor to Ecodyne Corporation, Lincolnshire, Ill.**
**Filed July 3, 1974, Ser. No. 485,401**
**Int. Cl.² C01C** *3/00*
**U.S. Cl. 423—238** **9 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 2,808,125 | 10/1957 | Back et al. | 55/70 |
| 3,038,285 | 7/1962 | Maurouc | 55/70 |
| 3,428,426 | 2/1969 | Carney et al. | 55/70 |
| 3,448,042 | 6/1969 | Mattia et al. | 210/26 |
| 3,758,277 | 9/1973 | Cook et al. | 423/396 |
| 3,775,088 | 11/1973 | Higgins | 423/396 |
| 3,804,757 | 4/1974 | Ruschenburg | 55/70 |

FOREIGN PATENTS OR APPLICATIONS

| | | | |
|---|---|---|---|
| 265,576 | 9/1964 | Australia | 423/238 |
| 334,179 | 6/1970 | U.S.S.R. | 423/237 |

1. A method for stripping ammonia from a spent alkaline regenerant solution used for the regeneration of a zeolite ion exchange bed; comprising the steps of:
a. directing the spent alkaline regenerant solution downwardly through a stripping column;
b. passing a gas upwardly through the column countercurrent to the flow of alkaline regenerant solution;
c. circulating an acidic working solution continuously from a holding tank through a vacuum creating means and then back into the holding tank; and
d. withdrawing stripped ammonia from the stripping column under a vacuum created therein by said vacuum creating means so as to cause said stripped ammonia to chemically react with said acidic working solution to form an ammonium salt solution.

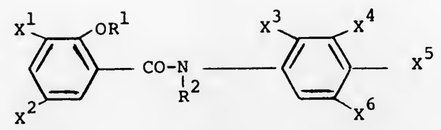
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**B 487,133**
**METHOD OF KILLING INTERNAL PARASITES USING SALICYLANILIDES**
**Bruce Adam Forsyth, Croydon, and David Ernest Pryor, Balwyn, both of Australia, assignors to ICI Australia Limited, Melbourne, Australia**
**Division of Ser. No. 355,813, April 30, 1973. This application July 10, 1974, Ser. No. 487,133**
**Claims priority, application Australia, May 12, 1972, 8942/72; Aug. 3, 1972, 9940/72; Dec. 5, 1972, 1505/72**
**Int. Cl.² A61K** *31/60*
**U.S. Cl. 424—230** **7 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 3,801,637 | 4/1974 | Meek | 424/324 |
| 3,823,236 | 7/1974 | Buchel et al. | 424/230 |

1. A method of killing internal parasites in warm blooded animals comprising administering orally or parenterally to an infected animal an effective amount of a compound of the formula:



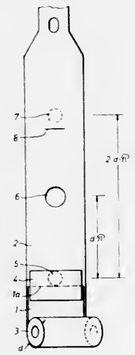

where $R^1$ is hydrogen or acetyl, $R^2$ is hydrogen, acetyl or lower alkyl, $X^1$ and $X^2$ are iodine atoms; $X^3$, $X^4$, $X^5$ and $X^6$ which may be the same or different are chlorine, bromine, iodine, trifluoromethyl or hydrogen; at least two and not more than two of $X^3$, $X^4$, $X^5$ and $X^6$ are hydrogen; when $X^3$ is chlorine, bromine, iodine or trifluoromethyl, then $X^4$ and $X^6$ are both hydrogen; and at least one of $X^3$, $X^4$, $X^5$ and $X^6$ is trifluoromethyl, said compound being administered in a dosage amount of from 1 to 50 mg per Kg animal bodyweight.



**B 503,029**
**ROLL FASTENING FOR ROLL FILMS**
**Ralf L. Klinkhammer, Cologne, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany**
**Filed Sept. 3, 1974, Ser. No. 503,029**
**Claims priority, application Germany, Sept. 7, 1973, 2345260**
**Int. Cl.² G03C** *3/02*
**U.S. Cl. 96—78** **2 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 1,828,955 | 10/1931 | Bornmann | 96/78 |
| 1,944,132 | 1/1934 | Naewiger | 96/78 |
| 2,188,779 | 1/1940 | Roehrl | 96/78 |




1. A roll fastening for roll films or cassette films comprising a leader having an outer end and a lateral width, in which the beginning of the film is stuck to the leader a short distance from its outer end by means of an adhesive strip, wherein a first hole is punched into a region of the leader which is in contact with the adhesive strip so that part of the tacky surface of the adhesive strip is exposed, and a second hole with a larger surface area than the first hole is punched into the leader at the same lateral position as and at a distance $d.\pi$ ($d$-roll diameter) from the first hole between the first hole and the outer end of the leader to prevent the first turn of the leader from sticking to the exposed tacky surface of the adhesive strip and whereby the second turn sticks to the tacky surface of the adhesive strip which is exposed through the first and second holes to form a bond by which the outermost turn of the leader is lightly bonded about the roll.

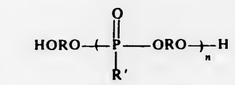
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**B 502,589**
**POLYALKYLENE GLYCOL ALKYL OR HALOALKYL POLYPHOSPHONATES USED AS FLAME RETARDANTS IN POLYURETHANE FOAM**
**Kyung Shim, Irvington, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.**
**Continuation of Ser. No. 282,642, Aug. 21, 1972, Pat. No. 3,855,360. This application Sept. 3, 1974, Ser. No. 502,589**
**Int. Cl.² C08G** *18/14*, *18/50*
**U.S. Cl. 260—2.5 AR** **9 Claims**

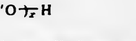
**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 3,333,027 | 7/1967 | Larrison | 260/969 |
| 3,354,241 | 11/1967 | Larrison | 260/2.5 AR |
| 3,359,348 | 12/1967 | Friedman | 260/2.5 R |
| 3,538,196 | 11/1970 | Baranauckas | 260/969 |
| 3,772,222 | 11/1973 | Steward | 260/2.5 AR |
| 3,855,360 | 12/1974 | Shim | 260/929 |

1. A flame retardant polyurethane foam containing as a chemically bonded integral part thereof, the residue of a polyalkylene glycol alkyl or haloalkyl polyphosphonate characterized by an acid number in water of below about 15 mg. of KOH per gram of sample, having the formula:




wherein R is the residue of a polyalkylene glycol having the formula:




wherein R'' is an alkylene radical of 2 to about 20 carbon atoms and *x* is a number from 2 to about 20, R' is alkyl or haloalkyl and n is a number in the range from about 2 to about 50.

**B 519,377**

## METHOD OF DRESSING LEATHER

**Kuno Wagner, Leverkusen-Steinbuechel, and Walter Schroer, Cologne, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

**Division of Ser. No. 427,290, Dec. 21, 1973, Pat. No. 3,880,784. This application Oct. 30, 1974, Ser. No. 519,377**
**Claims priority, application Germany, Dec. 23, 1972, 2263204**
**Int. Cl.² B05D** *3/02*; **B32B** *9/02*
**U.S. Cl. 427—389** **2 Claims**

**References Cited**
UNITED STATES PATENTS

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|---|---|---|---|
| 3,043,801 | 7/1962 | Wagner et al. | 260/841 |
| 3,142,699 | 7/1964 | Wagner et al. | 260/89.5 R |
| 3,472,802 | 10/1969 | Bownes et al. | 260/77.5 MA |
| 3,484,404 | 12/1969 | Collardeau et al. | 260/77.5 SS |
| 3,551,468 | 12/1970 | Chadwick | 260/77.5 SS |
| 3,677,813 | 7/1972 | Eckert et al. | 427/389 X |

1. The method of dressing leather which comprises applying to the leather a stable solution of a high-molecular weight diisocyanate polyaddition product in a solvent mixture, said solvent mixture comprising

a. an inert organic solvent,

b. an alcohol selected from the group consisting of primary and secondary alcohols, and

c. a semiacetal of formaldehyde of the formula $(HO)_p—R'—(O—CH_2OH)_q$

wherein

R is a radical containing up to about 20 carbon atoms, having a valency of $(p + q)$ and being selected from the class consisting of aliphatic, cycloaliphatic, araliphatic and trialkylamine groups and such groups substituted with alkylated nitrogen atoms and

wherein

$p$ and $q$ are integers,

$(p + q)$ is from 1 to 6, and

$p$ is from 0 to 3,

the alcohol being present in the mixture in a proportion of at least 25% by weight, based upon the dissolved diisocyanate polyaddition product, and drying the treated leather.

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**B 521,324**

## EPOXIDATION OF OLEFINS WITH LESS STABLE ORGANIC HYDROPEROXIDES BY USING AN ALCOHOL STABILIZING AGENT

**Ming N. Sheng, Cherry Hill, N.J.; John G. Zajacek, Strafford, Pa., and Thomas N. Baker, III, Sudbury, Mass., assignors to Atlantic Richfield Company, Los Angeles, Calif.**

**Division of Ser. No. 290,592, Sept. 20, 1972, Pat. No. 3,862,961, which is a continuation-in-part of Ser. No. 95,375, Dec. 4, 1970, abandoned. This application Nov. 6, 1974, Ser. No. 521,324**
**Int. Cl.² C07D** *301/20*
**U.S. Cl. 260—348.5 L** **6 Claims**

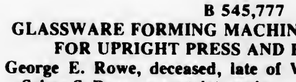
**References Cited**
UNITED STATES PATENTS

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|---|---|---|---|
| 3,434,975 | 3/1969 | Sheng et al. | 252/431 |
| 3,489,775 | 1/1970 | de Roch et al. | 260/348.5 L |
| 3,502,740 | 3/1970 | Zajacek et al. | 260/681 |
| 3,526,645 | 9/1970 | Vangermain et al. | 260/348.5 L |
| 3,538,124 | 11/1970 | Sheng et al. | 260/348.5 L |
| 3,649,648 | 3/1972 | Fetterman | 260/348.5 L |

FOREIGN PATENTS OR APPLICATIONS

| | | |
|---|---|---|
| 641,452 | 12/1963 | Belgium |
| 807,186 | 2/1969 | Canada |
| 799,502 | 11/1968 | Canada |

1. A method for the epoxidation of olefins characterized by having the formula



wherein R is hydrogen or an alkyl group having from 1 to 17 carbon atoms and Y is hydrogen, employing as the oxidizing agent a less stable organic hydroperoxide selected from the group consisting of cyclohexyl hydroperoxide and amylene hydroperoxide which compirses contacting said olefin with said hydroperoxide in the presence of a molybdenum-containing catalyst and as a stablilizing compound cyclohexanol at a temperature ranging between 50°C. to 140°C. under a pressure of at least the autogenous pressure of the reaction at the temperature employed, and with the mole ratio of said stabilizing compound to said hydroperoxide being in the range of from about 1:1 to 3:1.

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**B 535,813**

## LUMINESCENT SULFIDES OF MONOVALENT AND TRIVALENT CATIONS

**Perry Niel Yocom, Princeton, and John Pickett Dismukes, South Branch, both of N.J., assignors to RCA Corporation, New York, N.Y.**

**Filed Dec. 23, 1974, Ser. No. 535,813**
**Int. Cl.² C09K** *11/08*
**U.S. Cl. 252—301.4 S** **7 Claims**

**References Cited**
UNITED STATES PATENTS

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|---|---|---|---|
| 3,418,216 | 12/1968 | Royce | 252/301.4 |
| 3,801,702 | 4/1974 | Donohue | 252/301.4 |
| 3,850,837 | 11/1974 | Nath | 252/301.4 |

OTHER PUBLICATIONS

Chandron, M. G.; C. R. Acad. Sc. Paris; t273 Serie C; Oct. 11, 1971, pp. 849–851.

1. A luminescent material, having a crystal structure similar to that of alpha sodium ferric oxide and the empirical formula $(\alpha\ Ma\ \gamma\ Mc\ \delta/2\ Md)\ (\beta\ Mb\ \delta/2\ Md\ \epsilon\ Me)\ S_\tau$

wherein:

Ma is at least one monovalent cation selected from the group consisting of Na, K, Rb and Cs,

Mb is at least one trivalent cation selected from the group consisting of Gd, La, Lu, Sc and Y,

Mc is at least one monovalent cation selected from the group consisting of silver, copper and thallium,

Md is at least one divalent cation selected from the group consisting of europium, manganese, lead and tin,

Me is at least one trivalent cation selected from the group consisting of arsenic, bismuth, cerium, dysprosium, erbium, praseodymium, antimony, samarium, terbium and thulium,

S is sulfur,

$\alpha$ is 1.00 minus $\gamma$ minus $\delta/2$,

$\beta$ is 1.00 minus $\epsilon$ minus $\delta/2$,

$\gamma$, $\delta$ and $\epsilon$ are each in the range of 0.00 to 0.05 mol, and

$\gamma$ plus $\delta$ plus $\epsilon$ is in the range of 0.005 to 0.05 mol.



**B 545,777**

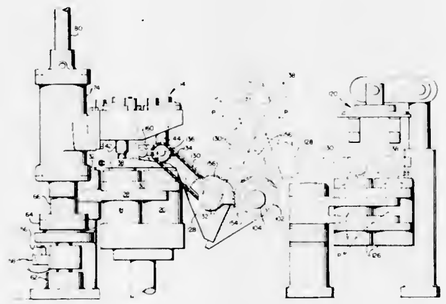
## GLASSWARE FORMING MACHINE OF THE I. S. TYPE FOR UPRIGHT PRESS AND BLOW PROCESS

**George E. Rowe, deceased, late of Wethersfield, Conn. (by Selma S. Rowe, executrix), assignor to Emhart Corporation, Farmington, Conn.**

**Filed Jan. 31, 1975, Ser. No. 545,777**
**Int. Cl.² C03B** *9/00*, *9/14*
**U.S. Cl. 65—239** **12 Claims**

**References Cited**
UNITED STATES PATENTS

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|---|---|---|---|
| 690,119 | 12/1901 | O'Neill | 65/361 X |
| 1,745,794 | 2/1930 | Hatch | 65/229 |
| 1,911,998 | 5/1933 | Hutchinson | 65/241 |
| 2,018,030 | 10/1935 | O'Neill et al. | 65/239 |
| 3,169,846 | 2/1965 | Zappia | 65/241 X |
| 3,329,492 | 7/1967 | Kinsley | 65/361 X |
| 3,434,820 | 3/1969 | Zappia et al. | 65/229 X |
| 3,490,891 | 1/1970 | Fouse | 65/239 X |



1. A glassware forming machine comprising:

a. a blank mold station having an upwardly open blank mold cavity defining structure for receiving the gobs of glass to be formed,

b. partible neck ring mold structures for mating with said blank mold cavity defining structure at said blank station,

c. parison neck forming means for insertion downwardly into the closed neck ring molds at said blank station,

d. a final blow station horizontally spaced from said blank station and having upwardly open blow mold cavity defining structure for receiving the partially formed parisons from said blank station,

e. means for transferring said parisons from said blank station to said blow station, said means including neck ring arms associated with said partible neck ring mold structures and means pivotally supporting said arms for movement about a horizontal axis located between said blank mold and blow mold stations, and

f. said transferring means further including means pivotally supporting each neck ring structure adjacent the free end of its associated neck ring arm, said neck ring mold structures supporting the parison during transfer from said blank to said blow station and also keeping the parison in an upright orientation during such transfer.

**B 565,180**

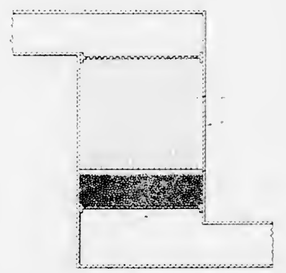
## MONOLITHIC CATALYTIC CONVERTER HAVING FLUIDIZED ABRASIVE PARTICLES BED FOR MAINTAINING CATALYST ACTIVITY

**Francis J. Fennessy, East Hartford, Conn., assignor to United Technologies Corporation, Hartford, Conn.**

**Continuation-in-part of Ser. No. 427,872, Dec. 26, 1973, abandoned. This application Apr. 4, 1975, Ser. No. 565,180**
**Int. Cl.² B01J** *8/18*, *8/24*; **F01N** *3/15*, *5/04*
**U.S. Cl. 23—288 F** **4 Claims**

**References Cited**
UNITED STATES PATENTS

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|---|---|---|---|
| 2,222,884 | 11/1940 | Stowe | 23/288 R |
| 2,747,976 | 5/1956 | Houdry | 23/288 F |
| 2,772,147 | 11/1956 | Bowen et al. | 23/288 F |
| 2,880,079 | 3/1959 | Cornelius | 23/288 F |
| 3,110,300 | 11/1963 | Brown et al. | 23/288 F |
| 3,184,291 | 5/1965 | Calvert | 23/288 F |
| 3,186,804 | 6/1965 | Fisher | 23/288 F |
| 3,307,920 | 3/1967 | Barnes | 23/288 F |
| 3,740,925 | 6/1973 | Gothard | 23/288 R |
| 3,754,870 | 8/1973 | Carnahan et al. | 23/288 F |



1. A catalytic reactor for purifying exhaust gases including:

a vertically disposed chamber having a bed of abrasive particles in the bottom thereof;

a first porous screen for supporting the particles;

a catalytic structure above the particles and mounted in the chamber, said structure having vertical passages defining substantially vertical catalytic surfaces, each of said vertical passages extending from the bottom of said structure to the top thereof and providing for the unimpeded flow of gases therethrough, the abrasive particles being substantially smaller than the passages for movement of the particles vertically in both directions in the passages;

a second porous screen at the top of said catalytic structure for preventing loss of said particles from said reactor;

the bottom end of the catalytic structure being spaced above the top surface of the bed of particles to leave a clearance space therebetween; and

said reactor having an inlet located below said first porous screen and an outlet at the top of the reactor above the top of said second porous screen for passing exhaust gases upwardly through the bed and through the catalytic structure for purifying said exhaust gas and fluidizing said bed such that the particles abrade the catalytic surfaces.

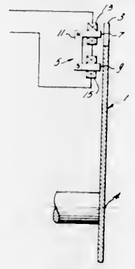
**B 592,143**
**MAGNETIC SPEED SENSOR WITH COMPENSATING POLE**

**Rex Wallace Presley, 36722 Marler, Livonia, Mich. 48154**

**Continuation of Ser. No. 478,988, April 4, 1975. This application July 1, 1975, Ser. No. 592,143**
**Int. Cl.² H02K** *21/38*
**U.S. Cl. 310—155** **5 Claims**

**References Cited**
UNITED STATES PATENTS

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|---|---|---|---|
| 2,161,256 | 6/1939 | Karcher | 310/155 X |
| 2,756,357 | 7/1956 | Schaberg | 336/135 X |
| 2,820,915 | 1/1958 | Mathews | 310/168 |
| 2,853,638 | 9/1958 | Bonnano et al. | 310/155 UX |
| 3,564,313 | 2/1971 | Goor | 310/168 |
| 3,825,782 | 7/1974 | Dassler | 310/168 |



**1.** A speed sensor for a vehicle wheel comprising a tone wheel driven by the vehicle and subject to axial misalignment and vibration, the tone wheel being made of magnetic material and having a continuous portion and a toothed portion, and sensing means having a sensing pole at one side of the tone wheel proximate the toothed portion and a compensating pole at the same side of the tone wheel proximate the continuous portion and remote from the toothed portion, coil means on the poles, and means for magnetizing the poles to induce a signal voltage across the coil means corresponding to wheel speed and substantially free of noise components due to axial misalignment and vibration of the tone wheel upon relative rotation of the tone wheel and sensing means.

# ELECTRICAL APPLICATIONS

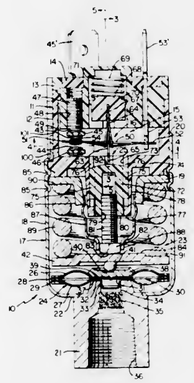
**B 428,877**
**FLUID OPERATED ELECTRICAL SWITCH CONSTRUCTION**

**Werner R. Bauer, Radnor, Pa., and Roger P. Sepso, Stratford, Conn., assignors to Robertshaw Controls Company, Richmond, Va.**

**Filed Dec. 27, 1973, Ser. No. 428,877**
**Int. Cl.² H01H** *35/34*
**U.S. Cl. 200—83 SA** **7 Claims**

**References Cited**
UNITED STATES PATENTS

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|---|---|---|---|
| 2,716,395 | 8/1955 | Pettigrew et al. | 121/45 |
| 2,807,686 | 9/1967 | Clendenin | 200/83 |
| 3,133,171 | 5/1964 | Griffith | 200/83 |
| 3,444,341 | 5/1969 | Mighton | 200/82 |



**1.** A fluid operated electrical switch construction comprising a first housing having an electrical switch therein, a second housing having an expandible and contractible fluid operated element therein, said housings being secured together, and motion transmitting means disposed in said housings between said element and said switch to transmit movement of said element to said switch to operate the same, said motion transmitting means having length adjustment means therein, said adjustment means comprising a pair of cooperating threaded members which thread axially of each other along a longitudinal axis that extends between said electrical switch and said fluid operated element, one of said housings carrying said threaded members, the other of said housings having means for holding one of said members to prevent the same from turning relative to said other housing.

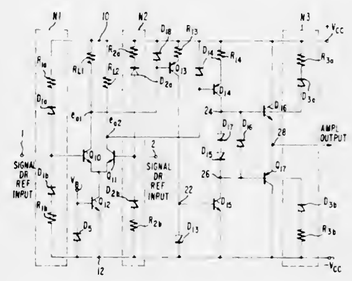
**B 439,542**
**RADIATION RESPONSIVE VOLTAGE DIVIDING CIRCUIT**

**Otto Heinrich Schade, Jr., North Caldwell, N.J., assignor to RCA Corporation, New York, N.Y.**

**Filed Feb. 4, 1974, Ser. No. 439,542**
**Int. Cl.² H03F** *3/08*
**U.S. Cl. 330—33** **9 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 3,619,799 | 11/1971 | Oelke | 330/33 |




**1.** In a circuit having a circuit node to which is coupled a reverse-biased semiconductor junction which passes a leakage current when subjected to incident radiation, means for clamping said node to a predetermined voltage at radiation levels higher than some predetermined level including:
first and second terminals for the application therebetween of an operating potential;
first and second impedances;
first and second radiation responsive elements, said elements being of the type which in the absence of radiation have a high equivalent impedance which decreases in response to radiation;
means connecting said first impedance in series with said first element between said first terminal and said circuit node; and
means connecting said second impedance in series with said second element between said second terminal and said circuit node.

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**B 443,712**
**CORE MEMORY WITH IMPROVED SENSE-INHIBIT RECOVERY TIME**

**Rex John Crookshanks, Palos Verdes Estates, Calif., assignor to Ampex Corporation, Redwood City, Calif.**

**Filed Feb. 19, 1974, Ser. No. 443,712**
**Int. Cl.² G11C** *7/02, 11/06*
**U.S. Cl. 340—174 DC** **24 Claims**

**References Cited**
UNITED STATES PATENTS

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|---|---|---|---|
| 3,548,391 | 12/1970 | Perlman | 340/174 CR |
| 3,675,224 | 7/1972 | Ninomiya et al. | 340/174 DA |
| 3,774,181 | 11/1973 | Wells et al. | 340/174 AC |
| 3,824,569 | 7/1974 | Schuur | 340/174 DC |

**1.** A magnetic core memory comprising at least one array of magnetic cores;
a plurality of conductors inductively coupled for selectively switching cores in the array and for sensing output voltage signals generated by selectively switched cores;

a sense amplifier coupled to at least one of said conductors to sense output voltage signals generated thereon by selectively switched cores; and

a non-linear electrical circuit connected to the at least one conductor to modify electric signals appearing thereon, said electrical circuit being connected to the one conductor at a position intermediate the array with the one conductor being inductively coupled to magnetic cores of



the array on each side of the connection position and with magnetic cores inductively coupled to the conductor on at least one side of the connection being disposed along the conductor between the connection position and the sense amplifier, said conductor being coupled to carry current between a current source and a current sink with a connection position and cores inductively coupled to the conductor on both sides thereof being disposed between the current source and current sink.

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**B 453,616**

## ACOUSTIC SURFACE WAVE DEVICE WITH HARMONIC COUPLED TRANSDUCERS

**Sheldon J. Kerbel, Merrick, N.Y., assignor to Hazeltine Corporation, Greenlawn, N.Y.**

**Filed Mar. 22, 1974, Ser. No. 453,616**

**Int. Cl.² H03H** *9/26, 9/30, 9/32*; **H01L** *41/08*

**U.S. Cl. 333—30 R** **7 Claims**

**References Cited**

UNITED STATES PATENTS

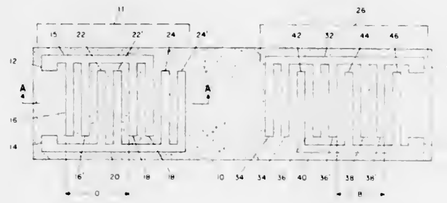
| | | | |
|---|---|---|---|
| 3,376,572 | 4/1968 | Mayo | 333/72 X |
| 3,614,463 | 10/1971 | Slobodnik, Jr. | 333/30 R |
| 3,727,155 | 4/1973 | De Vries | 333/72 |
| 3,742,396 | 6/1973 | Bahr et al. | 333/30 R |

OTHER PUBLICATIONS

Kuhn— "Enhanced Harmonic Response of an Interdigital Surface Acoustic Wave Transducer" in IEEE Trans. Electron Devices, June 1971, p. 395.

White et al.— "Direct Piezoelectric Coupling to Surface Electric Waves" in Applied Physic Letters, Vol. 7, No. 12, Dec. 15, 1965, p. 314–316.

Engan— "Excitation of Elastic Surface Waves by Spatial Harmonics of Interdigital Transducers" in IEEE Trans. on Electron Devices, Vol. ED16, No. 12, Dec. 1969; pp. 1014–1017.



1. An acoustic surface wave device for operation over a selected range of frequencies, comprising:

a piezoelectric substrate;

a first surface wave transducer having a first selected fundamental periodicity and having a first set of harmonic responses, only one of which lies substantially within said selected range of frequencies;

and a second surface wave transducer having a second selected fundamental periodicity, differing from said first selected fundamental periodicity, and having a second set of harmonic responses, only one of which overlaps substantially with any of the harmonic responses of said first transducer, said overlap occurring within said selected range of frequencies.

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**B 461,874**

## METHOD OF COPYING MAGNETIC RECORDINGS PROVIDED ON A MAGNETISABLE MEDIUM HAVING A GREATER COERCIVE FORCE BEFORE THAN AFTER RECORDING

**Jan Roos, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.**

**Continuation of Ser. No. 297,716, Oct. 16, 1972. This application Apr. 18, 1974, Ser. No. 461,874**

**Claims priority, application Netherlands, Oct. 21, 1971, 7114533**

**Int. Cl.² G11B** *5/86*

**U.S. Cl. 360—17** **2 Claims**

**References Cited**

UNITED STATES PATENTS

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|---|---|---|---|
| 2,738,383 | 3/1956 | Herr et al. | 360/17 |
| 3,465,105 | 9/1969 | Kumada et al. | 360/17 |



1. A method of copying magnetic recordings provided onto a first magnetisable recording medium on a second magnetisable recording medium comprising the steps of recording on the first magnetisable medium while in a state of reduced coercivity, thereafter increasing the coercive force of the first magnetisable medium to a value, $H_{c_1}$, said first medium consists of a magnetic material having the general formula $M_3R$, wherein M is at least one transfer metal of the first long period and R is at least one rare earth metal, said medium, before providing the recordings to be copied on it, being subjected to hydrogen gas under pressure to reduce the coercive force thereof, the hydrogen gas pressure being removed before copying is carried out to increase the coercive force of said first magnetizable medium, contacting the magnetic surfaces of the first magnetisable medium in a state of higher coercivity with the recording thereon and of the second magnetisable medium with each other, subjecting said magnetizable mediums while the surfaces thereof are in contact with one another to a magnetic auxiliary field to form on the second magnetizable medium a duplicate of the recording on the first magnetizable medium, and then separating said magnetizable mediums from each other, the coercive force $H_{c_1}$, the coercive force $H_{c_2}$ of the second magnetisable medium and the field strength H of the magnetic auxiliary field fulfilling the requirement: $aH_{c_2} < H < H_{c_1}/a$ with $1 < a < 2$.



**B 465,393**

## METHOD AND APPARATUS FOR DETERMINING RESISTANCE AT RADIO FREQUENCIES

**Charles A. Kirklen, and Charles F. Rhodes, Jr., both of Richardson, Tex., assignors to Sun Oil Company, Dallas, Tex.**

**Filed Apr. 29, 1974, Ser. No. 465,393**

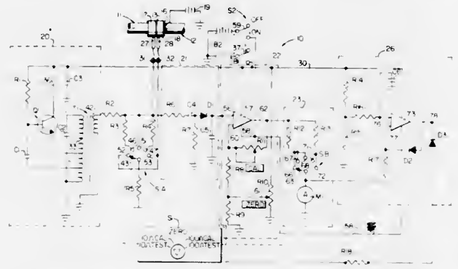
**Int. Cl.² G01R** *27/02*

**U.S. Cl. 324—62** **13 Claims**

**References Cited**

UNITED STATES PATENTS

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| 2,871,446 | 1/1959 | Wann | 324/62 X |
| 3,163,817 | 12/1964 | Simpson | 324/52 |
| 3,750,016 | 7/1973 | Oakley | 324/62 X |
| 3,769,576 | 10/1973 | Norkaitis | 324/62 X |



1. A method of determining the RF value of a resistance which comprises the steps of:

generating an RF signal;

impressing a portion of said RF signal through the resistance; and

converting the remainder of the RF signal to a direct current having a magnitude linearly related to the resistance.

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**B 483,615**

## CIRCUIT ARRANGEMENT FOR GENERATING IN A PICTURE DISPLAY DEVICE A SAWTOOTH CURRENT OF LINE FREQUENCY HAVING AN AMPLITUDE VARYING AT FIELD FREQUENCY

**Antonius Boekhorst, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.**

**Continuation of Ser. No. 40,830, May 27, 1970. This application June 27, 1974, Ser. No. 483,615**

**Claims priority, application Netherlands, May 29, 1969, 6908229**

**Int. Cl.² H01J** *29/56*

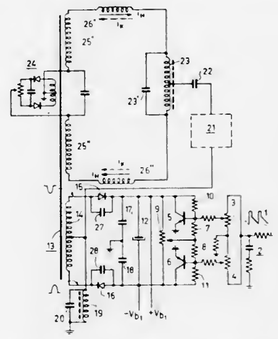
**U.S. Cl. 315—371** **10 Claims**

**References Cited**

UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 2,649,555 | 8/1953 | Lockhart | 315/371 |
| 3,320,469 | 5/1967 | Slavik | 315/371 |
| 3,440,483 | 4/1969 | Kaashoek et al. | 315/13 |

1. A circuit arrangement for generating in a picture display device a sawtooth deflection correction current of line frequency having an amplitude varying at field frequency, said circuit comprising a line deflection current generator and a field deflection current generator for applying sawtooth currents of line and field frequency and having a substantially constant peak-to-peak amplitude to line and field deflection coils respectively. a modulator means controlled by the field deflection generator for obtaining the amplitude variation of field frequency of the sawtooth correction current of line frequency, the said sawtooth correction current of line frequency being a function of the instantaneous value of the line deflection current and of the field deflection current, said modulator including an electronic switch switching at the line frequency, an inductive circuit including said line deflection coil, said switch coupling said field generator to said inductive circuit during the line scan period, a capacitor, a resonant circuit comprising said capacitor and said inductive circuit during the line flyback period, the period of the resonant frequency of the resonant circuit being substantially twice the line flyback period, said electronic switch comprising two



oppositely poled diodes that also generate supply voltages, said circuit further comprising an amplifier having an input adapted to receive said field frequency signal and an output coupled to said modulator, and means for applying said supply voltages due to the said diodes rectifying the peak amplitude during the line scan period of line pulses to said amplifier.

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**B 484,365**

## TICKET INFORMATION RECORDING AND WEB PARTING MECHANISM

**George Edmund Price, San Jose, Calif., assignor to International Business Machines Corporatiton, Armonk, N.Y.**

**Filed July 1, 1974, Ser. No. 484,365**

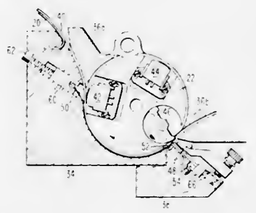
**Int. Cl.² G11B** *5/00*

**U.S. Cl. 360—1** **8 Claims**

**References Cited**

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| 1,981,486 | 11/1934 | Wheeler | 83/512 |
| 2,330,235 | 9/1943 | Peters | 83/337 |
| 3,601,042 | 8/1971 | Hamisch | 101/69 |
| 3,651,503 | 3/1972 | Kaho | 340/174.1 |
| 3,668,962 | 6/1972 | Chapman | 83/337 X |
| 3,668,963 | 6/1972 | Davis | 83/346 |
| 3,685,760 | 8/1972 | Fedor | 242/68.7 X |
| 3,704,820 | 12/1972 | Frederick et al. | 226/34 |
| 3,745,863 | 7/1973 | Murre et al. | 83/224 |
| 3,745,864 | 7/1973 | Watson | 83/295 |



1. A ticket information recording and parting mechanism for producing individual tickets from web ticket stock without waste, comprising

a frame structure,

a continuously rotating carrier arranged on said frame structure and carrying,

an information recording member arranged within said carrier, and

one ticket parting anvil member rotatably mounted within said carrier,

a complementary ticket parting blade member arranged on said frame structure,

a web advancing arrangement on said frame structure for passing a web about a part of said carrier and between said carrier and said complementary ticket parting blade member,

camming track means arranged on said frame structure and having a portion of generally circular loop configuration for presenting said anvil member in an attitude permitting said web stock to pass said blade member intact and another portion of generally triangular loop configuration for presenting said anvil member in an attitude substantially normal to the first said attitude for parting said web stock,

camming track following members travelling in said camming track and coupled to said one ticket parting anvil member, and

camming diverter means arranged in said camming track for engaging said camming track follower members for selectively changing the attitude of said one ticket parting anvil member.

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**B 488,395**

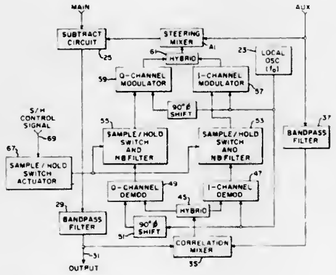
## SIDELOBE CANCELLER WITH PROGRAMMABLE CORRELATION SIGNAL WEIGHTING

**Hendrick H. Soule, Jr., Marcellus, and John F. Jureller, Syracuse, both of N.Y., assignors to General Electric Company, Syracuse, N.Y.**

**Filed July 15, 1974, Ser. No. 488,395**
**Int. Cl.² G01S** *3/06*
**U.S. Cl. 343—100 LE** **8 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 3,202,990 | 8/1965 | Howells | 343/100 CL |




**1.** In a canceller:

a. a main signal transmission channel having an output terminal and an input terminal coupled to receive a signal which may include both desired and undesired signal content;

b. an auxiliary signal transmission channel coupled to receive a signal including primarily said undesired signal;

c. cross correlation means connected to the output terminal of said main signal transmission channel and to said auxiliary signal transmission channel for detecting the relative amplitude and phase of said main and auxiliary channel signals and generating a correlation signal indicative of the result of such correlation;

d. correlation signal processing means including narrowband filter means and switch means connected in series relation, said switch means being selectively operable to pass the correlation signal generated by said cross correlation means;

e. a compensating cross feed network coupled to said auxiliary signal transmission channel to receive said undesired signal and to said correlation signal processing means to receive the correlation signal as processed thereby, said cross feed network being responsive to the signals coupled thereto to generate a correction signal of amplitude and phase corresponding to the undesired signal content of the main signal transmission channel; and

f. means interposed between said main channel input and output terminals for subtracting said correction signal from said main channel signal thereby to reduce the undesired signal content thereof.

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**B 492,946**

## VOLTAGE PULSE MULTIPLYING CIRCUIT

**Leon Sidney Siegel, P.O. Drawer 1710, Tulsa, Okla. 74101**

**Filed Aug. 16, 1974, Ser. No. 492,946**
**Int. Cl.² G06F** *7/38*
**U.S. Cl. 235—151.34** **3 Claims**

**References Cited**
UNITED STATES PATENTS

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|---|---|---|---|
| 2,968,181 | 1/1961 | Mittelmann | 235/92 FL |
| 3,043,508 | 7/1962 | Wright | 235/151.34 |
| 3,566,685 | 3/1971 | Zimmerman et al. | 235/151.34 X |
| 3,610,898 | 10/1971 | Yamamoto | 235/151.34 |
| 3,729,996 | 1/1973 | Metz | 235/92 FL X |
| 3,777,935 | 12/1973 | Storey | 235/151.34 X |
| 3,780,579 | 12/1973 | Barnard | 235/92 FL X |



**1.** An electric network which multiplies voltage pulses; including,

a meter responsive to a flowing quantity of material by generating voltage pulses at a frequency proportional to the flow rate of the material,

a circuit section connected to the meter and responsive to the voltage pulses to establish a series of voltage pulses having a consistent height and width,

a binary counter connected to the circuit section to receive the voltage pulses and having manually setable output switches,

an inverter circuit connected to the output switches of the binary counter,

a clock oscillator connected to the inverter to receive the signal from the inverter as an input,

a register connected to the clock oscillator output,

and a NAND gate connected to the clock output as a unit in a feedback circuit to the binary counter and connected to the inverter for control of the function of the NAND gate in the feedback circuit,

whereby the counter has its output reset to a logic 0 level by each voltage pulse received from the circuit section and the inverter establishes a logic 1 level when it receives the logic 0 level from the counter switches to turn the clock on to establish its output voltage pulses at a predetermined frequency to the register during the time the logic 1 level is received as an input and the NAND gate receives the logic 1 level and is thereby uninhibited to allow the feedback circuit to transmit the clock pulses to the counter until the number of pulses established by the output switch setting is reached which re-establishes the logic 0 level to turn the clock off and inhibit the NAND gate to block the feedback circuit.



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**B 499,718**

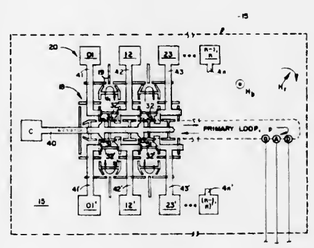
## MULTIPLE LOOP SHIFT REGISTER HAVING REDUNDANCY

**John L. Archer, Orange; Thomas T. Chen, Yorba Linda, and Leonard R. Tocci, Laguna Niguel, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.**

**Filed Aug. 22, 1974, Ser. No. 499,718**
**Int. Cl.² G11C** *29/00, 11/14, 19/00*
**U.S. Cl. 340—174 TF** **11 Claims**

**References Cited**
UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 3,792,450 | 2/1974 | Bogar et al. | 340/174 TF |




**1.** A serial shift register comprising,

a layer of magnetic material wherein single wall magnetic domains can be propagated,

a propagation loop defined by magnetic poles formed sequentially in a magnetically soft, patterned overlay on the magnetic layer in the presence of a cyclically varying, in-plane magnetic field,

at least one secondary propagation loop having ends for bubble domain entry and exit at points separated by at least one intervening magnetic pole of said propagation loop and defined by magnetic poles formed sequentially in said overlay in the presence of said cyclically varying in-plane magnetic field,

said secondary propagation loop having a pair of first magnetic poles at said entry and exit, and having at least a second magnetic pole adjacent said entry; and

a conductor network connected to said overlay for applying electric current to portions of said overlay to selectively degrade the magnetic properties thereof and thereby eliminate selected ones of said intervening magnetic poles and said second magnetic poles in order to provide a single continuous propagation path.

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**B 500,981**

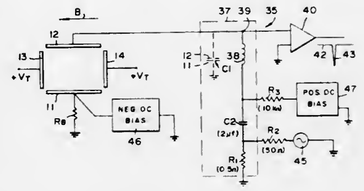
## ION AND ELECTRON DETECTOR FOR USE IN AN ICR SPECTROMETER

**James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Wesley T. Huntress, Sierra Madre, Calif.**

**Filed Aug. 27, 1974, Ser. No. 500,981**
**Int. Cl.² H01J** *39/46*
**U.S. Cl. 250—291** **18 Claims**

**References Cited**
UNITED STATES PATENTS

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|---|---|---|---|
| 3,475,605 | 10/1969 | Llewellyn | 250/290 |
| 3,484,602 | 12/1965 | McIlraith | 250/290 |
| 3,511,986 | 5/1970 | Llewellyn | 250/292 |




**1.** A detector for use in an ion cyclotron resonance (ICR) spectrometer of the type including a resonance cell through which ions move, the cell including first and second parallel resonance plates spaced apart along a first axis, and first and second parallel trapping plates, spaced apart along a second axis perpendicular to said first axis, said spectrometer including means for applying a magnetic field in the direction of said second axis, and means for applying a preselected potential between each of said trapping plates and a reference potential, the detector comprising:

a coil;

means connecting said coil substantially across said first and second resonance plates, the latter defining a capacitive element which together with said coil form a tuned circuit;

an external radio frequency (rf) oscillator adapted to provide signals at frequencies up to the megahertz range, at relatively low adjustable (rf) voltage levels which are independent of the signals' frequencies;

injecting means for connecting said oscillator to said tuned circuit to inject signals at a selected level and frequency from said oscillator into said tuned circuit; and

means for sensing the level of the signals across said tuned circuit.

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**B 502,973**

## TIME-RATIO CONTROL HAVING BIDIRECTIONAL SPEED POTENTIOMETER

**Michael H. Grace, Griffith, Ind., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.**

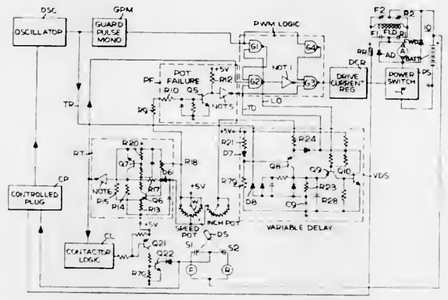
**Filed Sept. 3, 1974, Ser. No. 502,973**
**Int. Cl.² H02P** *7/08*
**U.S. Cl. 318—257** **1 Claim**

**References Cited**
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|---|---|---|---|
| 3,209,227 | 9/1965 | Berman et al. | 318/257 |
| 3,349,309 | 10/1967 | Dannettell | 318/341 |
| 3,683,253 | 8/1972 | Rummel et al. | 318/341 X |
| 3,684,945 | 8/1972 | Hermansson et al. | 318/257 X |
| 3,713,009 | 1/1973 | Poppinger et al. | 318/257 X |

**1.** In a vehicle driven by a d.c. traction motor energized by unidirectional pulses of current supplied from a battery through a semiconductor power switch and having forward

and reverse contactors which control the direction of said motor to propel said vehicle in the forward and reverse directions respectively, a time-ratio control for selectively varying the duty cycle of said pulses to thereby regulate the speed of said motor including a variable delay RC timing circuit having a timing capacitor in series with a bidirectional speed potentiometer, said speed potentiometer having a resistance element provided with a midtap and a movable wiper adapted to slidably engage said resistance element to vary the resistance of




said speed potentiometer in series with said timing capacitor and thereby regulate the time duration and duty cycle of said pulses, said RC timing circuit being in series with the resistance of said speed potentiometer between said wiper and said midtap, whereby movement of said wiper in either direction from said midtap increases the resistance in said timing circuit and thereby varies the time duration of said pulses, and direction control means for completing respective energizing circuits to said forward and reverse contactors when said wiper is moved in opposite directions away from said midtap.

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**B 507,647**
**BIPOLAR A/D CONVERTER**

**Glenn C. Waehner, Riverside, Conn., assignor to United Technologies Corporation, Hartford, Conn.**

**Filed Sept. 19, 1974, Ser. No. 507,647**
**Int. Cl.² H03K** *13/06*
**U.S. Cl. 340—347 AD** **3 Claims**

**References Cited**
UNITED STATES PATENTS

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|---|---|---|---|
| 3,505,668 | 4/1970 | Ottesen | 340/347 AD |
| 3,544,993 | 12/1970 | Gabriel | 340/347 AD |
| 3,657,653 | 4/1972 | Wilkinson | 340/347 AD |
| 3,718,923 | 2/1973 | Horwitz et al. | 340/347 NT |




**1.** Bipolar analog to digital conversion apparatus for providing a digital manifestation of an analog input signal, comprising:

successive approximation logic means for providing a digital output signal manifestation, said means responsive to an incrementing input signal to increment the digital value at its output;

digital to analog conversion means responsive to the output of said successive approximation logic means for providing an output signal which comprises an analog manifestation of the value of the digital output of said successive approximation logic;

first comparator means, responsive to the analog input signal and to the output of said digital to analog conversion means, for providing a first output signal indicative of the analog input signal being of the same polarity as and greater in magnitude than the output of said digital to analog conversion means;

means for summing the input signal and the output of said digital to analog conversion means to provide a sum-signal manifestation of said signals;

second comparator means, responsive to said sum signal and a reference potential, for providing a second output signal when said sum signal has a polarity with respect to said reference potential which is opposite to that of the output of said digital to analog conversion means; and

means responsive to both of said comparator means for providing said incrementing signal input to said successive approximation logic means.

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**B 515,455**
**CAMERA TUBE HAVING A TARGET WITH HETEROJUNCTION**

**Jan Dieleman, and Arthur Marie Eugene Hoeberechts, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.**

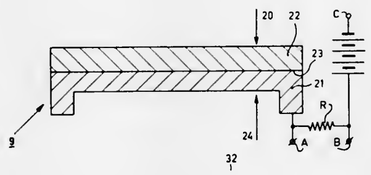
**Filed Oct. 17, 1974, Ser. No. 515,455**
**Claims priority, application Netherlands, Oct. 27, 1973, 7314804**
**Int. Cl.² H01J** *29/45, 31/38*
**U.S. Cl. 313—366** **13 Claims**

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| 3,271,591 | 9/1966 | Ovshinsky | 357/2 X |
| 3,821,662 | 6/1974 | Dewinter et al. | 357/61 X |

FOREIGN PATENTS OR APPLICATIONS

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|---|---|---|---|
| 2,097,370 | 3/1972 | France | 313/366 |


**1.** A camera tube comprising an evacuated envelope and within the envelope an electron source, a target to be scanned by an electron beam emerging from said source, said target comprising a radiation-receiving silicon layer which on the side to be scanned by the electron beam has a chalcogen-containing layer which forms a hetero junction with the silicon layer, said chalcogen-containing layer comprising gallium.



**B 520,924**
**ACOUSTOELECTRIC WAVE SEMICONDUCTOR SIGNAL PROCESSING APPARATUS WITH STORAGE OF WEIGHTING FACTOR**

**Larry Allen Coldren, Leonardo, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**

**Filed Nov. 5, 1974, Ser. No. 520,924**
**Int. Cl.² G06G** *7/19;* **H03H** *9/24*
**U.S. Cl. 235—181** **11 Claims**

**References Cited**
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| 3,816,753 | 6/1974 | Kino | 235/181 |
| 3,826,865 | 7/1974 | Quate et al. | 178/7.1 |
| 3,826,866 | 7/1974 | Quate et al. | 178/7.1 |
| 3,833,867 | 9/1974 | Solie | 235/181 |
| 3,851,280 | 11/1974 | Staples | 333/72 |

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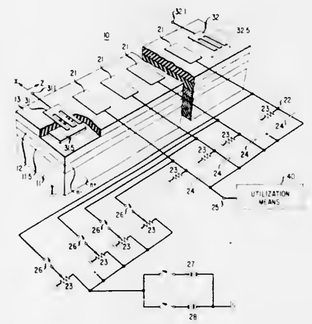
Khuri-Yakub et al: Anomolithic Zinc-Oxyde-on-Silicon Convolver, Applied Physics Letters Vol. 25 No. 4, Aug. 15, 1974.

Kino et al: Signal Processing by Parametric Interactions IEEE Transact. on Sonics and Ultrasonics, Vol. SU 20 No. 2 Apr. 1973.

Hayakawa et al.: Storage of Acoustic Signals in Surface States in Silicon, Appl. Physics Letters Vol. 25 No. 4 Aug. 15, 1974.

Stern et al.: New Adaptive Signal Processing Concept, Electronics Letters Mar. 7, 1974 Vol. 10 No. 5.

Coldren: Zinc-Oxide-on-Silicon Acoustically Scanned Imager with Positive Sensitivity Storage Capabilities, Applied Physics Letters Vol. 27 No. 1, July 1, 1975, pp. 6-8.

**7.** Apparatus according to claim **6** in which the electrodes are essentially buried layer semiconductor stripes in the body, said stripes being of relatively high conductivity compared to the bulk of the semiconductor body.

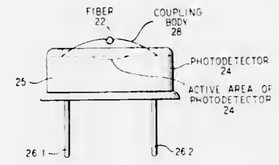
**B 522,577**
**OPTICAL FIBER POWER TAPS**

**James Emanuel Goell, Roanoke SW, Va.; Tingye Li, Rumson, and Willis Martin Muska, Little Silver, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**

**Filed Nov. 11, 1974, Ser. No. 522,577**
**Int. Cl.² G02B** *5/14*
**U.S. Cl. 250—227** **6 Claims**

**References Cited**
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| 3,045,223 | 7/1962 | Kapany et al. | 250/227 X |
| 3,058,021 | 10/1962 | Dunn | 250/227 X |
| 3,350,654 | 10/1967 | Snitzer | 250/227 X |
| 3,412,255 | 11/1968 | Krieger | 250/227 |
| 3,508,589 | 4/1970 | Derick et al. | 350/96 B X |
| 3,777,149 | 12/1973 | Marcatili | 250/227 X |


**1.** An arrangement for tapping optical power from an intermediate portion of an optical fiber waveguide without requiring that the fiber be terminated or broken, said fiber including a guiding region in which the optical power is essentially confined, and including a medium surrounding said guiding region, said arrangement being characterized by:

a body of dielectric material disposed in a coupling relationship to an intermediate length of said fiber, said body having an index of refraction which is approximately equal to or greater than the index of refraction of the medium surrounding said guiding region of said fiber and is selected to couple only a minor portion of the optical power propagating in said fiber waveguide guiding region toward a surface of said dielectric body laterally offset from said guiding region;

a photodetector contacting said laterally offset surface of said dielectric body and including an active area responsive to the wavelength of the optical signal to be propagated through said fiber, said active area of said photodetector being oriented to intercept the optical power coupled out of said guiding region of said fiber by said dielectric body; and

in which said guiding region of said fiber comprises an inner core formed of a low optical loss material, said medium surrounding the guiding region comprising an outer cladding of lower refractive index than that of said inner core; and

said dielectric body has an index of refraction greater than about 0.8 times the index of refraction of said outer cladding of said fiber.

**B 526,106**

## DIGITAL SIGNAL PROCESSING ARRANGEMENT USING A CASCADED INGEGRATOR FUNCTION GENERATOR

**Donald Lars Duttweiler, Colts Neck, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**

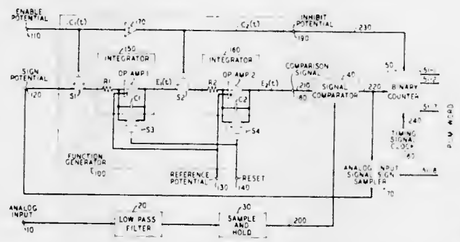
**Filed Nov. 22, 1974, Ser. No. 526,106**
**Int. Cl.² H03K *13/20***
**U.S. Cl. 340—347 AD** **9 Claims**

**References Cited**
UNITED STATES PATENTS

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| 3,513,467 | 5/1970 | Sliwkowski | 340/347 AD |
| 3,653,035 | 3/1972 | Carbrey | 340/347 AD |

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Johannesen "Electronics Letters" Sept. 23, 1971, *Vol. 7, No. 10, pp. 593–594.




**1.** In combination in a digital signal processing arrangement for producing a comparison signal corresponding to a predetermined piecewise linear segment companding law:

a first and a second integrator, each integrator having an input and an output terminal and generating a ramp signal;

a sign potential terminal;

means for connecting said sign potential terminal to said input terminal of said first integrator;

means for connecting said output terminal of said first integrator to said input terminal of said second integrator; and

means for operating said first integrator substantially complemental to said second integrator to produce a piecewise linear segment signal.

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**B 533,734**

## DC-TO-DC CONVERTERS EMPLOYING STAGGERED-PHASE POWER SWITCHES WITH TWO-LOOP CONTROL

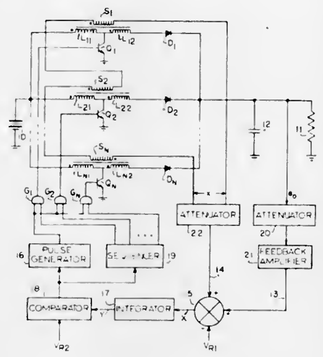
**James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Gene W. Wester, Pasadena, Calif.**

**Filed Dec. 17, 1974, Ser. No. 533,734**
**Int. Cl.² H02M *3/335*; G05F *1/64***
**U.S. Cl. 321—2** **10 Claims**

**References Cited**
UNITED STATES PATENTS

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|---|---|---|---|
| 3,521,150 | 7/1970 | Bates | 323/25 X |
| 3,571,697 | 3/1971 | Phillips | 323/17 |
| 3,619,758 | 11/1971 | Deranian | 321/2 |
| 3,621,371 | 11/1971 | Brumm | 323/17 |
| 3,736,496 | 5/1973 | Lachocki | 323/25 X |

**1.** In a boost, buck and buck-boost dc-to-dc converter employing a plurality of parallel staggered-phase power switches with a two-loop feedback control circuit for regulating the voltage of power applied to a load from a source, a separate switched inductive means for coupling said source to said loading during successive phases, a separate sense winding coupled to each inductive means, all of said sense windings being connected in series to one of two feedback loops in said two-loop feedback control circuit to provide a signal that indicates when one of said inductive means is switched on, means responsive to said two-loop feedback control circuit for




producing switching pulses to switch on an inductive means during each successive phase, and means for distributing said switching pulses to said inductive means in sequence during successive phases.

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**B 534,443**

## METAL HALIDE HIGH-INTENSITY DISCHARGE LAMP HAVING IMPROVED RESTART CAPABILITY

**Robert D. Downing, Mentor, Ohio, assignor to General Electric Company, Schenectady, N.Y.**

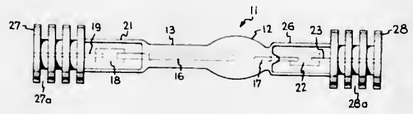
**Filed Dec. 19, 1974, Ser. No. 534,443**
**Int. Cl.² H01J *61/52***
**U.S. Cl. 313—42** **6 Claims**

**References Cited**
UNITED STATES PATENTS

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| 2,579,109 | 12/1951 | Davies et al. | 313/42 |
| 3,259,777 | 7/1966 | Fridrich | 313/184 |
| 3,685,880 | 8/1972 | Sobieski | 316/19 |
| 3,780,342 | 12/1973 | Grimshaw et al. | 315/173 |

FOREIGN PATENTS OR APPLICATIONS

| | | | |
|---|---|---|---|
| 465,137 | 5/1937 | United Kingdom | 313/43 |



**1.** A metal halide high-intensity discharge lamp comprising an envelope and at least one electrode structure sealed therein, said electrode structure comprising an elongated refractory metal electrode extending with said envelope and a conductor extending externally of the envelope, said envelope having a gas fill including a halide, the inner end of said electrode becoming molten during lamp operation, and a heat radiator connected to said conductor externally of said envelope for radiating heat into surrounding air so as to aid the cooling of said electrode upon termination of the discharge without substantially affecting the operating temperature of said electrode.



**B 534,991**

## SURFACE ACOUSTIC WAVE MULTI-CHANNEL FILTER

**Rolf D. Weglein, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.**

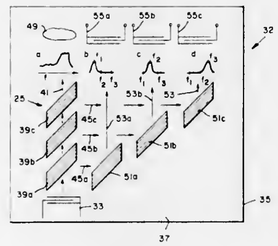
**Filed Dec. 20, 1974, Ser. No. 534,991**
**Int. Cl.² H03H *9/26, 9/30, 9/32*; H01L *41/08***
**U.S. Cl. 333—72** **7 Claims**

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| 3,568,102 | 3/1971 | Tseng | 333/30 R |
| 3,753,164 | 8/1973 | DeVries | 333/30 R |

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Williamson et al., "The Use of Surface–Elastic–Wave Reflection Gratings in Large Time–Bandwidth Pulse–Compression Filters," in IEEE Trans on Microwave Theory and Techniques, Vol. MTT 21, No. 4, Apr. 1973, pp. 195–199.



**1.** A surface acoustic wave multi-channel filter, comprising:

a substrate having a surface capable of supporting propagating surface acoustic wave energy;

input transducer means disposed on said substrate surface for converting electrical input energy to surface acoustic wave energy in said substrate and propagating said energy along a first predetermined path;

periodic grating filter means disposed on said substrate and including a first set of spaced periodic grating filter arrays tandemly positioned in said first predetermined path each for reflecting a portion of the propagating surface acoustic wave energy incident thereon along a separate predetermined intermediate path skew to said first predetermined path, and also including a second set of periodic grating filter arrays each lying along a different one of said separate predetermined intermediate paths and each reflecting at least a portion of the propagating surface acoustic wave energy incident thereon along a separate predetermined output path skew to the associated intermediate path, each of said periodic grating filter arrays including a plurality of spaced parallel reflector elements having a fixed periodicity, said periodic grating filter arrays in each associated pair of such arrays having the same reflector element periodicity but different from the reflector element periodicity of other associated pairs of such arrays thereby providing a predetermined different frequency-selective characteristic for each said associated pairs of said periodic grating filter arrays; and

output transducer means disposed on said substrate surface and including output transducers each lying along a different one of said predetermined output paths and each converting surface acoustic wave energy incident thereon, as reflected by said associated pairs of said periodic grating filter arrays in said first and second sets, to electrical output energy having a desired different center frequency.

**B 536,009**

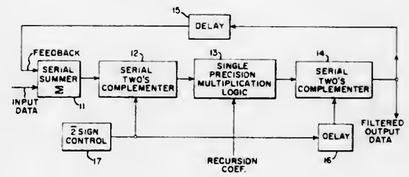
## RECURSIVE NUMERICAL PROCESSOR

**Fritz H. Schlereth, Baldwinsville, N.Y., assignor to General Electric Company, Syracuse, N.Y.**

**Filed Dec. 23, 1974, Ser. No. 536,009**
**Int. Cl.² G06F *7/38***
**U.S. Cl. 235—156** **7 Claims**

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|---|---|---|---|
| 3,609,568 | 9/1971 | Jackson | 235/156 X |
| 3,699,326 | 10/1972 | Kindell et al. | 235/176 X |
| 3,725,687 | 4/1973 | Heightley | 235/164 |




**1.** In a recursive processor subject to error integration, the combination comprising:

a. input terminal means for connection to a source of input data representing a time series, said input data being expressed in successive words in two's complement notation,

b. a first two's complementer to which said input data from said input terminal means is coupled for inverting the sign of serial words coupled thereto in two's complement notation in response to a control signal,

c. a numeric sub-processor coupled to the output of said first two's complementer for accepting input data in two's complement notation, said sub-processor being subject to a bias error which is consistently correlated with the sign of the input data,

d. a second two's complementer to which the output of said subprocessor is coupled for inverting the sign of serial words coupled thereto in two's complement notation in response to a control signal, and

e. control means coupled to the control input of said first and second two's complementers to invert and reinvert respectively the sign of alternate words to substantially cancel said bias error without changing the sign of the output data stream.

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**B 541,496**

## TRAFFIC USAGE DATA GATHERING APPARATUS

**Richard Henry Etra, Forest Hills, N.Y., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**

**Filed Jan. 16, 1975, Ser. No. 541,496**
**Int. Cl.² G06F *1/00***
**U.S. Cl. 340—172.5** **16 Claims**

**References Cited**
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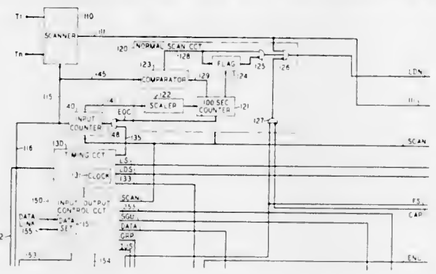
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| 3,099,819 | 7/1963 | Barnes | 340/172.5 |
| 3,115,549 | 12/1963 | Lamneck et al. | 179/8 A |
| 3,196,401 | 7/1965 | Lamneck | 340/172.5 |
| 3,231,866 | 1/1966 | Goetz et al. | 340/172.5 |
| 3,546,678 | 12/1970 | Callaway et al. | 340/172.5 |
| 3,588,837 | 6/1971 | Rash et al. | 340/172.5 |
| 3,732,547 | 5/1973 | Etra | 340/172.5 |
| 3,866,185 | 2/1975 | Etra et al. | 340/172.5 |

FOREIGN PATENTS OR APPLICATIONS

| | | | |
|---|---|---|---|
| 1,089,499 | 11/1967 | United Kingdom | 179/8 A |

**1.** Apparatus for gathering data pertaining to the status of each of a plurality of inputs comprising, means for scanning

said plurality of inputs in succession, individual means associated with each of said inputs for storing control information associated with each said input, and control means operable



with said scanning means for gathering said data from each of said inputs in accordance with said control information associated with each said input.

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**B 545,945**

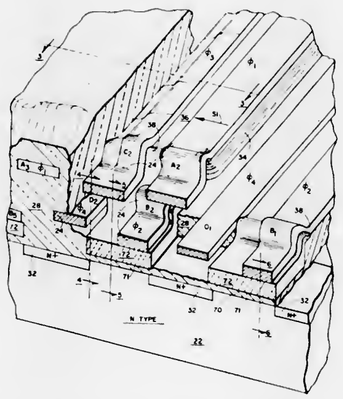
## MNOS CHARGE TRANSFER DEVICE MEMORY WITH OFFSET STORAGE LOCATIONS AND RATCHET STRUCTURE

**Yum T. Chan, Newport Beach, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.**

**Filed Jan. 31, 1975, Ser. No. 545,945**
**Int. Cl.² G11C** *11/40, 11/24, 19/28*
**U.S. Cl. 340—173 R** **9 Claims**

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UNITED STATES PATENTS

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| 3,654,499 | 4/1972 | Smith | 340/173 CA |
| 3,863,065 | 1/1975 | Kosonocky et al. | 357/24 |



**4.** In a permanent charge-storage charge-transfer memory in which charge packets are introduced into the memory by insertion into a charge transfer channel; in which charge packets are propagated along said channel, under the influence of a set of propagation electrodes overlying said channel, until said charge packets located where they are to be permanently stored; and in which the charge packets are permanently stored through electric field dependent transport between the charge transfer material and a permanent storage structure capable of trapping charge thereat, the improvement comprising:

disposing the permanent storage structures in locations laterally displaced from the charge transfer channel to minimize permanent-storage-structure-induced charge transfer inefficiencies in the propagation channel;

means for preventing charge propagated in a forward direction along the channel from spreading into the portion of the charge transfer material underlying the permanent storage structure; and

means for forcing charge propagated in a backward direction along said charge transfer channel to flow into the portion of the charge transfer material underlying the permanent storage structure.

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**B 546,426**

## METHODS AND APPARATUS FOR REDUCING THE BANDWIDTH OF A VIDEO SIGNAL

**Earl Franklin Brown, Piscataway; Robert Lewis Eilenberger, Colts Neck; Alan Mayer Gordon; Pat Le Mar Gordon, both of Matawan, and John Ormond Limb, New Shrewsbury, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**

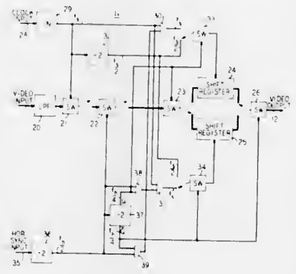
**Filed Feb. 3, 1975, Ser. No. 546,426**
**Int. Cl.² H04N** *5/46, 7/18*
**U.S. Cl. 178—6** **9 Claims**

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| 3,806,644 | 4/1974 | Browne et al. | 178/6.8 |

OTHER PUBLICATIONS

M. C. W. van Buul & L. J. van de Polder, "Standards Conversion of a T.V. Signal", Philips Research Reports, Vol. 28, 8–73, pp. 377–390.



**1.** Apparatus for reducing the bandwidth of the composite video signal generated by a television camera, or the like, said camera supplying in addition to the video signal a horizontal synchronization signal and a master clock signal, which comprises:

a first divider circuit for dividing the frequency of said horizontal synchronization signal by a factor of two;

a second divider circuit, connected to the output of said first divider circuit, for dividing the frequency thereof by a factor of two, said second divider circuit having first and second complementary outputs;

a third divider circuit for dividing the frequency of said master clock signal by a factor of N, where N is inversely proportional to the horizontal definition desired for the reduced bandwidth video signal;

a fourth divider circuit for dividing the frequency of the output from said third divider circuit by a factor of two;

first switching means, controlled by the output of said first divider circuit, for interrupting the transmission path of said video signal during alternate scanning lines in each field of said vido signal;

a first shift register of a capacity sufficient to store at least one complete scanning line of said video signal;

a second switching means, controlled by the first output of said second divider circuit, for alternately connecting the clock pulse input of said first shift register to the output of said third divider circuit or to the output of said fourth divider circuit;

a second shift register of a capacity sufficient to store at least one complete scanning line of said video signal;

third switching means, controlled by the second output of said second divider circuit for alternately connecting the clock pulse input of said second shift register to the output of said fourth divider circuit or to the output of said third divider circuit;

fourth switching means, connected to the output of said first switching means and controlled by the first output of said second divider circuit, for alternately routing the scanning lines of said video signal which are passed by said first switching means to said first or to said second shift register; and

fifth switching means controlled by the second output of said divider stage, for alternately selecting the output of said first and said second shift registers thereby to generate a composite video signal of reduced bandwidth.



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**B 558,220**

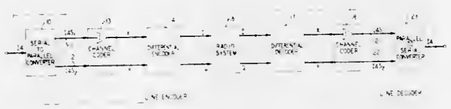
## METHOD AND APPARATUS FOR UNIQUELY ENCODING CHANNELS IN A DIGITAL TRANSMISSION SYSTEM

**George Howard Lentz, Andover, Mass., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**

**Filed Mar. 14, 1975, Ser. No. 558,220**
**Int. Cl.² H03K** *13/32*
**U.S. Cl. 325—40** **7 Claims**

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| 3,069,482 | 7/1963 | Frank et al. | 325/41 |
| 3,128,342 | 4/1964 | Baker | 178/66 |
| 3,128,343 | 4/1964 | Baker | 178/67 |
| 3,500,207 | 3/1970 | Ruthroff | 325/60 |
| 3,646,516 | 2/1972 | Flinders et al. | 340/146.1 BE |
| 3,665,395 | 5/1972 | Bochmann | 325/41 X |
| 3,665,430 | 5/1972 | Hinrichs et al. | 340/146.1 BE |



**1.** In a multichannel digital transmission system of the type wherein: (a) the incoming digital bitstream associated with each channel is divided into frames, each of said frames including a first group of terminal control bits, a group of data bits, and a second group of terminal control bits; (b) *n* such frames define a superframe; and (c) the receiving location includes monitoring means, responsive to said terminal control bits, for marking a channel bad if said terminal control bits indicate an excessive number of parity violations; a line encoder which comprises:

a series-to-parallel converter connected to the source of the incoming bitstream for generating, on two parallel bit rails, first and second bitstreams at half the rate of the incoming bitstream;

an encoder connected to said parallel bit rails for encoding said first and second bitstreams for transmission over said digital transmission system; and

means, located upstream of said encoder, for inverting the sense of at least one of said first and second bitstreams whereby said channel is uniquely coded with respect to a reference channel in the same system in which neither bitstream is inverted.

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**B 561,764**

## ANTI-MULTIPATH DIGITAL SIGNAL DETECTOR

**John H. Painter, Newport News, Va., assignor to U.S. Government, Washington, D.C.**

**Continuation of Ser. No. 412,379, Nov. 2, 1973, abandoned.**
**This application Mar. 25, 1975, Ser. No. 561,764**
**Int. Cl.² H04L** *15/24;* **H04B** *1/10;* **G06F** *15/36*
**U.S. Cl. 178—88** **12 Claims**

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| 3,378,847 | 4/1968 | Grover et al. | 325/476 |
| 3,396,369 | 8/1968 | Brothman et al. | 340/146.1 R |
| 3,490,040 | 1/1970 | Choquet et al. | 325/320 |
| 3,551,816 | 12/1970 | Paine | 325/321 |
| 3,614,626 | 10/1971 | Dillard | 325/323 |
| 3,736,507 | 5/1973 | Wolejsza, Jr. et al. | 178/67 |

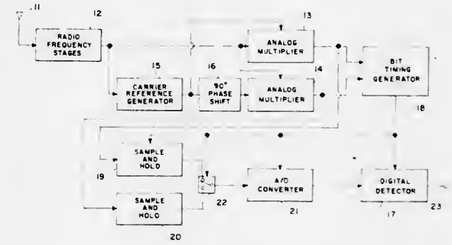
OTHER PUBLICATIONS

Gooding: Performance Monitor Techniques for Digital Receivers Based on Extrapolation of Error Rate, IEEE Transactions on Communication Technology, Vol. COM–16, No. 3, June 1968, pp. 380–387.

Murray: FM Parallel Tone Transmission System, IBM Technical Disclosure Bulletin, Vol. 14, No. 12, May 1972, pp. 3631–3632

Belman et al.: FSK Digital Demodulator with Majority Decision Filtering, IBM Technical Disclosure Bulletin, Vol. 13, No. 4, Sept. 1970, pp. 1042–1043.

Chadwick et al.: The Design of a Low Data Rate MSFK Communication System, IEEE Transactions on Communication Technology, Vol. COM–18, No. 6, Dec. 1970, pp. 740–750.




**1.** A receiver for radio signals that are modulated with binary information and that have been transmitted through a multipath medium comprising:

means receiving said radio signals for producing two quadrature components of the signals representing said binary information;

means receiving said two quadrature components for generating bit timing signals;

analog-to-digital converter means under the control of said bit timing signals for converting several samples, during each bit period, of said two quadrature components into two sets of digital signals;

two digital computer means, in one-to-one correspondence with the two digits representing said binary information, with each under the control of said bit timing signals and receiving said two sets of digital signals for computing during each bit period the probability that its corresponding digit was transmitted; and

comparator means for comparing the outputs of said two computer means and for producing a signal representing the digit whose probability of transmission was the greatest.

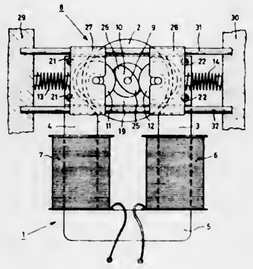
**B 561,784**
**SYNCHRONOUS MOTOR STARTING MEANS**
**Hendrik Poel, Drachten, Netherlands, assignor to U. S. Philips Corporation, New York, N.Y.**
**Filed Mar. 25, 1975, Ser. No. 561,784**
**Claims priority, application Netherlands, Apr. 5, 1974, 7404656**
**Int. Cl.² H02K** *7/118*
**U.S. Cl. 310—41** **4 Claims**

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| 2,078,257 | 4/1937 | Liner | 310/41 X |
| 3,333,125 | 7/1967 | Grabow | 310/41 |
| 3,860,841 | 1/1975 | Jullien-David | 310/41 |

FOREIGN PATENTS OR APPLICATIONS

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|---|---|---|---|
| 1,460,560 | 10/1966 | France | 310/41 |
| 550,809 | 1/1943 | United Kingdom | 310/41 |



1. An apparatus which comprises a synchronous motor (1) which is provided with a permanent-magnet diametrically magentized rotor (2) which is disposed between the free ends of the legs (3,4) of a U-shaped stator core (5), which is provided with coils (6,7) disposed around the legs, characterized in that the apparatus comprises a starting device (8), which is provided with:
- a cam disc (10) which is mounted on the shaft (9) of the rotor (2),
- one or more pressure members (11,12) which during starting co-operate with the cam disc (10), which are movable transverse to the centre line of the rotor shaft (9) and which are movably connected to stationary parts which are connected to the stator, and
- resilient means for loading said pressure members in the direction towards the cam disc (10).

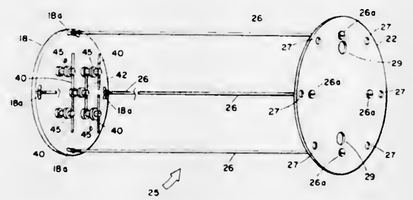
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**B 563,244**
**MONO-LOBED SCANNER**
**William C. Blanchard, and James E. Kreiner, Jr., both of Baltimore, Md., assignors to The Bendix Corporation, Southfield, Mich.**
**Filed Mar. 28, 1975, Ser. No. 563,244**
**Int. Cl.² H01Q** *19/16*
**U.S. Cl. 343—815** **9 Claims**

**References Cited**
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|---|---|---|---|
| 2,846,678 | 8/1958 | Best | 343/840 |
| 3,276,022 | 9/1966 | Brunner | 343/840 |
| 3,386,100 | 5/1968 | Jaszberenyi | 343/839 |
| 3,680,144 | 7/1972 | Low et al. | 343/840 |

1. Apparatus for correcting the positional inaccuracy of an antenna having a parabolic dish and an antenna element array spaced apart from said parabolic dish and directed into said dish, said antenna element array having at least four antenna elements polarized alike and displaced with orthagonal symmetry about the boresight axis of said antenna comprising:
- a ground plane for said antenna elements;
- means for fixedly holding said ground plane spaced apart from said parabolic dish and parallel thereto with said four antenna elements displaced with orthagonal symmetry about the boresight axis of said antenna; and,



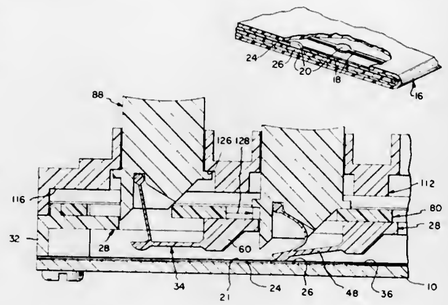
four elongated electrically conductive elements each having a relatively small cross sectional area arranged about said antenna elements equally spaced radially from said boresight axis and generally parallel thereto and generally equally angularly spaced about one wavelength apart, the spacing being adjustable.

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**B 579,104**
**KEYBOARD ASSEMBLY WITH OVERLAPPED FLEXIBLE PRINTED CIRCUIT CABLE SWITCH**
**Henry William Demler, Jr., 715 E. Maple St., Lebanon, Pa. 17042**
**Continuation of Ser. No. 503,127, Sept. 4, 1974, abandoned. This application May 20, 1975, Ser. No. 579,104**
**Int. Cl.² H01H** *13/70*; **H05K** *1/02*
**U.S. Cl. 200—5 R** **4 Claims**

**References Cited**
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| 3,125,895 | 3/1964 | Ross | 200/5 C X |
| 3,207,862 | 9/1965 | Robbins | 200/50 C X |
| 3,383,487 | 5/1968 | Wiener | 200/292 X |
| 3,472,974 | 10/1969 | McGough | 200/159 R |
| 3,519,766 | 7/1970 | MacKway | 200/325 |
| 3,745,288 | 7/1973 | Reimer | 200/16 A X |
| 3,909,564 | 9/1975 | Scheingold et al. | 200/5 E |



1. A keyboard assembly comprising:
- a. a flat flexible cable with a portion thereof folded back over on itself and having contacts deposited on both facing surfaces, contacts on one surface being directly across from contacts on the other surface;
- b. means for connecting the contacts into electrical circuits;
- c. a layer of insulating material positioned between the two contact-carrying surfaces and having holes therethrough, said holes being in registration with opposing contacts;
- d. a spring plate, overlying the folded over cable and containing a plurality of resilient first spring members, said members being formed from and integral with the plate, each member comprising a horizontal arm with a vertical arm extending obliquely upwardly and with a pair of spaced, semispherical heads on either side projecting downwardly and positioned adjacent an outside surface of the folded over portion of the cable with each head being in direct alignment with a contact located on the inside surface; and
- e. means for depressing the first spring members such that the horizontal arm rotates about its point of attachment with the plate and the semi-spherical heads push on the cable forcing the aligned contacts through the holes in the insulating material and into electrical engagement with the contacts on the facing surface.



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**B 583,089**
**SWITCHING VOLTAGE REGULATOR WITH LOW RFI NOISE**
**Harry L. Maddox, Reynoldsburg, Ohio, assignor to Western Electric Company, Inc., New York, N.Y.**
**Filed June 2, 1975, Ser. No. 583,089**
**Int. Cl.² G05F** *1/56*
**U.S. Cl. 323—17** **12 Claims**

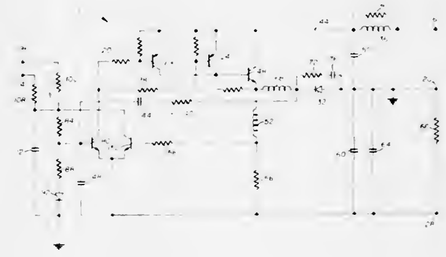
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| 3,577,065 | 5/1971 | Putzrath et al. | 323/DIG. 1 |
| 3,641,424 | 2/1972 | Kuykendall | 323/17 |
| 3,736,495 | 5/1973 | Calkin et al. | 323/DIG. 1 |
| 3,742,330 | 6/1973 | Hodges et al. | 323/DIG. 1 |
| 3,745,444 | 7/1973 | Calkin et al. | 323/22 T |
| 3,781,642 | 9/1973 | Dutton | 323/DIG. 1 |

OTHER PUBLICATIONS

*Solid State Design* Apr. 1963, pp. 30–34, "Considerations in the Design of Switching Type Regulator," by R. D. Loucks.

8. In a switching voltage regulator for receiving an unregulated direct current input voltage between an input terminal and a reference terminal thereof and for generating a regulated direct current output voltage across a load between an output terminal thereof and the reference terminal;
- an induction coil;
- a first transistor, having a base, a collector and an emitter, connected with its emitter-collector circuit path in series with the coil between the input and the output terminals, with the emitter-collector path between the input terminal and the coil;
- a diode, connected between the reference terminal and a point between the series connected first transistor and coil, and poled to be nonconductive when the first transistor is conductive;
- means for applying a control signal to the base of the first transistor to cyclically drive the first transistor (a) from full conduction to cutoff to interrupt a current flow between the input and the output terminals and through the first transistor and the coil to induce a voltage in the coil of a polarity to forward bias the diode and establish a current path between the reference terminal and the output terminal and through the diode and the coil (b) from cutoff to partial conduction at a controlled rate to again establish the current path between the input terminal and the output terminal and to reduce the current flow through the diode at a controlled rate, and (c) from partial conduction to full conduction at a more rapid rate when the current flow through the diode has been reduced to a predetermined value, to generate the regulated direct current output voltage across the load between the output terminal and the reference terminal, and
- means for sensing the value of the current flow to the output terminal and for varying the value of the control signal, when the current flow reaches a predetermined maximum value, to control the conduction of the first transistor to limit the current flow to the output terminal to the predetermined maximum value.



# REISSUES

JANUARY 27, 1976

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

**Re. 28,694**

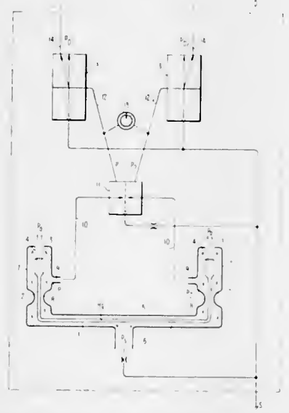
## FLUIDIC CLINOMETER CONTROL APPARATUS

**Costas E. Markakis, 12 Aravantinou St., Ekali, Athens, and George N. Vamvakoussis, Spiridon Trikoupi 39-41, Athens, Greece**

**Original No. 3,849,897, dated Nov. 26, 1974, Ser. No. 418,303, Nov. 23, 1973. Application for reissue Feb. 19, 1975, Ser. No. 551,059**

**Int. Cl.² G01C** *9/22*

**U.S. Cl. 33—365** **20 Claims**



*14. A fluidic clinometer control apparatus comprising a substantially U-shaped tube with its legs terminating in chambers of equal size, which are open to the atmosphere and are formed of microporous material, of a porosity permitting the passage of air, or other similar fluid, therethrough but inhibiting the passage of liquid from within the chambers; a suitable liquid partially filling the tube up to about the middle of the height of the chambers when the leg connecting part of the tube is horizontal and its legs are vertical; a fluidtight enclosure surrounding each of said microporous chambers in spaced relation to said chambers, thus forming an air space therebetween, said air space between said chamber and said enclosure being substantially equal in both legs, each enclosure being provided with a fluid inlet, to be connected to a source of pressurized fluid, and with a fluid outlet; and pressure responsive means connected to said fluid outlets and adapted to control the operation of servomechanisms.*

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**Re. 28,695**

## MASTER CYLINDER CONSTRUCTION AFFORDING AUTOMATIC RE-PHASING OF MASTER AND SLAVECYLINDERS

**Evans Glenn Freese, Hutchinson, Kans., assignor to The Cessna Aircraft Company, Wichita, Kans.**

**Original No. 3,347,043, dated Oct. 17, 1967, Ser. No. 509,113, Nov. 22, 1965. Application for reissue Sept. 9, 1974, Ser. No. 504,179**

**Int. Cl.² F15B** *7/00*

**U.S. Cl. 60—546** **11 Claims**

6. A hydraulic actuator assembly comprising:

an elongated cylinder;

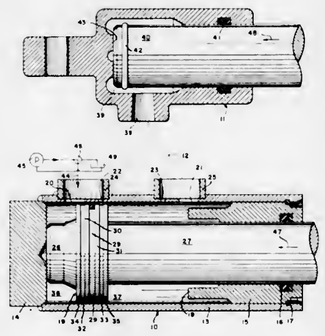
first and second longitudinally spaced fluid inlet and outlet fittings in the cylinder wall;

first and second longitudinally spaced fluid inlet and outlet ports through the cylinder wall communicating respectively with the first and second inlet and outlet fittings;

first and second longitudinally spaced fluid escape orifices through the cylinder wall communicating respectively with the first and second inlet and outlet fittings, one orifice adjacent each of said ports, the longitudinal spacing between the orifices being less than the longitudinal spacing between said ports, and the fittings, ports and orifices being in substantial longitudinal alignment along the cylinder wall;

a piston having limited reciprocable movement in the cylinder; and

an annular seal or packing carried by the piston for sealing between the piston and the internal wall of the cylinder, and for thus dividing the cylinder into first and second fluid pressure chambers,



the location of the piston at each end of its permitted stroke and the spacing between and location of the ports and the orifices being so related, each to the other, that:

(a) when the piston is at one end of its stroke the piston seal is located between the first port and the adjacent first orifice, the first cylinder chamber is in open communication with the first fitting through the first port, and the second cylinder chamber is in restricted communication with the first fitting through said first orifice; and

(b) when the piston is at the other end of its permitted stroke the piston seal is located between the second port and the adjacent second orifice, the second cylinder chamber is in open communication with the second fitting through the second port, and the first cylinder chamber is in restricted communication with the second fitting through the second orifice.

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**Re. 28,696**

## PITCH POINT ACTION GEARING

**William S. Rouverol, P.O. Box 9122, Berkeley, Calif. 94709**

**Original No. 3,438,279, dated Apr. 15, 1969, Ser. No. 644,173, June 7, 1967. Application for reissue Mar. 13, 1974, Ser. No. 450,616**

**Int. Cl.² F16H** *55/14*

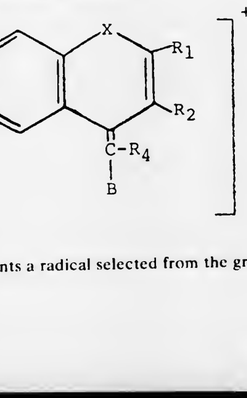
**U.S. Cl. 74—462** **7 Claims**

1. In a pair of mating gears,

teeth formed to extend across the rims of said gears in a direction slantingly disposed with respect to the pitch line of said pair to produce at least one area of contact between said pair for all rotational positions of said pair,

[said teeth being formed so that the centroid of said area of contact lies substantially on said pitch line for all rotational positions of said gears.]

*said teeth having in sections perpendicular to said pitch line active profiles of relative radius of curvature at the pitch lines less than the product of the pitch radii of said pair times the sine of the pressure angle divided by the sum of said pitch radii,*



*addendum height of the teeth of one of said pair being greater than 0.5 divided by the normal diametral pitch and the pitch and pressure angle of the teeth are such that when the maximum allowable torque is applied to said gears each said area of contact occupies substantially the full height of the tooth face.*

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**Re. 28,697**

**Patent Not Issued For This Number**

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**Re. 28,698**

## ELECTROPHOTOGRAPHIC MATERIAL CONTAINING SENSITIZERS

**Yoshinobu Murakami, Higashi-Osaka; Yo Hasegawa, Suita, and Kazuhisa Morimoto, Settsu, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan**

**Original No. 3,712,811, dated Jan. 23, 1973, Ser. No. 121,508, Mar. 5, 1971. Application for reissue Aug. 7, 1974, Ser. No. 495,520**

**Claims priority, application Japan, Mar. 13, 1970, 45-21766; Mar. 13, 1970, 45-21767**

**Int. Cl.² G03G** *5/06*

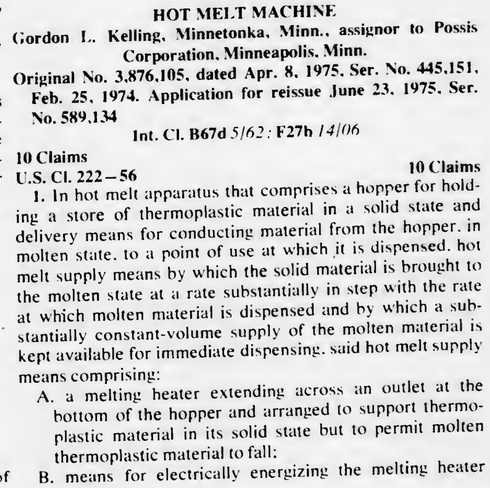
**U.S. Cl. 96—1.6** **3 Claims**

1. An electrophotographic material comprising a conductive support layer and photoconductive insulating layer, the latter comprising a combination of a photoconductive polymeric compound and a sensitizing amount of a sensitizer having the following formula:



wherein

B represents a radical selected from the group consisting of



and

$R_1$ is hydrogen, phenyl or an ethenyl radical selected from the group consisting of styryl, p-methoxystyryl, 3,4-dimethoxy-styryl, α-phenylstyryl, α-phenyl-p-methoxystyryl, β-furyl(α′)ethenyl and α-phenyl-β-furyl(α′) ethenyl;

$R_2$ is hydrogen or phenyl;

$R_3$ is hydrogen, methyl or phenyl;

$R_4$ is hydrogen or phenyl;

$R_5$ is hydrogen, phenyl or an ethenyl radical selected from the group consisting of styryl, p-methoxystyryl, 3,4-dimethoxy-styryl, α-phenyl-p-methoxystyryl, β-furyl(α′)ethenyl and α-phenyl-β-furyl(α′)ethenyl;

$R_6$ is hydrogen or phenyl;

$R_7$ is hydrogen or phenyl;

*$R_8$ is hydrogen or phenyl;*

*$R_9$ is hydrogen or p-methoxyphenyl;*

the anion is an anionic function selected from the group consisting of perchlorate, fluoroborate, chloroferrate, chlorozincate and nitrate; and

X is oxygen or a sulfur atom;

said photoconductive polymeric compound comprising at least one compound selected from the group consisting of poly-N-vinylcarbazole, brominated poly-N-vinylcarbazole and polyacenaphthylene.

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**Re. 28,699**

## HOT MELT MACHINE

**Gordon L. Kelling, Minnetonka, Minn., assignor to Possis Corporation, Minneapolis, Minn.**

**Original No. 3,876,105, dated Apr. 8, 1975, Ser. No. 445,151, Feb. 25, 1974. Application for reissue June 23, 1975, Ser. No. 589,134**

**Int. Cl. B67d** *5/62*; **F27b** *14/06*

**10 Claims** **10 Claims**

**U.S. Cl. 222—56**

1. In hot melt apparatus that comprises a hopper for holding a store of thermoplastic material in a solid state and delivery means for conducting material from the hopper, in molten state, to a point of use at which it is dispensed, hot melt supply means by which the solid material is brought to the molten state at a rate substantially in step with the rate at which molten material is dispensed and by which a substantially constant-volume supply of the molten material is kept available for immediate dispensing, said hot melt supply means comprising:

A. a melting heater extending across an outlet at the bottom of the hopper and arranged to support thermoplastic material in its solid state but to permit molten thermoplastic material to fall;

B. means for electrically energizing the melting heater

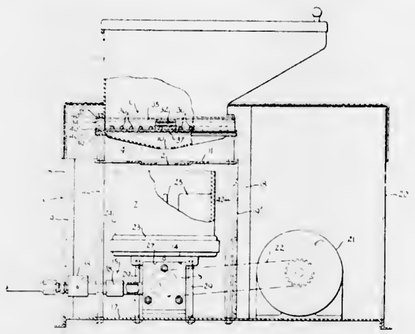
to heat the same to a temperature high enough to melt thermoplastic material;

C. an open topped reservoir spaced beneath the melting heater, [the area of] the open top of said reservoir being *disposed wholly beneath said melting heater and having an area* substantially smaller than the area of the melting heater, and said reservoir having an outlet at its bottom that communicates with said delivery means;

D. a funnel beneath the melting heater for collecting molten material falling therefrom, said funnel having an outlet over the open top of the reservoir for constraining the molten material to fall into the same;

E. heater means for heating the reservoir contents to maintain the same in molten condition;

*F.* [E] heat shield means *comprising a plate-like baffle located* above *and spaced from* the top of the reservoir



and underlying *and spaced from the bottom of* the funnel, to prevent transmission to the melting heater of heat from the reservoir, said heat shield means having a hole therethrough which is vertically aligned with the outlet of the funnel *and of a size* to allow molten material to drop *directly* into the reservoir from the outlet in the funnel;

G. sensing means in the reservoir at a level spaced from both the top and the bottom thereof, for detecting the presence of molten thermoplastic material at said level in the reservoir; and

H. means operatively connecting said sensing means with said means for electrically energizing the melting heater, to initiate energization of the melting heater whenever molten material in the reservoir is below said level and to terminate such energization when such molten material reaches said level.

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**Re. 28,700**

**ANTIBIOTIC X-5108 FOR STIMULATING GROWTH**

**Julius Berger, Passaic, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.**

**Original No. 3,657,421, dated Apr. 18, 1972, Ser. No. 67,724, Aug. 28, 1970. Continuation of Ser. No. 64,389, Aug. 14, 1970, Pat. No. 3,708,577. Application for reissue Dec. 11, 1972, Ser. No. 313,705**

**Int. Cl. H61k** *21/00*

**U.S. Cl. 424—122** **5 Claims**

**1.** A composition for enhancing the feed efficiency and stimulating the growth of poultry which comprises antibiotic X-5108, a yellow amorphous substance characterized as follows:

(a) analysis: carbon, 63.63%; hydrogen, 7.81%; nitrogen, 3.48%; oxygen, 25.08% (by difference);

(b) soluble in methanol, ethanol, 1- and 2-propanol, tert. butyl alcohol, ethyl acetate, amyl acetate, butyl acetate and chloroform;

(c) a characteristic infrared absorption spectrum as shown in accompanying FIG. **1**;

(d) a characteristic nuclear magnetic resonance spectrum as shown in accompanying FIG. **4**;

or a pharmaceutically acceptable salt thereof, and a non-toxic inert ingredient, wherein antibiotic X-5108 or a salt thereof is present in a ratio by weight of from about 0.0001 part to about 0.01 part per 100 parts of inert ingredient.

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**Re. 28,701**

**DISPENSING SYSTEM AND SECURITY CARD FOR USE THEREWITH**

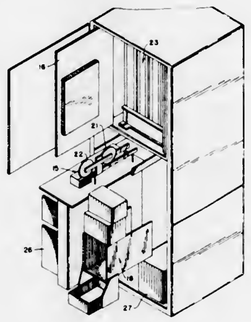
**John David Edwards, Sanderstead; Leonard Perkins; John Henry Donald, both of London; Peter Lee Chappell, Doodcrest K I; Sean Benjamin Newcombe, Old Coulsdon, and Malcolm David Roe, London, all of England, assignors to Burroughs Corporation, Detroit, Mich.**

**Original No. 3,697,729, dated Oct. 10, 1972, Ser. No. 68,650, Sept. 1, 1970. Application for reissue Sept. 30, 1974, Ser. No. 510,522**

**Claims priority, application United Kingdom, Sept. 9, 1969, 44452/69**

**Int. Cl.² G06K** *7/10*; **G07F** *1/06*, *11/00*; **G06K** *19/06*

**U.S. Cl. 235—61.7 B** **51 Claims**



**1.** Apparatus for authenticating a credit or security card and its use in response to the introduction into said apparatus of said security card and the entering into said apparatus of predetermined information, comprising:

means for verifying that a particular security card is valid, said verifying means including an oscillator and a transducer for quantizing a characteristic of magnetic material deposited on discrete areas of said security card, and means for reading encoded information, representative of said characteristic, and data on said security card,

means for permitting a user of said apparatus to enter personal identification information into said apparatus,

means for determining if said personal identification information corresponds to said data, and

means for authorizing the use of said security card only if the card is verified and if said personal identification information corresponds to said data.

**11.** An article comprising, in combination:

a body member;

a first predetermined area on said body member;

said first predetermined area containing a quantity of material which is capable of being influenced by an electromagnetic field;

a second predetermined area on said body member,

said second predetermined area containing data which is representative of said quantity of said material which lies within certain portions of said first predetermined area on said body member.



**Re. 28,702**

**NONINTERACTING LENS SYSTEM FOR A COLOR ENCODING CAMERA**

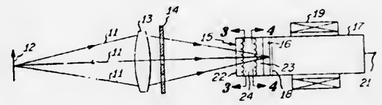
**Albert Macovski, Palo Alto, Calif., assignor to RCA Corporation, New York, N.Y.**

**Original No. 3,641,255, dated Feb. 8, 1972, Ser. No. 29,448, Apr. 17, 1970. Application for reissue Apr. 4, 1973, Ser. No. 347,630**

**Int. Cl.² H04N** *9/06*; **G02B** *27/12*

**U.S. Cl. 358—47** **13 Claims**

*12. For use in a color camera system having a device for generating electrical signals from an optical image focused thereon, optical means for focusing one of the primary colors onto the device in a series of discrete strips while passing other primary colors directed therethrough to said device, said means comprising a first member of material of index of refraction $n_1$ and a second member of material of index of refraction $n_2$, said members forming a lenticular array of cylindrical lenses, and the*



*materials being such that $n_1$ is different from $n_2$ for said one primary color and $n_1$ and $n_2$ are approximately equal for other of the primary colors.*

# PLANT PATENTS

## GRANTED JANUARY 27, 1976

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

**3,826**
**MINIATURE ROSE PLANT**
**Ralph S. Moore, 2519 E. Noble Ave., Visalia, Calif. 93277**
**Filed Sept. 30, 1974, Ser. No. 511,021**
**Int. Cl. A01h** *5/00*
**U.S. Cl. Plt.—10** **1 Claim**

1. A new and distinct variety of miniature rose plant of hardy, dwarf, rounded, much branched, bush type, as illustrated and described, characterized by buds and flowers resembling the "Starina" (Plant Pat. No. 2,646) miniature rose in general form and color but with more open (less petals) flowers, the color being similar but of usually a brighter and lighter hue; the general color effect being orange-red; and further characterized by a plant which is of vigorous and compact growth, easy to propagate from cuttings, with medium small semi-glossy foliage, an abundance of bloom, with flowers borne singly or several to the stem in loose spray or cluster.



**3,827**
**AZALEA PLANT**
**Anthony M. Shammarello, 4508 Monticello Blvd., South Euclid, Ohio 44143**
**Filed Sept. 27, 1974, Ser. No. 510,212**
**Int. Cl. A01h** *5/00*
**U.S. Cl. Plt.—56** **1 Claim**

1. A new and distinct variety of azalea plant of the hardy evergreen type, substantially as herein shown and described, characterized particularly as to novelty by the radiant pink color of its semi-double hose-in-hose flowers, by the absence of fading of the flowers when exposed to the sun, by the long lastingness of color of flowers, by the plant forming a compact bush snug to the ground, by the hardiness of the plant and buds at low temperatures inheritant of the parent plants and retaining the good qualities of plant character of parent plants.

# PATENTS

## GRANTED JANUARY 27, 1976

### ERRATA

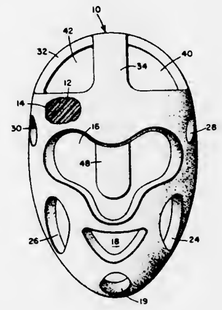
| For CLASS | See PATENT NO. |
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| 206-223 | 3,934,715 |
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| 242-018 DD | 3,934,830 |
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| 242-054 | 3,934,832 |
| 242-056.9 | 3,934,833 |
| 242-067.1 | 3,934,834 |
| 242-067.2 | 3,934,835 |
| 242-072.1 | 3,934,836 |
| 242-075.5 | 3,934,837 |
| 242-085.1 | 3,934,838 |
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| 244-129 D | 3,934,845 |
| 244-130 | 3,934,846 |
| 244-137 P | 3,934,847 |
| 244-151 | 3,934,848 |
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| 346-045 | 3,935,079 |
| 261-037 | 3,935,156 |
| 423-236 | 3,935,188 |
| 424-246 | 3,935,204 |
| 023-289 | 3,935,225 |
| 252-415 | 3,935,244 |
| 428-378 | 3,935,344 |
| 024-150 | 3,935,355 |
| 250-211 | 3,935,441 |
| 240-102 B | 3,935,560 |
| 357-011 | 3,935,582 |

# PATENTS

GRANTED JANUARY 27, 1976

## GENERAL AND MECHANICAL

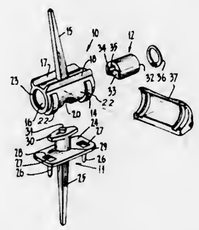
**3,934,271**
**PROTECTIVE HELMET**
**Jhoon Rhee, 2525 N. Ridgeview Road, Arlington, Va. 22207**
**Filed Nov. 27, 1974, Ser. No. 527,910**
**Int. Cl.² A42B** *1/08*
**U.S. Cl. 2—3 R** **8 Claims**



**1.** A protective helmet adapted to be worn on a person's head and capable of absorbing energy and generally conforming to the shape of a person's head, comprising resilient foam means covered with a tough, pliable surface casing, openings in said helmet generally conforming to the person's ears and chin, one large opening outlining the face portion of the head including the eyes, nose, mouth and chin, the rear of said helmet being generally open and including a flap member adapted to protect the rear of the head and to aid in putting on and taking off of said helmet.

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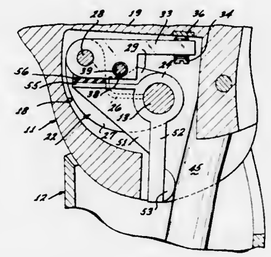
**3,934,272**
**KNEE PROSTHESIS**
**William Maxwell Wearne; John Edward Harris, and Wilfred Potter, all of Melbourne, Australia, assignors to The University of Melbourne, Melbourne, Australia**
**Filed Nov. 19, 1974, Ser. No. 525,319**
**Int. Cl.² A61F** *1/24*
**U.S. Cl. 3—1.911** **5 Claims**



**1.** A knee prosthesis including a first member having a rod adapted for connection within the marrow cavity of a femur, a second member having a rod extending therefrom adapted for connection within the marrow cavity of a tibia, said first member having a body of generally hollow cylindrical form, a pair of half bearing members having slots formed therein, each of the bearing members being located in one end of the cylindrical body, the second member having an extension entering the hollow cylindrical body of the first member and received between and located by the half bearing members, the said extension comprising at least one cylindrical bearing portion received between the half bearing members and a plate extending outwardly therefrom which is adapted to enter said slots, the second member being rotatable relative to the first member about the vertical axis of said cylindrical bearing portion, the limits of rotation being controlled by the said plate striking the walls of the slots.

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**3,934,273**
**PROSTHETIC LIMB WITH WEIGHT-RESPONSIVE JOINT LOCK**
**La Vaughn L. Mortensen, 10533 San Anselmo, South Gate, Calif. 90280**
**Filed Jan. 20, 1975, Ser. No. 542,217**
**Int. Cl.² A61F** *1/04, 1/08*
**U.S. Cl. 3—27** **9 Claims**



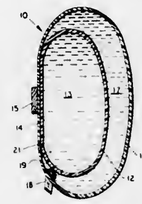
**8.** A pivotable mechanism for a prosthetic limb, comprising:
a first portion with a cavity formed at one end thereof;
a second portion with a well formed at one end to allow said one end of said first portion to pivot freely therein;
an axle fixed to said second portion and disposed across said well;
a pin fixed to said first portion and disposed across said cavity and substantially parallel to said axle;
said axle being disposed to extend also across said cavity;
at least one U-shaped brake band disposed around said axle and within said cavity, with the one end of the brake band remote from said first portion engaging said pin, and
first means are provided for causing said first portion to contact the other end of said brake band to cause the ends thereof to move toward each other whenever said first portion is urged toward said second portion;
second means responsive to the extension action of the second portion to lift said pin so that the ends of the brake band separate although said first portion is being urged toward said second portion.

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**3,934,274**
**DEFLATABLE MAMMARY AUGMENTATION PROSTHESIS**
**John H. Hartley, Jr., 2915 Andrews Drive, NW., Atlanta, Ga. 30305**
**Filed Oct. 29, 1974, Ser. No. 518,399**
**Int. Cl.² A61F** *1/00, 1/24;* **A41C** *3/10*
**U.S. Cl. 3—36** **9 Claims**

**1.** An augmentation prosthesis for subcutaneous implantation beneath the skin of a patient comprising an exterior sac containing an interior capsule which occupies less than the entire volume of the sac, said capsule being fixed to said sac and containing a fixed volume of soft material and said sac

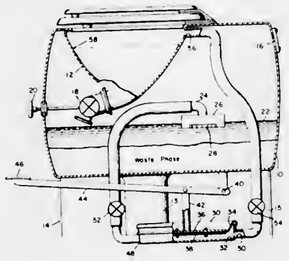
including a discrete one-way valve means for selective addition of a liquid into said sac, said valve means being attached to a wall of said sac and being fixed against movement relative to said wall at its point of attachment thereto, said liquid being compatible with the human body, whereby said augmentation prosthesis may be inserted into a cavity within the human body with substantially no liquid in said sac, liquid may be



introduced into said sac through said valve means while the sac is positioned within the cavity, the cavity may be closed and liquid may be extracted from said sac by piercing the skin of the patient with a hypodermic needle and piercing the sac with the needle and withdrawing a quantity of liquid from said sac to reduce any compression of the sac by contracture of surrounding tissue.

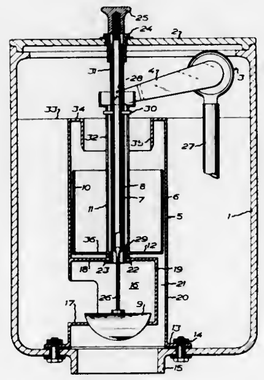
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**3,934,275**
**OIL RECOVERY SYSTEM**
**Norris J. Bishton, Jr., 14636 Hilltree Road, Santa Monica, Calif. 90402**
**Continuation of Ser. No. 212,594, Dec. 27, 1971, abandoned. This application Mar. 8, 1974, Ser. No. 449,534**
**Int. Cl.² E03D** *5/016*
**U.S. Cl. 4—10** **4 Claims**



1. The method of re-using flushing liquid used to flush a recirculating toilet system having a toilet bowl and a waste tank for receiving a mixture of human waste and flushing liquid therein and using a pumping mechanism to operate the flushing mechanism, the flushing liquid having a lower specific gravity than the specific gravity of said waste, said method comprising the steps of:
   - storing said flushing liquid in said waste tank on top of said waste;
   - closing a valve means between the toilet bowl discharge and the waste tank;
   - operating the pumping mechanism until essentially all of said flushing liquid in said tank is pumped directly from said mechanism into said toilet bowl thereby filling said bowl with essentially all of said flushing liquid;
   - subsequently emptying the waste tank of human waste while retaining essentially all of said flushing liquid in said bowl; and
   - opening the connection between the toilet bowl discharge and the waste tank to return all of said flushing liquid in said bowl directly to said tank.

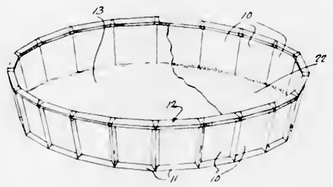
**3,934,276**
**FLUSHING CISTERN**
**Frans Harry Karlsson, Lund, and Per Torsten Faxen, Bromma, both of Sweden, assignors to Hykon-Patent Aktiebolag, Lund, Sweden**
**Filed May 21, 1973, Ser. No. 362,570**
**Claims priority, application Sweden, May 26, 1972, 6906/72**
**Int. Cl.² E03D** *1/36*
**U.S. Cl. 4—41** **7 Claims**



1. A flushing cistern for water closets having a container with a bottom discharge opening, comprising a refilling valve for admitting water into the container, an opening having an outlet valve seat connecting a lower part of the container to the discharge opening, a flushing valve for closing said valve seat, an overflow member providing an overflow passage connecting the discharge opening and an upper portion within the container for limiting the water level in the container to the elevation of said upper portion, said overflow member being an upright tubular member open at its upper end and comprising a lower end portion connected to and tightly surrounding said discharge opening in the bottom of the container, said tubular member having a cylindrical portion and a constricted portion located between said cylindrical portion and said lower end portion, said constricted portion being formed by wall means forming a chamber which constricts the overflow passage in said constricted portion, an opening connecting the chamber to the interior of the container, said wall means comprising chamber top wall and bottom wall members, the bottom wall member having an opening forming said flushing valve seat, a manually operable actuating means for unseating said flushing valve and opening said refilling valve to start a flushing and refilling cycle, a refilling valve closing means mounted in said overflow passage and being movable therein between an upper and a lower position, said valve closing means being coupled to said actuating means and movable thereby to the upper position upon starting of said cycle, said valve closing means being coupled to the refilling valve to close the refilling valve by movement to its lower position, said valve closing means comprising a cup movably positioned in the cylindrical portion of said tubular member above said chamber top wall member to receive water flowing into the overflow member, said cup having a bottom hole which forms at least a part of said overflow passage and through which the cup is emptied to said discharge opening, said valve closing means being positioned and constructed to receive and be weighted by water flowing into the overflow member to move the valve closing means to its lower position thereby closing the refilling valve; said flushing valve, overflow member and cup form an assembly removably mounted on the bottom of said container.



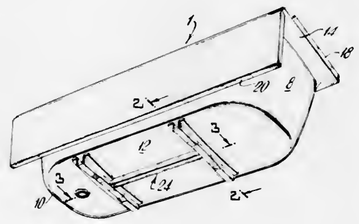
**3,934,277**
**PORTABLE SWIMMING POOL CONSTRUCTION**
**Richard L. Quirouette, 197 Presland Road, Ottawa, Ontario, Canada (K1K 2B9), and Rejean P. Lemay, 2250 Notre Dame Blvd., Orleans, Ontario, Canada**
**Filed Apr. 8, 1974, Ser. No. 458,994**
**Int. Cl.² E04H** *3/16, 3/18;* **F16L** *21/02*
**U.S. Cl. 4—172.19** **22 Claims**



1. In a portable swimming pool framework having a plurality of sheet metal members arranged side-by-side, a junction assembly for interconnecting adjacent edges of a pair of said members, said junction assembly comprising:
   a. a first pair of turned-back flanges formed along respective ones of said edges to define a first pair of slots facing away from each other,
   b. a beam member having a wall structure interconnecting a second pair of elongated flanges projecting generally towards each other and then each turned back on itself to define a second pair of slots,
   c. said second pair of flanges being located in respective ones of said first pair of slots,
   d. and a cleat member having a wall structure interconnecting a third pair of flanges projecting generally towards each other,
   e. said third pair of flanges being located in respective ones of said second pair of slots.

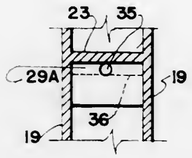
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**3,934,278**
**BATHTUB SUPPORT**
**Donald C. Schrock, Nevada, Mo., assignor to Crane Co., New York, N.Y.**
**Filed Oct. 11, 1974, Ser. No. 514,277**
**Int. Cl.² A47K** *3/16*
**U.S. Cl. 4—173** **11 Claims**



1. A bathtub including:
   a. a pair of side walls;
   b. a sloping end and an outlet end;
   c. a bottom, said bottom, ends and walls forming an integral well;
   d. means to support said bottom; and,
   e. water resistant tape positioned between said means and said bottom preventing contact between said means and said bottom to simultaneously secure said means to said bottom and form a sound barrier therebetween.

**3,934,279**
**LIQUID CHEMICAL EVAPORATOR FOR FLUSH TANKS**
**Sidney Mallin, 236 Kingston Row, Winnipeg, Manitoba, Canada**
**Filed Apr. 22, 1974, Ser. No. 462,669**
**Int. Cl.² E03D** *9/02*
**U.S. Cl. 4—228** **9 Claims**



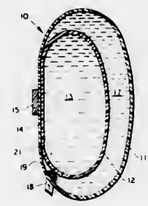
1. A container for dispensing a deodorizing vapour into the air space of an associated toilet tank, comprising in combination a canister, means for detachable mounting said canister within the associated toilet tank, said canister having an open base which is situated between the normal water level of said tank when installed therein, a baffle spanning said canister to define a chamber therebelow and a liquid deodorizor receiving reservoir thereabove, a closed upper side to said reservoir, said reservoir being situated between said upper side and said baffle, said baffle being above the said normal water level in the associated tank, first passageway means communicating between said chamber and said reservoir adjacent said upper side of said reservoir and above the level of the liquid deodorizor in said reservoir, means in said reservoir dividing same into two portions, said last mentioned means having second passageway means communicating between said portions substantially at the base of said last mentioned means, and opening means in the upper side of said canister communicating with one portion of said reservoir, said first passageway means communicating with the other portion of said reservoir whereby emptying of the associated tank transfers the deodorizor liquid in said one portion of said reservoir to said other portion of said reservoir by differential air pressure so that air is drawn through said opening means, through said second passageway means, bubbles through the liquid in said other portion of said reservoir, through said first passageway means into said chamber, and filling of the associated tank compresses the air in said chamber thereby transferring to said liquid from said other portion of said reservoir to said one portion of said reservoir so that the air in said chamber passes through said first passageway means, through said second passageway means and bubbles through the liquid in said one portion of said reservoir and through said opening means carrying with it an evaporated fraction of said liquid within said reservoir.

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**3,934,280**
**DRAIN-FLUSHING DEVICE**
**Pier Luigi Tancredi, c/o IASA International, Inc. 972 Lexington Ave., New York, N.Y. 10021**
**Continuation-in-part of Ser. No. 545,436, Jan. 30, 1975. This application May 21, 1975, Ser. No. 579,316**
**Int. Cl.² E03D** *11/00*
**U.S. Cl. 4—255** **2 Claims**

1. A drain-flushing device comprising in combination: a cylindrical tubular element having an open end at one end thereof and having a conically restricted end at least on inner surfaces thereof at an opposite other end thereof defining an aperture of predetermined small diameter; a reciprocatable sealed disk mounted sealably within the cylindrical tubular element sealably isolating spaces on each of opposite sides of the reciprocatable sealed disk from one another; shaft means mounted within the cylindrical tubular element secured at one end thereof fixedly to the reciprocatable sealed disk and adapted fo reciprocating the reciprocatable sealed disk and extending at an opposite end thereof through and beyond said open end adapted for reciprocation axially within the cylindri-

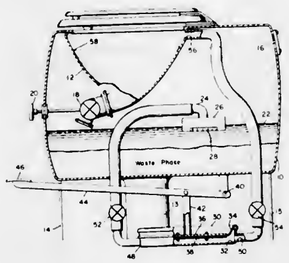
including a discrete one-way valve means for selective addition of a liquid into said sac, said valve means being attached to a wall of said sac and being fixed against movement relative to said wall at its point of attachment thereto, said liquid being compatible with the human body, whereby said augmentation prosthesis may be inserted into a cavity within the human body with substantially no liquid in said sac, liquid may be



introduced into said sac through said valve means while the sac is positioned within the cavity, the cavity may be closed and liquid may be extracted from said sac by piercing the skin of the patient with a hypodermic needle and piercing the sac with the needle and withdrawing a quantity of liquid from said sac to reduce any compression of the sac by contracture of surrounding tissue.

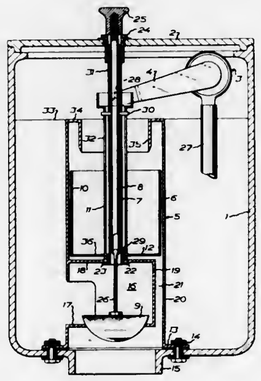
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**3,934,275**
**OIL RECOVERY SYSTEM**
**Norris J. Bishton, Jr., 14636 Hilltree Road, Santa Monica, Calif. 90402**
**Continuation of Ser. No. 212,594, Dec. 27, 1971, abandoned. This application Mar. 8, 1974, Ser. No. 449,534**
**Int. Cl.² E03D** *5/016*
**U.S. Cl. 4—10** **4 Claims**



1. The method of re-using flushing liquid used to flush a recirculating toilet system having a toilet bowl and a waste tank for receiving a mixture of human waste and flushing liquid therein and using a pumping mechanism to operate the flushing mechanism, the flushing liquid having a lower specific gravity than the specific gravity of said waste, said method comprising the steps of:
storing said flushing liquid in said waste tank on top of said waste;
closing a valve means between the toilet bowl discharge and the waste tank;
operating the pumping mechanism until essentially all of said flushing liquid in said tank is pumped directly from said mechanism into said toilet bowl thereby filling said bowl with essentially all of said flushing liquid;
subsequently emptying the waste tank of human waste while retaining essentially all of said flushing liquid in said bowl; and
opening the connection between the toilet bowl discharge and the waste tank to return all of said flushing liquid in said bowl directly to said tank.

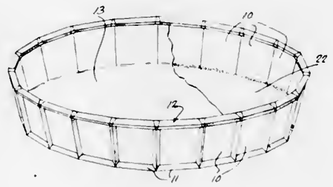
**3,934,276**
**FLUSHING CISTERN**
**Frans Harry Karlsson, Lund, and Per Torsten Faxen, Bromma, both of Sweden, assignors to Hykon-Patent Aktiebolag, Lund, Sweden**
**Filed May 21, 1973, Ser. No. 362,570**
**Claims priority, application Sweden, May 26, 1972, 6906/72**
**Int. Cl.² E03D** *1/36*
**U.S. Cl. 4—41** **7 Claims**



1. A flushing cistern for water closets having a container with a bottom discharge opening, comprising a refilling valve for admitting water into the container, an opening having an outlet valve seat connecting a lower part of the container to the discharge opening, a flushing valve for closing said valve seat, an overflow member providing an overflow passage connecting the discharge opening and an upper portion within the container for limiting the water level in the container to the elevation of said upper portion, said overflow member being an upright tubular member open at its upper end and comprising a lower end portion connected to and tightly surrounding said discharge opening in the bottom of the container, said tubular member having a cylindrical portion and a constricted portion located between said cylindrical portion and said lower end portion, said constricted portion being formed by wall means forming a chamber which constricts the overflow passage in said constricted portion, an opening connecting the chamber to the interior of the container, said wall means comprising chamber top wall and bottom wall members, the bottom wall member having an opening forming said flushing valve seat, a manually operable actuating means for unseating said flushing valve and opening said refilling valve to start a flushing and refilling cycle, a refilling valve closing means mounted in said overflow passage and being movable therein between an upper and a lower position, said valve closing means being coupled to said actuating means and movable thereby to the upper position upon starting of said cycle, said valve closing means being coupled to the refilling valve to close the refilling valve by movement to its lower position, said valve closing means comprising a cup movably positioned in the cylindrical portion of said tubular member above said chamber top wall member to receive water flowing into the overflow member, said cup having a bottom hole which forms at least a part of said overflow passage and through which the cup is emptied to said discharge opening, said valve closing means being positioned and constructed to receive and be weighted by water flowing into the overflow member to move the valve closing means to its lower position thereby closing the refilling valve; said flushing valve, overflow member and cup form an assembly removably mounted on the bottom of said container.



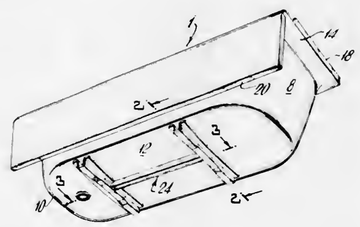
**3,934,277**
**PORTABLE SWIMMING POOL CONSTRUCTION**
**Richard L. Quirouette, 197 Presland Road, Ottawa, Ontario, Canada (K1K 2B9), and Rejean P. Lemay, 2250 Notre Dame Blvd., Orleans, Ontario, Canada**
**Filed Apr. 8, 1974, Ser. No. 458,994**
**Int. Cl.² E04H** *3/16, 3/18;* **F16L** *21/02*
**U.S. Cl. 4—172.19** **22 Claims**



1. In a portable swimming pool framework having a plurality of sheet metal members arranged side-by-side, a junction assembly for interconnecting adjacent edges of a pair of said members, said junction assembly comprising:
a. a first pair of turned-back flanges formed along respective ones of said edges to define a first pair of slots facing away from each other,
b. a beam member having a wall structure interconnecting a second pair of elongated flanges projecting generally towards each other and then each turned back on itself to define a second pair of slots,
c. said second pair of flanges being located in respective ones of said first pair of slots,
d. and a cleat member having a wall structure interconnecting a third pair of flanges projecting generally towards each other,
e. said third pair of flanges being located in respective ones of said second pair of slots.

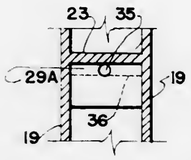
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**3,934,278**
**BATHTUB SUPPORT**
**Donald C. Schrock, Nevada, Mo., assignor to Crane Co., New York, N.Y.**
**Filed Oct. 11, 1974, Ser. No. 514,277**
**Int. Cl.² A47K** *3/16*
**U.S. Cl. 4—173** **11 Claims**



1. A bathtub including:
a. a pair of side walls;
b. a sloping end and an outlet end;
c. a bottom, said bottom, ends and walls forming an integral well;
d. means to support said bottom; and,
e. water resistant tape positioned between said means and said bottom preventing contact between said means and said bottom to simultaneously secure said means to said bottom and form a sound barrier therebetween.

**3,934,279**
**LIQUID CHEMICAL EVAPORATOR FOR FLUSH TANKS**
**Sidney Mallin, 236 Kingston Row, Winnipeg, Manitoba, Canada**
**Filed Apr. 22, 1974, Ser. No. 462,669**
**Int. Cl.² E03D** *9/02*
**U.S. Cl. 4—228** **9 Claims**



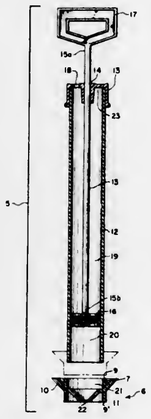
1. A container for dispensing a deodorizing vapour into the air space of an associated toilet tank, comprising in combination a canister, means for detachable mounting said canister within the associated toilet tank, said canister having an open base which is situated between the normal water level of said tank when installed therein, a baffle spanning said canister to define a chamber therebelow and a liquid deodorizor receiving reservoir thereabove, a closed upper side to said reservoir, said reservoir being situated between said upper side and said baffle, said baffle being above the said normal water level in the associated tank, first passageway means communicating between said chamber and said reservoir adjacent said upper side of said reservoir and above the level of the liquid deodorizor in said reservoir, means in said reservoir dividing same into two portions, said last mentioned means having second passageway means communicating between said portions substantially at the base of said last mentioned means, and opening means in the upper side of said canister communicating with one portion of said reservoir, said first passageway means communicating with the other portion of said reservoir whereby emptying of the associated tank transfers the deodorizor liquid in said one portion of said reservoir to said other portion of said reservoir by differential air pressure so that air is drawn through said opening means, through said second passageway means, bubbles through the liquid in said other portion of said reservoir, through said first passageway means into said chamber, and filling of the associated tank compresses the air in said chamber thereby transferring to said liquid from said other portion of said reservoir to said one portion of said reservoir so that the air in said chamber passes through said first passageway means, through said second passageway means and bubbles through the liquid in said one portion of said reservoir and through said opening means carrying with it an evaporated fraction of said liquid within said reservoir.

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**3,934,280**
**DRAIN-FLUSHING DEVICE**
**Pier Luigi Tancredi, c/o IASA International, Inc. 972 Lexington Ave., New York, N.Y. 10021**
**Continuation-in-part of Ser. No. 545,436, Jan. 30, 1975. This application May 21, 1975, Ser. No. 579,316**
**Int. Cl.² E03D** *11/00*
**U.S. Cl. 4—255** **2 Claims**

1. A drain-flushing device comprising in combination: a cylindrical tubular element having an open end at one end thereof and having a conically restricted end at least on inner surfaces thereof at an opposite other end thereof defining an aperture of predetermined small diameter; a reciprocatable sealed disk mounted sealably within the cylindrical tubular element sealably isolating spaces on each of opposite sides of the reciprocatable sealed disk from one another; shaft means mounted within the cylindrical tubular element secured at one end thereof fixedly to the reciprocatable sealed disk and adapted fo reciprocating the reciprocatable sealed disk and extending at an opposite end thereof through and beyond said open end adapted for reciprocation axially within the cylindri-

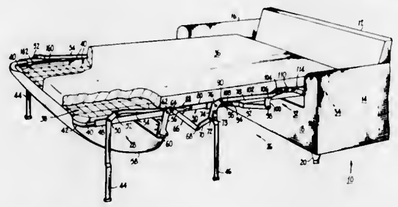
cal tubular element; a handle element mounted on a distal end of the shaft means at an end opposite from the attached said reciprocatable sealed disk, the handle element being adapted for manual grasping thereof for the pressing on the shaft means in a direction axially of the shaft means to thereby force liquid through the aperture at elevated pressure from one of the spaces adjacent the aperture; the outer surface of said conically restricted end being terminated at an apex of the



conically restricted end as a structure devoid of further projection ending bluntly at the apex and said inner surfaces being at a conical angle of from about 40 degrees to about 50 degrees relative to the side surfaces of the cylindrical walls of the cylindrical tubular element, the improvement being and including a circumscribing radially-outwardly and upwardly flared flange spaced upwardly from and including a lower cylindrical wall circumscribing the conically restricted end.

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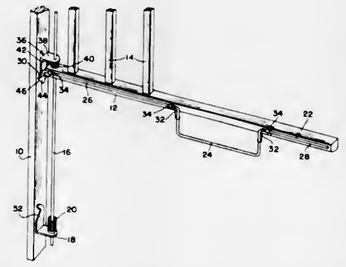
**3,934,281**
**MATTRESS COMPRESSION LINKAGE FOR CONVERTIBLE SOFA-BED**
**Joseph A. Brindisi, Uniondale, N.Y., assignor to Castro Convertible Corporation, New Hyde Park, N.Y.**
**Filed Oct. 30, 1974, Ser. No. 519,282**
**Int. Cl.² A47C *17/14***
**U.S. Cl. 5—13** **8 Claims**



1. In or for a convertible sofa-bed, a folding mechanism for supporting a mattress when unfolded and for supporting a seat when folded, said mechanism having first, second and third sections pivotably connected in series with one another, a mattress compression linkage comprising a first link pivotably connected adjacent one of its ends to said first section at a position separated by a substantial distance from the pivot point between said first and second sections, a second link pivotably connected adjacent one of its ends to said first link adjacent the other end of first link, said second link being pivotably connected adjacent its other end to said third section, abutment means on said third section for engaging said second link when said mechanism is folded and thereby pulling said first link towards said third section to compress the folded over mattress between said first and third sections, a shifting link pivotably connected to said first section, said one end of said first link being pivotably connected to said shifting link, and means for moving said shifting link during folding of the mechanism to move the pivot point of said first link farther from said pivot point between said first and second sections to increase the mattress compression leverage of said linkage.

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**3,934,282**
**SAFETY TRIP LOCK FOR THE DROP SIDE OF A CRIB**
**Robert G. Bryant, Gardner, Mass., assignor to GEM Industries, Inc., Gardner, Mass.**
**Filed Sept. 10, 1974, Ser. No. 504,809**
**Int. Cl.² H47C *2100***
**U.S. Cl. 5—100** **1 Claim**



1. A safety trip lock for the drop side of a crib wherein said crib includes corner posts, guide rods for said drop side mounted on the corner posts, and a bracket mounted in fixed position on each of two corner posts at opposite ends of the crib at the same side thereof,

each bracket comprising a plate adapted to be secured to its corner post at the inside aspect thereof, a rearwardly extending member on each bracket, each such member having an upwardly and inwardly inclined cam surface and a top edge, there being a notch in each said top edge, said drop side having a lower rail with apertures therein relatively slidably receiving the guide rods,

a trip wire mounted at the inside aspect of said lower rail, said trip wire comprising a generally intermediate offset actuator portion depending from said lower rail in position to be engaged and moved rotarily inwardly of said crib,

extensions at each end of said trip wire actuator portion, said extensions extending into close association with said corner posts and said brackets, each of said extensions including an offset crank, and a spring means for maintaining said trip wire in position wherein the offset actuator portion extends downwardly vertically from said drop side lower rail and said offset cranks also normally extend downwardly from said wire extensions,

said offset cranks being movable inwardly of the crib upon inward rotation of said offset actuator, but being normally held in the notches in the brackets by the weight of the drop side, so that the offset actuator cannot be actuated in the absence of a slight upward motion on the entire drop side releasing the offset cranks from said notches thereby allowing the actuator thereupon to be rotated inwardly similarly rotating the offset cranks releasing the same from the latches and allowing the crib drop side to drop,

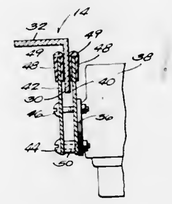
spring means normally aiding the weight of the drop side to hold the offset cranks in said notches, and

including a generally horizontal extension on each said bracket, said extensions being apertured to slidingly receive the drop side guide rods, said spring means being interposed between said horizontal extension and the top surface of said lower rail of the drop side.



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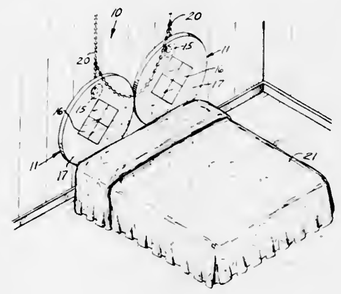
**3,934,283**
**BED FRAME WITH READILY CONNECTABLE VIBRATOR MOTORS**
**Marvin J. Raffel, 9094 N. 75th St., Apt. 1B, Milwaukee, Wis. 53223**
**Filed June 17, 1974, Ser. No. 479,703**
**Int. Cl.² A61H *1/000***
**U.S. Cl. 5—109** **2 Claims**



1. The combination comprising a bed structure including a frame having rail portions, a set of springs supported by said frame, at least one vibrator motor, means attaching said vibrator motor to a rail portion, said means comprising clamp arms projecting from said vibrator motor and having ends clampingly engaged with said rail portion, said arms being so disposed on said vibrator motor that the motor is supported in a position offset downwardly from said set of springs to prevent interference therewith, there being a bracket rigidly attached to one side of said vibrator motor and there being a pair of clamp arms attached to each end of said bracket by bolts, and a spacer sleeve around one bolt at each end of said bracket for spacing the clamp arms apart by a gap approximately equal to the thickness of the material of the rail portion to which the clamp arms are attached, said bracket being elongated at opposite ends beyond said vibrator motor to provide access to said bolts.

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**3,934,284**
**STEREO HEAD BOARD**
**John R. Paletta, and Helen Paletta, both of 14522 Seneca Trail, Middleburg, Ohio 44130**
**Filed Mar. 1, 1974, Ser. No. 447,066**
**Int. Cl.² A47C *20/00***
**U.S. Cl. 5—280** **1 Claim**



1. A headboard in combination with speakers and mirrors mounted on said headboard, and means to suspend said headboard,

said headboard comprising a pair of circular panels, said panels being secured together at their peripheries by a single flat plate fastened to one side of both of said panels, each of said panels having a speaker and a mirror mounted thereon,

said means to suspend comprising chains suspended from a ceiling, connected to each of said panels, whereby said headboard may be suspended from a ceiling at the head of said bed.

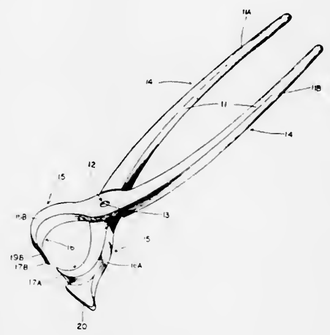
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**3,934,285**
**FIRE-RESISTANT FABRICS**
**Robert Edward May, Pleasant Garden, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.**
**Filed Aug. 16, 1971, Ser. No. 172,212**
**Int. Cl.² A47C *27/12*; B05D *3/12***
**U.S. Cl. 5—345 R** **8 Claims**

1. A fire retardant textile product comprising a mattress batting assembly which is normally susceptible to burning by a cigarette and a fire retardant fabric positioned on said batting assembly to retard burning thereof, said fabric having a heat conductive coating on its underside adjacent to and in contact with said assembly, said coating comprising a flexible, film-forming polymeric binder having dispersed therein from 30–60% by weight of a flake- or leaf-shaped heat conductive material selected from the group consisting of aluminum and graphite of from 50–400 mesh, the weight of the coating being at least about 2 ounces per square yard of fabric and the amount and size of said heat conductive material and the thickness of said coating being sufficient to carry away the heat of a cigarette falling or placed on the topside of said fabric so as to avoid burning or substantial charring of said assembly.

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**3,934,286**
**HAND TOOL**
**Robert E. Metzinger, Rural Rte. 1, Oxford, Ind. 47971**
**Filed Jan. 16, 1975, Ser. No. 541,426**
**Int. Cl.² B25B *7/22*; B25C *11/02***
**U.S. Cl. 7—3 A** **6 Claims**



1. A hand tool for use with electrical wire staples comprising:

a. a pair of levers pivotally connected at a point intermediate to the proximal and distal ends of said levers;

b. handle members being adapted from the portions of said levers located proximal to said point of pivotal connection;

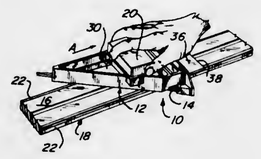
c. first and second coacting jaw members adapted from the portion of said levers located distal to said point of pivotal connection, said coacting jaw members having opposing surfaces, said opposing surfaces having distal edges; and

d. a fulcrum member attached to said first coacting jaw member, said fulcrum member being laterally offset from and parallel to the longitudinal center of said first jaw

member and extending beyond a plane through said distal edges of said jaw members.

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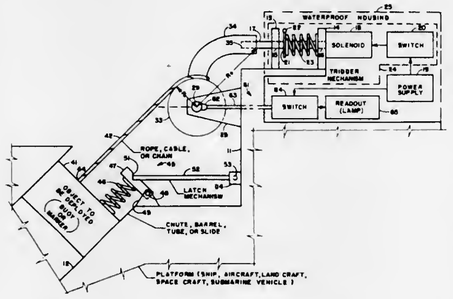
**3,934,287**
**COMBINATION SKI MAINTENANCE TOOL**
**G. Wix Howard, P.O. Box 16194, Denver, Colo. 80216**
**Filed Jan. 6, 1975, Ser. No. 538,950**
**Int. Cl.² B26B** *27/00*; **B24B** *15/00*; **B25F** *1/00*
**U.S. Cl. 7—14.1 R** **25 Claims**




1. A combination ski-maintenance tool comprising:
a laterally and longitudinally extensive shallow body having a first face and a second face;
at least a portion of the first face lying in a common plane;
guide means extending outward from the common plane to define a guide line for directional control of longitudinal movement of the body;
the guide means being arranged to contact and glide along a side marginal edge of a ski when the first face of the body is located in parallel overlying relation to the bottom surface of the ski to guide the body in longitudinal travel along the axis of the ski;
a file carried by the body;
the first face of the body being formed to receive and retain the file with a flat side exposed and parallel to the plane of the first face and with the axis of the file extending across the face at a substantial angle to the guide line defined by the guide means for direct planar cutting contact of the exposed side of the file with the full width of the bottom surface of the ski and with the guide means in guiding contact with the side marginal edge of the ski.

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**3,934,288**
**OBJECT RELEASE DEVICE**
**James L. Kirkland, Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**
**Filed Nov. 18, 1974, Ser. No. 524,722**
**Int. Cl.² B63B** *51/02*
**U.S. Cl. 9—8 R** **19 Claims**




1. A system for holding and timely releasing an object to be deployed in a predetermined environmental medium, comprising in combination:
platform means;
a rotatable drum means;
arm means connected to said rotatable drum means for rotation therewith;
means connected between said platform means and said rotatable drum means for supporting said drum means in such manner as to allow relative rotation therebetween;
cable means extending around said arm means and around a portion of the periphery of said drum means;
an object, intended to be deployed in said predetermined environmental medium, connected to the end of said cable means that is opposite the end thereof that extends around the aforesaid arm means;
a hole located in the end of the aforesaid arm means;
a shaft, with one end thereof slidably movable in and out of the hole of said arm means;
means effectively connected to the aforesaid platform means for slidably supporting said shaft with respect thereto;
a cotter pin extending through said shaft; and
a compressible spring disposed around said shaft between said cotter pin and the aforesaid shaft supporting means in such manner as to urge said shaft in such direction as to cause it to be timely inserted in the hole in the end of said arm means until moved out thereof in response to a predetermined signal.

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**3,934,289**
**MARINE FLUID TRANSFER APPARATUS**
**Clarence W. Shaw, Metairie, La., assignor to J. Ray McDermott & Co., Inc., New Orleans, La.**
**Filed Jan. 6, 1975, Ser. No. 538,951**
**Int. Cl.² B63B** *21/52*
**U.S. Cl. 9—8 P** **15 Claims**



1. An offshore marine terminal for mooring a tanker vessel and transferring fluids between the tanker and an underwater manifold, which comprises:
a buoyant member having a first end extending above the surface of the water and a second end submerged and extending beneath the water;
a bathyal service chamber on said second end of said member defining an underwater habitat suitable for maintaining humans in an artificial atmosphere;
means to selectively change the buoyancy of said member from a first lowered condition, in which said bathyal service chamber is positioned around said manifold to provide access to said manifold in a dry environment, to a second elevated positioned in which said member is disposed above said manifold; and
flow lines to transport the fluid, through said chamber, between the manifold and the vessel.



**3,934,290**
**SWIMMING SYSTEM**
**Kenneth W. Le Vasseur, 91-591 Aikanaka Road, Ewa Beach, Hawaii 96706**
**Filed May 20, 1974, Ser. No. 471,545**
**Int. Cl.² B63C** *11/04*; **A63B** *31/10*
**U.S. Cl. 9—309** **17 Claims**

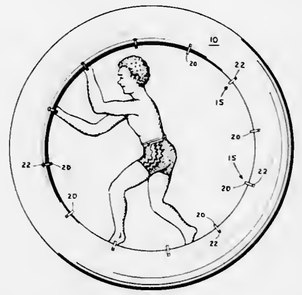


1. The swimming apparatus comprising a foot fin having a broad fluke area and having a narrower foot receiving section in another portion, the foot receiving section comprising adjacent foot pockets separated by a divider, each pocket having a separate upward opening for passing an ankle portion of a foot, first fastening means on the fin and second fastening means for engaging the first fastening means, the second fastening means being mounted along an inner surface of a lower edge of a leg receiving sheath, the leg receiving sheath comprising a slick skin having leg receiving means for holding legs for movement together, and having a longitudinal opening for inserting legs, and having a leg divider centrally longitudinally mounted on an interior of the skin for cushioning and separating legs, the leg receiving sheath having a hip receiving portion and having an upper reinforcement band surrounding an upper edge of the hip receiving portion.

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**3,934,291**
**WATER SPORTS WHEEL**
**Frederic Hagen, New York, N.Y., assignor to Douglas Leigh Research and Development Corporation, New York, N.Y.**
**Filed Aug. 23, 1974, Ser. No. 500,041**
**Int. Cl.² A63C** *15/04*
**U.S. Cl. 9—310 G** **1 Claim**

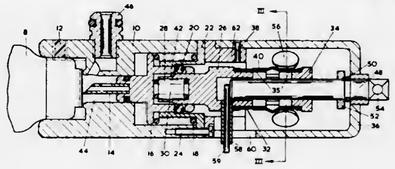
1. A manually operable water craft, comprising a pair of circular pneumatic tubes made of flexible, resilient material and arranged in spaced side-by-side upright relation for rotary motion on the surface of a water mass and forming two closed circular pockets for a gas providing the craft with the desired buoyancy in the upright rotatable positions of said tubes, a plurality of diametrically spaced and transversely extending holding members located between and connecting said circular tubes in spaced side-by-side relation, said transverse holding members being formed at both outer ends to provide tube gripping means each enclosing in gripping relation the inner wall portion of a tube, the central portions of said holding members being configured to provide centrally of the craft diametrically spaced hand grips for the operator, and said holding members between said outer tube gripping means and said central portions thereof being each configured to form two outwardly projecting spaced paddles, the paddles of said holding members being aligned to form two spaced series of circumferentially spaced paddles adapted to convert rotary motion of the craft into linear motion on the water mass, a series of arcuately-shaped, perforated panels aligned with each series of paddles with the panels in each series thereof located between the paddles aligned therewith, and means connecting the ends of the panels in each series to said holding members at the root portions of the paddles with such panels



to provide within the two series of paddles two circular treads on which an operator within the craft walks to cause rotation of said tubes, said two spaced aligned series of tread panels and paddles providing a central circular opening therebetween interrupted only by the central portions of said holding members extending across said opening to provide hand grips for the operator.

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**3,934,292**
**TRIGGERING DEVICES**
**Ciaran Joseph Mulderrig, London, England, assignor to BOC Limited, London, England**
**Filed Mar. 27, 1975, Ser. No. 562,647**
**Claims priority, application United Kingdom, Apr. 3, 1974, 14809/74**
**Int. Cl.² B63C** *9/18*; **F16K** *17/14*; **B67B** *7/28*
**U.S. Cl. 9—318** **10 Claims**



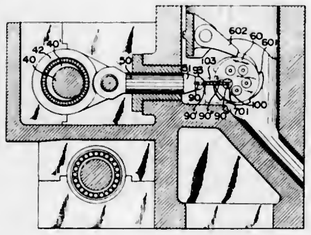
1. An immersion-actuated triggering device, including two members resiliently biassed towards each other but held apart by means of two or more folding struts extending between the members and kept in compression by the biassing force, the struts being kept in an elongated position by means of the tensions in one or more pieces of a material of which the tensile strength reduces greatly when it is wetted, whereby the struts collapse by folding outwardly when the material is wetted, the resultant relevant movement of the two members towards each other being effective to trigger an associated mechanism.

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**3,934,293**
**FEEDING DEVICE FOR WIRE STOCK IN A HIGH SPEED COLD HEADING DEVICE**
**Yuan Ho Lee, 85, Jen Ho Road, Tainan, China /Taiwan**
**Filed Aug. 6, 1974, Ser. No. 495,141**
**Int. Cl.² B21K** *1/44*; **B23G** *11/00*
**U.S. Cl. 10—13** **7 Claims**

1. In a heading machine for making headed goods from wire stock, the combination comprising:

a frame;
first eccentric driving means connected to a source of power by connecting means;
cutting die means;
means for feeding said wire stock into said cutting die means;
reciprocating cutting means including a cutting tool, said reciprocating cutting means being driven in a reciprocating fashion by second eccentric driving means connected to said first eccentric driving means for cutting the stock produced from said cutting die means to form cutoff blank pieces from said wire stock;
means for contacting the foremost end of said wire stock to adjust the length of said cutoff blank pieces;
stacker means for directly receiving the cutoff blank pieces from and at a position opposite said reciprocal cutting means;

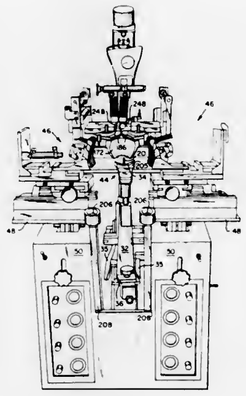


retaining means pivotedly mounted on said stacker means for retaining and holding the cutoff blank pieces one by one in a closely stacked substantially horizontal linear arrangement within said stacker means so that the foremost one of said cutoff blank pieces within said stacker is positioned in alignment with the center line of a die opening in a rotary die head;
said rotary die head having a plurality of die openings, and being actuated in an intermittent manner by an eccentric member driven by said second eccentric driving means; and
pushing means driven in a reciprocating manner by a connection engaged to the other end of said first eccentric driving means for directly causing the foremost one of said cutoff blank pieces within said stacker means to be pushed directly into one of said die openings by said pushing means.

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**3,934,294**
**LASTING MACHINE AND METHOD**
**Walter Vornberger, Tewksbury, Mass., assignor to International Shoe Machine Corporation, Nashua, N.H.**
**Filed Dec. 9, 1974, Ser. No. 530,927**
**Int. Cl.² A43D *21/00***
**U.S. Cl. 12—145** **6 Claims**

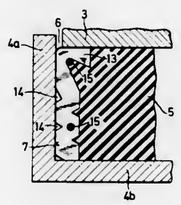
**6.** A method of heel lasting by means of heel wiping means that are symmetrically disposed about a forwardly-rearwardly extending line of symmetry and that are mounted for forward movement from a retracted position to an advanced position in a heel wiping stroke comprising: so supporting by support means a shoe assembly formed of a last having an upper mounted thereon and an insole located on its bottom that the heel of the shoe assembly faces the heel wiping means and is located forwardly of the heel wiping means when the heel wiping means is in its retracted position whereby the heel wiping stroke causes the heel wiping means to wipe the heel portion of the margin of the upper against the insole; initially maintaining the heel wiping means in its retracted position; thereafter so swinging the support means about an upright axis that is in approximate coincidence with the heel end of the shoe assembly as to bring the heel portion of the shoe assembly into symmetrical relationship with said line of symmetry;



and thereafter imparting a heel wiping stroke to said heel wiping means.

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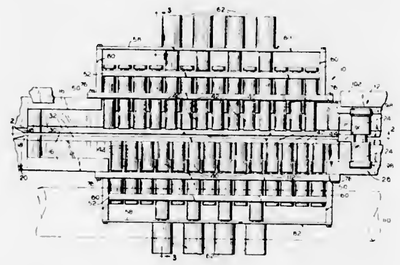
**3,934,295**
**ROCKER BEARING FOR BRIDGES ON SIMILAR STRUCTURES**
**Waldemar Koster, Forsbach, Germany, and Reinhold Huber, Rorbas, Switzerland, assignors to Firma Kober AG, Glarus, Switzerland**
**Filed Jan. 28, 1974, Ser. No. 437,238**
**Claims priority, application Germany, Feb. 6, 1973, 2305749; May 17, 1973, 2325141; July 26, 1973, 2337890**
**Int. Cl.² E01D *19/06***
**U.S. Cl. 14—16** **28 Claims**



**1.** A rocker bearing comprising upper and lower bearing members having opposed bearing surfaces for supporting loads applied to one of the other said members, an elastic pressure cushion interposed between the bearing surfaces, said elastic pressure cushion having its periphery at least in part enclosed by at least one peripheral casing wall, a plurality of lamellae embedded within said elastic pressure cushion adjacent one bearing surface and spaced about the periphery thereof, each of said lamellae being formed of a material less resilient than said elastic pressure cushion and having a narrow edge extending parallel to said one adjacent bearing surface and a narrow edge extending parallel to the surface of said peripheral casing wall, each of said edges being arranged within said cushion to abut the respective surfaces on application of a load to said bearing members.



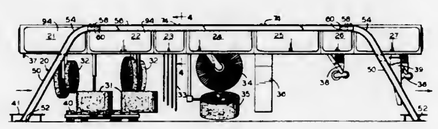
**3,934,296**
**WHEEL CLEANERS**
**Daniel C. Hanna, 1133 SW. Rivington Drive, Portland, Oreg. 97201**
**Filed Aug. 24, 1972, Ser. No. 283,544**
**Int. Cl.² B60S *3/04***
**U.S. Cl. 15—53 B** **10 Claims**



**1.** In combination,
a track along which wheels of one side of a car may be rolled,
a wheel pushing conveyor including a chain and pusher means pulled by the chain and adapted to engage one of the wheels to push the car along the track,
means for guiding the chain along a path having a first portion at one level and a second portion at a lower level,
wheel spinning means including wheel spinning elements positioned over the portion of the chain in said second portion,
and brush means for brushing the wheel,
the wheel spinning means having a slot extending longitudinally of the track,
the pusher means including a pusher for engaging the wheel and an arm connecting the pusher and the chain and extending through and movable along the slot,
the wheel spinning means including a pair of endless belt means on opposite sides of the slot and drive means for driving the belt means.

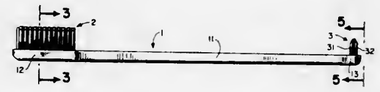
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**3,934,297**
**OVERHEAD CAR WASHES**
**Daniel C. Hanna, 1133 SW. Rivington Drive, Portland, Oreg. 97201**
**Filed June 14, 1974, Ser. No. 479,230**
**Int. Cl.² B60S *3/06***
**U.S. Cl. 15—53 AB** **12 Claims**



**1.** In an improved overhead car wash,
a pair of side arches,
an overhead framework rigidly joining the side arches, said framework comprising a plurality of modules comprising box-like frames secured together and to the side arches,
and brushing and cleaning mechanisms supported by the overhead framework, each of said modules supporting at least one of said brushing and cleaning mechanisms, said box-like frames and said side arches providing a unified integrated structure both for supporting said mechanisms and for providing a structure to house the same.

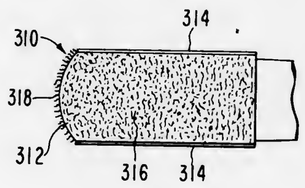
**3,934,298**
**TOOTHBRUSH**
**James S. H. Kim, 105 Kingston Court, New Orleans, La. 70114**
**Filed Apr. 23, 1974, Ser. No. 463,205**
**Int. Cl.² A46B *9/04***
**U.S. Cl. 15—167 R** **10 Claims**



**5.** An interdental toothbrush comprising:
an elongated handle having an end portion with a top side; and
a relatively small interdental brush portion mounted on said end portion on said top side consisting of a single group of parallel, juxtaposed tufts, defining at least generally a rectangular configuration, of parallel bristles emanating out from said handle in a direction perpendicular thereto, said tufts forming a series of even numbered, parallel rows aligned parallel in a direction transverse and perpendicular to the longitudinal axis of said handle, the ends of said bristles of said juxtaposed tufts of said rows together forming a single wedge-shape having two outward facing, flat bevel surfaces symetrical to each other, the top side of said end portion of said single group of tufts, forming said single wedge-shape, being otherwise clear of any other tufts of bristles or other substantial projections, the total size of the wedge-shape formed by said tufts being of an interdental size for fitting in between the sides of two juxtapositioned teeth with said bevel surfaces contacting the sides of the teeth; whereby said interdental brush portion can be used as a most effective interdental and periodontal cleanser and as an interdental stimulator without a traumatic effect on the crest of the interdental papillae.

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**3,934,299**
**TOOTH CLEANING DEVICE**
**Willard D. Regester, 2100 Sierra Ventura, Los Altos, Calif. 94022**
**Continuation-in-part of Ser. No. 31,712, April 24, 1970, abandoned. This application July 13, 1972, Ser. No. 330,811**
**Int. Cl. A46b *5/04***
**U.S. Cl. 15—104.94** **2 Claims**

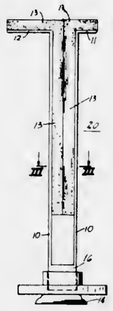


**1.** A tooth cleaning device comprising: a tubular body of terry cloth material having a continuous outer fabric surface throughout substantially its entire length, the body having a pair of opposed flexible fabric members, the members being integral with each other at one extremity of the body to provide a closed end therefor, the members being welded together only at the side margins thereof to define a pair of spaced ribs with the ribs being generally parallel with each other, providing continuations of said outer surface, and extending substantially the entire lengths of the side margins from said one extremity to the opposite extremity of the body,

said opposite extremity being open to permit the body to be placed on the finger and inserted in the mouth for engaging the teeth, said body being impregnated with a dentifrice material.

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**3,934,300**
**DRINKING GLASS CLEANER**
**Albert Tortorello, Mountainside, N.J., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest**
**Filed Apr. 15, 1974, Ser. No. 460,970**
**Int. Cl.² A47L** *17/10*; **B08B** *9/00*
**U.S. Cl. 15—244 R** **1 Claim**

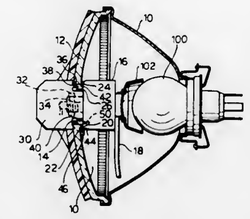


**1.** A device for cleaning the inside and outside surfaces of a cylindrical drinking glass is comprising a pair of tong members having parallel intermediate sections flexibly joined together at one end so that they may be moved to or away from each other with a section of absorbent sponge material fastened to each of the adjacent surfaces of each tong member, in which the free end of each tong member is bent at right angles away from the intermediate section of the tong member with the absorbent sponge material fastened along the length of the intermediate section and the said bent end of each tong member to form a shaped absorbent sponge surface generally parallel to the planes of the attached intermediate section and the bent end of the tong member and means on the joined portion to fasten the device to a flat surface, the bent end section of each tong member and its respective sponge material being of different lengths so that each tong member is suitable for cleaning the inside wall and inside bottom surface of a drinking glass of a different internal diameter.

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**3,934,301**
**DEVICE FOR CLEANING THE HEADLIGHT GLASS ON MOTOR VEHICLES**
**Salvatore Di Salvo, Turin, and Mario Morlondo, Testona-Moncalieri (Turin), both of Italy, assignors to Fiat Societa per Azioni, Turin, Italy**
**Filed July 25, 1974, Ser. No. 491,704**
**Claims priority, application Italy, Aug. 31, 1973, 69600/73**
**Int. Cl.² B60S** *1/44*
**U.S. Cl. 15—250.22** **9 Claims**

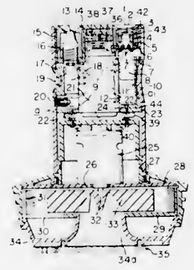
**1.** In a device for cleaning the headlamp glass of an automobile headlamp, having:
- a motor,
- a reduction gear,
- a wiper blade carried by said reduction gear, and conductors for the supply of electricity to said motor, said motor and said reduction gear being adapted to be mounted directly on a headlamp glass, the improvement comprising:
  - means for attaching said motor and said reduction gear together through an opening in said headlamp glass such that said motor is located inside said headlamp and said reduction gear is located externally of said headlamp; means for locating said motor and said



reduction gear with respect to said opening in said headlamp glass, and means for sealing said opening in said headlamp glass.

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**3,934,302**
**PORTABLE, MULTI-PURPOSE, RECHARGEABLE CIGARETTE LIGHTER**
**Kenichi Mabuchi, 3-34, Mita 2-chome, Minato, Tokyo, Japan**
**Filed Nov. 8, 1973, Ser. No. 413,764**
**Claims priority, application Japan, Nov. 14, 1972, 47-114183; Dec. 12, 1972, 47-124497**
**Int. Cl.² A47L** *5/24*, *7/00*; **F21V** *33/00*; **F23Q** *7/16*
**U.S. Cl. 15—339** **6 Claims**



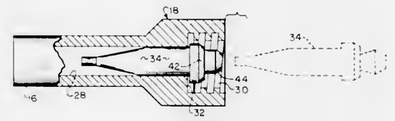
**2.** A portable, battery-operated multi-purpose cigarette lighter adapted to be operated by battery means comprising:
- an outer housing having at least one opening on the outer surface thereof;
- an electric cell housing in said outer housing and adapted to receive the battery means;
- an electrically actuated heating wire held in the opening provided on the surface of said outer housing;
- an on-off switch provided on the surface of said outer housing;
- means for connecting said heating wire to said switch whereby said heating wire may be heated by the current from the battery means flowing through said switch;
- a motor disposed within said outer housing, the output shaft of said motor being located adjacent the lower part of said housing;
- a vacuum cleaner housing, the upper portion of which is located in the lower part of said outer housing;
- a fan provided within said vacuum cleaner housing and rotatably secured on the output shaft of said motor;
- a filter frame inserted removably into said vacuum cleaner housing and having a filter at the periphery thereof;
- a dust pan having a central suction opening and a dish-shaped member at the periphery thereof, the upper portion of which is removably fitted to the lower portion of said vacuum cleaner housing;



brushes having one end thereof embedded around the peripheral portion of said suction opening in the bottom surface of said dust pan the other end of said brushes defining a support surface that is in a plane that is transverse to the longitudinal axis of said outer housing whereby said lighter is capable of independently standing upright on said brushes; and
- means for connecting said motor to said switch whereby said motor may be driven by the current from the battery means flowing through said switch.

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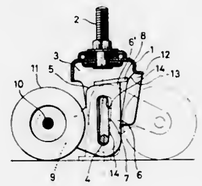
**3,934,303**
**EXPLOSIVE TORCH TIP CLEANER TOOL**
**Marvin C. Neithercutt, 2600 Frontier Drive, Midland, Tex. 79701**
**Filed Aug. 29, 1974, Ser. No. 501,640**
**Int. Cl.² A47L** *5/00*; **F23J** *1/00*
**U.S. Cl. 15—406** **4 Claims**



**1.** In a hand-held torch tip cleaning apparatus for effecting a high pressure differential across the flow passageway of a torch tip removably contained within the apparatus and from which debris causing obstruction thereof is to be ejected, the combination comprising:
- a central body member having a central bore formed therethrough with a marginal length of said central bore being sized to removably receive a blank cartridge concentrically arranged in axially aligned relationship therein and seated at one marginal end therein;
- a breech member removably affixed to the cartridge containing end of said central body member, said breech member having an axial bore which is axially aligned with said central bore, a spring loaded firing pin assembly slidably received in axial alignment with respect to said axial bore and with the detonator of the cartridge, such that the firing pin assembly is yieldably biased away from the cartridge; said firing pin assembly having an elongated shaft axially aligned with said central and axial bore and extending away from and clear of said breech member a distance at least equal to the longitudinal axial length of the central bore formed through said central member; so that the breech member can be removed from the central member and said shaft can then be used to forcibly remove a spent cartridge from seated relationship within said central member;
- a torch tip holding member having an axial bore formed therethrough with a free depending end portion thereof being made into the form of a muzzle, the opposed end portion of said holding member being removably affixed in axially aligned relationship to said central body member, a marginal length of the last said axial bore being sized to removably receive a torch tip therein such that the flow passageways of the torch tip are axially aligned with said axial bore; the outer periphery of the torch tip being sealingly engaged with the inner periphery of the last said axial bore so that when a torch tip is placed into the torch tip holder and a blank cartridge is placed into the central body member, the firing pin assembly can be struck, thereby causing the primer engaging end thereof to move into contact with and detonate the explosive charge thereof, thereby causing the explosive gases to develop a high pressure differential across the torch tip, and the explosive gases to flow through the passageways of the torch tip to thereby enhance removal of any obstruction therefrom.

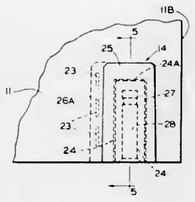
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**3,934,304**
**SWIVEL CASTORS**
**Sasuke Takahashi, 34/11, Yasunakacho-6-Chome, Yao, Osaka, Japan**
**Filed Sept. 24, 1974, Ser. No. 509,358**
**Int. Cl.² B60B** *33/06*
**U.S. Cl. 16—34** **4 Claims**



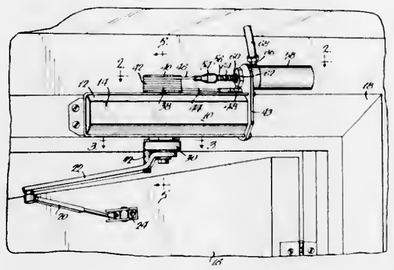
**1.** A locking swivel castor for attachment to the leg of a table or to the bottom of a like item having a rotary wheel in contact with the surface beneath the object being upheld, said castor comprising:
- slotted L-shaped support means connected to said rotary wheel for rotatably supporting said wheel and locking said castor into position, said support means having:
  - a first portion of the L-shape,
  - a first shaft fitted through said first portion at the end opposite the angle of the L-shape for rotatably supporting said wheel,
  - a second portion of the said L-shaped angled from said first portion, said second portion having a longitudinal slot running therethrough from the angle between the two portions toward the tip of the second portion, and
  - a support stand fixed to the end of said second portion opposite the angle formed by the first and second portions for resting against the surface beneath the item being upheld when the angle formed by the first and second portions is directed upward, whereby the castor is locked into position and is not free to move; and
- swivel framing means attached to the bottom of the item being upheld for swiveling and vertically adjusting said L-shape support means, said framing means having:
  - a second shaft stationarily fixed at the bottom thereof and loosely fitted through the slot in the second portion of said support means, whereby the second portion can slide along and rotate about the second shaft,
  - stopping plate means fitted therein for abutting against the support stand when the second portion of the L-shape and the support stand attached thereto are rotated about the second shaft and the angle formed by the first and second portions is directed downward, whereby rotating the second portion and the support stand about the second shaft away from the locking position toward the stop plate means causes the slot in the first portion to slide along the second shaft and the support stand to abut against the stop means, thereby lifting the support stand away from the surface and unlocking the swivel for free rotation.

3,934,305
## CASTER SOCKET
Walter Gusdorf, Creve Coeur, Mo., assignor to Gusdorf & Sons, Inc., St. Louis, Mo.
Filed Oct. 10, 1974, Ser. No. 513,552
Int. Cl.² A47B 91/00
U.S. Cl. 16—43 10 Claims



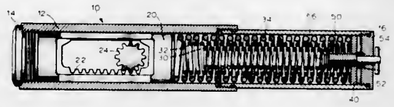
1. A caster socket comprising an elongated body formed with a socket opening for the reception of a caster swivel post, a pair of flanges projecting from and spaced apart by said body to form opposed surfaces of abutment, and means on one of said flanges for locating and receiving securing means.

3,934,306
## DOOR CLOSURE DEVICE
Vernie L. Farris, Houston, Tex., assignor to Federal Sign and Signal Corporation, Blue Island, Ill.
Filed Jan. 6, 1975, Ser. No. 538,762
Int. Cl.² E05F 15/20
U.S. Cl. 16—48.5 13 Claims



1. A door closer mechanism for automatically closing a door in response to a predetermined condition, the improvement comprising, in combination, a housing, a rotatable power shaft mounted in said housing and having a portion extending therefrom, force-producing means within said housing associated with said power shaft for rotatably biasing the latter in a door-closing direction, a door closure arm connected with a door to be controlled, said door closure arm being supported on said power shaft so as to be freely rotatable thereon, crank means fixedly mounted on said power shaft for conjoint rotation therewith, said crank means being engageable by said door closer arm when the latter is initially rotated in a door-opening direction thereby cocking said crank means and associated force-producing means while said door remains freely movable manually to any desired position between its fully open and fully closed positions, normally operable one-way brake means associated with said power shaft for preventing rotation of the latter in a door-closing direction, and means responsive to a predetermined condition for releasing said brake means enabling said force-producing means to rotate said power shaft and crank means in a door-closing direction whereby said crank means actuates said door closure arm to effect closing of said door.

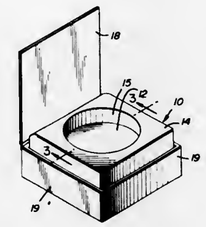
3,934,307
## SPRING ADJUSTMENT MECHANISM
Thomas R. Lasier, and Roy Pollack, 229 N. Homer St., both of Princeton, Ill. 61356
Continuation of Ser. No. 263,946, June 19, 1972, abandoned.
This application May 9, 1974, Ser. No. 468,245
Int. Cl. E05f 1/08
U.S. Cl. 16—79 7 Claims



1. An adjustable door closure mechanism adapted for use with a door which is movable between a door closed position and a door open position comprising:
a cylinder housing;
a piston slidable in said cylinder;
means for linking said piston to a door to translate said piston within said cylinder in a selected direction in response to the opening movement of the door;
an adjustable biasing system for producing a resultant door closing force which operates against said piston; said biasing system comprising a plurality of compression spring means having unequal lengths extended within said cylinder and separately engageable with said piston as said piston is translated in said cylinder by the opening movement of the door so that each spring means applies a separate closing force to said piston;
said plurality of compression spring means nested within one of said spring means;
said spring means being arranged within said cylinder in a first condition in which at least one first spring means contacts said piston in the door closed position and at least one second spring means is spaced from said piston in the door closed position;
said second spring means positioned to engage said piston at a selected position as said piston is translated within said cylinder by the opening movement of the door from closed door position whereby said plurality of spring means cooperate to produce a first resultant door closing force permitting said closure mechanism to control the closing movement of the door with a first set of physical characteristics; and
closing force adjustment means positioned within said housing for controlling said plurality of spring means to change said separate closing force of said first spring means, to change the location of engagement within said cylinder between said piston and said second spring means as said piston is translated within said cylinder, and to arrange said plurality of spring means in a second condition which causes said separate spring means to cooperate and to produce a second resultant door closing force and thereby to adjust said mechanism for closing a door with a second set of physical characteristics;
whereby said closure mechanism is readily adjustable in the field for use with a plurality of doors having different physical characteristics.

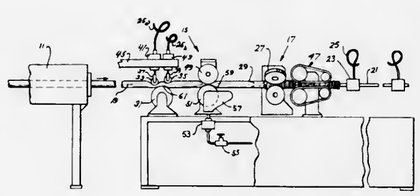
3,934,308
## HAMBURGER PATTY PRESS
Joseph R. Neri, 3101 Quentin Road, Brooklyn, N.Y. 11234
Filed Aug. 26, 1974, Ser. No. 500,311
Int. Cl.² A22C 7/00
U.S. Cl. 17—32 10 Claims

1. A molding device which comprises in combination: a stationary horizontal base plate, a mold having a through opening providing a molding cavity adapted to accommodate material to be molded, said mold being movably mounted with respect to said base plate, resilient means associated with said base plate and mold for urging said mold away from said base plate when said mold is pressed towards said base plate, a core element detachably secured to said base plate and being disposed in registering relation with said molding cavity, said mold being relatively movable between a first position in which said core element is disposed in the lower portion of said molding cavity and a second position in which said core element is disposed upward from said first position, retaining means associated with said core element and said mold for retaining said mold and core element in said first position when said mold device is in non-operating condition and pressing means associated with said mold for compressing said material in said cavity against said core element and for moving said mold from said first position to said second position.



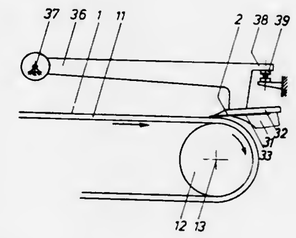


3,934,309
## ZONE REGULATION OF CASING INFLATION GAS
Arthur L. Sheridan, Woodridge, Ill., assignor to Union Carbide Corporation, New York, N.Y.
Filed June 28, 1974, Ser. No. 484,207
Int. Cl.² A22C 11/00
U.S. Cl. 17—42 5 Claims



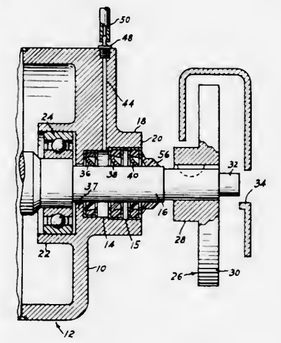
1. In a system for the production of flexible film tubing which system includes means for continuously introducing an inflation gas into the interior of the tubing and means for continuously unidirectionally advancing the tubing from a first zone to a second zone,
apparatus to maintain a preselected inflation gas pressure differential between the first zone and the second zone comprising, in combination: A base roll having a substantially flat circumferential surface in contact with the advancing tubing; a first flat nip roll disposed in first tubing nipping relationship relative to said base roll; a second flat nip roll disposed in second tubing nipping relationship relative to said base roll and spacedly adjacent said first nip roll; means to selectably vary the tubing nipping relationship between the first nip roll and the base roll; and means to selectably vary the tubing nipping relationship between the second nip roll and the base roll; whereby a continuous succession of inflation gas accumulation chambers is formed in the advancing tubing between the base roll and the first and second nip rolls, and successive inflation gas quantities in said accumulation chambers are passed from one of said zones to the other.

3,934,310
## SKINNING MACHINE FOR FISH FILLETS
Alfred Bartels, Lubeck-Israelsdorf, and Herbert Kohn, Bad Schwartau, both of Germany, assignors to Nordischer Maschinenbau Rud. Baader, Lubeck, Germany
Filed Oct. 15, 1974, Ser. No. 514,436
Claims priority, application Germany, July 13, 1974, 2433782
Int. Cl.² A22C 25/02
U.S. Cl. 17—62 1 Claim



1. A skinning machine for fish fillets including a machine frame, a moving conveying surface for the skin side of a fish fillet, an endless band knife slightly inclined against the direction of travel of the conveying surface, and a knife guide essentially comprising a knife support and a knife cover exposing the cutting edge of the band knife in the region of the conveying surface, wherein the band knife is inclined towards the conveying surface at an angle of about 5°, its cutting edge being formed by two chamfers including a cutting angle of essentially 30° to 40° between them; the chamfer adjacent to the conveying surface includes an angle of intersection of between 10° and 20° with the latter; said knife guide is supported by a supporting arm pivoted about a shaft parallel to the cutting edge and having resting elements adjacent to the knife guide, said resting elements coacting with stop means adjustably mounted on the machine frame; and said shaft is situated close to the plane comprising the chamfer facing the conveying surface.

3,934,311
## OYSTER BREAKER OPERATED BY ELECTRIC MOTOR HAVING BEARING SEAL DEVICE
John W. Thompson, Box 1946, R. D. No. 5, York, Pa. 17405
Continuation-in-part of Ser. No. 379,058, July 13, 1973, abandoned. This application Oct. 15, 1974, Ser. No. 514,619
Int. Cl.² A22C 29/04
U.S. Cl. 17—74 4 Claims



1. An oyster breaker comprising in combination, a housing having an opening through which the lip of an oyster is to be

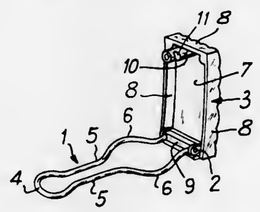
inserted, a rotatable shearing disc member having a shearing member projecting from one face thereof and cooperable with an edge of said opening to shear a portion of the lip of an oyster therefrom to form an opening for the insertion of an oyster knife therethrough, an electric motor mounted directly adjacent said housing and having a shaft with one end projecting into said housing, said rotatable shearing disc being mounted upon said one end of said shaft of said electric motor, said motor having a housing provided with a cylindrical opening in one end complementary to and through which said one end of the motor shaft projects for connection of said shearing disc thereto immediately adjacent said opening, and a bearing within said housing adjacent said opening to support said end of said motor shaft, in combination with seal means for said end of said shaft to prevent ambient liquid substances originating during the opening of oysters by said shearing disc member and capable of damaging said bearing and shaft from passing through said opening in said motor housing, said seal means extending between the walls of said cylindrical opening and said shaft and comprising a plurality of lip seals of compressible material spaced longitudinally along said walls of said opening and the outer periphery of said lip seals frictionally engaging said walls to secure said lip seals against rotation within said opening, said lip seals each having a similar flange extending integrally and radially from the outer portions of said seals into close slidable sealing engagement with said shaft, said flanges all extending angularly away from said bearing and the space between two of said lip seals and flanges defining a lubricant chamber therebetween, and said motor housing having a lubricant passage extending from the exterior upper portion of said housing downwardly into said lubricant chamber, whereby when lubricant is forced through said passage and into said chamber the flange on the lip seal nearest said bearing functions as a one-way valve by being forced into close sealing engagement with said shaft to prevent the passage of lubricant past said flange but lubricant being capable of passing between the flange on the other lip seal of said two lip seals and moving along said shaft to flush the engagement of the flange of said other lip seal with said shaft and thereby form a barrier seal to prevent ingress of said aforementioned ambient substances through said lubricant chamber.

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**3,934,313**
**BUTTON COVER**

**Robert Hocq, Boulogne-sur-Seine, France, assignor to Societe Franco-Hispano-Americaine (Francispam), Saint-Gratien and Societe Anonyme dite: Cartier, Paris, both of, France**

**Filed Nov. 26, 1973, Ser. No. 418,986**
**Claims priority, application France, Nov. 29, 1972, 72.42414**
**Int. Cl.² A44B *1//16***
**U.S. Cl. 24—113 MP** **2 Claims**



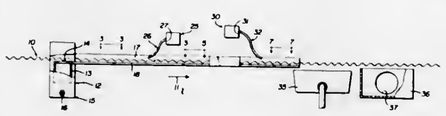

1. Button cover for cuffs comprising:
a first thin member comprising a first part defining a substantially circular recess having a diameter greater than that of a button to be covered, and a generally U-shaped second part including a slit leading to said recess and having a width less than said diameter,
a second generally box shaped member having a bottom dimensioned to cover said button and sides adapted to lie on opposite sides of a button covered by said bottom,
connecting means located in said second member adjacent one side thereof and pivotally connecting said second member to an end of said first part of said first member remote from said second part, said first and second members being pivotable with respect to each other between an open position wherein said first and second members are at an angle of substantially 90° to each other and a closed position in which said bottom and first member are parallel,
the sides of said second member other than said one side being dimensioned to leave a small gap between themselves and the plane of the nearest surface of said first member parallel to said bottom when said first and second members are in said closed position, the width of said gap being equal to the thickness of a cuff, and
fastening means for fastening said first and second members to each other in said closed position, said fastening means comprising a projection located in said second member close to the side thereof opposite said one side, said projection being provided with at least one lateral recess which resiliently engages a side of said slit when said first and second members are in said closed position.

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**3,934,312**
**METHOD OF AND APPARATUS FOR MAKING CONTINUOUS STRAND MAT**

**Robert G. Trout, Prairie Village, Kans., assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio**

**Filed Aug. 26, 1974, Ser. No. 500,798**
**Int. Cl.² D01D *11/02***
**U.S. Cl. 19—66 T** **7 Claims**



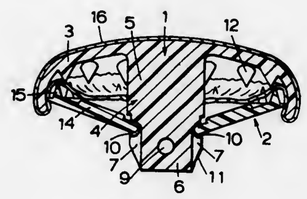
1. In a method of making a fibrous strand mat, the steps of: (1) depositing multifilament strands in an overall sinuous pattern on a movable foraminous collection conveyor, (2) moving said conveyor in a first direction over a non-foraminous support, (3) passing a liquid upwardly through said conveyor to flood the strands on said conveyor with said liquid, (4) conveying the liquid and the strands with the conveyor over said support at substantially the same speed so that the filaments of each strand tend to disperse while retaining the initial overall sinuous pattern of said strands, (5) vertically impinging a counter-current stream of additional liquid onto the flooded strands supported on said conveyor to create a localized turbulent flow of liquid displacing at least some of the filaments of each strand in a direction counter to the direction of movement of said conveyor, thereby locally dispersing said filaments from the initial overall sinuous pattern of said strands, (6) conveying the additional liquid and the dispersed strands with the conveyor from the region of localized turbulent flow to retain the filaments as locally dispersed, (7) vertically impinging a con-current second stream of additional liquid onto the flooded strands, the second stream creating a second localized turbulent flow of liquid displacing at least some of the filaments of said strands in the direction of movement of the conveyor, thereby further locally dispersing such filaments, and (8) moving said conveyor bearing the liquid and the dispersed filaments therein beyond said non-foraminous support to permit the flow of liquid through said conveyor, leaving the dispersed filaments on said conveyor in the form of a mat.



**3,934,314**
**BUTTONS**

**William Arthur Whysall, Albrighton, England, assignor to Newey Goodman Limited, Birmingham, England**

**Filed Apr. 8, 1974, Ser. No. 459,163**
**Claims priority, application United Kingdom, Aug. 8, 1973, 37510/73**
**Int. Cl.² A44B *1//12***
**U.S. Cl. 24—113 R** **5 Claims**




1. Button components for a button of the kind comprising a support, a piece of fabric extending over the front of the support and around the edge of the support to the rear thereof, and a retainer assembled with the support, at the rear of the support, the marginal parts of the fabric being trapped between the retainer and the support, said components comprising a support and a retainer, the support comprising a head with an axial stem at the rear formed with undercutting constituted by at least one preformed undercut, and the retainer comprising a wall element of tapered shape and having a central hole which can receive said stem, the cross-section of that part of the stem to the rear of the undercutting having a maximum transverse dimension greater than that of the hole and a minimum transverse dimension less than that of the hole the arrangement being such that when the button is assembled and the stem is inserted into the hole with the narrower end of the retainer pointing away from the head of the support, the retainer can be resiliently deformed so that the hole temporarily assumes a shape such as to enable that part of the stem to the rear of the undercutting to pass through it without itself being significantly deformed and without the periphery of the hole being significantly stretched the cross-section of the stem at the undercutting being such that after that part of the stem to the rear of the undercutting has been passed through the hole the retainer can resiliently snap back to its initial shape, part of the retainer bordering the hole entering the undercutting in the stem so as to maintain the components in the assembled state, and the marginal parts of the fabric being at the same time trapped between the broader end of the retainer and the rear of the head.

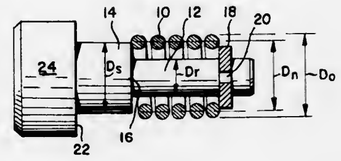
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**3,934,315**
**HELICAL-SPRING FASTENED ASSEMBLIES**

**Melvin Millhelser, North Bellmore, and Hugo Wurzel, New York, both of N.Y., assignors to Waldes Kohinoor, Inc., Long Island City, N.Y.**

**Filed July 26, 1974, Ser. No. 492,142**
**Int. Cl.² F16L *39/00*; A44B *19/00***
**U.S. Cl. 24—230 SL** **1 Claim**

1. A multi-coil helical spring-fastened assembly comprising, in combination, a first sub-assembly and a companion sub-assembly, said sub-assemblies being self-locked one to the other responsive to one thereof being assembled to the other by being inserted in a cylindrical bore with which said other sub-assembly is provided, said one sub-assembly comprising a stepped-diameter shaft-form member, the smaller-diameter end of which is provided with a ring-seating circumferential groove, a conventional open-ended spring-retaining ring mounted in said groove and providing an artificial shoulder thereon, a multi-coil helical spring positioned between the step of said shaft-form member and said groove-seated retaining ring, said multi-coil helical spring having initially substantially uniform outer diameter such that it is compressed responsive to assembly of said sub-assemblies as aforesaid and



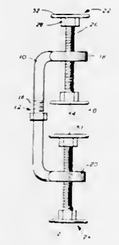

when so compressed it exerts gripping force in radial outward direction on a facing cylindrical bore surface of said companion sub-assembly.

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**3,934,316**
**CLAMPING DEVICE**

**David M. Driscoll, 185 Devonshire St., Boston, Mass. 02110**

**Filed Aug. 5, 1974, Ser. No. 494,500**
**Int. Cl.² A44B *21/00*; F16G *11/12***
**U.S. Cl. 24—243 CC** **3 Claims**



1. A combination clamp and jack comprising;
a support member having a center section and two end sections,
means for securing the center section and end sections to form a unitary support member wherein said end sections can assume different positions relative to the center section,
said means for securing including a first securing member coupling one end of the center section with one end of one of said end sections to permit said one end section to rotate through at least 180° relative to said center section and where said first securing member includes means for fixedly securing the one end section in a clamp position and for fixedly securing the one end section in a jack position, and a second securing member coupling the other end of the center section with one end of the other end section to permit said other end section to rotate through at least 180° relative to said center section and wherein said second securing member includes means for fixedly securing the other end section in a clamp position and for fixedly securing the other end section in a jack position,
the other end of said one end section defining an end surface for engagement with a work piece,
a claimping piece received by the other end of the other end section and having a surface for engagement with a work piece,
and means associated with the clamping piece for moving the clamping piece relative to the one end section of the support member,
whereby said securing members maintain said end sections in a clamp position wherein the work piece engaging surfaces are facing each other, and maintains said end

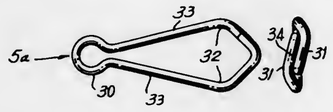
sections in a jack position wherein the work piece engaging surfaces are facing in opposite directions.

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**3,934,317**
**MEANS FOR DETACHABLE SUPPORT OF KEYS WITHIN A POCKET OF AN ARTICLE OF CLOTHING**

**John D. Langwell, 28 Branch Ave., Freeport, N.Y. 11520**

**Division of Ser. No. 255,783, May 22, 1972, Pat. No. 3,779,053. This application Sept. 24, 1973, Ser. No. 400,132**
**Int. Cl.² A44B *13/00*, *15/00***
**U.S. Cl. 24—237** **6 Claims**




1. A releasable connector comprising a length of resilient material bent to provide a closed loop at one end and a pair of branches with overlapped edge portions at an opposite end to form a closed link, said branches lying substantially in a common plane and including V-shaped shoulders in opposition to one another in said plane, said V-shaped shoulders having apexes facing away from one another, said overlapped edge portions being of V-shape when viewed in a direction perpendicular to said common plane, and being in superposed registry with one another, said V-shape edge portions having respective apexes and legs converging towards said apexes in a direction away from said closed loop, said apexes of the edge portions being disposed along a line substantially midway between said V-shaped shoulders, said overlapped portions also being bent out of said plane, said overlapped portions being of V-shape when viewed in end elevation in a direction parallel to said plane, said overlapped portions converging towards respective apexes in opposite directions so as to mate along a surface which is inclined with respect to said plane, said V-shaped shoulders of said branches being movable relative to one another to open the overlapped edge portions of the link and enable removal of articles from the link.

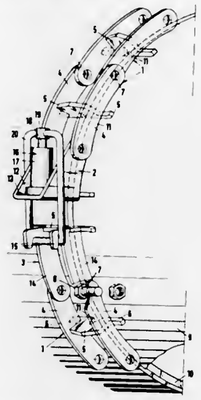
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**3,934,318**
**PIPE CLIP**

**Hubert Joseph Mertens, Schiekade 37, Rotterdam, Netherlands**

**Filed Oct. 2, 1974, Ser. No. 511,204**
**Claims priority, application Netherlands, Oct. 2, 1973, 73113536**
**Int. Cl.² A44B *21/00*; B21J *13/08*; F16L *13/08***
**U.S. Cl. 24—249 R** **5 Claims**

1. A pipe clamp for centered fixation of pipe ends to be welded together, comprising, in combination:
- a chain comprising a plurality of detachably interconnected chain link elements; and
- first and second coupling means connected at the respective ends of said chain and operative to cooperate with each other for straining said pipe clamp around said pipe ends;
- said chain link elements comprising
  - two lateral elements extending longitudinally with respect to said chain,
  - a transverse bridge element extending between said two lateral elements and interconnecting them to each other,
  - a transverse base bar extending between said two lateral elements and interconnecting them to each other, said base bar having a recess defined in a central portion of its side near said pipe ends of sufficient size to permit the passage of a welding electrode therethrough, and
  - first and second linking means connected at the respective ends of said two lateral elements and operative for pivotal connection to another of said chain link elements and said coupling means, whereby said pipe clamp is flexible and the length of said chain can be



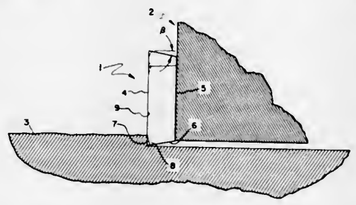
changed to be suitable for pipes having different diameters.

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**3,934,319**
**CUTTING INSERTS**

**Paul A. Schuler, Erie, Pa., assignor to General Electric Company, Schenectady, N.Y.**

**Filed Apr. 21, 1975, Ser. No. 570,301**
**Int. Cl.² B26D *1/00***
**U.S. Cl. 29—95 R** **7 Claims**



1. A cutting insert having top and bottom polygonal faces, the corresponding edges of said faces being joined by flanks, each flank defining at least one cutting edge with at least one adjoining face, each mutually abutting pair of faces and pair of flanks forming at least one cutting edge point, the leading edge of each cutting edge point being beveled, the angle between the plane of the bevel through the cutting edge point to the flank adjoining the bevel being from about 102° to 108°.

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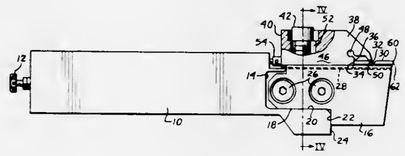
**3,934,320**
**GROOVING AND CUT OFF TOOL**

**James F. McCreery, Latrobe, Pa., assignor to Kennametal Inc., Latrobe, Pa.**

**Filed Nov. 1, 1974, Ser. No. 519,879**
**Int. Cl.² B26D *1/00***
**U.S. Cl. 29—96** **9 Claims**

1. A grooving and cut off tool comprising; a bar-like holder, a support blade fixed to one side of said holder and projecting from one end thereof, said blade having a first longitudinal groove formed in the upper edge thereof, the forward end of which is adapted for receiving an insert, a second longitudinal groove formed in the top of the bar-like holder, a block-like clamping member mounted on said holder and having a longitudinal slot extending upwardly therein from the bottom and defining a pair of dependent leg members on the opposite sides of the clamp member, one said leg member engaging said second longitudinal groove in the top of the bar-like holder, the other said leg member lying in the plane of said support blade and engaging the first groove rearwardly of the insert with the forward end of said other leg abutting the rearward end of the said insert, resilient clamping means extending forwardly from said other leg over said insert and engaging the top of the insert when said other leg engages said first groove





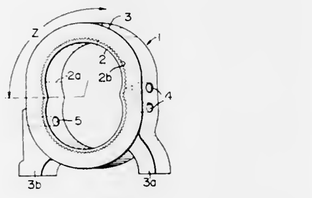
so that when said other leg is seated in said first groove, said resilient clamping means is pressed against the top of the insert, and a clamp bolt extending downwardly through said block-like clamp member between said dependent legs and threadedly engaging said holder, said block-like clamp member being slotted in the fore and aft direction to receive said clamp bolt and to permit fore and aft adjustment of the block-like clamp member on said holder.

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**3,934,321**
**ROTOR HOUSING FOR A ROTARY PISTON TYPE ENGINE AND METHOD FOR MANUFACTURING THE SAME**

**Hirotaka Iida; Hiroshi Masaoka; Michinobu Yamada; Mutsuo Ichihara; Yoshitaka Uebayashi; Koji Tashiro, and Sadao Taketomo, all of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan**

**Filed Apr. 9, 1974, Ser. No. 459,329**
**Claims priority, application Japan, Apr. 10, 1973, 48-40580; Apr. 11, 1973, 48-41639**
**Int. Cl.² B23P *15/00***
**U.S. Cl. 29—156.4 WL** **6 Claims**



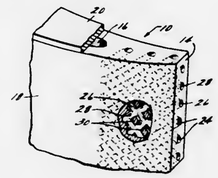
1. Method for manufacturing a rotor housing for a rotary piston type engine having a rotor housing liner with a cold zone located substantially opposite an ignition plug opening, comprising steps of providing a rolled metal sheet, scratching one side of said metal sheet to provide a rough surface, welding opposite terminal edges of said metal sheet together with said rough surface directed outside, forming said metal sheet into a trochoidal configuration to provide a liner with the welded edges disposed within a cold zone of the completed housing, and casting under pressure an aluminum based material around said liner with terminal edges welded to form a housing substrate.

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**3,934,322**
**METHOD FOR FORMING COOLING SLOT IN AIRFOIL BLADES**

**Ambrose A. Hauser, Cincinnati; Terry T. Eckert, Mt. Healthy, and James D. McDonel, Loveland, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio**

**Continuation of Ser. No. 291,005, Sept. 21, 1972, Pat. No. 3,819,295. This application Feb. 14, 1974, Ser. No. 442,325**
**Int. Cl.² B23P *15/04*, *13/02***
**U.S. Cl. 29—156.8 H** **4 Claims**



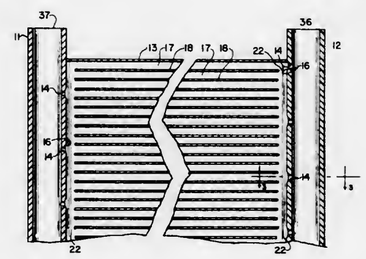
1. A method for forming a plurality of polygonal nodes within a trailing edge slot of an airfoil blade, the blade having an internal cavity and a trailing edge, the method comprising the steps of:
- forming at least two sides of each of said polygonal nodes by forming a first plurality of passages extending from said cavity through said trailing edge and aligned in a predetermined first angle other than substantially normal with respect to said trailing edge; and
- forming at least two additional sides of each of said polygonal nodes by forming a preselected second plurality of passages intersecting at least a portion of said plurality of passages and extending from said cavity through said trailing edge and aligned in a predetermined second angle other than substantially normal with respect to said trailing edge.

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**3,934,323**
**SOLAR HEAT EXCHANGE PANEL AND METHOD OF FABRICATION**

**Freeman A. Ford, Atherton; Errol Armstrong, Glen Ellen, and Richard O. Rhodes, San Francisco, all of Calif., assignors to Fafco, Incorporated, Menlo Park, Calif.**

**Filed Oct. 29, 1973, Ser. No. 410,630**
**Int. Cl.² B23P *15/26***
**U.S. Cl. 29—157.3 R** **10 Claims**



1. The method of fabricating a solar heating panel of the type having a plurality of internal tubular passages therethrough for conducting a fluid for transfer of thermal energy between the panel environment and the fluid comprising the steps of
- cutting the panel to a predetermined length along a line transverse to the tubular passage length direction,
- cutting a pair of hollow headers for positioning across the ends of the heating panels, forming a plenum chamber on each end of the panel in communication with the internal

passages, spacing apertures in a line along one side of each header, heating the surface of each of the hollow headers on both sides of the line of apertures until it reaches a fluid state, heating the surface on each end of the panel on both sides of the plenum chamber until it reaches a fluid state,

and pressing the heated surfaces of the headers to the heated surfaces on the ends of the panels for forming a bond therebetween as the surfaces cool, thereby obtaining a plurality of continuous flow paths from one header to the other header through which flow is substantially even due to the distribution effect of the plenum chambers.

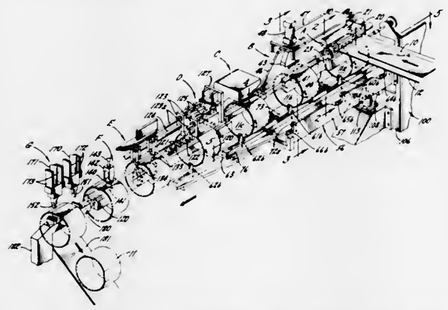
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**3,934,324**

## METHOD AND APPARATUS FOR FORMING AUTOMOTIVE WHEEL RIM BLANKS

**Johann T. Hess, Deerfield; Kurt Debrunner, and Aujit Tan, both of Chicago, all of Ill., assignors to Grotnes Machine Works, Inc., Chicago, Ill.**

**Filed Feb. 14, 1975, Ser. No. 549,984**
**Int. Cl.² B21H *1/10*; B21K *1/38***
**U.S. Cl. 29—159.1** **24 Claims**



**1.** A machine for forming wheel rim blanks comprising the combination of

a. a coiling station for coiling blanks of strip material into the form of a cylinder with the longitudinal edges of the coiled blank defining a preloaded longitudinal gap,

b. an end conditioning press adjacent the coiling station for forming symmetrical longitudinal edge portions on the coiled blank,

c. a welding station adjacent the end conditioning press for butt welding the longitudinal edge portions of the coiled blank,

the end conditioning press and welding station forming a continuous open path in the direction of the axis of the coiled blanks formed in the coiling station to permit simultaneous loading and unloading of blanks on opposite sides of both the end conditioning press and the welding station, and

d. a transfer mechanism for simultaneously (**1**) transferring a coiled blank from the coiling station to the end conditioning press, (**2**) transferring an end conditioned blank from the end conditioning press to the welding station, and (**3**) transferring a welded blank away from the welding station.

**15.** A method of forming wheel rim blanks comprising the steps of

a. loading a blank of strip material into a coiler and coiling the blank into the form of a cylinder with the longitudinal edges of the coiled blank defining a longitudinal gap,

b. transferring the coiled blank to an end conditioning press while positioning the longitudinal edges of the blank at predetermined circumferential positions so that said gap has a preselected width and circumferential location as it enters said press;

c. flattening the longitudinal edge portions of the coiled blank in the end conditioning press;

d. simultaneously (**1**) transferring the end conditioned blank to a welding station while maintaining said gap at said predetermined circumferential location, (**2**) transferring another coiled blank to the end conditioning press, and (**3**) loading another blank of strip material into the coiler;

e. butt welding the longitudinal edge portions of the coiled blank at the welding station; and

f. simultaneously (**1**) transferring the welded blank away from the welding station while maintaining the weld at a predetermined circumferential position, (**2**) transferring another end conditioned blank to the welding station, (**3**) transferring another coiled blank to the end conditioning press, and (**4**) loading another blank of strip material into the coiler.

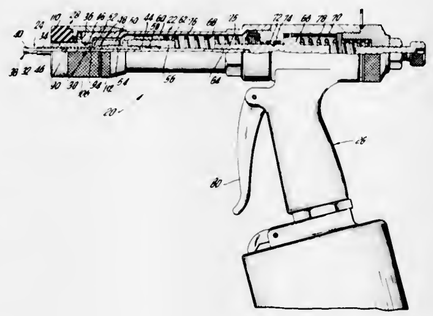
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**3,934,325**

## FASTENING METHOD, APPARATUS AND ARTICLE

**David M. Jaffe, Guilford, Conn., assignor to Automatic Fastener Corporation, Branford, Conn.**

**Filed May 10, 1974, Ser. No. 468,990**
**Claims priority, application United Kingdom, May 29, 1973, 25582/73**
**Int. Cl.² B21J *15/06***
**U.S. Cl. 29—243.52** **11 Claims**



**1.** Apparatus for setting blind fasteners having a front portion, a rear portion and an aperture therethrough, in a plurality of pieces of material, which comprises:

fastener setting means having an aperture therethrough and a portion adapted to engage and set a fastener,

mandrel means mounted for reciprocal movement in said aperature in the fastener setting means, said mandrel means extending out from said aperture and being adaptable to receive a fastener thereon, the mandrel means including a front portion adaptable to set the front of the fastener when driven into engagement with it,

means for driving the mandrel means rearwardly to first set the front of the fastener and then to drive the fastener thereon rearwardly until the rear portion of the fastener is driven into the fastener setting means to set the rear of the fastener, and

means mounted on said fastener setting means for engaging the rearmost piece of material on the fastener and driving it forwardly on the fastener into engagement with the piece of material on the fastener in front thereof as the fastener is driven rearwardly by the mandrel means.

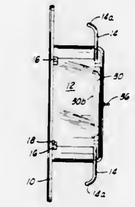


**3,934,326**

## ELECTRIC METER INSTALLING DEVICE

**Donald W. Owen, Norman, and Richard D. Pooler, Oklahoma City, both of Okla., assignors to Southwest Electric Company, Oklahoma City, Okla.**

**Filed Oct. 2, 1974, Ser. No. 511,224**
**Int. Cl.² B25B *27/02***
**U.S. Cl. 29—278** **24 Claims**



**1.** An electric meter installing device comprising:

a hollow transparent housing having an opening at one side thereof;

handles on opposite sides of the housing facilitating the lifting, handling and guidance of the housing;

meter engaging means within the housing at the side thereof opposite said opening and secured thereto for engaging an electric meter to be installed while a portion of the meter projects through said opening; and

releasing means accessible from outside the housing and cooperating with said meter engaging means to facilitate disengagement of an electric meter from the meter engaging means after the electric meter has been installed.

**23.** An electric meter installing device comprising:

a shield plate having an opening therethrough;

a hollow, open sided housing secured to said shield plate with the open side thereof aligned with the opening through said shield plate;

handle means on said housing;

a suction cup secured to the opposite side of said housing from the open side thereof; and

releasing means accessible from outside the housing for disengaging an electric meter from said suction cup.

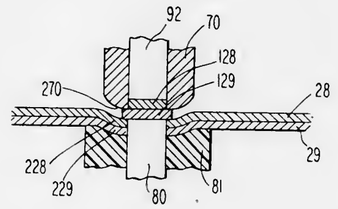
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**3,934,327**

## METHOD OF INTERLOCKING OVERLAPPING SHEET MATERIAL

**Otto P. Hafner, 1321 Paddock Way, Cherry Hill, N.J. 08034**

**Continuation-in-part of Ser. No. 497,884, Aug. 16, 1974, Pat. No. 3,885,299, which is a division of Ser. No. 384,494, Aug. 1, 1973, Pat. No. 3,862,485. This application Mar. 21, 1975, Ser. No. 560,786. The portion of the term of this patent subsequent to May 27, 1992, has been disclaimed.**
**Int. Cl.² B23P *11/00*, *17/00***
**U.S. Cl. 29—432** **2 Claims**



**1.** A method of locking together overlying sheets of metal or other material having deformable properties and including first and second sheets having interior and opposed exterior surfaces; said method comprising:

a. piercing said overlying sheets discontinuously along a boundary line defining a minor area;

b. displacing in one direction the material of said first and second sheets within said minor area out of the respective planes of the non-displaced first and second sheet major-area sheet material and bending in the opposite direction the edge portions of the major-area sheet material adjacent the piercings therein, the extend of said displacement of said minor-area material being such that the exterior surface of the minor-area material of the first sheet is just beyond the exterior surface of the bent edge portion of the second sheet material; and

c. compressing together the displaced minor-area material of said first and second sheets while confining the displaced minor-area material of the second sheet to limit its outward spread and to spread outwardly the displaced minor-area material of the first sheet over the exterior surface of the bent edge portion of the second sheet material beyond the edges of the piercings therein.

**2.** Apparatus for locking together overlying sheets of metal or other material having deformable properties and including first and second sheets having interior and opposed exterior surfaces; and apparatus comprising:

a. means for piercing said overlying sheets discontinuosuly along a boundary line defining a minor area;

b. means for displacing in one direction the material of said first and second sheets within said minor area out of the respective planes of the non-displaced first and second sheet major-area sheet material and for bending in the opposite direction the edge portions of the major-area sheet material adjacent the piercings therein, the extent of said displacement of said minor-area material being such that the exterior surface of the minor-area material of the first sheet is just beyond the exterior surface of the bent edge portion of the second sheet material; and

c. means for compressing together the displaced minor-area material of said first and second sheets while confining the displaced minor-area material of the second sheet to limit its outward spread and to spread outwardly the displaced minor-area material of the first sheet over the exterior surface of the bent edge portion of the second sheet material beyond the edges of the piercings therein.

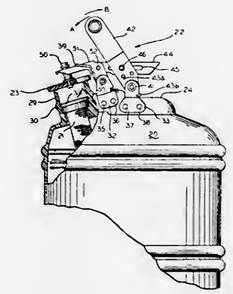
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**3,934,328**

## PROCESS FOR MAKING A PLASTIC WALLED DEVICE

**Frank S. Flider, Chicago, Ill., assignor to Justrite Manufacturing Company, Chicago, Ill.**

**Division of Ser. No. 98,557, Dec. 16, 1970, abandoned. This application Feb. 26, 1973, Ser. No. 335,516**
**Int. Cl.² B23P *11/02***
**U.S. Cl. 29—453** **9 Claims**



**1.** A process for making a plastic walled device comprising:

a. forming a stock-shaped device having an outer surface and an inner surface separated by a wall of plastic,

b. integrally forming on said outer surface a thickened two-sided fin portion projecting away from said outer surface.
c. placing a plate on each of the two sides of said fin, and
d. passing a fastener through each of said plates and said fin without breaking through said inner surface.

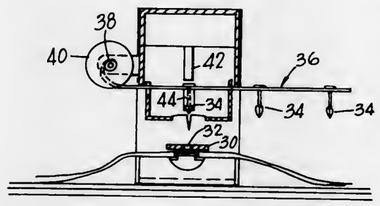
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**3,934,329**

## METHOD OF AND APPARATUS FOR ATTACHING FASTENERS FOR CLOTH AND THE LIKE

**Jeff Satkin, New York, N.Y., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest**

**Filed Oct. 10, 1974, Ser. No. 513,881**
**Int. Cl.² B23P** *11/02*
**U.S. Cl. 29—453** **2 Claims**




1. A method of feeding and affixing fasteners for cloth and the like which comprises: providing a plurality of first fastener members each having an aperture extending therein; providing a plurality of elongated second fastener members inserted in holes spaced apart along an elongated coiled tempered feed strip, said second elongated members each having an end dimensioned and configured for engagement with said aperture, positioning the associated cloth intermediate a free end of said strip and one of said first fastener members, supporting the coiled strip in a manner for the coil of the strip to urge the strip end to advance along the cloth, stopping the advancement of said strip end with one of said second members on said strip in coaxial relationship with the aperture, and forcing axially said second member into said aperture of said first member.

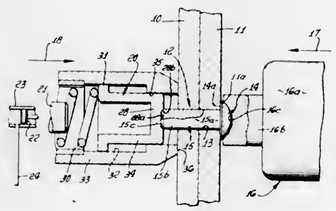
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**3,934,330**

## REVERSE END RIVETING SYSTEM AND METHOD

**Franklin S. Briles, 3600 Catamaran, Corona Del Mar, Calif. 92625**

**Filed Mar. 28, 1974, Ser. No. 455,555**
**Int. Cl.² B21D** *39/00*
**U.S. Cl. 29—509** **16 Claims**



1. In the method of securing a metallic rivet to work containing a through bore, the rivet having a head at one side of the work, an axially extending shank extending through the bore, the shank having a terminal protruding at the opposite side of the work, the terminal having a tip, there being an anvil and a driver, the anvil having a recess at one side thereof shaped to interfit said tip, the steps that include
a. applying back-up force to the rivet head tending to urge the head toward the work, and interfitting said tip into said anvil recess, and
b. thereafter delivering an impact from the driver to the anvil and then to the rivet shank terminal via said tip in a direction tending to urge said terminal toward said bore, but with sufficient impact velocity as to radially expand and axially shorten the bulk of said terminal, thereby to form an upset engaging said opposite side of the work while the head remains in close adjacency to said one side of the work.

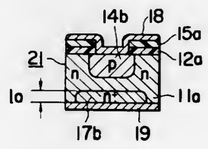
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**3,934,331**

## METHOD OF MANUFACTURING SEMICONDUCTOR DEVICES

**Masayoshi Sugiyama, Hitachi, Japan, assignor to Hitachi, Ltd., Japan**

**Continuation of Ser. No. 343,038, March 20, 1973, abandoned. This application Jan. 2, 1975, Ser. No. 537,962**
**Claims priority, application Japan, Mar. 21, 1972, 47-27454**
**Int. Cl.² B01J** *17/00*
**U.S. Cl. 29—583** **5 Claims**




1. A method of manufacturing semiconductor devices, comprising the steps:
a. forming a plurality of N-type high concentration regions in an N-type region whose surface is exposed to a first main surface of a semiconductor wafer, said N-type region forming at least one PN junction with an adjacent P-type region, each of said N-type high concentration regions being remote from one another;
b. forming a metal layer over the entirety of said first main surface of said N-type region to form ohmic contact with said N-type high concentration regions;
c. scribing grooves on a second main surface opposite to said main surface in a manner that said grooves in two directions are perpendicularly arranged to form substantially squares in which each of said N-type high concentration regions is confined and is smaller than the square in area so that each of said N-type high concentration regions is surrounded by the N-type region;
d. applying a masking tape to said metal layer;
e. applying a pressure to said semiconductor wafer on said masking tape for cutting off complete semiconductor elements defined by said scribing grooves;
f. applying tension to said masking tape; and
g. separating said complete semiconductor elements from said masking tape.

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**3,934,332**

## METHOD OF MAKING ELECTRICAL COILS HAVING IMPROVED STRENGTH AND OIL PERMEABILITY

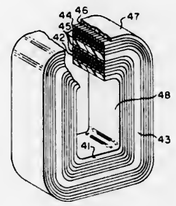
**Floyd F. Trunzo, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**Filed Nov. 26, 1974, Ser. No. 527,459**
**Int. Cl.² H01F** *41/06*
**U.S. Cl. 29—605** **10 Claims**

1. A method of making an oil permeable, bonded transformer comprising the steps of:



A. continuously, uniformly coating both sides of a flexible, porous sheet material having a thickness of between about 1 to 30 mils with dry adhesive resin particles having an average particle size of between about **37** to **420** microns, said coating covering from about **5** to **50** percent of the sheet material area in a non-patterned random distribution;
B. heating the coated sheet material between about 85° to 250°C for an effective period of time, forming a discontinuous 0.25 to 7 mil dry coating of discrete adhesive particles having substantially rounded cross sections bonded to each side of the sheet material, said adhesive coating covering from about 5 to 50 percent of the sheet material area in a non-patterned random distribution, to provide a porous, oil permeable resin particle coated layer insulation;




C. winding electrical conductors into turns, to form at least two different windings including a high voltage winding and a low voltage winding and inserting the porous, oil permeable, resin particle coated layer insulation between the high voltage winding and low voltage winding and between layers of the high voltage winding and the low voltage winding, to provide a wound coil assembly;
D. heating the wound coil assembly at a temperature and for a time effective to securely bond the winding layers together, while still providing an adhesive covering of the layer insulation of between about 5 to 50 percent, to provide a porous, oil permeable bonded coil assembly; and
E. impregnating the wound, bonded coil assembly with an insulating oil comprising a hydrocarbon liquid.

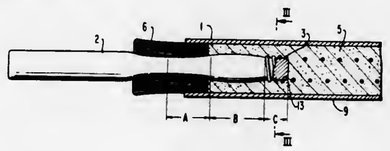
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**3,934,333**

## METHOD OF CONSTRUCTING BILATERAL HEATER UNIT

**John W. Churchill, 12 Winthrop Ave., Beverly, Mass. 01915**

**Division of Ser. No. 382,295, July 25, 1973. This application Nov. 26, 1974, Ser. No. 527,186**
**Int. Cl.² H05B** *3/00*
**U.S. Cl. 29—611** **11 Claims**




1. A method of forming a heater unit comprising the steps of forming a resistor assembly by placing each end of an elongated resistor helix over respective end portions of cylindrical metal terminals such that the helix is detachably secured to the respective terminals and extends therebetween, arranging the resistor assembly in a metal tubular sheath such that the assembly extends in the longitudinal direction of the sheath, filling the sheath with granulated powdered insulating material, capping the ends of the tubular sheath with end plugs which are sized for a slide fit into the sheath and a slide fit around the cylindrical terminals which extend through the plugs, and deforming the tubular sheath over the entire length thereof to compact the powdered insulating material such that the end plugs and the metal terminals are deformed to a shape corresponding to the shape of the sheath in the region of the end plugs and metal terminals with the end plugs and terminals becoming lockingly secured within the sheath, at least a portion of the sheath in the region of the end plugs together with at least a portion of the end plugs and the metal terminals thereat being deformed out of round.

**11.** A method of forming a heater unit comprising the steps of forming a resistor assembly by placing each end of an elongated resistor helix over respective end portions of cylindrical metal terminals such that the helix is detachably secured to the respective terminals and extends therebetween, arranging the resistor assembly in a metal tubular sheath such that the assembly extends in the longitudinal direction of the sheath, filling the sheath with granulated powdered insulating material, capping the ends of the tubular sheath with end plugs which are sized for a slide fit into the sheath and a slide fit around the cylindrical terminals which extend through the plugs, bending the tubular sheath having the resistor assembly and powdered insulating material therein into the shape of a U, pressing the legs of the U together while maintaining the same tube diameter, and then deforming the tubular sheath over the entire length thereof to compact the powdered insulating material and to provide a heater unit having a substantially circular cross section formed by two substantially semicircular parallel extending leg portions interconnected by a portion of the tubular sheath having a 180° outer return bend.

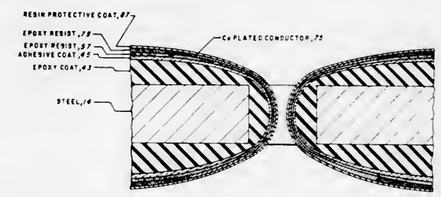
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**3,934,334**

## METHOD OF FABRICATING METAL PRINTED WIRING BOARDS

**Stephen L. Hanni, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.**

**Filed Apr. 15, 1974, Ser. No. 461,072**
**Int. Cl.² H05K** *3/10*
**U.S. Cl. 29—625** **11 Claims**



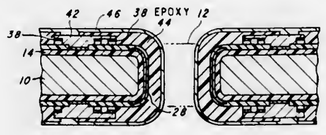

1. A method for fabricating printed wiring boards comprising:
a. forming a metal substrate having a circuit hole pattern;
b. electrostatically powder coating the metal substrate and hole forming walls with a suitable dielectric;
c. fusing the dielectric powder coating to electrically insulate the metal substrate including the apertures thereof from electrical circuitry; and
d. forming electrical circuitry on the dielectric in conjunction with the hole patterns.

**3.** A method for fabricating printed wiring boards comprising:
a. blanking sheet metal for outlining a plurality of metal substrates, forming hole patterns within said plurality of outlined metal substrates, and forming lead frames adjacent horizontally disposed edges of the sheet metal with holes therein for use in advancing the sheet metal and outlines of metal tabs;
b. preparing the sheet metal for coating with a layer of insulating material;

c. electrostatically powder coating surfaces of the metal substrates of the sheet metal with a dielectric;
d. fusing the coating for thermosetting the dielectric for electrically insulating the metal substrates;
e. coating all the dielectric insulating coating with an adhesive coating in preparation for forming conductor patterns and through hole interconnections by metallization;
f. forming conductor patterns on the adhesive coating;
g. partially removing the adhesive coating from the conductor patterns to form metal plating locking micropores;
h. electrolessly plating the conductor patterns with an electrically conducting material;
i. selectively forming soldering patterns;
j. removing any oxide forming on the exposed soldering patterns; and
k. sealing the exposed soldering patterns to prevent oxidation of the soldering pattern whereby a plurality of printed wiring boards are formed between a lead frame.

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**3,934,335**
**MULTILAYER PRINTED CIRCUIT BOARD**
**Mark A. Nelson, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.**
**Filed Oct. 16, 1974, Ser. No. 515,282**
**Int. Cl.² H05K** *3/18, 3/28*
**U.S. Cl. 29—625** **11 Claims**

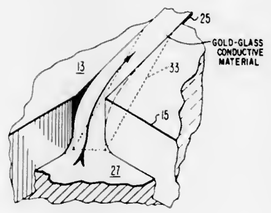



**1.** A method for fabricating a multilayer printed wiring circuit board comprising:
a. forming a dielectric layer on a substrate;
b. coating the dielectric layer with a first layer of photosensitive material;
c. selectively exposing the first layer of photosensitive material to form a layer defining a first conductor pattern of exposed photosensitive material;
d. forming the conductor pattern with a conductor material to form conductors in the conductor pattern;
e. coating the circuit bearing layer with a layer of photosensitive substrate material;
f. selectively exposing the layer of photosensitive substrate material to form a second dielectric layer defining circuit layer interconnections;
g. coating the second dielectric layer with a second layer of photosensitive material;
h. selectively exposing the second layer of photosensitive material to form a layer defining a second circuit pattern of exposed photosensitive material;
i. forming the second conductor pattern with electrically conducting material; and
j. repeating steps e through i to form a plurality of electrically interconnected layers of circuitry.

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**3,934,336**
**ELECTRONIC PACKAGE ASSEMBLY WITH CAPILLARY BRIDGING CONNECTION**
**Robert S. Morse, La Mesa, Calif., assignor to Burroughs Corporation, Detroit, Mich.**
**Filed Jan. 13, 1975, Ser. No. 540,579**
**Int. Cl.² H05K** *3/10, 3/30*
**U.S. Cl. 29—627** **3 Claims**

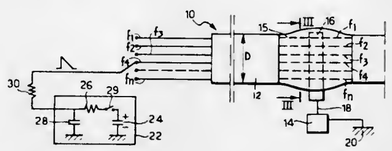
**3.** A method of assembling an electronic package for enclosing a microelectronic device mounted on a substrate comprising the steps of:
forming a device mounting recess in said substrate;
locating a plurality of conductive leads on said substrate;
cutting a capillary groove into the wall of said recess and leading from said recess to terminate at one of said plurality of electrically conductive leads;
applying a layer of hardenable conductive material to the bottom of said recess and to at least a portion of the wall




of said groove adjacent to the bottom of said recess causing upward flow of said conductive material by capillary action in said groove into contact with said one conductive lead before hardening; and
hardening said hardenable conductive material resulting in said conductive material forming a tenacious bond with said one of said plurality of electrically conductive leads.

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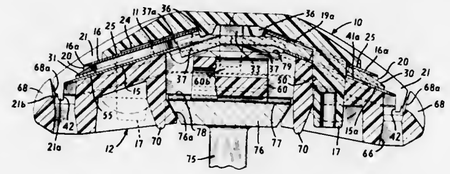
**3,934,337**
**METHOD OF CONNECTING A TERMINAL TO A WIRE**
**Mario Palazzetti, Avigliana (Turin), and Franco Grisotto, Turin, both of Italy, assignors to Fiat Societa per Azioni**
**Filed Aug. 15, 1974, Ser. No. 497,795**
**Claims priority, application Italy, Sept. 21, 1973, 69784-A/73**
**Int. Cl.² H01R** *43/00*
**U.S. Cl. 29—628** **2 Claims**




**1.** A method of attaching a conductive element to form a terminal to one of the wires of a cable with a plurality of wires, each wire having a conductive core covered by an insulating layer, and an outlet insulating cover holding all said wires together, comprising the steps of:
removing the insulating layer from one end of a wire to which said conductive element is to be attached to form a terminal at a point along the length of the cable,
removing a portion of said outer insulating cover of said cable over a region on either side of said point,
placing said conductive element adjacent said plurality of wires at said point,
covering said wires and said conductive element with hardenable liquid conductive material, and
applying between said conductive element and said one end of said wire to which said element is to be connected a voltage which rises until dielectric breakdown of the insulating layer around said wire occurs and then falls rapidly, said dielectric breakdown of said insulating layer causing perforation of said insulating layer and permitting said conductive liquid material to contact the conductive core of said wire, whereby upon subsequent hardening of said conductive liquid hardenable material a permanent connection of said terminal element to said wire is made.



**3,934,338**
**MULTIPLE BLADE SAFETY RAZOR COMBINATION**
**Paul A. Braginetz, Augusta County, Va., assignor to Philip Morris Incorporated, New York, N.Y.**
**Filed Dec. 11, 1972, Ser. No. 313,742**
**Int. Cl.² B26B** *21/06*
**U.S. Cl. 30—47** **9 Claims**



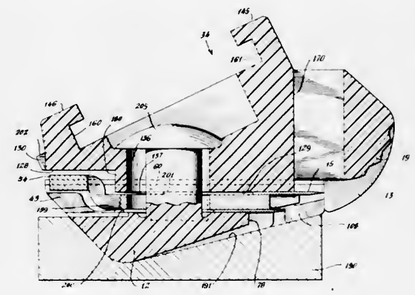
**1.** In a combination a razor head cartridge embodying a cap member, multiple blades, a blade spacer member, and a main platform member, a first pair of opposed blades being arranged under said cap member each extending radially outwardly from the midportion of the cap member, a second pair of blades similarly arranged with the spacer member positioned between the pairs of blades, the platform member being arranged adjacent the second pair of blades, said cap member having a pair of spaced downwardly projecting lugs positioned at each side of the midportion of the cap member to limit initially the rearward position of the respective said first blade the final radial outward position of the blade being determined by shoulder stop means on the cap member, each said lugs being nested in a depression in the spacer member, each said depression providing a shoulder to limit initially the rearward position of the respective said second blade the final radial position of the blade being determined by a shoulder stop means in the cap member, and a plurality of posts clamping together the said members and blades as a rigid assembly.

**2.** In a multiple blade razor having a cap member and a platform member with an intervening pair of blades in superposed relation and a spacer member between the blades and locking posts connecting the cap member and platform member and extending through openings in the spacer member and the blades, said spacer member having an annular flat reinforcing ring around each post opening of greater thickness than the adjacent main portions of the sheet, and a finger extending outwardly between the blades from each said ring and merging therewith.

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**3,934,339**
**RAZOR BLADE CARTRIDGE**
**Jan Dawidowicz, Fairfield, and Frank A. Ferraro, Trumbull, both of Conn., assignors to Warner-Lambert Company, Morris Plains, N.J.**
**Continuation of Ser. No. 191,665, Oct. 22, 1971, Pat. No. 3,783,510. This application Sept. 21, 1973, Ser. No. 399,587**
**Int. Cl.² B26B** *21/22*
**U.S. Cl. 30—47** **5 Claims**

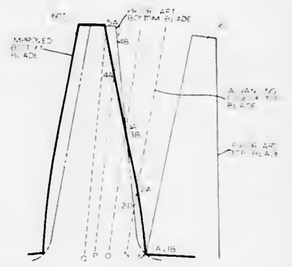
**1.** A razor blade cartridge comprising:
an elongated plastic blade seat member having an elongated guard surface defining a front surface of said blade seat member;
a bottom blade having an elongated cutting edge and a rear edge opposite said bottom blade cutting edge, said bottom blade being located on said blade seat member with said bottom blade cutting edge spaced upwardly and rearwardly of said guard surface;
an elongated spacer member located on said bottom blade;
a top blade having an elongated cutting edge and a rear edge opposite said top blade cutting edge, said top blade cutting edge being spaced upwardly and rearwardly of said bottom blade cutting edge;
a cap member located on said top blade including means extending downwardly from said cap member in abutting engagement with the rear edge of said top blade for preventing rearward movement;
means including a first pair of spaced stop surfaces for abutting engagement with said bottom blade cutting edge;
means including a second pair of spaced stop surfaces for abutting engagement with said top blade cutting edge;



a pair of spaced elements integrally molded with and extending upwardly from said blade seat member beneath said spacer member and in abutting engagement with the rear surface of said bottom blade for preventing rearward movement of said bottom blade;
means for permanently bonding said bottom blade, said spacer member, and said top blade between said blade seat member and said cap member; and
means for releasably engaging a cartridge holder.

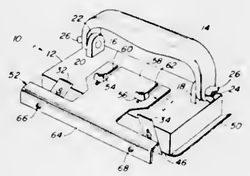
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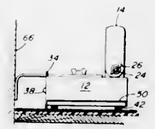
**3,934,340**
**CUTTING BLADE EDGE CONSTRUCTION FOR MECHANICALLY ACTUATED SHEARS**
**John E. Jones, and Lynn D. Lineback, both of Danville, Va., assignors to Disston, Inc., Pittsburgh, Pa.**
**Filed Aug. 23, 1974, Ser. No. 500,140**
**Int. Cl.² B26B** *19/06*
**U.S. Cl. 30—220** **18 Claims**



**1.** A cutting apparatus comprising:
a. a mechanical drive source;
b. mounting means for said drive source; and
c. a pair of planar cutting blades having a predetermined number of coacting cutting edges for cutting material caught therebetween, said blades being mounted on said mounting means for repetitive relative movement and having a drive connection to said drive source whereby the respective coacting edges of said blades move in a repetitive angular relation and repetitively execute cutting actions, said coacting edges being shaped such that during each such cutting action the contacting cutting point between each pair of coacting edges moves at a uniform speed.

**3,934,341**
**CARPET CUTTING TOOL**
**Larry A. Carlson, 64 Cheyenne Drive, Nashua, N.H. 03060**
**Filed Oct. 9, 1974, Ser. No. 513,317**
**Int. Cl.² B26B** *29/00*
**U.S. Cl. 30—287** **1 Claim**





**1.** A tool for cutting installed carpets and the like along a line parallel to a baseboard or the like, comprising

a. a body portion having a substantially flat horizontal upper face and a substantially flat vertical front face,

b. a handle connected to the upper face ofsaid body portion and being angularly adjustable with respect to said body portion about an axis parallel to said front face,

c. a pair of screw -mounted thin, flat cutting blades detachably mounted flat against the front face of said body portion in a substantially vertical plane and each having a cutting edge thereof extending downwardly from the body portion in diagonally different directions for cutting engagement with said carpet,

d. a smooth flat plate formed with upwardly curved ends mounted to the bottom of said body portion,

e. a plurality of rollers mounted in spaced relation along the bottom of said body portion for rotation about parallel horizontal axes perpendicular to said front face,

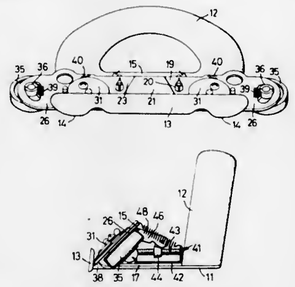
f. adjustable guide means extending from said body portion in spaced parallel relation to said cutting blades for sliding engagement with said baseboard,

g. said guide means including a horizontally disposed flat leg portion adjustably connected to the upper face of said body portion and extending therefrom perpendicular to said front face,

h. said guide means also including a verically disposed straight, smooth, flat wall at the free end of the said leg portion and perpendicular thereto for sliding engagement with said baseboard, said wall being substantially coextensive with and parallel to said front face and formed with an opening in registration with each cutting element,

i. cooperating measuring indicia on the leg portion of said guide means and on the upper face of said body portion for measuring the spacing between the wall of said guide means and said cutting blades.

**3,934,342**
**CARPET CUTTER**
**Katsumi Matsushita, No. 14-14, 1-cho Kaorigaoka, Sakai, Osaka, Japan**
**Filed Aug. 30, 1974, Ser. No. 501,866**
**Int. Cl.² B26B** *29/00*
**U.S. Cl. 30—293** **3 Claims**



**1.** A carpet cutter, comprising in combination:

a. a horizontal base plate (**11**) with one and another terminal portions, said base plate being slidable along a carpet;

b. a grip (**12**) vertically mounted along said one terminal portion of said base plate;

c. a sidewise extending guide plate (**13**) disposed vertically at substantially a right angle to said base plate (**11**) at said other terminal portion, said guide plate (**13**) being substantially parallel to said grip (**12**), one side of said guide plate facing said grip (**12**), said guide plate (**13**) being longer than and extending outwardly from the base plate (**11**) at both sides thereof;

d. an oscillatable plate (**15**) with a lower terminal axially connected to said base plate (**11**) at the immediate vicinity of said guide plate (**13**) on said grip facing side;

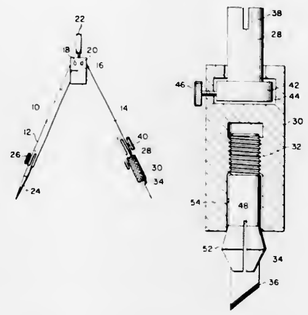
e. a blade holding plate (**19**) with a terminal section fixed to said oscillatable plate (**15**) at said side facing the guide plate (**13**), a blade fitting plate (**20**) connected sidewise to said terminal section, said blade fitting plate (**20**) holding a blade (**22**) with a cutting portion to the blade holding plate (**19**) at said terminal section in the position of having the blade (**22**) overlapping, a space (**38**) for allowing the insertion of a carpet defined between the guide plate (**13**) on the grip facing side and the blade cutting portion;

f. a wheel member (**35**) disposed on said blade fitting plate (**20**) outwards of the blade cutting portion at the grip facing side thereof, said wheel member (**35**) serving to press the carpet at the cutting portion thereof by rolling thereover while cutting the carpet; and,

g. a rotatable spiral shaft (**43**) and a spiral cylinder (**44**) with a link (**46**) disposed between the oscillatable plate (**15**) and the grip (**12**) on said base plate (**11**), said oscillatable plate (**15**) being connected to said spiral cylinder (**44**) by said link (**46**) so that the angle of said oscillatable plate (**15**) to said base plate (**11**) is adjustable.

**3,934,343**
**DEVICE FOR CUTTING CIRCLES**
**Jacek Witeckl, Downsview, Canada, assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest**
**Filed Oct. 30, 1974, Ser. No. 519,119**
**Int. Cl.² B26B** *5/00*; **B43L** *9/02*
**U.S. Cl. 30—310** **3 Claims**

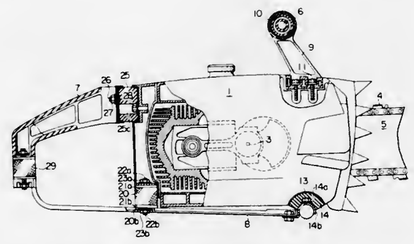
**1.** A device for cutting circles comprising: a pair of elongated legs; pivot means connecting upper ends of said legs for swinging movements; a pointer carried in the lower end of one of said legs; blade holding means; means for mounting said blade holding means to a lower end of the other of said legs for rotation about the axis of said other leg; a pointed generally planar blade fixedly carried projecting from said blade holding means; said blade holding means having a bore in the lower part thereof, said bore having a threaded upper portion and an unthreaded lower portion, a slitted member having slits at a lower portion thereof for fixedly carrying said blade and outwardly flaring surfaces in the area of said slits, said slitted



member further having an upper threaded portion for connection to said threaded portion of said bore, the screwing of said threaded portions together resulting in tightening said flaring surfaces against the unthreaded lower portion of said bore thereby clamping said blade in said slits.

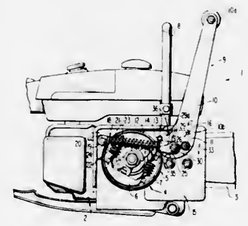


**3,934,344**
**PORTABLE CHAIN SAW**
**Hisashi Inaga, Tokyo, Japan, assignor to Kioritz Corporation, Tokyo, Japan**
**Filed Oct. 7, 1974, Ser. No. 512,903**
**Claims priority, application Japan, Mar. 28, 1974, 49-33953**
**Int. Cl.² B23D** *57/02*; **B27B** *17/00*
**U.S. Cl. 30—381** **5 Claims**



**1.** A portable type chain saw having separate front and rear handles which are attached respectively to front and rear portions of the main body of the chain saw engine in a manner that mechanical vibration caused by the engine-operation may be absorbed characterized in that said front handle is attached to a front portion of the main body of the chain saw engine through vibration dampers of rubber or the like elastomeric material, said rear handle is attached to an upper rear wall of said main body through vibration dampers of rubber or the like elastomeric material; said front and rear handles are connected together by means of a rigid unitary connector extending longitudinally of said main body at the lower side thereof; said connector having a front end portion attached to a lower portion of said front handle, an intermediate portion attached to a lower rear portion of said main body through vibration damper of rubber or the like elastomeric material and a rear end portion extending rearwardly beyond said main body and attached to said rear handle through vibration damper of rubber or the like elastomeric material.

**3,934,345**
**SNAP-ACTING OVER-CENTER CHAIN SAW SAFETY BRAKE AND METHOD OF OPERATION THEREOF**
**Sidney Hirschkoff, Los Angeles, Calif., assignor to McCulloch Corporation, Los Angeles, Calif.**
**Filed Oct. 15, 1974, Ser. No. 515,046**
**Int. Cl.² B23D** *57/02*; **B27B** *17/00*
**U.S. Cl. 30—381** **8 Claims**



**1.** In a chain saw including
chain saw engine means;
chain saw cutter chain means;
chain saw driving means operable to provide a driving connection between said chain saw engine means and said chain saw cutter means, said chain saw driving means including
centrifugally responsive, clutch shoe means operable to be driven by said engine means, and
clutch drum means drivingly connected with said cutter chain means and operable to be centrifugally engaged by said clutch shoe means; and
chain saw hand grip means;
the improvement entailing a chain saw safety brake comprising:
safety handle means operable to be engaged by movement of a chain saw operator's hand away from said chain saw hand grip means;
pivot means pivotally supporting said safety handle means on said chain saw;
brake band means at least partially encircling clutch drum means and operable to be disposed in
a first, relatively expanded, brake band condition permitting movement of said clutch drum means, and
a second, relatively constricted, brake band condition engaging and substantially preventing movement of said clutch drum means;
anchor means connected with one end of said brake band means and securing said one end of said brake band means to said chain saw;
connecting means securing another end of said brake band means to a portion of said safety handle means, spaced from said pivot means, such that movement of said safety handle means away from said hand grip means and a first safety handle means position providing said first, relatively expanded brake band condition will move said connecting means relative to said anchor means and position said safety handle means at a second safety handle means position so as to constrict said brake band means and dispose said brake band means in said second, relatively constricted, condition;
biasing means comprising
first mounting means secured to one of said chain saw and said safety handle means

coil spring means engaging one end of said first mounting means,

guide rod means extending telescopingly through said coil spring means and said first mounting means, and

second mounting means biasingly engaging another end of said coil spring means and connected with said guide rod means;

over-center connecting means operably interconnecting said biasing means and said safety handle means and including

cam surface means carried by the other of said safety handle means and said chain saw and extending transversely of a radius of said safety handle pivot means on opposite sides of said radius,

cam follower means carried by said second mounting means and disposed in sliding engagement with said cam surface means, with said coil spring means biasingly urging said cam follower means into said sliding engagement with said cam surface means,

said cam follower means, when engaged with a first portion of said cam surface means on one side of said radius being operable to resiliently bias said safety handle means towards said hand grip means and said first safety handle means position, effecting said first, relatively expanded condition of said brake band means,

said cam follower means, when engaged with a second portion of said cam surface means on another side of said radius, being operable to resiliently bias said safety handle means toward said second safety handle means position effecting said second, relatively constricted condition of said brake band means,

said biasing means cooperating with said safety handle means, in said first, safety handle means position of engagement between said cam follower means and said cam surface means, to provide a relatively shorter lever arm through which said biasing means acts resiliently on said safety handle means to resiliently bias said safety handle means toward said hand grip means and said first, safety handle means position,

said biasing means cooperating with said safety handle means, in said second, safety handle means position of engagement between said cam follower means and said cam surface means, to provide a relatively longer lever arm through which said biasing means acts resiliently on said safety handle means to resiliently bias said safety handle means away from said hand grip means and toward said second, safety handle means position,

first, accelerator lever means carried by said other of said safety handle means and said chain saw, disposed on one side of said radius and said second mounting means, and operable to engage said one side of said second mounting means at a location spaced from said cam follower means, said first accelerator lever means being operable to induce movement of said cam follower means relative to said cam surface means toward said second portion of said cam surface means in response to pivoting movement of said safety handle means toward said second safety handle means position at a faster rate than would result only from direct sliding engagement of said cam follower means and said cam surface means during such pivoting movement, and

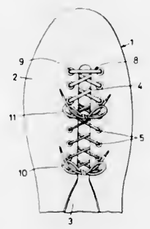
second accelerator lever means carried by said one of said safety handle means and said chain saw, disposed on another side of said radius and said second mounting means and operable to engage said other side of said second mounting means at a location spaced from said cam follower means, said second accelerator lever means being operable to induce movement of said cam follower means relative to said cam surface means toward said first portion of said cam surface means in response to pivoting movement of said safety handle means toward said first safety handle means position at a faster rate than would result only from direct engagement of said cam follower means and said cam surface means during such pivoting movement.

**3,934,346**

## SPORTING SHOES

**Kyozo Sasaki, No. 4-8, Rokuro kuso-cho, and Minoru Murayama, No. 18-203, 8-chome, Saido-cho, both of Ashiya, Hyogo, Japan**

**Filed Dec. 12, 1974, Ser. No. 531,853**
**Int. Cl.² A43B** *11/00*
**U.S. Cl. 36—2.5 R** **3 Claims**



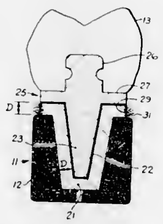

1. A shoe, including an instep with a plural number of elongated shoe strings, said strings having a middle section and being so arranged as to be tightened across said instep at a plurality of locations, and, fastening means at said middle portion combining said strings in parallel.

**3,934,347**

## DENTAL PROSTHETIC STRUCTURE AND METHOD

**Harvey Lash; Morris Kibrick, both of Palo Alto, and Shirl S. Fox, Menlo Park, all of Calif., assignors to Lash Oral Implants, Palo Alto, Calif.**

**Filed Jan. 14, 1975, Ser. No. 540,949**
**Int. Cl.² A61C** *13/00*
**U.S. Cl. 32—10 A** **16 Claims**




1. Apparatus comprising:

a hollow ceramic member having a porous exterior surface for interfacing with bone tissue;

mounting means for securing a dental prosthetic device; and

means including a resilient material disposed in the interior portion of said hollow member for suspending said mounting means in spaced-apart relation with the interior surface of said hollow member, said suspending means being resilient to multidirectional masticatory forces applied to said mounting means.

**3,934,348**

## METHOD OF FORMING A PORCELAIN CROWN

**Bora Janjic, 541 Lincoln Road, Miami Beach, Fla. 33139**

**Filed Jan. 2, 1975, Ser. No. 537,967**
**Int. Cl.² A61C** *5/08*
**U.S. Cl. 32—12** **6 Claims**

1. A method for forming a dental crown on a crown model made from a dentist's impression, including the steps of forming male and female dies on the model in hard dental plaster, applying a 0.002 inch gauge platinum film to the male die in form fitting relation, brushing a layer of gold crust on the platinum film, baking the crown, brushing a second layer of gold crust on the crown, baking the crown, applying a regular




porcelain to the crown conformed to the contour of the female die, baking the crown, brushing a glazing powder on the crown, and finally baking the crown.

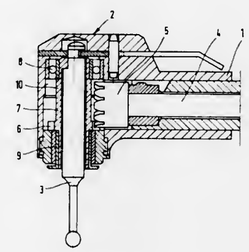


**3,934,349**

## DENTAL HANDPIECE OR ELBOWS FOR MOUNTING DENTAL TREATMENT TOOLS

**Eugen Eibofner, Mettenberg, Germany, assignor to Kaltenbach & Voigt, Biberach an der Riss, Germany**

**Filed Nov. 5, 1973, Ser. No. 412,722**
**Claims priority, application Germany, Nov. 15, 1972, 2256059**
**Int. Cl.² A61C** *1/10*
**U.S. Cl. 32—27** **4 Claims**




1. In a dental handpiece having a headpiece; a guide sleeve formed of hard metal; and means rotatably supporting said guide sleeve within said headpiece, said guide sleeve being adapted to support the shank of a dental treatment tool interiorly thereof, the improvement comprising; a coating formed essentially of chromium and metal carbide being provided on at least the annular inner wall surface of the guide sleeve, said coating having a hardness of at least 1800 Vickers hardness at a test load of 0.2 kg.

**3,934,350**

## PHOTO CROPPING DEVICE

**Larry H. Pirnie, Topeka, Kans., assignor to Josten's, Inc., Minneapolis, Minn.**

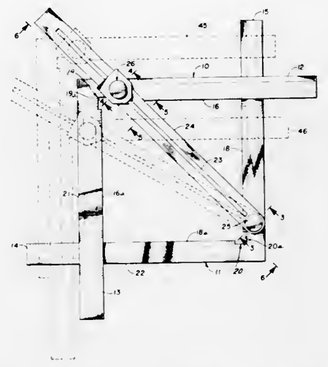
**Filed Aug. 22, 1974, Ser. No. 499,581**
**Int. Cl.² B43L** *13/00*
**U.S. Cl. 33—94** **7 Claims**

1. A geometrical instrument for laying out and proportioning photographs and the like comprising:

a pair of angle members positioned in overlapping relationship, each of said angle members having a pair of straight edges forming an included angle of less than 180°;

a strut extending between said pair of angle members and connected with each of said angle members at a point other than the apex of said included angle such that said included angle is visually exposed, said strut permitting limited selective relative movement between said pair of angle members; and

an inset corner at the apex of each of said included angles to enable one employing the instrument to make cropping



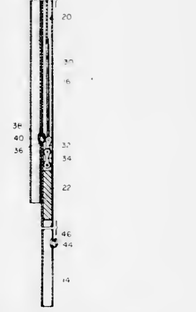
marks which accurately reflect the specific area of the photographs and the like, framed by the instrument.

**3,934,351**

## FOLDABLE MEASURING STICK

**John F. Sullivan, 14734 Lassen St., Mission Hills, Calif. 91345**

**Filed Sept. 16, 1974, Ser. No. 506,045**
**Int. Cl.² G01B** *3/06*
**U.S. Cl. 33—105** **4 Claims**



1. A foldable measuring device comprising:

a pair of members, one of said members including a hollow chamber;

connecting means for interlocking together said first and said second members when said members are in an abutting longitudinal alignment;

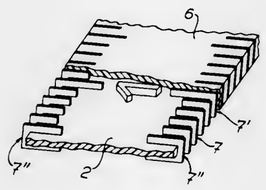
first means connected to both said first and second members are located within said hollow chamber, with said members interlocked together said first means exerting a force tending to maintain said members in said interlocked relationship, said first means including elastic means to permit separating of said members and locating of such in an abutting side by side relationship; and

a locking means interconnecting said members when said members are located in said abutting side by side relationship, said locking means to retain said members in said side by side position, said elastic means cooperating with

said locking means to maintain the interconnected side by side position of said members.

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**3,934,352**
**LINEAR MEASURING INSTRUMENT**
**Michel Quenot, Besancon, France, assignor to Stanley-Mabo, Besancon, France**
**Filed Feb. 27, 1974, Ser. No. 446,318**
**Claims priority, application France, Mar. 6, 1973, 73.7911**
**Int. Cl.² B43L *7/00***
**U.S. Cl. 33—111** **5 Claims**

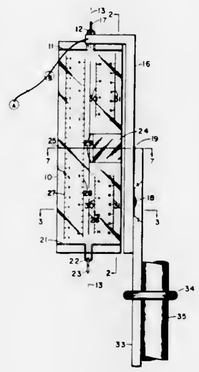


1. A rigid linear measuring instrument comprising an elongated member of plastic material having a planar rectilinear core bounded by substantially parallel longitudinally extending edges and planar top and bottom surfaces, a series of graduation lines and graduating figures spaced along the longitudinal extent of said core, said planar top and bottom surfaces having lines and figures projecting outwardly in relief therefrom, each graduation line being formed by a transverse U-shaped plate, the legs of said plate forming said relief lines on said top and bottom surfaces, and the base of said U-shaped plate further projecting laterally outwardly beyond said longitudinal edge and interconnecting said legs to provide said generally U-shaped configuration, a plastic coating having a color contrasting with said figures and lines enclosing said core and having a depth substantially equal to the relief depth of said figures and lines and the lateral projection of said lines whereby said figures and lines are flush with the outer surface of said coating on both the planar surfaces and longitudinal edges of the measuring instrument.

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**3,934,353**
**SURVEYING INSTRUMENT**
**David C. Haines, 107 "B" St., Salt Lake City, Utah 84103**
**Filed Sept. 19, 1974, Ser. No. 507,474**
**Int. Cl.² G01C *15/00***
**U.S. Cl. 33—262** **6 Claims**

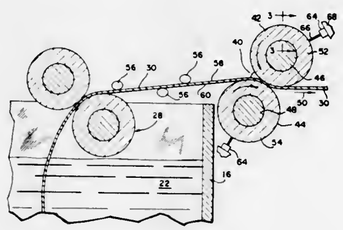
1. A simple surveying instrument comprising a transparent plate; means for suspending the transparent plate from a point on a vertical axis through the center of gravity of said plate; a hairline extending across said plate and being perpendicular to said vertical axis; and a mirrored surface positioned on said plate so that the plane of the mirrored surface is parallel to said vertical axis, said hairline extending across said mirrored surface, whereby when said plate is suspended so that a person can observe the pupil of his eye in said mirrored surface, and the reflection of his pupil is bisected by said hairline, then distant objects observed through said transparent plate which



appear to be in alignment with said hairline are located in the same level as the pupil of the eye of said person.

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**3,934,354**
**DRYING ROLLERS**
**Henry F. Hope, 3192 Huntingdon Road, Huntingdon Valley, Pa. 19006, and Stephen F. Hope, 2548 Wyandotte Road, Willow Grove, Pa. 19090**
**Filed Dec. 17, 1973, Ser. No. 425,075**
**Int. Cl.² F26B *3/00***
**U.S. Cl. 34—9** **13 Claims**



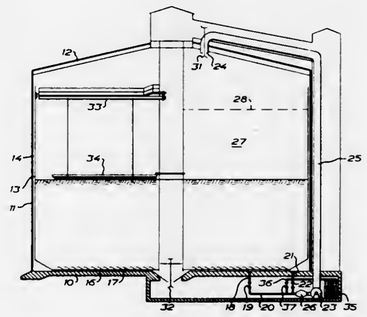
1. The method for removing moisture droplets from the upper and lower surfaces of a photographic plastic film characterized by an emulsion surface of high surface tension, as the wet film carrying the moisture droplets exits from processing equipment including at least one liquid bath and travels in a drying chamber between and in contact with a pair of drying rollers, the improvement which consists in

absorbing the moisture droplets by capillary action into microporous plastic material of at least a million interconnected microscopic pores per square inch covering the rollers, and

removing the dried film from contact with the rollers of the drying apparatus without leaving a droplet track on or marring the emulsion surface.



**3,934,355**
**APPARATUS FOR STORING GRAINS AND OTHER VEGETABLE PRODUCTS**
**Claes Martin Weibull, Hassleholm, Sweden, assignor to Claes Martin Weibull, Hassleholm, Sweden**
**Filed June 4, 1974, Ser. No. 476,266**
**Int. Cl.² F26B *21/06***
**U.S. Cl. 34—46** **6 Claims**



1. A large-capacity silo for storing grains and other vegetable products, comprising

air-tight outer wall, bottom and roof,

means for charging the silo with grains to be stored therein,

means for distributing said grains in the silo,

means for withdrawing said grains from the silo,

an air conditioning unit having an outlet side for supplying to the silo air of controlled moisture content and temperature,

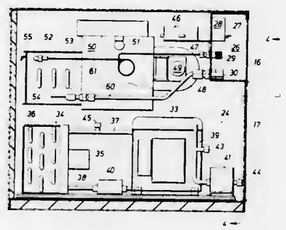
aeration means for causing the supplied air to flow through the grains stored in the silo,

an inner wall defining with said outer wall a space which extends at least over the major part of the boundary surface of the silo, first means for connecting said air conditioning unit to said space between the silo walls,

said aeration means comprising aeration opening means located at the silo bottom and means operable independently of the first means for connecting the outlet side of the air conditioning unit to said aeration opening means.

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**3,934,356**
**TEACHING AID FOR AIR CONDITIONING APPARATUS**
**George W. Bryant, Houston, Tex., assignor to G. M. Brooks Industries, Inc., Houston, Tex.**
**Filed Oct. 10, 1972, Ser. No. 296,001**
**Int. Cl.² G09B *25/02***
**U.S. Cl. 35—13** **18 Claims**



1. Training apparatus, comprising:

a selectively closable portable container for simulating a volume to be air conditioned;

a refrigerant compressor unit having a refrigerant inlet and outlet;

a condenser unit connected to the outlet of said compressor unit and having an outlet which is adapted to be connected to supply condensed refrigerant, said condenser unit removing heat from a refrigerant flowing therethrough which heat is expelled remote from the simulated air conditioned volume in said container;

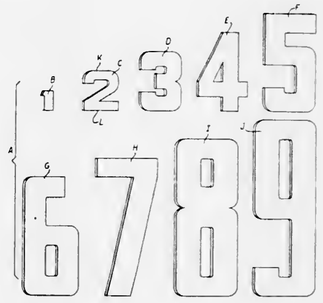
an evaporator unit in said container adapted to be connected to said condenser unit;

air moving means in said container for circulating air in said closed container and forcing air through said evaporator unit for cooling by said evaporator unit, said air moving means being selectively rendered operative; and,

controllable heat load simulation means in said container for heating the air in said container to alter the heat load on the refrigerant circulation system which includes said compressor unit, said condenser unit, and said evaporator unit.

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**3,934,357**
**TEACHING METHOD AND APPARATUS**
**Claude C. Couvillion, 3041 E. Lakeshore Drive, Baton Rouge, La. 70808**
**Filed Aug. 10, 1973, Ser. No. 387,350**
**Int. Cl.² G09B *1/02***
**U.S. Cl. 35—31 G** **5 Claims**



1. Apparatus which includes the provision for utilizing kinesthetic senses to teach arithmetic, said apparatus comprising:

a series of individual, three dimensional, digit-defining cutouts presenting a range of numerals having corresponding distinctive configurations in which each of said cutouts is of a predetermined length relative to that of the other cutouts in said series,

said cutouts being graduated to progressively increase in length from a numeral denoting a low value to a numeral denoting a high value,

the length of each of said cutouts being proportionate to that of the other cutouts in said series with the respective lengths corresponding directly with the numerical value thereof such that a selected group of two or more of said cutouts have a combined length, when placed in an end-to-end relationship, equal to that of the cutout presenting the numeral having a value equal to the sum of the values of said selected group of cutouts,

said cutouts each being provided with top and bottom edges that are straight and in parallelism with each other in order that the accurate placing of said cutouts in said end-to-end relationship is facilitated.

## 3,934,358
## DRIVE APPARATUS FOR INDEPENDENTLY CHANGING THE PHASE OF THE MOON FOR PLANETARIUM

Naohiko Kitano; Katsumi Haseda, and Tamotsu Takahashi, all of Toyokawa, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Nov. 15, 1974, Ser. No. 524,298
Claims priority, application Japan, Nov. 26, 1973, 48-133302
Int. Cl.² G09B 27/00
U.S. Cl. 35—42.5 2 Claims



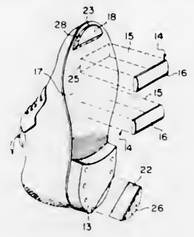

1. A planetarium apparatus comprising:
- a moon projector including an element for changing the phase of the moon, the moon projector being operable to bring the image of the moon projected on a dome into annual motion when rotated by the operation of an annual motion drive shaft and to stop the image of the moon on the dome when the drive shaft stops,
- a gear system for transmitting a drive force to the moon phase changing element to drive the element,
- an annual motion drive system for driving the annual motion drive shaft,
- a drive system for independently changing the phase of the moon provided independently of the annual motion drive system,
- differential gear means so disposed as to selectively transmit the operation of the annual motion drive system or of the moon phase independently changing drive system to the gear system, and
- switching means for sclectively operating the annual motion drive system or the moon phase independently changing drive system.

## 3,934,359
## REINFORCING ELEMENTS FOR SHOE SOLES AND HEELS

John Fletcher, New York, N.Y., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed Aug. 19, 1974, Ser. No. 498,436
Int. Cl.² A43B 13/22
U.S. Cl. 36—73 7 Claims

1. A plurality of reinforcing elements adapted to be affixed to a sole and a heel of a shoe for providing protection to said sole and heel, and providing a means for walking easily in a soft area, which comprises:
- a. a toe positioned sole reinforcement element affixed onto a toe portion of said sole;
- b. a heel reinforcing element fitted into a cut out segment of said heel
- c. a pair of center sole reinforcing elements, one of said pair of said center sole reinforcing elements mounted transversely across said sole just forwardly of a bend area of said sole, the other of said pair of said center sole reinforcing elements mounted transversely across said sole just rearwardly of said bend area of said sole, each said center sole reinforcing element having a rectangular box

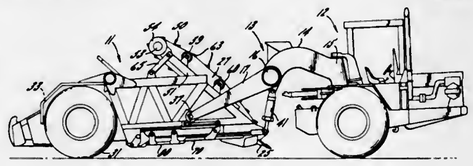



shaped with a rocker shaped lateral base, and said lateral base adapted to engage said ground.

## 3,934,360
## ELEVATING-TYPE SCRAPER HAVING FORWARDLY SLIDING FLOOR AND FULL-WIDTH PIVOTED STRIKER

John H. Hyler, Peoria, Ill., assignor to Westinghouse Air Brake Company, Pittsburgh, Pa.

Filed Oct. 31, 1974, Ser. No. 519,534
Int. Cl.² E02F 3/85
U.S. Cl. 37—8 13 Claims



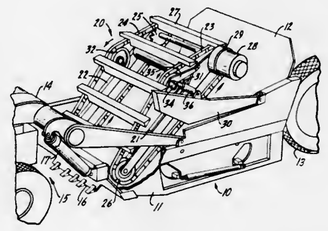
1. In an elevating-type scraper for earth moving purposes, the combination comprising an open-fronted bowl formed of a pair of spaced vertical side sheets and a fixed back wall, ground wheels for supporting the bowl and mounted behind the back wall, a scraper blade having a blade base of triangular section extensive in the fore-and-aft direction with a generally horizontal underside, the blade base extending transversely between the side sheets at the front edge thereof and rigidly secured at its ends to the side sheets for bracing the same with respect to one another, a tractor-supported draft frame, a pair of draft members pivotally secured at their rear ends to the side sheets and extending forwardly and upwardly for rigid connection at their front ends to the draft frame, actuator means coupled to the front end of the bowl for supporting it at a predetermined level with respect to the draft frame so that the blade cuts into the ground, a driven endless elevator positioned at the front end of the bowl having its lower end in proximity to the blade and inclined upwardly and rearwardly for conveying loosened soil from the blade into the bowl, a movable floor member enclosing the bottom of the bowl rearwardly of the blade base and extending transversely to bridge the space between the side sheets, the side sheets of the bowl having horizontal rails, suspension means on the movable floor member for engaging the rails for horizontal movement of the floor member, actuator means for moving the floor member from its enclosing position at the rear of the blade base forwardly to an open out-of-the way position adjacent the blade and nested under the blade base in substantial register therewith, the blade being extended downwardly in front of the nested floor member to protect the same, a strike-off member horizontally pivoted on the bowl and extending transversely so as to bridge the space between the side sheets to the rear of the floor member, the strike-off member having a striker blade at the forward edge thereof and pivoted for movement between a horizontal enclosing position and a generally vertical striking position, and means for moving the strike-off member to its horizontal position incident to movement of the floor member to its enclosing position.



## 3,934,361
## IDLER CONSTRUCTION FOR EARTH-MOVING ELEVATOR

Clifford E. Johnson, Peoria; Dale O. Freeburg, East Peoria, and John H. Hyler, Peoria, all of Ill., assignors to Westinghouse Air Brake Company, Pittsburgh, Pa.

Filed Oct. 7, 1974, Ser. No. 512,729
Int. Cl.² E02F 3/62; B60P 1/36
U.S. Cl. 37—8 1 Claim



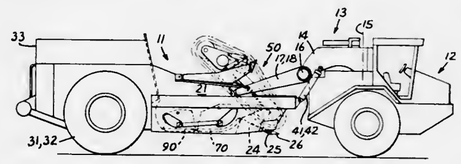
1. In an earth moving elevator for use with an open-fronted, tractor-drawn scraper bowl having
- a frame including a pair of frame members which extend upwardly and rearwardly at the front of the bowl, and which have means at the upper end for pivoting to the bowl,
- a pair of endless chains consisting of straight links pinned together and carrying transversely arranged flights, the chains having drive sprockets at the upper end of the frame and trained about rollers at the lower end of the frame so that the flights sweep the soil loosened by the blade backwardly into the bowl,
- a pair of chain idler wheels mounted upon the respective frame members intermediate the ends thereof, the idler wheels being generally coaxial and aligned with the respective chains for supporting the latter in paths of return movement spaced from the frame members,
- and means for pressing the idler wheels outwardly with respect to the frame,
- the improvement whereby relatively small idler wheels, having a radius approximately equal to the distance between chain link pin centers, are employed while minimizing noise resulting from the hammering action of successive links of the chain against surfaces of the idler wheels and while minimizing the resulting wear of said chain and said idler wheels,
- consisting of each of the chain idler wheels having an endless, relatively thick and cylindrically surfaced rim of durable material having a durometer rating in the region of 75 to 95 on the A scale.

## 3,934,362
## ELEVATING-TYPE SCRAPER HAVING FORWARDLY SWINGABLE FLOOR SECTION

John H. Hyler, Peoria, Ill., assignor to Westinghouse Air Brake Company, Pittsburgh, Pa.

Filed Nov. 15, 1974, Ser. No. 523,968
Int. Cl.² B60P 1/36
U.S. Cl. 37—8 23 Claims

1. In an elevating type scraper for earthmoving purposes, the combination comprising an open-fronted bowl formed of a pair of spaced vertical side sheets and a fixed back wall, ground wheels for supporting the bowl and mounted behind the back wall, a scraper blade extending between the side sheets at the front edge thereof, a tractor-supported draft frame, a pair of draft members pivotally secured at their rear ends to the side sheets and extending forwardly and upwardly having rigid connection at their front ends to the draft frame, means including an actuator interposed between the draft frame and the front end of the bowl and having control means for determining the degree of tilt of the bowl about its supporting wheels and hence the depth of cut of the blade, a driven endless elevator positioned at the front end of the bowl having its lower end in proximity to the blade and inclined upwardly and rearwardly for conveying loosened soil from the blade into the bowl, a front floor member and a rear floor member, the members being arranged edge to edge for enclosing the bottom of the bowl between the blade and the rear wall, with each of the floor members extending transversely so as to bridge the space between the side sheets, each of the floor members being in the form of a cradle having a pair of side plates secured to the lateral ends thereof and arranged flatly adjacent and within the respective side sheets, front and rear

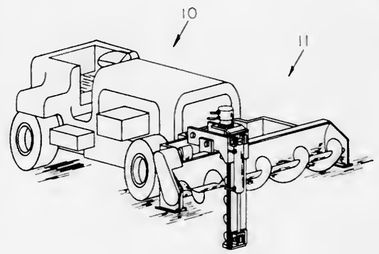



means for pivoting the side plates to the side sheets so that each floor member is pendulously supported for fore-and-aft swinging movement about a transversely extending axis, actuator means coupled to the floor members for moving them between closed and open positions, the front pivot means being so located that when the front floor member is swung forwardly to open position it nests in a generally vertical position adjacent the lower end of the elevator, the rear pivot means being so located that when the rear floor member is swung rearwardly to open position it nests in a generally vertical position adjacent the rear wall of the bowl so that substantially the entire bottom area of the bowl is available for dumping of the material in the bowl, the rear floor member having an associated straight striker blade extending substantially the width of the bowl and projecting downwardly from the bowl along the rear edge thereof to a strike-off position when the rear floor member is in its open position for leveling the material dumped from the bowl.

## 3,934,363
## TRENCH BACK FILLING AND COMPACTING APPARATUS

Russell L. McMurray, R.R. No. 2, Du Quoin, Ill. 62832

Filed Aug. 30, 1974, Ser. No. 502,004
Int. Cl.² E02F 5/04, 5/22
U.S. Cl. 37—82 7 Claims

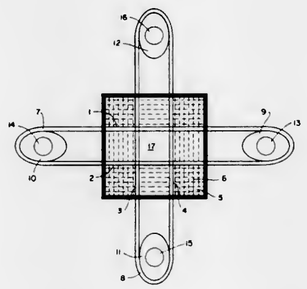



1. An apparatus for forcing dirt along opposite sides of a trench into the trench and then compacting the dirt within the trench comprising:

a frame;
a vertical auger rotatably mounted on said frame;
a horizontal auger rotatably mounted to said frame and including a first flight spiraling toward said vertical auger and a second flight spiraling toward said vertical auger from a side of said vertical auger opposite said first flight to propel dirt from opposite sides of said trench toward said vertical auger, said frame including a back-up wall positioned adjacent said horizontal auger forcing dirt into said horizontal auger, said frame further including another wall positioned adjacent said vertical auger forcing dirt into said vertical auger;
first means connected to said vertical auger and said horizontal auger operable to rotate said horizontal auger propelling dirt into said trench and to rotate said vertical auger to compact dirt within said trench;
second means connected to said frame and said vertical auger operable to raise and lower said vertical auger into and out of said trench.

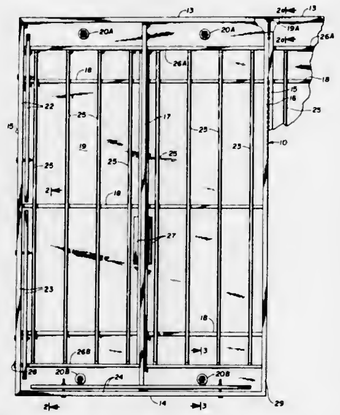
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**3,934,364**
**DISPLAY DEVICE FOR VARYING THE SHAPE AND CROSS-SECTION OF A RECTANGULAR AREA**
**Hans-Robert Kuhn, Kiel, Germany, assignor to Electroacustic GmbH, Kiel, Germany**
**Filed Nov. 12, 1973, Ser. No. 415,020**
**Claims priority, application Germany, Nov. 15, 1972, 2255904**
**Int. Cl.² G09F *11/00***
**U.S. Cl. 40—28 R** **3 Claims**



1. A display device having a centrally disposed rectangular area of variable shape and cross-section, a pair of movable line markers defining the upper and lower horizontal boundaries of said rectangular area, another pair of movable line markers defining the right and left vertical boundaries of said rectangular area, means for concurrently moving said pair of horizontal line markers to vary the vertical distance between said horizontal line markers, means for concurrently moving said pair of vertical line markers to vary the horizontal distance between said vertical line markers whereby the rectangular area of desired shape and cross-section is attained, said line markers comprising endless stretchable belts said means for concurrently moving said pair of horizontal line markers comprising two rotatable elliptical cams placed horizontally opposite each other said horizontal line marker belts being mounted on said horizontally displaced cams whereby rotation of said horizontally displaced cams induces variation in vertical distance between said horizontal line markers, and said means for moving said pair of vertical line marker belts comprising two rotatable elliptical cams placed vertically opposite each other said vertical line marker belts being mounted on said vertically displaced cams whereby rotation of said vertically displacing cams induces variation in horizontal distance between said vertical line markers.

**3,934,365**
**SIGN FRAME**
**Clinton L. Stein, and Dennis D. Holien, both of Watertown, S. Dak., assignors to Esco, Inc., Watertown, S. Dak.**
**Continuation-in-part of Ser. No. 334,631, Feb. 22, 1973, abandoned. This application June 17, 1974, Ser. No. 479,813**
**Int. Cl.² G09F *7/00***
**U.S. Cl. 40—125 G** **14 Claims**



1. A relatively large scale sign comprising:
a sign frame having a plurality of edges and being comprised of a plurality of sign frame modules connected together to form said sign frame;
a single flexible facing material having a shape and dimensions approximately that of said sign frame extending over said plurality of frame modules and covering at least one face of said sign frame, said facing material being supported by said sign frame about its periphery and having an edge corresponding to each edge of said sign frame;
a facing material gripping means connected with each edge of said sign frame for gripping the corresponding edge of said facing material, the position of at least two of said gripping means being adjustable relative to said frame to tension said facing material; and
means for adjusting the position of said adjustable gripping means relative to said sign frame for tensioning said facing material.

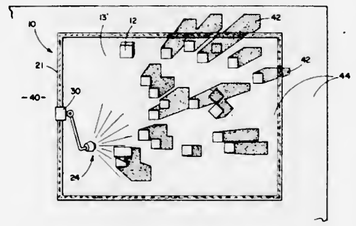
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**3,934,366**
**SYSTEM FOR PRODUCING VARIABLE STATIC LIGHT DISPLAYS**
**Robert Reiser, 9014 Melrose, Los Angeles, Calif. 90069**
**Filed Mar. 6, 1974, Ser. No. 448,540**
**Int. Cl.² G09F *13/00***
**U.S. Cl. 40—130 B** **11 Claims**

1. A system for producing a variety of different static light displays comprising:
a plurality of three-dimensional colored image-producing elements comprised of planar surfaces;
a base having an image-surface;
means for removably holding said image-producing elements in a plurality of different stationary positions against said base surface in a manner limiting movement of said elements along said base surface, said image-producing elements extending outwardly from said base surface, said image-producing elements each having at least a colored, translucent portion which defines a generally planar exterior surface, said portions being spaced from said base surface and colored other than black or white; and



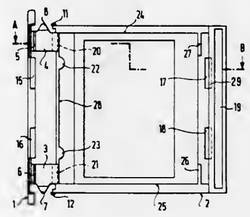
a single light source means associated with and positioned relative to said image-producing elements and said base surface so as to project a diverging beam of light, portions of said beam passing directly from the single light source means, striking said planar exterior surfaces of said translucent colored portions of the elements, passing through



said portions, and continuing on to strike said base surface to produce colored images on said base surface, other portions of said light beam passing directly from said light source means past said elements for a substantial distance to either side of said elements to directly strike said base surface.

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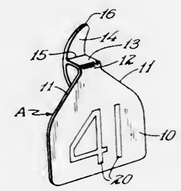
**3,934,367**
**EXCHANGEABLE FRAME FOR TRANSPARENCIES**
**Otto Max Philipp, Eichenstrasse 15, D-8900 Augsburg-Haunstetten, Germany**
**Filed Mar. 21, 1974, Ser. No. 453,514**
**Claims priority, application Germany, Mar. 30, 1973, 2316010**
**Int. Cl.² G09F *1/12***
**U.S. Cl. 40—152** **6 Claims**



1. A frame for transparencies, comprising:
a monolithic top frame means, bottom frame means and a connecting plate means therebetween;
first and second hinge means for permitting a relative pivoting between said connecting plate means, said bottom frame means and said top frame means;
first fastening means for fastening said connecting plate means in a parallel relationship to said top frame means to prevent a relative pivoting between said top frame means and said connecting plate means about said first hinge means; and
second fastening means coaxial with said second hinge means for additionally fastening said connecting plate means to said top frame means and permitting a relative pivoting between said connecting plate means and said bottom frame means whereby when said connecting plate means is fastened to said top frame means by said first and second fastening means, said connecting plate means and said top frame means will move as a unit relative to said bottom frame means about the axis of said second hinge means and releasable locking means for locking said top frame means in a parallel relationship to said bottom frame means, said locking means being located along an edge of said parallel connected top and bottom frame means which is parallel to said axis of said second hinge means but remote therefrom.

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**3,934,368**
**MARKING TAG**
**Donald David Fearing, 808 E. Geranium, St. Paul, Minn. 55106**
**Continuation-in-part of Ser. No. 216,489, Jan. 10, 1972, abandoned. This application May 22, 1974, Ser. No. 472,085**
**Int. Cl.² G09F *3/04***
**U.S. Cl. 40—301** **1 Claim**



1. A unitary livestock identification ear tag which can be readily folded from a normal configuration to a compact configuration for insertion into an animal's ear, following which it resiliently returns to said normal configuration for effective retention into place, said tag comprising an elongated flat body portion adapted to receive identification indicia, a neck section resiliently hinged along one of its edges to an edge of said body portion with said one edge defining a first transverse junction, said neck section extending substantially perpendicular to said body portion in said normal configuration, said neck section being thin and substantially flat in cross-section and being of a length sufficient, but not greatly exceeding, the length necessary to accommodate the thickness of an animal's ear, an elongated anchoring head substantially concave-convex from end to end and substantially equal in width to said neck section resiliently hinged intermediate the opposed ends of said anchoring head to the other edge of said neck section along a secod transverse junction substantially parallel to said first junction, said anchoring head extending only in two directions from said second junction substantially normal to said neck section and substantially parallel to said body portion in said normal configuration, the convex side of said head having a smaller radius of curvature than the opposite surface, whereby the thickness of said anchoring head is greater at said second junction than at the ends of said head, said anchoring head having opposed ends which are rounded sufficiently to engage an animal's ear to prevent unnecessary abuse of the ear during the use of the tag, said neck section being bendable along said first and second transverse junctions to position said neck into substantially coplanar relation to said body portion, and to position one end of said anchoring head substantially parallel to and substantially contacting said neck section and the other end of said anchoring head outwardly beyond said neck section with said other end of said anchoring head substantially in the plane of said neck section, whereby said neck section and said anchoring head are folded into a compact configuration for insertion through a slit in an animal's ear.

### 3,934,369
### VITRO NET BIOXYNTHESIS OF CHLOROPHYLL AND GRANA

**Constantin Anis Rebeiz, Champaign, Ill., assignor to University of Illinois Foundation, Urbana, Ill.**

**Filed Apr. 23, 1974, Ser. No. 463,353**
**Int. Cl.² A01G *1/00***
**U.S. Cl. 47—58** **17 Claims**

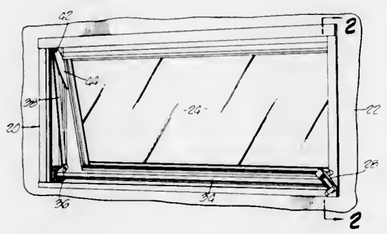
1. A process for in vitro net biosynthesis of chlorophyll and grana, said process comprising the following steps in relative sequence:
   a. irradiating etiolated plant tissue with visible light to precipitate formation of developing chloroplasts in said etiolated tissue;
   b. homogenizing said tissue in an environment having available oxygen and in a buffer comprising biosynthetic cofactors including, coenzyme A, glutathione, potassium, inoganic phosphate, methyl alcohol, magnesium, nicotinamide adenine dinucleotide and adenosine triphosphate, which buffer has a pH of from 7.9 to 8.2, as measured at ambient temperature;
   c. isolating developing chloroplasts from the homogenate of step (b); and
   d. incubating, while irradiating with visible light, said developing chloroplasts in an environment having available oxygen and in a buffer comprising biosynthetic cofactors including, δ-aminolevulinic acid, coenzyme A, glutathione, potassium, inorganic phosphate, methyl alcohol, magnesium nicotinamide adenine dinucleotide and adenosine triphosphate, which buffer has a pH of from 7.6 to 7.8, as measured at ambient temperture, to produce chlorophyll and grana.

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### 3,934,370
### PANEL OPERATING MECHANISM

**Gerald A. Kwan, Pasadena; Walter V. Penkov, Glendale, and Norman E. Roe, Sierre Madre, all of Calif., assignors to Hehr International Inc., Los Angeles, Calif.**

**Filed Jan. 21, 1974, Ser. No. 434,898**
**Int. Cl.² E05F *11/22***
**U.S. Cl. 49—341** **10 Claims**

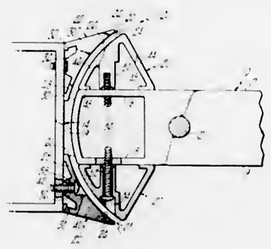


1. an oscillation-resistant movable closure assembly comprising:
   an elongated rod mounted for rotation about its axis of elongation;
   a closure panel mounted adjacent a supporting frame for movement between predetermined open and closed positions relative to said frame upon rotation of said rod;
   an operator mechanism coupled via gearing means to one end of said rod for rotating said rod thereby to effect said movement of said panel, said gearing means having backlash therein which could permit undesired partial movement of said panel, when said rod is operated or when external forces, other than forces exerted by said operator mechanism, are imposed on said panel, and
   a stationary friction pad in pressure engagement with said rod at a location displaced from said one end of said rod for resisting said undesired partial movement of said panel.

### 3,934,371
### FINGER GUARD FOR PIVOT HUNG DOOR

**Henry J. Ulatowski, Southington, and William H. Flaherty, Jr., Bristol, both of Conn., assignors to The Stanley Works, New Britain, Conn.**

**Filed Apr. 7, 1975, Ser. No. 565,645**
**Int. Cl.² E05D *11/00***
**U.S. Cl. 49—383** **7 Claims**



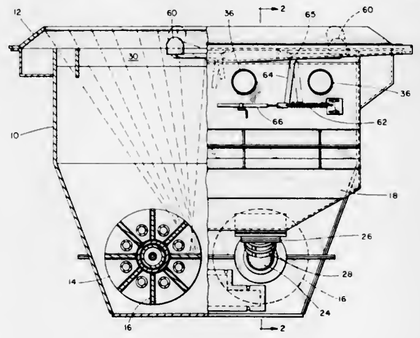
1. A standard center-pivot door pivotally mounted adjacent a jamb having a stile with opposite parallel sides and a finger guard assembly suited for field retrofit assembly to the door and to the jamb, said finger guard assembly comprising a pair of elongated jamb guard members each having a supporting surface flush mounted on the surface of the jamb facing the doorway and in spaced parallel relationship with each other, each of said jamb guard member having an exposed surface extending along its length facing the axis of the door pivot, a pair of elongated door guard members each having a supporting surface flush mounted on said opposite parallel sides of said door stile, each said door guard member having a surface respectively facing one of said exposed surfaces of one of said jamb guard members, mounting means for mounting each of said jamb guard members and said door guard members on the jamb and door stile respectively to define a narrow gap therebetween along their lengths whereby the gap remains substantially the same dimension as the door swings from its full closed to a full open position.

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### 3,934,372
### PORTABLE UPBLAST CLEANING HEAD

**Philip H. Diehn, Mishawaka, and John C. Bergh, Elkhart, both of Ind., assignors to Wheelabrator-Frye, Inc., Mishawaka, Ind.**

**Filed Oct. 10, 1974, Ser. No. 513,633**
**Int. Cl.² B24C *3/06***
**U.S. Cl. 51—8 SR** **18 Claims**



1. A portable upblast cleaning head for treating the underside of horizontally disposed surfaces comprising:



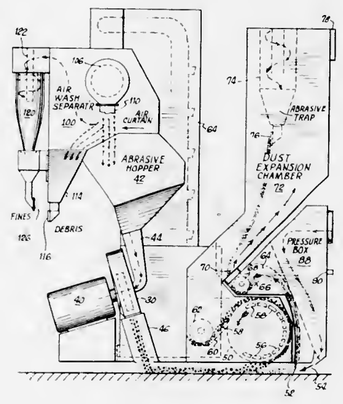
   a. a housing open at its upper end and defining a generally vertical corridor;
   b. at least one means mounted in the lower end of said housing for projecting particulate matter at high velocity toward said open upper end through said vertical corridor;
   c. hopper means for supplying particulate to said projecting means;
   d. means for effecting a sealing relationship between the open upper end of said housing and the surfaces being treated when said upper end is maintained in close proximity to said surface;
   e. means for collecting spent particulate and debris resulting from said treating; and
   f. means in said housing for receiving said debris and particulate from said collecting means for substantially separating said debris from said particulate and returning said particulate to said hopper means for reuse.

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### 3,934,373
### PORTABLE SURFACE TREATING APPARATUS

**Raymond M. Leliaert, South Bend, and Clyde A. Snyder, Mishawaka, both of Ind., assignors to Wheelabrator-Frye, Inc., Mishawaka, Ind.**

**Filed Aug. 16, 1974, Ser. No. 497,885**
**Int. Cl.² B24C *3/06, 9/00***
**U.S. Cl. 51—9 M** **13 Claims**

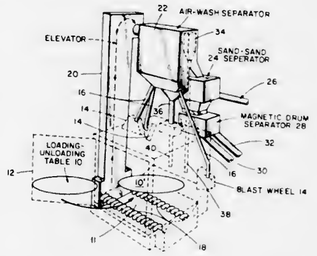



1. In a portable apparatus having means for projecting particulate material onto a surface portions of which may be grooved and for removal of debris and spent particulate thereon, the improvement comprising:
   a. magnetic means for removing ferromagnetic material from said surface;
   b. second means for removing by vacuum pickup any remaining debris and particulate from said surface;
   c. separating means receiving the removed material from said first and second means for effecting separation of debris from said particulate;
   d. means for returning the recovered and separated particulate to said projecting means; and
   e. means for producing an air blast on said surface to focus the debris and spent particulate into the vicinity of said magnetic means and second means.

### 3,934,374
### SAND RECLAMATION SYSTEM

**Raymond M. Leliaert, South Bend, Ind., assignor to Wheelabrator-Frye, Inc., Mishawaka, Ind.**

**Filed Aug. 21, 1974, Ser. No. 499,312**
**Int. Cl.² B24C *3/14, 7/00***
**U.S. Cl. 51—9 R** **6 Claims**



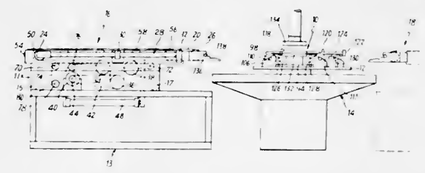

1. A sand reclamation system for breaking sand molds into discrete particles for reuse and for maintaining a selected minimum particle size, comprising:
   a. a blast chamber receiving said molds for confining the blast therein;
   b. means for throwing particulate at said molds to break them down into discrete particles;
   c. means for conveying the spent particulate and sand particles from said blast chamber;
   d. a first air wash separator for separating said sand particles from said particulate; and
   e. a second air wash separator for separating sand particles to remove particles which are smaller than said selected minimum size, said second separator including counterweight means for maintaining a minimum flow rate through said separator and bypass means for returning excessive amounts of sand to said blast chamber to limit the flow rate of sand into said second separator, thereby to obtain a relatively constant volume of sand particles through said second separator to obtain precise separation of said particles by size.

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### 3,934,375
### ARRANGEMENT FOR AUTOMATICALLY LOADING AND UNLOADING A MACHINING APPARATUS

**Maurice Hornstein, St. Cloud, France, assignor to Intercontinental Trading Company, Puteaux, France**

**Filed Dec. 24, 1974, Ser. No. 536,193**
**Claims priority, application France, Oct. 11, 1974, 74.34259**
**Int. Cl.² B24B *17/02***
**U.S. Cl. 51—101 R** **12 Claims**



1. The combination comprising a machining table provided with means for machining a workpiece thereon, and an arrangement for delivering the workpiece to the table and for removing the machined workpiece therefrom, the combination comprising a central, non-driven conveyor fixedly mounted on the table; a first frame separate from the table and situated upstream thereof and in line with the central conveyor; an upstream conveyor mounted on the first frame; a

second frame separate from the table and situated downstream thereof and in line with the central conveyor; a downstream conveyor mounted on the second frame; means for horizontally displacing the upstream and downstream conveyors between a first position where they are both remote from the central conveyor and second position where they are both adjacent the central conveyor; drive connection means for enabling the upstream and downstream conveyors to drive the central conveyor when in the said second position; retractable retaining means for positioning the workpiece received on the central conveyor and for holding it on the work table throughout the entire machining operation; and means for lowering the central conveyor from the workpiece during the machining operation; whereby the central conveyor receives and retains a workpiece from the upstream conveyor when the upstream and downstream conveyors are in their said second positions, machines the workpiece while the upstream and downstream conveyors are in their first positions, and then delivers the workpiece to the downstream conveyor when the upstream and downstream conveyors are back in their said second positions.

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**3,934,376**

## APPARATUS FOR CONTROLLING THE OPERATION OF A GRINDING WHEEL

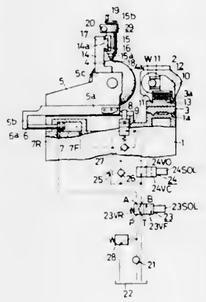
**Tuyoshi Tamesui, Okazaki, and Tetsuo Matsuzaki, Nishio, both of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Japan**

**Filed Oct. 22, 1974, Ser. No. 516,914**

**Claims priority, application Japan, Oct. 29, 1973, 48-121453**

**Int. Cl.² B24B** *49/04*

**U.S. Cl. 51—165.91** **3 Claims**



1. An apparatus for controlling the operation of a grinding wheel on a grinding machine, wherein said grinding wheel is fed against a generally cylindrical workpiece at a rough grinding speed during a rough grinding operation for said workpiece and at a fine grinding speed lower than said rough grinding speed during a finish grinding operation following said rough grinding operation, said apparatus comprising:

means for moving said grinding wheel reciprocally relative to said workpiece at a variable speed including said rough and fine grinding speeds;

a device for measuring a diameter of said workpiece to generate at least first, second and third signals responsive to predetermined large, intermediate and small diameters of said workpiece during one cycle of grinding operation, said third signal indicating the end of said one cycle of grinding operation;

means for initially causing variation of said variable speed from said rough grinding speed to said fine grinding speed in response to said second signal;

means for comparing with a predetermined value an interval of time between generation of said second and third signals; and

means for causing variation of said variable speed from said rough grinding speed to said fine grinding speed in response to said second signal in a following cycle when said interval is longer than said predetermined value and for causing variation of said variable speed from said rough grinding speed to said fine grinding speed in response to said first signal in said following cycle when said interval is exceeded by said predetermined value.

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**3,934,377**

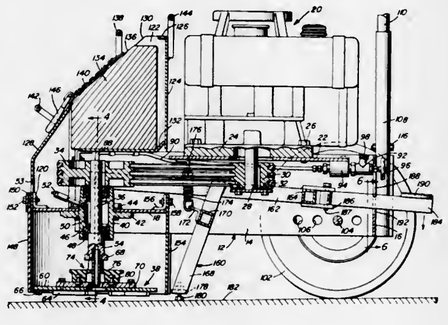
## CONCRETE SURFACE GRINDER

**Christian T. Tertinek, Canandaigua, N.Y., assignor to Stone Construction Equipment, Inc., Honeoye, N.Y.**

**Filed June 12, 1974, Ser. No. 478,728**

**Int. Cl.² B24B** *23/02*

**U.S. Cl. 51—177** **8 Claims**



1. In a surface grinder, the combination of a wheeled undercarriage having an axle positionable in one of a plurality of longitudinally spaced pairs of apertures in a frame portion of said undercarriage, a grinding wheel carried by said undercarriage, said undercarriage further carrying a skirt means surrounding the periphery of said grinding wheel, handle means and fluid supply means extending from a rearward portion of the grinder, hollow spindle means connected to the fluid supply means and to further conduit means, said hollow spindle means mounting the grinding wheel on the undercarriage, said grinding wheel including a plurality of diamond impregnated blocks mounted on the undersurface thereof, further conduit means connecting said fluid supply means, via the hollow spindle means, with an aperture in a central portion of said grinding wheel to supply fluid thereto, a power source and drive train including belt means and sheaves for rotatably driving said grinding wheel, changeable weight means on the undercarriage to vary the pressure between the grinding wheel and the surface to be ground, a housing for the grinding wheel having a frontal portion that slants from the power source area downwardly toward the forward portion of the grinder to increase visibility for an operator, said skirt means blending with said downwardly inclined housing and surrounding said weight means, a foot-operated lever means on said undercarriage to assist an operator in elevating the grinding wheel and changing the direction in which the grinder is being moved over the surface being ground, said lever means including adjustable threaded leg elements for varying the spacing of the grinding wheel from the to-be-ground surface.



**3,934,378**

## MECHANISM FOR MAKING ROLLER-HUB GROOVES

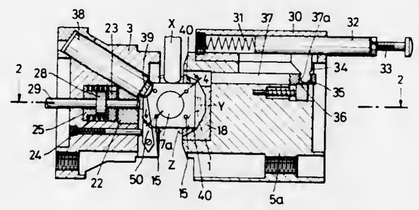
**Heinz Ditzel, and Werner Ditzel, both of Hainstr. 29, Schoneck-Kilianstadten, Germany**

**Filed Sept. 12, 1974, Ser. No. 505,532**

**Claims priority, application Germany, Sept. 13, 1973, 2346111**

**Int. Cl.² B24B** *41/06*

**U.S. Cl. 51—216 ND** **8 Claims**



1. A clamping and dividing mechanism for the precision machining of workpieces (**1**), for example annular cylinder grooves of ball races and the like, on a machine tool having a rotatable workpiece receiver (**3**), a counter support (**5a**) and a workpiece holder (**5**) therebetween, the mechanism comprising, in combination: means (**4, 6**) for guiding said holder in respective bores (**2, 7**) provided in said receiver and said support, in the form of two opposed swivel axles (**4, 6**); three parallel, resiliently guided cylinder members (**19, 20, 21**) in said receiver, assigned to a generated ball surface of the workpiece and aligned with a surface of the latter; an insert (**18**) in said support, having at least two jaws (**40**) facing the workpiece and engaging the same; and a trunnion (**7a**) associated with said holder, perpendicular to the direction of machining, and provided with support surfaces (**15**) for the workpiece, that are parallel with the direction of machining.

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**3,934,379**

## REMOVAL OF BUILT UP LAYERS OF ORGANIC COATINGS

**Norman R. Braton, and Jan R. Acker, both of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.**

**Filed Sept. 3, 1974, Ser. No. 502,900**

**Int. Cl.² B24C** *1/00*

**U.S. Cl. 51—319** **13 Claims**

1. In the method for removing layers of organic material built up on a support for articles during surface finishing or treatment thereof, the steps of rapidly reducing the temperature of at least one of the elements including the built up layers and the support to lessen the bonded relation between the built up layers and support, and then impacting the built up layers while the built up layers are still in the refrigerated state.

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**3,934,380**

## LOADING DOCK SHELTERS

**Cyril P. Frommelt, and Sylvan J. Frommelt, both of Dubuque, Iowa, assignors to Dubuque Awning & Tent Company, Dubuque, Iowa**

**Filed Mar. 29, 1974, Ser. No. 456,011**

**Int. Cl.² E06B** *1/00, 7/16, 5/00*

**U.S. Cl. 52—173 DS** **12 Claims**

1. In combination with a wall having a doorway therein, a loading dock shelter comprising

a. elongated pad means, comprising

1. a backing member, and

2. resilient, yieldable means mounted on said backing member and projecting outwardly therefrom, and

b. other means supporting said pad means in position to extend along the top and sides of said doorway in said wall,

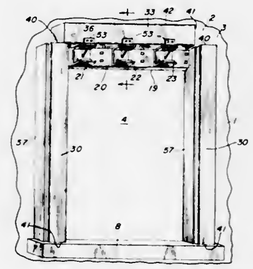
c. said other means being mounted on said wall in outwardly projecting relation thereto,

d. at least certain of said pad means being bodily adjustable, as a unit, inwardly and outwardly along said other means between two operative positions on said other means,

e. said adjustable pad means projecting outwardly a greater distance from said wall when disposed in one of said operative positions than when said adjustable pad means is disposed in the other said operative position,

f. said first mentioned pad means comprising

1. a head pad extending along the top of said doorway, and



2. two side pads extending along the sides of said doorway,

g. said head pad and said side pads being separable from each other,

h. said brackets having horizontally spaced elongated side members.

i. said side members having inner and outer upwardly opening notches spaced from each other longitudinally thereof,

j. said side pads having supporting members thereon, and

k. said supporting members being disposed

1. in said outer notches when said side pads are disposed in said one operative position, and

2. in said inner notches when said side pads are disposed in said other operative position.

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**3,934,381**

## STOP LOCK ASSEMBLY FOR A PIVOTAL TOWER

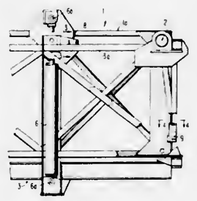
**Ype Bouma, Exmorra, Netherlands, assignor to General Crane Industries Limited, London, Canada**

**Filed Apr. 22, 1974, Ser. No. 462,941**

**Claims priority, application Canada, June 5, 1973, 173260**

**Int. Cl.² E04H** *12/34*

**U.S. Cl. 52—116** **5 Claims**

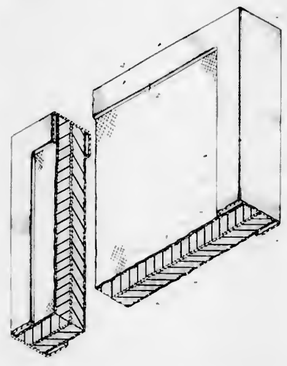


1. In an erectable tower assembly wherein the base of the tower is pivotally connected to a support structure including

a pair of vertically positioned laterally spaced side members, said tower base adapted to be raised from a substantially horizontal stored position within substantially the vertical height of the side members wherein the tower base is disposed horizontally therebetween to a vertical operative position, and having transversely extending pins inserted in aligned bores in the tower and support structure for holding the tower in the erected position, the improvement comprising, stop means operatively connected between the support structure side members and the base of the tower operative to limit the pivotal movement of the tower to the operative position and operative to pull portions of the side members of the support structure laterally toward and into the overlying contact with the sides of the tower and against an outwardly bending force on the side members to maintain the bores in alignment for the reception of the locking pins therein.

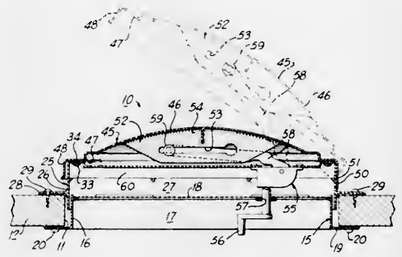
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**3,934,382**
**MODULAR SOUND-ABSORBING SCREENS**
**Clifford W. Gartung, 407 E. Edgewater, Balboa, Calif. 92661**
**Filed Feb. 27, 1974, Ser. No. 446,127**
**Int. Cl.² E04B 1/82; E04C 2/38**
**U.S. Cl. 52—144** **14 Claims**



1. A modular sound-absorbing office screen system comprising a first sound-absorbing panel, a rigid first frame member surrounding a perimeter portion of the first sound-absorbing panel, a second sound-absorbing panel, a rigid second frame member surrounding a perimeter portion of the second sound-absorbing panel, each panel having a respective top edge and opposed front and rear sides, each frame member being of channel-shaped cross-sectional configuration and including a corresponding top surface overlying a corresponding top edge of each panel, and opposite front and rear side portions integral with the top surface thereof and overlying corresponding front and rear sides of each sound-absorbing panel, and means for releasably securing the first and second sound-absorbing panels together in an abutting relation to hold them in an upright position and in a desired orientation with respect to each other, the releasable securing means including a rigid clip member having a top portion to rest on the top surface of the abutting first and second frame members, and at least one side portion depending from the top portion thereof to be releasably disposed in an overlying relation against a separate side portion of each of the abutting frame members on the opposite sides of the junction between the two frame members, and a cover plate of channel-shaped cross-sectional configuration to be releasably disposed over the clip member and for being releasably held along opposite side portions of the first and second frame members to hold the clip member in a snug fit bridging the junction between the two frame members so as to releasably hold the first and second sound-absorbing panels in a fixed orientation relative to each other.

**3,934,383**
**ROOF VENT**
**Loren L. Perry, Rte. 1, Alani Court, Winston Salem, N.C. 27013, and Louis J. Tuglus, 3419 N. Pontiac, Chicago, Ill. 60634**
**Continuation of Ser. No. 377,606, July 9, 1973, abandoned. This application July 15, 1974, Ser. No. 488,505**
**Int. Cl.² E04B 7/18**
**U.S. Cl. 52—200** **3 Claims**



1. An operating roof vent of translucent resin for mounting in a vent opening of a roof comprising; an integral cowl member including a downwardly projecting flange for cooperative insertion into said roof vent opening, an intermediate flange perimetrically surrounding said cowl member for securement to said roof adjacent the roof vent opening, and a vertically projecting outer frame portion of said cowl member extending above said perimetrical flange, a transverse beam integrally molded to said vertically projecting outer frame portion, a unitary vent cover and hinge member, said vent cover having a dished head and a perimetrical rim for cooperatively receiving said vertically projecting outer frame portion of said cowl member, said hinge member projecting from said outer rim downwardly, said hinge member being bonded to one section of said vertically projecting outer frame portion for pivotally supporting said vent cover, said vent cover having a depending control rim integrally formed in said dished vent cover in spaced juxtaposition and in alignment with said transverse beam, and means mounted on said transverse beam and connected to said depending control rib through an elongated slot in said rib for controlling the pivoting of said vent cover between closed, open and intermediate positions, said vertically projecting outer frame portion having a sealing deck, said sealing deck having a gasket receiving recess, a sealing gasket secured to said sealing deck for cooperatively sealing engagement with said vent cover in the vent cover close position.

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**3,934,384**
**CLOSURE SEAL MEMBER AND FIXED FRAME ASSEMBLY UTILIZING THE SAME**
**James L. Davis, St. Louis, Mo., assignor to H. H. Robertson Company, Pittsburgh, Pa.**
**Filed Jan. 7, 1974, Ser. No. 431,064**
**Int. Cl.² A04B 1/16**
**U.S. Cl. 52—397** **3 Claims**

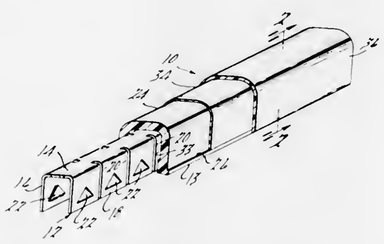
1. In a fixed frame assembly of polygonal configuration, having plural, angularly presented frame members surrounding a closure, said frame members including inner perimeter faces confronting said closure and defining contiguous perimeter recesses at one assembly face, and exposed perimeter faces at said one assembly face; said frame assembly having plural interior corners, each presented at the juncture of adjacent ones of said angularly disposed frame members; the improvement comprising:
sealing members, one presented in coextensive capping relation with each of said recesses, said sealing members including
longitudinally rigid support members frictionally retained in said capping relation by interlocking engagement with said inner perimeter faces of said frame members, said support members including first arms extending into said perimeter recesses and second arms integral with said first arms and extending therefrom over said exposed perimeter faces of said frame members; and
sealing strips having first portions compressed between said closure and the first arms of said support members, and second portions overlying said second arms and being substantially coextensive in area therewith, the second portions of the sealing strips of adjacent sealing members having strip ends engaged with each other and providing a neat exposed joint at each of said junctures;
the ends of the support members of adjacent ones of said sealing members being entirely spaced-apart from each other and being inwardly offset from the strip ends of the sealing strips.





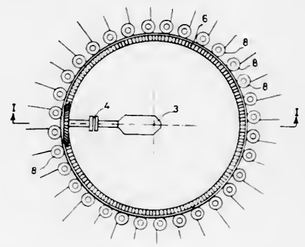
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**3,934,385**
**EDGE TRIM**
**Peter V. Paulus, Ypsilanti, Mich., and Aaron J. Ungerer, Niskayuma, N.Y., assignors to The Standard Products Co., Cleveland, Ohio**
**Filed Apr. 22, 1974, Ser. No. 462,623**
**Int. Cl.² E04C 2/33**
**U.S. Cl. 52—717** **2 Claims**



1. A bendable trim strip of U-section adapted to embrace and to be self-connectably located on the edge of a panel or the like comprising a U-sectioned elongated relatively flexible stiffening core formed of metal and which when bent tends to form relatively minor superficial irregularities, an elongated U-sectioned decorative covering carried by and embracing the exterior of and bendable with said core and continuously secured thereto along transversely spaced longitudinally extending narrow marginal areas located at the free edges of the legs of the U-sectioned core and covering, all portions of said covering except in said secured marginal areas being outspaced from the core throughout the entire effective length of said core and covering to define an uninterrupted longitudinal space of U-shaped cross section between the core and covering, whereby irregularities of the core are spaced from and do not affect the contour of the outspaced portion of the covering.

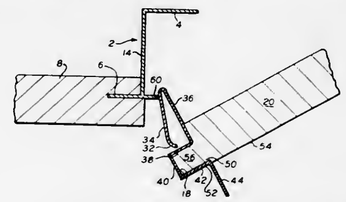
**3,934,386**
**METHOD FOR MANUFACTURING OF ROOFS**
**Saher Al Haj Issa, Bochum, Germany, assignor to Saher Al Haj Issa and Ali Abdulla Essa Almannai, both of Cologne, Germany**
**Division of Ser. No. 365,797, May 31, 1973, Pat. No. 3,866,385. This application Nov. 15, 1974, Ser. No. 523,963**
**Claims priority, application Germany, June 2, 1972, 2226690**
**Int. Cl.² E04B 1/35**
**U.S. Cl. 52—747** **5 Claims**



1. In a method of constructing a composite structure from a plurality of shell elements, the steps of:
positioning below the structure to be erected a set of shell elements to constitute a course in the relative side-by-side positions corresponding to those positions to be occupied by the elements in the eventual structure;
raising those edges of all the shell elements of the course which are to be lower-most in the eventual structure to the level of the upper edge of the previously erected portion of the structure;
pivotably attaching said raised edges of the shell elements of the course to said previously erected structure;
raising the edges of the shell elements of the course opposite to said previously raised edges to pivot the shell elements of the course about said pivotably attachments into their desired erected positions; and
securing the pivoted shell elements against other pivotable movement thereof.

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**3,934,387**
**UNITARY CLIP DEVICE FOR JOINING REMOVABLE CEILING TILE TO HANGER MEMBER**
**Wolfgang Moeller, 4 Glen Cove Drive, Glen Head, N.Y. 11545**
**Division of Ser. No. 392,408, Aug. 30, 1973, Pat. No. 3,875,717. This application Oct. 21, 1974, Ser. No. 516,843**
**Int. Cl.² F16B 5/06**
**U.S. Cl. 52—760** **2 Claims**



1. A unitary clip made of a resilient material adapted to detachably hold the edge of a ceiling panel to a supporting beam, said clip comprising a body portion and a resilient catch portion, the catch portion being integral with and extending retrorsely at an acute angle from one end of a first straight section of said body portion and terminating in an arcuate tip which faces said first section, the other end of said first section terminating in a first ledge extending generally perpendicu-

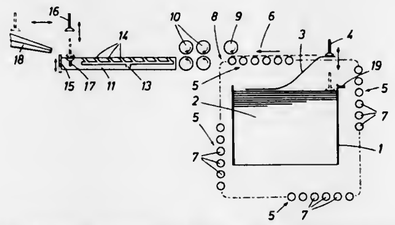
larly from said first section, under and somewhat beyond said arcuate tip, there being a small clearance between said arcuate tip and said first ledge, thereby providing for free swinging movement of said resilient catch portion; a lip member integrally connected to and extending generally perpendicularly away from the end of said ledge distal from said first section and in a direction parallel to and away from said first section, a second ledge extending from the other end of said lip generally parallel with and opposed to said first ledge, whereby the spacing between said ledges is adapted to receive an edge of a panel to be held and said arcuate tip is adapted to be deflected toward said first straight section and to springingly engage said supporting bearing, said arcuate tip serving as a cam to release said catch in response to a force applied in a direction away from said panel.

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## 3,934,388
## METHOD AND APPARATUS FOR HANDLING BAGS

**Wilhelm Stadlbauer, Alkoven; Walter Kump, Linz, and Erwin Koller, Ennsdorf, all of Austria, assignors to Vereinigte Osterreichische Eisen- und Stahlwerke-Alpine Montan Aktiengesellschaft, Linz, Austria**

**Filed Nov. 11, 1974, Ser. No. 522,416**
**Claims priority, application Austria, Dec. 4, 1973, 10149/73**
**Int. Cl.² B65B *43/30***
**U.S. Cl. 53—29** **8 Claims**



1. A method of handling a bag which is open at one end and has at least one closed edge and is initially disposed at the top of a stack of said bags, which comprises

operating a suction device to descend and engage said bag at a closed edge thereof and then to ascend so as to raise said bag adjacent to said closed edge, whereby a gap is formed between said suction device and said stack,

moving a bag support having a leading edge through said gap relative to said closed edge and transversely thereto,

holding said bag in a raised position as said support is thus moved until said bag has been entirely drawn over said leading edge,

subsequently releasing said bag and feeding it to a delivery table disposed adjacent to a bagging pipe, and

operating a plurality of suction heads disposed adjacent to said delivery table to engage said bag on said table on the outside of said bag adjacent to said open end and to move apart to open said bag at said open end, and then fitting said open end onto said bagging pipe.

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## 3,934,389
## COIN COUNTING AND WRAPPING AID

**Elliott C. Cryor, 1556 Moreland Ave., Baltimore, Md. 21216**

**Filed Dec. 13, 1974, Ser. No. 532,689**
**Int. Cl.² B65B *11/04, 11/48***
**U.S. Cl. 53—213** **6 Claims**

1. A coin counting and wrapping aid, comprising:

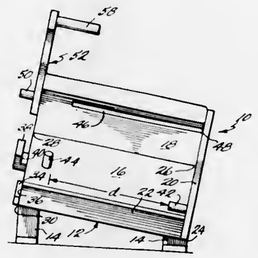
a generally rectangular, upwardly open box constituted by a floor, two opposed sidewalls and an end wall;

pedestal means mounting the box so that one sidewall is higher than the other and the floor slopes downward both toward the lower one of the sidewalls and toward said end wall;

first reference means rising from said floor a predetermined distance from the inside of said end wall, said distance equating to the width of universal coin wrappers to be used with said aid;

at least two interchangeable fourth end walls for said box, each fourth end wall including means for removably, securely mounting it on said box at the opposite end thereof from the first-described end wall so that the first described and removably end walls are a fixed distance apart;

second reference means disposed on the inside of the first-described end wall near said lower sidewall with sufficient clearance from the floor that a wrapper may be slid therebelow; and



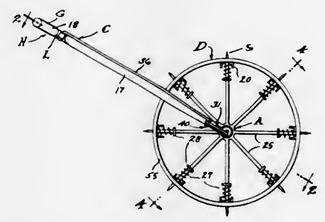
third reference means on the inside of each fourth end wall and disposed near one end thereof to generally axially align with the second reference means when the respective fourth end wall is removably mounted on the box, the third reference means each being of extents toward the second reference means, when the respective fourth walls are removably mounted on the box, such as to provide fixed distances of characteristically different length when each fourth wall is removably mounted on the box, each fixed distance being substantially the same as the length of a generally horizontal complete stack of coins of like denomination.

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## 3,934,390
## DEBRIS COLLECTOR

**Alexander K. S. Ballard, P.O. Box 24772, Los Angeles, Calif. 90024**

**Filed Jan. 17, 1974, Ser. No. 434,266**
**Int. Cl.² A01D *7/10***
**U.S. Cl. 56—400.02** **6 Claims**



1. The debris collecting roller comprised of, a drum rotatable on axially spaced aligned pairs of spokes projecting from a tubular axle and motivating means for rolling the same over terrain from which debris is to be collected, yieldingly depressible mounting means comprised of a multiplicity of bars and each moveably guided by and between a pair of said spokes and extending longitudinally within the drum and from which gangs of spikes project through openings in and from the outside wall of the drum, and retraction means including,



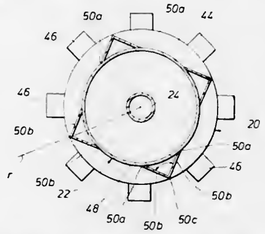
an actuator axially carried on the drum axis and operable to be shifted axially by control means, and motion transfer means responsive to axial shifting of the actuator to retract the yieldingly depressible mounting means and spikes carried thereby.

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## 3,934,391
## HARVESTING TOPPER

**Donald J. Brassette, Raceland, and Richard A. Duncan, Thibodaux, both of La., assignors to Thomson International Company, Thibodaux, La.**

**Filed July 25, 1974, Ser. No. 491,780**
**Int. Cl.² A01D *45/02***
**U.S. Cl. 56—63** **7 Claims**



1. Deflector apparatus for a harvesting topper, said deflector apparatus comprising:

an upstanding carrier having an upstanding axis and a surface facing laterally outwardly with respect to said axis, said surface being circular in cross section transverse to said axis,

a deflector attached to said carrier and projecting laterally outwardly from said laterally outwardly facing surface, said deflector having two side edges circumferentially spaced from each other along said laterally outwardly facing surface of said carrier and two deflector side surfaces each extending outwardly from a respective one of said side edges generally at an angle greater than 90° with respect to the portion of said laterally outwardly facing surface of said carrier adjacent said respective side edge, said deflector side surfaces tending to converge laterally outwardly of said side edges, and

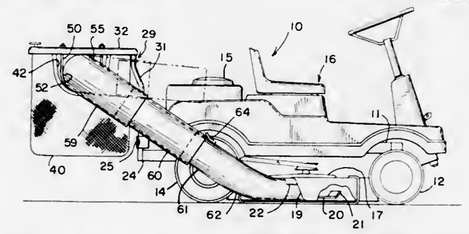
means connected to said carrier for mounting said deflector apparatus for rotation about the axis of said carrier.

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## 3,934,392
## DEBRIS COLLECTOR FOR LAWN AND GARDEN MACHINES

**John A. Moery, Willow Springs, and Harlin J. Trefz, Clarendon Hills, both of Ill., assignors to International Harvester Company, Chicago, Ill.**

**Filed Nov. 4, 1974, Ser. No. 520,753**
**Int. Cl.² A01D *35/26***
**U.S. Cl. 56—202** **11 Claims**



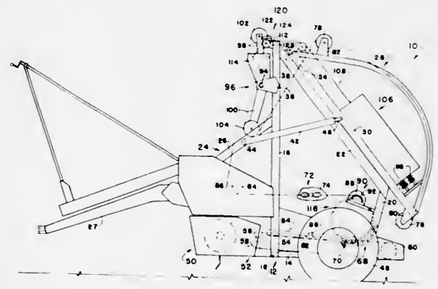
8. In a garden tractor having a debris discharge outlet, means for propelling said debris from said outlet, receptacle means for receiving said debris, said receptacle means including a subframe portion having a transverse opening, and conduit means defining a continuous unobstructed passage interconnecting said discharge outlet with said receptacle means, the improvement wherein said conduit means comprises outlet adapter means engaging said outlet and having an upwardly and rearwardly extending portion, an elbow extension member telescopingly engaging said portion of said outlet adapter means, and an elbow member having a fore and aft leg telescopingly engaging said extension member and a transverse leg rotatably mounted in said transverse opening for rotation of said fore and aft leg and said extension member away from said outlet adapter means upon retraction of said extension member toward said elbow.

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## 3,934,393
## BREAKAWAY MECHANISM FOR AN IMPROVED CROP MATERIAL ROLL FORMING MACHINE

**Willis R. Campbell, Ephrata, and William F. Ostergren, Terre Hill, both of Pa., assignors to Sperry Rand Corporation, New Holland, Pa.**

**Continuation-in-part of Ser. No. 405,977, Oct. 12, 1973, abandoned. This application Sept. 20, 1974, Ser. No. 507,822**
**Int. Cl.² A01D *39/00***
**U.S. Cl. 56—341** **6 Claims**



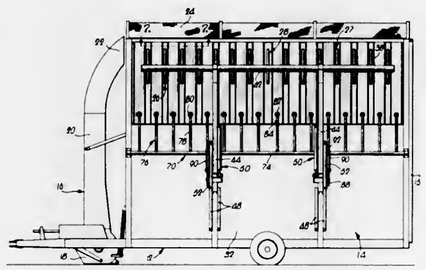
1. In a machine for forming a roll of crop material and having a mobile frame, means mounted to said frame for picking up crop material, lower roll forming means mounted to said frame including means movable for conveying said picked up crop material in a predetermined direction, and upper roll forming means including an endless flexible apron mounted above said conveying means to define a roll-forming area therebetween and being movable in a direction opposite to said predetermined direction for rolling crop material therebetween at said area, a take-up and expansion member mounted to said frame and engaging said flexible apron and tension means attached to said frame and connected to said member so as to bias said member toward a first position which in turn biases said flexible apron toward a contracted position, said member being yieldably movable away from said first position to allow said flexible apron to progressively expand against said biasing as said crop material being rolled at said area grows in diameter, the improvement which comprises:

a breakaway mechanism mounted to said frame and capable of engaging said take-up and expansion member when at its first position so as to prevent said member from yieldably moving away from said first position, which in turn prevents said flexible apron from expanding from its contracted position, until crop material being initially rolled at said roll-forming area between said conveying means and said flexible apron builds into a core having a desired predetermined density, said predetermined density being at least generally equal to the overall density of the remainder of crop material to be subsequently wound about said core to form said roll, said breakaway mechanism being further capable of releasing its engagement with said take-up member when said core of crop material reaches said predetermined density.

### 3,934,394
### CONTINUOUS FEEDING FOR STACK FORMING LOADERS

Harold Keith Garrison, Newton, Kans., assignor to Hesston Corporation, Hesston, Kans.

Continuation of Ser. No. 196,631, Nov. 8, 1971, abandoned. This application Mar. 30, 1973, Ser. No. 346,593
Int. Cl.² A01D 87/10
U.S. Cl. 56—344 33 Claims

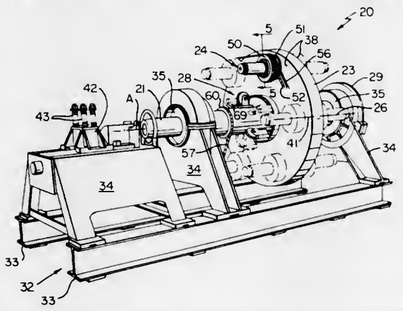


1. In a stacking machine:
a crop feeder;
a stack forming body for receiving the crop from said feeder; and
a press, vertically reciprocable rectilinearly for compacting the crop received by said body,
said press having means for accumulating the crop emanating from the feeder during each successive vertical descent of the press,
said press being retractable from beneath the accumulated crop after the press reaches its lowered position for discharging each crop accumulation into the body after each compaction.

### 3,934,395
### CABLE STRANDING APPARATUS

George W. Vryland, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed Dec. 19, 1974, Ser. No. 534,639
Int. Cl.² D07B 3/06, 3/00
U.S. Cl. 57—13 21 Claims

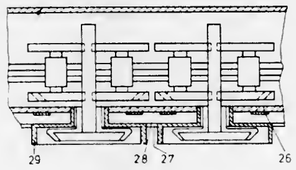


1. A cable stranding apparatus comprising, a rotatable hollow shaft adapted to receive a core for movement longitudinally therethrough, a plurality of rotatable spools carried by said shaft and each having a strand wire wound thereon which is adapted to be helically wound on said core to define a cable, and drive means driven by said shaft and operating to rotate each of said spools about its own axis in a controlled proportion to the speed of rotation of said shaft about its axis, said drive means having means for varying said controlled proportion in response to tension in at least one of said strand wires during helical winding thereof to thereby maintain said tension within a predetermined range.

### 3,934,396
### SPINNING UNIT OPERATING IN ACCORDANCE WITH THE OPEN-END METHOD

Fritz Stahlecker, Josef-Neidhart-Str. 18, D 7341 Bad Veberkingen, and Hans Stahlecker, Haldenstrasse 20, D 7334 Suessen, both of Germany

Filed Sept. 13, 1973, Ser. No. 396,710
Claims priority, application Germany, Sept. 23, 1972, 2246791
Int. Cl.² D01H 1/12, 13/00
U.S. Cl. 57—58.89 23 Claims

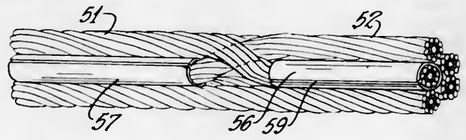


1. An open-end type spinning unit comprising:
a plurality of spinning stations which each have a spinning turbine disposed in turbine housing means, a turbine shaft attached to and rotatable with said spinning turbine and having a rear shaft portion extending through a rear wall of said turbine housing means, and a bearing assembly for rotatably supporting said shaft by way of engagement with said rear shaft portion,
a common bearing housing arranged rearwardly of and adjacent to said turbine housing means for housing respective bearing assemblies and rear shaft portions for said plurality of spinning stations,
common drive means disposed at least in part in said common bearing housing for rotatably driving the turbine shafts for said plurality of spinning stations,
and at least one air inlet opening in said common bearing housing in the zone of each of the bearing assemblies contained therein for providing respective separate cooling air streams to each of said bearing assemblies,
wherein air chambers are arranged in front of the air inlet openings leading into the common bearing housing.

### 3,934,397
### WIRE ROPE SPLICE ASSEMBLY

Boyd C. Black, 1174 S. 30th St., Heath, Ohio 43055

Filed July 11, 1974, Ser. No. 487,539
Int. Cl.² B21F 15/04
U.S. Cl. 57—142 10 Claims



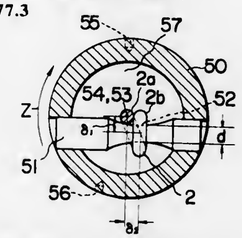
1. In a wire rope splice wherein a length of an end portion of at least one outer strand of the rope is tucked into the central core region of the rope;
a protective tubular sheath of material compatible in wear resistance with the wire rope material surrounding substantially the full length of said tucked end portion of strand of size such as to fill the core space without increasing the diameter of the rope in the splice region over that of the main body of the rope.



### 3,934,398
### FALSE TWISTING SPINDLE

Noboru Shindo, Maikata, and Hiroshi Hashizume, Kyoto, both of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Claim priority, application Japan, Aug. 13, 1973, 48-91100
Filed July 5, 1974, Ser. No. 486,194
Int. Cl.² D01H 7/92
U.S. Cl. 57—77.3 5 Claims

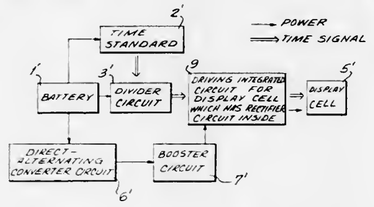


1. False twisting device for producing crimped filamentary yarns comprising a hollow cylindrical spindle having an axis of generation, means mounting the hollow cylindrical spindle for rotation about the axis of generation thereof, a twisting pin secured in the hollow cylindrical spindle and extending thereacross transversely of the axis of generation of the hollow cylindrical spindle having a minimum diameter portion with a center point, the center point of which is displaced transversely of the axis of generation of the hollow spindle in two mutually perpendicular directions distances $\delta_1$ and $\delta_2$ respectively.

### 3,934,399
### ELECTRIC TIMEPIECE INCORPORATING RECTIFIER AND DRIVING CIRCUITS INTEGRATED IN A SINGLE CHIP

Izuhiko Nishimura, and Tadashi Sano, both of Suwa, Japan, assignors to Kabushiki Kaisha Seikosha, Tokyo, Japan

Continuation-in-part of Ser. No. 369,339, June 12, 1973, abandoned. This application Jan. 11, 1974, Ser. No. 432,720
Claims priority, application Japan, June 12, 1972, 47-58476; United Kingdom, May 24, 1973, 24848/73; Germany, June 12, 1973, 2329875; France, June 12, 1973, 73.7321241; Switzerland, June 12, 1973, 8459/73
Int. Cl.² G04C 3/00
U.S. Cl. 58—23 R 9 Claims

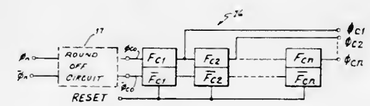



1. An electric timepiece comprising a quartz crystal vibrator for producing a high frequency time standard signal; divider circuit means for producing low frequency time signals in response to said high frequency time standard signal; display means for the digital display of time; driving circuit means including complementary coupled MOS transistors disposed intermediate said divider circuit means and said display means for applying driving signals to said display means in response to said time signals, each said transistor including a source and drain; d.c. potential means for energizing said vibrator and divider circuit means; means for stepping up the voltage supplied by said d.c. potential means and supplying said amplified potential to said driving circuit means to provide said driving signals for energizing said display means, said step-up voltage means including rectifier means including diodes for providing said d.c. potential of higher voltage, each said diode having an anode and cathode, at least said driving circuit means, said complementary coupled MOS transistors and said rectifier means diodes being in the form of a monolithically integrated circuit, said integrated circuit being formed from a common substrate, said substrate having in the surface thereof at least a first region of a first conductivity type, at least a first pair of spaced diffused areas in said first region formed of a second conductivity type opposite to that of said first conductivity type and defining the source and drain of one of said complementary coupled MOS transistors, at least a second pair of spaced diffused areas in said first region, a first diffused area of said second pair being of said second conductivity type, a second diffused area of said second pair being of a high concentration of said first conductivity type, said second pair of diffused areas defining the anode and cathode connections of one of said diodes, and insulating and conductive layers on said substrate, said conductive layers in part overlying said insulating layers and in part engaging said diffused areas to define electrical connections thereto, said driving circuit means, said complementary coupled MOS transistors and said rectifier means diodes being defined by diffused areas and insulating and conductive layers of like construction.

### 3,934,400
### ELECTRONIC TIMEPIECE

Izuhiko Nishimura, Suwa, and Shinji Morozumi, Shimosuwa, both of Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed May 13, 1974, Ser. No. 469,490
Claims priority, application Japan, May 11, 1973, 48-52344
Int. Cl.² G04C 3/00
U.S. Cl. 58—23 R 7 Claims




1. An electronic timepiece including oscillator means for producing a high frequency time standard signal; multi-stage chronographic divider means electrically coupled to said oscillator means for receiving said high frequency time signal and counting elapsed time in response thereto, a group of the last of said chronographic divider means stages being adapted to produce elapsed time signals for display said chronographic divider means including a binary divider stage immediately in advance of said group of chronographic divider means stages for producing a rounding off signal; digital display means including a plurality of digital display elements for the display of elapsed time, each display element respectively corresponding to one of said elapsed time signals from said group of chronographic divider means stages, said digital display means further including a plurality of display register means, each display register means receiving one of said elapsed time signals to be displayed, and one further display register means adapted to receive said rounding off signal and a plurality of series-connected rounding off means, each of said rounding off means being coupled to one of said display registers, said rounding off means being adapted to advance the count of said elapsed time signals received by said display register means by half the period of the rounding off signal counted by said binary divider stage to thereby round off the elapsed time displayed by said display elements.

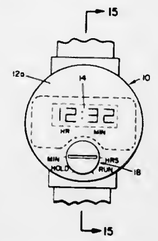
## 3,934,401
## SWITCH FOR ELECTRONIC WATCH

**John R. Wood, San Jose, Calif., assignor to American Microsystems, Inc., Santa Clara, Calif.**

**Continuation-in-part of Ser. No. 407,147, Oct. 17, 1973, Pat. No. 3,884,033. This application Mar. 21, 1975, Ser. No. 569,824**

**Int. Cl.² G04C** *3/00*; **G04B** *19/30*, *27/00*; **H01H** *19/58*

**U.S. Cl. 58—23 R** **11 Claims**




1. In an electronically operated watch having internal components including a mounting board, an electric circuit means fixed to said board, a power supply means for powering said watch connected to said circuit means, a housing means for supporting said components therein including front and rear wall members connected by a peripheral sidewall and a display means including hours and minutes indications mounted in said front member and connected to said circuit means, a rotary switch means situated in said front wall member and connected therethrough to said circuit means for setting the hours and minutes on said display means, said switch means comprising:

a relatively thin, disk-like body forming a shallow recess and extending inwardly from said front wall member, said body having a planar bottom portion partially covered by dielectric material, a plurality of terminals on said bottom portion each being exposed on the surface of said dielectric material and connected therethrough to said circuit means, a rotatable actuator disk supported within said shallow recess of said body, contact means on the underside of said actuator disk for contacting individual terminals and interconnecting preselected pairs of terminals in different combinations when the disk is placed in various rotational positions for thereby controlling said display means.

## 3,934,402
## STRUCTURE OF BEZEL PORTIONS OF WATER-TIGHT TIMEPIECE

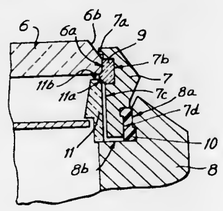
**Yoshiaki Fujimori, Suwa, Nagano-ken, Japan**

**Filed Dec. 5, 1974, Ser. No. 529,882**

**Claims priority, application Japan, Dec. 5, 1973, 48-138866**

**Int. Cl. G04B** *37/08*

**U.S. Cl. 5 890 R** **1 Claim**




1. An improved water-tight mounting for a timepiece comprising a transparent crystal having upper and lower surfaces, a case body for said timepiece underlying said crystal, said crystal being releasably mounted thereon, said crystal having a vertical peripheral surface substantially parallel to said timepiece axis and having a chamfered surface along an exterior edge of said upper surface thereof intercepting said vertical peripheral surface, a bezel releasably connecting said crystal to said case body, said bezel including a step overhanging said chamfered surface of said crystal, said step including a substantially linear edge releasably engaging said crystal along said chamfered surface thereof, said bezel including a gasket seat determined by a first annular groove interiorly located in an inner wall of said bezel and underlying said step provided therein, said crystal and bezel having a corresponding orientation such that said vertical peripheral surface of said crystal substantially overlies said gasket seat in said bezel, a first gasket mounted in said gasket seat so as to abut substantially the entire vertical peripheral surface of said crystal and protruding below said vertical peripheral surface of said crystal for abutting said lower surface of said crystal, said bezel having a second interiorly located annular groove in an outer wall of said bezel arranged below said first annular groove, a bearing ring upstanding on said case body having an outer wall substantially aligned with said vertical peripheral surface of said crystal but spaced from said inner wall of said bezel and including an angular edge at the peak of said outer wall thereof abutting said protruding portion of said first gasket, said case body including a transverse bearing surface on which said bearing ring is releasably supported in upstanding relationship solely against said protruding portion of said first gasket, and an arm issuing substantially upwardly from said case body substantially perpendicularly to said transverse bearing surface thereof, said arm terminating in an inwardly extending flange defining an interiorly located recess in said case body between said flange and said transverse bearing surface, and a second gasket having oppositely extending flanges at opposite ends thereof corresponding respectively to said second interiorly located annular groove in the outer wall of said bezel and said recess defined in said case body between said flange and transverse bearing surface thereof, said second gasket being mounted between said bezel and said case body under compression and said oppositely extending flanges at the opposite ends thereof being respectively releasably mounted in said second interiorly located annular groove in the outer wall of said bezel and said recess defined in said case body between said flange and transverse bearing surface thereof, said second gasket elevating said bezel off said transverse bearing surface of said case body.

## 3,934,403
## FIXATION OF DOUBLE CONDUCTING HAIRSPRING

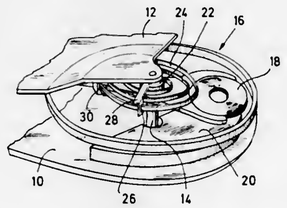
**Wilhelm Tilse, Birkenfeld, Germany, assignor to Timex Corporation, Waterbury, Conn.**

**Filed Mar. 17, 1975, Ser. No. 558,753**

**Claims priority, application Germany, May 6, 1974, 2421750**

**Int. Cl.² G04B** *17/06*; **B23P** *13/00*

**U.S. Cl. 58—114** **7 Claims**




1. A conductor-hairspring and hub arrangement for an electric watch comprising:

a hub having a groove;

a hairspring being fastened at one end in said groove and which protrudes from said groove;

means forming an electric conductor affixed on the protruding part of said hairspring and for electrically insulating said electric conductor from said hairspring.



## 3,934,404
## SECOND HAND REGULATING MECHANISM

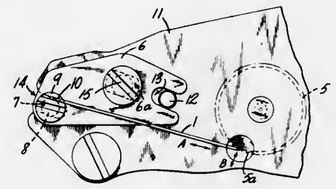
**Eiichi Matsuura, Chiba, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Japan**

**Filed Nov. 14, 1974, Ser. No. 523,893**

**Claims priority, application Japan, Nov. 17, 1973, 48-132949**

**Int. Cl.² G04B** *15/00*; **G04C** *3/00*

**U.S. Cl. 58—116 R** **8 Claims**




1. In a regulating mechanism for a timepiece second hand: a rotary ratchet-toothed wheel rotationally driven during use in a forward rotational direction for driving a timepiece second hand; a second jumper spring having an elongated major portion and terminating at one end in a projection which projects generally transversely of said major portion; and means mounting said second jumper spring so that said major portion thereof lies in a plane which is generally parallel to and spaced from the plane in which said ratchet-toothed wheel lies and with said projection in direct engagement with the teeth of said ratchettoothed wheel to effectively prevent reverse rotation thereof.

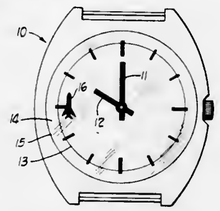
## 3,934,405
## ROTATABLE TRANSPARENT DISC SECOND HAND FOR WATCH

**Ronald P. Baker, 5676 Broadview Road, Parma, Ohio 44134**

**Filed Dec. 23, 1974, Ser. No. 535,946**

**Int. Cl.² G04B** *19/00*, *37/08*

**U.S. Cl. 58—126 A** **4 Claims**




1. In a timepiece of the type having a rotatable first hollow shaft for referencing minutes and a rotatable second hollow shaft for referencing hours, each shaft concentrically disposed about a rotatable central shaft for referencing seconds wherein said first shaft carries a minute hand and said second shaft carries an hour hand each said hand operatively disposed above a stationary dial face having indiciae marked thereon to indicate time, and said second shaft is rotatable in annularly spaced apart relationship with said first shaft, the improvement comprising a hub means having an axial bore and a radially outwardly extending flange near one end thereof, a single transparent disc having a reference mark near the periphery thereof, said disc being affixed to said hub means in abutment against said flange said hub means being demountably disposed on said central shaft, a portion of the surface of said hub means being in slight frictional engagement with said first hollow shaft to seal the annular space between said central shaft and said first hollow shaft against finely divided dusty material and moisture.

## 3,934,406
## BALANCE WHEEL ASSEMBLY AND METHOD FOR MANUFACTURE THEREOF

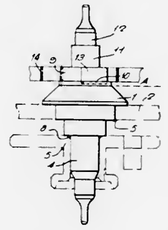
**Rene Bornand, Bienne, Switzerland, assignor to OMEGA Louis Brandt & Frere S.A., Switzerland**

**Filed Nov. 5, 1974, Ser. No. 521,062**

**Claims priority, application Switzerland, Nov. 29, 1973, 16753/73**

**Int. Cl.² G04B** *13/02*

**U.S. Cl. 58—140 R** **7 Claims**




1. In a balance wheel assembly including a balance wheel, a balance staff having a shoulder, a balance spring, and a flange which rotates relative to the balance staff, said balance staff including a saddle and a hub for the balance wheel, the improvement wherein said balance wheel hub and the plane of the balance spring are arranged on opposite sides of said saddle, and the flange is completely disengaged from the hub by said shoulder, and wherein the interior end of the balance spring is fastened directly to the balance staff without any intermediate component.

## 3,934,407
## METHOD OF AND APPARATUS FOR PRODUCING PARTICULARLY HIGH-STRENGTH CHAINS

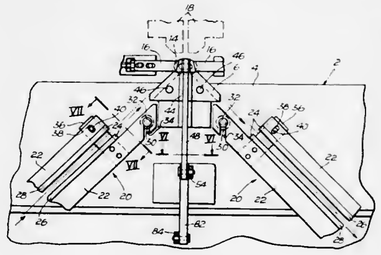
**Gerhard Lange, Baden-Wurttemberg, Germany, assignor to Wafios, Maschinenfabrik, Wagner, Ficker & Schmid, Reutlingen, Germany**

**Filed Sept. 20, 1974, Ser. No. 507,802**

**Claims priority, application Germany, Sept. 22, 1973, 2347768**

**Int. Cl.² B21L** *3/02*

**U.S. Cl. 59—31** **21 Claims**

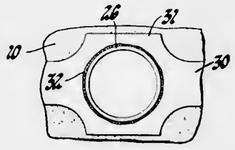



1. Chain welding apparatus for welding successive interconnected links of a chain strand comprising:

a frame;
a saddle secured to said frame for supporting a chain link to be welded, said saddle having an approach side and a discharge side;
a guide means disposed on each of said approach and discharge sides of said saddle for supporting and guiding said chain strand, said guide means on at least said approach side having at least a first and a second guide face, each of said faces being adapted to guide alternate links respectively of said chain strand, the planes of said first and second guide faces enclosing an angle of at most approximately 45° on opposite sides respectively of a vertical plane through the longitudinal axis of the chain strand; and
means attached to said frame and positioned adjacent said chain link to be welded for erecting and securely holding said link in an upright position for welding.

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**3,934,408**
**CERAMIC COMBUSTION LINER**
**John A. Irwin, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.**
**Filed Apr. 1, 1974, Ser. No. 456,601**
**Int. Cl.² F23D** *15/02*; **F02G** *3/00*
**U.S. Cl. 60—39.65** **11 Claims**

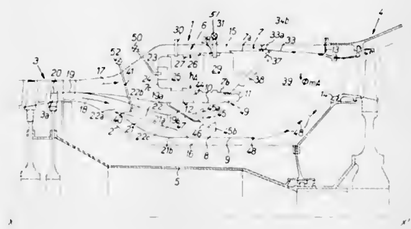



**1.** A combustion apparatus comprising, in combination, a combustion liner defining a space for combustion of fuel, the liner having a wall of ceramic material of approximately circular cross section defining the exterior of the liner and defining a circumferential row of ports for admission of air into the liner, the air being significantly cooler than the wall in normal operation of the combustion apparatus, and means for reducing thermal stresses in the wall due to local cooling of the wall by air entering through the ports comprising a bushing slidably received in each port and a retainer ring means encircling the exterior of the liner supported only through the said wall connected to the bushings in a said row of ports effective to retain the bushings in the ports, the width of the retaining ring being not more than a value slightly greater than the width of the bushings transversely of the retaining ring.

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**3,934,409**
**GAS TURBINE COMBUSTION CHAMBERS**
**Hervé Alain Quillévéré, Issy-les Moulineaux, and Jacques Emile Jules Caruel, Dammarie-les-Lys, both of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, Paris, France**
**Filed Mar. 12, 1974, Ser. No. 450,321**
**Claims priority, application France, Mar. 13, 1973, 73.08819**
**Int. Cl.² F02C** *3/00, 7/22*
**U.S. Cl. 60—39.65** **9 Claims**

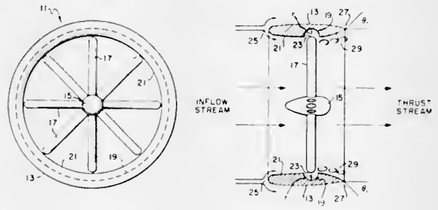
**1.** A combustion chamber arrangement for a gas turbine engine having air commpressor means, (a) an upstream portion; (b) partitioning means extending longitudinally of the upstream portion and defining therein a first chamber and a second chamber, the first chamber forming a combustion chamber comprising (1) a primary combustion zone having primary air intake means, idling fuel injection means and ignition means, and (2) a secondary combustion zone having secondary air intake means, and the second chamber forming a combustion chamber of the premixed burning type comprising a conduit having supplementary fuel injection means in an inlet region thereof, and a flame stabilizer system in a region intermediate said inlet region and an outlet of the conduit; (c) means in the air compressor means for supplying a first flow of air to the first chamber to feed (1) the primary combustion zone with primary combustion air through the primary intake means and (2) the secondary combustion zone with secondary combustion air through the secondary air intake means, and for supplying a second flow of air to the inlet region of the conduit; (d) means for running the gas turbine engine at idling speed comprising means for supplying fuel to said idling fuel injection means for said primary combustion zone at an idling flow rate to form a substantially stoichiometric air and fuel



mixture with the primary combustion air in the primary zone at said idling speed of the gas turbine engine; (e) supplementary means for running the gas turbine engine at maximum speed comprising mean for supplying fuel to said supplementary fuel injection means at a supplementary flow rate to form a premixed air and fuel mixture with the second flow of air in said intermediate region of said conduit, and means for igniting said premixed air and fuel mixture in said intermediate region; (f) a downstream portion forming a mixture chamber to receive first and second gas flows issuing from the first and second chambers, respectively; and (g) means for producing at least one constriction of at least one of said gas flows at its entry into the downstream portion in order to produce intermixing of the two gas flows in the mixture chamber.

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**3,934,410**
**QUIET SHROUDED CIRCULATION CONTROL PROPELLER**
**Robert M. Williams, Chantilly, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**
**Filed Sept. 15, 1972, Ser. No. 289,708**
**Int. Cl. F02k** *3/00*
**U.S. Cl. 60—269** **3 Claims**



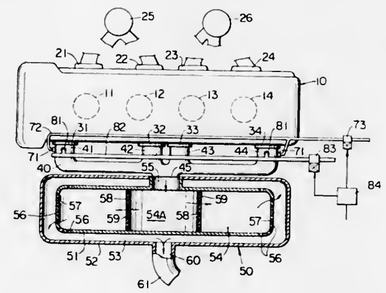

**1.** A quieting propeller shroud comprising:
a fixed axially extending annular shroud for enclosing a propeller thrust stream and having an exit diffusion angle;
a recess within said shroud, coextensive with the inside circumference of said shroud and having a circular cross-section to reduce the boundary layer at the interior of said shroud to substantially maintain the thrust stream diffusion angle at the shroud diffusion angle;



a propeller having a plurality of short chord blades having a generally elliptical shape mounted for
a blowing slot adjacent the trailing edge of each blade for circulation control blowing over the smooth rounded surface edge and for developing thrust proportionately to the momentum flux of air out of said slot; and
said recess has a radius of curvature "r" substantially equal in size to the vortex core generated at the propeller blade tip, and the recess centered about the vortex center generated by the propeller tip.

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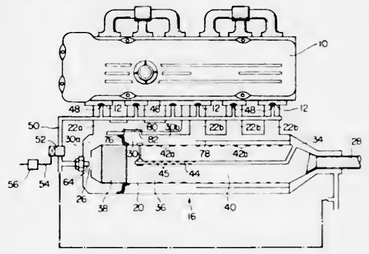
**3,934,411**
**SYSTEM FOR REDUCING POLLUTANTS IN ENGINE EXHAUST GAS**
**Kenji Masaki, Yokohama, and Mitinobu Konno, Yokosuka, both of Japan, assignors to Nissan Motor Company Limited, Yokohama, Japan**
**Filed Aug. 12, 1974, Ser. No. 496,893**
**Claims priority, application Japan, Aug. 17, 1973, 48-92289**
**Int. Cl.² F02B** *75/10*
**U.S. Cl. 60—286** **8 Claims**




**1.** A system for reducing concentrations of harmful substances in an exhaust gas from an internal combustion engine before emission into the atmosphere, the engine having an even number of combustion chambers, the system comprising:
an exhaust manifold communicable with the combustion chambers of the engine and having an outlet;
a thermal reactor made up of a cylindrical inner body forming a reaction chamber therein and having an inlet located in the central region of the peripheral wall thereof and connected with said outlet of said exhaust manifold and a cylindrical outer body arranged to enclose said inner body with a space therebetween and provided with a discharge port formed in the central region of the peripheral wall thereof, said space communicating with said reaction chamber through holes formed in both end regions of said inner body and being isolated from said inlet; and
first means to cause said exhaust manifold to discharge two differently composed exhaust gases alternately in dependence on the firing sequence of the combustion chambers, the first of said exhaust gases containing relatively large amounts of carbon monoxide and unburned fuel and the second containing relatively small amounts of carbon monoxide and unburned fuel and a relatively large amount of air.

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**3,934,412**
**THERMAL REACTOR FOR AFTERBURNING AUTOMOTIVE INTERNAL COMBUSTION ENGINE EXHAUST GASES**
**Kenji Masaki, Yokohama, and Hatuo Nagaishi, Yokosuka, both of Japan, assignors to Nissan Motor Company Limited, Yokohama, Japan**
**Filed Aug. 8, 1974, Ser. No. 496,011**
**Claims priority, application Japan, Aug. 17, 1973, 48-92292**
**Int. Cl.² F01N** *3/14*; **F02B** *75/10*
**U.S. Cl. 60—288** **14 Claims**




**1.** A thermal reactor for burning unburned components in exhaust gases of an internal combustion engine before emission to the atmosphere, the engine having a plurality of exhaust ports and the reactor including:
an outer casing having an exhaust gas inlet communicating with a plurality of exhaust ports;
an inner casing disposed within the outer casing and defining an outer chamber between the outer casing and the inner casing and an inner chamber therein, the inner casing having an inlet for the inner chamber to communicate with the outer chamber, an outlet communicating with the atmosphere, and a plurality of perforations formed therein to further communicate with the outer chamber; and
characterized by an oxidation catalyst disposed in the inner chamber of said inner casing for promoting oxidation of the unburned components in the exhaust gases introduced through the inlet of the inner casing to generate oxidation reaction heat;
a first secondary air injection nozzle disposed in the inner chamber of the inner casing between said oxidation catalyst and the outlet of the inner casing; and
a second secondary air injection nozzle disposed in a portion upstream of said oxidation catalyst for injecting secondary air into said oxidation catalyst.

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**3,934,413**
**AIR FLOW CONTROL UNIT FOR ENGINE SECONDARY AIR SUPPLY**
**David W. Beiswenger; Gordon R. Paddock, both of Rochester, and Ernst L. Ranft, Webster, all of N.Y., assignors to General Motors Corporation, Detroit, Mich.**
**Filed July 5, 1974, Ser. No. 485,817**
**Int. Cl.² F02B** *75/10*; **G05D** *11/00*
**U.S. Cl. 60—289** **2 Claims**

**1.** Means for supplying pressurized air at an accessory air pressure for an accessory mounted on a vehicle equipped with a combustion engine having an exhaust system, the pressurized air supply means comprising, in combination:
an air pump driven by the engine, the air pump having an outlet;
an air control unit including a chamber open to the air pump outlet, the chamber having an exhaust supply outlet, an accessory supply outlet, a high pressure relief outlet and a low pressure relief outlet, the exhaust supply and low pressure relief outlets being diametrically opposed across the chamber;

check valve means in the accessory supply outlet to prevent air flow back into the chamber;

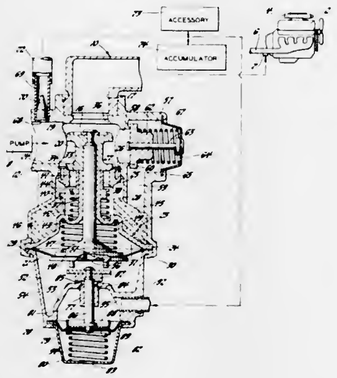
a high pressure relief valve in the high pressure relief outlet, the high pressure relief valve being openable by air at a high pressure greater than the accessory air pressure to vent the chamber to the atmosphere;

conduit means connecting the exhaust supply outlet with the engine exhaust system;

valve means in the chamber reciprocable between a first position closing the exhaust supply outlet and a second position closing the low pressure relief outlet;

valve actuation means in the air control unit outside the chamber, the valve actuation means including a stem linked with the valve means, the valve actuation means being responsive to an engine signal to move the valve means between its first and second positions;

an annular insert member in the air control unit, the insert member having an inner cylindrical surface defining a low pressure relief conduit having one end open to the low pressure relief outlet and a central guide portion within




the low pressure relief conduit and coaxial therewith, the central guide portion surrounding the stem, the insert member having an aperture through the inner cylindrical wall opening the low pressure relief conduit to the atmosphere;

a low pressure relief valve member reciprocable on the guide portion within the low pressure relief conduit, the low pressure relief valve member sealingly engaging the guide portion and the inner cylindrical wall;

spring means biasing the low pressure relief valve member toward the low pressure relief outlet, the spring means thereby balancing the force of air on the low pressure relief valve member with the vlave means in its first position, the spring means having such characteristics that the low pressure relief valve member closes the low pressure relief outlet from the aperture when the air pressure in the chamber is less than the accessory air pressure but moves past the aperture to open it to the low pressure relief outlet when air pressure in the chamber exceeds the accessory air pressure.

**3,934,414**

## HYDRODYNAMIC TORQUE CONVERTER FOR VEHICLES

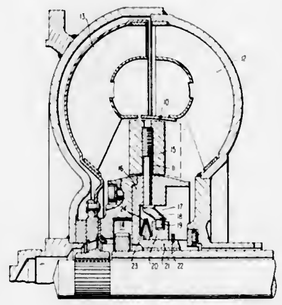
**Hans Merkle, Stuttgart, and Eberhard Frötschner, Gerlingen, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany**

**Filed Oct. 9, 1974, Ser. No. 513,387**

**Claims priority, application Germany, Oct. 9, 1973, 2350600**

**Int. Cl.² F16D** *33/04*

**U.S. Cl. 60—342** **19 Claims**



1. A hydrodynamic torque converter for vehicles which comprises a pump wheel means, a turbine wheel means and a guide wheel means, an adjustable blade means at least at one of these wheel means, characterized in that the adjustable blade means of a respective wheel means are rotatably supported and are automatically adjustable against a spring force by the torque exerted thereon solely by the circulating flow of the hydraulic medium.

**3,934,415**

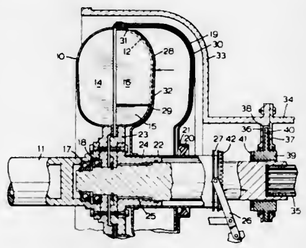
## FLUID COUPLING WITH MOVABLE VANES

**John E. Becker, Bowmanville, Canada, assignor to Cluaran Associates Ltd., Oshawa, Canada**

**Continuation-in-part of Ser. No. 352,971, April 20, 1973, abandoned, which is a continuation-in-part of Ser. No. 158,873, July 1, 1971, abandoned, which is a continuation-in-part of Ser. No. 81,667, Oct. 19, 1970, abandoned. This application May 20, 1974, Ser. No. 471,519**

**Int. Cl.² F16D** *33/02*

**U.S. Cl. 60—353** **6 Claims**



1. A fluid clutch of the kind specified comprising power input and output means (**11, 13**), a pump element (**10**) and a turbine element (**12**) connected respectively to the power input and power output means for rotation thereby and providing respectively cooperating pump and turbine chambers rotatable about the same axis and constituting a working chamber, a quantity of working liquid in the working chamber, each element comprising a respective annular element



shell (**10, 12**) and a respective set of radially-extending vortex producing vanes (**14, 16**), the pump element having an axial extension (**19**) thereof surrounding the turbine element shell to form a compartment between the extension and the turbine element shell, the turbine element comprising another annular shell (**30**) fixed thereto, disposed within the said compartment axially spaced from and rotatable with the turbine element shell to form a corresponding enclosure of constant volume therebetween, at least a portion of some of the vanes of said turbine element being movable axially through slots formed in the wall of the respective turbine element shell out of and into the turbine element chamber and respectively into and out of the last-mentioned constant volume enclosure for movement of the movable vanes or vane portions into and out of vortex-producing operative cooperation with the vanes of the pump element, and means operatively connected to the said movable vanes or vane portions for moving them through the slots from a clutch-engaged position in the turbine element chamber in which the pump and turbine vanes cooperate to produce power-transmitting vortices, to a clutch-disengaged position in which the pump and turbine vanes cannot cooperate to produce such vortices.

**3,934,416**

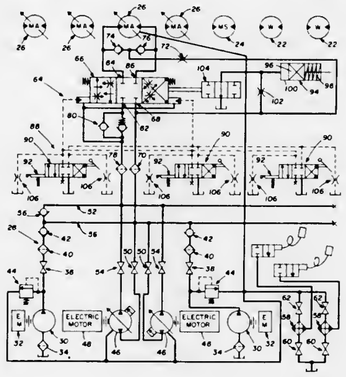
## CENTRAL HYDRAULIC SYSTEM FOR MARINE DECK EQUIPMENT

**Werner P. Goldkuhle, Longview; Richard E. Arnold, Dallas, and Malcolm Ray Johnson, Flint, all of Tex., assignors to LeBus International, Inc., Longview, Tex.**

**Filed Feb. 25, 1974, Ser. No. 445,252**

**Int. Cl.² F15B** *11/16*

**U.S. Cl. 60—484** **26 Claims**




1. A central hydraulic system for a plurality of marine deck equipment comprising:

variable displacement over center pump means for supplying hydraulic fluid at a predetermined pressure;

a plurality of hydraulic motors each individual to and drivingly connected to one of the marine deck equipment and each adapted for actuation by pressurized hydraulic fluid supplied by the variable displacement over center pump means to drive its associated marine deck equipment;

closed loop circuit means interconnecting the pump means and the motors;

a plurality of infinitely variable volume pressure compensated valves each individual to one of the hydraulic motors and each adapted to control the volume of pressurized hydraulic fluid flowing to its associated hydraulic motor and thereby regulate the speed of operation of the associated marine deck equipment;

a plurality of brake means each individual to one of the marine deck equipment and each for normally preventing operation of its associated equipment;

hydraulic actuator means individual to each brake means and adapted for actuation by pressurized hydraulic fluid supplied by the variable displacement pump means to disable the brake means and thereby permit operation of the associated equipment; and

hydraulic circuit means responsive to actuation of the associated infinitely variable volume pressure compensated valve to direct pressurized hydraulic fluid to the associated hydraulic motor for actuating the associated hydraulic actuator means and thereby disabling the associated brake means;

said hydraulic circuit means including valve means for receiving pressurized hydraulic fluid from the connections between the associated infinitely variable volume pressure compensated valve and the associated hydraulic motor and sequence valve means for directing pressurized hydraulic fluid to the hydraulic actuator whenever the differential between the hydraulic pressure in the connections extending from the infinitely variable volume pressure compensated valve and the hydraulic motor exceeds a predetermined level.

**3,934,417**

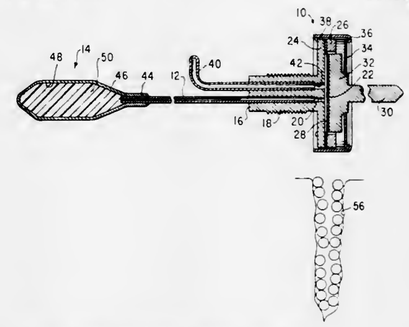
## THERMAL RESPONSIVE DEVICE WITH AN ADSORBENT CARBONACEOUS MATERIAL

**Denis G. Wolfe; Hugh J. Tyler, both of Santa Ana, Calif.; Wilbur F. Jackson, deceased, late of Rolling Hills, Calif., by Linda A. Benton, trust administrator, Long Beach, Calif., assignors to Robertshaw Controls Company, Richmond, Va.**

**Filed Oct. 12, 1973, Ser. No. 405,950**

**Int. Cl.² F01B** *19/02*; **G01K** *5/32*

**U.S. Cl. 60—516** **11 Claims**



11. A thermal responsive device comprising

means, including a metal bulb, forming an enclosed chamber;

porous carbonaceous granules in the metal bulb, formed by substantially complete pyrolytic decomposition of synthetic polymer granules containing polyvinylidene chloride in a purifying atmosphere at a temperature in the range of about 138°C to 177°C;

a charge of gas in the chamber, selected from the group consisting of helium, neon, argon, krypton, and xenon; and

expandable and retractable means responsive to the gas pressure in the chamber.

**3,934,418**

## TURBINE ENGINE

**Earl A. DeBaun, 4447 First Ave., North, St. Petersburg, Fla. 33713**

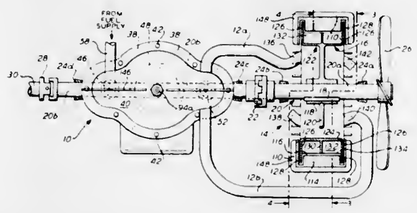
**Filed Dec. 19, 1974, Ser. No. 534,455**

**Int. Cl.² F02G** *3/00*; **F02C** *5/06*

**U.S. Cl. 60—624** **3 Claims**

1. A turbine engine comprising a rotary shaft for driving a related mechanism, a pair of similar compressors mounted diametrically opposite from each other upon said shaft, and a

turbine having a rotor fixed to said shaft for rotation therewith and provided with a pair of side-by-side, integral, vaned, annular, gas-receptive channels; each of said compressors comprising a cylinder including a combustion chamber, a piston operative in said cylinder and partially defining said chamber, fuel intake valve means, gas exhaust valve means, ignition means for igniting fuel within said chamber, said pair of compressors including cam means fixed upon said shaft and coacting separately and alternately with said intake valve means of both



compressors, with said exhaust valve means of both compressors, and with said pistons of both compressors to reciprocate said pistons; said engine further comprising ducts connecting the combustion chambers of the two compressors separately to diametrically opposite inlets of the two said channels of the turbine, whereby the force of exhaust gases from the combustion chambers of the two compressors is regularly, alternately applied to said turbine rotor at diametrically opposite points thereof to yield smoothe, efficient operation of the engine.

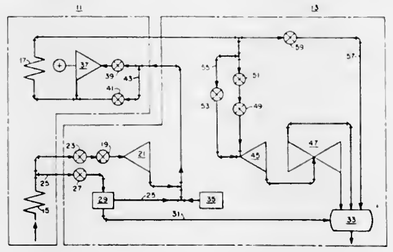
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**3,934,419**

## LOAD CONTROL SYSTEM ESPECIALLY ADAPTED FOR A HTGR POWER PLANT TURBINE

**Ola J. Aanstad, Greensburg, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**Continuation-in-part of Ser. No. 369,332, June 12, 1973, abandoned. This application Aug. 15, 1974, Ser. No. 497,608**
**Int. Cl. F01k** *9/00*
**U.S. Cl. 60—660** **60 Claims**



**1.** In a turbine system having a first turbine stage with a first flow valve to determine the flow therethrough, a first bypass line with a first bypass valve therein connected across the first turbine stage and the first flow valve, a second turbine stage with a second flow valve to determine the flow therethrough, and a second bypass line with a second bypass valve therein connected across the second turbine stage and the second flow valve, an improved control arrangement for simultaneously administering the loading of the first and second turbine stages comprising:

input means providing an input signal indicative of the power requirements of the turbine system;

first detecting means providing a first power signal indicative of the power output of the first turbine stage;

first comparing means for detecting the difference between the power requirements indicated by said input signal and the power output of the first turbine stage indicated by said first power signal and providing a first error signal indicative thereof;

first regulating means to adjust the first flow valve in response to said first error signal;

first compensating means to adjust the first bypass valve in response to adjustment of the first flow valve to produce an effect on the flow through the bypass line that is the inverse of the effect produced on the flow through the first turbine stage by adjustment of the first flow valve;

second detecting means providing a second power signal indicative of the power output of the second turbine stage;

second comparing means for determining the difference between the power requirements indicated by said input signal and the power output of the second turbine stage indicated by said second power signal and providing a second error signal indicative thereof;

second regulating means to adjust the second flow valve in response to said second error signal; and

second compensating means to adjust the second bypass valve in response to adjustment of the second flow valve to produce an effect on the flow through the second bypass line that is the inverse of the effect produced on the flow through the second turbine stage by adjustment of the second flow valve.

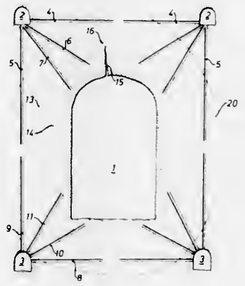
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**3,934,420**

## METHOD OF SEALING THE ROCK AROUND A ROCK CHAMBER INTENDED FOR A MEDIUM, THE TEMPERATURE OF WHICH IS BELOW THE NATURAL TEMPERATURE OF THE ROCK

**Erik Ingvar Janelid, Forsetevagen 18, Djursholm, and Carl-Olof Oskar Morfeldt, Friggavagen 17, Lidingo, both of Sweden**

**Filed July 11, 1974, Ser. No. 487,763**
**Claims priority, application Sweden, Aug. 6, 1973, 7310782**
**Int. Cl.² B65G** *5/00*; **E21F** *17/16*; **E21B** *33/13*
**U.S. Cl. 61—.5** **11 Claims**



**1.** A method for sealing a chamber surrounded by rock to adapt said chamber to store therein a substance having a predetermined storage temperature lower than the natural temperature of said rock comprising the steps of injecting into said surrounding rock a sealing agent having a melting point not more than about 100°C higher than said storage temperature of said substance, bringing the temperature within said chamber to below the melting point of said sealing agent substantially simultaneously with commencement of injection of said sealing agent into said surrounding rock, and continuing injection of said sealing agent to form about said chamber and within said surrounding rock a layer of frozen sealing agent contiguous with said chamber and a liquid layer of said sealing agent extending about said frozen layer.



**3,934,421**

## GROUND STABILIZATION MATTING

**Berthold H. Daimler, Remscheid-Lennep, Germany; Jan Vos, Dieren, Netherlands, and Wilhelm Herveling, Wuppertal, Germany, assignors to Akzona Incorporated, Asheville, N.C.**

**Continuation of Ser. No. 315,454, Dec. 15, 1972, abandoned. This application Aug. 2, 1974, Ser. No. 494,157**
**Int. Cl.² E02D** *3/08*; **D01D** *5/22*
**U.S. Cl. 61—35** **8 Claims**

**1.** A vertical load bearing structure comprising the combination of a matting of looped, intersecting interbonded synthetic polymer filaments, and a compatible soil contained in the matting, said filament loops being at least one millimeter in diameter and having a loop extension of at least 10 times the individual filament diameter, the combination of matting and compatible soil having increased vertical load bearing capacity and resistance to lateral shifting over the individual elements of the combination.

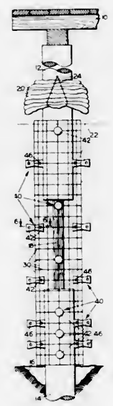
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**3,934,422**

## PILE SPLICING APPARATUS AND METHOD

**Larry E. Fredrickson, and Thomas L. Coates, both of 529 S. 49th St., Tacoma, Wash. 98404**

**Filed Nov. 11, 1974, Ser. No. 522,777**
**Int. Cl.² E02D** *5/60*
**U.S. Cl. 61—53** **10 Claims**



**1.** Apparatus for splicing in situ top and bottom segments of marine piling, the bottom segment being embedded in the ground, the apparatus comprising in combination:

a. an elongated cage of stiff, fluid-cement-permeable mesh material dimensioned to surround and overlap both of the pile segments while bridging the space between the segments,

b. an elongated concrete form bag of longitudinally collapsible, substantially fluid-cement-impermeable material dimensioned to overlie the cage,

c. a plurality of radially extending spacers dimensioned to abut the pile segments on one side of the cage and the concrete form bag on the other side of the cage, thereby spacing the cage predetermined radial distances to opposite sides of the pile segments and form bag, respectively,

d. securing means securing the spacers to the cage, and

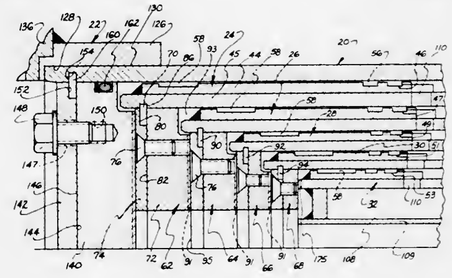
e. fastening means fastening the top and bottom of the concrete form bag to the top and bottom segments of the marine piling, respectively.

**3,934,423**

## POWER CYLINDER CONSTRUCTION

**Roland Haller, Shiloh, Ohio, assignor to Harsco Corporation, Camp Hill, Pa.**

**Filed Mar. 27, 1974, Ser. No. 455,062**
**Int. Cl.² F01B** *7/20*
**U.S. Cl. 92—52** **9 Claims**



**8.** A multiple stage telescoping power cylinder characterized by housing means including a housing base opening; a housing base means removably covering said base opening to provide access to the telescoping stages within said housing means; a plurality of telescoping piston and cylinder assemblies in said housing means and surrounding a central ram, each of said assemblies including a cylindrical member, transfer disc means on one end of the cylindrical member, and a snap ring disconnectably mounting said transfer disc means to said cylindrical member, said transfer disc means including inner and outer disc portions, and threaded fasteners accessible from said housing base opening removably securing said disc portions together at confronting disc surfaces, one of said annular grooves being formed by said confronting disc surfaces to permit access to and removal of said snap ring upon removal of said threaded fasteners.

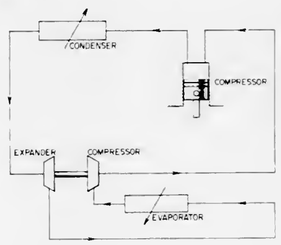
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**3,934,424**

## REFRIGERANT EXPANDER COMPRESSOR

**Fred L. Goldsberry, Amarillo, Tex., assignor to Enserch Corporation, Dallas, Tex.**

**Division of Ser. No. 422,759, Dec. 7, 1973, Pat. No. 3,864,065. This application Sept. 20, 1974, Ser. No. 507,864**
**Int. Cl.² F25B** *9/00*
**U.S. Cl. 62—87** **1 Claim**




**1.** A method of improving the efficiency of a compression refrigeration system having a primary compressor, condenser and evaporator comprising:

passing high pressure fluid through the condenser;

directing the high pressure fluid from the condenser into an inlet passageway within an axially extending rotatable shaft;

channeling the high pressure fluid from the inlet passageway radially outwardly through at least one passageway

formed in a rotary impeller mounted for rotation with the shaft;

expanding the high pressure fluid through nozzles substantially perpendicular to the radial passageway to impart rotary movement to the rotary impeller;

extracting the low quality expanded fluid to an evaporator;

evaporating the low quality fluid in an evaporator to low pressure gas;

removing at least a portion of the low pressure fluid to a secondary compressor, said secondary compressor being in driven engagement with said expander rotor whereby said removed low pressure fluid is at least partially compressed; and

returning said partially compressed fluid to said primary compressor.

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**3,934,425**

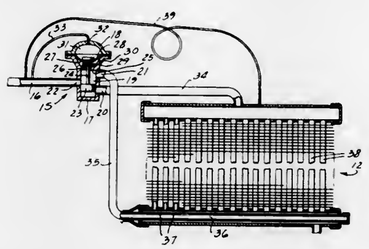
## FLOODED REFRIGERANT CONDENSER HEAD PRESSURE CONTROL

**Herman H. Morris, Chattanooga, Tenn., assignor to Custom Mechanical Contractors, Inc., Chattanooga, Tenn.**

**Filed Sept. 5, 1974, Ser. No. 503,296**

**Int. Cl.² F25B *49/00***

**U.S. Cl. 62—117** **4 Claims**



**4.** A method of providing a constant condenser pressure head in a refrigeration system of the vapor compression type comprising the steps of:

driving a refrigerant through a closed refrigeration circuit;

at a first point in said circuit compressing hot vapor in a refrigerant compressor to add heat of compression and directing the compressed vapor in a stream at a variable pressure through the circuit,

at a second point in said circuit directing the heated vapor stream to a condenser to liquify the stream,

selectively diverting the heated vapor stream to the gravitational top of a vapor condenser unit when vapor pressure from the compressor is low and

selectively diverting the heated vapor stream to the gravitational bottom of the vapor condenser unit and bubbling it upwardly through the condenser to maintain the condensing temperatures at a uniform level when vapor pressure from the compressor is high; and

successively directing the liquified refrigerant through the circuit for expansion and evaporation.

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**3,934,426**

## THERMOSTATIC EXPANSION VALVE FOR REFRIGERATION INSTALLATIONS

**Hans Jörgen Jespersen, Sonderborg, and Leif Nielsen, Nordborg, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark**

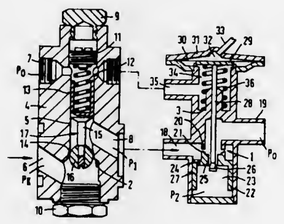
**Filed Aug. 7, 1974, Ser. No. 495,387**

**Claims priority, application Germany, Aug. 13, 1973, 2340836**

**Int. Cl.² F25B *49/00***

**U.S. Cl. 62—205** **6 Claims**

**1.** A thermostatic expansion valve assembly for a refrigeration system having an evaporator and an air cooled condenser, comprising, an operating element dependent upon the superheat temperature of said evaporator, a first flow passage having a first valve unit operated by said operating element, a second flow passage having a second valve unit in series with



said first valve unit which closes at a variable rate which increases as the condenser pressure rises, a reference spring and a displaceable element for operating said second valve unit, said displaceable element being biased in one direction by condenser pressure and in the other direction by evaporator pressure and said reference spring.

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**3,934,427**

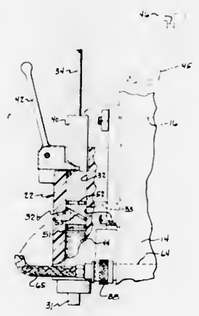
## DISPENSING MACHINE

**Richard M. Keyes, Rockford, Ill., assignor to Beatrice Foods Co., Chicago,, Ill.**

**Filed Sept. 9, 1974, Ser. No. 504,525**

**Int. Cl.² A23G *9/00***

**U.S. Cl. 62—342** **13 Claims**



**9.** In a semi-frozen confection machine including a freezing compartment having an outlet at its front end and adapted to freeze a liquid comestible; a reservoir communicating with the freezing compartment and adapted to hold and supply the liquid comestible to the freezing compartment; and a rotary beater in the freezing compartment to rotatably stir the comestible therein; and improvement comprising:

a valve block having a back side adjacent the freezing compartment outlet and having a valve chamber therein; said chamber having a dispensing outlet and first and second inlet ports; a first passageway connecting one inlet port to the freezing compartment; a second passageway leading from the other inlet port to the exterior of the valve block at one side thereof; a supply of flavoring material; a conduit connected to said supply and having an end at said one side of the valve block; a coupling on the end of the conduit and having a portion received in the second passageway; seal means on the coupling for sealing against the passageway; the valve block having a bore extending transverse of the passageway at a location between the seal means and the one side of the block; and a manually-removable fastener extending through the bore and engaged with the coupling to hold it in the passageway, a valve member mounted in the valve chamber and reciprocably movable between an open position and a closed position blocking flow through the inlet ports; a pair of spaced parallel grooves on the valve member located one below and one above the inlet ports when the valve member is in the closed position; a third groove on the valve member intermediate said pair and shaped so that it is below one of the inlet ports and above the other; and a sealing ring disposed in each groove and sealing against the valve chamber; whereby the intermediate sealing ring seals the inlet ports from each other when the valve member is in closed position.

**10.** In a machine for dispensing a semi-frozen comestible and a flavoring material including a freezing compartment; refrigeration means for refrigerating a surface of the freezing compartment; a first reservoir for holding a liquid comestible; a first supply means for supplying the liquid comestible and a gas to the freezing compartment; means in the freezing compartment for mixing the frozen comestible and the gas therein; and a second reservoir for a flavoring material, the improvement comprising:

a valve block at the freezing compartment and having at least one generally upright elongate chamber therein; said chamber having a dispensing outlet at its lower end; and first and second inlet ports at opposite sides of the chamber and spaced about an equal distance above the dispensing outlet so that the inlet ports are about the same level in the chamber; a first passageway connecting one inlet port to the freezing compartment; a second passageway connecting the other inlet port to said second reservoir means; feed means for feeding the flavoring material under pressure through the second passageway to said other inlet port; an elongate valve member mounted in the chamber and reciprocably movable between an open position and a closed position; said valve member having upper and lower spaced sealing rings extending therearound in planes crosswise of the valve member respectively above and below said inlet ports when the valve member is in its closed position and an intermediate sealing ring extending around the valve member intermediate the upper and lower sealing rings and canted relative to the valve member so that it is below one of the inlet ports and above the other inlet port when the valve member is in its closed position to seal the inlet ports from each other, said upper, lower and intermediate sealing rings being disposed above said inlet ports when the valve member is moved to its open position whereby flow of semi-frozen comestible and flavoring material occurs simultaneously when the valve member is in open position and is stopped when the valve member is in its closed position.

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**3,934,428**

## FLEXIBLE COUPLING

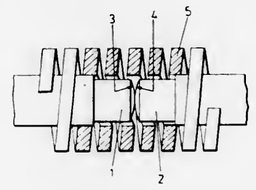
**Sven Arvid Hedin, Huddinge, Sweden, assignor to ITT Industries, Inc., New York, N.Y.**

**Filed May 10, 1974, Ser. No. 468,761**

**Int. Cl.² F16D *3/52***

**U.S. Cl. 64—15 C** **4 Claims**

**1.** A coupling for two rotating torque transferring shafts which are subject to variations in the angles they rotate with respect to each other and are exposed to strong axial pressures comprising, prepared heading surfaces on the ends of two shafts formed as conical or spherical surfaces so that, when the shafts are parallel and the ends of the shafts are placed in contact with each other they make contact with each other at a single central point, and when the shafts form an angle of



less than 180° with respect to each other during a period of rotation, the two end surfaces roll against each other, and means for preventing the two ends of the shafts from moving radially relative to each other, said means serving also as a torque transfer device transferring a portion of the turning torque between the two shafts, where the torque transferring device is a screw spring which is arranged around the ends of the two shafts.

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**3,934,429**

## CONSTANT VELOCITY UNIVERSAL JOINT

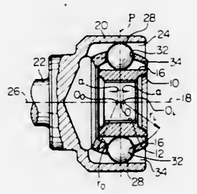
**Koichi Takahashi, Yokohama; Nobuteru Hitomi, Yokosuka, and Taisuke Kizu, Fujisawa, all of Japan, assignors to Nissan Motor Company Limited, Yokohama, Japan**

**Filed June 5, 1974, Ser. No. 476,703**

**Claims priority, application Japan, June 30, 1973, 48-73853**

**Int. Cl.² F16D *3/30***

**U.S. Cl. 64—21** **3 Claims**



**1.** A constant velocity universal joint comprising an inner race and an outer race between which balls are mounted in grooves for transmitting torque therebetween, a ball retaining cage positioned between said inner and outer races retaining said balls in a common plane, said cage having an outer surface formed with a part-spherical surface, the centers of radius of curvature of said part-spherical surfaces being equidistant from and on the opposite sides of the joint center, the inner surface of said cage and the outer surface thereof being in sliding engagement with the outer surface of said inner race and the inner surface of said outer race, respectively, the outer surface of said inner race being formed with a part-spherical surface having substantially the same center of radius of curvature to that of the part-spherical surface forming the inner surface of said cage and the inner surface of said outer race

being formed with a part-spherical surface having substantially the same center of radius of curvature to that of the part-spherical surface forming the outer surface of said cage, said inner race being provided in the part-spherical surface thereof with ball-engaging grooves which are angled with respect to the inner race axis and said outer race being provided in the part-spherical surface thereof with ball-engaging grooves which are angled with respect to the outer race axis in the opposite direction.

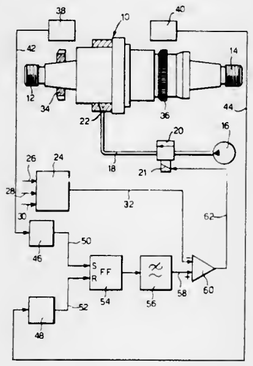
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**3,934,430**

## ELECTRONIC INJECTION TIMING CONTROL FOR FUEL INJECTION PUMPS

**Oscar Fuso, Turin, Italy, assignor to Fiat Societa per Azioni, Turin, Italy**

**Filed Mar. 6, 1974, Ser. No. 448,598**
**Int. Cl.² F02P 5/04; F16D 5/00**
**U.S. Cl. 64—25** **1 Claim**



1. A fuel injection system comprising:
an injection pump having a pump drive shaft;
a driving shaft;
a helical sleeve coupling interconnecting said pump drive shaft and said driving shaft;
electronic circuit means adapted to be responsive to a number of operating parameters of an associated engine to provide a first output signal;
hydarulic actuator means controlled by said circuit for effecting axial displacement of said sleeve to vary the relative angular displacement between said shafts and thereby vary the fuel injection advance angle of said pump as a function of the said parameters;
a first ferromagnetic toothed wheel attached to said pump drive shaft so as to rotate therewith;
a second ferromagnetic toothed wheel attached to said driving shaft so as to rotate therewith, said second ferromagnetic wheel having the same number of teeth as said first ferromagentic tooth wheel;
first magnetic pick-up means disposed adjacent said first ferromagnetic wheel to generate a signal proportional to the rotation of said wheel;
second magnetic pick-up means disposed adjacent said second ferromagnetic wheel to generate a signal proportional to the rotation of said second wheel;
means for deriving a second output signal proportional to the relative angular displacement of the pump drive shaft and the driving shaft comprising first and second monostable multivibrators having their inputs connected to said first and second magnetic pick-up means respectively, a flip-flop having "set" and "reset" inputs connected to the outputs of the first and second monostable multivibrators, and a low-pass filter means connected to the output of the flip-flop to provide the second output signal;
differential amplifier means having its inputs connected to said electronic circuit means and said low pass filter means to provide a third output signal representative of the difference between said first and second output signals, said third output signal being a control signal to said hydraulic actuator means.

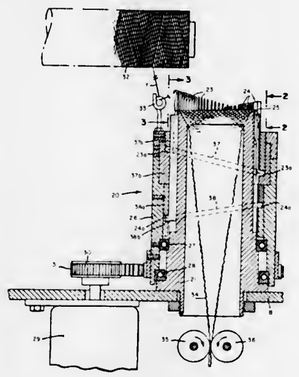
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**3,934,431**

## HIGH SPEED KNITTING MACHINE AND METHODS

**Robert W. Westmoreland, Sr., Roanoke, Va., assignor to Fred Whitaker Company, Bala Cynwyd, Pa.**

**Continuation of Ser. No. 821,447, May 2, 1969, abandoned. This application Oct. 29, 1973, Ser. No. 410,807**
**Int. Cl.² D04B 15/00, 15/32**
**U.S. Cl. 66—57** **10 Claims**



1. A circular knitting machine for knitting yarn into a fabric having a needle cylinder, a complement of needles disposed in said cylinder for vertical movement, a complement of sliders disposed in said cylinder in alternation with said needles, and cam means extending substantially completely around said cylinder for longitudinally moving said needles and said sliders back and forth so that essentially throughout the entire knitting cycle each of said needles moves in a direction opposite to the direction of movement of the sliders which are adjacent to said needle said cam means providing substantially continuous vertical movement to said needles and sliders.

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**3,934,432**

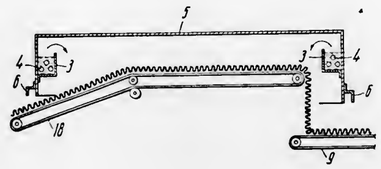
## APPARATUS FOR THE CONTINUOUS STEAMING OF MAN-MADE FIBERS

**Heinz Fleissner, Egelsbach near Frankfurt am Main, Germany, assignor to Vepa AG, Switzerland**

**Division of Ser. No. 276,081, July 28, 1972, Pat. No. 3,838,968. This application Feb. 27, 1974, Ser. No. 446,339**
**Claims priority, application Germany, July 28, 1971, 2137759; Nov. 16, 1971, 2156764; Mar. 11, 1972, 2211792**
**Int. Cl.³ D06B 3/02**
**U.S. Cl. 68—5 D** **22 Claims**

18. An apparatus for the steam treatment of fibrous material which comprises at least one open hood-shaped steamer housing defining a steam bell and having an open bottom extending across the housing, means for supplying steam within said housing, and means for transporting said fibrous material from outside of said housing into the steam contained within said housing and then outside of said housing.





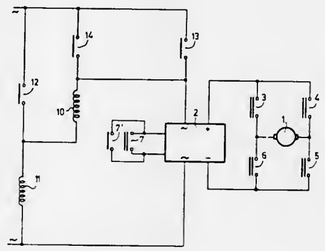
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**3,934,433**

## SWITCHING CONTROL FOR A REVERSING MOTOR OF A WASHING MACHINE

**Yves Albert Daniel Thibaut, Amiens, France, assignor to U.S. Philips Corporation, New York, N.Y.**

**Filed Feb. 7, 1974, Ser. No. 440,340**
**Claims priority, application France, Feb. 9, 1973, 73.04659**
**Int. Cl.² D06F 33/02**
**U.S. Cl. 68—12 R** **2 Claims**



1. A device for switching a drum drive motor of a washing machine, comprising a pump motor having a first line connection and a switch connection; a drum drive motor; an electronic supply module having a first line connection and a switch connection, and output connections; timer contacts, including a pump motor contact having a second line and a motor connection, and a spin cycle contact having a second line and a module connection; a reversing switch assembly; means for connecting said drum drive motor to said electronic supply module output connections via said reversing switch assembly; means for driving the reversing switch assembly having first and second input connections; a delay contact having second line and motor connections; and means for connecting said first line connections together and said second line connections together and for connecting first and second line connections to a source of electric power; wherein said pump motor contact motor connection, pump motor switch connection and first input connection are connected together, and said delay contact motor connection, spin cycle contact module connection, electronic module switch connection and second input connection are connected together, whereby said delay contact and drive means for the reversing switch form a series circuit in parallel with the pump motor contact, and said delay contact and spin cycle contact are in parallel for supplying power to said electronic control module.

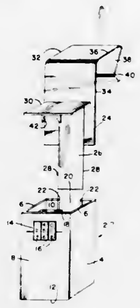
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**3,934,434**

## KEY SAFE APPARATUS

**Jack Law, 910 Alakea St., Honolulu, Hawaii 96813**

**Filed Sept. 24, 1973, Ser. No. 399,739**
**Int. Cl.² E05B 65/52**
**U.S. Cl. 70—63** **17 Claims**



1. A key safe apparatus comprising:
a receptacle box of a volume sufficient to enclose a door key, with four, generally rectilinear, vertical side walls and a bottom wall wherein a vertical side wall is formed with a slot structure running vertically downward from an upper edge of the vertical side wall, which slot structure has vertical edges bevelled in such a way that the slot structure is wider in a plane of an interior face of the vertical side wall than it is in a plane of an exterior face of the vertical side wall,
a tongued cover structure comprising a plate capable of covering the receptacle box and a bevelled tongue member attached to the plate and extending therefrom, which tongue member is formed with bevelled edges and which tongue member is wider in a plane of one principal face of the tongue member than it is in a plane of another principal face of the tongue member so that the tongue member may be keyed into the slot structure of the receptacle box,
a latching projection attached to the plate of the tongued cover structure and extending therefrom, and
a code lock structure engaging the latching projection attached to the plate, whereby a door key is securely encased in a receptacle box with a tongued cover structure locked to a receptacle box by means of a code lock.

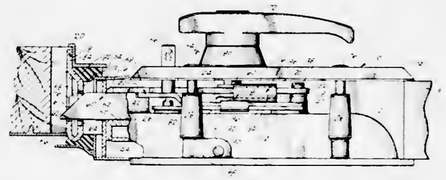
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**3,934,435**

## DOOR LOCKSET AND STRIKE

**William F. Gresham, San Clemente, Calif., assignor to VSI Corporation, Pasadena, Calif.**

**Filed Sept. 26, 1974, Ser. No. 509,656**
**Int. Cl.² E05B 65/06**
**U.S. Cl. 70—150** **26 Claims**



1. An improved lockset for mounting in a door and securing the door in a jamb, the lockset having a jamb end, an interior end opposite the jamb end, an outside for facing the outside of the door, and an inside for facing the inside of the door, the improvement comprising:

a. a monolithic body having a head with a straight line channel proximate the jamb end;
b. a lock bolt assembly in the channel of the body for translation along a path between a retracted and an extended position, the extended position having a portion of the lock bolt externally of the body on the jamb side thereof for receipt in a mortise of the jamb, the retracted position having the lock bolt withdrawn from the extended position for clearance of the mortise, the lock bolt assembly having U-shaped in cross section guides on the interior end of the lockset and facing the path;
c. a guide plte overlying the lock bolt assembly on the inside of the lockset, abutting the head of the body and secured to the body, capturing the lock bolt assembly in the channel, and received by the guides for maintaining the interior end of the lock bolt assembly along the path;
d. means for biasing the lock bolt assembly into its extended position;
e. means on the inside of the lockset for manually retracting the lock bolt assembly;
f. means on the outside of the lockset for manually retracting the lock bolt assembly; and
g. means for locking and unlocking the lockset from either side thereof.

**24.** For use in a door jamb to receive a lock bolt of a lockset mounted in a door, an improved strike comprising:
a one-piece member having ends adapted to be mounted to the door jamb, a medial section raised from a plane containing surfaces of the ends, a curl in the medial section for transit bearing with a lock bolt upon closing of the door,
the curl having a convex outward curvature, a mortise in the medial section having a primary and a secondary lock bolt bearing surface, the secondary surface being a redundant surface to keep a lock bolt upon failure of the primary surface, a pair of spaced apart retaining sections in the medial section, each retaining section having a slot for receipt of a shank of an interlock attached to the lockset, a head of the interlock residing behind the retaining section for interference therewith upon loads in the jamb and the door tending to separate the two.

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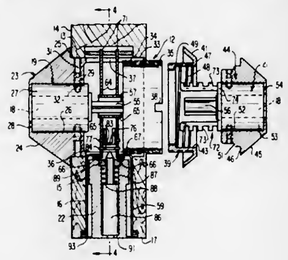
**3,934,436**
**STANDARD FOR PARKING AND LOCKING A BICYCLE**
**Francis T. Candlin, 280 Madison St., and Michael D. Candlin, 2737 E. 13th Ave., both of Denver, Colo. 80206**
**Filed Mar. 29, 1974, Ser. No. 456,359**
**Int. Cl.² B62H *5/00*; E05B *73/00***
**U.S. Cl. 70—234** **10 Claims**



1. A standard for parking and locking a bicycle with a locking means comprising in combination:
a a tubular post upstanding from a surface and having a cable-attaching portion on the post;
b a body clamp means outstanding from the post to engage and clamp upon the tubular frame portion of a bicycle and including a locking hole means therein to receive said locking means, and
c cable means having one end extending from the cable-attaching portion and being of a length to be interwoven through both wheels of a bicycle held by the body clamp and to terminate at its extended end adjacent to said locking hole means, said cable means including an eye at the extended end of said cable means to receive said locking means when said locking means are inserted through said locking hole in said body clamp means.

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**3,934,437**
**DOOR BOLT LOCK**
**Alois Crepinsek, El Paso, Tex., assignor to Alois Crepinsek; Lee A. Chagra and Dafe McFadden, all of El Paso, Tex.**
**Filed Dec. 12, 1974, Ser. No. 531,927**
**Int. Cl.² E05B *9/08***
**U.S. Cl. 70—370** **12 Claims**



1. In a door bolt lock:
lock cylinder housing means to be disposed within a transverse bore through a door near the edge thereof for housing at least one lock cylinder assembly in mechanical operative association with a lock bolt assembly to extend from the edge of the door;
said lock cylinder housing means including first and second flange means for capturing the lip portions of the transverse bore in the door therebetween and for securing said lock cylinder housing means within the transverse bore of the door;
said lock cylinder housing means having an aperture in the side thereof through which to receive the lock bolt assembly to be disposed in mechanical operative engagement with the lock cylinder assembly to be carried within said lock cylinder housing means;
said lock cylinder housing means having first and second axially separable housing portions including said first and second flange means, respectively; and
threaded coupling means for operative association with said first and second housing portions for coupling said first and second housing portions together and including mateable tubular threaded portions such that relative rotation between said mateable threaded portions produces axial translation of one of said housing portions relative to the other.

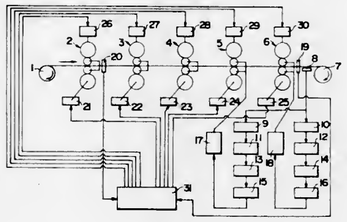
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**3,934,438**
**METHOD OF LONG-EDGE SHAPE CONTROL FOR TANDEM ROLLING MILL**
**Tohru Arimura, Yokohama; Masaru Okado, Tokyo; Takarokuro Ichimaru, and Masamoto Kamata, both of Fukuyama, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan**
**Continuation of Ser. No. 409,684, Oct. 25, 1973, abandoned.**
**This application Jan. 9, 1975, Ser. No. 539,787**
**Claims priority, application Japan, May 9, 1973, 48-51465**
**Int. Cl.² B21B *37/00***
**U.S. Cl. 72—9** **8 Claims**

1. A method of product-shape control carried out during rolling of a strip by a tandem rolling mill having a plurality of tandem-arranged adjacent rolling stands, comprising:



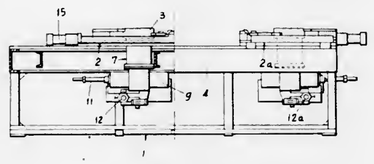
determining a shape influence coefficient which is a function of at least the dimensions of the tandem mill, schedule of roll passes and elastic deformation of the stands and rolls;
detecting, during rolling, the long-edge shape of the strip at the delivery side of the final stand in stand tandem mill;
producing a signal corresponding to said detected long-edge shape; and



adjusting the roll bending force for at least two latter stands, but not all stands, in said tandem mill as a function of said signal and as a function of said shape influence coefficient to control the shape of the strip without producing variations in the thickness of the strip at said delivery side of said final stand, and without producing variations in the inter-stand tension between each pair of adjacent stands.

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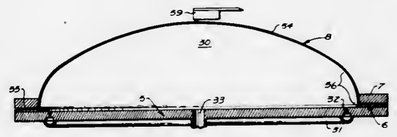
**3,934,439**
**DRAW-BENDING APPARATUS AND METHOD**
**Horst Kirschstein, Wuppertal; Frank Rabenschlag, Solingen; Dieter Lotz, Wuppertal; Gerhard Holland-Cunz, Wuppertal, and Hans Blomberg, Wuppertal, all of Germany, assignors to Gebr. Happich GmbH, Germany**
**Filed Apr. 1, 1974, Ser. No. 456,845**
**Claims priority, application Germany, Apr. 7, 1973, 2317540**
**Int. Cl.² B21D *11/02***
**U.S. Cl. 72—21** **7 Claims**



1. Apparatus for draw-bending a workpiece comprising, in combination:
first and second spaced bending tables each rotatable about respective spaced, parallel axes;
tool holder means connected to and rotatable with said first and second spaced bending tables; said tool holder means being connectable to a workpiece to be bent in response to the rotation of said first and second bending tables; the space between said tool holder means of said first and second spaced bending tables being free of intervening mechanism thereby to permit the free suspension of a workpiece between said tool holder means of said first and second bending tables;
operating means connected to said first and second bending tables for rotating said first and second bending tables;
control means connected to said operating means for establishing the angle of rotation of each of said first and second bending table;
said first and second bending tables being rotatable through different respective angles by said operating means;
means connecting said first and second bending tables to one another for rotating said bending tables through different angles of rotation simultaneously during an identical time period.

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**3,934,440**
**MEANS AND METHOD OF FORMING SHEET METAL**
**John W. Berg, 1111 Morse Ave., Space 35, Sunnyvale, Calif. 94086**
**Continuation of Ser. No. 145,397, May 20, 1971, abandoned.**
**This application Sept. 4, 1973, Ser. No. 394,280**
**Int. Cl.² B21D *26/04***
**U.S. Cl. 72—54** **5 Claims**



1. Means for shaping sheet metal, comprising:
a. a pair of opposed marginal members for receiving the margin of a sheet metal work piece therebetween;
b. a backing member for the work piece joined to one of the marginal members and forming with the work piece a pressure chamber;
c. guide means confronting the outer periphery of the marginal members and permitting translational movement of the marginal members and work piece as a unit relative thereto;
d. a plurality of clamp units disposed about the marginal members, each clamp unit including the guide means, a pair of opposed clamp members relatively movable to clamp the marginal members and the work piece therebetween, and means for effecting relative movement of the clamp members;
e. means for introducing pressure fluid into the pressure chamber to distend the work piece with respect to the backing member; and
f. means for individually controlling the clamping force exerted by each clamp unit to permit controlled slippage of the margin of the work piece with respect to the marginal members; including means for sensing slippage of the work piece in selected regions.

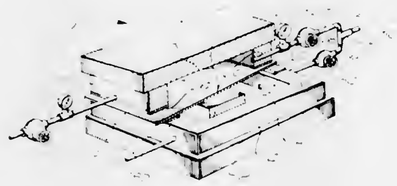
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**3,934,441**
**CONTROLLED ENVIRONMENT SUPERPLASTIC FORMING OF METALS**
**Charles Howard Hamilton, San Pedro; Fred B. Koeller, Manhattan Beach; Roger S. Raymond, Redondo Beach, and Martin Goldberg, Valencia, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.**
**Filed July 8, 1974, Ser. No. 486,290**
**Int. Cl.² B21D *26/04***
**U.S. Cl. 72—60** **17 Claims**

1. A method of making metallic forms in a controlled environment comprising:
providing at least one shaping member having a surface formed complimentary to the shape desired to be formed;
providing a metal blank having an effective strain rate sensitivity and two opposed principal surfaces;
enclosing an area around said metal blank and said at least one shaping member, said enclosed area being divided into first and second chambers by said metal blank, said metal blank being positioned as a diaphram between said chambers, said at least one shaping member being located in said first chamber;
providing an inert gas environment in said chambers;

heating said metal blank to a temperature suitable for superplastic forming; and

controlling the fluid pressure of said inert gas within said chambers to induce a pressure loading across the principal surfaces of said metal blank wherein the fluid pressure



of said inert gas within said second chamber is greater than the fluid pressure of said inert gas within said first chamber, thereby causing said metal blank to deform into said first chamber and against, and into intimate contact with, said at least one shaping member.

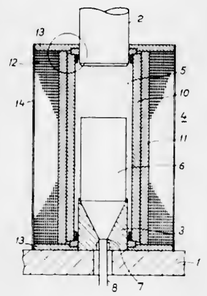
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**3,934,442**

**PRESS FOR HYDROSTATIC EXTRUSION**

**Hans Larker, Robertsfors, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden**

**Filed Aug. 15, 1974, Ser. No. 497,834**
**Claims priority, application Sweden, Sept. 5, 1973, 7312058**
**Int. Cl.² B21C** *27/00*
**U.S. Cl. 72—60** **2 Claims**



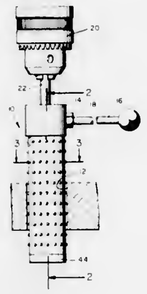
**1.** A high pressure apparatus with a pressure chamber having a high pressure cylinder comprising an inner tube **10** (liner) surrounded by a prestressed supporting member **11** and intended to enclose a pressure medium, a member projecting into the high pressure cylinder, a seal assembly comprising a seal holder **13, 18** at the end of the pressure chamber, first **21** and second **26** sealing rings of metal, the first ring having an inner cylindrical surface **22** making contact with the member projecting into the cylinder and an end surface **24** making contact with the seal holder, the second ring **26** having an outer surface **27** making contact with the cylinder wall and an end surface **28** making contact with the seal holder, the end surface of the inner tube being inwardly inclined towards the tube center and the seal holder having an inclined end surface abutting the inclined end surface of the inner tube.

**3,934,443**

**PEENING TOOL**

**David P. Keen, 2115 Robinson St., Redondo Beach, Calif. 90278**

**Filed Jan. 3, 1975, Ser. No. 538,301**
**Int. Cl.² B21J** *7/16*
**U.S. Cl. 72—75** **18 Claims**



**1.** A peening tool comprising:

a solid cylindrical body having a centrally located hollow portion defining a given body thickness,

a plurality of holes in said body thickness located radially in said cylindrical body,

said holes having a reduced diameter near the peripheral portion of said hollow cylindrical body,

a spherically shaped ball located in each of said holes and having a diameter less than the largest diameter of said hole but greater than said reduced diameter and greater than said body thickness, and

a rotatable driver body located within said hollow cylindrical body and having a plurality of individual rotatable hammers adapted to sequentially contact said balls.

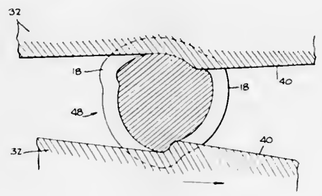
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**3,934,444**

**METHOD AND APPARATUS FOR FORMING VIBRATION-RESISTANT THREAD-FORMING SCREW**

**Leon Simons, New City, N.Y., assignor to NL Industries, Inc., New York, N.Y.**

**Division of Ser. No. 251,023, May 8, 1972, Pat. No. 3,850,074, which is a continuation-in-part of Ser. Nos. 54,716, July 14, 1970, abandoned, and Ser. No. 007,280, Jan. 30, 1970, abandoned. This application Aug. 29, 1974, Ser. No. 501,801**
**Int. Cl.² B21H** *3/06*
**U.S. Cl. 72—88** **5 Claims**



**1.** A thread forming die for rolling lobed thread-forming screws from circular shanks, said die comprising a hardened block shaped along a working surface thereof with thread-forming indentations having cross-sections corresponding to a desired formed thread cross-section, said thread-forming indentations each being undulated with respect to the plane of said working surface, with the undulations being arranged in columns extending across the indentations, said columns extending at an acute angle with respect to the direction of die movement, said acute angle being related to the spacing of said undulations such that a line drawin perpendicular to the direction of die movement will intercept corresponding points along undulations in at least two different columns so that a screw shank rolled by said die will at all times be engaged by the highest points of at least two undulations.



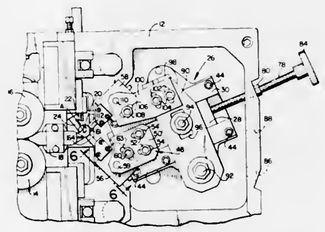
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**3,934,445**

**DUAL PURPOSE SPRING COILING MACHINE**

**Bernard Lampietti, Goshen, Conn., assignor to Torin Corporation, Torrington, Conn.**

**Filed June 24, 1974, Ser. No. 482,089**
**Int. Cl.² B21F** *11/00*
**U.S. Cl. 72—129** **29 Claims**



**1.** In a dual purpose spring coiling machine, the combination of an upstanding main supporting frame, feed means on said frame for intermittently advancing spring wire in a horizontal longitudinal direction, a spring coiling station at a front portion of said frame, a wire guide means on said frame between said feed means and coiling station, an arbor on said frame at said coiling station and projecting laterally and generally horizontally forwardly and which is adapted to engage wire advanced longitudinally past said guide means by said feed means, a pritch tool supported by said frame at said coiling station and engageable with and operable laterally to displace wire advanced longitudinally by said feed means, a spring cut-of tool supported by said frame and movable toward and away from said coiling station, and a coiling tool slide assembly arranged on a side of said arbor generally opposite said feed means and wire guide means, said assembly comprising a coiling tool slide, a guide mountable selectively on said frame in at least two discrete angularly related positions, said guide being adapted to support said slide for rectilinear movement in one and an opposite direction and toward and away from said coiling station at each of its said discrete positions, and at least two coiling tool holders carrying coiling tools and mountable selectively on said slide for different spring coiling functions.

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**3,934,446**

**METHODS OF AND APPARATUS FOR PRODUCTION OF WIRE**

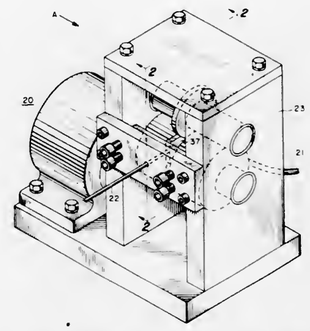
**Betzalel Avitzur, 817 N. 31st St., Allentown, Pa. 18104**

**Filed Apr. 16, 1974, Ser. No. 461,307**
**Int. Cl.² B21B** *21/00*
**U.S. Cl. 72—206** **22 Claims**

**11.** Apparatus for forming wire comprising:

a. Means for passing an incoming rod of material having a first cross-sectional area through a pair of opposed members which rotate about parallel axes, wherein said opposed rotating members have external cylindrical surfaces which cooperate so as to form a second cross-sectional area in the plane common to said axes, said second cross-sectional area being less than that of said first cross-sectional area so that said rotating members upset said incoming rod in a rolling manner; and

b. A die adjacent said plane and having an orifice aligned with said second cross-sectional area; said die orifice blocking discharge from said second cross-sectional area so that the rod moves directly into said die orifice, said die orifice being spaced from said plane by a distance substantially less than the radius of said members; said members having sufficient frictional contact with said rod so that said rod may be extruded through the die orifice to form wire.



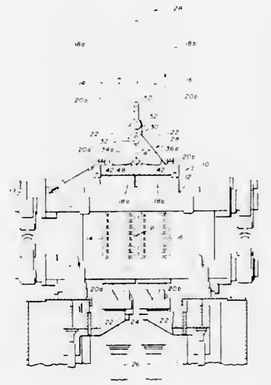
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**3,934,447**

**VERTICAL ROLL CHANGING APPARATUS**

**Robert R. Brodeur, Worcester, Mass., assignor to Morgan Construction Company, Worcester, Mass.**

**Filed Jan. 10, 1975, Ser. No. 540,157**
**Int. Cl.² B21B** *31/08*
**U.S. Cl. 72—239** **5 Claims**

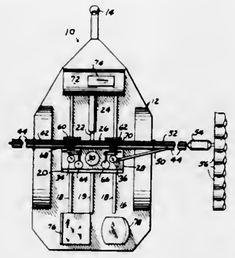


**1.** In a rolling mill having a housing containing a roll assembly which includes a pair of vertical rolls with the upper and lower roll necks of each roll journalled respectively in upper and lower laterally spaced bearing chocks, a carrying assembly for use in vertically moving the said roll assembly into and out of the said housing said carrying assembly comprising: a carrying member and first and second link members; first pin means for connecting said first and second link members to said carrying member at a common central location; second pin means for pivotally connecting said first and second link members to the upper bearing chocks of the roll assembly; and, third pin means on said carrying member at a lower central location spaced beneath said first pin means, said third pin means being engageable with oppositely inclined surfaces on said first and second link members.

### 3,934,448
### RACKED PIPE REAMER

Lowal L. Hand, 416 S. 4th, Clinton, Okla. 73601

Filed Nov. 25, 1974, Ser. No. 527,184
Int. Cl.² B21D 5/02
U.S. Cl. 72—380 6 Claims

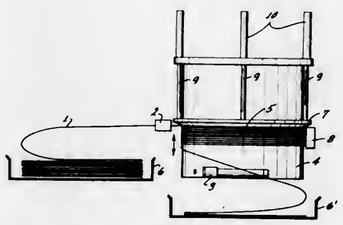


1. A reamer for horizontally disposed racked tubular members, comprising:
an elongated mobile frame including a substantially horizontal base;
a platform longitudinally slidably overlying said base;
platform moving means for moving said platform relative to said base;
trough means extending transversely of said base in vertically spaced relation above said platform;
elevating means for raising and lowering said trough means;
a reamer rod slidably supported by said trough;
a reamer connected with one end of said rod;
a pair of winches each having a flexible element connected with one end of said rod in cooperative opposition; and,
means including motors for operating said winches, whereby operation of said winches in sequence alternately pushes said rod and reamer into and through and pulls it back out of the same end of a racked tubular member.

### 3,934,449
### DRAWING ELONGATED STOCK, SUCH AS COPPER TUBING

Otto Uhlmann, Burgdorf, and Norbert Stephan, Ahlem, both of Germany, assignors to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hannover, Germany

Filed Mar. 10, 1975, Ser. No. 557,107
Claims priority, application Germany, Mar. 23, 1974, 2414134
Int. Cl.² B21C 1/02
U.S. Cl. 72—289 3 Claims

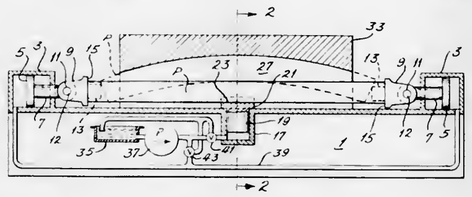


1. In a machine for drawing elongated stock such as copper tubing or the like and having a drawing die and a drum rotating on a vertical axial and onto which stock drawn by and through the die is wound and which draws the stock through the die, there being a clamp on the drum for holding the end of the stock, the improvement comprising a slightly obliquely positioned annulus, axially movably disposed on the drum; and
means for displacing the annulus to assume a first position in which it places the stock as drawn through the die for positioning on the drum, while pushing coiled stock down, and a second position of retraction to enlarge the capacity of the drum without dislodging the stock as coiled thereon.

### 3,934,450
### METHOD AND APPARATUS FOR BENDING ELONGATED MEMBERS

Winthrop B. Reed, St. Louis, Mo., assignor to General Steel Industries, Inc., St. Louis, Mo.

Filed Aug. 12, 1974, Ser. No. 496,374
Int. Cl.² B21D 5/02
U.S. Cl. 72—383 12 Claims



1. The method of bending an elongated member comprising the steps of positioning the elongated member between a pair of parallel surfaces normal to the axis of the proposed bend and spaced apart sufficiently to closely receive the width of the elongated member between them, initiating application of longitudinal compressive loads to opposite ends of the elongated member, applying a transverse load in a direction radially outwardly of the direction of the proposed bend to the intermediate region of the elongated member, ceasing application of such transverse load prior to substantial bending of the elongated member, and continuing application of such longitudinal compressive loads after cessation of application of said transverse load, to complete the bending operation.

### 3,934,451
### METHOD OF DETECTING IMPERFECTIONS IN A HEAT-INSULATING LINING

Paul Bristoll, and Godefridus Arink, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed May 29, 1973, Ser. No. 364,394
Claims priority, application Netherlands, June 2, 1972, 7207473
Int. Cl.² G01N 25/72
U.S. Cl. 73—15 FD 6 Claims

1. A method of detecting imperfections in a heat-insulating lining of foamed material of a wall enclosing a space suitable for cryogenic uses, comprising locally cooling the surface of the lining by scanning with a jet of cooled gas and observing the lining for imperfections in the cooled state.

### 3,934,452
### METHOD OF DETERMINING DYNAMIC STRAINS IN COMPOSITE STRUCTURES

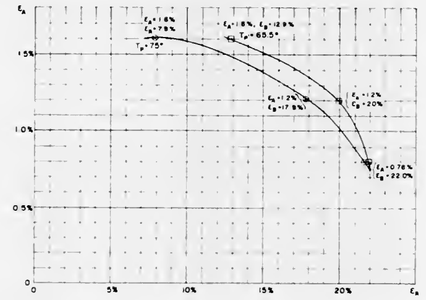
Dusan Cyril Prevorsek; Young Doo Kwon, and Raj Kumar Sharma, all of Morristown, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Dec. 2, 1974, Ser. No. 528,610
Int. Cl.² G01N 3/32
U.S. Cl. 73—15.6 5 Claims

1. Method of determining the strain amplitudes of the two principal components of a structure composed principally of two viscoelastic materials A and B at least one of which shows non-linear viscoelastic behavior under strain, due to cyclic straining of the structure with heat generation, comprising the following steps:
1. Experimentally determining rates of heat generation, Q, per unit volume of each material, due to cyclic straining, for each material at a series of temperatures by hysteresis measurements at various strain amplitudes ($\epsilon_A$) for material (A) and ($\epsilon_B$) for material (B);
2. Calculating by computer for each pair of a set of pairs of strain amplitudes ($\epsilon_A$, $\epsilon_B$), the steady-state temperatures at two positions (P) and (P′) in the structure, using finite difference approximations at successive positions through the structure, to solve the heat balance equation appropriate for the particular structure, having as its simplest form:

$$\sigma C_p \partial T/\partial t = K \partial^2 T/\partial q^2 + Q$$

where $\partial/\partial t$ indicates partial differentiation by time; $\partial/\partial q$ indicates partial differentiation by the space coordinate;
$\sigma$ = density
$C_p$ = heat capacity per unit volume



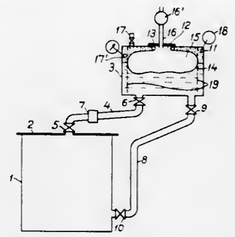
T = temperature
K = coefficient of thermal conductivity
Q = heat generation rate per unit volume, at the temperature calculated for each volume element dV and at the value of strain amplitude ($\epsilon_A$) or ($\epsilon_B$) imposed upon the material (A) or (B);
3. Representing the calculated set of temperatures at (P) as a function of strain amplitudes, $\epsilon$, of one of the materials for each value of the other $\epsilon$, and likewise representing the calculated set of temperatures at (P′);
4. Experimentally determining steady-state temperatures TP and $T_P'$ at positions (P) and (P′) of the structure as it undergoes the specified straining cycle;
5. Representing the curve of $\epsilon_A$ vs. $\epsilon_B$ at the temperature $T_P$ and an likewise the $\epsilon_A$ vs. $\epsilon_B$ curve at the temperature $T_P'$ using the data revealed by step (3) above;
6. Observing the intersections of the two curves revealed by step (5) above, thereby determining a pair of strain amplitudes ($\epsilon_A$, $\epsilon_B$) imposed by the cyclic straining, which pair of amplitudes will give rise to the experimentally determined temperatures $T_P$ and $T_P'$.

### 3,934,453
### CONSERVATOR SYSTEM

Petter Hessen, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Oct. 25, 1974, Ser. No. 518,151
Int. Cl.² G01D 7/04; H01G 5/04; H02G 15/26
U.S. Cl. 73—19 6 Claims

1. Conservator system for apparatus filled with oil which is saturated with a non-combustible gas, comprising a conservator tank, means connected with the conservator tank for circulation of oil through an inlet from the upper portion of the apparatus and an outlet to the lower portion of the apparatus, in which free non-combustible gas is present in an upper portion of the conservator tank above the oil level therein, an elastic diaphragm (14) in the conservator tank separating the oil and free non-combustible gas located above the oil level from the atmosphere, thereby providing a space on the side of



the diaphragm facing away from the oil, and means connecting said space to the atmosphere.

### 3,934,454
### GAS CONDITIONER AND ANALYZER

Stephen G. Simo, Rockland, Mass., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 4, 1974, Ser. No. 529,349
Int. Cl.² G01N 31/00
U.S. Cl. 73—29 7 Claims



1. A portable gas conditioner and analyzer for gas insulated substations comprising:
a two wheeled cart having handle means for facilitating the handling of the gas conditioner and analyzer by a single operator;
a cabinet mounted on said cart;
a gas circulator having an inlet side and an outlet side mounted within said cabinet;
an inlet gas circuit means connected to the inlet side of said gas circulator, said inlet gas circuit means being connectable to the gas insulated substation to provide a gas flow circuit between the substation and said circulator;
an outlet gas circuit means connected to the outlet side of said circulator, said outlet gas circuit means being connectable to the gas insulated substation to complete a closed gas circuit;
a first electronic sensor connected to said inlet gas circuit means operable to monitor the moisture content and the temperature of the gas as it flows from the gas insulated substation to said circulator;
a second electronic sensor connected to said outlet gas circuit means operable to monitor the moisture content and the temperature of the gas as it flows from said circulator to the gas insulated substation;
a first gas filter in the inlet gas circuit means, said first gas filter being operably disposed to filter the gas prior to said gas flowing to said circulator and after said gas is monitored by said first monitoring means;
a second gas filter in the outlet gas circuit means, said second gas filter being operably disposed to filter gas directly after the gas leaves said circulator;

a hygrometer-thermometer supported in said cabinet and having a moisture indicating scale and a temperature indicating scale including a switch normally positioned to connect said hygrometer-thermometer to indicate on one of said scales, said switch being operable when actuated to another position to connect said hygrometer-thermometer to indicate on the other of its scales; and,

individual means operably connecting said first and second electronic sensors to said hygrometer-thermometer.

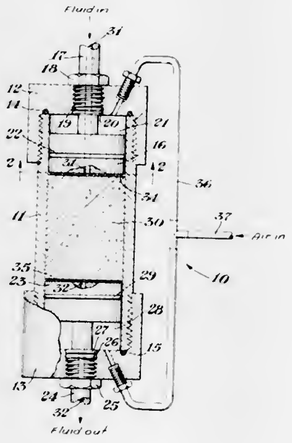
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**3,934,455**

**APPARATUS FOR TESTING A SAND SAMPLE**

**William H. Harrisberger, Tulsa, Okla., assignor to The Dow Chemical Company, Midland, Mich.**

**Filed Feb. 13, 1974, Ser. No. 442,283**
**Int. Cl.² G01N 15/08**
**U.S. Cl. 73—38** **1 Claim**




1. A method for testing a sand sample from a subsurface earth formation, which comprises the steps of:

placing an unconsolidated sand sample in a rigid, closed cylindrical vessel;

compacting the unconsolidated sand sample within the vessel to obtain a uniform pack by compressing the sample between a first piston and a second piston, the pistons being slidable toward each other within the vessel; and the diameter of the vessel, as related to the length of the sand sample, being a ratio of not more than 1 to 2;

passing a first fluid through the compacted unconsolidated sand sample to determine flow permeability of the unconsolidated sand sample;

passing a second and third fluids through the compacted, unconsolidated sand sample to condition the sand particles for accepting a fourth fluid which defines a consolidating fluid;

directing the consolidating fluid into the sand sample to adhere the sand particles together, to thereby consolidate the sand sample;

flushing the consolidated sand sample with a fifth fluid to remove consolidating fluid which is trapped in pore spaces between the sand particles;

curing the consolidating fluid by heating the vessel to a temperature sufficient to cure the said consolidating fluid; and

passing a sixth fluid through the compacted, consolidated sand sample to determine the flow permeability of the said consolidated sample.

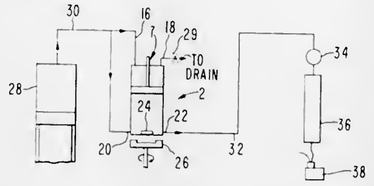
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**3,934,456**

**SOLVENT GRADIENT GENERATOR FOR CHROMATOGRAPHY SYSTEMS**

**Miner N. Munk, Walnut Creek, Calif., assignor to Varian Associates, Palo Alto, Calif.**

**Filed July 22, 1974, Ser. No. 490,549**
**Int. Cl.² G01N 31/08**
**U.S. Cl. 73—61.1 C** **22 Claims**




1. A liquid chromatography system having a controlled component solvent comprising:

a. a pumping means for supplying under pressure a first solvent;

b. a multi-compartmented solvent gradient generating means comprising a vessel having a substantially cylindrically configured bore, said vessel being adapted to have a second solvent in one said compartment, said one compartment having a first input port and a first output port, and another said compartment having a second input port and a second output port, first stopper means being provided for sealing said first input port, and second stopper means being provided for sealing said second output port;

c. substantially cylindrically configured piston means, including sealing means, disposed within said bore and sealably extending outside said vessel, said piston means having a piston head slidably contained within said gradient generating means for defining in combination with said vessel said one compartment adjacent one side of said head and said another compartment adjacent the other side thereof;

d. column means, including injector means, for selectively interacting said controlled component solvent with a stationary reactive element disposed within said column means;

e. control means for controlling the rate of movement of said piston head within said bore; and

f. mixing means coupling said first output port commonly with said second input port and with said pumping means for supplying said solvent having controlled component mixtures to said column means.

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**3,934,457**

**VESSEL NOZZLE INSPECTION APPARATUS**

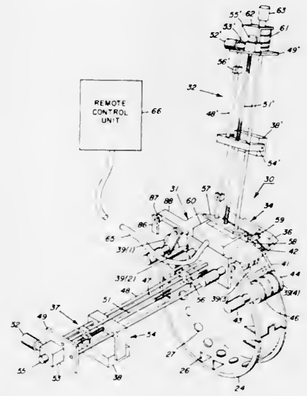
**Jack Phillip Clark; Thurman Dale Smith, and Alan Carl Foster, all of San Jose, Calif., assignors to General Electric Company, San Jose, Calif.**

**Filed Jan. 13, 1975, Ser. No. 540,679**
**Int. Cl.² G01N 29/04**
**U.S. Cl. 73—67.8 S** **24 Claims**

1. Remotely operable apparatus for inspecting the connection of a pipe to the wall of a vessel, said connection being formed by an attachment nozzle, said nozzle having a flange-like inner end welded by an inner weld within an aperture in said vessel, a generally cylindrical body portion extending outward from said vessel, a curved inner radius portion between said inner end and said body portion, and an outer end portion welded by an outer weld to said pipe, said apparatus comprising: a circular track positioned around said body portion of said nozzle, said track being formed of magnetic material; a vehicle adapted to run on said track said vehicle including a frame, a pair of wheels journalled in said frame, said wheels including permanent magnet means for adherence



of said wheels to said track, selectively operable drive means for said wheels for driving said vehicle around said track, an outer arm attached to said frame and extending therefrom generally parallel to said pipe, a first carriage mounted on said outer arm, said outer arm including first guiding means for guiding said first carriage back and forth along said arm, a first transducer block including at least one transducer for transmitting and receiving inspection signals, first attachment means for attaching said first transducer block to said first carriage, said outer arm including selectively operable drive means engaging said carriage for moving said first transducer block back and forth along said first guiding means across said




outer weld; an inner arm attached to said frame and extending therefrom generally parallel to said wall of said vessel, a second carriage mounted on said inner arm, said inner arm including second guiding means for guiding said second carriage back and forth along said arm, a second transducer block including at least one transducer for transmitting and receiving inspection signals, and second attachment means for attaching said second transducer block to said second carriage, said inner arm including selectively operable drive means engaging said second carriage for moving said second transducer block back and forth along said second guiding means across said inner weld.

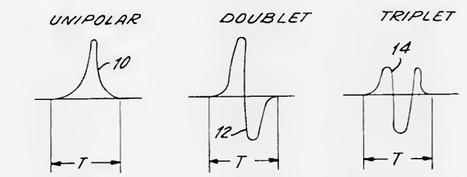
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**3,934,458**

**METHOD AND APPARATUS FOR PULSE ECHO IMAGING**

**Irwin Beretsky, New City, and Bernard Lightenstein, Yorktown Heights, both of N.Y., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.**

**Filed Feb. 4, 1974, Ser. No. 439,156**
**Int. Cl.² G01N 29/00**
**U.S. Cl. 73—67.9** **22 Claims**




1. A method for pulse echo processing comprising, the steps of, interrogating a layered material with energy pulses of controlled waveform, receiving the pulse echoes which result from the interrogation of said layered material, operating upon said pulse echoes to provide a pulse echo waveform comprising a plurality of echo pulses, each of said echo pulses including a pulse portion which indicates the phase of the change in impedance, if any, between said material layers, generating the echo response of said layered material to said energy pulses from said pulse echo waveform to thereby preserve said phase change indications, generating the impulse response of said layered material by compensating said echo response to satisfy at least two known impedance conditions of said layered material, and further processing said impulse response to produce a quantitative display of the relative impedances of said layered material.

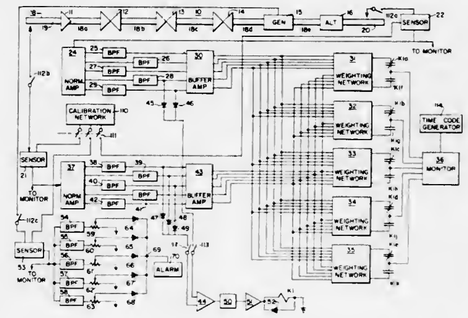
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**3,934,459**

**TORQUE MONITORING SYSTEM FOR ROTATING SHAFT**

**John F. Wolfinger; Robert Quay, both of Schenectady, and Joseph Tecza, Elnora, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.**

**Filed Oct. 10, 1974, Ser. No. 513,646**
**Int. Cl.² G01H 1/10**
**U.S. Cl. 73—70.1** **10 Claims**




1. Apparatus for producing a signal proportional to oscillating torque in a rotating shaft including a plurality of mass and shaft sections, said apparatus comprising:

sensor means for providing a first signal representative of torsional oscillations of said shaft;

filter means connected to receive said first signal for passing predetermined frequency components of said first signal; and,

means connected to said filter means for multiplying each of said predetermined frequency components by a constant to produce second signals proportional to torque at each of said shaft sections.

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**3,934,460**

**APPARATUS FOR FOCUSING AND COLLIMATING ULTRASONIC WAVES**

**Leo H. Sherwin, Schenectady, and Robert S. Gilmore, Burnt Hills, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.**

**Filed Aug. 6, 1973, Ser. No. 385,893**
**Int. Cl.² G01N 29/04**
**U.S. Cl. 73—71.5 US** **19 Claims**

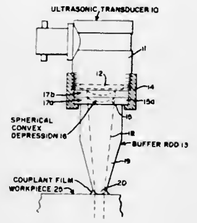
5. An ultrasonic testing apparatus for transmitting ultrasonic waves to a workpiece comprising:

a housing including a transducer comprising a planar active element for generating ultrasonic waves;

a buffer rod attached to said housing for contacting said workpiece; and,

means for focusing said ultrasonic waves, said focusing means disposed between said transducer and the end of the rod remote from the contact end of said buffer rod; said focusing means including at least one lens element having at least one liquid-filled depression and the acous-

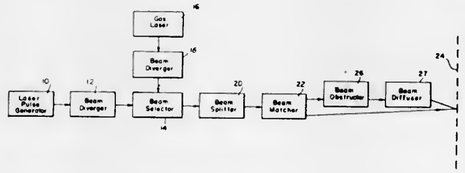
tic impedance of the liquid closely matches the acoustic impedance of the buffer rod, said ultrasonic waves being




transmitted to said workpiece without requiring said apparatus or the workpiece to be submerged in a liquid.

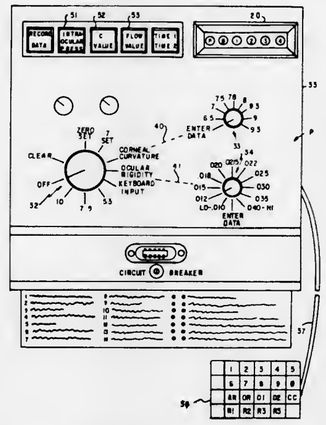
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**3,934,461**
**MULTIPLE EXPOSURE HOLOGRAPHIC INTERFEROMETER METHOD**
**Lee O. Heflinger, Torrance; Ralph F. Wuerker, Palos Verdes Estates, and Robert E. Brooks, Redondo Beach, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.**
**Continuation of Ser. No. 29,555, April 17, 1970, which is a continuation of Ser. No. 573,115, Aug. 17, 1966. This application Sept. 16, 1974, Ser. No. 506,642**
**Int. Cl.² G01B *11/16*, *9/02***
**U.S. Cl. 73—71.3** **9 Claims**




1. A method comprising the steps of:
a. generating a pulsed laser energy beam;
b. splitting said laser energy beam into a pair of beams;
c. directing one of said pair of beams through an unperturbed object space;
d. superposing said pair of beams;
e. exposing radiation sensitive material to said pair of superposed beams during generation of one pulse of said pulsed laser energy beam to make an image record;
f. exposing radiation sensitive material to said pair of superposed beams during generation of another pulse of said pulsed laser energy beam to make another image record;
g. directing one of said pair of beams during generation of one of said pulses through a perturbed object space;
h. processing said radiation sensitive material to convert said image records to visible images to form a hologram;
i. generating a continuous laser energy beam;
j. splitting said continuous laser energy beam into another pair of beams;
k. superposing said other pair of beams to occupy positions corresponding to positions occupied by said pair of beams;
l. obstructing the beam of said other pair of beams corresponding to said one beam wherein said object space was positioned; and
m. positioning said hologram for viewing in the other beam of said pair of beams in the same position occupied by said radiation-sensitive material when exposed.

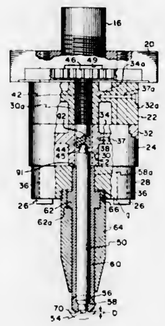
**3,934,462**
**AUTOMATIC COMPUTING OCULAR TONOMETER SYSTEM**
**Richard F. Rende, Maywood, Ill., assignor to American Hospital Supply Corporation, Evanston, Ill.**
**Filed Sept. 6, 1974, Ser. No. 503,950**
**Int. Cl.² A61B *3/16***
**U.S. Cl. 73—80** **22 Claims**




17. In a tonometer system including a tonometer transducer having a plunger adapted for placement on an eye and a foot plate slidably receiving said plunger, and analog circuit means for generating a signal representative of the location of said plunger relative to said foot plate, the improvement comprising: a handpiece for use by a clinician in placing said transducer means in test relation to an eye; visual indicator means on said handpiece and readily observed by said clinician without diverting his attention from a test; and handpiece control logic circuit means for controlling said visual indicator means to indicate to a clinician the status of the test.

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**3,934,463**
**HARDNESS TESTER**
**Adrian Dean Venderjagt, 4075 State St., Bridgeport, Mich. 48722**
**Filed Feb. 28, 1974, Ser. No. 446,967**
**Int. Cl.² G01N *3/42***
**U.S. Cl. 73—81** **19 Claims**



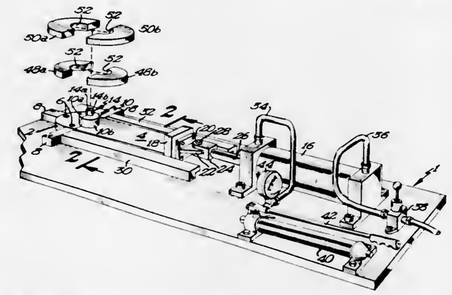
1. Hardness testing apparatus comprising:
workpiece penetrating means for penetrating a workpiece to be tested;



means mounting said workpiece and said penetrating means for relative movement between spread positions and engaged positions in which said penetrating means penetrates said workpiece;
load bearing stop means engageable with said workpiece for positively physically interrupting said relative movement of said penetrating means and said workpiece after said penetrating means has penetrated said workpiece to a predetermined depth by transmitting any additional force which tends to move said workpiece and penetrating means together directly to said workpiece via said stop means; and
means for determining the load exerted on said penetrating means by said workpiece independently of any load exerted by said workpiece on said stop means when said penetrating means is at said pedetermined depth.

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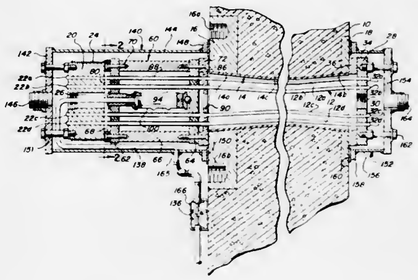
**3,934,464**
**PIPE RING TEST MACHINE**
**Claudius R. McCauley, Covington, La., assignor to Apache Corporation, Minneapolis, Minn.**
**Filed Aug. 6, 1974, Ser. No. 495,241**
**Int. Cl.² G01N *3/08*, *3/28***
**U.S. Cl. 73—95** **6 Claims**



1. A test machine for simulating a burst pressure test and applying tensile stress to a ring segment cut from a pipe section comprising:
a round post split along a parting line to define two half post segments;
stationary mounting means to which a stationary one of said post segments is rigidly affixed;
movable mounting means to which the other, movable one of said post segments is affixed, said movable mounting means being connected to power actuating means for movement towards and away from said stationary post segment along a displacement line substantially perpendicular to said parting line, said movable post segment being shiftable with said movable mounting means between a closed position abutting against said stationary post segment and an open, extended position displaced therefrom by operation of said power actuating means, whereby a ring segment cut from a pipe section of predetermined diameter may be placed around said split post with said movable post segment in said closed position and subjected to tensile stress by moving said movable post segment towards said open position along said displacement line; and
said split post being in a free, upstanding position with said half post segments lying in a substantially horizontal plane, whereby a pipe ring segment to be tested may be readily placed over the top of said split post around said post segments; and
a pair of semicircular shoe discs removably placed around said split post on said base plates in abutting contact with each other along said split post parting line, each of said shoe discs having an inner, semicircular recess of a diameter substantially equal to that of said split post, whereby said shoe discs will fit snuggly around said split post, and each of said shoe discs having an outer diameter substantially equal to that of a particular pipe ring segment to be tested, whereby such shoe discs of varying outer diameters may be removably placed on said split post to permit the testing of a wide range of sizes of pipe ring segments greater in diameter than said split post.

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**3,934,465**
**POST-TENSIONING LOAD CELL**
**John Arvid Hanson, Mt. Prospect, Ill., assignor to United States Gypsum Company, Chicago, Ill.**
**Filed Feb. 8, 1973, Ser. No. 330,655**
**Int. Cl. G01l *5/10***
**U.S. Cl. 73—143** **12 Claims**



1. An apparatus for measuring changes in a structure being compressed, comprising in combination:
1. a tendon assembly comprising a multiwire structural post-tensioning tendon having a stop member mounted at each end thereof arranged to have the structure to be compressed by the action of the tendon positioned intermediate said stop members,
2. a load cell for detecting changes in tensile loading of said tendon, comprising an elastically deformable tubular support member having a pair of spaced-apart end elements mounted thereon, one of said stop members being operatively connected to one end of said support member, whereby force applied to said stop member by said tendon causes axial deformation of said support member, and
3. telemetric means responsive to dimensional changes operatively mounted on means carried by said spaced-apart end elements within said tubular support member, whereby said telemetric means is adapted to detect relative movement of said end elements caused by axial deformation of said support member produced by changes in the tensile loading of said tendon,
wherein both of said spaced end elements are apertured to accommodate the passage of the tendon through the cell, whereby the load cell may be positioned on the tendon between one of the stop members and the structure being compressed and tension on the tendon will place said support member under corresponding compression.

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**3,934,466**
**RESISTANCE SENSING FREE-POINT TOOL**
**Willie A. Curry, Houma, La., assignor to Jude Thaddeus Fanguy, Houma, La., a part interest**
**Filed May 16, 1974, Ser. No. 470,558**
**Int. Cl.² E21B *47/024***
**U.S. Cl. 73—151** **1 Claim**

1. A free-point indicator system for determining the elevations of stuck and free portions of a pipe in a borehole, comprising:
a. a free-point indicator tool including
i. an upper section and a lower section mounted for longitudinal movement relative to each other,

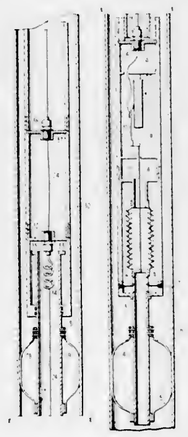
ii. frictional means on each of said sections for frictionally engaging the inside of a pipe to thereby cause said upper section to move upwardly relative to said lower section upon a stretching of the pipe,

iii. a variable resistance having a winding and a wiper arm, one of said winding or wiper arm being mechanically attached to said upper section for movement therewith and the other of said wiper arm or winding being mechanically attached to said lower section and fixed thereto, and

iv. slack joint means slidably connected to said upper section for limited relative movement therebetween, said slack joint means having fully open and fully closed positions and intermediate positions, said free-point indicator system being capable of being raised when said slack joint is in its fully open position or of being lowered when said slack joint is in its fully closed position but remaining stationary when said slack joint is in an intermediate position,

b. a single conductor wire line electrically connected to said wiper arm and extending to the surface, and

c. surface sensing means connected to said single conductor wire line for measuring the relative change in resistance due to the relative movement of said winding with respect



to said wiper arm, said surface measuring means including,

i. an indicating meter,

ii. a D. C. power supply, said indicating meter and said D. C. power supply being connected with said single conductor wire line to a common node and electrically referenced to ground and

iii. balancing and calibrating means connected to said single conductor wire, said indicating meter and said D. C. power supply for balancing out the resistance of said single conductor wire and adjusting the free-point zero and range of said indicating meter, said balancing and calibrating means including a first variable resistance connected in series between said single conductor wire line and said common node, a second variable resistance connected in shunt with said indicating meter, and a third variable resistance connected in series between said D. C. power supply and said common node, said first variable resistance serving to balance out the resistance of said single wire line, said second variable resistance serving to adjust the range of said indicating meter, and said third variable resistance serving to adjust the sensitivity of said surface measuring means.

**3,934,467**

**SPINNER FLOWMETER WITH ISOLATED BEARINGS**

**Yves Nicolas, Versailles, France, assignor to Schlumberger Technology Corporation, New York, N.Y.**

**Filed July 1, 1974, Ser. No. 485,058**

**Claims priority, application France, Apr. 9, 1974, 74.12371**

**Int. Cl.² E21B *47/10***

**U.S. Cl. 73—155** **35 Claims**




**29.** A well tool adapted for providing measurements representative of the flow rate of fluids in a well bore and comprising:

a body adapted for suspension in a well bore and including a depending axial spindle member having an unsupported outboard end portion;

fluid-driven impeller means including a hollow shaft member having a closed outboard end coaxially disposed around said spindle member for defining an inner lubricant chamber between said members above said closed shaft end, a plurality of impeller blades symmetrically arranged around said shaft member and having their respective inboard ends operatively coupled thereto for pivotal movement between laterally extended operating positions and generally longitudinal retracted positions, bearing means cooperatively mounted around said spindle member in said inner lubricant chamber for operatively journalling said shaft member for rotation about said spindle member upon relative movement of well bore fluids past said impeller means;

blade-positioning means including an actuating member coupled to said impeller blades and cooperatively arranged on said body for selective movement between one position operable for placing said impeller blades in their said operating positions and another position operable for placing said impeller blades in their said retracted positions;

means on said body defining an outer lubricant chamber in communication with the exterior of said body; and

passage means cooperatively arranged on said body for intercommunicating said inner and outer lubricant chambers and including at least one multi-directional portion adapted for at least retarding the movement of solid matter through said passage means into said inner lubricant chamber.



**3,934,468**

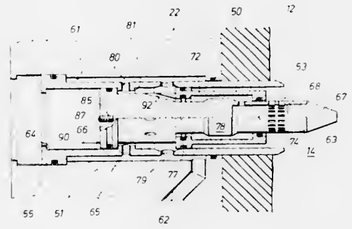
**FORMATION-TESTING APPARATUS**

**Emmet F. Brieger, Nogal, N. Mex., assignor to Schlumberger Technology Corporation, New York, N.Y.**

**Filed Jan. 22, 1975, Ser. No. 543,085**

**Int. Cl.² E21B *47/10***

**U.S. Cl. 73—155** **18 Claims**



**1.** Apparatus adapted for testing earth formations of different degrees of competency and comprising:

a body adapted for suspension in a well bore penetrating such formations;

sample-collecting means cooperatively arranged on said body for receiving samples of connate fluids produced from such formations;

sealing means having a central opening therein cooperatively arranged on said body and adapted for sealing engagement with a well bore wall to isolate a portion thereof adjacent to said central opening from well bore fluids;

a tubular probe having a closed forward portion and cooperatively arranged for movement relative to said body from a normal retracted position to an extended position where said closed forward portion of said tubular probe is projected through said central opening and is ahead of said sealing means;

filtering means cooperatively arranged on an intermediate portion of said tubular probe and adapted for admitting connate fluids into the interior of said tubular probe and restraining loose formation materials from passing into the interior of said tubular probe whenever said tubular probe is in its said extended position;

first passage means adapted for providing communication between said sample-collecting means and said central opening;

second passage means adapted for providing communication between said sample-collecting means and the interior of said tubular probe;

probe-actuating means cooperatively arranged on said tubular probe and adapted for advancing said tubular probe toward its said extended position as loose formation materials are eroded away from an isolated wall portion of a well bore wall ahead of said closed forward portion of said tubular probe and enter said first passage means; and

valve means cooperatively arranged for normally blocking communication through said second passage means and operable in response to movement of said tubular probe toward its said extended position for successively blocking further communication through said first passage means and opening communication through said second passage means.

**3,934,469**

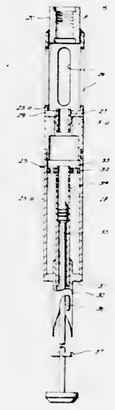
**METHOD AND STEAM SAMPLERS**

**Curtis E. Howard, Humble, and Douglas G. Calvin, Houston, both of Tex., assignors to Texaco Inc., New York, N.Y.**

**Filed Nov. 29, 1974, Ser. No. 528,073**

**Int. Cl.² E21B *47/00***

**U.S. Cl. 73—155** **19 Claims**



**1.** A method for collecting a sample of steam at a desired location down in a well comprising the steps of,

a. passing the steam that has arrived at the desired location through a tube means internally of a cylindrical collecting vessel,

b. passing a portion of the steam vapor phase and liquid phase from the tube means through an upper opening in the tube means out into an annulus formed between the tube means, and the cylindrical collecting vessel,

c. passing the steam vapor phase back into the tube means through side openings therein and out an opening in the lower end of the tube means,

d. collecting the steam liquid phase in the annulus, and

e. sealing the annulus with a sample of steam liquid phase therein for recovery at the surface.

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**3,934,470**

**METHOD FOR MEASURING THE FLOW RATE OF THE GASES COMING OUT OF AN OXYGEN CONVERTER**

**Giovanni Amati, Via Cavalleggeri d'Aosta 11, and Bruno Costa, Via Petrarca 31, both of Naples, Italy**

**Filed Nov. 23, 1973, Ser. No. 418,518**

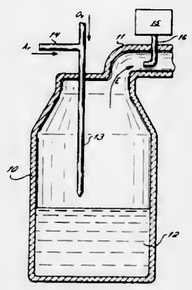
**Claims priority, application Italy, Nov. 30, 1972, 13049/72**

**Int. Cl.² G01F *1/70***

**U.S. Cl. 73—194 R** **2 Claims**

**1.** In a process for measuring the flow rate of a gas formed in an oxygen conversion process which conversion process is carried out by introducing oxygen into an oxygen converter containing a material to be oxidized and gaseous effluent, including a gas formed in said oxygen converter, are withdrawn, the improvement which comprises including in the oxygen feed to said converter between 0.15 and 1% by volume argon, as a tracer, and determining the concentration of said

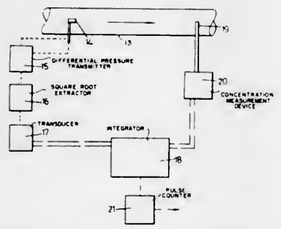
argon in the gaseous effluent at the mouth of the converter or at a point before which the effluent gases are mixed with air



or pollutant or before which the effluent gases are subjected to a combustion reaction.

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**3,934,471**
**FLOW MONITORING SYSTEM**
**Percy William White, Oak Lodge, Great Tey, Essex, and Frank William Batley, 3 Bowling Green, Great Waldingfield, Sudbury, Suffolk, both of England**
**Filed Jan. 29, 1974, Ser. No. 437,588**
**Claims priority, application United Kingdom, Feb. 7, 1973, 5983/73**
**Int. Cl.² G01F *1/74***
**U.S. Cl. 73—194 E** **6 Claims**




**1.** A mechanism for monitoring the rate at which material dispersed in a fluid stream passes through a given region, and for giving an output signal proportional to that rate, which mechanism comprises:

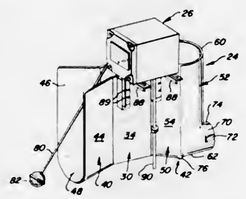
a. fluid flowrate measurement means for measuring the rate of flow of the fluid through the said given region, and for providing an electrical output proportional thereto;

b. material concentration measurement means for measuring the concentration of the material in the fluid stream passing through the said given region, and for providing an electrical output proportional thereto; and, operatively connected to the said fluid flowrate measurement means and the said material concentration measurement means

c. an integrative device for multiplying together the outputs from the said fluid flowrate measurement means and the said material concentration measurement means, and then summing the multiplied outputs, the integrative device incorporating a multiplying element for operating on the said electrical outputs from the said fluid flowrate measurement means and the said material concentration measurement means and producing a voltage output proportional to the product thereof; the multiplying element producing an output voltage Z at any instant related to its two input voltages X and Y such that $Z = KXY$, where K is a constant, there being two buffer amplifiers, one of the said two buffer amplifiers operating on each of the said two inputs, a voltage-to-frequency converter for converting said product to a pulsed constant amplitude signal, the frequency of the pulses thus being proportional to the rate of passage of the said material, and a counting device for summing the pulses supplied thereto from the voltage-to-frequency converter.

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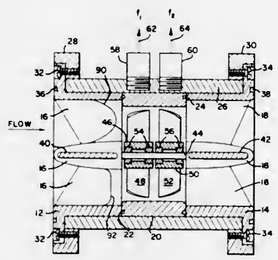
**3,934,472**
**FLUME-TYPE METERING**
**Allen C. Bradham, Milwaukee, Wis., assignor to Badger Meter, Inc., Milwaukee, Wis.**
**Filed July 15, 1974, Ser. No. 488,307**
**Int. Cl.² G01F *1/20***
**U.S. Cl. 73—215** **18 Claims**



**11.** In combination with a reservoir and at least one restricted conduit communicating at one end with said reservoir, a flume unit for use in measuring liquid flow through said conduit to or from said reservoir, said flume unit comprising a throat section including bottom and side walls defining a venturi throat passage, a well section extending from one end of said throat section and including bottom, side and end walls defining a closed-end well in open communication with one end of said throat passage, said well section being formed with an opening through the lower portion of said section, means forming a closed conduit connection between said opening and said one end of said conduit for liquid passage communication between said well and said conduit, and said side and end walls of said throat section and said well section being of a height substantially greater than and extending above the level of the top of said opening, said walls thereby precluding flow of liquid through said unit to or from said conduit, except through said opening and through the end of said throat passage opposite said well section, up to a liquid level substantially above the top of said opening.

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**3,934,473**
**FLUID FLOW METER WITH COUNTER ROTATING TURBINE IMPELLERS**
**Joseph B. Griffo, 215 Hill St., Midland Park, N.J. 07432**
**Filed June 12, 1974, Ser. No. 478,567**
**Int. Cl.² G01F *1/15***
**U.S. Cl. 73—231 R** **16 Claims**




**1.** A meter for measuring fluid flow comprising:



a. A fluid conduit;

b. shaft support means mounted within said conduit;

c. a shaft axially mounted on said shaft support means;

d. a first turbine impeller having a plurality of blades rotatably mounted in said conduit on said shaft;

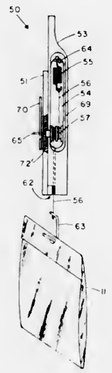
e. a second turbine impeller having a plurality of blades rotatably mounted in said conduit on said shaft, said second turbine impeller mounted proximate and downstream from said first turbine impeller, said second turbine impeller free to respond to any fluidynamic aberration developed from said first turbine impeller, said second turbine impeller arranged to rotate in a direction opposite that of said first turbine impeller;

f. first sensing means for sensing the angular velocity of said first turbine impeller; and

g. second sensing means for sensing the angular velocity of said second turbine impeller.

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**3,934,474**
**HOLDING AND MONITORING APPARATUS FOR INTRAVENOUS INFUSION CONTAINER**
**Robert G. Whitinger, Carmel, Ind., assignor to Methodist Hospital of Indiana Inc., Indianapolis, Ind.**
**Continuation-in-part of Ser. No. 270,336, July 10, 1972, abandoned. This application Oct. 26, 1973, Ser. No. 409,798**
**Int. Cl.² G01F *23/20***
**U.S. Cl. 73—296** **1 Claim**



**1.** An apparatus for holding an intravenous infusion container and for allowing measurement of relative amounts of liquid within the container over a period of time comprising:

a base;

a markable sheet mounted to said base and having a first marking and a second marking provided thereon;

an axle extending through said sheet being rotatably mounted on said base and rotatable about an axis through an angle to and from said first marking and said second marking;

a pointer removably mounted to said axle adjacent said sheet, said pointer movable through an arc about said axis, said pointer being positioned at one end of said arc when said axle is positioned at an end of said angle corresponding to said first marking with said pointer positioned at the other end of said arc when said axle is positioned at an end of said angle corresponding to said second marking, said pointer having a vertically stationary axis of rotation;

a line connectable to said container for suspendedly holding said container, said line being wrappingly received on said axle;

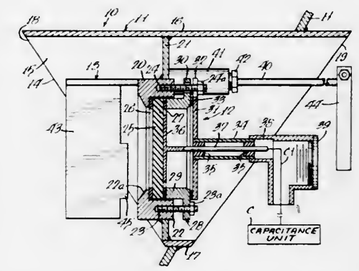
a helical spring having one end connected to said base and an opposite end connected to said line being yieldable under the weight of said container when full to allow said axle to rotate through said angle to said first marking and to urge said axle to rotate back through said angle to said second marking as said container is emptied;

a spool rotatably mounted by said axle in said base, said line having one end connected to said spring and an opposite end connected to a hook upon which said container is removably mounted, said line being wrapped around said spool;

said spool includes a wall and a pair of drums spaced apart by said wall, said line is wrapped around one of said drums and then extends through said wall and is then wrapped around the other of said drums.

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**3,934,475**
**CAPACITANCE TYPE MATERIAL LEVEL DETECTOR FOR HOPPERS**
**Earl Edward Rodgers, Des Plaines, and Gerald Allen Mellinger, Libertyville, both of Ill., assignors to United Conveyor Corporation, Deerfield, Ill.**
**Filed Aug. 9, 1974, Ser. No. 496,134**
**Int. Cl.² G01F *23/26*; H01G *5/20*; H01H *35/18***
**U.S. Cl. 73—304 C** **10 Claims**




**9.** Material level detector means for a hopper comprising, in combination:

a detector unit including an electrically conductive sensor member which is adapted to be electrically connected to a capacitance unit;

support means mounting said detector unit in an opening in a hopper sidewall, said support means sealing the periphery of said opening and being sealed to the detector unit;

and manually manipulable detector checking and cleaning means comprising a paddle which hangs alongside the detector unit on a rod that is carried in the support means, said paddle being positioned and arranged to be swung into the area in front of the detector unit by rotation of the rod and to break accumulated material from the face of said unit by sliding the rod rearwardly.

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**3,934,476**
**LINEAR TELETHERMOMETER**
**Harry H. Lamb, II, No. 3 Richards Drive, Dartmouth, Canada**
**Filed Sept. 11, 1969, Ser. No. 857,102. The portion of the term of this patent subsequent to Jan. 27, 1990, has been disclaimed.**
**Int. Cl.² G01K *7/24***
**U.S. Cl. 73—362 AR** **6 Claims**

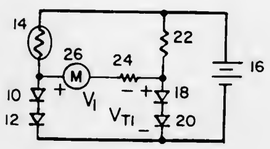
**1.** A nearly linear telethermometer device comprising a remote thermistor connected in series with one or more semiconductor diodes of any composition with a voltage-current relationship given by

$$i = I_\sigma(e^{v/n\lambda\sigma} - 1)$$

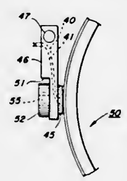
where $n$ is the number of diodes and being either discrete or integrated circuit devices,

means for electrically connecting a biasing potential to said thermistor and diode(s) such that the diodes are forward biased,

means for electrically connecting across said diode(s) device for measuring the voltage produced across said diode(s) which varies according to changes in the temperature of said thermistor.




**3,934,477**
**TEMPERATURE SENSING DEVICE**
**Raghulinga R. Thettu, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.**
**Division of Ser. No. 388,676, Aug. 15, 1973, Pat. No. 3,888,622. This application Nov. 13, 1974, Ser. No. 523,615**
**Int. Cl.² G01K** *1/16, 7/16, 13/08*
**U.S. Cl. 73—362.8** **5 Claims**



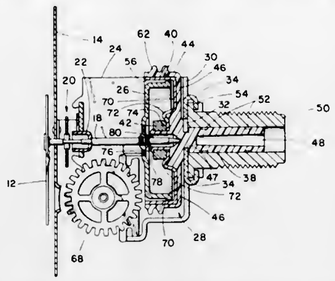




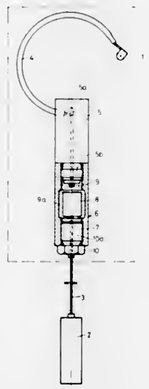
**1.** Apparatus for sensing the surface temperature of a heated body including
a temperature sensing element mounted within a probe,
means to support the probe adjacent to the heated body in non-contiguous relation therewith so as to form an air gap therebetween,
magnetic means for establishing a flux field within the air gap between the probe and the heated body, and
a magnetic medium filling the air gap and having a relatively high coefficient of thermal conductivity and being supported within the magnetic flux field to effect low frictional characteristics while providing rapid thermal response.

**3,934,478**
**MAGNET SHAFT ASSEMBLY FOR SPEEDOMETER AND ODOMETER**
**Patrick L. Powell, Franklin Park, Ill., assignor to Stewart-Warner Corporation, Chicago, Ill.**
**Filed Nov. 28, 1973, Ser. No. 419,519**
**Int. Cl.² G01P** *3/49*
**U.S. Cl. 73—519** **12 Claims**

**1.** An improved magnet shaft assembly for use in rotating a speedometer speed cup having a rim wall, comprising a metal flux collector having an axially extending portion spaced radially outwardly of said speed cup rim wall, a bar magnet spaced radially inwardly of said rim wall, and a molded plastic magnet shaft having an integrally formed portion adjacent one end in molded engagement with said flux collector including the axially extending portion and bar magnet for securing said magnet and collector to said magnet shaft.



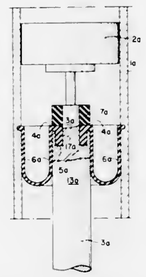

**3,934,479**
**MEASUREMENT APPARATUS INFLUENCED BY DISTURBING AMBIENT TEMPERATURE FLUCTUATIONS**
**Mario Posnansky, Horgen, Switzerland, assignor to Haenni & Cie Aktiengesellschaft, Jegenstorf, Switzerland**
**Filed Dec. 3, 1973, Ser. No. 421,272**
**Claims priority, application Switzerland, Dec. 6, 1972, 17732/72; Nov. 9, 1973, 15757/73**
**Int. Cl.² G01K** *5/36*
**U.S. Cl. 73—368.6** **15 Claims**




**1.** A measurement apparatus influenced by disturbing ambient temperature fluctuations, said measurement apparatus comprising a limited volume which is filled with a medium subjected to said temperature fluctuations and having a coefficient of thermal expansion, a compensation element which, under the influence of said disturbing temperature fluctuations, alters the size of a compartment forming a part of said limited volume containing the medium and thus alters said limited volume, the dimensions and coefficient of thermal expansion of said compensation element being selected such that, taking into account the coefficient of thermal expansion and the quantity of filling medium contained in said compartment, the increase and decrease in total volume of the limited volume is substantially the same as the expansion and contraction respectively of the filling medium caused by the influence of the disturbing temperature fluctuations upon the apparatus.



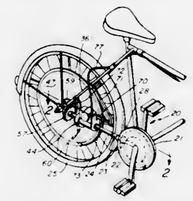
**3,934,480**
**ROLLING DIAPHRAGM SEAL BETWEEN TWO RELATIVELY MOVING PARTS**
**Anton Marie Nederlof, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.**
**Filed July 11, 1973, Ser. No. 378,246**
**Claims priority, application Netherlands, July 21, 1972, 7210087**
**Int. Cl.² F16J** *15/50*
**U.S. Cl. 74—18.2** **6 Claims**




**1.** In an apparatus including a cylinder element, a piston element reciprocally movable in the cylinder, a rod extending axially from the piston with an annular space defined between said rod and cylinder element, and a rolling diaphragm seal and means for securing same between said rod and cylinder element for separating said annular space into two portions, the improvement in combination therewith wherein, said rod comprises a first part of first diameter, and an axially adjacent second part of second larger diameter, with a shoulder defined at the transitional area between said first and second parts and an annular groove extending lengthwise generally axially inward from the surface of said shoulder, said seal being a tubular member formed by a tubular wall with first and second ends, and having wall thickness along its length and greater thickness at the first end, said groove width being approximately the same as the thickness of said seal's first end, said first end being removably located in said groove and said second end being secured to said cylinder, said apparatus further comprising an annular member of elastic material movable between first and second positions on said rod, the first position of said annular member being spaced from said shoulder and thus defining therebetween a gap of smaller length than the thickness of said first end of the seal for locking said first end in said groove, said second position of the member being spaced axially farther from the first position and from said first end of the seal to permit removal of said first end from the groove.

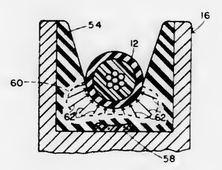
**3,934,481**
**AUTOMATIC FRICTION DRIVE TRANSMISSION**
**Donald A. Foster, 78 Winthrop Road, Brookline, Mass. 02146**
**Filed Jan. 3, 1975, Ser. No. 538,347**
**Int. Cl.² F16H** *15/04, 15/10*
**U.S. Cl. 74—190.5** **18 Claims**

**1.** A transmission for a vehicle of the type having a wheel to which power is to be applied to rotate it and a drive to provide wheel-turning power, said transmission including a friction member coaxially mounted with respect to said wheel to rotate therewith, a drive shaft disposed close to and radially with respect to the friction member and connected to said drive, a unit slidably mounted on said shaft with said shaft rotatable independently thereof, a friction wheel, means connecting said friction wheel to said shaft to slide therealong and to rotate therewith when the shaft is rotated in a direction to advance the vehicle, said friction wheel and said unit connected to move together along said shaft, the periphery of the friction wheel in engagement with said friction member, the ratio of revolution between the shaft and the friction member dependent on the radial position of the friction wheel relative to the friction member, said unit including means operable to shift said friction wheel and said unit along said shaft and having first and second connections with said friction wheel, the first operable to cause said shifting means to move said friction wheel and said unit in a direction to increase said ratio and the second operable to cause said shifting means to move said friction wheel and said unit in the opposite direction to decrease said ratio, said unit also including a control to actuate said shifting means to maintain the rotation of the shaft



substantially constant at a predetermined rate, said control including first means responsive to the speed of the friction wheel and second means providing predetermined yieldable opposition to the first control means, said first and second control means coacting to actuate said shifting means to render said first connection operative if the friction wheel speed is above said predetermined rate thereby to permit a decrease in shaft speed until it reaches said predetermined rate and to render said second connection operative if the friction wheel speed drops below said rate thereby to permit a higher shaft speed appropriate for the slower rate at which said vehicle wheel turns.

**3,934,482**
**CABLE TRACTION SHEAVE**
**Jimmy F. Byers, Georgetown, Tex., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**
**Filed Jan. 27, 1975, Ser. No. 544,167**
**Int. Cl.² F16H** *55/48*
**U.S. Cl. 74—230.7** **5 Claims**

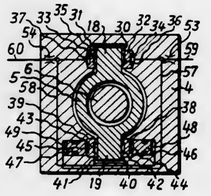


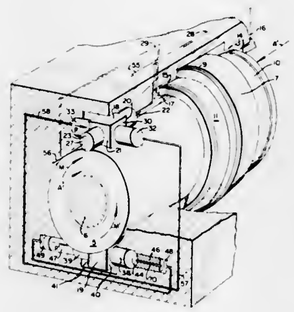

**1.** A cable traction sheave of the character described, said sheave comprising:
a circular sheave body formed of rigid material and having a peripheral groove defined therein of larger cross-sectional area than the cable to be accommodated;
a groove liner comprising a solid elastomeric material bonded in said peripheral groove, said liner having a U-shaped cable receiving groove defined therein;
said liner comprising means, responsive to forces exerted on the bottom portion of said liner by a cable in said cable receiving groove, for causing said liner to increase lateral pressures on said cable;
said means for causing said liner to increase lateral pressures on said cable comprising a plurality of spring elements embedded in said solid elastomeric material, each of said spring elements comprising an outwardly bowed bight portion, disposed in the bottom portion of said liner,

and a pair of radially extending leg portions disposed in the side walls of said liner, whereby flattening of said bight portion causes said leg portions to urge said side walls of said liner toward one another and into gripping relation with a cable in said cable receiving groove.

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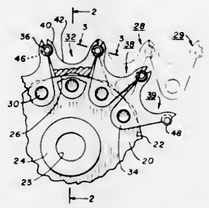
**3,934,483**
**FEED APPARATUS**
**Walter Lüthi, Ebnat, Switzerland, assignor to Werkzeugmaschinenfabrik Oberlikon-Buhrle AG, Zurich, Switzerland**
**Filed Feb. 11, 1974, Ser. No. 441,653**
**Claims priority, application Switzerland, Feb. 23, 1973, 2646/73**
**Int. Cl.² F16H *1/18***
**U.S. Cl. 74—424.8 R** **9 Claims**





1. A feed apparatus for displacing a movable component with respect to a stationary component by means of a threaded spindle mounted at one component and a nut member arranged at the other component, the improvement comprising two ring members substantially concentrically arranged with respect to the axis of the spindle, the nut member being supported in the other component by means of said two ring members, two surfaces arranged perpendicular to the axis of the spindle, each of said ring members being radially displaceably supported at a respective one of the surfaces and extending into a respective substantially ring-shaped groove, means for hydraulically retaining said ring members in axial direction, and wherein between the grooves and the ring members there is provided sufficient play for positioning each ring member at an inclination in the groove, and said surfaces are directed opposite to one another.

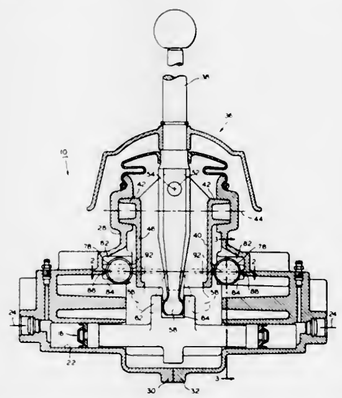
**3,934,484**
**TOOTH TRANSMISSION MEMBER UTILIZING PIVOTALLY INTERCONNECTED PREFORMS**
**Ben Bravin, 1365 Midvale Ave., Los Angeles, Calif. 90024**
**Filed Jan. 17, 1975, Ser. No. 541,725**
**Int. Cl.² F16H *55/12, 55/06, 55/30***
**U.S. Cl. 74—446** **9 Claims**



1. A transmission member which is sequentially assembled to provide the tooth engaging portions of a power transmission sprocket for use with roller chain and the like, said sprocket having a profiled intermediate section which in a mounted condition cooperatively engages the roller and like portions of a roller chain transmission member, said member including: (a) a support member having a prepared support means of selected configuration; (b) a preform having a midportion containing a positive power transmission profile formed in its outwardly facing portion, said profile providing a roller receiving contour, the preform having means for precisely engaging the support member; (c) retaining means provided on said preforms to cooperatively engage the support member and maintain this preform in a fixed condition on said member, and (d) hinge means formed in each of the two upwardly extending portions of the preform, said hinge means cooperatively secured to the next preform by a hinge retaining member, the hinge when connected forming a pivotal connection by which the preform is retained in a spaced relationship to the next adjacent preform.

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**3,934,485**
**RESISTANCE-PRODUCING STRUCTURE FOR A TRANSMISSION SHIFTING MECHANISM**
**Richard L. Ratliff, Jackson, Mich., assignor to Clark Equipment Company, Buchanan, Mich.**
**Filed June 17, 1974, Ser. No. 479,962**
**Int. Cl.² G05G *9/02, 9/12***
**U.S. Cl. 74—473 R** **12 Claims**



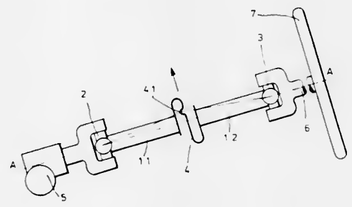
1. In a shifting mechanism for a mechanical transmission of the type including a support housing, a plurality of longitudinally shiftable members therewithin, a gear shift lever unit having a central position, a gimbal mounted within said support housing for transverse rocking or pivoting movement on a longitudinal axis but fixed against longitudinal movement, and a shift lever carried by said gimbal for transverse movement therewith and pivoted therein and relative thereto for longitudinal fore-and-aft shifting movement about a transverse axis, said shift lever having a downwardly projecting shift element for selectively engaging and longitudinally shifting each of said longitudinally shiftable members, the improvement comprising:

a. said support housing including at least one pair of longitudinally-extending as well as spaced upper and lower boss portions located below and laterally and oppositely spaced from the longitudinal pivot axis of said gimbal;
b. pre-loaded yieldable means interposed between said at least one pair of spaced upper and lower boss portions; and
c. said gimbal having at least one longitudinally extending projection located below and laterally spaced from said gimbal longitudinal pivot axis, said projection entering between said spaced upper and lower boss portions to abut and further load said yieldable means, and thereby provide operator feel, upon the pivoting movement of said gimbal from said shift lever central position to a direction bringing said projection laterally toward said gimbal longitudinal pivot axis.



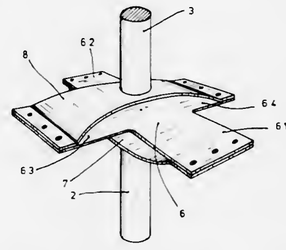
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**3,934,486**
**SAFETY STEERING COLUMN**
**Burkhardt Becker; Heinz Wallach, both of Wolfsburg, and Rainer Heise, Wolfsburg-Neuhaus, all of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany**
**Filed July 5, 1974, Ser. No. 486,074**
**Claims priority, application Germany, July 19, 1973, 2336788**
**Int. Cl.² G05G *1/08*; F16D *3/56***
**U.S. Cl. 74—492** **6 Claims**



1. A safety steering column for a vehicle having a steering wheel assembly and a steering gear assembly comprising a rotatable composite shaft extending between the steering wheel assembly and the steering gear assembly, the composite shaft being divided intermediate its ends into two shaft parts, a first relatively torsion-stiff joint coupling adjacent ends of the two shaft parts, and second and third relatively torsion-stiff joints coupling opposite ends of the composite shaft to the steering wheel assembly and the steering gear assembly, respectively, wherein at least the first joint includes an S-shaped metal member having three generally linear portions connected in series by two curved portions, an indentation being formed in a central one of the three linear portions of the metal member at a position radially offset from the central longitudinal axes of the shaft parts, the indentation being adapted to function as a first pivot point, the two shaft parts being coupled to different ones of the two outer linear portions of the S-Shaped metal member of the first joint.

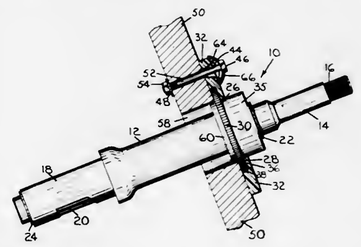
**3,934,487**
**VEHICLE STEERING COLUMN**
**Burkhardt Becker, Wolfsburg, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany**
**Filed July 5, 1974, Ser. No. 486,075**
**Claims priority, application Germany, July 20, 1973, 2336968**
**Int. Cl.² G05G *1/08*; F16D *3/56***
**U.S. Cl. 74—492** **1 Claim**



1. A steering column for a vehicle having a steering wheel and a steering gear comprising a first rotatable stub shaft coupled to the steering wheel, a second rotatable stub shaft coupled to the steering gear, a rotatable steering shaft extending between the first and second stub shafts, a first coupling means for coupling one end of the steering shaft to the first stub shaft, and a second coupling means for coupling the other end of the steering shaft to the second stub shaft, at least one of the coupling means coupling the steering shaft to one of the stub shafts so as to define an angle between the steering shaft and said one of the stub shafts, said at least one coupling means being relatively torsion-stiff and fabricated of metal plate and including a metal stamping having four arms disposed in a cross-like configuration, a first metal strip rigidly coupled intermediate its ends to an end of the steering shaft and at its ends to two opposed arms of the stamping, and a second metal strip rigidly coupled at its ends to two different opposed arms of the stamping and intermediate its ends to an end of said one of the stub shafts, the first strip being located on one side of the stamping and the second strip being located on the other side of the stamping.

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**3,934,488**
**STEERING CONTROL HEAD WITH ADJUSTABLE POSITIONING MEANS**
**George Cantley, Akron, Ohio, assignor to Rockwell International Corporation, Pittsburgh, Pa.**
**Filed Mar. 21, 1975, Ser. No. 560,579**
**Int. Cl.² B62D *1/18***
**U.S. Cl. 74—493** **14 Claims**



1. A steering control head with adjustable positioning means comprising a housing, a shaft rotatably supported in said housing, said shaft operatively attached to a steering

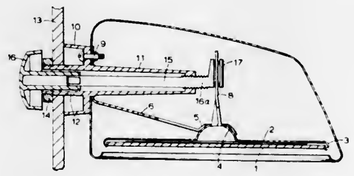
system, said housing having thereon a radially extending shoulder, said shoulder having, at least on a part of its outer surface, a series of teeth, a collar having an opening therethrough for fitting over and around said housing, said collar having an annular counterbore surrounding said opening to accept said shoulder therein, the inner axially extending surface of said collar counterbore having, at least on a part thereof, a series of teeth for meshing with said teeth on said shoulder, said collar being provided with a fastening means to fasten said collar and said housing intermeshed therewith to a bulkhead member.

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**3,934,489**
**REAR VIEW MIRRORS FOR VEHICLES**

**John Bottrill, Chichester, England, assignor to Wingard Limited, Chichester, England**

**Filed Apr. 11, 1974, Ser. No. 460,102**
**Claims priority, application United Kingdom, Apr. 12, 1973, 17545/73**
**Int. Cl.² F16C *1/00***
**U.S. Cl. 74—501 M** **4 Claims**



1. An exterior rear view mirror for vehicles in which a mirror located within a stationary housing is adjustable by remote control wherein said mirror is floatingly mounted in a housing and exposed in an opening in one end of the housing and is resiliently urged against an internal abutment flange in the housing set in from and parallel to the opening, and the rear face of the mirror is engaged by a radial finger carried by a rotatable spindle passing through and in screw-threaded engagement with a central boss in the housing at the end remote from the opening whereby the spindle on being rotated moves axially towards the mirror glass and the finger effects a rotating displacement of the edge of the mirror away from said abutment flange through a progressively increasing angle.

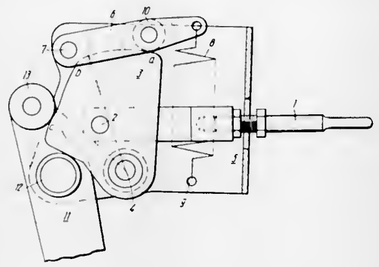
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**3,934,490**
**SPRING ASSISTED VARIABLE RATIO BRAKE OPERATING LEVER SYSTEM**

**Hans O. Schroter, 18 Robert-Koch-Strasse, 8 Munich 22, Germany**

**Filed Feb. 28, 1974, Ser. No. 446,905**
**Claims priority, application Germany, Feb. 28, 1973, 2309973**
**Int. Cl.² G05G *1/04***
**U.S. Cl. 74—520** **10 Claims**

1. A variable ratio operating lever system for the brake system of a vehicle comprising a rod adapted to actuate the brake system, a pivotally mounted actuating lever, a pivotally mounted intermediate lever pivotally connected to said rod and engageable by said actuating lever, said intermediate lever having a cam surface, a frame, a first lever pivotally mounted on said frame, a first roller on said first lever and means for resiliently urging said first roller against said cam surface, and said first roller being guided substantially concentrically to the pivot mount of said intermediate lever at least through half of the pivoting path of the intermediate lever in the braking direction and at a decreasing distance from said pivot mount upon further actuation in the braking direction so that the ratio between the distance travelled by the actuating lever



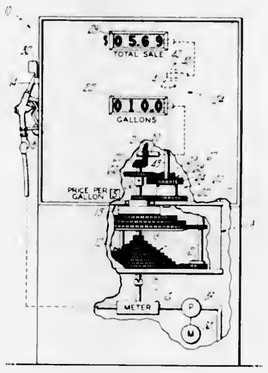
around its pivot and the travel of the rod initially increases and then decreases.

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**3,934,491**
**SETTABLE VARIATOR DRIVE MECHANISM**

**Bruno S. Smilgys, Hartford, Conn., assignor to Veeder Industries, Inc., Hartford, Conn.**

**Filed Aug. 29, 1974, Ser. No. 501,852**
**Int. Cl.² F16H *37/06***
**U.S. Cl. 74—681** **15 Claims**



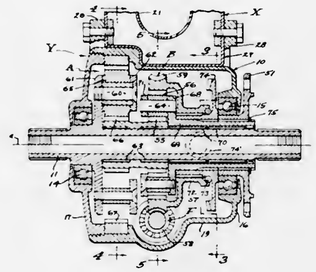

1. In a settable price variator drive train for a fluid delivery system for setting the unit volume price of the fluid delivered, comprising a price variator with a rotary input adapted to be rotated in accordance with the volume of fluid delivered, a rotary output, and gear means interconnecting the price variator input and output having settable price gear means settable for establishing the drive ratio between the variator input and output for establishing the unit volume price of the fluid, and a rotary drive mechanism for connecting the variator for registering the cost of fluid delivered in accordance with the volume of fluid delivered and the unit volume price established by the setting of the price gear means, the improvement wherein the rotary drive mechanism comprises a rotary drive output adapted to be connected for registering the cost of fluid delivered and first and second rotary inputs respectively connected for being driven by the variator output and by the variator input bypassing the settable price gear means, and selectively engageable intermediate drive control means controlled by said first rotary input for selectively connecting said second rotary input for rotating the rotary drive output in accordance with the rotation of said first rotary input whereby at least part of the torque load on the rotary drive output is transmitted thereto from the variator input via said second rotary input and bypassing the settable price gear means.



**3,934,492**
**VARIABLE SPEED DRIVE FOR BICYCLES AND THE LIKE**

**Norman E. Timbs, 10421 Beckford Ave., Northridge, Calif. 91324**

**Continuation of Ser. No. 428,029, Dec. 26, 1973, abandoned. This application Mar. 17, 1975, Ser. No. 558,673**
**Int. Cl.² F16H *37/06***
**U.S. Cl. 74—740** **11 Claims**



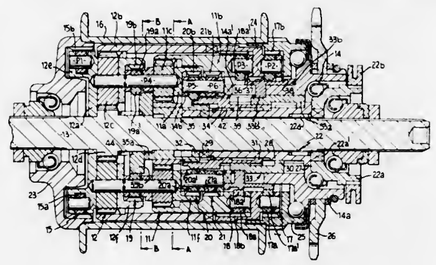
1. A low velocity high torque infinitely variable speed constant mesh transmission for bicycles and the like, including; a case with a crank shaft extending therethrough and with its opposite ends projecting from the case, a first stage speed changer comprising, a stationary ring gear and an input planet gear journaled on a carrier driven by the crank shaft and in constant mesh with said ring gear, and an output sun gear in constant mesh with said planet gear to be driven at increased angular velocity thereby; and a second stage speed changer comprising, an input sun gear driven by the first stage sun gear and a planet gear journaled on an output carrier rotatable over the crank shaft and in constant mesh with said second stage sun gear, and a rotatable ring gear in constant mesh with said planet gear; and an infinitely variable speed feedback drive means driven by the output carrier of the second stage and controlling the angular velocity of the rotatable second stage ring gear to effect a commensurate velocity change between the crank shaft and the output carrier.

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**3,934,493**
**EPICYCLIC CHANGE SPEED GEARS**

**Anthony William Hillyer, Loughborough, England, assignor to Raleigh Industries Limited, Nottingham, England**

**Filed Dec. 12, 1974, Ser. No. 531,964**
**Claims priority, application United Kingdom, Dec. 15, 1973, 58416/73**
**Int. Cl.² F16H *3/44*, *57/10***
**U.S. Cl. 74—750 B** **14 Claims**



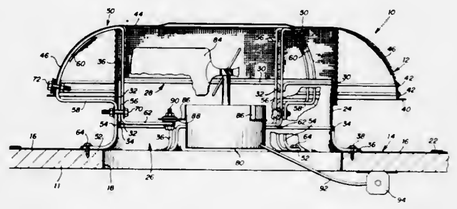
1. An epicyclic change-speed gear hub for a bicycle, tricycle or the like comprises first and second epicyclic gear trains arranged for operation about a common axis, uni-directional clutch means between such gear trains adapted selectively drivingly to connect the same, first output uni-directional clutch means adapted drivingly selectively to connect the planet cages of the epicyclic gear trains with the hub shell, second output uni-directional clutch means adapted drivingly and selectively to connect the gear rings, of the epicyclic gear trains with the hub shell, input uni-directional clutch means selectively co-operable with the respective epicyclic gear trains, a driver drivingly connected with the input uni-directional clutch means and adapted to transmit a forward drive motion to the hub through such means, and a cam and cam follower mechanism adapted, according to position relative to the axis of the hub, to control the relative conditions of the input and output uni-directional clutch means selectively to give a drive transmission path through the hub consistent with requirements.

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**3,934,494**
**POWER VENTILATOR**

**Henry N. Butler, Highway 180 East, Rte. 3, Box 3, Mineral Wells, Tex. 76067**

**Division of Ser. No. 335,073, Feb. 23, 1973, Pat. No. 3,862,218. This application Mar. 22, 1974, Ser. No. 454,005**
**Int. Cl.² F24F *7/02***
**U.S. Cl. 98—43** **1 Claim**



1. A ventilator for installation on horizontal and inclined surfaces of roofs having an opening connected with a space to be ventilated, comprising:

a hollow support base with the interior of said base, communicating with said opening, said support base having a first square-shaped flanged portion resting on the surface of said roof, a second cylindrical flanged portion extending transverse to the plane of said first flange, said first and second flanges being constructed from flexible material, a rigid frame reinforcing said first and second flange, a plurality of rigid feet extending from said frame, said rigid feet being attached to said roof;

a generally dome-shaped cover for said support base, said dome-shaped cover having arcuate portions adjacent the periphery thereof, said cover being formed from a flexible material and a rigid frame;

a plurality of bracket means for attaching said cover to said support base, said bracket means having an arcuate portion for contacting the arcuate portion of said cover, said bracket means being attached to the rigid frame of said cover and the rigid frame of said base, rigid feet extending from said bracket means, said rigid feet being attached to the roof, a fan support flange extending from one end of each of said bracket means into the interior of said cylindrical flange of said base;

a fan attached to said fan support flanges of said bracket means and the interior of said cylindrical flange causing air to flow from said base through said ventilator; and

screen means extending across the opening between said cover and said base for preventing undesirable objects from entering said ventilator.

**3,934,495**

## PAINT SPRAYING BOOTHS

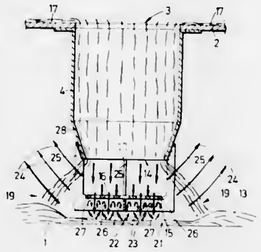
**Ivan Bloomer, London, England, assignor to Carrier Drysys, Ltd., London, England**

**Filed Jan. 16, 1974, Ser. No. 433,778**

**Claims priority, application United Kingdom, Jan. 22, 1973, 3095/73; Mar. 5, 1973, 10650/73; July 24, 1973, 35239/73**

**Int. Cl.² F23J *11/00***

**U.S. Cl. 98—115 SB** **8 Claims**



1. In a paint-spraying booth of the type including a floor, apparatus for scrubbing paint-laden air, said apparatus comprising a water-container located beneath and spaced from the floor of the booth, air extraction means connected with exhaust ducts which extend lengthwise of and beneath the floor of the booth, at least one tube which opens through and extends downwardly from the floor and has the end thereof nearest the buttom of the water-container disposed above and spaced, when the apparatus is in use, from the level of water in the water-container, and means arranged to cause a flow of water over the floor and into said tube, the end of the tube nearest the bottom of the water-container having associated therewith means defining an air flow-constricting opening which is co-axial with the tube, said opening being substantially parallel to the bottom of the water container, and a baffle positioned between said air flow-constricting opening and the bottom of the water-container and spaced from each thereof in substantially parallel relationship with the air flow-constricting opening and the bottom of the water-container, said baffle being substantially co-axial with the air flow-constricting opening and having a plurality of perforations extending therethrough, said perforations being small as compared with said air flow-constricting opening, the arrangement being such that in use of the apparatus the baffle provides by impingement thereon a first stage separation of paint particles from entraining air, and water in the water-container immediately below the baffle providing by impingement thereon of paint entraining air which passes through the baffle perforations a second stage separation, and an annular curtain of flowing water formed between the end of the tube nearest the bottom of the water-container and the surface of water in the water-container providing a third stage separation by the lateral passage of paint entraining air therethrough.

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**3,934,496**

## COUNTERBALANCE MECHANISM FOR FUME HOODS

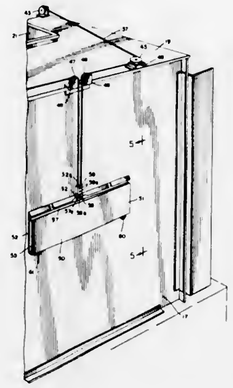
**Michael Turko, Manitowoc, Wis., assignor to American Hospital Supply Corporation, Evanston, Ill.**

**Filed Oct. 23, 1974, Ser. No. 517,100**

**Int. Cl.² F23J *11/00***

**U.S. Cl. 98—115 LH** **14 Claims**

1. In a fume hood having a top, a back, and right and left sides forming a working chamber and a sash mounted for movement between raised and lowered positions for opening or closing the working chamber, an improved sash counterbalance apparatus comprising a single cable having a pair of ends, each end of the cable being attached to the sides of the sash to provide right and left portions of the cable, cable routing means on the top of the fume hood for routing the right and left portions of the cable over the top of the hood and down the back thereof, a counterbalance behind the back of the hood, and a clamp on the counterbalance clampingly securing



the right and left portions of the cable whereby if one of the right and left cable portions breaks the other cable portion remains attached to the counterbalance.

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**3,934,497**

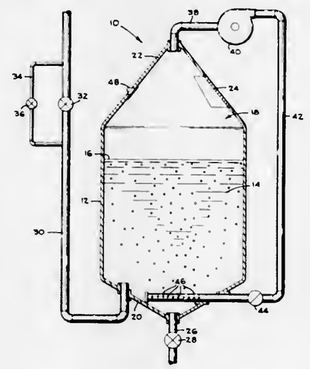
## APPARATUS FOR COOKING FRUIT AND THE LIKE PRODUCTS

**Phillip L. Hannah, San Jose, Calif., assignor to California Fruit Concentrates, Inc., San Jose, Calif.**

**Filed Apr. 17, 1974, Ser. No. 461,501**

**Int. Cl.² A47J *27/026*, *27/04*, *27/16***

**U.S. Cl. 99—476** **6 Claims**



1. Apparatus for cooking fruits and the like products in which said fruits are immersed in a body of water to form a slurry, said body of water being sufficient to cover said products to form said slurry and to create the necessary back pressure for an hydraulic head and of sufficient quantity to provide an adequate medium for the agitation of said slurry, said apparatus comprising:

a. a closed tank disposed for receiving said slurry in a lower portion thereof,

b. first means for introducing steam into the slurry contained in said tank for bringing said slurry approximately to a cooking temperature,



c. recirculating means for recirculating under pressure any moisture laden vapor which escapes from an upper surface of the slurry to a lower portion of said tank and into the slurry for heating said slurry and for agitating said slurry, said recirculating means being separate and apart from said first means.

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**3,934,498**

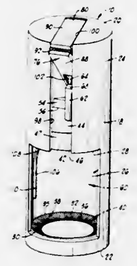
## COMPACTER FOR COMPACTING OBJECTS SUCH AS CANS AND THE LIKE

**Donald L. Hochanadel, 9704 N. Georgia Ave., Oklahoma City, Okla. 73120**

**Filed Jan. 31, 1974, Ser. No. 438,448**

**Int. Cl.² B30B *7/04***

**U.S. Cl. 100—35** **16 Claims**



15. A method for compacting objects such as metal cans and the like between a pair of gripping members comprising the steps of:

spacing the gripping members a predetermined distance apart for receiving the object to be compacted therebetween;

placing the object between the two gripping members;

moving at least one of the gripping members toward the other gripping member into engagement with the object to be compacted;

holding the object to be compacted in a relatively stationary position with respect to each of the gripping members;

moving at least one of the gripping members toward the other gripping member thereby moving the gripping member toward a compacting position compacting the object between the two gripping members; and

rotating at least one of the gripping members for twisting the object to be compacted as the gripping members are moved toward the compacting position, thereby rotating and weakening the structural integrity of the object to be compacted during the movement of the gripping members toward a compacting position.

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**3,934,499**

## SCRAP SHREDDING SYSTEM

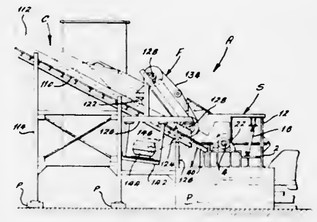
**Sven B. Strom, St. Louis, Mo., assignor to American Pulverizer Company, St. Louis, Mo.**

**Filed Mar. 21, 1974, Ser. No. 453,410**

**Int. Cl.² B30B *9/32***

**U.S. Cl. 100—53** **13 Claims**

1. A feeder for feeding large items of bulk scrap to a reducing machine which reduces the scrap to segments, said feeder comprising: a chute for receiving bulk scrap and having a bottom surface on which the scrap is supported; advancing means located above the supporting surface of the chute for engaging the scrap and moving it along the chute; at least one fluid operated cylinder for supporting the advancing means above the supporting surface of the chute; first and second pumps for supplying fluid to the hydraulic cylinder, the first pump being capable of elevating the pressure of the fluid sufficiently to overcome the weight of the advancing means, the second pump supplying fluid to the cylinder at a pressure less than that required to overcome the weight of the advancing means so that the advancing means will float on the scrap, exerting a force thereon less than; the force required to hold it away from the bottom surface of the chute whereby the feeder is supported by both the scrap and the cylinder; first



valve means between the first pump and the cylinder for directing high pressure fluid to the cylinder such that it will raise the advancing means; and second valve means between the second pump and the cylinder for directing pressure to the cylinder to exert a force on the advancing means in opposition to the weight of the advancing means.

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**3,934,500**

## MACHINE FOR PRINTING ON CYLINDRICAL OR FRUSTO-CONICAL CONTAINERS WITH ULTRA-VIOLET-LIGHT-SETTING INK

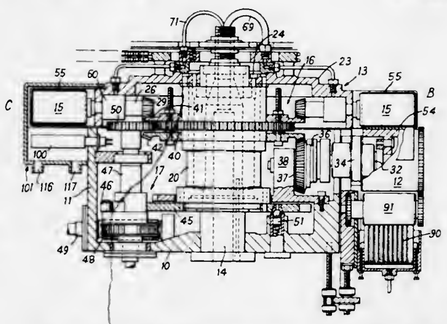
**John Maxwell Jackson, Potters Bar, England, assignor to Chromax Limited, England**

**Filed Dec. 13, 1974, Ser. No. 532,399**

**Claims priority, application United Kingdom, Dec. 21, 1973, 59582/73**

**Int. Cl.² B41F *7/16***

**U.S. Cl. 101—38 A** **14 Claims**



1. A multi-cylinder printing machine for printing on the surfaces of cylindrical or frusto-coincal containers in ultra-violet-light-setting inks, comprising a frame, a turret rotatably mounted on the frame, the turret having a plurality of rotatable mandrels for the containers to be printed, indexing means operable to turn the turret intermittently so as to index each mandrel in succession with printing stations around the turret, a plurality of printing cylinders rotatably mounted one at each of the printing stations, means for applying the ultra-violet-light-setting inks to the printing cylinders, and gear means for rotating the mandrels and printing cylinders in synchronism to ensure registration of the successive images printed by the printing cylinders on containers supported on the mandrels, wherein each mandrel is mounted in a recess in the turret with at least one side of the mandrel exposed to permit printing engagement between the printing cylinders and a container on the mandrel, and at least one ultra violet light source is arranged to direct light into the recesses to cure ink printed on

the containers, the light source being provided with a shroud co-operating with the turret to prevent escape of light except into a recess.

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**3,934,501**

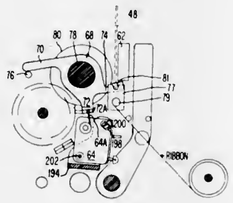
## ALIGNMENT AND ACTUATING MECHANISM FOR MICR DOCUMENT ENCODING APPARATUS

**Herbert John Bagen; Ronald Worden Ferguson; Henry M. Korytkowski, all of Rochester, and William H. Mowry, Jr., Ionia, all of N.Y., assignors to Burroughs Corporation, Detroit, Mich.**

**Continuation of Ser. No. 412,780, Nov. 5, 1973, abandoned. This application Dec. 20, 1974, Ser. No. 534,748**

**Int. Cl.² B41J** *13/12*

**U.S. Cl. 101—93** **5 Claims**



1. Control apparatus for printing devices comprising:
printing means for printing MICR encoding on an item such as a check,
demountable, removable item receiving means receivable in said printing means for positioning an item adjacent to the printing mechanism of said printing means,
electrical signal means in said item receiving means for producing a signal signifying the item is accurately side edge aligned within said receiving means,
additional electrical signal means within said apparatus effective to produce a signal signifying the item is properly bottomed relative to said printing mechanism,
electromagnetic means including means actuatable in response to the signals from said first and second mentioned signal means for actuating means for preventing cycle repetition and for printing upon said item,
said printing means including cam means for controlling and terminating the printing cycle of said apparatus and,
electrical time delay circuit means interconnecting the first and second mentioned signal means and said means preventing machine cycling for preventing a second or unwanted printing on said item.

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**3,934,502**

## ADJUSTABLE ROTARY SCREEN PRINTER WITH AIR-BIASED SQUEEGEES

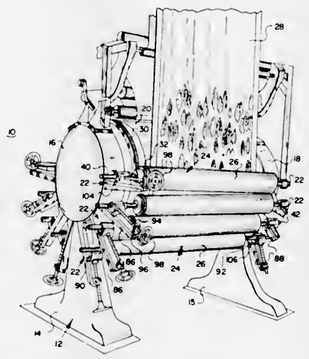
**Thomas J. Marino, Totowa, N.J., assignor to Morrison Machine Co., Paterson, N.J.**

**Continuation-in-part of Ser. No. 326,396, Jan. 24, 1973, abandoned. This application Dec. 31, 1974, Ser. No. 537,649**

**Int. Cl.² B41F** *15/10, 15/42*

**U.S. Cl. 101—115** **23 Claims**

1. A screen printing machine comprising:
a frame;
backing means supported by said frame to provide a support surface for material;
at least one rotary screen assembly carried by said frame in adjustably spaced relationship with respect to said support surface; said rotary screen assembly comprising:
an inner elongated support;
an outer hollow screen rotatably supported about said inner elongated support for rotation about an axis defined thereby;
elongated applicator means engaging the inner surface of said screen and supported by said elongated inner support;
and further including pressure adjusting means in the interior of said hollow screen, said pressure adjusting means comprising a plurality of axially spaced, individually inflatable elongated tubes positioned between said inner elongated support and said elongated applicator means for selectively urging said applicator means toward the inner periphery of said screen, whereby pressure applied to said applicator means may be selectively varied along the length thereof.



18. A screen printing machine comprising:
a frame;
backing means supported by said frame to provide a support surface for material;
at least one rotary screen assembly carried by said frame in adjustably spaced relationshp with respect to said support surface; said rotary screen assembly comprising;
an inner elongated support;
an outer hollow screen rotatably supported about said inner elongated support for rotation about an axis defined thereby;
elongated applicator means engaging the inner surface of said screen and supported by said elongated inner support;
and further including first adjusting means for rotating said inner elongated support about its said axis from a location outside of said hollow screen;
and further including second adjusting means for effecting axial motion of said inner elongated support; whereby the axial position of said screen with respect to said support surface is adjustably positioned;
further including first and second shaft members extending from opposite ends of said inner elongated support;
first and second holders carried by said frame for supporting said first and second shaft members;
wherein support surface means comprises a rotary drum mounted on a main shaft, and further comprising a sun gear mounted on said main shaft, said sun gear having helically oriented teeth circumferentially thereabout; and further including third adjusting means for effecting circumferential movement of said hollow screen with respect to said rotary drum; said third adjusting means comprising;
a gear rotatably and slidably supported on one of said first and second shaft members, said gear having helically oriented teeth which engage said helically oriented teeth of said sun gear;
connecting means interconnecting said gear and said hollow screen for effecting simultaneous rotation of same while allowing free axial motion of said gear along said one shaft member;
selectively operable means for effecting axial motion of said gear to thereby effect circumferential movement of said screen with respect to said drum; and
wherein said one of said shaft members is hollow and additionally includes an elongated passageway therethrough located adjacent the portion of said one shaft member on which said gear is situated; said selectively operable means for effecting axial motion of said gear including an elongated shaft axially movable within said one shaft member, and pin means passing through said elongated passageway for connecting said elongated shaft to said gear.



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**3,934,503**

## STENCIL SCREENS

**Layton C. Kinney, Chicago, and Edwin H. Tompkins, Riverside, both of Ill., assignors to IIT Research Institute, Chicago, Ill.**

**Continuation-in-part of Ser. No. 648,861, June 26, 1967, abandoned, which is a continuation-in-part of Ser. No. 457,658, May 21, 1965, abandoned. This application Dec. 10, 1968, Ser. No. 782,666**

**Int. Cl.² B41W** *1/24*

**U.S. Cl. 101—128.2** **6 Claims**

1. A blank for forming a printing screen comprising in combination:
a flexible, porous substrate having a high tensile strength and having openings which extend between opposite faces and of a size to permit passage of ink therethrough;
a thin film on said substrate having high flexural and tensile strength, said thin film being uniform in cross section and including a combustible film former composed of an organic resin having a high percentage of hydrogen and carbon, a solid oxidizer uniformly dispersed throughout said film, and a fuel component, being resistant and impervious to said ink, said film being self-combustible, having a light-absorbing pigment in sufficient quantities per unit of surface area of said film to be ignitable and completely consumed in selected areas directly exposed to a high-intensity, short-duration pulse of light which raises the thin film to ignition threshold.

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**3,934,504**

## METHOD FOR PHOTO-MECHANICAL COMPOSITION OF DESIGNS ON STENCILS FOR FILM AND SCREEN PRINTING, PARTICULARLY ROTARY SCREEN PRINTING

**Martin Klemm, Gerlafingen, Switzerland, assignor to Fritz Buser AG., Maschinenfabrik, Wiler b. Utzenstrof, Switzerland**

**Continuation of Ser. No. 241,609, April 6, 1972. This application Apr. 4, 1974, Ser. No. 457,871**

**Claims priority, application Switzerland, Apr. 13, 1971, 5265/71; Aug. 3, 1971, 11432/71; June 21, 1971, 9055/71. The portion of the term of this patent subsequent to Sept. 17, 1991, has been disclaimed.**

**Int. Cl.² B41N** *1/24;* **G03C** *5/00*

**U.S. Cl. 101—128.3** **6 Claims**

1. Method to make stencils having a stencil layer on printing grids having interstices between the grid lattice thereof, in which a photo-sensitive layer is utilized to be exposed in accordance with an image to be composed or printed, the non-exposed image portions being removed before printing, the method comprising
forming a level, smooth continuous composite surface of exposed grid lattice and a soluble filler located only in the interstices between the grid lattice, by
applying a filler material over a side of the printing grid, and penetrating the interstices between the lattice of the grid and
removing that portion of the filler material which extends over the printing grid to leave a smooth surface of grid lattice and interstitial filler material;
applying a continuous single photo-sensitive layer of sufficient thickness to form the stencil directly over the smooth surface of the exposed grid lattice and the filler in the interstices between the lattice with constant, controllable thickness,
exposing the photosensitive layer with the image to be composed;
selectively removing a portion of the layer of photo-sensitive material in accordance with the image to which the layer was exposed to develop the exposed photo-sensitive layer;
and thereafter removing all the filler material by a solvent.

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**3,934,505**

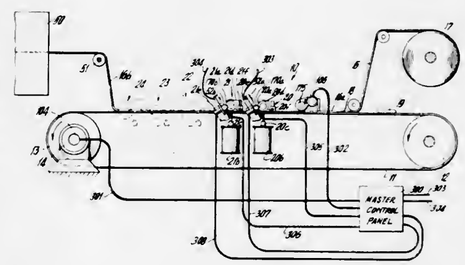
## METHOD AND APPARATUS FOR SYNCHRONOUS PRINTING OF A MOVING WEB

**David Kushner, New York, N.Y., assignor to Bernard Screen Printing Corporation, New Hyde Park, N.Y.**

**Filed Dec. 10, 1973, Ser. No. 423,088**

**Int. Cl.² B41F** *15/10;* **B41M** *1/12;* **B41F** *13/24*

**U.S. Cl. 101—129** **7 Claims**

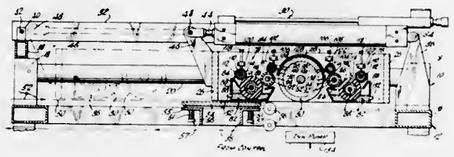



1. A method for synchronous printing on a moving fabric web comprising:
a. moving a fabric web on an endless belt across a first rotating cylindrical printing screen and then across a second rotating cylindrical printing screen;
b. transmitting a first electrical signal proportional to the speed of said web from said belt to a first signal comparator;
c. transmitting a second electrical signal proportional to the speed of said web from means moving said belt to said first signal comparator;
d. transmitting an electrical signal proportional to said first printing screen speed to said first signal comparator;
e. transmitting a corrective signal from said first signal comparator to control means for rotating said first printing screen;
f. transmitting said first electrical signal proportional to the speed of said web to a second signal comparator;
g. transmitting said second electrical signal proportional to the speed of said web to said second signal comparator;
h. transmitting an electrical signal proportional to said second printing screen speed to said second signal comparator;
i. transmitting a corrective signal from said second signal comparator to control means for rotating said second printing screen; so that the speed of each of said printing screens is made equal to the web speed and in synchronization with the other.

## 3,934,506
## APPARATUS FOR IMPRINTING INTERMITTENTLY ADVANCED WEBS

**Murray N. Levy, Spring Valley, N.Y., and Vincent J. Gasparino, West Orange, N.J., assignors to Adolph Gottscho, Inc., Union, N.J.**

**Filed Apr. 2, 1974, Ser. No. 457,313**
**Int. Cl.² B41F** *3/76, 3/14, 3/20*
**U.S. Cl. 101—260** **14 Claims**



1. A marking apparatus for imprinting webs advanced intermittently therepast comprising support means; back up plate means carried by said support means on one side of the path of said web; carriage means mounted on said support means for linear reciprocal displacement parallel to said web on the side thereof opposed to said back up plate means; marking means carried by said carriage means and including a print roller positioned for operative engagement of said web against said back up plate means during displacement of said carriage means to effect printing, at least one ink carrying roller for supplying ink for said print roller and transfer roller means for supplying ink to said print roller from said ink carrying roller; means for coordinately linearly displacing said carriage means and rotatably displacing said print roller in opposite directions parallel to the direction of advance of said web alternately during successive periods of rest of said web, said means for displacing said print roller including rack means mounted on said support means in the path of said carriage means and sput gear means operably coupled to said print roller for coordinate rotation therewith and positioned for meshing engagement with said rack means for rotational displacement thereby during the linear displacement of said carriage means and means for selectively linearly displacing said rack means relative to said support means for fine positioning said print roller relative to said backup plate; switch means positioned in the path of displacement of said carriage means in advance of each of the two respective rest positions thereof for actuation by said carriage means in advance of reaching said rest positions; and control means for decelerating and cushioning the stopping of said carriage means in advance of each of said rest positions in response to the actuation of said switch means.

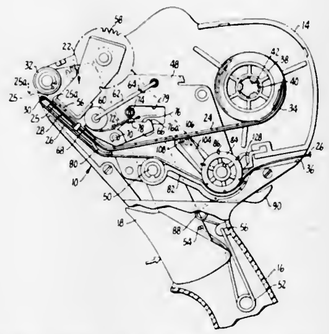
## 3,934,507
## MERCHANDISE LABEL MARKING GUN

**Don W. Geri, Mountain View, Calif., assignor to Primark Corporation, Dublin, Calif.**

**Filed Oct. 9, 1973, Ser. No. 404,486**
**Int. Cl.² B41F** *1/08*
**U.S. Cl. 101—291** **7 Claims**

1. In an adhesive label printer having a printing head operably connected to an operating trigger, a casing, a drive assembly contained within the casing and adapted to incrementally transport a label tape having precut adhesive labels carried on a separable backing tape, and a printing plate on which individual labels are sequentially printed by said printing head and incrementally advanced by said drive assembly in a direction across said printing plate, said printing plate having a cooperating label separating means for sharply reversing the direction of the backing tape for separating printed labels from the backing tape, each label having a lead edge that is first separated from the backing tape at the label separating means, an improvement comprising:

pressure means adapted to engage said tape upstream from said label separating means and bias means urging said pressure means against the tape at each incremental advance and releasing after each separation, said bias means cooperatively engaged to said trigger, whereby the

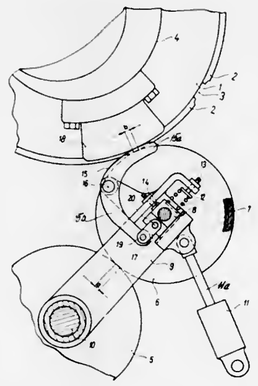


backing tape passes the label separating means under sufficient tension to separate a label from the backing tape.

## 3,934,508
## METHOD AND APPARATUS FOR ADJUSTING ROLLERS IN A PRINTING PRESS

**Paul Heimlicher, Bolligen, Switzerland, assignor to Maschinenfabrik Wifag, Switzerland**

**Filed Feb. 11, 1974, Ser. No. 441,442**
**Claims priority, application Sweden, Feb. 14, 1973, 7302098**
**Int. Cl.² B41F** *31/10*
**U.S. Cl. 101—349** **7 Claims**



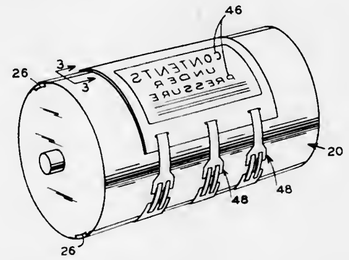
1. A device for adjusting the positions of rollers in a printing machine comprising a first roller, a stationary axle rotatably mounting said first roller, a second roller spaced from said first roller, a movably displaceable third roller arranged to contact said first and second rollers, first means connected to said stationary axle and supporting said third roller and fixably positioning it relative to said first roller so that a fixed distance is maintained between the axle of said third roller and the axle of said first roller and a fixed area or strip of contact is established between said first and third rollers, said first means includes a stop surface connected to said third roller and spaced from the strip of contact between said first and second rollers, said second roller having a stop thereon, second means operatively connected to said first means for movably displacing said first means about said stationary axle for placing said stop surface connected to said third roller into contact with said stop on said second roller and for establishing a strip of contact between said second and third rollers while maintaining the distance between the axle of said third roller and the axle of said first roller, said first means comprises a first lever pivotally mounted on said stationary axle and extending outwardly therefrom, a bearing rotatably mounting said third roller and slidably mounted on said first lever for movement toward and away from said stationary axle, a biasing member positioned on said first lever for forcing said bearing and third roller toward said first roller, a fixing device on said first lever for fixably positioning said bearing and said third roller relative to said first roller, said stop surface on said first means comprises an angle-shaped second lever pivotally connected intermediate its ends to said third roller, said second lever having a first arm and a second arm each extending from the point of pivotal connection to said third roller and angularly disposed relative to the other, said first arm forms said stop surface for contact with said second roller, a link, a pin connecting said link at one end to said second arm of said second lever at a position spaced from the pivotal connection of said second lever to said third roller, and an eccentric bolt connecting the other end of said link to said bearing for said third roller so that the distance between said bearing and the pin connection of said link to said second arm can be varied by rotating said eccentric bolt.



## 3,934,509
## MOUNTING MEANS FOR A PRINTING PLATE

**Philip G. Saunders, and Jack R. Simpson, both of Toledo, Ohio, assignors to Container Graphics Corporation, Toledo, Ohio**

**Filed Apr. 8, 1974, Ser. No. 458,910**
**Int. Cl.² B41F** *27/06;* **B65D** *67/02*
**U.S. Cl. 101—415.1** **5 Claims**

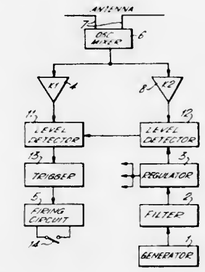



1. Apparatus for printing indicia on surfaces, said apparatus comprising a printing plate cylinder having at least two mounting flanges affixed thereto, a mounting sheet having a downwardly-turned lip along one edge thereof engaged with one of said mounting flanges, said mounting sheet also having a plurality of openings formed along an edge of said sheet opposite the edge having said lip, a printing plate mounted on said mounting sheet between said lip and said openings, and a mounting strap affixing said mounting sheet on said cylinder with said lip engaged with one of said mounting flanges, said mounting strap having a first portion received in one of said mounting sheet openings and having a second portion with a lip engageable with another of said mounting flanges of said cylinder, and resilient means connecting said two strap portions and being in tension when said first portion is connected to said mounting sheet and said second portion is connected to the mounting flange, said first portion of said mounting strap having an elongate strip of a width less than the width of one of said mounting sheet openings, a portion of said elongate strip being received through said one mounting sheet opening with said strip portion folded back between the remaining portion of said elongate strip and the surface of said printing plate cylinder, said elongate strip being made of a plastic material which can be folded by hand back on itself repeatedly at substantially any location along its length, said elongate strip being sufficiently rigid to hold said mounting sheet on said printing plate cylinder when folded back and said resilient means is under tension, said first portion of said mounting strap also having an enlarged portion at the end of said elongate strip opposite said elongate strip portion which is folded back, said enlarged portion having means for receiving and holding said resilient means connected with said second portion of said mounting strap.

## 3,934,510
## PROXIMITY FUSE

**Bjorn Dahl, Kongsberg, Norway, assignor to A/S Kongsberg Vapenfabrik, Kongsberg, Norway**

**Continuation-in-part of Ser. No. 340,034, March 12, 1973, Pat. No. 3,802,343. This application Mar. 25, 1974, Ser. No. 454,611**
**Claims priority, application Norway, Mar. 26, 1973, 1223/73**
**Int. Cl.² F42C** *13/04*
**U.S. Cl. 102—70.2 P** **8 Claims**




1. Proximity fuse, comprising at least two frequency selective amplifiers having different band-pass characteristics and both receiving the same input signals, said first amplifier (K1) including a relatively narrow band-pass filter and being connected to activate a detonator upon receiving a signal exceeding a given level within the pass-band thereof, said second amplifier (K2) including a relatively broad band-pass filter and being adapted to change the level which a signal in the first amplifier (K1) must exceed in order to activate the detonator, if a signal exceeding a certain level appears in the pass-band of the second amplifier.

## 3,934,511
## LINEAR SHAPED CHARGE WARHEAD

**Paul E. Cordle, and Melvin J. McCubbin, both of China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed Aug. 15, 1968, Ser. No. 753,038**
**Int. Cl.² F42B** *3/08, 1/02*
**U.S. Cl. 102—24 HC** **1 Claim**

1. A destructive warhead comprising;

an explosive charge of generally cylindrical formation having longitudinally extending corrugations formed in the periphery thereof;

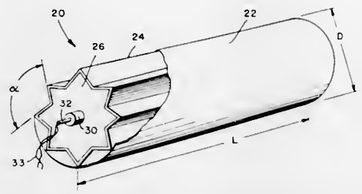
said corrugations being defined by vanes having, side walls meeting at apices, and open mouths;

with a side wall of one groove meeting the side wall of the next adjacent groove;

the angle between the side walls relative to each apex being on the order of approximately 120°;

said explosive charge being a homogeneous mass of high order explosive material;

said charge being uniformly covered with metal to the extent that the ratio of charge to metal per unit length is in the range of about 1.8 to about 2.25; and




the length to diameter ratio of the charge is at least three.

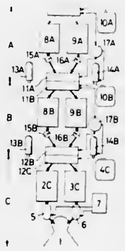
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**3,934,512**

## LIQUID FUEL MULTISTAGE ROCKET

**Kazuhide Adachi, No. 3393-7 Banchi, Sunagawa, Tachikawa, Tokyo, Japan**

**Filed Feb. 28, 1974, Ser. No. 446,699**
**Claims priority, application Japan, Dec. 3, 1973, 48-135961**
**Int. Cl.² F02C** *3/12*
**U.S. Cl. 102—49.4** **5 Claims**




1. A liquid fuel multistage rocket comprising:
a thrust stage body located at the lowermost stage and having a thrust generating device, a combustion chamber, a thrust stage fuel tank, and a thrust stage oxidant tank;
a propellant stage body disposed above said thrust stage body and having a propellant stage fuel tank and a propellant stage oxidant tank;
an open and close valve means coupling said fuel tanks to each other and coupling said oxidant tanks to each other, whereby said propellant stage fuel and oxidant tanks are emptied of their propellant prior to emptying said thrust stage fuel and oxidant tanks; and
small-sized rocket means on said propellant stage body to separate said propellant stage body from said thrust stage body when said propellant stage fuel and oxidant tanks are empty.

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**3,934,513**

## GRENADE-FIRING DEVICE

**André J. Gabriëls, Genk, Belgium, assignor to Fabrique Nationale Herstal S.A., Liege, Belgium**

**Filed June 17, 1974, Ser. No. 480,170**
**Int. Cl.² F42B** *11/42*; **F41C** *27/06*
**U.S. Cl. 102—65.2** **4 Claims**

1. A device for firing a grenade or the like from a weapon such as a gun, comprising: a tube affixed to the rear of the grenade, a bullet trap in the said tube, said trap comprising a steel mass, dimensioned to correspond to the said tube and having, near each of its ends, at least one centering edge resting on at least one of the inner wall of the said tube and a portion of the body of the grenade; a supplementary propellant charge in said tube adjacent said mass, the said mass being provided with vent passages, enabling a propelling gas from a



gun to pass from the rear of the said mass to the said supplementary charge and, from there, to the front of the said mass.

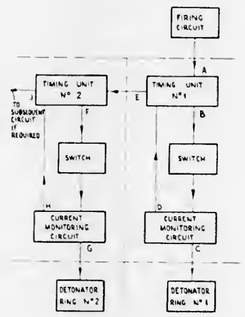
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**3,934,514**

## FIRING DEVICES AND PROCESSES

**Maxwell John Dawkins, Nunawading, Australia, assignor to ICI Australia Limited, Melbourne, Australia**

**Filed May 8, 1973, Ser. No. 358,348**
**Claims priority, application Australia, May 29, 1972, 9137/72**
**Int. Cl.² F42C** *11/06*
**U.S. Cl. 102—70.2 R** **16 Claims**




1. Electrical timing and control apparatus for sequentially activating a plurality of electrical load circuits at predetermined and controllable successive timing intervals after the occurrence of a first starting signal wherein the activation sequence is automatically halted whenever any one of the electrical load circuits fails to be successfully activated, said apparatus comprising:
first timing means connected to receive said first starting signal and to produce a first timed output signal which defines a first preselected timing interval,
first activation means connected to activate a first electrical load circuit at a first time corresponding to the time occurrence of saidi first starting signal,
first feedback means connected to detect the successful activation of said first electrical load circuit and to produce a first feedback signal in response thereto,
first logic means connected to receive both said first timed output signal and said first feedback signal and to produce a second starting signal occurring at a time interval subsequent to said first starting signal as determined by said first preselected timing interval, said second starting signal only being produced if both said first feedback signal and said first timed output signal are received by said first logic means, and
second activation means connected to activate a second electrical load circuit at a second time corresponding to the time occurrence of said second starting signal.



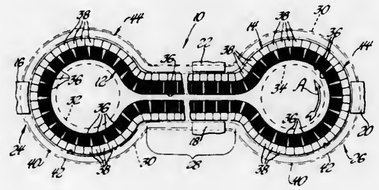
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**3,934,515**

## TRANSPORTATION SYSTEM

**Walton W. Cushman, Fraser, Mich., assignor to Lon H. Romanski, Sterling Heights, Mich.**

**Division of Ser. No. 304,903, Nov. 9, 1972. This application Nov. 25, 1974, Ser. No. 526,916**
**Int. Cl.² B61K** *1/00*
**U.S. Cl. 104—18** **17 Claims**



1. A method of transporting an entity to be transported from a first stationary station area to a second stationary station area, comprising the steps of transferring said entity from said first stationary station area to a second area defined by first means standing in stationary relationship to said first stationary station area, accelerating said first means until said first means attains a velocity substantially equivalent to the existing velocity of second means defining a third area contiguous to said second area, transferring said entity from said second area to said third area, transporting said entity on said third area at said existing velocity for a distance less than the distance between said first stationary station area and said second stationary area, transferring said entity from said third area while at said existing velocity to said second area, controllably decelerating said first means from said existing velocity until said first means attains a stationary relationship with respect to said second stationary station area, and transferring said entity from said second area to said second stationary station area.

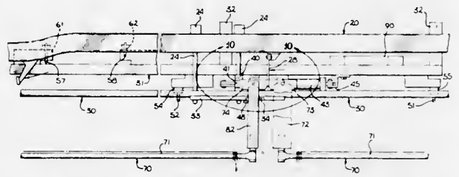
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**3,934,516**

## BATCHING AND DISPERS..G ASSEMBLY FOR A CONVEYOR SYSTEM

**Marius F. Paglia, Calabasas Park, Calif., assignor to Paglia Automated Conveyor Engineering, Inc., North Hollywood, Calif.**

**Filed July 24, 1974, Ser. No. 491,213**
**Int. Cl.² B65G** *17/42*
**U.S. Cl. 104—172 S** **13 Claims**



7. A system for batching and dispersing trolleys, in a conveyor system having an upper track containing a driving chain coupled to a trolley drive capturing means, and a lower track spaced a first distance from said upper track for supporting said trolleys, said trolleys having a first and second end, said system for batching and dispersing comprising;
a. a batching portion wherein a plurality of trolleys may be transported in a group, said batching portion being formed by spacing said lower track from said upper track a second distance, said second distance being greater than said first distance and sufficient to permit said drive capturing means to pass over said trolleys;
b. a dispersing assembly for accumulating said trolleys from said batching portion and for individually dispatching said trolleys into said conveyor system, said dispersing section comprising a stop means for blocking the path of said trolleys;
c. a plurality sensing means for activating said stop means;
d. a driving means for forcing batched trolleys through said batching portion and disbursing assembly, said driving means being flexible and coupled to said driving chain and capable of bending and sliding over said trolleys as said trolleys accumulate;
e. an anti-reversing means for preventing a stopped trolley from disengaging said stop means.

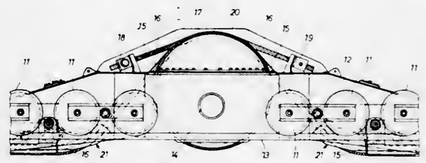
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**3,934,517**

## CABLE CONNECTION WITH SLACK CABLE-BRAKE RELEASE FOR AN AERIAL CABLEWAY

**Emil Hirsig, Thun, Switzerland, assignor to Willy Habegger, Thun, Switzerland**

**Filed Nov. 11, 1974, Ser. No. 522,584**
**Claims priority, application Switzerland, Nov. 20, 1973, 16278/73**
**Int. Cl.² B61B** *7/02*, *12/06*
**U.S. Cl. 104—173** **11 Claims**



1. In an aerial cableway having a travelling mechanism, a traction cable secured to said travelling mechanism and a brake release mechanism operatively connected to said traction cable and operable in response to a drop of the tension in the traction cable below a predetermined minimum value, the improvement comprising: a damping mechanism arranged at said travelling mechanism, said traction cable being guided over said damping mechanism to counteract oscillations in said cable, a cable drum, said traction cable being wrapped around said cable drum and secured to said travelling mechanism, a force measuring device for deflecting the traction cable in an oscillation free-range thereof between said damping mechanism and said cable drum, said force measuring device being operatively connected to said brake release mechanism so as to cause said brake release mechanism to respond upon a predetermined value of the force of the cable exerted upon said force measuring device.

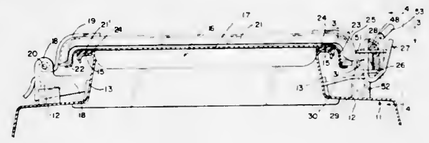
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**3,934,518**

## TROUGH HATCH LOCK DEVICE

**Franklin P. Adler, Michigan City, Ind., assignor to Pullman Transport Leasing Company, Chicago, Ill.**

**Filed Oct. 15, 1974, Ser. No. 514,341**
**Int. Cl.² B61D** *39/00*
**U.S. Cl. 105—377** **6 Claims**



1. A hopper hatch structure with a roof having an opening surrounded by a hatch coaming and a hatch cover means movably mounted on said roof for engagement with said hatch coaming to close said hatch opening,

a locking bracket connected to one side of said hatch cover in the closed position of said cover extending outwardly of said coaming,

said locking bracket having a horizontally extending element projecting outwardly of said coaming over said roof, the improvement comprising:

a latching mechanism for securing said cover in the closed position including;

a hold down arm,

means pivotally connecting said arm to said roof whereby said arm is swingable into hold down engagement over said horizontal projecting element,

keeper means for securing said arm in said hold down position comprising;

a first vertical guide member supported on said roof,

hook means projecting laterally outwardly and downwardly from said first guide member,

a second vertical guide member laterally disposed with respect to said first guide member for guiding said arm in a lateral direction,

said arm having limited lateral movement with respect to said guide members and being movable into locked position downwardly in engagement with said second vertical guide member, then laterally into engaging relation with said hook.

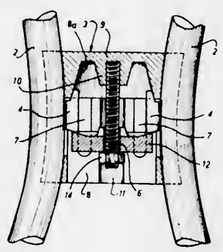
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**3,934,519**

## CORE STRUCTURE, ASSEMBLY AND PROCESS

**Didier Marceau Petit, Route du Vieux Moulin, Vincy Reuil Magny, France (02340)**

**Filed Apr. 8, 1974, Ser. No. 458,554**
**Int. Cl.² A47B *13/02***
**U.S. Cl. 108—150** **7 Claims**



**1.** An assembly comprising a core structure and a plurality of tubular or rod-like supporting members for a table or other article, said core structure comprising a core member having a top, a bottom, a side connecting the top and bottom, and a hollow interior portion open at the bottom, a plurality of external grooves in the side extending generally in a top to bottom direction, a side opening in each of said external side grooves communicating with said hollow portion, the hollow portion of said core member having inclined side surfaces sloping inwardly and upwardly from an area adjacent the upper ends of the interior of said side openings toward the top of the hollow portion of said core member, said tubular or rod-like supporting members each comprising a lug projecting from and affixed thereto, each of said lugs having an inwardly and upwardly inclined surface complemental to the inclined side surface of the hollow interior of said core member, said lugs being inserted in said side openings of said core member with said inwardly and upwardly inclined surfaces of said lugs in engagement with said inclined side surface of the hollow interior portion of said core member, and with the sides of said tubular or rod-like supporting members positioned in said external grooves each of said lugs on said supporting members also having a downwardly and inwardly sloped surface, clamping means comprising a plate, the upper edges of which have a sloping surface complemental to the downwardly and inwardly sloping surfaces of said lugs, and means for holding said plate in locked position with the sloping surfaces of said plate clamped against the downwardly and inwardly sloping surfaces of said lugs.

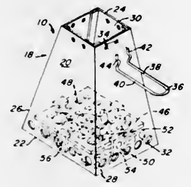
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**3,934,520**

## CHARCOAL STARTER

**Martin J. Brennan; Vernon D. Klawonn, both of Bethel Park, and Edward K. Browne, Pittsburgh, all of Pa., assignors to K & B Industries, Inc., Bethel Park, Pa.**

**Filed Oct. 10, 1974, Ser. No. 513,767**
**Int. Cl.² F23Q *13/00***
**U.S. Cl. 110—1 F** **6 Claims**



**1.** A charcoal starter comprising,

a tapered housing arranged to rest vertically on a supporting surface and being formed by interconnecting quadrilateral sidewalls to define an open top portion and an open base portion with said base portion having an area greater than said top portion,

a plurality of spaced apart air inlet apertures extending through each of said sidewalls at the lower portions thereof and openings extending through each of said sidewalls at the upper portions thereof,

handle means having end portions detachably engageable with said openings of one of said housing sidewalls for lifting said housing into and out of position on said supporting surface,

means for supporting charcoal to be ignited within said housing above said air inlet apertures of said housing sidewalls, said charcoal supporting means positioned for vertical movement within said housing,

said handle means including means for securing said charcoal supporting means within said housing for storage of said charcoal starter when said handle means is detached from engagement with said openings in one of said sidewalls, and

said charcoal supporting means having a plurality of apertures extending therethrough and a diagonal dimension greater than the diagonal dimension of said open top portion of said housing.

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**3,934,521**

## COMBUSTION APPARATUS

**Bruno Andreoli, Affoltern a. Albis, Switzerland, assignor to Von Roll AG, Gerlafingen, Switzerland**

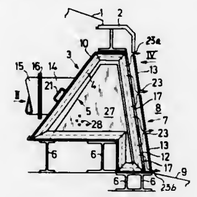
**Filed Dec. 19, 1974, Ser. No. 534,171**
**Claims priority, application Switzerland, Feb. 14, 1974, 2105/74**
**Int. Cl.² F23G *5/04*; F23B *1/20*; F23L *9/06***
**U.S. Cl. 110—15** **39 Claims**

**1.** A combustion apparatus, comprising a pre-drying grate (**1, DR1**), a combustion device (**9, DR9**) following the grate (**1, DR1**), a combustion chamber (**100**) above said device (**9, DR9**), and a drop (**8, 8*a*, 8*c*, 8*d*)** which is intermediate the grate (**1, DR1**) and the combustion device (**9, DR9**) and down which material to be combusted falls, wherein there is the improvement that:

at least part of said drop (**8, 8*a*, 8*c*, 8*d*)** is constituted as a front wall (**7, 7*a*, 7*b*, 7*c*)** of an air distribution box (**3, 3*a*, 3*b*, 3*c*, 3*d*)** extending over substantially the whole width



(*b1*, *b2*) of the grate (**1, DR1**) and connected to air supply means (**14, 15, 30, 51, 52**) for supplying air to said box (**3, 3*a*, 3*b*, 3*c*, 3*d*)**, and



said wall (**7, 7*a*, 7*b*, 7*c*)** is provided with air throughflow apertures (**13*s*, 17, 17*a*, 23, 33*a*, 50*a*, 75, 76*a***) so dimensioned that air passes from said box (**3,3*a*, 3*b*, 3*c*, 3*d***) to said chamber (**100**) in zones of different air speed, including zones of relatively higher air speed on each lateral side of said combustion chamber.

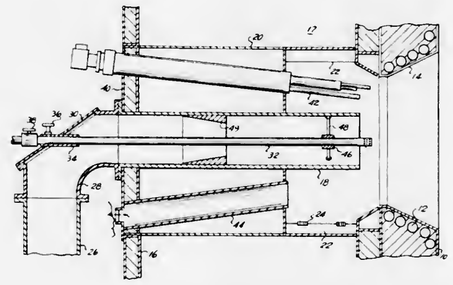
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**3,934,522**

## COAL BURNING SYSTEM

**Leonard Booker, St. Clair, Mich., assignor to The Detroit Edison Company, Detroit, Mich.**

**Filed Nov. 1, 1974, Ser. No. 520,000**
**Int. Cl.² F23D *17/00***
**U.S. Cl. 110—22 R** **12 Claims**



**1.** A firebox, a generally tubular burner barrel having an inner end adjacent the inner wall of said firebox and positioned to project fuel particles in a stream of primary air into the firebox for combustion therein a tube extending axially within said barrel for supplying fuel deflecting air under pressure to a zone adjacent the inner end of said burner barrel, said tube having a closed end, and a plurality of restricted air jet passages extending through the wall of said tube and inclined rearwardly and outwardly thereof and opening into the path of flow of the fuel-air mixture.

**12.** The method as defined in claim **11** which comprises directing the multiplicity of air jets outwardly from the zone and rearwardly with respect to the direction of flow of the stream of air and suspended particles.

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**3,934,523**

## METHOD AND APPARATUS FOR REMOVING MOLTEN WASTE FROM A FURNACE

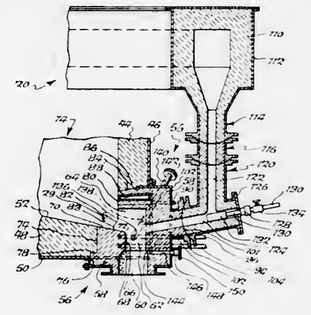
**Frank A. Bercynski, Clarence; Jack J. Fritz, Buffalo, and Theodore W. Lucas, Jr., Williamsville, all of N.Y., assignors to Andco Incorporated, Buffalo, N.Y.**

**Filed Oct. 17, 1974, Ser. No. 515,625**
**Int. Cl.² F23J *1/00***
**U.S. Cl. 110—165 R** **20 Claims**

**1.** In a furnace wherein solid material is exposed to hot gas in a manner forming a liquid waste, said furnace including means for distributing hot gas to the interior of said furnace, apparatus for removing said liquid waste from said furnace to an outlet comprising:

a. means for defining a discharge passage directing the liquid waste material from the interior of said furnace to the outlet; and

b. means for supplying hot gas to the liquid waste material flowing from the interior of said furnace through said discharge passage to the outlet to maintain the liquid waste material in a flowing state said means for supplying hot gas to the liquid waste material comprising conduit means having an inlet connected to said hot gas distributing means of said furnace and an outlet in communication



with said discharge passage and located so as to direct hot gas onto the flow of liquid waste material.

**17.** A method of removing liquid waste material from a furnace wherein hot gas is supplied to the furnace and solid material is exposed to said hot gas in a manner forming said liquid waste material, comprising the steps of:

a. providing a discharge path for directing said liquid waste material to flow from the interior of said furnace to an outlet; and

b. withdrawing a portion of said hot gas before it is supplied to the furnace and conveying said hot gas to said liquid waste material flowing from said furnace along said discharge path to maintain said liquid material in a flowing state.

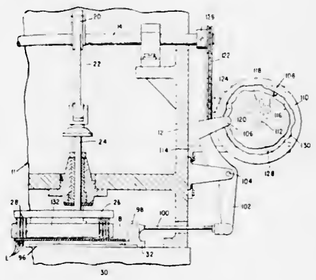
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**3,934,524**

## MACHINE AND METHOD FOR PRODUCING DENSE PILE FABRIC

**Randel P. Smith, Chattanooga, Tenn., assignor to The Singer Company, New York, N.Y.**

**Filed May 6, 1974, Ser. No. 467,335**
**Int. Cl.² D05C *15/14***
**U.S. Cl. 112—79 A** **11 Claims**



**1.** In a tufting machine including a bank of laterally spaced needles, a needle plate for supporting a backing fabric relative

to said needles, means for actuating the needles to penetrate the needle plate and the backing fabric thereon and to insert a series of tufts of yarn into the backing fabric upon each penetration of the needles, means for feeding the backing fabric longitudinally of the needle plate, control means for selectively rendering the feeding means inoperative during at least two successive penetrations of the needles into the backing fabric in accordance with a pattern, and means operative while the feeding means is inoperative for imparting relative lateral movement between said needles and said backing fabric in accordance with a pattern, whereby more than one series of tufts may be selectively inserted laterally into the backing fabric on successive penetrations of the backing fabric by the needles while the feed is inoperative.

**5.** In the method of forming a tufted pile fabric by a tufting machine having a bank of reciprocating needles and means for feeding a backing fabric in a longitudinal direction for penetration thereof by said needles, the improvement comprising the steps of selectively stopping the longitudinal feeding movement of the backing fabric, penetrating the backing fabric with said needles to insert a first series of tufts therein; shifting one of said needle bank and said backing fabric laterally with respect to the other while said feed is stationary, penetrating the backing fabric with said needles to insert a second series of tufts therein laterally displaced from said first series, and thereafter feeding said backing fabric at least one discrete increment of feed length.

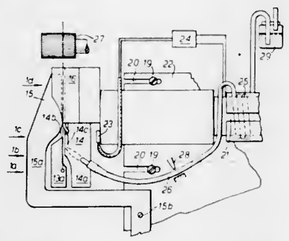
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**3,934,525**

## TEXTILE PROCESS

**Justin Anderson Aldred, Manchester, England, assignor to Ilcor GmbH, Chur, Switzerland**

**Continuation-in-part of Ser. No. 428,051, Dec. 26, 1973, abandoned. This application Apr. 30, 1975, Ser. No. 573,084**
**Int. Cl.² D05B *35/02*; D06F *71/30***
**U.S. Cl. 112—217** **18 Claims**



**1.** A method for setting a seam joining, along a seam line, two plies of fabric having face sides and reverse sides similarly orientated with respect to the seam, and further having seam allowances, so that when the plies are separated the seam allowances will tend to remain in contact each with the reverse side of its own ply, comprising the steps of:

a. feeding the plies together along the seam line;
b. separating and folding back the seam allowances;
c. setting the fabric during the said separating and folding step; and
d. constraining the seam against lateral displacement during said separating and folding step.

**10.** Apparatus for setting a seam joining, along a seam line, two plies of fabric having face sides and reverse sides similarly orientated with respect to the seam and further having seam allowances, so that when the plies are separated the seam allowances will tend to remain in contact each with the reverse side of its own ply, comprising

a fabric edge folder comprising tongue means adapted to divide adjacent edges of the two plies of fabric fed thereto, guide means adapted to turn said edges so that said edges lie against the outwardly facing reverse sides of the plies, and pressing means adapted to press the thus turned edges together; setting means adapted to set the fabric edges in said turned back condition; and seam constraining means adapted to locate the seam against lateral displacement in said setting means.

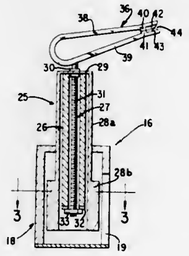
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**3,934,526**

## ULTRASONIC CUTTING APPARATUS

**Martin A. Damast, Brightwaters; Vincent P. Abberton, Westbury, and Kusler Celestin, New York, all of N.Y., assignors to Cavitron Corporation, New York, N.Y.**

**Filed Dec. 12, 1974, Ser. No. 532,092**
**Int. Cl.² D05B *65/00*; H01L *41/00***
**U.S. Cl. 112—252** **18 Claims**



**1.** An ultrasonic cutting apparatus comprising

a U-shaped flexural member having two legs in opposing relationship;
ultrasonic drive means connected to said flexural member for communicatingly exciting said flexural member; and
cutting means mounted on each of said legs in an opposing relationship to each other for cutting material placed therebetween.

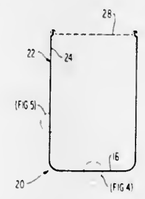
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**3,934,527**

## MANUFACTURING METHODS FOR SELECTIVE COATING CHARACTERISTIC TINPLATED STEEL CANS

**William T. Saunders, Weirton, W. Va., assignor to National Steel Corporation, Pittsburgh, Pa.**

**Filed Aug. 9, 1973, Ser. No. 387,043**
**Int. Cl.² B63B *19/00***
**U.S. Cl. 113—120 A** **4 Claims**



**1.** Method of manufacturing a one-piece container body to provide a uniformly tin coated surface for exposure to container contents while protecting remaining interior surfaces from exposure to container contents comprising the steps of

providing a flat rolled steel sheet metal blank having a surface substantially uniformly coated with tin by blanking electrotinplated flat rolled steel which has been electrotinplated in continuous strip form with a tin coating thickness on the substantially uniformly coated surface in the range of 10 micro-inches to about 90 micro-inches,
forming the tin coated sheet metal blank into a cup having a bottom wall and unitary sidewall with such tin coating on interior bottom wall and interior sidewall surfaces, such forming step being carried out while maintaining the tin coating thickness on the interior bottom wall surface in the range of 10 micro-inches to about 90 micro-inches in thickness during forming,
Ironing the sidewall of such unitary cup to provide a reduction in the thickness gage of the sidewall sheet metal over a major portion of its area in the range of about 25% to about 75% and a corresponding reduction in the thickness of the tin coating on the interior surface of the sidewall, such ironing step being carried out while maintaining the tin coating thickness on the interior bottom wall surface in the range of 10 micro-inches to about 90 micro-inches in thickness, and
applying a protective coating to the thinned tin coating on the ironed interior sidewall surface to substantially eliminate possible contact of such thinned tin surface with container contents while maintaining exposure of the tin coating maintained on the interior bottom wall surface for direct contact with container contents.



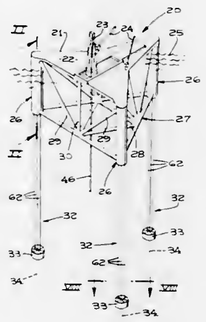
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**3,934,528**

## MEANS AND METHODS FOR ANCHORING AN OFFSHORE TENSION LEG PLATFORM

**Edward E. Horton, Portuguese Bend; John H. Brewer, Irvine; William H. Silcox, Newport Beach, and T. A. Hudson, Balboa Island, all of Calif., assignors to Deep Oil Technology, Inc., Long Beach and Chevron Oil Field Research Co., La Habra, both of, Calif.**

**Filed June 3, 1974, Ser. No. 475,800**
**Int. Cl.² B63B *35/44***
**U.S. Cl. 114—.5 D** **20 Claims**



**1.** In a method of anchoring a floating offshore platform apparatus having tension anchor lines, said anchor lines being generally vertically disposed and the offshore platform apparatus having a buoyant support means including an upstanding buoyant support member, a supply of flowable ballast material on said apparatus, and an anchor means having anchor compartments therein for said ballast material, said anchor means being transportable at the bottom of said buoyant support member;

flooding ballast tanks in said buoyant support means to lower said apparatus to a selected depth;
setting tension lines to a selected depth;
lowering said anchor means with substantially empty anchor compartments by drill pipe;
and transferring said ballast material from the supply of ballast material through said buoyant support member and drill pipe to said anchor compartments.

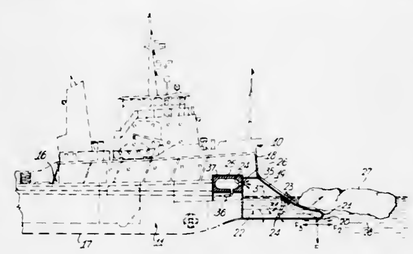
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**3,934,529**

## ICEBREAKING VESSELS

**John Patrick Gallagher, Calgary, Canada, assignor to Canadian Marine Drilling Ltd., Calgary, Canada**

**Filed Oct. 30, 1974, Ser. No. 519,484**
**Claims priority, application Canada, Sept. 16, 1974, 209254**
**Int. Cl.² B63B *35/08***
**U.S. Cl. 114—40** **5 Claims**



**1.** A procedure for breaking ice which comprises the cyclical steps of: pretensioning an ice sheet by plowing under a portion of the icesheet with a plow portion of the bow of an icebreaking vessel; providing a mass of water within a chamber disposed within said plow portion of the bow of said vessel; and applying, to the mass of water in said chamber, exhaust gases from a combustion chamber, said gases having a pressure of at least about 700 psi thereby rapidly expelling said mass of water, in the form of a single free piston, and superimposing on said pretensioned ice sheet, a massive upward momentum force due to the upward reaction of the downwardly expelled water.

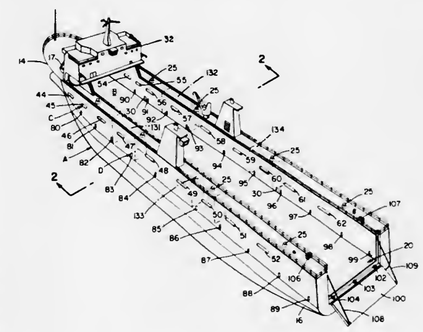
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**3,934,530**

## TRANSPORT VESSEL FOR FLOATING ONLOADING AND OFFLOADING OF CARGO

**Miklos M. Kossa, Berkeley, and David J. Seymour, Daly City, both of Calif., assignors to Inter-Hull, Seattle, Wash.**

**Filed Oct. 17, 1974, Ser. No. 514,859**
**Int. Cl.² B63B *35/28***
**U.S. Cl. 114—43.5 VC** **5 Claims**



**1.** A vessel for transporting floatably onloaded and offloaded cargo comprising: a hull having a raised bow section for providing buoyant support forward of said vessel at all drafts thereof; a well deck mounted interiorly of said hull extending substantially horizontally parallel to the waterlines of said hull, said well deck adapted to support on said hull said cargo; at least one ballast volume defined within said hull for permitting said hull to float at a first shallow draft when said ballast volume is empty, said ballast volume when empty being of sufficient displacement with respect to said hull to maintain

said well deck above the waterline of said vessel with said well deck fully loaded with cargo, and at a second deeper draft when said ballast volume is full of ballast, said well deck submerged at said second draft to provide for floating of the cargo thereover to place said cargo thereon; means for flooding and emptying said ballast volume of ballast; a wall extending upwardly from said well deck at the bottom to a preselected elevation above said well deck, said wall extending from the bow along the port side of the vessel, the starboard side of the vessel, and defining a fixed continuous open passage through the stern of said vessel for the entry and exit of cargo extending substantially the width of said well deck; a series of horizontally elongate ports transpiercing the wall of said vessel; and said ports positioned with respect to said vessel to become partially submerged to establish uninterrupted communcation between the surface of the ambient sea and the surface of the water within said well deck at said second draft to impede the formation of standing waves within the vessel when said vessel is at said second draft and to raise above communication to the sea upon support of said cargo on said well deck.

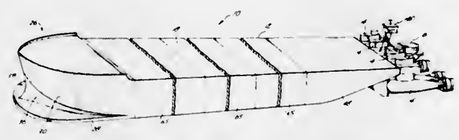
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**3,934,531**

## OCEAN GOING CARGO TRANSPORT SYSTEM

**Rudolph A. Allen, 1419 Second West, Apt. 303, Seattle, Wash. 98119**

**Filed July 18, 1974, Ser. No. 489,762**
**Int. Cl.² B63B** *9/00*
**U.S. Cl. 114—63** **25 Claims**





**1.** An ocean going cargo transport comprising a cargo vessel hull having an elongated generally flat-bottomed midship section, and stern and bow sections joined to the respective aft and forward ends of said midship section, and propulsion means operable to propel said hull at cruising speed, said midship section having substantially vertical sides extending downwardly substantially to the plane of its bottom, said bow section having upright sides merging with the respective sides of said midship section, converging together forwardly therefrom, and sloping laterally outward and upward to form a tapered bow with outward flare, said bow section having a bottom comprising a submerged forwardly projecting substantially horizontal bottom panel which in planform has side edges that extend generally forwardly in substantial alignment with the sides of the midship section, said submerged bottom panel being cantilevered from the hull and having a substantially flat horizontal bottom surface generally coplanar with the midship section bottom, said panel having a substantially flat horizontal top surface, the forwardly projecting length and vertical thickness of the bow bottom panel being predetermined to create a wave ahead of the bow during forward cruising speed of the vessel, the trough of which wave is presented to the converging sides of the bow.

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**3,934,532**

## MARINE TRANSPORT

**John J. Bylo, 7272 Willoughby Ave., Los Angeles, Calif. 90046**

**Continuation-in-part of Ser. No. 187,537, Oct. 7, 1971, Pat. No. 3,793,974, which is a continuation-in-part of Ser. No. 794,938, Jan. 29, 1969, abandoned. This application Feb. 4, 1974, Ser. No. 439,375**
**Int. Cl.² B63B** *25/00*
**U.S. Cl. 114—72** **1 Claim**

**1.** A marine transport system comprising, in combination, a plurality of modular cargo hold units of generally uniform external configuration and dimension over at least the lower portions thereof, a plurality of self-propelled shuttle vessels for moving cargo hold units between a plurality of at least three ports in the system, the system encompassing a route composed of a plurality of substantially serially connected different subroutes each of which is defined between two adjacent ports in the system whereby the system includes at least one port common to two subroutes, each shuttle vessel being configured to mate with at least any one of the hold units and to support the same, each hold unit being sized relative to the shuttle vessels when loaded and mated with any one of the shuttle vessels to consume a substantial fraction of the load-carrying capacity of the shuttle vessel, each vessel including ballasting means for buoyantly raising and lowering the vessel into and out of mating and load transferring relation to a hold unit supported above the vessel at a dock facility in the system, each shuttle vessel being defined and equipped as to propulsive machinery, and crew accommodations, hull form and proportion, and similar features in consideration of the navigational, meteorological, and operational factors pertinent to a particular system subroute in the system to which the shuttle vessel is assigned and on which the vessel is primarily operated whereby each vessel is different from most or all of the other vessels in the system, and a dock facility in each port in the system, each dock facility being cooperatively configured and arranged in cooperation with the vessels assigned to the subroutes common to the port and with the cargo hold units for receiving from and discharging to a shuttle vessel a loaded cargo hold unit and for supporting a received hold unit for the loading and unloading of cargo to and from the hold unit in the absence of a vessel at the dock facility, whereby, in moving a hold unit from one port on one subroute in the system to a second non-adjacent port on another subroute in the system, the hold unit is movable bodily from shuttle vessel to shuttle vessel at each port in the system intermediate the one port and the second port via the dock facilities in the intermediate ports.

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**3,934,533**

## AEROFOIL OR HYDROFOIL

**Barry Wainwright, 36 Southdown Road, Westbury-on-Trym, Bristol, England**

**Filed Sept. 12, 1973, Ser. No. 396,471**
**Int. Cl.² B63H** *9/04*
**U.S. Cl. 114—103** **9 Claims**

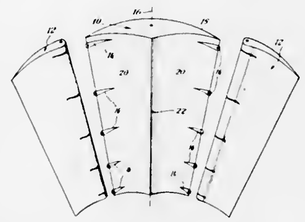
**1.** An aerofoil or hydrofoil, comprising:

a central panel having a central axis extending spanwise, said central panel being of symmetrical cross section of each side of said axis and having two opposite side edges;



at least two lateral panels each having first and second side edges;

means hinging each of said two lateral panels adjacent said first side edge thereof to said central panel at a respective one of said two opposite side edges of the central panel, to provide two alternative leading edges so that each lateral panel may pivot between an extended condition and a folded condition wherein the respective lateral panel is doubled back upon at least one of the central panel and the respective other lateral panel, to provide two alternative leading edges, the two lateral panels being of similar cross-section, and generally symmetrical with



respect to said central axis, so that when said one lateral panel is extended and the other is folded an aerofoil or hydrofoil that is nonsymmetrical in cross-section is formed, which is substantially a mirror image of the aerofoil or hydrofoil which may be formed by extending said other lateral panel and folding said one lateral panel, tie means interconnecting the lateral panels to move in concert, as follows: said one lateral panel folds as said other lateral panel extends and said other lateral panel folds as said lateral panel extends;

the effective leading edge of the aerofoil or hydrofoil incorporating said first side edge of whichever of the lateral panels as is in said folded condition.

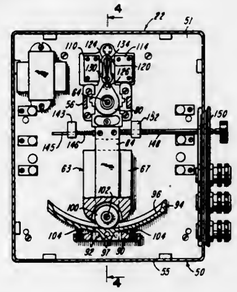
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**3,934,534**

## MARINE VESSEL ROLL STABILIZER APPARATUS

**Everett P. Larsh, 1001 E. Ridge Lane, Miami, Fla. 33157**

**Division of Ser. No. 273,331, July 19, 1972, Pat. No. 3,842,777. This application Aug. 16, 1974, Ser. No. 498,171**
**Int. Cl.² B63B** *39/00*
**U.S. Cl. 114—122** **10 Claims**



**1.** Roll sensor mechanism for a marine vessel for sensing roll movement thereof, of the type having support structure, a pendulum pivotally supported by the support structure, the pendulum being pivotally supported about a given pivotal axis, the improvement comprising:

means for increasingly resisting relative pivotal movement between the pendulum and the support structure, including an engagement member having an arcuate surface, engagement means carried by the pendulum and in engagement with the arcuate surface and movable with respect thereto during relative pivotal movement between the pendulum and the support structure, the arcuate surface forming an arc having a radius less than the spacing between the pivotal axis of the pendulum and the arcuate surface, the center of the arc being spaced between the arcuate surface and said pivotal axis of the pendulum,

means pivotally supporting the engagement member so that relative pivotal movement between the engagement means and the arcuate surface causes pivotal movement of the engagement member,

resilient means resisting pivotal movement of the engagement member and thus resisting relative pivotal movement between the pendulum and the support structure,

and means responsive to relative movement between the pendulum and the support structure for control of roll of the marine vessel.

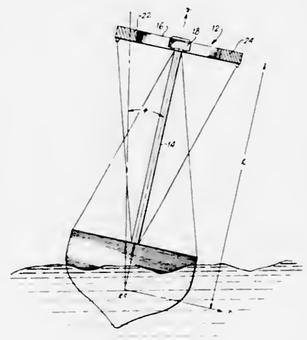
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**3,934,535**

## ROLL STABILIZER FOR A BOAT

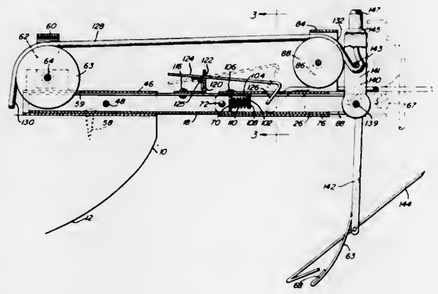
**Irven H. Culver, Playa Del Rey, Calif., assignor to Southwestern Industries, Inc., Los Angeles, Calif.**

**Continuation-in-part of Ser. No. 360,668, May 15, 1973, abandoned. This application May 15, 1974, Ser. No. 469,950**
**Int. Cl.² B63B** *39/02*
**U.S. Cl. 114—124** **9 Claims**



**1.** A passive non-linear energy absorbing dynamic mass system for limiting the roll of a floating vessel comprising a moving mass, a longitudinal guide member, means movably supporting the mass on the guide member for substantially free and undamped movement along the full length of the guide member, mounting means for mounting the guide member on the vessel with the path of movement of the mass extending transversely to the roll axis of the vessel, the energy absorbing means secured to the guide member and positioned at separated points along said path for limiting the length of free movement of the mass, the energy absorbing means absorbing substantially all the kinetic energy of the mass from impacts with the moving mass and dissipating it as heat to prevent recoil acceleration of the mass on impact, the amount of free movement of the mass along the guide means between the energy absorbing means being substantially greater than the motion accommodation distance of the energy absorbing means, the mass when the vessel is in a static level position being free along the full length of the guide member between the energy absorbing means of any forces tending to restore the mass to a central position.

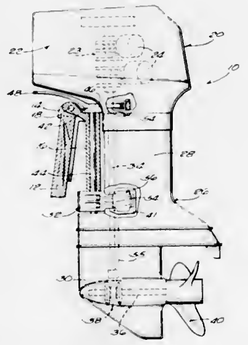
3,934,536
**EXTENDABLE ANCHOR LINE GUIDE AND SUPPORT WITH AUTOMATIC RELEASE**
Frazer W. Galamore, 54 Oak Ave., North Fort Myers, Fla. 33903, and Sheldon S. Fulton, 2001 Triggerfish, Matlacha, Fla. 33901
Filed Nov. 5, 1974, Ser. No. 521,233
Int. Cl.² B63B 21/22
U.S. Cl. 114—210 5 Claims



1. An anchor raising and support structure comprising a support arm including inner and outer ends, mounting structure on said inner end for mounting said support arm from a boat in generally horizontal position with the outer end of said support arm projecting outwardly of one marginal portion of the boat, the outer end of said arm including means in the form of opposite side outer terminal ends defining an endwise outwardly opening slot between said terminal ends, slide structure mounted on said arm including means defining a vertically extending window therethrough, said slide structure being freely shiftable along said arm between a first outward shifted position with said window disposed above the level of said terminal ends and disposed outwardly of said slot and a second inward shifted position with said window having at least a major portion thereof shifted inwardly of the outer extremity of said slot, said slide structure including guide structure elevated above said window, an elongated flexible tension member extending along said arm and having one free end portion passed over said guide structure and downward through said window and provided with anchor attaching structure on its terminal end shiftable vertically through said window and being elevatable by said tension member upwardly through said window to a position disposed juxtaposed to and forward of said guide structure for engagement with the latter upon inward displacement of said anchor attaching structure along said arm, said anchor attaching structure being of a width to bridge said terminal ends above the latter when said anchor attaching structure is elevated upwardly through said window, means yieldingly biasing said slide structure toward the first position thereof, depending second guide structure carried by the outer end of said arm for engagement by said anchor attaching structure from below when the anchor attaching structure is raised upward by said tension member toward the outer end of said arm when said slide is in the first position thereof, said second guide structure being operable to cause said anchor attaching structure, when the latter is being elevated upwardly through said window, to be retained outwardly of the first mentioned guide structure and to thereafter allow said anchor attaching structure to move inwardly over said slot and said terminal ends and into engagement with the first mentioned guide structure, whereby the slide structure may be displaced inwardly along said arm toward said second position thereof upon upward displacement of said attaching structure above the second mentioned guide structure, and releasable latch means carried by said arm for releasably latching said slide in said second position, said anchor attaching structure, after said tension member is slackened subsequent to said slide structure being inwardly shifted to said second position thereof, being operable to bridge said terminal ends for support therefrom.

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3,934,537
**VIBRATION ISOLATING MOUNT FOR AN OUTBOARD MOTOR**
Charles B. Hall, Ingleside, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.
Filed Nov. 18, 1974, Ser. No. 524,790
Int. Cl.² B63H 21/26
U.S. Cl. 115—17 22 Claims



1. An outboard motor comprising a transom bracket, a swivel bracket mounted on said transom bracket for vertical tilting movement, a propulsion unit including a drive shaft housing having a lower portion and a rotatably mounted propeller shaft carrying a propeller, means for mounting said propulsion unit from said swivel bracket including a lower mount including an insert connected to said swivel bracket and having a wedge-shaped cross section with upper and lower outer surfaces diverging in the direction of forward propeller thrust, and a resilient pad disposed between each of said insert surfaces and said propulsion unit.

2. An outboard motor comprising a transom bracket, a swivel bracket mounted on said transom bracket for vertical tilting movement, a propulsion unit including a rotatably mounted propeller shaft carrying a propeller, means for mounting said propulsion unit from said swivel bracket including an upper mount having a cross bar which is disposed transversely to the direction of the propeller thrust, which is connected to one of said swivel bracket and said propulsion unit, and which includes a portion having a wedge-shaped cross section with upper and lower surfaces converging in the direction of forward propeller thrust, and a resilient member which engages said upper and lower surfaces and is connected to the other of said swivel bracket and said propulsion unit.

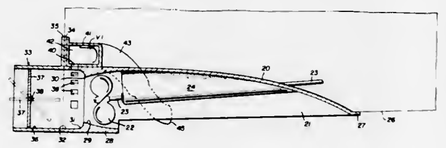
17. A device for mounting and vibrationally isolating vibrating equipment from a support comprising a wedge-shaped member adapted to be connected to said support and having opposed outer surfaces which converge in a direction away from said support, a pair of spacers having inner surfaces located in parallel spaced relation to respective of said member surfaces, a resilient pad disposed between each of said spacers and said member surfaces, and means for connecting said spacers to said equipment.

20. A device for mounting and vibrationally isolating vibrating equipment from a support, which equipment has a neutral axis extending substantially proximate its center of mass and about which said equipment tends to oscillate, comprising a casing adapted to be mounted on said equipment, a cross bar disposed in said casing and having opposed outer ends extending transversely of said neutral axis and outwardly from said casing for connection to said support, said cross bar including a central portion disposed inside said casing and having a wedge-shaped cross section with the opposite outer surfaces thereof diverging in a direction away from said support, and a resilient bushing having a wedge-shaped cross section disposed inside said casing and encircling said cross bar central portion.



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3,934,538
**BOAT PROPULSION SYSTEM**
H. Donald Canazzi, 178 Jewett Parkway, Buffalo, N.Y. 14214
Filed May 16, 1974, Ser. No. 470,408
Int. Cl.² B63H 5/16
U.S. Cl. 115—39 5 Claims

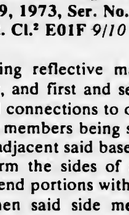


1. In a propulsion system on a boat having:
means defining a downwardly-facing, open-bottomed recess extending lengthwise along the bottom of the boat and gradually converging to provide a progressively smaller cross-section rearwardly; the improvement which comprises:
an annular shroud defining a passage that is closed at the bottom of the boat and merges smoothly with the back end of said open-bottomed recess and provides a rearward extension of said recess, said passage presenting a venturi throat and having an abruptly increased cross-section behind said throat and terminating in an open back end;
a propellor circumferentially enclosed in said passage just in front of said venturi throat;
means defining one or more openings in said shroud leading into said shroud immediately behind said venturi throat;
auxiliary passage means open at one end thereof to the outside of the boat and communicating at the other end thereof through said openings with the interior of said shroud immediately behind said venturi throat for passing water into said shroud by the venturi action of the water displaced through said throat by the propellor;
said recess providing substantially horizontal and non-turbulent flow of intake water along the bottom of the boat with gradually increasing velocity to the inlet side of the propellor;
and a plate-like valve member in said shroud behind said openings, said valve member being pivoted and movable between an open position substantially parallel to the direction of water flow from said propellor through said shroud and a closed position substantially transverse to said direction.

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3,934,539
**CHEMILUMINESCENT FOLDABLE SIGNAL DEVICE**
Steven M. Little, China Lake; Robert L. Gerber, Ridgecrest; Carl A. Heller, China Lake, all of Calif., and Vincent J. Esposito, Washington, D.C., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Mar. 26, 1974, Ser. No. 454,877
Int. Cl.² E01F 9/00; F21L 17/00
U.S. Cl. 116—63 P 2 Claims

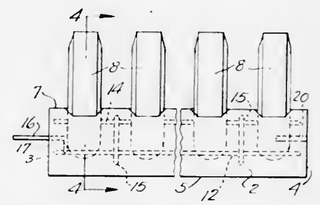
1. For use as a signal device to be deployed upon a supporting surface, the combination comprising:
an elongated plastic tubular chemiluminescent light member;
a detachably connected support means effective to maintain said light member at an angle of 45° or more to the surface upon which it is deployed;
said support means comprising;
a tubular cup shaped portion receiving one end of said light member;
a generally square base portion orthogonal to said cup portion; and



said square base portion having four elongated legs pivotally fastened to the four sides thereof and biased to a position orthogonal to said cup portion so that said legs may be folded together for convenience in storage and yet when said legs are deployed they present four points extending orthogonal to said cup portion.

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3,934,540
**BARRIER**
A. J. Bruner, 2166 Katherine St., Fort Myers, Fla. 33901; Edward T. Foster, 1050 Hollywood Blvd., Hollywood, Fla. 33020, and Thomas N. Kearns, 3500 Pembroke Road, Hollywood, Fla. 33021
Filed Jan. 17, 1973, Ser. No. 324,306
Int. Cl.² E01F 13/00
U.S. Cl. 116—63 P 10 Claims



1. A portable barrier section comprising a concrete block and a plurality of tires partially embedded in said block.

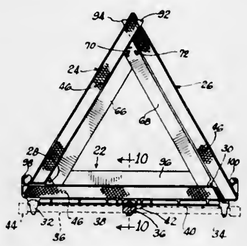
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3,934,541
**TRIANGULAR FOLDING REFLECTIVE TRAFFIC MARKER**
Louis May, Skokie, and Edmund M. Idzik, Chicago, both of Ill.; assignors to the Sate-Lite Mfg. Co., Chicago, Ill.
Filed Oct. 19, 1973, Ser. No. 407,797
Int. Cl.² E01F 9/10
U.S. Cl. 116—63 T 6 Claims

1. A triangular folding reflective marker, comprising a reflective base member, and first and second reflective side members having pivotal connections to opposite ends of said base member, said side members being swingable from horizontal folded positions adjacent said base member to inclined erected positions to form the sides of a triangle, said side members having upper end portions with longitudinal flanges adapted to overlap when said side members are in their erected positions, each of said flanges having a latching pin element and a latching slot therein adapted to receive the pin element on the other flange to retain said side members in their erected positions, each of said flanges having detent means adjacent the corresponding slot and forming a detaining fit with the other pin element, whereby said pin elements can be snapped into said slots for retention therein against

accidental disconnection, each of said side members including an end element projecting from the outer end thereof and extending beyond the other side member when said pin elements and slots are latched together, said end elements projecting away from the locations of said pin elements and slots and facilitating the overcoming of said detent means and the disconnection of said pin elements and slots by the application of a manually exerted squeezing force between said end elements on said side members.

4. A triangular folding reflective marker, comprising a reflective base member, first and second reflective side members having pivotal connections to opposite ends of said base



member, said side members being swingable from horizontal folded positions adjacent said base member to inclined erected positions to form the sides of a triangle, and latching elements on the upper ends of said side members for holding said side members together in their erected positions, each of said side members including an end element extending beyond the other side member when said side members are latched together, said end elements projecting away from the locations of said latching elements and facilitating the disconnection of said latching elements on said side members by the application of a manually exerted squeezing force between said end elements.

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**3,934,542**

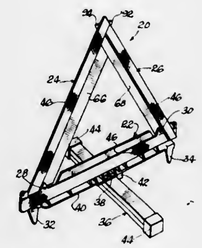
**TRIANGULAR FOLDING REFLECTIVE FLARE HAVING WEIGHTED BASE**

**Louis May, Skokie, and Edmund M. Idzik, Chicago, both of Ill., assignors to Sate-Lite, Mfg. Co., Chicago, Ill.**

**Filed Mar. 11, 1974, Ser. No. 450,149**

**Int. Cl.² F01F** *9/01*; **G08B** *5/00*

**U.S. Cl. 116—63 P** **2 Claims**



2. A triangular folding reflective flare,

comprising a lower member and two side members movably connected thereto for folding and unfolding movement between a triangular erected position and a folded position with said side members compactly folded relative to said lower member,

and an elongated base having a pivotal connection to said lower member for swinging movement relative thereto between folded and unfolded positions,

said base comprising a generally channel-shaped member having two opposite side walls and a connecting wall extending therebetween with an open side opposite said connecting wall,

a heavy material comprising a heavy aggregate mixed with a binder and received within said channel-shaped member,

and a cover wall secured to said channel-shaped member and closing said open side to retain said heavy material.

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**3,934,543**

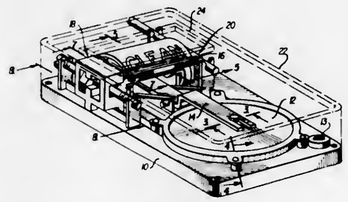
**APPARATUS FOR MONITORING THE CONDITION OF A FILTER**

**Durrell U. Howard, San Antonio, Tex., assignor to Sherwood Products Corporation, San Antonio, Tex.**

**Filed Dec. 23, 1974, Ser. No. 535,656**

**Int. Cl.² G01D** *21/00*

**U.S. Cl. 116—114 AD** **13 Claims**



1. Apparatus for indicating the condition of a filter in a forced air system comprising:

a base member;

an enclosed chamber mounted on said base member, one wall of said chamber comprising a flexible diaphragm having an interior surface within said chamber and an exterior surface;

means operatively associated with said base member for directing fluid pressure from either the upstream or the downstream side of said filter to either the interior or the exterior side of said diaphragm;

an elongated arm mounted to pivot relative to said base member;

means for pivotally connecting said arm to said flexible diaphragms;

indicator flag means mounted for rotation relative to said base member, said elongated arm contacting said flag means to cause rotation thereof in response to movement of said diaphragm due to changes in the pressure in said system; and

means connected to said indicator flag means for resisting movement of said flag means from a first position indicative of a clean filter until said arm has rotated said flag means a predetermined amount in response to said changes in pressure, and for aiding movement of said flag means to a second position indicative of a dirty filter after said flag means has moved said predetermined amount.

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**3,934,544**

**ULTRASONIC WAVE TRANSMITTER MECHANISM**

**Theodore Dennis Smith, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.**

**Filed Mar. 18, 1974, Ser. No. 452,037**

**Int. Cl.² B06B** *03/00*

**U.S. Cl. 116—137 A** **9 Claims**

1. An ultrasonic wave transmitter comprising:

a rod responsive to striking thereof mounted for producing an ultrasonic wave;

a striking member;

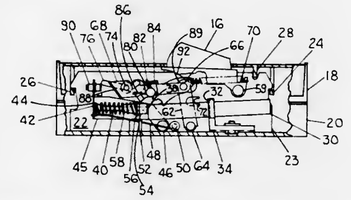
a pivotally mounted means including a guide pin for slidably supporting said striking member for movement relative thereto, said pivotally mounted means rotatable to a first



position with an end of said guide pin in contact with an end of said rod for providing damping controlled thereto and a second position with said end of said pin out of contact with said rod;

an actuating means movable from an initial position to a final position for moving said supporting means from said first position to said second position;

means coupled to said actuating means for engaging and moving said striking member away from said rod during initial motion of said actuating means and, upon a predetermined movement of said actuating means, for releasing said striking member;



a resilient means coupled to one end of said striking member and subject to a compression when said striking member is moved away from said rod, said resilient means imparting a force to drive said striking member when it is released into contact with said end of said rod and thereby generates said waves; and

means coupled to said supporting means and responsive to return of said actuating means to said initial position for moving said pin to said first position in contact with said rod for damping said waves.

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**3,934,545**

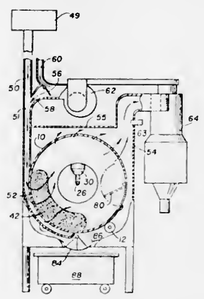
**APPARATUS FOR ENROBING DISCRETE OBJECTS**

**Joseph L. Schady, Beechurst, N.Y., assignor to Alpha Sheet Metal Works, Inc., Woodside, N.Y.**

**Continuation-in-part of Ser. No. 198,847, Nov. 15, 1971, abandoned. This application Nov. 19, 1973, Ser. No. 417,362**

**Int. Cl.² B05C** *3/08*, *5/00*

**U.S. Cl. 118—19** **4 Claims**



1. An apparatus for enrobing discrete objects comprising,

a housing,

perforated drum means rotatable about a horizontal axis within said housing and adapted to receive a charge of discrete objects to be enrobed,

means for rotating said drum means at a presettable speed to selectively tumble a received charge therein over a predetermined portion of the surface thereof,

means for periodically introducing liquid coating material into said drum means to wet the surface of the discrete objects forming said received charge therein,

a source of selectively conditionable air,

inlet conduit means connected to said source of conditionable air for selectively directing a stream of conditioned air onto said predetermined portion of the surface of said perforated drum means for directed passage thereof through said charge being tumbled therein to remove moisture therefrom,

discharge conduit means for directing the flow of moisture enhanced air emanating from said drum means exteriorly of said housing,

blower means connected to said discharge conduit means for inducing a selectively directed flow of air through said inlet conduit means, drum means and discharge conduit means and for varying the velocity of said flow of air,

means disposed intermediate said blower means and said inlet conduit means for effecting direct reintroduction, at a point downstream of said source, of selected portions of the moisture enhanced air passing through said discharge conduit means into said inlet conduit means and conditioned air flowing therethrough to permit a control of its drying characteristics through controlled recirculation thereof, and

whereby said objects being enrobed are subject to controlled variations in drying environment intermediate successive application of liquid coating materials thereto.

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**3,934,546**

**APPARATUS FOR FIXING WITH SOLVENT VAPORS**

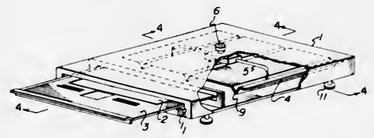
**Hideo Fukuzawa, Ebina, Japan, assignor to Rank Xerox Ltd., London, England**

**Filed Dec. 9, 1974, Ser. No. 531,253**

**Claims priority, application Japan, Dec. 25, 1973, 48-147207**

**Int. Cl.² B05C** *19/02*

**U.S. Cl. 118—48** **3 Claims**



1. Fixing apparatus comprising:

a housing having an opening in one side therein and retained in a horizontal position,

a tray located within said housing and movable into and out of said opening,

a solvent vaporizing medium located in a horizontal position in said housing, said medium being formed with at least one groove,

a plurality of rod members within said groove, and

solvent feeding means located above said medium for feeding solvent onto said rod members.

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**3,934,547**

**RENEWABLE CHOW FUSER COATING**

**Raymond L. Jelfo, Lewisville, Tex.; Stephen Strella, Pittsford, and Willard C. Hamilton, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.**

**Filed July 12, 1974, Ser. No. 487,937**

**Int. Cl.² G03G** *15/20*

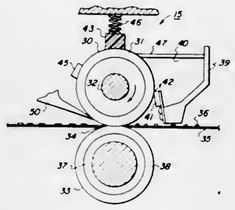
**U.S. Cl. 118—60** **6 Claims**

1. Apparatus for fusing toner images to support sheets, said apparatus comprising:

a heated fuser structure including a thermally conductive core;

means for applying a solid low surface energy coating to said core by contacting said core with a bar of low surface energy material, said coating preventing toner from contacting said core;

means for applying a low viscosity release agent to said low surface energy coating for facilitating release of said support sheets from said heated core; and



a deformable backup member forming a nip with said core member through which said support sheets move with said toner images contacting the low viscosity release agent.

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**3,934,548**

**BARREL FOR TREATMENT IN DIPPING BATHS, ESPECIALLY A PLATING BARREL**

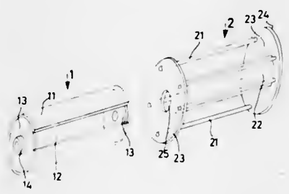
**Eduard Kaluza, Im Tuckwinkel, Germany, assignor to Firma Wilhelm Linnhoff OHG, Muhlenweg, Germany**

**Filed Feb. 18, 1975, Ser. No. 550,718**

**Claims priority, application Germany, Feb. 15, 1974, 2407209**

**Int. Cl.² B05C** *3/08*

**U.S. Cl. 118—418** **3 Claims**



1. A tumbling drum assembly for treating articles by immersion in a fluid medium comprising:

a horizontally arranged, freely rotatable barrel member having an opening in a side portion thereof, whereby to load and unload the barrel with respect to articles to be treated and fluid treating medium, and disposed within a cage member concentric with said barrel;

a panel forming part of and extending between the ends of said cage;

stop elements disposed on said barrel and associated with said opening on each side thereof;

a drive element disposed on said cage and operatively associated with said stop elements; and

means to reversably rotate said cage; whereby in one direction of cage rotation said panel is carried to a sealing relationship with respect to said opening and simultaneously therewith said drive element engages one of said stop elements and on further rotation in said one direction the barrel is rotated whereby to tumble the barrel contents, and

in a subsequent other direction of cage rotation the panel is removed from opening, the drive element engages the other of said stop elements and the barrel is subsequently rotated in a reverse direction whereby to locate said opening in an unloading position.

**3,934,549**

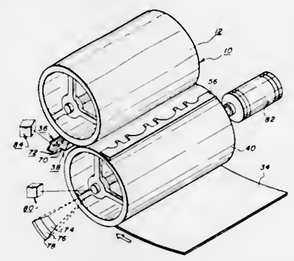
**TRANSFER APPARATUS**

**James R. Davidson, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.**

**Filed Aug. 1, 1974, Ser. No. 493,594**

**Int. Cl.² G03G** *15/16*

**U.S. Cl. 118—637** **8 Claims**



1. An apparatus for transferring one component of at least a two component mix from a support surface to a sheet of support material, including:

corona generating means disposed adjacent the support surface for applying an alternating charge potential to the support surface and mix adhering thereto to reduce the attractive force between the mix and the support surface so as to pre-condition the mix thereon;

a transfer member having the sheet of support material secured thereto, said transfer member being positioned closely adjacent to the support surface;

means for applying an electrical biasing potential to said transfer member to attract one component of the preconditioned mix from the support surface to the sheet of support material; and

magnetic means interposed between said corona generating means and said transfer member to remove the other component of the pre-conditioned mix from the support surface so as to prevent the transfer thereof to the sheet of support material.

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**3,934,550**

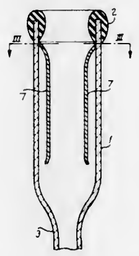
**METHOD FOR MACHINE MILKING OF COWS**

**Hermann Heinrich Karl Worstorff, Tumba, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden**

**Filed Mar. 14, 1974, Ser. No. 451,280**

**Int. Cl.² A01J** *5/06*

**U.S. Cl. 119—14.02** **9 Claims**



1. A method for machine milking of cows, in which the teats of the udder with their gland openings are subjected continuously to a constant vacuum so as to extract the milk and are subjected to impulses so as to massage the teats, the method being characterized in that the impulses are in at least one of the forms selected from pressure impulses and electric impulses and have a frequency of about 5 Hz to about 50 Hz.



**3,934,551**

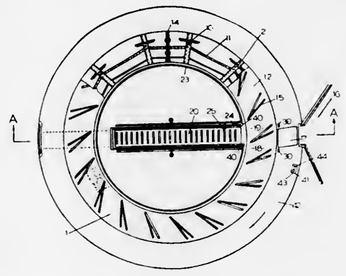
**MILKING SYSTEM**

**Kevin John Sulzberger, 43 R.D., Waitara, Taranaki, New Zealand**

**Filed Sept. 9, 1974, Ser. No. 504,650**

**Int. Cl.² A01J** *5/00*

**U.S. Cl. 119—14.04** **12 Claims**



12. A method of controlling the entrance and departure of cows on to an intermittently rotatable substantially annular milking platform which has means for admitting a cow over the outer periphery of said substantially annular platform while said platform is stationary and means to allow the exit of a milked cow over the inner periphery of said platform whilst the platform is stationary from whence the cow may then pass underneath a portion of said platform, said method including the steps of;

a. providing an automatic advancing control for said rotatable platform so that said rotatable platform is moved from a first stationary position to a second stationary position after the elapsing of a preselected base period which gives at least a minimum period of time sufficient for a cow to clear either periphery of said platform,

b. providing means for automatically detecting when a cow over said platform is causing an obstruction to rotation of said platform by spanning a periphery thereof and,

c. providing an automatic over-riding control actuable by said means for automatically detecting an obstructing cow which will prevent the automatic advancement of said platform until such time as such an obstruction to rotation of said platform ceases whereupon immediately movement of said platform occurs.

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**3,934,552**

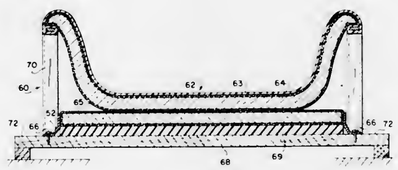
**ANIMAL SHELTER WITH PLURAL OPENINGS**

**Helen C. Kulka, 200 Film Bldg., 2108 Payne Ave., Cleveland, Ohio 44114**

**Filed July 29, 1974, Ser. No. 492,674**

**Int. Cl.² A01K** *1/02*

**U.S. Cl. 119—19** **5 Claims**



1. An animal shelter suitable for protecting the occupant from loud and/or sudden external noises, comprising a housing member having a solid integral outside surface layer, and contiguous thereto at least one sound absorbing layer and at least one sound barrier layer, said housing member comprising a non-rigid bag-like member having more than one opening and being rigidly attached to a base member a portion of which extends laterally from said housing member to form a threshold entrance area to said housing, and rigidifying means associated with said housing member in the region of at least one of said openings for maintaining such housing member permanently open for entrance to and exit from said shelter, said rigidifying means comprising a rigid frame attached to said base member and extending vertically therefrom for supporting the open end of said bag-like member and holding said member open, said rigid frame defining an opening aligned with said opening in said housing member, said opening in said frame being sufficiently large to permit substantially unrestricted movement of said animal to and from said shelter.

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**3,934,553**

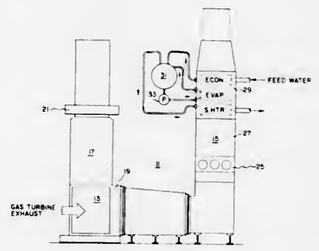
**COMBINED WALL BURNER AND FLAMEHOLDER FOR HRSG**

**James M. Freeman, Jr., West Newbury; Bruce E. Gans, Beverly; Sotiris Lambiris, Andover, all of Mass., and Donald E. Woodmansee, Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.**

**Filed Jan. 6, 1975, Ser. No. 538,952**

**Int. Cl.² F22B** *1/18*; **F23D** *13/24*

**U.S. Cl. 122—7 B** **16 Claims**




1. In a heat exchange apparatus of the type including an exhaust gas inlet and an exhaust gas outlet interconnected by a duct; said duct including a boiler tube section for passing a fluid in a non-contact heat exchange relation with the exhaust gas for raising the temperature of said fluid; and, improved combustion means for raising the temperature of said duct exhaust gas upstream from said boiler tube section, the improvement comprising:

a. a plurality of wall burners arranged about the perimeter of said duct; each wall burner including a nozzle portion having an axial centerline directed into said duct;

b. each wall burner having, associated therewith, a flameholder comprising an elongated trough having one end disposed adjacent one duct wall upstream from said burner nozzle portion; and, the other end directed toward an opposite duct wall; each flameholder being approximately parallel to its respective wall burner nozzle axial centerline.

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**3,934,554**

**WATER AND ROOM HEATER**

**Philip E. Carlson, 917 Maple St., Prentice, Wis. 54556**

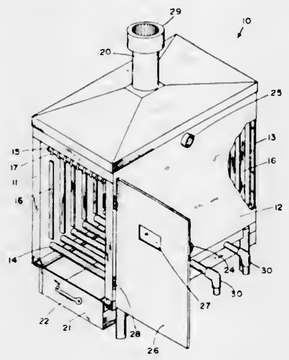
**Filed June 3, 1974, Ser. No. 475,610**

**Int. Cl.² F22B** *7/06*

**U.S. Cl. 122—176** **2 Claims**

1. An improved water heater and room heater for more efficiently utilizing the combustion heat of cumbustible materials and the like comprising a firebox having a top and a bottom, said firebox including a first metal water chamber, a second metal water chamber, and a third metal water chamber arranged to form U-shaped, vertical walls, said first water chamber, said second water chamber and said third water chamber each having a plurality of solid, metal, elongated,

vertically spaced ribs projecting therefrom and into the firebox for thereby transmitting the heat from the combustion of materials in the firebox to the water located in said first water chamber, said second water chamber and said third water chamber; a plurality of metal grates for supporting the combustible material, said plurality of metal grates connecting said first water chamber to said second water chamber, said plurality of grates providing a first network for passage of water from said first water chamber to said second water chamber, and for extracting heat from the combustion of materials in said firebox; a plurality of heat extracting members located at the top of the firebox, said heat extracting members including a plurality of metal heat extracting pipes having a plurality of radial projecting fins located thereon, said radial fins alternately spaced on said metal heat extracting pipes, said plurality of heat extracting pipes thereby providing a second net-



work for passage of water between said first water chamber and said second water chamber, said plurality of radial projecting fins coacting with said heat extracting pipes to more efficiently extract heat from the combustion of materials in said firebox; said first water chamber, said second water chamber, said third water chamber, said network of grates and said network of heat extracting pipes thereby coacting to provide a firebox that is operable for receiving the heat of combustion from the combustible material from at least five different sides, a cold water inlet located at the bottom of said water chamber and a hot water outlet located at the top of said water chamber, said firebox further including means for receiving the combustion ash, means for allowing the entrance of combustion air, means for controlling the amount of combustion air to the firebox chamber, and means for discharging the combusted gases.

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**3,934,555**

**BOILER USING COMBUSTIBLE FLUID**

**Henri Baumgartner, Bernex, Geneva, and John G. Meier, Geneva, both of Switzerland, assignors to Battelle Memorial Institute, Switzerland**

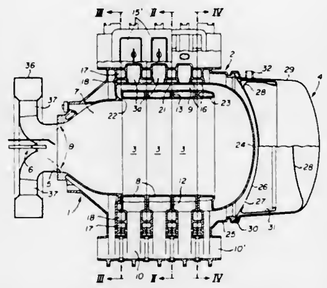
**Filed July 3, 1974, Ser. No. 485,623**

**Claims priority, application Switzerland, July 11, 1973, 10085/73**

**Int. Cl.² F22B** *25/00*

**U.S. Cl. 122—225 R** **4 Claims**

**1.** A fluid fuel boiler comprising, a combustion chamber, a cover on said combustion chamber having an opening for introducing a combustion supporting gaseous fluid through said opening, means to impart rotation to the gaseous fluid about an axis of said combustion chamber, a burner for introducing a fluid fuel into the chamber mixed with said gaseous fluid for combustion thereof, said cover having a generally frustro-conical configuration diverging from said opening toward the interior of said chamber at an angle of between 15° and 55°; means defining said combustion chamber having means defining a plurality of axial hot gas flow paths from a downstream portion of said combustion chamber to flow hot gases into an upstream portion of said combustion chamber, and means for diverting some of said hot gas flow along paths in a direction circumferentially of said combustion chamber, said latter paths being immersed in the flow path of said water thereby to improve heat transfer and terminating in a gas outlet, said combustion chamber comprising at least one modular element, joined axially to said frustro-conical cover and



coaxial therewith, said modular element comprising an inner ring and said means defining said plurality of axial hot gas flow paths defining a plurality of axial flow paths disposed circumferentially spaced from each other and radially of each ring thereby radially of said combustion chamber, said modular element comprises said means diverting hot gas flow circumferentially of said combustion chamber, and the last-mentioned means comprising means defining a spiral flow path about each said ring.

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**3,934,556**

**BOILER USING COMBUSTIBLE FLUID**

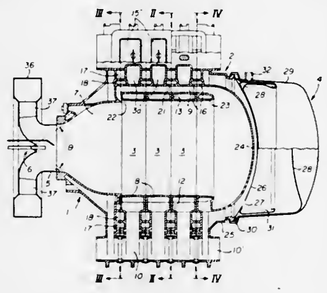
**Henri Baumgartner, Bernex, Geneva, Switzerland, assignor to Battelle Memorial Institute, Switzerland**

**Filed July 3, 1974, Ser. No. 485,638**

**Claims priority, application Switzerland, July 11, 1973, 10085/73**

**Int. Cl.² F22B** *25/00*

**U.S. Cl. 122—225 R** **3 Claims**



**1.** A fluid fuel boiler having a combustion chamber having sidwalls and a bottom, a cover having an opening for a burner for introducing a fluid fuel into said combustion chamber, means defining a water circulation circuit surrounding said combustion chamber, means defining an exhaust gas circulation circuit in communication with said combustion chamber and in contact with the water in said water circulation circuit, an annular member disposed defining an annular space around said combustion chamber in communication with said water circulation circuit and forming a part thereof, the improvement comprising an expansion vessel connected to said annular member opposed to the bottom of said combustion chamber, said expansion vessel comprising a wall opposed to said bottom and spaced from said bottom defining a space therebetween defining a part of said water circulation chamber and having an opening therein in communication with said water circulation circuit, a flexible diaphragm dividing said expansion vessel into two compartments comprising a water-receiving first compartment defined for receiving water through the last-mentioned opening and a gas-containing second compartment containing a compressible gas opposing water pressure against said flexible diaphragm from water in said first compartment.



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**3,934,557**

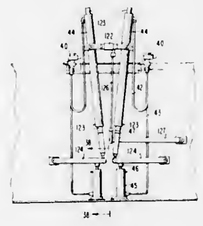
**LOW FIRE LIGHT-OFF APPARATUS**

**John W. Dirriwachter, and Robert J. Kelly, both of Richardson, Tex., assignors to Forney Engineering Company, Carrollton, Tex.**

**Filed Oct. 1, 1974, Ser. No. 510,926**

**Int. Cl.² F22B** *37/42*

**U.S. Cl. 122—448 B** **6 Claims**



**1.** Apparatus for controlling a plurality of fuel fired vapor generators for powering a marine propulsion system wherein each vapor generator may be operated in a low fire lightoff mode for ignition and a power mode for driving the propulsion system comprising:

control means operatively coupled to each vapor generator for controlling operation thereof in said respective power and lightoff modes, a regulator responsively coupled to said control means for delivering drive control outputs, a common drive coupled to the regulator and responsive to the drive control outputs, fuel regulator means for each vapor generator responsively coupled to said common drive for delivering fuel to each of said vapor generators in accordance with the drive control outputs, a variable displacement linkage arm coupling said common drive with each of said fuel regulator means, each linkage arm capable of being actuated to respective first and second retracted and extended lengths, and selection means operatively coupled to each linkage arm for selectively actuating each linkage arm to said respective first and second retracted and extended lengths, said selection means responsively coupled to said control means to actuate said linkage arm to said respective first and second retracted and extended lengths in accordance with the respective power and lightoff mode of each of the power generators, whereby each vapor generator may be operated in either mode by the common drive without affecting the operation of the other.

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**3,934,558**

**THROTTLING MEANS FOR TROCHOIDAL ROTARY COMBUSTION ENGINES**

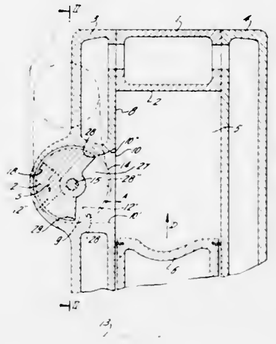
**Gottlieb Wilmers, Neuenstadt, Germany, assignor to Audi NSU Auto Union Aktiengesellschaft, Neckarsulm and Wankel G.m.b.H., Lindau, Bodensee, both of, Germany**

**Filed Apr. 2, 1975, Ser. No. 564,364**

**Claims priority, application Germany, Apr. 19, 1974, 2418852**

**Int. Cl.² F02B** *53/06*

**U.S. Cl. 123—8.45** **6 Claims**



**1.** A rotary internal combustion engine of trochoidal type, having a housing comprising at least one peripheral shell having a multilobed inner peripheral surface and at least two parallel side walls with the shell disposed between the side walls, the housing defining an engine cavity having a longitudinal axis, a rotor rotatably disposed within the cavity and having a generally polygonal profile with a plurality of apex portions which sweep the inner peripheral surface in sealing relation thereto, at least one side wall having in its inner surface an intake port for supplying fresh gas, the port having a greater lengthwise dimension in the direction of rotor rotation than in the radial direction and being opened and closed by a side face of the rotor, wherein the improvement comprises:

a. the side wall having an induction channel therein communicating with the intake port;

b. a rotary valve disposed in the induction channel adjacent to the intake port, the axis of rotation of the valve being disposed perpendicularly to the housing axis and also approximately perpendicularly to the lengthwise dimension of the intake port;

c. the valve cooperating with the upstream edge of the port to form a throttling gap and progressively increasing the cross-section of the open area of the port as the valve turns in the opening direction, and progressively delaying the closing time of the port with increasing valve opening.

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**3,934,559**

**ANTI-POLLUTANT SPHERICAL ROTARY ENGINE WITH AUTOMATIC SUPERCHARGER**

**William A. Cohen, Brooklyn, N.Y., assignor to Sphero International Company, West Long Branch, N.J.**

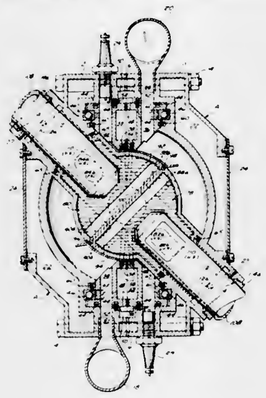
**Filed Mar. 10, 1975, Ser. No. 556,707**

**Int. Cl.² F02B** *53/00*

**U.S. Cl. 123—8.45** **40 Claims**

**1.** A rotary engine comprising a casing having a cavity therein, said casing having air intake, fuel inlet and exhaust ports therein communicating with said cavity, an engine shaft rotatably mounted in said casing, a cylindrical member mounted for rotation in said casing, said cylindrical member being directly drivingly connected to said shaft and having a combustion chamber defined in the wall thereof, said combustion chamber registering with said fuel inlet port in at least one

operative position thereof, and said exhaust port in at least one other operative position thereof, and a drive member movably mounted on said cylindrical member to drive same, said cylindrical member, said drive member and the inner wall of said casing defining a compression-expansion chamber,



means operably connecting said air intake port to said compression-expansion chamber, said compression-expansion chamber being operably connected to said combustion chamber and being expandable by the combustion of gases within said combustion chamber to move said drive member.

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**3,934,560**

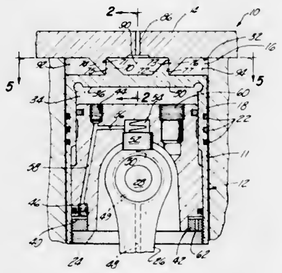
## INTEGRATED PRECOMBUSTION CHAMBER FOR INTERNAL COMBUSTION ENGINES

**Joseph L. Dodd, Farmington, Mich., assignor to Teledyne Industries, Inc., Los Angeles, Calif.**

**Filed Feb. 21, 1974, Ser. No. 444,399**

**Int. Cl.² F02B** *3/00*

**U.S. Cl. 123—32 B** **11 Claims**



**11.** An internal combustion engine including a piston having first and second parts movable relative to one another in a cylinder in response to reciprocation of the piston with respect to the combustion chamber of an engine whereby said relatively movable parts of said piston comprise a variable compression ratio piston, a cylinder head cooperating with the cylinder and the first and second parts of said piston to define the combustion chamber, the improvement comprising a first projection means extending from said second part of said piston into the combustion chamber;

a second projection means extending from a cylinder head into the combustion chamber closely adjacent to said first projection means;

said first projection means extending from the said second part of said piston and said second projection means extending from the cylinder cooperating to define at least one precombustion chamber and at least one secondary combustion chamber interior to the combustion chamber; and

at least one aperture for providing communication between the precombustion chamber and the secondary combustion chamber.

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**3,934,561**

## FUEL INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINES WITH COMBINED FUEL PUMP CONTROL SWITCH

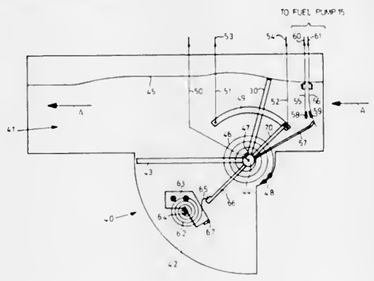
**Peter Romann, Stuttgart, and Erwin Nägele, Hessigheim, both of Germany, assignors to Robert Bosch G.m.b.H., Gerlingen-Schillerhohe, Germany**

**Filed Oct. 4, 1974, Ser. No. 512,210**

**Claims priority, application Germany, Nov. 16, 1973, 2357262**

**Int. Cl.² F02B** *3/00*

**U.S. Cl. 123—32 EA** **7 Claims**




**1.** Fuel injection system for an internal combustion engine (**10**) comprising

a source of fuel (T);

a fuel supply pump (**15**);

electromagnetically operated fuel valve means (**11**) hydraulically connected to receive pressurized fuel from said fuel supply pump (**15**);

electrical pulse generating means (TS, **22**) connected to the injection vlave means (**11**) for controlling the operating time (Ti) thereof and hence, for controlling the amount of fuel injected during such opening time;

and air quantity sensing means (LM) located in the induction pipe (**25, 41**) of the engine, connected to and providing an electrical control signal to said pulse generating means for controlling the pulse duration thereof in accordance with air flow through the induction pipe, said sensing means including a deflection member (**30**) located in the path of air flow through the induction pipe and means (**46**) acting on the deflection member for providing a reset force against deflection of the deflection member under air flow conditions,

switch means (**55, 56; 58, 59**) and a switch operating means (**57**) connected to said flap or disk (**30**), said switch means being located with respect to said switch operating means to be opened when the flap or disk (**30**) is at rest position and to be closed when the deflection member (30) moves away from rest position, said switch means being connected to the fuel supply pump (**15**) for de-energizing the fuel supply pump when the engine does not require fuel, as sensed by absence of air flow in the induction pipe; and

auxiliary force means (**62**) acting on the deflection member in a limited range of deflection from rest to open position and tending to decrease said reset force when the deflection member is at, or close to rest position,

said auxiliary force means being operable for decreasing the reset force to permit movement of said deflection member away from rest position and hence reliable closing of the switch upon small air flow conditions in the induction pipe and for preventing the overriding of the deflection force of said small air flow by the reset force.



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**3,934,562**

## TWO-CYCLE ENGINE

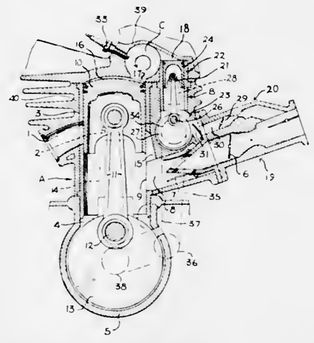
**Yoshiharu Isaka, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan**

**Filed Sept. 23, 1974, Ser. No. 508,523**

**Claims priority, application Japan, Sept. 26, 1973, 48-108191; Dec. 11, 1973, 48-137988**

**Int. Cl.² F02B** *25/12*

**U.S. Cl. 123—53 BA** **18 Claims**



**1.** A crankcase precompression type two-cycle engine system comprising:

a crankcase precompression type first two-cycle engine including a first cylinder having, in the wall thereof, an exhaust port and at least one scavenging port, a first piston reciprocating in said cylinder to open and close said exhaust and scavenging ports, a first crankcase connected with said scavenging port through at least one scavenging passage and an intake passage to supply air or lean air-fuel mixture to said first crankcase;

a crankcase precompression type second two-cycle engine, including a second cylinder mounted substantially in parallel with the first cylinder and having, in the wall thereof, at least one second scavenging port, a second piston reciprocating in said second cylinder to open and close said scavenging port therein, a second crankcase connected with said scavenging port in said second engine through at least one second scavenging passage, and a second intake passage to supply a rich air-fuel mixture to said second crankcase, said second piston being cooperatively coupled to said first piston so that said pistons move approximately at the same timing; and

a combustion chamber provided with an ignition plug and positioned between the first and second engines, interconnecting the cylinders of said engines.

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**3,934,563**

## SPEED-DEPENDENT IGNITION ANGLE CONTROL

**Rudolf Müller, Hannover-Stocken, and Jürgen Decker, Berenbostel, both of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany**

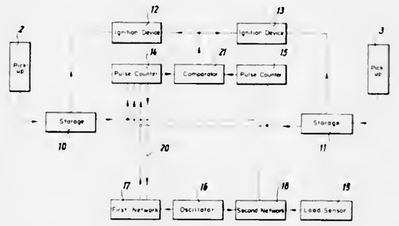
**Filed May 10, 1974, Ser. No. 469,007**

**Claims priority, application Germany, May 19, 1973, 2325479**

**Int. Cl.² F02P** *5/04*

**U.S. Cl. 123—117 R** **18 Claims**

**1.** In a method for speed-dependent control of the ignition angle of an internal combustion engine with external ignition, wherein an integrator for accumulating an electric quantity is controlled within a predetermined interval by an electric signal produced by markings on a rotating element of the engine and receiving elements associated with such markings, and from the integration result present at the end of the interval there is obtained an accurately timed ignition signal, the improvement comprising:




determining said predetermined interval with a constant angle interval extending between a first and a second marking on an engine part rotating relatively to another engine part; and

modifying the rate of accumulating said electric quantity in said integrator speed-dependently according to a non-linear dependence of the ignition angle on the speed.

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**3,934,564**

## CONTROL VALVE FOR EXHAUST GAS RECYCLING APPARATUS

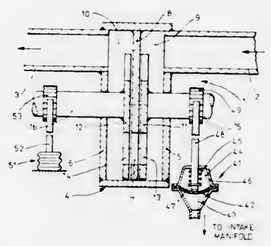
**Konrad Barnert, Wolfsburg, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany**

**Filed Dec. 28, 1973, Ser. No. 429,625**

**Claims priority, application Germany, Jan. 22, 1973, 2303007**

**Int. Cl.² F02M** *25/06*

**U.S. Cl. 123—119 A** **2 Claims**

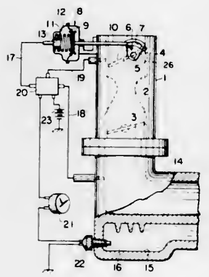



**1.** In apparatus for recycling exhaust gas and including two devices for converting operating parameters of an internal combustion engine into mechanical regulating movement, the improvement of a valve for controlling the quantity of exhaust gas recycled comprising a housing having an inlet and an outlet for the exhaust gas and a stationary partition disposed between the inlet and the outlet and dividing the housing into two chambers, said partition having an opening therethrough for the passage of exhaust gas; two perforated plate members, each disposed in one of said chambers between said partition and the inlet and the outlet, respectively; and two rotatable axles, each axle mounting a different one of said two perforated members such that a hole in the respective perforated member can be moved into and out of alignment with said opening in said partition thereby to open and close said opening and control a flow of exhaust gas through the valve, each of the axles being adapted for coupling to a different one of the converting devices of the recycling apparatus.

### 3,934,565
### CHOKE CONTROL SYSTEM FOR CARBURETORS

**Hirohumi Matsumoto, and Masahiko Nakada, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan**

**Filed June 10, 1974, Ser. No. 477,979**
**Claims priority, application Japan, June 22, 1973, 48-69743**
**Int. Cl.² F02M *1/10***
**U.S. Cl. 123—119 F** **8 Claims**



1. An automatic choke system for an automotive vehicle internal combustion engine comprising a choke valve operable between a fully opened and a fully closed postion, temperature sensitive bimetallic spring means for controlling opening and closing of said choke valve, a choke control mechanism adapted to move said choke valve in the direction of opening to a limited position short of said fully opened position but proximate thereto, means for generating a first signal representative of the temperature of said engine, means for generating a second signal representative of the speed of said vehicle, and means for applying both said first and said second signals to said control mechanism to cause said choke valve to be opened to said limited position when the temperature of said engine and the speed of said vehicle reach predetermined levels, respectively, said control mechanism being arranged to permit independent operation of said bimetallic means beyond said limited position of said choke valve whereby said choke valve may be moved to said fully opened position by said bimetallic means when said engine has reached a fully warmed-up condition.

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### 3,934,566
### COMBUSTION IN AN INTERNAL COMBUSTION ENGINE

**Michael A. V. Ward, 205 Walden St., Apt. 5-D, Cambridge, Mass. 02140**

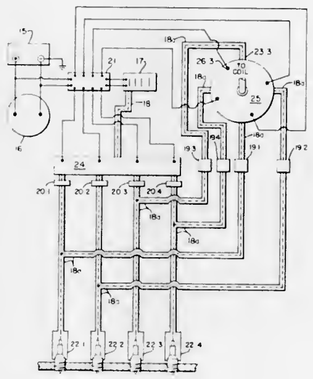
**Filed Aug. 12, 1974, Ser. No. 496,393**
**Int. Cl.² F02P *1/00*; F02B *33/00*; H05B *9/06*; F23N *5/20***
**U.S. Cl. 123—119 E** **25 Claims**

1. A system for use with an internal combustion engine having a combustion chamber, means for producing a combustible mixture therein, and means for igniting said mixture, the system comprising

means for generating electromagnetic energy at an operating frequency, $f_o$, of the order of the plasma frequency, $f_{ps}$, of a species, $s$, of charged particles of said mixture where

$$f_{ps} = \frac{1}{2\pi}\sqrt{\frac{n_s e^2}{m_s \epsilon_o}},$$

and where $n_s$ is the species number density of the mixture, $m_s$ is the species mass, $e$ is the charge of an electron, and $\epsilon o$ is the dielectric constant of free space, and for conducting said



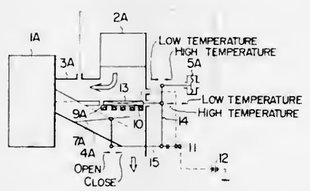
energy to said chamber for at least about a millisecond following ignition of said mixture to couple said energy to charged particles of said species in said mixture during combustion thereof.

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### 3,934,567
### FUEL EVAPORATING DEVICE

**Mamoru Fujieda, Ibaraki; Teruo Yamauchi, Hitachi, and Masakichi Momono, Katsuta, all of Japan, assignors to Hitachi, Ltd., Japan**

**Filed Mar. 27, 1974, Ser. No. 455,407**
**Claims priority, application Japan, Mar. 28, 1973, 48-34589**
**Int. Cl.² F02M *31/00***
**U.S. Cl. 123—122 H** **6 Claims**



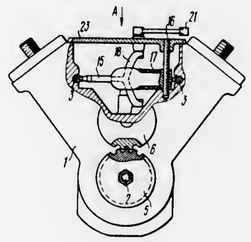

1. A fuel evaporating device comprising heating means provided in an air intake pipe of an internal combustion engine and arranged such that the fuel contacts a surface of said heating means; means located in the vicinity of said heating means for detecting the temperature of said heating means and maintaining the temperature of said heating means substantially constant; means for detecting the negative suction pressure of the internal combustion engine; and means for varying the temperature at which said heating means is set in relation to the output of said negative suction pressure detecting means, whereby the temperature at which said heating means is set is lowered as the negative suction pressure rises.



### 3,934,568
### CRANKSHAFT GOVERNOR OF AN INTERNAL COMBUSTION ENGINE

**Leonid Mikhailovich Malyshev, ulitsa Belinskogo, 28, kv. 30; Lev Iosifovich Indrupsky, ulitsa Avtozavodskaya, 69, kv. 13; Boris Pavlovich Gusev, ulitsa Eleny Kolesovoi, 68, kv. 98, and Yakov Borisovich Pisman, ulitsa Volodarskogo, 105, kv. 36, all of Yaroslavl, U.S.S.R.**

**Filed July 23, 1974, Ser. No. 491,053**
**Int. Cl.² F02D *1/04***
**U.S. Cl. 123—140 R** **1 Claim**



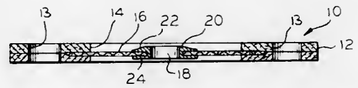
1. An internal combustion engine crankshaft governor disposed in the space between the banks of angularly related sections of a fuel pump incorporating two rack bars controlling fuel supply, comprising: a crosspiece rotated by said crankshaft of the internal combustion engine; centrifugal flyweights; pivot spindles for mounting said flyweights on said crosspiece; a coupling for converting the rotary movement of said centrifugal flyweights to the translatory movement of said two rack bars of said fuel pump controlling fuel supply; a double-arm lever actuated by said centrifugal flyweights through said coupling and having one arm connected with one of said rack bars of said fuel pump; a pivot spindle secured in the housing of said pump and positioned normally to the plane passing through the longitudinal axes of said rack bars, said pivot spindle carrying said lever rotatably mounted thereon; a spring for balancing the effort of said lever having one end connected with the other arm of said lever; a control lever for adjusting the tension of said spring connected with the other end of said spring; one more pivot spindle secured in the housing of said pump, positioned normally to the plane passing through the longitudinal axes of said rack bars and carrying said control lever rotatably mounted thereon.

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### 3,934,569
### APPARATUS AND METHOD FOR ATOMIZING FUEL-AIR MIXTURE IN A CARBURETION SYSTEM

**Robert F. Bobene, Morton Grove, Ill., assignor to Compression Dynamics, Incorporated, Skokie, Ill.**

**Continuation-in-part of Ser. No. 383,378, July 27, 1973, abandoned. This application Apr. 4, 1974, Ser. No. 457,700**
**Int. Cl.² F02M *29/00***
**U.S. Cl. 123—141** **11 Claims**



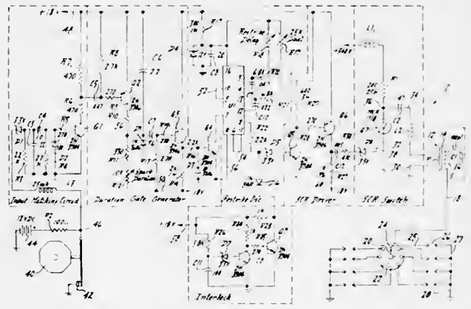

1. In an apparatus for atomizing a fuel-air mixture in an internal combustion engine having a a carburetor and an intake manifold, a passageway between said carburetor and said intake manifold for the flow of said fuel-air mixture therethrough, an atomizing member disposed generally transversely of said passageway, and laterally disposed aerodynamically configured means having an opening therethrough and completely supported by a foraminous member located in said passageway for creating a funnel-type flow pattern of said fuel-air mixture through said atomizing member in said passageway, said dynamically configured means forming a reinforced rim around the circumference of said opening and having one side facing opposite the direction of flow of said fuel air mixture through said passageway, said one side having substantially a curved aerodynamically curved configuration, said aerodynamically configured means allowing maximum flow of fuel-air mixture through said carburetor resulting in greater fuel economy and abatement of the discharge of pollutants.

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### 3,934,570
### FERRORESONANT CAPACITOR DISCHARGE IGNITION SYSTEM

**Joseph R. Asik, Bloomfield Hills, and Mitsugu Hanabusa, Ann Arbor, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.**

**Filed Apr. 24, 1974, Ser. No. 463,919**
**Int. Cl.² F02P *3/02***
**U.S. Cl. 123—148 E** **8 Claims**



1. In combination with an internal combustion engine, a capacitor discharge ignition system which comprises:

an ignition coil having primary and secondary windings and a ferromagnetic core about which said windings are wound;

a spark plug having electrodes spaced to form a spark gap, one of said electrodes being coupled to one terminal of said secondary winding;

a first capacitor connected in series with said spark gap, one terminal of said capacitor being coupled to the other terminal of said secondary winding;

a second capacitor coupled to said primary winding;

a DC source of electrical energy;

circuit means for charging said second capacitor from said DC source of electrical energy and for discharging said second capacitor through said primary winding in timed relation to operation of said engine; and

said second capacitor when discharged through said primary winding producing ferroresonant oscillations in the secondary circuit of said ignition coil.

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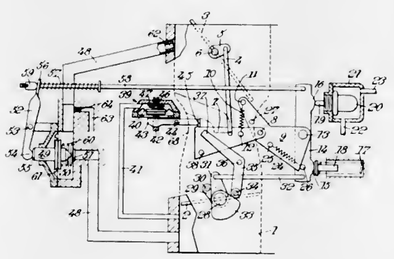
### 3,934,571
### CARBURETORS FOR INTERNAL COMBUSTION ENGINES, WITH AN AUXILIARY STARTING DEVICE

**Francois Mennesson, Nanterre, France, assignor to Societe Industrielle de Brevets et d'Etudes, Neuilly-sur-Seine, France**

**Filed Mar. 30, 1973, Ser. No. 346,477**
**Claims priority, application France, Apr. 10, 1972, 72.12543**
**Int. Cl.² F02M *1/16***
**U.S. Cl. 123—179 G** **5 Claims**

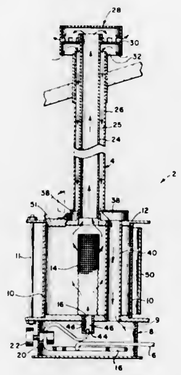
1. Carburetor for an internal combustion engine, comprising:

an intake pipe;
an operator actuatable main throttle member in said pipe;
a main fuel jetting system which opens into said pipe upstream of said throttle member for providing fuel to the engine during operation thereof under load;
and an auxiliary cold starting and warm-up device responsive to the temperature of the engine to increase the flow rates of fuel and air delivered to the intake pipe, said auxiliary device including:
an unbalanced startng valve located in the intake pipe upstream of the outlet of said main fuel jetting system into said pipe;
resilient return means urging the starting valve towards its closed position and exerting a force which decreases in proportion to engine temperature as the temperature of the engine increases;
a passage which opens into said intake pipe downstream of the main throttle member;
closure valve means in said passage;
means for delivering a mixture of air from a zone of said intake pipe downstream of the starting valve and of fuel, having a predetermined richness, to said passage upstream of said closure valve means;
means responsive to the temperature of the engine and operatively connected to said closure valve means for closing said closure valve means when heated to a predetermined temperature; and



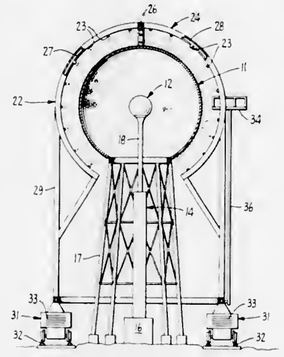
means responsive to the pressure existing in the intake pipe downstream of the main throttle member and limiting closure of said starting valve at small engine load whereby the air-fuel mixture is prevented from being substantially enriched,
wherein said limiting means are sensitive to pressure existing in the intake pipe downstream of the main throttle member to prevent said starting valve from closing beyond an intermediate degree of opening as soon as the engine is self running after starting, said pressure sensitive means cooperating with said temperature responsive means, whereby the minimal degree of opening is increased in proportion to engine temperature as the temperature of the engine increases; and
wherein said resilient means are constituted by a first spring mounted between a first lever rotatable about a fixed axis and a second lever rotatable on an axle carried by the first lever, the return force exerted by said first spring being transmitted to the starting valve through a link rod coupled to the second lever towards the center of the second lever, while one of the ends of the second lever carries the abovementioned axle and the other end cooperates with stop means controlled by said pressure sensitive means, the angular position of the first lever being determined by the temperature responsive means.

**3,934,572**
**INFRARED SPACE HEATER**
**Walter Dorwin Teague, Jr., Tweed Blvd., Nyack, N.Y. 10960**
**Filed Apr. 2, 1973, Ser. No. 347,220**
**Int. Cl.² F24C** *3/04*
**U.S. Cl. 126—92 B** **17 Claims**



**2.** A space heater as described in claim **1** wherein said chimney and said burner are cylindrical and are positioned with substantially concentric vertical axes.

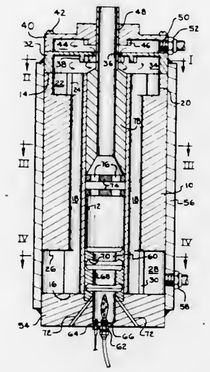
**3,934,573**
**SPHERICAL SYSTEM FOR THE CONCENTRATION AND EXTRACTION OF SOLAR ENERGY**
**Alessandro O. Dandini, 101 Greenridge Drive, Reno, Nev. 89502**
**Filed Feb. 28, 1975, Ser. No. 554,194**
**Int. Cl.² F24J** *3/02*
**U.S. Cl. 126—270** **14 Claims**



**1.** Apparatus for collecting solar energy, comprising
a generally spherical member mounted to receive the rays of the sun,
a heat energy receiving element positioned at the center of said spherical member,
a plurality of lenses in said spherical member formed for concentrating and directing heat energy radiation impinging said spherical member onto said heat energy receiving element,
and means connected to said heat energy receiving element for receiving heat energy therefrom and adapted for connection to equipment for utilizing such heat energy to perform work.

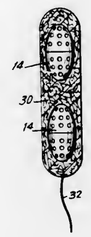


**3,934,574**
**HEAT EXCHANGER**
**Howard R. Johnson, Grass Lake, Mich., assignor to Hush Company, Inc., Ann Arbor, Mich.**
**Filed Jan. 10, 1974, Ser. No. 432,199**
**Int. Cl.² F24H** *1/00*
**U.S. Cl. 126—350** **9 Claims**



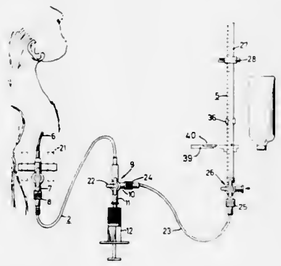
**1.** A heat exchanger characterized by its high heat exchanging capabilities in a concise configuration comprising, in combination, an elongated heat conducting core having first and second end regions, a plurality of passages defined in said core extending between said end regions, said passages each having first and second end regions, respectively, heat exchanging supply means associated with said core controlling the temperature thereof, a first chamber communicating with said core first end region and said passages' first ends, a second chamber communicating with said core second end region and said passages' second ends, inlet fluid heat transfer means communicating with said first chamber, outlet fluid heat transfer means communicating with said second chamber, and fluid flow control means introducing a fluid heat transfer medium into said passages' first end in a spiraling manner to effectively transfer heat between said core and the medium within said passages, said fluid flow control means including elongated inlet ports defined in said core having a length parallel to the length of said core and communicating with said first chamber and intersecting said passages' first ends in a substantially tangential manner.

**3,934,575**
**TAMPON DEVICE TO TEST FOR MICRO-ORGANISMS**
**Louis Bucalo, 155 Roberts St., New York, N.Y. 11741**
**Division of Ser. No. 329,862, Feb. 5, 1973, Pat. No. 3,842,166.**
**This application Aug. 23, 1974, Ser. No. 499,925**
**Int. Cl.² A61B** *10/00*
**U.S. Cl. 128—2 W** **5 Claims**



**1.** For use in testing for the presence of micro-organisms, a tampon of a type which could be inserted into the vagina during the menstrual cycle, and at least one device embedded within and surrounded by the tampon, said device including a culture medium for promoting the growth of micro-organisms and a carrier means carrying the culture medium and rendering the latter accessible to fluids absorbed by the tampon for growing in the culture medium micro-organisms present in the fluids.

**3,934,576**
**CENTRAL VENOUS CATHETER SYSTEM**
**Curt Aslov Danielsson, Borlange, Sweden, assignor to AB Sundsvalls Specialprodukter, Sundsvall, Sweden**
**Filed Nov. 14, 1973, Ser. No. 415,753**
**Claims priority, application Sweden, Nov. 17, 1972, 14941/72**
**Int. Cl.² A61B** *5/02*
**U.S. Cl. 128—2.05 D** **6 Claims**



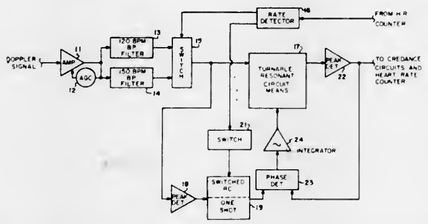
**1.** Apparatus for safe puncturing of a central vein such as a vena subclavia, comprising: a flexible catheter of thin material having at one end a tip and at the other end a one-way valve connected thereto, a flexible extension tube having a first end and a second end, the first end thereof sealingly connectible to the other end of the catheter and the one-way valve, a multiway-valve connected to the second end of the flexible tube and including connections for venous pressure, injection syringe means and dropping supply means,
a retractable cannula connectible to the other end of the catheter through the one-way valve in lieu of said extension tube and capable of extending through the one-way valve and the catheter and having a tip portion for projecting from the tip of the catheter, and a venous pressure meter connected to the venous pressure connection of said multiway-valve.

**3,934,577**
**FETAL HEART RATE MONITORING APPARATUS**
**Edward Paul Romani, Holland, Pa., assignor to Hoffmann-La Roche Inc., Nutley, N.J.**
**Continuation of Ser. No. 313,373, Dec. 8, 1972, abandoned.**
**This application Aug. 9, 1974, Ser. No. 496,247**
**Int. Cl.² A61B** *5/02*
**U.S. Cl. 128—2.05 T** **5 Claims**

**1.** In apparatus for monitoring heart beat activity in which means are provided for obtaining electrical Doppler signals from ultrasonic Doppler shifted information derived from heartbeat motion, the arrangement comprising:
filter means for passing a first band of frequencies including selectively actuable means for passing a second band of frequencies in lieu of the first band, of said electrical Doppler signals;
tunable resonant circuit means for de-emphasizing in the passed band of frequencies, frequency content other than that closely about the resonant circuit frequency for providing an output signal indicative of fetal heart rate;
phase detector means responsive to a phase shift between input signals to and output signals from the resonant

circuit means, for tuning the resonant circuit means at a preselected rate in accordance with the detected phase shift;

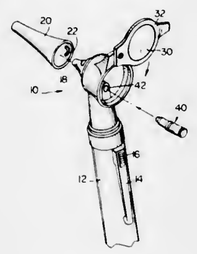
timing means defining a first pulse period in response to said input signals and defining a second pulse period in lieu of the first, for inhibiting the response of said phase detector means during the pulse period defined; and




rate detector means operatively coupled to the output signal indicative of fetal heart rate for separately controlling said filter means and said timing means in response to respective preselected different values of the heart rate signal.

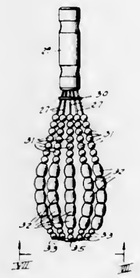
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**3,934,578**
**DIRECT ILLUMINATION OTOSCOPE**
**Helmut A. Heine, Herrsching, Germany, assignor to Propper Manufacturing Co., Inc., Long Island, N.Y. and Optotechnik Heine KG, Herrsching, Germany, part interest to each**
**Filed May 28, 1974, Ser. No. 473,499**
**Int. Cl.² A61B *1/06***
**U.S. Cl. 128—9** **1 Claim**




1. An otoscope comprising an otoscope speculum, a bulb sleeve within said otoscope speculum, movable contact means protruding into said sleeve, and an illumination bulb received within said sleeve from the proximal end thereof, said illumination bulb including a bulb chassis, an evacuated envelope at the forward end of said bulb chassis dimensioned to be received within said sleeve, filament contact legs extending rearwardly from said evacuated envelope into said bulb chassis, an electrically conductive first contact ring positioned over said bulb chassis, an electrically conductive second contact ring positioned over said bulb chassis, electrical insulating means intermediate said first and second electrical contact rings, one of said filament contact legs being in engagement with said first contact ring, the other said filament contact leg being in engagement with said second contact ring, said second ring being in electrical contact with said sleeve, said first contact ring having an exterior diameter smaller than the exterior diameter of said second contact ring and being in engagement with said movable contact means, such that engagement of said movable contact means with said first contact ring completes an electrical circuit to the bulb and positively retains said bulb in said sleeve.

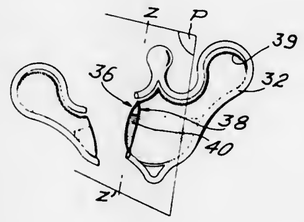
**3,934,579**
**MASSAGING AND RELAXING DEVICE**
**Brunhilde Brodbeck, 1440 Poplar Ave., Memphis, Tenn. 38104**
**Filed Oct. 4, 1974, Ser. No. 511,981**
**Int. Cl.² A61H *15/00***
**U.S. Cl. 128—57** **2 Claims**



1. A massaging and relaxing device for stimulating and relaxing various parts of the body having at least one hand grip and a plurality of beads extending from said hand grip, yieldable mounting means freely and flexibly mounting said beads for rotatable movement with respect to each other for contact with the body, comprising a series of flaring wires flaring outwardly from one end of said hand grip and converging toward their outer ends and turned inwardly as they approach their outer ends, and terminating at their outer ends at a relatively small diameter disk generally coaxial with said hand grip and connected to said disk in equally spaced radial relation with respect to each other, and said wires each having said beads freely mounted thereon and extending along greater portions of the length thereof.

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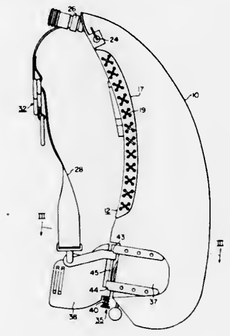
**3,934,580**
**CHEMICALLY ACTING INTRA-UTERINE DEVICE**
**Rene Cournut, Bordeaux-Cauderan, France, assignor to Apamed Anstalt, Vaduz, Liechtenstein**
**Filed Nov. 11, 1974, Ser. No. 522,966**
**Claims priority, application France, Nov. 9, 1973, 73.40003**
**Int. Cl.² A61F *5/46*; A61M *31/00***
**U.S. Cl. 128—130** **14 Claims**




1. An active intra-uterine device comprising a hydrophobic substrate of high mechanical resiliency, wherein said substrate comprises, within the volume thereof, inclusions of polymerized hydrophilic substances grafted on said hydrophobic substrate and cross-linked, in which water-soluble chemical agents have been stored previously, said hydrophobic substrate being porous so that said agents may perfuse through said hydrophobic substrate when the latter is placed in an aqueous medium.



**3,934,581**
**BREATHING APPARATUS**
**Wilbur J. O'Neill, Severna Park, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.**
**Continuation of Ser. No. 832,669, June 12, 1969, abandoned. This application Sept. 3, 1971, Ser. No. 177,859**
**Int. Cl.² A61M *16/00***
**U.S. Cl. 128—142** **17 Claims**



1. Underwater breathing apparatus, comprising:

A. a relatively hard inflexible outer protective shell;

B. a relatively soft flexible body-conforming undersurface for placement on a diver's back and connected to said shell;

C. breathing bag means positioned between said undersurface and said shell;

D. means for admitting a breathable gas to said breathing bag means;

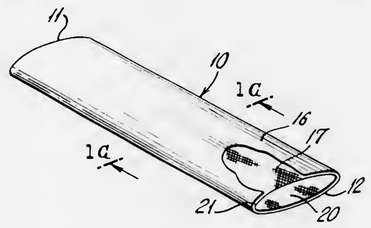
E. means for communicating said breathing bag means with the diver;

F. said apparatus being constructed and arranged that said breathing bag means is freely movable in the area between said undersurface and said shell when communicative with the diver and when supplied with said breathing gas; and

G. support means for supporting said apparatus on the diver.

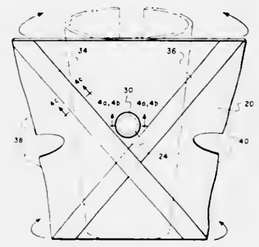
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**3,934,582**
**SURGICAL WRAP**
**Thomas M. Gorrie, Kendall Park, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.**
**Filed Jan. 2, 1974, Ser. No. 430,264**
**Int. Cl. A61f *13/00***
**U.S. Cl. 128—157** **8 Claims**




1. Surgical draping means for providing ease of aseptic application and close fit of a surgical drape to a body extremity, said draping means comprising a sterile, elongated tubular wrap, closed at one end and open at the other end, and having substantially coextensive inner and outer layers, said inner layer comprising a stretchable, textile material with good slip-over properties, and said outer layer comprising a thin, fluid impervious, elastic drapable material which is a barrier to bacterial migration and meets the antistatic properties required for operating rooms.

**3,934,583**
**THERAPEUTIC MUSCULOSKELETAL SUPPORT SLEEVE AND METHOD OF MANUFACTURING SAME**
**Donald W. Hollingshead, and Cecil E. Phillips, both of Eugene, Oreg., assignors to Danny W. Hollingshead, Eugene, Oreg.**
**Filed Sept. 27, 1974, Ser. No. 509,821**
**Int. Cl.² A61F *13/00***
**U.S. Cl. 128—165** **10 Claims**



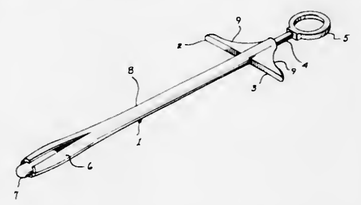

1. A musculoskeletal shin support device comprising:

a. an elongate form-fitted sleeve of elastic, heat-retaining foam material adapted to extend from above the ankle to below the knee for compressively ensheathing the area around and about the lower leg; and

b. a plurality of elongate elastic strips adhesively attached in a relaxed condition along their entire lengths to the interior surface of said sleeve and spaced substantially anterior and parallel to the longitudinal axis of said sleeve in positions so that, when said sleeve is fitted in place about the lower leg, the elastic strips will not resist movement, but will increase the compressive force of the sleeve and press the anterior muscles of the lower leg against the tibia.

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**3,934,584**
**BALLING GUN**
**Nicholas N. Corio, 6932 W. Pershing Ave., Peoria, Ariz. 85345**
**Filed Sept. 26, 1973, Ser. No. 401,037**
**Int. Cl.² A61D *7/00*; A61M *31/00***
**U.S. Cl. 128—223** **10 Claims**




1. A balling gun for administering a bolus within the throat of an animal, said balling gun comprising:

a. an elongated barrel having a plurality of resilient arms disposed at one end thereof for grasping the bolus;

b. said arms having inner surfaces which define a space within said gun to receive a bolus through an opening located at the end of the arms,

c. a plunger extending through the other end of said barrel and slidably mounted for axial movement within said barrel with one end extending within the space defined by said arms;

d. expansion means located within said space and secured to said plunger for engagement with a portion of said inner surfaces extending directly from said one end of the barrel with said portion being inclined with respect to the longitudinal axis and toward said other end of the barrel,

e. said expansion means being effective to radially expand said arms in response to axial movement of said plunger toward said other end.

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**3,934,585**

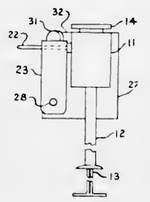
## METHOD AND APPARATUS FOR APPLICATION OF EYE DROPS

**David M. Maurice, 148 Tuscaloosa Ave., Atherton, Calif. 94025**

**Continuation-in-part of Ser. Nos. 63,363, Aug. 13, 1970, abandoned, and Ser. No. 114,133, Feb. 10, 1971, abandoned. This application Oct. 12, 1973, Ser. No. 405,786**

**Int. Cl.² A61M** *3/00*

**U.S. Cl. 128—225** **14 Claims**




**1.** An eye drop dispenser comprising:

housing means defining a small passageway terminating in a nozzle and adapted to contain an eye drop liquid to be dispensed,

means engaging said housing means for directing said nozzle toward an eye to be injected,

a plunger slideably mounted in said housing for movement into the said passageway,

a spring engaging said housing and plunger for urging said plunger into said passageway under spring pressure, and

controllable release means for restraining said plunger from moving into said passageway rotatably mounting said plunger relative to said housing and including visually obstructed engaging surfaces of said plunger and housing with each of said surfaces having at least one abruptly varying contour about said plunger and means for rotating said plunger to release said plunger at least once each revolution thereof to rapidly move under spring pressure into said passageway for forcibly ejecting liquid from the open end of said passageway at an indeterminate point of operation of the release means whereby a user does not blink at eye drop injection.

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**3,934,586**

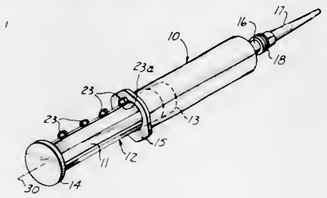
## NON-REFILLABLE MULTIPLE DOSAGE SYRINGE

**Fred H. Easton, 11591 Capri Drive, Garden Grove, Calif. 92641, and N. Donald Helmer, 10-63rd Place, Long Beach, Calif. 90803**

**Filed Jan. 22, 1975, Ser. No. 543,030**

**Int. Cl.² A61M** *1/00*

**U.S. Cl. 128—235** **5 Claims**




**1.** In a multiple dosage syringe that automatically signals to the user's sense of feel when a dose of predetermined volume has been discharged therefrom, including: an elongate hollow barrel capable of holding a charge comprising a plurality of such doses of a liquid material; discharge means mounted on the forward end of said barrel through which each of said doses can be discharged from said barrel; a piston slidably mounted within said barrel; an elongate piston member having a central axis, affixed to said piston and extending rearwardly through the rear end of said barrel; and stop means operatively associated with said barrel and member that tend to restrict forward movement of said piston after a dose of said liquid material is discharged through said discharge means, and stop means comprising a plurality of longitudinally spaced stops formed on the periphery of said elongate piston member, each of said stops having a greater longitudinal dimension than its transverse thickness dimension and each stop protruding outwardly from the periphery of the elongate member to such an extent that it will strike a member at the rear end of said barrel when said piston member is moved forwardly, each of said stops being sufficiently removable from its outwardly projecting position to permit said piston member and piston to move further forward within said barrel toward said discharge member; the improvement comprising:

a longitudinal undercut providing a line of maximum weakness of each stop extending in a longitudinal plane obliquely outward in the rearward direction relative to the central axis of the elongate member so that the portion of the stop outside said line can be broken off, leaving an inner portion of the stop protruding somewhat outside the elongate member, the amount of the protrusion of said inner portion being sufficiently slight so that the protrusion can move through the barrel in the direction, the rear end of the protrusion having an edge which scores the inner wall of the barrel during movement of the piston member sufficiently to prevent a sufficient seal between the piston and the barrel wall to permit discharging accurate quantitative doses from a fresh charge of liquid material after the original charge has been discharged.

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**3,934,587**

## DISPOSABLE ARTICLES HAVING A WATER-PERMEABLE AND WATER-REPELLENT SURFACE

**Roy Gerald Gordon, 22 Highland St., Cambridge, Mass. 02138**

**Filed June 17, 1974, Ser. No. 479,636**

**Int. Cl.² A61F** *13/16*; **B32B** *27/42*

**U.S. Cl. 128—284** **10 Claims**




**1.** An article of manufacture comprising a thin sheet, one side of said sheet being water-permeable and the other side being water-repellent, wherein said water-permeable side comprises a polymeric compound having a molecular weight in excess of about 1000 and having free hydrophilic groups selected from hydroxyl and amine groups and said water-repellent side comprises the reaction product of said polymeric compound with a vapor phase mixture comprising acid chloride having the general formula



$$R_1-C(=O)-Cl$$

and aldehyde having the general formula

$$R_2-C(=O)-H$$

wherein $R_1$ and $R_2$ are independently selected from straight or branched-chain aliphatic hydrocarbon radicals having from 1 to about 20 carbon atoms and cyclic hydrocarbon radicals having from 6 to about 20 carbon atoms, further wherein the molar proportion of acid chloride to aldehyde in the vapor phase mixture is greater than about 1:10.

**7.** A disposable paper container for containing aqueous liquids comprising cellulosic paper which has been exposed along the side normally coming into contact with aqueous liquids to a vapor phase mixture comprising acid chloride having the general formula

$$R_1-C(=O)-Cl$$

and aldehyde having the general formula

$$R_2-C(=O)-H$$

wherein $R_1$ and $R_2$ are independently selected from straight or branched-chain aliphatic hydrocarbon radicals having from 1 to about 20 carbon atoms and cyclic hydrocarbon radicals having from 6 to about 20 carbon atoms, further wherein the molar proportion of acid chloride to aldehyde in the vapor phase mixture is greater than about 1:10.

**10.** A disposable article of sanitary clothing according to claim **9** wherein said article is suitable for use as a diaper.

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**3,934,588**

## DISPOSABLE DIAPER HAVING FACING LAYER WITH PATTERNED PREFERENTIAL FLOW AREAS

**Frederick K. Mesek, Downers Grove; Virginia L. Repke, Oak Forest, and William R. Strickel, Chicago, all of Ill., assignors to Johnson & Johnson, New Brunswick, N.J.**

**Filed Aug. 20, 1974, Ser. No. 498,891**

**Int. Cl.² A61F** *13/16*

**U.S. Cl. 128—290 W** **22 Claims**




**1.** A multi-layer diaper comprising: a porous, imperforate facing layer in the form of a non-woven fabric formed of long fibers and short fibers, said facing layer having separate and discrete areas of preferential liquid flow throughout at least the central portion of its areas arranged sufficiently closely to each other so that no point in the central portion of the facing layer is more than one inch away from an area of preferential liquid flow; a highly porous, loosely compacted, cellulosic fibrous batt in face-to-face juxtaposition with the inner face of said facing layer; and a water-impervious backing sheet adhered to the outer surface of said batt.

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**3,934,589**

## SURGICAL INSTRUMENT FOR STERILIZING WOMEN BY LIGATURE OF TUBES

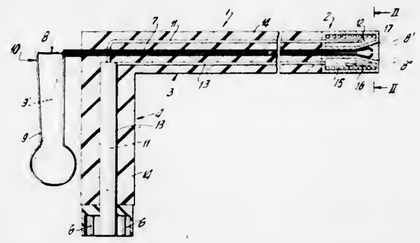
**Hildebrand Zimmer, Ahrensburg, Germany, assignor to Dragerwerk Aktiengesellschaft, Germany**

**Filed May 24, 1974, Ser. No. 473,220**

**Claims priority, application Germany, May 26, 1973, 2326988**

**Int. Cl.² A61B** *17/36*, *17/28*

**U.S. Cl. 128—303.1** **6 Claims**




**1.** A surgical instrument for sterilizing women by necrosis of tubes, comprising a tubular probe having a bore therethrough and an enlarged cavity at a distal end thereof, tongs extending through the bore with a gripper jaw extending out the distal end of the cavity for engaging the tubes and being retractable into the enlarged end of the bore after it is engaged with the tubes, said tongs having an operating handle exteriorly of the probe for shifting the tongs in the bore and for operating the jaws of said tongs, means for directing a coolant to said probe around said gripper jaw when it is retracted into the cavity for freezing the tubes, and heater means in the vicinity of said gripper jaw when it is retracted for heating said tubes.

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**3,934,590**

## OCULAR POSITIONING DROPLET DISPENSING DEVICE

**Gary J. Campagna, 236 Willow Ave., and Roland C. Janson, 114 Granada Drive, both of Corte Madera, Calif. 94925**

**Filed Nov. 21, 1974, Ser. No. 525,761**

**Int. Cl.² A61M** *7/00*

**U.S. Cl. 128—233** **3 Claims**




**1.** An ocular-positioning device for a standard soft-sided squeeze bottle of ophthalmic liquid having a reduced externally threaded droplet discharge nozzle and an internally threaded closure cap threadable on said nozzle, comprising:

an open top socket having a bottom wall formed with a normally horizontally disposed medial opening therein dimensioned to receive said nozzle and having an upstanding circumferentially disposed support structure on said wall, said structure being formed to slidably receive and embrace and support in vertically inverted position the side wall of said bottle with said nozzle extending through said opening;

a leg secured to and depending from said socket and having a concavely notched lower end structured to seat upon

and rotationally index with the bridge of the user's nose and to position said opening in vertically spaced alignment over the user's eye;

a pair of legs secured to and depending from said socket and having lower ends spaced on opposite sides of the axis of said opening and spaced from said first-named end and positioned to engage and rest upon the user's brow and cheek bone and to support said nozzle in spaced relation to the user's eye, the lower ends of said legs terminating in a common normally horizontal plane substantially parallel to the plane of said opening for supporting said device and said inverted bottle on a table top or the like in the storage mode of said device; and

said cap being threadable onto said nozzle at the normally under side of said wall to demountably secure said bottle in inverted position in said socket in said storage mode of said device.

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**3,934,591**

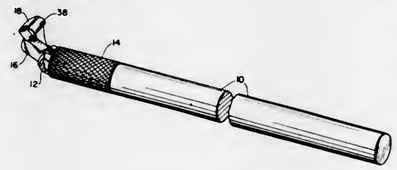
## DERMATOME

**Robert W. Gleason, 4608 Sharon Road, Camp springs, Md. 20031**

**Filed Mar. 20, 1974, Ser. No. 453,035**

**Int. Cl.² A61B** *17/322*

**U.S. Cl. 128—305.5** **11 Claims**



1. A dermatome comprising: a handle, a gripping device in the handle; blade support and cutting guide means; and cutting blade means mounted in the gripping device; said blade means comprising a generally elongate, flexible blade having a central, cutting portion and flat end portions bent from said central portion into juxtaposed, face to face abutting relationship, and said blade support and cutting guide means comprising a lateral support portion disposed beneath and generally coextensive with the long dimension of said blade central cutting portion and a base portion having means for mounting said blade flat end portions, said base portion being engaged and clamped by said gripping device, said lateral portion comprising a support, said blade central cutting portion being mounted on and over said support in predetermined spaced relationship thereto.

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**3,934,592**

## SUTURE BRIDGE

**Sidney Wolvek, Brooklyn, and Sol Sobel, Manhasset Hills, both of N.Y., assignors to Technibiotics, Inc., Brooklyn, N.Y.**

**Filed Mar. 14, 1974, Ser. No. 451,305**

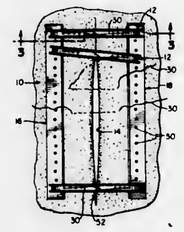
**Int. Cl.² A61B** *17/08*

**U.S. Cl. 128—335** **11 Claims**

1. A surgical bridge assembly for retention sutures looped about an incision in the skin comprising:

at least one bridge adapted to span said incision and terminating in first and second ends having respective first and second end surfaces, with first fastening means on said first end, and second fastening means on said second end;

first and second base means positionable on opposite sides of said incision, the lower surface of each having an area greater than that of said bridge end surfaces for distributing pressure exerted by said bridge ends over a surface area greater than that of said bridge end surfaces, said first base means having a plurality of third fastener means distributed over its surface in a general direction substantially transverse to the span of said bridge and said second base means having a plurality of fourth fastener means distributed over its surface in a general direction substantially transverse to the span of said bridge, said first and third fastener means and said second and fourth fastener



means adapted to form respective releasable connections whereby said bridge may be attached to said base means at a plurality of points therealong.

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**3,934,593**

## STRAPLESS BREAST SUPPORT

**Frederick N. Mellinger, Los Angeles, Calif., assignor to Frederick's of Hollywood, Hollywood, Calif.**

**Filed July 11, 1974, Ser. No. 487,707**

**Int. Cl.² A41C** *3/10*

**U.S. Cl. 128—480** **2 Claims**



1. A soft, pliable strapless breast support having a homogeneous construction comprised of:

a flat form having a firm border defining a soft foam contour cushion;

said flat form being comprised of:

first and second pieces of soft, pliable material;

a flexible plastic foam sandwiched between said first and second pieces of fabric;

means bonding said fabric to said plastic foam;

said border defining said contour cushion being formed by heating and compressing said fabric and said foam to produce a wide semi-circular lower border terminating in a pair of upward extending tabs and a narrow upper border slightly curved in the opposite direction from said wide border joining said wide border adjacent to said tabs;

adhesive means comprised of a non-skin sensitive adhesive coated on one side of said wide border whereby when said wide border is pressed against the chest beneath a breast and said tabs pulled upward, said contour cushion cups and supports said breast.



**3,934,594**

## PROCESS FOR THE MANUFACTURE OF TOBACCO SUBSTITUTE

**Monique Beringer, Saint Louis, France, and Paul Buchmann, Basel, Switzerland, assignors to Tamag Basel AG, Switzerland**

**Continuation of Ser. No. 337,479, March 2, 1973, abandoned. This application Aug. 1, 1974, Ser. No. 493,884**

**Claims priority, application Luxemburg, Mar. 2, 1972, 64889**

**Int. Cl.² A24B** *15/00*; **A24D** *1/18*

**U.S. Cl. 131—2** **4 Claims**

1. A homogeneous tobacco substitute which consists of:

5,000 grams of filler consisting of: one or more of gramineous plants or shells of nuts, cocoa beans or coffee beans,

600 grams magnesium formate

50 grams tartaric acid

300 grams potassium nitrate

1,000 grams paraffinurea

300 grams diammonium hydrogen phosphate

10 grams vanillylideneurea

1,500 grams sodium carboxymethylcellulose

1,400 grams glycerine

150 grams diethylene glycol

1,050 grams fruit concentrate

600 grams raw molasses

105 grams malt extract.

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**3,934,595**

## LACQUERS AND WAVESETTING LOTIONS CONTAINING METHYL METHACRYLATE-DIMETHYLAMINO-ETHYL METHACRYLATE-OCTADECYL METHACRYLATE TERPOLYMERS

**Annie Madrange nee Dermain, Saint-Germain-en-Laye, and Christos Papantoniou, Epinay-sur-Seine, both of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France**

**Filed Sept. 11, 1972, Ser. No. 287,845**

**Claims priority, application Luxemburg, Sept. 13, 1971, 63896**

**Int. Cl.² A61K** *7/11*; **A45D** *7/00*

**U.S. Cl. 132—7** **8 Claims**

8. A process for setting hair in waves comprising applying 10–100 cc of a composition having a cosmetic vehicle selected from the group consisting of ethyl alcohol-water, isopropyl alcohol-water and ethyl alcohol-propellant gas and an effective amount of a copolymer possessing tertiary amine groups, said copolymer having an average molecular weight of about 10,000 to 1,500,000 and comprising 16–43% methyl methacrylate, 25–54% dimethylamino-ethyl methacrylate and 12–52% octadecyl methacrylate, winding the hair on curlers and drying the hair.

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**3,934,596**

## SHAMPOOING APPARATUS

**George Suntheimer, Hanover; John R. Howatt, Waltham, and Emanuel J. Consales, Winchester, all of Mass., assignors to Robert B. Patterson; Mary D. Patterson and William A. Patterson, all of Braintree, Mass.**

**Filed Nov. 23, 1973, Ser. No. 418,559**

**Int. Cl.² A45D** *19/00*

**U.S. Cl. 132—9** **36 Claims**

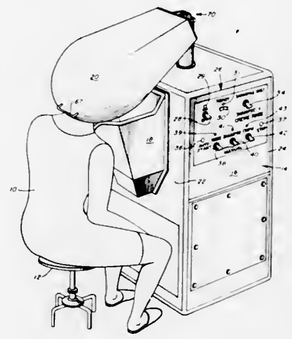
1. An apparatus for cleansing a person's hair and scalp comprising;

a sink having a liquid drain for removing liquid from the sink,

means for supporting the sink,

means defining a rest for the face of the person, said rest disposed in the sink in a fixed position relative to the sink and having liquid sealing means, whereupon the person may assume a seated position and have the face contacting the liquid sealing means of the rest and directed generally downwardly,

a hood means movable to cover the scalp of the person, one of said hood means and sink having liquid sealing means associated therewith,



and means disposed within said hood means in a fixed position relative to the hood means for directing water or shampoo at the scalp.

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**3,934,597**

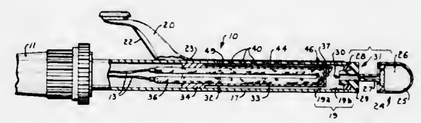
## HAIR CURLING INSTRUMENT

**Samuel L. McNair, Overland Park, Kans., assignor to Dazey Products Co., Kansas City, Mo.**

**Filed July 17, 1974, Ser. No. 489,133**

**Int. Cl.² A45D** *2/24*

**U.S. Cl. 132—37 R** **2 Claims**



1. A hair curling instrument adapted to heat or dispense steam to curls of hair wound thereon, the instrument comprising:

handle means adapted to be grasped by the user;

steam tube means for producing and dispensing steam, said tube means interconnected with said handle means and comprising

a tubular, cylindrical outer shell, said shell having a plurality of steam passage holes defined therein,

a generally cylindrical heating tube located interiorly of said shell in coaxial relationship therewith, said heating tube including means for producing heat to vaporize liquid in contact with said heating tube,

a steam chamber adapted to receive liquid, said steam chamber being in contact with said heating tube and communicating with said steam passage holes,

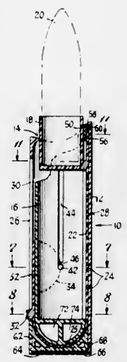
baffle means in said steam chamber, said baffle means comprising a thin sheet of material curved to conform generally with the inside curvature of said tube and disposed within said tube and between said means for producing heat and said holes and including spacer means spacing said sheet from the inside of the tube to permit flow of steam between said sheet and the inside of the tube to and out through the holes, and

means for injecting liquid into said steam chamber.

## 3,934,598
## COSMETIC HOLDER AND APPLICATOR

Thomas H. Hayes, Westport, Conn., and Efrem Ostrowsky, Highland Park, Ill., assignors to VCA Corporation, Greenwich, Conn.

Continuation of Ser. No. 323,838, Jan. 15, 1973, abandoned. This application July 10, 1974, Ser. No. 487,309
Int. Cl.² A45D *40/26*
U.S. Cl. 132—88.7 17 Claims

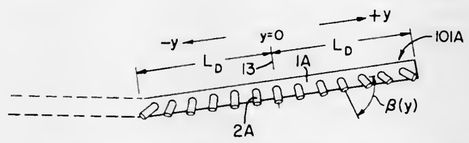


1. A cosmetic stick holder and applicator device, comprising in combination:
a. a hollow, essentially cylindrical casing having an opening at one end,
b. an internal curved guide member closely confined within the casing,
c. a cup disposed in said casing and adapted to carry the cosmetic stick, said cup being movable longitudinally between advanced and retracted positions,
d. a bendable, tenuous, elongate, flat push-pull strip disposed within the casing and having one end portion connected to the cup to shift the latter,
e. guide means for said strip, including a direction reversing guide carried by the internal guide member, confining opposite end portions of said strip for opposite movements respectively within the casing, said strip extending along and closely adjacent to diametrically opposed portions of said casing,
f. said casing having a longitudinal slot extending along the other end portion of said strip,
g. a finger piece connected with said other end portion of the push-pull strip and extending outwardly through said slot,
h. a thin, waferlike closure member having a convex-concave shape, said member being of arcuate cross-section and having a generally oval configuration when flat,
i. said closure member being connected to the other end of said push-pull strip and being movable along the inside surface of said casing from a retracted position intermediate the casing ends to an advanced, tilted position wherein it extends across and closes the open end of the casing in response to sliding of the finger piece along the slot of the casing for the purpose of shifting the cup and cosmetic stick carried thereby from the advanced to the retracted positions, and
j. cooperable means on the internal guide member and closure member for effecting said tilting of the latter as it approaches the open end of the casing.

## 3,934,599
## SUBMERGED MULTIPORT DIFFUSERS FOR COOLING WATER DISCHARGE

Gerhard H. Jirka, Belmont, and Donald R. F. Harleman, Lexington, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed May 10, 1974, Ser. No. 468,852
Int. Cl.² C02C *1/00*
U.S. Cl. 137—1 5 Claims




5. A method of diffusing buoyant fluids, such as cooling water, sewage effluents and the like, into a large body of fluid and adapted to maximize diffusion of the discharged fluid into the ambient fluid that comprises: moving the discharge fluid along a flow duct at the bottom of the large body of fluid; discharging the buoyant fluid at a large number of locations along said flow duct, the direction of discharge of the buoyant fluid being a variable angle equal to or substantially equal to $\beta(y)$ with respect to the orientation of the flow duct, wherein

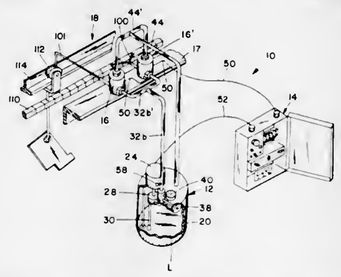
$$\beta(y) = \cot^{-1}\left(\frac{1}{\pi}\log\frac{1+y/L_D}{1-y/L_D}\right)$$

and wherein $y$ is the distance in either direction along said flow duct measured from the center of the discharge region and $L_D$ is the half length of the discharge region.

## 3,934,600
## LUBRICANT SYSTEM

William C. Murphy, Fremont, Mich., assignor to Shock V Automatic Lubrication Systems, Inc., Fremont, Mich.

Continuation-in-part of Ser. No. 382,892, July 26, 1973, abandoned. This application Dec. 2, 1974, Ser. No. 528,653
Int. Cl.² F16K *11/07, 3/04*
U.S. Cl. 137—2 4 Claims



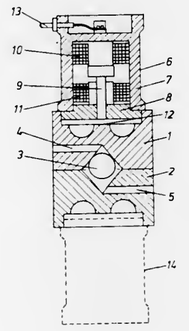
1. Lubricant dispensing apparatus employing a shock pulse, comprising:
lubricant source means;
recycle conduit means having an outlet from said source means and a return back to said source means;
solenoid valve means in said conduit means, including an inlet from said conduit means, a first outlet back to said conduit means, and a second outlet;
a fitting in said second outlet including at least one capillary discharge tube therefrom, for dispensing lubricant;
a valve seat at said second outlet, said solenoid valve means including a plunger shiftable from a first position on said valve seat closing said second outlet while said first outlet is open for dynamic recirculatory flow of lubricant from said source means through said conduit means and said valve means, to a second valve position momentarily restricting the recirculatory dynamic flow while opening said second outlet and exposing said capillary outlet means to the shock pulse from the restricted dynamic lubricant flow;
said valve means having a minimal amount of volume between said valve seat and said fitting, whereby insignificant amounts of lubricant are retained downstream of said valve seat including said capillary discharge tube.



## 3,934,601
## METHOD OF AND ARRANGEMENT FOR FEEDING PRESSURE FLUID IN PULSES

Erik Volmar Lavon, Saltsjo-Boo, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed July 15, 1974, Ser. No. 488,504
Claims priority, application Sweden, Aug. 1, 1973, 7310580
Int. Cl.² F16K *31/44*
U.S. Cl. 137—14 8 Claims



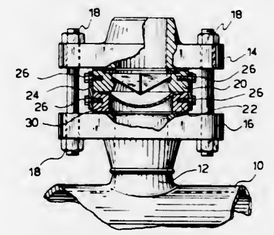
1. In a method of discharging pressure fluid through a valve by using fluid pressure as driving power, said valve including a housing, a pressure fluid conduit means in said housing, a valve body in said housing, and a valve seat in said housing on communication with said fluid conduit means for normally sealingly cooperating with said valve body to normally block said fluid conduit means, the improvement comprising:
generating shock waves in said housing by delivering impacts thereagainst for momemtarily lifting said valve body from said seat in a direction opposite to the direction of the fluid flow to momentarily unblock said fluid conduit means to discharge a pulse of pressure fluid.

5. A valve arrangement for discharging pressure fluid by using the fluid pressure as driving power comprising:
a housing;
a pressure fluid conduit means in said housing;
a valve body in said housing;
a valve seat in said housing in communication with said fluid conduit means for normally sealingly cooperating with said valve body to normally block said conduit means;
an impacting device attached to said housing; and
means for actuating said impacting device to impact said housing to generate shock waves in said housing for momentarily moving said valve body from said valve seat in a direction opposite to the direction of the fluid flow in said pressure fluid conduit means to momentarily unblock said conduit means to discharge a pulse of pressure fluid.

## 3,934,602
## RUPTURE DISC STRUCTURE

George Robert Muddiman, Beaconsfield, and Fred Edge, Lachine, both of Canada, assignors to Process Equipment Limited, Montreal, Canada

Filed Jan. 21, 1974, Ser. No. 435,247
Claims priority, application Canada, Aug. 27, 1973, 179622
Int. Cl.² F16K *17/40*
U.S. Cl. 137—68 9 Claims

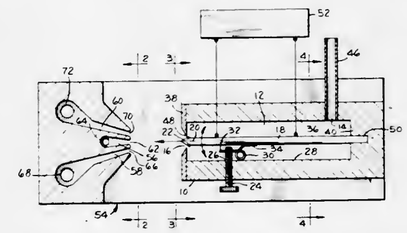


1. In a reverse buckling rupture disc device having a supporting member and a rupture disc associated therewith, the improvement wherein said device includes a sub-assembly releasably mounted in said supporting member, said sub-assembly comprising at least one cutting means, means for releasably mounting said sub-assembly to said supporting member, and means for frictionally mounting said cutting means in said sub-assembly, said cutting means comprising at least one cutting blade frictionally mounted at opposed ends thereof by said mounting means for said cutting means whereby said cutting means are releasably engageable with said sub-assembly to permit ready replacement of said cutting means when the latter has become worn or dulled.

## 3,934,603
## FLUIDIC UPSTREAM CONTROL OF THE DIRECTIONAL FLOW OF A POWER JET EXITING A FLUIDIC POWER NOZZLE

Howard William Avery, Schenectady, N.Y., assignor to General Electric Company, New York, N.Y.

Filed Jan. 8, 1974, Ser. No. 431,592
Int. Cl.² F15C *3/10*
U.S. Cl. 137—83 13 Claims



1. A fluidic device having a plenum chamber, an input port to said plenum chamber for receiving a supply of fluid, and a power nozzle contiguous with said plenum chamber for generating a power jet, said device including means located upstream of said power nozzle for controlling the directional flow of the power jet exiting said power nozzle, said controlling means comprising:
a. a plate defining one end wall of said plenum chamber and having a sharp edged orifice formed within said plate to define said power nozzle;
b. an elongated movable transducer element positioned within said plenum chamber and surrounded by the gas

therewithin, one end of said element being positioned adjacent said power nozzle; and

c. means for changing the position of said one end of said element relative to said power nozzle for controlling the directional flow of the power jet exiting said power nozzle, said changing means including:

i. adjustible means for applying a fixed mechanical bias to said transducer element; and

ii. signal means coupled to said transducer element for varying the position of said one end of said transducer element adjacent said power nozzle in response to corresponding variations in said signal means.

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**3,934,604**

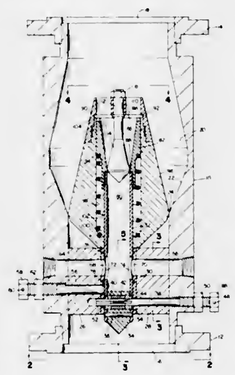
**PROPORTIONING APPARATUS**

**Ian S. Sanderson, Kennebunk, and John C. Hardy, Gorham both of Maine, assignors to Rockwood Systems Corporation, South Portland, Maine**

**Filed Aug. 30, 1974, Ser. No. 502,052**

**Int. Cl.² G05D** *11/02*

**U.S. Cl. 137—98** **14 Claims**



**1.** Proportioning apparatus comprising:

a tubular valve housing comprising a housing inlet adapted for connection to a primary liquid source, a housing outlet, and a housing passage therebetween, said housing passage having a first outwardly extending wall facing said housing outlet;

a first valve body in said housing passage movable between a first position at said first wall and a second position remote therefrom toward said housing outlet, said first valve body and said first wall adapted for coaction to close said housing passage with said first valve body in said first position thereof and to progressively open said passage on movement of said first valve body toward said second position thereof;

a tubular sleeve mounted and extending coaxially within said housing passage, said sleeve having an outer dimension smaller than the minimum inner dimension of said housing passage, said sleeve comprising a sleeve inlet adapted for connection to a secondary liquid source, a sleeve outlet within said housing and facing said housing outlet, and a sleeve passage therebetween, said sleeve passage having a second outwardly extending wall facing said housing outlet, said first and second walls having the same cross-sectional configurations;

a second valve body in said sleeve movable between a first position at said second wall and a second position remote therefrom toward said housing outlet, said second valve body having a maximum dimension smaller than the dimension at said first position of said second valve body, of said sleeve passage, said second wall extending from said first position of said second valve body toward said second position thereof and outwardly tapered having a progressively greater inner dimension in a direction toward said second position of said second valve body, said second valve body and said second wall adapted for coaction to close said sleeve passage with said second valve body in said first position thereof and to progressively open said passage on movement of said second valve body toward said second position thereof;

said first valve body being tubular and being slidably mounted on said sleeve with said sleeve extending therethrough, said first valve body slidable on said sleeve between said first and second positions thereof;

said second valve body connected to said first valve body and movable between said first and second positions thereof with said first valve body for proportional opening of said housing and said sleeve passages together, said first and second positions of said first valve body corresponding to said first and second positions of said second valve body; and

biasing means connected to one of said valve bodies urging said valve bodies to their respective first positions.

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**3,934,605**

**MODULAR DISTRIBUTOR BOX FOR FLUIDS**

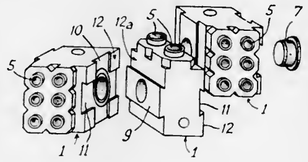
**André Legris, St-Maur, France, assignor to Societe Legris France S.A., Ozoir-la-Ferriere, France**

**Filed June 28, 1974, Ser. No. 484,244**

**Claims priority, application France, July 3, 1973, 73.24472**

**Int. Cl.² F15C** *4/00*; **F16L** *23/00*

**U.S. Cl. 137—271** **13 Claims**



**1.** A modular distributor box for distributing a fluid, comprising a linear assembly of a plurality of juxtaposed modules, each said module having:

a. a prismatic module body having a pair of oppositely facing faces and further faces extending transversely to and between said opposite faces;

b. said body having a central bore, the wall of said bore defining a central conduit extending through said module body from the center of one of said oppositely facing faces to the center of the other of said oppositely facing faces and being open at its ends at said oppositely facing faces;

c. said body having at least two relatively long and narrow intersecting grooves of identical cross-section formed in one of said oppositely facing faces, each of said grooves increasing in width in the direction inwardly of said body from the oppositely facing face in which it is formed and the intersection of said grooves being at the open end of said conduit at said last-mentioned face;

d. said body having a projection extending from the other of said oppositely facing faces and having a cross-section conforming to that of each groove whereby said projection may be inserted in and interlock with either of said grooves thereby permitting one module to be secured to another module in at least two different relative positions; and

said modules being interconnected by engagement of a projection on one of the modules with one of the grooves of a contiguous module with the central conduit of one module in register with the central conduit of said contiguous module to form a longitudinal conduit extending along said distributor box, and the body of at least one of said modules also having at least one passageway therein extending from one of said further faces of said last-mentioned body to said central conduit thereof to form a transverse conduit.



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**3,934,606**

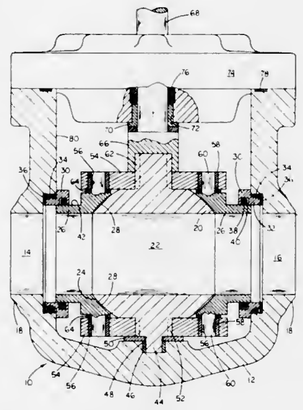
**CAM LOCKED BALL VALVE**

**Raymond E. Matthews, Campbel, Calif., assignor to Grove Valve and Regulator Company, Oakland, Calif.**

**Filed June 20, 1974, Ser. No. 481,040**

**Int. Cl.² F16K** *25/00*

**U.S. Cl. 137—454.6** **6 Claims**



**1.** A trunnion mounted plug valve comprising:

a valve body having a flow passageway therethrough;

a valve seat ring in said body around said flow passageway and movable axially thereof;

a valve plug having a flow port therethrough rotatable in said body between an open position with said flow port aligned with said seat ring and a closed position blocking fluid flow through said seat ring;

a cam plate fixed on said plug around a trunnion thereof to rotate therewith;

an arcuate cam slot in said plate;

a cam follower on said seat ring extending into said slot to be engaged by opposite edges thereof;

said cam slot extending through approximately 90° around the trunnion axis and curving closer to said axis at one end thereof so that said cam slot and follower are operative to move said seat ring axially away from said plug when said plug is rotated from said closed position, to move said seat ring positively into firm engagement therewith as said plug is rotated into its closed position, and to lock it in firm engagement therewith while in said closed position.

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**3,934,607**

**CONTROL FOR VACUUM SYSTEM**

**Istvan Revesz, Sodertalje, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden**

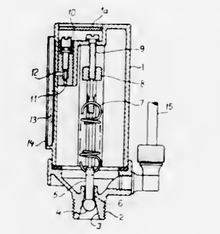
**Filed Sept. 3, 1974, Ser. No. 502,644**

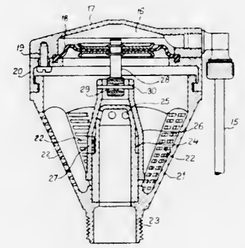
**Claims priority, application Sweden, Oct. 11, 1973, 73/306/73**

**Int. Cl. G05D** *16/06*

**U.S. Cl. 137—489.5** **7 Claims**

**1.** In combination with a vacuum system, a device for controlling the vacuum level in said system, said device comprising an indicator for sensing a deviation from a balance between a force generated by the vacuum level actually prevailing in said system and a force of constant magnitude permanently acting in the indicator, said indicator being operable to generate a deviation impulse corresponding to said deviation, an air admission valve connected to the vacuum system and having a closed chamber, and means associated with the indicator for transmitting said deviation impulse to said closed chamber for controlling the air admission valve under the guidance of said deviation impulse, the indicator including a housing having an interior and also having a throttled air admission opening through which said interior communicates with the outer atmosphere, said housing also having a throttled air discharge passage through which said interior communicates with the vacuum system, said interior also communicating through said transmitting means with said closed chamber of the air admission valve, the indicator also including a valve body actuated by said two forces for controlling the balance between the air admission into and the air discharge from the housing interior, the air admission valve including a space communicating with atmosphere and also including a valve member for controlling air flow from said space to the vacuum system, the air admission valve also including a displaceable wall having a movement-transmitting connection with said valve member, said wall having one side subjected to the pressure in said closed chamber and having its opposite side subjected to the pressure in said space.





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**3,934,608**

**CHECK VALVE**

**Glen B. Guyton, 3401 E. Newton, Tulsa, Okla. 74115**

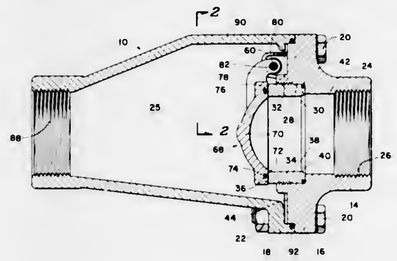
**Filed Nov. 14, 1973, Ser. No. 415,742**

**Int. Cl.² F16K** *15/03*

**U.S. Cl. 137—527.8** **3 Claims**

**1.** A check valve comprising a first housing member having an inlet port provided therein, a second housing member removably secured to the first housing member and having an outlet port therein in substantial alignment with the inlet port, sleeve means removably secured to said first housing member in substantial alignment with the inlet port and having one end thereof extending into the interior of the second housing member to provide a valve seat for the valve, hanger means removably secured between the housing members and retained against one housing member by pressure of the other housing member thereagainst, closure means removably se-

cured to the hanger means and pivotal for cooperation with the valve seat to provide alternate open and closed positions for the valve, said closure means comprising a substantially circular body member, an angled arm member carried by the circular body and extending substantially radially outwardly therefrom, pivot shaft means removably secured to the hanger means and operably connected with the arm member for pivotally securing the closure means to the hanger means, and



means provided on said hanger means for constantly urging the circular body in a direction toward the valve seat to compensate for any dimensional variances of the valve seat and closure means for assuring an efficient sealing of the valve in the closed position thereof, said last mentioned means comprising angularly disposed recess means provided in the hanger means for receiving the pivot shaft means therein whereby gravity constantly urges the pivot shaft in a direction toward the valve seat.

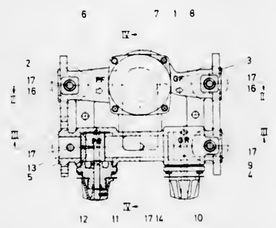
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**3,934,609**

## CONTROL UNIT FOR CENTRAL HEATING SYSTEMS

**Ulw Lars Anders Häggqvist, Vadstena, Sweden, assignor to Vadstena Pumpar AB, Vadstena, Sweden**

**Filed Sept. 16, 1974, Ser. No. 506,112**
**Claims priority, application Sweden, Feb. 8, 1974, 7401681**
**Int. Cl.² F04B** *21/02*
**U.S. Cl. 137—565** **1 Claim**



1. A control unit for central heating systems, said unit comprising a single integral body means, having therein a plurality of openings which are to be connected to main distributing and return pipes and to group distributing and return pipes, a system of enclosed channel means formed within said body, a circulation pump means, a throttle valve means, a shunt valve means and a check valve means associated with said body, a first one of said channel means connecting the opening for said main distributing pipe via said circulation pump means to the opening for said group distributing pipe, a second one of said channel means extending from the opening for said group return pipe through said throttle valve means, and said shunt valve means to the opening for said main return pipe, and a third of said channel means connecting said second channel means via said check valve means to the suction side of said circulation pump means.

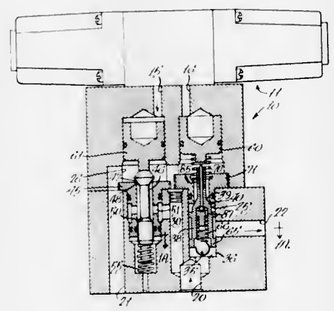
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**3,934,610**

## THREE-WAY CONTROL VALVE

**James C. Solie, Owatonna, Minn., assignor to Owatonna Tool Company, Owatonna, Minn.**

**Filed May 13, 1974, Ser. No. 469,424**
**Int. Cl.² F15B** *13/04*, *13/043*
**U.S. Cl. 137—596.12** **4 Claims**



1. A three-way control valve for use with a single-acting cylinder or the like in control of advance, return or hold operation thereof comprising, a valve body having an inlet port, a control port and a tank port, a first bore in said body in communication with all three of said ports, a first poppet check valve in said first bore and having a valve seat whereby, when seated, flow from the control port to the inlet port is blocked, a second poppet check valve in said first bore and having a valve seat whereby, when seated, flow from the control port to the tank port is blocked, a second bore in said body in parallel adjacent relation to said first bore and in communication with said inlet port and the tank port, a spool valve in said second bore with spaced opposed lands and one of said lands defining a poppet valve member coacting with a valve seat to control flow to the tank port, a passage connecting said first bore with said second bore intermediate said spaced opposed lands of said valve spool for fluid flow from the inlet port to the tank port, the poppet valve member in said second bore having an open position to permit flow from the inlet port to the tank port in hold and return operations and to block said flow in an advance operation whereby fluid flows past said first check valve to said control port, means for positioning said poppet valve member, both of said check valves being held on their respective valve seats by fluid pressure in a hold operation, means for opening said second check valve and holding said first check valve closed in a return operation to permit fluid flow from the control port to the tank port, and decompression valve means operable to bleed fluid from the control port to the tank port to reduce said fluid pressure and reduce the force required to open said second check valve, said decompression valve means including a relatively small poppet valve carried by said second check valve, spring means acting between said first check valve and said small poppet valve, a movable pin for opening said small poppet valve, and a movable member for sequentially engaging said pin and said second check valve.



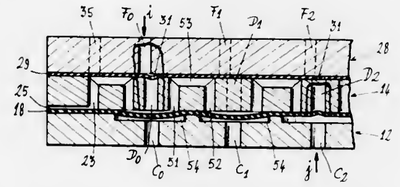
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**3,934,611**

## COMPARATOR FOR CODED SIGNALS REPRESENTED BY A PRESSURE OF FLUID

**Jean Gachot, 26, avenue de Paris, Soisy-sous-Montmorency, Val dOise, and Simeon Lekarski, 138, boulevard de la Republique, Saint Cloud, Hauts-de-Seine, both of France**

**Filed July 13, 1973, Ser. No. 378,993**
**Claims priority, application France, Aug. 4, 1972, 72.28245**
**Int. Cl.² F15C** *3/04*
**U.S. Cl. 137—608** **1 Claim**



1. A comparator for signals which are coded in a predetermined number system and represented by a fluid pressure, wherein said comparator comprises a first and a second rigid block which are pierced by first and second series of transverse ducts arranged in rows to receive a fluid pressure representing respectively a first and a second input signal, at least one elastic membrane which separates the two blocks, a first and a second output duct pierced in the second block at each end of said second series of transverse ducts, means responsive to fluid pressure representing the second signal in order to deform the elastic membrane and to permit propagation of said pressure in the direction of said two output ducts, and means responsive to fluid pressure representing the first signal in order to deform the elastic membrane and to prevent propagation of said pressure representing said second input signal beyond the duct corresponding to said first input signal, the second block having between each said duct two adjacent auxiliary ducts, one end of each of said auxiliary ducts opening on the membrane, the other end of each of said auxiliary ducts being connected to each other, each duct of the first block opening into a chamber which is limited by the membrane and is so located that one duct of the second block and the two adjacent auxiliary ducts open on and are positioned to be closed by the membrane in front of said chamber upon application of said fluid pressure representing the first signal.

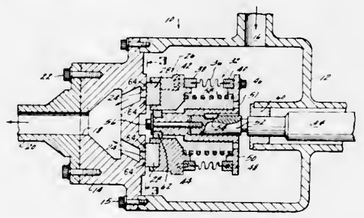
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**3,934,612**

## FLUID VALVE WITH WIDE TEMPERATURE RANGE

**Howard Berdolt Kast, Fairfield, Ohio, assignor to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.**

**Filed July 8, 1974, Ser. No. 486,471**
**Int. Cl.² F16K** *47/06*
**U.S. Cl. 137—625.3** **9 Claims**



1. A valve comprising:

a housing having an inlet and outlet therefrom,

a valve plate having at least one window therethrough for receipt of a flow of fluid from the valve inlet,

a rotating member in spaced relation with the valve plate having at least one ceramic pad in sliding engagement with the face of the valve plate such that at least one edge of the ceramic pad cooperates with a respective window to form a variable area orifice,

means for moving the rotating member relative to the valve plate, and

wherein the moving means includes a bellows coupling, one end of which connects to the rotating member and the other end of which connects to a rotatable shaft extending from the valve housing.

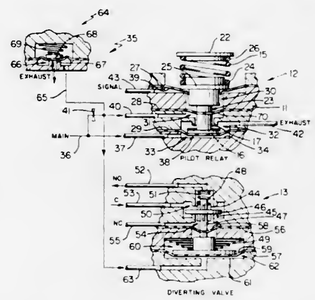
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**3,934,613**

## PNEUMATICALLY OPERATED PILOT RELAY AND SYSTEM AND DIVERTING RELAY CONSTRUCTION UTILIZING THE SAME OR THE LIKE

**Edward N. Caldwell, Knoxville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.**

**Continuation-in-part of Ser. No. 405,132, Oct. 10, 1973. This application Feb. 18, 1975, Ser. No. 550,453**
**Int. Cl.² G05D** *23/00*
**U.S. Cl. 137—625.5** **40 Claims**



1. A pneumatically operated diverting relay construction comprising a pilot relay means and a diverting valve means operatively associated together, said pilot relay means having means for sending a pneumatic pilot output to said diverting valve means to switch said diverting valve means from one condition thereof to another condition thereof when said pilot relay means receives a pneumatic signal of a certain magnitude, said pilot relay means having means for selecting within limits the magnitude of said pneumatic signal that is required for said pilot relay means to produce said pneumatic pilot output for switching said diverting valve means from said one condition to said other condition thereof, said pilot relay means having means for terminating said pneumatic pilot output to cause said diverting valve means to switch from said other condition thereof to said one condition thereof when said pneumatic signal falls to another certain magnitude, said switching of said diverting valve means from said other condition thereof to said one condition thereof taking place with substantially a snap action.

6. A pneumatically operated control system comprising a source of fluid, a pneumatic signal producing means, a pilot relay means, and a diverting valve means, said pilot relay means having means for sending a pneumatic pilot output from said source to said diverting valve means to switch said diverting valve means from one condition thereof to another condition thereof when said pilot relay means receives a pneumatic signal of a certain magnitude from said signal producing means, said pilot relay means having means for selecting within limits the magnitude of said pneumatic signal that is required for said pilot relay means to produce said pneumatic pilot output for switching said diverting valve means from said

one condition thereof to said other condition thereof, said pilot relay means having means for terminating said pneumatic pilot output to cause said diverting valve means to switch from said other condition thereof to said one condition thereof when said pneumatic signal falls to another certain magnitude, said switching of said diverting valve means from said other condition thereof taking place with substantially a snap action.

12. A pneumatically operated pilot relay means comprising a housing means, said pilot relay means having means for sending a pneumatic pilot output when said pilot relay means receives a pneumatic signal of a certain magnitude, said pilot relay means having means for selecting within limits the magnitude of said pneumatic signal that is required for said pilot relay means to produce said pneumatic pilot output, said pilot relay means having means for terminating said pneumatic pilot output when said pneumatic signal falls to another certain magnitude, said pilot relay means having means to cause said pilot relay means to be substantially snap acting when initially terminating said pneumatic pilot output.

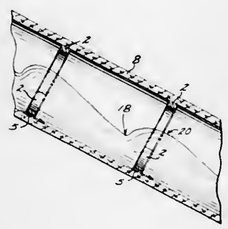
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**3,934,614**

## ENERGY DISSIPATOR RING

**Zoltan Elek, 19222 Sierra Isabelle Road, Irvine, Calif. 92664, and George M. Paulsen, 3936 W. 177th St., Torrance, Calif. 90504**

**Filed Sept. 23, 1974, Ser. No. 508,722**
**Int. Cl.² F15D *1/04***
**U.S. Cl. 138—44** **6 Claims**



2. An inclined closed liquid-carrying conduit having a plurality of spaced-apart energy dissipator rings therein, each ring comprising:

a a plurality of prefabricated ring sections, and

b an expansion device between at least two of said sections for forcing said two sections apart so as to increase the circumference of said ring until it is frictionally locked in place in said conduit.

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**3,934,615**

## SEGMENTED RIGID INSULATED CONDUIT

**Paul Lukomskyj, 14386 Park Drive, and Donald James Gamble, Apt. 4, 11229 - 99 Ave., both of Edmonton, Alberta, Canada**

**Filed Apr. 8, 1974, Ser. No. 458,671**
**Int. Cl.² F16L *9/18***
**U.S. Cl. 138—111** **6 Claims**

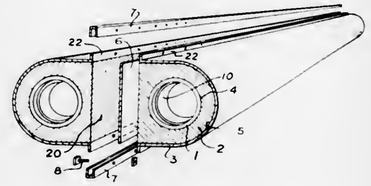
1. A longitudinally-segmented, insulated piping conduit comprising:

a plurality of spaced apart, substantially rigid conveyor pipes;

a plurality of discrete bodies of substantially rigid insulating material, each said body extending around and along the outer surface of a conveyor pipe, for insulating said conveyor pipe;

each said body having a shaped longitudinal surface section mating with a corresponding surface section of another body;

a rigid casing segment encasing each body except its shaped longitudinal surface sections; and



means disengagably connecting together the casing segments, whereby the bodies are protectively encased with their surface sections mated in longitudinal engagement.

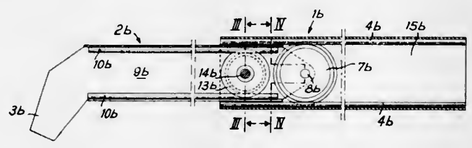
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**3,934,616**

## TELESCOPIC STRUCTURE

**Bernard M. Bourges, Le Plessis Belleville, France, assignor to Societe Anonyme: Poclain, Le Plessis Belleville, France**

**Filed Feb. 27, 1974, Ser. No. 446,232**
**Int. Cl.² F16L *7/00, 9/20***
**U.S. Cl. 138—113** **2 Claims**



1. A telescopic structure comprising:

at least an inner and an outer member which are telescopic one relative to the other; and

means for guiding and/or supporting one of said members relative to the other of said members in four mutually perpendicular directions, said guiding and/or supporting means comprising:

two pairs of wheels arranged between said inner and outer members,

means for coupling each of said pairs of wheels to a respective one of said inner and outer members,

means for mounting at least one of said pairs of wheels for rotation about substantially parallel axes,

a pair of parallel runways in respect of each of said wheels, situated one on each side of the rotational axis of the respective wheel and on which the peripheral surface of the respective wheel bears,

means rigidly attaching each pair of parallel runways to that one of said inner and outer members with which the respective wheel is not coupled, at least two of said pairs of runways being rigidly attached along the external corners of said inner member, and the other two of said pairs of runways being rigidly attached to the internal corners of said outer member,

and wherein one of said runways has a cross-section which is at least partly circular and said peripheral surface of the respective wheel bearing thereon is shaped to be at least partly toroidal with a diameter substantially equal to the diameter of the circular part of said runway and the diameters of the wheels bearing thereon being larger than the diameters of the other wheels.

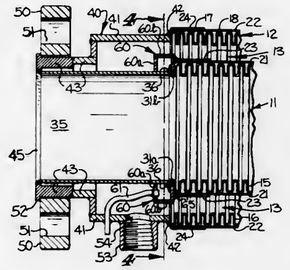


**3,934,617**

## CORRUGATED JACKETED PIPE ASSEMBLY HAVING VENTED ENCLOSURES FOR CONNECTING WELDS

**James R. Henderson, Charlotte, N.C., assignor to Controls Southeast, Inc., Charlotte, N.C.**

**Filed Aug. 26, 1974, Ser. No. 500,698**
**Int. Cl.² F16L *9/18***
**U.S. Cl. 138—114** **21 Claims**



1. A jacketed pipe assembly constructed to avoid cross-contamination and comprising inner and outer tubular members arranged in spaced relation to each other and defining therebetween a fluid-circulating chamber adapted for the circulation therethrough of a temperature controlling fluid for aiding in the flow of a processing fluid through said inner tubular member, said inner and outer tubular members including respective inner and outer elongate corrugated metal tubes, a metal coupling sleeve serving as an extension of said inner corrugated tube and having its inner end abutting one end of said inner corrugated tube, a continuous weld encircling the inner end of said coupling sleeve and connecting the same to the end of said inner corrugated tube, means connecting said coupling sleeve to the end of said outer tubular member and defining therebetween one end of said fluid-encirculating chamber, means within said fluid-circulating chamber surrounding said continuous weld and defining a closed passageway enclosing said continuous weld therein, and vent means communicatively connecting said closed passageway exteriorly of the pipe assembly whereby, in the event of rupture of the continuous weld, leakage into the closed passageway from within said inner corrugated tube will be vented to the exterior of both tubular members and thereby prevent cross-contamination.

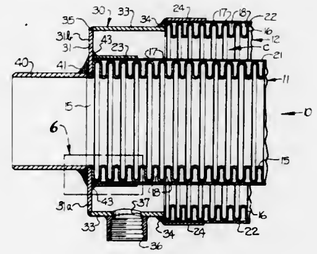
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**3,934,618**

## JACKETED PIPE ASSEMBLY FORMED OF CORRUGATED METAL TUBES

**James R. Henderson, Charlotte, N.C., assignor to Controls Southeast, Inc., Charlotte, N.C.**

**Filed Aug. 26, 1974, Ser. No. 500,744**
**Int. Cl.² F16L *9/18***
**U.S. Cl. 138—114** **26 Claims**



1. A jacketed pipe assembly constructed to avoid cross-contamination and comprising inner and outer tubular members arranged in spaced relation to each other and defining therebetween a fluid-circulating chamber adapted for the circulation therethrough of a temperature controlling fluid for aiding in the flow of a processing fluid through said inner tubular member, and inner and outer tubular members including respective inner and outer elongated corrugated metal tubes, an endless metal member surrounding one end of said inner corrugated tube and extending radially outwardly therefrom, means interposed between and sealingly interconnecting the radially outer portion of said endless metal member and the adjacent end of said outer tubular member to define therewith one end of the fluid-circulating chamber, a metal coupling sleeve serving as an extension of said inner corrugated tube and having its inner end abutting said one of said inner corrugated tube, and a continuous exterior weld encircling the inner end of said coupling sleeve and connecting the same to the end of said inner corrugated tube and to said endless metal member whereby in the event of rupture of the continuous exterior weld, leakage therethrough from within said inner corrugated tube or from said surrounding fluid-circulating chamber will be vented to the exterior of both tubular members and thereby prevent cross-contamination.

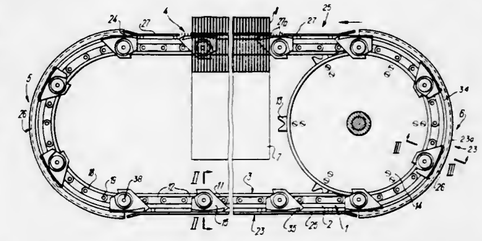
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**3,934,619**

## APPARATUS FOR GUIDING WEFT THREAD CARRIERS THROUGH THE SHED OF A LOOM OF THE SUCCESSIVE SHEDDING TYRE

**Evgeny Dmitrievich Loschilin, Kashirskoe shosse, 36, kv. 87, Domodedovo Moskovskoi oblasti; Alexandr Lvovich Galperin, ulitsa Moldagulovoi, 10, korpus 2, kv. 166, Moscow; Alexandr Alexandrovich Zabotin, ulitsa Profsojuznaya, 96, kv. 85, Moscow; Eduard Arshakovich Onikov, ulitsa Panferova, 5, korpus 2, kv. 106, Moscow, and Boris Alexandrovich Sakharov, ulitsa Krzhizhanovskogo, 24/35, korpus 6, kv. 404, Moscow, all of U.S.S.R.**

**Filed Oct. 2, 1974, Ser. No. 511,115**
**Int. Cl.² D03D *47/26***
**U.S. Cl. 139—12** **3 Claims**



1. An apparatus for guiding weft thread carriers through the successive sheds of a loom of the progressive shedding type, comprising: an encless chain conveyor including a plurality of interconnected links; first members mounted on some of said links and adapted to cooperate with said weft thread carriers for driving same within the shed of said loom; other members mounted on other ones of said links and adapted for cooperation with said weft thread carriers for driving same outside said shed; a stationary substantially closed endless guideway accommodating said endless chain conveyor for travel therealong and including straight and curving portions, said weft thread carriers moving in operation along said guideway; a side wall mounted externally on said guideway, including straight and curving portions corresponding in shape to said respective straight and curving portions of said guideway, said side wall serving as a guide for the lateral side of each said weft thread carrier, said side wall at said curving portions thereof being L-shaped in cross section, one end thereof being mounted on said guideway so that the free end thereof faces said weft thread carrier; an arcuate groove made in the lateral side of each said weft thread carrier adapted to cooperate with said side wall, said groove being adapted to receive said free

end of said curving portion of said side wall as said weft thread carrier moves during operation along said respective curving portions of said guideway.

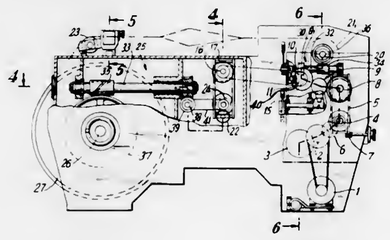
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**3,934,620**

## SYNCHRONIZING APPARATUS FOR THE DRAWING ROLLER AND THE WARP BEAM IN A LOOM

**Francisco Marlasca Garcia, 44 Plaza Castilla Sabadell, Barcelona, Spain**

**Filed Nov. 15, 1973, Ser. No. 416,058**
**Claims priority, application Spain, Nov. 24, 1972, 408963**
**Int. Cl.² D03D** *49/06, 49/20*
**U.S. Cl. 139—99** **4 Claims**



1. Apparatus for use in a loom including a drawing roller and a warp beam for affording automatic and synchronized drive between said drawing roller and said warp beam, comprising means for affording direct transmission between said drawing roller and said warp beam, said means including an intermediate shaft, a first reduction assembly in engagement with said intermediate shaft for driving said drawing roller, a first variator having a primary shaft, a pinion on said intermediate shaft for driving said primary shaft of said first variator, a device in operative engagement with said intermediate shaft for controlling the density of the fabric loomed, and a second reduction assembly in operative engagement with said variator and said warp beam so that, independent of the speed of the loom, any variation in the density of the fabric is automatically corrected in said warp beam.

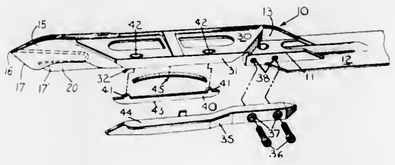
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**3,934,621**

## CARRIER FOR SHUTTLELESS LOOMS

**Anthony J. Tosches, Milford, Mass., assignor to Rockwell International Corporation, Pittsburgh, Pa.**

**Filed Mar. 18, 1975, Ser. No. 559,498**
**Int. Cl.² D03D** *47/22*
**U.S. Cl. 139—122 N** **4 Claims**



1. An improved carrier for inserting weft yarn into the shed formed between warp yarns on a loom of the type in which the weft yarn is supplied from a source outside of the warp and is inserted into the shed by a carrier which is attached to a reciprocating carrier, said improved carrier comprising:
1 a main body portion for attachment to the inserter
2 a rear wall extending outwardly from said main body in a direction away from the inserter
3 an upper extension extending outwardly from said rear wall to a terminus and having a generally downwardly facing yarn engaging surface,
4 a lower extension extending outwardly from said rear wall to a terminus and having a generally upwardly facing yarn engaging surface, and
5 said yarn engaging surfaces of said upper and lower extensions being
a. laterally offset with respect to each other in a direction transverse to the direction of inserter travel and
b. vertically overlapping in a direction normal to the directon of inserter travel.

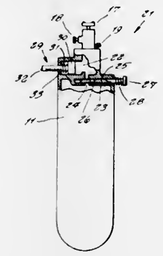
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**3,934,622**

## TIRE SAVER

**George Vitack; Rose Vitack; Josephine Vitack, all of c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, all of New York, N.Y. 10007**

**Filed July 16, 1973, Ser. No. 379,617**
**Int. Cl.² B65B** *3/04*
**U.S. Cl. 141—18** **2 Claims**



1. An air pressure tank for tire inflation, comprising an air pressure storage chamber, a tire inflation chamber, an inlet to said inflation chamber and a partition separating the storage chamber from the inflation chamber, including a passageway through said portion providing communication between said chambers, in further combination with a normally closed valve controlling flow through said passageway, including an inlet valve mounted in said inlet for filling the tank with air, further including a pressure guage mounted in the inflation chamber and extending slidably through the tank to the exterior to indicate the pressure in said inflation chamber, in still further combination with a tire inflation valve communicating with the inflation chamber for tire inflating purposes.

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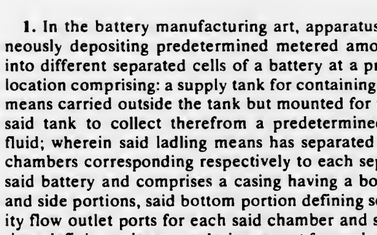
**3,934,623**

## VALVE COVER HAVING OIL CAN OPENER

**Wilford R. Hays, 2218 Princeton Ave., Los Angeles, Calif. 90026**

**Filed Oct. 30, 1974, Ser. No. 519,089**
**Int. Cl.² B65B** *3/04*
**U.S. Cl. 141—98** **7 Claims**

1. A valve cover for an engine having a built in can opener comprising:
an elongated trough member defined by a top wall and a side wall, the free edges of said side wall being integrally connected to a mounting flange for securing the valve cover to an engine block;
a cylindrically-shaped cavity whose axis intersects the plane of said mounting flange said cavity walls extending from said valve cover mounting flanges to a top wall adjacent said valve cover top wall and having means for opening oil cans inserted therein, said cavity walls being integrally formed with said valve cover side wall and said mounting flange; and



a removable cap positioned over said cavity adjacent said valve cover top wall.

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**3,934,624**

## ACID FILLING APPARATUS FOR BATTERIES OR THE LIKE

**William J. Eberle, Reading, Pa., assignor to General Battery Corporation, Reading, Pa.**

**Filed Dec. 10, 1973, Ser. No. 423,317**
**Int. Cl.² H01M** *7/00;* **B65B** *3/06*
**U.S. Cl. 141—100** **6 Claims**



1. In the battery manufacturing art, apparatus for simultaneously depositing predetermined metered amounts of fluid into different separated cells of a battery at a predetermined location comprising: a supply tank for containing fluid; ladling means carried outside the tank but mounted for immersion in said tank to collect therefrom a predetermined amount of fluid; wherein said ladling means has separated independent chambers corresponding respectively to each separate cell in said battery and comprises a casing having a bottom portion and side portions, said bottom portion defining separate gravity flow outlet ports for each said chamber and said side portions defining at least one drainage port for each said chamber for independently limiting the fluid content of each said chamber of said ladling means, said casing having opening means at an upper end separate from said gravity flow outlet ports, for inflow of fluid upon immersion of said ladling means; means for connecting said ladling means to said battery for transferring fluid therebetween; and means mounting said ladling means for periodic immersion in said tank and for raising said ladling means above said predetermined location, whereby the fluid automatically flows under the influence of gravity from said ladling means to said battery.

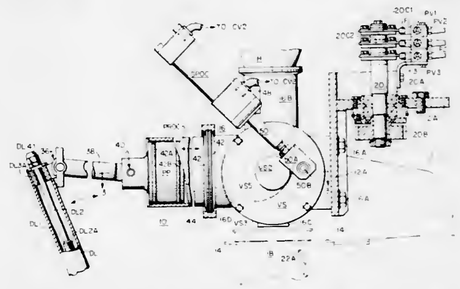


**3,934,625**

## FOOD DISPENSING VALVE MEANS AND CONTROL SYSTEM FOR AUTOMATIC CONTAINER FILLING MACHINES

**Stanton W. Tiernan, Baltimore, and Richard R. Epple, Glen Burnie, both of Md., assignors to Maryland Cup Corporation, Owings Mills, Md.**

**Filed Sept. 30, 1974, Ser. No. 510,575**
**Int. Cl.² B65B** *3/04*
**U.S. Cl. 141—115** **19 Claims**



1. Means for dispensing measured charges of food product and the like from a feed hopper to each of a plurality of containers presented in sequence at a filling position, comprising:
a product cylinder having a piston reciprocable therein to provide charge and discharge strokes;
valve means having a charging port communicating with said feed hopper, a product port communicating with said product cylinder, a discharge port proximate to said container filling position and a valve element selectively interconnecting said product cylinder with said feed hopper and said discharge port;
first drive means reciprocating said piston to draw and return food product from and to said feed hopper and to discharge food product through said discharge port from said product cylinder as a function of the position of said valve element; and
second drive means for said valve element positioning said valve element in a first position to interconnect said product cylinder with said feed hopper and in a second position to interconnect said product cylinder with said discharge port in synchronism with said piston; and
timing means responsive to a predetermined position of said piston means during said discharge stroke to constrain said second drive means to switch said valve element from said second to said first position such that the remainder of said discharge stroke will return food product from said product cylinder back to said feed hopper and abruptly cut off the flow of food product through said discharge port to agitate the food product in said hopper and preclude tailing at said discharge port.

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**3,934,626**

## ANTI-DRIP INJECTION NOZZLE FOR PLASTIC MOLDING

**John L. Hall, 1491 Mar Vista Ave., Pasadena, Calif. 91104**

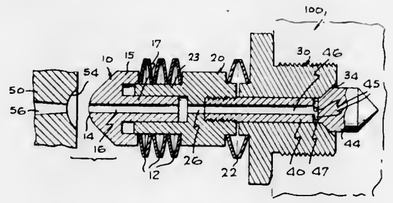
**Filed May 17, 1974, Ser. No. 470,842**
**Int. Cl.² B65B** *3/04, 39/02*
**U.S. Cl. 141—117** **4 Claims**

1. An anti-drip plastic material injection nozzle for pressing against the sprue bushing of a plastic-receiving mold comprising:
a valve block for securement to a plastic conditioning chamber containing molten plastic, a first central bore through said valve block, a valve seat terminating said first central bore at its conditioning chamber end;
a valve stem disposed within said first central bore in slidable engagement with said valve block and having a valve head on one end adapted to seat against said valve seat

and having a second and opposite end exterior of said valve block, said valve stem having a second central bore coaxial with said first central bore and extending from said second end to said valve head;

a tappet block mounted on said second end of said valve stem, a third central bore through said tappet block and in alignment with said second central bore;

a primary spring disposed between said valve block and said tappet block in compression so as to tend to maintain separation between said tappet block and said valve block for tending to maintain said valve head against said valve seat;



a nozzle head mounted on said tappet block in longitudinally slidable engagement therewith and having a fourth central bore therethrough in alignment with said third central bore; and

a secondary spring mounted between said tappet block and said nozzle head and tending to urge said nozzle head away from said tappet block, said secondary spring having a lower spring rate than said primary spring so that said secondary spring acts to maintain sealing engagement between said nozzle head and said sprue bushing effectively independently of said primary spring, and such plastic material being confined in its travel from such conditioning chamber through said aligned bores to said sprue bushing.

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**3,934,627**

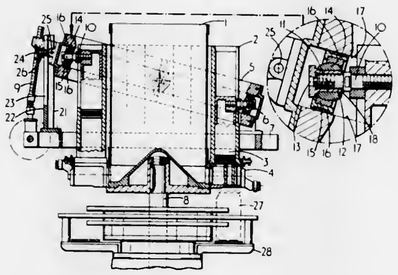
**FILLING MACHINES**

**Douglas Stewart Buick, 8 Duff St., Dundee, Scotland**

**Filed Aug. 15, 1974, Ser. No. 497,725**

**Int. Cl.² B65B** *57/06*

**U.S. Cl. 141—146** **10 Claims**



1. A filling machine for filling containers includes a receptacle for holding the substance to be filled, cylinders disposed in a circle around the exterior of the receptacle, the axes of the cylinders being vertical, a piston slidable in each cylinder, an endless track member presenting parallel upper and lower tracks surrounding the central receptacle, means for altering the angles the planes of the upper and lower tracks make with the axes of the cylinders, means for rotating the central receptacle and the cylinders about the vertical axis of the central receptacle relatively to the track, feeding means for containers to be filled located below the cylinders, a stub shaft supported by each piston and projecting radially outwards from the axis of the receptacle, a sleeve mounted on each stub shaft coaxially therewith and axially movable to different operative positions along the shaft relative to the track, to vary the position of that sleeve radially relative to the track to vary the stroke of that piston independently of the other pistons for a given position of the track, locking means for locking each sleeve in any chosen one of said different operative axial position on its stub shaft, and slipper means supported by each sleeve in sliding contact with the tracks.

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**3,934,628**

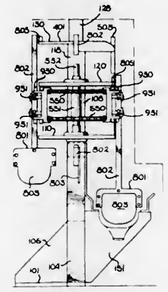
**MECHANICAL APPARATUS FOR CUTTING MOVING WORK**

**Fred J. Salemme, Stockton, Calif., assignor to California Cedar Products Company Inc., Stockton, Calif.**

**Filed Mar. 31, 1975, Ser. No. 563,803**

**Int. Cl.² B27M** *3/00*; **B26D** *1/56*

**U.S. Cl. 144—2 R** **10 Claims**



1. A mechanical apparatus for cutting moving work wherein the energy used to power the apparatus is obtained from the moving work by means of a mechanical linkage, said apparatus being comprised of:

a supportive framework and mounting means;

one or more force transmitting means suitably mounted upon said supportive framework on said mounting means so as to be freely rotatable thereon;

a plurality of cutting means assemblies mounted at intervals upon said force transmitting means, the cutting member of said asembly being slidably moveable therein, with the vertical position of each cutting member being controlled by application of a force to the top of each cutting member;

a cam member placed in the path of the cutting member at a first station such that when the cutting member encounters the cam an upward force is exerted upon the cutting member thus moving the cutting member from a lower position to a higher position and moving the cutting member out of the path of the moving work;

a guide member located in the path of the cutting member at a second station such that when the cutting member encounters the guide member a downward force is exerted upon the cutting member thereby causing the cutting member to move from its raised position to its lowered position and sever the moving work;

a work guiding means which guides the moving work along a path such that the moving work encounters a first cutting member in its lowered position, thereby exerting a force upon said first cutting member which force is transmitted through the cutting means assembly and along the force transmitting means to a second cutting member as this second cutting member encounters the guide means at the second station and moves from its raised to its lowered position, said second cutting member thereby simultaneously severing the moving work and assuming the role of said prior first cutting member.



**3,934,629**

**SCREW DRIVER**

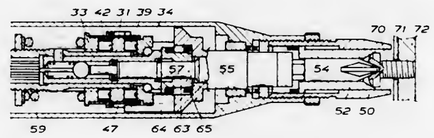
**Carl-Edvard Fison Boman, Nacka, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden**

**Filed Dec. 23, 1974, Ser. No. 535,684**

**Claims priority, application Sweden, Jan. 15, 1974, 7400513**

**Int. Cl.² B25B** *21/00*

**U.S. Cl. 144—32** **17 Claims**



1. Screw driver for driving a screw into a screw bed, comprising:

a housing (**11**),

a motor (**14**) located in said housing,

a power transmission and an output spindle (**54,55**) coupled to said motor, said power transmission including a torque limiting device (**31, 39, 34**) which comprises a driving member and a driven member, said driving and driven members having means to slip relative to each other as a predetermined torque magnitude is reached;

locking means (**47, 64, 54, 55**) coupled to said torque limiting device and manually shiftable between a first, normal tightening position and a second, high torque level position in which said locking means interlocks said driving member and said driven member of said torque limiting device against relative slipping, and

means (**50**) coupled to said locking means for sensing the actual, axial position of the screw by engaging the screw bed, and means connected to said sensing means (**50**) for shifting said locking means from said second high torque level position toward said first, normal tightening position responsive to the screw reaching a predetermined axial position relative to said screw bed to thereby reactivate said torque limiting device.

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**3,934,630**

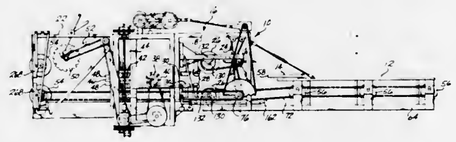
**METHOD AND APPARATUS FOR PRODUCING ROUGH CUT LUMBER**

**Roy R. Cockle, P.O. Box 323, Roy, Wash. 98580**

**Continuation of Ser. No. 351,199, April 16, 1973. This application Jan. 9, 1975, Ser. No. 539,930**

**Int. Cl.² B27M** *1/00*; **B27B** *1/00*; **B27C** *1/08*

**U.S. Cl. 144—39** **13 Claims**



1. Apparatus for producing lumber for a log comprising:

a. a frame assembly having a log infeed end and a lumber outfeed end with a linear travel path therebetween to be traversed by the longitudinal center axis of a log being formed into lumber,

b. a pair of opposed top and bottom rotary particle-forming cutter heads adapted to form parallel planar top and bottom surfaces on a log, said cutter heads having a common direction of rotation thereby exerting a lateral force on the log directed toward one lateral side of the travel path,

c. an infeed kerf cutter arranged to form a bottom longitudinal kerf in the portion of the log to be cut away by said bottom cutter head,

d. a bottom guide rail adjacent said kerf cutter and adapted to slide in said kerf,

e. a pair of opposed side rotary particle-forming cutter heads located between said kerf cutter and said top and bottom cutter heads and adapted to form parallel planar surfaces along the lateral sides of the log whereby said pairs of cutter heads can collectively form a cant of rectangular cross-section, said side cutter heads having a common direction of rotation,

f. side guide means located on said one lateral side of the travel path so as to resist said lateral force component by contacting the respective lateral surface of the cant at a location adjacent the top and bottom cutter heads,

g. bottom guide means located on the outfeed side of said bottom cutter head and adjacent thereto for contacting the bottom surface of the cant,

h. first adjusting means on the frame assembly for moving said kerf cutter, bottom rail, bottom guide means and bottom cutter head vertically as a first unit selected amounts, and for simultaneously moving a second unit comprising said top cutter head, oppositely to the movement of said first unit at the same vertical distance from said travel path as the first unit,

i. second adjusting means on the frame assembly for horizontally moving as a third unit said side guide means and the respective side cutter head, and for simultaneously moving a fourth unit comprising the other side cutter head oppositely to the movement of said third unit the same distance from said travel path as the third unit, and

j. infeed and outfeed conveyor means carried by said frame assembly for moving a log along said travel path.

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**3,934,631**

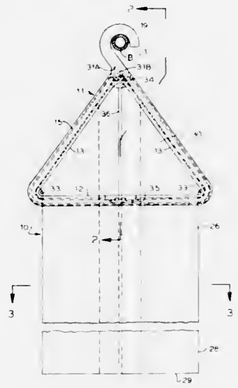
**CLOTHES BAG AND SUSPENSION HANGER THEREFOR**

**Michael C. Wilson, Wheaton, Ill., and Leslie E. Schnick, Anchorage, Alaska, assignors to Pretty Products, Inc., Coshocton, Ohio**

**Filed Jan. 24, 1974, Ser. No. 436,109**

**Int. Cl.² A45C** *11/00*

**U.S. Cl. 150—1** **9 Claims**



1. A clothes bag and detachable suspension hanger comprising;

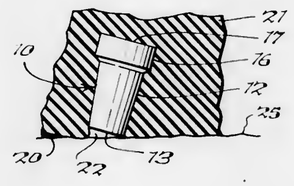
a rigid frame having peripheral elements defining a a predetermined open area in the plane of the elements and including a hanger element adapted to engage a support member for suspending said frame therefrom with the peripheral elements disposed in a substantially vertical plane, said peripheral elements being formed with a pe-

ripherally extending channel opening radially outward and having at least a portion of an element extending transversely to a vertical axis when said frame is vertically suspended with said portion disposed at a side of said frame opposite to said hanger element, said portion having a support element formed therewith, and

a flexible-walled bag attached to said rigid frame in depending relationship, said bag having a main body including front and rear wall panels disposed in superimposed relationship with the rear panel extending a distance beyond the one end of the front panel and with peripheral edges of the front and rear panels at that end cooperatively defining an opening disposed in a plane parallel to the plane of the panels, said peripheral edges defining said opening provided with a drawstring for constrictively and releasably securing said peripheral edges in said channel of said frame to secure said bag thereto with the bag opening in alignment with the open area defined by the peripheral elements of said frame, said drawstring engageable with said support element for support of the bag.

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**3,934,632**
**TRACTION-INCREASING DEVICE**
**Thomas G. Kalpin, 151 Jackson Ave., and Howard J. Ross, 56 Leonhardt Ave., both of North Tonawanda, N.Y. 14120**
**Filed Apr. 15, 1974, Ser. No. 460,963**
**Int. Cl.² B60C** *11/00*
**U.S. Cl. 152—210** **13 Claims**




1. In a traction element such as a vehicle tire having a tread or wear surface, a device installed in the traction element body adjacent said tread surface for enhancing traction and stability, said device comprising a body having an end surface spaced inwardly of said tread surface in a manner defining a recess, the volume of said recess being reduced to substantially zero when said traction element is in a position on a supporting surface such as a road providing maximum stress on the portion of the traction element body containing said device, said recess returning to the original volume thereof as said traction element moves further on said supporting surface in a manner relieving stress on the portion of the traction element body containing said device whereby suction is created in said recess as it begins to return to the original volume thereof thereby increasing traction between said traction element and said supporting surface.

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**3,934,633**
**ANTISKID DEVICE FOR VEHICLE TIRES**
**Karl Bula, Gladiolenstrasse 2, Seuzach, Switzerland**
**Filed Feb. 25, 1975, Ser. No. 552,951**
**Claims priority, application Switzerland, Feb. 27, 1974, 2773/74; Jan. 15, 1975, 450/75**
**Int. Cl.² B60C** *27/08*
**U.S. Cl. 152—221** **19 Claims**

1. An antiskid device for use on a vehicle tire comprising first and second end rings;

a plurality of flexible, substantially nonextensible hooplike strands in approximate side-by-side relationship between said end rings; and

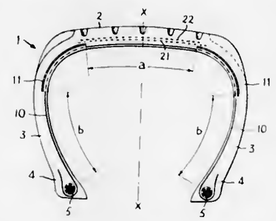
a plurality of connection means for connecting spaced-apart points on each of said strands to the next adjacent strands and for connecting points on the ones of said strands adjacent to said end rings to said rings, the points of connection being alternately circularly offset to form an annular meshwork between said rings,




said meshwork being significantly more expansible in directions perpendicular to tangents of the annular meshwork than in directions parallel to the tangents, whereby said meshwork can be placed around a vehicle tire to cover the tread and a portion of each sidewall thereof.

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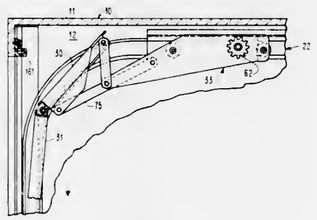
**3,934,634**
**RADIAL TIRE WITH AUXILIARY CARCASS PLIES**
**Henri Verdier, Beauregard-l'Eveque, France, assignor to Compagnie Generale des Etablissements Michelin, raison sociale Michelin & Cie, Clermont-Ferrand (Pay-de-Dome), France**
**Filed Feb. 22, 1974, Ser. No. 444,751**
**Claims priority, application France, Mar. 2, 1973, 73-08026**
**Int. Cl.² B60C** *5/08, 9/10*
**U.S. Cl. 152—354** **8 Claims**




1. A pneumatic tire comprising a tread, a pair of beads, a carcass reinforcement and a tread reinforcement, the tread reinforcement having a width substantially equal to the width of the tread and comprising at least two plies of cords that are crossed with respect to each other and oblique with respect to the longitudinal direction of the tire and the carcass reinforcement comprising at least one principal ply extending from one bead to the other and two auxiliary plies having cords oblique with respect to the longitudinal direction and arranged one on one side and the other on the other side of the median plane of the tire, the cords of the principal ply being, in the zones in which the auxiliary plies are mounted, oblique with respect to the radial direction of the tire and, in three zones, radial, two of the zones of the principal ply in which the cords of the principal ply are radial being respectively near the two beads and each extending over at least ⅛ of the width of the principal ply, the third of the zones of the principal ply in which the cords of the principal ply are radial also extending over at least ⅛ of the width of the principal ply, said zones in which the auxiliary plies are mounted lying partly under said tread reinforcement and said zones extending beyond said tread reinforcement at least into the shoulder area, and the entirety of said third of the zones of the principal ply lying under said tread reinforcement.

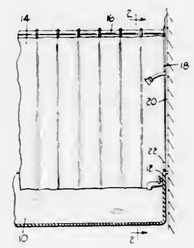


**3,934,635**
**OVERHEAD DOOR FOR A CONTAINER HAVING A VERTICAL OPENING SUCH AS A TRUCK TRAILER**
**Henry Kin, Forest Park, Ohio, assignor to KRS Industries, Inc., Forest Park, Ohio**
**Filed Oct. 17, 1972, Ser. No. 298,331**
**Int. Cl.² E05F** *11/00*
**U.S. Cl. 160—189** **6 Claims**




1. A manually movable overhead door for closing an opening in a wall of a container including a plurality of panels, hinge means for connecting said panels to each other, track means supported by walls of the container on each side of the door, said panels being movably supported by said track means, said track means on each side of the door including a vertical portion, a horizontal portion, and a curved portion connecting said vertical portion and said horizontal portion to each other, each of said horizontal portions being disposed substantially inwardly in the container of the vertical portion of said track means, a carriage connected to the uppermost of said panels and movably supported only on said horizontal portions of said track means irrespective of the position of said panels, counterbalance means supported on said carriage to exert a counterbalance force to said panels in accordance with the position of said panels on said track means, and means to decrease the counterbalance force produced by said counterbalance means as said panels are raised toward the full open position of the door, said decreasing means including means supported on each side of the door and means cooperating with said supported means and acting on said counterbalance means to decrease the counterbalance force as said panels are raised toward the full open position of the door, said supported means including a rack supported on each side of the door, each of said racks terminating prior to the plane containing the door when the door is in its closed position, and said cooperating means including gear means connected to said counterbalance means and engaging the teeth of each of said racks, each of said racks being supported by said track means, each of said racks extending for only the length of said horizontal portion of said track means, said counterbalance means including a spring having one end fixed to said carriage and its other end connected to said gear means, said gear means being rotatably mounted on said carriage whereby rotation of said gear means unwinds said spring as said panels are raised toward the full open position of the door, means to lock the lower most of said panels when the door is in its closed position, said lock means including first means adjustably supported on each side of the door and second means carried by the lower most of said panels and cooperating with each of said first means, said second means of said lock means including a first pair of members movably supported by the lower most of said panels, a second pair of members connected to said first pair of members and movably supported by the lower most of said panels, means cooperating with said second pair of members to move each of said first pair of members into engagement with a corresponding one of said first means, and said cooperating means being removably supported by said lower most panel to enable said first and second pairs of members to be adjustably positioned in accordance with the width of said door.

**3,934,636**
**SHOWER CURTAIN HOLDER**
**Jimmy W. Simmons, 2400 Haworth, Apt. 13, Newberg, Oreg. 97132**
**Filed Sept. 20, 1974, Ser. No. 507,598**
**Int. Cl.² A47H** *1/00*
**U.S. Cl. 160—349 R** **4 Claims**




1. In a shower of the type having a bathtub with a top peripheral flange and also having a flexible shower curtain on one side and a wall surface on another side against which it is desired that an end of the shower curtain have close association to prevent water from the shower splashing on the floor, the improvement compressing a shower curtain holder comprising:

a. a body portion having a vertical guideway open at the bottom,

b. means arranged to mount said body portion on a wall surface above the bathtub flange,

c. and a slide member disposed in said guideway having a lower end arranged to project beyond the open bottom of said vertical guideway,

d. said slide member having movement in said guideway between a pair of set positions,

e. one of said set positions comprising a lowered position arranged to clamp a portion of the shower curtain which has been inserted under the holder down on the bathtub flange to hold the curtain close to the wall surface and the other of said set positions comprising an upper position for releasing the shower curtain.

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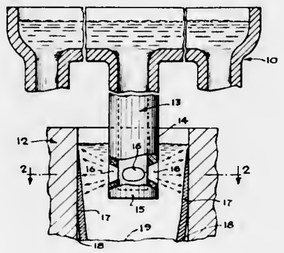
**3,934,637**
**CASTING OF MOLTEN METALS**
**Pierre Roger Potier, La Celle-Saint-Cloud, France, assignor to Foseco International Limited, Birmingham, England**
**Filed Mar. 14, 1974, Ser. No. 451,369**
**Claims priority, application United Kingdom, Mar. 28, 1973, 14954/73**
**Int. Cl.² B22D** *27/18*
**U.S. Cl. 164—56** **7 Claims**

1. In the process of ingot casting wherein molten metal is bottom poured into an ingot mould to form an ingot, the improvement which comprises locating in the ingot mould, prior to the commencement of pouring, a bonded composition comprising at least one fluxing agent and expandable graphite, said composition being borne up on the rising molten metal surface as the molten metal is poured and disintegrating because of the heat of said metal and the expansion of the graphite and thereafter fusing to form a fluxing cover on the surface of the molten metal thereby minimizing surface oxidation and surface inclusions.

## 3,934,638
## CONTINUOUS CASTING PROCESS

Robert W. Joseph, Schererville, Ind., assignor to Inland Steel Company, Chicago, Ill.

Filed Feb. 8, 1971, Ser. No. 113,156
Int. Cl.² B22D *11/16*
U.S. Cl. 164—89 7 Claims



1. In a process of continuous casting molten ferrous metal in which molten ferrous metal is introduced into the upper end of a continuous casting mold through a feeding nozzle having one end portion submerged in a pool of the molten ferrous metal maintained in the upper end of said mold to form a ferrous metal continuous casting having an improved internal structure including being free of axial voids and concentrations of segregated impurities in the axial zone of said casting, the improvement which comprises; continuously feeding molten ferrous metal into the upper end of a continuous casting mold through the submerged end portion of said feeding nozzle while maintaining said molten metal at a temperature sufficiently above the liquidus temperature of said ferrous metal to avoid skulling in said nozzle and not so high that the temperature of the molten ferrous metal can not be reduced to at least the liquid temperature thereof before descending into the deep liquid core zone of said casting, and cooling said molten ferrous metal to at least the liquidus temperature of said ferrous metal before said molten ferrous metal descends into the deep liquid core zone of said casting and while said molten ferrous metal remains between about the upper edge of said casting and a point above the lower end of said mold about where said casting initially forms an air gap by separating from the inner surface of said mold, and said cooling being effected by discharging said molten ferrous metal laterally from said feeding nozzle disposed axially in said mold with the said molten ferrous metal flowing generally radially outwardly directly into contact with each of the interior lateral surfaces of said casting.

## 3,934,639
## METHOD OF MARKING AN INGOT

Peter Richard McCrainor, and Bryan William Edwards, both of Birmingham, England, assignors to Foseco International Limited, Birmingham, England

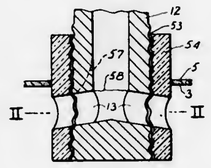
Filed Apr. 4, 1974, Ser. No. 458,039
Claims priority, application United Kingdom, May 9, 1973, 22156/73
Int. Cl.² B41B *11/62*; B22D *19/00*
U.S. Cl. 164—100 10 Claims

1. In the method of marking an ingot the improvement which comprises locating on at least one face of the cavity of an ingot mould at least one shaped body defining indicia and formed of a material comprising a foam plastics substrate supporting within its structure particulate refractory material bonded with a refractory binder, and casting molten metal into the ingot mould to form an ingot.

## 3,934,640
## SUBMERGED NOZZLE FOR CONTINUOUS CASTING

Friedhelm Neumann, Adliswil, and Josef K. Zeller, Weesen, both of Switzerland, assignors to Concast AG, Zurich, Switzerland

Division of Ser. No. 72,692, Sept. 16, 1970, Pat. No. 3,800,853. This application Dec. 11, 1973, Ser. No. 423,757
Claims priority, application Switzerland, Sept. 16, 1969, 13937/69
Int. Cl.² B22D *11/10*
U.S. Cl. 164—281 1 Claim

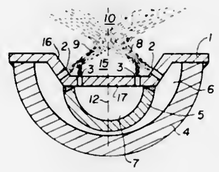


1. Apparatus for the continuous casting of steel, comprising a casting mold, a tubular nozzle extending into said mold with its lower end adapted to be submerged in the molten metal in the mold, and a refractory ring surrounding said nozzle and concentric therewith, said ring adapted to extend downwardly below the surface of the molten metal and upwardly above the surface of the molten metal, said tubular nozzle being provided with at least one lateral discharge outlet below the surface of the molten metal and said ring being provided with at least one lateral discharge outlet, said ring being rotatable on said nozzle to bring said lateral discharge outlet into register with said lateral discharge outlet of said nozzle, said ring being in threaded engagement with said nozzle from a level above said discharge outlets to a level below said discharge outlets whereby, in the event of fracture of said nozzle within the area of such threaded engagement, the fractured parts of said nozzle are held together by said ring.

## 3,934,641
## COOLING ARRANGEMENT FOR CONTINUOUSLY CAST METAL OBJECTS

Alain Chielens, Marcq-en-Baroeul, France, assignor to Fives-Cail Babcock, Paris, France

Filed Jan. 10, 1975, Ser. No. 539,939
Claims priority, application France, Mar. 20, 1974, 74.09449
Int. Cl.² B22D *11/124*
U.S. Cl. 164—283 S 12 Claims



1. A cooling arrangement for a continuously cast metal object comprising:

a. means defining a path of movement for said object, the object having an outer face extending in the direction of said path; and

b. tubular header means for projecting a cooling fluid toward said face, said header means being elongated in a direction substantially parallel to said face and defining a front wall directed toward said face,



1. said front wall being formed with two rows of first apertures symmetrical to a plane longitudinal relative to said header means and substantially perpendicular to said face,

2. each first aperture having an axis intersecting the axis of an aperture of the other row in said plane,

3. said front wall being further formed with at least one row of second apertures arranged between the rows of first apertures;

c. partition means of said header means bounding a plurality of conduits respectively communicating with said rows of first apertures and said at least one row of second apertures; and

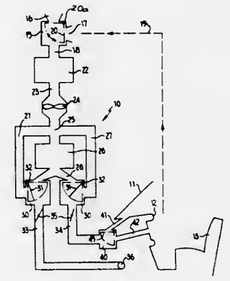
d. a source of air under pressure higher than atmospheric pressure communicating with one of said conduits; and

e. a source of water under pressure higher than atmospheric pressure communicating with another one of said conduits.

## 3,934,642
## VEHICLE AIR CONDITIONING SYSTEM

Derrick Coulson, Crewe, and John C. Coyle, Wybunbury, Near Mantwick, both of England, assignors to Rolls-Royce Motors Limited, Crewe, England

Filed Apr. 8, 1974, Ser. No. 459,234
Claims priority, application United Kingdom, Apr. 13, 1973, 17858/73
Int. Cl.² B60H *3/04*
U.S. Cl. 165—23 9 Claims



1. A vehicle air-conditioning system for an internal combustion engine driven vehicle comprising:

an air intake,

a refrigerant evaporator connected to the output of said air intake for receiving the air passing into said air intake,

first and second outlet ducting the separately conveying air to respective outlets in the upper and lower parts of the vehicle interior, respectively,

first and second air mixing means respectively selectively connecting said first and second outlet ducting to said heater and said bypass conduit,

means for automatically setting each of said air mixing means to feed to the respective outlet ducting air which has passed through the evaporator and through the heater and/or the heater bypass conduit,

settable mass flow regulating means in at least one outlet ducting,

air temperature sensing means for measuring the ambient temperature and the temperature inside the vehicle,

means responsive to said sensed temperatures for automatically controlling the air mixing means and the mass flow regulating means,

means for closing the outlet or outlets of the second outlet ducting and diverting the entire output of the system to said first outlet ducting,

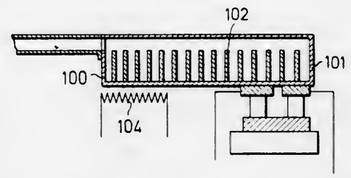
a manual means for varying the setting of said temperature sensing means, and

control means responsive to engine oil pressure and the energization state of an engine starter motor circuit in said vehicle for maintaining the air-conditioning system deenergized until the oil pressure reaches a predetermined value and the starter motor circuit is deenergized after motor start up, said control means including a relay having contacts which are closed when said oil pressure reaches a predetermined value and after said starter motor circuit is deenergized, said contacts being connected at one end to a power supply and at the other end to said control means.

## 3,934,643
## CONTROLLABLE HEAT PIPE

Nikolaus Laing, Hofener Weg 35-37, 7141 Aldingen bei Stuttgart, Germany

Continuation-in-part of Ser. Nos. 265,644, June 23, 1972, abandoned, and Ser. No. 289,675, Sept. 15, 1972, abandoned. This application Feb. 19, 1974, Ser. No. 443,257
Claims priority, application Austria, July 26, 1971, 6455/71; Sept. 17, 1971, 8082/71
Int. Cl. F28d *15/00*
U.S. Cl. 165—32 10 Claims




1. A controllable heat pipe formed as a main hollow body having therein a saturated vapor of and a boiling condensate of a liquid and an auxiliary hollow body in gaseous communication with the main hollow body and into which said vapor and condensate may be controllably maintained, a heat sink device in heat conducting contact with said auxiliary body for withdrawing heat from the auxiliary hollow body and a heat source for said auxiliary body for supplying heat thereto; the improvement comprising in that said auxiliary body includes therein a plurality of separate spaces containing said vapor and condensate and in that said heat sink device is positioned near one end of said auxiliary hollow body whereby the spaces within said hollow body progressively nearer to said heat sink device will be exposed to lower temperatures than said spaces progressively further away from said heat sink device.

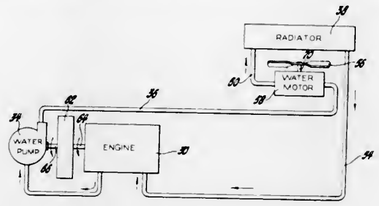
## 3,934,644
## REMOTE ENGINE WATER COOLER

Laird E. Johnston, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 12, 1973, Ser. No. 423,882
Int. Cl.² F01P *5/00*
U.S. Cl. 165—51 1 Claim

1. A motor vehicle with a liquid cooled engine surrounded by noise insulating material; engine cooling apparatus including air passage means formed between the vehicle roof structure and the ceiling of the vehicle passenger compartment; said air passage means having a forwardly opening air inlet and a rearwardly opening air outlet; a radiator supported within said air passage means in the path of air flowing therethrough; liquid passage means in said radiator for transmitting heat from liquid coolant warmed by the engine to air flowing between said inlet and outlet; conduit means extending from said engine through said noise insulating material and through the walls of said vehicle passenger compartment to said radiator; a water pump operably driven by the vehicle engine in fluid circuit therewith and with said radiator for passing cool-

ant therethrough; a fan located adjacent said radiator for causing air to pass therethrough when vehicle speed is insufficient to cause movement of appreciable quantities of cooling



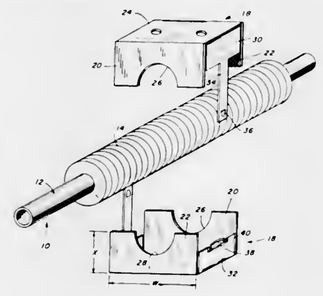

air; hydraulic motor means operably attached to said fan and in circuit with said water pump, said conduits and said radiator for receiving pressurized fluid from the hydraulic motor to rotate said fan.

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**3,934,645**
**FINNED TUBE PROTECTOR**

**Oscar Wesley Butts, Tulsa, Okla., assignor to Yuba Heat Transfer Corporation**

**Filed Feb. 1, 1974, Ser. No. 438,948**
**Int. Cl.² B22D** *23/00*
**U.S. Cl. 165—67** **3 Claims**



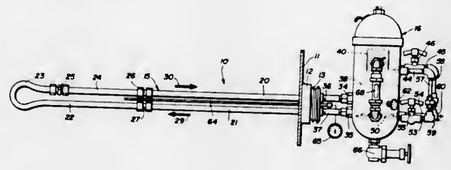
1. In combination with a finned tube including a central tube having a plurality of radially extending fins on the outer periphery thereof, a protector device comprising a pair of substantially identical independent half sections adapted for disposition on the central tube for encasing a plurality of adjacent fins, each of said half sections comprising mutually parallel spaced sidewall means of a substantially rectangular configuration and having a substantially semi-circular recess provided on one edge thereof for engaging the outer periphery of the central tube, outer band means spanning the distance between the sidewall means and disposed at the edge thereof opposite the recess means, first flap means conterminous with one end of the band means and extending substantially perpendicularly therefrom between the sidewall means, second flap means conterminous with the opposite end of the band means and extending substantially perpendicularly therefrom between the sidewall means, an elongated arm member extending outwardly from said first flap means and of a width less than the width of said first flap means, said arm member being engagable with the second flap means of the other half section, and complementary locking means provided on said arm member and second flap means and slidably interengagable for securely snap locking the half sections around the outer periphery of the finned tube as the half sections are moved in directions toward one another with the outer ends of said flap means being spaced apart for providing openings at each end of the protector device installed on the finned tube, said locking means comprising recessed slit means provided on said second flap member for receiving the end of said elongated arm therethrough in a manner substantially precluding accidental seperation of the assembled half-sections.

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**3,934,646**
**CONSTANT TEMPERATURE COLD-END CORROSION PROBE**

**Reed S. Robertson, Glen Ellyn, and William R. Watson, Oaklawn, both of Ill., assignors to Nalco Chemical Company, Chicago, Ill.**

**Division of Ser. No. 384,072, July 30, 1973, Pat. No. 3,861,876. This application Oct. 10, 1974, Ser. No. 513,870**
**Int. Cl.² F28D** *15/00*
**U.S. Cl. 165—105** **2 Claims**



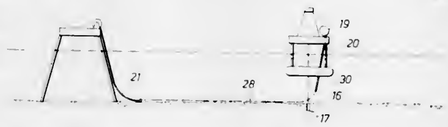
1. Apparatus for cooling a tubular metal corrosion specimen and maintaining the specimen at a predetermined temperature where the specimen is exposed to a gas stream temperature above said predetermined temperature, said apparatus comprising a tank mounted outside the gas stream having a liquid coolant supply therein which has a boiling point substantially the same as said predetermined temperature, vertically spaced upper and lower ports in said tank, the level of liquid coolant being above the upper port, piping connecting the opposite ends of said tubular specimen to said ports thereby defining a probe loop, a cooling coil in said tank substantially at the level of the lower port, a condensing coil in the tank positioned above the level of the liquid, means connecting said coils to a cold water supply, and valve means for each coil controlling the flow of water therethrough to regulate the temperature of the coolant.

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**3,934,647**
**PIPE LAYING SYSTEM**

**Donald G. Bokenkamp, Houston, Tex., assignor to Dolphin International, Inc., Houston, Tex.**

**Filed June 21, 1974, Ser. No. 481,536**
**Int. Cl.² E21B** *43/01*
**U.S. Cl. 166—.5** **21 Claims**



9. A method for connecting an offshore gathering location to at least one peripherally located undersea production well upon completion of the drilling of the well from a drilling structure, comprising the steps of:

unspooling a continuous string of production pipeline from a spool on a drilling structure,

pulling on the free end of said continuous string from another location spaced from said drilling structure while unspooling said continuous string,

extending said continuous string between said drilling structure and said location until the length of said continuous string is such that it will extend from an operating surface of said location to an undersea production wellhead,

on the drilling structure, connecting wellhead means to the other end of said continuous string of production pipeline, and



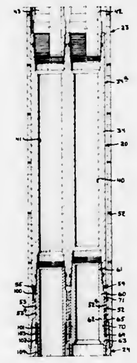
lowering the wellhead means and attached production pipeline from the drilling structure to the undersea wellhead site while pulling on the other end of said continuous string of the production pipeline until the wellhead means is at the undersea production wellhead and the other end of said continuous string is at the operating surface of said location.

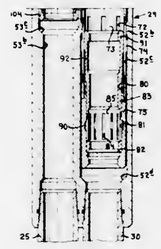
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**3,934,648**
**WELL TUBING SYSTEM WITH ORIENTING COUPLING MEANS**

**Amareswar Amancharla, Dallas, and Carter R. Young, Lewisville, both of Tex., assignors to Otis Engineering Corporation, Dallas, Tex.**

**Filed Dec. 18, 1974, Ser. No. 533,807**
**Int. Cl.² E21B** *33/12*; **F16L** *39/00*
**U.S. Cl. 166—116** **16 Claims**





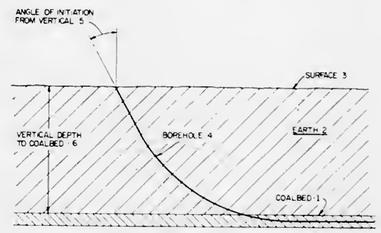
1. A well flow conductor system comprising: first fluid coupling means connectible with a multiple string well packer having a plurality of separate flow passages therethrough, said first coupling means having separate flow passages equal in number and position to communicate with said flow passages in said packer when said first coupling means is connected with said packer; second fluid coupling means adapted to releasably couple with said first coupling means and being connectible with a plurality of separate well flow conductors, said second coupling means having flow passages equal in number and communicating with said first coupling means when said first and second coupling means are connected together; first guide means on said first coupling means; and second guide means on said second coupling means for coacting with said first guide means to rotationally align said second guide means with said first guide means responsive to longitudinal motion only as said second guide means is moved toward said first guide means for coupling said first and second guide means together.

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**3,934,649**
**METHOD FOR REMOVAL OF METHANE FROM COALBEDS**

**Joseph Pasini, III, and William K. Overbey, Jr., both of Morgantown, W. Va., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.**

**Filed July 25, 1974, Ser. No. 491,726**
**Int. Cl.² E21B** *43/25*; **E21C** *41/04*
**U.S. Cl. 166—254** **8 Claims**




1. A method for removing methane gas from underground coalbeds prior to mining the coal, which comprises determining the orientation of the major natural fracture system of the coalbed and directionally drilling at least one borehole from the earth's surface into the coalbed, said borehole being initiated at a slant and descending at a gradual curve until a horizontal position is reached as the borehole intersects the major natural fracture system of the coal, allowing the methane gas to be released, and recovering the methane gas from the borehole.

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**3,934,650**
**RECOVERY OF NATURAL GAS DURING SOLUTION MINING OF AN UNDERGROUND SALT DEPOSIT**

**Robert G. J. LaFortune, Mentor, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio**

**Division of Ser. No. 316,407, Dec. 18, 1972, Pat. No. 3,856,482, which is a continuation of Ser. No. 172,239, Aug. 16, 1971, abandoned. This application Sept. 23, 1974, Ser. No. 508,253**
**Int. Cl.² E21B** *43/00*
**U.S. Cl. 166—267** **1 Claim**

1. The method of recovering natural gas contained in an underground salt deposit, which method comprises:

A. injecting water into said underground salt deposit and contacting the gas-containing salt deposit with injected water, thus obtaining a gas-containing brine solution;

B. withdrawing said brine solution from the underground salt deposit thereby forming brine clouded by very finely divided and substantially uniformly dispersed incipient gas bubbles;

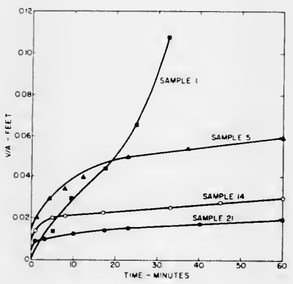
C. passing the clouded brine through a fibrous filter element disposed within a filter zone, said element having a fiber density sufficient to provide a pressure drop for said brine across said filter element of not substantially below about 20 p.s.i.g., and containing in the element natural and synthetic fibers maintained in said filter zone at least in part by resin binding, wherein said fibers are selected from the group consisting of natural wool, cellulose, and rayon, and said fibers are bound together by a synthetic, water-insoluble resin;

D. withdrawing clarified, gas-depleted brine from the downstream region of said filter zone;

E. withdrawing gas from said filter zone and away from the resulting clarified brine; and,
F. collecting said gas overhead from said filter zone.

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**3,934,651**
**METHOD OF ACIDIZING SUBTERRANEAN FORMATIONS**
**Dale E. Nierode; Donald M. Kehn, and Keith F. Kruk, all of Houston, Tex., assignors to Exxon Production Research Company, Houston, Tex.**
**Filed Oct. 10, 1974, Ser. No. 513,807**
**Int. Cl.² E21B** *43/26, 43/27*
**U.S. Cl. 166—282** **11 Claims**



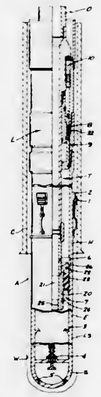

**1.** A method of fracturing a subterranean formation which comprises injecting into said formation at a pressure sufficient to form a fracture therein an acid emulsion comprising a major volume proportion of a hydrocarbon liquid as the internal phase and a minor volume proportion of an aqueous acid solution as the external phase, said acid emulsion containing an effective amount of a fluid loss additive comprising finely divided particulate material present in a concentration of at least 2 pounds per barrel of said emulsion; and from about 1 to about 5 weight percent in said acid solution of a polymer mixture of (a) a vinyl polymer for increasing the viscosity of said aqueous acid solution and selected from the group consisting of polyvinyl alcohol, polyvinyl pyrrolidone, and copolymers of vinyl alcohol and vinyl pyrrolidone, and (b) a water-soluble natural gum, said natural gum constituting at least 25 weight percent of said polymer mixture.

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**3,934,652**
**APPARATUS AND METHOD FOR CEMENTING WELL LINERS**
**Chudleigh B. Cochran, Houston, Tex., assignor to Brown Oil Tools, Inc., Houston, Tex.**
**Filed Oct. 15, 1974, Ser. No. 514,624**
**Int. Cl.² E21B** *33/14, 43/10, 23/00*
**U.S. Cl. 166—285** **18 Claims**

**7.** Apparatus for cementing a liner in a well bore comprising:
a. a setting tool having a tubular mandrel connected in a pipe string for extension through said liner;
b. seal means releasably attached to said liner and sealingly engaging the exterior of said mandrel and the interior of said liner permitting at least limited axial movement of said mandrel without movement of said seal means;
c. said seal means comprising a first sleeve carrying a first annular seal for sealing and sliding engagement with said mandrel and a second sleeve carrying a second annular seal for sealing engagement with said liner;
d. said seal means comprising latch means engageable with corresponding groove means within said liner to releasably hold said seal means against axial displacement therein.

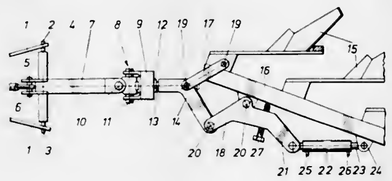
**16.** A method of cementing a liner in a well bore with a setting tool, having a tubular mandrel, connected to an operating string, comprising the steps of:
a. lowering said setting tool with said liner attached thereabout into said well bore, wiper means sealingly engaging the interior of said liner and seal means sealingly engaging the interior of said liner and the exterior of said mandrel;
b. anchoring said liner in said well bore;
c. releasing said setting tool from said liner;
d. pumping cement into said liner through said operating string and tool mandrel;



e. pumping plug means, sealingly engaging said operating string and mandrel, behind said cement into engagement with said wiper means;
f. pumping said cement out of said liner into said surrounding well bore by forcing said plug means and wiper means through said liner;
g. releasing said seal means by predetermined non-rotating axial movement of said mandrel; and
h. removing said setting tool and seal means from said well bore.

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**3,934,653**
**SEMI-MOUNTED TWO-WAY PLOW**
**Ignaz Albert Josef Becker, Preussisch Oldendorf, Germany, assignor to Rabewerk Heinrich Clausing, Bad Essen-Linne, Germany**
**Filed Feb. 25, 1974, Ser. No. 445,138**
**Claims priority, application Germany, Mar. 2, 1973, 2310497**
**Int. Cl.² A01B** *3/34, 3/32*
**U.S. Cl. 172—212** **19 Claims**

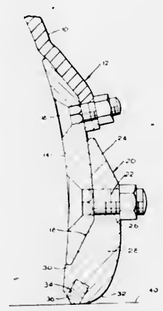


**1.** Semi-mounted or trailing roll-over plow, comprising:
a rotatable plow part including an elongate frame member, said rotatable plow part further including first and second sets of plow members fixedly mounted upon said elongate frame member and alternately selectable for plowing by rotation of said elongate frame member to corresponding first and second operating positions, said first and second plow member sets being vertically stacked and horizontally offset from the same side of said elongated frame member in said first and second operating positions, the center of gravity of said rotatable plow part being horizontally offset from said axis of rotation and elongate frame member in both said operating positions due to said horizontal offset of said plow member sets on the same side of said elongate frame member;
means carrying said elongate frame member and having front and rear bearing means for supporting said elongate frame member for rotation about an axis of rotation and longitudinally therebetween;
locating means supportingly interposed between at least one of said front and rear bearings and the adjacent end of said elongate frame member and horizontally shiftably locating said rotatable elongate frame member with respect to said one of said front and rear bearing means for permitting a shift of the center of gravity of said rotatable plow part substantially to said axis of rotation;
shift means interengaging the locating means with one of said frame member and carrying means adjacent said one bearing means and actuable preparatory to rotation for horizontally shifting said center of gravity of said rotatable plow part substantially to said axis of rotation by sufficient horizontal shifting of the adjacent end of said elongate frame member out of operating position, thereby substantially reducing the vertical lifting and retarding forces required to rotate the rotatable plow part between operating positions.



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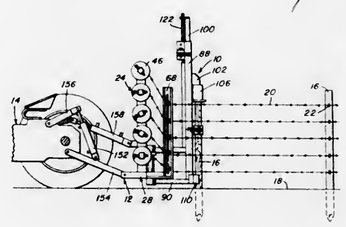
**3,934,654**
**EARTHWORKING BLADE DEVICE**
**Earle W. Stephenson, Latrobe, and Leonard E. Toews, Greensburg, both of Pa., assignors to Kennametal Inc., Latrobe, Pa.**
**Filed Sept. 6, 1974, Ser. No. 503,957**
**Int. Cl.² A01B** *15/02, 35/26, 1/04;* **E02F** *3/76*
**U.S. Cl. 172—719** **13 Claims**



**1.** An edge member adapted for mounting on the lower part of a blade for a scraping device such as a grader or snow plow so as to extend downwardly from the blade and a fraction of the length of the blade; said edge member comprising a steel body configured to engage one of the forward and rearward sides of the lower part of the blade in face to face engagement therewith, said edge member having a region at the bottom which is thickened in the fore and aft direction, said thickened region being formed with a downwardly opening slot therein, blocks of hard wear resistant material fixedly seated in said slot in side by side relation and having a "V" shaped profile in cross section at the bottom with the apex of the "V" at the bottom, the rearward side of said profile extending substantially horizontally and the forward side of said profile extending upwardly and forwardly to deflect material taken by said edge member upwardly and forwardly.

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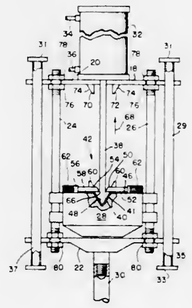
**3,934,655**
**HYDRAULIC POST SETTING AND WIRE DISPENSING APPARATUS**
**Bobby A. Whistle, Texarkana, Ark., assignor to Whistle Hydraulics, Inc., Garland, Ark.**
**Continuation-in-part of Ser. No. 223,136, Feb. 3, 1972, abandoned. This application Jan. 29, 1974, Ser. No. 437,737**
**Int. Cl.² E04B** *17/26*
**U.S. Cl. 173—46** **10 Claims**



**1.** An apparatus for driving fence posts or the like into the ground, said apparatus comprising a support framework, a weighted driving member carried by said framework for generally vertical reciprocation, lift means connected to said driving member for raising said driving member to an elevated position and permitting free fall of said weighted driving member to engage the upper end of a post for driving it into the ground, said lift means including a hydraulic motor adapted to be operable in either a motor mode when lifting the driving member or a pump mode when permitting the driving member to free fall, said driving member including an elongated member, said framework including a sleeve slidably guiding said elongated member, an elongated chain mounted alongside of said elongated member and having end portions thereof anchored to respective end portions of the elongated member, drive sprocket means on said hydraulic motor continuously engaged with the chain for moving the chain and elongated member generally vertically when the sprocket means is driven by the hydraulic motor when in a motor mode, said elongated member including a horizontal post engaging member intermediate the ends thereof for engaging the upper end of a fence post.

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**3,934,656**
**AUTOMATIC HYDRAULIC HAMMER**
**Joseph A. Pappert, 140 Myrtle Ave., Turnersville, N.J. 08012**
**Filed Nov. 1, 1973, Ser. No. 412,019**
**Int. Cl.² B25D** *9/00*
**U.S. Cl. 173—124** **8 Claims**



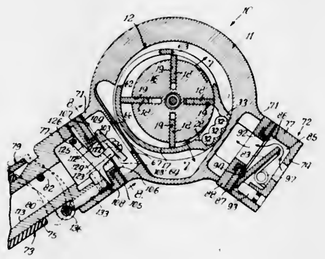
**1.** In an automatic hydraulic hammer suitable for use with

a hydraulic feed test boring machine having a hydraulic circuit, the combination of

A. a frame defining an interior space,
  1. said frame including a top yoke, a bottom support which is vertically spaced the yoke and vertical guides interconnecting the top yoke and bottom support;
B. a hydraulic cylinder connected into the hydraulic circuit and affixed to the top yoke,
  1. said cylinder vertically reciprocating a plunger within the space between an upper position and a lower position,
  2. said plunger including a body which terminates downwardly in a hammer connecting means to removably attach the plunger to the hammer,
  3. said hammer connecting means including an arrow-shaped head,
    a. the arrow-shaped head being formed with a lower, inclined, cam surface, the said surface contacting the quick release means when the plunger falls to its said lower position;
C. a hammer being vertically reciprocal within the space,
  1. said hammer vertically sliding upon the glides,
  2. said hammer being upwardly defined by a top surface;
D. quick release means affixed to the top surface of the hammer to interact with the hammer connecting means for hammer lifting and releasing purposes; and
E. clamp release means affixed to the top yoke to function the quick release means when the plunger is urged to its said upper position.

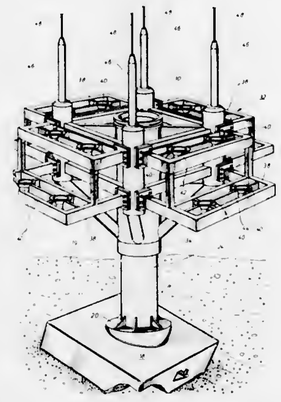
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**3,934,657**
**DUAL SAFETY CONTROL MEANS FOR A POWER TOOL**
**Irvin R. Danielson, Burr Ridge, Ill., assignor to Thor Power Tool Company, Aurora, Ill.**
**Filed Aug. 1, 1974, Ser. No. 493,922**
**Int. Cl.² B23B** *45/04*
**U.S. Cl. 173—169** **12 Claims**



**8.** In a power tool including a housing having a fluid motor therein, said motor having a fluid inlet, a fluid outlet and a power output member adapted to supply power to a work performing member, the improvement of safety control means for preventing motive fluid from discharging from said motor to rapidly render the tool inoperative, said safety control means comprising means providing a discharge passage for receiving motive fluid exhausting from the fluid outlet of said motor, a control member operatively associated with said discharge passage, and manually actuated means for effecting movement of said control member from a first position preventing motive fluid from flowing through said discharge passage to a second position permitting motive fluid to flow through said discharge passage, whereby said safety control means is operable to permit operation of said motor when said control member is in said second position and to prevent operation of said motor or to rapidly stop the same when said control member is in or moves to said first position.

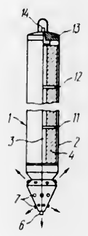
**3,934,658**
**MODULAR UNDERWATER WELL PLATFORM SYSTEM**
**Norman A. Nelson, 2422 W. 18th St., Apt. 169, Houston, Tex. 77008**
**Filed Sept. 19, 1974, Ser. No. 507,182**
**Int. Cl.² E21B** *15/02*
**U.S. Cl. 175—7** **15 Claims**



**1.** A modular underwater well drilling platform comprising, a first guide base adapted to be connected to a well member at the underwater floor, said base including a plurality of connecting and supporting frames directed outwardly in various directions and having interconnecting elements for allowing interconnection with additional guide bases in any of the various directions, said base including an opening for passage of a drill pipe.

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**3,934,659**
**APPARATUS FOR DRILLING HOLES IN EARTH SURFACE**
**Mikhail Ivanovich Tsiferov, ulitsa Druzhinnikovskaya, 11a, kv. 22, Moscow, U.S.S.R.**
**Filed Apr. 15, 1975, Ser. No. 568,183**
**Int. Cl.² E21B** *7/14*; **E21C** *21/00*
**U.S. Cl. 175—14** **8 Claims**

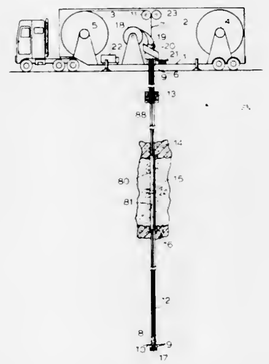


**1.** An apparatus for drilling holes in earth surface, including a rocket comprising: a generator of gas under high pressure; a drill head situated in the head portion of said rocket and including a group of jet nozzles communicating with said gas generator to create a dynamic gas jet acting on the face of the hole, said group of nozzles including a central nozzle belonging to the longitudinal axis of said rocket and being the hole-face nozzle and a plurality of rows of nozzles belonging to imaginary circles spaced from one another along the longitudinal axis of said rocket, the spacing between any adjacent pair of said rows of nozzles in a projection of sadi drill head upon a plane perpendicular to the longitudinal axis of said rocket being 4 to 7 times greater than the mean diameter of the nozzles of said adjacent pair of said rows of nozzles, the spacing between any two adjacent nozzles in each row being equal 4 to 7 critical diameters of the nozzles of said respective row.



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**3,934,660**
**FLEXPOWER DEEP WELL DRILL**
**Daniel E. Nelson, 4875 Sand Lake Road, Orlando, Fla. 32809**
**Filed July 2, 1974, Ser. No. 485,231**
**Int. Cl.² E21B** *3/08*, *9/32*
**U.S. Cl. 175—102** **16 Claims**

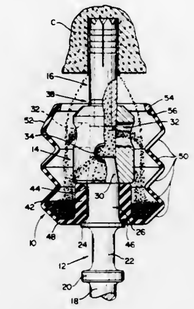


**1.** A well-drilling device having a drill motor, a drill bit attached to a drive shaft of the motor in rotatable contact with the housing of the motor, a drill guide from which the bit is extended in contact therewith from the bottom end thereof, a cable attached to the guide, a hydraulic supply line attached at one end to the motor in inlet port relationship therewith and attached at the other end to a fluid supply source, a cable spool onto which the cable can be wound and unwound to allow the drill guide and bit assembly to be raised and lowered respectively, and an exhaust return conduit attached to the motor in outlet port relationship therewith.

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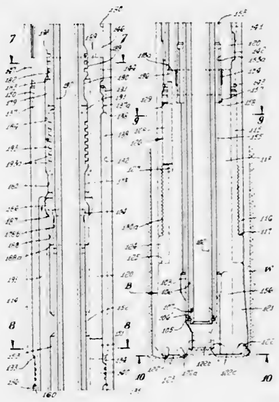
**3,934,661**
**DUST CUP**
**William D. Sauerwein, Joppa, Md., and Daniel Harrison Sides, New Freedom, Pa., assignors to The Black and Decker Manufacturing Company, Towson, Md.**
**Filed Aug. 14, 1974, Ser. No. 497,233**
**Int. Cl.² E21C** *7/00*
**U.S. Cl. 175—211** **7 Claims**

**1.** In combination with a self-drilling anchor, a chuck for holding said anchor, an adaptor shank for holding said chuck, and a power tool to drive said shank and chuck and anchor; the improvement comprising a cooperating portion on the adaptor shank located below said chuck and opposite said anchor mounted in said chuck, a dust cup operatively cooperable with said formed portion to hold said dust cup on said formed portion, said dust cup consisting of resilient material and comprising a neck portion adapted to be engaged with said cooperating portion of said shank, an annular wall at the rear end of said neck portion and extending radially outwardly therefrom, a plurality of sidewall portions extending forwardly from the outside of said annular wall and overlying said neck portion and said chuck, and each of said sidewall portions being alternately radially inwardly forwardly and radially outwardly forwardly disposed, whereby the side of said dust cup is of a bellows-like configuration.



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**3,934,662**
**CORE BIT**
**Alfred R. Curington, and Theodore J. Roscoe, Jr., both of Houston, Tex., assignors to Bakerdrill, Inc., Spartanburg, S.C.**
**Division of Ser. No. 392,628, Aug. 29, 1973, Pat. No. 3,871,486. This application Oct. 24, 1974, Ser. No. 517,539**
**Int. Cl.² E21B** *9/16*; **E21C** *13/02*
**U.S. Cl. 175—405** **7 Claims**

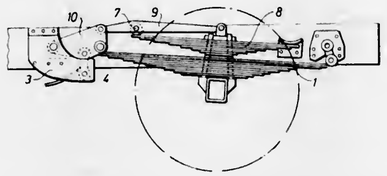


**1.** An anvil core bit for producing a core in a bore hole in an earth formation, comprising a bit body having an upper anvil portion terminating in an upper transverse face adapted to be struck by an airhammer piston, a bottom drilling face, and a central cylindrical lower opening into which a core can pass, said body further having a central cylindrical passage extending upwardly continuously and longitudinally from said opening and terminating at said upper face, whereby said passage is adapted to receive a core tube, cutter elements secured to said body and extending downwardly from said bottom drilling face for drilling the bore hole laterally outwardly of said opening, core cutting means immovably fixed to said body and disposed about said central opening for cutting the core to a first diameter greater than the diameter of said opening, and cutter means immovably fixed to said body and circumscribing said opening to shape the core to a

final diameter smaller than said first diameter, said cutter means comprising a circumferentially continuous ring coaxial of said body for trimming the core to said final diameter.

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**3,934,663**
**ATTACHMENT DEVICE FOR A GAUGE**
**Kurt Eilert Johansson, Timmermangatan 12, S-981 00 Kiruna, Sweden**
**Filed Jan. 13, 1975, Ser. No. 540,759**
**Claims priority, application Sweden, Jan. 16, 1974, 7400523**
**Int. Cl.² G01G** *19/08, 3/14*
**U.S. Cl. 177—137** **13 Claims**



**1.** Apparatus for attaching at least one weight sensing gauge (**4,34**) in a vehicle having a chassis and at least two spring assemblies (**1,8**) supporting said chassis, such that the at least one weight sensing gauge (**4,34**) senses the forces transmitted to said at least two spring assemblies (**1,8**), said attaching apparatus comprising:

at least one bracket (**3,33,43**) secured to the chassis of the vehicle;

at least one attachment means (**10,9**) coupled to one end of said at least one weight sensing gauge (**4,34**) and which is pivotably mounted to said at least one bracket (3,33,43);

means pivotally securing the other end of said at least one weight sensing gauge (**4,34**) to said chassis via said at least one bracket (**3,33,43**);

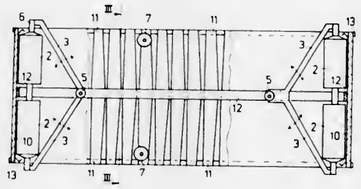
said at least one attachment means each including first (**10**) and second (**9**) levers pivotally connected to each other; and

means operatively coupling said first lever (**10**) of said attachment means to the first spring assembly (**1**) of the vehicle, and means (**7**) coupling said second lever (**9**) of said attachment means to the second spring assembly (**8**) of the vehicle, for mechanically interpreting the forces applied to the spring assemblies and for transmitting the interpreted forces to said at least one weight sensing gauge (**4,34**).

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**3,934,664**
**STEERING MECHANISM FOR TRACK VEHICLES**
**Jorma Toivo Tapani Pohjola, Vaskitie 8, 90250 Oulu 25, Finland**
**Filed Jan. 31, 1974, Ser. No. 438,191**
**Claims priority, application Finland, Feb. 1, 1973, 292/73; Feb. 1, 1973, 293/73; Jan. 7, 1974, 40/74**
**Int. Cl.² B62D** *11/00*
**U.S. Cl. 180—9.44** **11 Claims**

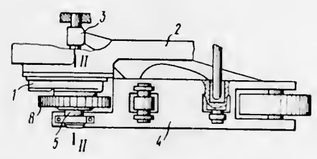
**1.** In a vehicle, a pair of end roll means extending transversely of the direction of travel of the vehicle and endless track means extending between and around said pair of end roll means to be guided thereby, said endless track means having a substantially non-stretchable central elongated endless region which is flexible and capable of assuming a curvature in accordance with turns which are executed by the vehicle when at least one of said end roll means turns about an upright axis, said endless track means having on each side of said central elongated region thereof a lateral elongated endless region for automatically contracting when said lateral region is on the inside of a curve executed by the vehicle and expanding when the lateral region is on the outside of a curve executed by the vehicle, said lateral regions of said endless track means automatically expanding and contracting while said central region assumes a curved condition to cooperate with said central region for providing said endless track means



with a smooth, substantially uniform curvature substantially throughout its length when the vehicle executes turns, said endless track means having on each side of said central elongated endless region thereof an elongated endless stretchable sheet material for reversibly expanding and contracting during execution of turns.

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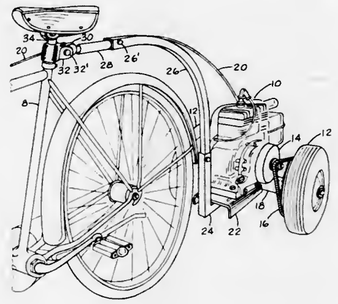
**3,934,665**
**TWO-STEP FINAL DRIVE OF A CRAWLER TRACTOR WITH RUNNING BOGIES**
**Jury Dmitrievich Egorov, ulitsa Marchenko 17, kv. 4; Ivan Savvateevich Kavyarov, prospekt Lenina, 15, kv. 20; Jury Petrovich Samatov, prospekt Lenina, 22, kv. 30; Nikolai Alexandrovich Chasovodov, ulitsa Marchenko, 19B, kv, 57, and Jury Ivanovich Chirikhin, prospekt Lenina, 28a, kv, 95, all of Chelyabinsk, U.S.S.R.**
**Continuation of Ser. No. 371,691, June 20, 1973, abandoned. This application July 22, 1974, Ser. No. 490,867**
**Int. Cl.² B62D** *55/00*
**U.S. Cl. 180—9.62** **3 Claims**



**1.** A two-step final drive of a crawler tractor provided with track roller frames, comprising a tractor frame; a carrier of a planetary reducer of a tractor transmission, said carrier being secured to said frame; a body disposed on one side of said carrier; a pinion supported by bearings in said body; a shaft of the tractor transmission, said shaft being linked up with said pinion through a splined connection; a driven gear supported by bearings in said body and meshing with said pinion; planet gears supported by bearings on said carrier; a sun gear meshing with said planet gears and connected to said driven gear by splines; said carrier being provided with a free end; a pivot for a track roller frame of the tractor, said pivot being disposed at said free end of the carrier; a track sprocket disposed at said free end between said pivot and the planetary reducer; and a ring gear linked up with said track sprocket by a splined connection and meshing with said planet gears.



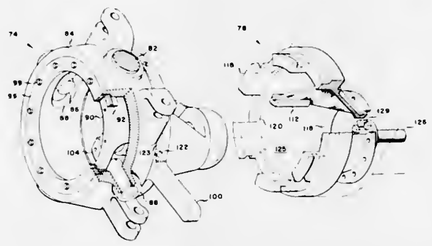
**3,934,666**
**BIKE BOOSTER**
**Robert W. Ellington, 4414 Concho St., Dallas, Tex. 75206**
**Filed Jan. 2, 1974, Ser. No. 429,493**
**Int. Cl.² B62P** *59/04*
**U.S. Cl. 180—11** **7 Claims**



**1.** The combination of a bicycle and a rear independent booster unit, with means connecting the booster unit to the bicycle and an attaching joint, wherein the improvements comprise: in the booster unit a single axle brace fixed to a single motor base piece, said base piece providing support and fixity for a double adjustable telescoping connecting means to which an attaching universal joint allows complete unrestricted rotary movement of the booster unit with relation to the bicycle, or of the bicycle with relation to the booster unit, about three mutual closely perpendicular axes.

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**3,934,667**
**ARTICULATED VEHICLE COUPLER**
**Daniel M. Schwartz, Los Altos, and John W. Cross, San Jose, both of Calif., assignors to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.**
**Filed July 1, 1974, Ser. No. 484,873**
**Int. Cl.² B62D** *59/00*
**U.S. Cl. 180—14 A** **11 Claims**



**1.** Coupler apparatus for joining first and second sections of a ground vehicle comprising

a socket forming member adopted to be attached to said first section,

an insertion means adopted to be attached to said second section, said insertion means complementary with and receivable in said socket member,

said insertion means including a forward semi-spherical support surface and a rearward larger diameter cylindrical support surface,

a guide receptacle defined by a pair of tapered walls in said insertion means,

a guide projecting from said socket forming member, said guide cooperating with the tapered walls of said guide receptacle to assist in angularly aligning said insertion means and said socket member,

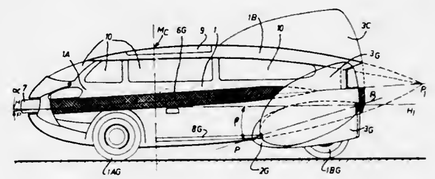
first set of final alignment members on the said socket member,

second set of final alignment members on the said insertion means, said first and second set of alignment members meshing for providing final alignment of said insertion means and said socket member,

locking means, said locking means cooperating with said first set of final alignment members and said second set of final alignment members for rigidly attaching said insertion means and said socket member.

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**3,934,668**
**LIGHTWEIGHT HIGH PERFORMANCE, HIGH SECURITY VEHICLE**
**Jacques Jean-Marie Jules Gerin, Chatellenot, Poullly-en-Auxois, Cote d'Or, France**
**Filed Nov. 20, 1973, Ser. No. 417,544**
**Claims priority, application France, May 5, 1972, 72.16157**
**Int. Cl.² B62D** *61/00*
**U.S. Cl. 180—21** **5 Claims**



**1.** A lightweight high performance vehicle affording a great degree of security comprising

a tapered cockpit with a well rounded forward portion both in the horizontal and in the vertical plane;

a profiled transverse horizontal appendix extending from both sides of the rear of said cockpit;

two front wheels at the front portion of said cockpit;

two rear wheels detached from said cockpit and housed at the two extremities of said profiled transverse appendix and forming therewith a transverse horizontal stabilizer;

three vertical stabilizers forming fins disposed respectively above said cockpit and at the two extremities of said transverse stabilizer;

and an aerodynamic brake including

a transverse pin located at the rear of said horizontal appendix,

flaps capable of pivoting on said transverse pin, under control of the driver, when the speed of the vehicle is sufficient for aerodynamic brake action to be efficient,

additional flaps contained inside said aerodynamic brake flaps and capable of pivoting laterally and automatically in proportion as said brake flaps pivot towards their fully open position so that, when the latter is reached, the space between said brake flaps and said central fin disposed above said cockpit is substantially completely blocked by said additional flaps.

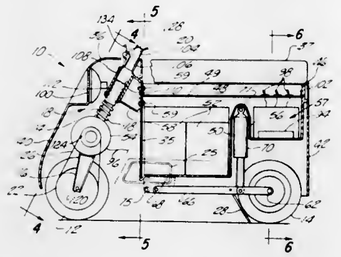
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**3,934,669**
**POWERED VEHICLE**
**Herbert L. Adams, 1036 San Carlos Road, Pebble Beach, Calif. 93953**
**Filed Aug. 26, 1974, Ser. No. 500,389**
**Int. Cl.² B60K** *17/30;* **B62D** *9/00*
**U.S. Cl. 180—34** **2 Claims**

**1.** A powered vehicle comprising:

an integrally formed body frame, resembling a suitcase, bounded by a top wall, a front wall, a rear wall, and side walls;

a pair of wheels supporting said frame;
a steering column having a lower portion rotatably carried by said frame, said lower portion of said steering column being coupled to one of said wheels to facilitate the steering of said vehicle when said steering column is rotated with respect to said frame;
an upper portion of said steering column being longitudinally slidably received in said lower portion and movable between a raised position and a lowered position;
means for releasably securing said upper portion to said lower portion when in either said raised or lowered positions, such that said upper portion of said steering column is rotatable with said lower portion when said upper portion is in said raised position and releasably secured with said lower portion, and said upper portion is movable with respect to said lower portion when not secured to said lower portion;
handlebar means carried by said upper portion and movable with said upper portion to a front to rear position with respect to said vehicle such that one end of said handlebar means is in close proximity to said top wall of said frame when said upper portion of said steering column is in said lowered position; and
the other end of said handlebar means projecting outwardly from said front wall of said vehicle, whereby, when said handlebar means is in said front to rear position, said one end of said handlebar means serving as a means for lifting and carrying said vehicle, the other end of said handlebar means serving to facilitate the manual propelling of said vehicle on at least one of said wheels; said handlebar means are coupled with said steering column by a non-

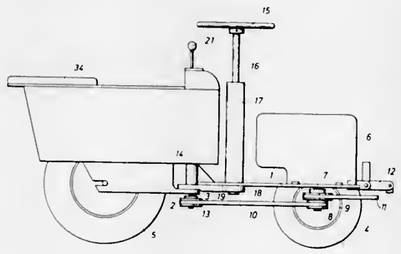


circular arrangement for positioning said handlebar in 90° increments for fail-safe torsional coupling for steering said vehicle in said operative mobile condition and for acurate positioning of said handlebar means with respect to said steering column in said front to rear position.

**2.** An electrically powered vehicle comprising:
an integrally formed body frame;
a plurality of wheels supporting said frame including a front driven wheel;
a steering column carried by said frame having an upper and a lower portion;
an electric motor carried by said steering column;
an angled member having a base and means for mounting an axle on which said driven wheel is rotatably mounted and supported, said base of said member mounting said electric motor;
means connecting the mechanical output of said electric motor to said wheel to drive the same; and
means fixedly attaching one end of said lower portion of said steering column to said electric motor such that said front driven wheel, said angled member, said electric motor, and said lower portion of said steering column unitedly form one member adapted to facilitate the steering of said electrically driven wheel;
bearing means carried by said frame and rotatable with respect to said frame, said bearing means having a splined bore, the opposite end of said lower portion of said steering column having a splined portion slidably received within said splined bore; and
shock absorbing spring means carried by said lower portion of said steering column and engaging with a portion of said frame.

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**3,934,670**
**VEHICLE FOR PROPULSION OF GARDENING IMPLEMENTS AND THE LIKE**
**Thord Erik Medalen, Vindarnas vag 2, S-582 72 Linkoping, Sweden**
**Filed Feb. 25, 1974, Ser. No. 445,691**
**Int. Cl.² B60K** *17/30*
**U.S. Cl. 180—52** **2 Claims**



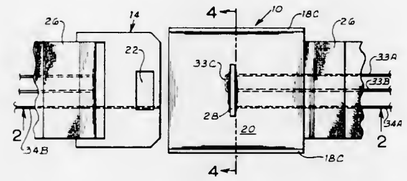
**1.** In a vehicle for the propulsion and operation of gardening, road-sweeping, snow-clearing and the like implements, said vehicle including first and second wheeled sections, the first section having an engine mounted thereon and the second section having at least one wheel adapted to be driven by the engine, means for pivotally connecting the first and second sections for articulated steering movement about a vertical axis, steering means mounted on one of the sections for implementing said steering movement, and a drive train extending between the sections for drivably coupling the engine to said one wheel, the improvements characterized by:
the means for pivotally connecting including a fork member extending from one of the sections and a tongue member extending from the other section and interposed in the fork member, and a vertical axle extending through the tongue and fork member and rotatably mounted therein to define said vertical axis, one end of said axle being coupled to the engine and the other end of said axle being coupled to said one wheel by a regulatable gearing device, wherein said axle serves both as a pivot pin rotatably connecting the first and second sections together and as a vertical drive shaft for coupling driving power from the first section to the second section.

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**3,934,671**
**STARTER ENABLING-DISABLING IGNITION SAFETY SEAT BELT FOR MOVING VEHICLES**
**Robert L. Hart, 1525 Olive St., Indianapolis, Ind. 46203**
**Filed Oct. 10, 1974, Ser. No. 513,476**
**Int. Cl.² B60R** *21/02*
**U.S. Cl. 180—82 C** **4 Claims**

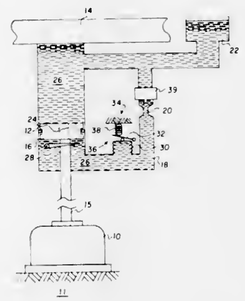
**1.**
A seat belt buckle means providing a connection means for establishing one or more circuits as an incident to the establishing of the mechanical supporting connection of the buckle means, and comprising:
first and second co-operating buckle members releasably engageable for establishing the mechanical supporting connection of the buckle means;
co-operating optical conductor means on each of the buckle members, the respective optical conductor means being optically connected to and providing a portion of an associated opto-electrical circuitry, said optical conductor means being respectively operatively aligned with the buckle member components which establish the mechanical supporting connection, and thereby operatively aligned for co-operating with one another whenever and only whenever the said buckle members are co-operatively engaged and are establishing said mechanical supporting connection; and
a key receivable in said first buckle member and including a portion of said optical conductor means therein, and removable from said buckle member to disable said opto-electrical circuitry.





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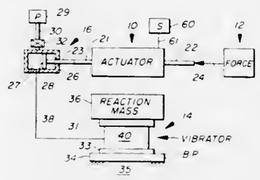
**3,934,672**
**METHOD AND APPARATUS FOR SENSING WHEN A SEISMIC GAS EXPLODER IS IN CONTACT WITH THE EARTH**
**Daniel P. Hearn, Richardson, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.**
**Filed Nov. 25, 1974, Ser. No. 526,841**
**Int. Cl.² G01V** *1/06*
**U.S. Cl. 181—117** **13 Claims**



**4.** In a system for generating seismic energy by means of a gas exploder of the type adapted to apply a downwardly directed pulse to the earth and which is driven upwardly by the resultant reactive force, the improvement comprising:
a a support structure,
b a hydraulic cylinder fixed to said support structure and having a piston movable therein,
c a quantity of hydraulic fluid in said cylinder,
d means for coupling said gas exploder to said piston so that the weight of said gas exploder is exerted through said piston during the fall of said exploder to increase the pressure in said fluid, and
e means for sensing the pressure in said fluid to determine when said pressure increase has been relieved by the return of said exploder to earth.

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**3,934,673**
**VIBRATOR SYSTEMS FOR GENERATING ELASTIC WAVES IN THE EARTH**
**Daniel Silverman, 5969 S. Birmingham St., Tulsa, Okla. 74105**
**Continuation-in-part of Ser. No. 223,896, Feb. 2, 1972, Pat. No. 3,789,951. This application Feb. 1, 1974, Ser. No. 438,698**
**Int. Cl.² G01V** *1/14*
**U.S. Cl. 181—119** **17 Claims**




**1.** A vibrator system for generating seismic waves in the earth, comprising;
a. at least one vibrator comprising a first expandable closed chamber having two parts which reciprocate with respect to each other, one part in contact with the earth, and the other part connected to a reaction mass;
b. an actuator drive means controlled in accordance with an oscillatory drive signal and having an output drive means responsive to said drive signal;
c. a first compartment comprising an expandable closed cavity having two parts which oscillate with respect to each other, the internal volume of said first compartment responsive to said output drive means, said first compartment connected by a first conduit to said first chamber, said first chamber and said first compartment filled with pressurized fluid at a selected pressure P;
d. said fluid at pressure P in said first compartment creating a first force F1 acting against said actuator output drive means; and
e. passive means to exert a second force F2 on said actuator output drive means in opposition to and substantially equal to the time average value of said force F1 on said drive means exerted by said fluid in said first compartment.

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**3,934,674**
**ACOUSTIC HEADSETS**
**Sidney X. Shore, 29 Wren Drive, Roslyn, N.Y. 11576, and Paul S. Martin, 189-54 43rd Road, Flushing, N.Y. 11358**
**Filed Aug. 29, 1974, Ser. No. 501,688**
**Int. Cl.² A61B** *7/02*
**U.S. Cl. 181—135** **5 Claims**

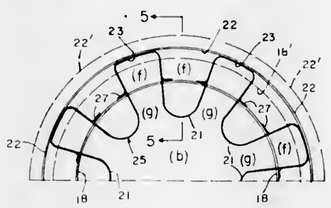


**1.** An acoustic headset having a pair of sound-transmitting tubes, a pair of earpieces carried by respective first end por-

tions of said tubes, and a generally U-shaped frame having in-turned end portions containing and directing second portions of said tubes adjacent first end portions thereof, said frame further including resilient arms containing third portions of said tubes extending from said in-turned end portions thereof, said frame further including a central portion carrying said arms, and a plug-in terminal, said tubes each including a further length extending to said plug-in terminal from said third portions thereof, respectively, said arms having inner and outer strips separated from each other along their entire lengths except for localized interconnections at widely spaced locations including interconnections at their extremities, and said inner and outer strips extending along said third portions of said tubes at the sides thereof facing toward and away from the center-line of the U-shaped frame.

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**3,934,675**
**JET ENGINE NOISE SUPPRESSOR**
**William P. Lear, Verdi, Nev., assignor to Lear Avia Corporation, Reno, Nev.**
**Filed May 20, 1974, Ser. No. 471,476**
**Int. Cl.² F02K 1/26**
**U.S. Cl. 181—33 HC** **15 Claims**



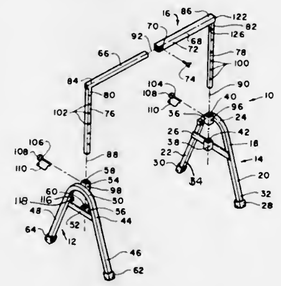
**1.** A sound suppressor for a jet engine having an exhaust nozzle through which hot exhaust gases are thrust along its longitudinal axis from the engine, said sound suppressor, comprising:

a plurality of mixing channels arranged about the downstream exit of the exhaust nozzle receiving both the exhaust gases and cooling air for directing cool air into the peripheral regions of the exhaust gas flow, thereby effectively attenuating the sound output, said channels having respective channel walls extending into the peripheral region of the exhaust gas flow, each channel wall having a surface configuration perpendicular to the inside surface of the exhaust nozzle and parallel to the direction of the longitudinal axis.

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**3,934,676**
**SCAFFOLD STRUCTURE**
**Robert C. Rice, 6137 Lincoln Highway East, Fort Wayne, Ind. 46803**
**Filed Sept. 23, 1974, Ser. No. 508,525**
**Int. Cl.² E04G 1/32; F16M 11/00**
**U.S. Cl. 182—182** **10 Claims**

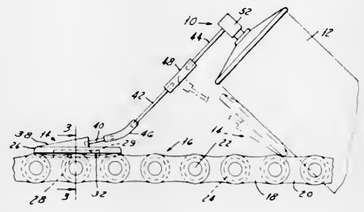
**1.** A scaffold structure comprising at least two rigid leg frames, each set of leg frames including a pair of spaced-apart legs and a top portion, upper collar elements each having an opening therethrough and being secured to said top portion with said openings extending vertically, a platform frame including a pair of parallel spaced-apart post members having cross-sections complementary to said collar openings whereby said posts are slidably, vertically received through said upper collars, respectively, a platform support including a pair of telescopically engaged platform members fixedly secured adjacent their distal ends to respective ones of the upper ends of said post members, post locking means for locking said posts in selected vertically displaced positions to said collar members with said platform members extending laterally between said leg frames in a plane generally perpendicular to the plane including said legs, support locking means for locking said support members in selected telescopically extended positions, a storage collar element fixedly secured to each of said leg frames, each said storage collar element having an opening therethrough, said openings having an axis disposed generally parallel to a plane including said legs, said storage collar openings being dimensioned to slidably receive said



posts therethrough, the outer one of said platform members being open at both ends thereof, the inner one of said platform members being slidably receivable into either end thereof, whereby said leg frames can be vertically stacked in interlocking relationship upon one another, said platform support can be assembled with said posts in closely spaced-apart relationship with said posts being slidably received in said storage collar elements.

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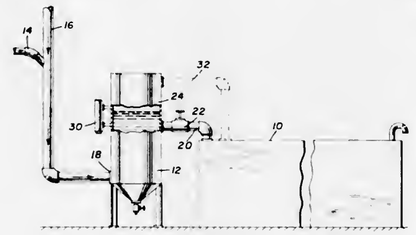
**3,934,677**
**MAGNET FOR GUIDING LUBRICATING HEAD ON A CHAIN TO BE LUBRICATED**
**Roger A. Schott, 13559 Rutland, Detroit, Mich. 48227, and Lawrence A. Schott, 15940 Warwick, Detroit, Mich. 48223**
**Filed June 6, 1974, Ser. No. 477,311**
**Int. Cl.² F16N 7/00**
**U.S. Cl. 184—15 R** **8 Claims**



**2.** A lubricator for a chain having a plurality of links pivotally interconnected adjacent their ends comprising an applicator head, a guide carried by said head and aligning said head with a chain for relative longitudinal movement therebetween, a magnet carried by said head for retaining said head on a chain in alignment therewith during relative longitudinal movement between said head and a chain, and means forming a passageway carried by said head for a lubricant to be discharged onto a chain for lubricating a chain, said magnet being a permanent magnet having a pair of spaced apart longitudinally extending parallel side walls projecting from said head into the space between and lying closely adjacent opposed transversely spaced apart links of a chain when said head is received thereon, thereby providing at least a portion of said guide carried by said head.



**3,934,678**
**FLOW MONITOR FOR CIRCULATING LUBRICATION SYSTEMS**
**Lewis C. Jennings, Boylston, Mass., assignor to Morgan Construction Company, Worcester, Mass.**
**Filed Mar. 4, 1974, Ser. No. 447,900**
**Int. Cl.² F01M 11/12**
**U.S. Cl. 184—103 R** **6 Claims**

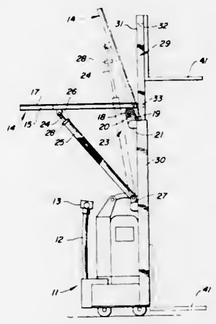


**1.** In an apparatus for circulating lubricating systems comprising a main receiving tank containing lubricant which is circulated through part of the system under pressure and unpressurized drain lines for returning the lubricant to the main receiving tank for recirculation, the improvement which comprises:

a. an indicating tank for receiving lubricant from said unpressurized drain lines, said indicating tank having a horizontal cross-sectional area which is substantially less than the horizontal cross-sectional area of said main receiving tank at any fluid level;
b. level indicator means for indicating the level of lubricant in the indicator tank, said level indicator means operatively connected to said indicating tank;
c. drain line means for draining lubricant by gravity flow from said indicating tank into said main receiving tank; and,
d. valve means located along said drain line means for maintaining a substantially constant fluid level in said indicating tank during ordinary operating conditions.

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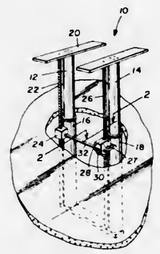
**3,934,679**
**RETRACTABLE STACKER GUARD**
**Nathan S. Lieptz, Beachwood, Ohio, assignor to Curtis Noll Corporation, Cleveland, Ohio**
**Filed Oct. 21, 1974, Ser. No. 516,363**
**Int. Cl.² B66B 9/00**
**U.S. Cl. 187—1 R** **15 Claims**



**14.** In a protective overhead guard for an operator-controlled vertical load-lifting machine having a longitudinally movable vertical-lifting member, the combination of an overhead guard pivotally connected to said machine for angular displacement relatively thereto, first means associated with said overhead guard and cooperating with said member for raising said guard axially about said pivotal connection to a retracted substantially upright position in response to downward longitudinal motion of said member to a load-carrying position below the operator, and second means associated with said guard and cooperating with said member for lowering said guard axially about said pivotal connection to an operator-protective position in response to upward longitudinal motion of said member toward a load-carrying position above the operator.

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**3,934,680**
**SAFETY LATCH FOR AUTOMOTIVE HOISTS OR THE LIKE**
**Burton DeWolfe Bishop, Salisbury, Md., assignor to Dresser Industries, Inc., Dallas, Tex.**
**Filed Feb. 26, 1975, Ser. No. 553,366**
**Int. Cl.² B66F 7/28**
**U.S. Cl. 187—8.5** **5 Claims**



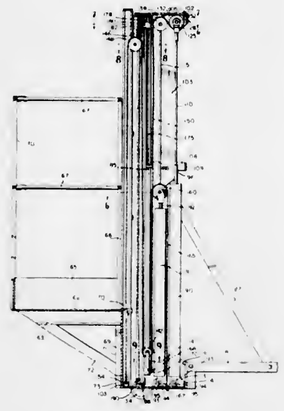
**1.** Improved safety latch apparatus for automotive hoists or the like that includes a piston telescopingly arranged within a fixed cylinder and means for causing said piston to move relative to said cylinder, said latch apparatus comprising:

a rack gear attached to and movable with the piston;
a latch housing attached to the cylinder and encompassing a portion of said rack gear, whereby said rack gear can move through said housing upon movement of said piston;
a gear shaft journaled in said housing;
a spur gear attached to said gear shaft in mesh with said rack gear, whereby said spur gear and shaft rotate in response to movement of said rack gear through said housing;
a latch dog member pivotally supported by said housing and including a tooth portion that is engageable with said rack gear; and;
friction-clutch means on said gear shaft for automatically urging said latch dog toward said rack gear when the piston is raised relative to the cylinder, said friction-clutch means including a latch operating member movable with and, at other times, movable relative to said spur gear and gear shaft, said clutch means also including a connecting member extending between said latch operating member and said latch dog member and resilient means on said latch operating member for biasing said latch dog member relatively toward said rack gear, whereby movement of said operating member moves said latch dog member into or out of engagement with said rack gear to prevent or permit movement of said rack relative to said housing, said resilient means permitting movement of said dog member relatively away from said rack gear permitting relative upward movement of said rack gear relative to said housing when said latch dog member is engaged with said rack gear.

### 3,934,681
### OVERHEAD SERVICE UNIT

**Robert C. Herrell, Indianapolis, Ind., assignor to Baker-Roos, Indianapolis, Ind.**

**Filed Apr. 12, 1974, Ser. No. 460,510**
**Int. Cl.² B66B *11/04***
**U.S. Cl. 187—17** **11 Claims**

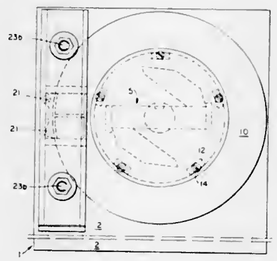


1. An overhead service unit, comprising a base, a first frame fixedly mounted on said base and projecting upwardly therefrom, a plurality of second frames slidably interconnected to each other and to said first frame, a platform movably mounted on one of said second frames, a pair of cylinders mounted on said base and each having an upwardly projecting vertically movable ram, a plurality of sets of chains operatively connected to said base, first and second frames, platform and rams whereby upon actuation of said cylinders to extend one of said rams and retract the other of said rams said chains will cause said second frames and platform to move vertically with and with respect to each other, and means for selectively actuating said cylinders to move said rams with respect to each other.

### 3,934,682
### SAFETY DEVICE FOR LIFTS, HOISTS AND LIKE APPARATUS

**Ture E. Hedstrom, Tjadervagen 35, 141 72 Huddinge, Sweden**

**Filed Nov. 5, 1973, Ser. No. 412,732**
**Claims priority, application Sweden, Dec. 13, 1972, 15279/72**
**Int. Cl.² B66B *5/18***
**U.S. Cl. 187—78** **4 Claims**



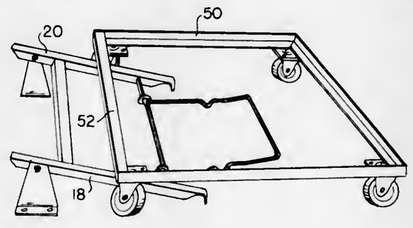
1. A safety device for braking a hoist and the like to a stop when its downward movement in a frame structure reaches a predetermined rate of descent, comprising:

a. a plate member fixed to the frame structure of said hoist having a sleeve member within which a shaft is journalled to rotate with the movement of the hoist;
b. a brake disc mounted to rotate about said sleeve in frictional engagement with stationary friction means effective to brake the descending movement of the hoist;
c. centrifugal means connected to said shaft and responsive to the rotational speed thereof to engage and rotate said brake disc when the rotation of the shaft reaches a predetermined velocity;
d. means carried by said plate member mounted to co-act with means on said brake disc to stop the rotation thereof after a predetermined number of revolutions;
e. said rotation stopping means comprising a spring biased rocker arm pivotally mounted on said plate member and an impingement member carried by said brake disc adapted to engage and move said rocker arm against a stop member carried by said plate upon completion of the predetermined number of revolutions.

### 3,934,683
### LOCKING BRACKET FOR DOLLY

**Ronnie H. Walker, Cypress, Calif., assignor to Banner Metals, Compton, Calif.**

**Filed Jan. 20, 1975, Ser. No. 542,563**
**Int. Cl.² B60T *3/00***
**U.S. Cl. 188—32** **2 Claims**




1. A locking bracket assembly for a dolly, or the like, comprising: a pair of pedestals to be mounted on a horizontal supporting surface in spaced positions along an axis adjacent and parallel to a wall, or the like; a pair of side rails respectively pivotally mounted on said pedestals at points displaced from the centers thereof toward the forward ends of the rails and with the forward ends of the rails spaced a predetermined distance from the wall surface, said side rails assuming a normally inclined position with the rear ends thereof resting on the horizontal supporting surface and with the forward ends thereof displaced up from the horizontal supporting surface; and a foot pedal coupled to said side rails to turn said rails to a generally horizontal release position, in which said foot pedal comprises a wire-like cross member affixed to said side rails at respective points displaced from the pivot points towards the rear ends of the side rails; and a U-shaped member pivotally coupled at its open end to the wire-like cross member.

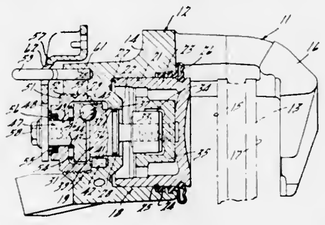
### 3,934,684
### COMBINED SERVICE AND PARKING BRAKE WITH AUTOMATIC ADJUSTOR

**Anthony C. Evans, Westland, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.**

**Filed Feb. 28, 1974, Ser. No. 446,735**
**Int. Cl.² F16D *65/56***
**U.S. Cl. 188—71.9** **3 Claims**

2. A sliding caliper type disk brake comprising a caliper housing having first and second portions adapted to be disposed contiguous to respective braking surfaces of an associated disk brake rotor, a cylinder bore formed in said first caliper portion, a piston slidably supported in said cylinder bore and adapted to cooperate with a first brake pad, means for pressurizing said cylinder bore and uring said piston toward the associated rotor braking surface to actuate the associated brake pad and for creating a reactive force for sliding said caliper assembly axially relative to the associated brake rotor, said cylinder bore terminating at an integral wall of said first caliper portion, a bore extending through said wall and terminating at an opening formed integrally with said first caliper portion, an actuating member having a first portion slidably received in said bore and a second portion extending into said piston, automatic adjusting means operatively connecting said second portion of said actuating member to said piston for actuating said piston upon axial movement of said actuating member and for automatically adjusting for wear of at least the first brake pad, said automatic adjusting means comprising a housing received within said piston and affixed against axial movement relative thereto, a threaded member rotatably supported within said adjustor housing, said actuating member having an externally threaded portion extending into said threaded member, said threaded member having





internal threads engaged with the threads on said actuating member, said threaded member having external threads of different pitch from said internal threads, a drive ring positioned within said adjustor housing and having a threaded connection with said external threads of said threaded member, means for transmitting axial force exerted upon said adjustor housing into a force acting upon said ring for effecting a differential screw rotation of said threaded member and one-way brake means operatively interposed between said threaded member and said housing for limiting the degree of reverse movement of said threaded member upon return brake action in response to a predetermined degree of lining wear, seal means interposed between said bore and said actuating member for preventing the leakage of fluid from said cylinder bore through said bore into said opening, rotary cam means disposed within said caliper opening, an operating member rotatably supported by said first caliper portion and operably connected to said rotary cam means for axially moving said actuating member upon rotary movement of said operating member to mechanically actuate said piston.

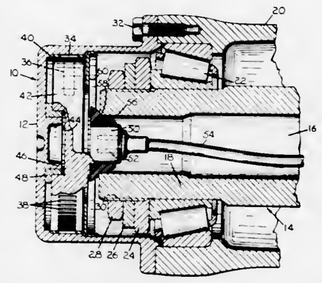
### 3,934,685
### WHEEL SPEED SENSOR ASSEMBLY

**Raymond John Jovick, Troy, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.**

**Filed Nov. 4, 1974, Ser. No. 520,283**
**Int. Cl.² B60T *8/12***
**U.S. Cl. 188—181 R** **10 Claims**

1. An improved wheel speed sensor assembly for installation in association with a wheel rotatably mounted on a hollow axle which has an open-ended spindle and being of a type which includes an excitor ring mounted within a hub cap of said wheel and a magnetic sensor device capable of electrically transmitting a speed signal through electrical wiring extending through the interior of said axle; wherein the improvement comprises:

said sensor device being disposed within a sensor housing;
said sensor housing being disposed within said hub cap and mounted thereon for relative rotation about a central axis of said hub cap with said sensor device in alignment with said excitor ring;
said sensor housing having a connector portion generally extending toward and aligned with said open-ended spindle and electrically coupled to said wiring when said hub cap is secured on said wheel; and



means disposed between said spindle and said sensor housing for providing frictional contact therebetween to prevent relative rotation of said spindle and said sensor housing during operation of said assembly.

### 3,934,686
### CARBON FRICTION MEMBERS HAVING TORQUE TRANSMITTING FORMATIONS

**Ian Leonard Stimson, Rugby, and Frederick Sidney Dowell, Coventry, both of England, assignors to Dunlop Limited, London, England**

**Filed Dec. 18, 1973, Ser. No. 425,801**
**Claims priority, application United Kingdom, Dec. 20, 1972, 58890/72**
**Int. Cl.² F16D *69/02***
**U.S. Cl. 188—251 A** **10 Claims**



1. A carbon frictional member for a brake or clutch comprising an annular carbon disc one periphery of which is provided with a number of discrete circumferentially-separated carbon torque-transmitting formations reinforced by filamentary material, the formations being formed by a separate sequence of operations from those used to form the remainder of the friction member and recessed into the periphery so that the disc surrounds the inserts on all but their radially outer faces.

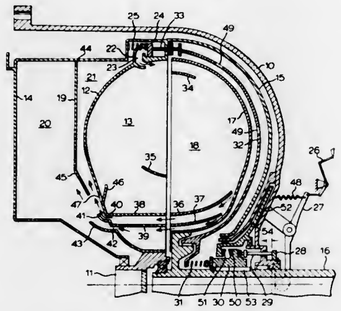
### 3,934,687
### HYDRAULIC COUPLING FLUID CLUTCHES

**John Edward Becker, Bowmanville, Canada, assignor to Cluaran Associates Ltd., Oshawa, Canada**

**Filed Aug. 19, 1974, Ser. No. 498,672**
**Claims priority, application United Kingdom, Aug. 22, 1973, 39711/73**
**Int. Cl.² F16D *67/00***
**U.S. Cl. 192—3.23** **8 Claims**

1. A hydraulic coupling fluid clutch comprising co-operating pump and turbine elements each having radial vortex-producing vanes and forming a working chamber, a reservoir chamber carried by the pump or turbine element, said reservoir chamber comprising two separate compartments connected by flow means, means for feeding the liquid from the

working chamber separately to the two compartments of the reservoir chamber, the said feeding means feeding liquid to one compartment under normal operating conditions of the coupling and feeding liquid to the other compartment under stall operating conditions, valve means returning liquid from the reservoir chamber to the working chamber, the said valve



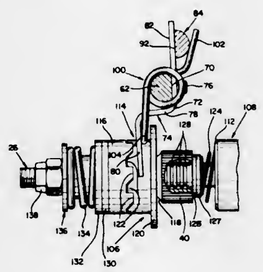
means connecting the said one compartment and the working chamber, and the said flow means between the compartments being of less flow capacity than the means feeding liquid to the other compartment, and operator-controlled means for closing the valve means to retain the liquid in the reservoir chamber and thereby declutch the coupling.

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**3,934,688**
**SHIFTER MECHANISM**

**Daniel Harrison Sides, New Freedom, Pa., and William D. Sauerwein, Joppa, Md., assignors to The Black and Decker Manufacturing Company, Towson, Md.**

**Filed Sept. 11, 1974, Ser. No. 505,042**
**Int. Cl.² F16D 47/00, 7/02, 11/04**
**U.S. Cl. 192—48.5** **32 Claims**



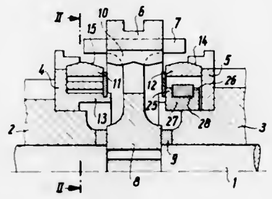
**20.** In an electrical tool, the combination comprising a motor shaft, a transmission driven by said shaft, clutch means interconnecting said shaft and said transmission, said clutch means comprising a first clutch member rotatably and slidably mounted on said shaft and a second clutch member, means to locate said second clutch member in a predetermined axial position on said shaft and for rotation with said shaft, spring means for urging said first clutch member into engagement with said second clutch member, said first clutch member comprising a pinion portion engaged with said transmission and a flange portion, shift means cooperable with said flange portion to move said first clutch member axially on said shaft and out of engagement with said second clutch member, said shift means comprising a shift member rotatably mounted in the housing of said tool and having a first portion cooperable with said flange portion of said first clutch member, said shift member having a second portion, said shift means further comprising an operating member mounted for motion in said housing, and spring means for urging said shift member second portion into engagement with said operating member, whereby a predetermined motion of said operating member causes a corresponding motion of said shift member which in turn moves said first clutch member into or out of engagement with said second clutch member.

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**3,934,689**
**SYNCHRONIZATION MECHANISM FOR CHANGE-SPEED TRANSMISSIONS OF MOTOR VEHICLES**

**Emil Kunz, Kornwestheim, Germany, assignor to Dr. Ing h.c.F. Porsche Aktiengesellschaft, Germany**

**Filed Apr. 8, 1974, Ser. No. 459,122**
**Claims priority, application Germany, Apr. 10, 1973, 2317852**
**Int. Cl.² F16D 11/00**
**U.S. Cl. 192—53 C** **28 Claims**



**1.** A synchronization mechanism, especially for change-speed transmissions of motor vehicles, in which a slotted synchronizing ring means is under the influence of slotted, substantially ring-shaped blocking means increasing the servo-effect thereof, the blocking means being arranged between the synchronizing ring means and a hub of an associated coupling means, characterized in that the blocking means is supported during a synchronizing operation at an independent abutment means extending in a recess means provided in the hub of the coupling means, the abutment means being engaged in a groove in the hub of the coupling means and being effectively anchored together with the blocking means between the ring ends thereof and the abutment means being loosely guiding in the blocking means such that a minor relative movement of said blocking means with respect to said abutment means takes place during synchronizing operations.

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**3,934,690**
**MAGNETIC SPRING CLUTCH**

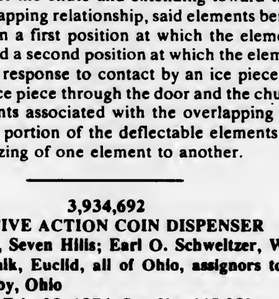
**John L. Janning, Dayton, Ohio, assignor to NCR Corporation, Dayton, Ohio**

**Filed Dec. 4, 1974, Ser. No. 529,316**
**Int. Cl.³ F16D 19/00**
**U.S. Cl. 192—84 T** **13 Claims**

**1.** In a magnetic spring clutch having a driving member means; a coil means, an output member means, and a helical clutch spring having one end fixed to said driving member means to rotate therewith; the improvement comprising:

a floating magnetic ring fixed to said output member means with said magnetic ring being at least partially surrounded by said clutch spring;

said coil means when energized having a magnetic flux path which passes through said clutch spring and said magnetic ring so as to cause said clutch spring to tighten on said magnetic ring to provide a driving connection between



said driving member means and said output member means.

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**3,934,691**
**ICE DISPENSING SYSTEM OF A REFRIGERATOR-FREEZER**

**Henry A. Toloczko, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.**

**Filed Dec. 6, 1974, Ser. No. 530,175**
**Int. Cl.² B65G 11/20**
**U.S. Cl. 193—32** **6 Claims**



**1.** In an ice-dispensing system of a refrigerator-freezer having an ice-discharge chute passing through a wall of the refrigerator-freezer, the improvement comprising:

first and second doors positioned within the chute at locations spaced one from the other along the length of the chute, each of said doors comprising a plurality of deflectable elements each attached at one edge about the inner walls of the chute and extending toward the chute axis in overlapping relationship, said elements being movable between a first position at which the elements seal the chute and a second position at which the elements are deflected in response to contact by an ice piece for passage of the ice piece through the door and the chute; and

heating elements associated with the overlapping portions of at least a portion of the deflectable elements for preventing freezing of one element to another.

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**3,934,692**
**POSITIVE ACTION COIN DISPENSER**

**Frank A. Novak, Seven Hills; Earl O. Schweitzer, Wickliffe, and Kamal Naik, Euclid, all of Ohio, assignors to Ardac, Inc., Willoughby, Ohio**

**Filed Feb. 25, 1974, Ser. No. 445,058**
**Int. Cl.³ G07D 1/04**
**U.S. Cl. 194—4 C** **17 Claims**

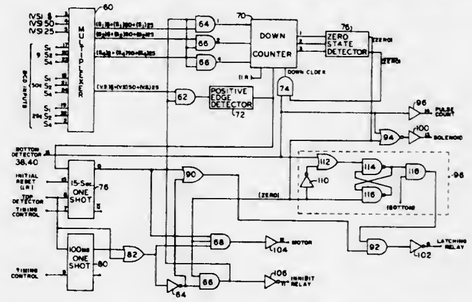
**1.** A positive payout coin dispenser operative to dispense change for money of any of numerous denominations, comprising:



first circuit means for determining the validity of the money for which change is desired and producing a signal indicative of the validity and denomination thereof;

coin chutes, one for each denomination of coins to be dispensed, operative to receive coins from associated hoppers and maintain said coins therein; and

second circuit means, interconnecting said first circuit means and said chutes for receiving and responding to



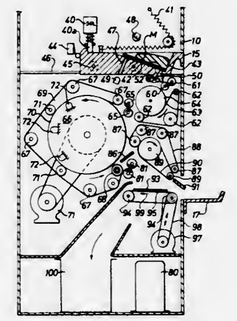
said signal to effectuate the release of respective predetermined numbers of coins from each chute and operative to sense the actual escapment of each coin from each chute; said second circuit means including a solenoid-actuated release mechanism positioned at the bottom of the chute to control the release of coins and a first sensing means positioned above said release mechanism for sensing the passing of a coin from said chute.

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**3,934,693**
**AUTOMATIC BANKING DEPOSIT RECEIVING AND HANDLING MACHINE**

**Kenichi Ooyama, Nagaokakyo, and Syunsuke Matsuo, Muko, both of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan**

**Filed Aug. 13, 1974, Ser. No. 496,921**
**Claims priority, application Japan, Aug. 16, 1973, 48-91857**
**Int. Cl.² G07F 7/10**
**U.S. Cl. 194—4 R** **11 Claims**



**1.** A deposit receiving and handling apparatus, comprising:

a. first means for receiving from a depositor one or more items to be deposited, said first means including a receptacle means having open and closed conditions, said receptacle means being capable of receiving said items from said depositor only when in said open condition, said first means also including locking means normally maintaining said receptacle means in said closed condition,

b. second means for receiving from said depositor a card, said second means including validity checking means

providing a first output signal when a card so received is valid;

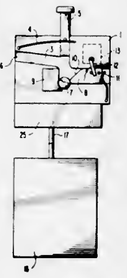
c. a third means which is responsive to said first output signal to disable said locking means, whereupon said receptacle means may be operated to its open condition,

d. fourth means detecting an operation of said receptacle means from said open condition to said closed condition to provide a second output signal, said fourth means additionally being responsive to said second output signal to enable said locking means,

e. fifth means operable in response to said second output signal to remove said items one at a time from said receptacle means.

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**3,934,694**
**COIN-CONTROLLED FLUID DISPENSER**
**Harry Pedersen, Ternevelen 50, 4042 Hafrsfjord, Norway**
**Filed Feb. 24, 1974, Ser. No. 552,123**
**Int. Cl.² G07F** *13/02*
**U.S. Cl. 194—82** **8 Claims**



1. A coin-controlled apparatus for dispensing a predetermined quantity of a fluid, comprising a coin chute defined in part by a pair of slides, means for inserting a coin in said chute between said slides so as to move one of said slides in one direction, means responsive to movement of said one slide in said one direction to pump said predetermined quantity of fluid while said coin holds said one slide in its moved position, and means responsive to movement of said dispensing means to move the other said slide in another direction different from said one direction when said predetermined quantity of fluid has been pumped thereby to permit said coin to fall out of contact from said slides, and means to return said slides to their initial position.

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**3,934,695**
**METHOD AND APPARATUS FOR ENHANCING AND MAINTAINING CHARACTER QUALITY IN THERMAL PRINTERS**
**Albert W. Kovalick, Santa Clara, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.**
**Filed Sept. 23, 1974, Ser. No. 508,111**
**Int. Cl.² B41M** *5/26*
**U.S. Cl. 197—1 R** **21 Claims**

1. A printer for printing characters on a printing medium comprising:

a printer head, having a plurality of spaced transducers mounted in a line thereon, movably mounted in close proximity to the printing medium, the line of transducers being oriented transverse to the direction of head movement;

motive means coupled to the printer head for driving the printer head past the printing medium at a predetermined rate;

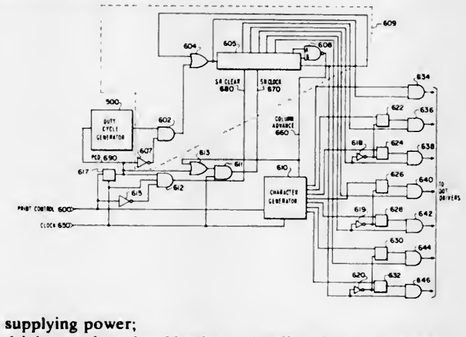
timing means for producing timing signals;

character generating means coupled to the timing means for generating character data signals in response to timing signals therefrom;

slant generating means coupled to the timing means for generating periodic, sequentially-timed command signals at a preselected repetition rate in response to timing signals received therefrom; and

gating means coupled to the printer head, the slant generating and the character generating means for selectively activating successive ones of the transducers in response to command and character data signals to print characters on the printing medium as a matrix of rows and columns of dots, the interval between rows being determined by the spacing between transducers and the interval between columns being determined by the repetition rate of the command signals and the rate at which the printer head is driven.

13. A method for printing characters on a printing medium comprising the steps of:



supplying power;

driving a printer head having a plurality of spaced transducers mounted in a line aligned thereon transverse to the direction of head movement past the printing medium in close proximity thereto and at a predetermined rate;

producing timing signals;

generating character data signals in response to the timing signals;

generating periodic, sequentially-timed command signals at a preselected repetition rate in response to the timing signals; and

activating successive ones of the transducers selectively in response to command and character data signals to print characters on the printing medium as a matrix of rows and columns of dots, the interval between rows being determined by the spacing between transducers and the interval between columns being determined by the repetition rate of the command signals and the rate at which the printer head is driven.

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**3,934,696**
**KEYBOARD TOUCH CONTROL**
**Hans W. Mueller, and Richard E. Shattuck, both of Cortland, N.Y., assignors to SCM Corporation, New York, N.Y.**
**Filed Aug. 30, 1974, Ser. No. 501,943**
**Int. Cl.² B41J** *5/26*
**U.S. Cl. 197—17** **9 Claims**

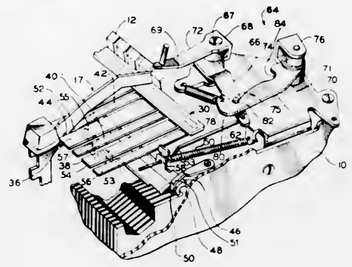
1. A frame supported keylever touch control mechanism for typewriters having a plurality of keylevers, the touch control mechanism comprising:

holding means supported on the frame and movable relative to said frame;

control means engaged by said holding means for maintaining a selectable position of said control means;

a plurality of leaf springs underlying and upwardly biasing the keylevers;

a shiftable bail supported on the frame and movable by said control means between an inoperative position and an operative position, the shiftable bail in the inoperative position being spaced from the keylever leaf springs to avoid affecting the touch of the keylevers and in the operative position being disposed in contact with said leaf springs; and

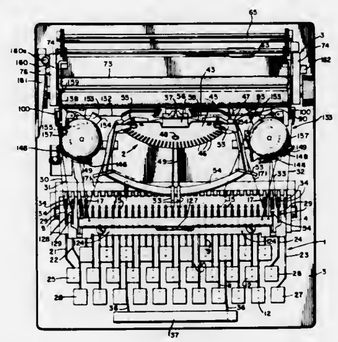


a touch control spring connected to the shiftable bail to cause the bail to add to the upward bias of the leaf springs to effect a heavier touch on the keylevers when the shiftable bail is in the operative position.



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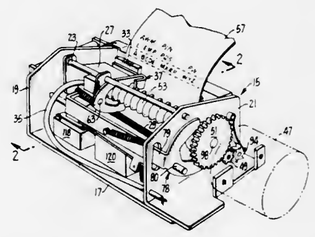
**3,934,697**
**SHIFT MECHANISM FOR TYPEWRITER APPARATUS**
**Shigeaki Kuramochi, 24-17-5-chome, Koishikawa, Bunkyo, Tokyo, Japan**
**Filed June 6, 1974, Ser. No. 476,847**
**Int. Cl.² B41J** *11/14*
**U.S. Cl. 197—72** **3 Claims**



1. Printing type change-over apparatus for a typewriter comprising a printing type change-over lever supporting a key, means mounting said type lever for pivotal movement from a first to a second position upon finger engagement of said key, a change-over actuator lever, means mounting said actuator lever for pivotal movement also from a first to a second position, a rod interconnecting said type lever and actuator lever for conjoint movement of said levers from the first to the second position, a frame member mounted on said actuator lever, a lift actuator, said lift actuator being mounted by said frame member, means urging said lift actuator to a first operative position, a lift plate adapted to be moved in a first direction by said lift actuator, a movable guide frame, means mounting said guide frame on said lift plate for movement with said lift plate and relative thereto, a platen, a platen supporting frame mounted on said guide frame, a plurality of type bars in juxtaposition to one another and each having a type carrier on which different types are disposed in a vertical row, means pivotally mounting said type bars for movement toward and away from said platen, and means operatively connecting said lift plate and lift actuator so that said lift plate moves in the first direction when said type lever moves from the first to second position to locate said platen thereby to be struck by one of said different types.

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**3,934,698**
**CARRIAGE MECHANISM FOR PRINTER**
**Thomas K. McGourty, 1640 Cox Road, Aptos, Calif. 95003**
**Filed Feb. 1, 1974, Ser. No. 438,794**
**Int. Cl.² B41J** *19/20*
**U.S. Cl. 197—90** **1 Claim**



1. A mechanism for carrying a thermal printer head or the like comprising in combination:

a. a frame having a slideably mounted carriage with a printing head thereon adapted to slide from a first side of said frame to the second side of said frame and return,

b. said printing head being adapted to print when traversing from said first side to said second side and to not print when being returned from said second side to said first side,

c. spring means for biasing said carriage from the first side of the frame to the second side of the frame,

d. escapement means for permitting said carriage to move by the action of said spring against said escapement means from the first side of the carriage to the second side of the carriage, said escapement means including a rack lying parallel to the path of travel of said carriage and pivot means on said rack whereby said rack can be rotated from a first position to a second position,

e. means for rotating said rack from said first position to said second position,

f. a first pawl mounted on said carriage, said pawl having a first tooth adapted to engage said rack when said rack is in the first position, and a second tooth adapted to engage said rack when said rack is in said second position, said rack and pawl means permitting said carriage to move stepwise through its path of travel from the first side of said frame to the second side of said frame as said rack is moved from the first position to said second position,

g. power means for returning said carriage from the second side of said frame to the first side of said frame, said power means including a worm extending from one side of said frame to the other and a second pawl on said carriage whereby said second pawl can engage said worm and said worm will move said carriage against said spring, moving said carriage to its opposite limit of travel,

h. means for rotating said worm,

i. said worm having a cam thereon, said cam having three faces, namely, a low concentric face, a cam lobe and a high concentric face,

j. a cam follower riding on said low concentric face while said carriage moves stepwise through its path of travel, and

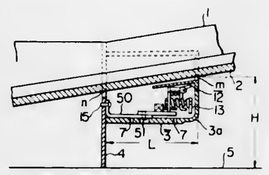
k. means to shift said cam follower to said lobe, whereby said cam follower rises on said lobe to the high concentric face, engaging said second pawl with said worm, whereby the carriage is caused to reverse its path of travel.

**3,934,699**

## HANDRAIL SAFETY DEVICE

**Chuichi Saito, Katsuta, and Schoichi Nakao, Mito, both of Japan, assignors to Hitachi, Ltd., Japan**

**Filed Mar. 1, 1974, Ser. No. 447,353**
**Claims priority, application Japan, Mar. 2, 1973, 48-24323**
**Int. Cl.² B66B 9/12**
**U.S. Cl. 198—16** **14 Claims**



1. In a moving stairway having handrails which pass into or out of entrance and exit portions of skirt guards for the moving stairway, a handrail safety device comprising

inlet structure means fixed to each skirt guard adjacent to the entrance and exit portions, said inlet structure means projecting outwardly externally from the skirt guards; and

detecting means provided in said inlet structure means for detecting either one of a horizontally directed force acting on said inlet structure means or a vertically directed force acting within said entrance and exit portions to interrupt movement of the moving stairway at the occurrence of such force,

wherein said inlet structure means includes a flexible housing containing said detecting means, said flexible housing having a front end portion being more flexible than the remaining housing portion.

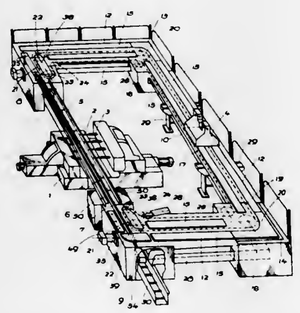
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**3,934,700**

## TRANSFER LINE

**Paul Schubert, Kirchheim, and Hans Treipl, Oschelbronn, both of Germany, assignors to Cross Europa-Werk GmbH, Wendlingen, Germany**

**Filed Jan. 7, 1975, Ser. No. 539,063**
**Claims priority, application Germany, Jan. 12, 1974, 2401503**
**Int. Cl.² B23Q 7/00**
**U.S. Cl. 198—19** **17 Claims**



1. In a transfer line of the type having at least one work station for machining workpieces, which can be moved onward rhythmically by a timed drive having a transporting device, and with a substantially U-shaped return line connected at its respective ends to two transfer stations, upon which line workpieces, clamped on a workpiece-carrier, can be slidingly conveyed along a slideway by said transporting device, at least one endless chain on said return line having a pulling length extending along said slideway, entrainment means for coupling the individual workpiece-carriers to the chain at a first point and at a second point, means at the second point permitting relative movement between the chain and carrier, and a transferring mechanism at each transfer station for automatically coupling or uncoupling the chain and carrier.

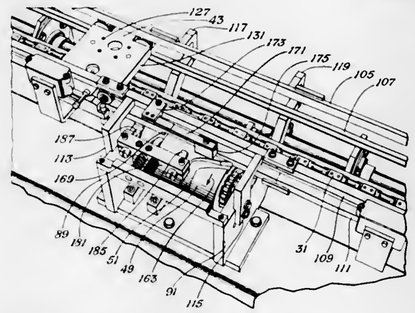
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**3,934,701**

## LINEAR INDEXING MACHINE

**John Russell Mooney, and Troy Richard Radford, both of Fort Worth, Tex., assignors to Mooney Engineering, Inc., Fort Worth, Tex.**

**Filed Mar. 28, 1975, Ser. No. 563,197**
**Int. Cl.² B23Q 07/16**
**U.S. Cl. 198—19** **6 Claims**



1. A linear indexing machine comprising:

a. a plurality of pallets each of which is adapted for carrying a work piece;

b. conveyor means for conveying said pallets to and from a plurality of index stations;

c. an index cam follower carried by each said pallet;

d. an index cam disposed at each index station;

e. means for driving said index cams in synchronism with said conveyor means;

f. each said index cam having a cam surface means for coaction with said index cam follower;

g. means for detaching a said pallet from said conveyor means as said pallet approaches each index station, with said index cam surface means coacting with said cam follower to decelerate said pallet to stop at said index station, to hold said pallet at said index station for a predetermined time interval and to thereafter accelerate said pallet to conveyor speed, and means for thereafter attaching said pallet to conveyor means.

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**3,934,702**

## ARTICLE TRANSFER APPARATUS

**Alan Kent Snyder, River Forest; Arthur D. Schmidt, Elgin, both of Ill.; Seldon T. Foote, deceased, late of South Bend, Ind., and by Robert R. Clipp, executor, assignors to Chicago Display Company, Melrose Park, Ill.**

**Filed Sept. 13, 1973, Ser. No. 396,889**
**Int. Cl.² B65G 47/00**
**U.S. Cl. 198—20** **8 Claims**

1. Improved packaging apparatus comprising:

conveyor means for conveying articles to a transfer station;

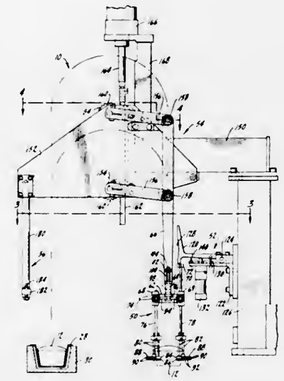
a plurality of gripping means positioned to receive a plurality of articles from said conveyor means, said gripping means comprising oppositely disposed elastic bands for gripping the sides of said articles;

engagement means associated with each of said gripping means for displacing said elastic bands toward one another to grip articles at said transfer station in a predetermined spatial relationship with respect to one another;



sensor means for sensing the presence of an article in each of said gripping means, said sensor means being operatively connected to actuate said engagement means;

transfer means for transferring said gripping means from said transfer station to a receiving station; and



disengagement means for moving said elastic bands away from one another at said receiving station, whereby to release articles engaged by said gripping means.

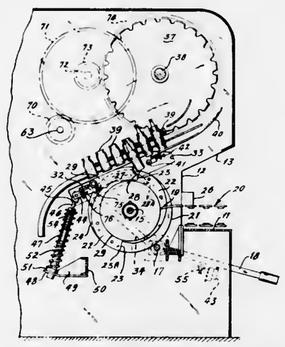
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**3,934,703**

## CONTAINER DISCHARGER WITH SAFETY MECHANISM

**Michael Vamvakas, Rocky River, Ohio, and Momir Babunovic, Des Peres, Mo., assignors to Barry-Wehmiller Company, St. Louis, Mo.**

**Filed Dec. 20, 1974, Ser. No. 534,743**
**Int. Cl.² B65G 47/00**
**U.S. Cl. 198—22 B** **7 Claims**



1. Discharge apparatus for containers moved by a pocketed conveyor into a discharge zone comprising: rotary cam means adapted to receive bottles in a gravity discharge zone from the conveyor pockets, bottle sensing finger means adjacent said cam means in said zone, said sensing finger means having a free end adjacent said cam means and an extension on said free end disposed in the path of the bottles moved into said discharge zone, means supporting said sensing finger means for movement between a normal position guiding the bottles dropped in said zone onto said cam means and a displaced position sensing a bottle jammed in said zone; means normally driving said pocketed conveyor and said cam means in timed relation, and a safety device to stop said drive, said safety device having a normal position corresponding to the normal position of said sensing means and the normal driving of said pocketed conveyor and cam means, and said safety device having a drive stop position corresponding to said displaced position of said sensing finger means, said safety device being moved into said drive stop position upon said sensing finger means moving to said displaced position.

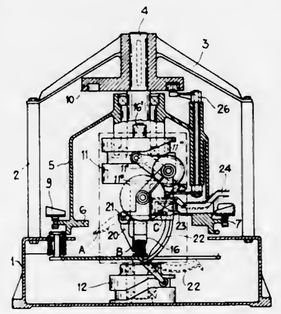
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**3,934,704**

## DEVICE FOR A CONTROLLED, CENTRIFUGAL DISTRIBUTION OF PRODUCTS TO POST-FINISHING MACHINES

**Ottorino Pisoni, Corso Sempione 51, Busto Arsizio (Varese), Italy**

**Filed June 13, 1973, Ser. No. 369,492**
**Claims priority, application Italy, June 13, 1972, 25602/72**
**Int. Cl.² B65G 47/52**
**U.S. Cl. 198—25** **8 Claims**



1. A device for a controlled, centrifugal distribution of product pieces from a slow traveling band conveyor to pans on a high speed conveyer for delivery to a post-finishing machine, said device comprising a horizontally revolving trunnion type fixture, transfer means centrally located in said fixture for removing product pieces from the slow traveling band conveyor, radially extending guides positioned on said trunnion type fixture to receive said pieces from said transfer means and to transport the pieces under the action of centrifugal force in outward radial direction, at a progressively increasing speed, from the center to the periphery of said trunnion type fixture, and means on said fixture for revolvingly interlocking the same with the high speed conveyor carrying the pans, such that each product, delivered by the trunnion type fixture, is transferred to and accurately positoned in a respective pan.

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**3,934,705**

## SYSTEM FOR OFFLOADING ARTICLES FROM A CONVEYOR BELT

**James L. Balch; James E. Anderson, and Boleslaus J. Sadeski, all of Madison, Wis., assignors to Oscar Mayer & Company, Incorporated, Madison, Wis.**

**Filed Mar. 1, 1974, Ser. No. 447,354**
**Int. Cl.² B65G 47/26**
**U.S. Cl. 198—32** **11 Claims**

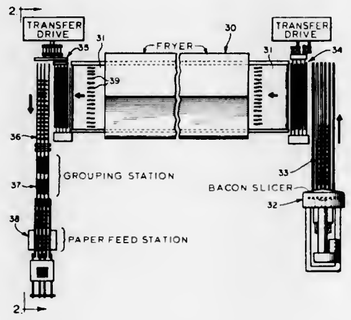
1. A system for transferring a product from a first conveyor to a second conveyor at right angles to said first conveyor, said system comprising, in combination:

a loading platform comprising a plurality of parallel spaced-apart cantilevered support rods arranged at the discharge end of said first conveyor to form a contiguous path therewith for said product;

means for rotating at least a portion of said support rods so as to move said product from said first conveyor into a predetermined loading position on said loading platform;

at least one product transfer carriage comprising a plurality of parallel spaced-apart cantilevered support members anchored to a carriage support block at one end, said support members being arranged to form a product supporting platform and spaced so as to pass between respective ones of said cantilevered support rods;

an offloading platform comprising a plurality of parallel spaced-apart cantilevered conveyor belts arranged at the input end of said second conveyor to form a contiguous path therewith for said product, said belts being substantially parallel to said support members and being spaced to allow respective ones of said support members to pass therebetween;



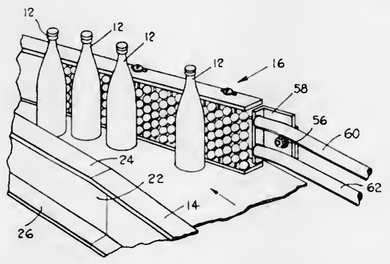

means for driving at least a portion of said belts to move said product from a predetermined offloading position on said offloading platform onto said second conveyor;

means defining an orbital operating path for said product transfer carriage whereby said support members are caused to successively pass between said cantilevered support rods and said cantilevered conveyor belts while being maintained in a substantially horizontal plane; and

drive means for advancing said product transfer carriage along said operating path to transfer said product from said predetermined loading position to said predetermined offloading position.

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**3,934,706**
**ARTICLE COMBINING LIVE WALL GUIDE RAIL**
**Joseph Tice, 502 Poinsettia Drive, Simpsonville, S.C. 29681**
**Filed June 24, 1974, Ser. No. 482,757**
**Int. Cl.² B65G *47/26***
**U.S. Cl. 198—32** **3 Claims**



**1.** An apparatus for channeling a disorderly array of articles being transported on a conveyor into a uniform row of articles, said articles being moved on a conveyor, the improvement comprising:

a pair of spaced articles confining walls;

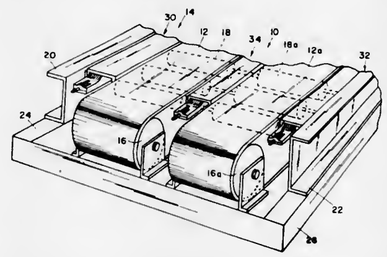
said spaced walls converging towards each other in a direction corresponding to the flow of said articles on said conveyor;

said spaced walls having a wide end for receiving said disorderly array of articles and a narrow end for exiting a uniform row of said articles; one of said walls including a pair of vertically spaced elongated members, longitudinally spaced vertically extending rods carried between said elongated members, a plurality of spherical beads carried on said rods defining longitudinally spaced rows of beads, said beads each having a bore extending therethrough through which said rods extend, said beads of each row being stacked one above the other in surface contact with the bead directly above and directly below, said beads of adjacent rows being nested within each other and in surface contact with beads of adjacent rows;

whereby said beads present an aligned surface for engaging said articles with a point contact while rotating on a larger bearing surface on said rods.

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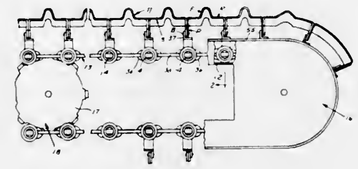
**3,934,707**
**BELT ACCUMULATORS**
**Clyde L. Bowman, Grand Rapids, Mich., assignor to Rapistan Incorporated, Grand Rapids, Mich.**
**Filed Apr. 24, 1974, Ser. No. 463,525**
**Int. Cl.² B65G *47/26***
**U.S. Cl. 198—34** **7 Claims**



**1.** An accumulator conveyor for conveying articles and packages comprising an endless, continuously driven article transport means defining at least one continuous article transporting and support surface moving continuously in one direction, at least one pair of article lifting means arranged adjacent each side of said conveyor for lifting packages and articles from transporting engagement with said continuous supporting surface; said lifting means including a plurality of vertically shiftable support means for shifting the conveyed articles or packages between a first position wherein articles on said conveyor above the same are lifted up from transport influence by said transport means and a second position in which articles are supported entirely on said transport means; said vertically shiftable support means having high friction surfaces, being elongated and extending at least the length of the packages or articles being conveyed, being stationary lengthwise of said article transporting and support surface, and being arranged adjacent, along and generally parallel to each side of said article transporting and support surface; said support surface extending substantially entirely between said pair of vertically shiftable support means to substantially entirely support any packages and articles on said support surface; a normally inoperative powered actuator for raising and lowering each of said support means; a sensor connected to each of said powered actuators for actuating the same in response to the presence of an article; a stop; means for moving said stop into the path of any articles or packages on said transport means; means interconnecting said stop and said sensor to allow activation of said actuators only when said stop is in the path of any articles or packages on said transport means.



**3,934,708**
**FLEXIBLE BELT CONVEYOR SYSTEM WITH TRACK-CONTAINED ROLLER, CARRIER AND CHAIN ASSEMBLY**
**Goro Kambara, 1528 Osceola St., Denver, Colo. 80204**
**Filed June 24, 1974, Ser. No. 482,593**
**Int. Cl.² B65G *41/00***
**U.S. Cl. 198—109** **13 Claims**



**1.** In a conveyor system capable of moving up and down, laterally, and with substantial rotation about its longitudinal axis along the course of travel through a curved path while supporting a load from below the load, the combination comprising:

a flexible, material-supporting belt made up of a plurality of repetitive belt sections arranged end to end;

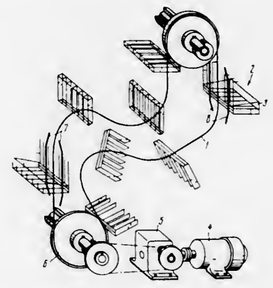
a generally channel-shaped track having inside track surfaces arranged for establishing a selected course of travel for the belt, said track including a top run in which the belt is arranged for supporting a load thereon from below the load, said top run having a track section with a center slot in a top wall and a closed bottom wall; and

belt moving means including a pulling chain adapted to be moved by a source of motive power, said pulling chain having a series of generally ellipsoidal-shaped alternating horizontal and vertical interconnnected links extending along the inside of the track and a plurality of roller carriages releasably affixed at selected spaced intervals to the link chain to space said roller carriages along the track, each said roller carriage having a main body portion, a pair of side portions projecting laterally outwardly from opposite sides of said main body portion and a neck portion extending from said main body portion through and beyond the center slot and affixed to the belt, each said main body portion having a center slot centered so that the geometric center of one of said chain links positioned in said center slot is in the geometric center of said main body portion, at least one support roller mounted on each of said side portions, said support rollers being contained entirely within the track and bearing on the inside track surfaces as said support rollers move inside said track, said side portions being symmetrically arranged on each side of a horizontal center line through the geometric center of said main body portion whereby load forces applied to the main body portion from the rollers are at all times in a direction toward the geometric center of the associated main body portion.

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**3,934,709**
**CONVEYORS FOR PILES OF NEWSPAPERS**
**Nikolai Ivanovich Anikanov, Bolshaya Bronnaya ulitsa, 2/6, kv. 6; Leonid Pavlovich Grachev, ulitsa Lva Tolstogo, 7, kv. 32; Grigory Avramovich Radutsky, 16 Parkovaya ulitsa, 49, korpus 2, kv. 68, all of Moscow, and Rafail Efimovich Kheifets, Brest-Litovsky prospekt, 162, kv. 30, Kiev, all of U.S.S.R.**
**Filed Nov. 26, 1974, Ser. No. 527,232**
**Claims priority, application U.S.S.R., July 29, 1974, 2044111**
**Int. Cl.² B65G *15/00***
**U.S. Cl. 198—158** **2 Claims**

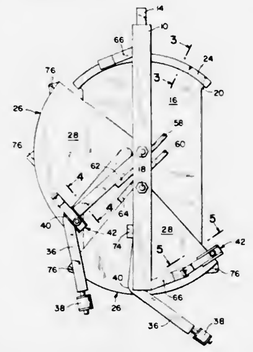
**1.** A conveyor for piles of newspapers, comprising: an endless chain movable along a three-dimensional path having areas where piles of newspapers are loaded thereon and unloaded therefrom; means for effecting motion of said chain along said path; cam means mounted at said loading and unloading areas; carriages mounted on said chain for joint travel therewith; a clamp mounted on each said carriage and comprising two spring-urged flaps, each in the form of a fork, with the two flaps together making a closed receptacle adapted to accommodate therein a pile of newspapers; one of said two forks having prongs bent at both ends thereof toward the other one of said flaps and being curved centrally thereof to form a convex portion facing the same direction as said



bent ends; two coaxially arranged tubes of which one is internal and the other one is external; said internal one of said tubes being relatively stationary and being secured on said respective carriage and having made therein a rectangular slot; said external one of said tubes having said flaps mounted thereon and having a helically shaped slot made therein, with said external tube being mounted for rotation about said internal tube; a stud extending through said slots; a follower fastened on said stud adapted to engage at said loading and unloading areas said cam means of said conveyor to effect rotation of said external tube relative to said internal tube, whereby the opening and closing of said flaps is effected.

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**3,934,710**
**MATERIAL HANDLING CONVEYOR**
**John Meredith Leach, P.O. Box 341, Port Jefferson, N.Y. 11777**
**Filed June 26, 1974, Ser. No. 483,250**
**Int. Cl.² B65G *17/16*; B65D *45/06***
**U.S. Cl. 198—143** **11 Claims**



**8.** A material handling system comprising a supporting conveyor, a material holding magazine including a shell having a bottom opening, a movable closure for said opening, means for moving said closure from an open to a closed position, and a supporting frame for said magazine connected to

and extending from said conveyor down under said magazine and in contact with said closure when in closed position so as to carry the full load of said magazine and its contents when said closure is in closed position and thus relieve said shell of of the weight load of said magazine and its contents.

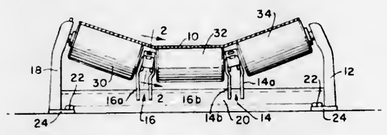
**10.** A material holding magazine comprising a shell having an opening therein surrounded by walls which have arcuate extremeties on two opposite sides, a movable closure for said shell opening which is curved to fit the arcuate extremeties of said walls, a movable lever pivotally mounted directly on said shell for arcuate movement only, and means interconnecting said closure and lever which causes said arcuate movement of said lever to first move said closure across and in close proximity to said arcuate extremeties of said shell and adjacent to said opening into closing position and stop and then upon further arcuate movement of said lever clamp said closure in a straight path towards and into contact with said arcuate extremeties of said shell in closed, sealing position over said opening.

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## 3,934,711
## KEEPER FOR IDLER ROLLS

**Ralph W. Coutant, Ridgewood, N.J., assignor to Litton Systems Inc., Passaic, N.J.**

**Filed Feb. 26, 1974, Ser. No. 446,009**
**Int. Cl.² B65G *39/12***
**U.S. Cl. 198—192 R** **8 Claims**



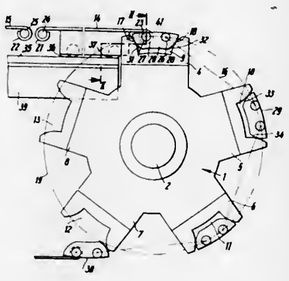
1. An idler roll set comprising, in combination,
a. a bracket having a frst and a second support spaced and interconnected by a continuous loop that spans a predetermined distance between said supports,
b. said first and second supports having upwardly opening apertures defined therein,
c. a pair of ears projecting beyond said continuous loop, one ear situated at each lateral side of the bracket,
d. idler rolls having support surfaces defined at each end thereof,
e. said support surfaces being insertable into said apertures in a vertical direction so that opposite ends of a first and a second idler roll are positioned adjacent to one another within said bracket,
f. a keeper comprising first and second coacting members, each member having a shallow, creased body and a leg depending from one end thereof,
g. said leg of each of said members having a first aperture formed therein that enables an ear on said loop to pass therethrough as each member is joined to the bracket, and
h. interlocking means defined between said first and second coacting members for joining said members together in overlapping relationship as they span the lateral distance across said apertures in said supports and lock the idler rolls in fixed position.

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## 3,934,712
## APRON CONVEYOR

**Wilhelm Jende, Tostedt, Germany, assignor to Pilot Hydraulik GmbH, Germany**

**Filed Dec. 28, 1973, Ser. No. 429,198**
**Int. Cl.² B65G *15/52***
**U.S. Cl. 198—195** **9 Claims**



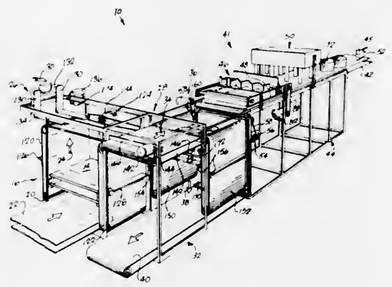
1. A conveyor assembly comprising:
a pair of pulleys each rotatable about an axis and spaced apart with their axes generally parallel to define an endless path of travel extending between said pulleys and about their peripheries, with a pitch circle being defined about each of said pulleys having a center which is coincident with the axis of rotation of each pulley, respectively;
a plurality of recess means defined about the periphery of each of said pulleys, each of said recess means being defined between at least a pair of circumferentially spaced curved convex terminal side walls extending generally parallel to said pulley axes with a widening configuration opening radially outwardly of said pulleys;
said terminal side walls of said recess means including a portion thereof extending radially outwardly of said pitch circle and a portion extending radially inwardly therof, said radially outwardly extending portion having a radius of curvature which is smaller than the radius of curvature of said radially inwardly extending portion;
a plurality of slats each having a pair of ends and a predetermined length extending therebetween;
a plurality of connecting means each joined between the ends of adjacent slats to form said slats in an endless assembly extending in a direction lengthwise of said slats along said endless path of travel between said pair of pulleys;
said connecting means including means enabling relative pivotal motion between each of said connecting means and each of said slats joined thereto about a pivot axis extending generally parallel to said axes of said pulleys;
means defining on each of said connecting means at least a pair of opposed convex walls adapted to be engaged within each of said recess means between terminal side walls thereof, said opposed convex walls being spaced apart in the direction of said endless path of travel a distance commensurate with spacing between said terminal side walls to enable each pair of said opposed convex walls to be engaged with rolling contact in succession between pairs of said terminal side walls during rotation of said pulleys;
each of said recess means being spaced apart circumferentially about said pulleys a distance determined by said predetermined length of said slats to enable said connecting members to become engaged in succession within said recess means to drive said endless slat assembly through said endless path of travel upon rotation of said pulleys;
said terminal side walls of said recess means and said opposed convex walls of said connecting means being configured to form said pulleys and said connecting means essentially as intermeshing gearing members.



## 3,934,713
## METHOD AND APPARATUS FOR PALLETIZING ARTICLES

**Richard H. Van der Meer, Golden, and Dan A. Gabrielson, Lakewood, both of Colo., assignors to Ball Corporation, Muncie, Ind.**

**Filed Aug. 2, 1971, Ser. No. 168,237**
**Int. Cl.² B65G *47/26***
**U.S. Cl. 198—34** **1 Claim**



1. An assembly for transferring articles from a first area to a second area, said assembly comprising: support means adapted to be moved along a closed loop endless path; first means connected with said support means and movable with said support means along said path, said first means being adapted for engagement with at least one of said articles when said one article is within said first area and when said first means is moved along a predetermined portion of said path whereby said first means moves said one article by pushing towards said second area; second means connected with said support means a distance of approximately one-half of said path from said first means and movable therewith, said second means being adapted for engagement with at least a subsequent article received within said first area when said second means is moved along a predetermined portion of said path for moving said subsequent article towards said second area; third means connected with said support means, movable therewith and positioned directly behind said first means, said third means being adapted for blocking the transfer path between said first and second areas when said third means is at a predetermined point along said fixed path; and fourth means connected with said support means, movable therewith and positioned directly behind said second means a distance of approximately one-half of said fixed path from said third means, said fourth means being adapted for blocking said transfer path when said fourth means is at a predetermined point along said fixed path.

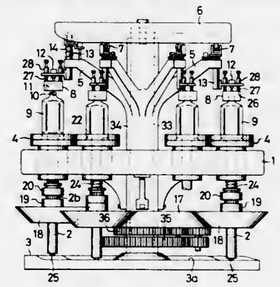
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## 3,934,714
## METHOD AND APPARATUS FOR REGULATING ORIENTATION OF CONTAINERS OR THE LIKE

**Takao Matsumoto, Amagasaki, Japan, assignor to Yamamura Glass Kabushiki Kaisha, Japan**

**Filed May 9, 1974, Ser. No. 468,520**
**Int. Cl.² B65G *47/24***
**U.S. Cl. 198—244** **2 Claims**

1. An apparatus for regulating the orientation of containers or like articles, each formed with a screw thread around its mouth portion, during transport comprising:
a turntable disposed at one side of a conveyor for transporting the articles at a constant speed and rotatable in timed relation to the conveyor;
a plurality of rotary tables supported by the turntable in circumferentially equidistant arrangement and each rotatable about its axis, the rotary tables being adapted to receive the articles from the conveyor and to rotate the received articles each about its axis;
transfer means for transferring the articles from the conveyor onto the rotary tables, one by one;
detecting means disposed above the rotary tables and identical in number to the number of the rotary tables, the detecting means capable of sending signals to a drive means being adapted to revolve at a speed equal to that of the turntable, each of the detecting means being engageable with the screw thread around the mouth portion of the article;
means for operating the detecting means to bring each of the detecting means into elastic pushing engagement with the screw thread around the mouth portion of the article



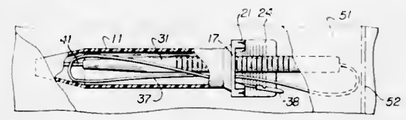
within a specified range of angle of revolution of the detecting means and to disengage the detecting means from the screw thread outside the range;
drive means for rotating the rotary table about its axis in response to a signal detecting the engagement of the detecting means with the screw thread and for stopping the rotation of the rotary table in response to a signal detecting that the engagement has changed as the rotary table rotates; and
delivering means for delivering the articles from the rotary tables onto the conveyor after the articles have been positioned in a specified orientation upon completion of the detecting operation.

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## 3,934,715
## CAUTERIZING INSTRUMENT AND HOLDER

**Frank P. Antonini, 3526 Divisadero, San Francisco, Calif. 94117, and Julien I. Schwalbe, 6215 Ascot Drive, Oakland, Calif. 94611**

**Filed May 20, 1974, Ser. No. 471,197**
**Int. Cl.² B65D *69/00*, *81/24***
**U.S. Cl. 206—223** **2 Claims**



1. A kit for an electro-surgical cauterizing instrument comprising a hollow handle, an electrode insertable in and removable from said handle, an electrical fitting in said handle, said handle having electrical contacts in its interior to establish electrical connection with said electrode when said electrode is inserted in said handle, an elongated core connected to said contacts inside said handle and extending out one end of said handle, a terminal on the end of said cord remote from said handle for electrical connection to a cauterizing machine, a holder formed with a sheath to receive said electrode and handle and having one closed end, said handle with said electrode inserted therein being insertable in and removable from said holder and said electrode being protected from electrical and germ contact with the exterior when inserted in said holder, said holder being substantially larger than said handle,

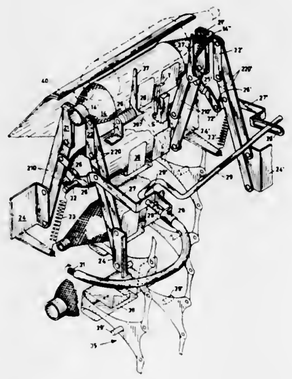
a flange on the open end of said sheath opposite said closed end, said flange formed with means for attachment of said holder to a surgical drape, and an envelope to maintain said handle, electrode and holder sterile until said envelope is opened, said electrode being inserted into said handle and electrically connected to said contacts, said electrode and the end of said handle adjacent said electrode being positioned inside said sheath, most of said cord being inside said sheath, said terminal being exposed immediately outside said sheath, said envelope enclosing the assembly of holder, handle, core and terminal.

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## 3,934,716
## ORIENTATION ALIGNMENT APPARATUS FOR YARN COPS BEING SUPPLIED TO TEXTILE MACHINES

**René Heckel, Horgen, Switzerland, assignor to Maschinenfabrik Schweiter AG, Horgen, Switzerland**

**Filed Oct. 25, 1974, Ser. No. 517,857**
**Claims priority, application Switzerland, Nov. 13, 1973, 15940/73**
**Int. Cl.² B65G 47/24**
**U.S. Cl. 198—252** **20 Claims**

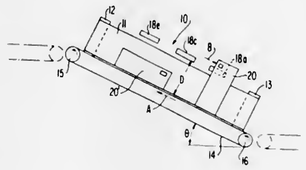


1. Apparatus for coordinating the end-for-end orientation of spinning cops (14) for transport with proper end orientation to a textile machine having
a transport means (15, 35) transporting spinning cops with random end-for-end orientation, and orientation means (46, 46'; 87, 87') to orient the cops to have a predetermined end-for-end orientation and to deliver the oriented, aligned cops to the textile machine,
comprisiag
spaced movable measuring means (21, 22; 21', 22'; 31) located in the transport path of the cops engaging the end portions of the cops to measure the diameters thereof;
means coupled to the measuring means to provide a measuring result signal representative of the difference of the diameters, as measured, thereof;
and control signal generating means (63-69; P, 91) applying said measuring result signal to the orientation means to effect delivery of a cop, in oriented alignment upon command of said control signal.

## 3,934,717
## FLAT-ARTICLE ORIENTING APPARATUS FOR AN AUTOMATIC MAIL HANDLING SYSTEM OR THE LIKE

**Takeo Katagiri, and Shinichi Fujiwara, both of Tokyo, Japan, assignors to Nippon Electric Compan, Limited, Tokyo, Japan**

**Filed Mar. 25, 1974, Ser. No. 454,496**
**Claims priority, application Japan, Mar. 26, 1973, 48-35461**
**Int. Cl.² B65G 47/24**
**U.S. Cl. 198—282** **9 Claims**



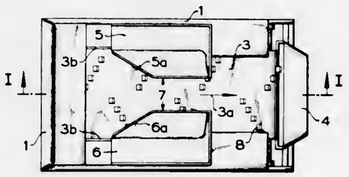
1. Apparatus for orienting flat articles having straight edges such that a long edge of the article is brought into or retained in contact with the bottom surface of a transport path, said apparatus comprising:
a. an upwardly open, U-shaped transport path adapted to retain flat articles having straight edges and coefficients of friction of $k_2$ relative to each other in an orientation such that their planar surfaces are generally parallel to the sides of said U-shaped transport path, the bottom of said U-shaped transport path being made of a material having a coefficient of friction of $k_3$ with respect to the flat articles which are to be oriented by the apparatus, and
b. at least one member disposed above said U-shaped transport path by a predetermined distance and having a surface in a plane generally perpendicular to the bottom of said U-shaped transport path and oriented at an acute angle to the flow of flat articles in said U-shaped transport path, the said surface of said member being made of a material having a coefficient of friction of $k_1$ with respect to the flat articles which are to be oriented by the apparatus, the coefficient of friction $k_1$ being smaller than the coefficient of friction $k_3$ but larger than the coefficient of friction $k_2$.

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## 3,934,718
## SUPPLY CONTAINER WITH CONVEYOR BELT FOR RECEIVING AND SUITABLY ORIENTING TEXTILE COILS OR THE LIKE

**Willi Küpper, Rickelrath, Germany, assignor to W. Schlafhorst & Co., Monchen-Gladbach, Germany**

**Filed Sept. 11, 1973, Ser. No. 396,250**
**Claims priority, application Germany, Sept. 15, 1972, 2245375**
**Int. Cl.² B65G 47/14**
**U.S. Cl. 198—287** **4 Claims**



1. In combination, a supply container and a conveyor belt for receiving and orienting textile coils and the like, said conveyor belt having a conveyor surface extending into said supply container, at least part of said container extending over said conveyor surface, said container having diverting cover means disposed so as to divert at least part of the textile coils from said conveyor surface, wherein said cover means comprises two collecting shells defining, above said conveyor surface, a gap extending in longitudinal direction of said conveyor belt and sloping toward the edges of said conveyor belt, said gap being shaped so that coils can escape upwardly through the gap, said cover means being spaced above said conveyor surface a distance several times greater than the diameter of said coils, so as not to interfere with coils properly held on said conveyor surface.

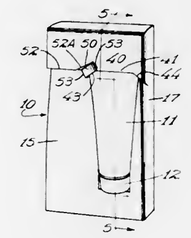


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## 3,934,719
## DISPLAY CARTON FOR TUBES

**Harry I. Roccaforte, Western Springs, Ill., assignor to Hoerner Waldorf Corporation, St. Paul, Minn.**

**Filed Nov. 13, 1974, Ser. No. 523,216**
**Int. Cl.² B65D 5/50**
**U.S. Cl. 206—45.14** **3 Claims**

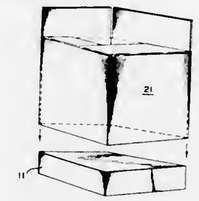


1. A carton made from foldable paperboard or similar sheet-like material and suitable for storage, shipment and display of deformable dispensing tubes or the like, said carton comprising:
opposed, parallel front and back panels;
first and second side panels in opposed relation connecting said front and back panels in a rectangular tube-like configuration;
means for supporting the cap of said tube, said means adapted to bear the weight of said tube and locate said tube near said front panel;
an elongated die cut opening in said front panel located above said means for supporting said tube and adapted to serve as a clearance recess for at least a portion of said tube;
a tube base restraining section formed in a first portion of said front panel including a first line cut formed horizontally across said first portion of said front panel and spaced above said means for supporting said tube and said tube opening, said first line cut having downwardly angled portions on either side thereof to permit that portion of said front panel located below said first line cut to be flexed inwardly and thereby create a recessed slot adapted to receive the crimped base of said tube and hold it in place against the portion of said front panel located above said first line cut; and
a downwardly angled connecting section at one side of said first line cut connecting said first line cut to a second line cut extending horizontally across the remainder of said front panel, said downwardly connection section permitting that section of said front panel below said line cut to flex inwardly to receive said tube yet allowing the remainder of said front panel above said line cut to stay in normal flat position.

## 3,934,720
## SUSPENSION BOX FOR SHIPPING FURNITURE

**John R. Kratochvil, Jr., Newton, N.C., assignor to Boise Cascade Corporation, Boise, Idaho**

**Filed Feb. 15, 1974, Ser. No. 443,032**
**Int. Cl.² B65D 85/00, 81/02, 5/35**
**U.S. Cl. 206—326** **22 Claims**



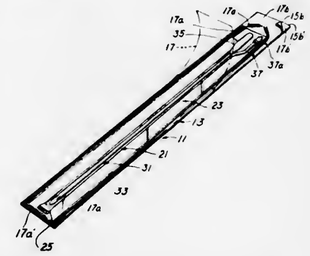
1. A shipping container for articles of furniture and the like, comprising
a. an integral hollow suspension box base unit for supporting the article, said suspension box base unit consisting of horizontal rectangular top and bottom walls and four vertical side walls, said top and bottom walls being spaced to define an open unobstructed chamber extending between said four vertical side walls;
b. a cover consisting of horizontal top and vertical side walls, said cover being open at its bottom thereby to permit said cover to be fitted downwardly over the article to a closed position in which the cover top wall is spaced from the top wall of said suspension box base unit, thereby to enclose the article of furniture, and the lower edge portions of said cover are adjacent the outer surface of the vertical side walls of said base unit; and
c. means connecting the lower edge portions of said cover with the vertical side walls of said base unit;
d. at least the top wall of said base unit being imperforate and formed of a material which deflects under load, thereby to cushion the article against shock forces applied to said container.

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## 3,934,721
## PACKAGED CATHETER ARRANGEMENT

**Robert W. Juster, St. Louis, Mo., and William E. Patton, North Canton, Ohio, assignors to Affiliated Hospital Products, Inc., St. Louis, Mo.**

**Continuation of Ser. No. 149,990, June 4, 1971, abandoned. This application Feb. 15, 1973, Ser. No. 332,584**
**Int. Cl. A61b 19/02; A61m 25/00**
**U.S. Cl. 206—364** **9 Claims**

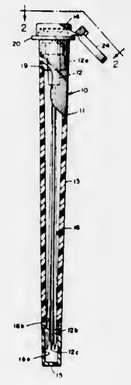


1. A packaged catheter arrangement, comprising
a flexible rubber catheter having an easily flexible insertion shaft with an insertion tip at one end and having two divergent fluid passage arms,
a flexible tube sheath, the tubular extent and shape of said tube sheath laterally enveloping and serving to protect the length of said catheter insertion shaft during and

subsequent to assembly as a dual component unit of said packaged catheter arrangement,
said tube sheath being closed at one end and open at its other end,
the interior of said tube sheath being of a size to accommodate said catheter shaft, but insufficient to accommodate said two divergent fluid passage arms,
and said catheter insertion shaft being removably disposed within said tube sheath with its insertion tip adjacent said closed end of said tube sheath and having its two divergent fluid passage arms adjacent and extending beyond said open end of said tube sheath.

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**3,934,722**
**STERILE NEEDLE PACKAGE**
**Allan M. Goldberg, Sepulveda, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.**
**Filed Aug. 26, 1974, Ser. No. 500,292**
**Int. Cl.² B65D** *85/24*
**U.S. Cl. 206—365** **15 Claims**

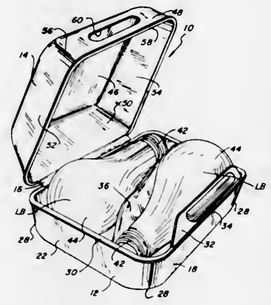


1. A needle package comprising a cartridge having a stiff elongated tubular body closed at its lower end and open at its upper end, a removable cap closing said open upper end, and a needle loosely supported within said cartridge, said needle having a sharpened tip portion at its lower end and an enlarged hub at its upper end, said cartridge body being provided with an internal ledge spaced below the body's upper end and engaging the underside of said hub to support said needle with the tip portion thereof spaced from the bottom of said body, said body also being provided with an enlarged compartment enclosing said tip portion and a relatively narrow neck portion directly above said compartment, said neck portion being engagable with said needle above said tip portion to prevent said tip portion from engaging the inside surface of said compament.

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**3,934,723**
**LIGHT BULB CONTAINER**
**Stephen F. Walker, Denver, Colo., assignor to Alan P. McGregor, Denver, Colo.**
**Filed Nov. 18, 1974, Ser. No. 518,690**
**Int. Cl.² B65D** *1/00, 85/42*
**U.S. Cl. 206—422** **6 Claims**

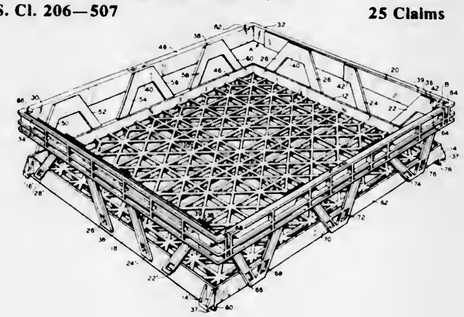
1. A nestable container for light bulbs, said container comprising in combination:
an open-topped receptacle of quadrangular horizontal cross-section having bottom and side walls, said receptacle side walls forming an angle with vertical so as to be downwardly convergent,
a top member adapted to lie over the open top of said receptacle, said top member having a top wall and side walls, said top member side walls forming an angle with vertical so as to be upwardly convergent,
a raised partition formed in said bottom wall of said receptacle having upwardly convergent sides defining an uppermost edge and opening downwardly to the bottom of said receptacle for defining separate light bulb receiving areas, said partition being generally S-shaped so that light bulbs placed in adjacent receiving areas are diametrically opposed, said uppermost edge of said partition extending to the height of said receptacle, tapering downwardly into ends level with said bottom wall, and terminating slightly



short of the side ends of said bottom wall so that said light bulb positioned in one of said receiving areas engages said partition along the intermediate portion of said light bulb,
means for hinging said top member to said receptacle along the corresponding rear side walls of said receptacle and said top member, and
means for releasably connecting said top member with said receptacle along the front side walls of said container so that when said top member is connected to said receptacle the enlarged glass end of said light bulb frictionally engages said top wall, said bottom wall, and two side walls of said receptacle and the metallic contact end of said light bulb frictionally engages said bottom wall and one side wall of said receptacle.

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**3,934,724**
**NEST AND STACK CONTAINER**
**Lewis T. Johnson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.**
**Filed Jan. 17, 1974, Ser. No. 434,094**
**Int. Cl.² B65D** *21/04*
**U.S. Cl. 206—507** **25 Claims**

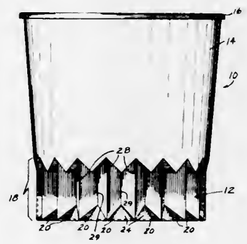


1. A generally rectangular nesting and stacking container comprising:
a generally horizontally disposed bottom; opposed first and second wall structures respectively projecting upwardly from opposed first and second sides of said bottom; with each of said wall structures comprising, in combination:
a pair of spaced apart guide lugs projecting outwardly from a said side of said bottom, one of said lugs being adjacent one end of said side of said bottom and the other lug adjacent the other end of said side;
a guide rail disposed generally vertically above said side of said bottom for receiving and supporting on its upper surface a said guide lug of a like upper container only during pre-nesting and pre-stacking operations;
a plurality of spaced apart inclined bar members extending upwardly between said side of said bottom and the inner surface of said guide rail for supporting said guide rail, and arranged so that, , whereby an upper said container will nest within a like oriented lower said container with the bars of corresponding wall structures paralleling each other but will stack on a reversely oriented lower said container as described hereinafter;
a plurality of stacking saddles provided on the tops of a like plurality of said bar members at an elevation less than that of said upper surface of said guide rail;
a plurality of stacking feet provided on the bottoms of a like plurality of said bar members at an elevation greater than that of said guide lugs for registering in vertical alignment with a said plurality of stacking saddles on a said reversely oriented like lower container in supporting a said upper container on a said lower container in stacking relationship; and
clearway means provided in said guide rail in vertical alignment with said guide lugs for permitting passage therethrough of the guide lugs of a like upper container during nesting operations when said stacking feet and said stacking saddles are not in vertical alignment, and for receiving therein the guide lugs of said upper container at the end of stacking operations.



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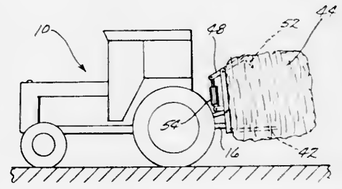
**3,934,725**
**NESTABLE ARTICLE**
**Bryant Edwards, Clarendon Hills, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.**
**Continuation-in-part of Ser. No. 233,979, March 13, 1972, abandoned. This application July 2, 1973, Ser. No. 375,423**
**Int. Cl.² B65D** *21/02*
**U.S. Cl. 206—519** **2 Claims**



1. In a generally nestable article which is formed from a substantially uniform thickness sheet material, the improvement of stacking means which permits non-jamming nesting of a plurality of identically formed such articles for the storage and transport of said articles in nested stacks, said stacking means formed in a wall of said article and comprising a series of contiguous stacking abutments each comprising a pair of planar surfaces angularly arranged relative to each other and to the axial direction of nesting of said articles and said abutments being continuously circumferentially arranged in said wall of said article and extending in a radial direction, a series of contiguous stacking recesses each comprising a pair of planar surfaces angularly arranged relative to each other and to the axial direction of nesting of said articles and said recesses being continuously circumferentially arranged in said wall with adjacent recesses having a portion thereof meeting on a juncture line extending in a radial direction opposite from the radial direction of said stacking abutments, said stacking recesses further being axially spaced and circumferentially offset from said stacking abutments, and said juncture lines forming a series of guiding means in said wall at the line of contiguity of said stacking recesses and extending in the same radial direction as said stacking recesses for engaging and guiding the stacking abutments of a like article into stacking cooperation with said stacking recesses during telescopic concentric nesting of said like article therein.

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**3,934,726**
**BALE CARRIER**
**Leon C. Martin, R.F.D. 2, Box 36, Greenfield, Iowa 50849**
**Filed Apr. 29, 1974, Ser. No. 465,421**
**Int. Cl.² A01D** *89/00*
**U.S. Cl. 214—131 A** **4 Claims**



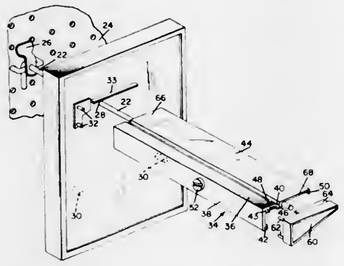
1. A bale carrier for use with a tractor three-point hitch having three lifting arms extending rearwardly therefrom comprising,
an elongated first horizontally disposed support means, said first support means being transversely disposed with respect to the longitudinal axis of the tractor,
a pair of tine members operatively secured to said first support means adjacent the opposite ends thereof and extending rearwardly therefrom for piercing engagement with the bale above the lower end thereof,
first connection means for operatively connecting said first support means to two of the lifting arms,
second support means extending upwardly from said support means, second connection means for connecting said second support means to the third lifting arm,
an arm means pivotally secured to said second support means adjacent the upper end thereof and extending rearwardly therefrom,
means on said arm means for engagement with the upper portion of the bale,
means for selectively pivotally moving said arm means,
said first support means comprising a first pipe means and wherein a second pipe means is selectively rotatably mounted in said first pipe means and has its opposite ends positioned outwardly of the opposite ends of said first pipe means, the two lifting arms being secured to the opposite ends of said second pipe means, one tine member of said pair of tine members being secured to each end of said second pipe means.

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**3,934,727**
**PILFER-PROOF MERCHANDISE DISPLAY**
**Paul Brefka, Boston, Mass., assignor to Henry L. Hanson Co., Inc., Worcester, Mass.**
**Filed Nov. 18, 1974, Ser. No. 524,500**
**Int. Cl.² E05B** *73/00*
**U.S. Cl. 211—7** **14 Claims**

1. Display apparatus for merchandise mounted on cards, comprising an elongated hook member, a generally planar vertical support for the hook, means holding the hook on the

support a plaque mounted on said hook members, said plaque in a plane generally parallel to said support generally horizontal and at right angles to the support, a plurality of cards mounted on said hook member, an elongated bracket, extending in a direction generally perpendicular to said plane of said support, one end of said bracket mounted on said plaque, the hook and bracket terminating in free ends adjacent to each other, a pivotable cover on the bracket, the cover being coextensive with the bracket and the hook, means hinging the movable cover along the bracket, said cover having one position in close association with the hook and the top edges of said cards and a pivoted position freeing the same, the cards and cover being constructed and arranged to allow removal of the cards from said hook only upon the movement of said cover to card freeing position, and means on said bracket temporarily securing said cover in locked position adjacent to the top edges of said cards.



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**3,934,728**

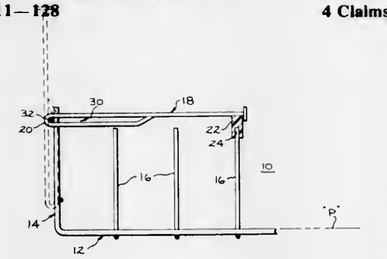
**DISHWASHER RACK**

**Lauren W. Guth, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.**

**Filed Oct. 15, 1974, Ser. No. 514,377**

**Int. Cl.² A47F *5/13***

**U.S. Cl. 211—128** **4 Claims**



**1.** In a rack assembly for an automatic dishwasher having a base rack lying in a generally horizontal plane, a first side portion, and upstanding spaced-apart rack fingers, the improvement comprising:

a secondary rack having a first side portion connected by a slidable pivot arrangement to the first side portion of the base rack and being pivotally and slidably movable between a first position at which the secondary rack extends substantially perpendicularly to the plane of the base rack and a second position at which the secondary rack overlies the horizontal plane of the base rack in parallel alignment therewith; and

holding elements for securing the secondary rack to said fingers and supporting said secondary rack in said horizontal position overlying said base rack.

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**3,934,729**

**TOWER CRANE**

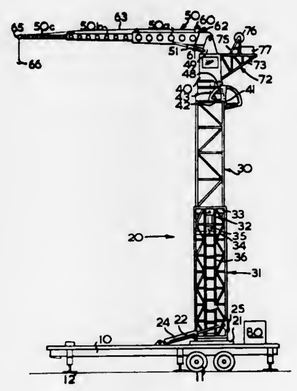
**Donald E. Wellman, Komoka, Canada, assignor to General Crane Industries Limited, London, Canada**

**Division of Ser. No. 144,199, May 17, 1971, abandoned, which is a continuation-in-part of Ser. No. 818,751, April 23, 1969, abandoned. This application Aug. 21, 1974, Ser. No. 499,417**

**Claims priority, application Canada, Apr. 9, 1969, 48201**

**Int. Cl.² B66C *23/62***

**U.S. Cl. 212—46 A** **3 Claims**



**1.** A mobile tower crane, comprising mobile platform means carrying in combination a base mounting for a tower, a tower pivotally connected to said mounting for tilting movement between a vertical operating position and a substantially horizontal travelling position in which travelling position the tower is supported by said mobile platform means, and raising means interconnecting the platform means and the tower for moving the tower between said positions, said combination being such that the tower when raised provides a firm support suitable for supporting a jib structure which is rotatable relative to the tower about the tower axis and which thereby in operation causes bending moments to be applied to said tower in various directions; and a jib structure carried by said tower which structure includes jib and jib support means, said jib support means including a turntable mounted at the top of the tower and means for rotating said turntable to cause slewing of the jib support means about the tower axis, a jib pivot mounting said jib on said jib support means to allow luffing movement thereof, and first hydraulic cylinder means connected between said jib support means and said jib for causing said luffing movement; wherein there is provided a tiltable unit carrying the jib pivot which unit is pivotally connected to the tower, and second hydraulic cylinder means connected to said tiltable unit for causing pivoting thereof between an operating position and a folded position, in which operating position, with the tower vertical, the said first hydraulic cylinder means is capable of luffing the jib between a raised position in which it forms an extension of the tower and a lowered position in which the jib forms a substantial angle of between about 60° and 90° with the tower axis, and in which the said second hydraulic cylinder means is capable of tilting said tiltable unit through an angle equivalent to said substantial angle, whereby the jib may be folded alongside the tower by operating said first cylinder means to lower the jib, and subsequently operating said second cylinder means to tilt the tiltable unit through said substantial angle, and wherein the relationship between the pivotal connection connecting the tiltable unit to the tower and the jib pivot is such that the jib lies close to the tower when the tiltable unit is in its folded condition.



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**3,934,730**

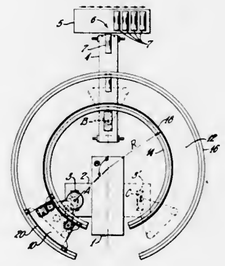
**APPARATUS FOR TRANSPORTING ARTICLES ALONG CURVED HORIZONTAL PATH WHILE MAINTAINING ORIENTATION CONSTANT**

**John A. Pershing, Toledo, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio**

**Filed Dec. 2, 1971, Ser. No. 204,047The portion of the term of this patent subsequent to Sept. 27, 1991, has been disclaimed.**

**Int. Cl.² B65G *47/24***

**U.S. Cl. 214—1 BH** **9 Claims**



**1.** Apparatus for horizontally transporting an article from any of a number of delivery stations lying along a horizontal curvilinear path to a receiving station while controlling the orientation of the article about a vertical axis with respect to the receiving station, comprising:

an elevated track which follows a horizontal curvilinear path passing over the delivery and receiving stations;

a carriage supported from the track;

a holder for fixably holding the article, the holder being rotatably supported from the carriage for rotation about a vertical axis;

means mounted on the carriage for raising the holder to lift the article from a delivery station and for lowering the holder to deposit the article at the receiving station;

means for moving the carriage along the curvilinear track while angularly changing its orientation about a vertical axis;

and means responsive to the angular change in orientation of the carriage as it moves along the curvilinear track for rotating the holder to maintain the article at all times in fixed angular relationship with respect to the receiving station.

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**3,934,731**

**APPARATUS FOR INSPECTING AND REPAIRING A PRESSURIZED-WATER REACTOR'S STEAM GENERATOR HEAT EXCHANGER TUBES**

**Otto Müller, Spardorf; Hans Röttger, Welher; Hans Kastl, Neustadt, a.d. Waldnaab, and Hans-Günter Hagen, Erlangen, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany**

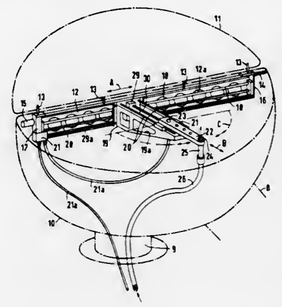
**Filed Dec. 20, 1973, Ser. No. 426,483**

**Claims priority, application Germany, Dec. 22, 1972, 2264143**

**Int. Cl. F28g *15/02***

**U.S. Cl. 214—1 BB** **9 Claims**

**1.** An apparatus for use with a pressurized-water reactor's steam generator having a manifold chamber enclosing the bottom side of a horizontal tube sheet having holes therethrough in which are mounted the tubes of a heat exchanger tube bundle which extends upwardly from the tube sheet's top side, said chamber having a manhole giving access to said tube sheet's bottom side to permit internal inspection or repair of said tubes by registration of an end of a flexible guide conduit with said holes and through which a flexible carrier can be guided for insertion via said holes through the tubes extending from the tube sheet's other side; said apparatus including a fixture insertable through said access opening and comprising a beam, means for detachably supporting said beam horizontally in said chamber beneath said tube sheet's bottom side, a horizontal cantilever arm having one end provided with means for supporting said guide conduit with its end pointing upwardly, and means for mounting the other end of said arm on one side of said beam and means for horizontally moving the end of said arm having said supporting means relative to said beam, whereby said guide conduit may be aligned with said holes in said tube sheet.



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**3,934,732**

**OBJECT TRANSFER MACHINE**

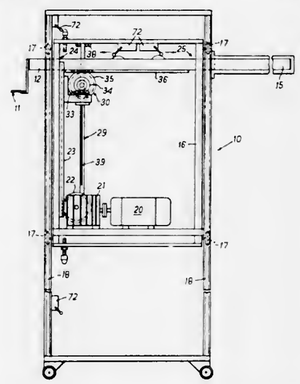
**Arnold Chambers, Chesterfield, England, assignor to Glass Tubes and Components Limited, Chesterfield, England**

**Filed July 22, 1974, Ser. No. 490,697**

**Claims priority, application United Kingdom, Aug. 9, 1973, 37844/73**

**Int. Cl.² B23Q *7/04***

**U.S. Cl. 214—1 BB** **5 Claims**

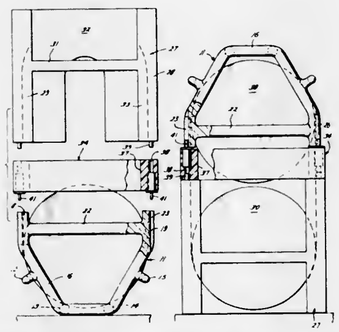


**1.** A machine for transferring objects from one work station to another, comprising an object carrier guided for vertical and horizontal movements, a first reversible drive means for raising and lowering the object carrier, a second reversible drive means for moving the object carrier horizontally to and fro, and mechanism for controlling the operation of the two reversible drive means, the control mechanism including a motor, a plurality of gears driven by said motor, said gears being in mesh with one another to form a gear train, and a bank of control cams, each of said control cams being fast with a respective one of said gears to be driven through a control cycle, each of the cams being operably connected to a selected one of said first and second drive means to cause

said selected drive means to operate for a predetermined period, and the cam arrangement being such that the two drive means cause the object carrier to move through a set sequence of vertical and horizontal movements during each control cycle.

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**3,934,733**
**TRANSFER DEVICE**
**Raymond D. Worden, P. O. Box 36010, Houston, Tex. 77036**
**Filed Oct. 10, 1974, Ser. No. 513,878**
**Int. Cl.² B65G** *3/00*
**U.S. Cl. 214—1 Q** **3 Claims**



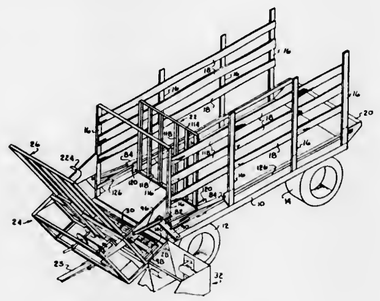
3. A transfer adapter for transferring discs from a boat to a carrier comprising,

a rectangular body having a plurality of alternate slots and lands extending therethrough,

and means on said body for engaging a boat to align the adapter and boat one relative position with the slots in the adapter aligned with alternate slots in a boat and in another relative position to align the slots in the adapter with the remaining slots in a boat.

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**3,934,734**
**BALE WAGON**
**Donald M. Grey, Selma, and Lee D. Butler, Kingsburg, both of Calif., assignors to Sperry Rand Corporation, New Holland, Pa.**
**Division of Ser. No. 139,324, May 3, 1971, abandoned. This application Aug. 23, 1973, Ser. No. 390,971**
**Int. Cl.² B65G** *57/32*
**U.S. Cl. 214—6 B** **6 Claims**



1. A bale wagon adapted for loading and unloading bales of hay or the like, comprising in combination:

a load rack for supporting a stack of bales, said stack being comprised by side-by-side tiers;

a generally upright transfer table normally disposed in a first position spaced forwardly of said load rack and movable between said first position and a second position in which said transfer table is disposed adjacent a front end of said load rack for delivering said tiers in succession to said load rack during loading and for receiving said tiers in succession from said load rack during unloading;

a carriage means disposed below said transfer table and adjacent said front end of said load rack;

a bale receiving table fixed to said carriage means;

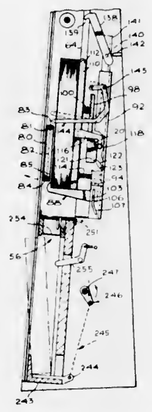
a mechanical drive for moving said carriage means and thereby said receiving table up and down relative to said transfer table for delivering bales thereto to load bales and for receiving bales therefrom to unload bales, said mechanical drive comprising: a drive shaft, a drive disc fixed to said drive shaft, and a crank pivotally connected at one end to a peripheral point of said disc and pivotally connected at the other end to said carriage means, whereby the selective rotation of said drive shaft cycles said carriage means and thereby said receiving table up and down;

bale retaining means disposed on said transfer table and being operative to transfer bales from said receiving table to said transfer table to form said tier of bales thereon during loading when said transfer table is at its first position and to transfer bales from said transfer table to said receiving table during unloading when said transfer table is at its first position, said retaining means further being operative to transfer a tier to the front end of said load rack from said transfer table upon the movement of said transfer table to said second position during loading and to transfer a like tier from the front end of said load rack to said transfer table upon the movement of said transfer table to said second position during unloading; and

conveying means disposed adjacent said receiving table for carrying bales received thereon from said wagon.

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**3,934,735**
**DAYLIGHT FILM HANDLING SYSTEM**
**Gunter Schmidt, Malibu, Calif., assignor to Productron, Inc., Los Angeles, Calif.**
**Division of Ser. No. 52,848, July 7, 1970, Pat. No. 3,790,160. This application Sept. 27, 1973, Ser. No. 401,441**
**Int. Cl.² B65G** *57/00*
**U.S. Cl. 214—6 D** **8 Claims**



1. Apparatus useful for dispensing film sheets into a cassette, each sheet having a notch extending inwardly from an edge thereof, one at a time from a stack of such sheets, said stack being comprised of alternate odd and even sheets with the notch in all of said odd sheets being aligned in a first row and the notch in all of said even sheets being aligned in a second row, said apparatus comprising:

a housing having an exit opening adapted to accommodate said stack therein;

first cam means in said housing for engaging said stack in alignment with said first row of notches;

second means in said housing for engaging said stack in alignment with said second row of notches;

means for alternately disengaging said first and second cam means from said stack to successively release one sheet at a time therefrom through said exit opening;

a cassette having an entrance opening for receiving a film sheet therethrough;

cassette light shield means disposed in said entrance opening;

means on said housing removably engagable with said cassette for opening said light shield means to permit a film sheet released from said exit opening to pass through said entrance opening;

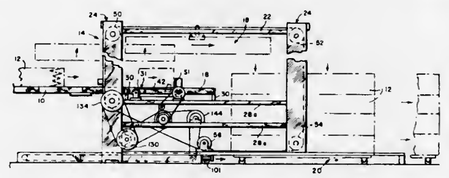
said first cam means comprising a first cam member eccentrically secured to a first rotatable rod;

said second cam means comprising a second cam member eccentrically secured to a second rotatable rod; and

said means for alternately disengaging said first and second cam means including means for alternately rotating said first and second rods.

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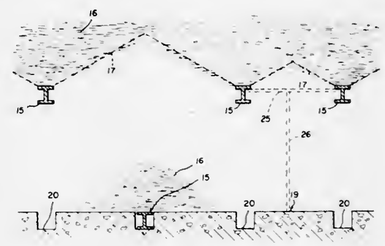
**3,934,736**
**SPRING STACKER**
**Kenneth H. Thomas, Oxford, Mass., assignor to Webster Spring Co. Inc., Oxford, Mass.**
**Filed Aug. 28, 1974, Ser. No. 501,032**
**Int. Cl.² B65G** *57/14*
**U.S. Cl. 214—6 FA** **2 Claims**



1. Apparatus for stacking spring assemblies produced on a spring assembly machine, comprising in line with the discharge side of the spring assembly machine, transfer means for receiving assemblies one by one from the spring assembly machine and a dolly upon which the transfer means deposits the assemblies one by one in a stack, said transfer means comprising a table supported at the discharge side of the assembly machine, said table being comprised of telescoping parts for adjusting the width of the table for springs of different widths, means arranged along opposite sides of the table and movable along the table for engaging and drawing an assembly forwardly along the table to a predetermined position, lifting means situated at opposite sides of the table below the level of the top of an assembly resting on the table at an initial position substantially midway between the leading and trailing ends of the assembly, said lifting means being movable upwardly relative to the sides of the assembly to engage and lift the assembly from the table, move the assembly forwardly to a position above the dolly, lower the assembly onto the dolly and return the lifting means to said initial position, means for ejecting the dolly when a predetermined number of assemblies are stacked thereon, and a counter actuated by return of said lifting means to said initial position to count the number of assemblies and when said predetermined number of assemblies is reached to effect operation of the means for ejecting the dolly.



**3,934,737**
**METHOD AND APPARATUS FOR SILO STORAGE AND UNLOADING**
**Edward H. Cumpston, Jr., 43 Monument Ave., Old Bennington, Vt. 05201**
**Filed Jan. 15, 1975, Ser. No. 541,282**
**Int. Cl.² B65G** *65/64*
**U.S. Cl. 214—16 R** **10 Claims**



1. A method of unloading feltable, non-flowable, generally laminar materials such as paper, cardboard, corrugated cardboard, and thin wood chips from a storage silo elevated above a base platform and having a plurality of vertically movable cross beams normally held at a level above said base platform in the bottom region of said silo for supporting said material in said silo, said method comprising:

a. lowering one of said beams to the region of said base platform to lower a portion of said material above said lowered beam, said material above said lowered portion of said material being self-supporting in a general arch shape upheld by ones of said beams other than said lowered beam;

b. moving said lowered portion of said material from said base platform and out from under said arch of said material above said lowered beam; and

c. raising said lowered beam back to said level of said plurality of beams.

4. A silo for feltable, non-flowable, generally laminar materials such as paper, cardboard, corrugated cardboard, and thin wood chips, said silo comprising:

a. a base platform;

b. walls extending above said base platform and substantially enclosing a storage chamber;

c. a plurality of generally parallel beams extending across the bottom region of said silo at a level above said base platform, said material being supported on said beams and being self-supporting in a general arch shape between said beams;

d. said walls providing an access opening to said base platform from the region of the ends of said beams;

e. means for lowering said beams one at a time in succession from said level above said base platform to the region of said base platform and for raising said beams back to said level above said base platform; and

f. means for moving from said base platform the portion of said material lowered by lowering each of said beams while the remainder of said material is self-supported in a general arch shape upheld by ones of said beams other than a lowered one of said beams.

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**3,934,738**
**TOOL CONNECTING**
**Carroll H. Arnold, Westminster, Mass., assignor to Wain-Roy, Inc., Hubbardston, Mass.**
**Filed Apr. 1, 1974, Ser. No. 456,523**
**Int. Cl.² E02F** *3/70*
**U.S. Cl. 214—145 A** **36 Claims**

1. Apparatus for releasably securing a materials handler to a boom while permitting rotation of said materials handler

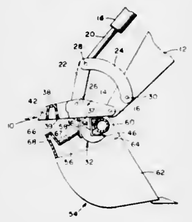
about a first axis fixed with respect to said boom, said apparatus comprising:

a hitch adapted for pivotal connection to said boom for rotation about said first axis and including a hitch body, a hook member of predetermined maximum width projecting outwardly from said body, and a hitch locking member spaced from said hook member in a direction generally perpendicular to said first axis,

said hook member defining a jaw having a jaw engagement surface, a tapering nose portion of width less than said predetermined maximum width facing away from said hitch locking member in a direction generally perpendicular to said first axis, and a rear surface intermediate said nose portion and said hitch locking member and facing generally towards said hitch locking member; and,

cooperating structure secured to said materials handler for receiving and engaging said hook member and for engaging said hitch locking member,

said cooperating structure defining an opening of width substantially equal to said maximum width of said hook



member for receiving said hook member, a cooperating structure locking member spaced from said opening on one side thereof for engaging said hitch locking member, and a rigid crossmember extending transversely the width of said opening adjacent the side thereof opposite said cooperating structure locking member for engaging said jaw engagement surface when said hook member is inserted within said opening,

the overall depth of said hook member being defined by said rear surface and the end of said nose portion most distant therefrom,

the length of said opening being defined by one surface intermediate said rigid cross-member and said cooperating structure locking member and facing generally towards said cross-member, and a second and generally oppositely facing surface on the side of said one surface opposite said cooperating structure locking member,

said length of said opening being less than the distance from said jaw engagement surface to said hitch locking member.

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**3,934,739**

**SELF-ERECTING SURGE STORAGE SYSTEM**

**D. Bruce Zumsteg, Glasgow; Gino Origlia, Columbia, and J. T. Odom, Glasgow, all of Mo., assignors to Standard Havens, Inc., Kansas City, Mo.**

**Filed Feb. 13, 1974, Ser. No. 442,127**

**Int. Cl.² B60P *1/64***

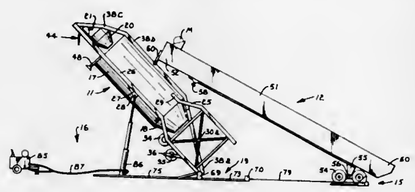
**U.S. Cl. 214—501** **9 Claims**

1. A portable, self-erecting storage system comprising:

a storage bin including a large volume tank and a supporting frame therefor, said bin positionable in a substantially horizontal position and in a vertical, operational position;

a foundation structure underlying said storage bin in ground engaging fashion and providing a pivotal connection with said bin, said pivotal connection defining a horizontal pivot axis;

power means including a pair of extendable hydraulic cylinders pivotally connected to said bin and said foundation structure on each side of said bin to pivot said bin on said horizontal pivot axis from the horizontal position to the operational position and from the operational position to the horizontal position; and



visual indicating means connected to said storage bin to detect and indicate the torsional condition of said bin during the pivotal raising and lowering thereof.

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**3,934,740**

**TRANSPORT VEHICLE WITH TILTABLE CHASSIS**

**James A. Rumell, 1955 Vermont, Blue Island, Ill. 60406**

**Filed Oct. 29, 1973, Ser. No. 410,344**

**Int. Cl.² B60P *1/04***

**U.S. Cl. 214—505** **18 Claims**



1. A transport vehicle comprising a tractor, a chassis releasably attached to said tractor for transport therewith, said chassis having a flatbed supported on a wheeled tandem, a removable and reusable freight hauling and storing container mounted on said flatbed, said container having retractable and extensible wheels, selectively operable means for retracting and extending said wheels, said container being supported in an immobile condition on said flatbed when said support wheels are in a retracted position, means for releasably securing said container to said bed when said wheels are in said retracted position, said container being supportable by said wheels on said bed when said wheels are in an extended position for longitudinal rolling movement with respect to said flatbed, said tandem supporting said flatbed for relative sliding and tilting movement, means for selectively positioning said flatbed longitudinally relative to said tandem, pivot means on said tandem for pivotably supporting said flatbed and about which said flatbed pivots regardless of the relative longitudinal position of said flatbed to said tandem, and means connected between said chassis and flatbed for tilting said flatbed relative to said tandem to permit removal of said container longitudinally off the end of said flatbed.

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**3,934,741**

**TELESCOPIC LOAD TRANSFER DEVICE**

**Edward A. Wentz, Gaithersburg, Md., assignor to American Chain & Cable Company, Inc., Bridgeport, Conn.**

**Division of Ser. No. 198,917, Nov. 15, 1971, Pat. No. 3,792,758, which is a continuation of Ser. No. 840,667, July 10, 1969, abandoned. This application Dec. 11, 1972, Ser. No. 314,159**

**Int. Cl.² B66F *9/14***

**U.S. Cl. 214—730** **2 Claims**

1. A stacker crane tray mechanism comprising a tray and movable support means therefor, said support means comprising a plurality of pairs of telescopically articulated beams;

one beam pair being attached to said tray and one other beam pair being relatively fixed and with respect to which



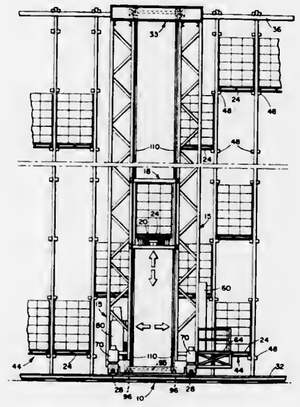
fixed beam pair all other beam pairs are telescopically movable;

the beam pairs intermediate said fixed beam pair and the beam pair attached to said tray having guide channels at one face thereof and guide rollers at the other face thereof;

wherein all said beam pairs are telescopically connected by rollers of beam pairs extending into guide channels of immediately adjacent beam pairs;

drive plates in superimposed array and secured to respective beam pairs for effecting telescopic movement thereof and having central nested channels;

drive chain means and said drive plates being sequentially coupled by said drive chain means so that driven movement of a first of said drive plates effects progressively extended movement of the remainder of said drive plates and the respective beam pairs, to drive said tray;



said drive plates being reversibly movable;

and hydraulic drive means comprising a plurality of double acting hydraulic cylinders secured in pairs, one pair being connected to another pair by connection of a piston rod of each of said pairs to each other;

the cylinders of each pair being connected to each other and the respective rods thereof extending in opposite directions and;

said cylinders and pistons being disposed in the lowermost drive plate channel;

means whereby the other piston rod of one of said pairs has an end relatively fixed with respect to said relatively fixed beam pair and the other piston rod of the other of said pairs is drivingly connected to said first drive plate;

whereby selective pressurization of said cylinders effects motion of one or both of said piston rods to actuate said first drive plate to a selective extent and in a direction dependent upon direction of pressurization of said cylinders.

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**3,934,742**

**VALVE MECHANISM FOR AUTOMATIC CONTROL OF A NUMBER OF FLUID MOTORS**

**Francis H. Tennis, Oconomowoc, Wis., assignor to Hydraulic Industries, Inc., Hartland, Wis.**

**Filed Dec. 26, 1973, Ser. No. 427,806**

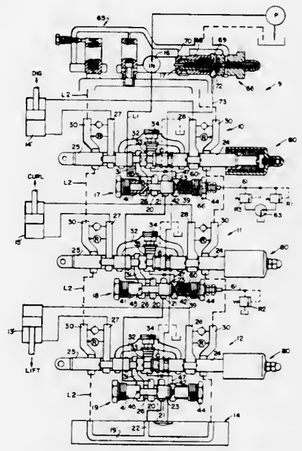
**Int. Cl.² E02F *3/28*; F15B *13/06***

**U.S. Cl. 214—762** **11 Claims**

1. Means for governing operation of first and second hydraulic motors each of which has a work performing element for connection with a load and an operating port to which pressure fluid can be delivered to effect actuation of the load, characterized by:

A. respective first and second motor control valves, each having a service port connected with the operating port of its motor, and a valve spool movable to a working position at which it communicates said service port with a pressure fluid supply port common to said valves;

B. a flow control mechanism connected with said control valves; through which pressure fluid from said common supply port must flow to reach the operating port of each motor, said mechanism having a valve member movable from a first position providing for flow of supply fluid to the operating port of said first motor to a second position obstructing such flow and providing for flow of supply fluid to the operating port of the second motor providing the spool of said second control valve is in its working position;



C. means to hold said flow control valve member in its said first position in response to the pressure of fluid present in the service port of said first control valve in said working position of the spool thereof;

D. means so interlinking said work performing elements that the load on the first motor can be reduced in consequence of movement of said flow control valve member to its second position at times when said valve spools are concurrently in their working positions;

E. and means rendered operative in consequence of and whenever the load on the first motor causes pressure at the service port of the first control valve to rise to a predetermined high value at said times when both spools are in their working position, for effecting actuation of said flow control valve member to its second position to thereby automatically provide for reduction of the load on the first motor.

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**3,934,743**

**BLOW MOLDED, ORIENTED PLASTIC BOTTLE AND METHOD FOR MAKING SAME**

**Charles Edmund McChesney, Monmouth Junction; Robert J. McHenry, Belle Mead, and James Alan Wachtel, Princeton, all of N.J., assignors to American Can Company, Greenwich, Conn.**

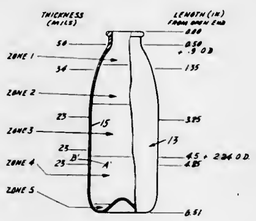
**Filed Dec. 29, 1972, Ser. No. 319,380**

**Int. Cl.² B65D *23/00*; B32B *7/02***

**U.S. Cl. 215—1 C** **35 Claims**

1. A self-supporting biaxially oriented plastic container blow molded from a parison across the thickness of its sidewall an outwardly radially decreasing temperature gradient within the orientation temperature range of and made from a glassy, essentially non-crystalline thermoplastic polymeric material which is capable of being biaxially oriented during blow mold-

ing, said container having a tubular sidewall with inner and outer surfaces, said sidewall having inner, middle and outer portions and being characterized in that in an axial zone thereof the percentage variation of the circumferential orientation release stress from said inner portion to said outer portion is less than about 4% per mil of sidewall thickness, said percentage variation being determined by multiplying 100 by a fraction in which the numerator is the difference between the orientation release stresses at said inner and outer portions and in which the denominator is the average of the orientation release stresses in said inner, middle and outer portions multi-

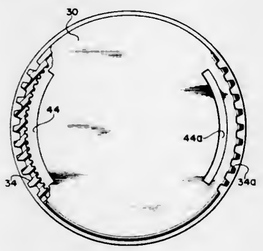



plied by the radial distance in mils between the centerlines of the inner and outer portions.

8. The blow molded oriented plastic container claimed in claim 1 wherein said container is a bottle, said percentage variation is less than about 3 percent per mil, and wherein said polymeric material is prepared by polymerizing a major portion of an olefinically unsaturated nitrile and a minor portion of an ester of a polymerizable olefinically unsaturated carboxylic acid in the presence of a preformed rubbery copolymer composed of a major proportion of a conjugated diene monomer and a minor proportion of an olefinically unsaturated nitrile.

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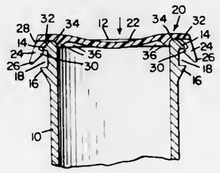
**3,934,744**
**CLOSURE ASSEMBLY**
**John Joseph Curry, Westchester, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.**
**Filed Oct. 3, 1974, Ser. No. 511,904**
**Int. Cl.² B65D** *55/02, 85/56*; **A61H** *1/00*
**U.S. Cl. 215—219** **4 Claims**




1. An outer cap for association as a safety overcap for a standard metal closure cap of the type having a relatively flat top wall and a depending skirt with knurling on the upper edge portion of said skirt and with threads in said skirt below said knurling and with an outwardly rolled rim at the lower edge portion of said skirt for threading of said closure cap onto complementary thread-like formations on a container neck portion for closing the same, said outer cap being formed of a resilient plastic material and comprising a top wall to overlie the top wall of the closure cap and a depending skirt of sufficient height to completely encircle the skirt of the closure cap, and a radially inwardly extending flange integrally formed on the lower edge of said depending skirt of said outer cap for trapping the outer cap on the closure cap, the upper portion of the inner wall of said skirt of said outer cap having a diameter larger than the diameter of a circle through the tips of said knurling on said closure cap, said upper portion of said inner wall of said skirt of said cap having two integrally formed teeth segments which are diametrically disposed to each other, the tips of said teeth segments lying on a circle of a diameter greater than the diameter of said circle through the tips of said knurling on said closure cap, the top wall of said outer cap being formed to have two arcuate slots therethrough which are diametrically disposed to each other and immediately radially inwardly of said two teeth segments and in substantially circumferential alignment with said two teeth segments, and said teeth segments having tooth profiles capable of mechanically interlocking with said knurling on said closure cap when said outer cap is mounted on said closure cap and a person squeezes opposed upper outer wall portions of said skirt of said outer cap radially outwardly of said teeth segments.

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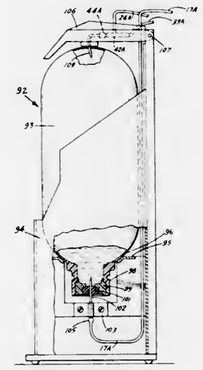
**3,934,745**
**SAFETY BOTTLE CAP**
**Walter C. Lovell, 348 Mountain St., Wilbraham, Mass. 01095**
**Continuation-in-part of Ser. No. 315,608, Dec. 15, 1972, abandoned. This application Sept. 16, 1974, Ser. No. 506,170**
**Int. Cl.² B65D** *55/02, 85/56*; **A61H** *1/00*
**U.S. Cl. 215—224** **2 Claims**




1. A safety closure for a bottle, said bottle having an open rim defined by a lip, said lip having an outwardly extending portion, a complementary lip in spaced relation to the outwardly extending portion of the first named lip, said lips defining a groove between them, said first named lip having a reaction surface at the inner side of the bottle, opposite the outwardly extending portion of the first named lip,
the closure comprising a cap of a deformable resilient and substantially self-sustaining plastic material including a main closed portion in the form of a dome, an inwardly inclined flange depending therefrom at the periphery thereof, said flange being constructed and arranged to snap over the first named lip to enter the groove to close the bottle,
a series of slots in the flange in mutually spaced relation circumferentially of the flange providing for expansion of the flange upon pressure downwardly applied to the dome to a position wherein the flange substantially clears the outwardly extending portion of the first named lip,
and a downwardly extending generally circular ridge at the inside portion of said cap, said ridge being spaced inwardly from the flange and forming a fulcrum, said fulcrum normally bearing on said reaction surface and causing the flange to pivot outwardly upon the application of the downward pressure on the dome aforesaid.



**3,934,746**
**FLUID PRODUCT RESERVOIR**
**Duane F. Lilja, 2410 Central Ave. NE., Minneapolis, Minn. 55418**
**Continuation-in-part of Ser. No. 413,768, Nov. 8, 1973, Pat. No. 3,841,555. This application Oct. 7, 1974, Ser. No. 512,523**
**Int. Cl.² B65D** *47/36*
**U.S. Cl. 215—232** **17 Claims**

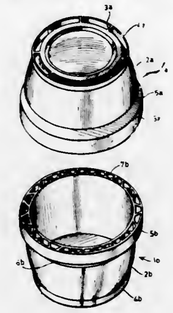



1. A fluid product reservoir comprising:
a closed container having an open neck portion with interior walls defining an open throat;
an interior, outwardly facing ledge integral with said interior walls of said throat;
a plug located in said throat having outer walls closely conforming to the interior walls of said neck portion to close the neck portion;
said plug having a peripheral, inwardly facing ledge in mating contact with the outwardly facing ledge in said throat;
the end portion of said neck being attached to the end of said plug to secure said plug in said throat;
a lip on said plug extending inwardly from the inwardly facing ledge of said plug, said lip being tapered inwardly and toward the center line of said container making biasing, frictional contact with said outwardly facing ledge of the throat to at least partially form a seal;
said plug having a central opening;
an elastically penetrable insert sealably located in said central opening of said plug.

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**3,934,747**
**CONTAINER, PARTICULARLY FOR LIQUIDS**
**Jan Henrik Needt, Oosterhout, North Brabant, Netherlands, assignor to Wiva N.V., Rotterdam, Netherlands**
**Filed Sept. 6, 1974, Ser. No. 503,908**
**Claims priority, application Netherlands, Sept. 10, 1973, 12477**
**Int. Cl.² B65D** *1/02*
**U.S. Cl. 220—5 R** **8 Claims**

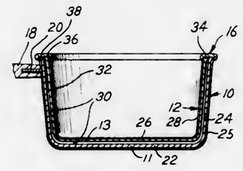
1. A container comprising at least two coaxial shell parts arranged end-to-end and made of synthetic moldable material, each shell part having a ring concentric with its respective shell part and connected to a peripheral edge of its respective shell part, the ring of each part having an edge facing an edge




of the other ring, said facing edges engaging each other in only a single plane and being permanently connected to each other.

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**3,934,748**
**COOKWARE CONTAINERS**
**Nick S. Racz, 25 Old Creek Road, Palos Park, Ill. 60464**
**Continuation of Ser. No. 242,325, April 10, 1972, abandoned. This application Aug. 19, 1974, Ser. No. 498,309**
**Int. Cl.² B65D** *25/18, 25/14, 25/34*
**U.S. Cl. 220—9 R** **28 Claims**




1. In a cookware unit including a container, said container comprising:
durable heat conductive cartridge means having heat conductive walls arranged in a predetermined configuration defining a cavity therein which is liquid-free, said walls conducting heat from a heat source to said liquid free cavity,
infix means also having walls arranged in substantially the same said predetermined configuration and sealingly positioned in the cavity of said cartridge means, said infix means walls also being heat conductive and defining a cavity therein for receipt of the food which is to be prepared in said container, said walls conducting heat to the food from said liquid-free cavity of said cartridge means, the walls of said cartridge means and said infix means being substantially dissimilar in at least one of composition and thickness such that the strength of said cartridge means is substantially greater than the strength of said infix means, and a heat bonded non-stick coating suited for food contact on said infix means coating the food contacting surfaces of said infix means cavity, and
fastening means attaching said infix means into said liquid free cavity of said cartridge means to thereby define an integral container at all times during cooking use and cleaning of said container, said fastening means together with the walls of said cartridge means and infix means defining sealing means to prevent the passage of matter to and from said liquid free cavity of said cartridge means at all times during cleaning and cooking use of the container, but allowing said durable cartridge means and

infix means to be separated when said container is not in use for replacement of said non-stick coated infix means with new infix means when the non-stick coating of said non-stick coated infix means has deteriorated.

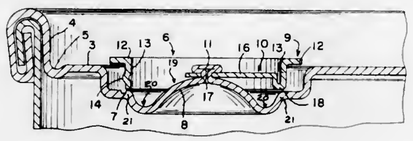
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**3,934,749**
**PLASTIC CONTAINER**
**Algis Steven Andrulionis, Fairfield, Conn., assignor to Polysar Plastics, Inc., Middletown, N.Y.**
**Filed Sept. 11, 1974, Ser. No. 504,884**
**Int. Cl.² B65D** *25/14*
**U.S. Cl. 220—63 R** **9 Claims**

**1.** A covered plastic container comprising a body wall and closed bottom end and sealed to a rim of the upper end of the body wall a plastic laminate cover comprising an inner plastic layer sealed to said rim of said upper end of the body wall thereby forming a hermetic seal and weakly adhering to the outer surface of said inner plastic layer and at least one outer plastic layer which is separable from said inner layer, said at least one outer plastic layer being so shaped and formed as to act as a press-on lid for said container when separated from said inner plastic layer, said inner plastic layer and said at least one outer plastic layer being originally formed as a laminate cover.

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**3,934,750**
**NON-DETACHABLE END UNIT**
**Edward J. Herbst, Posen, Ill., assignor to Continental Can Company, Inc., New York, N.Y.**
**Filed Nov. 8, 1974, Ser. No. 521,995**
**Int. Cl.² B65D** *41/02*
**U.S. Cl. 220—277** **10 Claims**



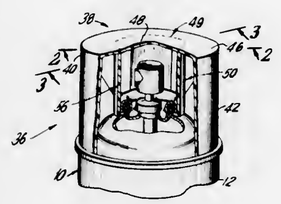
**1.** An improved non-detachable end closure for a can or similar container comprising an end panel having a chuck wall joined to a body by a chime, said end panel being formed with a well in an area between the end panel center and said chuck wall, said well having a substantially vertical sidewall and a base, and a score formed in said base, defining and partially encircling an opening flap, said flap being formed as an outwardly projecting dome with a peripheral depression thereabout, said depression being defined by a U-shaped contour of said end panel and having a portion at one side merging into said dome and having another portion at its opposite side merging into said base.

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**3,934,751**
**SAFETY OVERCAP FOR DISPENSING CONTAINERS**
**Edward H. Green, and Edward H. Green, Jr., both of 57 Interstate Road, Addison, Ill. 60101**
**Continuation-in-part of Ser. No. 498,440, Aug. 19, 1974, which is a continuation of Ser. No. 352,555, April 19, 1973, abandoned, which is a continuation-in-part of Ser. No. 254,191, May 17, 1972, abandoned. This application Dec. 20, 1974, Ser. No. 535,097**
**Int. Cl.² B67B** *5/00;* **B65D** *55/02;* **B67D** *5/32*
**U.S. Cl. 220—306** **18 Claims**

**1.** A safety overcap for a dispensing container having a cup member supporting dispensing means for dispensing a product stored in the container and including a protruding rim, said overcap comprising

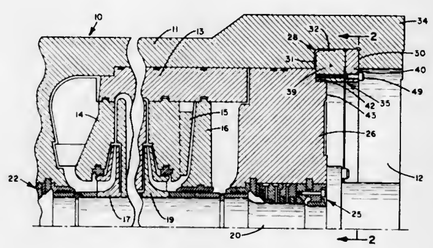
a top member have a flexible central portion, an annular portion and a peripheral edge;
a skirt depending from said peripheral edge of said top member; and
a plurality of spaced arms depending from said top member internally of said skirt, the lower portion of said arms having locking means, including an inwardly extending



end portion for engaging the rim of the cup member of the container;
each of said arms including a web portion extending radially outwardly from said arms towards said skirt; and
said arms being connected with said central portion and said annular portion of said top member of said overcap to be movable away from the center of said overcap with depression of said central portion of said top member.

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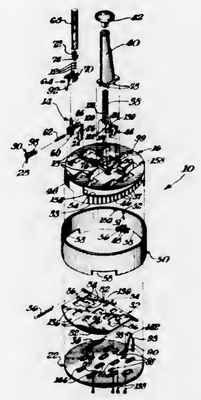
**3,934,752**
**END WALL CLOSURE APPARATUS**
**Donald P. Ravicchio, Appolo, and Carl H. Geary, Greensburg, both of Pa., assignors to Carrier Corporation, Syracuse, N.Y.**
**Filed Jan. 17, 1974, Ser. No. 434,167**
**Int. Cl.² B65D** *45/00*
**U.S. Cl. 220—328** **4 Claims**



**1.** Apparatus for supporting an end wall closure structure within an opening formed in the casing of a pressure vessel including
a shear key seated within a groove formed in the interior wall of the opening provided within the casing with a portion of the shear key extending inwardly beyond the interior wall of the casing and being received with a complementary shoulder formed within the outer face of the end wall closure structure, and
a pair of raised moment control pads carried upon the shear key and being arranged to act against one radial side face and the bottom wall of said groove in the casing, the control pads being located in regard to the center of gravity of the shear key so that the reactive bending moments translated by the end wall to said key are offset by the bending moments translated by the casing to said shear key whereby the sum of the moments acting about the key are substantially negated.



**3,934,753**
**DISC DISPENSER WITH REMOVABLE MAGAZINES**
**Alan C. Curtiss, Old Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.**
**Filed Jan. 29, 1974, Ser. No. 437,700**
**Int. Cl.² B65H** *3/44*
**U.S. Cl. 221—93** **32 Claims**

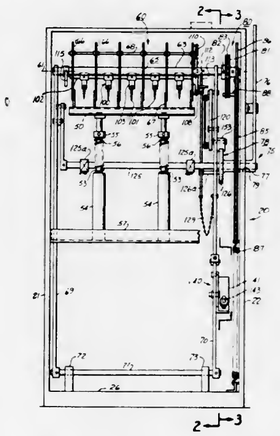


**25.** A disc dispenser comprising a body, a slot extending through said body, a socketed funnel in said body intersecting said slot, a tubular chute in said body intersecting said slot adjacent and spaced from said socketed funnel, a slide carriage having a slide plate disposed in said slot for sliding movement therein, the chute end of said plate having an aperture for receiving said discs, said chute end of said slide plate being thinner than the funnel end thereby providing a thin shouldered end on said plate containing said aperture whereby discharge of said discs from said funnel into said aperture is facilitated, resilient means urging said slide carriage to the loaded position in which said aperture is disposed below said socket, an actuating pin on said slide carriage whereby actuating movement is imparted to it for moving a disc loaded in said aperture over and into said chute, and said top of said tubular chute is open to permit the discharge of discs through said chute to be visually verified.

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**3,934,754**
**DEVICE FOR ISSUING SINGLE UNITS OF FLAT FLEXIBLE ARTICLES**
**Lyle V. Dutro, 1908 Meadowbrook, Altadena, Calif. 91001**
**Filed Jan. 28, 1974, Ser. No. 436,834**
**Int. Cl.² B65H** *3/22*
**U.S. Cl. 221—213** **44 Claims**

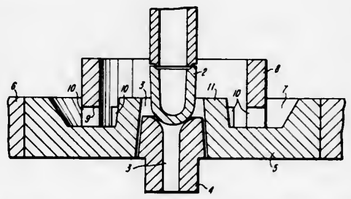
**1.** In a vending machine for issuing a single article from a stack of such articles, stripper means for stripping an end article from said stack, the article to be issued having an exposed face, and the stripper means comprising: a rotatable member having an axis of rotation and a direction of rotation when the article is being removed by it from the stack, an abutment surface on the rotatable member radially spaced from said axis, means for rotating the rotatable member and for simultaneously moving it laterally in a path across the stack, whereby to traverse the exposed face from adjacent one edge thereof, engagement means pivotally mounted to the rotatable member, said engagement means comprising an elongated pointed article-engaging element having a point and a piercing axis, and and extended engaged and a retracted disengaged condition in which the point is respectively radially outside of and inside of the abutment surface, the piercing axis of the engagement means making an acute angle with the exposed face of the article when extended and engaged thereto, with the piercing axis facing in the direction of rotation, whereby the article-engaging elements can be engaged to the article near said edge in the engaged condition, and while engaged to an article, the rotatable member may be simultaneously rotated and moved laterally across the face of the stack so as to wrap the article against the abutment surface with the article held to the rotatable member as a consequence of the said angularity of the said piercing axis, and strip it from the stack, and whereby the engagement means



may be placed in the disengaged condition to permit said article to be released and delivered over the top of the rotatable member, and the rotatable member can be returned to the initial position to repeat the said sequence, and stop means fixed to the rotatable member, projecting beyond its abutment surface, to be abutted by the article to be stripped so as to align the same at the time the article-engaging elements pierce the article.

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**3,934,755**
**METHOD AND DEVICE FOR PREVENTING SLAG FROM ESCAPING WHEN EMPTYING A POURING VESSEL**
**Paul Rheinlander, and Heinz Voigt, both of Wolfenbuttel, Germany, assignors to Thermo-Industrie GmbH & Co. KG, Bruchtorwall, Germany**
**Filed Apr. 3, 1974, Ser. No. 457,630**
**Claims priority, application Germany, Apr. 4, 1973, 2316757**
**Int. Cl.² B22D** *37/00, 41/10*
**U.S. Cl. 222—1** **12 Claims**



**1.** A method for preventing relatively lighter slag from escaping when emptying a pouring vessel containing steel of a specific weight heavier than that of slag and the relatively lighter slag in liquid form and provided with a stopper operated discharge opening in the bottom of the vessel, which includes in combination therewith the steps of providing a means for maintaining a barrier of heavier liquid steel between the relatively lighter slag and the discharge opening during the end phase of the vessel emptying operation and allowing said

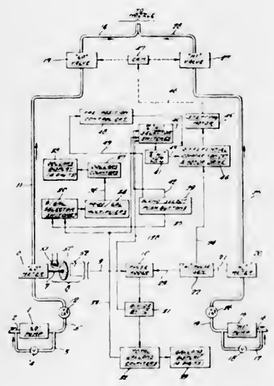
means to shutoff the flow of steel through the discharge opening while maintaining the barrier of steel between the slag and discharge opening.

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**3,934,756**
**BLENDING-TYPE MOTOR FUEL DISPENSING APPARATUS**

**Einar T. Young, Newtown Square; Stephen M. Fromuick, Glen Riddle; Robert Mayer, Ardmore, and Robert H. Livesay, West Chester, all of Pa., assignors to Sun Oil Company of Pennsylvania, Philadephia, Pa.**

**Filed Mar. 27, 1974, Ser. No. 455,476**
**Int. Cl.² B67D** *5/22*
**U.S. Cl. 222—28** **11 Claims**



**1.** A system for proportioning a pair of liquids and comprising:

a. a pair of flow conduits, one for each liquid;

b. means in each conduit for sensing the flow of liquid therethrough and for providing a train of individual pulses the number of which is proportional to the integrated liquid flow rate through the conduit;

c. means for summing the two pulse trains to produce a series of pulses the total number of which is representative of the combined volumetric liquid flow through both of said conduits;

d. gating means receptive of said series of pulses for passing therethrough only a selected percentage of said such pulses;

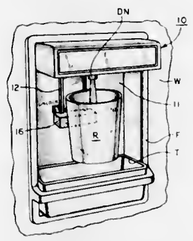
e. valve means in each conduit for adjusting the flow of liquid therethrough; and

f. means for controlling both of said valve means and including means for differentially comparing the pulse outputs of said gating means and of said sensing means in one conduit, to produce an output pulse control signal representative of differences between the compared pulses, and a bidirectional rotary stepping motor means, responsive to said output pulse control signal, for stepping in a number of discrete steps in one rotary direction or the other to control both of said valve means to achieve a selected proportioning of the pair of liquids, and a dual control cam means mechanically coupled for rotation with said stepping motor means and having a first portion of its cammed surface controlling one of said valve means and a second portion of its cammed surface controlling the other of said valve means.

**3,934,757**
**REFRIGERATOR WATER DISPENSER WITH CHILD-PROOF GUARD**

**Raymond P. Malek, Norridge, and Leroy R. Maleck, Galesburg, both of Ill., assignors to Container Corporation of America, Chicago, Ill.**

**Filed Dec. 20, 1974, Ser. No. 534,838**
**Int. Cl.² B67D** *5/06*
**U.S. Cl. 222—76** **3 Claims**




**1.** In a refrigerator having a connection to a fluid source for cooling fluid within said refrigerator and dispensing said cooled fluid through a wall of said refrigerator, the combination therewith of a dispenser having structure for preventing unintended dispensing of said fluid, said structure comprising:

a. discharge spout for said fluid located with reference to said wall and adapted to discharge fluid into portable receptacle held in proximity to said discharge means;

b. means controlled by movement of said receptacle determinative of discharge or cessation of said discharge comprising:

i. a power operated valve connected in said fluid source;

ii. means for controlling said vlave including a switch connected in a circuit with said valve;

iii. an actuating member supported on said structure and cooperating with said portable receptacle to actuate said control means;

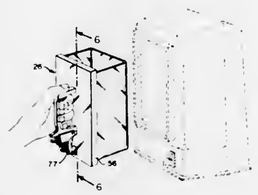
c. means supported on said structure and shiftable selectively between shut-off and discharge positions, said shut-off position preventing actuation of said actuating member, said discharge position enabling said actuating member to be actuated.

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**3,934,758**
**REFRIGERATED BEVERAGE DISPENSER-MIXER**

**Frederick M. Kipp, 455 Beach Road, Fairfield, Conn. 06430**

**Filed Mar. 14, 1974, Ser. No. 451,025**
**Int. Cl.² B67D** *5/62*
**U.S. Cl. 222—108** **23 Claims**




**1.** A refrigerated fluid dispensing and agitating apparatus comprising:

A. a thermally insulated, open-ended enclosure structure incorporating:



1. interior sidewalls defining an open-ended space therebetween to the outside, and

2. a thermally conductive liner forming at least a portion of the interior sidewalls;

B. a fluid container interfitting within and removable from the space defined by the interior sidewalls of the enclosure structure, incorporating:

1. a thermally insulated front plate forming a thermally and mechanically sealed compartment with said enclosure structure, and

2. a handle portion connected to the front plate for facilitating removal of the container from the enclosure structure;

C. fluid dispensing means cooperating with the fluid container for removal of fluid therefrom;

D. refrigeration means cooperating with the thermally conductive liner for cooling the liner; and

E. a removably engageable fluid agitator incorporating:

1. a mixing blade rotatably mounted within the fluid container;

2. first means for supplying rotational energy to the mixing blade; and

3. second means for removably engaging the first means to the mixing blade; and

F. switching means connected to said refrigeration means, said switching means incorporating a fluid container sensor, whereby said refrigeration means are de-energized when the fluid container is removed from the enclosure structure;

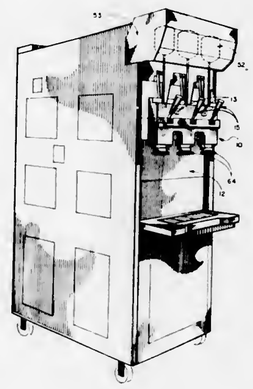
whereby the contents of the fluid container are refrigerated, dispensed, agitated, and stored when the fluid container is within the enclosure structure and dispensed when the fluid container is removed from the enclosure structure.

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**3,934,759**
**MULTIPLE DISPENSING HEAD FOR MILK SHAKE MACHINES**

**Frank Giannella, 3 Emeline Drive, Hawthorne, N.J. 07506, and Enzo Pelicciari, 140 Hepburn Road, Clifton, N.J. 07012**

**Filed Feb. 28, 1975, Ser. No. 554,263**
**Int. Cl.² B67D** *5/56*
**U.S. Cl. 222—129.1** **9 Claims**




**1.** A multiple head mixing, blending and dispensing apparatus for mixing and dispensing a variety of flavored comestibles such as milk shakes from a single machine having a reservoir of unflavored comestible and reservoirs of flavoring syrups, comprising:

a housing mounted on the front panel of a milk shake machine in communication with its reservoir of unflavored comestible and its reservoirs of flavoring syrups;

a plurality of mixing, blending and dispensing heads mounted within said housing, each of which is in communication with said reservoir of unflavored comestible and each of which is in communication with at least one reservoir of flavoring syrup; and each of which may be operated simultaneously with the others;

selection means to select the desired flavoring syrup to be mixed, blended and dispensed from each head;

a premix compartment within said housing communicating with said comestible and flavor reservoirs;

a comestible inlet port for admitting said unflavored comestible under pressure into said premix compartment;

at least one flavoring inlet port downstream from said comestible inlet port for admitting a flavoring under pressure into said comestible flow entering said premix compartment;

a blending compartment within said housing downstream from and communicating with said premix compartment;

a plurality of channels interconnecting said premix chamber to said blending compartment;

said premix compartment, in combination with said comestible and flavor pressurized flows and said channels, being disposed to produce a turbulent mixing of said flavoring and said comestible;

blender means rotably mounted within said blending compartment;

blender power means rotating said blender;

a dispensing nozzle attached to said housing downstream from and communicating with said blending compartment; and

manually operable control means for actuating said blender power means, for controlling the flow of said comestible, and for controlling the flow of said flavoring within said head;

a dispensing nozzle attached to said housing downstream from and communicating with said blending compartment; and

manually operable control means for controlling the flow of said comestible, and for controlling the flow of said flavoring within said head and for activating said blender power means.

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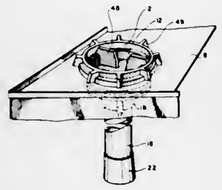
**3,934,760**
**RETRACTABLE AND VENTED POURING SPOUT**

**Edsel Le Gresley, 170 Commander Blvd., Agincourt, Ontario, Canada**

**Filed Oct. 24, 1974, Ser. No. 517,792**
**Claims priority, application Canada, Jan. 22, 1974, 190653**
**Int. Cl.² B67D** *3/00*
**U.S. Cl. 222—153** **12 Claims**

**1.** A combined closure and pouring spout assembly comprising an outer closure member to be received within an opening provided in a container, the outer closure having an outwardly opening recess to receive a closure plug, an inner transverse wall in the outer closure defining a bottom for the recess and a circular aperture provided in the inner transverse wall and an elongate tube in the form of a pouring spout having inner and outer ends carried in the circular aperture, the spout having throughout a major portion of its length an outer diameter less than the diameter of the circular aperture whereby the spout may be moved, when the closure plug is removed, to an extended pouring position and to a retracted position, the spout being held captive within the circular aperture by an annular flange provided on the outer end of the spout and by an enlargement provided on the inner end of the spout with the annular flange and enlargement having outer diameters greater than the diameter of the circular aperture, and a venting arrangement provided in association with the spout to provide air ingress into the container during pouring, the spout fitting loosely within the circular aperture with the

closure plug in sealing position in the outer closure providing communication between the interior of the spout and the interior of the container the closure plug being threadedly received within the outer closure and having two annular



spaced apart ridges on the bottom surface thereof for reception between an annular ridge provided on the inner transverse wall of the outer closure to effect air-and-liquid-tight sealing between the closure plug and the outer closure.

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**3,934,761**

## OUTER CONTAINER ASSEMBLY FOR HOUSING AN AEROSOL

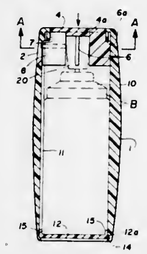
**Guy Rene Gentreau, Vincennes, France, assignor to Les Parfums de Dana, Inc., New York, N.Y.**

**Filed July 25, 1974, Ser. No. 491,655**

**Claims priority, application France, Oct. 19, 1973, 73.37319**

**Int. Cl.² B65D *83/14***

**U.S. Cl. 222—183** **9 Claims**



**1.** An outer container assembly for housing a spray container of the type having a depressable spray valve member at one end thereof and a laterally extending spray nozzle at said one end, said outer container assembly comprising a tubular body having internal dimensions of a size to receive a spray container to be housed therein, said tubular body having an open bottom of a size to permit the spray container to be passed therethrough, and an inwardly extending flange at its top end defining a top opening, an upper closure member within said tubular body, said upper closure member having a plurality of vanes extending to slidably engage the inner surface of said body to hold said upper closure member in said tubular body, said closure member having peripheral dimensions enabling its assembly in said body by way of said open bottom while inhibiting passage through said top opening, said body being free of internal portions which would inhibit passage of said upper closure member from said open bottom to said top opening, said vanes further defining a space for receiving the spray valve member of a spray container assembled within said tubular body, a spray outlet in said tubular body, said upper closure member further comprising means for holding the spray nozzle of a spray container assembled therein aligned with said outlet, and a bottom closure member for closing said open bottom for holding a spray container within said tubular body, said closure member having a plate-shaped member extending into said top opening, said vanes depending from said plate-shaped member and having stepped portions positioned to engage said flange to inhibit passing of said upper closure member through said top opening, the upper surface of said plate-shaped member being substantially flush with the outer surface of said tubular body at said flange.

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**3,934,762**

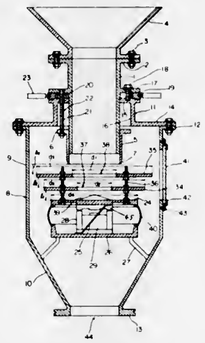
## APPARATUS HAVING VIBRATING PLATES FOR FEEDING POWDERED MATERIAL

**Kiyoshi Urayama, Kyoto, Japan, assignor to Kabushiki Kaisha Hosokawa Funtai Kogaku Kenkyusho, Osaka, Japan**

**Filed Dec. 20, 1974, Ser. No. 535,117**

**Int. Cl.² B65G *65/70***

**U.S. Cl. 222—200** **7 Claims**



**1.** An apparatus for feeding a powdered material comprising a first receiving member having a substantially horizontal receiving surface, a feed tube for feeding the powdered material onto the first receiving member, and means for vibrating the first receiving member to cause the powdered material on the first receiving member to flow down from a peripheral edge of the first receiving member, characterized in that at least one second receiving member having a substantially horizontal surface for receiving the powdered material fromm the feed tube and an opening substantially concentric with the feed tube is provided between the first receiving member and the feed tube and vertically spaced apart from both the first receiving member and the feed tube, whereby the powdered material placed on the second receiving member is made to flow down outside of the first receiving member from a peripheral edge of the second receiving member when the second receiving member is vibrated by the vibrating means.

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**3,934,763**

## HAND-HELD DISPENSER PUMP CONSTRUCTION

**Wolf Steiman, Bridgeport, Conn., assignor to VCA Corporation, Greenwich, Conn.**

**Filed June 3, 1974, Ser. No. 476,039**

**Int. Cl.² G01F *11/02***

**U.S. Cl. 222—321** **6 Claims**

**1.** A hand-held dispenser pump construction comprising, in combination:

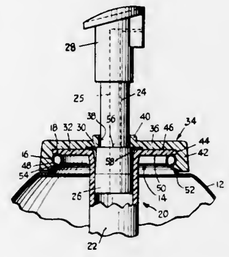
a. an aerosol-type can including a crowned top portion surrounding a top opening, said top portion having an outturned curl forming an annular rounded bead constituting the top rim of the can;



b. a plastic pump cylinder and protruding plunger carried thereby, said cylinder at its mouth having an integral, annular, outwardly extending mounting flange supported adjacent its periphery on the top rim of the can;

c. a one-piece, snap-on plastic closure member comprising an inverted, dish-shaped member having a flat disk-like body provided with a central opening through which the plunger extends and in which it is reciprocatable;

d. said closure member including an integral depending peripheral flange having an annular undercut closely adjacent the disk-like body for receiving and holding captive the mounting flange of the pump cylinder



whereby the upper side of said mounting flange is directly engaged by the underside of the disk-like body; and

e. said peripheral flange having in its inside wall a shallow annular groove of slightly less axial extent than said curl and immediately adjacent said annular undercut adapted to receive the outer wall portion of the outturned curl of the can when the closure is snapped over the top opening thereof; whereby

f. said top rim of the curl directly, sealingly engages the underside of the mounting flange of the pump cylinder adjacent its periphery to provide a leak-resistant seal without the use of any sealing gasket or washer.

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**3,934,764**

## APPARATUS FOR DOSING AND DISPENSING GRANULAR MATERIAL INTO CAPSULES

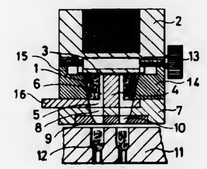
**Manfred Rebmann, Hegnach, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany**

**Filed July 3, 1974, Ser. No. 485,502**

**Claims priority, application Germany, July 5, 1973, 2334185**

**Int. Cl.² G01F *11/28***

**U.S. Cl. 222—451** **12 Claims**



**1.** In an apparatus for dosing material, especially granular material, and dispensing doses of said material into capsules, including a housing having a supply container for the granular material and a plurality of dosing chambers for receiving said granular material formed therein, said dosing chambers each having inlet and outlet apertures, the improvement comprising:

first slide means mounted within said housing, said first slide means separating said supply container from said plurality of dosing chambers and controlling in its movement opening and closing of the inlet apertures of said dosing chambers; and

second slide means mounted within said housing, said second slide means including penetrations and recesses which adjoin said dosing chambers, said recesses being disposed laterally of the dosing chambers and their respective penetrations, said second slide means controlling in its movement opening and closing of the outlet apertures of said dosing chambers with said penetrations and increasing the effective volume of said dosing chambers with said recesses to aid in dispensing the material therefrom.

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**3,934,765**

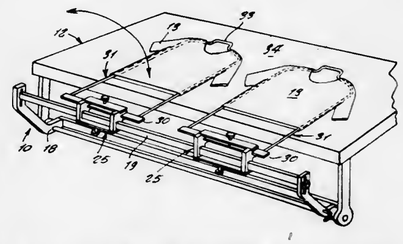
## DEVICE FOR MASS PRODUCTION GARMENT STEAMING

**Mihai Goldstein, 7239 Bergen Court, Brooklyn, N.Y. 11234**

**Filed Aug. 20, 1974, Ser. No. 499,001**

**Int. Cl.² A41H *5/00***

**U.S. Cl. 223—70** **1 Claim**

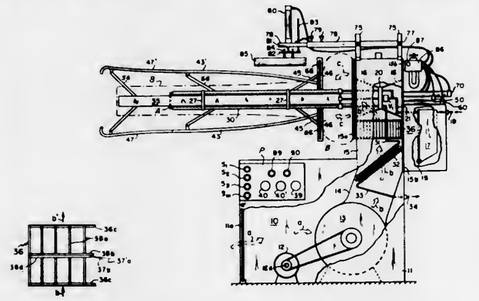


**1.** In a device for garment steaming, the combination of a steam table having a top surface, a stationary horizontal shaft supported by stanchions in spaced relation below a forward edge of said table, a U-shaped frame pivotally mounted on said shaft, said U-shaped frame comprising a pair of parallel, spaced apart levers and a bar between one end thereof, an opening in each lever near said end, said openings being axially aligned and receiving said shaft, an elongated slot near an opposite end of each said lever, a clamp support bar between said slots being adjustably supported therein respective to said shaft, a plurality of clamps adjustably mounted along said clamp support bar, a flat garment supporting form being removably held by each said clamp, said garment supporting clamps in one pivotal position of said U-shaped frame resting flat against said steam table upper surface, and adjustable stop means for limiting a pivotal travel of said U-shaped frame for a selective upward position of said garment supporting form, said adjustable stop means comprises a projection on a side of each said lever, said projection being axially parallel to said shaft, and a pair of collars rotationally adjustably mounted on said shaft, each collar having a radially extending pin, said pin extending into a travel path of one of said projections; said clamp supporting bar and said bar which is between the one ends of said levers being parallel to said stationary shaft which is supported by said stanchions, said levers being at right angle to both said bars and said stationary shaft; each said clamp having a slot for receiving said clamp support bar, and also having a mouth for receiving said garment supporting form, a single thumb screw on each said clamp for securement of said clamp on said clamp supporting bar, another single thumb screw also on each said clamp for securement of one said garment supporting form on said clamp; said mouth being formed between a pair of jaws one of which has a spur at its end projecting into said mouth and in a direction toward the other said jaw for abutting against said garment supporting form positioned in an inner end of said mouth, certain of said clamps each comprising a pair of parallel, spaced bars each of which contains one said slot and one said mouth and said pair of bars being held together by a pair of interconnecting plates,

while others of said clamps each comprise a single block containing said slot and said mouth.

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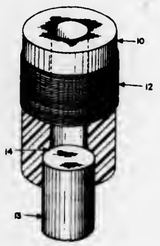
**3,934,766**
**GARMENT FINISHER**
**Stanley M. Bailey, Hamburg, Pa., assignor to Garment Finishing Equipment Corporation, Cambridge, Mass.**
**Continuation-in-part of Ser. No. 508,885, Sept. 24, 1974, Pat. No. 3,883,051. This application Feb. 3, 1975, Ser. No. 546,213**
**Int. Cl.² D06C** *15/00*
**U.S. Cl. 223—73** **10 Claims**



**1.** In a garment finishing machine having a support base, a set of longitudinally extending creasing blades operatively carried by said support base, means carried by said support base for supplying heated fluid along said blades, said means for supplying heated fluid comprising an air supply duct, an electric heater of plate-like construction positioned to extend across said duct and define a plurality of air flow passageways therethrough for heating the air, and thermal probe means for controlling a supply of electric energy to said heater to maintain the air being supplied by said duct at a desired heated temperature.

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**3,934,767**
**TEXTILE PACKAGE OF A CELLULAR PLASTIC CORE WITH WOUND YARN**
**Edward Jones, Clarkes Summit, Pa., assignor to Rohm & Haas Company, Philadelphia, Pa.**
**Filed Feb. 28, 1973, Ser. No. 336,651**
**Int. Cl.² B65H** *81/00*; **B65D** *85/676*; **B65H** *75/14*; **B32B** *5/18*
**U.S. Cl. 223—106** **4 Claims**




**1.** A textile package comprising a deformable, hollow, readily splitable cellular plastic core adapted for an interference fit on the spindle of a yarn takeup or yarn dispensing apparatus, and filaments, fibers or yarn wound on said core, said plastic core having a density of about 1.5 to 3 lbs. per cubic foot and a wall thickness of at least about one-fourth inch whereby compression of the inside of the core, causing an increase of one-sixteenth inch in the inside diameter of the core, will not change the outside diameter of the core and compression of the outside of the core by shrinkage of the filaments, fibers or yarns thereon will not decrease the inside diameter of the core.

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**3,934,768**
**GUN SUPPORT**
**Max E. Jones, 42398 Barbary St., Fremont, Calif. 94538**
**Filed Mar. 11, 1974, Ser. No. 449,975**
**Int. Cl.² F41C** *33/00*
**U.S. Cl. 224—1 R** **3 Claims**



**1.** In a gun support including a support member formed with a passageway therein dimensioned for mounting of said support member to a belt-like garment proximate the front waist of the user, said support member further being formed with a pocket having an open top dimensioned to receive the trigger guard of a gun therein, said open top being accessible for receipt of said trigger guard from a front side of said member, the improvement comprising:

an elastomeric member removably mounted in said pocket whereby a plurality of elastomeric members of similar external form may be interchangeably mounted in said pocket;

said elastomeric member having an interior wall defining an open top cavity mounted in registration with said open top of said pocket, said interior wall of said cavity being custom formed and contoured to mate with and provide a substantially continuous support for and resilient gripping of the outer periphery of the trigger guard of a particular gun whereby a plurality of elastomeric members may be interchangeably mounted in said pocket for support of any one of a plurality of guns; and

said elastomeric member being formed to resiliently grip and support said trigger guard with sufficient force to provide substantially the sole support required for said gun to secure the same in an upright ready for use position proximate the front waist of the user.

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**3,934,769**
**SHOULDER CARRIER FOR VIDEO TAPE MACHINE AND CAMERA**
**David Carlson, Jr., 3140 NE. Bryce, Portland, Oreg. 97212**
**Filed June 17, 1974, Ser. No. 479,600**
**Int. Cl.² A45F** *5/00*
**U.S. Cl. 224—5 V** **5 Claims**

**1.** A shoulder carrier for a portable camera and associated videotape machine, comprising

a. a body portion having front, rear and side portions,

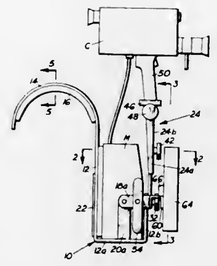
b. a pair of rearwardly extending hooks on said body portion arranged for engagement frontwise over the shoulders of a cameraman for supporting said body portion in front of a cameraman above the waist,

c. means in said body portion defining a pocket arranged to removably receive and hold a video tape machine,

d. an upright standard secured at its lower end to the front of said body portion and projecting above said pocket,

e. means at the upper end of said standard to support a camera thereon which is electrically connected to the video tape machine,

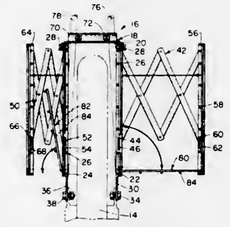




f. and bracket means on said body portion exteriorly of said pocket for holding accessory equipment.

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**3,934,770**
**COLLAPSIBLE BICYCLE ARTICLE CARRIER**
**Elizabeth Larsen, 137 Bluefield Ave., Newbury Park, Calif. 91320**
**Filed Aug. 30, 1974, Ser. No. 502,061**
**Int. Cl.² B62J** *9/00*
**U.S. Cl. 224—33** **2 Claims**



**1.** A collapsible bicycle article carrier comprising:

a fixed frame;

said frame being substantially U-shaped in configuration with said frame having a pair of substantially parallel, spaced apart legs, said frame adaptable to be placed over the rear wheel of a bicycle with one of said legs located on either side of the bicycle wheel and the apex portion of the frame forming an additional seat for the bicycle

a carrying unit attached to each said leg, each carrying unit formed of the following elements:

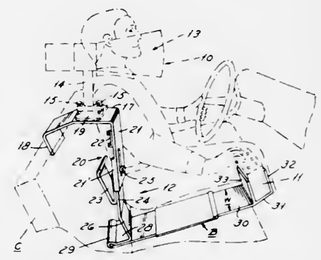
a scissor-linkage assembly attached to said frame, said scissor-linkage assembly comprising a plurality of pivotally connected links, two in number of said links being pivotally connected to said frame forming a first pair of separate connection points, one of said connection points of said first pair being slidably movable with respect to said frame between a first position and a second position;

an outer wall connected to the free end of said scissor-linkage assembly, two in number of said links being pivotally connected to said outer wall forming a second pair of separate connection points, one of said connection points of said second pair being slidably movable with respect to said outer wall, said outer wall movable by said scissor-linkage assembly between a closed position and an open position, said closed position being when said outer wall is located directly adjacent said frame with said movable connection point of said first pair in said first position, said open position being when said outer wall is spaced from said frame with said movable connection point of said first pair in said second position; and

a bottom connected between said outer wall and said frame when said outer wall is in said open position, said bottom pivotally connected to said frame, said bottom positioned against said frame when said outer wall is in said closed position.

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**3,934,771**
**RADAR MOUNT AND HOLDING BRACKET**
**Frank A. Eberhard, 418 N. Birney St., Bay City, Mich. 48706**
**Filed Mar. 5, 1974, Ser. No. 448,402**
**Int. Cl.² B60R** *7/04*
**U.S. Cl. 224—42.42 A** **17 Claims**



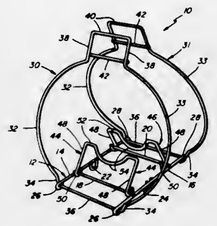
**1.** A bracket for readily and releasably mounting components of a mobile radar scope set in a vehicle interior, said bracket comprising an upright panel part having plural means for the mounting, in its entirety and within the vehicle interior, of one component of said scope set, and also for the mounting, also entirely within the vehicle interior but out of physical engagement with an in substantially spaced relation to said one component, of another component of said scope set, in which said upright panel part has a lateral extension on which a radar cone is supported as said one component of said scope set, and has a further lateral extension spaced vertically from the first-named extension, on which further extension a control unit is mounted as said other component of said scope set, said lateral cone-supporting extension being horizontal and spaced vertically above said further extension, said upright panel part and first-named extension including means to frictionally and releasably engage an upright back cushion member of the vehicle interior, with said first-named extension resting atop said member and said further extension horizontally located in position to rest on a seat cushion member of the vehicle interior.

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**3,934,772**
**DEVICE FOR LIFTING, CARRYING AND INVERTING WATER COOLER BOTTLES**
**Jerome A. Brannan, St. Cloud, Minn., assignor to Dansen Company, Inc., Walte Park, Minn.**
**Filed Aug. 30, 1974, Ser. No. 502,176**
**Int. Cl.² B65D** *87/00*
**U.S. Cl. 224—45 AA** **10 Claims**

**1.** A device for lifting, carrying and inverting water cooler bottles comprising a generally open rectangular frame means, a pair of jaw members each pivotally connected at one end to spaced portions of said frame means and each jaw member having means at its other end for gripping the neck of a water cooler bottle when said jaw members are pivoted into an angular relationship to one side of said frame means with their said other ends nearer each other than the distance between their said one ends so that the neck gripping means of said jaw members can engage the neck of said water cooler bottle when said neck is extending upwardly through said frame means in order to lift said bottle, and a pair of hoop members pivotally connected to portions of the frame means spaced at least as far apart as said one ends of said jaw members so that said hoop members can be pivoted in a direction to said one

side of said frame means for lifting said bottle when said neck gripping means of said jaw members are engaging said bottle neck, said frame means having a width less than the body of



the bottle and said hoop members being of a size so as to encircle the body of the bottle in order to carry and invert said bottle when said body of the bottle is against said frame means and said hoops encircle said body.

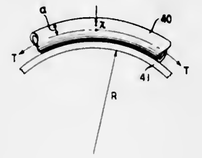
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**3,934,773**

## METHOD FOR BREAKING BRITTLE RODS OR FIBERS

**Edwin Leroy Chinnock, Rumson; Detlef Christoph Gloge, Red Bank, and Peter William Smith, Colts Neck, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**

**Filed Nov. 2, 1973, Ser. No. 412,293**
**Int. Cl.² B26F** *3/00*
**U.S. Cl. 225—2** **2 Claims**



**1.** The method of breaking a brittle material including the steps of:

scoring said material over a region along its surface;

mounting said material on a flexible bending form with said scored region facing away from said form;

and bending said form and said material while simultaneously applying to said form and said material a nonuniform tensile stress which decreases from a maximum value at said region to a minimum value along the opposite surface in contact with said form and which, at all points therebetween, is less than the threshold stress for producing a mist zone fracture, said minimum value being grater than zero by a sufficient amount to insure a mirror-type fracture.

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**3,934,774**

## DUAL SPEED TAPE DRIVE SYSTEM FOR AN ENDLESS LOOP DICTATING AND TRANSCRIBING SYSTEM

**James C. Whitney, Fairfield, Conn., assignor to Dictaphone Corporation, Rye, N.Y.**

**Filed Dec. 27, 1974, Ser. No. 536,856**
**Int. Cl.² B65H** *17/20*
**U.S. Cl. 226—50** **6 Claims**

**1.** A bidirectional tape drive assembly including provision for dual speed tape drive in one direction for a dictating and transcribing system utilizing an endless loop of magnetic tape of substantial length comprising:

a motor including an output shaft,

said output shaft having first and second drive belt engaging means thereon,

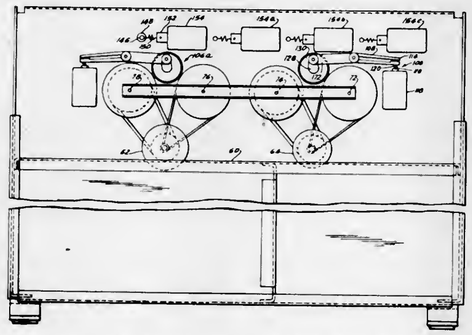
said first belt engaging means having an effective diameter significantly greater than said second belt engaging means,

first and second tape drive capstans spaced from each other and adapted to engage said magnetic tape and drive said tape,

said first capstan including drive belt engaging means operatively associated therewith,

a first drive belt operatively disposed about said first belt engaging means on said motor output shaft and said drive belt engaging means on said first capstan thereby to rotate said first capstan when said motor output shaft rotates,

said second capstan including a first hub member operatively associated with said second capstan through an overriding clutch means,



a second drive belt operatively disposed about said second belt engaging means on said motor output shaft and said first hub member thereby to rotate said second capstan at a slower speed than said first capstan when said motor output shaft rotates,

said second capstan including a second hub member spaced from said first hub and overriding clutch member and keyed to said second capstan, and

an idler wheel member disposed between said second hub member on said second capstan and said drive belt engaging means on said first capstan and movable from a first position spaced from said second hub member and said first capstan drive belt engaging means and a second position in frictional contact with said second hub member and said first capstan drive belt engaging means thereby to impart the faster speed of rotation of said first capstan to said second capstan.

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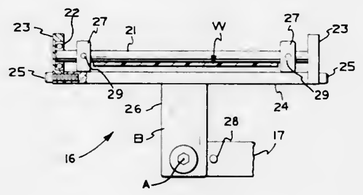
**3,934,775**

## WEB CENTERING DEVICE

**William B. Keller, Bayside, N.Y., assignor to Owens-Illinois, Inc., Toledo, Ohio**

**Filed Oct. 15, 1974, Ser. No. 514,477**
**Int. Cl.² B65H** *23/04*
**U.S. Cl. 226—196** **3 Claims**

**1.** A self-centering device for centering a moving web of thin sheetlike material along its intended path of travel, said device comprising in combination: a roller extending transversely across the path of travel of the web; a bracket rotatingly supporting said roller in rotating contact with one surface of the web, said bracket being pivotally mounted on an axis which extends parallel to the path of travel of the web and which is spaced from the moving web, closer to the surface of the web which is not contacted by the roller than to the surface which is contacted by the roller; and a pair of raised guides attached to the roller at spaced apart locations adjacent the opposed edges of the web when the web is moving along its intended path of travel, each of said guides being positioned to contact the adjacent of the edges of the web when the web drifts from its intended path of travel of said web toward said guide, whereby the bracket and the roller pivot



about said axis in a plane extending transversely of the path of travel of the web thereby establishing an imbalanced force load on the web which will tend to draw the web back to its intended path of travel.

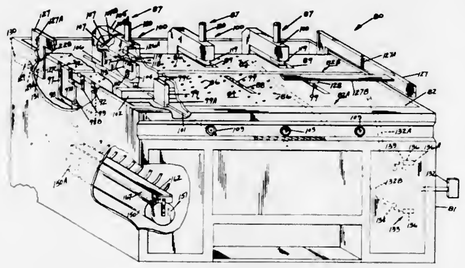
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**3,934,776**

## APPARATUS FOR FORMING PIPED OPENINGS IN A GARMENT

**John L. Cruden, Jr., Marvin Hollow Road, Walton, N.Y. 13856**

**Division of Ser. No. 47,950, June 22, 1970, Pat. No. 3,654,635, which is a division of Ser. No. 739,812, June 25, 1968, Pat. No. 3,587,501. This application Oct. 1, 1971, Ser. No. 185,562**
**Int. Cl. D05b** *3/00;* **A41d** *27/20*
**U.S. Cl. 227—76** **23 Claims**



**1.** An apparatus for locating and forming an opening in the facing of a piece of material adapted to overlie an opening formed in the front of said material to form a finished opening comprising:

means defining a support for the front and facing portions of said material,

means for locating the position of the opening to be formed in said facing with respect to a fold line between said facing and front portions,

forming means for forming the opening in the facing material to correspond with the opening in said front portion,

and actuating means operatively coupling said locating means with said forming means whereby the positioning of the locating means with respect to the opening in said front portion effects the location of the forming means over said facing with respect to said fold line a corresponding amount.



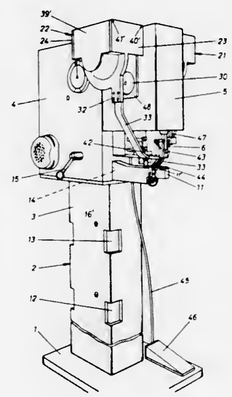


**3,934,777**

## MACHINE FOR THE ATTACHMENT OF FASTENERS

**Friedhelm Kramer, Ennepetal-Milspe, and Gunter Wolfertz, Wuppertal, both of Germany, assignors to Firma Schaeffer-Homberg GmbH, Wuppertal-Barmen, Germany**

**Filed Aug. 15, 1974, Ser. No. 497,643**
**Claims priority, application Germany, Aug. 16, 1973, 7329772**
**Int. Cl.² B21J** *15/10*
**U.S. Cl. 227—109** **3 Claims**



**1.** In a machine for the attachment of fasteners comprising a machine head, an upper tool and a lower tool mounted on said head for applying upper and lower fastener parts to an article, said head having a pair of lateral flanks, and drive means in said rotatable head, for feeding fastener parts to said tools, the improvement which comprises:

a pair of housings each including therein a tumbler drum rotatable to dispense respective fastener parts, each of said housings having a pair of opposite sides;

hanger means on each of said flanks of said head for engagement with either of said sides of a respective one of said housings for supporting said housings interchangeably on said flanks of said head;

a drive element extending from each of said sides of each housing for coupling to said drive means upon hanging of each housing on a respective flank of said head; and

a respective supply rail extending from each of said housings to a respective one of said tools for delivering the respective fastener parts thereto, said supply rail each being detachably secured to the respective housing and removable therewith from said head.

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**3,934,778**

## STAPLE DRIVING DEVICE WITH IMPROVED STAPLE JAM CLEARING MECHANISM

**Robert E. Males, Cranston, R.I., assignor to Textron, Inc., Providence, R.I.**

**Filed Feb. 13, 1975, Ser. No. 549,747**
**Int. Cl.² B25C** *5/06*
**U.S. Cl. 227—123** **9 Claims**

**1.** A staple driving device comprising

means defining a staple drive track,

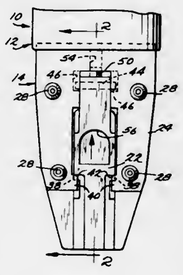
a staple driving element slidably mounted in said drive track for downward movement through a staple driving stroke and upward movement through a return stroke,

said drive track defining means including a rigid structure having opposed flat side surfaces defining the sides of said drive track for guidingly engaging the legs of a leading staple during the driving movement thereof, a forwardly

facing flat surface extending between said side surfaces for guidingly engaging the rear surface of a leading staple during the driving movement thereof, and longitudinally extending surfaces defining an opening of a staple-shaped configuration extending fowardly into communication with said drive track defining surfaces,

staple magazine means for receiving a stick of staples and feeding successive leading staples forwardly into said drive track through said staple-shaped opening to be driven outwardly of said drive track into a workpiece by said staple driving element during the staple driving stroke thereof,

said drive track defining means also including a rigid member mounted on said rigid structure forwardly of said staple-shaped opening for (1) translational movement in a direction parallel with the movement of said staple driving element between a locked operating position and a raised unlocked position and (2) pivotal movement between said raised unlocked position and a forwardly extending open access position,



said rigid member having (1) staple stop surface means facing rearwardly when said rigid member is in said locked operative position for engaging the forward surface of a leading staple after the feeding movement thereof through said staple-shaped opening by said magazine means, (2) staple guiding surface means facing rearwardly when said rigid member is in said locked operative position for guidingly engaging the forward surface of a leading staple during the driving movement thereof by said staple driving element, and (3) cam surface means extending downwardly and forwardly from the upper end of said staple stop surface means when said rigid member is in said locked operative position operable (1) when said rigid member is pivoted from said unlocked position into said open access position to permit limited forward movement of a leading staple fed through said opening, and (2) when said rigid member is pivoted from said open access position to move a leading staple rearwardly into a position of alignment with said drive track.

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**3,934,779**
**FASTENER DRIVING TOOL**
**Gilbert Dent, 103-01 118th St., Richmond Hill, N.Y. 11419**
**Filed Oct. 31, 1974, Ser. No. 519,670**
**Int. Cl.² B25C *1/04***
**U.S. Cl. 227—147** **7 Claims**

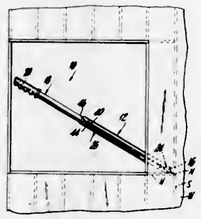
1. A fastener driving tool for use at otherwise inaccesible locations, said fastener driving tool comprising:

a. a cylinder having a first open end and a second end;

b. an elongated ram slidably mounted in said first open end of said cylinder, said ram including a first end positioned outwardly of said first end of said cylinder and a second end adjacent said second end of said cylinder;

c. a clip for releasably holding the head of a fastener proximate said second end of said cylinder;

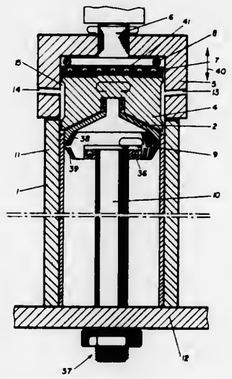
d. an elongated, axially displaceable rod mounted on and positioned substantially parallel to the longitudinal axis of said cylinder, said rod having a first end positioned proximate said first end of said cylinder and a second end coupled to said clip; and



e. spring means for normally biasing said rod and said clip to a fastener holding position.

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**3,934,780**
**APPARATUS FOR MAKING TUBULAR CONTAINERS**
**Valere Flax, Fezensac, France, assignor to Metal Box Limited, Reading, England**
**Division of Ser. No. 383,597, July 30, 1973, abandoned. This application Aug. 26, 1974, Ser. No. 500,555**
**Claims priority, application France, Aug. 3, 1972, 72.28664**
**Int. Cl.² B23K *19/02***
**U.S. Cl. 228—2** **10 Claims**

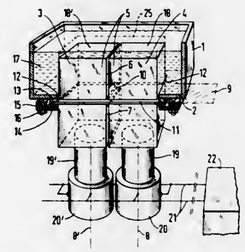


1. An apparatus for bonding a cap to one end of an open ended tubular body along a joining seam adjacent one end of said tubular body by applying heat to said seam, comprising first means for holding said tubular body, said first holding means having a longitudinal axis, second means for holding said cap in axial alignment with said first holding means relative to said longitudinal axis, means for axially moving said first and second holding means axially relative to each other, pressure menas for pressing said holding means axially relative to each other to bring the cap into frictional contact with said tubular body along said seam, drive means operatively connected to at least one of said holding means for positively rotating one of said holding means relative to the other to produce sufficient bonding heat by friction between the cap and the tubular body, wherein said second holding means comprise an outer holding member and an inner holding member, a housing, means for rotatably and axially movably supporting said outer holding member in said housing, and means for rotatably supporting said inner holding member inside said tubular body in axial alignment with said outer holding member to receive said cap between the inner and outer holding members, and wherein said pressure means are located between said outer holding member and said housing for pressing the outer holding member and thus the cap against the inner holding member.



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**3,934,781**
**SOLDERING BATH FOR FLUXLESS ULTRASONIC SOLDERING**
**Güenter Klauke; Rüediger Marzinlak, and Güenter Güerke, all of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany**
**Filed Sept. 12, 1974, Ser. No. 505,333**
**Claims priority, application Germany, Sept. 18, 1973, 2346993**
**Int. Cl.² B23K *1/08***
**U.S. Cl. 228—37** **10 Claims**



1. A solder bath for fluxless ultrasonic soldering comprising a vessel for holding molten solder and having a base, at least two sonotrodes, an acoustic head associated with each of said sonotrodes, a common oscillatory circuit for said acoustic heads so that each of the sonotrodes has at least one node of oscillation, a web having a width of at most 0.3 mm, said web interconnecting said sonotrodes at a common plane of the nodes of oscillation of said sonotrodes and spacing the sonotrodes apart by a distance no greater than 0.3 mm, said sonotrodes extending through said base into the bath so that the sonotrodes are in co-phasial operation and provide the bath with an enlarged cavitation zone having a uniform amplitude distribution.

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**3,934,782**
**METHOD AND APPARATUS FOR LOCATING AND LOCKING ONTO WORKPIECES IN POSITIVE DISPLACEMENT CASTING**
**Robert Holbrook Cushman, Shrewsbury, N.J., and Raymond L. Schenk, Jr., Doylestown, Pa., assignors to Gould Inc., Rolling Meadows, Ill.**
**Continuation of Ser. No. 435,169, Jan. 21, 1974, abandoned. This application Mar. 12, 1975, Ser. No. 557,537**
**Int. Cl.² B23K *3/02*; B22D *19/04***
**U.S. Cl. 228—51** **3 Claims**

1. Apparatus for bonding *n* (where *n* is equal to two or more) meltable component parts together by a positive displacement molecular fusion bonding process, said apparatus comprising, in combination:

a. means for supporting said *n* meltable component parts on an upstanding vertically oriented work axis, at least one of said components having an annular locating collar coaxial with said work axis;

b. a frame;

c. a bonding head carried by said frame in a position overlying the component parts;

d. a barrel carried by said bonding head for movement along said work axis into sealing engagement with the component parts to be bonded;

e. a ram carried by said bonding head for movement along said work axis, said ram being coaxial with said barrel and capable of axial movement therethrough;

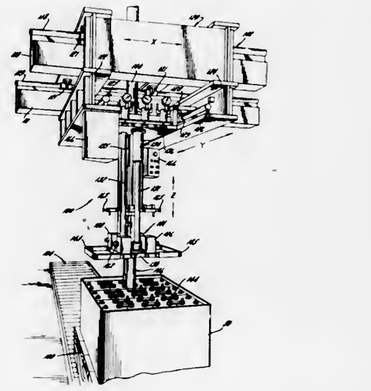
f. means for moving said head to a position where said ram and barrel are coaxial with said work axis;

g. means for advancing said barrel and said ram into engagement with said component parts and with said locating collar extending upwardly into said barrel;

h. means for locking said bonding head in position when said locating collar is properly positioned within the lower end of said barrel;

i. means for heating said ram to a temperature sufficiently high to melt those portions of the component parts in the path of ram movement;

j. means advancing said ram through said barrel and said component parts along said work axis as said heated ram



melts the portions of said component parts in the path of ram movement, whereby the molten material formed is displaced by said ram into said barrel and stored therein in heat transfer relation with said ram and a cavity is formed in said component parts;

k. means for axially retracting said ram from said component parts so as to enable the displaced molten material stored in said barrel to flow back to said cavity where said material is permitted to cool and solidify to form a uniform molecular fusion bond between said component parts with said bond being coextensive with the degree of penetration of said ram into said component parts;

l. means for axially retracting said barrel from engagement with said component parts following cooling and solidification of said molten material; and,

m. means for releasing said head locking means upon axial retraction of said barrel.

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**3,934,783**
**MULTIFACE WIRE BONDING METHOD AND TOOL**
**John E. Larrison, 2949 Baker St., Costa Mesa, Calif. 92626**
**Filed Sept. 30, 1974, Ser. No. 510,416**
**Int. Cl.² B23K *1/06***
**U.S. Cl. 228—110** **39 Claims**

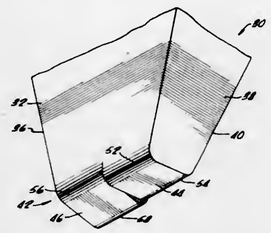
1. Wire bonding apparatus comprising

a bonding wedge having first and second wire contact areas of mutually different orientation, a wire guide having a feed end adjacent said contact areas, and

means for movably mounting said guide with respect to said wedge for motion between first and second positions at which a wire extending along said guide and from said feed end is in registry with said first and second contact areas, respectively, and one at a time.

25. The method of ultrasonically bonding a wire to two spaced points of a workpiece comprising the steps of

contacting a first section of the wire with a first working head of a bonding wedge,



vibrating said first working head to effect a first bond, shifting said bonding wedge rearwardly and transversely with respect to the longitudinal extent of said wire,

contacting a second section of the wire with a second working head of the shifted bonding wedge, and vibrating the second working head to effect a second bond.

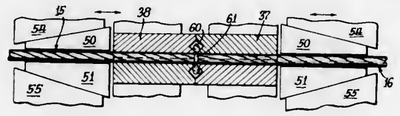
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**3,934,784**

## METHOD FOR INTERJOINING STRANDED WIRE CABLE ENDS

**Alfred H. Tessmann, Largo, Fla., assignor to Industrial Research and Development Corporation, Largo, Fla.**

**Filed May 27, 1975, Ser. No. 580,565**
**Int. Cl.² H01R *43/02***
**U.S. Cl. 228—125** **9 Claims**



1. A method of interjoining the ends of multiple strand wire cables comprising the steps of: metallurgically bonding a solid section of like metal coaxially to and between opposing end portions of the cables, and upsetting and removing a substantial portion of said section to effect a solid metal joint between said end portions having substantially the circumferential configuration of the cables.

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**3,934,785**

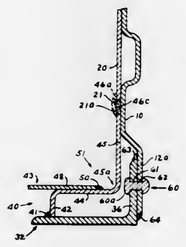
## METHOD OF ASSEMBLING BOXCAR END STRUCTURE

**Lowell L. Malo, St. Peters, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.**

**Division of Ser. No. 421,462, Dec. 3, 1973, Pat. No. 3,866,546. This application Aug. 26, 1974, Ser. No. 500,787**
**Int. Cl.² B23K *31/00***
**U.S. Cl. 228—135** **6 Claims**

1. A method of assembling a box car end structure comprising the following steps in the sequence indicated:

1. providing a box car end having an offset on one side thereof;
2. welding thereto a flat end liner on the side of said end opposite to said offset;
3. providing longitudinal relative movement between the welded end and end liner assembly and a box car end sill having a horizontal portion and a vertical extension such that the offset portion of said end engages said vertical extension;
4. integrally affixing said offset portion to said vertical extension with mechanical fasteners having a head thickness less than the extent of said offset;
5. welding to the horizontal portion of said end sill a floor support member having a horizontal portion adapted to support a floor panel and having an upper vertical portion adapted to provide a smooth and unobstructed end portion of the box car, and



6. welding the upper vertical portion of said floor support to said box car at a point on said box car end above said offset.

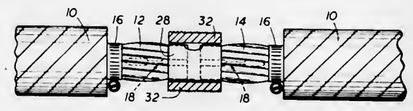
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**3,934,786**

## METHOD AND APPARATUS FOR SPLICING AND WELDING STRANDED ELECTRICAL CABLES

**Stephen Kozak, Upper Saddle River, N.J.; Frederick J. Bender, Huntington, and Jack Jerome, Glen Cove, both of N.Y., assignors to Jerome Underground Transmission Equipment, Inc., Commack, N.Y.**

**Filed Nov. 20, 1974, Ser. No. 525,408**
**Int. Cl.² B23K *31/00***
**U.S. Cl. 228—138** **25 Claims**



1. In an apparatus for splicing and welding together the adjacent ends of stranded electrical cables,

a sleeve compressibly engaging the adjacent cable ends in alignment with each other and having a welding window defined therein,

deformable clamp means to compressibly and clampingly engage with each cable to effect a compaction of and eliminate interstices between the strands of the cable thereat and block the flow of fluid therebeyond and spaced from said sleeve to form on its respective cable an area of enlargement between said clamp means and said sleeve means,

and a welding fixture connected about the cables adjacent said ends thereof and including means to effect a negative pressure at said enlarged area of each cable such that molten welding material deposited in said window experiences a migration substantially along the cable axis toward said enlarged area as the weld fills the window and connects said cable ends.

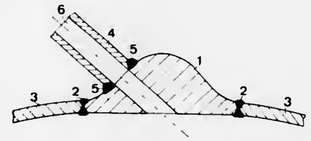


**3,934,787**

## METHOD OF MOUNTING PIPE FLANGES IN THE WALL OF A PRESSURE VESSEL

**Emil Fels, Pratteln, Switzerland, assignor to Buss, A.G., Basel, Switzerland**

**Continuation-in-part of Ser. No. 317,163, Dec. 21, 1972, abandoned. This application June 17, 1974, Ser. No. 480,100**
**Claims priority, application Switzerland, Dec. 18, 1971, 019005/71**
**Int. Cl.² B23K *31/02*; F16L *13/04***
**U.S. Cl. 228—184** **1 Claim**



1. A method for the connection of a steel pipe to a pressure vessel of uniform thickness composed of high quality low carbon steel, comprising:

cutting an opening in a wall of said pressure vessel which is of substantially larger diameter than that of the pipe;

joining a connection member to said pipe and to said opening which consists of a forged bored disc of lenticular shape having a thickened central portion and a rim, the thickness of said disc in the region of said rim being equal to the thickness of the wall of the pressure vessel, and the thickness of said disc in the region of its bore being several times the thickness of the rim;

said joining being by a first welding step of said pipe to said connection member in the region of said bore, whereby the first weld at the edge of said bore merges into the lenticular form at the thickened central portion adjacent the bore connection to provide better impact strength at the first weld, and by a second welding step in smooth transition between the disc and vessel, in which there is provided a smooth transition between the material of the pipe wall, material of the disc, and of the vessel's wall.

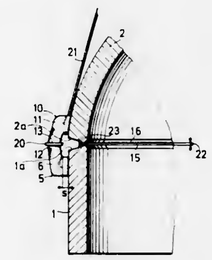
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**3,934,788**

## METHOD FOR WELDING A TOP PART AND AN ASSOCIATED BOTTOM PART

**Herbert Ammann, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland**

**Filed Jan. 17, 1974, Ser. No. 434,066**
**Claims priority, application Switzerland, Jan. 18, 1973, 674/73**
**Int. Cl.² B23K *37/04***
**U.S. Cl. 228—212** **4 Claims**



1. Method for welding a top part and an associated bottom part, spacers being employed to form a gap between both parts for filling with weld material whereupon the gap is filled with weld material, characterized in that both parts are provided with a plurality of corresponding claws, that the top part is located relative to the bottom part in a position which is such that the claws are oppositely disposed and that a resilient element which deforms when the weld material shrinks is provided between the claws of each claw pair, said resilient element comprising a spacer of a material which is more ductile than that of the claws and has a thickness which is such that the gap for filling with weld material has the required height after the claws of the top part are placed upon the claws of the bottom part and the dimensions of the claw support surfaces are such that the spacer is deformed when the weld seams shrink but without any excessive stresses occurring in the said weld seam.

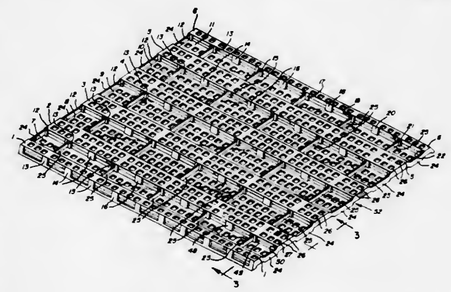
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**3,934,789**

## MEAT SPACER TRAY

**Richard L. Allman, Seymour, Ind., and Vernon E. Meurer, Fullerton, Calif., assignors to Standard Oil Company, Chicago, Ill.**

**Filed Dec. 19, 1974, Ser. No. 534,569**
**Int. Cl.² B65D *1/00***
**U.S. Cl. 229—2.5** **8 Claims**



1. A meat spacer tray comprising:

A. a plurality of top rectangular planar members, said members having their longer sides extending longitudinally and having said members' top and bottom rectangular planar surfaces co-planar to one another respectively, wherein the top and bottom surfaces of one said member are coplanar to the corresponding surfaces of other said members,

B. a plurality of bottom rectangular planar members, said members having their longer sides extending longitudinally and having each of said members' top and bottom rectangular planar surfaces coplanar to one another respectively, wherein the top and bottom surfaces of one said member are coplanar to the corresponding surfaces of other said members, and said bottom members are positionally related to the top planar rectangular members in two ways: the first said way is by two distances, one being a vertical distance in a direction normal to said members top planar surfaces giving rise to a space between the bottom surfaces of said top planar members and the top surfaces of said bottom planar members and the other being a horizontal distance in a direction normal to said top members' longer side and the second said way is an alternation of top and bottom rectangular members wherein all top planar members have two nearest neighbors of bottom rectangular planar members and vice versa, except for the two planar recentgular members on the longitudinal outside edges,

C. a plurality of connecting means extending between bottom planar members and top planar members to secure the relative position of each top planar member with respect to each bottom planar member positionally adjacent to said top planar member,

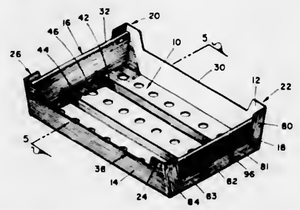
D. a plurality of holes of at least two types; at least one said type extending between the top and bottom surfaces of top planar rectangular members, and the other said type

extending between the top and bottom surfaces of bottom planar rectangular members,

E. a plurality of holes, wherein the sides of said holes are the sides of two connecting means, the top surfaces of bottom planar members, and the bottom surfaces of the top planar members.

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**3,934,790**
**FARM PRODUCE CONTAINERS**
**Avard Joseph Easter, 1151 S. Walnut, La Habra, Calif. 90631**
**Filed May 24, 1974, Ser. No. 473,150**
**Int. Cl.² B65D** *5/24, 5/48*
**U.S. Cl. 229—23 R** **14 Claims**



1. A creased blank suitable for folding along its crease lines to form the longer side walls and the bottom wall of a rectangular container, said blank comprising;

a flat rectangularly shaped board of material capable of being creased to form crease lines and of being folded along said crease lines;

said blank having portions of both of its end edges and both of its side edges cut away;

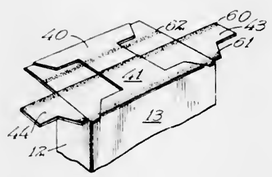
the side edges being shaped as the mirror image of one another, each having an elongated cutout formed over a majority of the central region thereof;

said end edges being shaped symetrically about the midpoint along their length and shaped as the mirror image of one another; and

said end edges being formed with four cutouts arranged in series along said edges, the outer most two of said cutouts being V-shaped.

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**3,934,791**
**CARTON SEALING**
**Raymond S. Dick, Minneapolis, Minn., and David H. Anenson, River Falls, Wis., assignors to Hoerner Waldorf Corporation, St. Paul, Minn.**
**Filed Nov. 13, 1974, Ser. No. 523,217**
**Int. Cl.² B65D** *5/02*
**U.S. Cl. 229—37 R** **5 Claims**



1. A carton closure for an end of a carton made from foldable paperboard or the like having four, rectangularly arranged side panels, comprising:

a first folded flap substantially covering said end of said carton hingedly attached to a first of said side panels along a hinge line;

a pair of opposed secondary flaps hingedly connected to the side panels at right angles to said first panel, said secondary flaps positioned in overlapping relationship to said first folded flap;

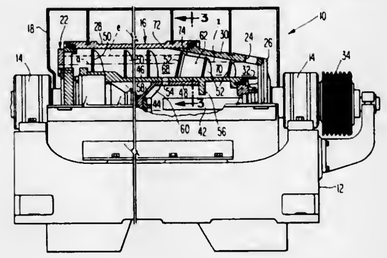
a first continuous band of adhesive extending across the length of said first folded flap along said hinge line, said first adhesive band located between said first flap and said secondary flaps;

a second line of adhesive extending across the length of said first folded flap juxtaposed along the edge of said flap furthest from said hinge line, said second band of adhesive located between said first flap and said secondary flaps; and

a fourth flap hingedly attached to the side panel opposite said first panel and located in overlapping relationship to said first folded and secondary flaps, said fourth flap covering substantially all of said end of said carton.

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**3,934,792**
**CENTRIFUGE APPARATUS**
**Robert Edward High, St. Ives, and Albert John Samways, Winston Hills, both of Australia, assignors to Pennwalt Corporation, Philadelphia, Pa.**
**Filed Jan. 3, 1975, Ser. No. 538,492**
**Int. Cl.² B04B** *3/04*
**U.S. Cl. 233—7** **15 Claims**



1. In a decanter centrifuge for separating light and heavy phase materials into respective inner and outer layers from a mixture thereof and for separately discharging said materials, having an elongated imperforate bowl with a tapered portion, said bowl being adapted for rotation about its longitudinal axis, feed means for delivering the mixture to be separated into said bowl, a screw conveyor comprising a hub and a series of helical flights mounted on said hub, said series of helical flights being coaxially arranged within the bowl to advance heavy phase material in the direction of the tapered portion of the bowl during rotation of said screw conveyor relative to said bowl, means for discharging light phase material from the bowl, and means for discharging heavy phase material from the bowl including a discharge port in the tapered portion of said bowl, said discharge port having a weir surface, said screw conveyor defining with said bowl a helical chamber extending about said axis between said means for discharging light phase material and said means for discharging heavy phase material, that improvement comprising:

a baffle carried by the screw conveyor and extending between the mutually facing broad surfaces of two adjacent helical flights in sealing relationship to thereby divide the helical chamber into

a separating zone communicating with said means for discharging light phase material, and

a discharging zone for heavy phase material, said discharging zone being disposed within the tapered portion of the bowl and communicating with said means for discharging heavy phase material,

said baffle having an outer edge closely spaced from said bowl to define therewith a restricted passageway for the underflow of heavy phase material from the separating zone to the discharging zone and extending inwardly from said outer edge for at least the radial distance of the combined thickness of said layers of light phase material and heavy phase material in the separating zone to prevent the flow of light phase material from said separating zone to said discharging zone,

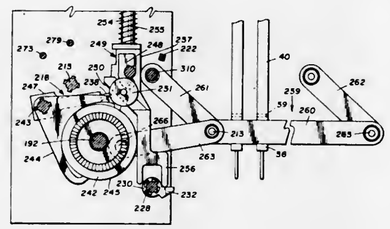
and means cooperating with said baffle to maintain the inner surface of the layer of separated light phase material at a level disposed inwardly of said weir surface and to discharge light phase material from said separating zone to said discharge passageway, the centrifugal pressure head of the layer of separated light phase material being applied to the heavy phase material in the separating zone and being transmitted through the restricted passageway to the heavy phase material in said discharging zone,

whereby the centrifugal pressure head transmitted to the heavy phase material in said discharging zone combines with the force applied by said screw conveyor to the heavy phase material in said discharging zone to overcome the centrifugal pressure head of the heavy phase material in said discharging zone, and thereby advance the heavy phase material in said discharging zone to said discharge port for discharge therefrom.



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**3,934,793**
**VOTING MACHINE**
**Cothburn M. O'Neal, Dallas; Alfred M. Mayo, Richardson, both of Tex.; George William Childs, deceased, late of Dallas, Tex., and by Patricia M. Childs, executrix, Dallas, Tex., assignors to Accuvote, International, Inc., Dallas, Tex.**
**Division of Ser. No. 309,174, Nov. 24, 1972, Pat. No. 3,866,826. This application May 28, 1974, Ser. No. 473,925**
**Int. Cl.² G07C** *13/00*
**U.S. Cl. 235—51** **23 Claims**



1. A voting machine comprising:

a columnar frame;

a plurality of voting keys arranged in said frame moveable between a first position and a second position, said keys carrying abutment means thereon;

linkage means including a bar pivotally connected at opposite ends and engaging said abutment means and adapted for planar movement from a first position with said keys in said first position to a second position with said keys in said second position;

a drive shaft;

clutch means operatively connected by crank means to said linkage means for moving said linkage means from said first to said second position, said clutch means including a first clutch member connected to said drive shaft and having gear teeth at one face, a seocnd clutch member slidably mounted on said drive shaft and having teeth on one face adapted for mating engagement with the teeth on said first clutch member;

a yoke shaft;

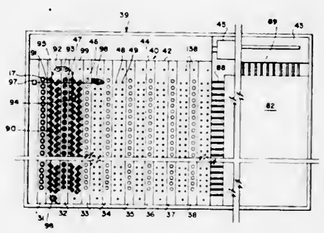
yoke shaft cam means adapted to position said yoke shaft;

yoke means carried on said yoke shaft and engaging said second clutch member; and

connector means for securing said yoke means to said yoke shaft with said linkage means in said first position, whereby said yoke means may be selectively secured to said yoke shaft and cammed by said cam means to engage said clutch members thereby moving said keys from said first to said second position.

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**3,934,794**
**VOTING MACHINE WITH BAND INTERLOCK**
**Cothburn M. O'Neal, Dallas, Tex., assignor to The Riverside Press, Inc., Dallas, Tex.**
**Filed June 3, 1974, Ser. No. 475,418**
**Int. Cl.² G07C** *13/00*
**U.S. Cl. 235—54 A** **19 Claims**



1. In a voting machine having a plurality of aligned voting keys, each of said keys being moveable between an unvoted position and a voted position, a mechanical interlock comprising:

a plurality of cam means each associated with one of said keys,

a plurality of slide means each adjacent one of said cam means for sliding in response to movement of said keys from the unvoted position to the voted position,

a plurality of pivot members each associated with one of said keys rotatably mounted for rotating in response to the sliding of one of said slide means, and

means for selectively interlocking certain of the pivot members associated with certain of said voting keys including common means for interconnecting each of said certain pivot members and blocking means removably attached to said each of said certain pivot members for contacting said common means to block rotation of said certain pivot members in response to a predetermined number of said certain voting keys having been moved to the voted position, whereby subsequent movement of additional of said certain voting keys to the voted position is prevented.

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**3,934,795**
**DUAL DUCT VARIABLE VOLUME AIR CONDITIONING SYSTEM**
**Le Roy Ginn; Le Royce Ginn, both of San Leandro, and Dainy Travaglio, Kensington, all of Calif., assignors to Universal Pneumatic Controls, Inc., Oakland, Calif.**
**Filed Feb. 1, 1974, Ser. No. 438,591**
**Int. Cl.² F24F** *13/04*
**U.S. Cl. 236—13** **31 Claims**

1. A variable volume conditioned air distribution system for supplying a regulated volume of conditioned air to a room or other space and comprising,

a first, cold duct for supplying cold air,

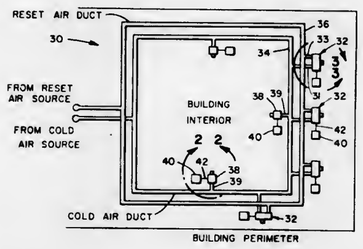
a first movable member in the first, cold duct for regulating the volume of air flowing through the duct,

a second, reset duct for supplying either hot air in a first mode of operation or cold air in a second mode of operation,

a second movable member in the second, reset duct for regulating the volume of air flowing through the duct,

and control means for positioning the first and second movable members in response to temperature in the room and effective to supply in sequence either a controlled vari-

able volume of hot air from the reset duct alone on demand or a controlled variable volume of cold air from the cold duct alone on demand in the first mode of operation and effective to reverse the direction of response of the second movable member to temperature change in the second mode of operation from the direction of response




of the second movable member to a similar temperature change in the first mode of operation so that the reset duct can be used as a hot duct with the system supplying either hot or cold air on demand in the heating season and as a cold duct to increase the cooling capacity of the system in the cooling season up to the total combined capacity of the first and second ducts.

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**3,934,796**

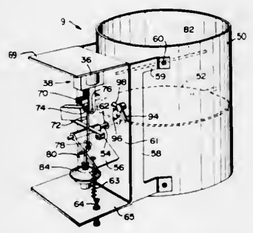
## HEATING SYSTEM WITH FUEL SAVING DRAFT RETARDER

**Paul E. Smith, Jr., Box 133A, Rte. No. 1, and Lloyd D. Chilcott, Box 95, Rte. No. 1, both of Mays Landing, N.J. 08330**

**Continuation-in-part of Ser. No. 417,181, Nov. 29, 1973, abandoned. This application Feb. 14, 1974, Ser. No. 442,626**

**Int. Cl.² G05D *23/00***

**U.S. Cl. 236—16** **8 Claims**




**1.** A fuel saving draft retarder for a heating system comprising

a flue section;

a damper mounted in the flue section;

a support on the flue section;

an arm on the damper rotatable in front of the support for opening and closing the damper;

a solenoid mounted on the support and having an armature and a heating system energizable winding;

linkage means connecting the solenoid to the arm for rotating the arm to open the damper when the winding is energized;

means for biasing the damper closed;

heating system control switch means mounted on the support for being engaged and operated by the arm when the damper is open;

a dashpot having an operating rod and spring means normally biasing the operating rod in an extended position;

means for mounting the dashpot on the support such that the operating rod is engaged and depressed by the arm when the arm is rotated to close the damper;

said linkage means including a rod, an eyelet on one end of the rod, a pin pivotally securing the eyelet to the armature of the solenoid, and head means on the other end of the rod; and

said arm having an opening slidably receiving the rod such that the head means engages the arm to rotate the arm to open the damper.

**4.** A heating system including

means for burning fuel,

fuel control means responsive to electrical energization for controlling a flow of fuel to the burning means,

said burning means including an exhaust stack for combustion products of the burning means,

a one-way air intake valve means for drawing air into the exhaust stack when a draft is being pulled in the exhaust stack and for closing when stack pressure exceeds room pressure,

damper means in the stack past the one-way air intake valve means for opening and closing the stack,

thermostat means for sensing temperature,

primary burner electrical control means operated by the thermostat means for energizing the fuel control means when the sensed temperature is below a selected temperature and for deenergizing the fuel control means when the sensed temperature is above the selected temperature,

means responsive to the primary burner control means for opening the damper means when the primary burner control means is energized and for closing the damper means when the primary burner control means is deenergized, and

switch means operated by the damper opening and closing means and interposed between the primary burner control means and fuel control means for allowing operation of the fuel control means only when the damper means is open.

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**3,934,797**

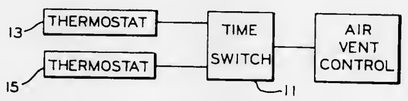
## INDIVIDUAL ROOM TEMPERATURE CONTROL SYSTEM

**Neal Robert Perlmutter, 7324 A Mill Run Apts., Fort Wayne, Ind. 46819**

**Filed May 28, 1974, Ser. No. 473,497**

**Int. Cl.² F24F *11/06***

**U.S. Cl. 236—46** **7 Claims**




**1.** A temperature control system for an individual room of a home or similar air which is typically occupied during certain hours of the day and unused during other hours of the day and which receives air from a forced air duct connecting to a central unit comprising:

a pair of thermostatically controlled switches each changing state at an individually selectable temperature;

electrically controllable means for selectively opening and closing the duct including means in the air duct mechanically movable between air passing and air blocking positions, electrically energizable means for moving the mechanically movable means cyclically between the air passing and air blocking positions so long as the electrically energizable means is energized, and a pair of normally closed switches one of which opens only when the mechanically movable means is in the air passing position and the other of which opens only when the mechanically movable means is in the air blocking position with each normally closed switch being coupled to the electrically energizable means to tentatively stop the mechanically movable means when one of the normally closed switches opens; and

means for selectively connecting one of the thermostatically controlled switches to the electrically controllable means.

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**3,934,798**

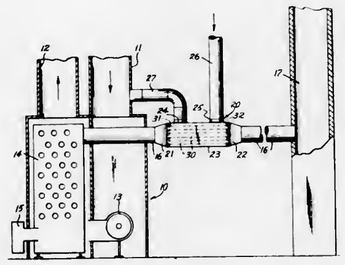
## HEAT SAVING APPARATUS

**Morris Goldsmith, Port Chester, N.Y., assignor to Partnership of Goldsmith, Josephson & Gulko, Arlington, Va.**

**Filed Nov. 1, 1974, Ser. No. 520,183**

**Int. Cl.² F24B *7/02***

**U.S. Cl. 237—55** **5 Claims**




**1.** In a forced draft home heating system comprising a furnace having a return plenum, a supply plenum, fan means for circulating air through an air circulating system including said furnace and said plenums, a combustion chamber, a chimney, a flue communicating therebetween and means for combustion gases to flow through said chamber, flue and chimney, the improvement comprising a heat exchanger interposed along a portion of the length of said flue, said heat exchanger having opposed tapered collars which engage with said flue and connect with a casing of enlarged cross-section extending therebetween, said casing enclosing a plurality of longitudinal tubes extending between opposed end plates from one collar to the other and providing a chamber within said casing and outside of said tubes, openings at opposite ends of said casing, the opening at one end of said casing being connected to a return register in said air circulating system and being separate from said return plenum, and the opening at the other end of said casing being connected to said return plenum to interconnect the existing fan means in said furnace with said return register via said chamber and said return plenum so that some of the air entering the furnace is preheated while the remainder of the air circulating in the system is not preheated, said opening on the other end of said casing being separate from said return plenum.

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**3,934,799**

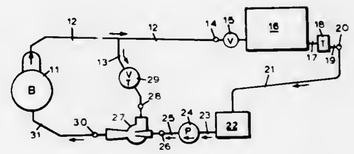
## HIGH-CAPACITY STEAM HEATING SYSTEM

**Francis R. Hull, 567 East 26th St., Brooklyn, N.Y. 11210**

**Division of Ser. Nos. 889,262, Dec. 3, 1969, abandoned, and Ser. No. 752,120, July 22, 1968, abandoned, and Ser. No. 690,040, Nov. 14, 1967, abandoned, and Ser. No. 621,381, Jan. 23, 1967, abandoned, and Ser. No. 403,244, Oct. 12, 1964, abandoned, and a continuation-in-part of Ser. No. 284,166, Aug. 28, 1972, abandoned, and a continuation-in-part of Ser. No. 121,795, March 8, 1971, Pat. No. 3,687,867. This application May 13, 1974, Ser. No. 469,475**

**Int. Cl.² F24D *1/08***

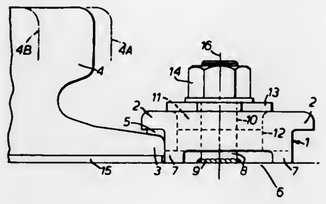
**U.S. Cl. 237—67** **11 Claims**




**1.** A steam heating process in combination: a steam generator or boiler member having integral heating processes; steam-operated heater adapted to receive heating steam supplied by said steam generator member, to condense said heating steam within its internal passageways as heat energy is transferred through its heating surfaces, and to discharge steam condensate therefrom; means for transferring pressurized heating steam from the outlet of said steam generator to the inlet of said steam-operated heater; a fluid-to-fluid contact heat exchanger adapted to effect the contact pre-heating of high-velocity feed liquid by contact interchange in parallel flow with low-velocity heating steam by means of accelerating nozzle and ejector passageways internally disposed within said contact heat exchanger member; a supply of feed liquid suitable for evaporation within said steam generator member; a liquid feed pump; means for transferring the said supply of feed liquid to the suction of said feed pump; means for transferring pressurized feed liquid from said feed pump to a nozzle passageway of said contact heat exchanger; means for transferring pressurized heating steam from the outlet of said steam generator to the ejector passage of said contact heat exchanger; valve regulating means disposed to control flow of said heating steam into the ejector passageway of said contact heat exchanger to regulate heat absorption by feed liquids passing therethrough; and means for transferring the heated feed liquid discharge of said contact heat exchanger to heating processes of said steam generator; the said contact heat exchanger being adapted to receive and exchange energy between high-velocity feed liquid and heating steam in parallel flow within internal fluid passageways thereof, to combine the thermal energy of the several entering fluid streams, and to discharge pressurized and pre-heated feed liquid from a diffuser passageway thereof; whereby the external effect of the contact feed heating process is to substantially separate the sensible heating of boiler feed liquid from the latent heating for evaporation of said boiler feed liquid within said steam generator, thereby increasing heat transfer capacity and steaming capacity of said steam generator member.

**4.** In a forced draft home heating system comprising a furnace having a return plenum, a supply plenum, fan means for circulating air thorugh an air circulating system including said furnace and said plenums, a combustion chamber, a chimney, a flue communicating therebetween and means for combustion gases to flow through said chamber, flue and chimney, the improvement comprising a heat exchanger interposed along a portion of the length of said flue, said heat exchanger having opposed collars which engage with said flue and connect with a casing of enlarged cross-section extending therebetween, said casing enclosing a plurality of longitudinal tubes extending between opposed end plates from one collar to the other and proving a chamber within said casing, said tubes having approximately the same cross-sectional area as said flue, openings at opposite ends of said casing, the opening at one end of said casing being connected to said return plenum to interconnect the existing fan means in said furnace with the opening on the other end of said casing via said chamber within said casing and said return plenum so that some of the

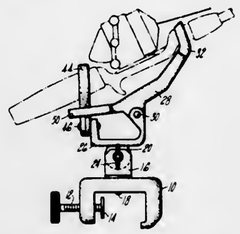
**3,934,800**
## TRACK RAIL ANCHORAGES
**George Molyneux, Gloucester, England, assignor to Molyneux Rail Clips Limited, Gloucester, England**
**Filed Apr. 15, 1974, Ser. No. 461,123**
**Claims priority, application United Kingdom, Apr. 17, 1973, 18348/73**
**Int. Cl.² E01B *9/30***
**U.S. Cl. 238—341** **1 Claim**



1. In combination with a track rail having a bottom rail flange that rests on a base supporting surface, an upstanding bolt rigidly secured to said supporting surface, a base anchorage member having two end surfaces to bear against and locate the edge of said rail flange, there being a circular passage in said base member, the axis of said passage being substantially closer to one said end surface than to the other said end surface, a rotary cam mounted for rotation in said circular passage, said bolt being eccentrically and relatively rotatably received in said cam, a flange projecting from each said end of said base member, and feet on said base member supporting said base member on said supporting surface, said end flanges being of a height above said supporting surface such that said feet rest on said supporting surface when either of said flanges on said base member overlies said bottom rail flange and a said end surface contacts said bottom rail flange.

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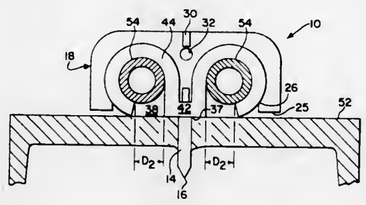
**3,934,801**
## FISHING ROD HOLDER
**Raymond A. Johnson, 233 Center St., Manchester, Conn. 06040**
**Filed Oct. 15, 1974, Ser. No. 514,666**
**Int. Cl.² A01K *97/10***
**U.S. Cl. 248—41** **8 Claims**



1. A holder for a fishing rod comprising:
clamp means, said clamp means being adapted to engage a supporting structure for mounting the holder from such structure;
a pair of movable jaw members, said movable jaw members being pivotally mounted on said clamp means and cooperating to define a rod receiving opening therebetween, said movable jaw members having an open position whereby a portion of a rod may be inserted therebetween and a closed position wherein a thus inserted rod will be releasably held therebetween;
rod support means, said rod support means comprising a first pair of fingers which define a first rod receiving recess therebetween, said rod support means further comprising a second pair of fingers which define a second recess therebetween;
means engaging said rod support means intermediate said first and second pairs of fingers for pivotally mounting said rod support means from said clamp means, said mounting means orienting said rod support means to align said first rod receiving recess with the opening defined by said movable jaw members and to position said second pair of fingers exteriorly of and in engaging relationship with said movable jaw members whereby movement of said rod support means in a first direction causes said second pair of fingers to operate said movable jaw members to the closed position;
said movable jaw members being weighted to bias said movable jaw members to said open position;
means for permitting simultaneous adjustment of said rod support means and said movable jaw members about a first axis; and
means for permitting simultaneous adjustment of said rod support means and said movable jaw members about a second axis transverse to said first axis, said means permitting adjustment about said second axis being adjustable independently of said means permitting adjustment about said first axis.

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**3,934,802**
## TUBE CLAMPING FASTENER
**Ralph Ernest Jennings, Glen Ellyn, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.**
**Filed Nov. 4, 1974, Ser. No. 520,511**
**Int. Cl.² F16B *15/00***
**U.S. Cl. 248—71** **15 Claims**

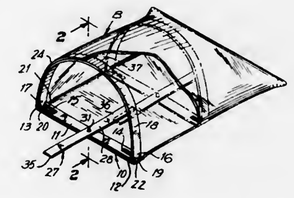


1. A fastening device for the attachment of tubing or the like to a support surface, comprising a shank, a head member at one extremity of the shank and a support surface penetrating point at the opposite extremity, the head member including at least one tubing receiving and clamping recess opening toward the penetrating point of the shank, the peripheral surface of the recess defining top and opposing side wall portions, an inner side wall portion disposed adjacent the shank axis and an outer side wall portion spaced outwardly from the shank axis with the lowermost extremities of the side walls defining the mouth of the recess, a flexible recess liner means mounted on the device for juxtaposed relationship with the peripheral surface of the recess, the recess liner, in cooperation with the recess, defining a predetermined mouth opening which is at least as great as the maximum transverse dimension of an associated tubing to permit entry of the tubing into the recess, the head including a bight portion interconnecting a leg portion extending downwardly therefrom, the inner surface of the leg portion forming the outer side wall of the recess, said outer side wall surface including a segment adjacent the lowermost extremity of the leg which is angled toward the shank, the lowermost extremity of the recess linear means being mounted intermediate the penetrating point and the mouth of the recess wherein the liner means is adapted to be forced upwardly on the device to generally follow the contour of the peripheral surface of the recess as the shank is driven into the support surface, the angled segment directing the liner means inwardly toward the shank decreasing the predetermined mouth opening beneath the associated tubing.



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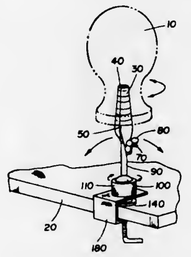
**3,934,803**
## BAG DISTENDING AND SUPPORTING APPARATUS
**Lawrence Frederick Paulus, Jr., Pleasantville, N.Y., assignor to Lawrence Frederick Paulus, Jr.; Gordon Asch and Mark T. Basseches, all of Pleasantville, N.Y.**
**Filed Oct. 8, 1974, Ser. No. 513,109**
**Int. Cl.² B65F *1/04*; B65B *67/12***
**U.S. Cl. 248—99** **9 Claims**



1. A portable free-standing bag distender apparatus comprising a rigid, flat, elongated, horizontal base plate, a generally planar elongated support blade adjacent and parallel to said base plate, said blade being essentially free of portions extending out of the plane of said blade, pivot means connecting said base plate and support blade for relative angular movement about a pivot axis perpendicular to the planes of said plate and blade, said pivot extending through said blade at a substantially medial position relative to the longitudinal axis of said blade whereby, when said blade is rotated about said pivot axis to offset the longitudinal axes of said plate and blade by 90°, portions of said blade extending to both sides of said plate, and stretcher means mounted on said blade, said stretcher means being resiliently deformable in a plane above and normal to said plate and blade, said stretcher means and plate together defining an open mouth expansible in a vertical plane and adapted to retain in open position thereover the vertically arrayed receiving end of a bag by expansion against the interior of said bag.

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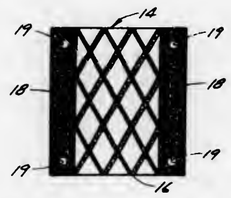
**3,934,804**
## SUPPORT FOR MANNEQUIN HEADS
**Donald G. Bruce, Antioch, Calif., assignor to The Raymond Lee Organization, Inc., a part interest**
**Filed Jan. 8, 1975, Ser. No. 539,261**
**Int. Cl.² A45D *44/14*; A41H *5/00*; A41G *3/00*; A47F *5/00***
**U.S. Cl. 248—229** **3 Claims**



1. A device for supporting a mannequin head and adapted to be secured to a table, said device comprising:
first and second upwardly extending elongated jaws pivotally secured together at a common point intermediate upper and lower ends of the jaws, the first jaw being fixed, the second jaw being pivotable in a vertical plane about the first jaw, both jaws having vertically spaced ridges which are aligned when the jaws are disposed together to define vertically spaced outer circular ridges, said jaws when disposed together defining a vertical truncated cone having said ridges on the outer surface;
a vertical rod secured at its upper end to the lower end of the first jaw and extending downward;
a sphere secured to the lower end of the rod;
a hollow enclosure with a horizontally disposed annular top lip of interior radius less than the radius of the sphere, the sphere being disposed inside the enclosure with the rod extending upward therefrom through the circular hole defined by the lip, said enclosure having an open region extending downward from the sphere to the bottom of the enclosure, said region having a peripheral horizontal circular groove;
a wedge shaped to fit into said open region and disposed therein, said wedge pressing upwards against the sphere, said wedge having an outer peripheral circular groove aligned with the groove in the region, said wedge being adapted to rest upon said table;
a circular ring fitting loosely within the aligned grooves to hold the wedge inside the enclosure;
an adjustable clamp adapted to engage the edge of the table and secured to the bottom of the enclosure leaving said open region exposed whereby said enclosure presses downward upon the wedge and said sphere is pressed against the lid and cannot rotate; and
means extending through the lower ends of both jaws to lock same together in any desired pivot position.

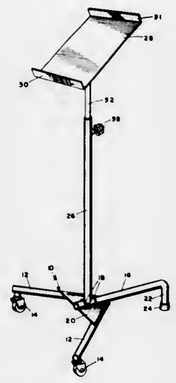
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**3,934,805**
## APPLIANCE BASE
**George Elaschuk, Mississauga, Canada, assignor to Domtar Limited, Montreal, Canada**
**Filed Sept. 23, 1974, Ser. No. 508,194**
**Claims priority, application Canada, Oct. 3, 1973, 182593**
**Int. Cl.² B65D *85/00***
**U.S. Cl. 248—346** **8 Claims**



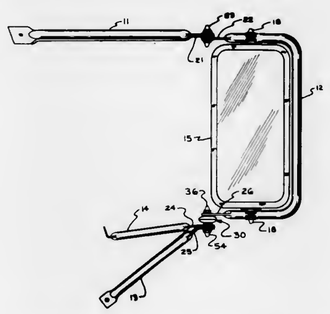
1. A base member comprising a top and bottom panel, a reinforcement extending between and spacing said top and bottom panels, said reinforcement having a pair of beam members positioned one at each side of said base and a reinforcing filler in the space between said beam members, said reinforcing filler being formed by an expanded honeycomb material oriented so that the longitudinal axes of apertures formed through the expanded honeycomb extend substantially perpendicular to said top and bottom panels, said beams being formed of honeycomb material oriented in the same manner as said expanded honeycomb forming said filler, said honeycomb material of said beams being expanded to a lesser degree than said expanded honeycomb material of said filler.

**3,934,806**
## BI-LEVEL BOOK STAND
**David M. Rady, 4742 Rolando, San Diego, Calif. 92115**
**Filed Oct. 9, 1974, Ser. No. 513,274**
**Int. Cl.² A47B** *97/04*
**U.S. Cl. 248—441** **4 Claims**



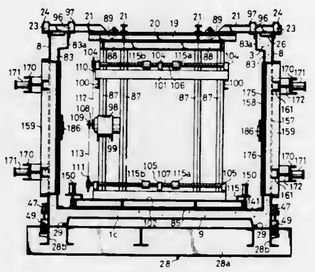
1. A book stand comprising:
a frame having a base and a shaft mounted to said base such that said shaft extends vertically upwardly from said base when the latter is disposed on a horizontal surface, the upper portion of said shaft defining an elongated vertical channel therein;
a tray having an inclined post mounted to the rear thereof and dimensioned to snugly seat in said channel whereby said tray is removably mountable substantially above said shaft and at an angle thereto; and
said base including a mounting socket for snugly and removably receiving said post, whereby said tray is alternatively mountable on said shaft and in said socket.

**3,934,807**
## MIRROR JOINT ASSEMBLY
**Harold S. Boutin, Northwood, Ohio, assignor to The Acme Specialty Manufacturing Company, Toledo, Ohio**
**Filed Oct. 1, 1973, Ser. No. 402,466**
**Int. Cl.² A47G** *1/24*
**U.S. Cl. 248—478** **6 Claims**



1. A mirror joint assembly comprising, in combination, a cover member defining first cooperating members on its inner surface, a clutch member adjacent said cover member, said clutch member including second cooperating members complementary with said first cooperating members, attaching means operatively connected to said cover member for attaching said cover member to a support, connecting means operatively attached to said clutch member for connecting said clutch member to a support, a bottom member adjacent said clutch member and separate from said cover member, said cover member and said bottom member having complementary sidewalls with mating surfaces, spring means positioned between said bottom member and said clutch member for urging said first and second cooperating members into an engaging relationship, means for variably adjusting the spring force of said spring means, whereby said mating surfaces of said complementary sidewalls of said cover member and said bottom member are moved relative to one another, said variable adjusting means comprising at least two adjusting screws extending between said cover member and said bottom member.

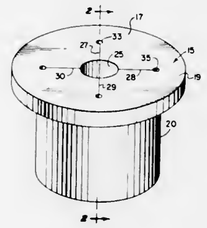
**3,934,808**
## ADJUSTABLY SUSPENDED MOLD SECTIONS FOR FORMING A CONCRETE ROOM
**Masuji Aizawa, Tokyo, Japan, assignor to Taihei Company Ltd., Tokyo, Japan**
**Filed Sept. 9, 1974, Ser. No. 504,369**
**Claims priority, application Japan, Sept. 11, 1973, 48-102334; May 2, 1974, 49-48722**
**Int. Cl.² E04G** *11/02*
**U.S. Cl. 249—27** **38 Claims**



1. A molding device for producing a box-type concrete block, comprising:
an outer mold including bottom panel means, a pair of opposed parallel side panels, and a pair of opposed parallel end panels at right angles to said side panels;
an inner mold including bottom panel means spaced above said bottom panel means of said outer mold, a pair of side panels each spaced inwardly from and parallel to one of said side panels of said outer mold, a pair of end panels each spaced inwardly from and parallel to one of said side panels of said outer mold, and corner panel means between adjacent ones of said side and end panels of said inner mold; and
support means for said outer and inner molds including means supporting saids bottom panel means of said outer mold and suspension frame means supporting said bottom panel means of said inner mold, said suspension frame means further supporting each said side and end panels of said outer and inner molds for horizontal linear movement inwardly and outwardly relative to the corresponding bottom panel means, and said suspension frame means supporting each of said corner panel means independent of the side and end panels for horizontal movement toward and away from the corresponding ones of said adjacent side and end panels along a linear path generally bisecting the corner between said corresponding ones of said adjacent side and end panels.

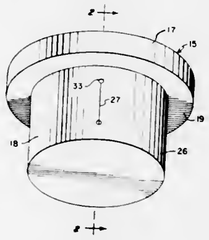


**3,934,809**
## SLITTED FLEXIBLE MOLD
**Robert H. Fox, Hoffman Estates; Robert J. Henning, Crystal Lake, and Miroslav Psensky, Cary, all of Ill., assignors to The Quaker Oats Company, Chicago, Ill.**
**Filed Dec. 4, 1974, Ser. No. 529,335**
**Int. Cl.² B28B** *7/06, 7/20*
**U.S. Cl. 249—117** **3 Claims**



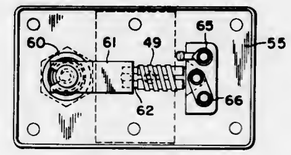
1. In an integral flexible distensible mold having wall portion defining a shaping cavity therein, the improvement comprising: a closed openable slit in said wall portion, said slit extending from at least a portion of the wall of the shaping cavity and only partly through the wall portion of the mold, the slit including an enlarged marginal portion thereof at the outward extreme thereof.

**3,934,810**
## FLEXIBLE MOLD
**Robert J. Henning, Crystal Lake, Ill., assignor to The Quaker Oats Company, Chicago, Ill.**
**Filed Dec. 4, 1974, Ser. No. 529,336**
**Int. Cl.² B28B** *7/06, 7/20*
**U.S. Cl. 249—117** **3 Claims**



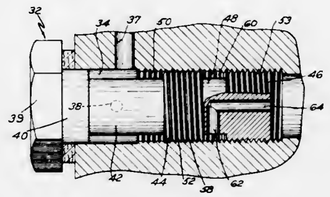
1. In an integral flexible distensible mold having a wall portion defining a shaping cavity therein, the improvement comprising: a closed openable slit in said wall portion, said slit extending from at least a portion of the exterior of the wall of the mold and only partly through the wall of the mold wherein no part of the slit extends into the shaping cavity and in which the slit includes an enlarged radially inward marginal portion thereof at the inner extreme thereof.

**3,934,811**
## ADJUSTABLE THERMAL VALVE
**Richard L. Perl, Mansfield, Ohio, assignor to The Tappan Company, Mansfield, Ohio**
**Division of Ser. No. 432,457, Jan. 11, 1974, Pat. No. 3,870,457, which is a continuation of Ser. No. 223,451, Feb. 4, 1972, abandoned. This application Dec. 26, 1974, Ser. No. 536,351**
**Int. Cl.² G05D** *15/01*
**U.S. Cl. 251—11** **3 Claims**



1. Thermal valve means comprising a housing having an inlet and an outlet orifice, a valve element normally spring biased closing against said orifice by a support including a heat warpable section, a resistance heater for warping the support to move the element away from the orifice and thereby open the same, said housing enclosing the valve element and its support in fluid tight relation and open only at said inlet and said orifice, and means operable from the exterior of said housing for adjusting the normal orifice closing force of the element with the housing in such closed condition and thus without diminishing the fluid tight integrity of said housing during such adjustment.

**3,934,812**
## VALVE CONSTRUCTION AND FLOW RESTRICTOR FOR USE THEREWITH
**Alfred W. Pett, Warwick, R.I., assignor to New England Union Co., West Warwick, R.I.**
**Filed Apr. 28, 1975, Ser. No. 572,619**
**Int. Cl.² F16K** *31/385, 31/40*
**U.S. Cl. 251—45** **6 Claims**

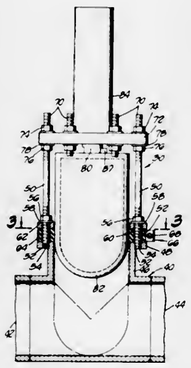


1. A valve construction for controlling flow of a fluid therethrough, comprising a body portion to which an inlet pipe and an outlet pipe are connected, an inlet chamber communicating with said inlet pipe and an outlet chamber communicating with said outlet pipe, a movable diaphragm located in said body portion and normally sealing communication between said inlet and outlet chambers, an interior chamber formed in said body portion between said diaphragm and a wall of said body portion, an interior pilot valve located in said body portion and that is operable to induce flow of fluid to and from said interior chamber for controlling the pressure differential across said diaphragm, wherein the diaphragm is flexed in accordance with the pressure differential thereacross to control communication between said inlet and outlet chambers, and means communicating with said inlet chamber and said interior chamber for restricting flow of fluid to and from said interior chamber so as to prevent too rapid closing of said diaphragm and thereby preventing water hammer from occurring in said pipes, said flow restricting means including an

elongated cylindrical control chamber that directly communicates with said pilot valve, a restrictor member located in said control chamber and including a first threaded portion that threadably engages a first threaded section of said control chamber to positively locate said restrictor member therein, a second threaded portion of said restrictor member cooperating with a second threaded section of said control chamber to define a spirally extending restricted passage, and passage means formed in said restrictor member and communicating with said spirally extending restricted passage and said interior chamber for directing fluid thereto, wherein flow of fluid to and from said interior chamber is controlled to produce gradual changes in the differential pressure across said diaphragm, said flow restricting means further including a secondary chamber that communicates with said control chamber and that cooperates therewith to produce the gradual changes in the differential pressure across said diaphragm.

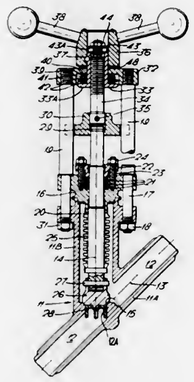
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**3,934,813**
**CONCRETE PUMP VALVE**
**Robert E. Jackson, Newport Beach, Calif., assignor to Challenge-Cook Bros., Incorporated, Industry, Calif.**
**Filed May 14, 1973, Ser. No. 359,706**
**Int. Cl.² F16K** *31/163*
**U.S. Cl. 251—62** **27 Claims**



**1. A valve comprising a supporting structure, a piston assembly having a closing member at the forward end thereof, said piston assembly being carried by said supporting structure and adapted for reciprocal movement therein, an annular sealing member carried by said supporting structure and supporting said closing member, said sealing member defining inner and outer wall portions, said inner wall portion being positioned about and in sealing engagement with said closing member, an annular band positioned about said outer wall portion of said sealing member and means carried by said band for tightening said band about said outer wall portion of said annular sealing member whereby said inner wall portion of said sealing member is radially pressed against said closing member.**

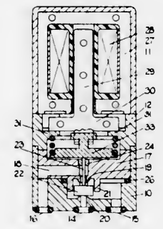
**3,934,814**
**FLUID-FLOW CONTROL VALVE**
**Peter Orszak, Oadby, England, assignor to The English Electric Company Limited, London, England**
**Filed Apr. 22, 1974, Ser. No. 462,736**
**Claims priority, application United Kingdom, Oct. 23, 1973, 49215/73**
**Int. Cl.² F16K** *31/50*
**U.S. Cl. 251—80** **9 Claims**



**1. A fluid-flow control valve comprising a valve body defining a fluid-flow aperture and having a valve seat surrounding the aperture, a valve closure member movably mounted in the body, a reaction member secured on the body in fixed position relative to the valve seat, jacking means operable to move the valve closure member into and out of seating engagement on the valve seat and to exert between the valve closure member and the reaction member a thrust which holds the valve closure member seated on the valve seat, a resiliently deformable thrust-transmitting means interposed between the jacking means and one of the said members, and stop means which limits the deformation the jacking means can effect in the thrust-transmitting means after the valve closure member has seated on the valve seat, wherein the jacking means comprises a threaded shaft portion, axially movable in unison with the valve closure member towards and away from the valve seat, and a nut threadedly engaged upon the shaft portion and rotatable relative thereto, the reaction member having an aperture in which the nut is rotatably mounted and a face surrounding said aperture and directed towards the valve seat, the nut having a face opposed to said face of the reaction member and there being provided a thrust bearing, disposed around the nut and between these two faces, and means which secures the shaft portion against rotation relative to the reaction member, and wherein the shaft portion of the jacking means extends through the nut thereof and has a part which is more remote from the valve seat than is the nut, and the stop means is secured on the said part and limits axial movement of the shaft portion, relative to the nut, in the direction towards the valve seat.**



**3,934,815**
**FLUID CONTROL VALVES**
**John Thomas Marsden, Stoke-on-Trent, England, assignor to Expert Industrial Controls Ltd., England**
**Filed Mar. 27, 1975, Ser. No. 562,784**
**Claims priority, application United Kingdom, Apr. 2, 1974, 14460/74**
**Int. Cl.² F16K** *31/06*
**U.S. Cl. 251—129** **4 Claims**

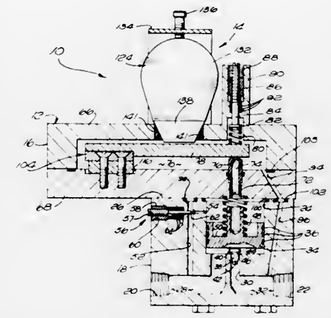


**1. A fluid control valve of the kind specified comprising a T-shaped armature, said armature having side plates, extensions on said side plates which extend beyond the head of the armature, the end portions of said extensions extending substantially at right angles to the remaining portions of the extensions, a spring abutment movable in the housing, a coiled compression spring defining said resilient means, said spring engaging said abutment to urge the abutment into contact with a stem on the valve member thereby to urge the valve member into contact with the seating defined about said one aperture, means carried by the abutment and engageable by the end portions of said extensions when in use electric current is supplied to a solenoid forming part of said electromagnetic means, the flow of current in the solenoid causing the armature to move the abutment in a direction away from the valve member to allow the valve member to be displaced by the air pressure, and stop means defined in the housing and which arrests the movement of the armature towards the valve member when the flow of electric current in the solenoid ceases.**

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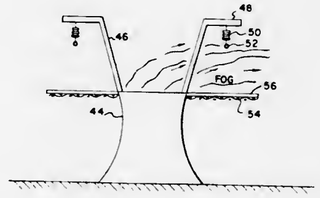
**3,934,816**
**FLUID CONTROL VALVE**
**Melvin L. Terrell, Los Angeles; Paul F. Lange, Downey, and James B. Doolittle, Burbank, all of Calif., assignors to International Telephone & Telegraph Corporation, New York, N.Y.**
**Filed July 24, 1974, Ser. No. 491,215**
**Int. Cl.² F16K** *31/02*
**U.S. Cl. 251—141** **5 Claims**

**1. An electromagnetically operated control valve comprising: a housing having a valve port and a magnetically attractable armature therein adjacent to said port, said housing having an inlet and an outlet, but being otherwise sealed; magnetic control means on said housing including a core assembly having a pair of pole pieces, said armature being disposed within the range of magnetic influence of said control means, actuation of said control means shifting said armature in directions toward and away from said valve port to control fluid flow therethrough, means mounting said coil assembly outside of said housing adjacent to a wall thereof; and a pair of pole extensions sealed in said wall in alignment with said pole pieces, said armature being disposed adjacent to said pole extensions.**



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**3,934,817**
**PRECIPITATION OF STEAM FOGS**
**Robert E. Barry, Ann Arbor, and Vincent J. Herter, Livonia, both of Mich., assignors to The Detroit Edison Company, Detroit, Mich.**
**Filed Mar. 7, 1974, Ser. No. 448,925**
**Int. Cl.² A01G** *15/00*
**U.S. Cl. 239—2 R** **22 Claims**

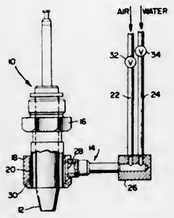



**1. A water cooling system for cooling water comprising heat transfer means for contacting the water with a flow of air to simultaneously heat the air, to evaporate water into the air, and to release the warm air containing water vapor into the atmosphere, a traffic area such as a highway or airport in the vicinity of said cooling system in position to receive a dense fog from said cooling system under fog favoring atmospheric conditions and a prevailing wind moving from the cooling system toward the said area, fog dissipating means interposed between the cooling system and area comprising means for establishing a high voltage electrical field through which air traversing the cooling system passes on its way to the traffic area, said fog dissipator being located in horizontally spaced relation to said cooling system such that under meteorological conditions effective to produce substantial fog conditions at said traffic area by condensation of water vapor and migration of fog so produced, substantial condensation of water vapor into fog particles occurs before reaching said fog dissipating means, the fog dissipating means comprising one or more horizontally extending conductors spaced above the path of passage of fog from the traffic area, grounded structure disposed directly below such conductors and below such path, and means for establishing a high voltage unidirectional field between the conductors and ground.**

## 3,934,818
## METHOD OF OXY-FUEL CUTTING

**Cornelius Seamans Arnold, Cranford, N.J., assignor to Union Carbide Corporation, New York, N.Y.**

**Filed Dec. 20, 1972, Ser. No. 316,997**
**Int. Cl.² B05B** *17/04*
**U.S. Cl. 239—8** **1 Claim**




1. In a method of oxy-fuel gas cutting of relatively thin steel plate wherein a high temperature cutting flame is directed at a portion of said plate to be cut, the improvement of which comprises:

passing a stream of air into a mixing zone adjacent said nozzle at a rate of between 75 to 100 cu.ft/hr at 15 to 25 psig;

passing a stream of water into said mixing zone at a rate of between 10 to 15 gal. per hr;

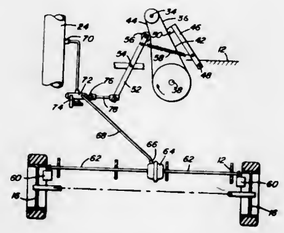
discharging the admixture of said water and air from said mixing zone to form an atomized aerosol mist; and

directing said mist in the form of a curtain about said cutting flame and as close as possible thereto without causing physical interference therewith.

## 3,934,819
## ANTI-RUN AHEAD SYSTEM FOR TRAVELING HOSE PULL SPRINKLERS

**Jay C. Groelz, and John W. Heinzman, both of Phillips, Nebr., assignors to Heinzman Engineering, Inc., Grand Island, Nebr.**

**Filed Jan. 8, 1975, Ser. No. 539,526**
**Int. Cl.² B05B** *3/18*
**U.S. Cl. 239—189** **9 Claims**

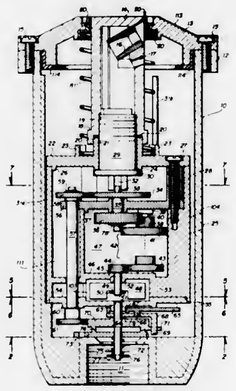


6. In combination with a mobile irrigation chassis of the type including supportive wheel means, coupling means for coupling to a source of high pressure water and rotary torque developing means having rotary power output means as well as a rotatable winding member to which one end of a field anchored pull cable is attached for winding therealong for advancing said chassis along a field to be irrigated, flexive torque transfer means drivingly coupling said output means to said winding member, brake means operatively associated with said wheel means for selectively braking the latter and including oscillatable actuator means, and flexure sensing means operatively associated with said torque transfer means to sense the flexure thereof and operatively connected to said actuator means for oscillating the latter in response to variations in flexure of said torque transfer means.

## 3,934,820
## SPRINKLER CONTROL

**Charles W. Phaup, Dallas, Tex., assignor to Telsco Industries, Dallas, Tex.**

**Filed Aug. 23, 1974, Ser. No. 500,051**
**Int. Cl.² B05B** *15/10, 3/16*
**U.S. Cl. 239—205** **33 Claims**



1. In a pop-up, rotary sprinkler system having an outer housing, a nozzle head vertically and rotatably movable through an outer housing cover, and an inner housing attached to the nozzle head and slidably received within said outer housing, such inner housing enclosing an adjustable direction controlling mechanism and a transmission driven by a water-wheel impeller, the combination which comprises:

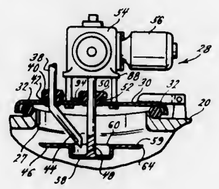
a. convex thrust rings integrally formed with cover and partition plates within said inner housing having surfaces confronting surfaces of rotating members of said transmission; and

b. resilient means to maintain said surfaces in contact with one another.

## 3,934,821
## BULK COOLER AND STORAGE TANK

**Paul Mueller; Robert B. Cannon, and Ray A. Prine, all of Springfield, Mo., assignors to Paul Mueller Company, Springfield, Mo.**

**Filed May 6, 1974, Ser. No. 466,968**
**Int. Cl.² B05B** *3/10;* **B44D** *5/10;* **F23D** *11/04*
**U.S. Cl. 239—224** **11 Claims**



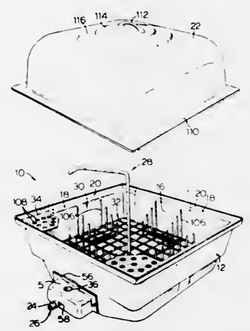
1. A device for distributing a liquid having a horizontally disposed disc, means to rotate the disc about a vertical axis, means for supplying a liquid to the upper surface of the disc, means for uniformly distributing the liquid on the upper surface of the disc, and means to isolate the distributing means from mechanically generated heat.



## 3,934,822
## WATER POWERED DISHWASHER

**Jack Ross, 230 Richmond St. East, Toronto, Ontario, Canada**

**Filed July 29, 1974, Ser. No. 492,393**
**Int. Cl.² B05B** *3/00;* **A62C** *5/02;* **B05B** *7/26;* **B08B** *3/00*
**U.S. Cl. 239—226** **17 Claims**

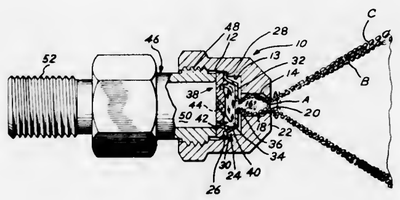


1. A soap dispenser for a water powered dishwasher, suitable for dispensing soap from storage to be mixed uniformly with water passing through a water inlet, the dishwasher having a container shell and top defining a washing and rinsing cavity therebetween a water inlet extending from one side of the container shell below the bottom of the shell, to the centre thereof into a washing cavity, a water inlet and a water outlet, and rotatable spray means adapted to rotate about the water inlet extending into the cavity, said soap dispenser comprising a soap storage in open communication with the atmosphere through at least a downwardly directed aperture, through which soap is discharged, an upwardly directed opening in the top of the water inlet disposed directly below the downwardly directed aperture for receiving the discharged soap and means in the water inlet when water is passing through the inlet, to cause a continuous suction on the soap discharged from said storage and assist to draw the soap through the opening into the water inlet to be mixed with the water passing therethrough.

## 3,934,823
## LOW DRIFT SPRAY NOZZLE

**Kenneth E. Reed, Saint Charles, Iowa, assignor to Delavan Manufacturing Corporation, West Des Moines, Iowa**

**Filed Nov. 12, 1973, Ser. No. 414,733**
**Int. Cl.² B05B** *1/34*
**U.S. Cl. 239—472** **14 Claims**



1. A nozzle for producing a swirling discharge of a hollow geometric shape having substantially large droplets therein, said nozzle comprising

a first chamber having a fluid inlet for introducing fluid to said first chamber,

swirl means for imparting a swirling motion to the fluid in said first chamber,

a second chamber,

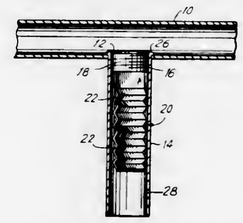
first orifice means between said first and second chambers, said swirling fluid passing from said first chamber to said second chamber through said first orifice means, said second chamber being larger in cross section than said first orifice means, and

means for discharging the swirling fluid from said second chamber while still in its swirling condition to form said swirling discharge of said hollow geometric shape and having said substantially large liquid droplets therein, said means for discharging includng second orifice means at an end of said second chamber opposite said first orifice means, said second orifice means being at least as large in cross section as said first orifice means.

## 3,934,824
## IRRIGATION SYSTEM WATER EMITTER

**Davis Fitzhugh, Raspberry Lane, Augusta, Ark. 72006**

**Filed June 17, 1974, Ser. No. 479,781**
**Int. Cl.² B05B** *15/00*
**U.S. Cl. 239—534** **3 Claims**



1. A water emitter for connection with the longitudinal bore in feeder lines of a drip irrigation system for the distribution of water in said bore to surrounding soil; said emitter comprising

a. a substantially rigid cylinder for attachment to a feeder line of a drip irrigation system;

b. first means on said cylinder for connecting said cylinder to said bore in a feeder line of a drip irrigation system;

c. a substantially rigid annular head;

d. an elongated, flexible, collapsible tube with one end connected to said head;

e. said tube having a plurality of spaced apart crimps disposed therealong to provide when expanded in internal sinuous path for water passing therethrough;

f. opposed cooperating means in one end of said cylinder and on said head for holding said head and its connected tube in said cylinder;

g. said cylinder surrounding said tube along substantially its entire length to protect said tube from surrounding soil in its collapsed state.

## 3,934,825
## PROCESS FOR THE WET GRINDING OF MATERIALS

**Pierre Delfosse, Paris, France, and Alfred Bosshard, Oftringen, Switzerland, assignors to Pfiiss-Staufer AG, Switzerland**

**Filed Oct. 23, 1973, Ser. No. 408,878**
**Claims priority, application Germany, July 9, 1972, 2334804The portion of the term of this patent subsequent to Sept. 9, 1992, has been disclaimed.**
**Int. Cl.² B02C** *17/14*
**U.S. Cl. 241—16** **16 Claims**

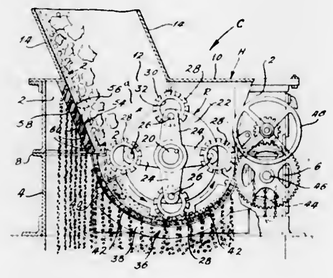
1. A process for the wet grinding of a material such as chalk, comprising the steps of:

forming a suspension containing particles of said material no coarser than 43 microns; and

grinding said suspension of material with grinding bodies having a weight density of at least 3.7 g/cc and consisting of 30 to 70 weight percent of zirconium oxide, 0.1 to 5 weight percent of aluminum oxide and 5.0 to 20 weight percent of silicon dioxide, wherein the weight ratio of said grinding bodies to said material to be ground is at least 6:1.

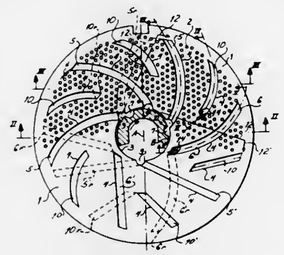
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**3,934,826**
**COAL CRUSHER**
**Donald F. Graveman, St. Charles, Mo., assignor to American Pulverizer Company, St. Louis, Mo.**
**Filed June 5, 1974, Ser. No. 476,582**
**Int. Cl.² B02C *13/09***
**U.S. Cl. 241—81** **7 Claims**



1. A machine for reducing lump material such as coal, said machine comprising: a rotor which revolves about an axis of rotation in one direction, generating windage as it does, the rotor having breaking elements which describe a hammer circle as the rotor revolves and are capable of moving inwardly toward the axis of rotation upon encountering oversize lumps; a housing supporting the rotor and enclosing the hammer circle, the housing having an upwardly presented opening located above the hammer circle and substantially entirely on that side of the axis along which the breaking elements descend; an apertured cage within the housing and spaced from the lower portion of the hammer circle, the cage being arcuate and generally corresponding in contour to the hammer circle so that large lumps of material introduced into the opening are crushed between the cage and breaking elements and reduced to a predetermined size small enough to pass through the apertures in the cage; and a generally flat apertured plate located between the opening and the upper end of the cage on that side of the axis at which the breaking elements descend and being close enough to the rotor to enable the windage generated by the rotor to impinge against it, the apertured plate forming an upward generally uninterrupted continuation of the cage and being inclined with respect to the vertical such that much of the lump material entering the opening will fall onto and pass over the apertured plate, the apertured plate having holes therein sufficient in size to permit passage of material of substantially said predetermined size but not larger, the apertured plate and holes therein extending above the hammer circle, whereby much of the material which is of the predetermined size or smaller will fall through the apertured plate before being impacted by the breaking elements with the windage assisting the passage through the apertured plate, while material larger than the predetermined size will be impacted by the breaking elements and moved along the cage until small enough to pass through the cage.

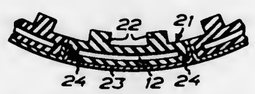
**3,934,827**
**DIE FOR TWO-STAGE FOOD CHOPPER**
**Ludwig Seydelmann, 1, Holderlinstra, 7 Stuttgart, Germany**
**Filed Sept. 3, 1974, Ser. No. 502,751**
**Claims priority, application Germany, Sept. 3, 1973, 2344284**
**Int. Cl.² A47J *43/07***
**U.S. Cl. 241—84** **13 Claims**



1. A die for a food chopper, said die comprising a metallic plate having a pair of opposite faces and formed with an array of throughgoing bores of like diameter extending between said faces, one of said faces being formed with at least one elongated groove having a width greater than the diameters of said bores, said food chopper pressing material to be chopped against said one face and having a blade rotated about an axis perpendicular to said face to sweep over said one face, said groove being inclined to said blade during sweeping of said blade over said groove.

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**3,934,828**
**WEAR-RESISTANT WALL LININGS FOR SHELLS OF MILLS AND LIKE APPARATUSES**
**Bo Klas Gerhard Persson, Hollviksnas, Sweden, assignor to Trelleborgs Gummifabriks Aktiebolag, Trelleborg, Sweden**
**Filed May 17, 1974, Ser. No. 471,108**
**Claims priority, application Sweden, May 18, 1973, 73070443**
**Int. Cl.² B02C *17/22***
**U.S. Cl. 241—102** **2 Claims**



1. A wall which is subjected in use to wear and which is made of wall segments, each of said wall segments including a wall element made of an elastomeric material, each of said wall elements having at least one inner cavity containing pressure fluid, each of said wall segments having a cup-shaped supporting element secured to a said wall element and having edges of which are upstanding along the sides of the wall element to support said sides of the wall element upon inflation of the wall element, said wall being compression prestressed in the portion thereof closest to the surface subjected to wear.

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**3,934,829**
**NOVEL WAY SYSTEM**
**Robert G. Coucher, 2021 Ribbon Lane, Salt Lake City, Utah 84117**
**Filed Aug. 26, 1974, Ser. No. 500,272**
**Int. Cl.² B02C *7/14***
**U.S. Cl. 241—259.1** **4 Claims**

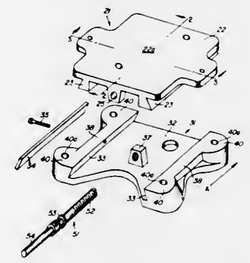
1. A way system for selectively advancing and retracting an electric motor along its axis, comprising:



a first way element, including a stationary mounting plate with a flush-mounting surface, a pair of parallel way surfaces depending from said mounting plate opposite said flush-mounting surface, and a first adjusting lug depending from said mounting plate between said depending way surfaces;

a second way element, including a movable support plate, a pair of parallel way surfaces upstanding from said support plate and arranged to register with respective said depending way surfaces, and a second adjusting lug upstanding from said support plate between said upstanding way surfaces;

a shaft with a first threaded portion engaged by threads in one of said adjusting lugs, a second portion journaled through the second adjusting lug, and a distal end portion extending beyond said plates, constituting adjusting means for changing the relative longitudinal position of



said movable support plate with respect to said stationary mounting plate;

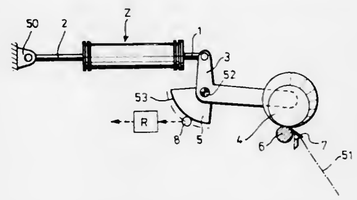
parallel motor support platforms associated with each of said upstanding way surfaces and carried approximately parallel said flush-mounting surface of said stationary mounting plate; and

mounting posts upstanding from respective said motor support platforms arranged to register with anchoring slots of a conventional electric motor frame mounting and sufficiently long to provide clearance between the distal ends of said posts and said flush-mounting surface to accommodate a mounting panel such that the mounting plate may be fastened to one side of such a mounting panel with the mounting posts extending through holes provided in said panel, and a motor frame mounting attached to the distal ends of said posts to slightly clear the opposite surface of said mounting panel.

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**3,934,830**
**SPOOLING MECHANISM**
**Gerhard Grau, Albershausen, Germany, assignor to Zinser Textilmaschinen GmbH, Ebersbach, Germany**
**Filed May 28, 1974, Ser. No. 473,758**
**Claims priority, application Germany, May 28, 1973, 2327164**
**Int. Cl.² B65H *54/42***
**U.S. Cl. 242—18 DD** **22 Claims**

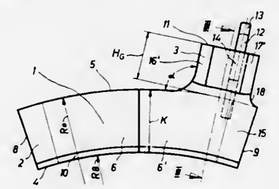
1. In a spooling mechanism for the winding of textile threads onto spools having a driven winding shaft; at least one spool whose circumference presses against the driven winding shaft; a pivotably mounted spool holder on which the spool is mounted for rotation, said spool holder being pivoted during increasing spool diameter with further pivoting permitting lifting the spool off from its associated winding shaft; and a linear servomotor, which has a working member and an associated guide member, which working member is connected to the spool holder and is mounted to be driven with respect to the guide member for the purpose of executing a displacement, the working member serving for the displacement of the spool holder and being itself displaceable by the spool holder, the improvement comprising: a pretension working element connected to the linear servomotor for causing the joint motion of said guide member of said linear servomotor together with said working member during displacement of the working member by said spool holder to maintain a substantially unchanged, predetermined, relative position between said work-



ing member and said guide member of said linear servomotor during motions of said spool holder; an operating device; and locking means, actuatable by said operating device, which in its locking position allows said working member to execute a working stroke relative to said guide member while taking along said spool holder.

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**3,934,831**
**TRAVERSING THREAD GUIDE**
**Klaus Bruggisser; Felix Graf, both of Winterthur, and Albert Ruegg, Pfaffikon, all of Switzerland, assignors to Rieter Machine Works Ltd., Winterthur, Switzerland**
**Filed Dec. 10, 1973, Ser. No. 423,501**
**Claims priority, application Sweden, Dec. 11, 1972, 17959/72**
**Int. Cl.² B65H *54/30***
**U.S. Cl. 242—43** **18 Claims**



1. A traversing thread guide for winding a thread and adapted to engage with a helically extending endless cam groove of a traverse cylinder, said cam groove having a bottom, said traversing thread guide comprising an elongated cam engaging portion, a gliding member for linear to-and-fro guiding of the traversing thread guide along a rigid guide device extending substantially parallel to the rotational axis of the traverse cylinder, said gliding member being arranged in offset relationship with respect to the center of the cam engaging portion, a thread guide member rigidly arranged on the gliding member, the center of gravity of the traversing thread guide being located in the cam engaging portion, said cam engaging portion comprising a base for the inner radial guidance of the traversing thread guide, said base possessing a curvature which at least approximates the curvature of the cam groove bottom, said base being in contacting relation with said cam groove bottom, said cam engaging portion further comprising an upper surface servicing for the outer radial guidance of the traveling thread guide on an inside surface of the guide device, said thread guide being freely radially movable with respect to the traverse cylinder between said inside surface of the guide device and the bottom of said cam groove, said gliding member being rigidly connected with the cam engaging portion and being provided with at least one gliding section for contacting a guide edge of the guide device,

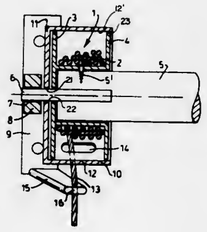
said gliding section enclosing an angle with the upper surface of the cam engaging portion.

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**3,934,832**
**REEL ASSEMBLY FOR ROLLER**

**Edwin Zilver, Doorwerth, Netherlands, assignor to Intersilma B.V., Velp, Netherlands**

**Continuation-in-part of Ser. No. 406,468, Oct. 15, 1973, abandoned. This application Jan. 20, 1975, Ser. No. 542,556**
**Claims priority, application Netherlands, Oct. 18, 1972, 7214127**
**Int. Cl.² B65H 75/00; E06B 9/20**
**U.S. Cl. 242—54 R** **8 Claims**



**1.** In combination with a blind roller rotatably mounted at opposite ends on a fixed support, a reel hub coaxially and fixedly secured to one end of said roller, axially spaced radial end flanges on the hub, a pull cord secured at one end to the reel adapted to be wound onto the hub and adapted to rotate the reel and the roller relative to said support, a tubular member substantially coaxial with the roller and having an inner circumferential surface extending axially for a distance at least equal to the length of said reel substantially closely surrounding the outer peripheries of both said end flanges, the diameter of said flanges being smaller than the diameter of the inner circumferential surface of said tubular member by a small distance less than the thickness of the pull cord, said tubular member having an aperture permitting free and unfettered passage of the unsecured end of the pull cord through said tubular member, and means for loosely mounting said tubular member on said support comprising cooperating means connected to said tubular member and to said support for preventing free rotation of said tubular member about the axis of said roller but allowing small free axial, radial and tilting movements of said tubular member with respect to said support during rotation of said roller.

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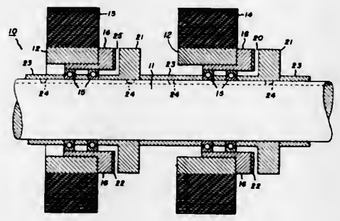
**3,934,833**
**HYSTERESIS CLUTCH FOR FILM WINDING**

**James L. Nash, Glens Falls, and Phillip H. Carrico, Greenfield Center, both of N.Y., assignors to General Electric Company, Hudson Falls, N.Y.**

**Filed Sept. 27, 1974, Ser. No. 510,114**
**Int. Cl.² B65H 19/04**
**U.S. Cl. 242—56.9** **6 Claims**

**1.** A bobbin winding assembly particularly adaptable for simultaneously winding a plurality of synthetic resin strips comprising in combination

a. a drive mandrel,
b. a plurality of bobbin core holders coaxially mounted in spaced array along said shaft for rotation thereon,
c. a hysteresis ring on each of said core holders,
d. and an annular permanent magnet ring fixed concentrically to said mandrel and adjacent each hysteresis ring with an air gap therebetween and in magnetic drive relationship thereto,



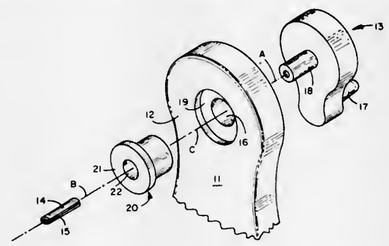
e. so that rotation of said drive mandrel rotates each of said core holders through said magnetic drive across said air gap.

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**3,934,834**
**QUILLER**

**James Edward Gick, 24842 Pylos Way, Mission Viejo, and James Walker Gick, 26662 Paseo Ensenada, San Juan Capistrano, both of Calif. 92675**

**Filed Aug. 12, 1974, Ser. No. 496,653**
**Int. Cl.² B65H 17/02**
**U.S. Cl. 242—67.1 R** **2 Claims**



**1.** A quiller for rolling strips of paper into decorative and artistic patterns, comprising:

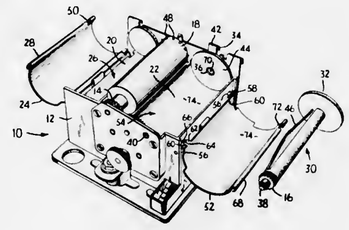
a body having a flat surface, a hole through the body and through the flat surface of the body and having a recess on the flat surface of the body on one side thereof around the hole of the body;
a cylindrical bushing member having an enlarged shoulder portion on one end thereof adapted to mate with said recess of said body, the cylindrical portion of said bushing extending through said hold of the body and being rotatable therein, the end portion of said bushing member which includes said shoulder portion having a flat surface, said flat surface fitting flush with the flat surface of said body member when said bushing member is disposed in said hole of said body, said bushing member including a hole extending axially therethrough;
a crank having a crank axis, a handle and a shaft disposed around the crank axis wherein the shaft is mated to the hole of the bushing by press fitting the shaft into the hole of the bushing on the other side of said body so that the crank axis is substantially perpendicular to the flat surface of the body and the crank is rotateable about the crank axis; and
a pin for winding the paper strips, said pin having an axis and having a slot extending axially therethrough for receiving one end of a paper strip, said pin being coupled to the shaft of the crank by being pressed into the shaft so that at least a portion of the pin is beyond the flat surface of the body.



**3,934,835**
**CHART CARRIER FOR RECORDER**

**John Maxwell, Chatham, N.J., assignor to Wagner Electric Corporation, Parsippany, N.J.**

**Filed June 28, 1973, Ser. No. 374,526**
**Int. Cl.² B65H 17/38**
**U.S. Cl. 242—67.2** **3 Claims**



**1.** A chart carrier comprising:

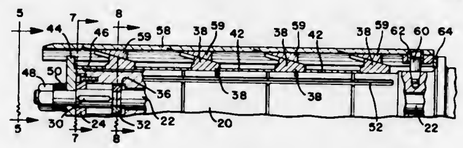
a. a housing;
b. chart storage means;
c. driving means comprising a driven cylinder;
d. chart take-up means comprising a substantially cylindrical enclosure for rolling and enclosedly retaining the used portion of the chart fed in from said chart storage means by said driving means, said enclosure comprising (i) a substantially semi-cylindrical cover having a rounded free edge, and (ii) a substantially semi-cylindrical base portion disposed in said housing, said chart take-up means further comprising means for pivotally mounting said cover along its outer edge on said housing and means for urging said cover toward said driven cylinder, said cover being operative when in a first position to form said substantially cylindrical enclosure with said substantially semi-cylindrical base portion, and further operative when in a second, pivoted position to expose said substantially semi-cylindrical base portion; and
e. retaining means operative to receive and rotatably retain a removable take-up spool, said retaining means comprising a leaf spring having a fixed end attached to said housing and a free end extending into said substantially cylindrical enclosure near one end thereof, a bushing mounted in said leaf spring near said free end thereof, and a disc having a central aperture therein and mounted near said free end of said leaf spring with said aperture in registration with said bushing, and an opposed end wall having an aperture therein aligned with said bushing in said central aperture of said disc along the axis of said substantially cylindrical enclosure.

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**3,934,836**
**MANDREL ASSEMBLY**

**Danny L. Dunlap; Charles E. Huelsman, and John H. Muhlenkamp, all of Minster, Ohio, assignors to Stamco Division, The Monarch Machine Tool Company, New Bremen, Ohio**

**Filed July 31, 1974, Ser. No. 493,477**
**Int. Cl.² B65H 75/18**
**U.S. Cl. 242—72.1** **11 Claims**



**1.** In a rotatable and expandable mandrel assembly including a mandrel including a plurality of longitudinally extending mandrel segments, a draw rod disposed within said mandrel, extending longitudinally thereof and fixed for rotation with said mandrel while movable longitudinally thereof, means for causing relative radial movement of said segments between expanded and collapsed mandrel configurations in response to longitudinal movement of said draw rod, and drive means mounted adjacent one end of said mandrel, the improvement comprising:

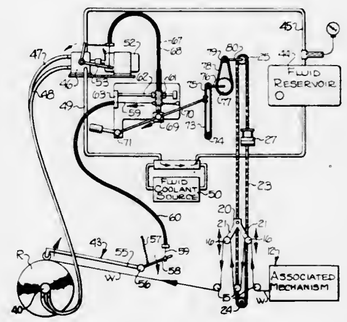
a. means for transmitting drive from said drive means to said mandrel to cause rotation thereof,
b. actuating means for causing longitudinal movement of said draw rod, and
c. means for selectively coupling said drive means to said drive transmitting means for rotation of said mandrel or to said actuating means to shift said draw rod longitudinally thereof and cause said segments to be shifted radially with respect to the longitudinal axis of said mandrel.

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**3,934,837**
**WEB WINDER AND COMPENSATOR APPARATUS**

**Hans O. Kellhack, and Peter Schmidt, both of Charlotte, N.C., assignors to Keiltex Corporation, Charlotte, N.C.**

**Filed Oct. 4, 1974, Ser. No. 512,361**
**Int. Cl.² B65H 59/00**
**U.S. Cl. 242—75.5** **17 Claims**




**1.** An improved web winder and compensator apparatus with automatic web winding speed compensating controls for selectively winding or unwinding at a uniform tension a roll of traveling continuous web material being selectively fed from or taken up by an associated mechanism, said apparatus comprising:

tension compensator means for receiving the traveling web in a predetermined path of travel therethrough and for compensating for variations in speed of travel of the web therethrough for maintaining a uniform tension therein during winding or unwinding thereof, said compensator means comprising stationary roll means positioned in the path of travel of the web for guiding the web through said compensator means, and counterbalanced movable roll means normally positioned on one side of said stationary roll means for receiving the traveling web therearound and moving toward and away from said stationary roll means for decreasing and increasing the length of the path of travel of the web through said compensator means in relation to the tension on the traveling web, said movable roll means including means for movement of said movable roll means to a threading position on the other side of said stationary roll means for straightline linear threading up of the web through said compensator means;
variable speed, center drive, reversible, winder means positioned adjacent said compensator means for selectively winding or unwinding a roll of the web material; and
control means including means for sensing the diameter of the web roll in said winder means, said control means being operatively connected between said compensator

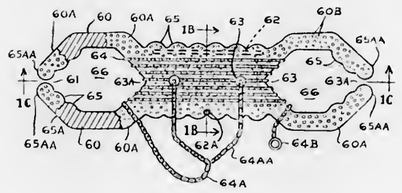
means and said winder means for controlling the winding or unwinding speed of said winder means in relation to and in response to the speed of travel of the web through said compensator means as indicated by the position of said movable roll means of said compensator means and the diameter of the web roll as indicated by sensing means for maintaining a uniform tension in the web material being wound or unwound.

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**3,934,838**
**FLOATABLE TOW-LINE HOLDER**

**Paul M. D'Amico, 2709 S. 12th St., Philadelphia, Pa. 19148**

**Division of Ser. No. 828,072, May 1, 1969, Pat. No. 3,596,300.**
**This application June 14, 1971, Ser. No. 152,956**
**Int. Cl. B65h** *75/36*
**U.S. Cl. 242—85.1** **2 Claims**



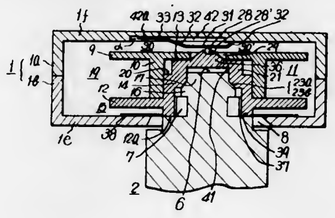

**1.** A laminated floatable substantially flat tow-line holder having a central body portion, a pair of clawlike bifurcated arms disposed at opposite ends of said central body portion, said arms at their distal ends defining open-throated substantially V-shaped chambers, said central body portion having one end of a bifurcated tow-line secured thereto forming a loop, with the other end of said tow-line being wound longitudinally for storage in each of said V-shaped chambers.

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**3,934,839**
**TAPE CASSETTE**

**Akio Serizawa, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan**

**Continuation-in-part of Ser. No. 384,576, Aug. 1, 1973, abandoned. This application June 7, 1974, Ser. No. 477,482**
**Claims priority, application Japan, Aug. 11, 1972, 47-94388[U]**
**Int. Cl.² G03B** *1/04*; **G11B** *15/32, 23/04*
**U.S. Cl. 242—198** **13 Claims**



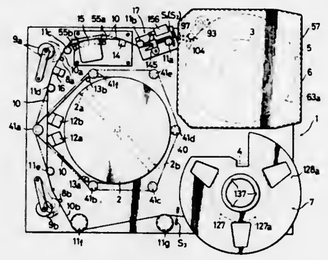

**1.** A tape cassette for use with a tape recording and/or reproducing apparatus having a rotatable reel drive means, said cassette comprising a casing including opposed walls and at least one tape-carrying reel rotatably contained in said casing between said walls, said casing having an aperture in one of said walls adapted for the insertion of the reel drive means therein, said reel including a hollow hub defining a socket having an opening at one end of said hub in registration with said aperture for the entry into said socket of the reel drive means inserted through said aperture, said socket being of stepped configuration to have a relatively large-diameter portion extending from said opening of the socket and a reduced-diameter cylindrical portion at the end of the socket remote from said opening for closely receiving a correspondingly dimensioned end portion of the reel drive means with a frusto-conical surface portion leading from said large-diameter portion to said reduced-diameter portion for directing the end portion of the reel drive means into said reduced-diameter portion of the socket, and at least one axially elongated rib projecting radially inward from the surface of said socket at said large-diameter portion of the latter and by which said reel is adapted to be rotatably coupled with the reel drive means.

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**3,934,840**
**REEL ASSEMBLY**

**Katsu Inaga, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan**

**Filed June 3, 1974, Ser. No. 476,091**
**Claims priority, application Japan, June 5, 1973, 48-66880[U]**
**Int. Cl.² G03B** *1/04*; **G11B** *15/32*
**U.S. Cl. 242—195** **4 Claims**




**1.** A reel assembly comprising a pair of tape-drawing wires with a required length, a connecting means for connecting said tape-drawing wires to another tape-like member, said connecting means being attached to one end of said tape-drawing wires, a reel hub, a pair of circular grooves formed on said reel hub to receive said tape-drawing wires wound thereon, a pair of flanges fixed to both ends of said reel hub and at least one cut-out portion formed on the circumference of said reel hub, said connecting means being led into said cutout portion when said tape-drawing wires are wound on said circular grooves and said tape-like member connected to said tape-drawing wires through said connecting means is wound around said reel hub, whereby said tape-like member can be orderly wound in circle around said reel hub.

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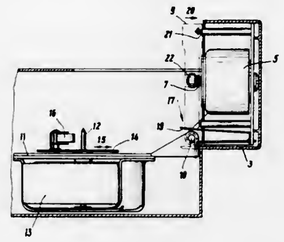
**3,934,841**
**TAPE DRIVE**

**Edgar Zuckschwert, and Georg Friedrich Papst, both of St. Georgen, Germany, assignors to Papst-Motoren KG, St. Georgen, Germany**

**Filed Dec. 2, 1974, Ser. No. 528,648**
**Claims priority, application Germany, Dec. 11, 1973, 2361573**
**Int. Cl.² G03B** *1/04*; **G11B** *15/32, 23/04*
**U.S. Cl. 242—198** **11 Claims**

**1.** A tape drive system for a recording and/or reproducing apparatus for a tape cassette having two tape spools one beside the other, comprising: a main housing; a movable casing portion connected to the main housing whereby a cassette-receiving space is provided between the main housing and the casing portion, the casing portion being displaceable relative to the main housing for exchanging a said cassette received in use in said space; tape winding motors for engaging the tape spools of a said cassette received in said space; at least one tape drive capstan; and at least one capstan drive motor driving the respective capstan to drive the tape, at least one of the motors being disposed in the casing portion for operatively engaging said received cassette from one side thereof, and the other motor or motors being disposed in the main housing for operatively engaging said received cassette from the other side thereof.



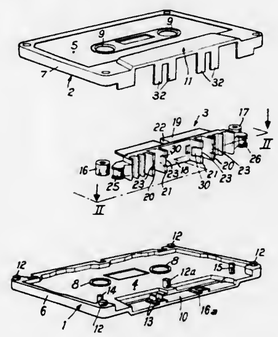



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**3,934,842**
**MINICASSETTE FOR RECORDING TAPE**

**Patrick Posso, 10, Avenue Jurigoz, Lausanne, Switzerland**

**Filed Sept. 12, 1973, Ser. No. 396,532**
**Claims priority, application France, Oct. 2, 1972, 72.34835**
**Int. Cl.² G03B** *1/04*; **G11B** *15/32, 23/04*
**U.S. Cl. 242—199** **7 Claims**




**1.** In a minicassette for holding a recording tape, for use in a tape machine provided with a recording and/or playback head, the minicassette including a first member constituting a casing body having a base portion, a second member constituting a casing cover having a base portion and fitting on the first member with the base portions parallel, to define an enclosed space for holding a tape supply reel and a tape take-up reel, and means associated with the members for holding such reels in position, the improvement wherein:

said minicassette further comprises a third molded member formed independently of, and arranged to be disposed between, said first and second members and constituting a tape-guide for said minicassette, said third member comprising an elongated web portion and being of an anti-abrasive material having a low coefficient of friction relative to the recording tape and being provided with projecting portions defining a tape sliding surface absolutely perpendicular to the base portions of said first and second members, said projecting portions being in the form of tabs projecting from said web portion and each provided with a notch located at its center and defining part of said tape sliding surface; two of said tabs being located at a central region of said web portion and being spaced apart to define, with the part of said web portion disposed therebetween, a housing for holding a pressing member provided to cooperate with the tape machine head; and said two tabs being provided with lateral projections directed toward the region constituting said housing for engaging the pressing member to cause such member to be gripped between said part of said web portion and said lateral projections;

said first member is provided with projecting portions arranged to position said third member relative to said first member; and

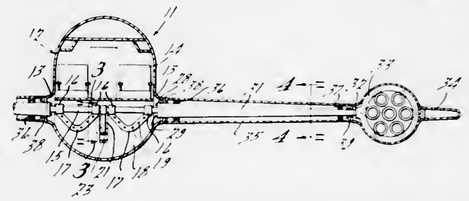
said members are dimensioned for causing said third member to be immobilized in position between said first and second members when said second member is fitted on said first member.

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**3,934,843**
**FREE WING FOR CONVERTIBLE AIRCRAFT STRUCTURE**

**John O. Black, 18094 Parkside, Detroit, Mich. 48221**

**Filed Aug. 5, 1974, Ser. No. 494,855**
**Int. Cl.² B64C** *27/28*
**U.S. Cl. 244—7 C** **2 Claims**



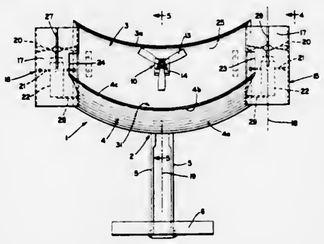

**1.** In an airplane construction, a fuselage, a spar extending from each side of the fuselage near the bottom thereof, a wing section pivotably mounted on each spar with the weight preponderance at the trailing edge which extends downwardly, a straight shaft extending across the fuselage, enlarged flanges on the ends of said shaft, means for removably securing said flanges to the adjacent ends of said spars, power means for rotating said shaft through an angle of approximately 90°, an engine supported on each outer end of the spars which are turned to move the engines to and from vertical and horizontal position, propeller means supported on the driving shaft of said engines for rotation thereby, and thrust bearings provided at each end of the wing sections adjacent to said fuselage and said engines.

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**3,934,844**
**FREE VORTEX AIRCRAFT**

**Ray R. Reighart II, 4778 Hillcrest North, Hilliard, Ohio 43026**

**Filed June 10, 1975, Ser. No. 585,708**
**Int. Cl.² B64C** *23/06*
**U.S. Cl. 244—40 A** **26 Claims**

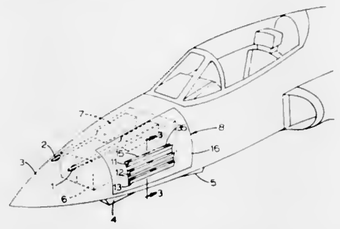



**1.** Free vortex aircraft construction including a frame means;

b shield means mounted on the frame means to generate and shed a substantial amount of vorticity into the air when the aircraft moves forwardly through the air;
c the shield means and frame means providing a vortex forming zone downwind of the shield means;
d a plurality of engine means mounted on the frame means to provide thrust for moving the aircraft forwardly through the air, and for pumping air from spaced locations in the vortex forming zone to retain and concentrate the vorticity within said zone to form a free vortex of low pressure air extending in an arcuate manner across the frame means; and
e surface means on the frame means located beneath at least a portion of the spaced pumping locations, on which the free vortex acts to produce lift on said aircraft.

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**3,934,845**
**GUN BAY PRESSURE RELIEF DEVICE**
**Alexander Rosin, Torrance, Calif., assignor to Northrop Corporation, Los Angeles, Calif.**
**Filed Mar. 17, 1975, Ser. No. 559,147**
**Int. Cl.² B64C 1/14**
**U.S. Cl. 244—129 D** **11 Claims**

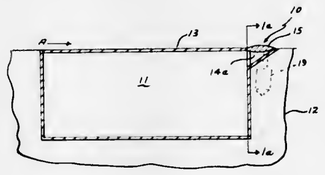


1. In combination with an aircraft having a gun bay and gun bay door in the side thereof; pressure relief means comprising:
a. means defining a cutout in said gun bay door;
b. a continuous hinge having an upper and a lower section hinged together by a continuous hinge pin;
c. said lower section being fixed to said gun bay door in the lower portion of said cutout and forming a flush outer surface with said gun bay door;
d. said upper section dimensioned to cover the upper portion of said cutout when in a closed position and rotatable outwardly and downwardly to an open position during internal pressure buildup within said gun bay due to gun gas explosion;
e. said upper section being automatically moved toward said closed position by normal in-flight upward flow of air around said gun bay door, as said pressure subsides; and
f. holding means to maintain said upper section in said closed position flush with the outer surface of said door under normal flight conditions.

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**3,934,846**
**DEVICE TO REDUCE FLOW INDUCED PRESSURE OSCILLATIONS IN OPEN CAVITIES**
**Otto F. Maurer, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.**
**Filed Oct. 8, 1974, Ser. No. 513,025**
**Int. Cl.² B64C 7/00**
**U.S. Cl. 244—130** **13 Claims**

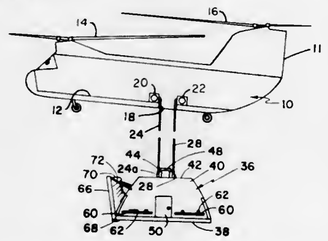
1. In an aircraft, aerospace or other vehicle having a bomb bay or other cavity for containing weapons or other stores, and door or other enclosure means openable during vehicular operation to expose the open cavity to the relatively fast moving air stream; a combined air flow deflector and diffuser device for reducing excessive pressure oscillations being otherwise induced in and near the open cavity by the inherent unsteady nature of the relatively fast moving air stream flow past the said cavity, as is manifested by the normal considerable inward and outward movement of the said flow relative to the said open cavity when said device is not being utilized; said device comprising; a first, main flow diverter element located in a predetermined spaced relation from the body of said vehicle directly in the path of, and automatically operative to divert a substantial portion of the air stream away from its normal entry into, and thus reducing the intensity of the pressure oscillations both at the entry to, and within the open cavity; second, main flow diverter element-mounting means for attaching said first, flow diverter element in the said predetermined spaced relation from the aircraft fuselage or other vehicular body at a predetermined position in alignment with a location preferably adjacent or substantially adjacent the



trailing edge of the open cavity; and third, flow diffuser means comprising divergent slotted means inherently incorporated in said combined air flow diverter and diffuser device between said first, flow diverter element and said mounting means, and further disposed in the path of, and automatically acting to reduce the velocity of the incoming air stream by the diffused flow of a significant, additional portion of the air stream flowing past the open cavity through the said divergent slotted means to thereby further somewhat reduce the inherent turbulence and circulation of air that would otherwise normally occur throughout the interior of the open cavity, and, simultaneously therewith, effecting the substantial elimination of the excessive pressure oscillations resulting at the shield area and within the said open cavity from the inherent and substantial inwardly and outwardly-oriented movements normally tending to occur within, and causing the unsteady flow of the air stream during its movement past the open cavity.

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**3,934,847**
**RESCUE CAPSULE FOR USE WITH A HELICOPTER**
**Pasquale P. Bentivegna, 56 Gladstone St., East Boston, Mass. 02128**
**Filed Oct. 4, 1974, Ser. No. 511,734**
**Int. Cl.² B64C 1/22**
**U.S. Cl. 244—137 P** **7 Claims**



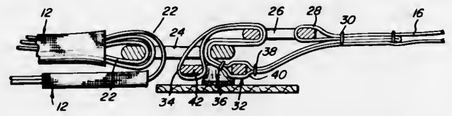
1. A rescue capsule in combination with a helicopter, said capsule comprising;
a floor,
a top,
a continuous side extending between the floor and top,
at least one door in the side to provide access to the capsule,



said top having an opening therethrough,
a projecting member extending above the top having a continuous side enclosing the opening and defining a passageway leading from the opening,
a cover for covering the open top of the projecting member,
said helicopter having a floor having an opening therein of about the same size as said projecting member,
winch means disposed adjacent the opening in the helicopter floor,
and cable means extending through the opening in the helicopter floor from the winch means to the capsule top,
wherein said winch means raises and lowers the capsule with the projecting member defining both a passageway to the helicopter when the capsule is at its top position and a guide for aligning the capsule with the projecting member extending into the opening in the helicopter floor.

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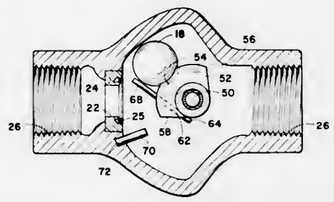
**3,934,848**
**RISER RELEASE BUCKLE DEVICE**
**Stephen L. Snyder, 331 Cherry Hill Blvd., Cherry Hill, N.J. 08034**
**Filed Dec. 31, 1974, Ser. No. 537,660**
**Int. Cl.² B64D 17/32**
**U.S. Cl. 244—151 A** **13 Claims**



1. A releasable connector coupling a body harness strap with a riser strap of a parachute, comprising buckle means connected to the straps, a flexible loop connected to one of the straps and threaded through the buckle means, a locking pin assembly engageable with the threaded loop extension for preventing separation of the riser strap from the buckle means and the harness and release means connected to the locking pin assembly for withdrawing the same laterally from the threaded loop extension.

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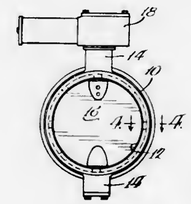
**3,934,849**
**SEATING AND ACTUATOR FOR A BALL VALVE**
**Eldon W. Morain, and Judson C. Cole, both of Tulsa, Okla., assignors to Continental Industries, Inc., Tulsa, Okla.**
**Filed June 14, 1974, Ser. No. 479,283**
**Int. Cl.² F16K 25/00**
**U.S. Cl. 251—163** **7 Claims**



1. A valve comprising:
a valve body having a flow passageway therethrough;
an annular valve seat interposed in said passageway and having an aperture therethrough which defines a portion of said fluid passageway;
an operator shaft opening in one side of the valve body;
a ball in said passageway adaptable to close the valve when moved against the valve seat;
actuating arm means sealably journalled through said shaft opening and having a shaft portion disposed interior of the valve body, the actuating arm having a pair of spaced transverse apertures therein internally of said valve body;
a cam arm carried by the said shaft and extending outwardly therefrom for engaging and moving said ball toward the valve seat;
a retaining pin secured to the interior of the valve body adjacent to the valve seat for encountering and deflecting the said ball toward the valve seat;
a cam surface provided on said cam arm for forcing said ball against the valve seat when the actuating arm means is pivoted to a valve-closed position; and
a U-shaped bar having parallel finger portions received in said pair of apertures in said actuating arm, the finger being angularly spaced from the cam arm, said fingers being adaptable for engaging the ball and moving said ball out of contact with the valve seat and carrying said ball out of the direct flow path when the actuator arm is pivoted to the valve-open position.

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**3,934,850**
**ADJUSTABLE VALVE SEAT**
**Gregory A. Kurkjian, Jr., Wheaton, Ill., assignor to Henry Pratt Company, Aurora, Ill.**
**Filed Aug. 8, 1974, Ser. No. 495,644**
**Int. Cl.² F16K 25/00**
**U.S. Cl. 251—171** **5 Claims**



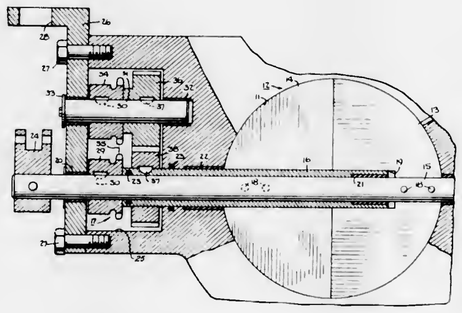
1. A valve having an adjustable valve seat comprising:
a valve body having an interior passage through which fluid may flow;
a valve member journalled in said body for movement between positions opening and closing said passage;
a peripheral, inwardly opening groove having opposed side walls in said body fronting on said passage and aligned with said valve member when said valve member is in a position closing said passage;
a valve seat of flexible material and having opposed sides disposed within said groove and adapted to sealingly contact said valve member about its entire periphery when it is in a position closing said passage, one side of said valve seat abutting one of said groove side walls;
at least one arcuate member within said groove about the periphery thereof and having a surface engaging the other side of said valve seat, said surface and said other side wall being configured such that when said member is progressively moved more deeply into said groove, said valve seat will be compressed and deformed into said passage; and
means for selectively effectively increasing the arc length of said arcuate member to selectively cause said compression and deformation, said increasing means comprising a turnbuckle;
there being plural said arcuate members and a substantially equal number of said turnbuckles, said turnbuckles being disposed between adjacent ends of said members within said groove.

**3,934,851**

## BUTTERFLY VALVE HAVING A SPLIT VANE

**Henry Illing, Parksville, N.Y., assignor to Kieley & Mueller, Inc., Middletown, N.Y.**

**Filed Dec. 12, 1973, Ser. No. 424,084**
**Int. Cl.² F16K *31/53***
**U.S. Cl. 251—248** **13 Claims**



1. A butterfly valve comprising
a housing defining an opening for a flow of fluid;
a butterfly vane mounted in said housing to selectively open and close said opening to a flow of fluid, said vane including a pair of discs; and
means for pivoting said discs, said means including a first shaft connected to one of said discs for pivoting said discs in a first direction, a second shaft connected to the other of said discs and positioned coaxially of said first shaft for pivoting said other disc in a second direction opposite said first direction, and a transmission connected to said shafts to rotate said shafts simultaneously in opposite directions to move said discs between respective closed positions and open positions thereof.

8. A butterfly valve comprising
a butterfly vane having a pair of semi-circular discs sequentially mounted on a common axis, said discs defining a line of separation therebetween when closed which is disposed at a right angle to said common axis, said axis passing transversely through each said disc; and
means for pivoting said discs in opposite directions to each other about said common axis from a closed position to an open position.

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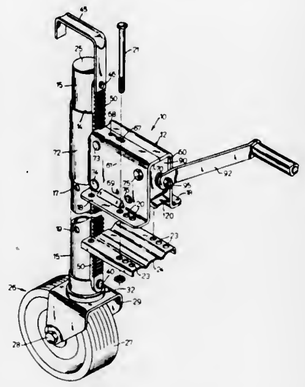
**3,934,852**

## TRAILER TONGUE JACK

**Bernard R. Weber, Elm Grove, and David W. Wendt, Monona, both of Wis., assignors to Wesbar Corporation, West Bend, Wis.**

**Filed Aug. 11, 1975, Ser. No. 603,435**
**Int. Cl.² B60S *9/02*; B66F *3/16***
**U.S. Cl. 254—86 R** **9 Claims**

1. In a jack: an elongated post having a rack along a side thereof; a housing through which said post member extends; a member pivotally mounted on said housing and selectively movable between two positions; a gear rotatably mounted on said member, said gear being in meshed engagement with said rack on said post when said member is in one of said two positions and said gear being out of meshed engagement with said rack on said post when said member is in the other of said two positions; and means mounted on said member for selectively rotating said gear in opposite directions to move said



post axially with respect to said housing when said member is in said one position and said gear and rack are engaged.

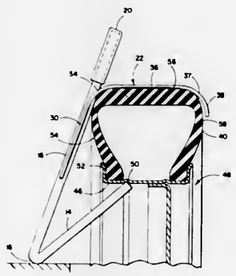
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**3,934,853**

## TIRE RETRIEVAL TOOL

**William Orsburn, 1599 N. Norma St., Sp. 24, Ridgecrest, Calif. 93555**

**Filed Dec. 17, 1973, Ser. No. 425,139**
**Int. Cl.² B66F *3/00***
**U.S. Cl. 254—131** **2 Claims**



1. A tool for removing a tire assembly comprised of a tire mounted on a wheel from a tire well without altering the mounting of the tire on the wheel, said tool comprising a first arm manually grippable to exert manual force thereupon, a second arm for engaging the wheel of said tire assembly to be removed from the tire well, an elbow joining the first arm to the second arm at an acute angle between said first and second arms, said first arm and second arm being configured to operate as a torque-exerting member and thereby provide a mechanical advantage in exerting force upon the first arm, a tire engaging brace fixedly attached to said first arm at a point of attachment intermediate the elbow and a free end of said first arm, said brace being configured as a somewhat U-shaped member including a first segment for contacting and engaging a first sidewall of the tire, a second segment for contacting and engaging the tread of the tire, and a third segment for contacting the opposite sidewall of the tire, to thereby restrain motion otherwise tending to disengage said tire assembly from the torque-exerting member when the second arm engages the tire in a torque-exerting relationship, said third segment being substantially equal to 2 inches in length, said third segment being joined to the second segment at substantially an angle of 130°, said first segment being substantially seven inches in length, said first segment also being joined to said seccnd segment at substantially an angle of about 120° and said second segment having a length of substantially about 6½ inches.



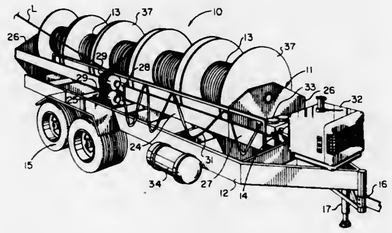
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**3,934,854**

## APPARATUS FOR WINDING PILOT LINES

**Robert W. Goode, Arlington, Tex., assignor to Hydra Dyne Corporation, Forth Worth, Tex.**

**Filed July 17, 1974, Ser. No. 489,397**
**Int. Cl.² F21C *29/16***
**U.S. Cl. 254—134.3 R** **6 Claims**



1. A portable reeling apparatus for winding elongated material upon a plurality of take-up elements mounted in side by side relationship, each element being rotatable about a horizontal axis in a substantially vertical plane parallel to the planes of rotation of the other elements, comprising:
a base for supporting the take-up elements;
means for rotating said take-up elements;
elongated guide means mounted on said base spaced from and parallel to the axis of each of said elements;
a bull wheel unit for receiving and advancing the elongated material toward a selected one of the take-up elements;
means for slidably mounting said bull wheel unit for rectilinear movement on said guide means; and
drive means operable to position said bull wheel unit at desired positions along said guide means and to produce reciprocating movement of the bull wheel unit along the guide means relative to any selected one of said take-up elements for level winding the elongated material onto the selected one of said take-up elements as the elongated material is pulled by the bull wheel unit and the take-up element is rotated to store the elongated material.

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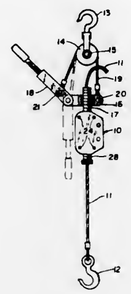
**3,934,855**

## WIRE ROPE BINDER

**William W. Patterson, III, and Eugene F. Grapes, both of c/o W. W. Patterson Company, 830 Brocket St., Pittsburgh, Pa. 15233**

**Filed Sept. 24, 1973, Ser. No. 399,826**
**Int. Cl.² B66D *1/00***
**U.S. Cl. 254—135 R** **6 Claims**

1. A cable fastening apparatus comprising a cable of given length, a clamp means adjustably positioned on said cable intermediate its ends, fastening means on one end of said cable spaced from said clamp means, said clamp engaging the cable on movement of the cable in the direction of said one end and releasing the rope on movement of the cable in the opposite direction, a base member on the side of the clamp opposite said fastening means, and anchoring means on the clamp coaxial with the cable and on the end opposite said one end of said cable, said anchoring means rigidly securing said clamp to said base member during normal operation, said base member further being adjustably secured to said anchoring



means to permit the distance between the base member and the clamp to be varied in discrete increments.

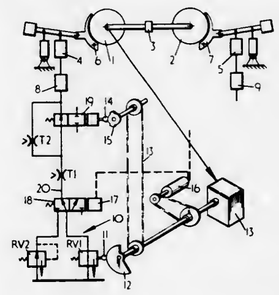
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**3,934,856**

## MINE HOISTS

**Bernard Elliott Shaw, Paisley, Scotland, assignor to Fullerton, Hodgart & Barclay Ltd., Paisley, Scotland**

**Filed June 14, 1974, Ser. No. 479,505**
**Claims priority, application United Kingdom, June 14, 1973, 28418/73**
**Int. Cl.² B66D *1/26***
**U.S. Cl. 254—184** **7 Claims**



1. In a mine winder of the type having two load-carrying cables wound in opposite directions around respective drums incorporating for each cable and its associated cable-supporting drum a braking mechanism, said braking mechanism comprising motion-sensitive means for sensing the immediate operating conditions of the cable, said motion-sensitive means incorporating one element the position of which is variable according to the amount of cable paid out from the drum and a second element arranged to occupy one of two possible extreme positions, one of which corresponds with most of the cable paid out or most of the cable reeled in and the other of which corresponds with positions of the cable between these extreme positions, the positions of these two elements constituting mechanical signals, and a cable movement detector arranged to sense whether the cable is moving above or below a predetermined minimum speed and if it is moving above said minimum speed in which direction and to generate a corresponding signal, pressure operated braking means for controlling the rate of movement of the cable, brake control means including air pressure control means operative to provide at least two separate supplies of air at different pressures and means for varying the pressure of the supply at the higher pressure between a minimum and a maximum value, said last mentioned means being arranged to receive a signal from said

one element and to act according to the signal received to vary the air supply pressure, a changeover valve connected to the air pressure control means and having operating means arranged to receive a signal from the cable movement detector and thereupon connect an output from the valve to either of said supplies of air according to the signal received, two air flow restricting devices connected between the outlet of the changeover valve and the braking means and arranged to provide individually different time delays in the build-up of pressure across the devices, and a time delay selecting device having operating means arranged to receive a signal from said second element and to act according to the signal received to render effective the appropriate air flow restricting device.

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**3,934,857**

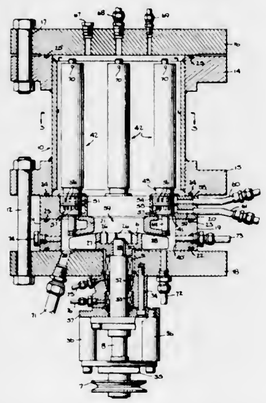
## MIXING AND HEAT TRANSFER APPARATUS

**Douglas W. Hege, Woodland Hills, Calif., assignor to Hege Advanced Systems Corporation, Huntington Beach, Calif.**

**Filed Nov. 16, 1973, Ser. No. 416,520**

**Int. Cl.² B01F** *5/16, 15/06*

**U.S. Cl. 259—8** **10 Claims**



**7.** A reactor for high energy mixing of a liquid and at least one other material while simultaneously transferring heat to or from the liquid mixture, the reactor comprising:

a closed vessel having an upper chamber, means for introducing the materials to

be mixed into the upper chamber, a lower chamber,

a short passageway, centrally located within the vessel, leading from the upper chamber to the lower chamber for conducting the materials to be mixed from the upper chamber into the lower chamber,

a plurality of elongated thin-walled conduits leading from inlets in the lower chamber that are radially spaced from the central passageway to outlets in the upper chamber for returning the mixture of materials to the upper chamber, each elongated conduit comprising

a first inner portion of annular cross section having a thin outer wall,

a second outer portion of annular cross section having a thin inner wall, the second portion coaxially surrounding the first portion with the thin inner wall of the second portion being spaced radially from the thin outer wall of the first portion; the passages for the heat exchanging fluid extending between the thin outer wall of the first portion and the thin inner wall of the second portion, and

a plurality of elongated passages extending along the length of each of the elongated conduits in circumferentially spaced relation on the other side of the thin wall from the flowing mixture of materials for conducting a heat exchanging fluid having a temperature different from the temperature of the mixture of materials flowing through the conduits, whereby heat transfer occurs between the heat exchanging fluid and the liquid flowing through the first portion across the thin outer wall of the first portion and between the heat exchanging fluid and the liquid mixture flowing through the second portion across the thin inner wall of the second portion;

a centrifugal impeller mounted in the lower chamber for rotation about an axis coincident with the axis of the central passageway, the impeller having a plurality of blades extending outward from an open eye at the center of the impeller to the outer circumference of the impeller; and

drive means for rotating the impeller about its axis, whereby the materials to be mixed are drawn from the upper chamber through the central passageway into the eye of the impeller, then are impelled outward between the rotating blades which impart kinetic energy to the mixture as it flows through the impeller, and finally are returned through the plurality of elongated conduits to the upper chamber, there being sufficient clearance between the upper face of the impeller and the wall of the lower chamber in the region between the central passageway and the plurality of radially spaced inlets of the elongated conduits to permit rotation of the impeller while preventing any significant recirculation of the mixture directly from the high pressure region at the outer circumference of the impeller to the low pressure region at the eye of the impeller.

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**3,934,858**

## METHOD AND APPARATUS FOR MIXING FOUNDRY MATERIALS

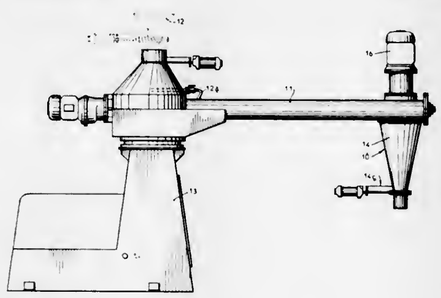
**Raymond Arthur Parsonage, West Bromwich, and Harold Higgs, Wolverhampton, both of England, assignors to Fordath, Limited, West Bromwich, England**

**Filed Dec. 17, 1973, Ser. No. 425,231**

**Claims priority, application United Kingdom, Apr. 24, 1973, 19442/73**

**Int. Cl.² B01F** *7/24*

**U.S. Cl. 259—8** **6 Claims**



**1.** Apparatus for producing a foundry mixture of sand and a rapid setting binder comprising:

means defining a discharge chamber having a foundry mixture discharge aperture at its lower end for discharging said foundry mixture;

means for separately introducing into the upper end of said chamber a sand/binder mixture and a sand/catalyst mixture;

a rotatable shaft extending downwardly and centrally through said chamber;

means for rotating said shaft;

a plurality of deflector blades fixed to said shaft, each such deflector blade being so shaped and positioned as to deflect downwardly flowing materials in an upward direction;

and a plurality of mixer blades fixed on said shaft and shaped and positioned to propel said downwardly flowing materials toward the discharge aperture;



said deflector blades and said mixer blades being arranged in groups comprising at least two mixer blades angularly spaced apart and at least one of said deflector blades;

each said deflector blade in each of said groups being positioned below and angularly between the mixer blades in each said group.

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**3,934,859**

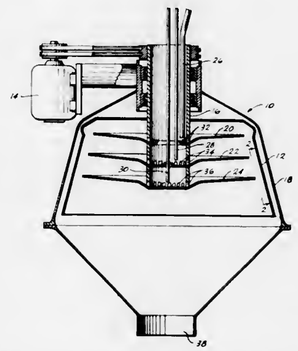
## MIXING APPARATUS

**Vagn Deve, East Washington, Pa., assignor to Combustion Engineering, Inc., Windsor, Conn.**

**Continuation-in-part of Ser. No. 412,233, Nov. 2, 1973, abandoned. This application Apr. 25, 1974, Ser. No. 464,020**

**Int. Cl.² B01F** *7/10*

**U.S. Cl. 259—8** **6 Claims**



**2.** Apparatus for mixing two materials, including an upright vertical housing having a circular cross section, a central shaft positioned within the housing, a first disc secured to the shaft, a second disc secured to the shaft below the first disc, means for rotating the housing and shaft, means for introducing a first material onto the upper surface of the first disc, means for introducing a second material onto the upper surface of the second disc, the inner surface of the housing having a plurality of diamond-shaped protrusions thereon, and outlet means in the lower portion of the housing through which the mixed material can be discharged.

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**3,934,860**

## APPARATUS FOR THE TREATMENT OF MEAT PRODUCTS

**Paul W. Michels, Plasmolen-Mook, and Ben G. Langen, Oeffelt, both of Netherlands, assignors to Homburg B.V., Cuyk, Netherlands**

**Filed Apr. 13, 1973, Ser. No. 350,746**

**Claims priority, application Netherlands, Apr. 13, 1972, 7204990**

**Int. Cl.² B01F** *7/16*

**U.S. Cl. 259—108** **2 Claims**

**1.** Apparatus for the treatment of meat products, comprising:

a rectangular container with rounded edges;

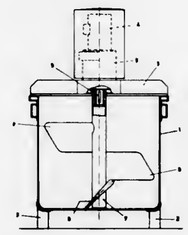
stirring means for subjecting all of the meat chunks retained in said container to a stirring movement, said stirring means comprising:

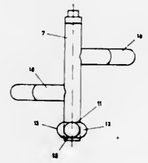
a stirring shaft,

a plurality of stirring blades affixed to said stirring shaft at angular spacings thereabout and at different levels thereon, each of said blades comprising a body which is symmetrical relative to its longitudinal axis and has flat upper and lower surfaces and rounded side walls, said rounded side walls causing horizontal and vertical components of movement of the meat chunks, the horizontal width of the blade perpendicular to its longitudinal axis first increasing, starting from the shaft up to a maximum substantially at half the radial blade length and thereafter decreasing again, and

drive means connected to said stirring shaft for supplying sufficient power to said shaft to impart said horizontal and vertical components of movement to chunks of meat filling said container; and

support means connected to said stirring means for supporting said stirring means such that said stirring shaft and said stirring blades are suspended within said container.





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**3,934,861**

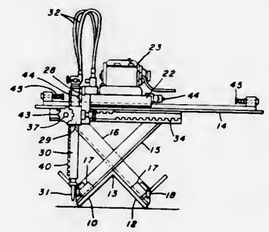
## METHOD AND APPARATUS FOR FLAME-CUTTING ANGLE IRONS

**George A. Rahall, Bellevue Borough, Allegheny County, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.**

**Filed Jan. 9, 1975, Ser. No. 539,668**

**Int. Cl.² B23K** *7/10*

**U.S. Cl. 266—23 R** **8 Claims**

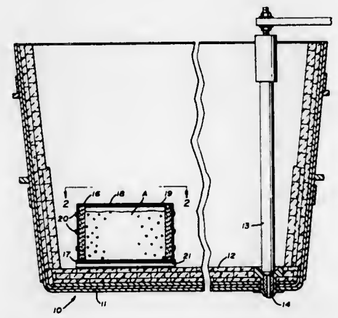


**1.** An apparatus for flame-cutting segments from an angle iron workpiece which has two legs and a corner where the legs intersect and is positioned with the corner facing upwardly, said apparatus comprising:

a frame adapted to be positioned over the workpiece;
a carriage mounted on said frame for horizontal movement therealong;
a torch mounted on said carriage for vertical movement with respect thereto and having a cutting tip at its lower end;
drive means on said carriage for moving said carriage and said torch horizontally across the workpiece; and
pinion means on said carriage operatively connected with said frame and said torch for moving said torch upwardly with respect to said carriage while said carriage and torch move horizontally across the first of the legs of the workpiece and downwardly with respect to said carriage while said carriage and torch move horizontally across the second of the legs of the workpiece;
said pinion means constraining said tip to move in a straight line at a constant angle with respect to the workpiece and at a constant distance therefrom, and at a constant speed as long as the carriage speed is constant.

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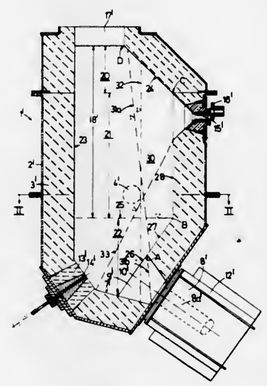
**3,934,862**
**DEVICE FOR SUPPLYING A TREATING AGENT TO MOLTEN METAL IN A LADLE**
**Micheal Donald LaBate, 115 Hazen Ave., Ellwood City, Pa. 16117**
**Continuation-in-part of Ser. No. 347,556, April 12, 1973, abandoned. This application June 13, 1974, Ser. No. 480,141**
**Int. Cl.² C21C** *7/00*
**U.S. Cl. 266—34 T** **5 Claims**



1. A refractory lined apertured ladle for making additions to molten metal, said ladle including a refractory lined apertured bottom and an upstanding, refractory lined side wall peripherally of the bottom, means closing the aperture in the bottom, and a hollow, heat consumable-disintegratable container supported in the ladle and having an addition agent confined therewithin, said container comprising a body having top and bottom open ends and made of a mixture comprising about 132 lbs. of a material selected from the group consisting essentially of limestone and dolomite, about 16 lbs. of a material selected from the group consisting essentially of wood chips, wood flour, and rice hulls, and from 4 lbs. to 10 lbs. of a hydrocarbon resin binder and a catalyst for the binder, a preselected portion of the resin binder and catalyst and the material selected from the group consisting essentially of wood chips, wood flour, and rice hulls comprising a combustible material to provide for the comsumption of the container at a predetermined rate to prevent boiling and agitation of the molten metal and thus to insure proper timed release of the addition agent into the molten metal, closure means closing the top and bottom ends of the body, and spacer means on the bottom of the container supporting the container in the ladle in predetermined spaced relation from the bottom of the ladle for proper positioning of the addition agent in the molten metal in the ladle, said spacer means having a weight sufficient to hold the container submerged in the molten metal and defining means for freezing of the container to the ladle bottom.

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**3,934,863**
**APPARATUS FOR REFINING MOLTEN METAL AND MOLTEN METAL REFINING PROCESS**
**Lars-Gunnar Norberg, Hagfors, Sweden, assignor to Uddeholms Aktiebolag, Hagfors, Sweden**
**Filed Mar. 11, 1974, Ser. No. 450,232**
**Int. Cl.² C21C** *5/46*
**U.S. Cl. 266—35** **11 Claims**

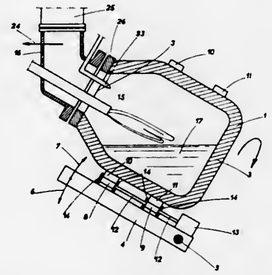


1. Apparatus for treating a molten metal with a gas/solid suspension or other fluid comprising a refractory lined converter for holding the molten metal, the converter being tiltable about a horizontal axle bar and having:
(1) A front-wall, a back wall and a sloping bottom defining a lower converting zone, the front wall and back wall being on opposite sides of a plane containing the axle bar which is a vertical plane when the converter is in its vertical operating position, the bottom being inclined at an oblique angle to the front wall so that the lower zone tapers towards the point which is the deepest point in the converter when the converter is in its vertical operating position,
(2) A top section, on top of the walls, including a charging port and having a sloping top wall inclined at an oblique angle to the front wall so that the top section tapers towards the charging port,
(3) At least one heating zone spaced away from the converter, the heating zone having at least one channel in liquid communication with the lower zone, the channel opening into the lower zone at a level that will be below the surface of the molten metal when the converter is in its vertical operating position and essentially in the region of that point in the converter which is the deepest point when the converter is in its vertical operating position and means for heating the contents of the zone by electric induction heating to an extent such that a temperature gradient can be established between the contents of the heating zone and the contents of the lower converting zone,
(4) At least one tuyere for introducing the gas/solid suspension or other fluid, said tuyere opening into the lower converting zone through the bottom or the back wall at a level that will be below the surface of the molten metal when the converter is in its vertical operating position, said tuyere and said heating zone channel being located on the opposite sides of the plane containing the axle bar which is a vertical plane when the converter is in its vertical operating position,
(5) A tap-hole in the front wall,
the converter being dimensioned such that when the converter is in a substantially horizontal tapping position, the volume of the basin bounded by the sloping top wall, the front wall and the sloping bottom is at least equal to the volume of the lower converting zone.



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**3,934,864**
**PROCESS AND INSTALLATION FOR REDUCTIVE MELTING OF IRON SCRAP, POWDER OR SPONGE**
**Jean Georges Marie Morlet, Paris, France, assignor to Creusot-Loire, Paris, France**
**Division of Ser. No. 885,623, Dec. 16, 1969, abandoned, which is a continuation-in-part of Ser. No. 693,995, Dec. 27, 1967, abandoned. This application Dec. 14, 1971, Ser. No. 208,013**
**Claims priority, application France, Jan. 13, 1967, 67.90994**
**Int. Cl. C21c** *5/32*
**U.S. Cl. 266—36 H** **5 Claims**

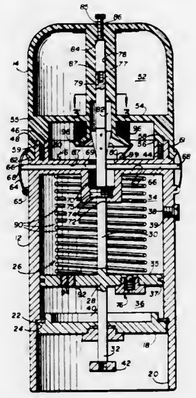


1. A reductive melting installation comprising a converter rotatable about its axis and carried by a tiltable cradle, an opening for said converter, a burner adjacent said opening supplied with fuel directed towards the interior base of said converter, an axial channel in said burner supplying a mixture of fuel and oxygen and at least two injectors adjacent the periphery of said burner for industrially pure oxygen discharging the industrially pure oxygen in front of the base of the burner flame.

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**3,934,865**
**UNDERWATER TIMER AND RELEASE DEVICE**
**Edwin J. Wedrall, 1170 N. Puente St., Brea, Calif. 92611**
**Division of Ser. No. 421,856, Dec. 5, 1973. This application Sept. 9, 1974, Ser. No. 504,338**
**Int. Cl.² F16F** *5/00*
**U.S. Cl. 267—114** **1 Claim**

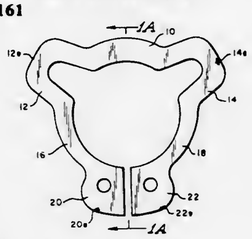
1. A fluid controlled timing device, comprising:
a cylindrical housing having an upper wall and a removable lower end wall, wherein there is defined a compartment:
a slidable piston head disposed within said compartment;
a primary chamber formed between said upper wall and said piston head;
a secondary chamber formed between said lower end wall and said piston head;
a biasing means disposed within said primary chamber, whereby said piston head is biased in the direction of said secondary chamber;
a one-way check valve positioned within said piston head, whereby fluid is allowed to pass from the primary chamber into said secondary chamber;
a fluid-flow-regulating means disposed in said piston, whereby fluid flow from said secondary chamber to said primary chamber is metered therethrough at a predetermined rate for controlled movement of said piston;
wherein said fluid-flow-regulating means comprises a plug disposed in said piston head having a orifice extending therethrough, providing a communicating passage between said primary and secondary chambers, whereby said flow of fluid is predetermined by the size of said passage;
at least one rod attached to said piston head and extending outwardly from said housing; and



a hydraulic fluid is disposed within said cylindrical housing, and wherein said cylindrical housing includes a plug removably received within an opening positioned in said housing.

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**3,934,866**
**SPECIAL-PURPOSE SPRING RETAINING RINGS**
**Omar Piatti, New York, and Wally Berliner, Floral Park, both of N.Y., assignors to Waldes Kohinoor, Inc., Long Island City, N.Y.**
**Filed Oct. 8, 1974, Ser. No. 513,060**
**Int. Cl.² F16F** *1/34*
**U.S. Cl. 267—161** **6 Claims**

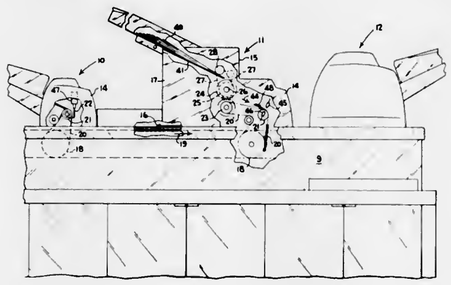


1. A special-purpose spring ring adapted to be sprung into groove provided therefor in a shaft, post, housing bore surface and the like and to function as an artificial shoulder thereon comprising: an open-ended uni-planar ring body provided by circumferentially spaced-apart middle and sidewardly disposed arcuate length-portions having section heights which decrease progressively from the mid-section of said middle arcuate length-portion to the open ends of the ring body which define the ring gap, an upright queen-truss formation interposed between and connecting ends of the opposite ends of said middle arcuate length-portion to the adjacently disposed end of a sidewardly disposed arcuate length-portion, the outer edges of the beams of said truss formations extending along arcs of a circle struck from the ring-body center, the open ends of the ring body having radially outwardly extending end-formations, the outer edges of which are generally arcuate and lie on the same circle as that of the outer edges of the beams of said truss formations.

## 3,934,867
## COLLATING, FOLDING AND INSERTING SYSTEM

**Frank A. Oeschger, Jr., East Norwalk, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.**

**Filed June 3, 1974, Ser. No. 475,435**
**Int. Cl.² B41L *43/00***
**U.S. Cl. 270—32** **9 Claims**



**7.** A document folding and feeding mechanism for a collator and envelope stuffing system, comprising:

a tray carried by a folding and feeding mechanism for supporting a quantity of documents to be folded;

a first feed roller supported by said tray for feeding said documents into said folding and feeding mechanism;

a main drive means operatively supported by said collator and envelope stuffing system;

a first sprocket wheel and chain drive mechanism operatively connected to said main drive means;

a second sprocket wheel and chain drive mechanism operatively connected to said first sprocket wheel and chain drive mechanism;

a first clutch means interposed between said first feed roller and said second sprocket wheel and chain drive mechanism for operatively connecting and disconnecting said frist feed roller to and from said second sprocket wheel and chain drive mechanism;

a first solenoid associated with said first clutch means for actuating said first clutch means in response to a demand feed signal provided by said collector and envelope stuffing system;

a second clutch means interdisposed between said second feed roller and said first sprocket wheel and chain drive mechanism for operatively connecting and disconnecting said second feed roller to and from said first sprocket wheel and chain drive mechanism; and

a second solenoid associated with said second clutch means for de-actuating said second clutch means in response to a demand signal provided by said collator and envelope stuffing system.

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## 3,934,868
## TOP LOADING, CONTINUOUS SUCTION FEEDER ATTACHMENT FOR PRINTING APPARATUS

**Martin Selak, Des Plaines, Ill., assignor to Astro Engineering Corporation, Skokie, Ill.**

**Filed Dec. 7, 1973, Ser. No. 422,877**
**Int. Cl.² B65H *1/28, 3/08, 9/06, 9/10***
**U.S. Cl. 271—9** **11 Claims**

**1.** A top loading, sheet feeding attachment adapted to be coupled to and actuated by the drive means of a utilization device such as a multi-lith offset machine or the like that is capable of a first, normal mode of operation, said attachment being adapted to be left in place on the utilization device when said attachment is not being used without interfering with the first mode of operation of the utilization device, said attachment comprising, in combination:

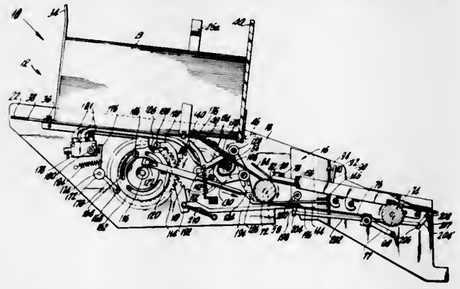
a. a loading section for accepting at least one stack of the sheets to be fed to the utilization device;

b. a transfer section positioned downstream of and contiguously with said loading section, said transfer section including suction means for pulling downwardly the bottom sheet in the stack on said loading section and at least one pair of roller means for receiving the pulled-down sheet therebetween and for advancing the pulled-down sheet in a direction away from said suction means and away from said loading section;

c. conveyor means for receiving the pulled-down sheet from said roller means and for transporting the pulled-down sheet towards the utilization device;

d. aligning means for orienting the sheet on said conveyor means relative to the input of the utilization device, said aligning means including a first, longitudinally extending rail positioned parallel to one longitudinal edge of said belt and a second, laterally adjustable rail parallel to said first rail; and

e. a transmission system including a drive train coupled to said conveyor means and adapted to be coupled to the



drive means of the utilization device, said transmission system further comprising:

1. first actuating means for moving said suction means towards and into engagement with the bottom sheet in the stack and then in a direction away from the bottom of the stack and for moving at least one of said pair of roller means into and out of frictional driving engagement with the sheet therebetween;

2. first timing means for controlling the application of a vacuum to said suction means with respect to the movement of said first actuating means; and

3. second actuating means for operating said aligning means in timed relationship to the movement of said suction means and to the application of vacuum thereto, said second actuating means comprising a reciprocating crank arm driven by a portion of said transmission system, a cam driven by said crank arm in a direction substantially parallel to said second rail and a cam follower positioned so as to be engaged by said cam, said cam follower being secured to said second rail and limited to movement that is perpendicular to the length thereof.

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## 3,934,869
## SHEET SEPARATING AND FEEDING APPARATUS

**Erwin J. Strobel, Jr., Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.**

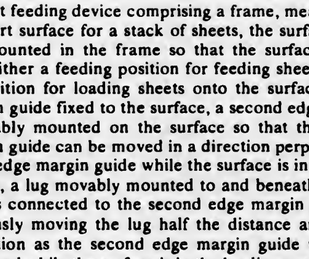
**Filed Dec. 20, 1973, Ser. No. 426,976**
**Int. Cl.² B65H *3/04***
**U.S. Cl. 271—35** **8 Claims**

**1.** An apparatus for feeding and separating individual sheets from a stack of sheets including:

a first feed roll mounted on a stationary axis adjacent the forward edge of the stack for separating sheets from the stack under normal operating conditions;

a second feed roll mounted on a second axis adjacent said first feed roll, said second axis being movable toward and away from the stack to move said second feed roll toward and away from the stack;

friction surface means associated with said first roll and said second roll, movement of said second roll toward the



stack causing an increase in the friction surface area contacting the stack; and,

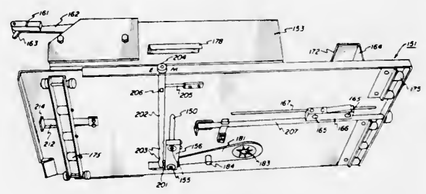
means for automatically moving said second roll toward said stack when a non-feed condition is encountered during a sheet feed cycle.

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## 3,934,870
## SHEET FEEDING DEVICES

**Laurence G. Miller, Drybrook, and Vernon J. Smith, Tewkesbury, both of England, assignors to Rank Xerox Ltd., London, England**

**Filed Nov. 19, 1973, Ser. No. 417,022**
**Claims priority, application United Kingdom, Dec. 1, 1972, 55724/72**
**Int. Cl.² B65H *1/04***
**U.S. Cl. 271—164** **3 Claims**



**1.** A sheet feeding device comprising a frame, means defining a support surface for a stack of sheets, the surface being movably mounted in the frame so that the surface can be moved to either a feeding position for feeding sheets or to a loading position for loading sheets onto the surface, a first edge margin guide fixed to the surface, a second edge margin guide movably mounted on the surface so that the second edge margin guide can be moved in a direction perpendicular to the first edge margin guide while the surface is in the loading position, a lug movably mounted to and beneath the surface, means connected to the second edge margin guide for simultaneously moving the lug half the distance and in the same direction as the second edge margin guide when the latter is moved while the surface is in the loading position, and means mounted on the frame for locating the lug in a fixed position along the direction of movement of the second edge margin guide when the surface is moved to the feeding position so that a line equidistant between the edge margin guides is always located in a given position relative to the frame.

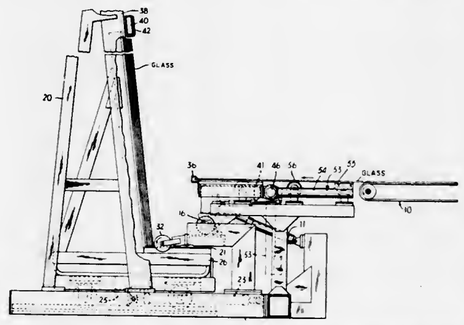




## 3,934,871
## ACCUMULATOR

**George A. Dean, Kansas City, Mo., assignor to Dean Research Corporation, Kansas City, Mo.**

**Continuation-in-part of Ser. No. 145,684, May 21, 1971, abandoned. This application May 7, 1973, Ser. No. 357,630**
**Int. Cl.² B65H *29/44, 31/06***
**U.S. Cl. 271—184** **26 Claims**



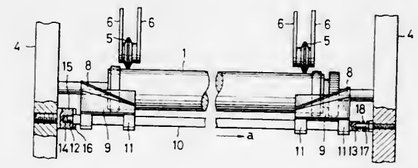
**1.** A sheet material accumulator comprising: a tiltable table movable from horizontal position towards vertical and on which the sheet material is normally carried in a horizontal position, said tiltable table having a lip thereon for retaining sheet material on said table during tilting thereof, said lip comprising a stop located at the end of the table and a return on said stop, said return being spaced from the table a distance sufficient to permit the edge of the sheet to slide between the table and return, means for tilting said table to move said sheet material towards vertical position; means for removing said sheet material from said table after said table has moved a selected distance toward vertical position; means for receiving said sheet material and means for reducing contact shock when said sheet material is placed on said receiving means.

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## 3,934,872
## PRINTED SHEET GUIDE MECHANISM IN OFFSET PRINTING PRESS

**Yoshinori Honkawa, Hiroshima, Japan, assignor to Ryobi, Ltd., Hiroshima, Japan**

**Filed Oct. 2, 1974, Ser. No. 511,367**
**Claims priority, application Japan, Oct. 3, 1973, 48-115298**
**Int. Cl.² B65H *29/70***
**U.S. Cl. 271—188** **5 Claims**



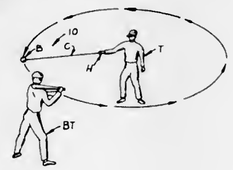
**5.** A printed sheet guide mechanism in an offset printing press having a delivery roller assembly and a pair of guide members each of which has formed integral therewith a slanted guide flap adapted to bend each edge of the printed sheet along its travelling direction to give stiffness to the sheet, said guide members being adjustably positionable along an axis parallel to the axis of said delivery roller, each of said guide members being made from a plate-like member and including:

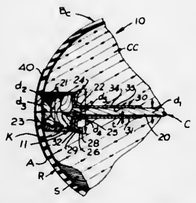
a horizontal portion;

a vertical portion erected from the rear end of said horizontal portion;
a sloping portion slanting downwardly from the top end of said vertical portion at an inclination corresponding to the angle at which the printed sheets are delivered; and
a guide flap raised up with a slant from the inner side of the front end to the outer side of the rear end of said sloping portion.

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**3,934,873**
**BASEBALL BATTING AID**
**Billy J. Griffin, 3961 Scott Drive, Forest Park, Ga. 30050**
**Filed Apr. 29, 1974, Ser. No. 465,117**
**Int. Cl.² A63D *15/10***
**U.S. Cl. 273—26 E** **5 Claims**



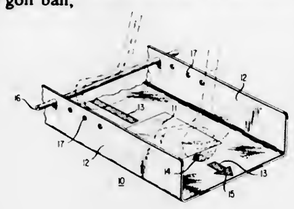




1. A baseball batting aid comprising:
a ball having a diametrically extending hole therethrough, one end of said hole having a counterbore of a prescribed depth communicating with the exterior of said ball, said ball having a shoulder between said hole and said counterbore;
a cord extending through said hole and into said counterbore, said cord having a knot thereon within said counterbore, said knot having a larger dimension than the diameter of said hole;
a sleeve member comprising a tubular section positioned within said hole around said cord, and an annular head flange integral with that end of said tubular section at said counterbore, said head flange extending over said shoulder and positioned between said knot and said shoulder within said counterbore; and,
an annular support member received around said tubular section of said sleeve member and juxtaposed between said head flange of said sleeve member and said shoulder, said support member having an outside diameter larger than the diameter of said counterbore and said ball being resilient about said counterbore so that said counterbore is expanded as said support member is pulled into said counterbore and then contracts as said support member is seated against said shoulder to lock said support member within said counterbore.

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**3,934,874**
**GOLF PUTTING AID**
**Frank D. Henderson, 32 Rolling Hill Drive, Chatham, N.J. 07928**
**Filed Apr. 7, 1975, Ser. No. 565,636**
**Int. Cl.² A63B *69/36***
**U.S. Cl. 273—35 A** **4 Claims**

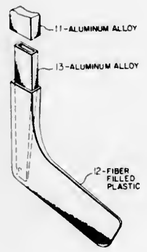
2. A golf putting aid comprising;
a rectangular longitudinal member of substantially non-reflective material;
said member having a pair of longitudinal sidewalls;
a dimple on the longitudinal axis of said member for receiving a golf ball;




a centrally located reflective area adjacent to said dimple;
a visible longitudinal indicia extending for a major portion of the length of said channel and equidistant from said sidewalls, and;
a movable rod member mounted in said sidewalls transverse the longitudinal axis of said longitudinal member.

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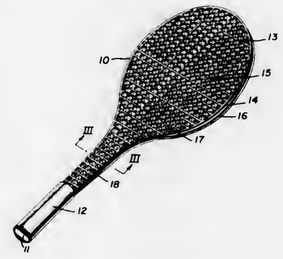
**3,934,875**
**HOCKEY STICK**
**James Leland Easton, 15141 Mulholland Drive, Los Angeles, Calif. 90024, and Gary William Filice, 19544 Wells Drive, Tarzana, Calif. 91356**
**Filed Feb. 14, 1974, Ser. No. 442,640**
**Int. Cl.² A63B *59/12***
**U.S. Cl. 273—67 A** **5 Claims**




1. A hockey stick comprising a shaft, a blade and a shank interconnecting the shaft and the blade;
the shaft being formed of a metal tube having a rectangular cross-section;
the shank being formed of a metal tube having a rectangular cross-section with an upper portion adapted to mate removeably with the lower end of the shaft and a lower portion adapted to be affixed permanently to a molded plastic blade, the lower portion being tapered in at least one dimension from the upper portion to a smaller section at its lower ends and having at least one blade retaining recess in its surface, said recess being tapered from a relatively wide cross-section toward the shaft end to a narrower cross-section toward the blade end of the shank;
the shaft and the shank being joined in a four-plane bonded lap joint with the lower end of the shaft receiving and lapping the exterior of the upper portion of the shank;
the blade being formed of fiber reinforced plastic and molded permanently to the lower portion of the metal shank and substantially filling the blade retaining recess, with the lower end of the shank extending substantially to the heel portion of the blade.



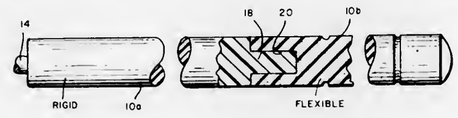
**3,934,876**
**GAME RACKET**
**Daniel G. Haddad, Worcester, Mass., assignor to Norman S. Blodgett, Worcester, Mass.**
**Filed Apr. 15, 1974, Ser. No. 460,737**
**Int. Cl.² A63B *49/02*, *51/02***
**U.S. Cl. 273—73 C** **8 Claims**




1. A game racket, comprising: a rigid, one-piece, homogenous frame having a curvilinear head portion, an intermediate throat and shank portion, and a handle portion integral with said head portion; said head, throat, shank, and handle portions having a solid cross-section; at least said head, throat and shank portions consisting of an entirely open-celled network of a plurality of interconnected plates traversing the entire area thereof and forming a honeycomb-like matrix; each of said plates having walls which are perpendicular to the plane of said racket and constituting the width dimension thereof; each of said plates having planar upper and lower surfaces parallel to the central plane of said racket, said planar surfaces being exposed at least at said head, throat and shank portions and constituting two ball contact surfaces of said head portion, the planar surfaces of each of said plates constituting the length dimension thereof; said width dimension being approximately equal to said length dimension; each plate further having a nonuniform thickness with one location of greatest thickness wherein said greatest thickness is less than each of said width and length dimensions and being oriented parallel to said contact surfaces of said racket; and hand grip means covering said handle portion to provide a gripping surface for the user.

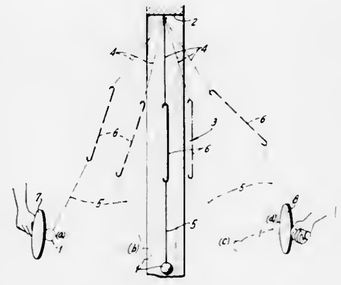
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**3,934,877**
**POLICE DEFENSIVE IMPLEMENT**
**Davis L. White, Placida, Fla., assignor to Monadnock Lifetime Products, Inc., Fitzwilliam, N.H.**
**Filed Dec. 6, 1974, Ser. No. 530,089**
**Int. Cl.² F41B *15/02***
**U.S. Cl. 273—84** **4 Claims**




1. A police weapon, comprising two elongate members of equal length each having a portion which is relatively rigid and another portion which is relatively flexible such that the flexible sections will bend relative to the rigid sections, means connecting the members comprising a flexible cord connected at one end to the rigid portion of one of the elongate members and at the other to the rigid portion of the other of the elongate members so that the flexible portion of one of the elongate members constitutes a handle by means of which the implement is wielded and the flexible portion of the other elongate member constitutes an implement for inflicting a blow.

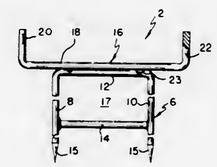
**3,934,878**
**ERRATIC MOVEMENT TETHERED BALL**
**Stephen K. Haber, 240 E. 48th St., New York, N.Y. 10017**
**Filed Aug. 28, 1974, Ser. No. 501,322**
**Int. Cl.² A63B *71/02***
**U.S. Cl. 273—95 A** **4 Claims**




1. A tethered-ball game adapted for playing in a doorway by players equipped with paddles comprising:
a ball between 1 and 2 inches in diameter and weighing between 0.1 and 1 ounces;
at least one flat paddle adapted to be held by at least one player for striking the ball; and
an elongated suspension member for suspending the ball from the center of a doorway at a height convenient for striking the ball with a paddle held by a player standing on one side of the doorway, the suspension member having an upper portion, an intermediate portion, and a lower portion, the upper and lower portions comprising lengths of a flexible filament and the intermediate portion comprising an elongated thin stiff link member having a length of approximately 6–24 inches and weighing less than 1 ounce but more than the combined weight of the ball and the upper and lower filament portions.

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**3,934,879**
**HORSESHOE TARGET POSTS**
**Frank E. Curtiss, 819 E. Erie St., Painesville, Ohio 44077, and Jack E. Curtiss, 5246 Corduroy Road, Mentor, Ohio 44060**
**Division of Ser. No. 143,014, May 13, 1971, abandoned, which is a division of Ser. No. 857,084, Sept. 11, 1969, Pat. No. 3,602,509. This application Mar. 20, 1974, Ser. No. 452,921**
**Int. Cl.² A63B *71/02***
**U.S. Cl. 273—104** **4 Claims**




1. A post member for use in an outdoor field game comprising,
a lower section having at least one closed target area adapted to be inserted into the ground,
an upper section extending from the lower section having a plurality of arm-like projections defining other target areas adapted to receive in scoring registration a throwing object,

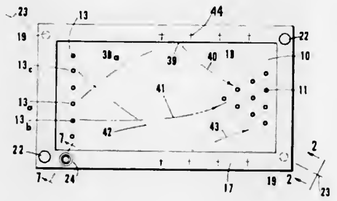
said lower section includes a pair of spaced legs extending generally parallel and outwardly from a bight portion,
said upper section including another pair of spaced legs extending generally parallel and outwardly from said bight portion in a direction opposite to said first mentioned pair of legs, and
said legs of said upper section are shorter and spaced apart farther than the legs of said lower section.

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**3,934,880**
**PLAYING SURFACE STRUCTURE FOR SPINNING TOP PIN GAMES**

**Lajos George Laszlo, 189 Newton Drive, Willowdale, Ontario, Canada**

**Filed Nov. 18, 1974, Ser. No. 524,487**
**Int. Cl.² A63F 9/16**
**U.S. Cl. 273—108** **3 Claims**



1. A playing surface structure for a spinning top pin game, the combination therewith of: rebound walls defining a rectangular perimeter for the playing surface, the latter being in the form of a flat sheet of rigid material the upper surface of which constitutes a playing surface having indicia thereon to define locations at which pins may be set up thereon; means fastening the playing surface member to said rebound wall members; a leg of fixed predetermined length at each corner of one pair of opposed diagonal corners of the rectangular playing surface and extending below said playing surface member to support the latter diagonally about the bottom ends of said legs; a level indicating device supported in one of said wall members at a predetermined gradient relative to the plane of the playing surface, the direction of said gradient being substantially at right angles to the diagonal between one pair of opposed corners; and an adjustable leg at each of the other corners of said side wall members extending therebelow for adjustment of the gradient of the playing surface to a predetermined value at which the levelling device indicates a level condition for said device.

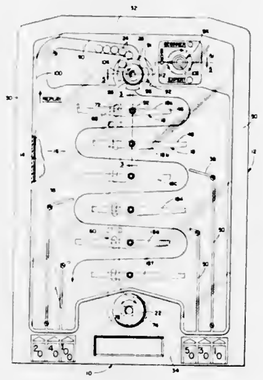
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**3,934,881**
**MANIPULATIVE SKILL GAME APPARATUS HAVING TILTABLE PLATFORMS AND AUTOMATIC FEEDER MECHANISM**

**Adolph E. Goldfarb, 4614 Monarca Drive, Tarzana, Calif. 91356, and Erwin Benkoe, 17965 Medley Drive, Encino, Calif. 91316**

**Filed Feb. 10, 1975, Ser. No. 548,398**
**Int. Cl.² A63F 7/02**
**U.S. Cl. 273—110** **8 Claims**

1. Manipulative skill game apparatus comprising
a. a generally upright board having a front face,
b. a means on said board defining series of generally horizontally disposed platforms arranged generally below one another at said board front face, each of said platforms being tiltable about a generally horizontal axis extending forwardly from the front face of said board,
c. means attached to said board defining an enclosure around the said platforms and being at least partially transparent,
d. a plurality of balls within said enclosure
e. control means coupled to said platforms, and accessible from outside of said enclosure for tilting said platforms to effect movement of balls from a successively higher platform to a lower platform,



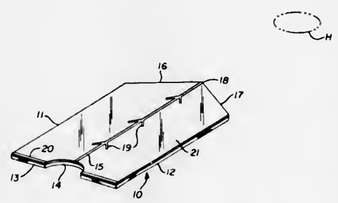
f. discharge means located in said enclosure above said platforms for automatically delivering the balls to the platforms at timed intervals, so that there will be more than one ball on the platforms unless the player completes the play sequence of each ball within its time interval.

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**3,934,882**
**GOLF GUIDE**

**Richard E. Whittaker, 302 S. Croton Ave., New Castle, Pa. 16103**

**Filed Dec. 11, 1974, Ser. No. 531,794**
**Int. Cl.² A63B 69/36**
**U.S. Cl. 273—183 A** **8 Claims**



1. A golf guide consisting of a thin, flat member having spaced parallel sides and one end formed at a right angle with respect to said sides and notched on the axial center line of the member, the other end of the member being pointed with the apex of the point lying on said axial center line, a stripe on said member indicating said axial center line and extending between said notch and said apex of said pointed end.

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**3,934,883**
**DISK RECORD PLAYER**

**Robert L. Chambers, 2148 NW. 48th St., Miami, Fla. 33142**

**Filed Jan. 10, 1974, Ser. No. 432,190**
**Int. Cl.² G11B 15/00**
**U.S. Cl. 274—9 B** **2 Claims**

1. A disc record support and drive device comprising:



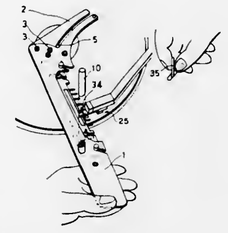
a housing;
at least three rollers coupled to said housing and disposed in a common plane an equal radial distance from a predetermined point within said housing to the edge of said rollers, one of said rollers being pivotally moveable relative to said housing and said predetermined point;
means connected to one of said rollers and said housing for rotating said roller;
a phonograph cartridge;
cartridge support means coupled to said housing and said cartridge, said cartridge radially moveable along said cartridge support means; and
linkage means connecting said pivotally mounted roller and said cartridge for lifting said cartridge whenever said roller is pivoted, whereby a disc record inserted in the plane of said rollers to engage said rollers will move said pivotal roller lifting the cartridge mechanism above the surface of the record.

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**3,934,884**
**PRECISION PIECE SELECTOR ON GRAMAPHONE RECORD**

**Kosuke Matsukata, 390 Tsurumi-cho, Tsurumi, Yokohama, Kanagawa, Japan**

**Filed June 7, 1974, Ser. No. 477,504**
**Claims priority, application Japan, June 8, 1973, 48-63859**
**Int. Cl.² G11B 3/00**
**U.S. Cl. 274—9 RA** **4 Claims**



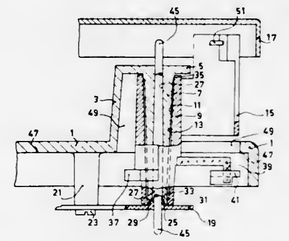
1. An apparatus for precisely locating a selection on a phonograph record which has boundary zone grooves between the selections on the record and which is to be played on a record player having a rotating turntable, a spindle in the center of the turntable for centering and holding the record on the turntable, and a tone arm pivoted on an axis having a cartridge with a playing stylus secured thereto which may be manually positioned on the record on the turntable, said apparatus comprising:
piece selector means radially extending above and across the surface of the record player for slidably fitting around the spindle on the turntable, said piece selector means comprised of:
a flat positioning bar having a straight portion and a portion angled from the straight portion, the angled portion having a groove therein removably and slidably fitted around the spindle on the turntable, and the straight portion radially extending above and across the record and having a cut out portion in the side thereof facing against the rotational direction of the turntable and two parallel angled slots, one slot on each side of the cut out;
radial indication means removably connected to the said piece selector means between said piece selector means and the turntable for indicating the position of the boundary zones between the selections of the record when said piece selector means is fitted about the spindle, said radial indication means comprised of:
a radial adjustment plate beneath said positioning bar having a cut out in the side thereof opposing the rotation of the turntable and having two parallel slots perpendicular to the edge of the bar, one slot on each side of the cut out;
two bolts attached to said radial adjustment plate and fitted into the parallel angled slots of said positioning bar, whereby said radial adjustment plate is attached beneath said positioning bar;
a bottom plate below the radial adjustment bar having a groove therein running the length of the plate;
a needle setter rod removably fitted into the groove in said bottom plate;
boundary zone pins perpendicularly attached to the top of the needle setter rod at positions corresponding to the boundary zones on the phonograph record;
a top plate between said bottom plate and needle setter rod and the radial adjustment plate; and
two bolts removably fitted through said base plate, said top plate, and the two parallel slots in the radial adjustment plate, whereby the top plate, the bottom plate, and the needle setter rod thereinbetween are operatively connected to said positioning bar; and
cartridge guide means fitted to the tone arm for guiding the cartridge and the tone arm into the desired position in said radial indication means and for supporting the cartridge and tone arm thereon, said cartridge guide means comprised of:
a cartridge plate attached between the tone-arm, and
a supplemental cartridge plate fastened to and beneath said cartridge plate toward the free end of the tone-arm for positionig adjacent the boundary zone pin indicating the desired location on the record.

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**3,934,885**
**BEARING OF A PICK-UP ARM FOR A RECORD PLAYER**

**Gerhard Freiter, Berlin, Germany, assignor to U.S. Philips Corporation, New York, N.Y.**

**Filed Sept. 18, 1973, Ser. No. 398,494**
**Claims priority, application Germany, Sept. 27, 1972, 2247446**
**Int. Cl.² G11B 3/10**
**U.S. Cl. 274—23 R** **8 Claims**

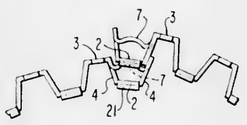


1. A pick-up arm bearing assembly for a record player with a cover plate, comprising a cover plate having first, second and third portions, said first portion being raised above said second portion, said third portion connecting between said first and second portions, said second portion having an opening therethrough below said first portion, a part of said opening extending beyond said first portion; a bearing column having a vertical axis, said column mounted below said first portion of the cover plate and extending downward, said cover opening part being in spaced relationship with said bearing column axis; a bearing body fitted coaxially over said bearing column to permit rotation about the axis of said column; a retaining member; means for mounting said retaining member under said cover plate so as to retain said body on said column; and bearing block means for attaching a pick-up arm for pivotal motion about a horizontal axis, comprising a lower portion disposed below the cover plate and connected to said bearing body and an upper portion having a cross-section in a horizontal plane smaller than said part of said opening and in spaced relationship with said axis corresponding to said

spaced relationship, said upper portion projecting upward above said part of said opening in the cover plate, said upper portion comprising means for pivotally mounting a pick-up arm about a horizontal axis, whereby said bearing body, bearing block means and retainer can be assembled to the record player from below the cover plate.

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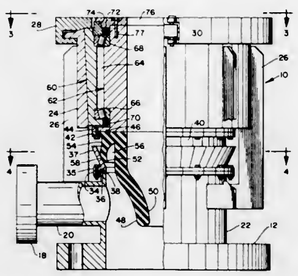
**3,934,886**
**CORRUGATED RADIAL SPACER EXPANDER FOR COMPOUND OIL SCRAPING RINGS**
**Syoji Okada, Ohmiya, Japan, assignor to Nippon Piston Ring Co., Ltd., Tokyo, Japan**
**Filed Sept. 11, 1974, Ser. No. 505,190**
**Claims priority, application Japan, Sept. 11, 1973, 48-101672**
**Int. Cl.² F16J** *9/06*
**U.S. Cl. 277—2** **5 Claims**



1. In a corrugated radial spacer expander adapted for use in combination with side rails to form a compound oil scraper ring, said expander being annular in shape and severed to present two opposing ends and having a circumferential corrugation consisting of successively alternating valleys and crests connected by intermediate flanks, the improvement comprising: protrusions in the form of partially struck out integral strips of said expander longitudinally briding neighboring flanks over the bottom of adjacent valleys at respective opposing ends, said strips including integral portions which are laterally offset when said strips overlie each other which prevent the valley adjacent one end of said expander from being received within the valley adjacent the other end, when said ends are overlapped one on the other.

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**3,934,887**
**ROTARY DRILLING HEAD ASSEMBLY**
**Morris S. Biffle, Midland, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.**
**Filed Jan. 30, 1975, Ser. No. 545,507**
**Int. Cl.² F16D** *3/06*; **F16J** *15/16*
**U.S. Cl. 277—31** **15 Claims**

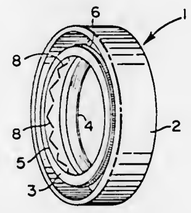


1. In a rotary drilling head assembly for wellbore forming operations having a main body for connection to the upper end portion of a wellbore casing and formed into an upper and a lower stationary housing, a central axial bore formed through said upper and lower housings for receiving a toolstring therethrough, a rotating bowl rotatably journaled to the upper housing, a stripper seal means concentrically affixed to the rotating bowl for jointly rotating with and sealingly engaging a toolstring placed therethrough; and an outlet pipe connected to the lower housing in flow relationship to the axial bore; the improvement comprising:

a circumferentially extending annular seal seat formed on said lower housing at a location spaced above the inlet to said outlet pipe; a circular rotating fluid seal means mounted to be rotated concurrently with said stripper seal means and sealingly engaging said annular seal seat.

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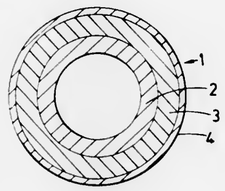
**3,934,888**
**BI-DIRECTIONAL ROTARY SHAFT SEAL**
**Walter A. Lutz, Lexington, Ky., assignor to Parker-Hannifin Corporation, Cleveland, Ohio**
**Continuation of Ser. No. 863,587, Oct. 3, 1969, abandoned. This application Mar. 13, 1974, Ser. No. 450,553**
**Int. Cl. F16j** *15/32*
**U.S. Cl. 277—134** **7 Claims**



1. A bi-directional seal for a rotatable shaft, said seal including a member molded of resilient material which in its initially molded, unused and undeformed condition has an annular sealing lip of predetermined diameter, a pair of narrow elongated ribs on one side of said lip converging toward said lip, a generally cylindrical surface segment on said ribs at their convergence adjacent said lip and coaxial therewith and lying at approximately the same radius at least as large as that of said lip, said ribs extending angularly in opposite directions from said lip so as to provide a pumping action when said lip and said surface are in contact with said rotating shaft regardless of the direction of rotation of said shaft whereby fluid leaking past said sealing lip is pumped toward the other side of said lip by one or the other of said ribs.

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**3,934,889**
**FIRE SEAL**
**Stanley Smith, Wotton-under-Edge, England, assignor to Rolls-Royce (1971) Limited, London, England**
**Filed Sept. 11, 1974, Ser. No. 504,918**
**Claims priority, application United Kingdom, Sept. 22, 1973, 44560/73**
**Int. Cl.² F16J** *15/00*
**U.S. Cl. 277—226** **6 Claims**

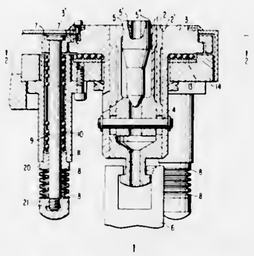


6. A fire seal comprising an inner tube of a silicone elastomer material and which is capable of being pressurized by fluid under pressure, the inner tube being surrounded by an intermediate layer of a resilient fire resistant carbon felt, the intermediate layer in turn being surrounded by a wear resistant sleeve of a reinforced rubber material.



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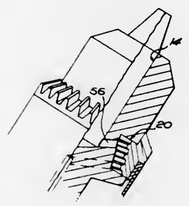
**3,934,890**
**COLLET CHUCK WHICH CAN BE CENTERED RELATIVE TO ONE OR MORE AXES OF THE WORKPIECE TO BE MACHINED AND SUITABLE FOR MACHINE TOOLS**
**Ugo Buzzi, Agno, Switzerland, assignor to Albe S.A., Agno, Switzerland**
**Filed Sept. 25, 1974, Ser. No. 509,224**
**Claims priority, application Switzerland, Oct. 8, 1973, 14332/73; Sept. 7, 1974, 12144/74**
**Int. Cl.² B23B** *31/20*
**U.S. Cl. 279—16** **7 Claims**



1. A collet chuck which can be centred relative to an axis of the workpiece to be machined and suitable for machine tools in general and in particular machine tools having a number of successive positions characterised by an inner prehensile member (1) capable of gripping the workpiece, an intermediate member (2) coaxial to the first with a conical seating which slides axially causing the prehensile member (1) to close on the workpiece to be machined (5); an outer casing (3) rigidly attached to the prehensile member (1) by means of a pin (4), an outer ring (7) fitted with radial play around the periphery of outer casing (3), spring members (8) of variable tension to compress the outer casing (3) and outer ring (7) against each other to lock them together by friction, and pusher means (9) operable axially by a thrust member to unlock said outer casing and said outer ring.

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**3,934,891**
**DRILL CHUCK AND METHOD OF ASSEMBLY**
**George C. Derbyshire, Sheffield, England, assignor to The Jacobs Manufacturing Co., Ltd., Sheffield, England**
**Filed Apr. 9, 1974, Ser. No. 459,382**
**Claims priority, application United Kingdom, Apr. 11, 1973, 17343/73**
**Int. Cl.² B23B** *31/12*
**U.S. Cl. 279—61** **4 Claims**



1. A slidable jaw rotary chuck having a cylindrical body provided with a work receiving bore extending axially and partway into its front end, a group of jaw tracks in the body converging downwardly and forwardly to the axis of said bore, a work gripping jaw slidable in each track, a circumferential groove about the body opening into the tracks into which groove screw threads upon each jaw are exposed, a jaw actuating nut disposed in the groove having internal screw threads connected with the exposed screw threads of the jaws for selectively advancing and retracting the jaws as a set along the tracks to open or closed condition, an external key operable gear unitary with the nut having rotation relative to the body for imparting a selected direction of rotation to the nut, and a sleeve rotatable with and extending rearwardly from the gear covering over the periphery of the body rearwardly of the gear; wherein a port extending radially from the bore through the body opens into the groove to communicate directly with the screw threads of the nut, the bore being adapted to be pressurized through its front end with lubricant for passage of the lubricant through the port to the screw threads of the nut and as a consequence of rotation of the nut passage of the lubricant from the screw threads of the nut to the screw threads of the jaws.

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**3,934,892**
**ICE SKATE**
**Hugh E. Balkie, Chateauguay Center, Canada, assignor to Kenbruidge Holdings Limited, Canada**
**Filed June 20, 1974, Ser. No. 481,338**
**Claims priority, application Canada, May 7, 1974, 199191**
**Int. Cl.² A63C** *1/02*
**U.S. Cl. 280—11.12** **12 Claims**



1. A skate comprising

a. a blade curved throughout its length in a longitudinal plane to define a convex running edge,

b. a pair of wall members having lower edges connected to said blade throughout its length,

c. said wall members extending upwardly from said blade while diverging from each other, and

d. horizontal flanges extending from upper edges of said wall members for securing to a boot sole to form in cross-section a triangular structure therewith at least at front and rear portions of the skate,

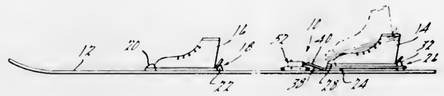
e. wherein said wall members have upturned, vertically extending, lower edge portions abutting side portions of the blade with inturned, horizontally extending edges abutting an upper surface of the blade, said upturned portions and inturned edges, copperating to form an elongated socket having a curvature corresponding to that of said blade, said blade being secured within said socket.

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**3,934,893**
**SLALOM SKI DEVICE**
**Joseph A. Greenleaf, 209 Village Drive, Lansing, Mich. 48910**
**Filed Oct. 4, 1974, Ser. No. 512,065**
**Int. Cl.² A63C** *9/00*
**U.S. Cl. 280—11.35 K** **13 Claims**

1. In a ski device, the combination including a planar sole plate, an elongate toe stem connected to and projecting longitudinally forwardly from said sole plate, a ball fixed to the free end portion of said toe stem, a planar base plate, a support

member comprised of a pair of support elements each connected to said base plate for pivotal movement about an axis normal to the plane of said base plate, said support elements



defining a socket adapted to receive said ball, said ball and socket connecting said toe stem to said support member for limited universal movement relative thereto.

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**3,934,894**

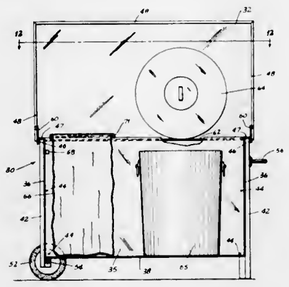
**UTILITY CART AND BAG HOLDER THEREFORE**

**William M. Hoeffken, 301 N. 41st St.; Russell W. Hoeffken, 124 Columbus Drive, and Paul W. Hoeffken, 120 N. 36th St., all of Belleville, Ill. 62223**

**Filed Apr. 25, 1974, Ser. No. 463,992**

**Int. Cl.² B62B *1/14***

**U.S. Cl. 280—47.19** **12 Claims**



**1.** A cart for containing, transporting and storing trash and other bulky materials adapted to selectively use both bag and can containers and to protect the material contained therein from the effects of weather, fire and animals, having means forming an enclosure; means forming an opening into the enclosure, means for selectively opening and closing the opening, the opening and closing means extending downwardly beyond the opening and positioned to deflect water away from the opening; frame means supporting the enclosure; means mounted on the frame means for moving the enclosure; recess means integral with the opening and closing means for storing and supporting a trash can lid; means cooperating with the downwardly extending portion of the opening and closing means limiting the movement of the opening and closing means in a direction away from the opening; support means on the enclosure adjacent to the opening; removable means in the enclosure for selectively using bags and cans in the enclosure, includiing means for selectively holding a bag in an article receiving relationship within the enclosure, the holding means having at least one downwardly extending projection for cooperating with the support means to position the holding means within the enclosure, and means for hanging the holiday means on the support means, the holding means including the hanging means being adapted to support a trash bag in an article receiving relationship within the enclosure with an open end of the bag positioned between the hanging means and the support means.

**3,934,895**

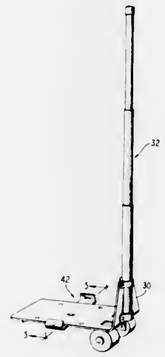
**BOWLING BAG CART**

**George G. Fox, 2692 Craig Drive, Des Plaines, Ill. 60018**

**Filed Nov. 20, 1974, Ser. No. 525,555**

**Int. Cl.³ B62D *1/12***

**U.S. Cl. 280—47.26** **7 Claims**



**1.** A bowling bag cart which includes

a substantially planar support base, said base having an area to at least support a major portion of the bottom area of a bowling bag and not being substantially enlarged relative to said bottom area of the bowling bag,

a forward pair of wheels rotatably mounted to the bottom of said base portion,

a downwardly extending rear rest member in the bottom of the base to support said cart in resting position,

means for holding the bottom of the bag to said base portion,

a front plate at the forward end of the base, the plane of said front plate being substantially normal to the plane of the base portion, and

a retractable handle having a plurality of telescoping tubular portions including a lower and an upper tubular portion, said lower portion being securely fixed to a face of the front plate, the retracted position of said handle not extending beyond at least carrying handles at the top of the bowling bag, and the extended position of the handle allowing hand pulling action to trundle the cart along a support surface.

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**3,934,896**

**STEERING ARRANGEMENT FOR MOTOR VEHICLES**

**Bela Barenyi, Malchingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany**

**Filed Feb. 2, 1973, Ser. No. 329,094**

**Claims priority, application Germany, Feb. 3, 1972, 2205014**

**Int. Cl.² B62D *1/18***

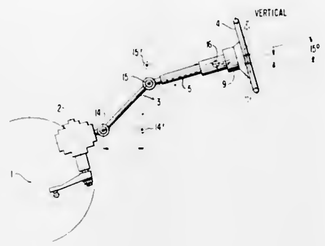
**U.S. Cl. 280—87 R** **25 Claims**

**1.** A steering arrangement for a motor vehicle comprising:

steering column means having a portion which is pivotally mounted within the area of an instrument panel means, said steering column means being inclined in a given direction and having a steering wheel supported at an end thereof,

at least one intermediate member supporting the steering column means within the area of a vehicle front axle, said member having a different inclination than the steering column means, and

means for automatically positioning said steering wheel in a substantially vertical plane in front of an impinging body upon application of rearwardly directed deformation forces in said area of said front axle such that said intermediate member is moved rearwardly and upwardly




wherein said steering column is pivoted to position said steering wheel in said vertical plane to optimize force dissipation of said impinging body on said steering wheel.

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**3,934,897**

**ENERGY ABSORBING STEERING COLUMN FOR VEHICLES, PARTICULARLY MOTOR VEHICLES**

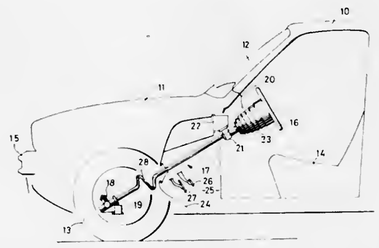
**Jakob Moos, Oestrich, Rheingau, Germany, assignor to General Motors Corporation, Detroit, Mich.**

**Filed Sept. 9, 1974, Ser. No. 504,193**

**Claims priority, application Germany, Sept. 20, 1973, 2347355**

**Int. Cl.² B62D *1/18***

**U.S. Cl. 280—87 R** **4 Claims**



**1.** In a vehicle having dirigible road wheels, a steering column assembly comprising elongated and generally cylindrical steering shaft means, said steering shaft means having upper and lower portions, means operatively connecting said lower portion to said road wheels, manual steering means operatively secured in a predetermined position in said vehicle to one end of said upper portion of said steering shaft means, mounting means secured in said vehicle operatively connected to one of said portions of said steering shaft means for supporting said steering shaft means for limited rotation within said vehicle, said lower portion of said steering shaft means having an energy absorbing helical part integrally formed therewith, said helical part having at least 1 convolution, said convolution having a diameter larger than the diameter of the remainder of said steering shaft means, said helical part being adapted to axially collapse in response to an impact load applied to one end of said steering shaft means to absorb impact energy and so that said one end of said steering shaft means and said manual steering means connected thereto substantially remain in position in said vehicle.



**3,934,898**

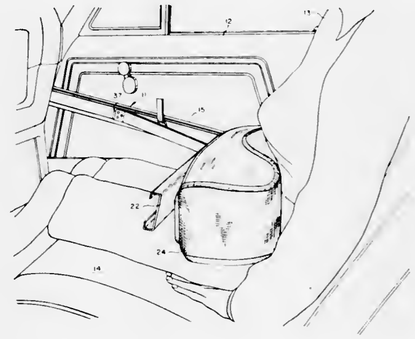
**PASSENGER RESTRAINT DEVICE**

**John C. Long, 90 Broad St., Charleston, S.C. 29401**

**Filed Mar. 10, 1975, Ser. No. 557,092**

**Int. Cl.² B60R *21/10***

**U.S. Cl. 280—150 B** **11 Claims**



**1.** Passenger restraint apparatus for a vehicle having a side door comprising a restraint arm, mounting means on said door pivoting one end of said arm for movement between an inoperative position extending along the door and an angularly related position for restraining a seated passenger, said mounting means being adjustable along the door to conform the restraint to different passenger sizes, means at the door automatically responsive to movement of said arm to said restraint position for releaseably latching said arm in restraint position, and manual means for releasing the latched arm.

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**3,934,899**

**FASTENING ARRANGEMENT OF ONE SHEET-METAL MEMBER PROVIDED WITH A RIM IN ANOTHER SHEET-METAL MEMBER ALSO PROVIDED WITH A RIM**

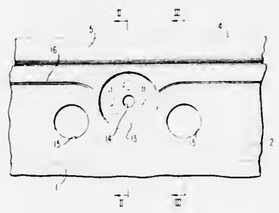
**Gerhard Burk, Magstadt, and Dieter Willem, Sindelfingen, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany**

**Filed Oct. 16, 1974, Ser. No. 515,339**

**Claims priority, application Germany, Oct. 17, 1973, 2352181**

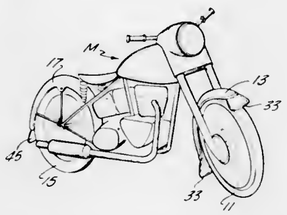
**Int. Cl.² B62B *9/16***

**U.S. Cl. 280—152 R** **26 Claims**



**1.** A fastening arrangement of a sheet metal member provided with rim means at another sheet metal member also provided with rim means, characterized in that embossment means are arranged at the rim means of one of said sheet metal members which keep the two sheet metal members at a distance from one another, the two sheet metal members being fastened together within the area of said embossment means.

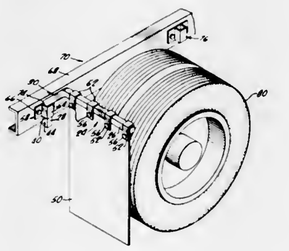
3,934,900
**FENDER AND SPLASH GUARD**
Robert E. Wilson, 3002 Melvin, Rochester, Mich. 48063
Filed Sept. 23, 1974, Ser. No. 508,048
Int. Cl.² B62B 9/16
U.S. Cl. 280—152.3 7 Claims



1. A high strength fender and splash guard combination unit for vehicle wheel and tire assembly, said unit comprises a single piece molded of resilient polypropylene material and including a main arcuate fender portion having a cross section including a central curved section and depending side sections joined to the sides of the curved section to form a relatively sharp angled juncture portion, and an integral splash guard portion extending tangentially from one end of the main arcuate portion, said splash guard portion having a cross section comprising an arcuate generally conforming to the shape of the central curved section of the main fender portion, and attaching means in said arcuate fender portion for mounting said unit on a vehicle.

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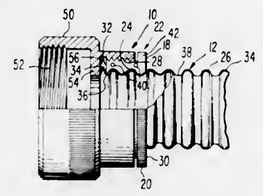
3,934,901
**QUICK RELEASE MUD FLAP HANGER ASSEMBLY FOR TRUCKS AND TRAILERS**
obert C. Hammerly, 2061 Norma Lane, Anaheim, Calif. 92802
Filed Nov. 29, 1974, Ser. No. 528,347
Int. Cl.² B62B 9/16
S. Cl. 280—154.5 R 13 Claims



1. A mud flap hanger assembly for trucks and trailers, comrising:
a. a mud flap,
b. hanger means for supporting said mud flap,
said hanger means including a hanger having a first leg,
a second leg extending substantially perpendicularly thereto, and a resilient portion interconnecting said first and second legs,
said resilient portion including a plurality of coplanar bends, each of said bends being less than about 90°,
c. connecting means for connecting said mud flap to said first leg, and
d. support means, adapted for mounting on the frame of a truck or trailer, for supporting said second leg with said mud flap disposed rearwardly of wheels of said truck or trailer whereby to intercept material rearwardly thrown therefrom.

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3,934,902
**CONNECTOR FOR A CORRUGATED CONDUIT**
James Arthur McNamee, Burlington, Mass., assignor to RCA Corporation, New York, N.Y.
Filed Dec. 18, 1973, Ser. No. 425,735
Int. Cl.² F16L 41/00
U.S. Cl. 285—156 2 Claims



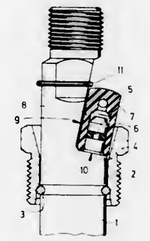
1. In combination:
a first annular member adapted to receive an annular corrugated deformable conduit comprising two identical halves having at least one annular corrugation formed in an internal surface thereof and terminating in an end face intersecting said surface, said end face terminating at and intersecting said one corrugation solely along the crest of said one corrugation so that a portion of said conduit extends beyond said end face when said first member is disposed about said conduit, said first annular member having an external screw thread coaxial with said corrugation and comprising two identical interdigitized helical screw threads arranged to form a single externally threaded member, the screw thread on each half being identical to the screw thread on the other half and interchangeable therewith, and
a second annular member having a surface thereof coextensive with and facing said end face, said second annular member having an internal thread comprising two interdigitized helical threads complementing and arranged to couple with said external helical screw threads, said screw threads being arranged to cause said first and second members to translate said end face toward said facing surface whereby said second member secures said two halves together solely by way of said internal thread, whereby said extending end portion is crushed between said end face and said facing surface thereby firmly securing said conduit to said first and second members, and connector engaging means formed in said second member.

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3,934,903
**FUEL INJECTION NOZZLE ARRANGEMENT**
Karl Hofmann, Aidlingen, and Walter Mladek, Stuttgart, both of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany
Filed Jan. 31, 1974, Ser. No. 438,417
Claims priority, application Germany, Feb. 20, 1973, 2308261
Int. Cl.² F16L 41/00
U.S. Cl. 285—156 11 Claims

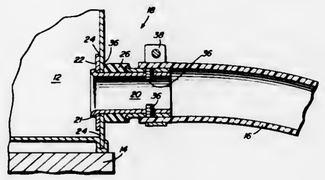
1. A fuel injection nozzle arrangement for internal combustion engines comprising, in combination:
a. a nozzle holder;
b. a hose serving as a fuel supply conduit;
c. a tubular socket connected to and extending outwardly from a surface of said nozzle holder and adjacent to an abutment surface of the nozzle holder;
d. a hose nipple forming connection means between said nozzle holder and said hose, said hose nipple including an affixable portion having a bore within which the tubular socket is received for mounting the hose nipple to the nozzle holder and an outer surface which is at least coextensive with said bore and is substantially parallel to the abutment surface when the hose nipple is mounted to the tubular socket, said hose nipple engaging the abutment surface when mounted to the tubular socket to provide a secure fit of the hose nipple to the nozzle holder;
e. a sealing means positioned between an internal surface of said bore and an opposing surface of said tubular socket; and
f. at least one hose coupling member coupled to said affixable portion.





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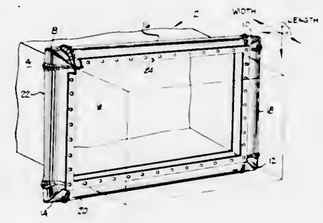
3,934,904
**TRIPLE NIPPLE**
Joseph B. Hord, 312 W. Saunders, Maxton, N.C. 28364
Filed Nov. 5, 1974, Ser. No. 521,235
Int. Cl.² F16L 41/00
U.S. Cl. 285—158 2 Claims



1. In combination, a container having an opening in the peripheral wall thereof, a flexible hose, and a nipple connecting the hose to the container, said nipple comprising an inner cylindrical sleeve extending through the opening and having an outwardly flared inner end disposed interiorly of the container, an annular seal member interposed between the flared end of the inner sleeve and the container in peripherally enclosing relation to the opening for sealing the inner sleeve with respect to the opening, an outer cylindrical sleeve telescoped over the inner sleeve and disposed externally of the container, an elongated gasket of resilient material encircling said inner sleeve and disposed between the outer surface of the wall of the container and the outer sleeve, each of said sleeves having radial screw threaded openings therethrough, set screws threaded through said openings in the sleeves and maintaining the sleeves in predetermined longitudinal relationship, the length of said gasket being normally greater than the distance between the container and the inner end of said outer sleeve when the set screws are positioned through the openings whereby the gasket is maintained in compressed condition in sealed relation to the wall of the container peripherally of the opening, said hose being telescoped over and secured to the outer sleeve.

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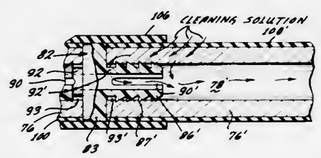
3,934,905
**EXPANSION JOINT**
Donald Fredrick Lockard, Littleton, Colo., assignor to Johns-Manville Corporation, Denver, Colo.
Filed Jan. 7, 1974, Ser. No. 431,192
Int. Cl.² F16L 51/02
U.S. Cl. 285—229 7 Claims



1. A flexible expansion joint for joining the ends of spaced-apart adjacent ducts, which comprises:
a. a tubular connector having a specific configuration which includes: a plurality of corners; a plurality of sides each of which connects two of said corners; and terminal end portions adapted to mate with the facing ends of said ducts; and
b. means comprising a center section and two adjacent expansion sections incorporated in each of said corners with each of said sections extending axially of the connector to permit axial movement of said connector while maintaining a constant surface area of said connector.

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3,934,906
**MEANS FOR COUPLING AND SEALING MEMBRANE CARRYING TUBE SECTIONS**
Frank R. Shippey, Thousand Oaks; Timothy C. Vance, Los Angeles, and Fred E. Martin, Newbury Park, all of Calif., assignors to Raypak, Inc., Westlake Village, Calif.
Filed Feb. 15, 1974, Ser. No. 442,788
Int. Cl.² B01D 29/10
U.S. Cl. 285—371 9 Claims

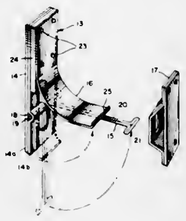



1. A coupling means for coupling together sections of porous tubular cores having axial bores and having a separating membrane coating the surface thereof, the coupling means comprising a connector member having a body part configurated to fit between adjacent ends of core sections, the connector member having nipples extending oppositely from the body part adapted for securement in the ends of the bores of adjacent core sections, the connector member having an axial bore therethrough and said nipples being configurated to seal the joints between the connector member and adjacent ends of core members, each of said nipples having circumferential barbs configurated to provide securement in bores of adjacent core sections, there being spaces between barbs inside the bores, axial slots formed in the material of the nipples to provide axial communication between spaces between barbs whereby cleaning fluid can permeate through a core into the spaces between barbs and can then travel axially to the end of a nipple or the interior of the axial bore.

## 3,934,907
## VEHICLE DOOR LATCH

Daniel A. McGillivray, 1021 Edwards St., Waukegan, Ill. 60085

Filed Aug. 23, 1974, Ser. No. 500,159
Int. Cl.² E05C 19/06, 19/10
U.S. Cl. 292—121 5 Claims



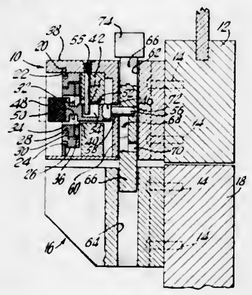
1. A latch assembly including a mounting plate adapted to be affixed to a vertical surface, a normally vertical latch bar having an upper end pivotally attached to the plate for outward swinging movement of the bar in a vertical plane normal to the plate, the bar having an opposite free end adapted to be detachably received in the recess of a keeper, wherein the improvement comprises

a vertically-elongated spring arm having an upper end secured to said plate substantially above the pivotal attachment of said bar to said plate and having a lower end slidably engagable with said bar for yieldably resisting lifting movement of the bar's free end and for retaining said free end within the recess of said keeper, said spring arm being substantially wider than the portion of said bar in slidable engagement therewith and having its free end curved away from said bar, said spring arm in an untensioned state having its lower end spaced outwardly from said bar in the direction of pivotal movement of said bar, whereby, said bar may be grasped and swung outwardly a limited distance of free movement before slidably engaging said spring arm.

## 3,934,908
## LOCK WITH RETAINER

Michael Rifkin, Lyndhurst, N.J., assignor to The Magne-Lok Co., Lyndhurst, N.J.

Filed Aug. 14, 1974, Ser. No. 497,417
Int. Cl.² E05B 65/06; E05C 1/04, 13/02
U.S. Cl. 292—150 2 Claims

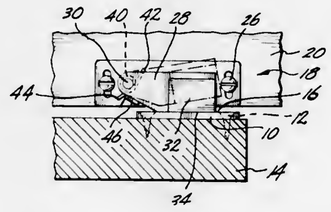


1. A lock assembly comprising a housing, a locking bolt axially movable therein, a lock pin perpendicular to said bolt and longitudinally movable in said housing between locking and unlocking positions, said pin being formed with a lock bore receiving a part of said bolt when said pin is in said locking position thereof, so that when said part of said bolt is in said bore said bolt maintains said pin in said locking position thereof, said pin being longitudinally movable to said unlocking position thereof upon retraction of said part of said bolt from said bore and said pin being formed with a longitudinal groove which extends from said bore and in which said part of said bolt is situated during movement of said pin from said locking to said unlocking position thereof, and limiting means carried by said housing and engaging said bolt for limiting the latter only to axial retraction movement out of said bore to an extent where said part of said bolt remains situated in said groove during movement of said pin from said locking to said unlocking position thereof, said groove having distant from said bore an end which engages said part of said bolt when the latter is retracted to release said pin for movement to said unlocking position thereof, whereby said end of said groove cooperates with said part of said pin for determining the unlocking position of said pin while at the same time preventing removal of said pin from said housing with said limiting means preventing removal of said bolt from said housing, said limiting means including a portion of said bolt formed with a longitudinally extending opening and a limiting pin carried by said housing to remain stationary with respect thereto, said limiting pin extending into said opening and engaging one end of said opening when said bolt is retracted from said bore so that said limiting pin by engaging said one end of said opening maintains said part of said bolt in said groove of said pin.

## 3,934,909
## PUSH RELEASABLE MAGNETIC LATCH

William J. Van Natter, 18414 94th NE., Bothell, Wash. 98011

Filed July 23, 1973, Ser. No. 381,495
Int. Cl. E05c 19/16
U.S. Cl. 292—251.5 12 Claims



1. In a push releasable magnetic latch assembly to latch a movable object to a stationary object, as in latching a door to a stationary structure, said objects being adapted to move relative to one another on a general path of travel toward each other and away from each other into, respectively, latching and unlatching positions, where the latch assembly comprises:

a first latch member mounted to one of said objects and comprising first magnetic means,

a pivotal second latch member comprising an arm member and second magnetic means mounted thereto, said arm member being pivotally mounted to said other object for movement about an axis of rotation whereby said arm member is movable between a forward latching position with said first and second magnetic means being proximate one another in magnetic latching relationship and a rearward position with said first and second magnetic means spaced from one another to weaken the magnetic attraction therebetween and position the magnetic means in non-latching relationship,

the improvement comprising in combination:

stop means on the same object as said rotatable second latch member for positioning said arm member in a forward position for accurately aligning the movable object in a closed position relative to the stationary object,

push means on the arm member of the pivotal second latch member, said push means being spaced from said axis of rotation and positioned at a location which is between said axis of rotation and said second magnetic means and forwardly toward said first object, such that as said arm member swings between its forward and rearward positions, said push means engages said first object, such that said arm member is capable of acting as a lever arm against said first object,

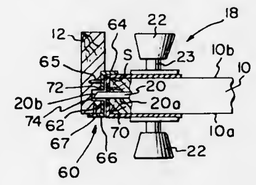
spring means operatively engaging said arm member to urge said arm member from its rearward position to its forward position against said stop means for repositioning the objects in a closed aligned position and for propelling the movable object away from the stationary object to overcome the weakened magnetic attraction of the first and second magnetic means when moving from said rearward position to said forward position such that the movable object swings open away from said stationary object.



## 3,934,910
## DOOR GUARD

Edward Radke, 1733 S. Carter, Midland, Mich. 48640

Filed Dec. 12, 1974, Ser. No. 531,979
Int. Cl.² E05C 1/00
U.S. Cl. 292—346 1 Claim



1. In combination:

a door having inner and outer sides and generally vertical lateral edges;

a door lock, mounted on said door including

a door locking bolt laterally movable between a projecting position laterally outwardly beyond at least one lateral edge of said door and a laterally inner position; and

rotatable bolt actuating means extending generally transversely to the plane of said door for moving said bolt as said bolt actuating means is rotating;

an auxiliary lock mounted on said door along said one lateral edge in vertically spaced relation with said first mentioned lock, said auxiliary lock including a bolt movable in a lateral path between a projecting position projecting beyond said one lateral edge and a laterally inner position, said auxiliary lock including second bolt actuating means extending transversely to the plane of said door;

a one piece lock guard including an elongate channel, being U-shaped in section, having a base generally perpendicular to the plane of said door with aperture means therethrough;

bolt plate means received in said aperture means and mounted on said door with the outer face of said bolt plate means being flush with the outer face of said base;

said bolt plate means having additional aperture means therethrough slidably receiving said bolts;

said lock guard including a pair of confronting flange portions, generally parallel to the plane of said door bearing against said inner and outer sides of said door, at least one of said flange portions having aperture means therethrough receiving said bolt actuating means; and

a longitudinally extending strike plate portion adapted to be vertically disposed between said door and a door jamb, having aperture means therein for receiving said bolts in said projecting positions,

said strike plate portion including

a transversely extending door stop flange on the inner end of said strike plate portion extending transversely to the plane of said door in a direction toward said door, and

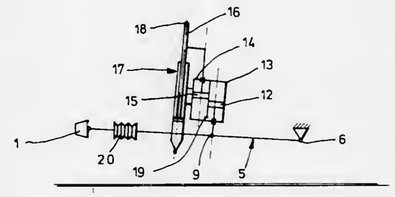
an oppositely directed mounting flange at the outer edge of said plate portion for engaging the outer face of said door jamb;

said door including a recessed portion receiving the base portion of said lock guard such that the laterally outer surface of said base portion is flush with the laterally outer edge portion surface of said door.

## 3,934,911
## VEHICLE BUMPER ARRANGEMENT

Conrad Oehlerking, Braunschweig, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Division of Ser. No. 436,119, Jan. 24, 1974, Pat. No. 3,879,074. This application Jan. 2, 1975, Ser. No. 538,143
Claims priority, application Germany, Feb. 3, 1973, 2305417
Int. Cl.² B60R 19/04
U.S. Cl. 293—68 3 Claims



1. In a vehicle having at at least one end thereof bumper means including a bumper oriented transversely of the vehicle and located at a distance from a travelled surface on which the vehicle is supported, the improvement of means for maintaining the distance between the bumper and the travelled surface generally constant comprising:

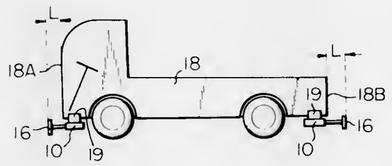
a. support means for supporting the bumper, the support means including lever means mounting at one end thereof the bumper,

b. first means mounting the support means and coupled to the other end of the lever means, and

c. second means mounting the support means and including a first cylinder coupled to a wheel for the vehicle and adapted to contain a fluid under pressure, a second cylinder communicating with the first cylinder and adapted to contain a fluid under pressure, the second cylinder also being coupled to the wheel, a first piston coupled to the vehicle body and received in the first cylinder for reciprocating movement, and a second piston coupled to the lever means intermediate the ends thereof and received in the second cylinder for reciprocating movement,

the first and second mounting means imparting different movements to the support means upon movement generally perpendicular to the travelled surface by a vehicle body portion located adjacent the bumper, the different movements imparted to the support means effecting movement of the bumper relative to the adjacent vehicle body portion opposite in direction and approximately equal in amplitude to the movement of the adjacent vehicle body portion.

**3,934,912**
**VEHICLE ENERGY-ABSORBING SYSTEM WITH ADJUSTABLE ABSORPTION CAPACITY**
**Yoshiyuki Ogihara, and Norimoto Aya, both of Yokosuka, Japan, assignors to Nissan Motor Company Limited, Yokohama, Japan**
**Filed July 19, 1974, Ser. No. 489,914**
**Claims priority, application Japan, July 23, 1973, 48-80862**
**Int. Cl.² B60R *19/02***
**U.S. Cl. 293—73** **2 Claims**

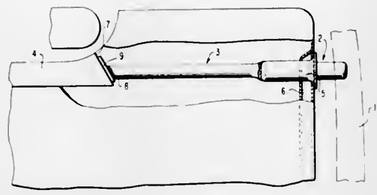



1. In combination with an automobile an impact energy absorption system comprising:
a hydraulic shock absorber having a hydraulic cylinder, a piston-rod received in and protruding from said hydraulic cylinder, a pressurized gas chamber communicable with said hydraulic cylinder and a valve means for the control of fluid communication between said hydraulic cylinder and said pressurized gas chamber;
a retractable bumper joined with said piston-rod;
a weight detection means to sense the weight of a payload of the automobile and produce an electrical signal representing the sensed weight;
a pressure regulation means for varying a gas pressure in said pressurized gas chamber;
a carriage means for supporting said hydraulic cylinder in such a position that said bumper is located at a distance externally from an end of the automobile and selectively moving said hydraulic cylinder in the longitudinal direction of the automobile; and
an electrical control means for controlling said pressure regulation means and said carriage means in response to said electrical signal, so that an energy absorption capacity in a collision of the automobile represented by the product of a resistance offered by said shock absorber against a retracting movement of said bumper and a distance travelled by said bumper until coming into contact with said end can be varied depending on said weight of said payload.

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**3,934,913**
**BUMPER SUPPORT STRUCTURE**
**Hubert Hutai, Grafenau-Datzingen, and Wolfgang Fischer, Leinfelden, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany**
**Filed Mar. 27, 1974, Ser. No. 455,412**
**Claims priority, application Germany, Mar. 27, 1973, 2315105**
**Int. Cl.² B60R *19/04***
**U.S. Cl. 293—99** **13 Claims**

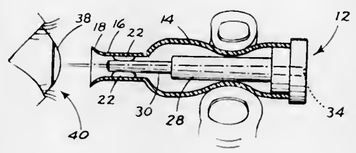
1. A motor vehicle which includes a vehicle body and at least one bumper means that is supported at the vehicle by way of impact absorber means, and longitudinal bearer means which extend approximately in extension of the retraction direction of the impact absorber means, characterized in that the impact absorber means are supported at end faces of the longitudinal bearer means by interposition of a buckling-resistant structural part which extends within the confines of the vehicle body, and wherein the end faces of the longitudinal bearer means are provided with a bevelled-off surface at



which abuts the free end of the structural part which has a complementary bevelled surface.

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**3,934,914**
**DEVICE FOR INSERTING AND REMOVING CONTACT LENS**
**Eben H. Carruthers, P.O. Box 40, Warrenton, Oreg. 97146**
**Filed July 11, 1974, Ser. No. 487,729**
**Int. Cl.² A61F *9/00***
**U.S. Cl. 294—1 CA** **7 Claims**




1. A device for use in inserting and removing a contact lens comprising:
an elongate, hollow tube having a lens holding portion at one end thereof opening into the interior of said tube and a portion of said tube spaced from said one end being resilient to accommodate manual flexing of opposed sides thereof toward each other and to return substantially to their original configuration when released,
a light transmitting closure element attached to and providing an airtight closure of the other end of said tube, and
an elongate, substantially rigid, straight light transmitting shaft of smaller side-to-side dimension than the interior of said resilient portion of the tube secured at one of its ends to said closure element and extending axially of said tube through the resilient portion of said tube, with its other end adjacent but spaced inwardly from said lens holding portion of the tube, said shaft being operable to prevent said opposed sides of the tube from being pressed into contact with each other, thus to maintain a line of sight light path extending axially of said tube from said closure element to said lens holding portion during flexing of said tube walls toward each other.

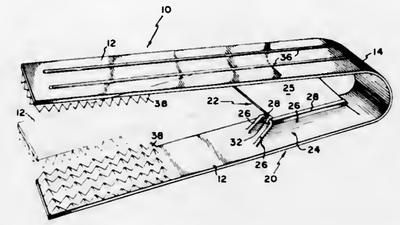
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**3,934,915**
**DISPOSABLE UTILITY TONGS**
**Norbert J. Humpa, 100 Aspen Drive, Schaumburg, Ill. 60172**
**Filed Mar. 9, 1973, Ser. No. 339,930**
**Int. Cl.² B25B *9/02***
**U.S. Cl. 294—16** **10 Claims**

10. A tong construction comprising:
a one-piece blade including blade portions connected by a hinge portion normally urging the blade portions to positions in which they lie in the same plane but permitting movement thereof to generally coextensive positions in which opposite ends thereof are engaging each other; and



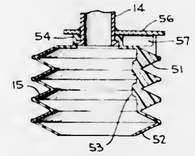
keeper means on said blade portions for preventing movement of said blade portions to said positions in which they




lie in the same plane of each other but permitting movement of said blade portions to said engaging positions.

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**3,934,916**
**VACUUM PICKUP CUP**
**Thomas R. Baker, Redwood City, Calif., assignor to Kliklok Corporation, Greenwich, Conn.**
**Division of Ser. No. 436,612, Jan. 25, 1974. This application Dec. 3, 1974, Ser. No. 529,225**
**Int. Cl.² B66C *1/02***
**U.S. Cl. 294—64 R** **5 Claims**

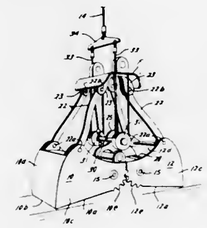



1. A vacuum pickup cup for transferring and positioning an article comprising a collapsible body terminating in a lip means forming a vacuum opening, integral stiffening means on one side of said body to resist collapse, the opposite side being substantially free to collapse, said body being laterally flexible during both relaxation and collapse of said body, said body except for said lip means remaining free of said article, whereby said cup and substantially the entire article tilt toward the side free to collapse when vacuum is applied thereto while remaining subject to outside accommodating force and substantially the entire article is picked up.

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**3,934,917**
**CLAMSHELL BUCKET APPARATUS**
**Curtis L. Paxton, and Percy J. Gray, both of Pearland, Tex., assignors to McGinnes Manufacturing Company, Pearland, Tex.**
**Filed Dec. 10, 1973, Ser. No. 423,496**
**Int. Cl.² B66C *3/10***
**U.S. Cl. 294—70** **18 Claims**

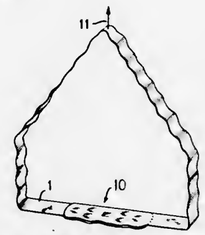
1. A clamshell bucket apparatus, comprising:
a pair of clamshell bucket sections each having a scoop configuration with laterally spaced inner edges which are adapted to contact each other in a substantially vertical position when the bucket is in its closed position for lifting a load and are adapted to be extended to a substantially horizontal position when the bucket is in its open position for picking up or dumping a load;
means including an upper frame for pivotally mounting said bucket sections together for pivotal movement to and from said open and closed positions;
operating and hoisting means operably connected with said clamshell bucket sections for both manipulating said bucket sections to and from said closed and open positions and for raising and lowering said bucket sections, said operating and hoisting means including:
a single line system adapted to extend from the clamshell bucket apparatus to a crane or the like;
releasable latch means movably mounted with said bucket sections and automatically biased into the latching position when the bucket sections are open and the single line system is slackened off;



a movable latch-engaging means operably connected with said single line system for movement into engagement with said latch means for thereafter applying a force to said buckets to move same to the closed position by pulling upwardly on said single line system, and for movement out of engagement with said latch means for supporting the entire apparatus from said single line system with the bucket sections in the open position; and
means for automatically releasing said latch means from said latch-engaging means by slackening off on said single line system when the bucket sections are supported on the ground or the like.

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**3,934,918**
**JUNCTION FOR SHEET-LIKE MATERIAL LOAD LIFTING BAND WITH OVERLOAD INDICATOR**
**Heinz Kress, Holzen near Schwerte, and Heinz Heckmanns, Ennepetal-Buttenberg, both of Germany, assignors to Titan Verpackungssysteme GmbH, Schwelm, Germany**
**Filed Nov. 16, 1973, Ser. No. 416,353**
**Claims priority, application Germany, Nov. 21, 1972, 2256983**
**Int. Cl.² B66C *1/18***
**U.S. Cl. 294—74** **5 Claims**




1. A re-usable load-lifting band for lifting of heavy loads, comprising a band having a main section and a pair of overlapping terminal sections which form with said main section a closed loop for lifting of loads having a weight up to a predetermined upper limit; connecting means connecting said terminal sections with one another against separation when said loop supports a load, said connecting means comprising interconnecting parts in said terminal sections and each including a plurality of slits and corresponding sheet portions extending from the general plane of the respective terminal section, each of the sheet portions of the respective terminal section cooperating with a pair of slits in the other terminal section to thereby prevent said separation of said terminal sections under load; and inter-engaging portions having angularly related

juxtaposed flange-like portions and juxtaposed openings receiving said flange - like portions on said terminal sections connecting the latter with each other and for retaining them from unintentional separation in the absence of said load, said flange-like portions being of plastically-deformable material which deforms upon the application of a load to said band and permanently visually indicates if the latter has been used to lift the loads having a weight in excess of said predetermined upper limit.

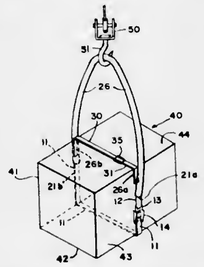
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**3,934,919**

## SELF-ERECTING MATERIAL HANDLING SLING

**Arthur W. Smith, Trenton, N.J., assignor to TransTechnology Corporation, Sherman Oaks, Calif.**

**Filed May 7, 1974, Ser. No. 467,652**
**Int. Cl.² B66C *1/18***
**U.S. Cl. 294—74** **16 Claims**




**1.** A material handling sling comprising an elongated, flexible securing member having a leading end and a terminal end, fluid inflatable means disposed intermediate the leading and terminal ends of the securing member, said inflatable means being adapted to increase the rigidity of the portions of the securing member with which it is in contact when said means are inflated with a fluid and thereby form a bowed or angular bail that projects outwardly from the load.

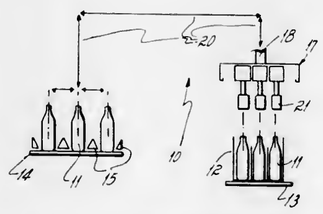
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**3,934,920**

## CARRIAGE FOR LIFTING AND SPREADING ROWS OF ARTICLES

**Edward F. Rowekamp, Cincinnati, Ohio, assignor to The Lodge & Shipley Company, Cincinnati, Ohio**

**Filed July 8, 1974, Ser. No. 486,409**
**Int. Cl.² B66C *1/10***
**U.S. Cl. 294—87 R** **3 Claims**




**1.** A lifting carriage for plural patterns of articles comprising,

an elongated channel-shaped shroud including a flat top plate and depending lateral flanges,

a plurality of transverse rods supported between said flanges,

a plurality of elongated manifolds slidably mounted on said rods for lateral movement, each manifold having plural sets of grippers, each set of grippers on a manifold being spaced longitudinally from the adjacent set and aligned transversely with grippers on adjacent manifolds to provide plural patterns of grippers longitudinally spaced along said shroud,

each said manifold having two upwardly projecting pins,

said top plate having a transverse slot receiving each said pin,

two cam plates mounted for longitudinal movement on said shroud and having angulated cam slots receiving said pins to effect lateral movement of said manifolds upon longitudinal movement of said cam plate,

a longitudinally oriented piston and cylinder mounted on said shroud and connected to each said cam plate to thrust said cam plate longitudinally in one direction to spread said manifolds, and in other direction to retract said manifolds.

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**3,934,921**

## BUFFER FOR SPRING-SUPPORTED WHEELS

**Ewald Nelken, Mulheim, Germany, assignor to Fried. Krupp Huttenwerke AG, Bochum, Germany**

**Filed Sept. 21, 1973, Ser. No. 399,442**
**Claims priority, application Germany, May 12, 1973, 2324060**
**Int. Cl.² B60B *17/00***
**U.S. Cl. 295—1** **5 Claims**




**1.** In a wheel for having an electrical current passing therethrough for use on an electrical vehicle, the wheel comprising a center-disc, a wheel-rim circumposed about said center-disc, said center-disc and wheel-rim including means forming an annular channel between the respective outer and inner peripheries of the center-disc and wheel-rim, elastic buffer means disposed between said center-disc and the wheel-rim and including electrical, current-conducting means for forming an electrical circuit between said center-disc and wheel-rim, the improvement in which the buffer means comprises a buffer element of an elastic material which is clamped at opposite sides in said annular channel, said annular channel being limited by portions of the center-disc and the wheel-rim, the opposite sides of the buffer element abutting respective portions of the center-disc and the wheel-rim and connecting the center-disc and wheel-rim to each other in cushioned relationship, said buffer element including a radially-extending channel extending through the opposite sides of the buffer element, a flexible electrical conductor extending through the radially-extending channel, said buffer element including opposed recesses in the opposite sides of the buffer element and communicating with the radially extending channel, electrical contact elements disposed in the opposed recesses of the buffer element, each contact element comprising a contact plate, the flexible electrical conductor terminating at opposite ends in a rivet head disposed beneath the contact plate in the opposed recesses and operatively connected to the contact plate, the rivet head being integral with the ends of the conductor, the contact plate covering the respective rivet head and being fixedly secured in a respective recess of the buffer element and protecting the rivet head from being sheared off while being compressed into contact with the center-disc and wheel-rim for insuring current transmittal.

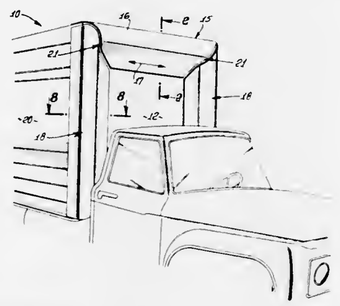


**3,934,922**

## AERODYNAMIC DRAG REDUCTION DEVICES FOR SURFACE VEHICLES

**Paul B MacCready, Jr., and Peter B. S. Lissaman, both of Pasadena, Calif., assignors to Aerovironment Inc., Pasadena, Calif.**

**Filed Sept. 5, 1974, Ser. No. 503,290**
**Int. Cl.² B62D *35/00***
**U.S. Cl. 296—1 S** **15 Claims**




**1.** In combination,

a. a vehicle body having an exterior front wall, an exterior side wall and an exterior top wall, said side wall meeting said front wall at a vertical corner, and said top wall meeting said front wall at a horizontal corner,

b. means for preventing, reducing, or delaying separation of the flow boundary layer from said side and top walls rearwardly of said corners at normal operating speeds of the vehicle,

c. said means comprising two cooperating elongated protrusions respectively extending parallel to said two corners, each protrusion having a substantially smooth, arcuate outer surface projecting smoothly outwardly of said front wall, said protrusion surface having first elongated extent merging toward said front wall at a shallow angle therefrom and in a generally transverse direction extending away from the corner paralleling that protrusion and terminally joined to and extending along said front wall in spaced relation to said corner such that the first elongated extent substantially merges with the front wall, and second elongated extent merging generally toward said corner and terminally joined to and extending along said body proximate said corner such that the second elongated extent substantially merges with a body wall proximate said corner whereby each corner is enveloped by one protrusion,

d. said two protrusions extending generally perpendicular toward one another and mating proximate the intersection of said corners.

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**3,934,923**

## AIR DECELERATOR FOR TRUCK CAB

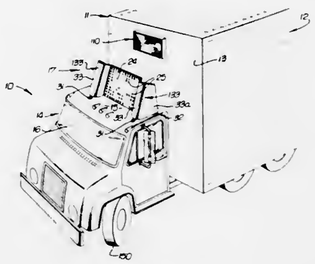
**Peter B. S. Lissaman, Pasadena, and Jack H. Lamble, Anaheim, both of Calif., assignors to Aerovironment Inc., Pasadena, Calif.**

**Filed Mar. 7, 1975, Ser. No. 556,210**
**Int. Cl.² B62D *35/00***
**U.S. Cl. 296—1 S** **18 Claims**

**1.** For combination with a truck having a cab and a body rearwardly of the cab, drag reducing means comprising

a. porous structure including an upright plate adapted to be mounted on the truck to project above the cab roof and extend laterally, so as to be presented forwardly toward oncoming relative airflow for passing air rearwardly therethrough toward the front of said body, with accompanying air energy reduction and deceleration relative to the truck, said plate defining multiple through openings presented forwardly and distributed widely both vertically and laterally over the plate area, and

b. air flow directing means at laterally opposite ends of said structure and integral therewith for directing oncoming relative airflow laterally around said ends, said airflow directing means defining non-porous solid surfaces which




are generally vertically elongated and substantially coextensive in height with said upright plate and project with forward convexity forwardly of a plane defined by the plate front face, said surfaces also extending rearwardly of said plane at the lateral boundaries of said airflow directing means.

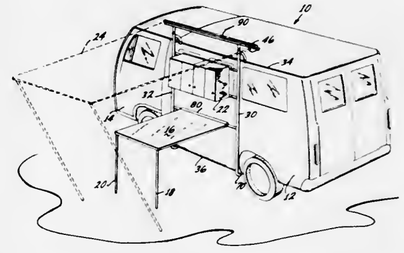
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**3,934,924**

## CAMPING APPARATUS FOR VAN-TYPE VEHICLE

**Joseph Dilibertl, 9608 Easter Way, San Diego, Calif. 92131**

**Filed Oct. 24, 1974, Ser. No. 517,731**
**Int. Cl.² B60P *3/32***
**U.S. Cl. 296—23 R** **2 Claims**




**1.** For use with a vehicle, a camping assembly which comprises:

a pair of main support members removably connected vertically to a side of the vehicle, in a spaced parallel relationship,

roof rain gutter attachment means for removably attaching said main support members to a roof rain gutter of the vehicle,

said roof rain gutter attachment means comprises a member projecting from each of said main support members to a point spaced outwardly therefrom and above the roof rain gutter and sloping toward and laterally adjacent the roof rain gutter,

vice means connected to the laterally adjacent terminal end of said members for releasably locking said roof rain gutter in said vice means,

said vice means comprising a fixed arm depending from said member and engaging said roof rain gutter, and

an adjustable clamp member contoured similar to the contour of the roof rain gutter and adapted to grasp the roof rain gutter with substantial surface contiguity,

the lower extremity of each of said main support members being contoured for closely abutting a lower body part of the vehicle, whereby the main support members are tensionly assembled to the vehicle,

a plurality of horizontally extending auxiliary support members removably connected to said main support members, female channel members connected to said auxiliary support members, a cabinet and awning each adapted for connection to one of said auxiliary support members, each of said cabinet and awning having a male channel connected to one end thereof for slidable reception in said female channels, and a pin removably received in mutually aligned holes in said male and female channels to secure said male channel in said female channel.

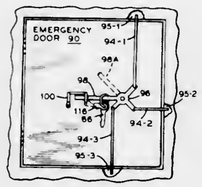
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**3,934,925**

## SYSTEM FOR LOCKING DOORS OF BUSES

**Joseph T. Fetsch, 26 Concord Road, Port Washington, N.Y. 11050**

**Filed Feb. 14, 1974, Ser. No. 442,508**
**Int. Cl.² B62D** *31/02*
**U.S. Cl. 296—28 A** **10 Claims**




1. A protective and safety door-locking and unlocking system for a bus that has a front door for normal use and operation for passenger entrance and exiting and that has a rear emergency door that is normally to be kept latched closed but not locked, during passenger use of the bus, so said emergency door may be opened from inside or from outside the bus in case of an emergency; said locking and unlocking system comprising:

a. means operable by the driver for normally operating the front door to an open position or to a closed position, for passenger entrance and exiting; said driver-operable means being also operable by said front door to be moved to a door-locking position to hold said front door closed against unauthorized entry, during non-passenger use of the bus;

b. means independent of the normal driver-operable means for moving said driver-operable means from outside said bus, such that said driver-operable means is moved away from said door-locking position, to unlock said front door to provide access to the inside of the bus;

c. an ignition system switch lock;

d. an ignition key for said ignition switch lock to control the ignition system of the bus;

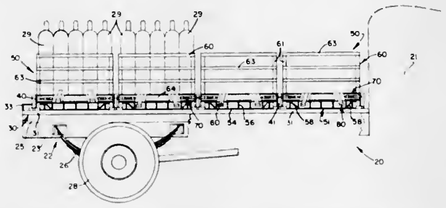
e. means for locking said emergency door against unauthorized entry during non-passenger use of the bus, said emergency-door-locking means being mechanically connected to and serving as a carrier for said ignition key, thereby to require removal of the ignition key from the ignition switch lock to make available said means for locking said emergency door, and subsequently requiring unlocking of said emergency door to permit removal of said emergency door locking means plus said mechanically connected ignition key to make said ignition key then available to operate the ignition switch to start and operate the engine of the bus.

**3,934,926**

## TRANSPORTING SYSTEM

**Richard C. Bennett, 7333 Armitage Ave., Elmwood Park, Ill. 60635**

**Continuation of Ser. No. 375,689, July 2, 1973. This application Mar. 25, 1975, Ser. No. 561,929**
**Int. Cl.² B62D** *23/00*
**U.S. Cl. 296—35 A** **13 Claims**



1. A transporting system comprising a load-supporting bed forming part of a vehicle, a plurality of longitudinally spaced-apart and laterally extending dividers which divide said bed into a plurality of bays, each of said dividers having keeper structure associated therewith and substantially perpendicular thereto, a plurality of article carriers arranged to be carried by a loader-unloader respectively into and out of said bays, a pair of bolts on each of said article carriers and mounted thereon for reciprocal movement between latching conditions engaging the associated keeper structure and unlatching conditions disengaging said keeper structure, a pair of biasing means on each of said article carriers respectively for urging the associated bolts to the latching conditions thereof, and a pair of actuating means on each of said article carriers respectively operatively coupled to said bolts for individual movement thereof between the latching and unlatching conditions, said actuating means being arranged to be automatically engaged respectively by forks of a loader-unloader when the associated article carrier is carried thereby to move the associated bolt against the action of the associated biasing means to the unlatching condition thereof and thereby enable an article carrier to be placed in or removed from a chosen bay.

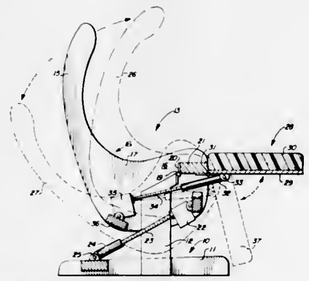
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**3,934,927**

## POWERED TILTING LOUNGER

**Henry Chanoch Zur, Tel Aviv, Israel, assignor to Arizona Lounger Company, Phoenix, Ariz.**

**Filed Oct. 29, 1974, Ser. No. 518,521**
**Int. Cl.² A47C** *1/02*
**U.S. Cl. 297—69** **8 Claims**



1. In a lounger,

a. supporting structure including a base adapted to rest on a floor and a pedestal upstanding from said base;

b. a structural assembly identified as a body supporting member for receiving the body of an occupant and comprising a rigid backing including a back portion, a seat portion, and a bend between and connectiing said back and seat portions, and a resilient pad covering the back and seat portions and the bend of said rigid backing;

c. means for pivotally mounting said body supporting member on said pedestal at the upper end thereof and on a horizontal axis extending through said seat portion in the forward upper region thereof;

d. power means for tilting said body supporting member on said pivotal mounting whereby the body supporting member is moved from a reclining position to an upright position and vice versa;

e. a leg rest pivotally mounted on said seat portion at the forward free end thereof and on a horizontal axis, and,

f. an independent power means for swinging said leg rest into and out of a horizontal leg supporting position.



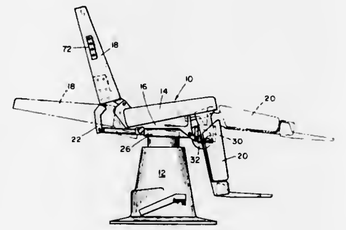
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**3,934,928**

## ADJUSTABLE OPERATORY CHAIR

**Philip C. Johnson, Cincinnati, Ohio, assignor to Dentsply Research & Development Corporation, Milford, Del.**

**Filed Dec. 27, 1973, Ser. No. 428,950**
**Int. Cl.² A61G** *15/00*
**U.S. Cl. 297—71** **7 Claims**



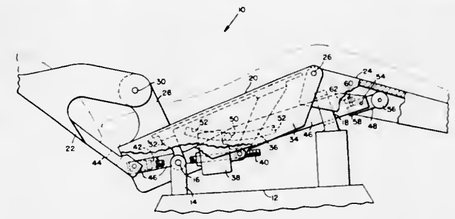
1. A chair including a seat, a back rest pivotally connected to said seat adjacent the rear edge thereof, power means comprising an electric motor mounted upon said chair, actuating means connected to said back rest and operable to move the same reversibly between normal substantially upright and rearwardly extending positions comprising opposite limits of movement thereof, reduction gear means connecting said actuating means to said motor for operation thereby, a worm and worm gear driven by said reduction gear means, and a shaft rotated by said worm gear for no more than one revolution during the full movement of said back rest between said substantially upright and rearwardly extending positions, in combination with an electrical control circuit for said motor comprising a plurality of limit switch means, said electric circuit being connected between said limit switch means and motor and a source of current and said switch means being operable to de-energize said motor when said back rest reaches either the normal upright or rearwardly extending limits of movement thereof, an adjustable program switch connected in said circuit, and an operator for said program switch adjustably carried by said shaft which is driven by said worm and worm gear and is operable during the actuation of said motor while moving said back rest toward said rearwardly extending limit position to de-energize said motor and thereby stop movement of said back rest prior to the same reaching said normal rearward limit of movement thereof.

**3,934,929**

## ADJUSTABLE DENTAL CHAIR

**Azriel Jay Rabinowitz, Rochester, N.Y., assignor to Sybron Corporation, Rochester, N.Y.**

**Filed Sept. 3, 1974, Ser. No. 502,446**
**Int. Cl.² A47C** *1/06*; **A61G** *15/00*
**U.S. Cl. 297—75** **6 Claims**



1. A dental chair comprising:

a. pivotally connected back, seat and footrest sections;

b. a base having a rearward portion pivotally supporting said seatrest section and a forward guide portion;

c. motor means carried by said seatrest section and operatively connected to said backrest section for articulating said backrest relative to said seatrest;

d. a linearly movable link connected to said backrest and extending through said guide portion to contact said footrest section for articulating said footrest responsive to movement of said backrest; and

e. cam means connecting said link and seatrest section for articulating said seatrest about said rearward portion responsive to movement of said backrest.

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**3,934,930**

## BACK SUPPORT FOR CHAIR

**Edwin C. Sandham, Thiensville, Wis., assignor to Leggett & Platt, Incorporated, Carthage, Mo.**

**Filed Nov. 7, 1974, Ser. No. 521,940**
**Int. Cl.² A47C** *7/44*
**U.S. Cl. 297—291** **9 Claims**



1. A back support for a chair which includes a back pad comprising, in combination:

an elongated resilient block attached to the back pad;

a clip in part disposed between said block and said back pad;

a locking element integrally formed on said clip,

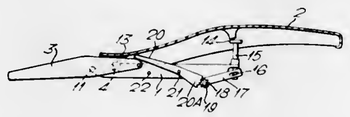
a support member including a pocket disposed therein, said pocket being shaped to receive said block and said clip, a portion of said pocket cooperating with said locking element of said clip when said block and clip are inserted therein to resiliently urge said locking element to a locked position wherein the back pad is connected to said support member for pivotal movement relative thereto.

**3,934,931**

## DENTAL CHAIR

**Takahiro Matsui, and Osamu Uwamori, both of Kyoto, Japan, assignors to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan**

**Filed Apr. 5, 1974, Ser. No. 458,223**
**Claims priority, application Japan, Apr. 17, 1973, 48-43370**
**Int. Cl.[2] A61G *15/00*; A47C *16/02***
**U.S. Cl. 297—319** **7 Claims**



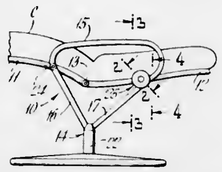
1. A dental chair, comprising:
a generally horizontally positioned seat having front and rear portions;
a back positioned adjacent said rear portion of said seat and movable to various inclines relative to said seat between a first, substantially upright, position and a second position below the horizontal;
first means for effecting inclination of said back between said first and second positions;
second means for pushing said front portion of said seat upward relative to said rear portion thereof; and
third means operable only in response to inclination of said back below a substantially horizontal position to drive said second means, resulting in said front portion of said seat being pushed upward relative to said rear portion thereof, such that the knees of a patient using the dental chair are raised above his waist.

**3,934,932**

## ADJUSTABLE CHAIR

**Jostein Ekornes, Ikornes, Norway, assignor to J.E. Ekornes Fabrikker A/S, Ikornes, Norway**

**Continuation-in-part of Ser. No. 193,430, Oct. 28, 1971, Pat. No. 3,773,383. This application Sept. 24, 1973, Ser. No. 400,446The portion of the term of this patent subsequent to Nov. 20, 1990, has been disclaimed.**
**Int. Cl.[2] A47C *1/032***
**U.S. Cl. 297—320** **5 Claims**



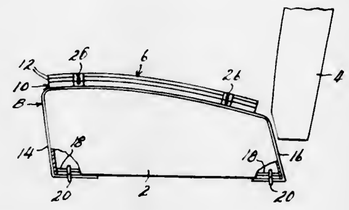
1. In an improved adjustable chair having a seat and back hingedly connected together and two supports, one at each side of said chair, such supports for use in adjusting the relative angular position of both said seat and said back to each other, each of such supports having a front and a rear portion, each of said rear support portions being pivotally connected to a side of said back, the improvement comprising two adjustable coupling units of the frictional variety, each unit being affixed to a separate side of the seat, and each unit being linearly slidable along one of said front support portions to allow the seat to move upwardly and forwardly and to move downwardly and backwardly for the adjustment of said angular position, each of said units being adjustable by frictional coupling to establish such an equilibrium position along said front supports that shifting of loading on said chair will move the seat and back relative to said supports to another position of similar equilibrium, the distance between the units and the axis about which the back and seat are hinged together being fixed, said coupling units being provided with opposed sections, defining surfaces therebetween for frictional engagement with and sliding movement along said front support portions, and means for moving said opposed sections towards and away from each other to vary the friction between said surfaces and said front support portion.

**3,934,933**

## THERAPEUTIC SEAT PAD FOR AUTOMOBILES

**Anthony J. Long, P.O. Box 697, Warsaw, Mo. 65355**

**Filed June 26, 1974, Ser. No. 483,302**
**Int. Cl.[2] A47C *3/00***
**U.S. Cl. 297—384** **7 Claims**



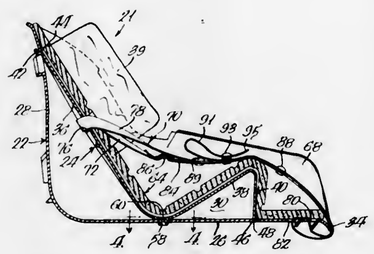
1. A thereapeutic seat pad comprising:
a. a generally planar base pad adapted to overlie the top surface of a seat cushion and having laterally spaced apart portions adapted respectively to support the left and right sides of the pelvis of a person sitting thereon,
b. attaching means operable to secure said base pad to said seat cushion, and
c. adjusting means operable to vary the thickness of the laterally spaced sections of said base pad independently of each other.

**3,934,934**

## CHILD CAR SEATING APPARATUS AND METHOD FOR ASSEMBLING THE SAME

**Claude S. Farrell, Jr., Worthington; Richard E. Cone, II, Kent, and Alan David Ellies, Columbus, all of Ohio, assignors to Buckeye International, Inc., Columbus, Ohio**

**Filed July 2, 1974, Ser. No. 485,161**
**Int. Cl.[2] A47C *13/00*; A62B *35/00***
**U.S. Cl. 297—384** **18 Claims**



1. A child's car seat for protecting the child from infancy until the child is old enough to safely use an automobile seat, said child's seat comprising a molded unitary open-ended, outer shell which includes:
a substantially L-shaped center wall having a long portion terminating in a first rim at one end and having first infant-insert-receiving-and-positioning means associated therewith; a short portion joined at one end to said long portion and terminating in a second rim at the other end and having second infant-insert-receiving-and-positioning means associated therewith;
a pair of side walls, one along each side edge of the center wall and extending between said rims; and
said shell adapted to be positioned in a rear-facing infant-receiving postion wherein said long portion provides the bottom of the seat and the short portion provides the back of the seat and also adapted to be positioned in a front-facing toddler or child-receiving position wherein said short portion provides the bottom of the seat and the long portion provides the back of the seat.

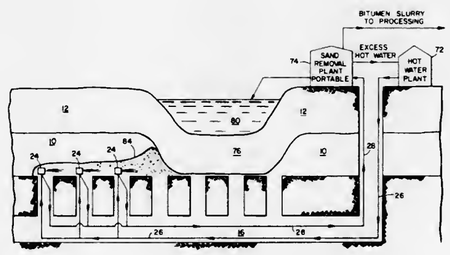


**3,934,935**

## HYDRAULIC MINING OF OIL BEARING FORMATION

**Charles A. R. Lambly, Alamo, and Charles T. Draney, Hillsborough, both of Calif., assignors to Bechtel International Corporation, San Francisco, Calif.**

**Filed Aug. 26, 1974, Ser. No. 500,796**
**Int. Cl.[2] E21C *45/00***
**U.S. Cl. 299—2** **16 Claims**



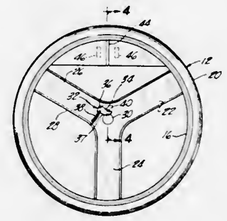

1. A method of mining material from oil bearing formations, such as tar sands, wherein said formation is between an overburden of an overlying rock and soil formation and an underlying impervious stratum, by subjecting said formation to high velocity fluid jet streams capable of forming a slurry of said material; and wherein a plurality of spaced-apart tunnels are formed through said impervious stratum adjacent to and below said formation, which comprises:
boring upwardly from said tunnels into said formation, a plurality of spaced-apart rows of channels, wherein said rows are spaced apart at a distance less than the effective distance of said jet stream for forming slurry from said material;
from a first row of channels, directing into said formation material, high velocity rotating fluid jet streams to form a slurry of said formation material in the jet stream path, wherein the effective distance of adjacent jet streams overlap, so as to form a row of interconnecting cavities;
directing said jet streams toward material from areas adjacent to said cavities, so as to continually enlarge said interconnected row of cavities to define a chamber, while initiating rotating jet streams from the next adjacent row of channels, so as to form a receding chamber moving towards said next row of channels, until said formation material and said overburden above a portion of said chamber is no longer supported and caves into a portion of said chamber;
continuously removing slurry from said cavities for further processing; and
repeating said process from successive rows of channels.

**3,934,936**

## AUXILIARY WHEEL FOR VEHICLES

**Maynard W. Fine, 7187 Stonebrook, West Bloomfield, Mich. 48013**

**Continuation-in-part of Ser. No. 351,961, April 17, 1973, Pat. No. 3,866,978. This application Aug. 13, 1974, Ser. No. 496,966**
**Int. Cl.[2] B60C *17/04***
**U.S. Cl. 301—38 S** **7 Claims**



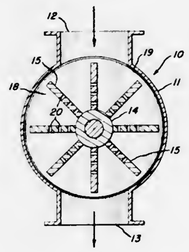
1. An auxiliary wheel for use with a conventional pneumatic tired vehicle wheel when the pneumatic tire carried by the rim of the conventional wheel is inoperative, said auxiliary wheel comprising;
a circular rim member having an outer diameter greater than that of the rim of said conventional wheel;
a tire carried on the outer peripheral surface of said rim member;
structural support means interconnecting portions of the inner periphery of said rim member;
a coupling member having means for releasably attaching said coupling member to said wheel rim;
means pivotally connecting said coupling member to said circular rim member, said rim member being in a non-coaxial position with respect to said wheel rim when said coupling member is attached thereto, said rim member being movable from said non-coaxial position to a coaxial position with respect to said wheel rim when said wheel is rotated a limited distance; and
a locking means for lockingly engaging said rim member to said coupling member to maintain said rim member in said coaxial position.

**3,934,937**

## NEW ROTARY VALVE

**Liong S. Tee, Westmont, Ill.; Carlo Piazza, deceased, late of Naperville, Ill., and by Judith B. Piazza, executrix, Naperville, Ill., assignors to Standard Oil Company, Chicago, Ill.**

**Filed Sept. 27, 1971, Ser. No. 183,961**
**Int. Cl.[2] B65G *53/46***
**U.S. Cl. 302—14** **2 Claims**



1. In combination with a rotary valve for metering solid-liquid slurries wherein said valve comprises an enclosed housing provided with entry and exit ports and a rotor contained and

rotatable within said housing, said rotor being made up of 4 to 10 blades extending outwardly from along a portion of a drive shaft, said portion passing throughout the housing, towards the inside surface of said housing and said blades extending laterally towards left and right side walls, said walls providing left and right side enclosures for pockets formed by adjacent blades, wherein the improvement comprises:

screening means in the surfaces of said blades to permit the liquid of the solid-liquid slurry to flow rapidly from one pocket to an adjacent pocket and to retain the solids of the solid-liquid slurry so that such solids in one such pocket are trapped in such pocket until discharged through said exit port; and

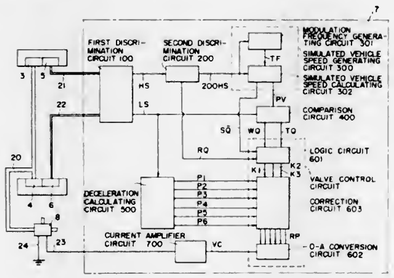
said blades extending towards the inside surface of said housing and extending laterally towards left and right side walls, but not touching or sealing against the surface of said hosuing or said side walls and leaving a clearance between the blades and said inside surface of said housing and said side walls to prevent the solids of the solid-liquid slurry from being subjected to damaging shearing forces between the blades and said inside surface of said housing and said side walls and to prevent plugging of said entry port with solids of the solid-liquid slurry.

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## 3,934,938
## METHOD, CIRCUIT, AND APPARATUS FOR ANTI-SKID BRAKE CONTROL IN MOTOR VEHICLES

**Kazutaka Kuwana, Toyota, and Hiroyuki Amano, Chiryu, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Japan**

**Filed July 17, 1973, Ser. No. 380,096**
**Claims priority, application Japan, July 20, 1972, 47-72722; Sept. 28, 1972, 47-97419; Sept. 28, 1972, 47-97420**
**Int. Cl.² B60T *8/10***
**U.S. Cl. 303—21 P** **2 Claims**




1. An anti-skid control apparatus for an automobile, which comprises:

sensor means adapted to produce outputs corresponding respectively to respective rotating speeds of a plurality of vehicle wheels;

a simulative vehicle speed generating circuit adapted to detect simulatively the wheel speed from the outputs of said sensor means thereby to produce a simulative vehicle signal;

a wheel speed detecting circuit adapted to derive a wheel speed signal of a wheel to be controlled from said outputs of said sensor means;

a deceleration counting circuit adapted to count the decelerated speed of the wheel to be controlled;

a comparing logical circuit adapted to compare said simulative vehicle signal with said wheel speed signal thereby to calculate the slip ratio and to discriminate whether or not said slip ratio is within the range of a predetermined slip of 20 to 60%;

a correcting deceleration circuit adapted to correct the decelerated or accelerated speed obtained in response to the output of said logical circuit, said decelerated or accelerated speed being obtained by a calculating operation of said deceleration counting circuit; and

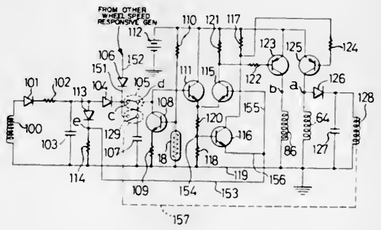
control means for controlling the braking hydraulic pressure of the wheel to be controlled in response to the output of said correcting deceleration circuit when said wheel slip ratio is outside the predetermined range of the slip.

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## 3,934,939
## BRAKING PRESSURE REGULATING DEVICE FOR A VEHICLE BRAKING SYSTEM

**Takashi Hida, Kariya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Japan**

**Continuation-in-part of Ser. No. 246,752, April 24, 1972, abandoned. This application Apr. 12, 1974, Ser. No. 460,618**
**Claims priority, application Japan, Apr. 23, 1971, 46-26904**
**Int. Cl.² B60T *8/10***
**U.S. Cl. 303—21 A** **8 Claims**




1. In a wheeled vehicle braking system of the type wherein braking pressure is applied to wheel cylinders of the vehicle wheels in response to pressure applied to a brake pedal and transmitted through a master cylinder, the improvement of a regulating device by which the braking pressure applied to the wheel cylinders is controlled in a fashion to ensure that the rate of reduction of the wheel speed corresponds to a deceleration rate set by the magnitude of the pressure applied to the brake pedal, said regulating device comprising:

sensor means for detecting the rotational speed of at least one wheel of said vehicle and developing a wheel speed-responsive voltage representative thereof;

memory means for storing said speed-responsive voltage, siad voltage being discharged in response to the application of braking pressure to said brake pedal;

proportioning means operatively connected through said master cylinder to said brake pedal for setting the rate of discharge of said voltage in response to the magnitude of braking pressure applied to said brake pedal;

comparator means for comparing said discharge voltage with said wheel speed-responsive voltage when said at least one wheel is being braked under said braking pressure; and

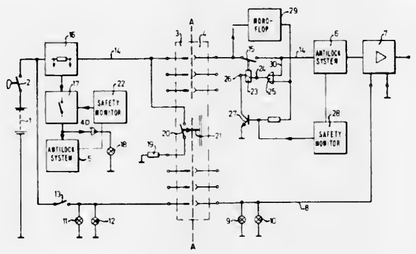
pressure increasing means including a cut-off means for interrupting communication between said master cylinder and said wheel cylinders, said pressure increasing means supplying a pressure of a magnitude greater than that of the master cylinder pressure to said wheel cylinder when said wheel speed-responsive voltage is higher than said variably responding discharge voltage, thereby decreasing said wheel speed and ensuring that the rate of reduction of said wheel speed corresponds to the rate set by the pressure applied to the braking pedal.



## 3,934,940
## SAFETY INTERLOCK CIRCUIT FOR SWITCHING BRAKE ANTILOCK SYSTEMS IN A TRACTOR TRAILER VEHICLE COMBINATION IN AND OUT

**Eberhard Schualbel, Hemmingen, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany**

**Filed Sept. 23, 1974, Ser. No. 508,326**
**Claims priority, application Germany, Oct. 19, 1973, 2352496**
**Int. Cl.² B60T *8/02, 13/00***
**U.S. Cl. 303—21 R** **8 Claims**




1. A safety interlock circuit for the brake antilock systems of tractor-trailer vehicle combinations in which at least the tractor vehicle is provided with a brake antilock system, said circuit comprising:

connecting means (3) on the tractor vehicle for connecting a voltage supply line (14) from a voltage source (1) for supplying electric power to a brake antilock system of a trailer vehicle through a mating connector on said trailer vehicle;

current measuring means (16) comprising a resistor interposed in said voltage supply line (14) between said voltage source (1) and said connection means (3);

means comprising a threshold switch means (17) responsive to the voltage across said resistor for disabling a brake antilock system (5) in said tractor vehicle when the current in said current measuring means is below a predetermined value, and

warning means (18) connected to said disabling means for indicating when the brake antilock system (5) of said tractor vehicle is thereby disabled,

said threshold switch means being connected so as to disable said brake antilock system (5) of said tractor vehicle and to enable said warning means (18) in one position and to disable said warning means and to enable said brake antilock system of said tractor vehicle in the other position of said threshold switch.

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## 3,934,941
## SKID CONTROL VALVE

**Lloyd H. Holmes, Salt Lake City, Utah, assignor to E-Systems, Inc., Dallas, Tex.**

**Filed Dec. 23, 1974, Ser. No. 535,994**
**Int. Cl.² B60T *8/12***
**U.S. Cl. 303—21 F** **12 Claims**

1. A valve apparatus comprising:

primary input channel means arranged for connection to a primary fluid source;

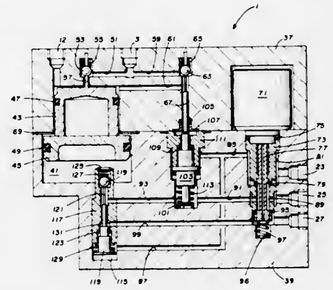
means defining a changeover cavity, said primary input channel means being connected to a first end of said changeover cavity;

primary output channel means connected to said first end of said changeover cavity, said primary output channel means being arranged for connection to a utilization device;

secondary input channel means arranged for connection to a secondary fluid source;

connecting channel means for connecting said secondary input channel means with a second end of said changeover cavity;

control means between said secondary fluid source and said second end of said changeover cavity, said control means being selectively operable to vary the effective pressure of said secondary fluid within said connecting channel means between said control means and said second end of said changeover cavity thereby providing pressure-controlled secondary fluid to said second end of said changeover cavity;



a first movable piston member in said changeover cavity; and

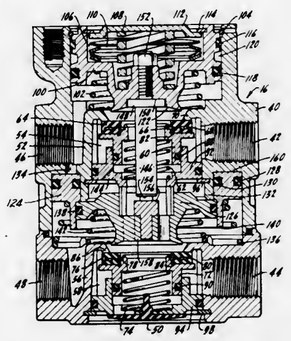
a second movable piston member in said changeover cavity separate from said first movable piston member, said first movable piston member being movable in response to the pressure exerted thereon by the primary fluid and said second movable piston member, said second movable piston member being movable in response to the pressure exerted thereon by the secondary fluid and said first movable piston member, each of said first and second movable piston members being in fluid contact with only one of said primary and secondary fluids.

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## 3,934,942
## DUAL CIRCUIT BRAKE VALVE

**Boleslaw Kilmek, Des Plaines, Ill., assignor to The Berg Manufacturing Company, Des Plaines, Ill.**

**Filed July 22, 1974, Ser. No. 490,893**
**Int. Cl.² B60T *15/12***
**U.S. Cl. 303—52** **14 Claims**



1. A brake application valve including a housing having a first inlet and a first outlet, a second inlet and a second outlet and an exhaust outlet, a first shuttle in said housing normally closing communication between said first inlet and outlet, a second shuttle in said housing normally closing communication between said second inlet and outlet, said shuttles nor-

mally maintaining communication between said outlets and said exhaust outlet,

a first piston in said housing yieldingly urged away from said first shuttle, a second piston in said housing yieldingly urged away from said second shuttle, said second piston having inner and outer concentric portions, mechanical means carried by said first piston and positioned to cause said second piston inner portion to follow inward movement of said first piston, inward movement of both pistons moving said first and second shuttles to open communication between said inlets and outlets and close communication to said exhaust outlet,

said second piston inner portion being mounted in sliding engagement with said second piston outer portion and having a surface exposed to fluid pressure appearing at said exhaust outlet, said second piston outer portion having a circumferential surface exposed to fluid pressure at said first outlet to cause movement of said second piston in response to fluid pressure supplied to said first outlet, said second piston inner and outer portions having surfaces exposed to fluid pressure at said second outlet whereby the ratio between the exposed surfaces of said second piston inner and outer portions determine the relationship between pressures applied at said outlets.

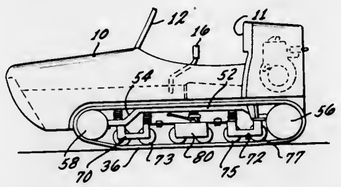
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**3,934,943**

## ENDLESS TRACK ADAPTED FOR USE WITH TRACK LAYING VEHICLES

**Rodney E. Gage, 9815 Lemona Ave., Sepulveda, Calif. 91343**

**Filed Mar. 29, 1974, Ser. No. 456,320**
**Int. Cl.² B62D** *55/24*
**U.S. Cl. 305—35 EB** **8 Claims**




1. A track member for an endless track vehicle comprising:

a plurality of transversely spaced longitudinal members and longitudinally spaced transverse members intersecting said longitudinal members and being integrally joined thereto to define a sheet-like grid with the spaces between said members defining openings completely through said grid;

the thickness of said members in the place of said sheet-like grid being small relative to their dimension normal to said plane;

said grid being of elastomeric material whereby said grid may be bent, in said plane, to arcuate form to effect steering of the vehicle without distorting the plane of said grid.

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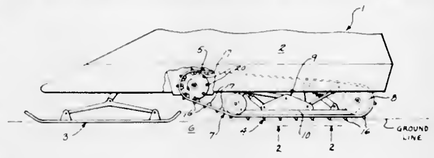
**3,934,944**

## GROUND ENGAGING DRIVE TRACK APPARATUS FOR SNOWMOBILES AND THE LIKE

**Lyle M. Forsgren, Fond Du Lac, Wis., assignor to Brunswick Corporation, Skokie, Ill.**

**Filed Sept. 27, 1974, Ser. No. 510,062**
**Int. Cl.² B62D** *55/08*
**U.S. Cl. 305—38** **15 Claims**

1. A drive track assembly for driving a vehicle over a support surface comprising an endless drive track means including a drive run and a return run with an internal suspension system urging the drive run into drive engagment with the support surface, said track means comprising a plurality of laterally spaced belt sections, a plurality of longitudinally spaced and laterally extending track members secured to the outer surface of said spaced sections and defining exposed




heat transfer members within said belt sections, said track members being formed of a good heat dissipating material, and a plurality of depending drive engaging members on said sections supporting said track members in spaced relation to the drive surface.

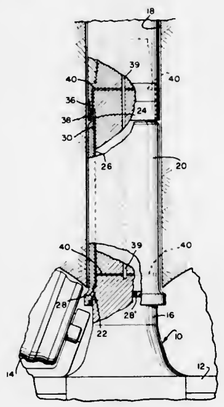
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**3,934,945**

## DRILL ROD STABILIZATION MEANS

**William H. Hamilton, Seattle, and William D. Coski, Mercer Island, both of Wash., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.**

**Filed Oct. 3, 1974, Ser. No. 511,640**
**Int. Cl.² F16C** *1/26*
**U.S. Cl. 308—4 A** **14 Claims**




1. For use with an earth boring machine having a rotatable and earth penetrating drill rod, means for stabilizing the drill rod during rotation and earth penetration, comprising:

means for coupling thereof to drill rod, for interpositioning between the earth and drill rod, for engaging the earth;

said earth engaging means having means for receiving a bearing means interpositionally between said earth engaging means and drill rod for accommodating relative rotation between said earth engaging means and drill rod.

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**3,934,946**

## RECIRCULATING BALL SLIDE

**John Kelsey Burr, Shrewsbury, and William Wolf, Eatontown, both of N.J., assignors to Motion Systems, Inc., Shrewsbury, N.J.**

**Filed Oct. 5, 1973, Ser. No. 404,018**
**Int. Cl.² F16C** *17/00*
**U.S. Cl. 308—6 C** **1 Claim**

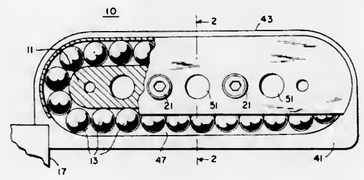
1. In combination, a ball slide and a slide rail, said ball slide comprising:



a recirculating ball race;

a plurality of ball bearings; and

means for retaining said ball bearings within said ball race, said ball slide and slide rail both including a concave ball track, at least the ball track in said ball race having an average radius of curvature less than 10 percent larger than the radius of said ball bearings, the center of curva-




ture thereof being radially offset from the center of said ball bearings, said ball slide and said slide rail being respectively secured to first and second members which are adapted for relative movement with respect to one another, said slide rail and/or said ball slide being secured to their respective members by means of rotatable, eccentric machine screws.

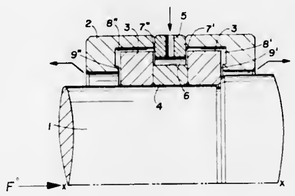
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**3,934,947**

## FLUID BEARING SYSTEM

**Lothar Walter, Schweinfurt, and Rainer Schürger, Arnstein, both of Germany, assignors to SKF Industrial Trading and Development Company, B.V., Amsterdam, Netherlands**

**Filed Oct. 25, 1973, Ser. No. 409,704**
**Claims priority, application Germany, Oct. 26, 1972, 2252495**
**Int. Cl.² F16C** *32/06*
**U.S. Cl. 308—9** **1 Claim**




1. A fluid bearing for a shaft comprising an annular housing located about said shaft, said housing and said shaft defining at least one fluid compression pocket distributed about the periphery of said shaft, an inlet for the supply of fluid under pressure to said compression pocket and control means for regulating the flow of pressure to and from said pocket comprising an annular recess formed in said housing, a pair of spaced disks integrally formed with shaft and extending radially outward into said recess, an annular ring integrally formed with said housing and extending radially inward between said spaced disks, the axially opposing surfaces of said ring and said disks forming restrictor inlet openings and the axially opposing surfaces of said disk and said housing forming discharge openings, said restrictor inlet and discharge openings being simultaneously varied relative to each other in the opposite direction as a function of the size and distribution of the load thereon.

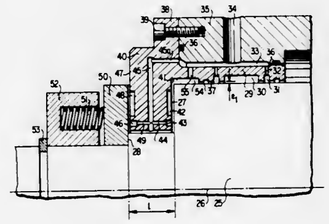
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**3,934,948**

## SELF-PRESSURIZING AND SELF-COMPENSATING HYDROSTATIC BEARING

**Francois Claude Pruvot, Pully (VD), Switzerland, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France**

**Filed July 9, 1974, Ser. No. 486,934**
**Claims priority, application France, July 20, 1973, 73.26826**
**Int. Cl.² F16C** *1/24, 7/04, 33/72, 37/00*
**U.S. Cl. 308—9** **12 Claims**




1. A self-pressurizing hydrostatic bearing intended to support a rotating shaft, comprising:

a bearing element including a plurality of pockets each of which is respectively pressurized, in response to the rotation of said shaft relative to said bearing element, by means of a fluid supply channel;

said pockets and channels being bounded and defined by means of sealing lands integral with said bearing element, said lands extending to within a very short distance from said shaft so as to define a gap therebetween; and

wherein said bearing element is deformable radially outwardly under the influence of said pressure within said pockets,

whereby said gap defined between said lands and said shaft increases as said pressure increases in response to the increasing rate of rotation of said shaft so as to permit the temperature rise of the fluid leaving said bearing, as said speed increases, to be substantially nullified.

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**3,934,949**

## METHOD FOR REDUCING ROTATION COMPONENTS IN TABLE TRANSLATION

**Kevin James Brady, Murray Hill; Victor Andrew Firtion, Secaucus; Leif Rongved, Summit, and Thomas Edward Saunders, Basking Ridge, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**

**Division of Ser. No. 429,037, Dec. 27, 1973. This application Apr. 16, 1975, Ser. No. 568,523**
**Int. Cl.² F16C** *35/00*
**U.S. Cl. 308—9** **2 Claims**

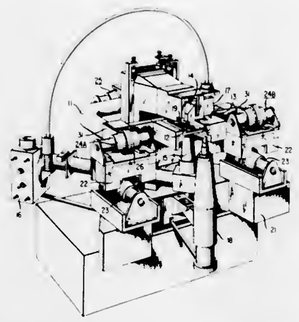
1. A method for translating a semiconductor wafer along a straight line with great precision comprising the steps of:

determining the movement curvature $a_1$ of a first reciprocating air bearing;

determining the movement curvature $a_2$ of a second reciprocating air bearing;

fastening the first and second bearings to a table such that

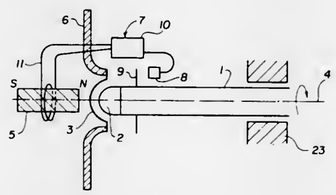
they lie along a common axis and such that the angle $a_1$ extends in the same direction as that of the angle $a_2$;



supporting the table with a third air bearing; and
applying a reciprocating translational force to the table.

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**3,934,950**
**BEARING FOR HIGH SPEED ROTARY SHAFTS**
**Wolf Kuhlmann, Schweinfurt, Germany, assignor to SKF Industrial Trading and Development Company, B.V., Amsterdam, Netherlands**
**Filed Oct. 3, 1973, Ser. No. 403,330**
**Claims priority, application Germany, Oct. 4, 1972, 2248695**
**Int. Cl.² F16C *39/00***
**U.S. Cl. 308—10** **16 Claims**

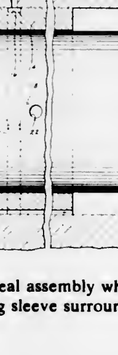


1. A system for journalling high speed rotary shafts comprising a spherical cap bearing fixedly mounted with respect to the shaft adapted to receive an end of said shaft, and to support said shaft against axial movement in the direction of said bearing, magnetic means arrayed with respect to said cap bearing to exert a continual force axially on said shaft toward the bearing means associated with said shaft cooperative with said magnetic means to move said shaft toward said spherical cap bearing during rotation and said cap bearing formed with at least one groove on its surface for forming a dynamic bearing film between the cap bearing and the shaft during rotation of said shaft.

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**3,934,951**
**SYSTEM OF CONSTRUCTION COMPONENTS FOR THE PRODUCTION OF ROLLER ASSEMBLIES**
**Karl Stumpf, Goethestrasse 1, 4 Dusseldorf, Germany**
**Filed Feb. 21, 1975, Ser. No. 551,830**
**Claims priority, application Germany, Mar. 30, 1974, 7411241[U]**
**Int. Cl.² F16C *13/00*, *35/00*; B65G *13/00***
**U.S. Cl. 308—20** **3 Claims**

1. A roller assembly for a roller train comprising
a fixed cylindrical axle;
a roller pipe having cylindrical inner and outer surfaces;
first and second end members each having bearing means therein, said members being slidable onto said axle for rotation thereon, each of said end members having
a hub extending into and frictionally engaging the interior surface of said pipe, and
a flange having a larger outer diameter than said hub, said flange forming a shoulder abutting an end of said pipe;
pulley means integrally formed on said first one of said end members for cooperating with drive means to rotate said roller assembly about said axle;



a plurality of hollow frustoconical members slidable onto said pipe in end-to-end relationship surrounding said pipe and in coaxial relationship therewith, the outer surfaces of said frustoconical members making equal angles with the axes thereof, the smaller end of each said member being of equal diameter with the larger end of the next adjacent one of said members to form a continuous frustoconical outer surface along the length of said roller assembly; and an annular spacer member between the larger end of the largest one of said frustoconical members and said pipe to maintain said larger end in coaxial relationship with said pipe.
said spacer member having means defining a shoulder abutting the larger end of said largest member.

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**3,934,952**
**LEAKPROOF SEAL FOR BEARINGS**
**Willis W. Gardner, Waukesha, Wis., assignor to Waukesha Bearings Corporation, Waukesha, Wis.**
**Filed Jan. 24, 1975, Ser. No. 543,722**
**Int. Cl.² F16C *1/24***
**U.S. Cl. 308—36.1** **16 Claims**

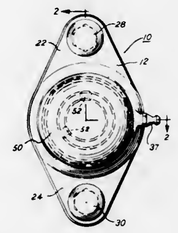


1. In a bearing and seal assembly wherein there is a rotatable shaft and a bearing sleeve surrounding a portion of said shaft, there being oil openings in said bearing sleeve, and wherein there is means for applying oil under pressure to said oil openings to provide lubrication between said bearing sleeve and said shaft, and wherein there is a seal assembly surrounding said shaft axially spaced from said bearing sleeve, the improvement comprising means providing an annular collecting chamber around said shaft between said bearing sleeve and said seal assembly, a seal ring surrounding said shaft at the end of said bearing sleeve which is adjacent said collecting chamber, and means including a scavenge pump coupled to said annular collecting chamber to remove material from said chamber which has collected therein because of leakage past said seal ring and seal assembly.



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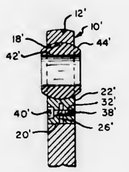
**3,934,953**
**SHAFT BEARING AND METHOD OF ASSEMBLING THE SAME**
**Robert W. Tooley, Osceola, Ind., assignor to Reliance Electric Company, Mishawaka, Ind.**
**Filed May 3, 1974, Ser. No. 466,604**
**Int. Cl.² F16C *9/06*; B21D *53/10***
**U.S. Cl. 308—72** **13 Claims**



1. A shaft bearing comprising a housing having a body with a cavity therein, a bearing insert seating in said cavity for journalling a shaft, a retainer for seating on said body for securing said bearing insert in place in said housing, said body and said retainer being constructed of a plastic material joined together at their interface by ultrasonic vibration, forming an integral body retainer structure with the bearing insert entrapped in said body cavity.

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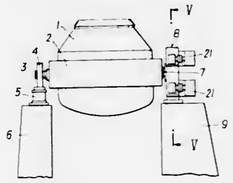
**3,934,954**
**SPHERICAL BEARING WITH SLOTTED KEY**
**Albert R. McCloskey, Fairfield, Conn., assignor to Rockwell International Corporation, Pittsburgh, Pa.**
**Filed Dec. 9, 1974, Ser. No. 530,697**
**Int. Cl.² F16C *23/04***
**U.S. Cl. 308—72** **1 Claim**



1. A spherical bearing comprising an outer member having a hole extending from side to side the surface of the hole being concave and spherical so that the outer member has constricted portions at each side, the outer member also having a walled keyway extending downward from the hole and extending axially from side to side of the outer member substantially perpendicular to the sides of the outer member; a walled key in the keyway co-extensive with the keyway, the key also having a concave and spherical top surface corresponding to the surface of the hole so that the key has shoulder portions corresponding to the constricted portions of the outer member; and a partially spherical inner member having flat sides, the inner member being held in the outer member by impingement of the spherical surface of the inner member against the constricted portions of the outer member and the key being held in the outer member by impingement of the shoulder portions of the key against the spherical surface of the inner member, the improvement comprising the provision of a radial extending slot in the walled key, adjusting means in the wall of the key to vary the width of the slot thereby varying the bearing tolerance between the inner and outer members, said radially extending slot is only partially through said key in a radial direction, said slot being open in the direction of said keyway.

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**3,934,955**
**FIXED BEARING ASSEMBLY FOR A TILTABLE-CONVERTER CARRYING TRUNNION**
**Ernst Riegler, Enns, and Manfred Schmidt, Linz, both of Austria, assignors to Vereinigte Osterreichische Eisen- und Stahlwerke-Alpine Montan Aktiengesellschaft, Linz, Austria**
**Filed Jan. 2, 1975, Ser. No. 538,202**
**Claims priority, application Austria, Jan. 10, 1974, 167/74**
**Int. Cl.² F16C *23/06***
**U.S. Cl. 308—72** **15 Claims**



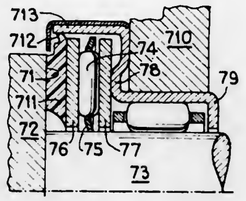
1. A fixed bearing assembly for a tiltable-converter carrying trunnion which comprises:
a spur gear wheel secured to the carrying trunnion,
a base,
a common bearing and drive housing directly secured to the base and jointly accommodating the carrying trunnion and the spur gear wheel, and
a bearing means between the spur gear wheel and the housing for accommodating angular and wobbling movements of the carrying turnnion spur gear wheel.

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**3,934,956**
**AXIAL THRUST BEARING**
**Alfred Pitner, Paris, France, assignor to Nadella, France**
**Filed Mar. 19, 1974, Ser. No. 452,517**
**Claims priority, application France, Mar. 21, 1973, 73.10070**
**Int. Cl.² F16C *19/34***
**U.S. Cl. 308—174** **21 Claims**

1. A thrust bearing comprising an annular support structure having means defining a radially inwardly extending retaining face at each end of the structure, at least one annular plate disposed within the support structure and defining a raceway, a ring arrangement of radial rolling elements in rolling contact with the raceway and a cage which guides the rolling elements, at least one axially deformable annular elastically yieldable means disposed within the support structure in freely axially movable relation to the support structure, and applied against in contact with the plate on a side of the plate remote from the

rolling elements, one of said retaining faces axially retainingly cooperating with the cage and the other retaining face axially




retaining the yieldable means, the rolling elements being uncovered for direct engagement with a machine part.

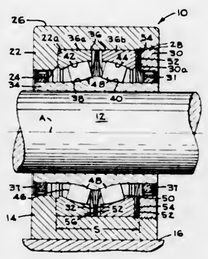
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**3,934,957**

## PRELOADED DOUBLE ROW SPHERICAL ROLLER BEARING

**William J. Derner, Indianapolis, Ind., assignor to FMC Corporation, San Jose, Calif.**

**Filed Feb. 13, 1974, Ser. No. 442,023**
**Int. Cl.² F16C** *23/00*
**U.S. Cl. 308—207 A** **3 Claims**




1. A double row antifriction bearing having a housing and having inner race means and outer race means, said bearing having two rows of rollers mounted between said inner race means and said outer race means, said outer race means comprising two spaced apart annular race members, said housing having two spaced apart opposing wall surfaces between which said two annular race members are received, at least one of said housing wall surfaces defined by a threaded nut adjustable toward and away from the opposite wall surface to adjust the span between said wall surfaces, the combination comprising a first wave spring between said outer race members and engaged with both to bias said race members apart, and a second wave spring between one of said race members and one of said housing wall surfaces, said spring engaged with both said one race member and said one housing wall surface to bias said members apart and thereby bias said other housing wall surface into engagement with said other race member.

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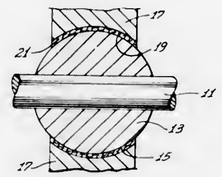
**3,934,958**

## BEARING LINER

**Peter H. Turner, Burbank, Calif., assignor to Sargent Industries, Inc., Los Angeles, Calif.**

**Division of Ser. No. 274,606, July 24, 1972. This application Apr. 25, 1974, Ser. No. 463,885**
**Int. Cl.² F16C** *9/06*
**U.S. Cl. 308—238** **20 Claims**

1. In combination:
a first member defined in part by a first surface;
a second member defined in part by a second surface disposed in proximity to the first surface of the first member, the second member having characteristics for movement with respect to the first member;
first means disposed in fixed relationship with one of the first and second surfaces and slidably engaging the other of the first and second surface to provide a low friction




layer between the first and second surfaces, the first means including a fibrous material, the first means further including particles of a low friction material in a mechanically bonded relationship with the fibrous material and further including an adhesive.

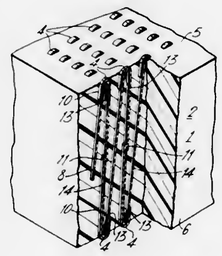
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**3,934,959**

## ELECTRICAL CONNECTOR

**Hermanus Petrus Johannes Gilissen, Vlijmen, Netherlands, assignor to AMP Incorporated, Harrisburg, Pa.**

**Filed July 22, 1974, Ser. No. 490,621**
**Claims priority, application Netherlands, Aug. 8, 1973, 7310941**
**Int. Cl.² H05K** *1/00;* **H01R** *11/02*
**U.S. Cl. 339—17 M** **2 Claims**




1. A matrix connector comprising an elastomer body presenting a pair of opposite contact surfaces at each of which is disposed a multiplicity of spaced contacts, the contacts of the opposite faces being interconnected by conductors extending through the body, in which the contacts are defined by folds of the conductors extending through the elastomeric mass, convex portions of the folds being exposed at the opposite faces, said conductors comprise flat metal strips formed as circuits on a lamina flexible printed circuit folded in concertina fashion and encased within the elastomer body, the metal strips extending externally around respective concertina folds to define the contacts exposed at the contact surfaces of the elastomer body, the strips associated with alternate folds of the concertina form being disposed on one side of the printed circuit and the strips associated with the intervening folds being formed on the opposite side of the printed circuit, strips on one side of the circuit being connected with respective strips on the other side through holes in a flexible insulating lamina of the circuit at locations within the elastomer body inwards of the contact surfaces, and the elastomer extending through apertures in the insulating lamina.

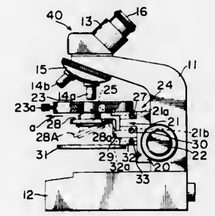


**3,934,960**

## ARRANGEMENT FOR DETACHABLY MOUNTING AN EXAMINING MEMBER ONTO A MICROSCOPE

**Teruo Ouchi, Hachioji, and Hiroshi Isuda, Mitaka, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan**

**Filed Oct. 24, 1974, Ser. No. 517,487**
**Claims priority, application Japan, Dec. 15, 1973, 48-142334[U]**
**Int. Cl.² G02B** *21/06*
**U.S. Cl. 350—87** **9 Claims**




1. Detachable mounting apparatus for use with a microscope having support means movable in a first plane towards and away from optical objective means, comprising:
a support member extended from said support means in a second plane substantially perpendicular to said first plane, said support member having a first dovetail joint portion formed on each of a pair of opposed surfaces extended in said second plane;
means for supporting a specimen to be examined;
a first examination accessory member;
each of said specimen support means and said first examination accessory member having a cooperating dovetail joint portion extended in said second plane and adapted to detachably closely mate with one of said first dovetail joint portions to independently rigidly position each of said specimen support means and said first examination accessory member to one of said pair of opposite support member surfaces and within the viewing cone of said optical objective means, whereby each of said specimen support means and said first examination accessory member is independently removable from said support member by sliding disengagement of said first and cooperating dovetail joint portions in said second plane without disturbing the position relative to said microscope and said movable support means of the other one of said specimen support means and first examination accessory member.

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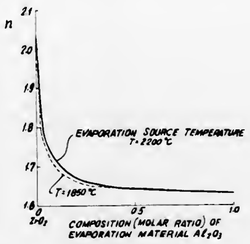
**3,934,961**

## THREE LAYER ANTI-REFLECTION FILM

**Susumu Itoh, Tokyo; Keijiro Nishida, Kanagawa; Osamu Kamiya, Tokyo, and Nobuyuki Sekimura, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Japan**

**Continuation-in-part of Ser. No. 192,394, Oct. 26, 1971, abandoned. This application Sept. 21, 1973, Ser. No. 399,612**
**Claims priority, application Japan, Oct. 29, 1970, 45-95438**
**Int. Cl.² G02B** *5/28*
**U.S. Cl. 350—164** **5 Claims**

1. A three-layer anti-reflection coating deposited by vapor-deposition consisting of a first layer, a second layer and a third layer being positioned in the recited order from a glass base plate:
the first layer having an optical thickness of one-half the designed wavelength and being composed of aluminium oxide and zirconium oxide;
the second layer having an optical thickness of one-half the designed wavelength; and
the third layer having an optical thickness of one-fourth the designed wavelength,
wherein the relationship among the refractive indices of the glass base plate, the first layer, the second layer, and the third layer is




that the second layer > the glass base plate > the first layer > the third layer.

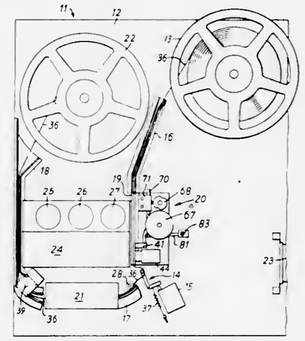
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**3,934,962**

## MECHANISMS FOR TRANSPORTING STRIP MATERIAL

**John Thurston Taylor; Anthony James Halliday; Jonathan George Cordy Angel, all of Peacehaven, and Bernard Blakemore, London, all of England, assignors to Colourvision Associates, London, England**

**Filed Feb. 8, 1974, Ser. No. 440,761**
**Claims priority, application United Kingdom, Feb. 12, 1973, 6735/73; Feb. 12, 1973, 6737/73**
**Int. Cl.² G03B** *1/22*
**U.S. Cl. 352—194** **7 Claims**




1. An intermittent drive mechanism comprising:
face cam means mounted for rotation about an axis;
profile cam means mounted for rotation about the said axis;
said face cam means having a side face defining a cam groove;
first lever means arranged to be moved cyclically by rotation of said face cam means,
claw means provided on said first lever means;
cam groove follower means provided on said first lever means and extending parallel to said axle to engage said cam groove whereby to be positively guided to effect the cyclical movement of the first lever means on rotation of said face cam means;
second lever means arranged to be moved cyclically by rotation of said profile cam means and pivotally coupled to said first lever means whereby to impose the cyclical movement of said second lever means on said first lever means; and
strip guiding means arranged adjacent said claw means whereby said cyclical movements of said first and second lever means imposed upon said claw means drives said

claw means in cyclical motion such that said claw means is engageable with and disengageable from perforated strip material in said guiding means under the action of said profile cam means, and intermittently transports said material in said guiding means under the action of said face cam means.

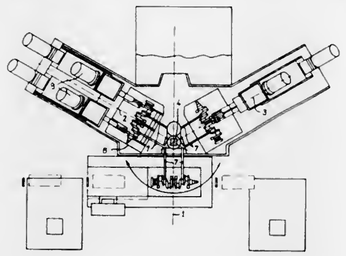
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**3,934,963**

## AUTOMATIC BALANCING MACHINES

**Christian Langlois, Billancourt, France, assignor to Regie Nationale des Usines Renault, Billancourt, France**

**Filed Oct. 16, 1973, Ser. No. 406,934**
**Claims priority, application France, Nov. 2, 1972, 72.38988**
**Int. Cl.² B27C *9/00*; B23B *39/04***
**U.S. Cl. 408—2** **1 Claim**



1. Automatic machine for balancing the rotary crankshaft of thermal engines comprising

a measuring station and machining stations disposed circumferentially equal distances apart on a common circle;

a rotary unit, said rotary unit having a work holding fork for each station extending radially from said rotary unit toward each station;

said forks being spaced equal circumferential distances apart;

means to rotate said rotary unit to angularly displace said forks from one station to another in the same direction of rotation and to move said fork vertically to receive the rotary crankshaft and to deliver said crankshafts to supports at said stations;

said machining stations having crankshaft supports comprising V-shaped members for receiving and centering the journals of said crankshafts, together with inserts for engaging and positioning a central crankpin, and

a bracket adapted to be operated automatically by a fluid-actuated cylinder and piston unit, said bracket further comprising shoes for clamping journals normally to said V-shaped members and a bevelled spring-urged piston end for pressing the reference crankpin against one of the positioning inserts to angularly orientate the crankshaft in the mounting.

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**3,934,964**

## GRAVITY-ACTUATED FLUID DISPLACEMENT POWER GENERATOR

**David Diamond, 2773 Mill Ave., Brooklyn, N.Y. 11234**

**Filed Aug. 15, 1974, Ser. No. 497,533**
**Int. Cl.² B23B *39/00***
**U.S. Cl. 415—7** **6 Claims**

1. A gravity-actuated power generator, comprising:

a. a first fluid medium;

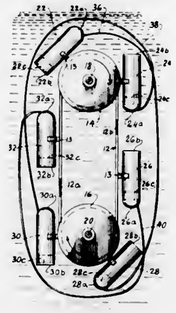
b. a plurality of containers, said containers being immersed in and having a variable buoyancy with respect to said first fluid medium;

c. rotating means, said rotating means being connected to and driven by said containers, and having at least one substantially horizontal axis of rotation; and

d. gravity-actuated pump means, said gravity-actuated pump means being connected to and controlling the buoyancy of said containers in accordance with the positions of said containers with respect to said axis of rotation;

e. whereby said containers positioned to move upwardly about said axis of rotation are lighter in weight, and said containers positioned to move downwardly about said axis of rotation are heavier in weight, relative to the weight of said first fluid medium displaced thereby;

f. such that said containers move by force of gravity and fluid displacement about said axis of rotation,



g. a second fluid medium, said second fluid medium being lighter than an equal volume of said first fluid medium and being contained within said containers; and

h. conduit means, said conduit means connecting between said containers positioned to move upwardly about said axis of rotation and said containers positioned to move downwardly about said axis of rotation, thereby forming opposite pairs of containers,

i. said gravity-actuated pump means being adapted to pump said second fluid medium from said containers positioned to move downwardly about said axis of rotation, through said conduit means to said containers positioned to move upwardly about said axis of rotation.

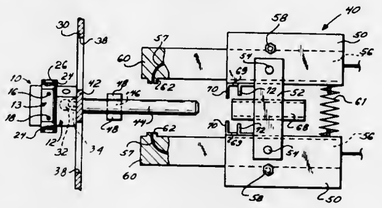
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**3,934,965**

## OPTICAL COUPLER

**Donald F. Wiseman, Hackensack, and Roy C. Josephsen, Hillsdale, both of N.J., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.**

**Filed Oct. 29, 1974, Ser. No. 518,677**
**Int. Cl.² G01N *1/10***
**U.S. Cl. 356—246** **12 Claims**



1. In an optical coupling for a flowcell having an optical sight path and light-input and light-output windows along said sight path the combination of: a support for the flowcell, clamp means comprising a pair of jaw members having a pair of corresponding end portions and comprising means for movement of such end portions relatively toward and away from each other, at least a pair of light-transmitting elements



having terminals supported in the respective jaw members for alignment with said light-input and light-output windows, respectively, in the operative positions of said jaws, and slip-on coacting guide means on said clamp means and said support for aligning said light-transmitting elements along said optical sight path in the operative positions of said jaws.

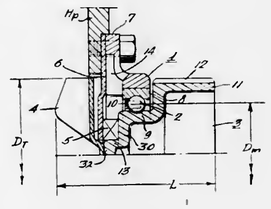
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**3,934,966**

## COOLING WATER PUMP, PREFERABLY OF MOTOR CAR ENGINES

**Sture Lennart Asberg, Savedalen, Sweden, assignor to SKF Industrial Trading and Development Company, B.V., Jutphaas, Netherlands**

**Continuation-in-part of Ser. No. 304,905, Nov. 9, 1972, Pat. No. 3,861,170. This application June 21, 1974, Ser. No. 481,877**
**Claims priority, application Sweden, Nov. 11, 1971, 14399/71**
**Int. Cl.² F16C *1/06* F04D *29/22***
**U.S. Cl. 415—219 C** **9 Claims**



1. A pump unit for liquid-cooled internal combustion engines preferably for vehicle engines and of the type including a pump unit housing, an impeller, a drive member operatively connected to the impeller to rotate the same forming a rotatable assembly, bearing means supporting the drive member for rotation relative to the housing and a seal adapted to seal an annular space between the rotatable assembly and housing characterized in that the pitch diameter $D_m$ of the bearing and the axial length L of the pump unit as measured from the impeller to the oppositely located end of the drive member are of a relationship wherein $D_m$ is between $1/\sqrt{3}$ and $\sqrt{3}$ L.

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**3,934,967**

## REFRIGERATION COMPRESSOR AND SYSTEM

**Edwin L. Gannaway, Adrian, Mich., assignor to Sundstrand Corporation, Rockford, Ill.**

**Filed July 12, 1973, Ser. No. 379,006**
**Int. Cl.² F04B *27/00***
**U.S. Cl. 417—271** **9 Claims**

1. A refrigeration compressor, comprising,

a. a sealed housing,

b. a cylinder block in the housing having an annular array of parallel axially disposed cylinders around a central axis,

c. pistons reciprocable in the cylinders,

d. a cam inclined relative to the axis of the cylinder block,

e. means mounting the cam and the cylinder block for relative rotation to reciprocate the pistons in the cylinders,

f. means providing an annular inlet channel in the housing around the cylinder block,

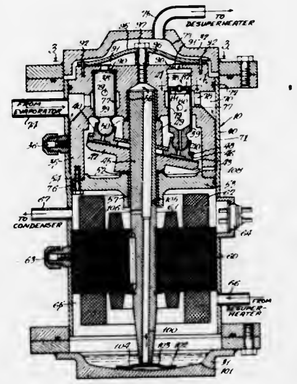
g. an inlet in the housing leading to the annular channel,

h. intake valving for admitting low pressure fluid from the inlet channel to the cylinders on the intake strokes of the pistons,

i. an outlet leading from the housing,

j. an annular array of outlet ports in the cylinder block leading axially respectively from the cylinders to the outlet,

k. leaf valves associated with the outlet ports for discharging high pressure fluid from the cylinders to the outlet on the compression strokes of the pistons, and



l. a circular dish-shaped baffle having a central portion in spaced relation to the cylinder block and an outer periphery overlying and contiguous with the leaf valves and defining restricted passages between the leaf valves from the interior of the baffle to the outlet.

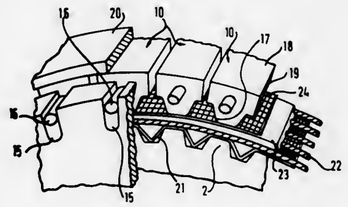
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**3,934,968**

## MOLD FOR MAKING DOUBLE-TOOTHED BELTS

**Mario Cicognani, Milan, Italy, assignor to Industrie Pirelli S.p.A., Milan, Italy**

**Filed Mar. 4, 1975, Ser. No. 555,254**
**Claims priority, application Italy, Apr. 26, 1974, 21925/74**
**Int. Cl.² B29D *29/00*; B29H *7/22***
**U.S. Cl. 425—28 B** **4 Claims**

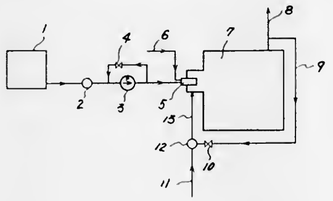


1. A mold for the manufacture of double-toothed belts comprising a mandrel provided with teeth on its outer surface, a plurality of shaped bars arranged around the toothed surface of the mandrel, said shaped bars having their surface directed towards the mandrel, each bar being shaped to form at least the groove of one tooth and two half teeth, and means for carrying out a guided movement, in a direction radial to the mandrel, of said shaped bars.

## 3,934,969
## METHOD FOR BURNING EMULSION OILS

**Hideyo Noda, Kyoto; Norio Kawai, Osaka; Osamu Tarue, Nagaokakyo; Kazuo Fukada, Takarazuka; Shigeyoshi Idehara, Akashi; Tadao Nakanishi, Osaka; Yuzo Kakimoto, Akashi, and Yoshito Nakamura, Ibaraki, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan**

**Filed Dec. 20, 1974, Ser. No. 534,793**
**Claims priority, application Japan, Dec. 22, 1973, 48-3904**
**Int. Cl.² F23J** *5/02*
**U.S. Cl. 431—9** **7 Claims**

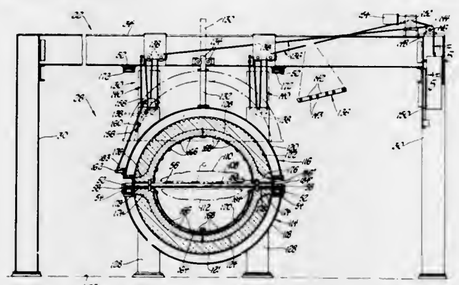


1. In burning an emulsion oil containing oil and water in a ratio of 5 – 9 : 5 – 1 by volume, a method characterized in that the emulsion oil is burned while recycling 10 to 40% by volume of the resulting combustion exhaust gas to a combustion chamber.

## 3,934,970
## GLASS TEMPERING SYSTEM

**Harold A. McMaster, 707 Riverside Drive, Woodville, Ohio 43469, and Norman C. Nitschke, 9102 Buck Road, Perrysburg, Ohio 43551**

**Filed Feb. 19, 1975, Ser. No. 551,435**
**Int. Cl.² F27B** *9/00;* **C03B** *25/04*
**U.S. Cl. 432—121** **38 Claims**



1. A roller hearth furnace for heating sheets of glass, the furnace comprising:

a horizontally elongated housing including upper and lower housing portions of complementary hollow constructions, the lower housing portion being fixedly mounted in an upwardly opening orientation, the upper housing portion opening downwardly and being mounted for vertical movement between an upper open position spaced above the lower housing portion to permit access into the housing portions and a lower closed position immediately over the lower housing portion so the housing portions cooperatively define a horizontally elongated heating chamber, said housing portions cooperatively defining horizontally elongated slots along the elongated sides thereof, said elongated slots opening horizontally in communication with the heating chamber and in alignment with each other, and means on the housing for heating the chamber thereof; and

a roller conveyor for moving sheets of glass through the heating chamber, said conveyor including means defining a pair of support surfaces respectively extending horizontally alongside the slots of the housing and located externally of the heating chamber, said support surfaces being at the same vertical height as each other, a pair of continuous drive belt means respectively slidable on the pair of support surfaces, said drive belt means having upwardly facing surfaces in horizontal alignment with the elongated housing slots and each other while sliding along the support surfaces, a plurality of elongated rollers extending through the heating chamber of the furnace and outwardly through the elongated slots in the housing, the opposite ends of each roller being supported on the upwardly facing surface of the adjacent drive belt means so the roller portions within the heating chamber support sheets of glass in a horizontal orientation, positioning means preventing the rollers from moving in the elongated direction of the furnace so that frictional engagement of the rollers with the drive belt means rotates the rollers as the belt means move along the support surfaces, and drive means for moving the belt means along the support surfaces so glass sheets on top of the rollers within the heating chamber are heated while conveyed within the housing.

10. A roller hearth furnace for heating sheets of glass, the furnace comprising:

a horizontally elongated housing including upper and lower housing portions of complementary hollow constructions, the lower housing portion being fixedly mounted in an upwardly opening orientation and having an inner layer of refractory material, the upper housing portion opening downwardly and having an inner layer of refractory material, the upper housing portion being mounted for vertical movement between an upper open position spaced above the lower housing portion to permit access into the housing portions and a lower closed position immediately over the lower housing portion so the inner layers of refractory material of the housing portions cooperatively define an elongated heating chamber of the furnace, said layers of refractory material cooperatively defining a pair of horizontally elongated slots along the elongated sides of the furnace, said elongated slots opening horizontally in communication with the heating chamber and in alignment with each other, and means for heating the heating chamber of the housing;

a roller conveyor for moving sheets of glass through the heating chamber of the furnace from one end thereof to the other, said conveyor including means defining a pair of support surfaces respectively extending horizontally alongside the slots of the housing and located externally of the heating chamber, said support surfaces being at the same vertical height as each other, a pair of continuous drive belts respectively associated with the pair of support surfaces on opposite sides of the furnace, a driven belt sheave for each drive belt at one end of the furnace and an idler belt sheave for each drive belt at the other end of the furnace, said drive belts having portions that are slidably driven along their respective support surfaces and including upwardly facing surfaces in horizontal alignment with the elongated housing slots and with each other, a plurality of elongated rollers extending through the heating chamber and outwardly through the elongated slots in the housing, the opposite ends of each roller being supported on the upwardly facing surface of the adjacent drive belt so the intermediate portions of the roller within the heating chamber support sheets of glass in a horizontal orientation, and a plurality of positioning members extending upwardly between the rollers from adjacent the support surfaces to prevent movement of the rollers along the elongated direction of the furnace so that frictional engagement of the rollers with the belt driven along the support surfaces rotates the rollers and thereby conveys sheets of glass through the furnace, said positioning members permitting upward movement of the rollers when the upper housing portion is in the raised position thereof; and

heat seals for sealing between the housing and the rollers at the elongated slots in the housing to mitigate heat flow out of the heating chamber through the slots.

23. A glass tempering system comprising the combination of:

a furnace including an elongated housing defining an elongated heating chamber, heating means for heating said chamber, said housing defining elongated slots at opposite lateral sides of the furnace, said slots communicating with the heating chamber and opening horizontally in alignment with each other;

a first conveyor for moving glass through the furnace from one end thereof to the other, the conveyor including means defining a pair of support surfaces extending horizontally alongside the slots of the housing and located externally of the heating chamber, a pair of continuous drive belt means associated with the pair of support surfaces on opposite sides of the housing, a first pair of belt sheaves rotatably supported on opposite sides of the furnace adjacent the one end thereof and respectively receiving the pair of drive belt means, a second pair of belt sheaves rotatably supported on opposite sides of the furnace adjacent the other end thereof and respectively receiving the pair of drive belt means, a first electric motor drive mechanism for driving the first pair of the drive belt sheaves so that portions of the drive belt means slide along the support surfaces toward the one end of the furnace from the other end thereof, said portions of the pair of drive belt means having upwardly facing horizontal surfaces aligned with the slots in the housing and with each other at the same vertical height, a plurality of elongated rollers extending through the heating chamber and outwardly through the slots in the housing, the opposite ends of each roller being supported on the upwardly facing surface of the adjacent drive belt means so the intermediate portions of the rollers within the heating chamber support sheets of glass in a horizontal orientation, and positioning means locating the rollers longitudinally with respect to the furnace so that frictional engagement of the rollers with the drive belt means rotates the rollers as the drive mechanism drives the first pair of belt sheaves and thereby conveys glass from the one end of the furnace to the other;

a quench unit adjacent the other end of the furnace for quenching the sheets of glass after leaving the furnace;

a second conveyor for carrying the sheets of glass through the quench unit, said second conveyor including means defining a second pair of support surfaces, a second pair of continuous drive belt means, rotatably supported sheaves receiving the second pair of continuous drive belt means so that portions thereof respectively slide over the second pair of support surfaces and define upwardly facing surfaces, a plurality of elongated rollers extending transversely with respect to the elongated direction of the tempering system and having ends respectively supported on the upwardly facing surfaces of the pair of second drive belt means, and positioning means preventing movement of the rollers of the second conveyor longitudinally with respect to the tempering system so that driven movement of the second pair of drive belt means along the support surfaces toward the furnace rotates the rollers supported thereby so as to carry the glass away from the furnace thorugh the quench unit, and a second electric motor drive mechanism for driving the second pair of drive belt means; and

means coupling the first and second conveyors to coordinate the movement thereof so that glass moves at a steady state between the two conveyors.

3,934,971

## PROCESS FOR PREPARING MULTICOLORED COTTON PILE FABRIC

Eugene J. Blanchard, New Orleans; Gloria A. Gautreaux, and Robert J. Harper, Jr., both of Metairie, all of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed June 4, 1974, Ser. No. 476,244
Int. Cl.² D06P *1/00*, *5/12*
U.S. Cl. 8—14 5 Claims

1. A process for producing cotton pile fabrics which are multicolored on one side which process comprises:
a. padding the fabric with a basic catalyst solution,
b. drying the fabric from a,
c. coating the loops on one side of the cotton pile fabric from b with a formulation containing a reactive dye and thickening agent,
d. drying and subsequently curing the fabric from c,
e. washing the cured fabric from d,
f. overdyeing the washed fabric from e with a second reactive dye.

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3,934,972

## DYEING PROCESS

Colin William Greenhalgh; David Francis Newton; Dennis Eckersley; Ian Cheetham; Duncan Adrian Sidney Phillips; Kenneth Dunkerley; Gerald Williams, and Vibhas Chokshi, all of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Mar. 18, 1974, Ser. No. 452,441
Claims priority, application United Kingdom, Apr. 25, 1973, 19580/73; Oct. 16, 1973, 48080/73
Int. Cl.² C09B *1/00*, *5/62*; D06P *3/82*
U.S. Cl. 8—39 13 Claims

1. A process for dyeing textile fibers comprising cellulose or blends of cellulose with polyester fibres which process comprises applying to said fibres an unsulphonated dyestuff containing a dicarboxylic cyclic anhydride grouping or a dicarboxylic acid grouping such that cyclic anhydride formation can occur by loss of water therefrom, or a half ester or half amide of such a dicarboxylic acid grouping, any carboxylic acid group in the said dyestuff being present in free acid form or in the form of a salt with ammonia or a volatile amine, and heating the textile fibre until fixation of the dyestuff takes place.

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3,934,973

## FINELY DIVIDED COLORANTS

Andrew Shultz, Morris Plains, and Leslie C. Wizemann, Wyckoff, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Continuation of Ser. No. 721,590, April 16, 1968, abandoned. This application Sept. 20, 1971, Ser. No. 182,234
Int. Cl.² C09B *67/00*
U.S. Cl. 8—79 10 Claims

1. A process for preparing a finely-divided, easily dispersible colorant composition which comprises preparing a slurry of a substrate consisting essentially of a finely-divided, inert, water-insoluble inorganic material in a solution of a dyestuff, removing the solvent from said slurry by atomizing said slurry into a stream of heated gas and recovering the resulting dried product as a free-flowing particulate composition of said inert substrate having said dyestuff evenly dispersed on the surface thereof.

10. A dry, solid particulate colored composition comprising a cleansing composition having uniformly dispersed therethrough a colorant composition as claimed in claim 9.

3,934,974

## SOLUTION OF ETHYLAURAMINE HYDROCHLORIDE IN THIODIGLYCOL

Aimé Joseph Arsac, and Roland Jean Dominique Tosan, both of Condrieu, France, assignors to Produits Chimiques Ugine Kuhlmann, Paris, France

Filed Sept. 5, 1973, Ser. No. 394,577
Claims priority, application France, Sept. 5, 1972, 72.31355
Int. Cl.² D06P *1/68*
U.S. Cl. 8—93 2 Claims

1. Solution of ethylauramine hydrochloride in thiodiglycol wherein the concentration of ethylauramine hydrochloride is equal to, or greater than 15 percent by weight.

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3,934,975

## LEATHER TREATING PROCESS

James M. Kelly, Belford, and John G. Papalos, Kearny, both of N.J., assignors to Diamond Shamrock Corporation, Cleveland, Ohio

Continuation of Ser. No. 206,969, Dec. 10, 1971, abandoned, which is a division of Ser. No. 93,839, Nov. 30, 1970, abandoned. This application Oct. 10, 1973, Ser. No. 405,113
Int. Cl.² C14C *3/18*
U.S. Cl. 8—94.24 11 Claims

1. In a method of treating leather stock whose wrung split shave weight is normally 40 to 50 percent by weight of water, comprising
A. washing the stock in 400 percent water for 15 minutes and draining,
B. refloating the stock for 30 minutes in 100 percent water at 80° F and neutralizing with 0.06% sodium bicarbonate,
C. washing the stock in a float at 130° F for 10 minutes and draining,
D. adding 2 to 10 percent by weight of solids of a leather treating composition (syntan) per 100 percent at 130° F and running for 1½ hours,
E. adjusting the system with formic acid to the lowest equilibrium pH and running for 15 minutes,
F. further adjusting the system with formic acid to a pH of 3.5 and running for an additional 15 minutes,
G. washing the stock for 10 minutes in cold water,
H. heating the stock to 130° F, washing for 10 minutes and draining,
I. fat-liquoring the stock with 8 percent solids per 100 percent float at 130° F with a fat liquor consisting of an emulsified oil whose emulsifier is of a nonrewetting character,
J. rinsing the stock, washing for 10 minutes and horsing up the stock,
K. rinsing out the stock and tacking it up to dry in an oven at 140 degrees F for 4 hours,
L. allowing the stock to lay over for 3 days to pick up moisture, and
M. drying and staking the stock,
the improvement which comprises using a leather treating composition in step D comprising an alkyl phenol - polyphenol condensate which has been alkoxylated and phosphated, and in which
A. the alkyl phenol is selected from at least one of a group consisting of saturated or unsaturated linear or branched chain $C_6$ to $C_{30}$ alkyls,
B. the phenol moiety of the alkyl phenol is selected from at least one of a group consisting of phenols, thiophenols, and phenols substituted with at least one member of the group consisting of hydroxyl radicals, halogen atoms, nitro radicals, methyl radicals, ethyl radicals, propyl radicals and phenyl radicals.
C. the polyphenol is selected from at least one of a group consisting of fused ring, polyaryl, and polyaralkyl polyphenols having from 2 to 15 benzene rings per molecule, including polyphenols substituted with at least one member of the group consisting of hydroxyl radicals, halogen atoms, nitro radicals, methyl radicals, ethyl radicals, and propyl radicals.
D. the alkyl phenol and polyphenol are joined by an aldehyde, substituted aldehyde, or aldehyde liberating composition.
E. the alkoxylating agent is selected from at least one of a group consisting of ethylene oxide, propylene oxide, butylene oxide and iso-butylene oxide, and
F. the phosphating agent is selected from at least one of a group consisting of polyphosphoric acid, phosphoric acid, phosphorous pentoxide, pyrophosphoric acid, phosphorous acid, and phosphorous oxychloride,
further characterized in that the total number of benzene rings contained in one molecule of the condensate is between 3 and 16.





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3,934,976

## TRACE LEAD ANALYSIS METHOD

Catherine A. Zelaskowski, Trenton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 19, 1974, Ser. No. 443,545
Int. Cl.² G01N *31/22*, *33/20*, *33/22*
U.S. Cl. 23—230 R 9 Claims

1. A method for colorimetrically determining the lead content in gasoline comprising (1) mixing a gasoline sample containing tetraalkyllead with iodine in the presence of a tetraorganoammonium halide and exposing the mixture to ultra-violet radiation from a 3660 A wavelength ultra-violet source for a period of from 30 seconds to about 10 minutes sufficient to convert the tetraalkyllead to dialkyllead diiodide, (2) mixing the resulting reaction mixture with an aqueous solution of an acidic compound selected from the group consisting of nitric acid and ammonium nitrate and separating the resulting aqueous phase from the organic gasoline phase, and (3) combining the aqueous phase with an alkali metal salt of 4-(2-pyridylazo)-resorcinol in an aqueous solution to produce a color corresponding to the initial lead concentration.

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3,934,977

## REAGENT AND METHOD FOR DETERMINING TOTAL CALCIUM IN BODY FLUIDS

Kenneth E. Cleaver, Woodbury, N.J., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Aug. 9, 1974, Ser. No. 496,003
Int. Cl.² G01N *31/22*, *33/16*
U.S. Cl. 23—230 B 7 Claims

1. A method for the rapid determination of total calcium in protein-containing body fluids, comprising the steps of mixing a sample of body fluid with a color reagent consisting essentially of an aqueous solution of chlorophosphonazo III buffered to a pH within the range of 5.0 to 5.5 by a buffer comprising potassium hydrogen phthalate, and thereafter optically comparing the color development of the sample-reagent mixture with that of the same reagent mixed with a standard of known calcium concentration.

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3,934,978

## METHOD FOR ASSAY OF PROSTAGLANDINS

William O. McClure, So. Pasadena, Calif., assignor to Nelson Research & Development Co., Irvine, Calif.

Filed Oct. 7, 1974, Ser. No. 512,446
Int. Cl. G01n *21/00*, *31/08*, *33/16*
U.S. Cl. 23—230 B 10 Claims

1. A method for assaying prostaglandins of the E and F series comprising the sequential steps of reducing the keto groups in a sample containing the prostaglandins to hydroxy groups, selectively oxidizing the prostaglandin 15-OH groups to keto groups, reducing the keto groups to hydroxy groups by means of a radioactive labeled chemical reducing agent, isolating radioactive labeled prostaglandins and measuring the amount of radioactivity of the isolated radioactive labeled prostaglandins.

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3,934,979

## METHOD OF ASSAY FOR PROSTAGLANDINS OF THE F ALPHA SERIES

William O. McClure, S. Pasadena, Calif., assignor to Nelson Research & Development Co., Irvine, Calif.

Filed Oct. 7, 1974, Ser. No. 512,447
Int. Cl. G01n *21/00*, *31/08*, *33/16*
U.S. Cl. 23—230 B 9 Claims

1. A method for assaying prostaglandins of the F$\alpha$ series comprising reacting a prostaglandin of the F$\alpha$ series with a compound having the formula



where R is a radical containing a fluorescent or radioactive label, isolating the labeled reaction products, and respectively measuring the amount of fluorescence or radioactivity of the labeled reaction product.

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3,934,980

## METHOD OF ASSAY FOR PROSTAGLANDINS OF THE E SERIES

William O. McClure, So. Pasadena, Calif., assignor to Nelson Research & Development Co., Irvine, Calif.

Filed Oct. 7, 1974, Ser. No. 512,448
Int. Cl. G01n *21/00*, *31/08*, *33/16*
U.S. Cl. 23—230 B 9 Claims

1. A method for assaying for prostaglandins of the E series comprising reacting prostaglandins of the E series with sodium borotritide in a suitable solvent, isolating the tritiated prostaglandins, and measuring the amount of radioactivity of the isolated tritiated prostaglandins.

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3,934,981

## APPARATUS FOR DETECTION OF CHLOROMETHYL METHYL ETHER OR BIS-CHLOROMETHYL ETHER

Eldon F. Ault, and Richard A. Solomon, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 303,123, Nov. 2, 1972, abandoned. This application July 12, 1973, Ser. No. 378,479
Int. Cl.² G01N *31/08*
U.S. Cl. 23—253 R 10 Claims




1. Apparatus to determine the presence of chloromethyl methyl ether or bis-chloromethyl ether in a fluid comprising:
a. an enclosed reaction chamber;
b. first means for introducing a predetermined amount of an alkali metal salt of an organic hydroxy compound, dissolved in a lower alcohol, into said reaction chamber;

c. means for passing a preselected amount of said fluid into admixture with said compound in said chamber;
d. second means for introducing a liquid hydrocarbon solvent into said reaction chamber, which solvent is characterized as being immiscible with, and capable of floating upon, said lower alcohol solution;
e. means for agitating any liquid in said chamber;
f. a gas chromatographic column;
g. a suitable detector adapted to receive effluent from said column and to provide an output signal;
h. means for selectively withdrawing part of said solvent, as a liquid, from said chamber without withdrawing any significant portion of said lower alcohol solution, said apparatus thereby being adapted for the carrying out of a solvent extraction step within said chamber;
i. means, including a sample injection valve, for applying said withdrawn liquid solvent to said chromatographic column;
j. means for eluting components from said column and for transporting said components to said suitable detector;
k. output signal display means coupled to said detector; and
l. timed controller means for sequentially controlling said first and second means for introducing, means for passing, means for withdrawing solvent as a liquid, and means for applying.

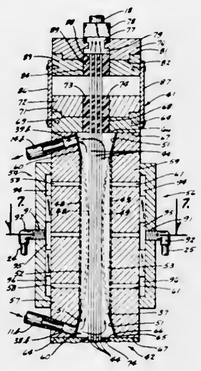
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**3,934,982**

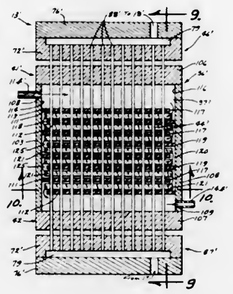
## BLOOD OXYGENATOR

Leon J. Arp, 1107 Highland Circle S.E., Blacksburg, Va. 24061

Continuation-in-part of Ser. No. 258,817, June 1, 1972, abandoned. This application May 21, 1974, Ser. No. 471,876
Int. Cl.² A61M *1/03*
U.S. Cl. 23—258.5 M 9 Claims



1. An extra-corporeal blood oxygenator comprising:
a housing forming an oxygenation chamber; blood inlet means at one end of said chamber for passing blood, at a certain pressure, to be oxygenated into said oxygenating chamber, and blood outlet means at the other end of said chamber through which the oxygenated blood is discharged; and
a plurality of tubular elements of a liquid impermeable, gas permeable material extending through said oxygenating chamber and in contact therein with said blood as the blood passes through said chamber; oxygen inlet and outlet means located at opposite ends of said tubular elements for carrying oxygen therethrough at a partial pressure greater than the partial pressure of the oxygen in the blood as the blood is transmitted through said chamber;
and wherein said oxygenating chamber has a pair of opposed sidewalls, said oxygenator further including a pair of opposed flexible walls located within said oxygenating chamber, each said flexible wall being sealed about its periphery to one of said opposed sidewalls of said chamber, and means attached to said housing, including a plurality of spaced openings formed in a portion of said housing, for transmitting a fluid through said openings and into a cavity formed between each respective pair of a chamber sidewall and a flexible wall sealed thereto to move said flexible wall within said chamber, said flexible walls being adapted to contact the blood moving through



said chamber and operable, upon movement thereof by said fluid, to agitate said blood within said chamber.
4. An extra-corporeal blood oxygenator comprising:
housing means having an oxygenating chamber formed therein and having blood ingress and blood egress means for said chamber;
means connected to said ingress means for transmitting blood in a pulsating manner under pressure to be oxygenated into said chamber;
tubular means disposed within said chamber and comprised of a liquid impermeable, gas permeable material;
means connected to said tubular means for transmitting oxygen therethrough under a partial pressure greater than the partial pressure of oxygen in the blood within said oxygenating chamber,
baffle means mounted within said chamber and including a plurality of spaced baffles, said plurality of baffles being longitudinally spaced apart relative to and located between said blood ingress and blood egress means, alternate ones of said baffles engaging opposite walls of said chamber, said baffle means directing the blood through said chamber in a continually reversing path between said ingress and egress means, said path being substantially normal to said tubular means when disposed between said walls; and
means connected to said egress means for withdrawing the oxygenated blood from said chamber.

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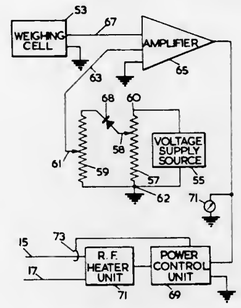
**3,934,983**

## WEIGHING CELL APPARATUS FOR DIAMETER CONTROL OF A ROTATABLE GROWING CRYSTAL

William Bardsley, West Malvern; Geoffrey William Green, Malvern; Charles Harry Holliday, Newland, and Donald Thomas James Hurle, Welland, all of England, assignors to National Research Development Corporation, London, England

Filed Sept. 7, 1973, Ser. No. 395,172
Claims priority, application United Kingdom, Sept. 8, 1972, 41726/72
Int. Cl.² B01J *17/00, 17/20*
U.S. Cl. 23—273 SP 4 Claims

1. Apparatus for the growth of crystalline material including means for establishing a melt of a given crystallizable material, a pull rod arranged for pulling a crystal from said melt when established, means for lifting said pull rod from said melt to pull said crystal on one end of said rod, means for rotating said pull rod about its axis while said rod is being lifted, said means for rotating including a substantially tubular member surrounding said rod and attached to said rod whereby said rod rotates together with said member, and a construction for monitoring the weight of said crystal for the purpose of closed-loop control of said crystal comprising a weighing cell attached to said rod near the end of said rod opposite to said first mentioned end to measure the weight of said rod and said crystal, a weighing cell support housing arranged to support




said weighing cell, said support housing including a support plate having an aperture through which said rod and said tubular member pass, said support plate being arranged so as to be lifted by said lifting means whereby said housing, said weighing cell and said rod are all lifted together and, located in said aperture, a bearing having an inner race fixed to said tubular member and outer race fixed to said support plate whereby said tubular member is attached to said support plate and said tubular member and said rod may be rotated without rotating said support plate.

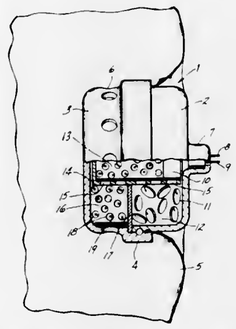
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**3,934,984**

## GAS GENERATOR

Darrell W. Marlow, Herrin, and Brady L. Freeman, Carterville, both of Ill., assignors to Olin Corporation, New Haven, Conn.

Filed Jan. 10, 1975, Ser. No. 540,059
Int. Cl.² B01J *7/00*; B60R *21/08*
U.S. Cl. 23—281 2 Claims



1. A gas generator for an inflatable occupant restraint comprising a housing, a propellant chamber in said housing, a gas generating charge in said chamber, means for igniting said charge in response to a predetermined signal, an outlet in said housing for the expulsion of gases formed upon igniting and burning of said charge, a cooling chamber formed between said propellant chamber and said outlet, said cooling chamber including a plurality of hollow, metallic balls each having an opening through the surface thereof.

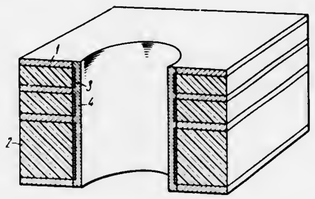


**3,934,985**

## MULTILAYER STRUCTURE

Georgy Avenirovich Kitaev, ulitsa Mira 36, kv. 30; Vadim Alexandrovich Ploskikh, ulitsa Bazhova, 76, kv. 32, both of Sverdlovsk; Viktor Alexeevich Minkov, Leningradskoe shosse, 86/1, kv. 81; Viktor Georgievich Kurbakov, Leningradskoe shosse, 56, kv. 231, both of Moscow; Evangelina Mikhailovna Chernysheva, ulitsa Ekskavatornaya, 50, kv. 6, Sverdlovsk; Tatyana Nikolaevna Zlatkovskaya, ulitsa 40 let Oktyabrya, 26, kv. 48, Sverdlovsk, and Viktor Timofeevich Brunov, ulitsa Belinskogo, 8/10 kv. 14, Sverdlovsk, all of U.S.S.R.

Filed Oct. 1, 1973, Ser. No. 402,626
Int. Cl.² B32B *15/04*
U.S. Cl. 29—183.5 2 Claims



1. A multilayer structure comprising: metal layers; dielectric layers disposed between and alternating with said metal layers; and intralayer junctions for interconnecting said metal layers, said junctions being integral with end faces of said metal layers, and being constituted by films of an electrolytically deposited metal.

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**3,934,986**

## INSTANT STARTING BRIQUETTES

Souren Z. Avedikian, 161 Harbor Drive, Key Biscayne, Miami, Fla. 33149

Filed Jan. 25, 1974, Ser. No. 436,501
Int. Cl.² C10L *9/00, 10/00*
U.S. Cl. 44—6 2 Claims

1. An improved instant-igniting charcoal briquette impregnated with a combustion supporting material selected from the group consisting of straight chain aliphatic alcohols, acids, and mixtures thereof which have a minimal vapor pressure at room temperatures and have a melting point above ambient temperatures and a compound selected from the group consisting of trioxane, tetra-oxane and mixtures thereof.

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**3,934,987**

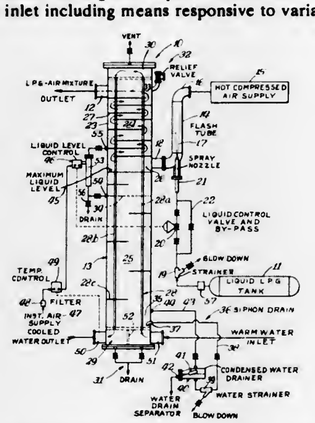
## BLENDING APPARATUS

Henry W. Bivins, Jr., 5030 Brummel, Skokie, Ill. 60076

Filed Mar. 25, 1974, Ser. No. 454,067
Int. Cl.² B01F *3/02*
U.S. Cl. 48—180 C 16 Claims

13. Apparatus for providing from a liquid fuel fluid supply an aerated gaseous fuel fluid, comprising: heat exchanger means defining a chamber having a lower chamber portion and an upper chamber portion, an inlet to a lower portion of said upper chamber portion, and an outlet from an upper portion of said upper chamber portion; means defining a flash chamber; means for delivering liquid fuel fluid from said supply into hot air in said flash chamber; means for delivering the resultant mixture of fuel fluid and air through said inlet into said heat exchanger chamber wherein liquid fluid of said mixture collects in said lower chamber portion and gaseous fluid thereof passes upwardly through said upper chamber portion to said outlet; and means for limiting the level of liquid

fluid in said heat exchanger to a preselected level below the level of said inlet including means responsive to variations in




the liquid level to regulate the rate of delivery of said liquid fuel fluid into said hot air.

### 3,934,988
### ALUMINUM SILICATE PARTICLES HAVING A LAYER OF A RARE EARTH OXIDE THEREON

**Leslie Theodore Barfield, Rotherham, England, assignor to London & Scandanavian Metallurgical Co., Limited, England**

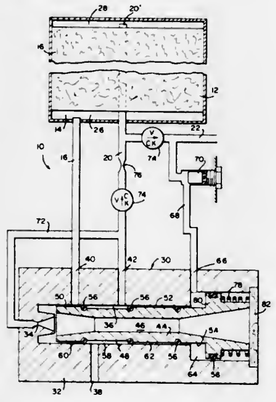
Filed May 29, 1974, Ser. No. 474,153
Claims priority, application United Kingdom, May 30, 1973, 25681/73
Int. Cl.² B24D *3/34*
U.S. Cl. 51—308 5 Claims

1. A calcined polishing powder comprising an alumina silicate compound of the mullite type, the particles of which have a layer of at least about 5% by weight based on the weight of the composition of a rare earth oxide thereon.

### 3,934,989
### GAS DRYING APPARATUS

**Ronald L. Haugen, Pennington, N.J., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.**

Continuation of Ser. No. 340,290, March 12, 1973, abandoned. This application July 17, 1974, Ser. No. 489,141
Int. Cl.² B01D *53/04*
U.S. Cl. 55—163 11 Claims

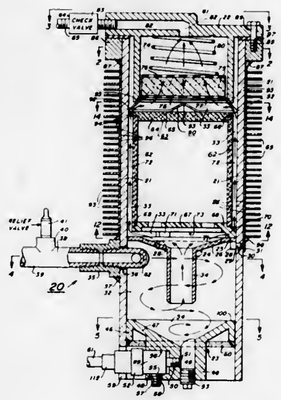


1. Gas drying apparatus, comprising:
a gas drying chamber;
conduit means for admitting gas to said chamber for drying gas therewithin, and for exiting dried gas from said chamber; and
valving means, coupled to said conduit means, pneumatically operative for controlling gas admittance and exiting; wherein
said valving means comprises a valve body having a valve chamber formed therewithin and a valving element pneumatically movably disposed within said valve chamber;
said valving means and said conduit means comprise first means for communicating said drying chamber with said valve chamber for causing gas to be admitted to said drying chamber via said valve chamber; and wherein said valving means further comprises
pilot signal means operative for addressing gas to said valving element pneumatically to effect movement of said valving element,
means coupled to said latter means and to said conduit means, responsive to a predetermined gas pressure subsisting in said conduit means, for operating said latter means,
second means, joined to said conduit means, for communicating said drying chamber with said valve chamber for causing gas to be admitted to said drying chamber via said valve chamber, and
means operative in response to movement of said valving element, and cooperative with said second means and said conduit means, for producing a partial vacuum, for applying the vacuum to said drying chamber, and for evacuating said chamber.

### 3,934,990
### AIR COOLER AND CLEANER FOR COMPRESSED AIR

**Thomas N. Ide, III, Drexel Hill, Pa., assignor to Stratoflex, Inc., Fort Worth, Tex.**

Filed Mar. 17, 1972, Ser. No. 235,767
Int. Cl.² B01D *45/12*
U.S. Cl. 55—218 14 Claims



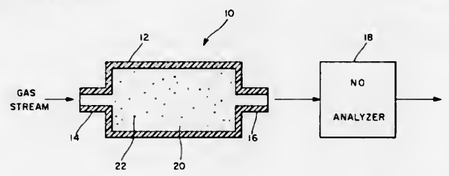
1. An air cooler and cleaner for operative mounting in a compressed-air pipe-line between an air-compressor and its compressed-air storage-reservoir, for cooling the compressed-air and for removing therefrom any moisture, lubricating-oil and solid particles which may be entrained therein, said air cooler and cleaner including a cooling-chamber, an unbaffled swirl-chamber adjacent the upstream end of the cooling-chamber, a compressed-air inlet arranged to be connected with the discharge outlet of an air-compressor and communicating with said swirl-chamber in a zone thereof substantially nearer the cooling-chamber than the opposite end thereof and arranged to deliver the compressed-air from the compressor into the swirl-chamber generally tangentially with respect thereto and to freely swirl the compressed-air in the swirl-chamber without baffled interruption, to separate therefrom liquid and solid particles entrained therein, a contaminant-drain-opening forming an exit from said swirl-chamber, and the lower portion of said swirl-chamber being pitched downwardly towards said drain-opening, a member positioned between and separating the cooling-chamber and the swirl-chamber and separating its tangential air-inlet from the cooling-chamber, said member having a hole therethrough, an air-exit tube carried by said member and communicating with and extending from the hole therein into the swirl-chamber a substantial distance beyond its tangential air-inlet, and spaced from said swirl-chamber exit thereby to cause the swirling motion of the compressed-air to extend a substantial distance axially into the swirl-chamber before the compressed-air passes from the swirl-chamber into the cooling-chamber, an automatic drain-valve operatively connected with said drain-opening and having a control-port and arranged to be controlled by a pilot-fluid under pressure from the compressor and arranged to have its control-port connected with the pilot-fluid output-port of the compressor, an air-outlet-port communicating with the downstream side of said cooling-chamber, said swirl-chamber and said cooling-chamber being so arranged with respect to each other that the compressed-air will flow from the swirl-chamber into and through the cooling-chamber, and a check-valve connected with said air-outlet-port for barring the flow of the compressed-air from the storage-reservoir into the cooling-chamber.



### 3,934,991
### NITRIC OXIDE ANALYSIS AND SCRUBBER THEREFOR

**John P. Frain, Costa Mesa; John N. Harman, III, Placentia, and Radhakrishna M. Neti, Brea, all of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.**

Filed Mar. 1, 1971, Ser. No. 119,601
Int. Cl.² B01D *39/04*
U.S. Cl. 55—316 5 Claims



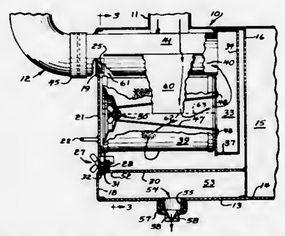

1. A scrubber apparatus for selectively removing nitrogen dioxide from a gas stream containing nitric oxide without affecting the nitric oxide content of the stream, said apparatus comprising:
a. a container having an inlet port for the gas stream and an outlet port; and
b. a scrubber material in the container including silver carbonate whereby the scrubber has an efficiency of at least about 99% and a capacity of about 11.5 ppm hours of 99% nitrogen dioxide removal per gram of silver carbonate.

### 3,934,992
### TRUCK AIR FILTER

**Terrence V. Thompson, Woodstock, Ill., assignor to Terrence V. Thompson, Woodstock; George Athans, Cary and Leonidas Athans, Crystal Lake, all of, Ill.**

Filed June 19, 1974, Ser. No. 480,607
Int. Cl.² B01D *50/00*
U.S. Cl. 55—324 8 Claims

1. In combination with an enclosed tank mounted on a motor vehicle and having horizontally extending wall means of closed cross section, an air filter system for delivering air to a discharge air conduit comprising a housing including a side wall connected to and supported by said tank, said side wall of said housing having the same cross section as said wall means of said tank and being a horizontal extension thereof; a vertical rear wall interposed between said filter system and said tank, and a front wall spaced laterally from said rear wall and including an access aperture; inlet air conduit means communicating through said housing for delivering air thereto; baffle means for intercepting air delivered from said inlet conduit for distributing the same within said housing; a plenum within said housing; air filter element means within



said housing for filtering air from said baffle means prior to its entering into said plenum; a front panel removably mounted to cover said access aperture in said front wall to permit access to said filter element means; and extension conduit means for communicating the interior of said plenum with said discharge air conduit.

### 3,934,993
### GLASSWARE HANDLING AND TREATING EQUIPMENT

**Edward W. Bowman, deceased, late of Tampa, Fla.; by Muriel B. Bowman, executrix, and by Michael Edward Bowman, executor, both of Uniontown, Pa., assignors to E. W. Bowman, Incorporated, Uniontown, Pa.**

Filed July 18, 1974, Ser. No. 489,732
Int. Cl.² C03C *17/00*
U.S. Cl. 65—60 5 Claims



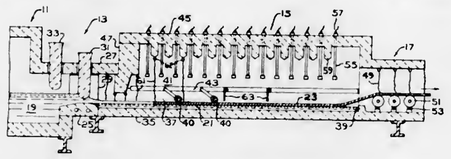
1. Apparatus for maturing a spray coating applied to bottles following annealing comprising
a. conveyor means adapted to be positioned at the outlet end of an annealing lehr,
b. gripping means on said conveyor means for gripping only the neck of said bottles and suspending said bottles while moving the length of the conveyor,
c. heating means for heating the base of the bottles while suspended to remove surface irregularities caused by supporting the coated bottoms of the bottles before the coating is set or matured,
d. spray means downstream of said heating means for applying a coolant to the bottom of the bottles after the same have passed over said heating means, and
e. blower means downstream of said spray means for removing the coolant previously sprayed on the bottoms of said bottles.

5. A method of removing surface irregularities from the bottom of bottles having a nonabrading coating thereon comprising the steps of:
a. gripping said coated bottles by the necks thereof so as to suspend said bottoms thereby exposing the bottoms thereof, and conveying the bottles when so gripped,
b. heating the bottoms of said bottles when so suspended to remove the surface irregularities,
c. applying a coolant to the bottoms of said bottles when so suspended following heating so as to set the treated surface, and
d. drying the cooled bottom surface of said bottles while suspended, whereby the bottoms of said bottles are matured.

### 3,934,994
### CONTROL OF THERMAL CONVECTION IN A FLOAT GLASS FORMING CHAMBER

**William J. Muhlstadt, Natrona Heights, and James R. Schornhorst, Pittsburgh, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.**

**Filed May 30, 1974, Ser. No. 474,846**
**Int. Cl.² C03B *18/02***
**U.S. Cl. 65—65 A** **10 Claims**



**1.** In a method of making flat glass wherein molten glass is delivered onto a pool of molten metal in an enclosed chamber having a roof extending over the pool of molten metal providing a headspace between the roof and the pool of molten metal, which headspace is filled with a gaseous atmosphere; wherein, following its delivery, the glass is advanced along the surface of the pool of molten metal from an inlet end of the chamber to an outlet end of the chamber and, while being so advanced, is cooled and subjected to tractive forces whereby the glass is formed as a dimensionally stable, continuous sheet of glass; and then removing the dimensionally stable, continuous sheet of glass from the pool of molten metal and from the enclosed chamber, the improvement which comprises

a. positioning a plurality of barriers in the headspace above the advancing glass in a region of the chamber extending from its inlet end to a location where the advancing glass is dimensionally stable such that each barrier is extended substantially across the headspace transverse to the advance of the glass and is extended from adjacent the roof downwardly into a sufficiently closely spaced relation with the advancing glass to prevent substantial gas flow beneath the barrier along the glass and such that the spacing between adjacent barriers of said plurality of barriers is from one-fourth to twice the height of the chamber headspace between the surface of the pool of molten metal and the roof; and

b. removing sufficient heat from the chamber between adjacent barriers to establish a convective flow of gases in the headspace between adjacent barriers that is substantially less intense than the flow of gases in the headspace of the chamber in the absence of such barriers;

whereby the rate at which the advancing glass is cooled following its delivery onto the pool of molten metal and prior to its reaching dimensional stability is sufficiently low to yield a continuous sheet of glass having observably less optical distortion than that of glass produced in the absence of such spaced barriers.

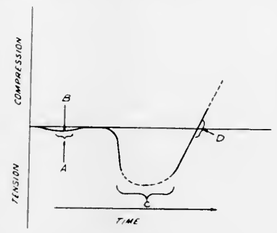
**5.** In a glassmaking apparatus including a glass forming chamber having an inlet end and an outlet end containing a pool of molten metal for supporting glass during forming in the chamber and having a substantially enclosed upper portion enclosing a headspace for containing a gaseous atmosphere over the pool of molten metal, means for delivering molten glass onto the pool of molten metal at the inlet end of the chamber, means for advancing delivered glass along the surface of the molten metal, means for cooling of the glass for forming a continuous sheet of glass from the molten glass and means for removing the continuous sheet of glass from the chamber at its outlet end, the improvement comprising:

a plurality of barriers positioned in a region of the chamber extending from its inlet end one-third of its length toward its outlet end, each barrier extending transversely across the chamber and being sufficiently closely spaced from the pool of molten metal to prevent the substantial flow of gases along the length of the chamber parallel to the intended direction of glass advance, with adjacent barriers being spaced from one another a distance of from about ¼ to about 2 times the height of the chamber headspace.

### 3,934,995
### METHOD OF CUTTING HOT GLASS BAND

**Walter K. French, Montrose, N.Y., assignor to The Seagrave Corporation, New York, N.Y.**

**Continuation-in-part of Ser. No. 426,526, Dec. 20, 1973, Pat. No. 3,875,766, and a continuation-in-part of Ser. No. 470,815, May 17, 1974. This application Feb. 27, 1975, Ser. No. 553,494**
**Int. Cl.² C03B *21/00***
**U.S. Cl. 65—97** **3 Claims**

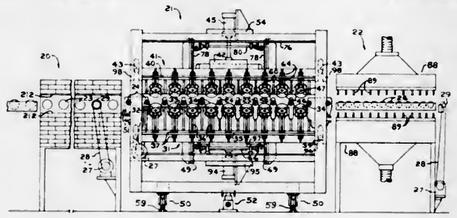



**1.** The method of making discrete glass sheets from a ribbon of glass proceeding from a melt, said glass being in the temperature range of from about 1000° to about 1300°F, which comprises the steps of subjecting at least a surface area of said band to a quenching influence in quantity sufficient to place the surface area in slight tension, said quench reducing the temperature of said surface area to a range about 50°F or less below the maximum temperature of the interior of said band, forming a score line across said chilled portion of said band and breaking said band on said score line promptly after the formation of said score line and before the fissures resulting from said score have healed.

### 3,934,996
### CONVEYOR ROLLS ON CONVEYOR ROLL SYSTEMS FOR ROLL FORMING APPARATUS

**Robert G. Frank, Murrysville, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.**

**Filed May 2, 1974, Ser. No. 466,342**
**Int. Cl.² C03B *23/02***
**U.S. Cl. 65—106** **14 Claims**



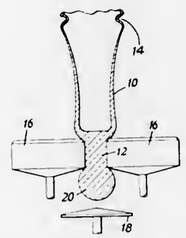
**1.** A method of shaping sheets comprising conveying a heat-softened sheet into a sheet forming station comprising upper and lower sets of rotatable forming rolls having complementary curvatures while supported on a plurality of rotating rigid conveyor rolls of cylindrical configuration having a common upper tangent defining a support plane, rotating said rotatable forming rolls, lifting said softened sheet on a plurality of said lower set of said rotating shaped forming rolls until the opposite surfaces of said deformable sheets are engaged and fed longitudinally between said upper and lower sets of rotating forming rolls for sufficient time to shape said sheet to conform to said complementary curvatures, lowering said shaped sheet on said lower set of rotating forming rolls near the downstream end thereof to transfer said shaped sheet onto a series of flexible rotating conveyor rolls capable of self-conforming to the shape of the formed sheets and removing the shaped sheets while supported on said flexible conveyor rolls.



### 3,934,997
### PRODUCTION OF ONE-PIECE STEMWARE FROM GLASS, ETC.

**David Harold Inns, Chesterfield; William Roy Bennett, Dronfield, near Chesterfield, and Arnold Chambers, Chesterfield, all of England, assignors to Glass Tubes and Components Limited, Chesterfield, England**

**Continuation of Ser. No. 385,880, Aug. 6, 1973, abandoned, which is a division of Ser. No. 275,447, July 26, 1972, Pat. No. 3,773,490. This application Dec. 4, 1974, Ser. No. 529,537**
**Claims priority, application United Kingdom, Aug. 2, 1971, 36199/71**
**Int. Cl.² C03B *21/00***
**U.S. Cl. 65—109** **7 Claims**



**1.** A method of manufacturing a stemmed article, such as a drinking vessel or vase, from a viscous settable material, such as glass, comprising the steps of:

a. providing a part-formed article having a glob of at least semi-molten material in the position where the stem is required;

b. supporting said part-formed article vertically for rotation about its longitudinal axis with said glob lowermost;

c. rotating said article about its longitudinal axis while simultaneously rolling the circumferential surface of the glob in a vertical plane with rollers the surfaces of which conform to the desired shape of the finished article;

d. reducing the distance between the rollers to form the stem of the desired shape and configuration without stretching; and

e. advancing a foot-forming member towards the glob and applying pressure thereagainst to form a radially extending foot on said stem.

### 3,934,998
### NECK RING CARTRIDGE FOR GLASSWARE MACHINE

**George E. Rowe, deceased, late of Wethersfield, Conn. (by Selma S. Rowe, executrix), assignor to Emhart Corporation, Hartford, Conn.**

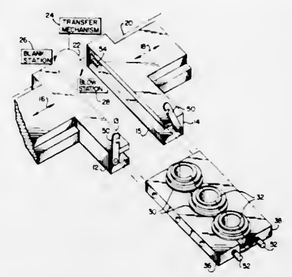
**Filed June 26, 1974, Ser. No. 483,284**
**Int. Cl.² C03B *9/00***
**U.S. Cl. 65—172** **2 Claims**

**1.** In a glassware forming machine of the type having a blank mold station wherein several preliminary parisons are formed, a blow mold station for final forming several glassware articles from these parisons, and a neck ring mechanism for transferring these parisons from the blank station to the blow station, the improvement comprising:

a. left and right hand neck ring arms, both of which arms include inner portions for attachment to the neck ring mechanism whereby said arms are both movable from and to said blank and blow stations, and also individually movable toward and away from one another,

b. said neck ring arms having longitudinally extending surfaces which face one another, each such neck ring arm surface defining at least one longitudinally extending channel open onto said surface,

c. left and right hand neck ring cartridges, each such cartridge having one longitudinally extending side edge which is slidably received in an associated one of said neck ring arm channels, left and right hand neck ring mold segments for forming neck portions of the parisons at the blank station and for supporting the parisons during transfer to the blow station,



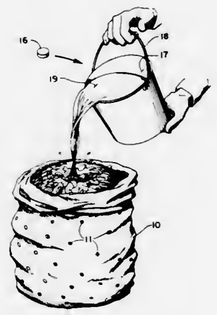

d. said cartridge having facing portions which define locating surfaces for receiving said neck ring mold segments and neck ring mold mounting means for retaining said mold segments against said locating surfaces and in said cartridges, and

e. quick disconnect attachment means for retaining said cartridges in said channels to facilitate the removal and replacement of said neck ring mold segments by removing the cartridges.

### 3,934,999
### COMPOSTING METHOD AND APPARATUS

**Harold R. Meier, Minneapolis, Minn., assignor to Judd Ringer Corporation, Eden Prairie, Minn.**

**Filed Apr. 18, 1973, Ser. No. 352,242**
**Int. Cl.² C05F *9/02, 9/04*; B65D *25/08, 31/00***
**U.S. Cl. 71—9** **7 Claims**



**1.** A method of rapidly composting organic material, which method comprises:

providing a flexible bag having an open end, a plurality of apertures through the body portion of the bag, said apertures being sufficiently large to permit the ready passage of air and gas therethrough but sufficiently small to prevent the escape therethrough of any substantial amount of the organic material to be composted,

substantially filling said bag with organic material to be composted,
adding thereto a predetermined amount of an aqueous solution containing therein numerous minute particles which tend to facilitate decomposition of the organic material,
closing the open end of said bag so that said bag is substantially closed except for said apertures therethrough,
placing said bag upon a supporting surface which normally maintains said bag in a stationary condition,
periodically compressing said bag to force out of said bag gases accumulating therein as a result of such decomposition, and
then manipulating the bag to allow air to enter therein through said apertures.

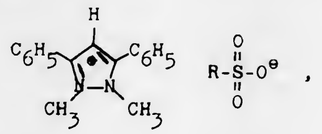
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## 3,935,000
## HERBICIDAL MIXTURE OF A PYROZOLIUM SALT AND BENZOTHIADIOZINONE DERIVATIVE

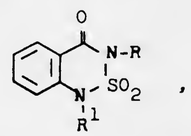
**Adolf Fischer, Mutterstadt, Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Germany**

**Filed Aug. 14, 1974, Ser. No. 497,329**
**Claims priority, application Germany, Aug. 17, 1973, 2341594**
**Int. Cl.² A01N 9/12**
**U.S. Cl. 71—91** **4 Claims**

1. A herbicide composition consisting essentially of an inert carrier and a herbicidally effective amount of a mixture of a. a compound of the formula



in which R denotes lower alkoxy or phenyl which may be substituted by lower alkyl, and
b. a compound of the formula



in which R denotes lower alkyl and $R^1$ denotes hydrogen, or an alkali metal, alkaline earth or substituted amine salt of said compound (b) in a weight ratio of *a:b* of 5:1 to 1:5.

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## 3,935,001
## HERBICIDE MIXTURES OF URACIL, A CARBAMATE AND A PYRIDAZONE

**Adolf Fischer, Mutterstadt, Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany**

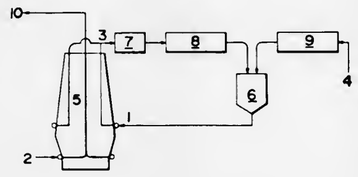
**Division of Ser. No. 348,085, April 4, 1973. This application July 30, 1974, Ser. No. 493,115**
**Claims priority, application Germany, Apr. 13, 1972, 2217698**
**Int. Cl.² A01N 9/22**
**U.S. Cl. 71—92** **1 Claim**

1. A herbicide composition containing a herbicidally effective amount of a mixture of herbicides consisting of:
a. 3-cyclohexyl-5,6-trimethylene uracil,
b. 3-methoxycarbonylaminophenyl-N-(3'-methylphenyl)-carbamate, and
c. 1-phenyl-4-amino-5-chloropyridazone-(6) in a weight ratio of a:b:c of 1–10: 1–10:1–10.

## 3,935,002
## METHOD OF BLAST FURNACE OPERATION UTILIZING SELECTIVE RECYCLING OF PERIPHERAL GAS STREAM

**Tsuneo Miyashita, and Hiroaki Nishio, both of Kawasaki, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan**

**Filed Apr. 3, 1974, Ser. No. 457,720**
**Int. Cl.² C21B 5/06**
**U.S. Cl. 75—42** **2 Claims**




1. In a method of blast furnace operation of the type in which a reducing gas produced by reforming a mixture of a peripheral gas stream taken out from the top or shaft portion of a blast furnace and a fresh feed materials is injected into the blast furnace through reducing gas inlet ports other than the ordinary tuyeres, wherein said peripheral gas stream is taken out through a plurality of outlet ports the improvement comprising determining the number of said outlet ports in accordance with either one of the following equations:

$$\text{when } n \leqq k\,m \geqq \frac{C/H}{1.45(C/H)+2.7}\,n$$

$$\text{when } n > k\,m \geqq \frac{C/H}{1.45(C/H)+2.7}\,k$$

$$\text{where } k = 75.2 - 268\left(\frac{U}{U+V}\right) + 375\left(\frac{U}{U+V}\right)^2 - 187\left(\frac{U}{U+V}\right)^3$$

U/U+V = ratio of injected reducing gas quantity (U) to the total gas quantity (U+V) passing through furnace
V = quantity of gas produced from the blast by the combustion of coke and solution loss reaction
m = number of outlet ports for peripheral gas stream
n = number of inlet ports for reducing gas
C/H = ratio by weight of C to H contained in a fresh feed gas
and positioning said outlet ports for peripheral gas stream relative to said inlet ports for reducing gas so that there is a predetermined angular relation therebetween established in accordance with the following equation:



$$\theta \leqq \left|2.52\times10^4\left(\frac{U}{n(U+V)}\right)^3 - 4.53\times10^3\left(\frac{U}{n(U+V)}\right)^2 + 2.83\times10^2\left(\frac{U}{n(U+V)}\right)\right|$$

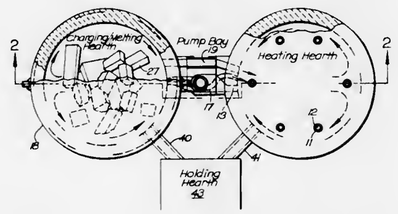
where
$\theta$ = angle made between vertical plane formed by peripheral gas stream outlet port and furnace center line and vertical plane formed by reducing gas inlet port and furnace center line (in degrees)
$n$ = number of reducing gas inlet ports
U = quantity of reducing gas injected
V = quantity of gas produced from blast by the combustion of coke and solution loss reaction

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## 3,935,003
## PROCESS FOR MELTING METAL

**Theodore D. Steinke, Pleasanton, and Melvin A. Carter, Livermore, both of Calif., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.**

**Filed Feb. 25, 1974, Ser. No. 445,721**
**Int. Cl.² C22B 21/00**
**U.S. Cl. 75—68 R** **10 Claims**




1. A method of melting metal comprising
a. maintaining a body of molten metal in a heating chamber;
b. withdrawing molten metal from said heating chamber;
c. pumping a portion of said withdrawn molten metal to a melting chamber containing solid metal so as to melt said solid metal;
d. pumping a portion of said withdrawn molten metal to said heating chamber so as to maintain a substantially homogeneous melt in said heating chamber; and
e. returning molten metal from said melting chamber to said heating chamber.

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## 3,935,004
## ADDITION OF ALLOYING CONSTITUENTS TO ALUMINUM

**John Porter Faunce, Columbia, Md., assignor to Diamond Shamrock Corporation, Cleveland, Ohio**

**Continuation-in-part of Ser. No. 399,176, Sept. 20, 1973, abandoned. This application Nov. 11, 1974, Ser. No. 522,330**
**Int. Cl.² C22C 1/02**
**U.S. Cl. 75—68 R** **19 Claims**

12. A process for the addition of metal alloying constituents to aluminum, which comprises;
blending a mixture of at least one particulate metal alloying material selected from manganese, chromium, and iron, substantially all of said metal having a particle size less than about 0.25 mm., with from about 0.1 to about 2.5 percent by weight of a non-hygroscopic salt fluxing agent selected from the group consisting of $KBF_4$ and $K_2Na_2Ba_2(SiF_6)_3$;
compacting the blended mixture into a coherent body; and
admixing the compacted mixture with the aluminum to be alloyed.

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## 3,935,005
## COMPOSITION AND METHOD FOR STRIPPING GOLD AND SILVER

**Hamilton M. Solidum, North Attleboro, Mass., and Robert G. Zobbi, Southbury, Conn., assignors to American Chemical & Refining Company, Incorporated, Waterbury, Conn.**

**Filed Sept. 19, 1974, Ser. No. 507,333**
**Int. Cl.² C09K 13/00; C23F 3/04**
**U.S. Cl. 75—105** **11 Claims**

6. In the method of stripping gold and silver deposits from substrates, the steps comprising:
A. dissolving in water 7.5–60.0 grams per liter of a dry powder composition consisting essentially of, on a dry weight basis, 78.0–95.0 percent of a soluble cyanide compound selected from the group consisting of alkali metal cyanides, ammonium cyanide and mixtures thereof; 0.01–5.0 percent of a soluble lithium compound; 0.01–0.5 percent of an auxiliary agent comprising a soluble compound of a metal ion selected from the group consisting of lead, bismuth and mixtures thereof; and 5.0–22.0 percent of a water soluble, ring-substituted nitrobenzene acid compound selected from the group consisting of alkali metal and ammonium salts of methylnitrobenzoic acid, chloro-nitrobenzenesulfonamide, alkali metal and ammonium salts of amino nitrobenzoic acid, and alkali metal and ammonium salts of chloronitrobenzoic acid, said soluble lithium compound and auxiliary agent having non-interfering anions;
B. maintaining the aqueous solution resulting therefrom at a temperature of 18°–55° Centigrade;
C. immersing in said aqueous solution a workpiece having a deposit of a metal selected from the group consisting of gold and silver for a period of time sufficient to remove said deposit; and
D. rinsing said workpiece to remove said aqueous solution therefrom.

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## 3,935,006
## PROCESS FOR ELUTING ADSORBED GOLD AND/OR SILVER VALUES FROM ACTIVATED CARBON

**Dennis D. Fischer, Laramie, Wyo., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.**

**Filed Mar. 19, 1975, Ser. No. 559,941**
**Int. Cl.² C22B 11/00**
**U.S. Cl. 75—118 R** **11 Claims**

1. A process for recovering gold and/or silver values from activiated carbon with gold and/or silver values adsorbed thereon, comprising eluting said activated carbon with an eluent selected from the group consisting of water soluble alcohols, solutions of water soluble alcohols and a strong base, aqueous solutions of water soluble alcohols, aqueous solutions of water soluble alcohols and a strong base, water soluble ketones and aqueous solutions of water soluble ketones.

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## 3,935,007
## ALUMINUM ALLOY OF AGE HARDENING TYPE

**Yoshio Baba, Nagoya, and Mituhiro Kawai, Inazawa, both of Japan, assignors to Sumitomo Light Metal Industries, Ltd., Tokyo, Japan**

**Filed Nov. 13, 1974, Ser. No. 523,534**
**Int. Cl.² C22C 21/16**
**U.S. Cl. 75—142** **4 Claims**

1. An aluminum alloy of age-hardening type consisting essentially of:

| | weight percent |
|---|---|
| Cu | 1.2 to 1.9 |
| Mg | 0.4 to 1.0 |
| Si | 0.3 to 0.8 |
| V | 0.01 to 0.16 |

and balance aluminum and inevitable impurities.

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**3,935,008**
**ELECTROPHOTOGRAPHIC PROCESS HAVING DEVELOPED HYDROPHILIC IMAGE AREAS**

**Erwin Lind, Auringen, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt, Germany**

**Filed June 21, 1973, Ser. No. 372,239**
**Claims priority, application Germany, June 23, 1972, 2230757**
**Int. Cl.² G03G *13/14***
**U.S. Cl. 96—1.4** **15 Claims**

**1.** A process of forming an electrophotographic copy from an original which comprises uniformly charging a photoconductive hydrophobic material by means of a corona, imagewise exposing the photoconductive hydrophobic material in an exposure station, pre-developing the exposed charge image to a hydrophilic image by means of a two-component developer powder consisting of a hydrophilic solid substance and a carrier material, developing the hydrophilic image with an aqueous liquid into an aqueous image and transferring the aqueous image thus produced onto a copy receiving material.

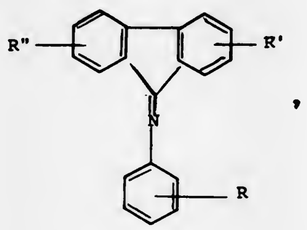
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**3,935,009**
**ELECTROPHOTOGRAPHIC REPRODUCTION ELEMENT OF AN ANILINE COMPOUND ELECTRON ACCEPTOR**

**Gerardus J. Crommentuyn, Lottum, and Johannes H. A. Kuiper, Grubbenvorst, both of Netherlands, assignors to Océ-van der Grinten N.V., Venlo, Netherlands**

**Filed Feb. 6, 1974, Ser. No. 440,245**
**Claims priority, application Netherlands, Feb. 14, 1973, 7302034**
**Int. Cl.² G03G *5/04***
**U.S. Cl. 96—1.5** **16 Claims**

**1.** An electrophotographic reproduction element comprising a support having on it a photoconductive coating layer which contains a donor-acceptor complex formed of an electron donor having photo- or semiconductor properties and an electron acceptor, wherein the electron acceptor is a compound of the formula




in which R represents one or more moieties selected from the group consisting of hydrogen and halogen atoms and lower alkyl, lower alkoxy, nitro, cyano, carboxylic acid, carboxylic ester, sulfonic acid, sulfonic ester, alkylsulfinyl, alkylsulfonyl and trifluoromethyl substituents and R' and R'' each represents a hydrogen atom or one or more nitro groups but at least one of R' and R'' is not a hydrogen atom.

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**3,935,010**
**ELEMENT AND PROCESS FOR SELECTIVELY FORMING POSITIVE OR NEGATIVE PHOTOGRAPHIC IMAGES**

**Paul B. Gilman, Jr., Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.**

**Filed Sept. 3, 1974, Ser. No. 502,682**
**Int. Cl.² G03C *5/04, 1/28, 1/365/30***
**U.S. Cl. 96—27 E** **15 Claims**

**1.** A photographic element capable of forming either a positive or a negative image, depending upon the choice of electromagnetic radiation wavelengths to which it is exposed, comprising

a support

and, as a coating thereon, a layer comprising

internally fogged photographic silver bromide grains which are substantially free of surface fog and, associated with the surface of said grains,

a desensitizer containing an imidazoquinoxaline nucleus having a reduction potential more positive than −0.90 volt and an oxidation potential more positive than +0.80 volt, said desensitizer being present in a desensitizing amount sufficient to cover no more than 25 percent of the surface of said silver bromide grains,

at least 0.5 times the amount of said desensitizer of a spectral sensitizing dye having an absorption peak at least 20 nm removed from any absorption peak exhibited by said desensitizer, and

said silver bromide grains being chosen so that prior to association with said sensitizing dye and desensitizer a test coating thereof with no image exposure and development for about 5 minutes at 20°C using Kodak Developer D-19 will provide a density of less than 0.4 and, when said test coating is developed, but with the developer containing 0.50 grams of potassium iodide per liter of developer, it will have a maximum density greater than 0.5.

**10.** A process of selectively forming either a positive or a negative photographic image comprising

providing as a coating of a photographic element a composition comprising (1) internally fogged photographic silver bromide grains which are substantially free of surface fog and, associated with the surface of said grains, (2) a desensitizing amount sufficient to cover no more than 25 percent of the surface of said silver halide grains of a desensitizer having a reduction potential more positive than +0.80 volt and (3) at least 0.5 times the amount of said desensitizer of a spectral sensitizing dye having an absorption peak at least 20 nm removed from any absorption peak exhibited by said desensitizer, said silver bromide grains being chosen so that prior to association with said sensitizing dye and desensitizer a test coating thereof with no image exposure and development for about 5 minutes at 20°C using Kodak Developer D-19 will provide a density of less than 0.4 and, when said test coating is developed, but with the developer containing 0.50 grams of potassium iodide per liter of developer, it will have a maximum density greater than 0.5;

selectively exposing said coating to electromagnetic radiation within a wavelength range within which the silver bromide grain surfaces are predominantly desensitized or

selectively exposing said coating to electromagnetic radiation within a wavelength range within which the silver bromide grain surfaces are predominantly sensitized;

and then developing with an internal image developer to form an image.



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**3,935,011**
**SYSTEM FOR MAKING COMPOSITE PHOTOMICROGRAPHS**

**Klaus P. Schindl, Wien, Austria, assignor to C. Reichert Optische Werke AG, Vienna, Austria**

**Filed Apr. 18, 1973, Ser. No. 351,913**
**Int. Cl.² G03C *5/04, 5/06***
**U.S. Cl. 96—41** **1 Claim**

**1.** A method of preparing composite photomicrographs comprising the steps of:

positioning a mask in the intermediate image plane of a microscope, said mask having a transparent portion and an opaque portion and said mask being optically aligned with the optical path of said microscope;

making a first exposure on a frame of a camera film plane through said microscope intermediate image plane;

positioning a second mask in said intermediate image plane, said second mask having a transparent portion corresponding to the opaque portion of said first mask and an opaque portion corresponding to the transparent portion of said first mask and being located in optical, alignment on the optical path of said microscope; and

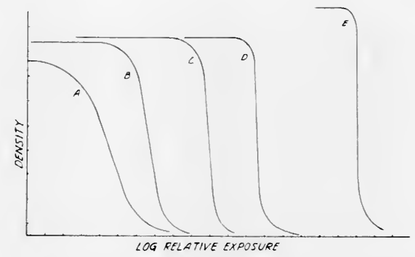
making a second exposure of the said frame, whereby a composite photograph of a single object is produced.

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**3,935,012**
**PHOTOSENSITIVE SHEET MATERIALS**

**Gilbert L. Elan, White Bear, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.**

**Filed July 12, 1973, Ser. No. 378,526**
**Int. Cl.² G03C *5/24, 1/00, 1/02***
**U.S. Cl. 96—48 R** **13 Claims**




**1.** Light-sensitive sheet material useful as an intermediate in forming a record of a light-image on a print sheet containing a second reactant which is reactive with a first reactant to provide a visible change; said intermediate sheet consisting essentially of a photolyzable heat-stable source of hydrogen halide, an acid-cleavable adduct of a said first reactant and an organic compound containing a vinyl ether linkage, said adduct being capable of supplying a reducing agent when cleaved with acid, and an acid acceptor for said hydrogen halide in an amount, between 0.01 and 2.0 moles per mole of said photolyzable source, less than sufficient to retain all of the hydrogen halide available from said photolyzable source upon exposure to said light image; wherein said acid acceptor is selected from the group consisting of:

a. nitrogen-containing organic compounds having at least one basic group and wherein the conjugate acid corresponding to each said group has a pKa value greater than 4.6, and

b. nitrogen-containing organic compounds having at least one basic group, wherein the conjugate acid corresponding to each said group has a pKa value greater than 3.3, and wherein said compound has no hydrogen-heteroatom bond with dissociation energy less than 85 kcal/mole.

**13.** Light-sensitive sheet material resistant to thermally induced degradation and containing as a photolyzable source of halogen free radicals an ester or urethane derivative or tribromoethanol.

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**3,935,013**
**ELECTROLESS DEPOSITION OF A COPPER-NICKEL ALLOY ON AN IMAGEWISE PATTERN OF PHYSICALLY DEVELOPABLE METAL NUCLEI**

**Mark Lelental, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.**

**Filed Nov. 12, 1973, Ser. No. 415,459**
**Int. Cl.² G03C *5/24***
**U.S. Cl. 96—48 PD** **19 Claims**

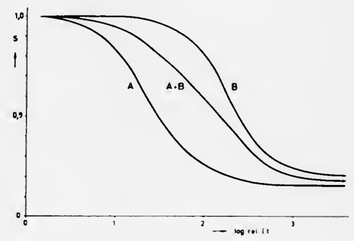
**1.** A developed photographic element comprising a support having thereon physically developable metal nuclei in an imagewise pattern and an imagewise coating of a copper nickel alloy containing from 9 to 98 mole percent copper and from 2 to 91 percent of nickel based on total moles of copper and nickel said coating being formed by electroless deposition of said alloy onto said nuclei.

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**3,935,014**
**DIRECT-POSITIVE PHOTOGRAPHIC EMULSION CONTAINING, UNFOGGED, MONODISPERSED SILVER HALIDE GRAINS HAVING A LAYERED GRAIN STRUCTURE OF SPECIFIC SILVER CHLORIDE CONTENT**

**Sieghart Klötzer, and Erik Moisar, both of Cologne, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen-Bayerwerk, Germany**

**Filed Feb. 14, 1974, Ser. No. 442,614**
**Claims priority, application Germany, Feb. 20, 1973, 2308239**
**Int. Cl.² G03C *5/24, 1/02***
**U.S. Cl. 96—64** **13 Claims**




**1.** A photographic material for producing direct-positive photographic images having at least one silver halide emulsion layer having unfogged and monodispersed silver halide grains having a layered grain structure wherein 95% by weight of the silver halide grains of the emulsions have a grain diameter which does not deviate by more than 40% from the average grain diameter and which grains are not or only slightly chemically sensitized at the surface wherein the improvement comprises the unfogged silver halide grains of the emulsion have at least two phases, a localized first phase of the silver halide grains has at least 20 mol percent of silver chloride based on the total mol percent of silver halide and a second phase of the silver halide grains has less silver chloride than said first phase and said silver halide grains contain not more than 30 mol percent of silver chloride based on the silver halide of said grains based on the total mol percent of silver halide, said silver halide grains when exposed for between 1/100 to 1 second and developed for 3 minutes at 20° C with an internal developer of the following description:

| | |
|---|---|
| Hydroquinone | 15 g |
| Monomethyl-p-aminophenolsulfate | 15 g |
| Sodium sulfite (anhydrous) | 50 g |
| Potassium bromide | 10 g |
| Sodium hydroxide | 25 g |
| Sodium thiosulfate (cryst.) | 20 g |
| Water up to | 1000 ml |

provide a silver image of density which is at least three times that when similarly exposed and developed for 4 minutes at 20°C with a surface developer of the following composition:

| | |
|---|---|
| p-Hydroxyphenylglycine | 10 g |
| Sodium carbonate (cryst.) | 100 g |
| Water up to | 1000 ml. |

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**3,935,015**

**SILVER HALIDE COLOR PHOTOGRAPHIC MATERIALS CONTAINING 3-ANILINO-5-PYRAZOLANE COUPLERS**

**Atsuaki Arai; Yasushi Oishi; Akio Okumura; Minoru Yamada; Yukio Yokota, and Kozo Inouye, all of Minami-Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan**

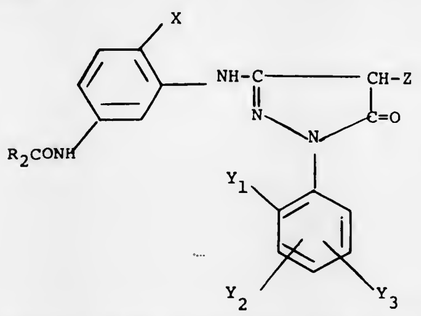
**Filed Feb. 22, 1974, Ser. No. 445,032**

**Claims priority, application Japan, Feb. 22, 1973, 48-21454**

**Int. Cl.² G03C** *1/76, 1/40*

**U.S. Cl. 96—74** **9 Claims**

8. A color photographic material comprising a support having thereon a green-sensitive silver halide emulsion layer containing a 3-anilino-5-pyrazolone magenta dye-forming coupler, a red-sensitive silver halide emulsion layer containing a cyan dye-forming coupler with a phenol or 1-naphthol nucleus, and a blue-sensitive silver halide emulsion layer containing a cyan dye-forming coupler with an acylacetamido group, said magenta dye-forming coupler having the general formula:




wherein $R_8$ represents a straight chain, branched chain, or cyclic alkyl group having 5 to 29 carbon atoms; X represents an alkoxyl group having 1 to 18 carbon atoms or a halogen atom; Z represents a hydrogen atom, a thiocyano group, an acyloxy group, an aryloxy group, an alkoxy group, an arylazo group, a 2-aminoarylazoxy group, a 2-amidoarylazoxy group, a 2-arylthriazolyl group, an alkyl group, an alkylthio group, an arylthio group, a cycloalkylthio group, a carbon-containing heterocyclic monothio group having a 5 to 6 membered ring containing at least one hetero nitrogen, oxygen or sulfur atom in which the heterocyclicmoieties of the monothio group are incapable of forming a chromophoric compound; $Y_1$ represents a halogen atom, an alkyl group, or an alkoxy group; and $Y_2$ and $Y_3$, which may be the same or different, each represents a hydrogen atom, a halogen atom, an alkyl group, an alkoxyl group, an aryloxy group, an alkoxycarbonyl group, an aralkoxycarbonyl group, a carboxyl group, a cyano group, a nitro group, or an acylamino group.

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**3,935,016**

**SILVER HALIDE COLOR PHOTOGRAPHIC MATERIALS CONTAINING 3-ANILINO-5-PYRAZOLONE COUPLERS**

**Tokio Nishimura; Minoru Yamada; Hiroyuki Amano, and Yasushi Oishi, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Company, Ltd., Minami-ashigara, Japan**

**Filed Apr. 15, 1974, Ser. No. 461,086**

**Claims priority, application Japan, Apr. 13, 1973, 48-41868**

**Int. Cl.³ G03C** *1/76, 1/40*

**U.S. Cl. 96—74** **18 Claims**

1. A color photographic material comprising a support having coated thereon a silver halide emulsion layer containing a magenta dye forming coupler having a 3-anilino-5-pyrazolone ring and at least one hydrophobic residue of 8 to 32 carbon atoms, the ortho position of the anilino group at the 3-position of said pyrazolone ring being substituted with a halogen atom, an alkyl group, an alkoxyl group, an amide group, an aryl group, an aryloxy group, a cyano group, a nitro group, a hydroxyl group, or an amino group, and at least one of said silver halide emulsion layer and a hydrophilic colloic layer adjacent said silver halide emulsion layer containing a hydroquinone compound having at least one substituent of at least 8 carbon atoms or a hydroquinone precursor capable of providing said hydroquinone compound upon hydrolysis.

14. The color photographic material of claim 1, in which said photographic material comprises a support having thereon at least a green-sensitive silver halide emulsion layer, a differently sensitized silver halide emulsion layer, an a hydrophilic colloid layer present between said two silver halide emulsion layers, said green-sensitive silver halide emulsion layer containing said 3-anilino-5-pyrazolone type magenta dye forming coupler and said hydrophilic colloid layer containing said hydroquinone compound.

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**3,935,017**

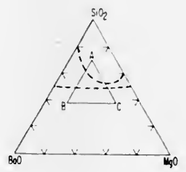
**HIGH-ALUMINA CONTENT COMPOSITIONS CONTAINING BAO-MGO-SIO$_2$ GLASS AND SINTERED CERAMIC ARTICLES MADE THEREFROM**

**Richard A. Gardner, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.**

**Filed Jan. 2, 1974, Ser. No. 430,329**

**Int. Cl.² C04B** *33/26, 35/04*

**U.S. Cl. 106—46** **7 Claims**




1. A sintered alumina ceramic material sinterable in a reducing atmosphere without blistering or mottling consisting essentially of alumina and a pre-fused ternary glass sintering aid from the system:

BaO-MgO-SiO$_2$,

said sintered alumina ceramic material having a dielectric constant of at most 9.5, which permits adequate speeds upon use in computer circuitry, and a dissipation factor less than .005, said ternary glass sintering aid being selected from compositions within the area bounded by A-B-C in the Figure, which points A-B-C represent the following compositions:

| Point | Mol % BaO | Mol % MgO | Mol % $SiO_2$ |
|---|---|---|---|
| A | 15.0 | 15.0 | 70.0 |
| B | 43.5 | 17.5 | 39.0 |
| C | 17.5 | 43.5 | 39.0. |



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**3,935,018**

**GLASSES**

**Neil Hunter Ray, and William Derek Robinson, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England**

**Filed Apr. 12, 1973, Ser. No. 350,496**

**Claims priority, application United Kingdom, Apr. 27, 1972, 19560/72; Aug. 16, 1972, 38141/72**

**Int. Cl.² C03C** *3/00*

**U.S. Cl. 106—47 R** **16 Claims**

1. An inorganic oxide glass having a mole % composition in the range

$B_2O_3$ 1.2 to 3.5;
$P_2O_5$ 50 to 72;
PbO 0 to 30;

at least one oxide selected from oxides of:

Cu, Ag, Au, Sc, Y, La, Ti, Zr, Hf, V, Nb, Ta, Cr, Mo, W, Mn, Tc, Re, Fe, Co, Ni, Ru, Rh, Pd, Os, Ir, Pt, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, Th, Pd, and U, 0 to 5;

the glass containing in addition at least one oxide selected from alkali metal oxides and at least one oxide selected from alkaline earth metal oxides and zinc oxide.

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**3,935,019**

**GLASSES AND GLASS-CERAMICS**

**James Erich Rapp, Oregon, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio**

**Continuation-in-part of Ser. No. 349,152, April 9, 1973, abandoned, which is a division of Ser. No. 241,448, April 5, 1972, Pat. No. 3,852,077. This application Feb. 12, 1974, Ser. No. 441,790**

**Int. Cl.² C03C** *3/00*

**U.S. Cl. 106—47 R** **5 Claims**

1. A thermally crystallizable glass suitable for crystallization to a glass-ceramic having good dielectric properties and an index of refraction in said glass-ceramic in excess of 2.000 and higher than the index of refraction of said glass, said glass consisting essentially of the following composition:

| Ingredient | Mole Percent |
|---|---|
| $GeO_2$ | 35 - 60 |
| $Nb_2O_5$ | 19 - 35 |
| PbO | 16 - 35 |

wherein the molar ratio of $Nb_2O_5$ to PbO ranges from about 0.9:1 to about 1.5:1.

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**3,935,020**

**FARADAY ROTATION GLASSES**

**Emil W. Deeg, Woodstock, Conn.; David A. Krohn, and Robert E. Graf, both of Southbridge, Mass., assignors to American Optical Corporation, Southbridge, Mass.**

**Filed Apr. 24, 1974, Ser. No. 463,490**

**Int. Cl.² C03C** *3/04, 3/08*

**U.S. Cl. 106—54** **5 Claims**

1. A Faraday rotation glass exhibiting a high Verdet constant and low susceptibility toward devitrification consisting essentially of the following constituents as expressed in weight percent:

| | |
|---|---|
| $SiO_2$ | 0–12 |
| $B_2O_3$ | 10–42 |
| Alkali metal oxide | 0–1 |
| Rare earth oxide | 25–57 |
| Alkaline earth oxide | 8–24 |
| $ZrO_2$ | 1–7 |
| $WO_3$ | 0–7 |
| $Al_2O_3$ | 0–2 |
| Fining Agent | 0–0.5 |

where the alkaline earth oxide is selected from the group consisting of CaO, BaO, ZnO, and combinations thereof, the rare earth oxide is selected from the group consisting of $Tb_4O_7$, and the combination of $Tb_4O_7$ and $La_2O_3$, the $Tb_4O_7$ being present in an amount of 20-45 weight percent, and the alkali metal oxide being selected from the group consisting of $Na_2O$, $K_2O$, and combinations thereof.

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**3,935,021**

**WATER-RESISTANT GYPSUM PRODUCTS**

**Dale R. Greve, Beaverton, Oreg., and Eugene D. O'Neill, Miami, Fla., assignors to Georgia-Pacific Corporation, Portland, Oreg.**

**Filed Nov. 5, 1973, Ser. No. 412,968**

**Int. Cl.² C04B** *11/14*

**U.S. Cl. 106—111** **27 Claims**

1. A composition, capable of being set by water into a water-resistant gypsum product, comprising gypsum, at least about 0.15 wt. % of polyvinyl alcohol and at least about 3 wt. % of wax-asphalt emulsion, wherein the total amount of said polyvinyl alcohol and said wax-asphalt emulsion present in the composition is such that the water-resistant properties of said gypsum product are greater than a gypsum product prepared from a like gypsum composition which contains one of said polyvinyl alcohol or said wax-asphalt emulsion in an amount the same as the figure of said total amount.

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**3,935,022**

**METHOD FOR THE REMOVAL OF HEMICELLULOSE FROM HEMICELLULOSE-CONTAINING CAUSTIC LIQUORS**

**Hannes Sihtola, Tillimaki 30A, 00330 Helsinki 33, Finland**

**Filed Apr. 26, 1974, Ser. No. 464,304**

**Claims priority, application Finland, July 23, 1973, 2313/73**

**Int. Cl.² C08L** *1/24, 5/24*

**U.S. Cl. 106—163** **16 Claims**

1. A process for removing hemicellulose from hemicellulose-containing alkali solution consisting essentially of adding to said alkali solution a sufficient amount of a solvent consisting essentially of ethanol to precipitate hemicellulose from said alkali solution, removing the precipitated hemicellulose from said solution and recovering the purified alkali liquor.

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**3,935,023**

**ALUMINA DISPERSIONS**

**Mahlon Robert Deroif, Blackwood, N.J., assignor to Philadelphia Quartz Company, Valley Forge, Pa.**

**Continuation of Ser. No. 383,879, July 30, 1973. This application Oct. 8, 1974, Ser. No. 513,199**

**Int. Cl.² C08K** *3/22*

**U.S. Cl. 106—308 B** **19 Claims**

1. A method of preparing stable aqueous dispersions of alumina at concentrations of about 18 to 26% $Al_2O_3$ onn a weight basis, consisting essentially of:

1. preparing an aqueous solution of hydrochloric acid,
2. controlling the temperature below the boiling point of the dispersion,
3. maintaining the pressure between 0.5 to 5 atmospheres,
4. adding alumina to said aqueous solution such that the weight ratio of alumina to HCl is 53 to 66 parts alumina to 1 part HCl and the $Al_2O_3$ is 18 to 26% of the total mixture, and

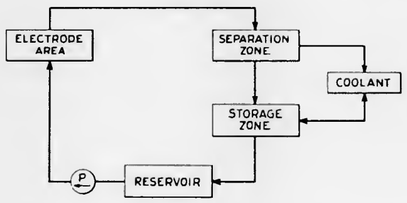
5. simultaneously agitating said mixture to obtain the desired dispersion.

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### 3,935,024
### HALOGEN HYDRATES

**Philip Charles Symons, Birmingham, Mich., assignor to Energy Development Associates, Madison Heights, Mich.**

**Continuation-in-part of Ser. No. 50,054, June 26, 1970, Pat. No. 3,713,888, and a continuation-in-part of Ser. No. 244,222, April 14, 1972, abandoned. This application Jan. 3, 1973, Ser. No. 320,806**
**Int. Cl. H01m *35/00***
**U.S. Cl. 136—6 E** **18 Claims**




1. A method for producing electric current from an electrical energy storage device having an electrode compartment means containing therein a positive electrode means and a negative electrode means comprised of a metallic surface, which will combine electrochemically with a halogen, comprising the steps of:
   1. circulating an aqueous metal halide electrolyte solution sequentially past said electrode means in said electrode compartment means, externally of said electrode compartment means and back past said electrode means;
   2. decomposing a halogen hydrate thereby producing its thermal decomposition products, namely halogen and water;
   3. passing said decomposition products into said electrolyte while it is being circulated external to said electrode compartment thereby dissolving at least a portion of halogen from said halogen hydrate; and
   4. completing the circuit between said positive and negative electrode means.

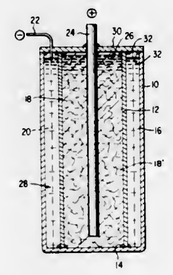
2. A method for producing electric current from an electrical energy storage device, having an electrode compartment means, containing therein, a positive electrode means, a negative electrode means comprised of a metallic surface which will combine electrochemically with a halogen and an ion permeable diaphragm mounted between said positive electrode means and said negative electrode means so as to provide a positive electrode compartment means and a negative compartment means comprising the steps of:
   1. circulating an aqueous metal halide electrolyte solution sequentially past said negative electrode means in said electrode compartment means, externally of said electrode compartment means and back past said negative electrode means;
   2. circulating an aqueous metal halide electrolyte solution sequentially past said positive electrode means in said electrode compartment means, externally of said positive electrode compartment means and back past said positive electrode means;
   3. decomposing a halogen hydrate thereby producing its thermal decomposition products, namely, halogen and water;
   4. passing said decomposition products into said electrolyte from said positive electrode compartment means while it is circulating external to said electrode compartment means thereby dissolving at least a portion of halogen from said halogen hydrate; and
   5. completing the circuit between said positive and negative electrode means.

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### 3,935,025
### ELECTRIC STORAGE BATTERY PROVIDING HIGH ENERGY DENSITY

**Martyn A. Cadman; Michel Volnov, and Helmut Tannenberger, all of Geneva, Switzerland, assignors to Etat Francais, Paris, France**

**Filed June 29, 1973, Ser. No. 375,092**
**Claims priority, application France, July 6, 1972, 72.24400**
**Int. Cl.² H01M *10/00***
**U.S. Cl. 136—6 LN** **19 Claims**



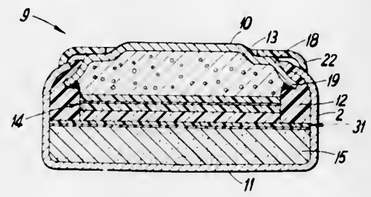

1. An electrical storage battery comprising an anode compartment containing at least one reducer metal, a cathode compartment containing an electrically conductive solution comprising at least one salt of said reducer metal in a non-aqueous solvent, at least one electron acceptor in solution in said electrically conductive solution, and a wall, sealed to fluids, for separating said compartments and comprising a solid material which permits the migration, at ambient temperature, of the reducer metal of the anode, in the form of ions, the said electron acceptor being soluble in the electrically conductive solution contained in the cathode compartment in the reduced state as well as the initial state thereof.

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### 3,935,026
### ENERGY CELL FOR WATCH

**Paul L. Howard, Millington, Md., assignor to Timex Corporation, Waterbury, Conn.**

**Filed Apr. 14, 1975, Ser. No. 568,337**
**Int. Cl.² H01M *35/02, 43/02***
**U.S. Cl. 136—20** **8 Claims**



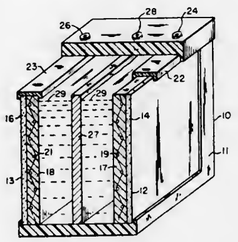

1. In an energy cell having a positive electrode, a negative electrode and an electrolyte, the improvement comprising:
   a positive active material of said positive electrode consisting essentially of a mixture of divalent silver oxide and up to 20% by weight of a material from the group including sulfur and silver sulfide whereby the voltage level of the divalent silver oxide is depressed to a predetermined level without affecting the cell capacity, said voltage being maintained over substantially the entire life of the cell.



### 3,935,027
### OXYGEN-REDUCTION ELECTROCATALYSTS FOR ELECTRODES

**Charles J. Warde, and Albert D. Glasser, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**Filed Apr. 9, 1975, Ser. No. 566,491**
**Int. Cl.² H01M *4/58, 4/86, 8/00***
**U.S. Cl. 136—86 A** **10 Claims**



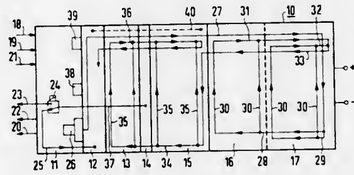

1. A gas electrode containing a hydrophilic layer comprising:
   1. a composite adapted to provide a gas-liquid interface therein containing:
      i. an oxygen absorption/reduction electrocatalyst selected from the group consisting of $CaMnO_3$ and $Ca_{(1-x-z)}MnO_3$: $Na_x$, $Y_z$, where $x$ and $z$ can range from about 0.05 to 0.40; and
   2. a metal current collector.

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### 3,935,028
### FUEL CELL SET AND METHOD

**Karl Strasser, and Dieter Hasenauer, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany**

**Continuation of Ser. No. 261,250, June 9, 1972, abandoned. This application Sept. 23, 1974, Ser. No. 508,646**
**Claims priority, application Germany, June 11, 1971, 2129134**
**Int. Cl.² H01M *8/04, 8/06***
**U.S. Cl. 136—86 C** **12 Claims**



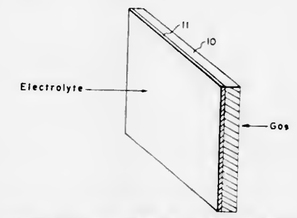

1. A fuel cell set for the generation of electric energy through the reaction of gaseous reactants and a liquid electrolyte which is circulated, the fuel cell set comprising:
   a housing of compact construction;
   a plurality of fuel cells which are combined into at least one fuel cell battery disposed within said housing;
   an electrolyte regenerator, disposed adjacent said fuel cells within said housing, which removes reaction water from the electrolytic liquid, said electrolyte regenerator including a plurality of water depletion units each comprising an electrolyte chamber, a condensation chamber, an asbestos diaphragm which separates said electrolyte chamber from said condensation chamber, a cooling chamber, and a non-porous condensation surface which separates the cooling chamber from said condensation chamber, and said electrolyte chambers of said water depletion units being coupled by an electrolyte flow line to the electrolyte chambers of said fuel cells;
   a pressure lock, disposed adjacent said regenerator within said housing through which the reaction water flows, said pressure lock comprising a gas chamber, a liquid chamber, and a liquidpermeable asbestos diaphragm which separates the liquid chamber from said gas chamber, and said pressure lock gas chamber being coupled to said electrolyte regenerator condensation chambers;
   a heat exchanger, disposed adjacent said pressure lock within said housing, having a coolant which removes heat from the electrolyte and cooling chambers, said heat exchanger electrolyte chambers being coupled to said electrolyte regenerator electrolyte chambers;
   a supply tank for the electrolytic liquid disposed adjacent said heat exchanger and coupled by a plurality of electrolyte flow lines to the electrolyte chambers of said electrolyte regenerator and said fuel cells within said housing; and
   a control unit, disposed adjacent said tank within said housing, which controls the flow of gaseous reactants, electrolytic liquid and reaction water and through which the gaseous reactants and coolant are supplied to and discharged from said fuel cell set, said gaseous reactants and said coolant being supplied to and discharged from said fuel cells and said heat exchanger, respectively, on the side of said fuel cell set on which said control unit is disposed, said control unit including valve means, coupled to said pressure lock and supply tank for controlling the reaction water discharge flow and returning said reaction water to said supply tank thereby controlling the electrolyte concentration; a pump for pumping said electrolyte through said fuel cell set; a pneumatic valve to allow hydrogen to flow to the electrolyte regenerator upon starting the fuel cell set; a control line, magnetic valve and reducing valve through which the hydrogen flows to the electrolyte regenerator; feed lines for the oxygen and hydrogen reactants; an oxygen diaphragm valve in the feed line for the oxygen; a hydrogen diaphragm valve in the feed line for the hydrogen; a choke which opens the oxygen diaphragm valve later than the hydrogen diaphragm valve; discharge lines for the oxygen and hydrogen residue; an oxygen discharge valve in the discharge line for the oxygen residue; and a hydrogen discharge valve in the discharge line for the hydrogen residue.

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### 3,935,029
### METHOD OF FABRICATING A CARBON - POLYTETRAFLUOROETHYLENE ELECTRODE - SUPPORT

**Bernard Baker, Brookfield Center, and Martin Klein, Brookfield, both of Conn., assignors to Energy Research Corporation, Danbury, Conn.**

**Continuation of Ser. No. 200,052, Nov. 18, 1971. This application Feb. 19, 1974, Ser. No. 443,209**
**Int. Cl. H01m *13/04***
**U.S. Cl. 136—121** **3 Claims**




1. A method for the manufacture of an electrically conductive substrate for use as an electrode support in a fuel cell comprising the steps of:

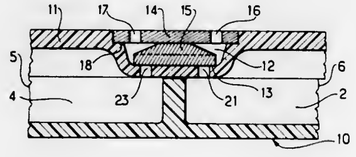
a. blending a quantity of carbon with dry powdered polytetrafluoroethylene in a lubricant to form a homogeneous mixture, said polytetrafluoroethylene constituting from 6 percent to no more than 32 percent of the combined weight of said carbon and said polytetrafluoroethylene;
b. filtering lubricant from said blend to form a filtered mixture;
c. subjecting said filtered mixture to rolling forces effecting thickness reduction thereof, thereby forming a sheet of fibrillated polytetrafluoroethylene containing carbon and lubricant; and
d. removing the remainder of said lubricant from said sheet.

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## 3,935,030
## VALVE MEANS FOR AN ELECTROCHEMICAL STORAGE CELL OR THE LIKE

**Francis Sperandio, Le Bouscat, France, assignor to SAFT-Societe des Accumulateurs Fixes et de Traction, Romainville, France**

**Filed Mar. 13, 1975, Ser. No. 558,176**
**Claims priority, application France, Mar. 21, 1974, 74.09705**
**Int. Cl.² H01M 2/12**
**U.S. Cl. 136—170** **5 Claims**

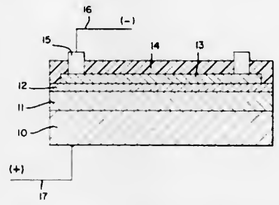



1. Valve means comprising a chamber freely communicating with a first venting space and having a passage communicating with a second space and an elastically deformable part contained in the chamber, said part stopping up the communicating passage between the chamber and the said second space when an excess pressure prevails in the second space in relation to the pressure prevailing in the chamber is lower than a first determined value, and opening up the said communicating passage by elastic deformation when the said excess pressure is higher than a second predetermined value, thus enabling the escaping of a fluid from the said second space via said communicating passage toward the said first space, the said chamber communicating with at least a third space having a communicating passage corresponding to said first-named communication passage and also being stopped up and opened up by the responsive deformation of the said elastically deformable part under the same pressure conditions in said third space as of the pressures between the chamber and the second space, the opening and closing of respective of said communicating passages by said part being independent of pressure conditions in respective of said second and third spaces.

## 3,935,031
## PHOTOVOLTAIC CELL WITH ENHANCED POWER OUTPUT

**Alan D. Adler, West Redding, Conn., assignor to New England Institute, Inc., Ridgefield, Conn.**

**Filed May 7, 1973, Ser. No. 357,852**
**Int. Cl. H01v 1/28**
**U.S. Cl. 136—206** **13 Claims**



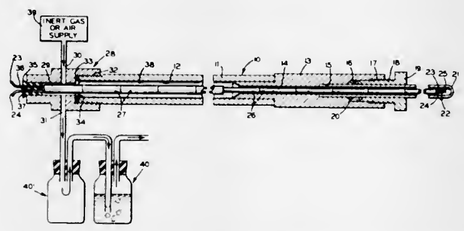

1. An article of manufacture comprising a photovoltaic cell having a layer of at least one porphyrinic compound deposited on an exposed semiconductor surface thereof, said layer being at least as thick as a monomolecular layer of said porphyrinic compound.

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## 3,935,032
## SHEATHED THERMOCOUPLE

**Raymond L. Brandeberry, Toledo; Glen J. Lehr, Oregon, and Denzil W. Stacy, Toledo, all of Ohio, assignors to Libbey-Owens-Ford Company, Toledo, Ohio**

**Filed Nov. 15, 1973, Ser. No. 416,017**
**Int. Cl.² G01K 7/00**
**U.S. Cl. 136—230** **7 Claims**



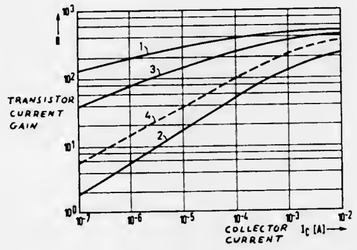

1. In a sheathed thermocouple for measuring the temperature of hot gases of the type having a pair of dissimilar conductors joined together at one of their ends to form a hot junction, which conductors are contained in a chamber sealed from the surrounding atmosphere and said hot junction extends into a refractory sheath, said refractory sheath together with an elongated tubular housing defining the sealed chamber, the tubular housing being provided with a hot and a cold end, and the hot end of the housing having an elongated bore for telescopically receiving the open end of the sheath, the improvement comprising:
a. connecting means detachably and sealingly attaching the open end of said sheath in the bore provided in the hot end of said tubular housing for forming one end of said chamber;
b. seal means attached to the cold end of said tubular housing for forming the other end of the chamber and including means to sealingly pass the conductors therethrough; and
c. means for pressurizing and maintaining a positive pressure in the chamber defined by said sheath and said tubular housing for preventing the hot gases being measured from penetrating said sheath and deteriorating said hot junction of said thermocouple.



## 3,935,033
## METHOD OF IMPROVING THE RADIATION RESISTANCE OF SILICON TRANSISTORS WITH A SILICON OXIDE COATING

**Rudolf Bauerlein, and Dieter Uhl, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany**

**Division of Ser. No. 162,439, July 14, 1971, Pat. No. 3,829,961. This application Nov. 15, 1973, Ser. No. 416,252**
**Claims priority, application Germany, July 18, 1970, 2035703**
**Int. Cl. H01l 7/54**
**U.S. Cl. 148—1.5** **6 Claims**




1. A method of improving the radiation resistance of silicon transistors with a silicon oxide coating, comprising the steps of irradiating a semiconductor device having a silicon oxide coating with electrons at an energy below 150 keV and a dose between $10^9$ and $10^{12}$ rad at the boundary layer between the silicon and silicon oxide coating; and maintaining the temperature of the semiconductor device at a temperature of between 150° and 450°C during irradiation thereof.

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## 3,935,034
## BORON DIFFUSION COATING PROCESS

**William J. Hayes, Shelby, Mich., assignor to Howmet Corporation, Greenwich, Conn.**

**Division of Ser. No. 220,477, Jan. 24, 1972, abandoned. This application July 3, 1974, Ser. No. 485,528**
**Int. Cl.² C23F 7/00**
**U.S. Cl. 148—6** **8 Claims**

1. A process for the diffusion coating of a cemented metal carbide selected from the group consisting of carbides of tungsten, tantalum, titanium, columbium, molybenum, vanadium, chromium, zirconium, silicon and hafnium, comprising the steps of packing the cemented carbide in a powder consisting essentially of boron and a refractory salt or oxide selected from the group consisting of aluminum oxide, silica, zirconium oxide, and mixtures thereof, with the boron constituting from 0.2 to 15% by weight of the total weight of the boron and the refractory oxide or salt, and heating the pack to a temperature within the range of 1350° to 2500°F to diffusion coat the metal carbide.

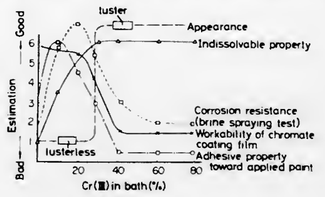
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## 3,935,035
## AQUEOUS SOLUTION AND METHOD FOR SURFACE TREATMENT OF METALS

**Tadashi Tanaka, Yokohama; Joji Oka, Tokyo, and Katushi Saito, Yokohama, all of Japan, assignors to Nippon Steel Corporation, Japan**

**Filed May 31, 1974, Ser. No. 475,302**
**Claims priority, application Japan, June 5, 1973, 48-63228; Jan. 22, 1974, 49-9630**
**Int. Cl.² C23F 7/26**
**U.S. Cl. 148—6.2** **11 Claims**

1. An aqueous solution for treatment of metal surfaces which has a pH value greater than 7, and consists essentially of 0.01 to 10% by weight, estimated as Cr, of a chromium compound in which 5 to 40% of the initial quantity of Cr(VI)



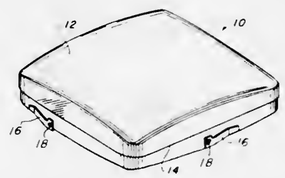

is reduced by reaction with a trifunctional phenol and which possesses no free inorganic acid.

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## 3,935,036
## METHOD OF FORMING A DARK, VERY ADHERENT COATING ON A CRT MASK ASSEMBLY

**Frank Joseph Kinsch, Arlington Heights, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.**

**Filed Feb. 19, 1974, Ser. No. 443,564**
**Int. Cl.² C23F 7/02**
**U.S. Cl. 148—6.16** **6 Claims**




1. A method of forming a dark, adherent coating, primarily of black iron oxide, on a mask assembly having exposed steel surfaces for use in a cathode ray tube bulb, said method comprising:
applying a solution of chromic and phosphoric acid to the exposed steel surfaces of the mask assembly for reaction therewith so as to generate a preliminary protective coating on said exposed surfaces, the ratio of chromic acid to phosphoric acid being approximately 4 to 1 over a range of concentration of phosphoric acid from about 0.5% to 2% by weight;
rinsing the mask assembly to substantially remove therefrom that portion of the acid which did not react with the mask assembly;
inserting the mask assembly into a cathode ray tube bulb; and
baking the mask assembly and the bulb so as to convert said preliminary coating to an adherent, dark coating consisting primarily of black iron oxide over the surface of the mask assembly.

4. A method of producing a dark, adherent coating, primarily of black iron oxide on a steel cathode ray tube mask assembly which has been re-etched to enlarge its apertures, said method comprising:
spraying the mask assembly with a hot solution of chromic and phosphoric acid, the ratio of chromic acid to phosphoric acid being approximately 4 to 1 over a range of concentration of phosphoric acid from about 0.5% to 2% by weight;
rinsing the excess solution from the mask assembly with a spray of deionized water;
drying the mask assembly;
inserting the mask assembly into its mating front panel;
mating the front panel with a cathode ray tube funnel;
baking the assembled cathode ray tube panel, mask assembly and funnel at approximately 435°C.

### 3,935,037
## AUSTENITIC IRON-NICKEL BASE ALLOY

**Donald R. Muzyka, Reinholds, and Ronald C. Gebeau, West Lawn, both of Pa., assignors to Carpenter Technology Corporation, Reading, Pa.**

**Filed Apr. 18, 1974, Ser. No. 462,127**
**Int. Cl.² C22C** *38/44, 38/46, 38/50, 38/54*
**U.S. Cl. 148—38** **10 Claims**

1. An iron-nickel base cold worked and precipitationed strengthened article subjected to less than 20% cold work before being precipitation strengthened to 0.2% yield strength of at least 180 ksi, the composition of said article consisting essentially in weight percent of about

| | |
|---|---|
| Carbon | 0.10 Max. |
| Manganese | 2 Max. |
| Silicon | 1 Max. |
| Phosphorus | 0.04 Max. |
| Sulfur | 0.03 Max. |
| Chromium | 13.5–16 |
| Nickel | 24–28 |
| Molybdenum | 1–1.75 |
| Titanium | 1.6–2.7 |
| Columbium | 0.7–1.2 |
| Vanadium | 0.5 Max. |
| Aluminum | 0.35 Max. |
| Boron | 0.001–0.01 |
| Copper | 0.5 Max |

### 3,935,038
## METHOD FOR MANUFACTURING NON-ORIENTED ELECTRICAL STEEL SHEET AND STRIP HAVING NO RIDGING

**Yoshiaki Shimoyama; Kunisuke Miyoshi, and Hiroyuki Kimura, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Japan**

**Continuation-in-part of Ser. No. 503,868, Sept. 6, 1974, abandoned, which is a continuation of Ser. No. 301,221, Oct. 26, 1972, abandoned. This application Dec. 3, 1974, Ser. No. 529,099**
**Claims priority, application Japan, Oct. 28, 1971, 46-85752**
**Int. Cl.² H01F** *1/04*
**U.S. Cl. 148—110** **2 Claims**

1. In a method for manufacturing non-oriented electrical steel sheet and strip wherein molten silicon steel is cast into a slab which is hot rolled, cold rolled, and annealed, the improvement which comprises controlling the composition of the steel so that the composition at the time of hot rolling comprises

C < 0.06%
Si = 1.5 to 4.0%
Al < 1.0%,
Si + Al 2.0%, and
C > 1/100 (Si + Al) − 0.75%,

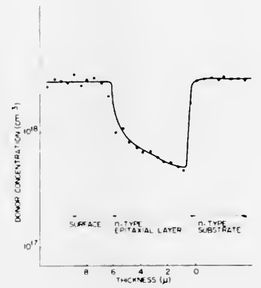
with the remainder being iron and unavoidable impurities, such that the sheet possesses ridging having undulations of not more than about 7 microns.

### 3,935,039
## METHOD OF MANUFACTURING A GREEN LIGHT-EMITTING GALLIUM PHOSPHIDE DEVICE

**Tatsuro Beppu, Tokyo; Masami Iwamoto, Yokohama, and Tetsuo Sekiwa, Kawasaki, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan**

**Filed Apr. 3, 1974, Ser. No. 457,649**
**Claims priority, application Japan, Apr. 4, 1973, 48-38483**
**Int. Cl.² H01L** *7/38*
**U.S. Cl. 148—171** **7 Claims**

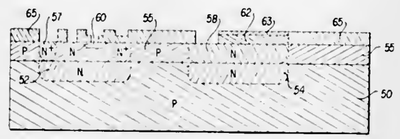
1. A method of manufacturing a green light-emitting gallium phosphide device which comprises the steps of adding nitrogen from a nitrogen compound to a liquid-phase epitaxial solution maintained at a higher temperature than 1030°C; precooling said solution to a temperature of 600° to 1000°C; bringing said precooled solution into contact with a substrate of gallium phosphide having the same conductivity type as said solution; cooling said solution for the formation of a nitrogen-containing liquid-phase epitaxial layer on said substrate; and forming a region in close proximity to said epitaxial layer with the opposite conductivity type thereto.




### 3,935,040
## PROCESS FOR FORMING MONOLITHIC SEMICONDUCTOR DISPLAY

**Donald R. Mason, Indialantic, Fla., assignor to Harris Corporation, Cleveland, Ohio**

**Division of Ser. No. 190,778, Oct. 20, 1971, Pat. No. 3,766,447. This application June 13, 1973, Ser. No. 369,422**
**Int. Cl.² H01L** *21/205, 21/84, 29/26*
**U.S. Cl. 148—175** **8 Claims**



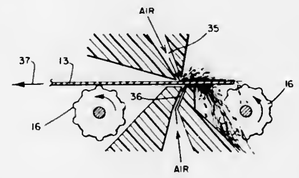

1. A method of fabricating a monolithic semiconductor display in a single crystal silicon substrate comprising:
epitaxially depositing on a plurality of selected regions of a surface of said silicon substrate a thin layer of an alloy of silicon to form a graded layer on each selected region having a crystal lattice constant substantially matching the crystal lattice constant of said silicon substrate at the boundary therebetween and having a crystal lattice constant substantially matching the crystal lattice constant of a preselected electroluminescent single crystal semiconductor material at a second surface;
thereafter epitaxially depositing a layer of said preselected electroluminescent semiconductor material on each of said thin layers;
forming a planar p-n junction in each of said layers of electroluminescent semiconductor material to form a plurality of light emitting diodes for said display; and
forming p-n junctions in said substrate and said graded epitaxial layer to form an active semiconductor component different from said light emitting diodes.



### 3,935,041
## METHOD FOR TREATMENT FLUID APPLICATION AND REMOVAL

**Daniel L. Goffredo, Riverton, N.J., and Conrad Dale Shakley, Spring Mills, Pa., assignors to Chemcut Corporation, State College, Pa.**

**Continuation-in-part of Ser. No. 189,895, Oct. 18, 1971, Pat. No. 3,801,387. This application Jan. 2, 1974, Ser. No. 430,197**
**Int. Cl.² B08B** *7/04;* **B05C** *5/00;* **C23F** *1/00;* **G03C** *5/24*
**U.S. Cl. 156—18** **23 Claims**

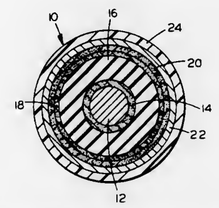



1. A process for application of a film of chemical treatment fluid to an article wherein the film is of improved uniformity, comprising the steps of:
A. providing a stream of gas having atomized particles of a treatment fluid entrained therein;
B. moving said article along a predetermined generally planar path through a chamber; and
C. exposing said article to said stream of gas by blowing a thin stream of said gas directly thereon across the path, through gas knife means that extend across the path, whereby a thin film of said entrained treatment fluid is applied directly to said article, while the article is moving along its generally planar path.

### 3,935,042
## METHOD OF MANUFACTURING CORONA-RESISTANT ETHYLENE-PROPYLENE RUBBER INSULATED POWER CABLE, AND THE PRODUCT THEREOF

**Ralph E. Wahl, Trumbull, Conn., assignor to General Electric Company, New York, N.Y.**

**Division of Ser. No. 486,523, July 8, 1974, Pat. No. 3,878,319. This application Jan. 23, 1975, Ser. No. 543,335**
**Int. Cl.² H01B** *9/02*
**U.S. Cl. 156—56** **15 Claims**

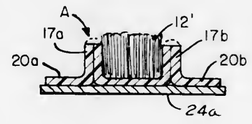



1. A method of manufacturing electric power cable comprising an assemblage of a conductor with a composite covering thereabout including a dielectric insulation of a thermoset ethylene-propylene rubber compound, a semiconductive layer overlying the dielectric insulation, and an enclosing jacket of a thermoset polychloroprene, comprising the steps of:
a. forming a dielectric insulating body of a curable ethylene-propylene rubber compound about a metallic electrical conductor, and curing the ethylene-propylene rubber of said insulating body;
b. heating the cured ethylene-propylene rubber compound insulating body about the conductor to a temperature of at least about 200°F;
c. applying a vapor-permeable, semiconductive adhering coating over the surface of said cured and heated insulating body of ethylene-propylene rubber compound;
d. applying a layer of semiconductive material overlying the coating adhered to the surface of the cured and heated insulating body; and
e. forming an enclosing protective jacket of a heat-curable polymer surrounding the cable assemblage and heat curing the polymer.

### 3,935,043
## METHOD OF MAKING WALL-REINFORCED WEATHERSTRIP

**Milton Kessler, 6690 Harrington Ave., Youngstown, Ohio 44512**

**Filed July 24, 1974, Ser. No. 491,523**
**Int. Cl.² E06B** *7/16;* **B32B** *5/00*
**U.S. Cl. 156—72** **2 Claims**




1. Method of making pile weatherstrip comprising the steps of
a. applying parallel spaced continuous lines of piling to a continuous base sheet of thin flexible material,
b. cutting the sheet between lines of piling to leave strips of the base material with one or more continuous lines of piling running along each strip, and the base sheet material extending out on each side from each line of piling,
c. folding a portion of the bare base sheet material of the strip back on itself beside a line of said piling to form an upstanding wall of folded base sheet material alongside and adjacent to the line of pile, with the remainder of said base sheet material lying flat in its original plane and extending out away from the line of piling to form a retaining edge portion for the weatherstrip,
d. fastening a backing support strip to the bottom of the weatherstrip,
e. cutting the top edge of said upstanding wall of folded base sheet material along its top fold line to thus provide two upstanding walls of the base sheet material capable of spreading apart and thus providing two sealing edges instead of one.

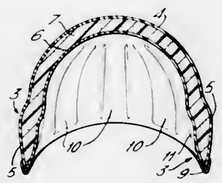
### 3,935,044
## METHOD OF MANUFACTURING IMPROVED PROTECTIVE HEADGEAR

**Noel Daly, 41A Young St., New Plymouth, New Zealand**

**Division of Ser. No. 246,581, April 24, 1972, abandoned. This application Mar. 18, 1974, Ser. No. 452,397**
**Claims priority, application New Zealand, Dec. 23, 1971, 165908**
**Int. Cl.² B32B** *5/20*
**U.S. Cl. 156—79** **7 Claims**

1. A method of producing a protective helmet comprising placing an inner shell having a dome portion and downwardly extending side portions on a die, positioning a further die so that a cavity is provided between the outer surface of the inner shell and the further die, filling the cavity with prefoamed beads of polystyrene of selected density, applying direct steam heat to said beads to expand said beads and create a continuous homogeneous layer of shock absorbing material extending

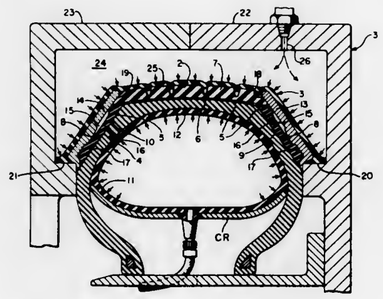
over the whole outer surface of the inner shell and physically adhered to it, and removing the inner shell with the adhered



layer of shock absorbing material from said die and said further die.

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**3,935,045**
**METHOD OF RETREADING A TIRE**
**Merritt W. Wolfe, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio**
**Filed Oct. 26, 1973, Ser. No. 409,995**
**Int. Cl.² B29H 5/04, 17/16**
**U.S. Cl. 156—96** **12 Claims**

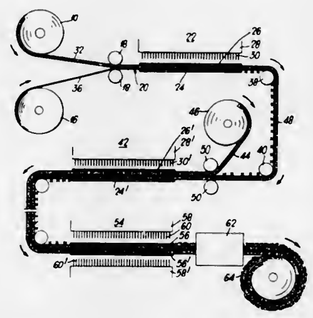


1. A method of full-capping a tire comprising:
a. buffing a tire casing to remove at least a portion of the worn tread and at least one upper sidewall of the tire casing;
b. positioning a previously molded and vulcanized tread in surrounding relation around the tire casing, the precured tread extending beyond the buffed upper sidewall of the tire casing;
c. interposing a heat-curable material between the precured tread and tire casing for bonding the tread to the casing;
d. placing unvulcanized elastomeric material against the precured tread and buffed upper sidewall of the tire casing; and
e. contacting the unvulcanized elastomeric material with a molding device to form a pattern of ribs and grooves in the unvulcanized elastomeric material while simultaneously heating the bonding and unvulcanized elastomeric material to temperatures sufficient to cause curing of the bonding material and vulcanization of the elastomeric material.

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**3,935,046**
**NON-WOVEN FABRICS**
**Geoffrey Poulter Kiernan, Cockermouth, and William Tinkler, Workington, both of England, assignors to Imperial Chemical Industries Limited, London, England**
**Filed Nov. 6, 1972, Ser. No. 303,958**
**Int. Cl.² D04H 1/48**
**U.S. Cl. 156—148** **12 Claims**

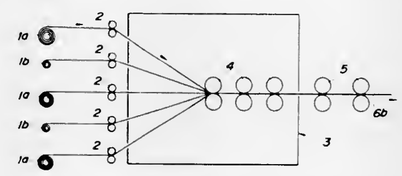
1. A process for producing a non-woven fabric having a textured surface, comprising:
forming a first non-woven web of fibers at least 5% by weight of which are potentially adhesive,
superimposing said first web on a scrim fabric, and
passing said first web and scrim through a needle loom containing coarse gauge needles whereby fibers of said first web are needle punched through the scrim,
needle punching fibers of a second non-woven web with coarse gauge needles on to the scrim side of the web-scrim assembly to carry fibers from said second web



through said scrim and said first web to form large tufts on the surface of said first web,
subsequently needle punching the assembly with fine gauge needles from both sides thereby forming intermingled tufts of fibers of said first and second non-woven web on the surface of said first non-woven web, and
finally treating the assembly to render adhesive the potentially adhesive fibers so as to form bonds between continguous fibers.

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**3,935,047**
**PROCESS FOR THE PREPARATION OF A SYNTHETIC WOOD**
**Toshihiko Shinomura, Yokohama, Japan, assignor to Nippon Oil Company Ltd., Tokyo, Japan**
**Filed May 15, 1974, Ser. No. 470,236**
**Claims priority, application Japan, May 17, 1973, 48-54122; May 17, 1973, 48-54123; May 17, 1973, 48-54124**
**Int. Cl.² B32B 31/12; C09J 7/00**
**U.S. Cl. 156—163** **8 Claims**



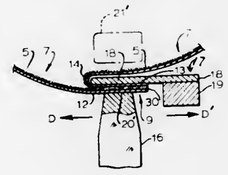
1. A process for the preparation of a synthetic wood comprising the steps of:
fusion mixing a composition consisting essentially of 100 parts by weight of a thermoplastic resin and 5 – 400 parts by weight of an inorganic particulate filler to form a mixture thereof, the thermoplastic resin being selected from the group consisting of homopolymers of the monomers ethylene, propylene, styrene, vinyl chloride and vinylidene chloride, copolymers of at least two of said monomers, blends of said homopolymers and said copolymers, and mixtures of rubber with said homopolymers and said copolymers



molding the mixture into sheets, having a thickness of at least 0.5 mm,
drawing the sheets only monoaxially and to an extent that a drawing ratio of 50 – 1500% is attained,
heating the drawn sheets for a time sufficient to permit their surfaces to be heated to temperatures not lower than the melting point of the sheets while their interior remains at a temperature lower than said melting point,
superposing the thus heated drawn sheets one upon another,
fusion bonding the thus heated, superposed sheets together, and
allowing the fusion bonded mass to cool thereby obtaining the synthetic wood.

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**3,935,048**
**METHOD FOR FORMING CONTAINERS WITH FIN-TYPE SEAMS**
**George I. Rucker, Dublin, Calif., assignor to Crown Zellerbach Corporation, San Francisco, Calif.**
**Division of Ser. No. 327,476, Jan. 29, 1973, abandoned. This application Nov. 4, 1974, Ser. No. 520,437**
**Int. Cl.² B29D 23/10**
**U.S. Cl. 156—203** **8 Claims**

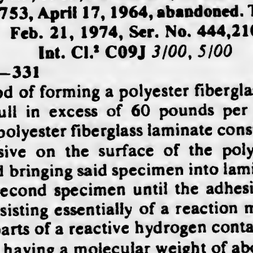


1. The method of forming a heat sealed fin-type seam on tubed bag forming sheet material having heat sealable material on a face thereof, which comprises continuously moving the tube in an axial direction with the heat sealable material on the inside of the tube, while thus moved continuously folding one edge portion of the sheet back over the body of the tube, simultaneously overlapping the opposite edge portion of the sheet over the folded edge portion to form said fin, providing between said fin and the body of the tube a back-up plate over which the fin can ride, continuously heat sealing said edge portions together by pressure application of a heated die against said overlapped edge portion whereby said folded edge portion engages said plate, and maintaining tracking alignment of said fin on said plate by continuously applying a pulling force on said fin in a direction toward the edge of the fin.

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**3,935,049**
**METHOD OF COVERING A SUBSTRATE BY OVERIDGE BONDING OF A COVERING MATERIAL ABOUT THE EDGES OF THE SUBSTRATE**
**Robert L. Schmidt, and Hubert J. Beckman, both of St. Charles, Ill., assignors to Ashland Oil, Inc., Ashland, Ky. and Riverside Laboratories, Inc., Geneva, Ill.**
**Filed July 15, 1974, Ser. No. 488,875**
**Int. Cl.² E04B 2/00; B32B 3/04, 27/12, 31/04**
**U.S. Cl. 156—216** **12 Claims**

1. Process for preparing a laminate from a rigid sheet and a resin-impregnated covering material wherein the covering material is to be bonded to a broad flat side of said sheet, the improvement which comprises:
A. applying a preformed strip of heat moldable resin along at least one of the thin sides bordering and adjacent to a broad flat side of a support substrate sheet;
B. positioning a resin-impregnated covering material over said flat side, said covering material extending beyond said strip of heat moldable resin; and



C. hot pressing said covering material with unidirectional compressive forces against said broad flat surface of said sheet and over said heat moldable resin, thereby simultaneously laminating said at least one of the thin sides and the broad flat surface.

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**3,935,050**
**METHOD OF MAKING A FUEL CELL**
**Marvin T. Conger, Akron; Theodore A. Evans, Uniontown, and Herbert F. Villemain, Cuyahoga Falls, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio**
**Filed Sept. 13, 1973, Ser. No. 396,957**
**Int. Cl.² B29C 1/14**
**U.S. Cl. 156—242** **2 Claims**

1. A method of building an elastomeric fabric container comprising building a fluorocarbon elastomeric inner liner on a building form, applying a solvent solution of a fluorocarbon elastomer coating over the inner liner and laying up fabric over the coating while the coating is sufficiently fluid to strike through the fabric, to give at least one layer of fabric, covering the fabric with at least one coat of a fluorocarbon elastomer and curing the elastomer to give a finished container after removal of the building form.

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**3,935,051**
**POLYURETHANE COMPOSITION AND LAMINATES MADE THEREWITH**
**Newell R. Bender, Cuyahoga Falls, and William M. Larson, Hudson, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio**
**Division of Ser. No. 217,230, Jan. 12, 1972, Pat. No. 3,812,003, which is a continuation-in-part of Ser. No. 9,131, Feb. 11, 1970, abandoned, which is a continuation of Ser. No. 833,855, May 29, 1969, abandoned, which is a continuation of Ser. No. 360,753, April 17, 1964, abandoned. This application Feb. 21, 1974, Ser. No. 444,210**
**Int. Cl.² C09J 3/00, 5/00**
**U.S. Cl. 156—331** **9 Claims**

1. A method of forming a polyester fiberglass laminate that requires a pull in excess of 60 pounds per square inch to separate the polyester fiberglass laminate consisting of spreading an adhesive on the surface of the polyester fiberglass specimen and bringing said specimen into laminating relationship with a second specimen until the adhesive has set, said adhesive consisting essentially of a reaction mixture
1. of 100 parts of a reactive hydrogen containing polymeric material having a molecular weight of about 700 to 4500 selected from the class consisting of polyester polyols, polyether polyols and polyester amides,
2. about 38 to 80 parts of an organic polyisocyanate,
3. at least 5 parts to no more than about 200 parts of an inert powdery filler with the proviso that in no case shall the amount of filler exceed that amount which when mixed with a hundred parts of the reactive hydrogen

containing polymeric material renders the resulting mixture unspreadable,

4. sufficient catalyst to achieve set of the reaction mixture in at least a quarter of an hour at about 75°F., and
5. sufficient monomeric nitrogen containing polyol having from 3 to 6 hydroxyls to be about equivalent to the excess polyisocyanate relative to the amount of reactive hydrogen containing polymeric material.

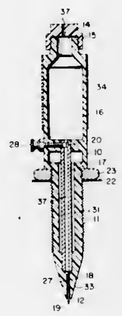
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**3,935,052**

## ACID ENGRAVING MACHINE DEVICE

**Hendrik J. Vernhout, Hamilton, Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest**

**Filed July 31, 1974, Ser. No. 493,470**
**Int. Cl.² C23F *1/02***
**U.S. Cl. 156—345** **1 Claim**



1. A pen device for use in engraving, adaptable for mounting in an arm of a pantograph, said device incorporating a housing body comprising:
   an internal refillable acid reservoir,
   a hollow axial tube leading from the acid reservior to a pen member which projects through an end tip of the device,
   said pen member being in the form of a hollow tube fitted at its external end with a rollable stainless steel ball, with
   a valve member in the form of a screw that is mounted transversely to the said hollow axial tube, said screw extending externally of the device and threaded in the housing so as to extend beyond the periphery of the housing, in which the acid reservoir is open at an end of the housing and is covered by a removable threaded cap, said cap fitted with a vent hole,
   said housing body fitted with means to attach to the arm of a pantograph.

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**3,935,053**

## PROCESS FOR PREPARING THERMOSETTING LAMINATES

**Rudolph J. Armstrong, Jr., Hempstead, N.Y., assignor to Photocircuits Corporation, Glen Cove, N.Y.**

**Division of Ser. No. 819,093, April 24, 1969, Pat. No. 3,600,247, which is a continuation-in-part of Ser. No. 680,983, Nov. 6, 1967, abandoned. This application Oct. 16, 1970, Ser. No. 69,522**
**Int. Cl.² G01N *27/00*; G01R *27/14***
**U.S. Cl. 156—378** **5 Claims**

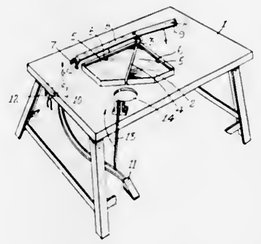
1. In a laminating press for heating and laminating with thermosetting resins the improvement which comprises electrical sensing means for measuring the electrical properties of the gel stage of the thermosetting resin of a heated thermosetting laminating assembly as said resin is heated and means for applying pressure to said press when said electrical sensing means measures the gel stage to thereby thermoset the laminated assembly in said press.

**3,935,054**

## APPARATUS FOR MANUFACTURING NECK-TIES

**David Hirschson, 25 Linksfield Drive, Johannesburg, South Africa (2001)**

**Division of Ser. No. 137,446, April 26, 1971, Pat. No. 3,842,436. This application July 25, 1974, Ser. No. 491,629**
**Claims priority, application South Africa, Apr. 24, 1970, 70/2749**
**Int. Cl.² B29H *7/04*; A41H *33/00***
**U.S. Cl. 156—443** **4 Claims**



1. Apparatus for securing a lining in an end of a neck-tie comprising;
   a supporting surface for supporting the end of a strip of tie material containing heat fusible fibres,
   means for forming a pleat along the longitudinal axis of said strip of tie material,
   means for clamping a lining against said strip of tie material along two lines diverging from said pleat, and
   means for providing heat at said two-lines to fuse the lining and material together at said lines and thereby form a pointed end to the lining and material.

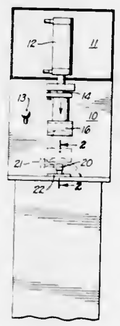
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**3,935,055**

## ASSEMBLY TOOL FOR USE IN ATTACHING FIBERGLASS TOOL HANDLES

**Joseph Allen Carmien, Beverly Hills, Calif., assignor to Nupla Corporation, Sun Valley, Calif.**

**Filed Aug. 30, 1974, Ser. No. 502,088**
**Int. Cl.² B31F *1/00***
**U.S. Cl. 156—443** **3 Claims**



1. An assembly tool for use in connecting fiberglass handles to tool heads, said assembly tool comprising means for holding a tool head with a piece of masking tape extending across the top of said tool head in overlying relationship to the handle receiving opening of said tool head, a tape applicator movable with respect to said tool head, said applicator having a concave resilient pad formed complementarily to the convex portion of said tool head surrounding said opening, said pad being constructed and arranged so that said pad upon movement thereof toward said tool head engages all of the peripheral edges of said tape adjacent to and surrounding said opening and moves said edges downwardly simultaneously while applying no pressure against the portion of said tape which extends across the top of said opening, whereby said tape is drawn tightly across the top of said opening, said pad being adapted upon further movement toward said tool head to press the portions of said tape disposed outwardly from said opening inwardly simultaneously into sealing engagement with said tool head around the entire periphery of said opening while said tape is held tightly drawn across said opening to seal said opening against leakage of potting compound inserted into said opening to bond a handle to said tool head.



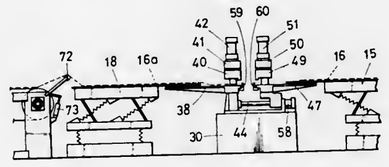
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**3,935,056**

## APPARATUS FOR SPLICING PARALLELOGRAMMATIC PIECES OF RUBBER CLOTH WITHOUT OVERLAP

**Masao Koyama, Hatano; Noboru Okada, Fujisawa, and Masahiro Ogawa, Hiratsuka, all of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan**

**Filed Sept. 9, 1974, Ser. No. 504,418**
**Claims priority, application Japan, Sept. 13, 1973, 48-104328**
**Int. Cl.² G03D *15/04***
**U.S. Cl. 156—507** **8 Claims**



1. In apparatus for successively splicing parallelogrammatic pieces of rubber cloth without overlap, the combination of:
   a. a forward vibrating conveyor for successively feeding the pieces of rubber cloth forwardly by vibration, said forward vibrating conveyor including means for reorienting and guiding lateral edges of the successive pieces of rubber cloth traveling thereon;
   b. a butt-splicer for joining the successive pieces of rubber cloth end to end without overlap, said butt-splicer including:
      1. a rear table mounted forwardly of said forward vibrating conveyor for receiving the successive pieces of rubber cloth therefrom, said rear table having an edge remote from said forward vibrating conveyor;
      2. a rear retractable stop;
      3. means for moving said rear retractable stop between an operative position for arresting the forward movement of each piece of rubber cloth in a prescribed position on said rear table and an inoperative position away from the plane of said rear table, the piece of rubber cloth having its leading edge projecting a prescribed distance beyond said edge of said rear table when stopped in said prescribed position thereon;
      4. a rear clamping platen;
      5. means for moving said rear clamping platen between an operative position for clamping the piece of rubber cloth against said rear table in said prescribed position and an inoperative position for releasing the same;
      6. a front table mounted forwardly of said rear table in coplanar relationship thereto, said front table having an edge opposed to said edge of said rear table;
      7. a front retractable stop;
      8. means for moving said front retractable stop between an operative position for arresting in a prescribed position on said front table the movement of the precedingly spliced piece of rubber cloth as the same is fed backwardly and an inoperative position away from the plane of said front table, the precedingly spliced piece of rubber cloth having its trailing edge projecting a prescribed distance beyond said edge of said front table when stopped in said prescribed position thereon;
      9. a front clamping platen;
      10. means for moving said front clamping platen between an operative position for clamping the precedingly spliced piece of rubber cloth against said front table in said prescribed position thereon and an inoperative position for releasing the same; and
      11. means for moving at least one of said front and rear tables toward and away from the other whereby said opposed edges of said front and rear tables can be forced into abutting contact with each other for splicing operation;
   c. a backward vibrating conveyor mounted forwardly of said butt-splicer for selectively feeding the precedingly spliced piece of rubber cloth backwardly to said butt-splicer by vibration, said backward vibrating conveyor including means for reorienting the piece of rubber cloth traveling backwardly thereon; and
   d. take-up means for carrying the spliced pieces of rubber cloth away from said butt-splicer via said backward vibrating conveyor by indexed movement.

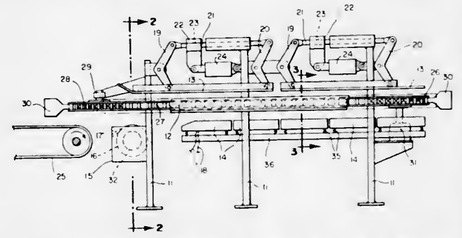
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**3,935,057**

## APPARATUS FOR SECURING THE FREE END OF A ROLL OF FIBROUS WEB MATERIAL

**Robert D. Gray, Wilmington, Del., assignor to Scott Paper Company, Philadelphia, Pa.**

**Filed Aug. 28, 1974, Ser. No. 501,146**
**Int. Cl.² B65C *11/04*; B05C *11/00***
**U.S. Cl. 156—578** **7 Claims**



1. Apparatus for securing the free end of a roll of fibrous web material, comprising:
   moisture-application means for applying moisture to a selected location on the outside surface of the free end while the free end is against the roll, the moisture-application means comprising a knurled-periphery wheel mounted for rotation in the direction of movement of the roll through the apparatus and in a position where its periphery contacts the periphery of the roll when the roll is moved past, a reservoir into which the wheel extends for picking up moisture held in the reservoir, means for rotating the wheel slightly faster than movement of the roll past the wheel, and doctor means positioned adjacent the wheel for wiping excess moisture from the wheel;
   heat-application means for applying heat to the moistened selected location;
   pressure-application means for applying pressure to the moistened selected location simultaneously with applying heat;
   guide means for guiding the roll in its axial direction past and into operative contact with the moisture-application means, the heat-application means and the pressure-application means; and
   roll-conveyance means for moving the roll uninterruptedly past the moisture-application means, the heat-application means, and the pressure-application means.

### 3,935,058
### ZONE MELTING PROCESS

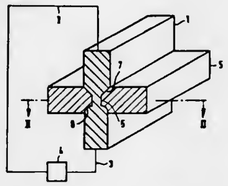
**Wilhelm H. Kuhlmann-Schäfer, Hannover, Germany, assignor to Preussag Aktiengesellschaft, Germany**

**Continuation of Ser. No. 270,692, July 11, 1972, abandoned. This application June 21, 1974, Ser. No. 481,819**

**Claims priority, application Germany, July 15, 1971, 2135305**

**Int. Cl.² B01J** *17/08*

**U.S. Cl. 156—602** **12 Claims**



1. A zone melting process for purifying a charge utilizing a narrower having an aperture therethrough, said aperture defining an inlet, a central region, and an outlet, the cross-sectional area of said central region being less than the cross-sectional area of said charge adjacent to said narrower, comprising the steps of:

passing an alternating current longitudinally through said charge to heat said charge by Joule heating;

driving said charge into direct physical contact with said narrower, through said inlet and into said central portion to reduce the cross-sectional area of a portion of said charge and define a zone of molten liquid in said charge, said zone being within and closely adjacent said aperture;

continuing to pass said alternating current through said charge;

causing said molten liquid to flow through said aperture and said outlet to increase the cross-sectional area of said zone and solidify said molten liquid exiting said aperture; and

moving said charge relative to said narrower whereby said zone migrates through said charge.

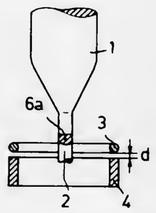
### 3,935,059
### METHOD OF PRODUCING SINGLE CRYSTALS OF SEMICONDUCTOR MATERIAL BY FLOATING-ZONE MELTING

**Michel Ayel, Caen, France, assignor to U.S. Philips Corporation, New York, N.Y.**

**Continuation of Ser. No. 56,631, July 20, 1970, abandoned. This application June 28, 1972, Ser. No. 267,178**

**Int. Cl.² B01J** *17/10*

**U.S. Cl. 156—620** **2 Claims**




1. In a floating melt zone process for forming a monocrystalline semiconductor rod from a seed crystal in contact with an end of a rod of semiconductor material, wherein the diameter of the rod varies at least over a portion of the length thereof, a method for generating a floating melt zone of substantially constant axial depth moving axially through the rod of varying diameter at a substantially constant axial displacement rate, said method comprising the steps of:

positioning axially with respect to the rod a high frequency inductance coil radiating sufficient energy to generate a floating melt zone of at least the desired axial depth even when positioned over the rod region of maximum diameter;

positioning a short circuit ring axially with respect to the rod;

slowly moving the radiating inductance coil axially with respect to the rod at a substantially constant rate from the end in contact with the seed crystal to the other end; and

maintaining the short circuit ring in axial position with respect to the rod at an axial distance from the inductance coil which varies directly with the diameter of the rod at the floating melt zone,

whereby the short circuit ring absorbs radiated energy in excess of the amount required to maintain a substantially constant axial depth for the floating melt zone as the floating melt zone travels through the rod at a substantially constant axial displacement rate.

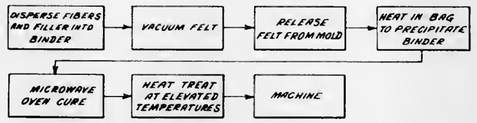
### 3,935,060
### FIBROUS INSULATION AND PROCESS FOR MAKING THE SAME

**James C. Biome, Bridgeton, Mo.; Chris J. Goodbrake, Vandalia, Ill.; Marvin Edward O'Brien, Jackson, Miss., and Macy W. Vance, St. Louis, Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.**

**Filed Oct. 25, 1973, Ser. No. 409,620**

**Int. Cl.² D21H** *5/18*

**U.S. Cl. 162—152** **8 Claims**




1. A process for making a fibrous insulation, said process comprising forming a slurry containing by weight about 2.1% to about 7.5% ceramic fibers, about 18% to about 22% colloidal silica binder which is capable of forming a ceramic when fired, not more than about 5.4% ceramic filler, and about 60% to about 80% water; felting the slurry to form a soft felt in which the fibers cross at junction points; precipitating the binder onto the fibers and filler by mixing into the slurry hexamethylenetetramine which generates ammonia at between about 160°F. and 205°F. and heating the soft felt to between about 160°F. and 205°F. for about 60 to about 120 minutes to generate the ammonia so as to elevate the pH of the liquid within the felt to at least about 6.5 and thereby cause the binder to concentrate and gel at the junction points, said heating to between 160°F. and 205°F. being in an enclosure to prevent excessive evaporation of liquid from the soft felt; thereafter subjecting the soft felt to microwave energy to dry the felt; and firing the felt to increase its strength.

6. An insulative material comprising: ceramic fibers disposed in a random network such that some of the fibers cross over other fibers, creating interstices in the network; a granular ceramic filler with the granules thereof being in the interstices of the network, whereby the crossing fibers and the fillers form junction points in the network; and a binder concentrated at the junction points of the fibrous network and holding the fibers and the granules of the filler in place, the binder being silica; the insulative material having a density between approximately 10 lbs./ft.³ and 38 lbs./ft.³ with the fibers constituting between approximately 20% and 80% of the weight of the material, the binder between approximately 10% and 40%, and the granular filler not more than approximately 50%.



### 3,935,061
### STOCK INLET FOR A PAPER MACHINE

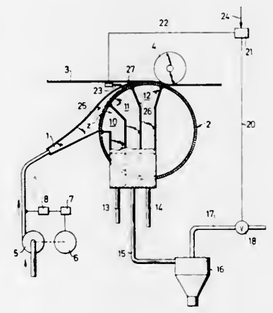
**Peter Biornstad, Ravensburg, Germany, assignor to Escher Wyss GmbH, Ravensburg, Germany**

**Filed Dec. 4, 1973, Ser. No. 421,606**

**Claims priority, application Switzerland, Dec. 11, 1972, 17969/72**

**Int. Cl.² D21F** *1/02, 1/04, 1/06*

**U.S. Cl. 162—252** **8 Claims**



1. In a paper machine, the combination of

a movable water-permeable element;

a feed duct for supplying stock onto said element, said duct having an outlet extending over a sheet-forming zone of said element and terminating at one end of said zone;

means for feeding stock to said feed duct at a constant quantity per unit of time;

at least one suction box disposed in the region of said zone on a side opposite said feed duct;

a vacuum source connected to said suction box to evacuate said box;

a control means for controlling the vacuum in said suction box; and

a sensor in said feed duct for measuring the stock pressure in said zone, said sensor being connected to said control means to deliver a signal thereto indicative of the stock pressure, wherein said control means controls the vacuum in said vacuum box in response to deviations of said signal from a set value to maintain a constant column of stock at said outlet of said feed duct.

### 3,935,062
### NUCLEAR POWER PLANT WITH A SAFETY ENCLOSURE

**Wolfgang Keller, Erlangen; Joachim Krüger, Forchheim; Johann Ropers, Erlangen, Dechsendorf, and Hans-Peter Schabert, Erlangen, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany**

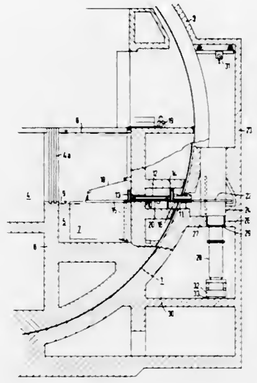
**Filed Apr. 24, 1973, Ser. No. 353,998**

**Claims priority, application Germany, Apr. 26, 1972, 2220491**

**Int. Cl.³ G21C** *19/20*

**U.S. Cl. 176—30** **10 Claims**

1. A nuclear power plant comprising a pressure containment shell having a personnel lock extending therethrough, means inside of said shell forming a water-floodable reactor fuel-element changing space and a water-floodable fuel-element storage basin connecting with said space, a fuel-element storage rack in said basin, a fuel-element transport vessel on the outside of said shell; a fuel-element lock extending through said shell and transversely dimensioned for the endwise passage of fuel elements therethrough, said fuel-element lock having an inner end in said basin and an outer end on the outside of said shell, means in said basin for transferring fuel-elements between said inner end and said rack, and means on



the outside of said shell for transferring fuel-elements under water between said outer end and said vessel.

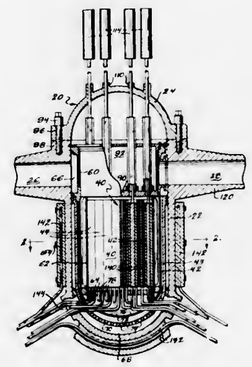
### 3,935,063
### EMERGENCY HEAT REMOVAL SYSTEM FOR A NUCLEAR REACTOR

**Thomas L. Dunckel, Potomac, Md., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.**

**Filed Nov. 28, 1973, Ser. No. 419,832**

**Int. Cl.² G21C** *9/00;* **F28D** *15/00*

**U.S. Cl. 176—38** **5 Claims**

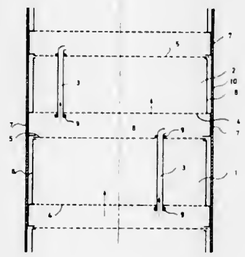


1. An apparatus for removing decay heat from a nuclear reactor having a core, pressure vessel, and cooling system comprising: a heat exchange reservoir; a plurality of heat pipes having a working fluid selected from the group consisting of water, sodium, lithium, bismuth and mercury, the first end of a heat pipe in heat transfer relationship with the nuclear reactor and the second end within the reservoir; a fluid storage tank with fluid therein; a fluid connecting means between the reservoir and tank having a valve; a means to detect core temperatures; and a means to activate the connecting means valve upon detecting core temperatures to control the fluid flow between the storage tank and heat exchange reservoir.

### 3,935,064
## FUEL ASSEMBLY FOR GAS-COOLED NUCLEAR REACTORS

John Mackinlay Yellowlees, Brussels, Belgium, assignor to Belgonucleaire, Brussels, Belgium

Filed Apr. 5, 1973, Ser. No. 348,298
Claims priority, application Belgium, June 19, 1972, 118875
Int. Cl.² G21C 3/16
U.S. Cl. 176—73 9 Claims



1. A fuel assembly for gas-cooled nuclear reactors, comprising:

a wrapper tube;

inside said wrapper tube is positioned a number of beds each said bed being defined above it and below it by spaced apart plates which permit gas coolant to pass therethrough; each said bed containing fuel comprised of coated particles; said beds are superposed in a stacked array and so as to form between neighboring said beds a space which defines a mixing zone for gas coolant; said beds extending across said wrapper tube and each sealing said wrapper tube;

a bypass tube passing by each said bed and communicating between a said space that is above that said bed which it passes by and another said space that is below that said bed;

whereby gas coolant flow is divided between a said bed and a said bypass tube.

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### 3,935,065
## PROCEDURE FOR CONSERVATION OF LIVING ORGANS AND APPARATUS FOR THE EXECUTION OF THIS PROCEDURE

Roland Karl Doerig, Nordstrasse 350, CH-8037, Zurich, Switzerland

Division of Ser. No. 285,739, Sept. 1, 1972. This application Aug. 29, 1973, Ser. No. 392,441
Claims priority, application Switzerland, Sept. 2, 1971, 13000/71; Mar. 24, 1972, 4479/72
Int. Cl.² C12B 3/00, 9/00
U.S. Cl. 195—1.7 2 Claims

1. In a process for the conservation, storage and transport of a living organ using a portable apparatus having an organ compartment, a pump compartment and a cooled liquid perfusion medium enriched with a respiratory gas, wherein said perfusion medium is subjected to automatic regulation of the flow rate of said gas in response to the flow resistance in the organ, the improvement comprising the use of dry ice and the $CO_2$ gas resulting therefrom for the cooling of the perfusate and the operation both of the perfusing pump and of the pumping means for oxygenating the perfusate with air.

### 3,935,066
## CELL LINES

Kostadin Apostolov, London, England, assignor to Burroughs Wellcome Co., Tuckahoe, N.Y.

Continuation of Ser. No. 301,429, Oct. 27, 1972, abandoned, which is a continuation of Ser. No. 108,228, Jan. 20, 1971, abandoned, which is a continuation of Ser. No. 50,289, June 26, 1970, abandoned. This application Dec. 13, 1974, Ser. No. 532,609
Claims priority, application United Kingdom, July 3, 1969, 33605/69
Int. Cl.² C12B 3/00, 9/00
U.S. Cl. 195—1.7 4 Claims

1. A cell culture of a human epithelial heteroploid liver cell line, comprising a cell line in association with a nutrient culture medium, said cell line being a human epithelial heteroploid liver cell line, comprising cells characterized as follows:

a. the cells form individually separated islands or discrete clumps when cultured in a growth medium;

b. the cells have a morphology closely resembling that of hepatocytes of the human liver;

c. the cells have a generation time not more than 24 hours;

d. the cells manifest increased production of glycogen in the presence of 1% glucose in the said growth medium; and

e. the cells are capable of supporting viruses.

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### 3,935,067
## INORGANIC SUPPORT FOR CULTURE MEDIA

Richard L. Thayer, Billings, Mont., assignor to Wyo-Ben Products, Inc., Billings, Mont.

Filed Nov. 22, 1974, Ser. No. 526,376
Int. Cl.² C12B 3/00; C12K 1/10; C12B 1/00
U.S. Cl. 195—1.7 22 Claims

1. In an aqueous microbial or tissue-cell culture medium which consists essentially of a support, nutrient matter and water, the improvement wherein the support is water-swellable to an extent of at least 3-fold in contact with sufficient water, and the support and water together constitute a solid or semi-solid non-particulate mass which is inorganic, is water-retentive, is thixotropic, and is a non-nutritive microbial or tissue-cell growth support.

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### 3,935,068
## CONTINUOUS ISOMERIZATION PROCESS UTILIZING IMMOBILIZED FLOCCULATE ENZYME

Charles W. Nystrom, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Jan. 2, 1973, Ser. No. 320,035
Int. Cl.² C12D 13/00
U.S. Cl. 195—31 F 5 Claims

1. A continuous process for converting glucose to fructose which comprises passing a glucose-containing solution through a bed of immobilized glucose isomerase wherein the immobilized glucose isomerase is used in the form of an aggregate comprising cell-free glucose isomerase and a water-soluble polyelectrolyte flocculating agent selected from the group consisting of cationic polyelectrolytes and anionic polyelectrolytes.

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### 3,935,069
## ENZYMATIC PROCESS USING IMMOBILIZED MICROBIAL CELLS

Margaret Esther Long, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Dec. 23, 1974, Ser. No. 535,615
Int. Cl.² C12B 1/00
U.S. Cl. 195—31 F 20 Claims

1. A process for effecting an enzyme-catalyzed transformation of a substrate which comprises contacting the substrate, under conditions suitable for effecting said enzyme catalyzed transformation, with an aggregate comprising microbial cells having associated therewith active quantities of said enzyme, a polyelectrolyte flocculating agent and amounts of an oxide, hydroxide, phosphate or sulfate of a metal selected from the group consisting of magnesium, calcium, iron and manganese sufficient to produce increased hardness in the aggregate and recovering the transformed substrate, said aggregate having been dried prior to use in said transformation.



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### 3,935,070
## PRODUCTION OF SWEET SYRUP FROM DEXTROSE MOTHER LIQUOR

Mikio Suekane, Saitamaken; Shiro Hasegawa, Tokyo; Masaki Tamura, Machida, and Yoshiyuki Ishikawa, Kunitachi, all of Japan, assignors to CPC International Inc., Englewood Cliffs, N.J.

Continuation of Ser. No. 303,751, Nov. 6, 1972, abandoned. This application May 22, 1975, Ser. No. 579,992
Int. Cl.² C12D 13/02
U.S. Cl. 195—31 F 17 Claims

1. A process for increasing the sweetness and monosaccharide content of a starch hydrolysate, comprising:

a. subjecting a starch hydrolysate containing dextrose, maltose, isomaltose and oligosaccharides to enzymatic isomerization to isomerize at least a portion of the dextrose in said starch hydrolysate to levulose, and then

b. treating said hydrolysate with an enzyme preparation having isomaltase or transglucosidase activity to produce a syrup which is sweeter and contains a higher amount of monosaccharides than said starch hydrolysate.

16. A continuouse process for increasing the sweetness and monosaccharide content of a hydrol liquor, comprising:

a. acid or enzyme thinning a starch slurry to a D.E. of 10 or less, followed by enzymatic saccharification of the thinned starch to obtain a hydrolysate having a D.E. above about 95,

b. crystallizing the dextrose from said hydrolysate to obtain a crystalline dextrose and a hydrol,

c. continuously passing said hydrol through a column packed with a xylose isomerase enzyme preparation to partially isomerize the dextrose in said hydrol and thereafter

d. continuously passing said hydrol containing partially isomerized dextrose through a column containing an enzyme preparation having isomaltase or transglucosidase activity, said enzyme preparation having been absorbed on bentonite.

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### 3,935,071
## PROCESS FOR THE CONVERSION OF GLUCOSE INTO GLUCONIC ACID

Hans Ulrich Bergmeyer, and Dieter Jaworek, both of Tutzing, Obb, Germany, assignors to Boehringer Mannheim G.m.b.H., Mannheim Waldhof, Germany

Filed Mar. 13, 1973, Ser. No. 340,775
Claims priority, application Germany, Mar. 24, 1972, 2214442
Int. Cl.² C12D 1/02; C12D 1/06
U.S. Cl. 195—32 15 Claims

1. Process for the conversion of glucose into gluconic acid by enzymatic oxidation in the presence of oxygen in aqueous solution, which process comprises passing a glucose-containing aqueous solution over a catalyst comprising an insoluble gel carrier to which is bound a mixture of glucose oxidase and catalase in close side by side proximity.

### 3,935,072
## PURIFICATION OF COENZYME A

Ichiro Chibata, Saita; Tetsuya Tosa, Kyoto, and Yuhsi Matuo, Saita, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

Filed July 31, 1973, Ser. No. 384,212
Claims priority, application Japan, Aug. 10, 1972, 47-80113; Aug. 10, 1972, 47-80115
Int. Cl.² C07G 7/02, 7/00, 3/00
U.S. Cl. 195—68 12 Claims

1. A process for purifying coenzyme A which comprises the steps of:

A. admixing a cell-free extract of a coenzyme A-producing microorganism with a cyanogen halide-activated water-insoluble polysaccharide at a pH of 6 to 9 thereby immobilizing proteins contained in the extract; and washing the immobilized proteins until materials which are not covalently bound thereto are removed; or

B. admixing coenzyme A with a cyanogen halide-activated water-insoluble polysaccharide at a pH of 6 to 8 to give an immobilized coenzyme A; contacting the immobilized coenzyme A with a cell-free extract of a coenzyme A-producing microorganism at a pH of 6 to 8, said extract having an ionic strength of 0.05 to 0.1, whereby proteins which exhibit special and unique affinity to coenzyme A and are inherently contained in living cells of the coenzyme A-producing microorganism are adsorbed on the immobilized coenzyme A; washing the immobilized coenzyme A with an aqueous solution of pH 6 to 8 having an ionic strength of 0.05 to 0.1; contacting the washed immobilized coenzyme A with an aqueous solution of pH 6 to 8 having an ionic strength higher than 0.5 to elute the proteins from the immobilized coenzyme A; and admixing the resultant proteins with a cyanogen halide-activated water-insoluble polysaccharide at a pH of 6 to 9 to give immobilized proteins; and

C. contacting a coenzyme A solution with the immobilized proteins or enzymes at a pH of 6 to 8 to have coenzyme A adsorbed on the immobilized preparation; washing the immobilized proteins with an aqueous solution of pH 6 to 8 having an ionic strength lower than 0.4; and then contacting the washed immobilized proteins with an aqueous acidic solution of pH 2 to 5 or with an aqueous solution of pH 6 to 8 having an ionic strength aqueous solution of pH 6 to 8 having an ionic strength of 0.1 to 0.5, at 0° to 30°C, to elute coenzyme A from the immobilized preparation.

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### 3,935,073
## METHOD FOR DETECTING BACTERIA

John R. Waters, Towson, Md., assignor to Johnston Laboratories, Inc., Cockeysville, Md.

Division of Ser. No. 30,675, April 22, 1970, Pat. No. 3,676,679, which is a continuation-in-part of Ser. No. 770,484, Oct. 25, 1968, abandoned. This application Sept. 22, 1971, Ser. No. 182,812
Int. Cl. C12k 1/00
U.S. Cl. 195—103.5 R 9 Claims

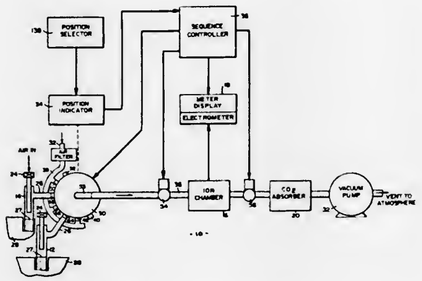
1. A method for analyzing a body fluid for the presence of bacteria therein, said method comprising:

placing a sample of the body fluid into a closed container together with a growth medium containing water including a $C^{14}$ carbon containing carbon source which is fermentable to produce carbon dioxide;

exposing the medium with the sample therein in said closed container to conditions conducive to the occurrence of normal metabolic processes for a period of time sufficient to cause production of $C^{14}O_2$ by the fermentation of said source;

thereafter removing at least a portion of the gaseous atmosphere from within the container above the medium and the sample and replacing a portion of the atmosphere in said container; and

determining the presence of $C^{14}O_2$ in said gaseous atmosphere by measuring the radioactivity of said removed portion of said gaseous atmosphere in radioactivity mea-




suring means while the gaseous atmosphere remains in a gaseous condition; and flushing said radioactivity measuring means with gas to remove the radioactive gaseous atmosphere therefrom.

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**3,935,074**

## ANTIBODY STERIC HINDRANCE IMMUNOASSAY WITH TWO ANTIBODIES

**Kenneth Edward Rubenstein, Palo Alto, and Richard K. Leute, Sunnyvale, both of Calif., assignors to Syva Company, Palo Alto, Calif.**

**Filed Dec. 17, 1973, Ser. No. 425,376**
**Int. Cl. G01n *31/00*; C12k *1/04***
**U.S. Cl. 195—103.5 R** **24 Claims**

1. A method for determining the presence of a ligand in an unknown suspected of containing said ligand which comprises:

combining in an aqueous medium said unknown, antiligand, anti(detector ligand) and Reagent, wherein said Reagent has a pair of epitopes in close proximity so that simultaneous binding of receptors to said pair of epitopes is sterically inhibited, wherein one of said pair of epitopes is recognized by said antiligand and the other of said pair of epitopes is recognized by said anti(detector ligand);

determining by a detectant the amount of remaining unbound anti(detector ligand) or anti(detector ligand) bound to Reagent; and

determining the presence of ligand by comparing said amount determined with said amount determined with a medium having a known amount of ligand.

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**3,935,075**

## AUTOMATIC BACTERIAL SPECIMEN STREAKER AND METHOD FOR USING SAME

**Russell C. Perry, Smithtown, and Roy W. Porter, Roslyn Heights, both of N.Y., assignors to Diagnostic Research, Inc., Roslyn, N.Y.**

**Filed May 13, 1974, Ser. No. 469,457**
**Int. Cl.² C12B *1/02***
**U.S. Cl. 195—127** **15 Claims**

1. Automatic bacterial specimen streaking apparatus comprising:

a. a table;

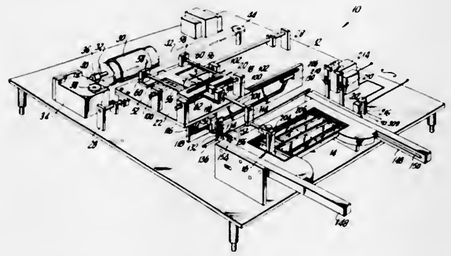
b. means for mounting a tray containing the specimen on said table whereby the tray is non-moveably held with respect to said table when said apparatus is in use;

c. moveable loop means positioned above said mounting means in the vicinity of the area to be occupied by the tray, said loop means being arranged to selectively contact the specimen in the tray;

d. first displacing means for moving said loop means from a starting position in a first direction over the area of said mounting means to be occupied by the tray;

e. second displacing means for moving said loop means from a starting position in a second direction over the area of said mounting means to be occupied by the tray, said second displacing means moving said loop means concurrently with the movement thereof in said first direction, said second direction being substantially perpendicular to said first direction to thereby define a figure eight movement pattern of said loop means;

f. a drive system for synchronously moving said first and said second displacing means;



g. means for advancing said loop means from the starting position thereof and in a direction parallel to said first direction of movement after the completion of each figure eight pattern to thereby define a plurality of successive figure eight patterns having a plurality of cross-over points between adjacent figure eight patterns; and

h. means for returning said loop means to the starting position thereof after a predetermined length of travel in said first direction.

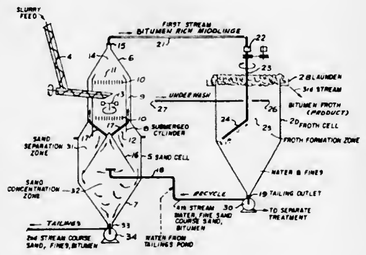
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**3,935,076**

## TWO STAGE SEPARATION SYSTEM

**Lubomyr M. O. Cymbalisty, Edmonton, Canada, assignor to Canada-Cities Service, Ltd.; Atlantic Richfield Canada Ltd. and Gulf Oil Canada Ltd., all of, Canada**

**Division of Ser. No. 364,343, May 29, 1973, Pat. No. 3,487,789. This application Aug. 23, 1974, Ser. No. 500,092**
**Int. Cl.² B01D *11/00*; C10G *1/00***
**U.S. Cl. 196—14.52** **4 Claims**




1. A two-cell separator, for use in the hot water process for extracting bitumen from a slurry containing bitumen, coarse and fine sand particles, and water, comprising:

a. a sand cell vessel having a side wall and conical bottom and adapted to contain a body of hot water,

b. means associated with the sand cell vessel intermediate its upper and lower ends for introducing the slurry thereinto,

c. means associated with the sand cell vessel at its upper end for removing therefrom a first stream,

d. means extending into the sand cell vessel's lower end for discharging a recycle stream thereinto,



e. means associated with the sand cell vessel at its lower end for removing therefrom a second stream;

f. a froth cell vessel having a side wall and adapted to contain a body of hot water,

g. means, associated with the froth cell vessel intermediate its upper and lower ends, for distributing the first stream thereinto uniformly across its cross-sectional area,

h. means associated with the froth cell vessel at its upper end for removing therefrom a third stream,

i. means associated with the froth cell vessel at its lower end for removing a fourth stream,

j. means connecting the means (c) with the means (g) for transferring the first stream therebetween; and

k. means connecting the means (i) with the means (d) for recycling the fourth stream therebetween.

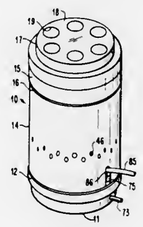
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**3,935,077**

## AUTOMATIC WATER DISTILLER

**Clifford C. Dennison, 440 Centenary Ave., Cleveland, Tenn. 37311**

**Filed Apr. 29, 1974, Ser. No. 464,831**
**Int. Cl.² B01D *3/00*; C02B *1/08***
**U.S. Cl. 202—83** **6 Claims**



1. A water distillation apparatus including:

a base;

a shell removably supported by said base;

insulated evaporator means disposed within said shell and said base;

a condensing chamber disposed within said shell above said insulated evaporator means;

insulated means to transport steam from said insulated evaporator means to said condensing chamber;

a water cooling and preheating chamber disposed above said condensing chamber, said water cooling and preheating chamber having a common wall with said condensing chamber to provide heat exchange therebetween;

first means to supply water to said water cooling and preheating chamber to aid in cooling the steam in said condensing chamber;

second means to supply the water in said water cooling and preheating chamber to said insulated evaporator means when the water in said water cooling and preheating chamber reaches a predetermined level;

said condensing chamber having its outer wall spaced from said shell to form a passage therebetween;

means to cause the flow of air through said passage to aid in cooling the steam in said condensing chamber;

means to inactivate said first water supply means, said insulated evaporator means, and said causing means when the water in said storage chamber reaches a predetermined level;

a storage chamber disposed within said shell above said insulated evaporator means and beneath said condensing chamber, for storing the distilled water from said condensing chamber produced by condensation of the steam in said condensing chamber;

said insulated means to transport steam extending through said storage chamber and being insulated therefrom;

an annular plate mounted at its inner circumference on said insulated means to transport steam, separating said condensing chamber from said storage chamber, with its outer circumference spaced from said outer wall of said condensing chamber, for directing a portion of the steam from said condensing chamber into said storage chamber.

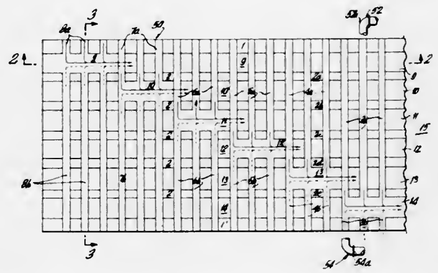
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**3,935,078**

## WASTE HEAT EXHAUST SYSTEM FOR SIDE BURNER REGENERATIVE COKE OVEN BATTERIES HAVING A DIVIDED HEATING SYSTEM

**Friedrich Thiersch; Manfred Strobel, and Theo Schmitz, all of Recklinghausen, Germany, assignors to Firma Carl Still, Germany**

**Filed Dec. 20, 1974, Ser. No. 534,888**
**Claims priority, application Germany, Dec. 22, 1973, 2364330**
**Int. Cl.² C10B *5/12***
**U.S. Cl. 202—141** **4 Claims**



1. A waste heat exhaust system for side burner regenerative coke oven batteries having a divided heating system, comprising a coke oven battery having a pusher side and a coke side, a chimney flue connected to one end of said battery, said battery having a plurality of flue gas ducts extending in a longitudinal direction and connected at their one ends to said chimney flue, a plurality of transverse first flues of unequal length having outer ends connected to respective waste gas lines on the pusher side of said battery and extending transversely to said flue gas ducts and having inner ends connected to respective ones of said gas ducts at spaced longitudinal locations along the length thereof, and a plurality of transverse second flues of unequal lengths having outer ends connected to respective waste gas lines on the coke side of said battery and extending transversely to said flue gas ducts and having inner ends connected to respective ones of said gas ducts at spaced locations along the length of said batteries.

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**3,935,079**

## METHOD AND APPARATUS FOR DISPLAYING ACTIVE OXYGEN AND SENSOR TEMPERATURE

**Charles E. Fitterer, Allison Park, and Carl D. Cassler, Pittsburgh, both of Pa., assignors to Fitterer Engineering Associates, Inc., Oakmont, Pa.**

**Filed Nov. 3, 1972, Ser. No. 303,370**
**Int. Cl.² G01N *27/46*; G08B *29/00***
**U.S. Cl. 346—45** **19 Claims**

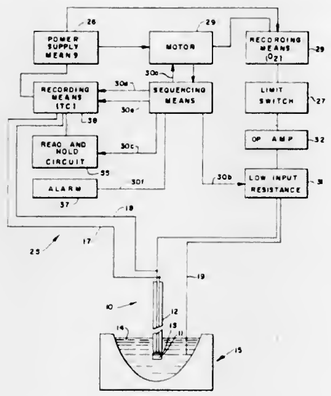
1. An apparatus for displaying at least a pair of physical representations which respectively represent at least a first and a second sensed parameter, comprising the combination of:

input circuit means for receiving a first signal and a second signal which are respectively electrical representations of said first parameter and said second parameter;

first recording means operatively connected to said input circuit means for receiving said first signal representative

of said first parameter and for displaying a first physical representation of said signal upon command;

second recording means for receiving said second signal representative of said second parameter and for displaying a second physical representation of said second signal, said second recording means including limiting means responsive to a predetermined level of said second signal




for initiating the operation of said second recording means;

sequencing means initially responsive to said limiting means for causing said first recording means to display said first representation of said first parameter; and

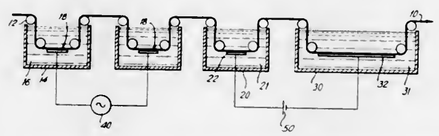
a source of power operatively connected to said first recording means and said second recording means.

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**3,935,080**
**METHOD OF PRODUCING AN ALUMINUM BASE SHEET FOR A PRINTING PLATE**

**Robert Gumbinner, Tarrytown, and Ken-ichi Shimazu, Pleasantville, both of N.Y., assignors to Polychrome Corporation, Yonkers, N.Y.**

**Filed Oct. 2, 1974, Ser. No. 511,344**
**Int. Cl.² C25D** *5/00, 5/44;* **B23P** *1/00*
**U.S. Cl. 204—28** **5 Claims**



1. A method of producing an aluminum base sheet suitable for a printing plate, which comprises:

a. First graining the surface of said aluminum base sheet by treatment for from one-half to two minutes in an aqueous electrolytic solution containing from 0.1 to 20 per cent of an electrolyte selected from the group consisting of HCl, NaCl, LiCl and KCl, with an alternating voltage providing a current density of from about 0.1 to 10 amps per square inch, at a temperature of from 20° to 95°C., to increase the surface area of said aluminum sheet by about 500%; and

b. Then cleaning the said grained aluminum sheet by treatment thereof for from ½ to 2 minutes in an aqueous solution of sulfuric acid of concentration of from about 10 to 50 weight percent, with a direct voltage providing a current density of from about 0.1 to about 10 amps per square inch, at a temperature of from about 20° to 80°C, wherein said aluminum sheet is the cathodic electrode; and

c. Then anodizing the said cleaned aluminum sheet by treatment thereof in an aqueous solution of sulfuric acid having a concentration of from 8 to 22 weight percent for from ½ to 3 minutes, with a direct voltage providing a current density of from 1 to 100 amperes per square foot, at a temperature of from 20° to 80°C wherein said aluminum sheet is the anodic electrode, to yield a grained, cleaned and anodized aluminum base sheet suitable for a printing plate.

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**3,935,081**
**DENSITY CONTROL FOR ELECTROPLATABLE POLYMER COMPOSITIONS**

**James A. Shotton, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.**

**Filed Aug. 14, 1973, Ser. No. 388,158**
**Int. Cl.² C25D** *5/56, 3/38, 5/10*
**U.S. Cl. 204—30** **8 Claims**

1. A process for barrel electroplating a normally solid polymer which comprises the steps of:

a. incorporating a filler system into said plastic, said filler system consisting of a siliceous filler and a heavy filler selected from the group consisting of barium sulfate and zinc oxide;

b. molding the resulting composition of plastic and fillers;

c. conditioning the molded plastic product of step (b) by contacting same with a combination, in series, of (1) an acid chromate etch and (2) an HF treatment;

d. preplating the resulting conditioned product of step (c) with an electrolessly platable metal; and

e. electroplating the preplated product of step (d) with a final finish to obtain a metal-plated plastic product; wherein said siliceous filler is present in an amount ranging from 10 to 40 weight percent, said heavy filler is present in an amount ranging from 5 to 35 weight percent, and the filler system of said siliceous and said heavy filler is present in an amount ranging from 15 to 60 weight percent, and the weight ratio of said siliceous filler to said heavy filler is in the range of about 0.2:1 to about 5:1, and wherein the composition resulting from step (a) has a density not less than the density of the plating baths of steps (d) and (e).

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**3,935,082**
**PROCESS FOR MAKING LEAD ELECTRODE**

**Heinz Peter Fritz, Garching, and Detlef Missol, Hart, both of Germany, assignors to Rheinisch-Westfalisches Elektrizitatswerk AG, Essen, Germany**

**Continuation-in-part of Ser. No. 440,449, Feb. 7, 1974, abandoned. This application May 10, 1974, Ser. No. 468,804**
**Claims priority, application Germany, Feb. 13, 1973, 2306957**
**Int. Cl.² C25D** *5/42, 9/06*
**U.S. Cl. 204—32 R** **10 Claims**

1. A process for making an electrode containing lead oxide as an active material, comprising the steps of:

a. immersing a body of titanium in a hot solution of oxalic acid having a titanium-oxalato complex dissolved therein; and

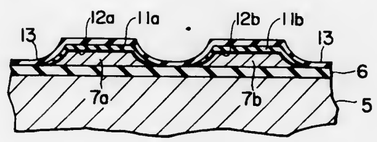
b. anodically coating the so treated body with $PbO_2$ in an electrolyte containing the ions of lead (II) and the ions of a lead (II) salt of an organic sulfate or phosphate with a highly polar group.



**3,935,083**
**METHOD OF FORMING INSULATING FILM ON INTERCONNECTION LAYER**

**Akihiro Tomozawa, Kodaira; Kensuke Nakata, Tokorozawa; Akira Kikuchi, and Takashi Agastuma, both of Kodaira, Japan, assignors to Hitachi, Ltd., Japan**

**Filed Jan. 7, 1974, Ser. No. 431,488**
**Claims priority, application Japan, Jan. 12, 1973, 48-5973**
**Int. Cl.² C25D** *5/02;* **B01J** *17/00;* **H01L** *23/28*
**U.S. Cl. 204—38 A** **4 Claims**




1. A method of forming a protected interconnection layer overlying the surface of a substrate structure comprising the steps of:

a. forming a first metallic layer over the surface of said substrate structure;

b. anodically oxidizing a thin portion of the upper surface of said first metallic layer to form a first porous metallic-oxide insulating film on said first metallic layer;

c. selectively removing prescribed portions of said porous film and said first metallic layer to expose the surface of said substrate structure and to form gradually sloping side surfaces of said first metallic layer;

d. forming a second metallic layer on the entire surface of the substrate structure and layer resulting from said (c);

e. anodically oxidizing said second metallic layer to form a second porous metallic oxide film therefrom;

f. anodically converting the surface portion of said first metallic layer facing said second porous metallic oxide film into a non-porous metallic oxide film;

g. removing portions of said second porous metallic oxide film lying in the etched-out portions of said first metallic layer on said substrate structure; and

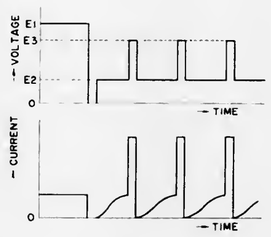
h. forming, by chemical vapor deposition, a further protective insulating film on the substrate resulting from step (g).

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**3,935,084**
**ANODIZING PROCESS**

**Shiro Terai, Nagoya; Akinari Ichiryu, Aichi; Toshio Suzuki, Kasugai, and Yoshikatsu Hayashi, Nagoya, all of Japan, assignors to Sumitomo Light Metal Industries, Ltd., Tokyo, Japan**

**Filed Mar. 28, 1974, Ser. No. 455,947**
**Int. Cl.² C25D** *11/14*
**U.S. Cl. 204—58** **5 Claims**



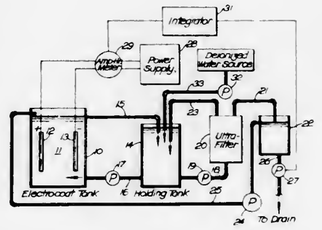

1. A process of forming a colored oxide film on a substrate of aluminium or an aluminium alloy, which comprises subjecting the substrate to anodizing at a direct-current voltage $E_1$ of 10 to 20 volts in an electrolyte comprising an aqueous solution of 4 to 15% by weight of sulfuric acid to form a substantially colorless oxide film on the surface of the substrate, then dropping the voltage $E_1$ to zero and subjecting the substrate carrying the oxide film on its surface to electrolytic treatment in the same electrolyte by applying an alternating-current voltage $E_2$ of 2 to 4 volts for a period of 2 to 20 minutes to develop a recovery effect and obtain an oxide film of desired color tone.

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**3,935,085**
**COMPOSITION CONTROL OF AN ELECTROCOATING BATH**

**Jr. Baker, Pleasanton, and Willard J. Springer, Livermore, both of Calif., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.**

**Filed Mar. 6, 1974, Ser. No. 448,597**
**Int. Cl.² C25D** *13/06*
**U.S. Cl. 204—181** **4 Claims**




1. In the method of electrocoating metal products wherein the electrocoating bath contains polycarboxylic acid coating resin which has been at least partially neutralized with an agent selected from the group consisting of organic amines, ammonium hydroxide, potassium hydroxide, sodium hydroxide and lithium hydroxide and wherein electrocoating bath is passed through an ultrafilter so as to separate neutralization agent therefrom and at least part of the ultrafilter permeate containing neutralization agent is discarded, the improvement comprising

a. sensing the electrocoating current; and

b. discarding a predetermined amount of permeate containing the neutralization agent in accordance with the current sensed.

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**3,935,086**
**ELECTRODIALYSIS PROCESS**

**Teruyuki Misumi, and Sakae Tsushima, both of Yokohama, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan**

**Filed Feb. 13, 1975, Ser. No. 549,738**
**Int. Cl.² B01K** *5/00;* **C08F** *15/02*
**U.S. Cl. 204—180 P** **9 Claims**

1. An anionic ion-exchange membrane, comprising a film of a crosslinked vinyl imidazole polymer or copolymer, said membrane having the properties of:

1. an anionic transport number which is 0.60 or more;

2. a specific electric conductivity which is $0.5 \times 10^{-3}$ to $20 \times 10^{-3}\ \Omega^{-1}cm^{-1}$ (at 25°C, in 0.5N aqueous sodium chloride solution); and

3. a resistance to organic contamination which is 10 minutes or more in terms of the time needed before the electrodialysis voltage becomes twice as much as that at the start up of electrodialysis when 0.5N aqueous sodium chloride solution containing 10 ppm sodium dodecyl benzene sulfonate is subjected to electrodialysis at current density of 1.1 A/dm².

### 3,935,087
### METHOD FOR ELECTRODEPOSITION OF SELF-CROSSLINKING CATIONIC COMPOSITIONS

**Robert D. Jerabek, Glenshaw, and Joseph R. Marchetti, Greensburg, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.**

**Continuation-in-part of Ser. No. 317,864, Dec. 22, 1972, abandoned. This application Dec. 23, 1974, Ser. No. 535,592**
**Int. Cl.² C25D** *13/06*
**U.S. Cl. 204—181** **16 Claims**

1. A method of electrocoating an electrically-conductive surface serving as a cathode comprising passing an electric current between said cathode and an anode in electrical contact with an aqueous electrodepositable composition, wherein said electrodepositable composition comprises an aqueous dispersion of:

A. a quaternary onium salt group-containing resin comprising the reaction product of:

1. an epoxy group-containing reaction product of an epoxy group-containing organic material and a semi-capped organic polyisocyanate; and
2. a reactant selected from the group consisting of an amine acid salt, a sulfide-acid mixture, and a phosphine-acid mixture, said reactant reacted with said epoxy group-containing reaction product in an amount and at a temperature sufficient to provide a quaternary onium salt-containing, water-dispersible resin;

said quaternary onium group salt-containing resin (A) containing hydroxyl groups and capped isocyanate groups, said capped isocyanate groups stable at room temperature but reactive with hydroxyl groups at elevated temperatures; and

B. a catalytic amount of a catalyst for urethane formation.

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### 3,935,088
### ELECTROPHORETIC ENAMELLING OF FERROUS ARTICLES

**Friedel Kaup, Gutersloh, and Heinrich Warnke, Marienfeld, both of Germany, assignors to Miele & Cie, Gutersloh, Germany**

**Continuation-in-part of Ser. No. 179,203, Sept. 9, 1971, abandoned. This application Sept. 4, 1973, Ser. No. 393,823**
**Claims priority, application Germany, Sept. 12, 1970, 2045265**
**Int. Cl.² C25D** *13/02, 13/20*
**U.S. Cl. 204—181** **8 Claims**

1. A method for the electrophoretic coating of a ferrous article with a vitreous enamel comprising the steps of (a) coating said article with from 0.3 to 5 g/sq. m. of zinc or 0.01 to 2 g/sq. m. of copper, (b) electrophoretically coating the metal-coated article with vitreous enamel, and (c) firing said enamel.

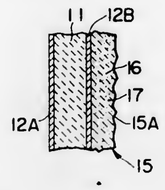
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### 3,935,089
### OXYGEN SENSOR COATED WITH CATALYTIC MATERIAL

**Kinmochi Togawa, Zushi; Kazuo Matoba, Yokohama; Hiroshi Takao, Kamakura, and Yoshitaka Hata, Fujisawa, all of Japan, assignors to Nissan Motor Company Limited, Japan**

**Filed July 18, 1974, Ser. No. 489,539**
**Claims priority, application Japan, July 24, 1973, 48-83283**
**Int. Cl.² G01N** *27/46*
**U.S. Cl. 204—195 S** **9 Claims**

1. An oxygen sensor to sense the difference in oxygen content between two gases, comprising a layer of a solid oxygen-ion electrolyte, a first metal electrode formed on a side of said electrolyte layer to communicate with a reference gas, a second metal electrode formed on the opposite side of said electrolyte layer to communicate with the gas being measured, both said first and second electrodes being permeable to gas, and a porous coating formed on said second electrode, said coating being of an inorganic material comprising at least a major amount of at least one refractory oxide and impregnated with a catalyst for oxidation of oxidizable components



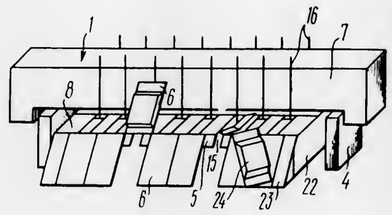

in said gas said refractory oxide comprises at least a substantial amount of $Al_2O_3$.

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### 3,935,090
### COVERING OF AN ALUMINUM-PRODUCING ELECTROLYSIS CELL

**Dmitry Pavlovich Petrusenko, ulitsa Degtyareva, 25, kv. 32; Lev Grigorievich Andreev, ulitsa Dzerzhinskogo, 22, kv. 12, and Alexandr Mikhailovich Epshtein, prospekt Lenina, 22, kv. 77, all of Vologograd, U.S.S.R.**

**Filed Mar. 15, 1974, Ser. No. 451,603**
**Int. Cl.² C25C** *3/08, 3/22*
**U.S. Cl. 204—243 R** **5 Claims**




1. An aluminium-producing electrolysis cell having vertical side walls and provided with holders for block-type preburnt anodes, comprising: a hood for gathering and extracting volatiles, located above said cell and having side walls whose edges are parallel to the cell side walls; slidable lids adjacent to one another and arranged inclinedly at the lower edges of said side walls of the hood; inclined guideways for each of said lids, made fast at the edges of said walls of the hood; drive shafts arranged along said electrolysis cell behind said anode-holders; levers secured on said drive shafts; double-arm right angle hangers, wherein one of the arms of each hanger is arranged along one of said levers pivotally round the longitudinal axis of said lever, while the other arm is articulated to the top end face of said lid and rests with its loose end upon the adjacent lever.

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### 3,935,091
### DEVICE FOR DETACHING AN ELECTROLYTICALLY PERCIPITATED METAL SHEET FROM A CATHODE

**Pentti J. Rautimo, Helsinki, and Aarne A. Kapanen, Pori, both of Finland, assignors to Outokumpu Oy, Outokumpu, Finland**

**Filed Oct. 17, 1973, Ser. No. 407,208**
**Claims priority, application Finland, May 17, 1973, 1607/73**
**Int. Cl.² C25D** *1/00, 17/00*
**U.S. Cl. 204—281** **3 Claims**

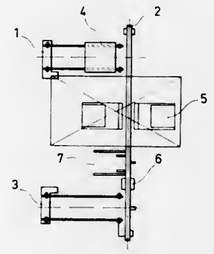
1. A device for detaching an electrolytically precipitated metal sheet, especially a copper, nickel or zinc sheet, from a base plate working as a cathode, which comprises

means for holding the base plate rigidly in an essentially vertical position,



blades mounted for limited downward movement to initially detach the upper edge of the precipitated metal sheet at least locally from the base plate by movement of said blades between said upper edge and said base plate,

gripping jaws, for gripping the detached upper edge, a horizontal pulling device comprising a carriage having wheel



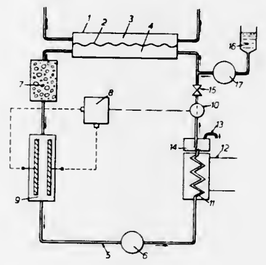

means movable along generally horizontal rails, said carriage being connected to the gripping jaws, and said carriage being provided with driving members for creating horizontal movement along said rails to an extent sufficient to detach the entire precipitated sheet from the base plate.

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### 3,935,092
### PURIFICATION OF A CHLORIDE SOLUTION

**Jean Bizot, Essonne, and André Sausse, Hauts-de-Seine, both of France, assignors to Rhone-Poulenc-Textile, Paris, France**

**Division of Ser. No. 315,196, Dec. 14, 1972. This application Mar. 21, 1974, Ser. No. 453,532**
**Claims priority, application France, Dec. 14, 1971, 71.44868**
**Int. Cl.² C25D** *21/00*
**U.S. Cl. 204—234** **2 Claims**



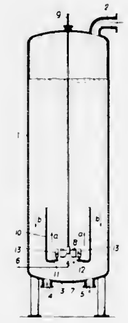

1. Apparatus for the purification of blood, said apparatus comprising a haemodialyzer, a first and second chamber in said haemodialyzer, a membrane separating said first and second chamber, means for producing a pressure differential between said first and second chamber, an inlet and an outlet for said second chamber, a purification closed loop connected to said inlet and outlet said loop including (i) means to circulate a solution of sodium chloride around said loop, (ii) an electrolyzer and, (iii) a separator permitting the removal from the closed loop of gases and of a volume of liquid and means to supply a direct current to said electrolyzer.

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### 3,935,093
### BITUMEN BLOWING

**Hans Senolt; Heinrich Tomaschko, and Georg Palvik, all of Vienna, Austria, assignors to Osterreichische Mineralolverwaltung Aktiengesellschaft, Vienna, Austria**

**Continuation of Ser. No. 78,035, Oct. 5, 1970, abandoned. This application Dec. 14, 1972, Ser. No. 315,008**
**Claims priority, application Austria, Oct. 3, 1969, 9332/69**
**Int. Cl.² C10G** *27/00*
**U.S. Cl. 208—6** **3 Claims**




1. A bitumen blowing method comprising: providing a body of bitumen, providing a spatially defined central portion in said body of bitumen, blowing air into said spatially defined central portion at a pressure sufficient to overcome the hydrostatic pressure of the bitumen, thereby producing within the body of bitumen an upward flow of a mixture of bitumen and air and a corresponding downward flow of bitumen relatively poor in air compared to the upwardly flowing mixture and mechanically agitating the upwardly flowing mixture within the spatially defined central portion to disperse the air therein.

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### 3,935,094
### MAGNETIC SEPARATION OF ILMENITE

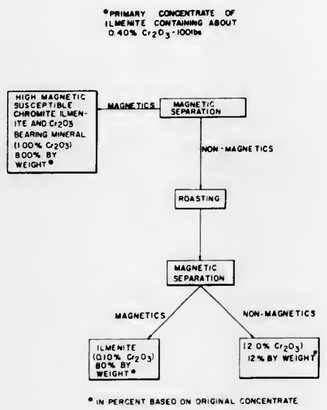
**Michel Bergeron, Tracy, and Stephen Frederick Prest, St-Lambert, both of Canada, assignors to Quebec Iron and Titanium Corporation - Fer et Titane du Quebec, Incorporated, Sorel, Canada**

**Filed Oct. 10, 1974, Ser. No. 513,893**
**Int. Cl.² B03C** *1/02*
**U.S. Cl. 209—8** **8 Claims**

1. In a method for purifying ilmenite ore containing combustibles, the improvement comprising the steps of:

a. separating magnetically an ilmenite ore having liberated chromites present as impurities to remove magnetically susceptible chromium bearing minerals;
b. heating the thus treated ilmenite at a temperature from 690°C to 810°C for a period of at least ten minutes, said heating being in the presence of excess oxygen;
c. separating magnetically the thus heated ilmenite as the

more magnetically susceptible species from the impurities therein;




e. recovering the magnetized ilmenite product having the reduced amount of chromites present.

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**3,935,095**

**STRONG FIELD MAGNETIC SEPARATORS**

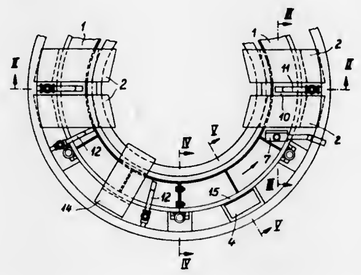
**Wilhelm Susse, Krefeld, and Heinz Alter, Rheinhausen, both of Germany, assignors to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany**

**Filed Apr. 30, 1973, Ser. No. 355,866**

**Claims priority, application Germany, May 5, 1972, 2222003**

**Int. Cl.² B03C** *1/12*

**U.S. Cl. 209—222** **2 Claims**




1. A strong field magnetic separator for separating materials of different weak magnetic properties from each other, which includes in combination: a plurality of coreless magnetic coils operable to induce high intensity magnetic fields in the space within said coreless magnetic coils, said magnetic coils including an even number of coreless magnetic coils each two successive magnetic coils having poles of the same polarity facing each other, container means including induction poles and being movable within the space surrounded by said coreless magnetic coils, conveying means for conveying materials to be separated from each other into said container means, means for withdrawing separated materials of different magnetic properties, said container means including a plurality of containers respectively forming chambers of a circular ring rotatable about its vertical central axis, and driving means operatively connected directly to the periphery of said ring.

**3,935,096**

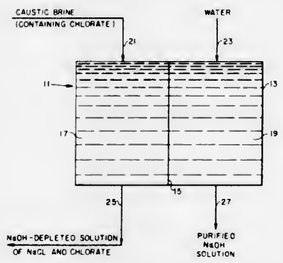
**PRODUCTION OF AQUEOUS METAL HYDROXIDE SOLUTIONS OF LOW METAL HALIDE CONCENTRATION**

**Jeffrey D. Eng, North Vancouver, and Cyril J. Harke, Burnaby, both of Canada, assignors to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.**

**Filed Jan. 2, 1974, Ser. No. 430,116**

**Int. Cl.² B01D** *13/00*

**U.S. Cl. 210—22** **10 Claims**




1. A method of separating metal hydroxide from metal halide in an aqueous solution of metal hydroxide, metal halide and halate which comprises diffusing the metal hydroxide from the solution through a cation-active permselective membrane of a material selected from the group consisting of the hydrolyzed copolymer of a perfluorinated olefin and a fluorosulfonated perfluorovinyl ether, one-side modified, derivatives thereof and sulfostyrenated perfluoroethylene-propylene to produce an aqueous metal hydroxide diffusate solution of low metal halide concentration.

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**3,935,097**

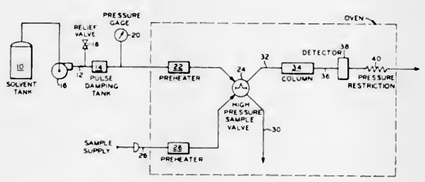
**ACID AND ALCOHOL CARRIER FOR HF-$H_2O$ CHROMATOGRAPHIC SEPARATION USING ANION EXCHANGE RESIN**

**Lewis B. Roof, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.**

**Filed Aug. 7, 1974, Ser. No. 495,509**

**Int. Cl.² B01D** *15/08*

**U.S. Cl. 210—31 C** **10 Claims**




1. A process for separating HF, water, and acid soluble oil comprising passing a sample containing said HF, water and acid soluble oil through a high pressure liquid chromatographic column packed with a weakly basic anion exchange resin in a carboxylate form utilizing as a carrier a liquid mixture of a normally liquid saturated aliphatic carboxylic acid in a normally liquid saturated aliphatic alcohol.



**3,935,098**

**ADSORBENT PROCESS FOR HEAVY METALS**

**Nakaaki Oda; Yoshio Horie; Mitsuru Idohara, and Shozo Iwasa, all of Takaoka, Japan, assignors to Nippon Soda Co., Ltd., Tokyo, Japan**

**Filed June 28, 1973, Ser. No. 374,341**

**Claims priority, application Japan, July 4, 1972, 47-66931**

**Int. Cl.² B01D** *15/00*

**U.S. Cl. 210—38** **6 Claims**

1. A process for adsorbing heavy metals or heavy metallic compounds which comprises contacting liquid or gas containing heavy metal or heavy metallic compounds with a resin prepared by a reaction between an an aldehyde, a dithiocarbamate compound and an aromatic compound having at least one group selected from —OH, —SH, —$NH_2$, —COOH, and —COOMe wherein Me represents sodium, potasium, $NH_4$ or calcium.

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**3,935,099**

**METHOD OF REDUCING WATER CONTENT OF EMULSIONS, SUSPENSIONS, AND DISPERSIONS WITH HIGHLY ABSORBENT STARCH-CONTAINING POLYMERIC COMPOSITIONS**

**Mary Ollidene Weaver, Peoria; Edward B. Bagley, Morton; George F. Fanta, Peoria, and William M. Doane, Morton, all of Ill., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.**

**Filed Apr. 3, 1974, Ser. No. 456,911**

**Int. Cl.² C02B** *1/14*; **C02C** *5/02*; **C08L** *3/00*

**U.S. Cl. 210—43** **9 Claims**

1. A method of reducing the water content of emulsions, comprising:

a. providing an aqueous-fluid absorbing composition comprising water-insoluble alkali salts of aqueous alkali saponified gelatinized-starch-polyacrylonitrile graft polymers which contain gelatinized starch (GS) and saponified polyacrylonitrile (HPAN) in molar ratios of from about 1:1.5 to 1:9 GS:HPAN, said water-insoluble alkali salts of aqueous alkali saponified gelatinized-starch-polyacrylonitrile graft polymers being further characterized as water-insoluble solids capable of absorbing in excess of 300 parts of water by weight per part of said water-insoluble solids,

b. mixing an emulsion with the aqueous fluid-absorbing composition, and

c. separating the resuling water-soaked aqueous-fluid absorbing composition from the resulting water-reduced emulsion.

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**3,935,100**

**PROCESS FOR THE TREATMENT OF WASTE WATERS CONTAINING SULFURIC ACID AND/OR AMMONIUM SULFATE**

**Jacques Alagy, Lyon; Christian Busson, Rueil Malmaison, and Maurice Cessou, Communarg, all of France, assignors to Institut Francais du Petrole, Paris, France**

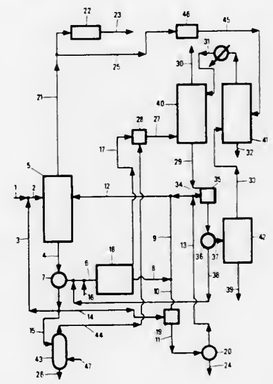
**Filed June 28, 1974, Ser. No. 484,228**

**Claims priority, application France, June 29, 1973, 73.24127; Dec. 4, 1973, 73.43318; Mar. 6, 1974, 74.08095**

**Int. Cl.² C02B** *1/34*; **C02C** *5/06*

**U.S. Cl. 210—45** **24 Claims**

1. A process for treating waste water containing sulfuric acid and/or ammonium sulfate, comprising the steps of : (a) reacting the waste water with ash-containing solid barium sulfide recovered from the following step (c) and with an aqueous solution of barium sulfide recovered from the following step (e), to form a suspension of ashcontaining solid barium sulfate in the waste water at a pH of 3 – 7, the proportions of said solid barium sulfide from step (c) and said barium sulfide supplied as solution from step (e) being respectively 70 – 95 percent and 5 – 30 percent of the total barium sulfide, (b) reacting the resulting barium sulfate with coal or coke containing 0.1 – 20 percent b.w. of ash, at 700°– 1500°C, to form ash-containing solid barium sulfide and a gas containing $H_2S$ and $SO_2$ which is separated, (c) recycling to step 1 at least the major portion of the ash-containing solid barium sulfide formed in step (b), and (d) admixing water with a minor portion of the ash-containing solid barium sulfide formed in



step (b), thereby obtaining a barium sulfide solution and insoluble ash, separating said barium sulfide solution from said insoluble ash and (e) recycling at least one portion of the barium sulfide solution obtained in step (d) and separated from the ash to step (a).

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**3,935,101**

**CLARIFICATION PROCESS**

**William Scott Briggs, Bellingham, Wash., assignor to Georgia-Pacific Corporation, Portland, Oreg.**

**Division of Ser. No. 305,821, Nov. 13, 1972, Pat. No. 3,857,830. This application July 22, 1974, Ser. No. 490,482**

**Int. Cl.² C02B** *1/20*

**U.S. Cl. 210—47** **11 Claims**

1. In a process for the clarification of an aqueous suspension of solid particle matter wherein a flocculating agent is added in a sufficient amount to flocculate the suspended particle matter the improvement which cimprises using as a flocculating agent a water-soluble lignin-di-epoxide reaction product obtained by reacting at a pH in range of 8-13 and a temperature in the range of 50° to 220°C a lignin solution containing 20–50 percent lignin with a long-chained di-epoxide having a molecular weight in the range of 120 to 1800 to the extent that the phenolic hydroxyl content of the lignin has been reduced from 40 to 95%, said di-epoxide having linking atoms selected from the group consisting essentially of carbon, nitrogen, sulfur, and oxygen and being a terminal di-epoxide with epoxy groups being on the terminal ends of the long chain, said terminal ends being alkylene groups of at least 3 carbon atoms.

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**3,935,102**

**GEOTHERMAL POWER SYSTEM AND METHOD**

**Judson S. Swearingen, 500 Bell Air Road, Los Angeles, Calif. 90024**

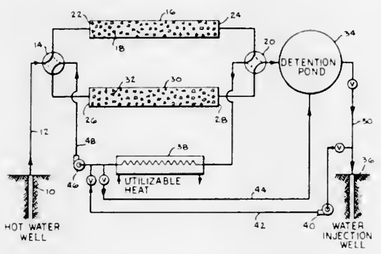
**Filed Dec. 13, 1973, Ser. No. 424,470**

**Int. Cl.² F03G** *7/02*; **B01D** *21/00*

**U.S. Cl. 210—83** **9 Claims**

1. A method of extracting heat from hot unrefined water containing impurities comprising the steps of: alternately cocurrently flowing volumes of said unrefined water and volumes of clean liquid through a housing containing porous material whereby heat is alternately transferred from said unrefined water to said porous material and from said porous

material to said clean liquid, and extracting heat from said clean liquid subsequent to its flow through said housing, wherein a high temperature front moves along the length of said housing as each of said volumes of unrefined water is



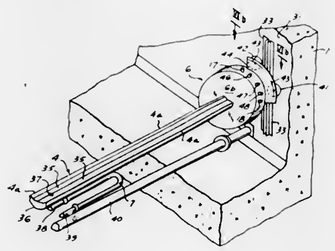

passed therethrough and wherein the subsequent volume of clean liquid is caused to begin to flow through said housing when said high temperature front is intermediate the ends of said housing.

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**3,935,103**
**APPARATUS FOR SEPARATING LOW-DENSITY LIQUID FROM A RELATIVELY MORE DENSE LIQUID SUBSTANTIALLY IMMISCIBLE THEREWITH**

**Karl Disque; Helmut Hölzgen, and Philipp Stauch, all of Neustadt, Germany, assignors to Erdol-Raffinerie Neustadt GmbH & Co., Neustadt, Germany and King-Wilkinson, Inc., Tulsa, Okla.**

**Filed Dec. 3, 1973, Ser. No. 421,492**
**Claims priority, application Germany, Dec. 2, 1972, 2259141**
**Int. Cl.² E02B *15/04***
**U.S. Cl. 210—97** **6 Claims**



**1.** In a device for withdrawing a light liquid from a heavy liquid upon which the light floats, especially for the removal of oil from water, in which a longitudinally extending trough having a width which is small relative to its length and formed at least in part with an upwardly open channel cross section, is supported in the liquids by floats so that it can be immersed in the liquids to enable only the upper liquid to flow from above into the open upper part of the channel cross section while the heavier liquid is drawn off through an outlet below the trough, the upper edges of the side walls of the trough are horizontal and parallel to one another and lie close to the liquid surface while the longitudinal axis of the trough parallel to these upper edges lies substantially at the level of the liquid surface and the bottom of the trough is formed by parts which converge toward one another and are inclined to the axis of the trough toward a lower outlet opening from which a discharge device leads to the lighter liquid from the trough, the improvement wherein:

the trough is disposed in a vessel containing the liquids to be separated to a variable height;

the floats are disposed at the ends of the trough and close these ends while being provided with means for raising and lowering the trough relative to the liquid levels;

at least one of the floats is provided with an end face juxtaposed with a confronting side wall of the vessel and so connected thereto that the trough is movable relative to the bottom of the vessel upwardly and downwardly and is swingable about its longitudinal axis over a limited angular range in opposite senses from an intermediate position;

in the intermediate position the upper edges of the lateral walls of the trough both lie above the level of the lighter liquid in the vessel and block the admission of both liquids into the trough; and

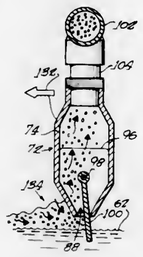
the floats are provided with means for selectively canting the trough in one sense or the other about its axis to selectively immerse the respective upper edge of the trough beneath the surface of the lighter liquid, the latter means including a pair of trim chambers formed in one of said floats, means connecting said trim chambers for liquid communication therebetween, and means for transferring liquid between said chambers without altering the total quantity of liquid in said chambers.

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**3,935,104**
**AUTOMATIC FOAM REMOVER FOR FLOTATION TANKS**

**Charles E. Russell, Wayne; Fred E. Russell, Elgin, and Melvin B. Pearson, Hoffman Estates, all of Ill., assignors to Waste Water Systems, Inc., Hoffman Estates, Ill.**

**Filed Mar. 20, 1974, Ser. No. 453,174**
**Int. Cl.² B01D *21/24***
**U.S. Cl. 210—97** **5 Claims**



**1.** In a flotation tank of substantially rectangular cross-section for treatment of waste water therein by causing the formation of gas bubbles which rise through the waste water body carrying insoluble and immiscible matter in the waste water with them to the surface of said body to form a layer of foam, froth or sludge on said surface which is maintained at a constant level by overflow means connected with the tank, an automatic foam remover comprising:

a. a hollow beam extending horizontally across the top portion of said tank between two opposite side walls thereof and having its bottom edge at a distance above said waste water level with a downwardly open slot extending along said bottom edge,

b. an elongate substantially flat-faced vane mounted within said hollow beam for pivotal movement on a horizontal axis above said slot and extending downwardly through said slot to a level below the surface of said waste water body, said slot being of significantly greater width than the thickness of said vane,

c. conduit means providing communication between a vacuum source and the interior of said hollow beam,

d. means at the ends of said beam supporting said beam for translatory movement on guide rails provided on said tank and extending along said two opposite side walls thereof,

e. a horizontal shaft rotatably mounted on the outside of said tank and extending transversely of said guide rails,

f. a sprocket wheel secured to each end of said shaft,

g. an endless drive chain trained over each of said sprocket wheels and over an idler sprocket wheel at the opposite side of the tank,

h. drive means operatively connected with said shaft for moving said endless drive chains in synchronism with each other continuously in one direction,

i. a first horizontal lateral projection on each of said chains in alignment with each other,

j. a second horizontal projection on each end of said beam and extending longitudinally of said beam outwardly above the top edge of said tank,

k. link means connecting said first and second projections at each end of said beam, said link means being of variable effective length to permit variation of the distance between said first and second projections as said first projections pass around the sprocket wheels in the reversal of the direction of movement of said beam,

whereby movement of said beam in one direction tends to cause compression of the foam in front thereof and thereby causes said vane means to pivot into engagement with the rear edge of said slot and thus subjects said foam in front of the vane means to the suction action of said vacuum source and thereby causes discharge of said foam through said conduit means, the operation being repeated during the reverse movement of said beam, this time with said vane means in engagement with the other edge of said slot.

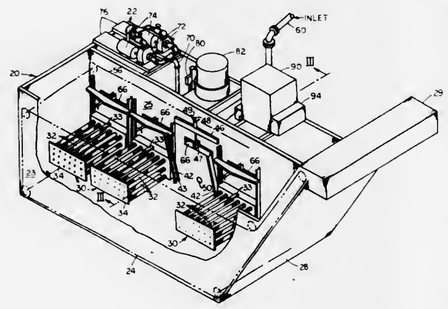


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**3,935,105**
**TUBULAR FILTER IN SETTLER**

**Stephen N. McEwen, Bowling Green, Ohio, assignor to Henry Manufacturing Co., Inc., Bowling Green, Ohio**

**Filed Nov. 12, 1974, Ser. No. 523,035**
**Int. Cl.² B01D *27/12, 29/32***
**U.S. Cl. 210—138** **29 Claims**



**1.** In an apparatus for separating solid particles from a liquid comprising: a settling tank having an apertured side wall, a filter in said settling tank, and pump means for sucking said liquid through said filter from said tank, the improvement comprising:

A. an assembly having an open sided chamber and a plurality of horizontal tubular filter elements comprising said filter communicating with said chamber,

B. releasable clamping means for holding the open side of said chamber in fluid tight communication with said side wall around said aperture in said side wall of said tank, and

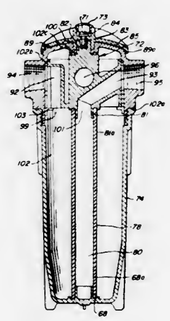
C. duct means connecting said aperture to said pump means.

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**3,935,106**
**WATER FILTER ASSEMBLY**

**Herbert D. Lipner, 166 26th St., Park Forest, Ill. 60466**

**Continuation-in-part of Ser. No. 435,849, Jan. 23, 1974, abandoned. This application July 19, 1974, Ser. No. 490,136**
**Int. Cl.² B01D *29/10***
**U.S. Cl. 210—232** **4 Claims**



**1.** A water filtering apparatus comprising:

a valve rotor, having an inlet bore and an outlet bore, said inlet and outlet bores communicating respectively with oppositely disposed entering and exiting openings in said rotor;

a housing for said rotor, said housing having therein housing entering and housing exiting openings corresponding to those of said rotor and communicating therewith when said rotor is in filtering position, positioned such that if said valve rotor be rotated, said rotor entering opening and said rotor exiting opening may be discommunicated

**18.** A separator for solid particles in a liquid, comprising:

A. a settling tank having

a. a vertical wall with an outlet therein,

b. means for removing the settled particles from the bottom of said tank, and

c. filter means in said tank attached to said vertical wall,

B. a clean liquid tank adjacent said settling tank,

C. pump means connected to said outlet for removing liquid from said settling tank through said filter means into said clean tank,

D. means for precoating said filter means with a suspended filtration medium, and

E. means connected to said outlet for backwashing said filter means to remove periodically accumulated particles on said filter means for settling in said settling tank;

the improvement comprising:

in said filter means:

a. a plurality of parallel tubular filter elements mounted horizontally inside said settling tank,

b. a chamber connected to one end of all said elements and to said outlet in the wall of said settling tank,

c. means attached to said wall for removably holding said chamber against said outlet in said wall, and

d. gasket means around an aperture in said chamber for insuring a fluid type seal between said chamber and side wall of said settling tank around said outlet; and

in said precoating means:

a. means for dispersing said precoat medium in said liquid from said pump means,

b. duct means for directing liquid containing said precoat medium to above and adjacent said filter means for direct deposit on said filter means; and

F. means for controlling the cycle of operation of said separator for periodically backwashing and precoating said filter means.

thereby from said housing entering opening and said housing exiting opening respectively;

a filter tank detachably, sealably mounted to said housing;

a hollow, elongated filter element having permeable walls defining a central cavity, said filter element mounted in said filter tank with one end thereof opening into one said bore of said rotor; and

automatic vacuum relief means for releasing the vacuum created within said filter tank when said entering and exiting openings of said rotor have been discommunicated from said entering and exiting openings of said housing, whereby said apparatus may be more easily disassembled; said automatic vacuum relief means comprising a vacuum opening in said filter tank communicating said filter tank with the ambient atmosphere; and a vacuum seal covering said vacuum opening when said valve rotor is in filtering position discommunicatable therefrom when said valve rotor is rotatably positioned in bypass configuration.

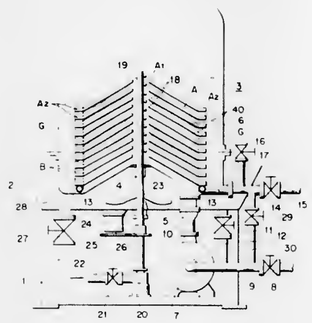
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**3,935,107**

## FILTER

**Aisaburo Yagishita, No. 5-2, Shinho-cho 4-chome, Chigusa, Nagoya, Aichi, Japan**

**Filed Dec. 18, 1973, Ser. No. 425,829**
**Int. Cl.² B01D** *23/00, 23/24, 29/00*
**U.S. Cl. 210—243** **7 Claims**



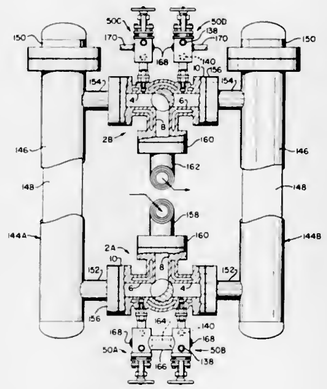
**1.** A filter comprising a plurality of screen plates, each having a penetration hole at its central portion, said plates being disposed inside of a filter box in a stacked form with a predetermined distance between each said plate such that the penetration holes are vertically aligned, pump means for pumping a raw liquid from an input pipe connected thereto through said penetration holes, wherein the raw liquid to be filtered is fed through said penetration holes onto the central portion of each of said screen plates and flows towards the peripheral portion thereof such that the filtrate is collected at a plurality of portions disposed at nearly equal intervals on the peripheral portion of each of said screen plates, a rotary jet shower pipe positioned within said penetration holes such that said jet shower pipe does not contact the edges of said penetration holes, and collector means operatively coupled to said peripheral portion of said screen plate for collecting and removing the filtrate collected on said peripheral portions of said screen plates.

**3,935,108**

## CHANGEOVER VALVES WITH BYPASS AND BENT VALVING

**Louis V. Forgues, Lunenburg, Mass., assignor to Parks-Cramer Company, Fitchburg, Mass.**

**Filed Oct. 7, 1974, Ser. No. 512,520**
**Int. Cl.² B01D** *27/10;* **F16K** *11/22*
**U.S. Cl. 210—340** **22 Claims**



**1.** Apparatus comprising:

a plug valve and first and second auxiliary valves mounted to said plug valve;

said plug valve comprising a valve body having a chamber for receiving a valve plug and at least a first port and a second port communicating with said chamber, first and second openings in said valve body intersecting said first and second ports respectively, and a valve plug rotatably mounted in said chamber, said valve plug having a passageway for controlling flow of fluid through said valve body via said first and second ports;

said auxiliary valves each comprising a stem having a stop portion which is disposed in one of said openings and is adapted to close off said one opening when said stem is in a first position and to open said one opening when said stem is in a second position, and means for moving said stem axially between said first and second positions; and

means connecting said first and second openings so that fluid can bypass said valve plug when the stems of said bypass valves are in said second positions.

**22.** Apparatus comprising a main valve and first and second auxiliary valves;

said main valve comprising a valve body with at least first, second and third ports, and flow control means for selectively controlling flow of fluid through said valve body between said third port and said first and second ports;

said first and second auxiliary valves each comprising a stem with a valve head, and means for axially and non-rotatably reciprocating said stem; and

means defining first and second openings in said valve body communicating with said first and second ports respectively, and means defining first and second valve seats in said valve body for the valve heads of said first and second auxiliary valves respectively;

the stems of said first and second auxiliary valves being disposed in said first and second openings respectively so that the valve heads of said first and second auxiliary valves engage said first and second valve seats respectively and block off said first and second openings respectively when said stems are in a first position and are disengaged from said first and second valve seats respectively and unblock said first and second openings when said stems are in a second position.

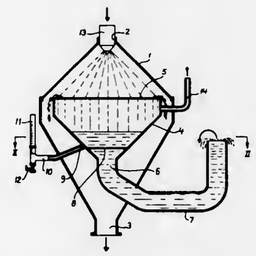


**3,935,109**

## STRAINING APPARATUS

**Lars-Goran Rundqvist, Tumba, and Karl Folke Olof Jakobson, Taby, both of Sweden, assignors to AB Celleco, Tumba, Sweden**

**Filed Oct. 18, 1973, Ser. No. 407,589**
**Claims priority, application Switzerland, Oct. 25, 1972, 13740/72**
**Int. Cl.² B01D** *35/00*
**U.S. Cl. 210—406** **5 Claims**



**1.** In a straining apparatus for separating fibres and the like from a liquid, the combination of a vessel having an outlet, a first strainer forming one wall of the vessel, means for spraying the fibre-containing liquid on to the outside of said strainer wall, means for evacuating said vessel, a second strainer having a smaller total area than the first strainer and covering said outlet from the vessel, said outlet being situated lower than said strainer wall, said second strainer having an inlet side, and means for maintaining, during operation of the straining apparatus, a liquid column covering said inlet side of the second strainer and forming a free liquid surface between the two strainers, the mesh openings of the second strainer being larger than the mesh openings of the first strainer but small enough so that fibres passing through the first strainer due to rupture thereof will rapidly obstruct the second strainer, the combination comprising also an outlet conduit connected to said outlet of the vessel, said conduit having outside the vessel a portion located at a higher level than the second strainer.

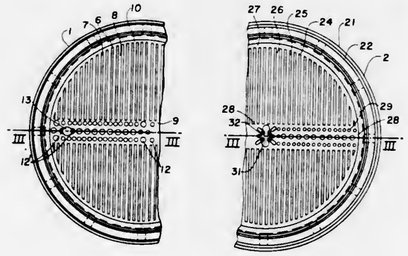
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**3,935,110**

## ENCLOSED FILTERING UNIT FOR FILTERING AND/OR TREATING LIQUID OR GASEOUS MEDIA

**Paul Schmid, and Albert Droesch, both of Riehen, Switzerland, assignors to GHH Basel AG, Basel, Switzerland**

**Filed Nov. 2, 1973, Ser. No. 412,413**
**Claims priority, application Switzerland, Feb. 21, 1973, 2468/73**
**Int. Cl.² B01D** *29/16*
**U.S. Cl. 210—445** **9 Claims**



**1.** A fluid treating unit comprising:

1. a first plate-shaped member having a major face formed wtih a plurality of grooves therein, said member being formed with an opening therethrough transverse to said major face and communicating with said grooves;

2. a second plate-shaped member having a major face formed with a plurality of grooves therein, said second member being formed with an opening therethrough transverse to the major face of said second member and communicating with the grooves in the major face of said second member;

3. a layer of treating material permeable to the fluid to be treated and having two opposite surfaces respectively engaged by said major faces and bounding said grooves in said major faces;

4. sealing means connecting said plate-shaped members and therewith constituting a chamber enclosing said layer;

5. a first conduit communicating with said opening in said first member and constituting an inlet path of flow into said chamber for a fluid to be treated;

6. a second conduit communicating with said opening in said second member and constituting a discharge path of flow from said chamber for the treated fluid, (a) said paths being transverse to said major faces,

7. first guide means in said chamber at said opening of said first member for deflecting fluid entering said chamber from said first conduit in said inlet path into a direction substantially parallel to the major face of said first member and for thereby preventing erosion of said layer; and

8. second guide means in said chamber at the opening of the second member for deflecting fluid flowing in a direction substantially parallel to the major face of said second member in the grooves of said second member into said discharge path.

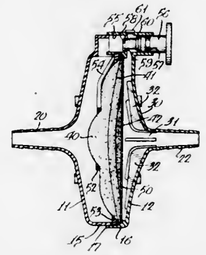
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**3,935,111**

## DEVICE FOR REMOVING BLOOD MICROEMBOLI

**Donald J. Bentley, Newport Beach, Calif., assignor to Bentley Laboratories, Inc., Irvine, Calif.**

**Filed Apr. 6, 1973, Ser. No. 348,588**
**Int. Cl.² B10D** *25/00*
**U.S. Cl. 210—446** **16 Claims**

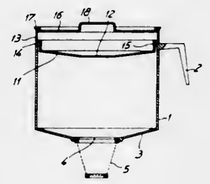


**1.** A device for removing microemboli from whole blood or the like comprising: a casing with an interior chamber and with a flow inlet to and a flow outlet from the chamber; a plurality of effective layers of microemboli-removing material positioned in said chamber and sealed to the inner periphery of the casing to require blood flow therethrough in travel of the blood from the flow inlet to the flow outlet, said effective layers each consisting of foamed open cell polyurethane to define tortuous flow passages therethrough, said effective layers having progressively smaller effective pore sizes whereby the blood in flowing therethrough has the microemboli of a size to block passages in a layer prevented from flowing thereto by adherence to the walls of the passages in a preceding layer.

### 3,935,112
### REUSABLE COFFEE FILTER

**Albert Greutert, Sachseln, Switzerland, assignor to Interelectric AG, Sachseln, Switzerland**

**Filed July 8, 1974, Ser. No. 486,626**
**Claims priority, application Germany, July 12, 1973, 2335506**
**Int. Cl.² B01D** *35/28*
**U.S. Cl. 210—456** **3 Claims**



1. A reusable coffee filter comprising:
a. a pot-shaped hot water container having a bottom wall defining an opening of a diameter smaller than the diameter of the hot water container;
b. a frustro-conical filter strainer made of metallic sieve sheets depending from the opening in said pot-shaped hot water container, the bottom of said frustro-conical strainer comprising a horizontal sieve sheet; and
c. a water distribution pan supported within said hot water container by means located at the top thereof, said pan having a bottom wall containing a large number of small holes distributed over a portion of the bottom wall vertically aligned with the opening in said hot water container and somewhat smaller in extent than that opening.

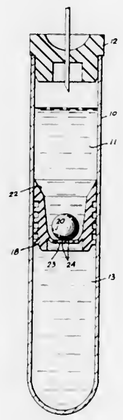
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### 3,935,113
### SERUM/PLASMA SEPARATOR WITH CENTRIFUGAL VALVE

**Waldemar A. Ayres, Rutherford, N.J., assignor to Becton, Dickinson and Company, East Rutherford, N.J.**

**Filed Feb. 27, 1974, Ser. No. 446,364. The portion of the term of this patent subsequent to Nov. 12, 1991, has been disclaimed.**
**Int. Cl.² B01D** *21/26*
**U.S. Cl. 210—516** **2 Claims**

1. A separator device for separating mixed light phase and heavy phase constituents of blood and establishing a permanent barrier between said phases, including:
a tubular container closed at both ends, one of said ends being closed with a stopper penetrable by a needle for the introduction of blood into said container;
elastomeric barrier means fixedly located intermediate the container ends and dividing the container into first and second chambers such that upon separation of the blood into the light phase and the heavy phase by the application of centrifugal force, the first chamber contains only the light phase;
a passageway through the barrier means connecting the first and second chambers;
a ball in said first chamber having a specific gravity greater than the heavy phase of the blood; and
a stretchable diaphragm integral with the base of the barrier means and extending across the passageway, at least one normally closed aperture in the diaphragm, the diaphragm normally sealing off the passageway to provide a barrier between first and second chambers, and when subjected to a predetermined centrifugal force, the ball causes the diaphragm to stretch in the direction of the second chamber to open the apertures to provide communication between the chambers to permit the light phase to travel to the first chamber and the heavy phase to travel to the second chamber, and upon cessation of the applied centrifugal force, the diaphragm returns to its



normal unstretched position to close the apertures and seal off the passageway and provide a barrier between the first and second chambers; said ball normally resting on the upper surface of said diaphragm.

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### 3,935,114
### LOW-WEAR GREASE FOR JOURNAL BEARINGS

**Ruel M. Donaho, Jr., Houston, Tex., assignor to Hughes Tool Company, Houston, Tex.**

**Continuation of Ser. No. 292,021, Sept. 25, 1972, abandoned. This application Dec. 4, 1974, Ser. No. 529,302**
**Int. Cl.² C10M** *3/18, 5/14, 7/20, 7/24*
**U.S. Cl. 252—18** **11 Claims**

1. A heavy duty lubricating grease consisting essentially of a substantially uniform dispersion including:
a. a multi-purpose heavy duty hydrocarbonaceous lubricant thickened by a calcium acetate complex to form a lubricating grease that is stable at high temperature and that has an ASTM worked penetration of no less than 265; and effective and synergistic amounts of:
b. powdered molybdenum disulfide; and
c. powdered metallic oxide; said metallic oxide being selected from the group consisting of antimony trioxide; and a mixture of substantially equal parts of antimony trioxide, zinc oxide, lead oxide, nickel oxide, tungsten trioxide, vanadium pentoxide and copper oxide;
such that said heavy duty lubricating grease can be prepared to have a Shell 4-ball EP scar diameter of about 1.4 millimeters maximum after 5 minutes at 900 revolutions per minute at 500 kilograms load.

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### 3,935,115
### COOLANT FOR ROTARY ENGINE

**George A. Paul, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.**

**Filed Oct. 4, 1973, Ser. No. 403,705**
**Int. Cl.² C09K** *5/00*
**U.S. Cl. 252—73** **2 Claims**

2. The process of cooling a liquid-cooled rotary internal combustion engine comprising circulating in the cooling system thereof an aqueous solution of propylene glycol monomethyl ether containing about 25–70% by volume of the ether.



### 3,935,116
### FUNCTIONAL FLUID COMPOSITIONS

**Martin B. Sheratte, Reseda, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.**

**Continuation-in-part of Ser. No. 230,131, Feb. 28, 1972. This application Mar. 11, 1974, Ser. No. 449,623**
**Int. Cl.² C09K** *3/00*; **C10M** *3/40*
**U.S. Cl. 252—78** **15 Claims**

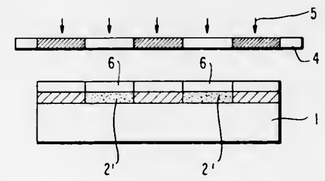
1. A functional fluid composition consisting essentially of (1) a combination of at least two phosphate esters, one of said phosphate esters containing at least two groups selected from the class consisting of alkyl and alkoxyalkyl, and mixtures thereof, and a second of said phosphate esters containing at least two aromatic groups selected from the class consisting of aryl and alkaryl groups, and mixtures thereof, and (2) a combination of at least two polyalkylene glycol ethers containing terminal oxyalkyl groups wherein the alkyl radicals contain from 1 to about 8 carbon atoms, said alkylene groups being selected from the class consisting of ethylene and propylene radicals, one of said polyalkylene glycol ethers having a molecular weight ranging from about 500 to about 2,000, and a second of said polyalkylene glycol ethers having a molecular weight ranging from above 2,000 up to about 25,000, said phosphate esters and said polyalkylene glycol ethers being present in amounts such that said composition has a viscosity at −65°F of not greater than about 6,000 centistokes, and a viscosity at 210°F of not less than 2.25 centistokes.

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### 3,935,117
### PHOTOSENSITIVE ETCHING COMPOSITION

**Gyoji Suzuki, and Takeshi Tomotsu, both of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan**

**Continuation-in-part of Ser. No. 174,825, Aug. 25, 1971. This application Nov. 26, 1973, Ser. No. 419,010**
**Claims priority, application Japan, Aug. 25, 1970, 45-74488**
**Int. Cl.² C03C** *15/00*; **C09K** *13/00*; **G03C** *5/00*
**U.S. Cl. 252—79.1** **3 Claims**



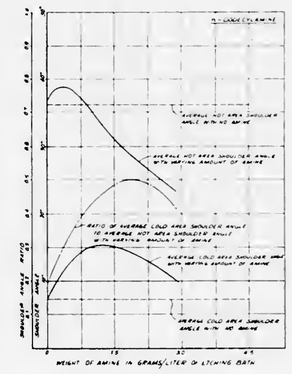
1. A photosensitive etching solution for fabricating a semiconductor device, employing a coating of silicon nitride, borosilicate glass, or phosphosilicate glass, provided on a silicon semiconductor substrate which comprises:
1. a compound which is capable of being decomposed by light to liberate a material which etches said coating, said decomposable compound being selected from the group consisting of tritylfluoramine, tetrafluorohydrazine, tri-n-butyl-tin-fluoride, α, α, α, trifluorotoluene, trifluoriodomethane, trifluorotrichloroethane, and p,p'-difluorodiphenylsulphone or a compound obtained from the reaction between the photodecomposed material and other material in the solution which etches said coating,
2. a binder, and
3. a solvent.

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### 3,935,118
### NITRIC ACID SYSTEM FOR ETCHING MAGNESIUM PLATES

**David L. Czirr, Cresskill, N.J., and Harry Kroll, Warwick, R.I., assignors to Philip A. Hunt Chemical Corporation, Palisades Park, N.J.**

**Continuation-in-part of Ser. No. 337,879, March 5, 1973, abandoned. This application Feb. 11, 1974, Ser. No. 441,342**
**Int. Cl.² C09K** *13/06*
**U.S. Cl. 252—79.4** **56 Claims**



1. An etching liquid for etching bare areas of a magnesium plate, other portions of which are covered with an etch-resist pattern, said etching liquid including
I. a strong inorganic acid,
II. at least one liquid fatty monocarboxylic acid having from 6 to 26 carbon atoms and substantially non-reactive with the inorganic acid,
III. at least one organophosphonic acid,
IV. at least one alkylaryl sulfonic acid,
V. at least one surfactant or coupling agent, and
VI. water.

17. An etching liquid for etching bare areas of a magnesium plate, other portions of which are covered with an etch-resist pattern, said etching liquid including
I. a strong inorganic acid,
II. at least one liquid fatty monocarboxylic acid having from 6 to 26 carbon atoms and substantially nonreactive with the inorganic acid,
III. at least one polycarboxylic acid having from 2 to 10 carbon atoms,
IV. at least one alkylaryl sulfonic acid,
V. at least one surfactant or coupling agent,
VI. at least one salt of an acyclic or an alicyclic amine having at least 6 carbon atoms, and there being essentially absent from the etching liquid sulfonates and sulfates of fatty monocarboxylic acids, and
VIII. water.

### 3,935,119
### LUMINESCENT DEVICE, PROCESS, COMPOSITION, AND ARTICLE

**Stephen W. Barber, Toledo, Ohio, and William F. Nelson, Port Washington, N.Y., assignors to Owens-Illinois, Inc., Toledo, Ohio**

**Division of Ser. No. 203,495, Nov. 30, 1971, Pat. No. 3,855,144, Continuation of Ser. No. 41,455, May 28, 1970, Pat. No. 3,634,711, which is a division of Ser. No. 841,690, July 1, 1969, Pat. No. 3,527,711, which is a continuation-in-art of Ser. Nos. 355,248, March 27, 1964, Ser. No. 355,251, March 27, 1964, Ser. No. 355,253, March 27, 1964, Ser. No. 355,407, March 27, 1964, Ser. No. 355,408, March 27, 1964, Ser. No. 355,409, March 27, 1964, Ser. No. 355,421, March 27, 1964, Ser. No. 355,422, March 27, 1964, Ser. No. 355,444, March 27, 1964, Ser. No. 355,445, March 27, 1964, Ser. No. 355,469, March 27, 1964, Ser. No. 355,470, March 27, 1964, and Ser. No. 355,471, March 27, 1964.**

**This application Jan. 29, 1973, Ser. No. 327,529**

**Int. Cl.² C09K** *11/08*; **C03C** *13/00, 3/04*

**U.S. Cl. 252—301.4 F** **4 Claims**

1. A vitreous homogeneous fiber consisting essentially of silica and the oxides of the rare earths terbium and cerium, wherein the total number of atoms of said rare earths per million silicon atoms does not exceed 5000, and the number of each of such rare earth atoms per million silicon atoms is at least 5, said silica glass, exclusive of said rare earth oxides, being at least 99 weight percent silica.

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### 3,935,120
### ANION-DEFICIENT ACTINIDE NITRATE SOLUTION

**Johannes Bastiaan Willem Kanij, Zevenaar, and Arend Jaman Noothout, Oosterbeek, both of Netherlands, assignors to Stichting Reactor Centrum Nederland, The Hague, Netherlands**

**Filed May 30, 1973, Ser. No. 365,197**

**Claims priority, application Netherlands, June 5, 1972, 7207572**

**Int. Cl. C09k** *3/00*

**U.S. Cl. 252—301.1 R** **8 Claims**

1. A method for the preparation of a concentrated anion deficient actinide nitrate solution, the actinide metals being chosen from the group of four valent plutonium, hexavalent uranium and four valent thorium, wherein undesired precipitates of $UO_3$ hydrates are avoided, by dissolving one or more oxides from the group $PuO_2$, $UO_2$, $U_3O_8$, $UO_3$ or lower oxides than $UO_3$, located between $UO_2$ and $UO_3$ in molten $UO_2(NO_3)_2.6H_2O$ or molten $Th(NO_3)_4.4H_2O$ and mixtures thereof at a temperature of at least 60°C, whereafter the obtained melt is diluted with water to the desired concentration.

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### 3,935,121
### FOAM CONTROL COMPOSITIONS FOR AQUEOUS SYSTEMS, ITS PREPARATION, AND PROCESS USING SAME

**Hillel Lieberman, Warminster; Anthony J. Graffeo, Willow Grove, and John S. Kucsan, Philadelphia, all of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.**

**Filed June 29, 1973, Ser. No. 374,835**

**Int. Cl.² B01D** *19/04*

**U.S. Cl. 252—321** **4 Claims**

1. A process for preparing a foam control composition for aqueous systems, said composition consisting essentially of from about 1% to about 10% of an amide, from about 1% to about 10% of an emulsifier, from about 88% to about 98% of a liquid hydrocarbon carrier, and from 0% to about 2% of a silicone oil, which process comprises:

a. Combining the amide, the emulsifier, and from about 1/5 to about ½ of said liquid hydrocarbon carrier;

b. Heating the amide, emulsifier, and the liquid hydrocarbon carrier amount until a clear melt is obtained;

c. Rapidly adding to said melt the remainder of said liquid hydrocarbon carrier to cool the melt to a temperature of from about 150°F. to about 200°F.;

d. Allowing the cooled mixture to further cool to a temperature of from about ambient to about 135°F.; all said percentages being on a weight basis and wherein said amide is obtained by the reaction of a polyamine containing an alkylene group of from 2 to 6 carbons, with a fatty acid or a mixture of fatty acids, having an average composition of 6 to 22 carbons per acid molecule.

4. A process for controlling the foam of an aqueous system, which comprises adding to said system an effective amount of the product of claim 3.

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### 3,935,122
### GREASE COMPOSITIONS

**Joseph J. Dickert, Jr., Lower Makefield Township, Pa., assignor to Mobil Oil Corporation, New York, N.Y.**

**Filed Apr. 1, 1975, Ser. No. 563,997**

**Int. Cl.² C10M** *1/40, 3/34, 5/22, 7/38*

**U.S. Cl. 252—33.2** **13 Claims**

1. A grease composition comprising a major proportion of an oil of lubricating viscosity and an amount of metal salts sufficient to thicken said oil to a grease consistency, which salts consist essentially of (a) at least one metal salt of a C-alkyl or alkenyl succinic acid, having from about 10 to about 30 carbon atoms in the alkyl or alkenyl group and (b), at least one metal salt of a C-alkyl or alkenyl succinimidoarylsulfonic acid, having from about 14 to about 30 carbon atoms in the alkyl or alkenyl group, the relative weight proportions of (a) to (b) being between 1:99 and 99:1.

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### 3,935,123
### POLYSILOXANE-POLYOXYALKYLENE COMPOSITIONS USED IN POLYURETHANE FOAM

**Bela Prokai, Mahopac, and Bernard Kanner, West Nyack, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.**

**Continuation-in-part of Ser. No. 279,883, Aug. 11, 1972, Pat. No. 3,846,462. This application Sept. 20, 1974, Ser. No. 507,934**

**Int. Cl.² B01F** *17/54*; **C08G** *18/61*

**U.S. Cl. 252—351** **36 Claims**

1. As novel compositons, an admixture containing from about 10 to about 90 weight percent of Component A and from about 90 to about 10 weight percent of Component B, said percentages being based on the total weight of A and B contained in the admixture, wherein:

Component A is a cyano-bearing polysiloxanepolyoxyalkylene copolymer having the average composition,

$$(R)_3SiO[(R)_2SiO]_x[(R)\underset{\underset{R'CN}{|}}{SiO}]_y[(R)\underset{\underset{E}{|}}{SiO}]_zSi(R)_3$$

where R is alkyl, R′ has at least two carbon atoms and is bivalent alkylene or an oxyalkylene group the oxygen atom of which is bonded to silicon, *x* has an average value from about 10 to about 200, *y* has an average value from about 3 to about 100, *z* has an average value from about 2 to about 30, and E comprises a polyoxyalkylene block the oxyalkylene content of which is constituted of from about 20 to about 65 weight percent of oxyethylene; and

Component B is a polyalkylsiloxane-polyoxyalkylene copolymer in which the polyoxyalkylene content is constituted of from about 20 to about 75 weight percent of oxyethylene.



### 3,935,124
### ANTI-STICK COMPOSITION FOR COATING AND DETACKIFYING UNCURED RUBBER ARTICLES AND THE LIKE

**Donnie R. Thene, Elberfeld; Robert J. O'Donoghue, Indianapolis, and Donald W. Terry, Noblesville, all of Ind., assignors to Miller Chemical Corporation, Evansville and Mid-State Chemical & Supply Corporation, Indianapolis, both of, Ind., part interest to each**

**Filed Jan. 2, 1974, Ser. No. 429,854**

**Int. Cl.² C08J** *7/04*; **C08C** *1/02*

**U.S. Cl. 252—382** **29 Claims**

1. A liquid composition for coating and thereby detackifying solid articles of uncured elastomeric materials initially having tacky surface characteristics, said composition comprising an aqueous slurry consisting essentially of:

a substantial proportion of finely divided particles of a kaolin clay;

a sufficient amount of a water-soluble soap to provide bridging and tieing between the charge sites on the kaolin particles and the tacky surfaces of the uncured articles to thereby adhere a layer of kaolin particles to the tacky surfaces; and

a sufficient amount of water to disperse said clay particles.

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### 3,935,125
### METHOD AND COMPOSITION FOR INHIBITING CORROSION IN AQUEOUS SYSTEMS

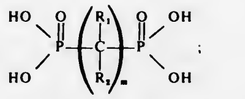
**Jose T. Jacob, Lake Zurich, Ill., assignor to Chemed Corporation, Cincinnati, Ohio**

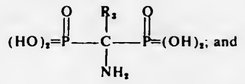
**Filed June 25, 1974, Ser. No. 482,941**

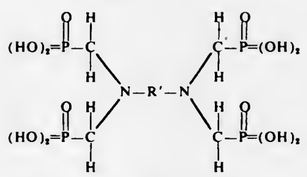
**Int. Cl.² C23F** *11/16, 11/14*

**U.S. Cl. 252—389 A** **5 Claims**

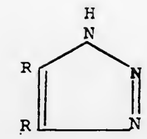
1. A composition for inhibiting corrosion in aqueous systems, said compositions consisting essentially of watersoluble amine pyrophosphate, organophosphonate and triazole; wherein the amine pyrophosphate has from 2 to 10 carbon atoms; wherein the organophosphonate has a formula of the group consisting of:







wherein *m* is an integer from 1 to 10; $R_1$ is hydrogen, or alkyl group having from 1 to 4 carbons; $R_2$ is hydroxyl, hydrogen or alkyl group having from 1 to 4 carbons; $R_3$ is an alkyl group having 1 to 10 carbons, benzyl or phenyl, and R′ is an alkylene radical having from 1 to 10 carbons; and water soluble salts of these acids; and wherein the triazole is a member of the group consisting of benzotriazole; 1,2,3-triazole or derivative thereof having the formula:



where R is H or an alkyl group of 1–4 carbon atoms, or an aromatic group, or together from an aromatic or substituted aromatic ring; and water soluble salts, and wherein the amine pyrophosphate is present in an amount from about 0.5 to about 1,000 ppm; the organophoshonate is about 0.5 to about 1,000 ppm; and the triazole is about 0.5 to about 200 ppm of water.

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### 3,935,126
### CATALYST AND METHOD OF OXYDEHYDROGENATION OF ALKYL AROMATIC COMPOUNDS

**G. Edwin Vrieland, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.**

**Filed May 28, 1974, Ser. No. 474,128**

**Int. Cl.² B01J** *27/18*

**U.S. Cl. 252—437** **6 Claims**

1. A catalyst consisting essentially of an alkaline earth metal-nickel phosphate containing from about 61 to about 70% phosphate.

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### 3,935,127
### METHOD OF CATALYST MANUFACTURE

**John E. Conway, La Grange, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.**

**Filed July 1, 1974, Ser. No. 484,519**

**Int. Cl.² B01J** *23/16*

**U.S. Cl. 252—465** **9 Claims**

1. A method of manufacturing a catalytic composite of from about 4 to about 30 wt. % Group VIB metal in oxide form, from about 1 to about 10 wt. % Group VIII metal in oxide form and a refractory inorganic oxide carrier material which comprises:

a. dry mixing molybdenum oxide or finely divided Group VIB metal compound thermally decomposable to the metal oxide, Group VIII metal compound thermally decomposable to the metal oxide and a refractory inorganic oxide, said metal compounds being utilized in amounts to provide from about 60 to about 90% of said Group VIB metal in oxide form and from about 60 to about 90% of said Group VIII metal in oxide form;

b. peptizing the mixture and forming an extrudable dough;

c. extruding said dough and drying and calcining the extrudate;

d. impregnating the calcined extrudate with a Group VIB metal compound and a Group VIII metal compound, said metal compounds being thermally decomposable to metal oxides and being utilized in amounts to provide a final catalytic composite containing from about 4 to about 30 wt. % Group VIB metal in oxide form and from about 1 to about 10 wt. % Group VIII metal in oxide form; and

e. drying and calcining the resulting composite in an oxidizing atmosphere.

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### 3,935,128
### COPPER CHROMITE CATALYST AND THE PROCESS FOR PRODUCING IT

**Marvin Michael Fein, Westfield, N.J.; Paul Alexander Colgate, Los Angeles, Calif., and Ronald Allan Kent, Ridgewood, N.J., assignors to Dart Industries Inc., Los Angeles, Calif.**

**Filed Dec. 30, 1974, Ser. No. 537,793**

**Int. Cl.² B01J** *23/86*

**U.S. Cl. 252—467** **17 Claims**

1. In a process for the production of copper chromite catalyst wherein a water soluble copper salt is reacted in solution

with a chromium compound selected from the group consisting of chromic acid, an alkali chromate and an alkali dichromate in the presence of ammonia to form a precipitate of a copper-chromium-nitrogen complex, the precipitate is recovered from the reaction mixture, washed, dried and calcined, the improvement which comprises, adding between about 0.5 and about 5 percent by weight of urea based on the copper calculated as the metal to the solution prior to precipitation.

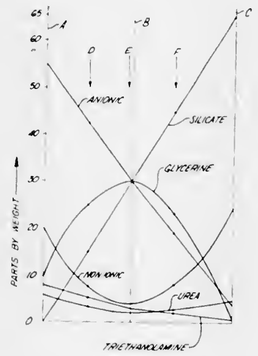
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**3,935,129**

## LIQUID CLEANING COMPOSITIONS

**Walter J. Jabalee, 44151 Lantern Lane, Apt. 1, Sterling Heights, Mich. 48077**

**Filed Oct. 25, 1973, Ser. No. 409,628**
**Int. Cl.² C11D 3/08**
**U.S. Cl. 252—525** **19 Claims**




1. An aqueous detergent composition comprising zero to about 65 parts by weight of an alkali metal silicate and a combination of an anionic organic detergent, a non-ionic organic detergent, triethanolamine, glycerine, and urea; each in an approximate proportion relative to the proportion of said silicate as indicated in the drawing.

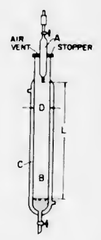
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**3,935,130**

## DETERGENT COMPOSITION FOR CLEANING BATHTUBS

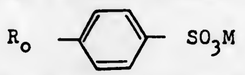
**Satoshi Hirano, Fujieda; Jusha Tsumura; Izumi Imaseki, both of Tokyo, and Yoshimi Kawasaki, Fujieda, all of Japan, assignors to Kabushiki Kaisha Tsumura Juntendo, Tokyo, Japan**

**Filed July 12, 1973, Ser. No. 378,640**
**Claims priority, application Japan, July 19, 1972, 47-71629**
**Int. Cl.² C11D 1/94**
**U.S. Cl. 252—542** **6 Claims**

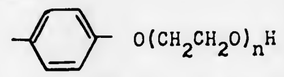



1. A detergent composition for bathtub cleaning which consists essentially of:

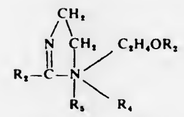
1. 100 parts by weight of a detergent base comprising 40 to 85% by weight of an alkylaryl sulfonate of the formula:



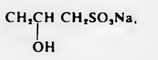
wherein $R_o$ is an alkyl having 8 to 14 carbon atoms, and M is a salt-forming cation selected from the group consisting of ammonia, monoethanolamine, diethanolamine, and triethanolamine; 10 to 40% by weight of a polyoxyethylene alkylaryl ether of the formula:



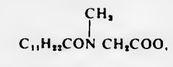
wherein $R_1$ is an alkyl having 8–9 carbon atoms, and n is an integer from 7 to 13; and 5 to 20% by weight of a cyclic imidinium compound of the formula:



wherein $R_2$ is an aliphatic hydrocarbon having 7 to 17 carbon atoms, $R_3$ is selected from the group consisting of hydrogen, alkali metals, $CH_2COOH$, $CH_2COONa$, and $CH_2COOK$, $R_4$ is a member selected from the group consisting of $CH_2COOH$, $CH_2COONa$, and



and $R_5$ is a member selected from the group consisting of OH,



$C_{12}H_{25}OSO_3$, and $C_{13}H_{27}(OC_2H_4)_3OSO_3$;

2. 9 to 30 parts by weight of a diethylene glycol monoalkyl ether of the formula:

$R_6O(C_2H_4O)_2H$

wherein $R_6$ is a lower alkyl having 1 to 4 carbon atoms, and

3. 2 to 15 parts by weight of an ethanolamine of the formula:

$(HOCH_2CH_2)_nNH_m$

wherein $n$ is an integer from 1 to 3 and $m$ is a number satisfying the equation $n + m = 3$;

4. sufficient amount of water to provide an aqueous solution of the mixture of the components (1) through (3), said detergent composition requiring little scrubbing in the bathtub cleaning.

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**3,935,131**

## HIGH SUDSING PHOSPHATE-FREE DETERGENT COMPOSITION

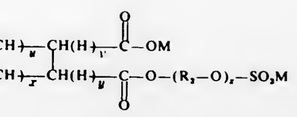
**Samuel H. Sharman, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.**

**Filed July 2, 1973, Ser. No. 375,998**
**Int. Cl.² C11D 1/29, 1/28, 3/20**
**U.S. Cl. 252—555** **6 Claims**

1. Detergent composition comprising

a. as a detergent-active component 1 part by weight of a compound of the formula





in which $R_1$ and $R_2$ are substantially linear saturated or unsaturated aliphatic groups of 3 to 19 carbon atoms, $R_3$ is alkylene of 2 to 4 carbon atoms, $u$, $v$, $x$, and $y$ are 0 or 1, $z$ is an integer 1 to 4, M is H or a water-soluble salt-forming cation, the sum of the carbon atoms in $R_1$ and $R_2$ is 13 to 21, the sum of the unsaturated sites in $R_1$ and $R_2$ is 0 to 1, the sum of $u$, and $v$ is 1, The sum of $x$ and $y$ is 1, and the sum of $u$ and $x$ is 1, and

B. as a foam enhancing component, from 0.05 to 0.03 parts by weight of an essentially straight chain primary alcohol of 11 to 14 carbon atoms.

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**3,935,132**

## THERMOPLASTIC URETHANE POLYMER FILLED WITH CROSS-LINKED URETHANE POLYMER

**Richard M. Gerkin; Rene Roberts, both of Charleston, and Joy C. Hodges, Chesapeake, all of W. Va., assignors to Union Carbide Corporation, New York, N.Y.**

**Filed Apr. 15, 1974, Ser. No. 460,933**
**Int. Cl.² C08L 75/06, 75/08**
**U.S. Cl. 260—2.5 BE** **12 Claims**

1. A mixture, capable of being processed by thermoplastic polymer techniques, said mixture comprising an intimate blend of a previously produced thermoplastic urethane polymer and a comminuted crosslinked urethane polymer, said cross-linked urethane polymer being derived from a flexible urethane foam, a semi-rigid urethane foam, a rigid urethane foam, or a non-foamed urethane elastomeric polymer.

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**3,935,133**

## HIGH RESILIENCE POLYURETHANE FOAM STABILIZED WITH A SILICATE-BASED SURFACTANT COMPOSITION

**Bruce G. van Leuwen, Trumbull, and Ralph A. Colafati, III, New Haven, both of Conn., assignors to Olin Corporation, New Haven, Conn.**

**Continuation-in-part of Ser. No. 428,489, Dec. 26, 1973, abandoned. This application Dec. 23, 1974, Ser. No. 535,549**
**Int. Cl.² C08G 18/14; C08K 5/54**
**U.S. Cl. 260—2.5 AH** **16 Claims**

1. A flexible polyurethane foam prepared from a reaction mixture which is comprised of:

a. an organic polyisocyanate,

b. a polyether polyol having in its structure the nucleus of an aliphatic alcohol having 2–8 reactive hydrogens and polyoxyalkylene chain segments attached through one end thereof to said nucleus at the site of the reactive hydrogens, said polyether polyol being further characterized by (1) a molecular weight of at least about 4,000 and (2) a ratio of primary to secondary hydroxyl end groups ranging from about 1.5:1 to about 6:1,

c. a foaming agent,

d. a reaction catalyst, and

e. a silicate-based surfactant composition which is prepared by a process that comprises

1. reacting together, at a temperature of about 40°–200°C, (a) a silicon tetrahalide selected from the group consisting of silicon tetrachloride, silicon tetrabromide, and silicon tetraiodide, and, per every mole of said silicon tetrahalide (b) about 0.2–2.0 moles of water and (c) at least about one mole of an alcohol represented by the formula $R_1OH$ wherein $R_1$ is alkyl of 2–20 carbon atoms or aromatic hydrocarbon of 6–14 carbon atoms, the reaction yielding a product made up of a volatile portion, which has a boiling point no greater than about 125°C at 10 mm of mercury pressure, and a non-volatile portion, and

2. removing said volatile portion, and

3. at a temperature of about 65°–320°C in the substantial absence of moisture and in the presence of a transesterification catalyst, reacting the non-volatile portion of the product of step (1) with a polyether alcohol having a molecular weight of about 500–5,000 and represented by the formula $R_2—C_nH_{2n}O—H$ wherein $R_2$ is alkyl of 1–10 carbon atoms and the moiety $—C_nH_{2n}O—$ represents a polyoxyalkylene chain consisting of from about 10 to 100 percent by weight of oxyethylene units, and, correspondingly, about 90–0 percent of oxypropylene units, oxybutylene units or a mixture of oxypropylene and oxybutylene units, said polyether alcohol being employed in a molar proportion ranging from about 0.006 to about 1.1 moles per every mole of said silicon tetrahalide which is used in step (1), with the proviso that the molar proportion of said polyether alcohol is no more than about 55% of the molar proportion of alcohol reacted in thre reaction of step (1).

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**3,935,134**

## HEAT-SEALING ADHESIVES

**Manfred Dollhausen, Odenthal, and Gerhard Hohmann, Leverkusen, both of Germany, assignors to Bayer Aktiengesellschaft, Germany**

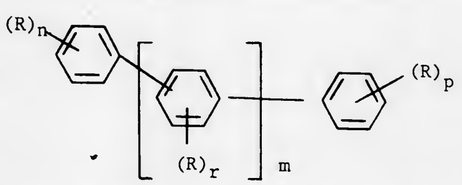
**Filed Apr. 19, 1974, Ser. No. 462,308**
**Claims priority, application Germany, Apr. 25, 1973, 2320805**
**Int. Cl.² C08L 15/02, 7/00**
**U.S. Cl. 260—3.5** **6 Claims**

1. An adhesive composition consisting substantially of

a. 0.5–30% by weight of a copolymer of ethylene and a vinyl ester having from 2 to 10 carbon atoms in the ester moiety, said vinyl ester being present in an amount of 35–70% by weight, based on the weight of said copolymer;

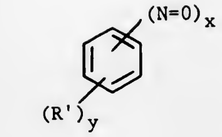
b. 0.5–30% by weight of a member selected from the group consisting of chlorinated polyisoprene, chlorinated polyethylene, chlorinated polypropylene and chlorinated natural rubber, each of said members having a chlorine content of 60–70% by weight;

c. 0.5–30% by weight of a compound of the formula



wherein each R is separately alkyl having 1 to 10 carbon atoms, alkoxy having 1 to 10 carbon atoms, cycloalkyl having 5 to 12 carbon atoms, phenyl, phenylalkyl having 7 to 13 carbon atoms, alkylphenyl having 7 to 13 carbon atoms, phenoxy or phenalkoxy having 7 to 12 carbon atoms; $n$ is zero or an integer of from 1 to 5; $p$ is an integer of from 1 to 2; $r$ is zero or an integer of from 1 to 4 and $m$ is zero or an integer of from 1 to 3;

d. 0.1–24% by weight of a compound of the formula



wherein R' is alkyl having 1 to 10 carbon atoms, alkanolamino having 1 to 10 carbon atoms, cycloalkyl having 5 to 12 carbon atoms, phenylalkyl having 7 to 13 carbon atoms, phenyl, phenoxy, phenylamino having 6 to 12 carbon atoms, phenylnitrosoamino having 6 to 12 carbon atoms or halogen; *y* is zero or an integer of from 1 to 5 and *x* is 2 and

e. 30–90% by weight of at least one organic solvent.

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**3,935,135**

## HEAT-SEALING ADHESIVES

**Manfred Dollhausen, Odenthal, and Gerhard Hohmann, Leverkusen, both of Germany, assignors to Bayer Aktiengesellschaft, Germany**

**Filed Apr. 19, 1974, Ser. No. 462,309**

**Claims priority, application Germany, Apr. 25, 1975, 2320804**

**Int. Cl.² C08L** *15/02, 7/00*

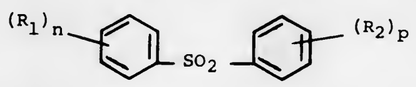
**U.S. Cl. 260—3.5** **5 Claims**

1. An adhesive composition consisting substantially of

a. 0.5–30% by weight of a copolymer of ethylene and a vinyl ester having from 2 to 10 carbon atoms in the ester moiety, said vinyl ester being present in an amount of 35–70% by weight, based on the weight of said copolymer;

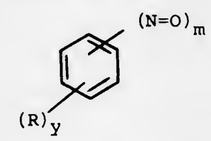
b. 0.5–30% by weight of a member selected from the group consisting of chlorinated polyisoprene, chlorinated polyethylene, chlorinated polypropylene and chlorinated natural rubber, each of said members having a chlorine content of 60–70% by weight;

c. 0.5-30% by weight of a compound of the formula



wherein $R_1$ and $R_2$ are each separately alkyl having 1 to 10 carbon atoms, alkoxy having 1 to 10 carbon atoms, cycloalkyl having 5 to 12 carbon atoms, phenyl, phenylalkyl having 7 to 13 carbon atoms, phenoxy or phenalkoxy having 7 to 12 carbon atoms; *n* is zero or an integer of from 1 to 5 and *p* is an integer of from 1 to 5;

d. 0.1–24% by weight of a compound of the formula



wherein R is alkyl having 1 to 10 carbon atoms, alkoxy having 1 to 10 carbon atoms, alkanolamino having 1 to 10 carbon atoms, cycloalkyl having 5 to 12 carbon atoms, phenylalkyl having 7 to 13 carbon atoms, phenyl, phenoxy, phenylamino having 6 to 12 carbon atoms, phenylnitrosoamino having 6 to 12 carbon atoms or halogen; *y* is zero or an integer of from 1 to 5 and *m* is 2 and

e. 30–90% by weight of at least one organic solvent.

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**3,935,136**

## PREPARATION OF IMPACT PLASTIC COMPOSITIONS

**Clifford W. Childers; Earl Clark, and Wallace D. Johnson, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.**

**Filed Feb. 7, 1972, Ser. No. 224,309**

**Int. Cl.² C08L** *7/00, 23/00, 9/00, 47/00*

**U.S. Cl. 260—4 R** **26 Claims**

1. A method of preparing high impact polymer compositions which comprises dissolving at least one unsaturated rubber in at least one polymerizable vinylidene group-containing monomer to form a rubber-in-monomer solution, suspension polymerizing said rubber-in-monomer solution in the presence of a monomer-soluble organic azo or peroxy free radical generating initiator and in the further presence of a peroxy free radical cross-linking agent under aqueous suspension polymerization conditions including a polymerization temperature sufficient to activate said monomer-soluble organic azo or peroxy free radical initiator and wherein said polymerization temperature is below the activation temperature of said peroxy free radical cross-linking agent, thereby preparing a graft polymer, recovering the so-prepared graft polymer from said suspension polymerization system, and cross-linking the so-recovered graft polymer with said peroxy free radical cross-linking agent under hot-mixing conditions sufficient to activate said peroxy free radical cross-linking agent, thereby preparing said high impact polymer composition,

wherein said unsaturated rubber is a natural rubber or synthetic rubber and where synthetic is a polymer of at least one conjugated diene of up to 12 carbon atoms per molecule; copolymer thereof with at least one monovinyl substituted aromatic compound, with at least 1-monoolefin of up to 8 carbon atoms per molecule, or with a nitrile group-containing monomer; and is characterized as having at least enough unsaturation to be vulcanizable,

wherein said vinylidene group-containing monomer is characterized as polymerizable in the presence of said unsaturated rubber by thermal polymerization or in the presence of a monomer soluble free-radical generating initiator, and said vinylidene group-containing monomers containing 3 to 30 carbon atoms per molecule and comprise monovinyl-substituted aromatic compounds, alpha,-beta-unsaturated nitriles, esters of acrylic acid, esters of alkacrylic acid, and vinyl esters, such that at least one said vinylidene group-containing monomer is an alpha, beta-unsaturated-nitrile,

wherein said aqueous suspension polymerization conditions include employment of water as the continuous phase therein and said rubber-in-monomer solution as the discontinuous phase therein.

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**3,935,137**

## PAINT COMPOSITION CONTAINING DENATONIUM BENZOATE AND LATEX RESIN BINDER FOR APPLICATION OVER OLD PAINT FILMS TO PREVENT INGESTION OF POISONS THEREFROM

**Walter Minkoff, Rockville Centre, N.Y., assignor to Peerless Paint and Varnish Corporation, Brooklyn, N.Y.**

**Continuation of Ser. No. 345,071, March 26, 1973, abandoned, which is a continuation-in-part of Ser. No. 267,623, June 29, 1972, abandoned, which is a continuation-in-part of Ser. No. 115,796, Feb. 16, 1971, abandoned. This application Apr. 15, 1974, Ser. No. 460,875**

**Int. Cl.² C08K** *5/10;* **C09K** *3/00;* **C08L** *31/04, 1/26*

**U.S. Cl. 260—17 R** **11 Claims**

1. A coating composition for application to previously coated substrates consisting essentially of a paint containing 0.05% to 0.5% by weight of the non-volatile portion of said paint of the bitter tasting deterrent denatonium benzoate; 9.0% to 99.5% by weight of a resin binder selected from the group consisting of at least one of ppolyvinyl acetate-acrylic copolymer latex and a mixture of polyvinyl acetate-acrylic copolymer latex and acrylic latex for controlling the amount of said deterrent released on contact with saliva; and an effective amount of a surfactant for stabilization of said paint, said coating composition having the visual appearance, durability, adhesion, toughness, washability and continuity of conventional paint and having a repulsive taste which discourages persons from licking, sucking, chewing, swallowing or otherwise mouthing said substrates.



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**3,935,138**

## PULVERULENT BINDERS

**Frank Wingler, Leverkusen; Josef Pedain, Cologne; Richard Müller, Bergisch-Neukirchen; Rolf Dhein, Krefeld-Bockum, and Eckhard de Cleur, Duisburg, all of Germany, assignors to Bayer Aktiengesellschaft, Germany**

**Filed May 28, 1974, Ser. No. 473,391**

**Claims priority, application Germany, June 1, 1973, 2328013**

**Int. Cl.² C08F** *18/14;* **C08K** *3/00*

**U.S. Cl. 260—17 R** **3 Claims**

1. A powdered coating agent comprising a mixture of

A. 96 to 80 parts by weight of a random addition copolymer having free hydroxyl groups of which 50 to 100 mol % thereof have been reacted with at least one aliphatic or cycloaliphatic dicarboxylic acid anhydride to obtain an acid number of 22 to 110 mg. of potassium hydroxide per g. of reaction product, said random addition copolymer before reaction with said anhydride being a copolymer of

I. 30 to 85% by weight of styrene, α-methylstyrene, o-chlorostyrene, p-chlorostyrene, p-tert.butylstyrene, methylmethacrylate or a mixture of at least two of said monomers,

II. 5 to 60% by weight of acrylic acid ester having 1 to 12 carbon atoms in the alcohol moiety, methacrylic acid ester having 2 to 12 carbon atoms in the alcohol moiety or a mixture thereof and

III. 10 to 30% by weight of a hydroxyalkyl ester of acrylic acid or methacrylic acid having 2 to 4 carbon atoms in the hydroxyalkyl moiety,

the sum of the percentage contents of I to III being 100 and the molecular weight of said copolymer of I to III being 3,000 to 20,000 and its hydroxyl number being 50 to 126 mg. of potassium hydroxide per g. of copolymer and

B. 4 to 20 parts by weight of triglycidylisocyanurate, a bisoxazoline or a trisoxazoline.

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**3,935,139**

## BINDER COMPOSITIONS

**Ronald James Ashall, Wigan, England, assignor to Fibreglass Limited, St. Helens, England**

**Filed July 5, 1974, Ser. No. 486,070**

**Claims priority, application United Kingdom, July 18, 1973, 34199/73; Apr. 18, 1974, 17089/74**

**Int. Cl.² C08L** *97/00;* **B32B** *17/10*

**U.S. Cl. 260—17.5** **38 Claims**

1. In a method for producing a glass fibre product which includes the steps of flowing a plurality of streams of molten glass, attenuating the streams to a desired fibre diameter by means of a high velocity gaseous blast, treating the fibres with a binder composition comprising an A stage phenol-aldehyde condensate resin which resin has been polymerised in the presence of a catalyst selected from the group consisting of an alkali and an alkaline earth metal hydroxide, projecting the fibres onto a conveyor, and conveying the binder coated fibres through a curing stage whereby said binder is cured and said fibres are bonded to one another at points of contact, the improvement comprising utilising an acidic lignosulphonate to neutralise at least part of the alkali or alkaline earth metal hydroxide catalyst of said resin by adding said acidic lignosulphonate to said resin at a pH above 7.5.

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**3,935,140**

## NOVEL AQUEOUS COATING COMPOSITIONS

**Tadahiro Go; Takashi Suzuki, and Masaaki Inoue, all of Kawasaki, Japan, assignors to Nippon Zeon Co. Ltd., Tokyo, Japan**

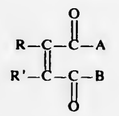
**Filed Sept. 23, 1974, Ser. No. 508,124**

**Claims priority, application Japan, Oct. 4, 1973, 48-111680**

**Int. Cl.² C09D** *3/52, 3/56, 5/40;* **C25D** *13/00*

**U.S. Cl. 260—19 UA** **11 Claims**

1. An aqueous coating composition comprising a water soluble or dispersible material prepared by addition reacting a mixture containing (1) 90–50 parts by weight of a natural drying oil and (2) 10–50 parts by weight of a liquid copolymer having a number average molecular weight of from 500 to 5000 and containing 90–50% by weight of 1,3-pentadiene polymerization units and 10–50% by weight of 1,3-butadiene polymerization units, the liquid copolymer being obtained by polymerizing a corresponding monomeric mixture of 1,3-pentadiene and 1,3-butadiene in the presence of a Friedel-Crafts type catalyst, with at least one α,β-unsaturated dicarboxylic compound represented by the following general formula



wherein R and R' are each a hydrogen atom, halogen atom or alkyl group, and A and B are each a hydroxyl group, alkoxy group or —O— together formed by A and B with the proviso that A and B do not take an alkoxy group at the same time, thereby to form an addition product which is then neutralized to make it soluble or dispersible in water.

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**3,935,141**

## ENVIRONMENTALLY DEGRADABLE ETHYLENE POLYMERIC COMPOSITIONS

**James Edward Potts, Bernards Township; Stephen Watson Cornell, Dunellen, and Albert Martin Sracic, Gladstone, all of N.J., assignors to Union Carbide Corporation, New York, N.Y.**

**Continuation-in-part of Ser. No. 184,206, Sept. 27, 1971, abandoned. This application June 28, 1972, Ser. No. 267,255**

**Int. Cl.² C08L** *91/00*

**U.S. Cl. 260—23 H** **26 Claims**

1. An environmentally degradable polymer composition comprising,

based on the total weight of said composition, a major portion by weight of ethylene polymer as the base resin,

about 0.01 to about 40 percent by weight of at least one auto-oxidative susceptible additive having at least one hydrogen atom bonded to a carbon atom having an auto-oxidative susceptibility greater than that of a hydrogen atom bonded to a normal secondary carbon atom,

at least one salt of at least one polyvalent metal selected from the group consisting of titanium, vanadium, chromium, manganese, iron, cobalt, nickel, copper, zinc and cerium, in such amounts as to provide about 0.002 to about 2.0 percent by weight of the metal atom, and

about 0.0025 to about 1 percent by weight of antioxidant for said ethylene polymer.

### 3,935,142
### SMOKE-RETARDANT POLYVINYLCHLORIDE COMPOSITIONS

**Alfred P. Wilson, St. Charles Township, Kane County, Ill., assignor to Standard Oil Company, Chicago, Ill.**

**Filed Feb. 3, 1975, Ser. No. 546,540**
**Int. Cl.² C08G *6/00***
**U.S. Cl. 260—23 XA** **6 Claims**

1. A composition comprising a resinous polymer of vinyl chloride and a smoke-retardant concentration of ferrous trimellitate.

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### 3,935,143
### ABS RESIN COMPOSITION

**Sakae Takahashi; Shiro Saeki, and Yoshio Onisawa, all of Sakai, Japan, assignors to Daicel Ltd., Osaka, Japan**

**Filed Apr. 16, 1973, Ser. No. 351,619**
**Claims priority, application Japan, Apr. 19, 1972, 47-39364**
**Int. Cl.² C08L *91/00***
**U.S. Cl. 260—23.7 R** **7 Claims**

1. An acrylonitrile/butadiene/styrene molding composition adapted for rotational molding which consists essentially of (A) substantially spherical acrylonitrile/butadiene/styrene resin particles of from 10 to 100 mesh size prepared by the bulk-suspension two stage polymerization process (e) said acrylonitrile/butadiene/styrene resin particles having uniformly dispersed and coated only on the surfaces thereof (B) particles of an organic compound additive having a particle size of less than 100 mesh, said additive having a melting point of 100° to 250°C and a thermal decomposition point above 200°C, the weight ratio of (A) to (B) being 100 : 0.1 to 5.0, and said organic compound being selected from the group consisting of compatible lubricants, anti-oxidants, plasticizers, flame retardants, ultraviolet absorbing agents, and mixtures thereof.

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### 3,935,144
### CONTACT ADHESIVES

**Kurt Hagenweiler, and Kurt Scholz, both of Remagen-Kripp, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany**

**Filed June 3, 1974, Ser. No. 475,583**
**Claims priority, application Germany, June 5, 1973, 2328430**
**Int. Cl.² C08L *93/00***
**U.S. Cl. 260—24** **10 Claims**

1. A process for the manufacture of contact adhesives which comprises:

mixing (a) 28 to 94 percent by weight of a polyol having a molecular weight from 300 to 8,000 and a hydroxyl number from 20 to 85 and

(b) 5 to 60 percent by weight of an amorphous, thermoplastic, tackifier resin which has a softening point from 40° to 150°C. and a molecular weight from 200 to 7,500, without the addition of solvents; and

reacting the mixture, without the use of solvent, with (c) 1 to 12 percent by weight of 3-isocyanatomethyl-3,5,5-trimethylcyclohexylisocyanate,

the percentages by weight being based on the total weight of the components (a), (b) and (c).

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### 3,935,145
### PROCESS FOR THE MANUFACTURE OF MODIFIED NATURAL RESIN PRODUCTS

**Albert Rudolphy, Wiesbaden-Biebrich, Germany, assignor to Hoechst Aktiengesellschaft, Germany**

**Continuation-in-part of Ser. No. 294,655, Oct. 3, 1972, Pat. No. 3,880,788. This application Mar. 26, 1973, Ser. No. 345,239**
**Claims priority, application Germany, Oct. 8, 1971, 2150216; Mar. 29, 1972, 2215235; Mar. 29, 1972, 2215293**
**Int. Cl.² C08L *93/00***
**U.S. Cl. 260—27 BB** **10 Claims**

1. A process for the manufacture of a natural resin product comprising reacting (a) a natural resin selected from the group consisting of colophony, wood resin, tall oil, abietic acid and levopimaric acid with (b) at least one ethylenically unsaturated monomer capable of being added to at least one of said natural resins, said monomer containing from 2 to 12 carbon atoms and being free from carboxylic groups and anhydride groups, and (c) an $\alpha$, $\beta$-olefinically unsaturated carboxylic acid or a derivative thereof selected from the group consisting of anhydrides, esters and amides which provides carboxylic groups under the reaction conditions in an amount by weight equalling more than 5% of the weight of the natural resin, but less than the weight of (a) + (b); said resin product having a melting point of at least 97°C, being soluble in organic solvents and containing said natural resin in an amount equalling about 15–85% and said monomer in an amount equalling about 0.2 to 20%, both amounts being based on the total weight of the resin.

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### 3,935,146
### POLYURETHANEAMIDES DISPERSIBLE IN WATER AND DISPERSIONS CONTAINING THEM

**Klaus Noll; Walter Schröer; Josef Pedain, and Helmut Reiff, all of Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen Bayerwerk, Germany**

**Filed Mar. 18, 1974, Ser. No. 452,153**
**Claims priority, application Germany, Apr. 25, 1973, 2320719**
**Int. Cl.² C08G *18/12***
**U.S. Cl. 260—29.2 TN** **15 Claims**

1. In a process for preparing a polymer which is dispersible in water without an emulsifier which comprises reacting an organic diisocyanate with organic compounds in the molecular weight range of 300 to 6000 which are difunctional for the purpose of the isocyanate polyaddition reaction, contain hydrogen atoms which are reactive with isocyanate groups and do not contain any side chain polyethylene oxide units wherein (1) an organic compound which is difunctional for the purpose of the isocyanate polyaddition reaction, contains hydrogen atoms which are reactive with isocyanate groups, and contains side chain polyethylene oxide units, or (2) an organic diisocyanate or mixture of diisocyanates containing from about 5 mol percent to about 100 mol percent of diisocyanate which contains side chain polyethylene oxide units is included in the reaction mixture, the improvement wherein the said organic compounds having a molecular weight of 300 to 6000 contains from about 5% to 100% by weight of polyamide or polyester amide, the ratio of ester groups to amide groups in the polyester amide being not more than 15:1 and the ratio of the reactants being in such proportions that the resulting product contains about 0.5% to about 20% by weight of amide groups.



### 3,935,147
### AQUEOUS PATTERN PAINT FROM CARBOXYLIC RESIN, N-ALDEHYDE RESIN, POLYSILOXANE RESIN AND FLUOROCARBON SURFACTANT

**Henry W. Godshalk, Aurora, Ill., and Mohinder Paul Sharma, Wyoming, Mich., assignors to Henry W. Godshalk, Batavia, Ill.**

**Filed Mar. 18, 1974, Ser. No. 451,883**
**Int. Cl.² B44D *5/00*; C08L *83/04***
**U.S. Cl. 260—29.4 R** **11 Claims**

1. A resinous composition for producing a pattern paint consisting essentially of an aqueous dispersion of (1) a water reducible resinous vehicle in which the resin is selected from the group consisting of a polyester resin containing carboxyl groups and a polyacrylic acid resin, (2) an amine-aldehyde or amide-aldehyde resin cross-linking agent for the resinous vehicle, (3) a fluorocarbon surfactant containing a group of the formula $CF_3—CF_2—CF_2—$ and (4) a polysiloxane resin having an average molecular weight of at least 2,000.

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### 3,935,148
### RECOVERY AND RECYCLE OF LATEX PRODUCED IN USED AQUEOUS SUSPENSION MEDIUM

**Clifford W. Childers, and Earl Clark, both of, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.**

**Filed Dec. 5, 1972, Ser. No. 312,331**
**Int. Cl.² C08L *9/00, 47/00*; C08F *220/42, 110/02***
**U.S. Cl. 260—29.6 XA** **9 Claims**

1. In the aqueous suspension graft polymerization in which at least one unsaturated elastomer and at least one vinylidene group containing monomer are reacted to form a polymerization product mixture comprising a graft polymer phase and an aqueous phase, the improvement comprising converting the unreacted monomers remaining in either phase after the suspension polymerization is complete to a polymer latex by adding to said product mixture a water-soluble polymerization initiator, then subjecting said product mixture to polymerization conditions which will cause the unreacted monomers to polymerize in the aqueous phase in response to said initiator to form a latex, separating the polymer latex from the graft polymer phase, the reaction conditons employed in both the suspension polymerization and the polymerization of the unreacted monomers being selected to that substantial amounts of gel are not formed, and using the polymer latex as at least a portion of the suspension medium for an ensuing aqueous suspension graft polymerization in which at least one unsataurated elastomer is grafted with at least one vinylidene group containing monomer.

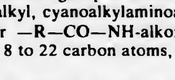
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### 3,935,149
### FIRE RETARDANT AQUEOUS EMULSION COPOLYMER ADDITIVES

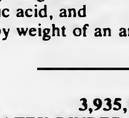
**Paul Kraft, Spring Valley, and Siegfried Altscher, Monsey, both of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.**

**Continuation of Ser. No. 160,905, July 8, 1971, abandoned, and a continuation-in-part of Ser. No. 49,204, June 23, 1970, abandoned. This application Apr. 8, 1974, Ser. No. 458,626**
**Int. Cl.² C08F *14/22, 30/02*; D06M *15/32***
**U.S. Cl. 260—29.6 TA** **7 Claims**

1. An aqueous emulsion copolymer consisting of: (1) from about 1 to 90%, by weight, of at least one bis(hydrocarbyl) vinylphosphonate having the structure:



wherein X is selected from the group consisting of hydrogen, halogen, cyano, aryl, $C_1$–$C_{18}$ alkyl and



wherein R and R′ are hydrocarbyl and substituted hydrocarbyl groups having non-interfering substitutents, said hydrocarbyl and said substituted hydrocarbyl groups containing up to about 18 carbon atoms inclusive with the proviso that R and R′ can be the same, different, or conjoint and (2) the balance being at least one halogen containing, ethylenically unsaturated compound selected from the group consisting of the vinyl halides and the vinylidene halides.

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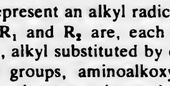
### 3,935,150
### AQUEOUS POLYSTYRENE CONTAINING DISPERSIONS AS ANTI-STATICS FOR THE PERMANENT FINISHING OF FIBRE MATERIALS

**Josef Oxe, Arlesheim, and Rudolf Keller, Riehen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.**

**Division of Ser. No. 226,511, Feb. 15, 1972, Pat. No. 3,835,148. This application June 4, 1974, Ser. No. 476,242**
**Claims priority, application Switzerland, Feb. 16, 1971, 2248/71**
**Int. Cl.² D06M *13/38, 15/26***
**U.S. Cl. 260—29.6 MN** **11 Claims**

1. A preparation for use in giving fiber materials a permanent antistatic and dirt-repellent finish, consisting essentially of an aqueous dispersion of

a. 10 to 20 % by weight of an antistatic agent comprising a compound of the formula



wherein R represent an alkyl radical having 8 to 22 carbon atoms, $R_1$ and $R_2$ are, each independently, alkyl, hydroxyalkyl, alkyl substituted by carboxylic and/or sulphonic acid groups, aminoalkoxyalkyl or aminoalkyl wherein the amino group is unsubstituted or substituted by hydroxyalkyl, cyanoalkylaminoalkyl or by the group R—CO— or —R—CO—NH-alkoxyalkyl wherein R is alkyl having 8 to 22 carbon atoms, or one of $R_1$ and $R_2$ is hydrogen,

b. 3 to 35 % by weight of an aqueous non-film-forming dispersion of polystyrene,

c. 1 to 6 % by weight of an inorganic or organic monobasic or polybasic acid, and

d. 0 to 5 % by weight of an antimicrobic agent.

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### 3,935,151
### BLENDED LATEX BINDER FOR EXTERIOR PAINTS WITH WET PRIMED ADHESION

**Richard Gorham Nickerson, Weston; Robert Thomas Bouchard, Gardner; Paul Joseph Charles Hurtubise, Fitchburg, and Eugene Alfred Duchesneau, Jr., Ashburnham, all of Mass., assignors to Borden, Inc., Columbus, Ohio**

**Division of Ser. No. 410,129, Oct. 10, 1973. This application Aug. 5, 1974, Ser. No. 494,597**
**Int. Cl.² C08L *33/06, 27/06***
**U.S. Cl. 260—29.6 WB** **6 Claims**

1. A latex blend capable of conferring wet primed adhesion to paints comprising

I. up to about 85% of the total solids of an emulsion copolymer containing polymerized therein
   a. at least about 50 parts by weight of a monomer selected from the group consisting of vinyl acetate and vinyl chloride.
   b. sufficient monomer selected from the group consisting of $C_1$–$C_{10}$ alkyl esters of acrylic and methacrylic acids, and the $C_1$–$C_{10}$ alkyl diesters of maleic acid and fumaric acid to make 100 parts by weight of (a) and (b) monomers, and
   c. about 0.3-5% based on the total of said (a) and (b) monomers of a carboxylated monomer selected from the group consisting of acrylic acid, methacrylic acid, itaconic acid, aconitic acid, methacrylic acid dimer, crotonic acid, isocrotonic acid, angelic acid, teglic acid, senecioic acid, hexenic acid and the $C_1$–$C_{10}$ alkyl monoesters of maleic acid and fumaric acid; and

II. to make 100% of the total solids, at least about 15% of an emulsion copolymer chosen from the group consisting of

A. an emulsion copolymer containing copolymerized therein
   d. about 50-70 parts of vinyl chloride,
   e. about 30–50 parts of monomers selected from the group consisting of $C_1$–$C_{10}$ alkyl diesters of maleic acid and fumaric acid to make 100 parts by weight of (d) and (e) monomers,
   f. about 0.3–5%, based on said (d) and (e) monomers, of a carboxylated monomer selected from the group consisting of acrylic acid, methacrylic acid, itaconic acid, aconitic acid, methacrylic acid dimer, crotonic acid, isocrotonic acid, angelic acid, teglic acid, senecioic acid, hexenic acid and the $C_1$–$C_{10}$ alkyl monoesters of maleic acid and fumaric acid, and
   g. sufficient hydroxymethyl diacetone acrylamide (HMDAA) to achieve an HMDAA level of at least about 0.40% with respect to total monomers in the entire latex blend; and

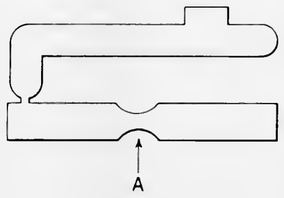
B. an emulsion copolymer containing copolymerized therein
   h. monomers selected from the group of monomers consisting of $C_1$–$C_{10}$ alkyl diesters of maleic acid and fumaric acid,
   j. about 0.3–5% based on (h) monomers of a carboxylated monomer selected from the group consisting of acrylic acid, methacrylic acid, itaconic acid, itaconic acid, aconitic acid, methacrylic acid dimer, crotonic acid, hexenic acid and the $C_1$–$C_{10}$ alkyl monoesters of maleic acid and fumaric acid, and
   k, sufficient hydroxymethyl diacetone acrylamide (HMDAA) to achieve an HMDAA level of at least about 0.65% with respect to total monomers in the entire latex blend.

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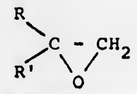
**3,935,152**
**STYRENE-ACRYLONITRILE RESIN COMPOSITION HAVING GOOD PARTING PROPERTY**
**Yukio Hozumi; Akira Ohi, and Tatuhiko Imai, all of Sakai, Japan, assignors to Daicel Ltd., Osaka, Japan**
**Filed May 6, 1974, Ser. No. 467,091**
**Claims priority, application Japan, May 10, 1973, 48-51903**
**Int. Cl.² C08K** *5/15*; **C08F** *220/42, 220/70*
**U.S. Cl. 260—30.4 N** **4 Claims**

1. A thermoplastic synthetic resin moldable composition, consisting essentially of

A. a copolymer of styrene and acrylonitrile, said copolymer having blended therein,




B. from 0.05 to 0.5 percent by weight, based on the weight of said copolymer, of one or a mixture of parting agents of the formula




wherein R and R′ each represent hydrogen or straight-chain alkyl, with the proviso that the sum of the carbon atoms in R and R′ is from 8 to 13.

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**3,935,153**
**PROCESS FOR PREPARING STYRENE RESINS CONTAINING POLYESTER PLASTICIZERS**
**Teizo Kudo; Yoshio Hashizume; Masatoshi Mikumo, and Masanori Itoh, all of Saitama, Japan, assignors to Daicel Ltd., Osaka, Japan**
**Continuation of Ser. No. 378,255, July 11, 1973, abandoned. This application Apr. 10, 1975, Ser. No. 566,787**
**Claims priority, application Japan, July 31, 1972, 47-76591**
**Int. Cl.² C08K** *5/11*
**U.S. Cl. 260—31.6** **10 Claims**

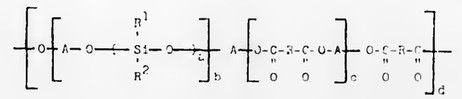
1. In a method for producing a molding composition suitable for use in low-pressure low-shear molding techniques, which comprises carrying out a bulk-suspension two-stage polymerization of (A) monomer selected from the group consisting of (1) an aromatic monoalkenyl monomer and (2) a mixture of said aromatic monoalkenyl monomer with another monovinyl monomer, in the presence of (B) a butadiene rubber elastomer, the improvement which comprises incorporating in the polymerization mixture before the bulk polymerization stage, (C) from 1 to 10 wt. %, based on said monomer component (A), of a straight chain saturated polyester having an average molecular weight of 1000 to 50,000, said straight chain saturated polyester being selected from the group consisting of polyesters obtained by the condensation reaction of dibasic acids having up to 10 carbon atoms with alkylene glycols having 2 to 6 carbon atoms, and polyesters prepared by the ring-opening-polymerization of lactones of hydroxyalkanoic acids having up to 12 carbon atoms in the alkyl group.

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**3,935,154**
**BLOCK COPOLYESTERS OF POLYSILOXANES**
**John Duval Cawley, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.**
**Division of Ser. No. 346,373, March 30, 1973, Pat. No. 3,861,915. This application Sept. 24, 1974, Ser. No. 508,800**
**Int. Cl.² C08K** *5/02*
**U.S. Cl. 260—33.8 SB** **26 Claims**

1. A solvent-soluble block copolyester having a molecular weight of at least 10,000 and an inherent viscosity greater than 0.2 in chloroform, and having the formula:





wherein R is an alkylene radical containing at least 3 carbon atoms, A is selected from the group consisting of alkylene radicals containing from about 2 to about 25 carbon atoms, and arylene radicals containing from about 6 to about 25 carbon atoms derived from aromatic diols, $R^1$ is an alkyl radical containing from about 1 to about 10 carbon atoms, and $R^2$ is selected from the group consisting of $R^1$, phenyl, naphthyl, and anthracenyl and aralkyl wherein the alkyl portion contains from 1 to 10 carbon atoms and alkaryl wherein the alkyl portion contains from 1 to 10 carbon atoms, *b* is an integer of at least 1, *a* is an integer of at least 10, *c* is an integer of at least 2, and *d* is an integer of at least 2.

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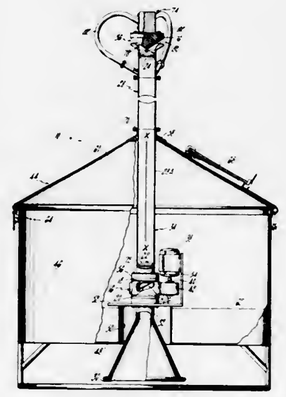
**3,935,155**
**POLYMER MANUFACTURE**
**Desmond Wilfrid John Osmond, Windsor, and Morice William Thompson, Maidenhead, both of England, assignors to Imperial Chemical Industries Limited, London, England**
**Filed Apr. 5, 1973, Ser. No. 348,142**
**Claims priority, application United Kingdom, Apr. 14, 1972, 17250/72**
**Int. Cl.² C08K** *5/01*; **C08L** *67/00, 77/00, 79/08*
**U.S. Cl. 260—34.2** **15 Claims**

1. A process for the manufacture of a stable dispersion of particles of a polymer selected from the group consisting of polyesters, polyamides and polyimides in an inert organic liquid medium in which the polymer is insoluble by the polymerisation of one or more reactive monomers of which one monomer is solid at the temperature at which the polymerisation reaction takes place and is capable of existing as a stable dispersion of finely divided particles in the liquid medium at that temperature, and any remaining monomer has an appreciable solubility in the liquid medium at the polymerisation temperature, the process comprising the steps of (1) dispersing the said solid monomer in the inert organic liquid in the presence of monomer-stabilising agent so as to produce a stable dispersion of particles of the monomer having a mean diameter not greater than 50$\mu$, the monomer-stabilizing agent being per se soluble in the inert organic liquid and incorporating (i) a polymeric component which is solvatable by the liquid and (ii) a grouping which is capable of becoming associated with the particles of the solid monomer and (2) heating the dispersion of solid monomer together with any remaining monomer or monomers at the polymerisation temperature, so as to bring about the polymerisation reaction, in the presence of a polymer-stabilising agent which is per se soluble in the inert organic liquid and incorporates (a) a polymeric component which is solvatable by the liquid and (b) a grouping which is capable of effecting association between the polymer-stabilising agent and the resulting polymer by reacting with a polymerizable grouping contained in at least one of the monomers from which the polymer is formed.

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**3,935,156**
**UNIT AND METHOD FOR SPRAY COOLING FLUID**
**Harvey E. Richter, Farmington, Conn., assignor to The Tec Group, Inc., Bloomfield, Conn.**
**Filed Aug. 4, 1972, Ser. No. 277,988**
**Int. Cl. B01f** *3/04*
**U.S. Cl. 261—37** **3 Claims**

1. A modular fluid cooling unit for cooling a body of water and the like and comprising a generally cylindrical stationary tower having a flow passage therethrough with a discharge outlet at an open upper end of the tower and an inlet at its lower end, a power operated axial flow pump between upper and lower ends of the tower, the pump including a cylindrical rotor with an axial flow passageway coaxially aligned with the tower and forming part of its flow passage, the cylindrical rotor forcing fluid through the tower with a vortical motion of relatively high kinetic energy and under relatively low pressure, a velocity deflector mounted on the tower, the velocity deflector including a downwardly directed conical portion in coaxially fixed relation to the tower at its discharge outlet and jointly defining with the tower a substantially unobstructed



annulus permitting slinging of fluid in a 360° radiating spray pattern from the discharge outlet, the conical deflector portion amplifying the angular escape velocity of the fluid by at least partial deflection of the axial velocity of the fluid at the discharge outlet of the tower, a float structure for supporting the tower, the pump and the velocity deflector, the float structure including a fluid tight shell enveloping the pump, the shell extending above the water surface being of an inverted cone shape providing a downwardly sloping surface radiating in surrounding symmetrical relation to the tower for minimizing surface area exposed to wind for improved seaworthiness.

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**3,935,157**
**POLYCARBONATE RESIN HAVING IMPROVED ELECTRICAL TRACKING RESISTANCE**
**Paul Schiller, Krefeld, and Hugo Vernaleken, Krefeld-Uerdingen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen Bayerwerk, Germany**
**Filed Mar. 28, 1974, Ser. No. 455,842**
**Claims priority, application Germany, Sept. 11, 1973, 2345799**
**Int. Cl.² C08J** *3/20*
**U.S. Cl. 260—37 PC** **5 Claims**

1. An electrical insulator having a minimum tracking resistance to leakage current of about 280 volts comprising an intimate blend of a high molecular weight thermoplastic polycarbonate based on an aromatic bis-hydroxy compound and 0.05% to 10% by weight of additives selected from the group consisting of oxides of vanadium, molybdenum, cerium, palladium, copper, silver, cobalt, nickel, and platinum.

3,935,158

## ROAD MARKING PAINT COMPOSITIONS

**Koichi Watanabe, Kawasaki, Japan, assignor to Nippon Zeon Co. Ltd., Tokyo, Japan**

**Filed Aug. 23, 1974, Ser. No. 499,825**
**Claims priority, application Japan, Aug. 28, 1973, 48-96428**
**Int. Cl.² C08K** *3/20, 3/30*
**U.S. Cl. 260—42.21** **5 Claims**

1. A hot-melt type road marking wax-free paint composition comprising, by weight, 100 parts of at least one aliphatic hydrocarbon resin having a softening point of 70°–160°C and being a cationically polymerized polymer of unsaturated hydrocarbons comprising a $C_5$ fraction as the main ingredients, 2.5–40 parts of at least one ethylene-vinyl ester copolymer having a melt index of 1.5–1,000 g/10 minutes and being a copolymer of 90–50% by weight of ethylene and 10–50% by weight of at least one vinyl ester, 20–100 parts of at least one pigment, and 80–500 parts of at least one filler.

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3,935,159

## PLASTICS COMPOSITIONS BASED ON POLYVINYLIDENE FLUORIDE

**Edmond Demillecamps, Wavre, and André Orban, Brussels, both of Belgium, assignors to Solvay & Cie, Brussels, Belgium**

**Filed June 28, 1974, Ser. No. 484,628**
**Claims priority, application France, July 10, 1973, 73.25685**
**Int. Cl.² C08K** *3/22*
**U.S. Cl. 260—42.27** **4 Claims**

1. A plastic composition based on polyvinylidene fluoride which possesses improved impact strength, comprising 0.05 to 6 parts by weight of rhombohedral iron sesquioxide per 100 parts of polyvinylidene fluoride.

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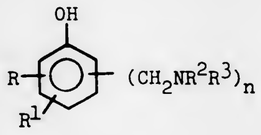
3,935,160

## DIALKYLAMINOMETHYLPHENOLS AS CATALYST DEACTIVATORS FOR STEREOREGULAR DIENE POLYMERS

**Richard H. Kline, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio**

**Continuation-in-part of Ser. No. 356,693, May 2, 1973, abandoned. This application Jan. 9, 1975, Ser. No. 539,666**
**Int. Cl.² C08J** *3/20*
**U.S. Cl. 260—45.8 NT** **9 Claims**

1. A process of preventing the oxidative degradation of elastomeric stereoregular polymers, a major portion of said polymer consisting of segmeric units derived from conjugated diolefinic monomers, said polymers containing transition metal catalyst residues, comprising adding a dialkylaminomethylphenol to the stereoregular polymer prior to exposure of the polymer to substantial oxidative degradation conditions, the dialkylaminomethylphenols having the following structural formula



wherein R and $R^1$ are selected from the group consisting of hydrogen and alkyl radicals having 1 to 12 carbon atoms, wherein $n$ is an integer from 1 to 3, wherein, when $n$ is 1, $R^2$ and $R^3$ are joined through a member of the group consisting of $-CH_2-$ and $-O-$ to constitute with the attached nitrogen atom a heterocyclic radical and wherein, when $n$ is 2 or 3, $R^2$ and $R^3$ are selected from the group consisting of alkyl radicals having 1 to 4 carbon atoms, hydroxy alkyl radicals having 2 to 4 carbon atoms or can be joined through a member of the group consisting of $-CH_2-$ and $-O-$ to constitute with the attached nitrogen atom a heterocyclic radical and wherein the total number of substituents on the phenolic ring in addition to the hydroxy group is from 1 to 5, with the proviso that when the phenolic ring contains 4 or 5 substituents the radicals $-(CH_2NR^2R^3)_n$ are in ortho or para positions.

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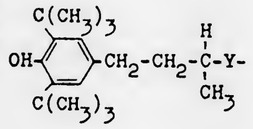
3,935,161

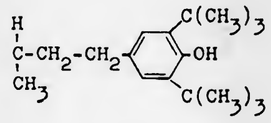
## PROCESS FOR STABILIZING POLYAMIDES

**Karl Schlichting, Bobenheim-Roxheim; Peter Horn; Johannes Schlag, both of Ludwigshafen, and Wolfgang Koernig, Mannheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany**

**Division of Ser. No. 444,414, Feb. 21, 1974. This application Sept. 11, 1974, Ser. No. 504,873**
**Claims priority, application Germany, Feb. 24, 1973, 2309435**
**Int. Cl.² C08G** *6/00*
**U.S. Cl. 260—45.9 NC** **10 Claims**

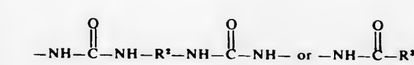
1. A process for stabilizing polyamides against oxidation and thermal degradation, which comprises adding thereto a stabilizing compound of the formula:



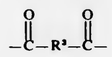




in which Y denotes



where $R^2$ is a radical derived from aliphatic, aromatic or aromatic/aliphatic diisocyanates and



is the diacyl radical of an aliphatic or aromatic dicarboxylic acid.

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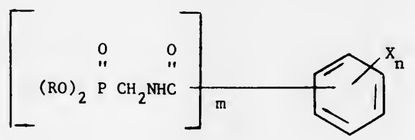
3,935,162

## DIALKYL AROMATIC AMIDOMETHYL PHOSPHONATE FLAME RETARDANTS

**Peter Golborn, Lewiston, and James J. Duffy, Buffalo, both of N.Y., assignors to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.**

**Division of Ser. No. 393,868, Sept. 4, 1973, Pat. No. 3,895,161, which is a division of Ser. No. 239,784, March 30, 1972, Pat. No. 3,803,269. This application Dec. 11, 1974, Ser. No. 531,646**
**Int. Cl.² C08G** *6/00*
**U.S. Cl. 260—45.9 NC** **15 Claims**

1. A process for rendering resin compositions flame retardant which comprises applying to said resin a flame retardant amount of a compound of the formula:



wherein R is selected from the group consisting of phenyl, lower alkenyl and halogen substituted and unsubstituted lower alkyl of 1–6 carbon atoms, X is selected from the group consisting of chlorine, bromine and lower alkyl of 1–6 carbon atoms, $m$ is an integer from 1–4 and $n$ is an integer from 0–5, provided that the sum of $m$ and $n$ is not greater than 6 and when $m$ is 1, $n$ is greater than 0.

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3,935,163

## LIGHT STABILIZED POLYMER COMPOSITIONS

**John D. Spivack, Spring Valley, and Peter P. Klemchuk, Yorktown Heights, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.**

**Continuation of Ser. No. 339,474, March 8, 1973, abandoned. This application May 28, 1974, Ser. No. 473,605**
**Int. Cl.² C08G** *6/00*
**U.S. Cl. 260—45.75 N** **10 Claims**

1. A composition of matter stabilized against oxidative and ultraviolet light deterioration which comprises
   a. a synthetic organic polymer normally subject to ultraviolet and oxidative deterioration,
   b. from 0.001 to 5% be weight based on the weight of polymer of a nickel 3,5-di-t-alkyl-4-hydroxybenzoate having up to 8 carbon atoms,
   c. from 0.001 to 5% by weight based on the weight of polymer of an ultraviolet light absorber selected from
      1. 2-hydroxy-4-n-octoxybenzophenone; or
      2. a benzotriazole selected from 2-(2′-hydroxy-3′,5′-di-t-butylphenyl)-5-chlorobenzotriazole, 2-(2′-hydroxy-3,5-di-t-amylphenyl)benzotriazole or 2-(3′-t-butyl-2′-hydroxy-5′-methylphenyl-5-chlorobenzotriazole,
   d. from 0.01 to 5% by weight based on the weight of polymer of a benzoate co-light stabilizer selected from n-octadecyl-3,5-di-t-butyl-4-hydroxybenzoate or 2,4-di-t-butyl-phenyl 3,5-di-t-butyl-4-hydroxybenzoate;
   e. from 0 to 5% by weight based on the weight of polymer of a phenolic antioxidant selected from n-octadecyl-3,5-di-t-butyl-4-hydroxyphenylpropionate, tetrakis-methylene3-(3′,5-di-t-butyl-4′-hydroxyphenyl)propionate methane, di-n-octadecyl-3,5-di-t-butyl-4-hydroxyphosphonate, tris(3,5-di-t-butyl-4-hydroxybenzyl)isocyanurate or di-octadecyl-2-(3-t-butyl-5-methyl-4-hydroxybenzyl)malonate;
   f. from 0 to 5% by weight based on the weight of polymer of an organo-sulfur compound selected from dilaurylthiodipropionate and distearylthiodipropionate, provided that said composition is synergistic in its activity.

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3,935,164

## LIGHT STABILIZED POLYMER COMPOSITIONS

**John d. Spivack, Spring Valley, and Peter P. Klemchuk, Yorktown Heights, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.**

**Continuation of Ser. No. 339,458, March 8, 1973, abandoned. This application May 28, 1974, Ser. No. 473,633**
**Int. Cl.² C08G** *6/00*
**U.S. Cl. 260—45.75 N** **14 Claims**

1. A composition of matter stabilized against oxidative and ultraviolet light deterioration which comprises
   a. a synthetic organic polymer normally subject to ultraviolet and oxidative deterioration,
   b. from 0.001 to 5% by weight based on the weight of polymer of a nickel 3,5-di-t-alkyl-4-hydroxybenzoate having up to 8 carbon atoms in the t-alkyl group,

c. from 0.001 to 5% by weight based on the weight of polymer of an ultraviolet light absorber selected from (1) 2-hydroxy-4-n-octoxybenzophenone, or (2) a benzotriazole selected from 2-(2'-hydroxy-3',5'-di-t-butylphenyl)-5-chlorobenzotriazole, 2-(2'-hydroxy-3,5-di-t-amylphenyl) benzotriazole or 2-(3'-t-butyl-2'-hydroxy-5'-methylphenyl)-5-chlorobenzotriazole,

d. from 0 to 5% by weight based on the weight of a polymer of a phenolic antioxidant selected from n-octadecyl 3',5'-di-t-butyl-4'-hydroxyphenyl) propionate, tetrakis-methylene 3-(3',5'-di-t-butyl-4'-hydroxyphenyl)propionate methane, di-n-octadecyl 3,5-di-t-butyl-4-hydroxybenzylphosphonate, tris(3,5-di-t-butyl-4-hydroxybenzyl-)isocyanurate, di-octadecyl-2-(3-t-bitu;-5-methyl-4-hydroxybenzyl)malonate, and 1,3,5-tris-(3,5-di-t-butyl-4-hydroxybenzyl)5-triazine-2,4,6-(1H,3H)-trione,

e. from 0 to 5% by weight based on the weight of polymer of an organosulfur compound selected from dilaurylthiodiproprionate and distearylthiodynapionate, provided that said composition is synergistic in its activity.

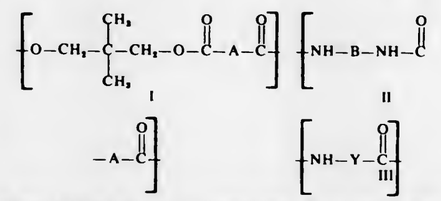
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### 3,935,165
### PROCESS FOR THE STABILIZATION OF POLYESTER AMIDES

**Gerhard Schade, Witten, Germany, assignor to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany**

**Continuation-in-part of Ser. No. 380,423, July 18, 1973, abandoned. This application Apr. 24, 1974, Ser. No. 463,917**
**Claims priority, application Germany, Apr. 26, 1973, 2321120; July 22, 1972, 2236041**
**Int. Cl.² C08G 6/00**
**U.S. Cl. 260—45.85 B** **6 Claims**

1. A stabilized polyester amide composition comprising a random polyester amide containing the following moieties:



where A is an aliphatic, cycloaliphatic or aromatic residue or mixtures thereof, B is an aliphatic or cycloaliphatic residue or mixtures thereof, and Y is an aliphatic or cycloaliphatic residue, the moieties I being present in an amount of 20 to 80 mole percent, the structural moieties II, III or moieties thereof being present in an amount of 80 to 20 mole percent, and a stabilizer composition consisting essentially of:

A. phosphorous acid, or an alkyl or aryl ester thereof,

B. triphenylphosphine; and

C. a sterically impeded phenol,

wherein the total weight of stabilizer composition is between 0.1 and 0.5 weight percent, based upon the combined total amount of polyester amide-forming starting materials and the weight ratio of the components A:B:C is within the following range: 0.5–10:1:1–40.

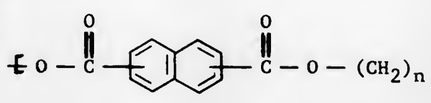
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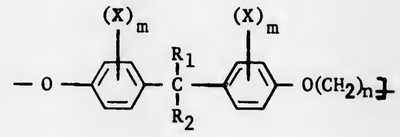
### 3,935,166
### AROMATIC POLYESTER OF 2,6 AND/OR 2,7 NAPHTHALENE DICARBOXYLIC ACID

**Tamaki Kanai, Machida; Takashi Yamagishi; Tetsuya Ohta, both of Sagamihara, and Hiroatsu Moriyama, Hachioji, all of Japan, assignors to Teijin Limited, Osaka, Japan**

**Continuation of Ser. No. 368,288, June 8, 1973, abandoned. This application Aug. 22, 1974, Ser. No. 499,607**
**Int. Cl.² C08G 63/66**
**U.S. Cl. 260—47 C** **6 Claims**

1. A linear aromatic polyester consisting essentially of, in the polymer molecule, about 50 to 100 mole % of a first repeating unit being represented by the formula

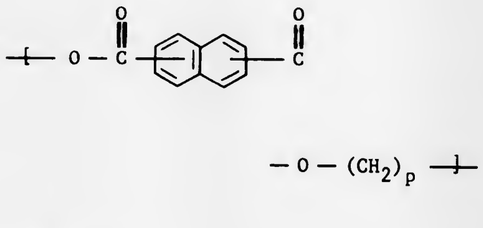




in which

$R_1$ and $R_2$ are the same or different and represent an alkyl group of 1–3 carbons, $n$ is an integer of 1–6, X is a halogen atom and $m$ is 0, 1 or 2;

and from 0 to about 50 mole % of a second repeating unit being represented by the formula



in which

$p$ is an integer of 1–6;

with an intrinsic viscosity of 0.3 or more when measured at 35°C. by the use of orthochlorophenol as a solvent.

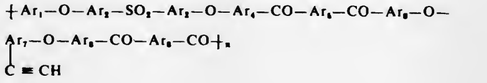
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### 3,935,167
### ACETYLENIC POLYMERS, TRIMERS THEREOF AND THE PRODUCTION THEREOF

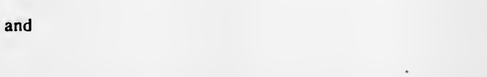
**Carl S. Marvel, and Celeste Samyn, both of Tucson, Ariz., assignors to University Patents, Inc., Stamford, Conn.**

**Filed June 6, 1974, Ser. No. 476,901**
**Int. Cl.² C08G 75/00**
**U.S. Cl. 260—49** **8 Claims**

1. A polymer having one of the general formulae



and



wherein $Ar_1$, $Ar_2$, $Ar_3$, $Ar_4$, $Ar_5$, $Ar_6$, $Ar_8$, $Ar_9$ and $Ar_{10}$ are the same or different bivalent aromatic hydrocarbon radicals containing 6 to 10 carbon atoms, $Ar_7$ is a trivalent aromatic hydrocarbon radical containing 6 to 10 carbon atoms, and $n$ is 30 to 120.

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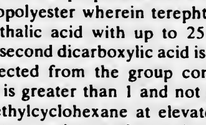


### 3,935,168
### PROCESS FOR PREPARING POLYESTERS FROM TEREPHTHALIC ACID IN THE PRESENCE OF PHOSPHONIUM COMPOUNDS

**Robert Benson Rashbrook, Harrogate, England, assignor to Imperial Chemical Industries Limited, London, England**

**Continuation of Ser. No. 203,858, Dec. 1, 1971, abandoned. This application Dec. 12, 1973, Ser. No. 424,011**
**Int. Cl.² C08G 63/38**
**U.S. Cl. 260—75 P** **4 Claims**

1. A process for the preparation of a fiber or film forming polyester or copolyester wherein terephthalic acid or a mixture of terephthalic acid with up to 25 molecules per 100 molecules of a second dicarboxylic acid is reacted with at least one glycol selected from the group consisting of $HO(CH_2)_nOH$ where $n$ is greater than 1 and not greater than 10 and 1:4-hydroxymethylcyclohexane at elevated temperature and the resultant ester or mixture of esters is polycondensed in the presence of a polycondensation catalyst selected from the group consisting of soluble antimony compounds and soluble germanium compounds, at temperatures above said elevated temperature until a high molecular weight polyester or copolyester is formed, characterized in that during the reaction there is present a compound of the formula:



in amount not less than 0.001 percent by weight based on the terephthalic acid and not greater than about 0.5 percent by weight based on the terephthalic acid.

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### 3,935,169
### METHOD OF PREPARING POLYESTER POWDER

**Robert Richard Reen, Stamford, Conn., assignor to ICI United States Inc., Wilmington, Del.**

**Continuation of Ser. No. 295,476, Oct. 2, 1972. This application June 28, 1974, Ser. No. 484,163**
**Int. Cl.² C08G 63/70**
**U.S. Cl. 260—75 T** **6 Claims**

1. A method of preparing a polyester powder from a synthetic polyester resin, selected from the group consisting of polyethylene terephthalate, polyethylene isophthalate, polyethylene orthophthalate, copolymers and mixtures thereof, said method comprising

a. dissolving the polyester resin in benzyl alcohol; and

b. precipitating the polyester powder by combining the solution with a diluent.

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### 3,935,170
### TRIVALENT ANTIMONY CATALYST

**Otto Ernest Loeffler, Rahway, N.J., assignor to NL Industries, Inc., New York, N.Y.**

**Division of Ser. No. 391,121, Aug. 24, 1973, Pat. No. 3,899,522. This application Feb. 3, 1975, Ser. No. 546,794**
**Int. Cl.² C08G 63/14**
**U.S. Cl. 260—75 R** **1 Claim**

1. In the process for preparing polyethylene terephthalate from terephthalic acid derivatives and ethylene glycol in the presence of an antimony catalyst, the improvement which comprises using as said catalyst, a trivalent antimony compound having the valences of antimony occupied by dianion radical of a 1,2-alkane diol and organic carboxylate anion radical, said carboxylate anion radical containing from 1 to 10 carbon atoms, wherein the mol ratio of antimony to dianion radical of 1,2-diol to organic carboxylate anion radical is 1:1:1., and wherein said dianion radical of a 1,2-alkane diol is selected from the group consisting of ethylene glycol dianion, 1,2-propane diol dianion, 3-chloro-1,2-propane diol dianion, 1,2-butane diol dianion, and mixtures thereof.

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### 3,935,171
### PROCESS FOR THE ANIONIC POLYMERIZATION OF PYRROLIDONE

**Aldemaro Ciaperoni, and Andrea Mattiussi, both of Bollate, Italy, assignors to Montedison S.p.A., Milan, Italy**

**Filed July 22, 1974, Ser. No. 490,742**
**Claims priority, application Italy, July 23, 1973, 26909/73**
**Int. Cl.² C08G 69/24**
**U.S. Cl. 260—78 P** **5 Claims**

1. A process for producing a fiber-forming polypyrrolidone by the anionic polymerization of pyrrolidone, which process comprises polymerizing said monomer in contact with a catalytic system composed essentially of an alkali pyrrolidonate as catalyst and, as activator of the catalyst, an alkali metal carbamate or ammonium carbamate.

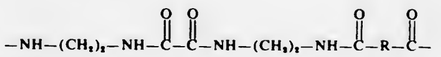
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### 3,935,172
### REGULAR COPOLYAMIDES AS DESALINATION MEMBRANES

**Otto F. Vogl, Amherst, Mass., and Donald R. Stevenson, Brunswick, Ohio, assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.**

**Filed May 20, 1974, Ser. No. 471,513**
**Int. Cl.² C08G 69/26**
**U.S. Cl. 260—78 R** **8 Claims**

1. A film-forming copolyamide consisting essentially of the repeating units:



where R is selected from the group consisting of the isophthaloyl radical, the sebacyl radical and the pyridyl radical.

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### 3,935,173
### CURABLE COMPOSITIONS

**Takahisa Ogasawara; Yorimasa Kobayashi; Kiyokazu Mizutani; Teruo Nakagawa; Noboru Hisanaga, and Hidemaro Tatemichi, all of Nagoya, Japan, assignors to Toagosei Chemical Industrial Co. Ltd., Tokyo, Japan**

**Filed Mar. 18, 1974, Ser. No. 452,266**
**Claims priority, application Japan, Mar. 22, 1973, 48-32940**
**Int. Cl.² C08F 220/20, 222/12; C08G 63/52**
**U.S. Cl. 260—78.5 E** **26 Claims**

1. A curable composition comprising (A) an oligo(meth)acrylate having a (meth)acroyl group equivalent of not more than 1000 and being prepared by esterifying (1) a polyhydric

alcohol, (2) a polycarboxylic compound selected from the group consisting of a polycarboxylic acid and the anhydride thereof, said polyhydric alcohol and polycarboxylic compound not being a dihydric alcohol and dicarboxylic compound respectively at the same time, and (3) (meth)acrylic acid to produce the oligo(meth)acrylate and (B) a polyol poly(meth)acrylate prepared by esterifying a polyhydric alcohol and (meth)acrylic acid to produce the polyol poly(meth-)acrylate.

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**3,935,174**

## 2-METHYLENE PROPANE PHOSPHONIC ACID ESTERS AND THEIR COPOLYMER WITH ACRYLONITRILE

**Eugen Velker, Dormagen-Hackenbroich; Francis Bentz, Cologne, and Gunther Nischk, Dormagen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

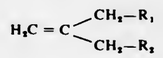
**Division of Ser. No. 311,413, Dec. 1, 1972. This application Aug. 20, 1974, Ser. No. 499,068**

**Claims priority, application Germany, Dec. 3, 1971, 2160019**

**Int. Cl.² C08F** *210/00, 220/42, 220/70, 220/02*

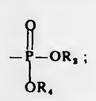
**U.S. Cl. 260—80.71** **9 Claims**

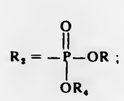
**1.** An acrylonitrile copolymer comprising: 1. 60–99.9% by weight of acrylonitrile; 2. 0.1–40% by weight of 2-methylene propane phosphoric acid ester of the formula



wherein

$R_1$ = chloro, bromo, iodo, or



; 

$R_3$ = hydrogen, ammonium, alkali metal, $C_1$-$C_4$-alkyl, or aryl;

$H_4$ hydrogen, $C_1$-$C_4$-alkyl, or aryl; and

3. the remainder being an ethylenically unsaturated comonomer copolymerizable with acrylonitrile;

said copolymer having a K-value of 60–120 as described by Fikentscher in Cellulosechemic 13, 58 (1932).

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**3,935,175**

## PROCESS FOR THE POLYMERIZATION OF UNSATURATED COMPOUNDS

**Gabriele Lugli; Alessandro Mazzei, both of San Donato Milanese, and Gabriella Brandi, Milan, all of Italy, assignors to Snam Progetti S.p.A., San Donato Milanese, Italy**

**Filed Nov. 19, 1973, Ser. No. 417,077**

**Int. Cl. C08d** *1/14, 1/18, 1/20*

**U.S. Cl. 260—82.1** **12 Claims**

**1.** Process for the polymerization and copolymerization of unsaturated compounds selected from the group consisting of olefins and diolefins wherein the polymerization reaction is carried out in the presence of a catalyst consisting of

a. an uranium compound selected from the group consisting of $U(OCH_3)_4$, $U(OCH_3)_3Cl$, $U(OC_4H_9)_4$, $U(OC_8H_{17})_4$, $U[N(C_2H_5)_2]_4$, $U[N(C_2H_5)_2]_3Br$, $U(OCH_3)_5$, $U(O\text{-}i\text{-}C_4H_9)_5$;

b. a reducing compound of a metal belonging to the 2nd or 3rd group of the periodic system selected from the hydrides, mixed hydrides and alkylderivatives thereof; and

c. a Lewis acid selected from $AlBr_3$, $AlI_3$, $AlCl_3.OEt_2$, $AlRCl_2$, $BCl_3$, $TiCl_4$ wherein R is a hydrocarbon radical.

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**3,935,176**

## THERMOSPLASTIC ELASTOMERIC MATERIALS

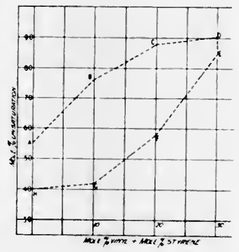
**John Richard Hawkins, Southampton, and John Michael Locke, Lyndhurst, both of England, assignors to The International Synthetic Rubber Co., Ltd., England**

**Filed Sept. 8, 1971, Ser. No. 178,549**

**Claims priority, application United Kingdom, Sept. 14, 1970, 43767/70**

**Int. Cl. C08d** *5/00, 3/08, 3/12*

**U.S. Cl. 260—83.7** **8 Claims**



**1.** A thermoplastic elastomeric material comprising a hydrogenated copolymer of a conjugated diene characterized in that the copolymer before hydrogenation is a random copolymer, having a number average molecular weight of 100,000 to 500,000, of 93 to 98 mole % of butadiene or isoprene and 7 to 2 mole % of styrene and has a vinyl content of 0 to 12 mole % based on total monomers, and in that the copolymer is hydrogenated to an extent such that the mole percentage saturation is in the range 50% to 70%.

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**3,935,177**

## POLYMERISATION AND COPOLYMERISATION OF DIENES

**Eberhard Müller, and Günter Marwede, both of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Germany**

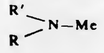
**Filed Nov. 6, 1974, Ser. No. 521,465**

**Claims priority, application Germany, Nov. 9, 1973, 2355941**

**Int. Cl.² C08D** *1/20*

**U.S. Cl. 260—84.7** **9 Claims**

**1.** A process for the homo- or copolymerisation of conjugated dienes, which comprises contacting at least one conjugated diene in an inert organic solvent with a catalytic amount of a catalyst consisting of an alkali metal amide of the formula:



wherein R and R′, which may be the same or different, are $C_3$ – $C_{20}$ alkyl, $C_5$ – $C_7$ cycloalkyl, or $C_6$ – $C_{10}$ aryl and Me is lithium, sodium or potassium, in the presence of a solvating agent for the catalyst selected from the group consisting of diethers, tertiary aliphatic diamines, triethylamine and tetrahydrofuran.



**3,935,178**

## PROCESS FOR THE RING OPENING POLYMERISATION OF CYCLOOCTADIENE-(1-5)

**Gunther Lehnert, Leverkusen-Waldsiedlung; Dieter Maertens, Leverkusen, and Manfred Zimmermann, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Germany**

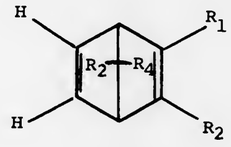
**Filed June 20, 1974, Ser. No. 481,312**

**Claims priority, application Germany, June 27, 1973, 2332564**

**Int. Cl.² C08F** *4/06, 4/20, 4/22*

**U.S. Cl. 260—88.2 D** **5 Claims**

**1.** A process for the ring opening polymerization of cyclooctadiene-(1,5), said process comprising polymerizing said diene in the presence of 0.05 to 2 mmols for every 100 g. of said diene, of at least one halide of at least one metal selected from the group consisting of tungsten, molybdenum, tantalum and rhenium and in the presence of 0.1 to 10% by weight, based on the weight of said diene, of an activator of the formula



wherein $R_1$, $R_2$, $R_3$ and $R_4$ are the same or different and are selected from the group consisting of hydrogen and monovalent hydrocarbon.

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**3,935,179**

## CYCLOOLEFIN METATHESIS

**Elert A. Ofstead, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio**

**Filed Apr. 1, 1974, Ser. No. 456,912**

**Int. Cl.² C08F** *4/22*

**U.S. Cl. 260—93.1** **7 Claims**

**1.** A cycloolefin metathesis process comprising polymerizing at least one unsaturated alicyclic compound selected from the group consisting of (1) unsaturated alicyclic compounds containing five carbon atoms in the ring and containing one double bond in the ring, (2) nonconjugated unsaturated alicyclic compounds containing at least seven carbon atoms in the ring and at least one double bond in the ring, and (3) polycyclic olefins and diolefins, by subjecting said alicyclic compounds or mixture thereof to polymerizations conditions in the presence of a catalyst system comprising (A) at least one transition metal salt selected from the group consisting of tungsten halides and tungsten oxyhalides, (B) at least one compound selected from the group consisting of dialkylaluminum halides, alkylaluminum sesquihalides and alkylaluminum dihalides, (C) at least one hydroxy compound of the general formula ROH wherein R is selected from the group consisting of alkyl and cycloalkyl and wherein R contains a nitrile substituted and (D) a hydroxy compound of the general formula R′OH wherein R′ is selected from the group consisting of alkyl, cycloalkyl, alkoxyalkyl, haloalkyl and aryl, wherein the molar ratio of A:B:C:D lies within the range of 1:0.5–10:0.5–3:0.5–2.

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**3,935,180**

## POLYBUTADIENE AND PROCESS FOR PRODUCING SAME

**Shotaro Sugiura; Tetsuro Matsuura; Haruo Ueno; Minoru Kono; Hideo Ishikawa, and Thunehiko Tokutomi, all of Ichihara, Japan, assignors to UBE Industries, Ltd., Japan**

**Continuation-in-part of Ser. No. 210,597, Dec. 21, 1971, abandoned. This application Aug. 31, 1973, Ser. No. 393,290**

**Int. Cl. C08d** *3/08, 1/14*

**U.S. Cl. 260—94.2 R** **16 Claims**

**1.** A process for the production of polybutadiene consisting of 2–40% of the 1,2-cis structure, 60–98% of the cis-1,4-structure and not more than 1.5% of the trans-1,4-structure which comprises the two successive steps of:

first, polymerizing for a period of time ranging between a period of ten minutes and 10 hours, 1,3-butadiene in an inert organic solvent in the presence of a cis-1,4-polymerization catalyst consisting essentially of

*a*. a cobalt component selected from the group consisting of ($a_1$) a cobalt compound and ($a_2$) a material formed by electrochemically depositing metallic cobalt on metallic zinc, and

*b*. a halogen-containing organoaluminum compound represented by the formula

wherein R is an alkyl or cycloalkyl group having 1 to 6 carbon atoms or a phenyl group, X is a halogen atom and $n$ is a positive number in the range of 1.5 to 2.0 thereby forming cis-1,4-polybutadiene, and

secondly, without deactivating the remaining cis-1,4-polymerization catalyst and with the addition or no addition of 1,3-butadiene and/or an inert organic solvent to the polymerization system, effecting the 1,2-polymerization of 1,3-butadiene, (A) in the case where the following component ($a'$) is not the same as component ($a$) of the cis-1,4-polymerization catalyst employed, by adding thereto, without deactivating the remaining cis-1,4-polymerization catalyst, a 1,2-polymerization catalyst comprising

*a′*. a cobalt component selected from the group consisting of ($a'_1$) a cobalt compound and ($a'_2$) a material formed by electrochemically depositing metallic cobalt on metallic zinc,

*b′*. an organoaluminum compound represented by the formula

$$AlR_3 \qquad (2)$$

wherein R represents the group defined hereinbefore, and

*c′*. carbon disulfide, when the component ($a'$) is not the same as the component ($a$) of the cis-1,4-polymerization catalyst employed, or,

B. in the case where the component ($a'$) is the same as the component ($a$) of the cis-1,4-polymerization catalyst employed, by adding to the polymerization system, without deactivating the remaining cis-1,4-polymerization catalyst, either

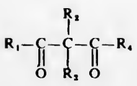
(B1) all the components of said 1,2-polymerization catalyst or

(B2) the components of said 1,2-polymerization catalyst except component ($a'$) when the component ($a'$) is the same as the component ($a$) of said cis-1,4-polymerization catalyst employed, the aforesaid 1,2-polymerization being conducted for a period of time varying between ten minutes and ten hours,

thereby forming the desired polybutadiene product, in which said cobalt compound of ($a_1$) and ($a'_1$) is a member selected from the group consisting of

i. a cobalt salt of a carboxylic acid having 6 to 10 carbon atoms,

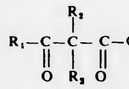
ii. a cobalt complex of a $\beta$-diketone represented by the formula:



(3)

wherein each of $R_1$ and $R_4$ is an alkyl group having 1 to 3 carbon atoms and each of $R_2$ and $R_3$ is a hydrogen atom or an alkyl group having 1 to 3 atoms,

iii. a cobalt complex of a β-keto acid ester represented by the formula



(4)

wherein $R_1$, $R_2$, $R_3$ and $R_4$ are as defined in preceding formula (3), and

(iv) a cobalt halide complex prepared from a cobalt halide represented by the formula CoXn wherein X is a halogen atom and *n* is 2 or 3 and a ligand capable of forming a complex in coordination with the cobalt halide, selected from the group consisting of tertiary amines, alcohols, tertiary phosphines, ketones and N,N-dialkylamides,

said cis-1,4-polymerization catalyst containing 0.002 to 50 millimoles of the cobalt compound ($a_1$) and 0.2 to 200 millimoles of the halogen-containing organoaluminum compound (*b*), per each mole of 1,3-butadiene, and the molar ratio (Al/Co) of the halogen-containing organoaluminum compound (*b*) to the cobalt compound ($a_1$) being 5 to 500, or containing 0.025 to 5 g of the material ($a_2$) formed by electrochemically depositing metallic cobalt on metallic zinc per 100 g of 1,3-butadiene and 0.1 to 5 times the weight of the material ($a_2$), of the halogen-containing organoaluminum compound (*b*), and

said 1,2-polymerization catalyst containing 0.001 to 10 millimoles of the cobalt compound ($a'_1$), 0.1 to 100 millimoles of the organoaluminum compound (*b'*) and 0.001 to 20 millimoles of carbon disulfide (*c'*), per each mole of 1,3-butadiene, and the molar ratio (Al/Co) of the organoaluminum compound (*b'*) to the cobalt compound ($a'_1$) being 5 to 500, or containing 0.05 to 10 g of the material ($a'_2$) formed by electrochemically depositing metallic cobalt on metallic zinc per 100 g of 1,3-butadiene, 0.1 to 5 times the weight of the material ($a'_2$), of the organoaluminum compound (*b'*) and 0.001 to 20 millimoles of carbon disulfide (*c'*) per mole of 1,3-butadiene.

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**3,935,181**

## PROCESS FOR CHLORINATING ETHYLENE POLYMERS

**Lowhardt A. A. Schoen, Geleen, Netherlands, assignor to Stamicarbon B.V., Geleen, Netherlands**

**Filed Aug. 27, 1974, Ser. No. 500,942**

**Claims priority, application Netherlands, Aug. 28, 1973, 7311780**

**Int. Cl. C08f** *27/03*

**U.S. Cl. 260—94.9 H** **15 Claims**

**1.** Process for chlorinating a solid, finely divided ethylene polymer to produce statistical or hybridical chloropolyethylene, said process comprising

a. mixing said polymer with 10 to 100% by weight of water, based on the weight of ethylene polymer, and

b. chlorinating the polymer with gaseous chlorine

at a temperature which is below the ethylene polymer decomposition temperature and above the crystalline melting point of the ethylene polymer during at least about 70% of the chlorination period and at a pressure such that the boiling point of water at said pressure is at least equal to the said chlorination temperature while maintaining the amount of water in the ethylene polymer at a level of at least 10% by weight, based on the weight of starting ethylene polymer, until the chlorination has proceeded to a polymer chlorine content of at least 15% by weight and maintaining the water substantially uniformly distributed in the polymer.

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**3,935,182**

## WATER-SOLUBLE QUATERNARY AMMONIUM HETEROCYCLIC AZO DYESTUFFS

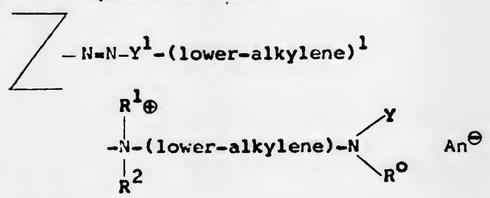
**Patrick J. Jefferies, Erlanger, Ky., and Nathan N. Crounse, Cincinnati, Ohio, assignors to Sterling Drug Inc., New York, N.Y.**

**Continuation-in-part of Ser. No. 201,153, Nov. 22, 1971, Pat. No. 3,784,599, which is a continuation-in-part of Ser. No. 51,676, July 1, 1970, Pat. No. 3,709,903, which is a continuation-in-part of Ser. No. 777,884, Nov. 21, 1968, abandoned, which is a continuation-in-part of Ser. No. 551,868, May 23, 1966, abandoned. This application Feb. 14, 1973, Ser. No. 332,511**

**Int. Cl.² C09B** *29/34, 29/36, 29/38;* **D06P** *1/08*

**U.S. Cl. 260—155** **18 Claims**

**1.** A compound of the formula



wherein:

$R^0$ is hydrogen, lower-alkyl or hydroxy-lower-alkyl;

$R^1$ is lower-alkyl, lower-alkenyl or hydroxy-lower-alkyl;

$R^2$ is lower-alkyl, lower-alkenyl, hydroxy-lower-alkyl or -(lower-alkylene)-$NR^0Y$; or $R^1$ and $R^2$ together with the nitrogen atom are pyrrolidino, piperidino or 4-lower-alkanoyl piperazino;

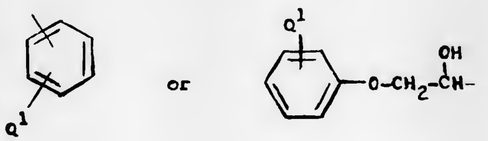
Y is hydrogen or



wherein R is hydrogen, lower-alkyl, lower-alkenyl, phenyl or phenyl-lower-alkyl;

An is an anion;

$Y^1$ is a divalent radical of the formula

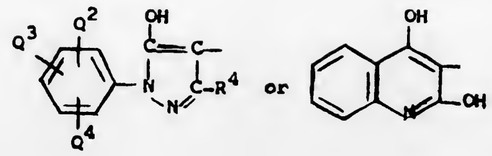


in which

$Q^1$ is hydrogen, lower-alkyl, lower-alkoxy or halogen; and

Z is an azoic coupling radical of the formula





in which

$Q^2$, $Q^3$ and $Q^4$ are each hydrogen, lower-alkyl, lower-alkoxy, hydroxy, nitro, amino, carbo-lower-alkoxy, carboxamido, sulphamyl or halogen; and $R^4$ is lower-alkyl, lower-alkoxy, carboxamido or carbo-lower-alkoxy.

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**3,935,183**

## INDAZOLE-AZO PHENYL COMPOUNDS

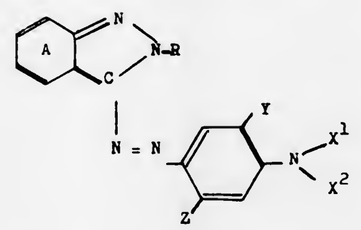
**Thomas Douglas Baron; Brian Ribbons Fishwick; John Lindley Leng, and Michael Yelland, all of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England**

**Continuation-in-part of Ser. No. 105,100, Jan. 8, 1971, abandoned. This application May 7, 1973, Ser. No. 357,577**

**Int. Cl.² C09B** *29/08, 29/26*

**U.S. Cl. 260—162** **1 Claim**

**1.** A water-insoluble azo dyestuff of the formula:



wherein R is lower alkyl; the ring A is unsubstituted or is substituted by chlorine, bromine or nitro; Y is hydrogen, lower alkyl or lower alkoxy; Z is hydrogen, lower alkyl, lower alkoxy, chlorine or a group of the formula —NHCOR¹ wherein $R^1$ is lower alkyl; and $X^1$ and $X^2$ are independently selected from hydrogen, lower alkyl, hydroxy lower alkyl, lower alkylcarbonyl lower alkyl, cyano lower alkyl, lower alkoxycarbonyl lower alkyl, lower alkoxy lower alkyl, lower alkylcarbonyloxy lower alkyl, lower alkoxy lower alkoxycarbonyl lower alkyl, cyano lower alkoxy lower alkyl, chloro lower alkyl, phenoxy lower alkyl, phenyl, lower alkylcarbonylamino lower alkyl, cyano lower alkoxycarbonyl lower alkyl and lower alkylcarbonyloxy lower alkoxy carbonyl lower alkyl.

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**3,935,184**

## SYNTHETIC POLYOXIN TYPE NUCLEOSIDES

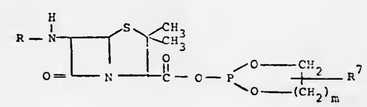
**Gordon H. Jones, Palo Alto; John G. Moffatt, Los Altos, and Michael D. Edge, Mountain View, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.**

**Filed Feb. 22, 1972, Ser. No. 228,366**

**Int. Cl.² C07H** *19/16, 19/18;* **C08B** *37/00*

**U.S. Cl. 260—211.5 R** **16 Claims**

**1.** A compound having the formula:



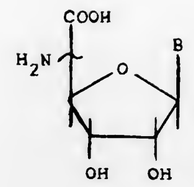
wherein:

R is an organic acyl radical derived from an organic carboxylic acid or a reactive derivative thereof;

$R^7$ is selected from the class consisting of hydrogen and lower alkyl and

*m* is a whole number from 1 to 6;

and wherein said organic acyl defined by R is selected from the group consisting of



wherein the wavy line indicates either the 5'-D-allo or the 5'-L-talo epimer and B is a purine or pyrimidine radical selected from the group consisting of 5-hydroxyuracil-1-yl, 5-hydroxycytosin-1-yl, 5-azauracil-1-yl, 5-aza-cytosin-1-yl, 2-thiouracil-1-yl, 2-thiocytosin-1-yl, 4-thiouracil-1-yl, 2-amino-6-chloropurin-9-yl, 2-amino-6-mercaptopurin-9-yl, 6-methylthioguanin-9-yl, 6-chloropurin-9-yl, 2,6-dichloropurin-9-yl, 6-mercaptopurin-9-yl, 6-methylthiopurin-9-yl, and 6-hydroxylaminopurin-9-yl; and pharmaceutically acceptable salts thereof.

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**3,935,185**

## POLYNUCLEOTIDES OF POLY(5-HYDROXYCYTIDYLIC ACIDS)

**David Wesley Hutchinson, Leamington Spa, and Michael Anthony William Eaton, Aylesbury, both of England, assignors to G. D. Searle & Co., Chicago, Ill.**

**Filed Mar. 28, 1974, Ser. No. 455,877**

**Claims priority, application United Kingdom, Apr. 2, 1973, 15671/73**

**Int. Cl.² C07H** *19/10*

**U.S. Cl. 260—211.5 R** **2 Claims**

**1.** Poly(5-hydroxycytidylic acids) containing greater than ten and up to 200 5-hydroxycytidine residues, inclusive.

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**3,935,186**

## INTERMEDIATES FOR PRODUCING SEMI-SYNTHETIC PENICILLINS AND CEPHALOSPORINS AND METHODS OF PRODUCTION

**John H. Sellstedt, King of Prussia, Pa., assignor to American Home Products Corporation, New York, N.Y.**

**Division of Ser. No. 197,142, Nov. 9, 1971, Pat. No. 3,859,298. This application July 5, 1973, Ser. No. 376,788**

**Int. Cl.² C07D** *501/02, 499/04*

**U.S. Cl. 260—239.1** **9 Claims**

**1.** A compound selected from the group consisting of those having the following formula and the acid addition salts thereof:


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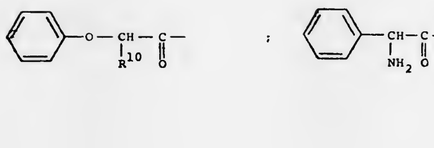

wherein:

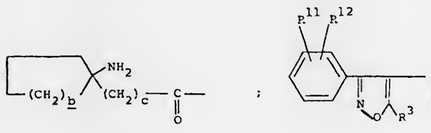
$R^3$ is selected from the class consisting of hydrogen, (lower-)alkyl and phenyl;

$R^8$ and $R^9$ are selected from the group consisting of hydrogen and (lower)alkoxy;

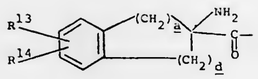
$R^{10}$ is selected from the class consisting of hydrogen, (lower-)alkyl and phenyl;

$R^{11}$ and $R^{12}$ are selected from the class consisting of hydrogen and halogen; $R^{13}$ and $R^{14}$ are selected from the class consisting of hydrogen, halogen, (lower)alkyl, (lower)alkoxy, phenyl and phenoxy; *a* is an interger from 0 to 1; *b* is an interger from 0 through 5; *c* is an interger from 0 through 2; *d* is an interger from 1 through 3, with the proviso that when *a* is 0, *d* is greater than 1, and when *a* is 1, *d* is less than 3.


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**3,935,187**

## PROCESS FOR DEPOLYMERIZING AMYLACEOUS POLYMERS

**Edwin L. Speakman, Clinton, Iowa, assignor to Standard Brands Incorporated, New York, N.Y.**

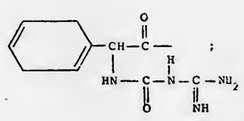
**Continuation-in-part of Ser. No. 408,030, Oct. 19, 1973, abandoned. This application Aug. 12, 1974, Ser. No. 496,609**

**Int. Cl.² C08B** *33/00, 31/00*

**U.S. Cl. 260—233.3 R** **8 Claims**

**1.** A process for partially depolymerizing granular starch comprising reacting granular starch with hydrogen peroxide in an aqueous mixture in the presence of a salt selected from the group consisting of alkali metal chlorides, ammonium chlorides and mixtures thereof, and cupric ions while maintaining the pH of the aqueous mixture in the range of from about 5.5 to about 7 by the addition of alkali thereto, the reaction conditions being such as to maintain the granular structure of the starch.

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**3,935,188**

## REMOVAL OF HYDROGEN CYANIDE FROM ACIDIC GASES

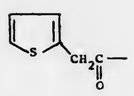
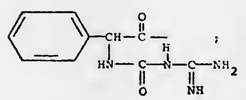
**Heinz Karwat, Pullach, Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Germany**

**Filed Dec. 10, 1973, Ser. No. 423,397**

**Claims priority, application Germany, Dec. 8, 1972, 2260248**

**Int. Cl.² C01C** *3/00*

**U.S. Cl. 423—236** **18 Claims**


;

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**1.** In a process for the removal of hydrogen cyanide from gases containing at least one other acidic component selected from the group consisting of hydrogen sulfide, carbonyl sulfide and mixtures thereof comprising scrubbing said hydrogen cyanide and said at least one other acidic component from the gases with a physical scrubbing agent, regenerating resultant loaded scrubbing agent, and recycling resultant regenerated scrubbing agent to the scrubbing step,

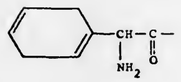
the improvement wherein as part of said regenerating, the resultant loaded physical scrubbing agent containing said hydrogen cyanide is mixed with an aqueous alkali metal or alkaline earth hydroxide solution, and the thus-formed cyanide salt solution is thermally decomposed into ammonia and formate according to the following reaction:

$$Me(CN)_x + 2x\,H_2O = Me(HCOO)_x + xNH_3$$

wherein

Me is an alkali or alkaline earth metal,

*x* is the valence of Me.





**3,935,189**

## PENICILLINS

**Harry Ferres, Horsham; Adrian Victor Kemmenoe, Westcott, and Desmond John Best, Sutton, all of England, assignors to Beecham Group Limited, England**

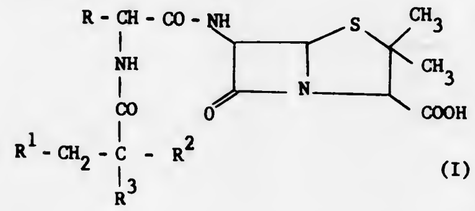
**Division of Ser. No. 466,814, May 3, 1974. This application May 15, 1975, Ser. No. 577,715**

**Claims priority, application United Kingdom, May 4, 1973, 21203/73**

**Int. Cl.² C07D** *499/44*

**U.S. Cl. 260—239.1** **9 Claims**

**1.** A penicillin of formula (I):



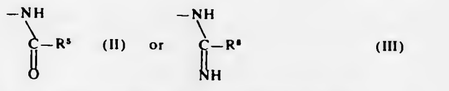
(I)

wherein

R is phenyl, hydroxyphenyl, halophenyl, nitrophenyl, alkoxyphenyl having 1–3 carbon atoms in the alkoxy part, aminophenyl, 2- or 3-thienyl, cycloalkyl having 3–7 carbon atoms in the cyclo part, or alkyl having 1–4 carbon atoms;

$R^1$ is phenyl, benzyl, 3-hydroxyphenyl, 4-hydroxyphenyl, 4-nitrophenyl, 4-chlorophenyl, 4-fluorophenyl, 4-methoxyphenyl, 4-aminophenyl, phenoxy or benzyloxy;

$R^2$ is



(II) or (III)

in which $R^5$ is amino, mono- or di-alkylamino having 1–4 carbon atoms in the alkyl part, cyclohexylamino, hydrogen, alkyl of 1–4 carbon atoms or phenyl, and $R^6$ is amino, mono- or di-alkylamino having 1–4 carbon atoms in the alkyl part or cyclohexylamino;

$R^3$ is hydrogen or alkyl or 1–3 carbon atoms; or a pharmaceutically acceptable salt or a pharmaceutically acceptable hydroylzable ester which converts to the free acid form in vivo.

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**3,935,190**

## SULFITES OF ALIPHATIC GLYCOLIC AMIDES

**Adolf Fischer, Mutterstadt; Hanspeter Hansen, Ludwigshafen, and Wolfgang Rohr, Mannheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany**

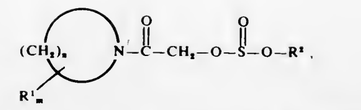
**Filed June 20, 1974, Ser. No. 481,216**

**Claims priority, application Germany, June 30, 1973, 2333477**

**Int. Cl.² C07D** *295/16, 223/04*

**U.S. Cl. 260—239 B** **5 Claims**

**1.** A sulfite of an aliphatic glycolic amide of the formula



where $R^1$ is methyl or ethyl, m denotes one of the integers 0, 1, 2 and 3, $R^2$ is selected from the group consisting of alkyl of 1 to 6 carbons, alkyl of 1 to 6 carbon atoms none-substituted by halogen; cyclopropyl; cyclohexyl; allyl; methallyl; propargyl; and butyn-1-yl-3, and *n* denotes one of the integers 3, 4, 5 and 6.

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**3,935,191**

## AMINOALKYL ETHERS OF 2,2′- AND 3,3′-DIHYDROXYBENZIL

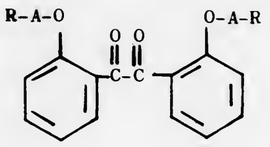
**Gerhard R. Wendt, Havertown, and Michael W. Winkley, Malvern, both of Pa., assignors to American Home Products Corporation, New York, N.Y.**

**Filed Oct. 9, 1974, Ser. No. 513,354**

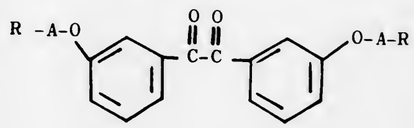
**Int. Cl.² C07D** *295/08*

**U.S. Cl. 260—239 B** **13 Claims**

**1.** A symmetrical compound of the formula:

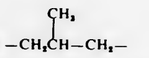


and

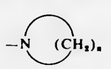


wherein A is a divalent aliphatic hydrocarbon radical of the formula

$-CH_2CH_2-$, $-CH_2CH_2CH_2-$,



and R is an amino group of the formula



wherein *n* is the number 4, 5, or 6; and the non-toxic, pharmaceutically acceptable acid addition salts thereof.

**13.** A compound as defined in claim **1** which is 3,3′-bis-[2-(1-pyrrolidinyl)ethoxy]benzil.

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**3,935,192**

## PENICILLINS

**Harry Ferres, Horsham; Adrian Victor Kemmenoe, Westcott, and Desmond John Best, Sutton, all of England, assignors to Beecham Group Limited, Great Britain**

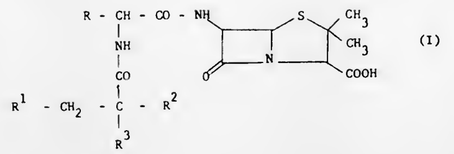
**Division of Ser. No. 466,814, May 3, 1974. This application May 16, 1975, Ser. No. 578,262**

**Claims priority, application United Kingdom, May 4, 1973, 21203/73**

**Int. Cl.² C07D** *449/44*

**U.S. Cl. 260—239.1** **8 Claims**

**1.** A penicillin of formula (I):



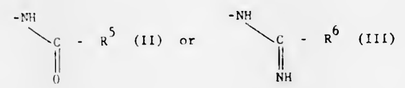
(I)

wherein

**R** is phenyl, hydroxyphenyl, halophenyl, nitrophenyl, alkoxyphenyl having 1–3 carbon atoms in the alkoxy part, aminophenyl, 2- or 3-thienyl, cycloalkyl having 3–7 carbon atoms in the cyclo part, cycloalkenyl having 5–7 carbon atoms in the cyclo part, or alkyl having 1–4 carbon atoms;

**$R^1$** is acetoxy;

**$R^2$** is



(II) or



(III)

in which **$R^5$** is amino, mono- or di-alkylamino having 1–4 carbon atoms in the alkyl part, cyclohexylamino, hydrogen, alkyl of 1–4 carbon atoms or phenyl, and **$R^6$** is amino, mono- or di-alkylamino having 1–4 carbon atoms in the alkyl part or cyclohexylamino;

**$R^3$** is hydrogen or alkyl of 1–3 carbon atoms; or a pharmaceutically acceptable salt or a pharmaceutically acceptable hydrolyzable ester which converts to the free acid form in vivo.

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**3,935,193**

**DIACYL PENICILLINS AND METHODS FOR THEIR PRODUCTION**

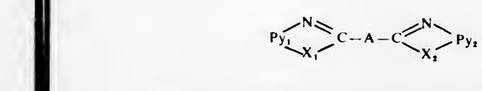
**Jinnosuke Abe, Shizuoka; Tetsuo Watanabe, Kanagawa; Teruo Take; Kentaro Fujimoto; Tadashiro Fujii, and Kazuyoshi Nishie, all of Shizuoka, all of Japan, assignors to Toyo Jozo Kabushiki Kaisha, Shizuoka, Japan**

**Filed Dec. 29, 1970, Ser. No. 102,556**

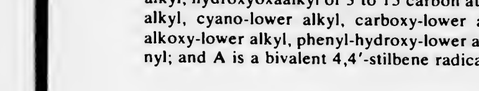
**Int. Cl. C07d** *99/16*

**U.S. Cl. 260—239.1** **4 Claims**

**1.** A process for the production of a diacyl penicillin, comprising admixing 1 mole of a benzyl penicillin ester of the formula



wherein X is phenacyl, with 1–2 moles of a chlorinating agent selected from the group consisting of $PCl_5$, $POCl_3$, $COCl_2$ and $SOCl_2$, and 1–5 moles of a tertiary organic amine selected from the group consisting of pyridine, quinoline and dimethylaniline, at a temperature of −20° to 25°C., to obtain an imide chloride group-incorporated compound of the formula



wherein X is phenacyl; and then admixing one mole of the compound of the last-named formula with 1-2 moles of a carboxylate of the formula



wherein M is a metal atom selected from the group consisting of potassium, sodium, lithium and silver, and R is a member selected from the group consisting of 1-(2′,6′-dichlorophenyl)4-methylpyrazole-5-carbonyl, 1-(p-chlorophenyl)-3-methylpyrazole5-carbonyl, and 1-phenyl-4-methylpyrazole-5-carbonyl, at a temperature of 20° to 60°C.

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**3,935,194**

**SEPARATION OF HECOGENIN-TIGOGENIN MIXTURES**

**Bjarte Löken, Milan, Italy, assignor to Omni Research Incorporated, San German, P.R.**

**Filed Jan. 22, 1974, Ser. No. 435,465**

**Int. Cl.² C07J** *17/00*

**U.S. Cl. 260—239.55 A** **5 Claims**

**1.** A method for separating a hecogenin-tigogenin mixture predominant in hecogenin which comprises acetylating the mixed genins, then dissolving the resulting mixed acetates in a non-polar solvent, and thereafter crystallizing out a relatively pure hecogenin acetate, the tigogenin acetate remaining in solution in the mother liquor.

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**3,935,195**

**4,4′-STILBENEBIS-PYRIDOOXAZOLES AND RELATED OPTICAL BRIGHTENERS AND POLYMERIC COMPOSITIONS BRIGHTENED THEREBY**

**Nathan N. Crounse, Cincinnati, Ohio, assignor to Sterling Drug Inc., New York, N.Y.**

**Division of Ser. No. 820,005, April 28, 1969. This application July 14, 1971, Ser. No. 162,620**

**Int. Cl.² C07D** *221/00*

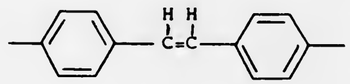
**U.S. Cl. 260—240 CA** **7 Claims**

**1.** A fluorescent compound of the formula





wherein $Py_1$ and $Py_2$ are each a bivalent heterocyclic nucleus of the pyridine class in which the open bonds are on vicinal ring carbon atoms of said nucleus wherein each of the pyrido rings is otherwise unsubstituted or further substituted by a member of the class consisting of halogen, lower alkoxy and lower alkyl; $X_1$ and $X_2$ are each a member of the class consisting of O, S and NR, wherein R is H, lower alkyl, hydroxy-lower alkyl, hydroxyoxaalkyl of 3 to 15 carbon atoms, phenyl-lower alkyl, cyano-lower alkyl, carboxy-lower alkyl, carbo-lower alkoxy-lower alkyl, phenyl-hydroxy-lower alkyl or lower alkenyl; and A is a bivalent 4,4′-stilbene radical of the formula



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**3,935,196**

**USEFUL PRO-DRUG FORMS OF THEOPHYLLINE**

**Takeru Higuchi; Nicolae S. Bodor, and Yu-Neng Kuo, all of Lawrence, Kans., assignors to Interx Research Corporation, Lawrence, Kans.**

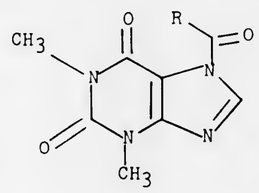
**Filed Apr. 22, 1974, Ser. No. 463,092**

**Int. Cl.² C07D** *473/08*

**U.S. Cl. 260—240 J** **21 Claims**

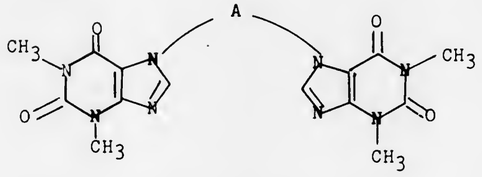
**1.** A pro-drug of theophylline having the formula

(I)

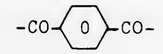


or

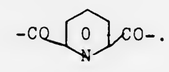
(II)



wherein R represents a member selected from the group consisting of straight or branched $C_4$–$C_{20}$ alkyl, straight or branched $C_4$–$C_{20}$ alkenyl, substituted phenyl or substituted or unsubstituted naphthyl whose substituents are selected from the group consisting of hydroxy, $C_1$–$C_4$ alkyl, $C_1$–$C_4$ alkoxy, acyloxy derived from an alkanoic acid of up to 4 carbon atoms chlorine, bromine, and iodine, and 2-,3-,4-pyridyl or quinoline and wherein A represents a member selected from the group consisting of —CO—, —CO—$(CH_2)_n$—CO— wherein *n* represents an integer of from 1 to 16, —CO—CH=CH— CO-(cis or trans),



and



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**3,935,197**

**2-STYRYL-4H-PYRIDO(1,2-A)PYRIMIDIN-4-ONES**

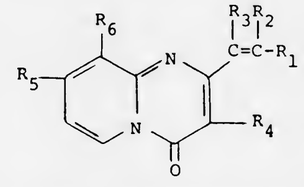
**Harry L. Yale, New Brunswick, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.**

**Filed May 16, 1975, Ser. No. 578,237**

**Int. Cl.² C07D** *239/70*

**U.S. Cl. 260—240 D** **10 Claims**

**1.** A compound having the formula



wherein $R_1$ is phenyl, phenyl substituted with 1,2 or 3 of the same or different alkyl, alkoxy or halogen groups, phenyl substituted with 1 or 2 dialkylamidosulfonyl groups, or phenyl substituted with 1 or 2 trifluoromethyl groups; $R_2$ and $R_3$ are the same or different and are hydrogen or alkyl; and $R_4$, $R_5$ and $R_6$ are the same or different and are hydrogen or methyl; and wherein the terms alkyl and alkoxy refer to non-tertiary groups having 1 to 4 carbon atoms.

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**3,935,198**

**PROCESS FOR THE PREPARATION OF THE CEPHALOSPORANIC ACID DERIVATIVE**

**Masuo Murakami; Kozo Takahashi, both of Tokyo; Ichiro Isaka, Hoya; Teruaki Ozasa, Ageo, and Teruya Kashiwagi, Urawa, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan**

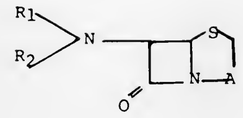
**Filed Dec. 19, 1973, Ser. No. 426,108**

**Claims priority, application Japan, Dec. 28, 1972, 48-2755**

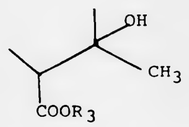
**Int. Cl.² C07D** *501/10*

**U.S. Cl. 260—243 C** **7 Claims**

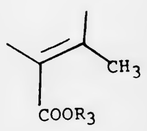
**1.** A process for the preparation of a cephalosporanic acid derivative represented by the formula



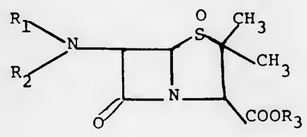
wherein $R_1$ and $R_2$, which may be the same or different, each represents a univalent group, selected from the group consisting of lower alkyl, cyclohexyl, benzyl, phenethyl, 2-furylethyl, 2-pyridylmethyl, trifluoromethyl, methoxymethyl, phenoxyethyl, benzylthioethyl, trichloromethyl, phenyl, naphthyl, quinolyl, pyridyl, piperidyl, furyl, tolyl, p-nitrophenyl, phenylacetyl, cyclohexylacetyl, 2-thienylacetyl, 2-furylacetyl, cyclopentylcarbonyl, α-phenoxyacetyl, benzoyl, thiobenzoyl, said $R_1$ and $R_2$ may be combined to form a divalent group selected from the group consisting of salicylidene, benzylidene, oxomethylidene, α-chloro-phenethylidene, ethylidene, α-imino-phenethyl, piperidinomethyl-idene, 1-phenyl-1-dimethylamino methylidene, 1-propenylidene,pentamethylene, 1-oxopentamethylene, tetramethylene, ethylene-dicarbonyl, phthaloyl, 3-phenyl-1,1,2-trimethyl-4-oxo-2-azatetramethylene, 1,1-dimethyl-3-phenyl-2-nitroso-4-oxo-2-azatetramethylene, 1,4-dioxo-2-butene-1,4-diyl, and o-phenylenedithiocarbonyl, and A represents a divalent group represented by the formulae



or



wherein $R_3$ represents a hydrogen atom, a methyl group, an ethyl group, a tert-butyl group, a 2,2,2-trichloroethyl group, a triphenylmethyl group, a bis(p-methoxyphenyl)methyl group a methoxybenzyl group, a benzhydryl group, a 3,5-di-tert-butyl-4-hydroxybenzyl group, a phthalimidomethyl group, a p-toluenesulfonylethyl group, or a halogen-substituted benzyl group which consists essentially of heating the penicillin sulfoxide derivative represented by the formula

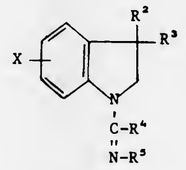


wherein $R_1$ and $R_2$ are as defined above at a temperature up to about 180°C in an inert organic solvent.

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**3,935,199**
**IMINOMETHYLINDOLINES**
**Yao Hua Wu, and Walter G. Lobeck, both of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.**
**Division of Ser. No. 253,672, May 8, 1972, Pat. No. 3,823,136, which is a division of Ser. No. 862,915, Oct. 1, 1969, Pat. No. 3,679,692. This application May 13, 1974, Ser. No. 469,201**
**Int. Cl.² C07D** *279.04*
**U.S. Cl. 260—243 R** **4 Claims**

1. A compound selected from the group consisting of indoline bases having the formula



and the pharmaceutically acceptable acid addition salts thereof wherein

X is located in any of the 4, 5, 6, or 7 positions of the indoline ring and is selected from the group consisting of hydrogen, nitro, amino, $R^1CO$, $R^1CONH$, and $R_1SO_2NH$ wherein

$R^1$ is lower alkyl group of from 1 to 4 carbon atoms inclusive,

$R^2$ and $R^3$ are independently selected from the group consisting of hydrogen and lower alkyl of from 1 to 3 carbon atoms inclusive, and

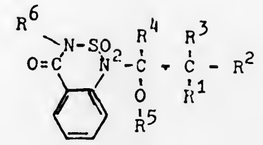
$R^4$ and $R^5$ are joined to form in combination with the atoms to which they are attached a 5,6-dihydro-3-(2H-thiazinyl), 2-imidazolin-2-yl, or 3H-indol-2-yl group.

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**3,935,200**
**N,N-DISUBSTITUTED 2,1,3-BENZOTHIADIAZIN-(4)-ONE-2,2-DIOXIDE**
**Adolf Fischer, Mutterstadt; Gerhard Hamprecht, Mannheim, and Rolf Huber, Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany**
**Filed Oct. 18, 1974, Ser. No. 516,072**
**Claims priority, application Germany, Nov. 3, 1973, 2355113**
**Int. Cl.² C07D** *285/16*
**U.S. Cl. 260—243 R** **9 Claims**

1. A substituted 2,1,3-benzothiadiazin-(4)-one-2,2-dioxide of the formula



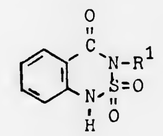


where $R^1$, $R^2$, $R^3$ and $R^4$ are hydrogen or lower alkyl, $R^5$ is an alkyl radical of 1 to 20 carbon atoms, $R^1$ and $R^5$ may also be combined to form a chain containing 2 or 3 methylene radicals, and $R^6$ is an alkyl radical of 1 to 10 carbon atoms or a lower alkyl substituted by fluoro, chloro or cyclohexyl.

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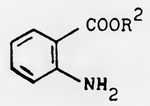
**3,935,201**
**PRODUCTION OF 2,1,3-BENZOTHIADIAZIN-4-ONE-2,2-IOXIDES**
**Dietrich Mangold, Neckargemuend; Karl-Heinz Koenig, Frankenthal, and Gerhard Hamprecht, Mannheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany**
**Filed Nov. 11, 1974, Ser. No. 522,630**
**Claims priority, application Germany, Nov. 15, 1973, 2357063**
**Int. Cl.² C07D** *285/16*
**U.S. Cl. 260—243 R** **7 Claims**

1. A process for the production of a 2,1,3-benzothiadiazin-4-one-2,2-dioxide of the formula (I):



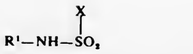
(I)

in which $R^1$ is an alkyl of one to eight carbon atoms, or cycloalkyl of five to eight carbon atoms, wherein the said radicals may bear alkyl or alkoxy of one to four carbon atoms, carbalkoxy of two to four carbon atoms as substituents, which process comprises: reacting an anthranilinic acid ester of the formula (II):



(II)

in which $R^2$ is an alkyl of one to eight carbon atoms, cycloalkyl of five to eight carbon atoms, aralkyl of seven to twelve carbon atoms or phenyl, wherein said radicals may bear alkyl or alkoxy of one to four carbon atoms, or carbalkoxy of two to four carbon atoms as substituents, with a sulfamyl halide of the formula (III):



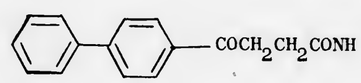
(III)

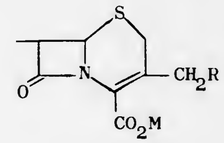
in which $R^1$ has the above meaning and X is bromine or chlorine in the presence of an inert organic solvent and a basic compound selected from the group comprising tertiary amines, alkaline earth metal compounds and alkali metal compounds at a temperature of from 20° to 100°C.

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**3,935,202**
**3-(4-BIPHENYLYLCARBONYL)PROPIONAMIDO CEPHALOSPORIN DERIVATIVES**
**Peter H. L. Wei, Springfield, and Ronald J. McCaully, Malvern, both of Pa., assignors to American Home Products Corporation, New York, N.Y.**
**Filed Mar. 18, 1974, Ser. No. 452,017**
**Int. Cl.² C07D** *499/44, 501/20*
**U.S. Cl. 260—243 C** **3 Claims**

1. A compound of the formula





in which

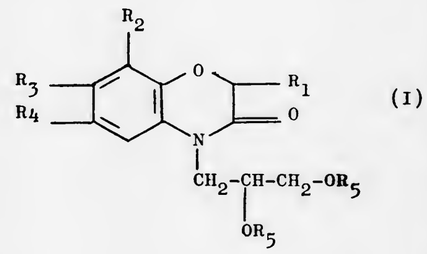
R is hydrogen or alkanoyloxy of 2 to 6 carbon atoms, and

M is hydrogen, an alkali metal or the ammonium cation.

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**3,935,203**
**DERIVATIVES OF 3-OXO-2,3-DIHYDRO-1,4-BENZOXAZINE**
**Germaine Thuillier, Paris, and Jacqueline Laforest, Vincennes, both of France, assignors to CERPHA, Arceuil, France**
**Filed Aug. 2, 1973, Ser. No. 384,924**
**Claims priority, application France, Aug. 3, 1972, 72.28095**
**Int. Cl.² C07D** *265/28*
**U.S. Cl. 260—244 R** **17 Claims**

1. Derivative of 3-oxo-2,3-dihydro-1,4-benzoxazine corresponding to the formula (I)



(I)

in which:

$R_1$ is selected from the group consisting of the hydrogen atom and a lower alkyl group; $R_3$, $R_2$ and $R_4$, which are

identical or different, are selected from the group consisting of the hydrogen atom, a halogen atom, a nitro group, a lower alkyl group, a lower alkoxy group and $R_4$ may be an allyl group; and $R_5$ is selected from the group consisting of the hydrogen atom and an acetyl group.

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**3,935,204**

## CEPHALOSPORIN AND PHARMACEUTICAL PREPARATIONS CONTAINING THE SAME

**Sven Erik Dahlen; Bertil Ake Ekström; Ödön Kálmán József Kovács, and Berndt Olof Harald Sjoberg, all of Sodertalje, Sweden, assignors to Astra Lakemedel Aktiebolag, Sodertalje, Sweden**

**Filed Mar. 13, 1973, Ser. No. 340,673**

**Claims priority, application United Kingdom, Mar. 13, 1972, 11690/72**

**Int. Cl.² A61K** *31/51*

**U.S. Cl. 424—246** **2 Claims**

1. A pharmaceutical composition for the treatment of bacterial infection which comprises, as an active ingredient, an anti-bacterially effective amount of the compound 7-(tetrazolyl-acetamido)-3-[(5-methylthiodiazolyl)-thiomethyl] cephem, ethoxycarbonyloxymethyl ester, or a therapeutically acceptable salt thereof, in a pharmaceutically acceptable carrier;

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**3,935,205**

## DIMORPHOLINOMETHYL-(4-METHYL-3-PENTENYL)-CYCLOHEXENENES

**Paul Albert Ochsner, Geneva, Switzerland, assignor to Givaudan Corporation, Clifton, N.J.**

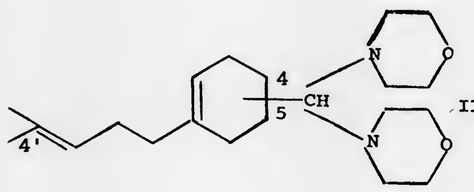
**Filed Sept. 3, 1974, Ser. No. 502,464**

**Claims priority, application Switzerland, Sept. 21, 1973, 13606/73**

**Int. Cl.² C07D** *295/08*

**U.S. Cl. 260—246 B** **1 Claim**

1. A compound of the formula:



II

wherein the dimorpholinomethyl residue is present in the 4- or 5-position,
or mixtures of the 4- and 5-position isomers of the formula II.

**3,935,206**

## SULFOSUCCINATE DERIVATIVES AS DETERGENT BUILDERS

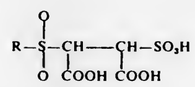
**Vincent Lamberti, Upper Saddle River, N.J., assignor to Lever Brothers Company, New York, N.Y.**

**Division of Ser. No. 394,613, Sept. 5, 1973, which is a division of Ser. No. 156,933, June 25, 1971, abandoned. This application July 1, 1974, Ser. No. 484,917**

**Int. Cl.² C07C** *143/00*; **C07D** *295/00*

**U.S. Cl. 260—247.1 E** **1 Claim**

1. An $\alpha$-alkylsulfonyl-$\beta$-sulfosuccinic acid having the general formula:



or the alkali metal, ammonium, monoethanolammonium, diethanolammonium, trimethylammonium, tetramethylammonium, morpholinium, N-methylmonoethanolammonium and N-ethylmonoethanolammonium salt thereof wherein R is an alkyl containing 1–30 carbon atoms.

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**3,935,207**

## CONJUGATE ADDITION

**Maurice W. Gittos, Slough, and David Anthony Amey, Luton, both of England, assignors to Aspro-Nicholas Limited, Slough, England**

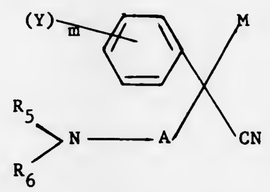
**Filed Dec. 18, 1973, Ser. No. 425,875**

**Claims priority, application United Kingdom, Dec. 28, 1972, 59762/72**

**Int. Cl.² C07D** *295/00*

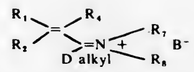
**U.S. Cl. 260—247.5 R** **11 Claims**

1. A method of conjugate covalent addition which comprises treating a donor compound with an acceptor compound, said donor having the formula



wherein y represents $C_1$–$C_4$ alkyl optionally substituted by hydroxy or by $C_1$–$C_4$ alkoxy, hydroxy, $C_1$–$C_4$ alkoxy, halogen or trifluoromethyl;
*m* represents zero or an integer up to 5;
A represents $C_1$–$C_6$ alkylene;
$R_5$ represents $C_1$–$C_4$ alkyl optionally substituted by $C_3$–$C_6$ cycloalkyl or $C_3$–$C_6$ cycloalkyl; and
$R_6$ represents hydrogen or $C_1$–$C_4$ alkyl optionally substituted by phenyl; or
$R_5$ and $R_6$ together represent an alkylene radical optionally interrupted by oxygen or nitrogen and which together with the amino nitrogen atom constitutes a saturated five or six-membered heterocyclic ring; and
M represents a cation;
and said acceptor having the formula





wherein $R_1$ and $R_2$ independently represent hydrogen or $C_1$–$C_4$ alkyl and $R_4$ represents hydrogen, $C_1$–$C_4$ alkyl or $C_2$–$C_5$ alkoxycarbonyl provided that at least one of $R_1$, $R_2$ and $R_4$ represents alkyl or
$R_1$ together with $R_2$ or $R_4$ represents an alkylene radical which together with their adjacent carbon atom(s) forms a carbocyclic ring of 3 to 8 carbon atoms and $R_4$ or $R_2$ respectively is as defined above, or
$R_1$ together with $R_4$ represents a third valency bond joining their immediately adjacent carbon atoms and $R_2$ represents $C_1$–$C_4$ alkyl;
$R_7$ and $R_8$ represent the same or different alkyl radicals or together represent a saturated alkylene radical optionally substituted by oxygen or nitrogen which with the adjacent nitrogen atom forms a heterocyclic ring;
D represents Q or S and
$B^-$ represents a non-nucleophilic anion.

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**3,935,208**

## TRIAZINYL VAT DYESTUFFS

**Hans Altermatt, Reinach, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.**

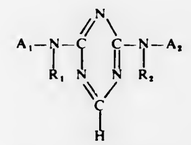
**Filed Jan. 21, 1974, Ser. No. 435,062**

**Claims priority, application Switzerland, Jan. 30, 1973, 1327/73**

**Int. Cl.² C07D** *251/48*

**U.S. Cl. 260—249** **3 Claims**

1. A vat dyestuff of the formula



wherein each of $R_1$ and $R_2$ is independently hydrogen or lower alkyl, and each of $A_1$ and $A_2$ is independently anthraquinone unsubstituted or substituted by benzoylamino, halobenzoylamino, halogen, lower alkyl, lower alkoxy, lower alkanoyl, amino, phenylmercapto, or is phthaloylacridone.

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**3,935,209**

## 5(6)-BENZENE RING SUBSTITUTED BENZIMIDAZOLE--CARBAMATE DERIVATIVES HAVING ANTHELMINTIC ACTIVITY

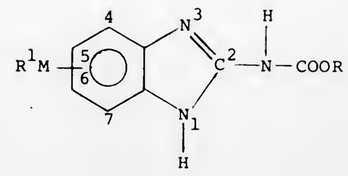
**Colin C. Beard, Palo Alto; John A. Edwards, Los Altos, and John H. Fried, Palo Alto, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.**

**Continuation-in-part of Ser. No. 340,581, March 12, 1973, abandoned. This application Feb. 11, 1974, Ser. No. 441,222**

**Int. Cl.² C07D** *235/32*

**U.S. Cl. 260—250 BN** **22 Claims**

1. A compound selected from the group of compounds represented by the formula:



where R is a lower alkyl group having 1 to 4 carbon atoms; $R^1$ is selected from the group consisting of thiazolyl, pyridyl, imidazolyl, pyrimidinyl, thienyl, pyridazinyl, pyrazinyl, pyrrolyl, pyrazolyl, oxazolyl, furyl, isothiazolyl, isoxazolyl, thiadiazolyl, and triazolyl, and M is O, S, or



the $R^1$ M-substitution being at the 5(6)-position; or a pharmaceutically acceptable salt thereof.

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**3,935,210**

## PREPARATION OF 1-ARYL-4,5-DIHALO-PYRIDAZONE-6

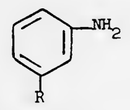
**William J. Houlihan, Mountain Lakes, and Jerome Linder, Westfield, both of N.J., assignors to Sandoz, Inc., E. Hanover, N.J.**

**Continuation of Ser. No. 167,481, July 29, 1971, abandoned. This application May 20, 1974, Ser. No. 471,462**

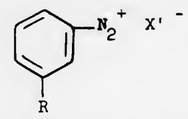
**Int. Cl.² C07D** *237/12*

**U.S. Cl. 260—250 A** **10 Claims**

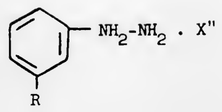
1. A single aqueous phase process for preparation of a 1-aryl-4,5-dihalopyridazone-6 comprising the steps of: a) reacting a compound of the formula:



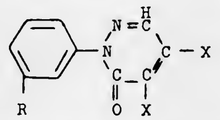
in which R is hydrogen or trifluoromethyl with nitrous acid in a dilute aqueous solution in the presence of a mineral acid selected from the group consisting of hydrochloric acid and sulfuric acid to obtain a dilute aqueous solution of a diazonium salt of the formula:



in which R is as defined above and X′ is the anionic residue of the mineral acid; b) maintaining said diazonium salt in the aqueous solution in which it is formed and reacting said diazonium salt with excess sulfurous acid in the presence of a mineral acid selected from the group consisting of hydrochloric acid and sulfuric acid at a temperature in the range of from minus 10° to plus 35°C. to obtain a dilute aqueous solution of a hydrazine acid addition salt of the formula:



in which R is as above defined and X'' is the mineral acid forming the acid addition salt; and c) maintaining said hydrazine acid addition in the aqueous solution in which it is formed, regulating the acidity of said aqueous solution at a pH not exceeding pH 5.0, heating said aqueous solution at a pH not exceeding pH 5.0 to a temperature of at least 40°C. to remove excess sulfurous acid in the form of sulfur dioxide and reacting said hydrazine acid addition salt with mucochloric or mucobromic acid in the aqueous solution in which the hydrazine is formed at a temperature of from 70° to 120°C. to obtain a 1-aryl-4,5-dihalopyridazone-6 of the formula:

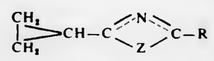


in which R is as above defined and X is chloro or bromo.

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**3,935,211**
**CYCLOPROPYL 1,2,4-OXADIAZOLYLDIAZINES**
**William Joseph Fanshawe, Pearl River, N.Y., and Sidney Robert Safir, River Edge, N.J., assignors to American Cyanamid Company, Stamford, Conn.**
**Division of Ser. No. 347,307, April 2, 1973, Pat. No. 3,857,843, which is a division of Ser. No. 288,219, Sept. 11, 1972, Pat. No. 3,770,739. This application Aug. 20, 1974, Ser. No. 498,901**
**Int. Cl.² C07D** *237/14*
**U.S. Cl. 260—250 A** **2 Claims**

**1.** A cyclopropyl-1,2,4-oxadiazolyldiazine of the formula:



wherein Z is a trivalent radical selected from the group consisting of



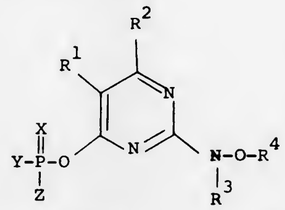
and



the dotted line represents one double bond, the position being dependent upon the definition of Z; R is pyridazinyl and a pharmaceutically acceptable salt thereof.

**3,935,212**
**PESTICIDAL SUBSTITUTED 2-HYDROXYLAMINOPYRIMIDINYL PHOSPHORUS ESTERS**
**Graham Paul Cotterrell, Wokingham, England, assignor to Imperial Chemical Industries Limited, London, England**
**Filed Nov. 19, 1973, Ser. No. 417,088**
**Claims priority, application United Kingdom, Dec. 18, 1972, 58290/72**
**Int. Cl.² C07D** *239/46*
**U.S. Cl. 260—256.4 E** **6 Claims**

**1.** A compound of the formula:

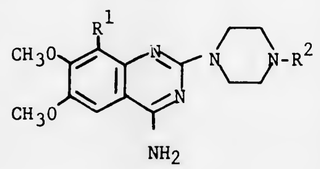


or acid-addition salt thereof, wherein X is oxygen or sulphur; Y and Z are lower alkoxy or lower alkylamino; $R^1$ is hydrogen; $R^2$ is lower alkyl; $R^4$ is alkyl of 1 to 10 carbon atoms, and $R^3$ is hydrogen, lower alkyl or acetyl.

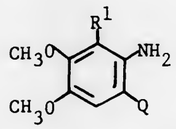
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**3,935,213**
**PROCESS FOR HYPOTENSIVE 4-AMINO-2-(PIPERAZIN-1-YL) QUINAZOLINE DERIVATIVES**
**Hans-Jurgen E. Hess, Old Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.**
**Filed Dec. 5, 1973, Ser. No. 421,992**
**Int. Cl.² C07D** *239/08*
**U.S. Cl. 260—256.4 Q** **17 Claims**

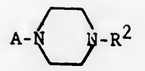
**1.** A process for the production of a compound of the formula



which comprises the steps of reacting a compound of the formula



or a salt thereof, with a compound of the formula

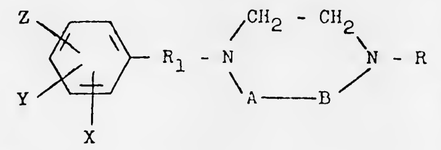


or a salt thereof, in a reaction-inert, organic solvent;
wherein $R^1$ is selected from the group consisting of hydrogen and methoxy;
$R^2$ is selected from the group consisting of alkenyl having from 3 to 5 carbon atoms, benzoyl, furoyl, thienylcarbonyl, alkoxycarbonyl having from two to five carbon atoms, alkenyloxycarbonyl having from 4 to 5 carbon atoms and (2-hydroxyalkoxy)carbonyl having from 4 to 5 carbon atoms;
Q is selected from the group consisting of cyano and =NH)—$NH_2$;
and A is —C(=NH)—X—$R^3$, wherein X is selected from the group consisting of O and S, and $R^3$ is alkyl having from 1 to 6 carbon atoms.

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**3,935,214**
**2- OR 3- KETO-3-OR-2-PHENYL-1,4-DISUBSTITUTED PIPERAZINES**
**Hugo Zellner, deceased, late of Linz-Ebelsberg, Austria (by Gertraud Zellner, administratrix), assignor to Donau-Pharmazie Gesellschaft m.b.H., Linz, Austria**
**Continuation-in-part of Ser. No. 848,395, July 23, 1969. This application Feb. 20, 1973, Ser. No. 333,497**
**Claims priority, application Austria, July 26, 1968, 7306/68**
**Int. Cl.² C07D** *295/12*
**U.S. Cl. 260—268 MK** **12 Claims**

**1.** A 1,4-disubstituted phenyl piperazine compound of the formula



in which
X, Y, and Z are members selected from the group consisting of hydrogen, halogen, trifluoro lower alkyl, hydroxyl, lower alkoxy, and phenyl substituted lower alkoxy;
R is a member selected from the group consisting of di-lower alkylamino lower alkyl, piperidino lower alkyl and lower alkyl pyrrolidino;
$R_1$ is lower alkyl with 1 to 3 carbon atoms; and one of the groups A and B is a keto group of the formula



while the other one of the groups A and B is the phenyl substituted methylene group of the formula



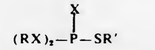
;

or their pharmaceutically acceptable acid addition salts.

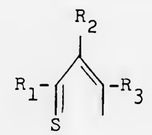


**3,935,215**
**PROCESS OF REVERTING THIOPHOSPHATES**
**Bernardus A. Oude Alink, St. Louis, Mo., assignor to Petrolite Corporation, St. Louis, Mo.**
**Division of Ser. No. 165,336, July 22, 1971. This application June 29, 1973, Ser. No. 374,992**
**Int. Cl.² C07D** *339/04*
**U.S. Cl. 260—327 C** **7 Claims**

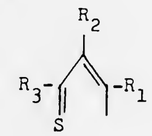
**1.** The process of reverting thiophosphates of the formula



where X is O or S, R is a hydrocarbon radical from the group consisting of alkyl, aryl, cycloalkyl, aralkyl and alkaryl and R′ is a 3-thione-propene-1 group of the formula



or



where $R_1$, $R_2$ $R_3$ are hydrogen, alkyl, aryl, cycloalkyl, alkenyl, alkynyl, alkaryl, aralkyl or heterocyclic groups to the corresponding dithiolium compounds which comprises reacting said thiophosphates with an organic or inorganic acid.

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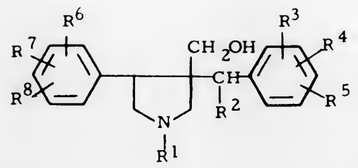
**3,935,216**
**PREPARATION OF TOLUOYL-5-PYRRYL-2-ACETONITRILE**
**Karl E. Wiegand, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.**
**Filed Mar. 18, 1974, Ser. No. 451,817**
**Int. Cl.² C07D** *207/32*
**U.S. Cl. 260—326.5 J** **6 Claims**

**1.** A process for preparing 5-benzoyl or p-toluoyl-1-methylpyrrole-2-acetonitrile comprising reacting a mixed anhydride of an aromatic acid selected from benzoic acid and p-toluic acid and an organosubstituted inorganic acid selected from methane sulfonic acid and toluene sulfonic acid with 1-methylpyrrole-2-acetonitrile in the presence of a solvent selected from nitromethane, 1,2-dichloroethane, methylene chloride and mixtures thereof.

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**3,935,217**
**SUBSTITUTED PYRROLIDINEMETHANOLS**
**Michio Nakanishi, and Hiroshi Yuki, both of Nakatsu, Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan**
**Filed Feb. 28, 1974, Ser. No. 446,841**
**Claims priority, application Japan, Feb. 28, 1973, 48-24528**
**Int. Cl.² C07D** *207/08*
**U.S. Cl. 260—326.5 R** **21 Claims**

**1.** A substituted pyrrolidinemethanol of the formula:



wherein $R^1$ and $R^2$ are each a hydrogen atom or an alkyl group of 1 to 4 carbon atoms; $R^3$, $R^4$, $R^5$, $R^6$, $R^7$ and $R^8$ are each a hydrogen atom, a halogen atom, an alkyl group of 1 to 4 carbon atoms or an alkoxy group of 1 to 4 carbon atoms, or $R^3$ and $R^4$, or $R^6$ and $R^7$ combinedly form a methylenedioxy group; and pharmaceutically acceptable acid addition salts thereof.

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**3,935,218**

**IMIDAZOLINYL PHENYL CARBONYL COMPOUNDS ACID ADDITION SALTS AND RELATED COMPOUNDS**

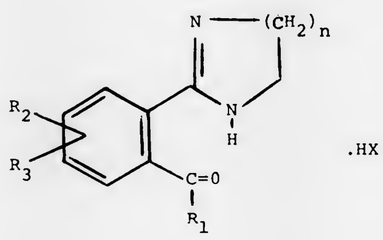
**Theodore S. Sulkowski, Wayne, Pa., assignor to American Home Products Corporation, New York, N.Y.**

**Division of Ser. No. 757,792, Sept. 5, 1968, Pat. No. 3,763,178, which is a continuation-in-part of Ser. Nos. 622,918, March 14, 1967, abandoned, and Ser. No. 622,931, March 14, 1967, abandoned, and Ser. No. 576,833, Sept. 2, 1966, abandoned, and Ser. No. 487,587, Sept. 15, 1965, abandoned. This application Sept. 6, 1973, Ser. No. 394,708**

**Int. Cl.² C07D** *49/34*

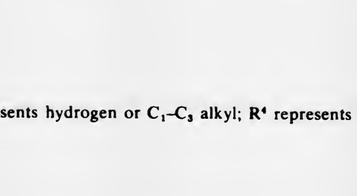
**U.S. Cl. 260—309.6** **2 Claims**

1. A process for the preparation of acid addition salts having the formula:



.HX

wherein $R_1$ is selected from the group consisting of hydrogen, lower alkyl, phen(lower)alkyl, phenyl, monohalophenyl, dihalophenyl, mono(lower)alkylphenyl, di(lower)alkylphenyl, trifluoromethylphenyl, mono(lower)alkoxyphenyl, di(lower)alkoxyphenyl, thienyl, pyridyl, furyl and tetrahydro-2-naphthyl; $R_2$ is selected from the group consisting of hydrogen, halogen, amino, lower alkylamino, lower alkyl and lower alkoxy; $R_3$ is hydroxy when $R_2$ and $R_3$ are dissimilar and when $R_2$ and $R_3$ are the same they are both selected from the group consisting of phenyl, monohalophenyl, dihalophenyl, mono(lower)alkylphenyl, di(lower)alkylphenyl, trifluoromethylphenyl, mono(lower)alkoxyphenyl, di(lower)alkoxyphenyl, thienyl, pyridyl, furyl and tetrahydro-2-naphthyl; n is 1; and HX is a pharmacologically acceptable acid, which comprises reacting a compound having the formula:



wherein $R_1$, $R_2$, $R_3$ and n are defined as above, with a pharmacologically acceptable acid in ethanolic solution.

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**3,935,219**

**ANTIMICROBIAL DIHALONITROMETHYLISOXAZOLES**

**Henry Feuer, West Lafayette, Ind., and John Pennington Lawrence, Stow, Ohio, assignors to Purdue Research Laboratory, Lafayette, Ind.**

**Filed Oct. 25, 1973, Ser. No. 409,558**

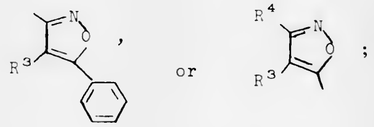
**Int. Cl.² C07D** *261/08*

**U.S. Cl. 260—307 H** **4 Claims**

1. A compound of the formula

$R - CX_2NO_2$

wherein X represents chloro or bromo;
R represents



$R^3$ represents hydrogen or $C_1$–$C_3$ alkyl; $R^4$ represents $C_1$–$C_3$ alkyl.



**3,935,220**

**TETRAHYDROIMIDAZOLO[1,2-A]PYRIDINE DERIVATIVES**

**Horst Meyer; Friedrich Bossert, both of Wuppertal-Elberfeld; Wulf Vater, Opladen, and Kurt Stoepel, Wuppertal-Vohwinkel, all of Germany, assignors to Bayer Aktiengesellschaft, Germany**

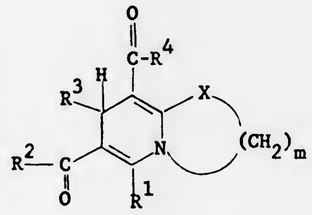
**Division of Ser. No. 337,477, Feb. 28, 1973, Pat. No. 3,856,798. This application May 10, 1974, Ser. No. 468,741**

**Claims priority, application Germany, Mar. 6, 1972, 2210633**

**Int. Cl.² C07D** *213/46*

**U.S. Cl. 260—294.8 C** **23 Claims**

1. A compound of the formula:



wherein

X is $-NR^5-$;
*m* is 2;
$R^1$ is hydrogen or lower alkyl;
$R^2$ is lower alkoxy, lower alkoxy(lower alkoxy) or alkynyloxy of 2 to 4 carbon atoms;
$R^4$ is lower alkoxy or alkynyloxy of 2 to 4 carbon atoms;
$R^5$ is lower alkyl; phenyl; phenyl substituted by one or two substituents selected from the group consisting of lower alkyl, trifluoromethyl, cyano, halo, nitro and carbo(lower alkoxy); pyridyl; furyl; thienyl; or naphthyl; and
$R^3$ is hydrogen or lower alkyl.

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**3,935,221**

**SUBSTITUTED FUSARIC ACID DERIVATIVES**

**Tetsuji Miyano; Kunio Suzuki, and Hiroshi Fukatsu, all of Nagoya, Japan, assignors to Banyu Pharmaceutical Co., Ltd., Nagoya, Japan**

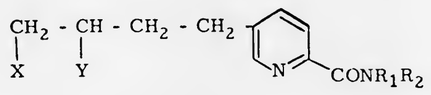
**Continuation-in-part of Ser. No. 257,834, May 30, 1972, Pat. No. 3,835,146. This application Apr. 17, 1974, Ser. No. 461,595**

**Claims priority, application Japan, May 28, 1971, 46-36220; Oct. 1, 1971, 46-76237**

**Int. Cl.² C07D** *213/56*

**U.S. Cl. 260—295 AM** **2 Claims**

1. A halo-fusaric acid amide of the formula:



wherein X represents hydrogen or halogen; Y represents halogen; and $R_1$ and $R_2$ are same or different and represent hydrogen or a lower alkyl group.

**3,935,222**

**1,4,5,7-TETRAHYDROPYRAZOLO[3,4-B]PYRIDIN-6-ONES**

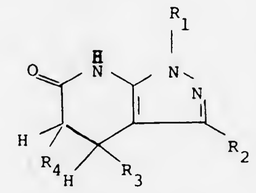
**Hans Hoehn, Tegernheim, Germany, assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.**

**Filed Apr. 16, 1975, Ser. No. 568,754**

**Int. Cl.² C07D** *471/06*

**U.S. Cl. 260—295.5 B** **16 Claims**

1. A compound of the formula



wherein $R_1$ is hydrogen, lower alkyl, phenyl, phenyl-lower alkyl or furfuryl; $R_2$ is hydrogen, lower alkyl or phenyl; $R_3$ is hydrogen, lower alkyl, tri(halo)lower alkyl or phenyl, and $R_4$ is hydrogen, carboxy or carbo-lower alkoxy, and acid addition salts thereof.

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**3,935,223**

**2-AMINO-1,4-DIHYDROPYRIDINE DERIVATIVES**

**Horst Meyer; Friedrich Bossert, both of Wuppertal-Elberfeld; Wulf Vater, Opladen, and Kurt Stoepel, Wuppertal-Vohwinkel, all of Germany, assignors to Bayer Aktiengesellschaft, Germany**

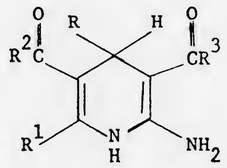
**Division of Ser. No. 336,639, Feb. 28, 1973, Pat. No. 3,867,393. This application Mar. 27, 1974, Ser. No. 455,305**

**Claims priority, application Germany, Mar. 6, 1972, 2210674**

**Int. Cl.² C07D** *213/55*

**U.S. Cl. 260—295.5 R** **4 Claims**

1. A compound of the formula:

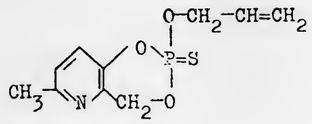


wherein

R is hydrogen; lower alkyl; alkenyl of 2 to 4 carbon atoms; alkynyl of 2 to 4 carbon atoms; phenyl; phenyl substituted by one, two or three substituents, one of said substituents being selected from the group consisting of lower alkyl, lower alkoxy, halogeno, nitro, cyano, trifluoromethyl, azido, carbo, lower alkylsulfonyl, lower alkylsulfonyl. lower alkylthio and phenyl and the remainder being selected from the group consisting of lower alkyl, lower alkoxy, halogeno, and nitro; or naphthyl;
$R^1$ is hydrogen, lower alkyl, phenyl or pyridyl; and one of $R^2$ and $R^3$ is lower alkyl and the other of $R^2$ and $R^3$ is lower alkoxy, lower alkoxy, lower alkenyloxy or lower alkynyloxy.

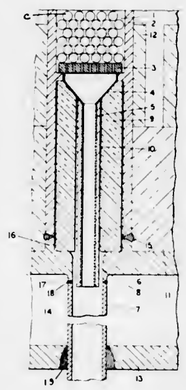
**3,935,224**
**4H-PYRIDO[3,2A]-1,3,2-DIOXOPHOSPHORANE DERIVATIVES**
**Kurt Rufenacht, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.**
**Filed Nov. 1, 1972, Ser. No. 302,641**
**Claims priority, application Switzerland, Dec. 10, 1971, 18066/71; Sept. 15, 1972, 13544/72**
**Int. Cl.² C07D** *213/71*
**U.S. Cl. 260—294.8 C** **4 Claims**

**1.** A compound of the formula



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**3,935,225**
**DEVICE FOR PERFORMING CATALYTIC ENDOTHERMIC REACTIONS**
**Hans-Dieter Marsch, Dortmund-Oespel, Germany, assignor to Friedrich Uhde GmbH, Dortmund, Germany**
**Filed Mar. 4, 1974, Ser. No. 447,520**
**Claims priority, application Germany, Apr. 10, 1973, 2317893**
**Int. Cl.² B01J** *3/02, 3/04, 8/06*
**U.S. Cl. 23—289** **5 Claims**

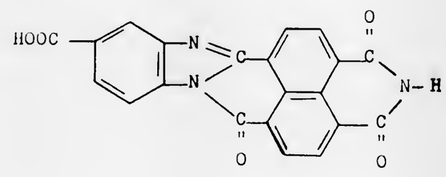


**1.** In a device for performing catalytic reactions on a process gas, comprising in combination
a vertically disposed vessel,
an upright reaction tube in said vessel for receiving the process gas at the upper end portion and discharging the process gas at the lower end portion,
a grid in the upper portion of said reaction tube for supporting catalyst above the grid,
a process gas discharge tube of less diameter than said reaction tube and arranged concentrically therewith,
a connection between the top of said process gas discharge tube and said reaction tube adjacent said grid, and
thermal insulation between said process gas discharge tube and the inner wall of said reaction tube, the improvement comprising:
an inner tubesheet through which said process gas discharge tube freely extends,
an outer tubesheet spaced downstream from said inner tubesheet to provide an heat exchanger space therebetween for reception of a cooling fluid,
a cooling tube in liquid tight engagement with said inner tubesheet and extending through and rigidly connected to said outer tubesheet,
said process gas discharge tube extending without physical contact into said cooling tube, and
a rigid connection between said reaction tube and said upper tubesheet where cooling, insulation and process gas routing combine to reduce the temperature of said reaction tube, said reaction tube comprising heat-resisting steel, and said inner tubesheet comprising normal boiler structural steel.

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**3,935,226**
**SUBSTITUTED PHENANTHROLINE PIGMENTS**
**James J. Jordan, Jr., Livingston, N.J., assignor to Allied Chemical Corporation, New York, N.Y.**
**Filed Sept. 23, 1974, Ser. No. 508,302**
**Int. Cl.² C07D** *487/06*
**U.S. Cl. 260—282** **1 Claim**

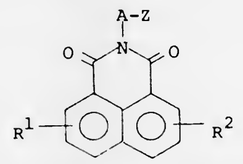
**1.** A compound having the formula



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**3,935,227**
**2-[(SUBSTITUTED-PIPERIDINYL OR TETRAHYDROPYRIDINYL)ALKYL]-1H-BENZ-[DE]ISOQUINOLINE-1,3(2H)-DIONES**
**Peter C. Wade, Pennington, N.J., and Berthold Richard Vogt, Yardley, Pa., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.**
**Filed Aug. 28, 1974, Ser. No. 501,411**
**Int. Cl.² C07D** *401/06*
**U.S. Cl. 260—281 S** **25 Claims**

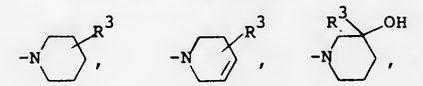
**1.** A compound of the formula



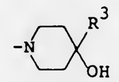
wherein $R^1$ and $R^2$ are each independently selected from the group consisting of hydrogen, chlorine, bromine, fluorine, straight or branched chain alkyl of 1 to 4 carbons, straight or branched chain alkoxy of 1 to 4 carbons, straight or branched chain alkylthio of 1 to 4 carbons, nitro, amino, cyano and



trifluoromethyl; A is a straight or branched chain alkylene of 1 to 8 carbons; and Z is selected from the group consisting of



and



wherein $R^3$ is selected from the group consisting of phenyl, phenyl-alkyl, substituted phenyl and phenyl-alkyl wherein said alkyl is straight or branched chain of 1 to 4 carbons and said phenyl substituent is selected from the group consisting of chlorine, bromine, fluorine, di(chloro), di(bromo), straight or branched chain alkyl of 1 to 4 carbons, di(methyl), straight or branched chain alkoxy of 1 to 4 carbons, nitro, amino, and trifluoromethyl; and the pharmaceutically acceptable acid addition salts thereof.

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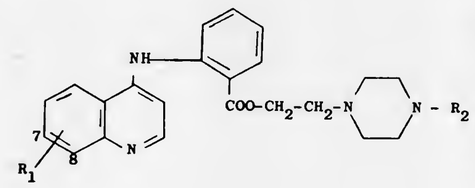
**3,935,228**
**PREPARATION OF COBALT COMPLEX**
**Kestutis A. Keblys, Southfield, Mich., assignor to Ethyl Corporation, Richmond, Va.**
**Continuation of Ser. No. 141,993, May 10, 1971, abandoned. This application Oct. 23, 1973, Ser. No. 408,635**
**Int. Cl.² C07D** *213/16, 215/06*
**U.S. Cl. 260—270 J** **26 Claims**

**14.** A process for preparing solutions in pyridine/methanol of cobalt complexes which consists essentially of reacting (1) cobalt compound selected from cobalt oxides, cobalt sulfides, cobalt cyanides, cobalt salts of $H_2SO_4$, $H_2SO_3$, $HNO_3$, halogen acids, phosphorus acids, boric acids and carbonic acids, organic cobalt salts of sulfonic acids, phosphorus containing acids, and $C_2$–$C_{20}$ carboxylic acids, (2) carbon monoxide, (3) hydrogen, (4) as pyridine selected from isoquinoline, pyridine and mono- and di-alkyl substituted pyridine wherein the alkyls are $C_1$–$C_6$, and (5) $C_1$–$C_{10}$ alkanol such that (i) the molar ratio of $H_2$:CO is from 1:10 to 10:1, (ii) the molar ratio of said pyridine:cobalt is greater than about 2:1, and (iii) the volume ratio of pyridine:alkanol is from 3:1 to 1:3, at pressures ranging from about 1,000 to about 10,000 p.s.i.g., and temperatures ranging from 100°C. to 250°C.

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**3,935,229**
**ESTERS OF 2-[(4-QUINOLYL)AMINO]-BENZOIC ACIDS**
**Don Pierre René Lucien Giudicelli, Fontenay-sous-Bois; Henry Najer, Paris; Philippe Michel Jacques Manoury, L'Hay-les-Roses, and Andre Pierre Fernand Dumas, Bagneux, all of France, assignors to Synthelabo, Paris, France**
**Filed Apr. 2, 1974, Ser. No. 457,174**
**Claims priority, application France, Apr. 6, 1973, 73.12505; May 9, 1973, 73.16635; Dec. 17, 1973, 73.44963**
**Int. Cl.² C07D** *295/12*
**U.S. Cl. 260—268 BQ** **24 Claims**

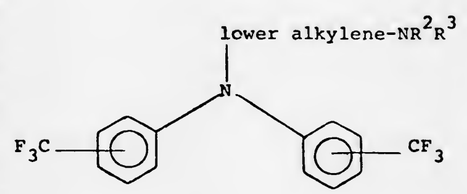
**1.** A compound of the formula:



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**3,935,230**
**α, α, α, α′, α′, α′-HEXAFLUORODI-M-TOLYLAMINE DERIVATIVES**
**Harry Louis Yale, New Brunswick, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.**
**Division of Ser. No. 300,049, Oct. 24, 1972, Pat. No. 3,830,842, which is a division of Ser. No. 71,234, Sept. 10, 1970, Pat. No. 3,712,921. This application June 14, 1974, Ser. No. 479,243**
**Int. Cl.² C07D** *295/12*
**U.S. Cl. 260—268 R** **6 Claims**

**1.** A compound of the structure

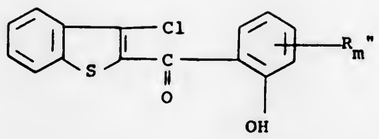


wherein $-NR^2R^3$ is piperazino, (lower alkyl)piperazino, di(lower alkyl)piperazino or 2-hydroxyethylpiperazino, or a pharmaceutically acceptable salt thereof.

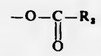
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**3,935,231**
**NOVEL BENZOTHIOPHENE DERIVATIVES AS STABILIZERS FOR ORGANIC COMPOUNDS**
**Lajos Avar, Binningen, and Kurt Hofer, Munchenstein, both of Switzerland, assignors to Sandoz Ltd., (Sandoz AG), Basel, Switzerland**
**Filed Oct. 11, 1973, Ser. No. 405,462**
**Claims priority, application Switzerland, Oct. 17, 1972, 15187/72**
**Int. Cl.² C07D** *333/56*
**U.S. Cl. 260—330.5** **8 Claims**

**1.** A compound of the formula



wherein $R_m''$ is hydroxy, alkoxy ($C_1$-$C_{18}$), or a group



wherein $R_3$ is alkyl ($C_1$-$C_{21}$), phenyl or phenyl substituted by 1, 2 or 3 members of the group halo, hydroxy, 1 or 2 alkyls ($C_1$-$C_{22}$), 1 alkoxy ($C_1$-$C_8$) and phenylsulphonyl.

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## 3,935,232
## PROCESS FOR MANUFACTURING HETEROCYCLIC COMPOUNDS

**David Boyd Baird; Ronald Baker; Brian Ribbons Fishwick, and Robert David McClelland, all of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England**

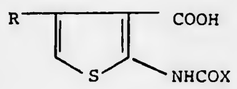
**Filed Oct. 11, 1974, Ser. No. 514,319**

**Claims priority, application United Kingdom, June 9, 1972, 27005/72; Aug. 29, 1972, 39948/72**

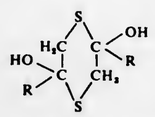
**Int. Cl.² C07D** *333/24*

**U.S. Cl. 260—332.2 C** **1 Claim**

**1.** A process for the manufacture of a compound of the formula



wherein R is selected from the group consisting of hydrogen, lower alkyl and phenyl and X is selected from the group consisting of hydrogen, lower alkyl, chloromethyl and β-carboxyethyl, which comprises reacting a compound of the formula $HSCH_2OR$ or a dimer thereof having the formula



wherein R has the meaning given above, with cyanoacetic acid, lower alkyl cyanoacetate or cyanoacetamide in an aqueous alkaline medium at a temperature between 20° and 100°C, adding an acylating agent of an acid of the formula HOOCX wherein X has the meaning given above and acylating at a pH of between 4 and 10 by addition, as necessary, of an aqueous solution of an alkali.

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## 3,935,233
## O-METHYL/ETHYL-S-PROPYL/BUTYL-O-PHENYL THIOPHOSPHATES AND DITHIOPHOSPHATES HAVING AN O-HETEROCYCLIC GROUP OR THE PHENYL RING

**Ernst Beriger, Allschwil, Switzerland; Manfred Boger, Haltingen, Germany; Jozef Drabek, Allschwil, and Odd Kristiansen, Reinach, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.**

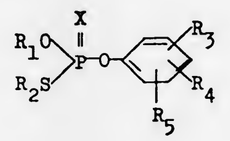
**Division of Ser. No. 408,874, Oct. 23, 1973. This application Dec. 20, 1974, Ser. No. 534,933**

**Claims priority, application Switzerland, Nov. 3, 1972, 16043/72; Sept. 21, 1973, 13638/73**

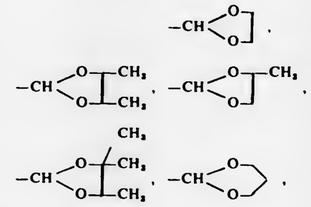
**Int. Cl.² C07D** *319/06;* **A01N** *9/28*

**U.S. Cl. 260—340.7** **8 Claims**

**1.** A compound of the formula



wherein $R_1$ represents methyl or ethyl, $R_2$ represents n-propyl, isobutyl, or sec. butyl, $R_3$ and $R_4$ each represents hydrogen, chlorine, bromine, methyl or ethyl, $R_5$ represents



and X represents oxygen or sulphur.

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## 3,935,234
## CHEMICAL CONDENSATION IMPROVEMENT

**Paul H. Reichenbacher, Elk Grove Village; Theresa M. Forsythe, Mount Prospect; Allen K. Sparks, Des Plaines, and Ted Symon, Lombard, all of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.**

**Continuation-in-part of Ser. No. 172,573, Aug. 17, 1971, abandoned. This application Aug. 2, 1973, Ser. No. 384,999**

**Int. Cl.² C07D** *311/06;* **C07C** *69/76, 65/02*

**U.S. Cl. 260—343.2 R** **9 Claims**

**1.** In the chemical condensation of phenol or benzene with acrylic acid or its methyl ester in the presence of an oxygen-containing gas and a compound of a noble metal of Group VIII of the Periodic Table which is soluble in the reaction medium, said chemical reaction being operated under conditions such that the metal component of said metal-containing compound is alternately reduced to a valence state of zero and oxidized back to the higher valence state of its soluble form, the improvement which comprises effecting said reaction in the presence of an inert high surface area solid material selected from the group consisting of carbon, activated carbon, diatomaceous earth, clay and metal oxides.



## 3,935,235
## LACTONES

**Francis R. F. Hardy, Chester, and Ian Robert King, Luton, both of England, assignors to Laporte Industries Limited, Luton, England**

**Filed Apr. 8, 1974, Ser. No. 459,227**

**Claims priority, application United Kingdom, Apr. 11, 1973, 17498/73**

**Int. Cl.² C07D** *307/32*

**U.S. Cl. 260—343.6** **3 Claims**

**1.** A process for the production of a γ-caprolactone comprising (a) heating a polymeric feed material containing the group $-O-(CR_2)_5-CO-$, in which R represents a hydrogen atom or a methyl group, in a macrocylic ring or an acyclic chain, to a temperature of from 300°C to 500°C in the absence of added catalyst thereby to form an acyclic carboxylic acid whose δ atom is unsaturated and (b) cyclising said acyclic carboxylic acid by contacting it with a catalyst comprising a strong protonating agent, selected from the group consisting of strong acids, cation exchange resins in the free acid form, and strongly acidic mixtures containing hydrogen ions.

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## 3,935,236
## AMINOPROPANOL SUBSTITUTED ISOCHROMANONES AND PHTHALIDES

**Elvio Bellasio, Como, Italy, assignor to Gruppo Lepetit, S.p.A., Milan, Italy**

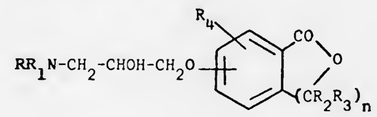
**Filed May 24, 1974, Ser. No. 473,099**

**Claims priority, application United Kingdom, May 30, 1973, 25678/73**

**Int. Cl.² C07D** *307/88, 311/76*

**U.S. Cl. 260—343.2 R** **5 Claims**

**1.** A compound of the formula I



wherein R is hydrogen, $C_1$-$C_4$ alkyl or hydroxy-($C_2$-$C_4$) alkyl; $R_1$ is $C_1$-$C_4$ alkyl or hydroxy-($C_2$-$C_4$) alkyl; $R_2$ and $R_3$ each independently represent hydrogen or $C_1$-$C_2$ alkyl, $R_4$ is hydrogen or alkoxy of 1 to 4 C, n is the number 1 or 2; and the pharmaceutically acceptable acid addition salts thereof.

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## 3,935,237
## METHOD OF SULFONATION OF AROMATIC HYDROCARBONS WITH MINIMIZED BY-PRODUCT FORMATION

**Alfred Davidsohn, Locarno, Switzerland, assignor to Marni S.A., Luxemburg**

**Filed Mar. 6, 1974, Ser. No. 448,637**

**Claims priority, application Italy, Mar. 10, 1973, 12524/73**

**Int. Cl.² C07C** *143/24*

**U.S. Cl. 260—505 E** **11 Claims**

**1.** An improved method for the sulfonation of aromatic hydrocarbon compounds by a gaseous reagent consisting of reactant $SO_3$ diluted in inert diluent gases which comprises the steps of:

A. introducing the aromatic compound into a first of a plurality of reaction vessels;

B. feeding less than the stiochiometrically-required amount of the gaseous reagent of $SO_3$, diluted in inert gases, into each of said reaction vessels to react with a portion of said aromatic compound to form a liquid mixture in said vessel of (a) unreacted excess aromatic compound, (b) the sulfonic acid product produced by the reaction of the aromatic compound with the $SO_3$; and (c) some by-products, said by-products being soluble in said unreacted excess aromatic compound;

C. removing said mixture from said reaction vessels to a separation vessel;

D. separating said sulfonation product (b), from said unreacted excess aromatic compound (a) containing said dissolved by-product (c);

E. recovering said sulfonated product (b);

F. recycling to said first reaction vessel the unreacted aromatic compound (a) containing dissolved therein said by-products (c), whereby said by-products (c) achieve an inhibiting concentration for said by-product formation in said aromatic compound within the reaction vessels.

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## 3,935,238
## PREPARATION OF PHTHALATE ESTERS

**Richard V. Norton, Wilmington, Del., assignor to Sun Research and Development Co., St. Davids, Pa.**

**Filed Jan. 15, 1973, Ser. No. 323,477**

**Int. Cl.² C07C** *69/80, 69/82*

**U.S. Cl. 260—475 R** **11 Claims**

**1.** A process for the preparation of a lower alkyl ester of an aromatic carboxylic acid of the benzene or naphthalene series which comprises contacting the ammonium salt of an aromatic carboxylic acid with vapors of a lower alkanol at a temperature between about 230°C., and about 300°C. in the presence of an alkaline esterification catalyst selected from the group of oxides of silicon, titanium, aluminum, zirconium and thorium, said oxides containing at least about 0.2% by weight of an alkali metal oxide.

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## 3,935,239
## PROCESS FOR PRODUCING AROMATIC α-DIKETONES

**Oyar Yanovich Neiland, ulitsa Raunaya, 45 korpus 3, kv. 127, and Yana Nikolaevna Kreitsberga, ulitsa Gorkogo 18, kv. 3, both of Riga, U.S.S.R.**

**Continuation of Ser. No. 252,464, May 11, 1972, abandoned. This application Mar. 15, 1974, Ser. No. 451,597**

**Int. Cl.² C07C** *69/76, 49/76*

**U.S. Cl. 260—469** **4 Claims**

**1.** A process for producing aromatic α-diketones, which comprises oxidizing 1,2-diphenylacetylene compounds with potassium permanganate in an aqueous acetone solution at a volumetric ratio of acetone to water of from 5:1 to 8:1 and at the boiling point of the reaction mixture.

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## 3,935,240
## CYCLOPENTYLHEPTENOIC ACIDS AND DERIVATIVES

**Keith Blakeney Mallion, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England**

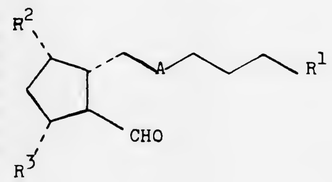
**Filed Oct. 26, 1973, Ser. No. 410,090**

**Claims priority, application United Kingdom, Nov. 10, 1972, 52010/72; Jan. 15, 1973, 2033/73; Aug. 15, 1973, 39578/73**

**Int. Cl.² C07C** *69/76*

**U.S. Cl. 260—469** **6 Claims**

**1.** An aldehyde of the formula:



wherein $R^1$ is carboxy or alkoxycarbonyl of up to 11 carbon atoms, A is cis-vinylene, $R^2$ and $R^3$, which may be the same or different, are hydroxy, 3,5-dinitrobenzoyloxy or hydrocarbon aroyloxy of up to 15 carbon atoms and bearing 0 or 1 alkyl of 1 to 4 carbon atoms on carbon atom 2, 3 or 4.

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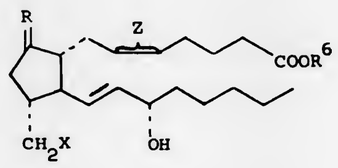
**3,935,241**

## 11α-METHYLSUBSTITUTED PROSTAGLANDIN DERIVATIVES

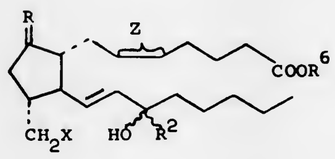
**Joseph M. Muchowski, and Angel Guzman, both of Mexico City, Mexico, assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.**

**Filed May 10, 1974, Ser. No. 468,772**
**Int. Cl.² C07C** *147/02, 147/14, 149/26*
**U.S. Cl. 260—468 D** **7 Claims**

**1.** An 8R-antimeric or racemic compound selected from the group of those represented by the formulas:



(A)



(B)

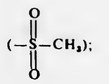
wherein

R is a keto group;

X is thiomethyl, methylsulfinyl



or methylsulfonyl



$R^2$ is methyl or ethyl;

$R^6$ is hydrogen, a lower alkyl group of 1 to 4 carbon atoms or the pharmaceutically acceptable, non-toxic salts of compounds in which $R^6$ is hydrogen,

Z is a cis double bond and the wavy lines ( ) indicate the α or β configuration or mixtures thereof, provided that when $R^2$ is α, the hydroxyl group, attached to the same carbon atom as $R^2$, is β, and when $R^2$ is β, the hydroxyl group, attached to the same carbon atom as $R^2$, is α.

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**3,935,242**

## PROCESS FOR THE PREPARATION OF COLORED MANEB

**Pierre Fulconis, and Claude Franson, both of Marseille, France, assignors to Procida, Marseille, France**

**Filed July 10, 1974, Ser. No. 487,140**
**Claims priority, application France, July 13, 1973, 73.25758**
**Int. Cl.² C07F** *13/00*
**U.S. Cl. 260—429 K** **10 Claims**

**1.** A process for the production of colored maneb consisting of the steps of reacting a water-soluble salt of manganese with a water-soluble salt of ethylenebis(dithiocarbamic acid) in the presence of a slightly basic aqueous reaction media, where said reaction media contains at least one water-soluble dyestuff dissolved therein, and recovering, as a precipitate, a colored maneb.

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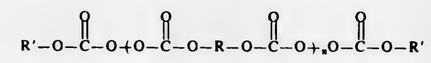
**3,935,243**

## METHOD FOR PREPARING POLYPEROXYDICARBONATE ESTERS

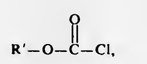
**Duane B. Priddy, Coleman, Mich., assignor to The Dow Chemical Company, Midland, Mich.**

**Continuation-in-part of Ser. No. 398,046, Sept. 17, 1973, abandoned. This application Sept. 30, 1974, Ser. No. 510,181**
**Int. Cl.² C07C** *68/00, 69/96*
**U.S. Cl. 260—463** **8 Claims**

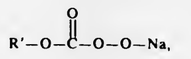
**1.** A process for preparing compounds having the formula



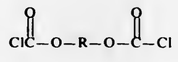
wherein R' is an alkyl radical of 1–6 carbon atoms, R is an alkylene radical of 2–8 carbon atoms or a polyalkyleneoxy radical wherein each alkylene group has 2–4 carbon atoms and R has a maximum of about 12 carbon atoms, and n is an integer of at least 2, which comprises reacting sodium peroxide with an alkyl chloroformate of the formula



wherein R' has the aforesaid significance, to form the sodium alkylperoxy carbonate



reacting a sodium alkyperoxycarbonate with a diol bis(chloroformate) of the formula



wherein R has the aforesaid significance, to form the corresponding peroxydicarbonate, said reaction being carried out at about −10°C. to about 20°C. in the presence of an aqueous lower alkanol.



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**3,935,244**

## HIGH PRESSURE REGENERATION OF A COKE-DEACTIVATED CATALYST CONTAINING PLATINUM, RHENIUM, HALOGEN & SULFUR

**John C. Hayes, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.**

**Continuation-in-part of Ser. No. 844,200, July 23, 1969, Pat. No. 3,622,520, which is a continuation-in-part of Ser. No. 805,380, March 7, 1969, abandoned. This application May 3, 1971, Ser. No. 139,911The portion of the term of this patent subsequent to Nov. 23, 1988, has been disclaimed.**
**Int. Cl.² B01J** *23/96;* **C10G** *35/08*
**U.S. Cl. 252—415** **13 Claims**

**1.** A method for regenerating a deactivated hydrocarbon conversion catalyst which is a combination of a platinum group component, a rhenium component, a halogen component and a sulfur component with an alumina carrier material, the catalyst having been deactivated by deposition of carbonaceous materials thereon during a previous contacting with a hydrocarbon charge stock at hydrocarbon conversion conditions, said method comprising the sequential steps of:

1. contacting the deactivated catalyst with a substantially sulfur-free first gaseous mixture consisting essentially of hydrogen, about 0.02 to about 3.6 mole % $H_2O$ and HCl -- the mole ratio of $H_2O$ to HCl contained therein being about 20:1 to about 100:1 -- at a temperature of about 350° to about 600°C. and at a pressure of about 1 to about 50 atmospheres for a period extending until the resulting effluent gas stream is substantially free of hydrogen sulfide;
2. purging hydrogen from contact with the catalyst resulting from step (1) with an insert gas stream;
3. subjecting the catalyst resulting from step (2) to contact with a substantially sulfur-free second gaseous mixture consisting essentially of an insert gas, $O_2$, $H_2O$, and HCl -- the amount of $O_2$ being about 0.2 to about 3 mole % thereof, the amount of $H_2O$ being about 0.03 to about 3.6 mole % thereof and the mole ratio of $H_2O$ to HCl contained therein being selected from the range of about 20:1 to about 100:1 -- at a temperature of about 375° to about 450°C. and at a pressure of about 7 to about 35 atmospheres for a period sufficient to substantially remove said carbonaceous materials;
4. treating the catalyst resulting from step (3) with said second gaseous mixture for a period of at least about 0.5 to about 10 hours at a temperature of about 450° to about 550°C. and at a pressure of about 7 to about 35 atmospheres;
5. purging oxygen from contact with the catalyst from step (4) with an inert gas stream; and,
6. subjecting the catalyst resulting from step (5) to contact with a substantially sulfur-free third gaseous mixture consisting essentially of hydrogen, about 0.03 to about 3.6 mole % $H_2O$, and HCl -- the mole ratio of $H_2O$ to HCl contained therein being selected from the range of about 20:1 to about 100:1 -- at a temperature of about 300° to about 600°C. for a final period of at least about 0.5 to about 5 hours, thereby producing a regenerated hydrocarbon conversion catalyst having activity, selectivity, and stability characteristics comparable to those possessed initially by the fresh catalyst.

**13.** A method of regenerating a deactivated hydrocarbon conversion catalyst which is a combination of a platinum group component, a rhenium component, a halogen component and a sulfur component with an alumina carrier material, the catalyst having been deactivated by deposition of carbonaceous materials thereon during a previous contacting with a hydrocarbon charge stock at hydrocarbon conversion conditions, said method comprising a combination of the method defined in claim **1** with the step of sulfiding the catalyst resulting from step (6) at a temperature of about 20° to 550°C. to result in a regenerated catalyst containing about 0.01 to about 0.5 wt.% sulfur.

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**3,935,245**

## RADIOACTIVELY LABELED STEROID DERIVATIVES

**Otto Engelfried; Bob Nieuweboer; Karl Petzoldt; Ulrich Kerb, and Klaus Lübke, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Germany**

**Filed June 4, 1974, Ser. No. 476,279**
**Claims priority, application Germany, June 8, 1973, 2330159**
**Int. Cl.² C07J** *9/00*
**U.S. Cl. 260—397.1** **16 Claims**

**1.** a radioactive labeled steroid bearing the radical —X—N—$R_1R_2$ wherein —$NR_1R_2$ is a tritium- or carbon-14 labeled amino or aminoacid radical and X is $R_3$, —O—CO—$R_3$, =N—O—$R_3$ or —NH—CO—$R_3$ wherein $R_3$ is —$(CH_2)_n$—CO— in which n is an integer from 0 to 4, inclusive.

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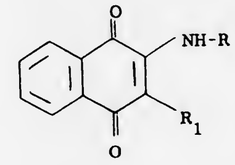
**3,935,246**

## NAPHTHOQUINONES

**Karl Bernauer, Allschwil; Erika Böhni, Basel, both of Switzerland, and Janos Borgulya, Upper Montclair, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.**

**Filed Dec. 18, 1974, Ser. No. 533,902**
**Claims priority, application Switzerland, Jan. 10, 1974, 282/74**
**Int. Cl.² C07C** *97/22*
**U.S. Cl. 260—396 R** **3 Claims**

**1.** A compound represented by the formula



wherein R is cyclopentyl or cycloheptyl and $R_1$ is halogen or lower alkoxy.

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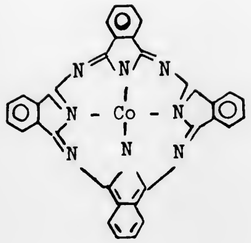
**3,935,247**

## OXIDATION OF ALKYLATED PHENOLS TO P-BENZOQUINONES

**Vipin M. Kothari, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio**

**Filed Sept. 28, 1973, Ser. No. 401,726**
**Int. Cl.² C07C** *49/64*
**U.S. Cl. 260—396 R** **5 Claims**

**1.** A process which comprises reacting an alkylated phenol selected from the group consisting of 2,6-dialkylphenol, 2,5-dialkylphenol and 2,3-dialkylphenol wherein the alkyl groups contain from one to eight carbon atoms with oxygen or oxygen bearing gas at a temperature of from about 0° C. to about 100° C. at a pressure of from about 10 pounds per square inch to about 1,000 pounds per square inch in the presence of from about ½ mole percent to 15 mole percent per mole of alkylated phenol of a cobalt phthalocyanine catalyst of the general formula



in the presence of a solvent selected from the group consisting of (I) n-alkyl substituted amides selected from the group consisting of dimethylformamide, cyclohexylmethylformamide, diphenylformamide, phenylmethylformamide, and 1-methyl-2-pyrrolidinone, (II) sulfoxides selected from the group consisting of dimethylsulfoxide, cyclohexylmethylsulfoxide, and phenylmethylsulfoxide, and (III) alkanols selected from the group consisting of methanol and ethanol.

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### 3,935,248
### ANTHRAQUINONE DYES

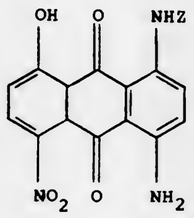
**John Stuart Manson, and Denis Robert Annesley Ridyard, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England**

**Continuation of Ser. No. 243,857, April 13, 1972, abandoned. This application Nov. 19, 1974, Ser. No. 525,276**

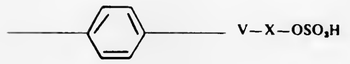
**Int. Cl.² C07C** *97/24;* **C09B** *1/16*

**U.S. Cl. 260—378** **2 Claims**

**1.** A water-soluble anthraquinone dye having the formula



wherein Z represents a member selected from the group consisting of (a) -X-$OSO_3H$ wherein X represents alkylene containing 2 to 5 carbon atoms and

(b) 

wherein V represents oxygen, sulphur, ethylimino or a direct link and X represents ethylene.

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### 3,935,249
### TAR REDUCTION BY INORGANIC HALIDE FOR REACTION OF UNSATURATED ANHYDRIDE AND POLYBUTENE

**Imre Puskas, Glen Ellyn, and John A. Cengel, Wheaton, both of Ill., assignors to Standard Oil Company, Chicago, Ill.**

**Filed May 10, 1973, Ser. No. 358,914**

**Int. Cl.² C07D** *307/60*

**U.S. Cl. 260—346.8 R** **3 Claims**

**1.** In the reaction between 300–3,000 $M_n$ butene polymer and maleic anhydride to prepare polybutenyl-substituted succinic anhydride, the improvement comprising conducting said reaction at a temperature of from 150° to 300°C in the presence of 5–200 ppm based on said polymer of dry hydrogen chloride or calcium bromide.

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### 3,935,250
### N-LOWER ALKYL, N-LOWER ALKYLIMINOMETHYL CARBAMIC ACID ESTERS OF αNAPHTHOL AND SUBSTITUTED PHENOLS

**Georg Pissiotas, Lorrach, Germany, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.**

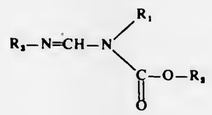
**Filed Oct. 1, 1973, Ser. No. 402,648**

**Claims priority, application Switzerland, Oct. 12, 1972, 14963/72; July 30, 1973, 10999/73**

**Int. Cl.² C07D** *307/79*

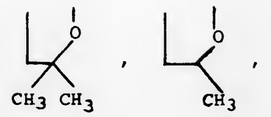
**U.S. Cl. 260—346.2 R** **6 Claims**

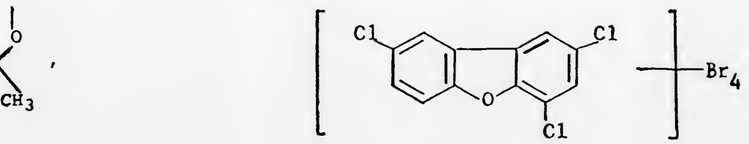
**1.** A compound of the formula



or salts thereof, wherein $R_1$ represents $C_1$–$C_4$ alkyl, $R_2$ represents α-naphthyl or phenyl substituted by halogen, $C_1$–$C_8$ alkyl, $C_1$–$C_4$ haloalkyl, $C_1$–$C_4$ alkoxy, alkoxyalkyl with one to four carbon atoms in each alkyl moiety, $C_1$–$C_4$ alkylthio, $C_3$–$C_4$ alkynyloxy, di-($C_1$–$C_4$) alkylamino, di-($C_3$–$C_8$) alkenylamino, di-($C_3$–$C_8$) alkynylamino, hydroxy, cyano, nitro, cyclopentyl, mono-($C_1$–$C_4$) alkylaminomethyleneamino, di-($C_1$–$C_4$) alkylaminomethyleneimino,

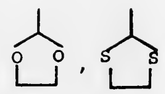




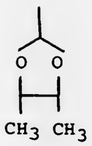


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or



groups, and $R_3$ represents $C_1$–$C_4$ alkyl.

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### 3,935,251
### 2,4,8-TRICHLORO-TRI AND TETRA BROMODIBENZOFURANS

**Joachim Dazzi, Riehen; Rudolf Kirchmayr, Munchenstein, and Henri Dietrich, Arlesheim, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.**

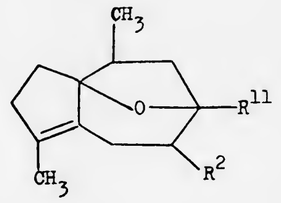
**Filed Mar. 7, 1974, Ser. No. 449,176**

**Claims priority, application Switzerland, Mar. 20, 1973, 4028/73**

**Int. Cl.² C07D** *307/91*

**U.S. Cl. 260—346.2 M** **2 Claims**

**1.** A 2,4,8-Trichloro-tetrabromodibenzofuran of the formula



III

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### 3,935,252
### METHOD OF MANUFACTURING FUNGIBLE POLYTETRAMETHYLENE ETHER GLYCOL

**Hideo Tomomatsu, Crystal Lake, Ill., assignor to The Quaker Oats Company, Chicago, Ill.**

**Filed Sept. 18, 1974, Ser. No. 566,968**

**Int. Cl.² C07D** *307/34*

**U.S. Cl. 260—346.1 R** **3 Claims**

**1.** In a method for manufacturing polytetramethylene ether glycol in which ingredient tetrahydrofuran is polymerized with a tetrahydrofuran-polymerization catalyst to form a catalytically active tetrahydrofuran-catalyst-polymer mixture, and wherein the catalytic activity of said catalytically active mixture is terminated by the addition of water or 1,4-butene diol thereto, wherein the resulting mixture includes excess tetrahydrofuran and polytetramethylene ether glycol, wherein said resulting mixture is subjected to distillation for removal of said excess tetrahydrofuran therefrom, to contact with solid neutralizing agents, and to mechanical separation steps for removal of water therefrom, the improvement comprising: prior to contacting of said ingredient tetraphydrofuran with the tetrahydrofuran-polymerization catalyst, contacting liquid tetrahydrofuran containing n-butyl aldehyde and having a water content of less than 0.5 percent with a molecular sieve having a nominal pore size in the range 4–5 A inclusive and having a heat of adsorption of about 1,800 btu/pound water ± 100 but/pound of water, continuing said contacting until said n-butyl aldehyde is completely removed from the liquid tetrahydrofuran, separating liquid tetrahydrofuran from the molecular sieve, and using the separated tetrahydrofuran as said tetrahydrofuran ingregient.

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### 3,935,253
### NOVEL ODORANT

**Peter Naegeli, Wettingen, Switzerland, assignor to Givaudan Corporation, Clifton, N.J.**

**Filed May 23, 1973, Ser. No. 363,207**

**Claims priority, application Switzerland, June 5, 1972, 8265/72**

**Int. Cl.² C07D** *311/02*

**U.S. Cl. 260—345.2** **5 Claims**

**1.** A compound of the formula

wherein
$R^2$ represents hydrogen or lower alkyl and
$R^{11}$ represents hydrogen or lower alkyl.

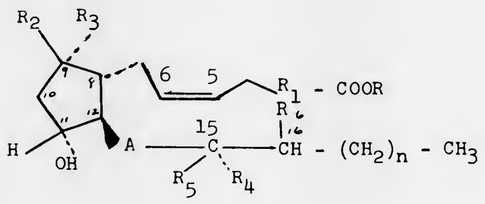
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3,935,254
## 5C-PROSTEN-13-YNOIC ACIDS

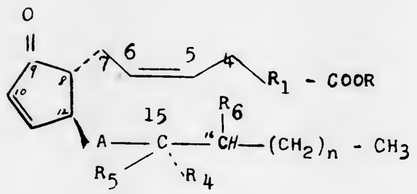
Carmelo Gandolfi; Gianfederico Doria, both of Milan, and Pietro Gaio, Belluno, Italy, assignors to Carlo Erba S.p.A., Milan, Italy

Filed Mar. 30, 1973, Ser. No. 346,249
Claims priority, application Italy, Apr. 13, 1972, 23063/72; Apr. 28, 1972, 23662/72
Int. Cl.² C07C *61/38, 61/71*
U.S. Cl. 260—514 D 18 Claims

1. Compounds having general formulas (I)



(I)



(II)

and the racemates thereof,
wherein R is a hydrogen atom, a pharmaceutically acceptable cation or a $C_{1-12}$ alkyl group; $R_1$ is $-CH_2CH_2-$, $-OCH_2-$, $-SCH_2-$, $-CH=CH-$ or $-C\equiv C-$; one of $R_2$ and $R_3$ is a hydrogen atom and the other is a hydroxy group or $R_2$ and $R_3$ together form an oxo-group; A is $-C\equiv C-$, one of $R_4$ and $R_5$ is a hydrogen atom and the other is a hydroxy group; $R_6$ is a hydrogen atom or a $C_{1-4}$ alkyl group; n is 3 or 4; and wherein the chains bound to the carbon atoms in the 8-position and in the 12-position have the trans-configuration.

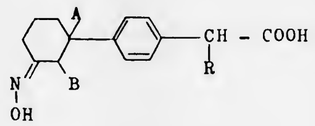
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3,935,255
## PHENYLACETIC ACID DERIVATIVES

Jacques Georges Maillard, Paris, France, assignor to Laboratoires Jacques Logeais, Issy-les-Moulineaux, France

Filed Aug. 28, 1974, Ser. No. 501,455
Claims priority, application France, Sept. 17, 1973, 73.33276
Int. Cl.² C07C *119/14*; A01N *9/20*
U.S. Cl. 260—518 R 2 Claims

1. A compound selected from the compounds having the formula



(1) in which R is selected from hydrogen and alkyl having 1–4 carbon atoms and A and B, when taken separately, each represent a hydrogen atom and, when taken together, form a carbon-carbon bond, and their therapeutically acceptable salts with inorganic and organic bases.

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3,935,256
## PROCESS FOR THE PRODUCTION OF THE CALCIUM SALT OF PANTOTHENIC ACID

John F. Verbeeck, Libertyville, Ill., assignor to Thompson-Hayward Chem. Co., Kansas City, Kans.

Filed Sept. 6, 1974, Ser. No. 503,796
Int. Cl.² C07C *99/04, 99/10*
U.S. Cl. 260—534 A 3 Claims

1. An improved process for the preparation of the calcium salt of pantothenic acid which comprises the steps of
reacting acrylonitrile with ammonia in aqueous solution to from beta-aminopropionitrile;
hydrolysis of beta-aminopropionitrile in the presence of sodium hydroxide to form the sodium salt of beta-alanine;
reacting the sodium slat of beta-alanine with calcium chloride in a liquid which will from an azeotropic mixture with water to form the calcium salt of beta-alanine;
removing water from the reaction mixture by azeotropic distillation to form an anhydrous calcium salt of beta-alanine; and



reacting the anhydrous calcium salt of beta-alanine with dl-pantolactone to form dl-calcium pantothenate.

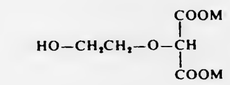
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3,935,257
## CHEMICAL COMPOUNDS

Dennis A. Ruest, Manchester; C. Y. Shen, St. Louis, and John L. Mason, University City, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Mar. 18, 1974, Ser. No. 452,307
Int. Cl.² C07C *59/12*
U.S. Cl. 260—535 P 3 Claims

1. Compounds represented by the formula



wherein M is alkali metal, and acids thereof.

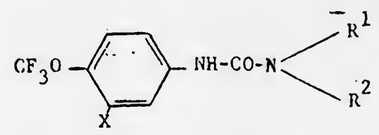
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3,935,258
## PROCESS FOR MAKING N-ARYLUREA COMPOUNDS AND HERBICIDAL COMPOSITIONS CONTAINING SAME

Jan Hempel, Leverkusen, and Erich Klauke, Odenthal-Hahnenberg, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

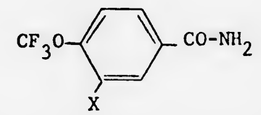
Filed June 1, 1972, Ser. No. 258,705
Claims priority, application Germany, June 12, 1971, 2129200
Int. Cl.² C07C *127/19*
U.S. Cl. 260—553 A 5 Claims

1. Process for the preparation of a substituted N-phenylurea compound of the formula



(I),

wherein
X is hydrogen or chlorine;
$R^1$ is hydrogen, methyl or $\beta$-hydroxyethyl, and
$R^2$ is alkyl with 1 to 3 carbon atoms or $\beta$-hydroxyethyl
which process comprises reacting in substantially equimolar amounts an substituted benzoic acid amide of the formula



(II),

in which
X is defined as above,
with an alkali metal hypohalite or an alkaline earth metal hypohalite at a temperature of from 0° to 40°C in the presence of water as a diluent, and adding to the resulting aqueous solution an amine of the general formula



(III)

in which
$R^1$ and $R^2$ have the meanings stated above, and then reading at an elevated temperature of 50°– 70°C.

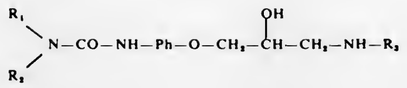
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3,935,259
## AMINES AND PROCESSES FOR THEIR MANUFACTURE

Max Wilhelm, Watchung, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 101,393, Dec. 24, 1970, abandoned. This application May 17, 1973, Ser. No. 361,373
Claims priority, application Switzerland, Nov. 13, 1970, 16788/70; Jan. 8, 1970, 204/70
Int. Cl.² C07C *127/18*
U.S. Cl. 260—553 A 8 Claims

1. A compound of formula



wherein $R_1$, $R_2$ and $R_3$ each represent lower alkyl having up to 7 carbon atoms or $R_1$ is hydrogen, Ph represents a meta- or paraphenylene bivalent radical, unsubstituted or substituted by a member of the group consisting of allyl, allyloxy, lower alkoxy of up to 4 carbon atoms, chlorine or bromine, and salts thereof with pharmaceutically acceptable acids.

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**3,935,260**

## AUTO-CONDENSATION PRODUCTS OF UREA

**Fritz Dieter Schlosser, Germiston, South Africa, assignor to African Explosives & Chemical Industries Limited, Transvaal, South Africa**

**Continuation of Ser. No. 190,273, Oct. 18, 1971, abandoned. This application Oct. 18, 1973, Ser. No. 407,512**

**Claims priority, application South Africa, Oct. 21, 1970, 70/7156**

**Int. Cl.² C07C** *127/24*

**U.S. Cl. 260—553 B** **19 Claims**

1. Process for producing a particulate mixture of auto-condensation products of urea containing predominantly biuret which is suitable as a non-protein nitrogen supplement for ruminant feeds comprising heating at a temperature between 150°C and 180°C with continuous stirring in a reaction vessel having a smooth surface, finely divided urea dispersed in a non-toxic branched chain paraffin which is inert to urea and its auto-condensation products, has a boiling point in the range of 150° and 180°C and in which urea or its auto-condensation products have a solubility at ambient temperature of not more than 5% by weight of the urea of its auto-condensation products, said paraffin containing a non-toxic surface active agent selected from the group consisting of cationic surface active agents, nonionic surface active agents, anionic surface active agents and mixtures of cationic and anionic surface active agents in an amount of from 0.01 to 1.0 percent m/m of the initial quantity of urea, continuing said heating until at least 90 percent of the urea is converted into said mixture of auto-condensation products and separating the particulate mixture thus formed from the branched chain paraffin.

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**3,935,261**

## CYCLOPENTANE DERIVATIVES

**Michael Peter Lear Caton, Upminster; Edward Charles John Coffee, London, and Gordon Leonard Watkins, Dagenham, all of England, assignors to May & Baker Limited, England**

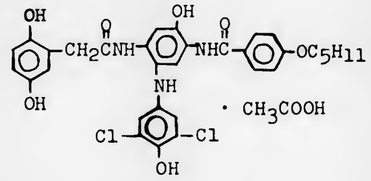
**Division of Ser. No. 343,460, March 21, 1973, Pat. No. 3,884,942, which is a continuation-in-part of Ser. No. 108,981, Jan. 22, 1971, abandoned. This application Sept. 3, 1974, Ser. No. 502,976**

**Claims priority, application United Kingdom, Jan. 23, 1970, 3494/70; Mar. 2, 1973, 10402/73**

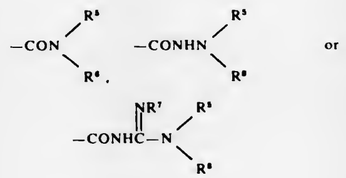
**Int. Cl.² C07C** *102/00, 103/37*

**U.S. Cl. 260—557 R** **3 Claims**

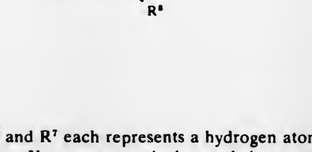
1. A cyclopentane compound of the formula:



wherein $R^1$ represents a hydrogen atom or a lower alkyl group, $R^2$ represents a straight- or branched-chain alkyl group of 1 to 10 carbon atoms, $R^3$ represents a hydrogen atom or a lower alkyl, lower alkenyl, phenyl-(lower)alkyl and lower alkanoyl group, $R^4$ represents a group of formula:



or



wherein $R^5$, $R^6$ and $R^7$ each represents a hydrogen atom or a lower alkyl group, X represents a vinylene, ethylene, or cyclopropylene group, and $n$ represents 5, 6, 7 or 8.

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**3,935,262**

## OXICHROMIC COMPOUNDS, STABILIZED OXICHROMIC COMPOUNDS AND PROCESSES FOR PREPARING SAME

**Gregory James Lestina, Rochester, and Walter Monroe Bush, Victor, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.**

**Continuation-in-part of Ser. No. 206,949, Dec. 10, 1971, abandoned, and a continuation-in-part of Ser. No. 308,869, Nov. 22, 1972, Pat. No. 3,880,658. This application Sept. 27, 1973, Ser. No. 401,327**

**Int. Cl.² C07C** *103/22*

**U.S. Cl. 260—559 R** **36 Claims**

10. A compound according to claim 1 having the formula:





**3,935,263**

## OXICHROMIC COMPOUNDS, STABILIZED OXICHROMIC COMPOUNDS AND PROCESSES FOR PREPARING SAME

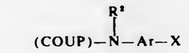
**Gregory James Lestina, Rochester, and Walter Monroe Bush, Victor, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.**

**Continuation-in-part of Ser. No. 206,949, Dec. 10, 1971, abandoned, Continuation-in-part of Ser. No. 308,869, Nov. 22, 1972, Pat. No. 3,880,658. This application Dec. 19, 1973, Ser. No. 426,177**

**Int. Cl.² C07C** *103/20*

**U.S. Cl. 260—559 R** **10 Claims**

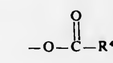
1. A compound having the formula:



wherein (COUP) is a photographic color coupler connected to said nitrogen atom in said formula at the coupling position to provide a reduced azomethine linkage; Ar is an aromatic group containing a carbocyclic arylene nucleus and comprises from 6 to 20 carbon atoms; $R^2$ is a carbonyl-containing group of the formula:



wherein $R^4$ is a) an alkyl group or substituted alkyl group containing from 1 to 12 carbon atoms or b) an aryl group or substituted aryl group containing from 6 to 12 carbon atoms; and X is an hydroxy group, an amino group, an alkylamino group, or the group:



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**3,935,264**

## HYDROGENATION OF DINITROTOLUENE TO TOLUENE DIAMINE

**Sudhir K. Bhutani, West Haven, Conn., assignor to Olin Corporation, New Haven, Conn.**

**Filed June 19, 1974, Ser. No. 480,796**

**Int. Cl.² C07C** *85/10*

**U.S. Cl. 260—580** **13 Claims**

1. In a process for preparing toluene diamine which comprises reacting dinitrotoluene with hydrogen in the presence of an aliphatic alcohol solvent and a hydrogenation catalyst comprised of nickel, platinum or palladium, the improvement which comprises carrying out said reaction in the presence of a proportion of carbon monoxide ranging from about 0.1 to about 10 percent by volume based on the volume of hydrogen which is used.

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**3,935,265**

## VAPOR PHASE CONVERSION OF AROMATIC ESTERS TO AROMATIC ALDEHYDES

**Allen Feinstein, Wheaton, and Ellis K. Fields, River Forest, both of Ill., assignors to Standard Oil Company, Chicago, Ill.**

**Filed May 9, 1974, Ser. No. 468,429**

**Int. Cl.² C07C** *45/00*

**U.S. Cl. 260—599** **5 Claims**

1. A process for converting an alkyl ester of an aromatic carboxylic acid to an aromatic aldehyde by contacting said aromatic ester in the vapor phase with alumina from about 400° to 500°C for about 3 to 100 seconds wherein the aromatic moiety of said ester is selected from the group consisting of phenyl, naphthyl and biphenyl moieties, wherein said aromatic moieties are optionally substituted with substituents selected from the group consisting of halo, alkyl, hydroxyl, carboxyl, amino, alkoxy, alkylthio, aryloxy, cyano, and nitro radicals, the said alkyl moiety of said ester is unsubstituted and is free of $\beta$-hydrogens.

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**3,935,266**

## N-SUBSTITUTED GUANIDINO ACID DERIVATIVES

**Sadao Hashimoto; Ryuji Sakakibara; Yasushi Kurashige; Katsuo Takikawa; Yoko Osame; Hiroshi Minami, and Takashi Suzue, all of Naruto, Japan, assignors to Taiho Pharmaceutical Company, Limited, Tokyo, Japan**

**Filed Oct. 26, 1971, Ser. No. 192,557**

**Claims priority, application Japan, Oct. 28, 1970, 45-95341**

**Int. Cl.² C07C** *103/30*

**U.S. Cl. 260—561 A** **3 Claims**

1. An N-substituted guanidino acid derivative having the following formula of



wherein R is an alkyl having 6 to 15 carbon atoms or phenethyl; A represents an alkyl having 1 to 4 carbon atoms, an alkenyl having 2 to 4 carbon atoms and cyclo hexyl; and $n$ is an integer of 5.

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**3,935,267**

## TETRAHYDRONAPHTHYLOXY-AMINOPROPANOLS AND SALTS THEREOF

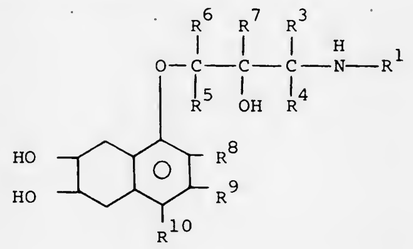
**Frederic Peter Hauck, Somerville; Christopher M. Cimarusti, Somerset, and Venkatachala Lakshmi Narayanan, Hightstown, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.**

**Continuation-in-part of Ser. No. 48,458, June 22, 1970, abandoned. This application Dec. 1, 1971, Ser. No. 203,865**

**Int. Cl.² C07C** *93/06*

**U.S. Cl. 260—570.7** **7 Claims**

1. Compounds of the structure



and stereoisomers and salts thereof, wherein $R^1$ is lower alkyl; $R^3$, $R^4$, $R^5$, $R^6$ and $R^7$ are the same or different and are selected from the group consisting of hydrogen and lower alkyl; and $R^8$, $R^9$ and $R^{10}$ are the same or different and are selected from the group consisting of hydrogen, lower alkyl, lower alkoxy and cycloalkyl.

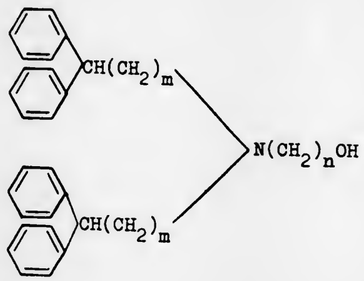
### 3,935,268
### ω-[BIS(ω,ω-DIPHENYLALKYL)AMINO]ALKAN-1-OL AND THEIR SALTS

**Hidehiko Kaneko, Minoo; Jiro Aritomi, Nara, both of Japan, and Yuzuru Yamato, deceased, late of Minoo, Japan by Akiko Yamato, Hiroshi Yamato, Yumi Yamato, heirs, all of Minoo, Japan, assignors to Dainippon Pharmaceutical Co., Ltd., Osaka, Japan**

**Int. Cl.² C07C *91/22***

**U.S. Cl. 260—570 R** **3 Claims**

**1.** ω-[Bis(ω,ω-diphenylalkyl)amino]alkan-1-ol of the formula:



wherein *m* is 2 and *n* is 2 or 3 and the pharmaceutically acceptable acid addition thereof.

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### 3,935,269
### COPOLYMERS OF N-SUBSTITUTED AZIRIDINES AND EPOXIDES EPISULFIDES

**Prella M. Phillips; Clarence R. Dick, both of Lake Jackson, and Joseph M. Baggett, Freeport, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.**

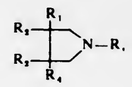
**Continuation of Ser. No. 846,263, July 30, 1969, abandoned. This application Jan. 11, 1974, Ser. No. 432,791**

**Int. Cl.² C07C *135/00*; C08G *6/26***

**U.S. Cl. 260—584 B** **13 Claims**

**1.** A process for preparing a liquid or solid copolymer whose backbone consists essentially of alternating ring opened units of

A. an aziridine of the formula



wherein

1. R is an inert organic group;
2. $R_1$, $R_2$, $R_3$ and $R_4$ are hydrogen, alkyl aryl or aralkyl groups, at least two of them being hydrogen; and

B. a vicinal epoxide of the formula



wherein

1. X is oxygen
2. $R_5$, $R_6$, $R_7$ and $R_8$ are hydrogen, alkyl, aryl, alkaryl, aralkyl, alkenyl, alkoxyalkyl, alkenyloxyalkyl, or $R_6$ and $R_7$ join to form a five or six membered cycloalkyl group, at least two of them being hydrogen;

said copolymer being water insoluble when R is a hydrocarbon radical of at least six carbon atoms, X is oxygen and $R_1$–$R_8$ are each hydrogen:

said process comprising reacting by contacting (A) with (B) in liquid phase at a temperature of at least about 130°C;

provided that when R is a hydrocarbon group of at least six carbon atoms, and $R_1$–$R_8$ are each hydrogen, the process comprises the additional step of recovering a water-insoluble copolymer.

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### 3,935,270
### PROCESS FOR THE PREPARATION OF CYCLOHEXADECENONES AND DERIVATIVES

**Nissim Calderon, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio**

**Continuation-in-part of Ser. No. 664,907, Sept. 1, 1967, Pat. No. 3,439,056. This application Feb. 23, 1968, Ser. No. 707,486The portion of the term of this patent subsequent to Apr. 15, 1986, has been disclaimed.**

**Int. Cl.² C07C *45/04***

**U.S. Cl. 260—586 P** **4 Claims**

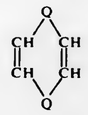
**1.** The method for the preparation of alicyclic ketones which contain 16 carbon atoms in the alicyclic ring which comprises subjecting an alicyclic compound corresponding to the formula:



wherein

1. Q comprises a sequence of six carbon atoms situated in linear succession between the methylidene carbons which constitute the double bond;
2. the carbon atoms in the linear succession of Q may be interconnected by both carbon-carbon single bonds and carbon-carbon double bonds;
3. any of the carbon atoms in the linear succession of Q may be substituted by alkyl radicals; and
4. said alicyclic compounds containing no conjugated double bonds,

while said hydrocarbon is diluted to about 10% in an inert diluent to a catalyst comprising (A) at least one organometallic compound wherein the metal is selected from the group consisting of Ia, IIa, IIb and IIIa groups of the Periodic Table of Elements, the organo portion of said organometallic compound being selected from the group consisting of trialkyls, triaryls, dialkyl halides, alkyl dihalides, dialkyl hydrides, diaryl hydrides, aryl dihydrides and aryl halides; (B) at least one metal salt selected from the group consisting of molybdenum and tungsten halides, acetylacetonates, sulfates, phosphates and nitrates; and (C) at least one compound of the general formula R—Y—H wherein Y is selected from the group of oxygen and sulfur and wherein R is a radical selected from the group consisting of (1) hydrogen, (2) alkyl, (3) aryl, (4) arylalkyl, (5) alkaryl, (6) alkenyl, (7) when Y is S, R is thioalkyl, thioarylalkyl and thioalkaryl, (8) when Y is O, R is alkoxy, arylalkoxy and alkaryloxy and (9) radicals of (2) through (6) wherein at least one hydrogen of said radicals is substituted by a material selected from hydroxyl (OH) and thiol (SH) groups, wherein the molar relationship between catalyst component (A), (B) and (C) are within a molar ratio of B/C ranging from about 0.3/1 to at least about 20/1, and the molar ratio of A/B is within the range of about 0.5/1 to at least 15/1, to form at least one cyclic polyolefin corresponding to the formula:



wherein

1. Q comprises a sequence of six carbon atoms situated in linear succession between the methylidene carbons which constitute the double bond;
2. the carbon atoms in the linear succession of Q may be interconnected by both carbon-carbon single bonds and carbon-carbon double bonds;
3. any of the carbon atoms in the linear succession of Q may be substituted by alkyl radicals; and
4. said alicyclic compounds containing no conjugated double bonds,

and subsequently subjecting said cyclic polyolefin to a sequence of reactons whereby at least one and not more than two of the —CH=CH— groups are converted to a



group to form a cyclic compound containing 16 carbon atoms in the alicyclic ring and containing one or two carbonyl functional groups.

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### 3,935,271
### UNSATURATED ALIPHATIC KETONES

**Hans-Peter Schelling, Oberwil, and Fritz Schaub, Basel, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland**

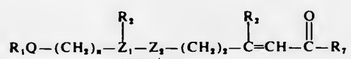
**Continuation-in-part of Ser. No. 257,671, May 30, 1972, abandoned. This application Dec. 19, 1973, Ser. No. 426,229**

**Claims priority, application Switzerland, June 2, 1971, 8036/71**

**Int. Cl.² C07C *49/24***

**U.S. Cl. 260—594** **5 Claims**

**1.** A compound of the formula:



wherein

$R_1$ is alkyl of 1 to 10 carbon atoms; alkenyl of 3 to 10 carbon atoms; alkynyl of 3 to 10 carbon atoms; cycloalkyl of 3 to 6 carbon atoms; cycloalkyl of 3 to 6 carbon atoms substituted by alkyl of 1 to 4 carbon atoms; cycloalkenyl of 5 to 7 carbon atoms; cycloalkenyl of 5 to 7 carbon atoms substituted by alkyl of 1 to 4 carbon atoms; cycloalkyl (of 3 to 6 carbon atoms)alkyl (of 1 to 4 carbon atoms); cycloalkyl(of 3 to 6 carbon atoms)alkyl (of 1 to 4 carbon atoms) ring substituted by alkyl of 1 to 4 carbon atoms; cycloalkenyl(of 5 to 7 carbon atoms)alkyl (of 1 to 4 carbon atoms); or cycloalkenyl (of 5 to 7 carbon atoms) alkyl (of 1 to 4 carbon atoms) ring substituted by alkyl of 1 to 4 carbon atoms;

$R_2$ and $R_3$, which are the same or different are each hydrogen or alkyl of 1 to 4 carbon atoms,

$R_7$ is alkyl of 1 to 5 carbon atoms;

Q is oxygen or sulphur;

$-Z_1-Z_2-$ is $-CH-CH_2-$ or $-C=CH$; and

*n* is an integer 1, 2 or 3.

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### 3,935,272
### PROCESS FOR THE OXIDATION OF OLEFINE COMPOUNDS

**Robert Chapurlat, Rhone, France, assignor to Rhone-Poulenc S.A., Paris, France**

**Filed May 2, 1972, Ser. No. 249,510**

**Claims priority, application France, May 3, 1971, 71.15774**

**Int. Cl.² C07C *45/04***

**U.S. Cl. 260—597 R** **15 Claims**

**1.** Process for the production of acetone by oxidising propylene in an oxygen-free atmosphere, in the gas phase, in the absence of water or in the presence of up to 5% by weight of water, using, as oxidising agent, an oxy-metal compound containing one or more oxygen atoms directly bonded to the metal and not bonded to an organic radical, selected from an oxo-metal compound of the general formula:

$$[(L)_x(O)_nM\text{-}Q]_pM(O)_n(L)_x]^m\ A \qquad (I)$$

in which M represents V, L represents a monodentate or polydentate ligand, A represents an organic or inorganic anion or cation, Q represents oxygen or sulphur, *x* is an integer greater than or equal to zero, *p* is equal to zero or one, *m* is a positive or negative integer and *n* is an integer greater than or equal to zero such that there is one or more oxygen atoms directly bonded to the metal and not bonded to an organic radical.

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### 3,935,273
### NAPHTHYL ACETALDEHYDE DERIVATIVES

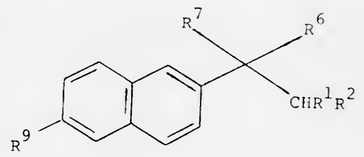
**John H. Fried, and Ian T. Harrison, both of Palo Alto, Calif., assignors to Syntex Corporation, Palo Alto, Calif.**

**Division of Ser. No. 222,278, Jan. 31, 1972, Pat. No. 3,821,253, which is a division of Ser. No. 814,855, April 9, 1969, Pat. No. 3,663,713, Continuation-in-part of Ser. No. 741,900, July 2, 1968, Pat. No. 3,626,012. This application Apr. 25, 1974, Ser. No. 464,029. The portion of the term of this patent subsequent to Dec. 7, 1988, has been disclaimed.**

**Int. Cl.² C07C *47/52***

**U.S. Cl. 260—600 R** **11 Claims**

**1.** A compound selected from the group of compounds represented by the formula:



(A)

wherein

$R^1$ and $R^2$ are alkoxy having from 1 to 6 carbons, cycloalkoxy having from 3 to 7 carbons, cycloalkylmethoxy having from 4 to 8 carbons, 2-cycloalkylethoxy having 5 to 9 carbons, 3-cycloalkylpropoxy having from 6 to 10 carbons, monocyclic arylmethoxy having from 7 to 13 carbons, 2-phenylethoxy or 3-phenylpropoxy; or $R^1$ and $R^2$ taken together are oxo;

one of $R^6$ and $R^7$ is hydrogen and the other is hydrogen, methyl, ethyl or difluoromethyl; or $R^8$ and $R^7$ taken together are methylene, ethylene or halomethylene; and

$R^9$ is difluoromethoxy, alkoxymethyloxy having up to 7 carbons, difluoromethylthio, alkoxymethylthio having up to 6 carbons, or alkylthiomethylthio having up to 7 carbons.

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## 3,935,274
## PROCESS FOR THE CONTINUOUS PREPARATION OF HYDROXYPIVALDEHYDE

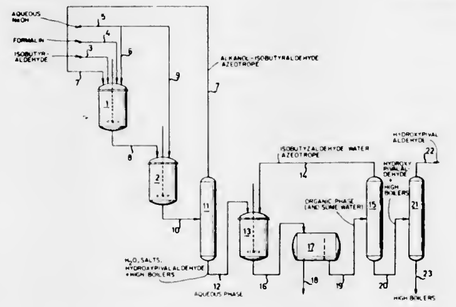
**Günter Jacobsen, Frankfurt am Main; Hans Fernholz, Fischbach, Taunus, and Dieter Freudenberger, Hofheim, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany**

**Filed Apr. 21, 1969, Ser. No. 817,961**

**Claims priority, application Germany, Apr. 24, 1968, 1768274**

**Int. Cl. C07c *47/18***

**U.S. Cl. 260—602** **6 Claims**



**1.** A process for the continuous preparation and recovery of hydroxypivalaldehyde which comprises:

(1) reacting isobutyraldehyde and formaldehyde in a homogeneous reaction mixture at a temperature from 30°C. to 70°C. in a first stirred vessel, said said reaction mixture being formed by introducing into said vessel an aqueous formaldehyde solution, isobutyraldehyde in a stoichiometric amount or in excess up to 100 percent, an aqueous 30 percent to 50 percent sodium hydroxide solution as a catalyst, said sodium hydroxide being present in an amount of 0.5 to 4.0 grams per mol of hydroxypivalic aldehyde produced, and an alkanol having 1 to 4 carbon atoms, said alkanol being present in an amount approximately equal in weight to the amount of water contributed by said aqueous formaldehyde solution and said aqueous sodium hydroxide solution, the ratio of the sum of the isobutyraldehyde and formaldehyde reagent to the sum of the water and alkanol being from 0.7 to 1.3;

2. introducing the reaction mixture from said first stirred vessel into at least one additional stirred vessel for further reaction at a temperature from 30°to 70°C., said additional stirred vessel being connected with said first stirred vessel in a cascade arrangement, and adding additional catalyst solution to said additional stirred vessel in the same amount as is present in said first stirred vessel;

3. distilling unreacted isobutyraldehyde from the reaction mixture, after reaction in said additional stirred vessel, as an azeotrope with said alkanol and returning the distillate to said first stirred vessel;

4. separating the undistilled residue into an aqueous phase and an organic phase in a separation zone by the addition thereto of 50 to 500 grams of isobutyraldehyde per mol of hydroxypivalaldehyde formed in the reaction;

5. distilling the organic phase to remove water and isobutyraldehyde as an azeotrope thereof and returning the isobutyraldehyde, with dissolved water therein, to the separation zone; and

6. vacuum distilling the undistilled residue to obtain pure hydroxypivalaldehyde.

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## 3,935,275
## PROCESS FOR PREPARATION OF TERPENE FLAVORANTS AND NOVEL INTERMEDIATES THEREFOR

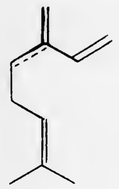
**Erhard Bertele, Dubendorf, and Peter Schudel, Grut near Wetzikon, both of Switzerland, assignors to Givaudan Corporation, Clifton, N.J.**

**Division of Ser. No. 742,178, July 3, 1968, Pat. No. 3,872,172. This application Jan. 25, 1974, Ser. No. 436,754**

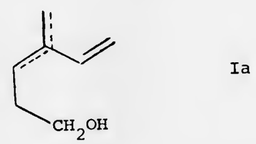
**Int. Cl.² C07C *45/16***

**U.S. Cl. 260—603 HF** **3 Claims**

**1.** Process which comprises ozonizing a compound having the formula:



with not more than about 1 mole equivalent of ozone per mole of said compound at temperatures below ambient room temperature and decomposing the ozonization product in the presence of a reducing agent suitable for reducing ozonization products to alcohols, selected from the group consisting of a complex metal hydride, hydrogen catalytically activiated by noble-or transition metals or complexes of such said metals, to form the product having the formula:



Ia

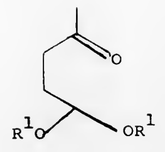
converting the alcoholic hydroxyl group to an iodo substituent, reacting the resulting iodo-compound with triphenyl phosphine to give the corresponding phosphonium iodide, neutralizing said compound to form



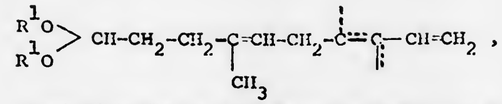
wherein Ph signifies a phenyl group,

reacting the latter with the ketone acetal of the formula

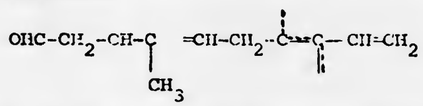




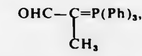
to form



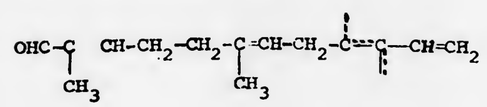
wherein $R^1$ signifies lower alkyl groups which may be linked together to form a lower alkylene group, hydrolyzing the resulting triene acetal which is obtained to the triene aldehyde of the formula:



and reacting the resulting triene aldehyde with a phosphorane of the general formula:



wherein Ph has the above significance, to give a corresponding tetraene aldehyde of the formula:



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## 3,935,276
## PROCESS FOR THE MANUFACTURE OF METHYL MERCAPTAN

**Georges Biola, Venissieux; Bernard Buathier; André Combes, both of Lyon, and Michel Martin, Les Roches-de-Condrieu, all of France, assignors to Rhone-Poulenc Industries, Decines, France**

**Filed Aug. 28, 1974, Ser. No. 501,293**

**Claims priority, application France, Nov. 30, 1973, 73.43539**

**Int. Cl.² C07C *148/00***

**U.S. Cl. 260—609 R** **14 Claims**

**1.** In a catalytic process for the vapor phase synthesis of methyl mercaptan by the reaction of hydrogen sulfide and methanol, the improvement comprising dividing the catalyst charge into separate portions to establish at least three catalytic zones within the catalyst bed, introducing the total theoretical amount of hydrogen sulfide into the first of said catalytic zones, introducing preselected amounts of methanol reagent into said catalytic zones wherein the molar ratio of hydrogen sulfide to methanol is between about 1.10 to 2.5 whereby the temperature in each of said catalytic zones is maintained between about 280°C. and 450°C. and recovering the methyl mercaptan product exiting from said catalyst bed.

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## 3,935,277
## NEW $R_f$-GLYCOLS CONTAINING TWO PERFLUOROALKYLTHIO GROUPS AND USEFUL COMPOSITIONS THEREFROM

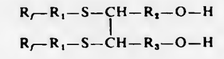
**Robert Ernest Arthur Dear, Mount Kisco, and Robert Allan Falk, New City, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.**

**Filed Feb. 4, 1974, Ser. No. 439,497**

**Int. Cl.² C07C *149/16***

**U.S. Cl. 260—609 R** **12 Claims**

**1.** A compound of the formula



in which

$R_f$ is straight or branched-chain perfluoroalkyl of 1 to 18 carbon atoms or said perfluoroalkyl substituted by perfluoroalkoxy of 2 to 6 carbon atoms;

$R_1$ is branched or straight chain alkylene of 1 to 12 carbon atoms, alkylenethioalkylene of 2 to 12 carbon atoms, or alkyleneoxyalkylene of 2 to 12 carbon atom; and

$R_2$ and $R_3$ each independently is straight or branched chain alkylene of 1 to 12 carbon atoms; straight or branched chain alkylene of 1 to 12 carbon atoms, substituted by one or two of phenyl or cyclohexyl; or $R_2$ and $R_3$ are a group of the formula $C_mH_{2m}(OC_kH_{2k})_r$,

where

*m* is an integer from 1 to 12,

*k* is an integer from 2 to 6, and

*r* is an integer from 1 to 40.

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## 3,935,278
## PROCESS FOR PREPARING DIPEROXIDE FROM AN ORGANIC HYDRO-PEROXIDE AND A KETONE

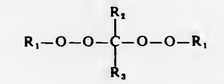
**Rudolph Rosenthal, Broomall, Pa., and Harold A. Sorgenti, Olympia Fields, Ill., assignors to Atlantic Richfield Company, Los Angeles, Calif.**

**Filed Mar. 4, 1970, Ser. No. 16,564**

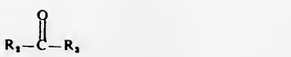
**Int. Cl.² C07C *179/02***

**U.S. Cl. 260—610 R** **5 Claims**

**1.** In a method for preparing compounds of the formula



wherein $R_1$, $R_2$ and $R_3$ are independently selected from hydrocarbyl radicals containing from one to sixteen carbon atoms and wherein $R_2$ and $R_3$ can be joined in an alicyclic radical, by the reaction of organic hydroperoxide of the formula $R_1$—O—O—H with a compound of the formula



at temperatures in the range of −10°C. to 100°C., the improvement of carrying out the reaction in the presence of a catalyst concentration within the range from about 0.01 to 2 weight percent of metal based upon the total weight of the starting materials, said catalyst being molybdenum or vanadium compounds or complexes soluble in the reaction mixture.

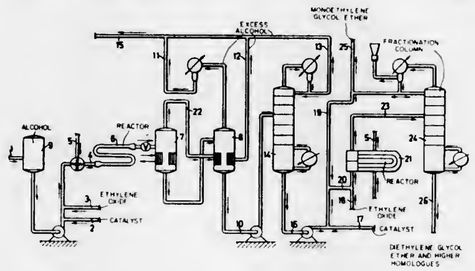
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**3,935,279**

## PROCESS FOR THE PRODUCTION OF GLYCOL ETHERS

**Gioacchino Cocuzza, Catania; Benedetto Calcagno, Milan, and Gianni Torreggiani, Varese, all of Italy, assignors to Societa'Italiana Resine S.I.R. S.p.A., Milan, Italy**

**Filed Dec. 26, 1973, Ser. No. 428,575**
**Claims priority, application Italy, Dec. 22, 1972, 33441/72**
**Int. Cl.² C07C *41/02***
**U.S. Cl. 260—615 R** **7 Claims**




1. An improved process for the production of ethylene glycol ethers by the reaction of ethylene oxide with $C_1$–$C_4$ aliphatic alcohols, wherein the improvement comprises

contacting a $C_1$–$C_4$ alkanol and ethylene oxide in a first reaction stage, under adiabotic conditions, in a molar ratio of from about 3:1 to 20:1, at a temperature of from about 70° to 220°C., at a pressure of from about 10 to 50 Kg/cm²;

evaporating excess alcohol from ethylene glycol monoalkyl ethers obtained as the reaction products in the first stage;

contacting the ethylene glycol monoalkyl ethers with ethylene oxide in a molar ratio of from about 1:1 to 10:1 and with monoethylene glycol monoalkyl ether in a second reaction stage at a temperature of from about 100° to 250°C., under isothermal conditions, at a pressure of from about 5 to 20 kg/cm²;

fractionating monoethylene glycol monoalkyl ether and diethylene glycol monoalkyl ether from the reaction products of the second stage and partly recycling the monoethylene glycol monoalkyl ether to the second stage, and discharging the remainder of the monoethylene glycol monoalkyl ether, maintaining a weight ratio of discharged fraction to the recycled fraction of from about 0.5:1 to 5:1.

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**3,935,280**

## REDUCTION OF AMINO ACIDS IN THE PRESENCE OF BORON TRIFLUORIDE

**Clinton F. Lane, Milwaukee, Wis., assignor to Aldrich-Boranes, Inc., Milwaukee, Wis.**

**Filed Jan. 10, 1975, Ser. No. 540,007**
**Int. Cl.² C07C *29/00***
**U.S. Cl. 260—618 H** **8 Claims**

1. A process for the reduction of an amino acid to an amino alcohol which comprises contacting a mixture of the said amino acid and boron trifluoride or ether complex thereof with either diborane, a borane-ether complex or a borane-organic sulfide complex.

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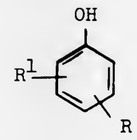
**3,935,281**

## PHENOLIC ANTIOXIDANTS PREPARED FROM A PENTACYCLO-TETRADECA-5,11-DIENE

**Kirkwood S. Cottman, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio**

**Filed May 6, 1974, Ser. No. 467,424**
**Int. Cl.² C07C *37/14*, *39/17***
**U.S. Cl. 260—619 B** **5 Claims**

1. A reaction product prepared by reacting a mixture comprising (A) at least one phenolic reactant conforming to the following structural formula



wherein R is selected from the group consisting of hydrogen, alkyl radicals having from 1 to 12 carbon atoms, cycloalkyl radicals having from 5 to 12 carbon atoms, aralkyl radicals having from 7 to 12 carbon atoms, and aryl radicals having 6 to 12 carbon atoms and $R^1$ is selected from the group consisting of hydrogen and tertiary alkyl radicals having from 4 to 12 carbon atoms and (B) pentacyclo [8.2.1.$1^{4,7}$.$0^{2,9}$.$0^{3,8}$]tetradeca-5,11-diene, in the presence of a Friedel-Crafts catalyst, at a temperature of from 25° C. to 160° C. the molar ratio of the pentacyclo compound to the phenolic reactant being from 1:1 to 1:10.

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**3,935,282**

## PROCESS FOR PREPARATION OF α-NAPHTHOL

**Ken-ichi Kudo, Niihama; Tadayuki Ohmae, Kobe, and Akihiko Uno, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan**

**Filed May 6, 1974, Ser. No. 467,541**
**Int. Cl.² C07C *39/14***
**U.S. Cl. 260—621 H** **3 Claims**

1. A process for preparing α-naphthol, which consists essentially of dehydrogenating ketotetrahydronaphthalene at a temperature of from 200 to 450°C at from atmospheric pressure to a slightly elevated pressure, in the presence of a catalyst comprising (1) platinum or a platinum compound selected from the group consisting of chloroplatinic acid and the salts thereof; (2) an alkali metal salt selected from the group consisting of sodium sulfate, sodium carbonate, sodium acetate, sodium chloride and sodium chloroplatinate; and (3) a maganese compound selected from the group consisting of maganous sulfate, manganous chloride, manganous nitrate, manganous acetate, manganic sulfate and sodium permanganate and/or a chromium compound selected from the group consisting of chromous sulfate, chromous acetate, chromic chloride, chromium trioxide and sodium bichromate; supported on a γ-alumina carrier.



**3,935,283**

## PRODUCTION OF HYDROQUINONE

**Nicholas P. Greco, Edgewood, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.**

**Continuation-in-part of Ser. No. 267,534, June 29, 1972, Pat. No. 3,862,247, which is a continuation-in-part of Ser. No. 16,545, March 4, 1970, abandoned, and a continuation-in-part of Ser. No. 447,848, March 4, 1974, abandoned, which is a continuation of Ser. No. 296.260, Oct. 10, 1972. This application Jan. 17, 1975, Ser. No. 542,086**
**Int. Cl.² C07C *39/10***
**U.S. Cl. 260—621 M** **7 Claims**

1. A process for producing hydroquinone comprising:

a. hydrogenating nitrobenzene in an aqueous acid medium and in the presence of an acid resistant reducing catalyst selected from the group consisting of platinum, platinum on carbon, platinum sulfide on carbon, molybdenum sulfide on carbon and molybdenum sulfide at an elevated temperature at 130° to 160°C at an elevated pressure until hydrogen absorption by the nitrobenzene ceases; the ingredient for imparting acid characteristics to the medium being present in at least an effective molar quantity with respect to the nitrobenzene and being selected from the group consisting of sulfuric acid, phosphoric acid and ammonium bisulfate;

b. steam distilling residual nitrobenzene from the reaction medium;

c. filtering the catalyst from the reaction medium;

d. adding sufficient water to provide 40 to about 120 moles of water per mole of nitrobenzene initially present;

e. maintaining the aqueous reaction medium at a temperature of from 200 to 300°C from a time sufficient to hydrolyze the hydrogenated product to hydroquinone,

f. cooling the aqueous reaction medium, and

g. extracting the hydroquinone from said cooled aqueous reaction medium with an organic water-immiscible solvent.

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**3,935,284**

## HOMOGENEOUS HYDROGENATION OF SACCHARIDES USING RUTHENIUM TRIPHENYL PHOSPHINE COMPLEX

**Walter M. Kruse, Wilmington, Del., assignor to ICI United States Inc., Wilmington, Del.**

**Filed Oct. 19, 1973, Ser. No. 407,871**
**Int. Cl.² C07C *29/00***
**U.S. Cl. 260—635 C** **17 Claims**

1. A homogeneous hydrogenation process comprising contacting a solution of a substrate selected from the group consisting of monosaccharides, disaccharides, trisaccharides, polysaccharides and corn starch hydrolyzate with hydrogen under positive pressure in the presence of a catalyst comprising a ruthenium triphenyl phosphine complex having the following general formula:

$RuHCl(PR'_3)_3$

wherein R′ is phenyl, p-methyl phenyl, or p-methoxy phenyl and a strong acid having a pKa equal to less than about 1 and a prototropic organic solvent capable of dissolving the substrate and catalyst at room temperature or at the reaction temperature and about 1 percent to about 30 percent of water based on the total weight of the system.

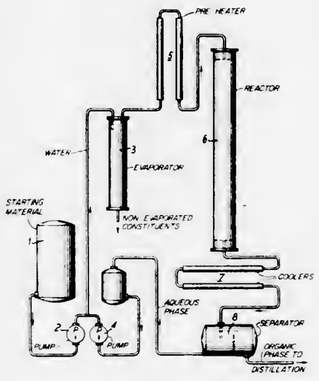
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**3,935,285**

## RECOVERY OF ALCOHOLS FROM ESTERS FORMED DURING AN OXO-SYNTHESIS

**Hans Tummes, Oberhausen-Sterkrade-Nord; Jurgen Falbe, and Boy Cornils, both of Dinslaken, all of Germany, assignors to Ruhrchemie AG, Oberhausen, Germany**

**Continuation of Ser. No. 881,351, Dec. 2, 1969, abandoned. This application Sept. 18, 1972, Ser. No. 290,056**
**Claims priority, application Germany, Dec. 27, 1968, 1817051**
**Int. Cl.² C07C *29/00***
**U.S. Cl. 260—638 R** **7 Claims**




1. In a process for recovering an alcohol from an ester formed by the hydroformylation of an olefinically unsaturated compound with carbon monoxide and hydrogen, the improvement comprising heating the said ester with 2 to 20 % by weight water based on the combined weight of a distillation residue obtained by a distillative separation of aldehyde products from the raw product resulting from said hydroformylation, said products containing formic acid esters in admixture with alcohol and/or higher boiling condensation products from aldehydes and alcohols, at a temperature in the range of 250° to 350°C and passing the heated product in the vapor phase at ordinary atmosphereic pressure over a high surface area porous solid alumina or activated carbon maintained at said temperature and separating and recovering the resulting alcohol product from gaseous products.

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**3,935,286**

## PROCESS FOR REDUCING THE AMOUNT OF TRICHLOROETHYLENE IN 1,2-DICHLOROETHANE

**Jean-Claude Strini, St-Auban, and Jean-Raymond Costes, Damplerre, both of France, assignors to Rhone-Progil, Courbevole, France**

**Filed Dec. 21, 1973, Ser. No. 427,374**
**Claims priority, application France, Dec. 27, 1972, 72.46391**
**Int. Cl.² C07C *17/38*, *19/00*, *21/06***
**U.S. Cl. 260—652 P** **7 Claims**

1. In the process for reducing the amount of trichloroethylene which is present as an impurity in 1,2dichloroethane through chlorination of trichloroethylene in the liquid phase into pentachloroethane at a temperature in the range from 20 to 80°C in the absence of light and in the presence of a Lewis acid catalyst the improvement wherein ethylene is introduced with chlorine and 1,2-dichloroethane containing trichloroethylene in a homogeneous reaction zone, with the mole ratio of the ethylene to trichloroethylene of at least 50 and the mole ratio of trichloroethylene to chlorine of at most 0.02.

### 3,935,287
### STABILIZED METHYL CHLOROFORM

**Norman L. Beckers, Chardon, and Edward A. Rowe, Mentor, both of Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio**

**Division of Ser. No. 243,072, April 11, 1972, Pat. No. 3,864,413, which is a continuation-in-part of Ser. No. 5,101, Jan. 22, 1970, abandoned. This application Oct. 25, 1974, Ser. No. 517,941**

**Int. Cl.² C07C *17/40***

**U.S. Cl. 260—652.5 R** **3 Claims**

1. A stabilized composition which consists essentially of methyl chloroform containing
   a. 0.1 to 2.0 percent by weight of a nitroalkane of from 1 to 3 carbon atoms.
   b. 0.05 to 0.5 percent by weight of an aliphatic epoxide selected from the group consisting of propylene oxide, butylene oxide, epichlorohydrin and methyl glycidyl ether,
   c. 0.1 to 1.0 percent by weight of trioxane, and
   d. 0.1 to 2.0 percent by weight of propylene glycol monomethyl ether.

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### 3,935,288
### PRODUCTION OF OLEFINIC HALIDES

**Herbert Riegel, Maplewood, N.J., assignor to The Lummus Company, Bloomfield, N.J.**

**Continuation-in-part of Ser. No. 663,593, Aug. 28, 1967, abandoned. This application Dec. 2, 1970, Ser. No. 94,536**

**Int. Cl.² C07C *21/02***

**U.S. Cl. 260—656 R** **22 Claims**

1. A process for producing a mono-olefinically unsaturated aliphatic hydrocarbon halide by the catalytic dehydrohalogenation of the corresponding saturated halide, comprising:
   directly contacting said saturated halide with a melt containing a multivalent metal halide in its higher and lower valence state, in an amount effective to catalyze the dehydrohalogenation of the saturated halide, said multivalent metal halide being selected from the group consisting of the halides of manganese, copper, iron and cobalt, said contacting being effected at a temperature from about 300°C to about 650°C, to dehydrohalogenate the saturated halide to said monoolefinically unsaturated aliphatic hydrocarbon halide.

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### 3,935,289
### SELECTIVE HALOGENATION OF PARAFFINS

**Pierre M. J. G. de Radzitzky d'Ostrowick, 101 Avenue Paul Hymans - Woluwe-St-Lambert; Jacques D. V. Hanotier, 36 Avenue Docteur Decroly - uccle., 18 Brussels, and Joseph M. E. Vaerman, 28, Clos Fernand Tonnet, 9 Jette - Brussels, all of Belgium**

**Filed Dec. 11, 1969, Ser. No. 884,317**

**Claims priority, application Belgium, Apr. 11, 1969, 69601**

**Int. Cl.² C07C *109/04***

**U.S. Cl. 260—660** **12 Claims**

1. The process for selective halogenation of a straight-chain or branched-chain hydrocarbon of the type $CH_3—CH_2—R$ in which R is a primary alkyl group, to preferentially halogenate the carbon atom of a methylene group in alpha-position to a terminal methyl group, comprising reacting said hydrocarbon in the liquid phase with a halogen donor selected from the group consisting of molecular bromine and the halogen compounds having the formula



wherein X is a chloro or bromo radical; $Y_1$ and $Y_2$ are members of the group consisting of the fluoro, chloro, bromo, cyano, carboxyl, alkoxycarbonyl, hydrogen and hydrocarbon radicals; $Y_3$ is a fluoro, chloro, bromo, cyano, carboxyl, or alkoxycarbonyl radical; in the presence of a cationic cobaltic salt of a lower fatty acid and an activator selected from the group consisting of sulphuric acid, perchloric acid, trifluoroacetic acid, trichloroacetic acid, tribromoacetic acid, dichloroacetic acid, dibromoacetic acid, boron trifluoride and mixtures thereof, at a temperature between −20°C and +100°C, and in the absence of molecular oxygen.

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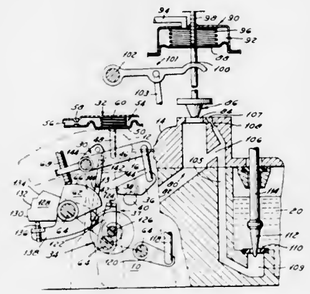
### 3,935,290
### CARBURETOR COLD ENGINE FUEL ENRICHMENT SYSTEM

**William E. Dickensheets, and Albert A. Pruchno, both of Southfield, Mich., assignors to Ford Motor Company, Dearborn, Mich.**

**Filed Aug. 5, 1974, Ser. No. 491,597**

**Int. Cl.² F02M *1/06***

**U.S. Cl. 261—39 B** **7 Claims**



1. A combination cold engine cranking and running fuel enrichment system comprising a variable area venturi carburetor having an induction passage connected to fresh air at one end and adapted to be connected to the engine intake manifold at the other end, the passage containing means forming a venturi including a valve movable to vary the venturi area to control airflow through the venturi, a variable area fuel port adjacent the venturi whereby fuel is inducted into the passage during airflow through the venturi, an auxiliary air bypass passage having an outlet connected to the induction passage and having a separate air inlet, a first valve spring biased to close the inlet and responsive to engine operation to move to an open position, a supplemental fuel passage connected to the air bypass passage at one end to a supply of fuel at the other end, a second valve movably cooperating with the fuel supply to block or variably increase the supply of fuel to the supplemental fuel passage, temperature responsive means connected to the second valve for movement of the second valve in opposite directions as a function of changes in temperature from a predetermined level, and control means to vary the area of both the venturi and fuel port on a predetermined schedule to vary fuel flow and normally biasing the venturi valve towards a closed smallest area venturi position and movable in response to engine operation to open positions increasing the area of the venturi anc changing fuel flow, inoperativeness of the engine effecting a movement of the venturi valve to effect closing down of the venturi area and a closing of the first valve to decrease the air supplies to the induction passage and bypass passage upon subsequent engine cranking operation thereby increasing the manifold signal acting on the supplemental fuel passage to enrichen the starting fuel/air mixture to the engine, subsequent running operation of the engine moving the venturi valve to a larger venturi area and the first valve to an open position thereby increasing the fuel inducted from the fuel port while bleeding the manifold signal acting on the fuel passage to decrease fuel flow through the fuel passage and leaning the fuel/air mixture to the engine to provide an overall fuel/air mixture leaner than during engine cranking operations, means connecting an air bleed passage to the supplemental fuel passage and having an orifice therein, the first valve in its closed position covering the air bleed passage, opening of the first valve decaying the vacuum signal acting on the fuel passage.



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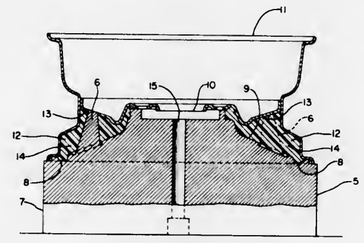
### 3,935,291
### METHOD OF MOLDING POLYURETHANE ARTICLES IN A MOLD COATED WITH THREE MOLD RELEASE AGENTS

**William E. Jackson, Bradner, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio**

**Filed Aug. 28, 1973, Ser. No. 392,400**

**Int. Cl.² B29C *1/04*, *5/00*; B29D *27/04***

**U.S. Cl. 264—331** **5 Claims**



1. In a method of molding polyurethane articles from a polyurethane reaction mixture by applying mold release agent to the mold, charging a polyurethane reaction mixture into the mold and permitting said reaction mixture to react and set prior to removal from the mold, the improvement wherein the mold release coatings comprises a coating of a polyhalocarbon a hydrocarbon mold release agent selected from the class consisting of wax, polyethylene and polypropylene and a coating over the hydrocarbon mold release agent of polyvinyl alcohol.

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### 3,935,292
### CAST POLYMERIZATION PROCESS WITH IMPROVED MOLD RELEASE

**Hiroshi Okubo; Masamichi Kato; Isao Kaetsu, and Akihiko Ito, all of Takasaki, Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan**

**Filed Mar. 20, 1974, Ser. No. 453,044**

**Claims priority, application Japan, Mar. 23, 1973, 48-32605**

**Int. Cl.² B29C *1/04***

**U.S. Cl. 264—338** **6 Claims**

1. A process for producing a cast polymer article using a mold with a glass surface, comprising:
   coating the glass surface of the mold with polysiloxane or silicone oil;
   heating the polysiloxane or silicone oil coating on the surface at a temperature in the range of from about 150°C to about 350°C at which the percent gel fraction of the baked polysiloxane or silicone oil determined by extracting in toluene at 60°C for 48 hours is at the most 50 percent;
   wiping the coated and baked polysiloxane or silicone oil to remove excess polysiloxane or silicone oil to thus smoothen the coating;
   charging a material to be cast selected from the group consisting of a polymerizable monomer, a polymerizable prepolymer or a mixture thereof into the treated mold as above;
   polymerizing the material by a suitable polymerization means; and
   removing the resulting cast article from the mold.

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### 3,935,293
### METHOD FOR THE MANUFACTURE OF METALLIC CHLORIDES

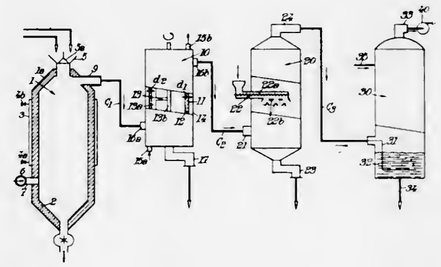
**Constantin Tsirigotis, Athens, Greece, assignor to Larco Societe Miniere et Metallurgique de Larymna S.A., Athens, Greece**

**Filed June 29, 1973, Ser. No. 375,093**

**Claims priority, application Luxemburg, Mar. 6, 1973, 67161**

**Int. Cl.² C01G *49/10*, *53/08*, *37/04*, *3/04***

**U.S. Cl. 423—39** **13 Claims**



4. In a method for the manufacture of metallic chlorides comprising:
   providing a raw material containing as an alloy at least two metals selected from the group consisting of iron, nickel, chromium, copper and cobalt,
   said raw material optionally containing sulfur, the amount of said metals, together with any sulfur present in said raw material, being more than 80 percent by weight of the raw material, said raw material being in the form of ingots, scrap metal, or mats, in pieces less than 200 mm in size,
   providing a chlorinating zone containing a gaseous chlorinating mixture containing chlorine, HCl, and oxygen, the partial pressures of these constituents being as follows:
   $2P_{Cl_2} + P_{HCl} \cdot 0.2$ atmosphere, and
   $P_{O_2} < P_{HCl} + P_{Cl_2}$,
   introducing said raw material into said chlorinating zone,
   maintaining the temperature in said chlorinating zone at a temperature of from 600°C to 1350°C, and maintaining said partial pressures of said chlorinating constituents, to chlorinate at least two said metals to form at least two gaseous metal chlorides,
   reducing the vapor pressure of said gaseous metal chlorides sufficiently to recover at least one of said metal chlorides as a liquid or solid metal chloride, and
   recovering the condensed metal chloride,
   the improvement which comprises
   maintaining, in the chlorination zone, the amount of chlorine at more than 5 volume % and less than 90 volume %, the amount of HCl at more than 1 volume % and less than 75 volume %, and the amount of oxygen at more than 1 volume % and less than 35 volume %.

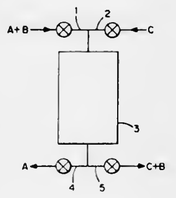
## 3,935,294
## METHOD OF REMOVING HYDROGEN SULFIDE FROM GASES

**Aaron J. Teller, Great Neck, N.Y., assignor to Teller Environmental Systems, Inc., Worcester, Mass.**

**Division of Ser. No. 156,952, June 25, 1971, Pat. No. 3,859,417, which is a continuation of Ser. No. 860,665, Sept. 24, 1969, abandoned, which is a continuation-in-part of Ser. No. 667,801, Sept. 14, 1967, abandoned, which is a continuation-in-part of Ser. No. 363,403, April 29, 1964, abandoned. This application June 14, 1974, Ser. No. 479,212**

**Int. Cl.² B01D** *53/34*

**U.S. Cl. 423—226** **8 Claims**




1. A process for the vapor phase chromatographic separation of hydrogen sulfide from a gas stream comprising the steps of:

a. passing said gas stream into contact with an absorbent, high surface area solid support material having deposited thereon a compound capable of reacting chemically with hydrogen sulfide to form a thermally decomposible molecule and thereby removing hydrogen sulfide from the gas stream, said compound being selected from the group consisting of hydroquinone and quinol; and,

b. recovering said gas stream substantially free of hydrogen sulfide by removing it from contact with the support material and the thermally decomposible molecule deposited thereon.

## 3,935,295
## PROCESS FOR REMOVING CHLORINE-CONTAINING COMPOUNDS FROM HYDROCARBON STREAMS

**Richard W. La Hue, and Cecil B. Hogg, both of Louisville, Ky., assignors to Catalysts and Chemicals, Inc., Louisville, Ky.**

**Filed Jan. 23, 1973, Ser. No. 326,011**

**Int. Cl.² C01B** *7/00*

**U.S. Cl. 423—240** **7 Claims**

6. A process of removing organic sulfur compounds and organic chloride compounds from a hydrocarbon containing fluid stream, which comprises the steps of:

A. converting said organic sulfur compounds to hydrogen sulfide and said organic chloride compounds to hydrogen chloride by passing said fluid stream in the presence of hydrogen over a catalyst comprising cobalt or nickel in association with the oxides of molybdenum and a support at a pressure in excess of atmospheric and a temperature in excess of 300° F.;

B. removing the hydrogen chloride and a portion of said hydrogen sulfide by passing said treated fluid stream at a temperature in excess of 300° F. through a bed of solid chloride adsorbent comprising a mixture of zinc oxide, a basic compound of calcium and an inert binder, said basic compound of calcium being present in a weight percent, expressed as calcium oxide, of from 10 to 80 percent of the total adsorbent; and,

C. removing the remainder of said hydrogen sulfide from said fluid by passing said fluid through an adsorbent active for removing hydrogen sulfide therefrom.

## 3,935,296
## METHOD FOR REMOVING SULFUR DIOXIDE FROM A COMBUSTION EXHAUST GAS

**Tomijiro Morita, and Isao Funahashi, both of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan**

**Filed Nov. 8, 1973, Ser. No. 413,906**

**Claims priority, application Japan, Nov. 10, 1972, 47-112656**

**Int. Cl.² C01B** *17/00*

**U.S. Cl. 423—242** **4 Claims**

1. A method for removing sulfur dioxide in the form of calcium sulfite from a sulfur dioxide-containing combustion exhaust gas, comprising the steps of:

1. feeding a portion of the combustion exhaust gas to a sulfuric acid solution to produce sulfurous acid in the solution and a gas exhaust and then oxidizing the sulfurous acid with air or oxygen in the presence of an oxidizing catalyst to produce sulfuric acid;

2. feeding the remaining portion of the combustion exhaust gas and the gas exhausted from step (1) to an aqueous solution of alkali sulfite to produce an aqueous solution of alkali bisulfite and alkali sulfate;

3. mixing a major portion of the aqueous solution of alkali bisulfite produced in step (2) with slaked lime or limestone for reaction to give a reaction solution containing calcium sulfite; and

4. separating calcium sulfite from the reaction solution obtained in step (3), the filtrate separated in step (4) being circulated to step (2), and the minor portion of the aqueous solution of alkali bisulfite produced in step (2) being mixed with sulfuric acid produced in step (1) and with a portion of calcium sulfite separated in step (4) thereby to convert the alkali sulfate, which is secondarily produced in the aqueous solution of alkali bisulfite, into gypsum.

## 3,935,297
## CARBO CHLORINATION OF $ALPO_4$

**Alfred Lippman, Metairie; Charles Toth, New Orleans, and Roger Frank Sebenik, Matairie, all of La., assignors to Toth Aluminum Corporation, New Orleans, La.**

**Filed Dec. 19, 1973, Ser. No. 426,218**

**Int. Cl.² C01B** *25/12*; **C01F** *7/02*

**U.S. Cl. 423—304** **11 Claims**

1. A process of anhydrous carbo-chlorination of $AlPO_4$ comprising the steps of introducing $AlPO_4$-containing material into a reactor zone; introducing chlorine and carbonaceous material into said reactor zone; heating the reactor zone to a temperature of from 600°–1200°C to form aluminum chlorides, phosphorous oxides, phosphorous chlorides, phosphorous oxychlorides and carbon oxides; separating the reaction products into three fractions by condensation, the first fraction being $P_2O_5$, the second fraction being $AlCl_3$ and $AlCl_3 \cdot POCl_3$, and the third fraction being $PCl_3$, $PCl_5$, $P_2O_3$, CO and $CO_2$; and passing said fraction, which is gaseous, into an oxidizer to produce $P_2O_5$, $CO_2$ and $Cl_2$.

## 3,935,298
## PROCESS FOR THE PREPARATION OF PHOSPHORIC ACID

**Yujiro Sugahara, Tokyo; Yoshibumi Noshi, Tsuruoka; Hiroyuki Naito, Tsuruoka; Akira Takahashi, Tsuruoka, and Shoji Shoji, Tsuruoka, all of Japan, assignors to Mizusawa Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan**

**Filed July 2, 1973, Ser. No. 375,828**

**Claims priority, application Japan, Nov. 25, 1972, 47-118341**

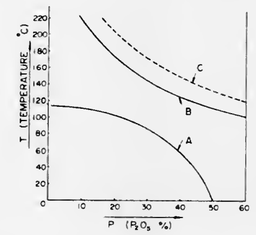
**Int. Cl.² C01B** *25/16*

**U.S. Cl. 423—320** **19 Claims**

1. In a process for the preparation of phosphoric acid which comprises mixing phosphate rock and sulfuric acid in the presence of water, drying the mixture to obtain a solid reaction product between phosphate rock and sulfuric acid and extracting phosphoric acid from said solid reaction product, the improvement which comprises mixing phosphate rock and sulfuric acid in an amount of 0.7 to 0.97 equivalent to the calcium component in the phosphate rock, in the presence of water at a temperature of 30° to 105°C., under such condition that gypsum dihydrate is stably formed and that the following requirement is satisfied:

$$0.70 \geqq C \geqq 0.45$$

wherein C designates the weight ratio of phosphate rock to the sum of phosphate rock and total water,




the mixing of phosphate rock and sulfuric acid being carried out for a time sufficient to substantially complete the decomposition of the phosphate rock by sulfuric acid, and drying the mixing reaction product between the phosphate rock and sulfuric acid to solid small masses of the phosphate rock-sulfuric acid reaction product at a temperature not exceeding 200°C. under such drying time and heating conditions that the gypsum dihydrate in said mixing reaction product is converted substantially to anhydrous gypsum or a combination of anhydrous gypsum and gypsum hemihydrate.

## 3,935,299
## PROCESS FOR PREPARATION OF WIDE-PORE ADSORBENT FOR USE IN CHROMATOGRAPHY

**Andrei Vladimirovich Kiselev, Leninskie Gory, Mgu Zona M kv. 160, Moscow; Galina Lvovna Kustova, ulitsa Burevestnika 9, kv. 9; Boris Alexandrovich Lipkind, ulitsa Burevestnika, 9, kv. 3, both of Gorky, and Jury Stepanovich Nikitin, Leningradskoe shosse, 120, korpus 3, kv. 4, Moscow, all of U.S.S.R.**

**Continuation of Ser. No. 252,462, May 11, 1972, Pat. No. 3,888,972. This application Jan. 31, 1975, Ser. No. 546,184**

**Int. Cl.² C01B** *33/12*, *33/16*, *33/18*

**U.S. Cl. 423—338** **3 Claims**

1. A process of preparing a porous silica adsorbent having a pore diameter of 560 to 19,500 A adapted for use in chromatography comprising the steps of (1) mixing finely dispersed non-porous silica having a specific surface area of 35 to 380 $m^2/g$ with water to form an aqueous suspension; (2) drying the suspension at a temperature of 100° to 450°C. to form a silica xerogel; (3) hydrothermally treating said dried xerogel at a temperature of 100° to 380°C and under a pressure of 1 to 300 atm; (4) drying the treated xerogel at a temperature of 100° to 300°C.; and particulating the dried xerogel by grinding either after step (2) or after step (4).

## 3,935,300
## PROCESS FOR PREPARING POTASSIUM CYANATE FROM POTASSIUM HYDROXIDE AND UREA

**Gerald L. Tucker, and Elmer Ladelle Blanton, both of Yazoo City, Miss., assignors to Mississippi Chemical Corporation, Yazoo City, Miss.**

**Filed Feb. 20, 1974, Ser. No. 444,011**

**Int. Cl.² C01C** *3/14*

**U.S. Cl. 423—365** **4 Claims**

1. In a process for preparing potassium cyanate by the melt reaction of urea with potassium hydroxide and recovering the resulting potassium cyanate, the improvement which comprises:

mixing solid urea and solid potassium hydroxide in a mole ratio of 1.75 to 2.15 : 1.0; and

heating said mixture until it melts and resolidifies to 180° – 240°C and reaction byproducts are no longer evolved.

## 3,935,301
## PROCESS FOR PRODUCING CARBON FIBERS FROM ORGANIC FIBROUS MATERIAL

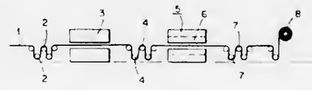
**Ken-ichi Morita; Yoshiro Kinoshita, and Shigetora Kashio, all of Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan**

**Filed May 29, 1973, Ser. No. 364,752**

**Claims priority, application Japan, Aug. 7, 1972, 47-78410, June 1, 1972, 47-53827**

**Int. Cl.² B29C** *25/00*

**U.S. Cl. 423—447** **14 Claims**




1. In a process for producing a carbon fiber from an organic fibrous material which contains carbon in a form which is subject to heat stabilization in an active atmosphere and which carbon is operative to form strong carbon fibers in a non-oxidizing atmosphere, the steps which comprise:

A. preparing a heat-stabilized organic fibrous material by heating said organic fibrous material in an active atmosphere, and

B. conduction said fibrous material under tension at a speed of about 0.5 – 65 meters per minute and heating said heat-stabilized fibrous material in a carbonizing furnace maintained at a temperature of from about 800° C to 1600° C over a total length from about 1 – 15 meters,

B-1. controlling said heating in said furnace to provide a profile of such character that when temperature is plotted on a vertical axis and locations along the length of the carbonizing furnace are plotted on the horizontal axis, the temperature profile above 800° C has a slope which either remains constant or decreases until the maximum temperature in said furnace is reached,

B-2. said heating being further characterized by the fact that, when said temperature profile is divided vertically midway along the length of said furnace to form halves representing the inlet portion and the outlet portion of said furnace, the area under the plot corresponding to the outlet portion of said furnace is greater than that representing the inlet portion of said furnace, and wherein

B-3. the average cooling rate in said furnace is greater than the average heating rate, and wherein

B-4. the maximum furnace temperature exists at the aforementioned outlet portion of said furnace.

## 3,935,302
## PREPARATION OF ALKALINE EARTH METAL HALIDE CRYSTALS FOR LASER WINDOWS

**Ricardo C. Pastor, Manhattan Beach; Kaneto Arita, Gardena, and Morton Robinson, Malibu, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.**

**Filed Feb. 27, 1974, Ser. No. 446,581**

**Int. Cl.² C01F** *11/22*

**U.S. Cl. 423—490** **4 Claims**

1. A method of preparing alkaline earth metal halide crystals for laser windows by a reactive atmosphere process comprising the steps of

a. placing an alkaline earth metal halide crystal in a crystal growth crucible within a furnace;

b. purging said furnace with an inert gas;
c. causing the atmosphere within said purged furnace to become reactive with respect to anion and cation impurities by the application of low dewpoint HF gas at an input rate which maintains a positive pressure at a $P_{H_2O}/P_{HF}$ ratio less than $10^{-5}$;
d. causing said halide crystal to melt by gradually increasing the temperature of said furnace to a point slightly above the melting point of said crystal;
e. allowing said melt to soak in said reactive atmosphere from 8–15 hours;
f. initiating a programmed crystal growth process with said crucible at a rate not to exceed a few millimeters per hour whereby a recrystallized crystal is formed; and
g. allowing said crystal to slowly cool in the presence of the HF reactive atmosphere.

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### 3,935,303
### BASE FOR OPHTHALMOLOGICAL MEDICINAL PREPARATIONS AND ON OPHTHALMOLOGICAL MEDICINAL FILM

**Gennady Lvovich Khromov, 2 Frunzenskaya ulitsa, 10, kv. 100; Anatoly Borisovich Davydov, ulitsa Krasny Kazanets, 19, korpus 1, kv. 283; Jury Fedorovich Maichuk, ulitsa Usievicha, 11, kv. 4, all of Moscow, and Inna Fedorovna Tischina, Schelkovsky raion, poselok Biofabriki, 25, kv, 22, Moskovskaya oblast, all of U.S.S.R.**

**Filed Nov. 1, 1972, Ser. No. 302,820**
**Int. Cl.² A61K *27/12***
**U.S. Cl. 424—14** **5 Claims**

1. An ophthalmological medicinal film which is an oblong plate, 6 – 9 mm long, 3 – 5 mm wide, and 0.2 – 0.6 mm thick consisting of a biologically soluble, assimilable copolymer of acrylamide, N-vinylpyrrolidone and butyl acrylate having a molecular weight from 20,000 to 500,000 and containing 10 to 90 per cent acrylamide links and an ophthalmological medicinal agent, selected from the group consisting of 3-ethyl-4(1-methyl-5-imidazolyl)- tetrahydrofuran-2-one, atropine, 3-methoxy-6-sulfanilamidopyridazine, β-dimethylaminoethyl-p-butylaminobenzoate, neamine and 5-iodo-2-desoxyuridine, said film characterized by prolonged medicinal action in the eye.

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### 3,935,304
### DENTAL CREAMS

**Joseph P. Januszewski, Sommerville; Martin Cordon, Highland Park, and William Grant Pierson, Flanders, all of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.**

**Continuation-in-part of Ser. No. 295,073, Oct. 4, 1972, abandoned. This application Apr. 30, 1974, Ser. No. 465,462**
**Int. Cl.² A61K *7/16***
**U.S. Cl. 424—49** **15 Claims**

1. A toothpaste containing at least about 25% by weight dispersed particles of sodium bicarbonate and a polishing agent system comprising titanium dioxide powder having a particle size less than about two microns, the amount of titanium dioxide particles being more than about 0.1% of the weight of the toothpaste, said particles dispersed in a vehicle containing sufficient liquids, said vehicle consisting essentially of about 5 to 35% water and sufficient viscous water miscible polyol humectant or mixtures thereof, and a sufficient amount of gelling or thickening agent to impart to the toothpaste the pasty consistency, body and the non-tacky nature which is characteristic of conventional dental creams or toothpastes, said sodium bicarbonate being primarily in an undissolved solid state, said dental cream having a granular textured appearance comprising a substantially dispersed non-crystalline appearing granulate of macroscopic crystalline bicarbonate granules in an otherwise smooth continuous matrix.

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### 3,935,305
### TOOTHPASTE

**Thomas James Delaney, Piscataway, and William Grant Pierson, Flanders, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.**

**Continuation-in-part of Ser. Nos. 465,461, April 30, 1974, and Ser. No. 465,476, April 30, 1974, and Ser. No. 465,463, April 30, 1974, which is a continuation-in-part of Ser. No. 419,741, Nov. 28, 1973, which is a continuation-in-part of Ser. No. 389,827, Aug. 20, 1973, abandoned, and Ser. No. 295,094, Oct. 4, 1972, abandoned, said Ser. No. 465,461, is a continuation of Ser. No. 295,068, Oct. 4, 1972, abandoned, said Ser. No. 468,476, is a continuation-in-part of Ser. No. 382,827, , which is a continuation-in-part of Ser. No. 295,094,. This application May 30, 1974, Ser. No. 474,551**
**Int. Cl.² H61K *7/18***
**U.S. Cl. 424—49** **16 Claims**

1. A dental cream containing an abrasive system comprising about 1 – 25% sodium bicarbonate in a vehicle containing sufficient liquids, said vehicle consisting essentially of about 5 to 35% water and sufficient viscous water miscible polyol humectant or mixtures thereof and a sufficient amount of gelling or thickening agent to impart to the dental cream the pasty consistency, body and the non-tacky nature which is characteristic of conventional dental creams or toothpastes, and at least about 20% of a water-insoluble dental abrasive material compatible with said bicarbonate in the dental cream, said sodium bicarbonate being primarily in the undissolved solid state, said dental cream having a granular textured appearance comprising dispersed non-crystalline appearing granulate of macroscopic crystalline bicarbonate granules in an otherwise smooth continuous matrix.

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### 3,935,306
### TOOTHPASTE FORMULATIONS

**Francis D. Roberts, Millinton, N.J., and John J. Steinke, III, Syracuse, N.Y., assignors to Colgate-Palmolive Company, New York, N.Y.**

**Continuation of Ser. No. 243,060, April 11, 1972, abandoned, which is a continuation-in-part of Ser. No. 147,613, May 27, 1971, abandoned, which is a continuation of Ser. No. 749,934, Sept. 5, 1968, abandoned. This application Feb. 8, 1974, Ser. No. 440,945**
**Int. Cl.² A61K *7/16***
**U.S. Cl. 424—49** **13 Claims**

1. A speckled toothpaste comprising a translucent or transparent gel toothpaste vehicle having a refractive index between 1.4 and 1.5 and having dispersed therein up to 75% by weight of macroscopically visible, substantially water-insoluble palpable agglomerates of impalpable dental polishing agent particles, said agglomerates having a particle size less than 840 microns and including an agglomerating agent having binding properties, said particles of dental polishing agent being so agglomerated that said agglomerates retain their visibility and palpability in the toothpaste but are reduced to invisible, impalpable particles when said toothpaste is subjected to toothbrushing, said toothpaste base including a polishing material having a refractive index substantially the same as said translucent or transparent toothpaste vehicle in order to maintain visual clarity so as to form a clear gel, the total amount of dental polishing agent and polishing material in said toothpaste being at least 5 percent by weight, said agglomerates being visible both on the surface and in the interior of said clear gel, giving a positive three dimensional sparkling appearance due to the unique light reflectance effects, said agglomerates being inherently white or, when colored, containing about 1 to 10% by weight of water insoluble dye, pigment or lake, said clear gel vehicle having a color different from, or contrasting with, said agglomerates, said gel vehicle containing water and having a total liquid content which is about 20 to 89.5% by weight of the toothpaste.



### 3,935,307
### LIQUID OR PASTY DENTIFRICE AND PROCESS FOR PREPARING THE SAME

**Kenji Aimoto, Toyonaka; Shigeru Hashimoto, Suita, and Toyoaki Yoneda, Sakura, all of Japan, assignors to Teijin Limited, Osaka and Sunstor Dentrificy Co. Ltd., both of, Japan**

**Filed May 30, 1974, Ser. No. 474,721**
**Claims priority, application Japan, June 5, 1973, 48-62504**
**Int. Cl.² A61K *7/16***
**U.S. Cl. 424—56** **6 Claims**

1. In a liquid or pasty dentifrice, the improvement which comprises uniformly incorporating therein, a first polysaccharide having a number average molecular weight of not less than 100,000, the molecule of said first polysaccharide containing D-glucose, D-mannose, D-galactose and succinic acid in the approximate molar ratio of 1:0.03:0.1:0.2, in an amount of 0.3 to 2 parts by weight per 100 parts by weight of said liquid or pasty dentifrice.

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### 3,935,308
### WOUND COVERING AND METHOD OF APPLICATION

**Donald L. Wise, Belmont; Arthur D. Schwope, Watertown, both of Mass., and Kenneth W. Sell, Rockville, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed Aug. 8, 1974, Ser. No. 495,705**
**Int. Cl.² A61K *31/74***
**U.S. Cl. 424—78** **1 Claim**

1. A method of treating an extensive burn injury to an external portion of a person, comprising the steps of:
spraying a layer of a solution of poly-ε-caprolactone, having a molecular weight in the range of 2,000 to 300,000, in a volatile solvent comprising liquid tetrahydrofuran onto said external portion;
allowing said solvent to evaporate so as to leave a thin, flexible film of said poly-ε-caprolactone, having a thickness of about 0.0005 inch to 0.01 inch, adhering to said portion so as to form a barrier to body fluid loss therethrough.

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### 3,935,309
### SYNERGISTIC COMBINATIONS OF PHOSPHONOMYCIN AND BACTERIOSTATIC AGENTS

**David Hendlin, Springfield, N.J.; Justo Martinez Mata; Sagrario Mochales Del Val, both of Madrid, Spain, and Edward O. Stapley, Metuchen, N.J., assignors to Merck & Co., Inc., Rahway, N.J.**

**Continuation-in-part of Ser. Nos. 655,757, July 25, 1967, abandoned, and Ser. No. 679,165, Oct. 20, 1967, abandoned, Ser. No. 728,059, May 9, 1968, Pat. No. 3,639,590, and Ser. No. 59,761, July 30, 1970, abandoned, and Ser. No. 255,117, May 19, 1972, abandoned. This application Sept. 20, 1974, Ser. No. 507,846**
**Int. Cl.² A61K *35/00***
**U.S. Cl. 424—114** **6 Claims**

5. The method of treating infections caused by pathogenic bacteria in animals and humans which comprises administering to animals or humans a composition comprising phosphonomycin and chloramphenicol in an effective amount for treating said pathogen, said phosphonomycin and chloramphenicol being administered in the ratio of 1–10 to 10–1.

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### 3,935,310
### REMEDY FOR TREATMENT OF HEMORRHOIDS

**John D. Homan, 115 Gilbert Ave., Ada, Ohio 45810**

**Continuation-in-part of Ser. No. 448,820, March 7, 1974, abandoned. This application Mar. 24, 1975, Ser. No. 561,632**
**Int. Cl.² A61K *35/78***
**U.S. Cl. 424—195** **6 Claims**

1. Composition for the treatment of hemorrhoids consisting essentially in the product resulting from heating powdered or chipped limbs or roots of *Celastrus scandens* to a temperature not substantially exceeding 240°F, for a period of 2–15 minutes, in a medium selected from the group consisting of animal fats and vegetable oils.

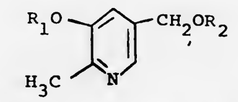
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### 3,935,311
### SUBSTITUTE PYRIDINOL-CONTAINING COMPOSITIONS AND METHODS FOR THE TREATMENT OF COCCIDIOSIS

**Yasuhiro Morisawa; Mitsuru Kataoka; Taiichiro Watanabe; Noritoshi Kitano, and Toshiaki Matsuzawa, all of Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan**

**Division of Ser. No. 404,641, Oct. 9, 1973, Pat. No. 3,897,556. This application Sept. 26, 1974, Ser. No. 509,720**
**Claims priority, application Japan, Oct. 20, 1972, 47-105090; Apr. 11, 1973, 48-41111**
**Int. Cl.² A61K *31/675***
**U.S. Cl. 424—200** **9 Claims**

1. An anticoccidial composition which comprises a compound of the formula



intimately dispersed in an inert edible carrier, wherein $R_1$ and $R_2$ are each hydrogen or a phosphono group, and at least $R_1$ or $R_2$ is said phosphono group; or a salt thereof.

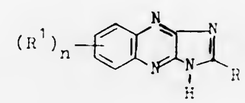
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### 3,935,312
### COMBATING FUNGI WITH IMIDAZO-[4,5-b]QUINOXALINES

**Winfried Lunkenheimer; Karl Heinz Büchel, both of Wuppertal, and Helmut Kaspers, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

**Filed Sept. 21, 1973, Ser. No. 399,652**
**Claims priority, application Germany, Oct. 7, 1972, 2249350**
**Int. Cl.² A01N *9/22***
**U.S. Cl. 424—250** **7 Claims**

1. A method of combating parasitary fungi which attack plants which comprises applying to said fungi a fungicidally effective amount of an imidazo[4,5-b]quinoxaline of the formula



in which
R is alkyl with 1 to 4 carbon atoms or haloalkyl with 1 to 2 carbon atoms and 2 to 5 halogen atoms,
$R^1$ is chlorine, alkyl with 1 to 4 carbon atoms or haloalkyl with 1 to 2 carbon atoms and 2 to 5 halogen atoms, and
*n* is 0, 1 or 2.

### 3,935,313
### PHARMACEUTICAL COMPOSITION CONTAINING N-(3-DIETHYL-AMINOPROPYL)-4-NITRO-1-OXIDE-PYRIDINE-2-CARBOXAMIDE AND PROCESS FOR THE TREATMENT OF HYPERTENSION THEREWITH

**Jan Marcel Didier Aron-Samuel, Suresnes, and Jean Jacques Sterne, Argenteuil, both of France, assignors to Jan Marcel Didier Aron-Samuel, Suresnes, France**

**Continuation-in-part of Ser. No. 233,718, March 10, 1972, abandoned. This application May 29, 1974, Ser. No. 474,316**
**Claims priority, application United Kingdom, Mar. 29, 1971, 8084/71**
**Int. Cl.² A61K *31/455, 31/44***
**U.S. Cl. 424—266** **11 Claims**

1. Process for the treatment of hypertension, comprising administering to a patient suffering from hypertension a therapeutically effective amount of a compound selected from the group consisting of N-(3-diethylaminopropyl)-4-nitro-1-oxide-pyridine-2-carboxamide and its acid addition salt with a pharmaceutically acceptable acid.

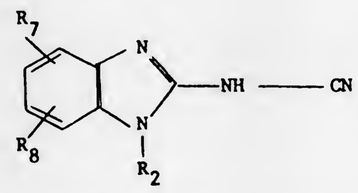
4. Pharmaceutical composition having an anti-hypertensive activity comprising a therapeutically effective amount of a compound selected from the group consisting of N-(3-diethylamino-propyl)-4-nitro-1-oxide-pyridine-2-carboxamide and its acid addition salt with a pharmaceutically acceptable acid together with a pharmaceutical carrier.

### 3,935,314
### ANTI-HYPERTENSIVE COMPOSITIONS OF BENZIMIDAZOLE DERIVATIVES

**Eric Alfred Watts, Harlow, England, assignor to Beecham Group Limited, England**

**Continuation of Ser. No. 308,719, Nov. 22, 1972, abandoned. Claim priority, application United Kingdom, 54498/71**
**This application Oct. 2, 1974, Ser. No. 511,227**
**Int. Cl.² A61K *31/415***
**U.S. Cl. 424—273** **14 Claims**

14. A method of treatment of hypertension in a mammal which comprises the administration to said mammal of an anti-hypertensively effective amount of a composition comprising an anti-hypertensively effective amount of a compound of the formula:



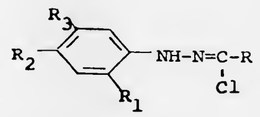
or a pharmaceutically acceptable salt thereof wherein $R_8$ is hydrogen or methyl and each of $R_7$ and $R_8$ is hydrogen, chlorine, bromine or methyl together with a pharmaceutically acceptable carrier, wherein the composition is in oral dosage form containing from 5 to 500 mgs of anti-hypertensive compound.

### 3,935,315
### INSECTICIDAL AND ACARICIDAL PHENYLHYDRAZONE DERIVATIVES

**Roger Boesch, Vitry-sur-Seine, France, assignor to Rhone-Poulenc S.A., Paris, France**

**Division of Ser. No. 363,651, May 24, 1973, Pat. No. 3,847,987. This application Apr. 25, 1974, Ser. No. 464,213**
**Claims priority, application France, May 26, 1972, 72.18895; Mar. 19, 1973, 73.09754**
**Int. Cl.² A01N *9/20***
**U.S. Cl. 424—327** **13 Claims**

1. An insecticidal and acaricidal composition suitable for agricultural use containing 0.005 to 80% by weight of a phenylhydrazone derivative of the formula:



wherein R represents alkyl of 1 through 4 carbon atoms, and two of the symbols $R_1$, $R_2$ and $R_3$ represent halogen and the third represents halogen or nitro, and a compatible diluent therefor.

### 3,935,316
### METHOD OF USE AND FORMULATIONS

**Malcolm W. Moon, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.**

**Filed Jan. 2, 1975, Ser. No. 537,836**
**Int. Cl.² A61K *31/15***
**U.S. Cl. 424—327** **7 Claims**

1. The method for therapeutically and prophylactically controlling parasitic Haemonchus or Ostertagia worms in animals which comprises administering orally or parenterally to animals an effective anthelmintic dosage of 3-phenylpyruvoyl chloride 1-phenylhydrazone.

### 3,935,317
### PREPARATION OF RED AND ROSE WINES

**Joseph S. Bianchi, 551 Miguel Place, Fullerton, Calif. 92635**

**Filed May 30, 1974, Ser. No. 474,523**
**Int. Cl.² C12G *1/00***
**U.S. Cl. 426—15** **10 Claims**

1. A fermentation process for making wine from grapes having colored skins, which process includes the steps of:

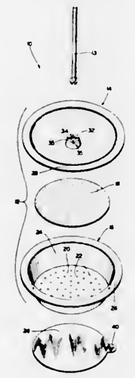
a. de-stemming and crushing said grapes;
b. pressing said de-stemmed and crushed grapes to separate the juice and pulp from the skins thereof;
c. disposing said juice and pulp in a container in which they are in free communication with the ambient atmosphere;
d. adding yeast to said juice and pulp to cause the fermentation thereof;
e. subjecting said skins to the action of an aqueous mixture of citric acid and an acid selected from the group consisting of hydrochloric, sulfuric and phosphoric acids until a substantial amount of the coloring substance has been withdrawn from said skins and colors said aqueous mixture to provide an aqueous colored extract and thereafter separating said colored extract from said skins;
f. partially neutralizing said colored extract by neutralizing said acid from said group therein with a non-toxic material;
g. allowing said yeast to ferment said juice and pulp to wine, with carbon dioxide and exothermic heat generated by said fermentation being allowed to flow to the ambient atmosphere; and
h. adding said colored partially neutralized aqueous extract to said juice and pulp prior to the fermentation thereof to wine having been completed by said yeast.



### 3,935,318
### DISPOSABLE APPARATUS FOR BREWING A BEVERAGE SUCH AS COFFEE

**Sergio Mihailide, Alabama 41 - Apt. 101, Colonia Napoles ZP18, Mexico City, Mexico**

**Filed Oct. 12, 1974, Ser. No. 512,876**
**Int. Cl.² B65B *29/02***
**U.S. Cl. 426—80** **16 Claims**



1. Disposable device for use with a cup of hot water for brewing a single cup of a beverage, comprising: a receptacle containing a predetermined quantity of ground beverage material selected from the group consisting of coffee and tea, said receptacle having a circular horizontal cross-section and a height that is less than the diameter of said cross-section, said receptacle including an annular side portion non-permeable to water a lid that is flexible for vertical reciprocating action and non-permeable to water and a bottom surface that is permeable to water, and manual pumping means flexing only the lid of said receptacle for providing reciprocating flow of said hot water through said water permeable bottom surface and forced circulation of said hot water throughout the beverage material for brewing.

### 3,935,319
### PROTEIN FOOD PRODUCT

**Norman Bratton Howard, Oxford, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio**

**Filed May 28, 1974, Ser. No. 473,544**
**Int. Cl.² A23J *3/00***
**U.S. Cl. 426—104** **16 Claims**

8. A shaped protein food product comprising a mixture of
edible protein fibers,
edible binder material, and
a stabilized fat consisting of from 85 to 95% edible triglyceride and from 5 to 15% ethylcellulose, by weight of stabilized fat,
said mixture being bound together to form a shaped fibrous protein food product.

### 3,935,320
### TUBULAR CELLULOSIC CASING WITH CATIONIC THERMOSETTING RESIN COATING

**Herman S. Chiu, Chicago, and Jerome J. M. Rasmussen, South Stickney Township, Cook County, both of Ill., assignors to Union Carbide Corporation, New York, N.Y.**

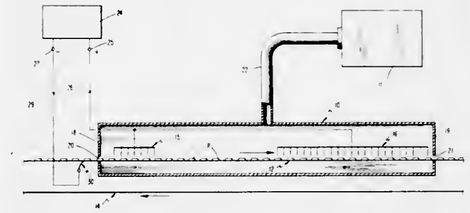
**Filed Apr. 4, 1973, Ser. No. 347,685**
**Int. Cl.² A23B *4/00***
**U.S. Cl. 426—105** **14 Claims**

1. A tubular cellulosic fibrous food casing characterized as being opaque and having at least about 0.45% by weight of a coating of cured cationic thermosetting resin bonded to the interior and exterior surfaces thereof to afford resistance to degradation by cellulolytic enzymes.

### 3,935,321
### ACCELERATED COOLING METHOD

**Stephen Allen Sakler, Bronx, N.Y.; Samuel Joseph Porcello, Wayne, and Jack L. Rossen, Englewood, both of N.J., assignors to Nabisco, Inc., East Hanover, N.J.**

**Filed Jan. 11, 1974, Ser. No. 432,743**
**Int. Cl.² A23D *6/00***
**U.S. Cl. 426—244** **6 Claims**



1. The method of cooling an edible product having at least an outer layer of a hot fluid material which crystalizes upon cooling comprising the steps of exposing the product to a cooling atmosphere until the fluid material at the outer surface of the product has hardened, subjecting the product after the hardening of the surface thereof to a corona current to rapidly extract heat from the interior regions of the material without increasing the temperature of the hardened surface, the corona current flowing between oppositely polarized high voltage electrodes positioned on opposite sides of the product.

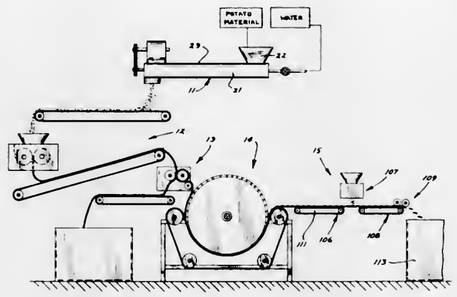
### 3,935,322
### CHIP SEPARATING FROM A FRIED RIBBON

**Verne E. Weiss, Wayzata; Glenn M. Campbell, and Gerald L. Wilson, both of Minneapolis, all of Minn., assignors to General Mills, Inc., Minneapolis, Minn.**

**Filed Apr. 27, 1973, Ser. No. 355,260**
**Int. Cl.² A23L *1/01***
**U.S. Cl. 426—439** **10 Claims**

1. A method for preparing fabricated potato chips comprising mixing at least one member of the group consisting of potato flakes and potato granules with water to form a dough, said water being present in an amount of from 25 to 45 percent based on the total weight of the dough, sheeting said dough, cutting said sheeted dough to produce a continuing

ribbon, transporting said ribbon through a hot oil bath thereby frying said ribbon, said ribbon extending from the entrance to




the exit of said bath and then separating said ribbon into individual potato chips.

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**3,935,323**

## PROCESS FOR IMPROVING WHIPPING PROPERTIES OF AQUEOUS PROTEIN SOLUTIONS

**Joseph V. Feminella, Trumbull, Conn., and Donald A. Grindstaff, Minnetonka, Minn., assignors to Stauffer Chemical Company, Westport, Conn.**

**Filed Dec. 6, 1973, Ser. No. 422,213**
**Int. Cl.² A23J** *1/20, 3/02;* **A23G** *3/00*
**U.S. Cl. 426—564** **9 Claims**

1. A process for improving the whipping properties of an aqueous solution containing dissolved cheese whey protein consisting essentially of

a. heating an aqueous solution containing dissolved cheese whey protein having a protein concentration of about 5 grams per liter to about 100 grams per liter to a temperature within the range of at least 95°C. to less than 99° C. said aqueous solution being heated to a temperature within said range for not more than 5 minutes;
b. cooling said aqueous solution containing dissolved cheese whey protein to below about 60° C.; and
c. whipping said aqueous solution containing dissolved cheese whey protein within about 8 hours after heating.

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**3,935,324**

## CREAM BASE FOR CONFECTIONARY USE

**Ulf Persmark, Karlshamn, and Jan-Erik Stenback, Morrum, both of Sweden, assignors to AB Karlshamns Oljefabriker, Karlshamn, Sweden**

**Filed Aug. 29, 1974, Ser. No. 501,672**
**Claims priority, application Sweden, Sept. 4, 1973, 73120032**
**Int. Cl.² A23G** *3/00*
**U.S. Cl. 426—572** **15 Claims**

1. A ready-to-whip cream base for confectionary use requiring no auxiliary emulsifiers or foaming agents, said cream base comprising from about 45% to 60% by weight of a fat phase, and a water phase; said fat phase comprising a fat base and lecithin, said fat base being composed of, by weight, from about 15% to about 25% coconut oil, from about 30% to about 50% hydrogenated oil of the stable $\beta'$-crystallizing type, and from about 35% to about 45% liquid vegetable oil, and said lecithin being present in a proportion of from about 0.5% to about 1.5% based on the weight of said fat base; and said cream base further comprising as part of said water phase from about 10% to about 35% water, from 15% to about 30% sugar and from about 0.03% to about 0.05% preservatives, based on the weight of said cream base.

**3,935,325**

## FREEZE-THAW STABLE LIQUID COFFEE WHITENER

**Cecilia Gilmore, and Donald E. Miller, both of Strongsville, Ohio, assignors to SCM Corporation, Cleveland, Ohio**

**Continuation-in-part of Ser. No. 284,127, Aug. 28, 1972, abandoned. This application June 14, 1974, Ser. No. 479,684**
**Int. Cl.² A23D** *5/00*
**U.S. Cl. 426—613** **2 Claims**

1. A pareve fluid coffee whitener characterized by enhanced freeze-thaw stability and improved whiteness, comprising 5–18% by weight of vegetable fat, 1–3% by weight of vegetable protein, 5–15% by weight of sweetener, emulsifiers, and water to make up 100%, said emulsifiers consisting essentially of:

a. 0.3 to 0.6% by weight of said whitener of monoglycerides;
b. 0.1 to 0.3% by weight of an ethoxylated partial fatty acid ester of a hexitol selected from mannitol and sorbitol;
c. 0.05 to 0.2% by weight of a partial fatty acid ester of a hexitol selected from mannitol and sorbitol; and
d. 0.05 to 0.6% by weight of stearoyl-2-lactylic acid.

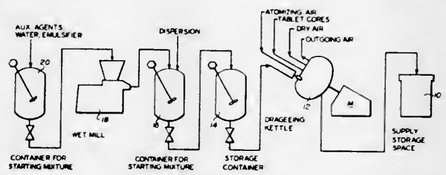
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**3,935,326**

## PROCESS FOR COATING TABLETS WITH AQUEOUS RESIN DISPERSIONS

**Gregor Groppenbächer, Mannheim-Feudenheim; Peter Rieckmann, Mannheim-Waldhof, and Werner Rothe, Hockenheim, all of Germany, assignors to Boehringer Mannheim G.m.b.H., Mannheim, Germany**

**Continuation-in-part of Ser. No. 44,557, June 8, 1970, abandoned, which is a division of Ser. No. 740,058, June 26, 1968, abandoned. This application Apr. 22, 1974, Ser. No. 463,216**
**Claims priority, application Germany, June 28, 1967, 1617351**
**Int. Cl.² A61K** *9/32, 9/369/42*
**U.S. Cl. 427—3** **8 Claims**




1. Process for preparing coated tablets which comprises applying to a core of active material at least one layer of a coating composition comprising a film forming aqueous synthetic resin dispersion with a resin content between 30 and 60% by weight, from 2 to 50% by weight of a material which is soluble in either the gastric or alkaline juices of the small intestine and up to 50% by weight of one or more insoluble fillers the amounts of said soluble material and said fillers being based on the amount of said aqueous synthetic resin dispersion, the combined amount of said water soluble material and said fillers being at least 5–6%, and permitting said coating composition layer to dry.

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**3,935,327**

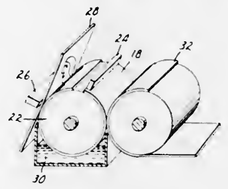
## COPYING USING PYROELECTRIC FILM

**Allen L. Taylor, Woodbury Township, Washington County, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.**

**Filed Aug. 6, 1973, Ser. No. 385,848**
**Int. Cl. G03g** *5/00, 13/08, 13/10*
**U.S. Cl. 427—19** **3 Claims**

1. A method for forming a copy of a graphic representation using a uniformly poled pyroelectric polymeric film comprising the steps of:

a. exposing said uniformly poled pyroelectric polymeric film to a heat source in accordance with the graphic representation to heat said film, thereby forming a charge pattern on said film in accordance with the graphic representation;
b. contacting said film bearing said charge pattern with toner particles charged so as to be deposited in accordance with the charge pattern on said film;



c. placing a sheet of a suitable substrate in registry on said film bearing said toner particle developed image to transfer said toner from said material to said substrate; and
d. fusing said toner to said substrate, thereby forming a completed copy of the graphic representation.



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**3,935,328**

## METHOD FOR PROVIDING DIELECTRIC ISOLATION IN AN EPITAXIAL LAYER OF A COMPOUND SEMICONDUCTOR USING THE PLASMA OXIDATION

**Takuo Sugano, Tokyo, and Yoshifumi Mori, Ichikawa, both of Japan, assignors to Kentaro Hayashi, Tokyo, Japan**

**Filed Oct. 11, 1973, Ser. No. 405,733**
**Claims priority, application Japan, Oct. 12, 1972, 47-102281**
**Int. Cl.² B05D** *5/12*
**U.S. Cl. 427—34** **2 Claims**

1. A method for providing dielectric isolation of an epitaxial layer of a compound semiconductor of gallium arsenide (GaAs) comprising the steps of;

a. forming a film of said compound semiconductor on an insulative or semi-insulative substrate,
b. coating an aluminum (Al) mask layer by evaporation on the surface of the compound semiconductor film,
c. selectively removing the aluminum (Al) mask layer by a photoresist process from an area where the compound semiconductor is to be oxidized,
d. oxidizing the exposed area of removed aluminum (Al) of the compound semiconductor by placing it in a hot plasma produced by a high frequency hot plasma discharge at a temperature range of about 1,000°–1,300°C in an oxygen atmosphere of about 0.3 Torr until the oxidation is completed up to a depth to reach to the substrate, and
e. removing the remaining aluminum (Al) mask by etching.

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**3,935,329**

## METHOD OF MANUFACTURING NEW PAINTABLE RUBBER PRODUCTS

**Albert F. Reilly, Howell, Mich.; Ivan C. Doddridge, Virginia Beach, Va., and Ming Chih Chen, St. Clair Shores, Mich., assignors to Sheller-Globe Corporation, Toledo, Ohio**

**Continuation-in-part of Ser. No. 358,514, May 9, 1973, Pat. No. 3,873,348. This application Jan. 27, 1975, Ser. No. 544,219**
**Int. Cl.² B05D** *3/063/12*
**U.S. Cl. 427—35** **29 Claims**

1. A method of manufacturing a flexible paintable rubber product, comprising the steps of:

formulating a composition comprising, percentages being by weight,
a. about 15 to about 90% of a cross-linkable rubber material selected from at least one of the group consisting of
styrene butadiene rubber, polybutadiene rubber, and isoprene rubber,
said rubber material also including less than 50% of ethylene-propylene diene monomer rubber or neoprene rubber,
b. about 0.01 to about 40% of a polymeric stiffening agent for providing a high flex modulus for the cured composition,
c. about 0.01 to about 50% of a plasticizing agent,
d. zero to about 5% of an accelerating agent,
e. 0.01 to about 10% of a curing agent,
f. zero to about 10% of an activating agent,
g. zero to about 80% of a filler material,
forming the product by molding said composition and curing the product at a temperature between about 275° and about 450° F for a residence time period between about 20 minutes and about ½ minute, preparing a clean surface on the molded product, applying a flexible color stable colored paint coating to the product.

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**3,935,330**

## TWO-STEP COATING PROCESS

**Oliver W. Smith, South Charleston; Charles H. Carder, Charleston, and David J. Trecker, South Charleston, all of W. Va., assignors to Union Carbide Corporation, New York, N.Y.**

**Filed Dec. 8, 1971, Ser. No. 205,855**
**Int. Cl. B44d** *1/50;* **C09d** *3/58*
**U.S. Cl. 427—41** **9 Claims**

1. A method for coating a substrate which comprises the steps of

A. applying a fluid coating composition to said substrate, said fluid coating composition comprising
a. from 0.1 to 50 weight per cent of a thermally curable reactive thermoset crosslinker selected from the group consisting of:
i. a polyfunctional epoxide having at least two oxirane units,
ii. the polyoxirane-containing low molecular weight polymers of (i),
iii. a urea/formaldehyde resin, or
iiii. a melamine/formaldehyde resin,
b. from 0.1 to 50 weight per cent of a radiation and thermally curable reactive solvent selected from the group consisting of:
i. an acrylate or methacrylate of a monofunctional or polyfunctional alcohol, or
ii. an acrylamide or methacrylamide of a monofunctional or polyfunctional amine, said solvent having both at least one vinyl polymerizable double bond and at least one thermally sensitive hydroxyl, carboxyl, amino or oxirane group, and
c. the balance thereof being a radiation sensitive reactive component of the formula



wherein X is hydrogen or methyl; aryl is phenyl or substituted phenyl; $z$ has a value of 1 to 4; when $z$ is 1, Y is monovalent cycloalkyl of 5 to 12 carbon atoms, cycloalkenyl of 5 to 12 carbon atoms, $-C_mH_{2m}H$, $-C_mH_{2m}CN$, $-C_mH_{2m}Cl$, $-C_mH_{2m}NR_2''$, $-C_mH_{2m}COONR_2''$, $-C_mH_{2m}COOCH_2OCH_2CH_3$, or $-(C_pH_{2p}O)_rC_pH_{2p}H$, when $z$ is greater than 1, Y is $-C_qH_{2q}-$, $-(C_pH_{2p}O)_xC_pH_{2p}-$, $-(C_yH_{2y}COO)_xC_yH_{2y}-$, $-C_qH_{2q-1}-$, or $-C_qH_{2q-2}-$; R'' is hydrogen or alkyl of 1 to 5 carbon atoms; $m$ has a value of 1 to 10; $r$ has a value of 0 to 4; $p$ has a value of 2 to 4; $q$ has a value of 2 to 8; $x$ has a value of 1 to 5; and $y$ has a value of 2 to 5;

B. subjecting said applied coating composition to ionizing or non-ionizing irradiation to initiate free-radical polymerization of components (b) and (c) and thereafter

C. subjecting the coated article of step (B) to elevated temperature of from 50° to 250°C. to thermally cure components (a) and (b) and obtain a solid, dry coating on said substrate.

**9.** A method as claimed in claim **1** wherein step (B) is carried out under an inert atmosphere.

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**3,935,331**

## PREPARATION OF OLEFIN $SO_2$ COPOLYMER ELECTRON BEAM RESIST FILMS AND USE OF SAME FOR RECORDING

**Eugene Samuel Poliniak, Willingboro; Howard George Scheible, Livingston, and Richard Joseph Himics, Skillman, all of N.J., assignors to RCA Corporation, New York, N.Y.**

**Filed Jan. 9, 1975, Ser. No. 539,851**
**Int. Cl.² B05D** *3/06*; **G11B** *9/00*
**U.S. Cl. 427—43** **6 Claims**

**1.** A method of preparing an electron beam recording medium comprising a film of a copolymer of $SO_2$ and an olefin on a substrate which comprises

a. dissolving said copolymer in a solvent,
b. filtering the resultant solution through a filter having apertures on the order of 0.2 micron or smaller,
c. applying a copolymer film from said solution onto said substrate,
d. drying said film in a vacuum of at least $10^{-6}$ torr until said solvent is removed, and
e. maintaining said dried film moisture-free until it is exposed to an electron beam.

**5.** A method of recording information in the form of a relief pattern which comprises

a. dissolving a copolymer of $SO_2$ and an olefin in a solvent,
b. filtering the resultant solution through a filter having apertures on the order of 0.2 micron or smaller,
c. applying a copolymer film from said solution onto a substrate,
d. drying said film in a vacuum of at least $10^{-6}$ torr until said solvent is removed,
e. maintaining said dried film moisture-free until it is exposed to an electron beam,
f. exposing said film to a modulated beam of electrons, and
g. developing said film by dissolving the exposed portions in a solvent to form said relief pattern.

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**3,935,332**

## DEVELOPMENT OF POLY(1-METHYL-1-CYCLOPENTENE-$SO_2$) ELECTRON BEAM RESIST

**Eugene Samuel Poliniak, Willingboro, and Richard Joseph Himics, Skillman, both of N.J., assignors to RCA Corporation, New York, N.Y.**

**Filed Jan. 9, 1975, Ser. No. 539,801**
**Int. Cl.² B05D** *3/06*; **G11B** *9/00*
**U.S. Cl. 427—43** **6 Claims**

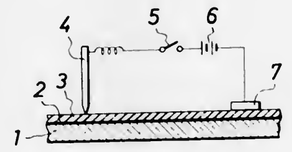
**1.** In a method of recording information whereby a modulated beam of electrons is scanned across the surface of a film of resist material which becomes more soluble in a developer solvent where impinged upon by the beam of electrons and the resist material is developed with the developer solvent so as to remove the solubilized portions thereof, the improvement which comprises employing as the resist material a film of a copolymer of $SO_2$ and 1-methyl-1-cyclopentene and developing with a solvent selected from the group consisting of 2-methylcyclohexanone, 3-methylcyclohexanone, and acetonyl acetate in acetone.

**3,935,333**

## METHOD FOR FORMING A TRANSPARENT IMAGE ON A SHEET

**Harunobu Muneoka, and Tuguo Nezu, both of Hiratsuka, Japan, assignors to Kansai Paint Company, Ltd., Tokyo, Japan**

**Filed Dec. 15, 1972, Ser. No. 315,472**
**Claims priority, application Japan, Dec. 18, 1971, 46-103046**
**Int. Cl.² B41C** *3/08*
**U.S. Cl. 427—49** **10 Claims**




**1.** A method for forming a transparent image on a sheet which comprises the steps of: providing a sheet having a transparent film base, an opaque conductor layer formed on one side of said transparent film base, and a semi-conductive layer formed on said opaque conductor layer having a volume resistivity of $10^3$ to $10^6$ ohm·cm; applying from 10 to 70 volts between said opaque conductor layer and a stylus electrode contacting the surface of said semi-conductive layer and simultaneously rendering transparent or translucent those portions of the semi-conductive and conductor layers underlying said stylus forming an image; contacting the thus formed image sheet with a liquid for removing said semi-conductive layer at least in the image portion, said semi-conductive layer being formed from one of (1) a uniform dispersion of semi-conductive metal oxide particles in a binder, (2) a uniform dispersion of non-conductive particles and conductive substances in a binder, and (3) a homogeneous conductive polymer.

**8.** A method for forming transparent image on a sheet comprising a transparent film base, an opaque conductor layer being formed on one side of said transparent film base, and a semiconductive layer being formed on said opaque conductor layer comprising a uniform dispersion of metal compound particles in a non-conductive and polymeric organic binder, said particles being reduced to free metal by application of electric voltage, comprising the steps of:

A. applying electric voltage from 20 to 70 volts between said opaque conductor layer and a needle electrode contacting the surface of said semiconductive layer having a thickness of 2 to 50 microns and a volume resistivity of $10^3$ to $10^6$ ohm·cm where the image is formed;
B. contacting the formed image sheet with a corrosive liquid comprising an aqueous solution of a substance selected from the group consisting of hydrochloric acid, nitric acid, phosphoric acid, sulfuric acid, formic acid, acetic acid, propionic acid, butyric acid, oxalic acid, hydroxysuccinic acid, citric acid, phenolsulfonic acid, ferric chloride, potassium ferrocyanide, ammonium thiocyanate and phosphates of ammonium to selectively remove the semiconductive layer and the opaque conductor layer in the image portion; and
C. further contacting the image sheet with water or an organic solvent selected from the group consisting essentially of methyl isobutyl ketone, methyl ethyl ketone, toluene, xylene, tetrahydrofuran, butyl acetate, N,N-dimenthyl formamide, dimethyl sulfoxide, trichloroethylene, perchloroethylene, ethyl alcohol to remove the remaining semiconductive layer.



**3,935,334**

## PROCESS FOR PREPARING A METALLIZED RESIN FILM FOR CONDENSER ELEMENT

**Hiroshi Narui, Uji, and Terumi Shinohara, Joyo, both of Japan, assignors to Oike & Company, Ltd., Kyoto, Japan**

**Filed June 21, 1974, Ser. No. 481,916**
**Claims priority, application Japan, June 6, 1973, 48-72675; Dec. 3, 1973, 48-13828; June 1, 1974, 49-62397**
**Int. Cl.² B05D** *5/12*, *5/00*
**U.S. Cl. 427—81** **18 Claims**

**1.** In a process for producing a metallized resin film for a condenser element comprising at least one di-electric resinous layer and at least one metal deposition layer, the improvement which comprises forming on said resinous layer a margin wherein the metal deposition layer is not present by the steps comprising

1. providing a water-soluble coating layer by applying a water-soluble paint to at least one side of the dielectric resinous layer in the portion of the resinous layer corresponding to the pattern of margin,
2. providing a metal deposition layer on the dielectric resinous layer partially coated with the water-soluble coating layer, said metal deposition layer being applied by means of vacuum metallizing procedures, and
3. removing the water-soluble coating layer and the metal deposition layer thereon by dissolving away the water-soluble coating layer with water.

**4.** The process of claim **2**, wherein the dielectric resin film is a member selected from the group consisting of the films made of polyethylene terephthalate, polyethylene naphthalate, polypropylene, polycarbonate, polystyrene, polytetrafluoroethylene, polyamide, polyvinyl chloride and cellulose acetate.

**7.** The process of claim **5**, wherein the dielectric resinous coating is made of at least one member selected from the group consisting of ethyl cellulose, cellulose acetate, cellulose acetate butyrate, polycarbonate, polystyrene, saturated polyester resin, acrylic resin, melamine resin, urea resin, phenolic resin, unsaturated polyester resin, thermosetting-type acrylic resin, alkyd resin, epoxy resin and urethane resin.

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**3,935,335**

## METHOD FOR PRODUCING SUPPORT FOR ELECTROPHOTOGRAPHIC MATERIAL AND ELECTROSTATIC RECORDING MATERIAL

**Isamu Maruyama; Shigeyoshi Suzuki, both of Nagaokakyo, and Yoshitake Yoshihiro, Tokyo, all of Japan, assignors to Mitsubishi Paper Mills, Ltd., Japan**

**Filed Apr. 10, 1974, Ser. No. 459,789**
**Claims priority, application Japan, Apr. 26, 1973, 48-46688**
**Int. Cl.² B05D** *5/12*
**U.S. Cl. 427—121** **14 Claims**

**1.** In a method for producing a support for electrophotographic materials or electrostatic recording material which comprises applying an electroconducting agent to an untreated paper, the improvement comprising the first step of fixing an anionic sizing agent which is at least one member selected from the group consisting of

a. sodium salts of maleic and derivative copolymers,
b. ammonium salts of copolymers containing carboxyl groups,
c. alkyd resin,
d. petroleum resin,
e. acrylic resin, and
f. polyacrylamide resin

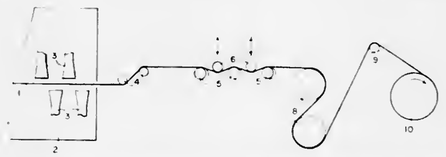
into a layer of the untreated paper and the second step of coating an electroconductive quaternary ammonium polymer on the thus treated paper.

**3,935,336**

## PROCESS FOR MAKING CARRIER SHEETS IMPREGNATED WITH AMINOPLAST CONDENSATION RESINS

**Rötger Mitgau, Essen-Kupferdreh; Bruno Petrik, Essen, and Dietmar Schedlitzki, Niederwenigern, all of Germany, assignors to Th. Goldschmidt AG, Germany**

**Filed Feb. 16, 1973, Ser. No. 333,311**
**Claims priority, application Germany, Mar. 9, 1972, 2211312**
**Int. Cl.² D06M** *13/54*
**U.S. Cl. 427—173** **9 Claims**



**1.** A process for making a carrier sheet of paper treated with an aqueous solution of at least one heat-hardenable aminoplast condensation resin, comprising passing said treated sheet through a heated zone in which said heat-hardenable aminoplast resin is dried and precondensed,

stretching said treated sheet at a temperature in the range of about 80°C to about 130°C, and in a direction transverse to the grain direction of said sheet,

and cooling said treated, stretched sheet.

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**3,935,337**

## PREPARATION OF LIQUID CRYSTAL CONTAINING POLYMERIC STRUCTURE

**Lynn J. Taylor, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio**

**Continuation of Ser. No. 331,445, Feb. 12, 1973, abandoned, which is a continuation of Ser. No. 121,156, Feb. 4, 1971, abandoned. This application Nov. 7, 1973, Ser. No. 413,655**
**Int. Cl.² C09K** *3/34*, *11/06*
**U.S. Cl. 427—180** **5 Claims**

**1.** A process for preparing a thin, layer-like film structure of controlled thickness suitable for use in electronic display devices comprising providing a polymeric material film, applying a liquid-crystal material to the surface of said polymeric material film and then heating said polymeric film to a temperature sufficient to promote diffusion of said liquid-crystal material therein to form said film structure containing said polymeric material in matrix form with said liquid-crystal material as a dispersed phase embedded in said polymeric material film such that said liquid-crystal material is in intimate contact with said matrix, said polymeric material being chemically and physically inert relative to the contained liquid-crystal material.

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**3,935,338**

## PROCESS FOR THE PREPARATION OF PRESSURE-SENSITIVE ADHESIVE ARTICLES

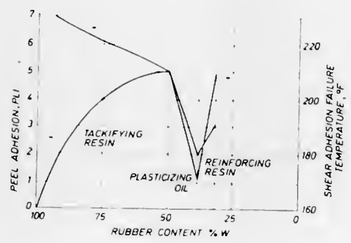
**William J. Robertson, Ronald K. Crossland, James T. Harlan Jr. and, all of San Marino, Calif., assignor to Shell Oil Company, Houston, Tex.**

**Filed Apr. 23, 1973, Ser. No. 353,865**
**Int. Cl.² C09J** *7/04*
**U.S. Cl. 427—207** **5 Claims**

**1.** An improved process for making a pressure-sensitive adhesive article comprising the steps of

a. mixing 100 parts by weight of a block copolymer of the groups consisting of block copolymers having at least two monoalkenyl arene polymer blocks A and at least one elastomeric conjugated diene polymer block B, said blocks A comprising 8–55 percent by weight of the copolymer and hydrogenated derivatives of the same, 50–200 parts by weight of a tackifying resin compatible

with block B, 20–75 parts by weight of a reinforcing resin compatible with blocks A and having a softening point at least 20°C higher than that of blocks A, and 25–100 parts by weight of a hydrocarbon extending oil;




b. heating the mixture to a fluid state;
c. and wiping a moving substrate with the fluidized mixture, said wiping action being in the absence of solvents for the mixture and without film formation of the mixture prior to contact with the substrate.

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**3,935,339**

## METHOD FOR COATING PARTICULATE MATERIAL THEREOF

**Claude E. Cooke, Jr., Houston, Tex., assignor to Exxon Production Research Company, Houston, Tex.**

**Filed July 16, 1973, Ser. No. 379,286**
**Int. Cl.² B05D** *7/00*
**U.S. Cl. 427—216** **17 Claims**

**1.** A method of forming free-flowing resin-coated particles which comprises:
a. coating the particles of a particular substrate material with a liquid thermosetting epoxy resin;
b. in the presence of a curing agent capable of curing said epoxy resin to a solid infusible state, agitating said coated particles in a nonpolar liquid immiscible with said liquid resin and containing a nonionic surfactant having a molecular weight of at least 2000 which retards agglomeration of said resin coated particles until said epoxy resin cures to a solid, infusible state; and thereafter
c. removing the coated particles from said immiscible liquid.

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**3,935,340**

## PROCESS FOR PREPARING PLASTIC COATED METAL POWDERS

**Tadashi Yamaguchi; Takayuki Ono, both of Sendai; Hiroshi Hoshi, Narashino; Michio Hirakawa, and Isao Watanabe, both of Ichikawa, all of Japan, assignors to Lion Yushi Kabushiki Kaisha, Tokyo, Japan**

**Filed Dec. 3, 1973, Ser. No. 421,321**
**Claims priority, application Japan, Dec. 4, 1972, 47-121357**
**Int. Cl.² B05D** *7/00*
**U.S. Cl. 427—216** **8 Claims**

**1.** A process for preparing plastic coated metal powder which comprises suspending a metal powder in an aqueous medium containing a radical-polymerizable monomer and initiating polymerization of said monomer with an initiator consisting essentially of acidic sulfite ions in the presence of said metal powder.

**3,935,341**

## METHOD FOR RENDERING WOOD RESISTANT TO FIRE

**Karl-Otto Sorensen, and Jorgen Sondergaard, both of Naesteved, Denmark, assignors to Kanamark International Limited, Cayman Islands, British W. Indies**

**Continuation of Ser. No. 296,365, Oct. 5, 1972 abandoned, which is a continuation of Ser. No. 99,382, Dec. 18, 1970, abandoned.**
**This application Dec. 7, 1973, Ser. No. 422,935**
**Claims priority, application Denmark, Dec. 23, 1969, 6836/69**
**Int. Cl.² B05D** *3/02*
**U.S. Cl. 427—317** **4 Claims**

**1.** A method for rendering wood resistant to fire which comprises:
heating the wood to dry the same to a mositure content of below about 4%;
impregnating the heated, dried wood, while still hot, with an aqueous solution containing from about 7 to about 70% by weight of a formaldehyde-reactive monomer, said solution having a temperature of at least 80°C.;
heating the formaldehyde-reactive monomer-impregnated wood to dry the same to a moisture content of below about 4%;
impregnating the dry, formaldehyde-reactive monomer-containing wood with a stoichiometric excess of formaldehyde; and
heating the now twice impregnated wood to effect a condensation reaction between the formaldehyde-reactive monomer and the formaldehyde, and to dry the wood to a moisture content of about 4%.

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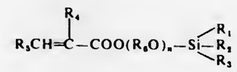
**3,935,342**

## HYDROPHILIZATION OF NON-POLAR SURFACES

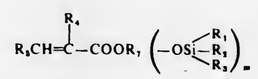
**Drahoslav Lim, Palo Alto, Calif., assignor to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany**

**Continuation-in-part of Ser. No. 331,093, Feb. 9, 1973. This application Dec. 4, 1973, Ser. No. 421,718**
**Int. Cl.² C08F** *8/10*; **C08J** *5/24*
**U.S. Cl. 427—341** **22 Claims**

**1.** A process for preparing a hydrophobic polymer substrate having a coating thereon of a hydrophilic polymer selected from the group consisting of homopolymers and copolymers comprising (A) coating said substrate with material selected from the group consisting of (1) a silylated monomer having the formula:

(a) 

or

(b) 

and (2) a mixture of said silylated monomer and a copolymerizable monomer; wherein $R_5$ is hydrogen or lower alkyl; $R_4$ is hydrogen, lower alkyl, halogen of atomic weight 9 to 80, phenyl or cyano, $R_6$ is alkylene or haloalkylene of 2 to 4 carbon atoms; $R_7$ is alkylene of 3 to 6 carbon atoms; $n$ is an integer of 1 to 4; $m$ is an integer of 2 to 5; and $R_1$, $R_2$ and $R_3$ are lower alkyl, pehnyl, or tolyl; (B) hydrolyzing the polymerized monomer or mixtures of monomers to form the hydrophilic polymer by replacing the





groups by hydrogen atoms.

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**3,935,343**

## MOLTEN SALT METHOD OF PRODUCING FIRE RESISTANT WOOD ARTICLES

**Harold W. Nuttall, Long Grove, Ill., assignor to United States Gypsum Company, Chicago, Ill.**

**Continuation of Ser. No. 224,597, Feb. 7, 1972, abandoned.**
**This application Feb. 21, 1974, Ser. No. 445,372**
**Int. Cl.² B44D** *1/14*; **C09K** *3/28*
**U.S. Cl. 427—353** **16 Claims**

**1.** A method for imparting fire resistance to wood articles within a period of 3 minutes which comprises immersing the wood article in molten ammonium phosphate substantially free of water under a pressure of at least about 10 p.s.i.g.

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**3,935,344**

## SIZING COMPOSITION AND GLASS FIBERS TREATED THEREWITH

**William H. Haggerty, Reynoldsburg, and Gerhard N. Bolen, Granville, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio**

**Continuation of Ser. No. 81,157, Oct. 15, 1970, abandoned.**
**This application July 17, 1972, Ser. No. 272,523**
**Int. Cl.² D02G** *3/00*
**U.S. Cl. 428—378** **6 Claims**

**1.** Glass fiber strands having from approximately 1 to 2 percent by weight of a dried coating of a sizing composition comprising in percent by weight:

| Materials | % by Weight |
|---|---|
| Water soluble resin mixture given below | 1.50 |
| Vinyl acetate, N-methylol-acrylamide copolymer emulsion | 3.85 |
| Ethylene-vinyl acetate copolymer emulsified particles stabilized by a partially acetylated polyvinyl alcohol protective colloid | 3.85 |
| Gamma-methacryloxypropyl-trimethoxysilane | 0.10 |
| Glacial acetic acid | 0.30 |
| Wax | 0.10 |
| Lubricant | 0.30 |
| Paintable fluid silicone emulsion | 0.50 |
| Deionized water | Balance |

said water soluble resin mixture being the reaction product of 1 mol of a diepoxy with 1 mol of diethanolamine and 1 mol of a polyglycol monoester with the preponderance of the diepoxy molecules having one diethanolamine molecule reacted with one oxirane group thereof and one polyglycol monoester molecule reacted with the other oxirane group thereof.

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**3,935,345**

## ELECTROLESS PLATING OF PEROXIDE FORMING METALS

**Luis E. Lema, Milford, Mass., assignor to Unitrode Corporation, Watertown, Mass.**

**Filed Aug. 20, 1974, Ser. No. 499,077**
**Int. Cl.² C23C** *3/02*
**U.S. Cl. 427—383** **45 Claims**

**1.** An oxidation-reduction process for electroless plating of a peroxide forming transition base metal selected from Group VI of the periodic table of elements comprising the steps of:
a. oxidizing oxides on the surface of said peroxide forming metal with hydrogen peroxide to produce metal peroxides of said peroxide forming metal; and
b. reducing in solution ions of a metal plating solution with said metal peroxides to deposit a protective metal plate on said peroxide forming metal;
c. said ions including ions selected from the group consisting of nickel, chromium, cobalt, rhodium or combinations thereof.

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**3,935,346**

## COATED PLASTIC SUBSTRATES FOR COATING COMPOSITIONS

**Edward J. Stengle, and James J. Tillman, both of Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio**

**Division of Ser. No. 340,071, March 12, 1973, Pat. No. 3,868,343. This application July 1, 1974, Ser. No. 484,556**
**Int. Cl.² B05D** *7/02*; **C08J** *7/04*
**U.S. Cl. 427—385** **17 Claims**

**1.** A method for providing a solid organic polymeric surface with a hard, strongly adhered, abrasionresistant, mar-resistant, chemically resistant, acetone-resistant, coating wherein a thermosettable resin system is cured in a short time, said method comprising the steps of:
1. applying onto said polymeric substrate an organic solvent solution of a coating composition prepared by a method which comprises:
a. heating methyltrialkoxysilane, wherein the alkoxy group contains between one and six carbon atoms, with between about 1.5 moles to about 10 moles of water per mole of total silane in the presence of an effective catalyzing amount of a acid hydrolysis catalyst between about 40°C. up to and including the reflux temperature for a period of about 1–10 hours so as to produce a substantially gel-free solution which contains a dissolved, hydrolyzed and partially condensed organopolysiloxane,
b. concentrating the solution containing said dissolved, hydrolyzed and partially condensed organopolysiloxane by heating to remove some but not all volatile material, including alkanol by-product and some water, so as to obtain a solution of a hydrolyzed and further partially condensed organopolysiloxane,
c. precuring the resultant product by heating below the gel point thereof to remove volatiles and produce a solvent-soluble, further-curable organopolysiloxane, and
d. adding in an amount, of between about 3% to about 15% by weight based on organopolysiloxane solids, an alkylated melamine-formaldehyde partial condensate resin to said solvent-soluble, further-curable organopolysiloxane, said alkylated resin being a methylated and $C_2$–$C_4$ alkylated resin wherein the molar ratio of methylation to $C_2$–$C_4$ alkylation is at least 1:1 and wherein said resin, based on a 66–67 weight percent solution in a 1:1 weight mixture of isobutanol to isopropanol has a hydrocarbon tolerance of about 20–200 and a water tolerance of about at least 300, and
2. evaporating said solvent, and heating said substrate at a temperature and for a time sufficient to thermoset the residual coating composition and form a hard, mar-resistant, abrasion-resistant, chemically resistant, acetone-resistant, strongly adhered coating consisting essentially of the heat cured product of an organopolysiloxane and a methylated and lower alkylated melamine-formaldehyde resin, on said substrate.

### 3,935,347
### DISPERSION OF ARYLENE SULFIDE POLYMER CONTAINING FLUOROCARBON POLYMER FOR FORMING COATINGS

**Jennings P. Blackwell, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.**

**Division of Ser. No. 299,065, Oct. 19, 1972, Pat. No. 3,856,735. This application Sept. 13, 1974, Ser. No. 505,917**
**Int. Cl.² B05D** *7/14, 1/02*
**U.S. Cl. 427—388** **16 Claims**

1. A process for forming a coated article comprising:
applying to a substrate a dispersion formed by subjecting fluorocarbon polymer, in particulate form having a molecular weight sufficient to give a melt viscosity flow of 0 at 380°C using a 5,000 g. weight, to intensive milling by ball milling or rod milling with a liquid selected from water, ethylene glycol, or propylene glycol; and thereafter adding thereto poly(arylene sulfide) in particulate form and a pigment or filler in particulate form and subjecting the resulting mixture to additional intensive milling by ball milling or rod milling; and
heating said thus applied dispersion at a temperature of at least 500°F to form a cured coating.

### 3,935,348
### METHOD OF BONDING SILICONE RUBBER TO A PRIMED SURFACE

**Christopher John Smith, Llanishen, Wales, assignor to Dow Corning Limited, Barry, Wales**

**Filed Feb. 14, 1974, Ser. No. 442,560**
**Claims priority, application United Kingdom, Feb. 20, 1973, 8162/73**
**Int. Cl.² C09J** *5/02;* **B32B** *25/20, 21/08, 13/12*
**U.S. Cl. 427—408** **5 Claims**

1. A method of producing a porous masonry or wood substrate having bonded thereto a silicone rubber which comprises (1) applying to the surface of a porous substrate which is of masonry or wood a coating of a primer composition comprising (a) a cyclised rubber resin, (b) from 0 to 40%, based on the weight of (a), of a film forming polyester resin which is compatible with (a), and (c) a volatile organic solvent, the solvent (c) comprising from 45 to 85% of the total weight of the primer composition, (2) drying the applied coating and (3) applying to the primed surface a room temperature vulcanisable silicone rubber composition selected from the group consisting of (I) compositions based on an organosiloxane polymer having in the molecule (A) silicon bonded oxime radicals, (B) a mixture of an organosiloxane polymer having silanol groups and a silane having at least 3 silicon-bonded oxime groups per molecule, or (C) a mixture of (A) and (B), (II) compositions based on (D) an organosiloxane polymer having terminal silicon-bonded acyloxy groups, (E) a mixture of a silanol-terminated organosiloxane polymer and a silane having at least 3 silicon-bonded acyloxy groups per molecule, or (F) a mixture of (D) and (E), and (III) compositions based on (G) an organosiloxane polymer having terminal silicon-bonded amido or amino groups, (H) a mixture of a silanol-terminated organosiloxane polymer and a silylamine or silylamide or (K) a mixture of (G) and (H).

### 3,935,349
### PROCESS OF COATING AN ALUMINUM ARTICLE

**Shiro Terai, Nagoya; Akinari Ichiryu, Aichi; Toshio Suzuki, Kasugai, and Toshinori Maeda, Nagoya, all of Japan, assignors to Sumitomo Light Metal Industries, Ltd., Tokyo, Japan**

**Filed Oct. 1, 1973, Ser. No. 402,364**
**Claims priority, application Japan, Oct. 6, 1972, 47-101027**
**Int. Cl.² B05D** *7/14;* **C23F** *7/06*
**U.S. Cl. 427—409** **4 Claims**

1. A process for coating an aluminum article, which comprises treating an aluminum article having an anodized oxide surface layer or a boehmite surface layer with a silane compound of the formula:

$$[R(CH_3)_n]-Si-X_3$$

wherein $n$ is 1, 2 or 3, R is an alkylenediamino group of 1–4 carbon atoms, an alkoxy group having an epoxy group and containing 1–4 carbon atoms, X is at least one group which is reactive with aluminol and is selected from the group consisting of an alkoxy group of 1–4 carbon atoms and an alkyl group of 1–4 carbon atoms provided that all of the group X do not constitute the alkyl group simultaneously; then coating the so-treated aluminum article with a known coating composition containing a thermo-setting resin as the film forming material by applying said coating composition onto the oxide layer surface of the aluminum article by means of a coating technique other than electrodeposition, and finally heat-curing the resin coating on the aluminum article.

### 3,935,350
### SUPPRESSION OF CREVICE CORROSION IN GASKETED TITANIUM CREVICES BY THE USE OF RUBBER COMPOUND GASKETS SUBSTANTIALLY FREE OF CALCIUM

**Donald W. Du Bois, and William B. Darlington, both of Corpus Christi, Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.**

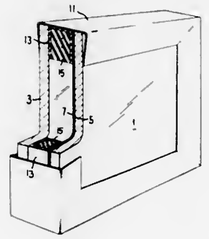
**Division of Ser. No. 348,452, April 5, 1973, Pat. No. 3,857,773. This application June 27, 1974, Ser. No. 483,725**
**Int. Cl.² C25B** *1/24*
**U.S. Cl. 428—35** **3 Claims**

1. In a titanium vessel in an electrolytic system having a pair of surfaces, at least one of said surfaces being of titanium, said surfaces being separated by a gasket with a crevice therebetween subject to crevice corrosion, the improvement wherein said gasket comprises a substantially calcium free rubber composition resistant to chloride brines containing less than 0.07 weight percent calcium as determined by atomic adsorption spectroscopy and less than 10 weight percent calcium in the ash by emission spectroscopy.

### 3,935,351
### MULTIPLE GLAZED WINDOWS INCLUDING SELECTIVE REFLECTING METAL/METAL OXIDE COATINGS

**Helmut Franz, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.**

**Division of Ser. No. 252,803, May 12, 1972, Pat. No. 3,846,152. This application May 17, 1974, Ser. No. 470,769**
**Int. Cl.² B32B** *17/06;* **E06B** *3/24;* **G02B** *5/28*
**U.S. Cl. 428—34** **1 Claim**



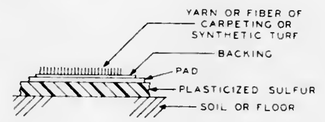

1. In a multiple glazed glass article comprising at least two glass panels disposed in substantially parallel relation, and spaced apart by a space member disposed between said panels about their margins and held in said relation by a marginal frame member, the improvement comprising at least two coatings affixed to at least one side of at least one of said panels:
a. a first coating affixed to the glass said first coating being a transparent metal coating consisting essentially of nickel substantially in its reduced metallic state; and
b. a second coating affixed to the first coating said second coating being a transparent metal oxide coating consisting essentially of copper oxide of from about 50 to about 1500 angstroms.



### 3,935,352
### SUPPORTED TURF OR CARPET-LIKE MATERIAL

**William G. Toland, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.**

**Filed May 29, 1974, Ser. No. 474,456**
**Int. Cl.² D03D** *27/00;* **D04H** *11/00*
**U.S. Cl. 428—95** **6 Claims**



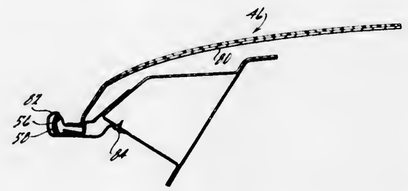

1. A method for obtaining a supported turf or carpet-like structure which comprises placing a layer of molten plasticized sulfur on a surface and then placing, on the layer of plasticized sulfur, synthetic turf or carpet-like material having its own backing, and wherein the synthetic turf or carpet-like material is placed backing side down on the layer of plasticized sulfur.

5. A supported turf or carpet-like structure comprising a solidified layer of plasticized sulfur and synthetic turf or carpet-like material placed thereon and wherein the synthetic turf or carpet-like material has its own backing.

### 3,935,353
### HEAT SHRINKABLE DECORATIVE COVERING MATERIAL FOR VEHICLE PANELS

**Ralph G. Doerfling, Walled Lake, and Charles J. Motycka, Detroit, both of Mich., assignors to Detroit Gasket & Manufacturing Co., Oak Park, Mich.**

**Division of Ser. No. 255,797, May 22, 1970, Pat. No. 3,846,200. This application July 8, 1974, Ser. No. 486,517**
**Int. Cl.² B32B** *3/06;* **B62D** *27/00;* **B60J** *7/00*
**U.S. Cl. 428—99** **3 Claims**

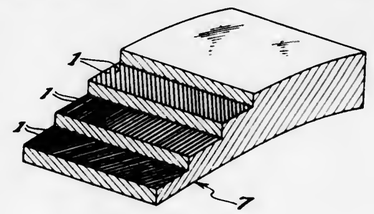



1. A decorative plastic covering material for vehicle roof panel and the like comprising a plastic sheet composed of a heat-softenable thermoplastic material having a heat-softening point of about 200°F up to about 300°F and incorporating a heat-activatable adhesive film over substantially the entire underside surface thereof, said adhesive film having a heat-activatable temperature at which tackification thereof occurs above the initial heat-softening point of said plastic sheet, said sheet being of a preselected shape and size and incorporating a convex contour over the inner area thereof of a magnitude in excess of the convex contour of a rigid vehicle roof panel over which the sheet is adapted to be applied, said plastic material in said inner area being in a prestretched condition and characterized as incorporating a memory therein for effecting a shrinkage of said sheet in response to a heating thereof to a temperature at which said sheet becomes plastically deformable, and fastening means comprising longitudinally extending clips of arcuate cross section secured along at least a portion of the terminal edge portions of said sheet for overlying and interlockingly engaging the peripheral edge of a vehicle roof panel for locating said sheet in proper registration thereover and for securing the terminal edges of said sheet against movement relative to a vehicle roof panel in response to a heating and shrinkage of said sheet when disposed in overlying relationship on the vehicle panel.

### 3,935,354
### SHAPED ARTICLES OF PYROLYTIC GRAPHITE-SILICON CARBIDE MICROCOMPOSITES

**Eugene L. Olcott, 6504 Lakeview Drive, Falls Church, Va. 22041**

**Division of Ser. No. 65,899, Aug. 21, 1970, Pat. No. 3,738,906. This application Nov. 27, 1972, Ser. No. 309,641**
**Int. Cl. B32b** *5/12*
**U.S. Cl. 428—107** **5 Claims**




1. A shaped pyrolytic graphite article comprising a matrix containing embedded therein at least one reinforcing refractory filament or strand layer, said filament or strand layer comprising a plurality of unidirectional and substantially parallel, laterally spaced, individual, continuous refractory filaments or strands, said matrix comprising crystallite layers of pyrolytic graphite containing embedded SiC aciculae in which the longitudinal axes of said aciculae are aligned substantially in the c-direction relative to the a-b plane of the associated pyrolytic graphite crystallite, said SiC aciculae comprising about 5% to about 95% by volume of said matrix, said crystallite layers being nucleated from each of said individual filaments or strands and interconnected to form a continuous matrix phase surrounding and interconnecting each of said filaments or strands.

2. The article of claim 1 wherein said article comprises a plurality of reinforcing layers.

3. The article of claim 2 wherein the unidirectional, substantially parallel filaments or strands comprising one reinforcing layer are oriented in a direction different from the unidirectional, substantially parallel filaments or strands comprising another reinforcing layer.

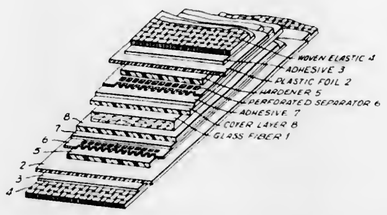
### 3,935,355
### WRAPPING MATERIAL

**Hans Georg Kuhn, Heerstrasse 131/135, D-1000 Berlin 19, Germany**

**Filed Dec. 20, 1972, Ser. No. 317,056**
**Claims priority, application Austria, Dec. 28, 1971, 11166/71**
**Int. Cl.² B32B** *3/10*
**U.S. Cl. 24—150 R** **32 Claims**

1. In an elongated wrapper which is initially flexible and which when wrapped around one or more bodies is adapted to be stretched and to assume a substantially rigid condition, outer, elongated, tubular, impermeable, elastic envelope means having in a transverse direction a width which is a relatively small fraction of its length in a longitudinal direction and having a generally flat cross sectional configuration for surrounding one or more bodies while being stretched in said

longitudinal direction and wrapped around the bodies, said envelope means having an inner surface carrying one of a pair of materials which when they combine react to assume a hardened condition, said one material being distributed in said longitudinal direction along said inner surface of said envelope means and the other of said materials being situated in the interior of said envelope means between opposed wall portions thereof which extend in said longitudinal direction, and separating means situated in the interior of said envelope means between said materials and separating the latter from each other for preventing them from combining with each other, said separating means including an apertured layer of sheet material and a covering sheet material which is relatively brittle and which has the property of rupturing in response to stretching of said envelope means in said longitudinal direction when said envelope means is wrapped around one or more of said bodies, said covering sheet material being adhered to and covering said apertured sheet material to close the apertures thereof so that upon rupturing of said covering sheet material in response to said longitudinal stretching of said envelope means, said separating means will assume a non-separating condition placing said materials in contact



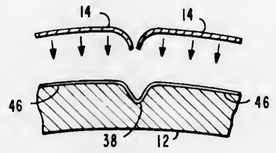

with each other through apertures of said apertured sheet material so that they will combine to assume said hardened condition in response to stretching of said envelope means in said longitudinal direction and wrapping of said envelope means around one or more bodies, said envelope means and separating means both being transparent while said pair of materials include a material which initially is non-transparent but which becomes transparent when said pair of materials combine with each other, so that the transparency resulting from the combining of said pair of materials gives a visual indication of the hardening reaction and renders visible that part of a body which is covered by the wrapper.

**32.** The combination of claim 1 and wherein said pair of materials are respectively, a polymerizable material and a hardener therefor, releasable fastener means coacting with windings of the wrapped envelope means and the structure therein for fastening them to each other, said releasable fastener means including a push member having a pointed shank to pierce through the wrapping and a receiving member having a recess for receiving the pointed shank, and said shank being made of polystyrene while said polymerizable material is a polyester with which said polystyrene becomes bonded so that the polymerizable material will be united with said shank.

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**3,935,356**
**FANCIFUL OBJECT**
**Irene M. Minow, Box 325, Cripple Creek, Colo. 80813**
**Filed May 29, 1973, Ser. No. 364,713**
**Int. Cl.² B32B** *3/30*
**U.S. Cl. 428—163** **4 Claims**

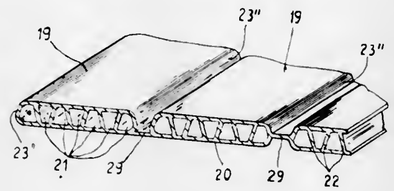
**1.** A fanciful object comprising a base of relatively hard, molded material having a selected shape and a plurality of grooves in the surface thereof and panels of flexible covering material secured to and conforming to selected portions of the surface of the base, the margins of said panels being at least partially within and along said grooves, and the panels being substantially coextensive with areas defined within said grooves and combining with exposed surface areas of the base to give the object an appearance of being substantially completely comprised of the flexible covering material of the




panels rather than the molded material of the base, the base being substantially of ceramic composition and the covering material being substantially of cloth composition.

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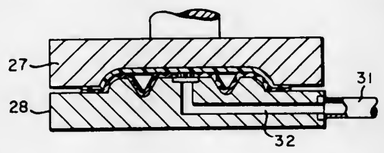
**3,935,357**
**HOLLOW EXTRUDED PLASTIC STRIPS FOR PACKINGS**
**Pietro Padovani, Verona, Italy, assignor to I. S. A. P. S.p.A., Verona, Italy**
**Filed Mar. 27, 1973, Ser. No. 345,415**
**Int. Cl.² B32B** *3/02, 3/26;* **B29D** *23/04;* **B65D** *81/02*
**U.S. Cl. 428—166** **2 Claims**




**1.** A hollow extruded strip having at least one end, made of plastic material comprising an outer wall forming a closed triangular shape when viewed in cross-section taken transverse to the longitudinal axis of the strip, and a plurality of inner walls parallel to the longitudinal axis of the strip, formed integral with and connecting opposed portions of said outer wall, wherein the homogeneous molecular orientation of said plastic material in the longitudinal direction of said strip.

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**3,935,358**
**PROCESS FOR PREPARING A HOLLOW, RIB-REINFORCED LAMINATED STRUCTURE**
**Nathaniel Convers Wyeth, Mendenhall, Pa., and Frank William Arnoth, Wilmington, Del., assignors to E. I. Du Pont de Nemours & Co., Wilmington, Del.**
**Continuation-in-part of Ser. No. 346,164, March 29, 1973, abandoned. This application Feb. 15, 1974, Ser. No. 443,199**
**Int. Cl.² B29C** *17/04;* **B32B** *3/00, 31/20*
**U.S. Cl. 428—166** **34 Claims**




**1.** A process for preparing a hollow, ribreinforced, laminated article consisting essentially of:

a. placing two sheets between opposing mold platens, the sheets being aligned such that the sheet surfaces are in interfacial contact, at least one of the sheets being a thermoplastic material heated to its thermoforming temperature and at least one of the sheets being provided with grooves or integral projections, on the surface which contacts the other sheet, which form fluid passageways, and at least one of the mold platens being provided with a mold cavity to form a shaped article having ribs;

b. closing the mold platens to contact the sheets and position the mold cavity contiguous to the thermoplastic sheet which is at its thermoforming temperature;

c. introducing a fluid into the fluid passageways to distend the thermoplastic sheet into its mold cavity forming a shaped article having ribs, while the closed mold platens maintain contact between the sheets in the nondistended areas; and

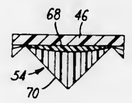
(d) adhering the sheets in the nondistended areas to form a laminate.

**34.** A hollow, rib-reinforced, laminated article made by the process of claim **1**.



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**3,935,359**
**RETROREFLECTIVE SHEETING AND METHOD AND APPARATUS FOR PRODUCING SAME**
**William P. Rowland, Southington, Conn., assignor to Rowland Development Corporation, Kensington, Conn.**
**Division of Ser. No. 265,736, June 23, 1972, Pat. No. 3,811,983. This application Filed Feb. 13, 1974, Ser. No. 441,950. The portion of the term of this patent subsequent to Aug. 15, 1989, has been disclaimed.**
**Int. Cl.² B29D** *7/08;* **G02B** *5/12*
**U.S. Cl. 428—172** **9 Claims**

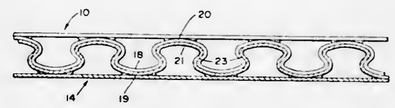



**1.** Retroreflective sheeting comprising a body portion having smooth, substantially parallel opposite surfaces, and a multiplicity of minute cube corner formations closely spaced thereon and projecting from one of said surfaces thereof, each of said cube corner formations having three faces and a base adjacent said body portion with a side edge dimension of not more than about 0.025 inch and being a composite of a first resin for formulation providing the body of the cube corner formation and a second resin formulation substantially providing said base, said body portion being formed separately from said cube corner formations and said cube corner formations being bonded to said body portion by said second resin formulation with said close spacing substantially avoiding any smooth areas therebetween, said body portion and cube corner formations being fabricated from transparent synthetic resin and said first and second resin formulations of said cube corner formation being of different composition and of substantially the same refractive index to provide retroreflective sheeting in which those light rays entering through the other of said surfaces of said body portion predominately pass through said body portion and into said cube corner formations and are reflected thereby back through said body portion along paths that are substantially parallel to their paths of entry.

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**3,935,360**
**COMPOSITE PAD**
**Erik Brown, Amherst, N.H., assignor to Brown Products, Inc., Amherst, N.H.**
**Continuation-in-part of Ser. No. 292,774, Sept. 27, 1972, abandoned. This application Jan. 28, 1974, Ser. No. 436,837**
**Int. Cl.² B32B** *3/00, 3/28*
**U.S. Cl. 428—186** **1 Claim**

**1.** A corrugated board structure defined by a perimeter comprising two corrugated boards each having a planar lining sheet adhered to a corrugated member wherein the corrugated members of each board are in nesting relationships, the corrugations being exposed to view at locations along said perimeter and closely adjacent said perimeter the corrugations being inelastically deformed into an interlocking reentrant configuration, and not being deformed from their initial corrugated shape elsewhere whereby the structure retains its ability to resist crushing.




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**3,935,361**
**MAGNETIC IMPULSE RECORD ELEMENT LAMINATE AND METHOD OF MAKING SAME**
**Michael B. Dorfman, Clinton, and Robert E. Logan, Easton, both of Conn., assignors to Addressograph Multigraph Corporation, Cleveland, Ohio**
**Filed May 3, 1973, Ser. No. 356,917**
**Int. Cl.² G11B** *5/70, 5/80, 5/84;* **B32B** *31/12*
**U.S. Cl. 428—189** **9 Claims**



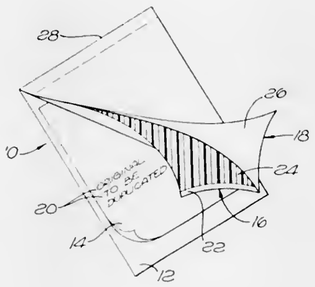

**1.** As an article of manufacture, a vinyl plastic member having a surface at least a portion of which is provided with a coating consisting of a dry residue of a partially hydrolyzed vinyl chloride-vinyl acetate copolymer comprising, on a solids basis, from about 88 to about 94 weight percent polyvinyl chloride, from about 2 to about 6 weight percent polyvinyl acetate, and from about 2 to about 10 weight percent polyvinyl alcohol activatable to an adhesive condition when heated and a transferrable magnetic impulse record element greater than 0.3 inches in width carried on a separable backing strip comprising a dispersion of magnetic particles in a binder matrix overlying and bonded to said coating by a hot stamping process, said coating having a thickness in the range of 0.01 to 0.03 mils and forming an interface between the record element and the vinyl plastic member whereby the amount of cupping which accompanies the transfer of the impulse record is less than 200 microinches per 0.1 inch of the record element width.

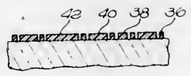
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**3,935,362**
**IMAGE CONTROL MEANS AND STRUCTURED TRANSFER SHEET FOR THERMAL REPRODUCTION PROCESSES**
**Joseph Tat-Hin Sund, Los Angeles, and Yoshikazu Yamada, Irvine, both of Calif., assignors to Bell & Howell Company, Chicago, Ill.**
**Filed Oct. 25, 1973, Ser. No. 409,531**
**Int. Cl.² B41M** *5/10, 5/18*
**U.S. Cl. 428—207** **7 Claims**

**5.** A transfer sheet for use in a thermal transfer process for reproducing a thermally detectable original image, comprising a substrate and a discontinuous layer thereon in the form of a pattern of a plurality of closely spaced discrete carbon regions of thermally transferable heat-sensitive material of vary-

ing widths substantially uniformly distributed over said substrate whereby to enable transfer of said heat-sensitive mate-




rial temperature correlated with the optical density of said original image.

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**3,935,363**
**ABSORBENT PRODUCT CONTAINING FLOCCULATED CLAY MINERAL AGGREGATES**

**Nelson D. Burkholder; Ralph L. Wisner, both of Midland, Mich., and Dudley A. Taber, The Hague, Netherlands, assignors to The Dow Chemical Company, Midland, Mich.**

**Filed Sept. 16, 1974, Ser. No. 506,364**
**Int. Cl.² B32B *9/00***
**U.S. Cl. 428—281** **4 Claims**

1. An article for absorbing aqueous fluids comprising a flexible fibrous support having dispersed therein dry, water stable, flocculated clay mineral aggregates.

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**3,935,364**
**POROUS, HEAT-SENSITIVE SUBSTRATES COATED WITH SYNTHETIC RESINS**

**Emil Proksch, and Helmut Eschweiler, both of Vienna, Austria, assignors to Eternit-Werke Ludwig Hatschek & UCB,S.A., Saint-Gilles-lez-Bruxelles**

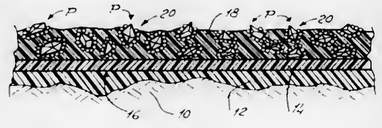
**Continuation-in-part of Ser. No. 194,026, Oct. 29, 1971, abandoned. This application Jan. 11, 1974, Ser. No. 432,487**
**Claims priority, application Austria, Oct. 30, 1970, 9779/70**
**Int. Cl.² B05D *3/06*; B32B *3/00*, *13/00*, *21/00***
**U.S. Cl. 428—304** **18 Claims**

1. An article, comprising a heat-sensitive porous substrate having a smooth, hard resin surface coating thereon, said coating comprising a room temperature cured mixture of (a) 100 parts by weight of at least one saturated synthetic resin which normally has a minimum filmforming temperature higher than room temperature on said porous substrate and (b) 2 to 40 parts by weight of an organic liquid which is a swelling agent for said resin, said liquid consisting of 70 to 10 percent by weight of at least one mono-ethylenically unsaturated compound having a boiling point of less than 190°C. and 30 to 90 percent by weight of at least one ethylenically unsaturated compound having a boiling point of at least 190°C.

**3,935,365**
**ANTI-SKID AND WEAR-RESISTING ROAD MARKING TAPE MATERIAL**

**Ludwig Eigenmann, Vacallo, Ticino, Switzerland**

**Filed Jan. 22, 1974, Ser. No. 435,476**
**Claims priority, application Italy, Jan. 22, 1973, 19444/73**
**Int. Cl.² B32B *5/16***
**U.S. Cl. 428—323** **15 Claims**




1. As an article of manufacture, a tape material for securement to primer layers provided on roadway pavements so as to form traffic-regulating indicia on the latter, comprising a first layer which contains a polymeric binder having high molecular cohesion, said first layer having one surface adapted to face towards a roadway pavement and another surface adapted to be exposed to traffic; a plurality of hard particles having a minimum hardness of about 6 on the Mohs' Hardness Scale distributed among various levels of said first layer intermediate said surfaces thereof, at least some of said hard particles being provided with a sharp tip; and a second layer adapted to be secured to a primer layer on the roadway pavement bonded to said one surface of said first layer, said second layer being compatible with said first layer so that said first and second layers are firmly bonded to one another, and said second layer also being compatible with the primer layer so as to permit a firm bond to be obtained between said second and primer layers when said tape material is placed on the primer layer, said tape material being effective for imparting good anti-skid properties to a traffic-regulating indicium formed therewith due to the presence of said tips of said hard particles which provide gripping areas when exposed, and said tape material further being effective for maintaining good anti-skid properties during wear of the traffic-regulating indicium due to the distribution of said hard particles among various levels of said first layer which enables fresh hard particles to become exposed as the hard particles next to the latter are removed by wear.

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**3,935,366**
**BONDED GOLD ARTICLE COMPOSITION FOR BONDING GOLD TO A CERAMIC SUBSTRATE UTILIZING COPPER OXIDE AND CADIUM OXIDE**

**Baynard R. Smith, North Palm Beach, Fla., assignor to Electro Oxide Corporation, Palm Beach Gardens, Fla.**

**Division of Ser. No. 248,014, April 27, 1972, Pat. No. 3,799,891. This application Mar. 22, 1974, Ser. No. 453,568**
**Int. Cl.² B32B *15/04*; B05D *3/02***
**U.S. Cl. 428—328** **41 Claims**

1. A method of bonding a gold layer to a ceramic substrate including the steps of:

a. mixing on a weight basis: (A) about 0.1 to 7.0% of at least one copper oxide powder from the group consisting of cuprous oxide and cupric oxide; (B) about 0.01 to 15.0% of cadmium oxide powder; (C) 78.0 to 99.89% of gold powder having a particle size within the approximate range of 2.0 to 5.0 microns, said copper oxide powder and said cadmium oxide and said gold powder defining in combination a solid composition mixture, said weight percentages of said copper oxide, said cadmium oxide and said gold powder pertaining to said solid composition mixture; and, (D) about 10.0 to 95.0% of an organic binder devoid of glass frits, said organic binder in combination with waid copper powder, said cadmium oxide powder and said gold powder defining a total composition mixture, said weight percentages of said organic binder pertaining to said total composition mixture;

b. applying said total composition mixture to a ceramic substrate to form a coated ceramic substrate; and

c. firing said coated ceramic substrate at a predetermined temperature within the approximate temperature range of 850°to 1063°C.



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**3,935,367**
**METHOD OF RENDERING SURFACES NONFOGGING AND RESULTING ARTICLES**

**Richard E. Merrill, Wakefield, and Arthur A. Massucco, Natick, both of Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.**

**Filed Nov. 24, 1972, Ser. No. 309,332**
**Int. Cl.² C08G *18/04*; C09K *3/18***
**U.S. Cl. 428—336** **27 Claims**

1. A method for rendering a surface of a substrate nonfogging, comprising the step of adhering to said surface a thin transparent film of a block copolymer characterized as containing alternating blocks of a hydrophilic polyetherurethane and of a hydrophilic polyacrylic which is a copolymer of a hydroxy-substituted acrylate and an ethylenically unsaturated acid, the weight ratio of said polyetherurethane to said copolymer ranging between about 10 to 90 and about 40 to 60.

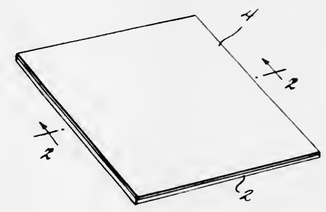
12. An article of manufacture comprising a substrate having on at least one surface thereof a nonfogging, transparent coating comprising a thin transparent film of a block copolymer, the blocks of which are characterized as being a hydrophilic polyetherurethane alternating with a hydrophilic polyacrylic which is a copolymer of a hydroxy-substituted acrylate and an ethylenically unsaturated acid, the weight ratio of said polyetherurethane to said copolymer ranging between about 10 to 90 and about 40 to 60.

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**3,935,368**
**VINYL CHLORIDE FLOORING MATERIAL COATED WITH A HYDROPHILIC ACRYLIC POLYMER**

**Jonas Weiss, Plainfield, N.J., assignor to National Patent Development Corporation, New York, N.Y.**

**Filed July 1, 1971, Ser. No. 158,824**
**Int. Cl.² B05D *3/02*; B32B *27/08***
**U.S. Cl. 428—337** **2 Claims**




1. A vinyl chloride polymer flooring material, in the form of tile or sheeting, having a thickness of 10 to 500 mils and having a protective outer coating consisting essentially of a hydrophilic acrylic polymer selected from the group consisting of homo polymers of hydroxyethyl acrylate, hydroxypropyl acrylate, hydroxyethyl methacrylate, hydroxypropyl methacrylate, methoxyethyl acrylate, ethoxyethyl acrylate, methoxyethyl methacrylate and ethoxyethyl methacrylate.

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**3,935,369**
**METHODS OF MANUFACTURING AN INSULATED CONDUCTOR AND PRODUCT PRODUCED THEREBY**

**Emanuel John George, Atlanta, Ga.; Joseph Lane Salter, Lutherville, Md.; Earl Salvator Sauer, and Charles Edward Tidd, Jr., both of Baltimore, Md., assignors to Western Electric Company, Inc., New York, N.Y.**

**Filed Nov. 2, 1973, Ser. No. 412,362**
**Int. Cl.² C08G *45/04***
**U.S. Cl. 428—379** **9 Claims**




1. A method of covering a conductive member with a composition which includes a plasticized polyvinyl chloride, an epoxy resin, a stabilizer, a filler system, a flame retardant constituent, and a carbon black constituent, which includes the steps of:

advancing the conductive member along a path;

preheating the conductive member to a temperature within a specified temperature range of approximately 525° to 675°F; and

extruding the composition over the conductive member while the temperature thereof is substantially within the specified temperature range, the temperature being sufficiently high to cause a sufficient chemical reaction of at least one of the constituents of the composition which causes the composition to develop an unexpectedly superior permanent adhesion with the outwardly facing surface of the conductive member, the magnitude of the adhesion being determined at least partially by the temperature to which the conductive member is preheated, further the magnitude of the adhesion being controlled to be consistently within a specified range.

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**3,935,370**
**PROCESS FOR PREPARING FLOCK FIBERS FOR ELECTROSTATIC FLOCKING**

**Toni Marti, Lucerne, Switzerland, assignor to Societe de la Viscose Suisse, Emmenbrucke, Switzerland**

**Filed Aug. 27, 1973, Ser. No. 391,915**
**Claims priority, application Switzerland, Sept. 6, 1972, 13114/72**
**Int. Cl.² B32B *27/02***
**U.S. Cl. 428—394** **13 Claims**

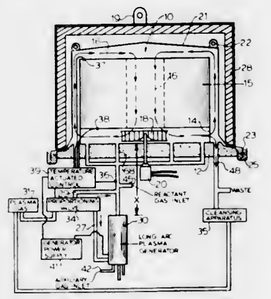
1. Process for preparing flock fibers suitable for use in the manufacture of pile materials by electrostatic flocking which comprises treating flock fibers made of polymers selected from the group consisting of polyamides, polyesters, polyacrylonitriles, polyvinyl chloride, and cellulose triacetate with an aqueous solution consisting essentially of tannin and a water-soluble alum, wherein the preparation of said flock fibers excludes any pre-treatment or post-treatment with an aqueous solution containing potassium antimonyl tartrate.

3,935,371

## PLASMA HEATED BATCH-TYPE ANNEALING FURNACE

Salvador L. Camacho, O'Neal Road, Raleigh, N.C. 27606, and James K. Magor, 3555 Hamstead Court, Durham, N.C. 27707

Division of Ser. No. 332,919, Feb. 16, 1973. This application June 17, 1974, Ser. No. 480,236
Int. Cl.² H05H *1/26*
U.S. Cl. 13—2 11 Claims



1. A modified batch-type annealing furnace converted to plasma arc operation comprising in combination:
a. a basic furnace construction comprising a hearth floor, an inner box-like cover having a closed upper end and a sealable open bottom end adapted to rest about the floor and to provide a treatment chamber to enclose the charge to be annealed, an outer box-like cover having a closed upper end and an open bottom end and a refractory lining therein and being adapted to rest surrounding said inner cover;
b. conduit means providing gas entry paths through said floor and to and from said inner cover chamber;
c. a plasma generator assembly located proximate and external of said furnace construction and including a plasma generator, an electrical power and any necessary cooling supply and a plasma gas supply therefor, the plasma gas output of said gene.ator being connected to said conduit means entry path;
d. temperature control means connected to sense the temperature within said chamber and to control the operation of said assembly whereby upon energization of said generator and the feeding of plasma gas from said supply thereto, a controlled flow of said plasma gas is heated, directed to said chamber and made useful therein as a temperature controlled annealing atmosphere surrounding said charge; and
e. a bypass pipe and valve arrangement connected between said generator plasma gas supply and said generator and controlled by said temperature control means such that said chamber temperature may be controlled by the amount of said plasma gas bypassed around said generator.

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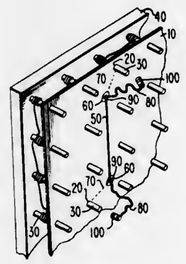
3,935,372

## METHOD AND APPARATUS FOR MODIFYING WIRE-WRAPPED BACK PLANES

Gerald H. Triplett, Plymouth; Edward A. Nicol, and William G. Klehm, Jr., both of Farmington, all of Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed Aug. 2, 1974, Ser. No. 494,213
Int. Cl.² H05K *1/04*
U.S. Cl. 174—68.5 7 Claims

1. The method of effecting wiring changes in the interconnection of the post terminals in a back plane, to thereby modify the operational characteristics of the back plane, said method comprising the steps of:
a. forming a matrix of apertures in a board suitable for receiving a printed circuit, said matrix corresponding to the plurality of post terminals on the back plane,
b. forming a printed circuit on the surface of said board including a plurality of circuit segments, each of said circuit segments partially spanning the distance between a pair of selected apertures corresponding to a pair of post terminals requiring interconnection,
c. forming a pair of circuit terminals at the terminal ends of each of said circuit segments,
d. applying a pair of graphic pathways on the surface of said board for each of said circuit segments, each of said pairs of graphic pathways leading from the circuit terminals of a circuit segment to the said pair of selected apertures partially spanned thereby, each of said pairs of graphic pathways terminating at and serving to identify a pair of selected apertures corresponding to a pair of post terminals requiring interconnection,
e. affixing one end of a jumper wire to each of said circuit terminals,
f. mounting said board with said printed circuit, said jumper wires and said graphic pathways onto the post terminals of the back plane with each aperture of said matrix of apertures being received over its corresponding post terminal of the back plane, and
g. electrically connecting the free end of each of said jumper wires to the post terminal receivably disposed within the selected aperture identified by the graphic pathway leading from the circuit terminal to which it is affixed.



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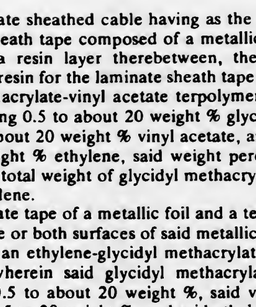
3,935,373

## ACCESS INSERT FOR SPLICE CASE

Bert A. Smith, Northridge, and Paul C. Getz, Saugus, both of Calif., assignors to Smith-Schreyer & Assoc., Inc., Woodland Hills, Calif.

Filed Mar. 4, 1975, Ser. No. 555,297
Int. Cl.² H02G *15/08*
U.S. Cl. 174—77 R 8 Claims

1. An access insert for a splice case comprising
a first resilient tube;
a rigid sleeve positioned about at least a portion of said first resilient tube;
a closed end at a first end of said first resilient tube; and



a second resilient tube, said second resilient tube extending from about a second end of said first resilient tube.





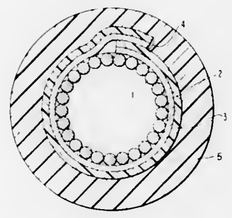
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3,935,374

## LAMINATED SHEATHED CABLE

Kanji Yoshikawa; Yoshiharu Tatsukami, both of Niihama; Hiroshi Shimba, and Hiroaki Mukunashi, both of Yokohama, all of Japan, assignors to Sumitomo Electric Industries, Ltd. and Sumitomo Chemical Company, Ltd., both of Osaka, Japan

Filed Dec. 18, 1972, Ser. No. 315,965
Claims priority, application Japan, Dec. 18, 1971, 46-102819
Int. Cl.² H01B *7/22*; B32B *7/00*
U.S. Cl. 174—102 R 5 Claims



1. A laminate sheathed cable having as the shielding layer a laminate sheath tape composed of a metallic foil, an outer jacket, and a resin layer therebetween, the improvement wherein said resin for the laminate sheath tape is an ethylene-glycidyl methacrylate-vinyl acetate terpolymer, said terpolymer comprising 0.5 to about 20 weight % glycidyl methacrylate, 0.5 to about 20 weight % vinyl acetate, and about 60 to about 99 weight % ethylene, said weight percentages being based on the total weight of glycidyl methacrylate, vinyl acetate and ethylene.

5. A laminate tape of a metallic foil and a terpolymer resin coated on one or both surfaces of said metallic foil, said resin consisting of an ethylene-glycidyl methacrylate-vinyl acetate terpolymer wherein said glycidyl methacrylate is used in amounts of 0.5 to about 20 weight %, said vinyl acetate in amounts of 0.5 to 20 weight %, and said ethylene in amounts of about 60 to about 99 weight %, said weight percentages being based on the total weight of glycidyl methacrylate, vinyl acetate and ethylene.

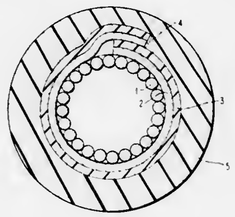
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3,935,375

## LAMINATE TAPE AND LAMINATE SHEATHED CABLE

Terumichi Ichiba; Hiroshi Shimba, and Hiroaki Mukunashi, all of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed May 14, 1973, Ser. No. 359,944
Claims priority, application Japan, May 13, 1972, 47-47332; May 27, 1972, 47-52603; May 27, 1972, 47-52604
Int. Cl.² H01B *7/22*; B32B *7/00*
U.S. Cl. 174—102 R 20 Claims



1. A laminate sheathed cable including a laminate tape composed of a metal foil and a terpolymer resin coated on one or both surfaces of the metal foil, the terpolymer resin having a metal index of below about 15 and consisting of (a) a first component of at least 25 weight percent ethylene; (b) a second component selected from glycidyl methacrylate, glycidyl acrylate and allyl glycidyl ether; and (c) a third component selected from an alkyl acrylate and an alkyl methacrylate, said laminate tape being formed on a cable core in the form of a tube such that both ends of the laminated tape are united.

11. A laminate tape of a resin and a metal foil adapted to be formed on a cable core in the form of a tube, both ends of said laminate tape capable of being united, characterized in that a terpolymer resin having a melt index below about 15 and consisting of (a) a first component of at least 25 weight percent ethylene; (b) a second component selected from glycidyl methacrylate, glycidyl acrylate and allyl glycidyl ether; and (c) a third component selected from an alkyl acrylate and an alkyl methacrylate, is used as the resin, said resin being coated on one or both surfaces of the metal foil.

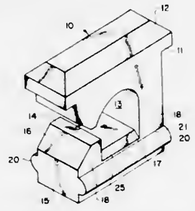
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3,935,376

## CERAMIC INSULATOR FOR SUPPORTING A RIBBON-TYPE HEATING ELEMENT

Leland L. Cooper, Cabbot, and Darl L. Beer, Sarver, both of Pa., assignors to Du-Co Ceramics Company, Saxonburg, Pa.

Filed Dec. 18, 1974, Ser. No. 533,810
Int. Cl.² H01B *17/56*; H05B *3/02*, *3/32*
U.S. Cl. 174—138 J 3 Claims



1. A ceramic insulator for supporting a ribbon heating element within an electric resistance heater; said insulator having spaced sidewalls, a front wall and a back wall; a pair of mounting shoulders located at the upper end of said insulator for supporting said insulator in a heater, one of said mounting shoulders extending outwardly from the front wall of said insulator and the other of said mounting shoulders extending outwardly from the back wall of said insulator; a passageway

extending through said insulator between said spaced sidewalls to form an open interior portion within said insulator adapted to receive a ribbon heating element; said front wall of said insulator having a substantially horizontally extending slot formed therein connecting with said open interior portion of said insulator to provide access to said open interior portion for insertion of a ribbon heating element into said open interior portion; a flat bearing surface located between said spaced sidewalls and forming the bottom of said passageway, said bearing surface located in a plane below a plane including the bottom of said slot, said bearing surface adapted to support a ribbon heating element extending through said open interior portion of said insulator; each of said spaced sidewalls having an elongated radiused rib extending outwardly therefrom, the longitudinal axis of each of said ribs being parallel to and located below said plane including said bearing surface, each of said ribs extending along one of said spaced sidewalls from said front wall to said back wall of said insulator, the curved surface of each of said ribs providing a rounded contact surface located below said plane including said bearing surface, whereby a ribbon heating element extending through said open interior portion of said insulator and supported by said bearing surface contacts a portion of said rounded surface of each of said ribs to minimize abrasive wear between said insulator and the ribbon heating element during expansion and contraction of the ribbon heating element.

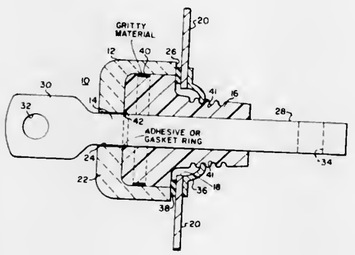
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**3,935,377**

## ELECTRICAL BUSHING COMPRISING A RESIN BODY AND A CERAMIC OUTER SHELL

**James R. Gamble, Greensburg, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**Filed Dec. 24, 1974, Ser. No. 536,068**
**Int. Cl.² H01B** *17/26, 17/32*
**U.S. Cl. 174—153 R** **4 Claims**




**1.** An electrical bushing adaptable for insertion through an aperture in the casing of electrical apparatus comprising, a cup-shaped ceramic shell having a central opening, a conductor extending longitudinally through the shell and the central opening, the conductor having a smaller diameter than the central opening, a body of epoxy resin occupying the interior of the shell and adhering to the conductor and to the shell, the resinous body including a portion extending out of the side of the shell opposite the central opening and around the conductor, the combination of said portion and the conductor being insertable through the aperture and into the casing of electrical apparatus, the conductor and the epoxy resinous body have corresponding coefficients of expansion, and means on said portion for detachably mounting the bushing in place.

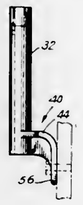
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**3,935,378**

## STAND-OFF INSULATORS

**Herbert Frank Heyden, Pelham, N.Y., assignor to Union Plastics Corporation, Springfield, N.J.**

**Filed May 17, 1974, Ser. No. 470,750**
**Int. Cl.² H01B** *17/14*
**U.S. Cl. 174—158 R** **10 Claims**



**1.** A stand-off insulator, consisting of a one-piece body of electrically non-conductive material having an elongated portion provided with a pair of opposed free end regions at one of which said body has a means for releasably fixing to said one free end region an article such as a clamp, bracket, or the like, and at the other of which said body has a means for mounting said body on a support with said elongated portion extending in a given direction with respect to said support, said mounting means including a flange of substantially L-shaped configuration having one wall projecting from said elongated portion at said other free end region thereof inwardly of an extremity of said other free end region so that said elongated portion extends past and beyond said one wall of said flange up to said extremity of said other free end region of said elongated portion, said flange having a second wall extending angularly from said one wall thereof to be directly fastened to a support.

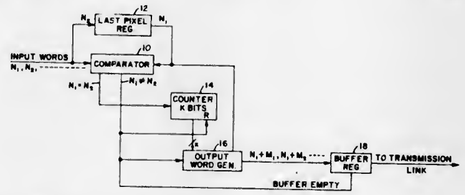
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**3,935,379**

## METHOD OF AND SYSTEM FOR ADAPTIVE RUN LENGTH ENCODING OF IMAGE REPRESENTING DIGITAL INFORMATION

**Daryl D. Thornburg, and James L. Christensen, both of San Diego, Calif., assignors to General Dynamics Corporation, St. Louis, Mo.**

**Filed May 9, 1974, Ser. No. 468,789**
**Int. Cl.² H04N** *1/38*
**U.S. Cl. 178—6** **15 Claims**




**1.** The method of increasing the information density of digital data which represents an image, comprising the steps of:

a. comparing consecutive pairs of digital signals which represent different pixels of said image,
b. counting the number of said consecutive pairs, each of the signals of which are identical, and
c. upon occurrence of each of said consecutive pairs which is constructed of signals which are different, encoding the number which is counted before said occurrence into
i. a first digital data word having a given number of digits representing the first signal of the consecutive pair which is constituted of different signals and a portion of said counted number which is actually a part thereof, and



ii. into additional digital words for any remaining portions of said last named number which are also actually parts thereof and which are greater than zero, which additional words each having said given number of digits and representing said first signal and different ones of said remaining portions.

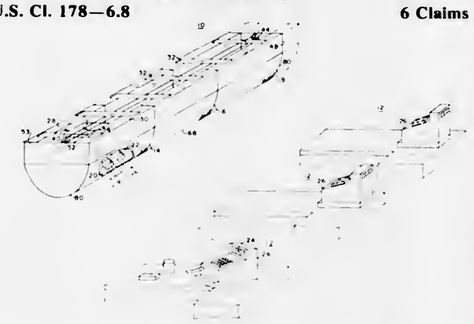
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**3,935,380**

## SURVEILLANCE SYSTEM

**John M. Coutta, 450 Superior Ave., Decatur, Ga. 30030**

**Filed Dec. 6, 1974, Ser. No. 530,133**
**Int. Cl.² H04N** *7/18*
**U.S. Cl. 178—6.8** **6 Claims**



**1.** A surveillance system for viewing a plurality of spaced, in-line stations comprising:

an elongated carriage track positioned along a line parallel to the line of said stations;
a carriage adapted to be supported by and be movably operated on said track;
drive means for selectively positioning said carriage along said track;
a television camera supported by said carriage;
first training means for rotating said camera horizontally and second training means for tilting said camera;
display means for displaying the output of said camera;
control means for selectively operating said drive means and for operating said first and second training means whereby said camera may be positioned to selectively view said stations; and
a semi-circular partially opaque, but otherwise transparent, cover extending from end to end of said system and covering said camera and carriage as they are moved end to end.

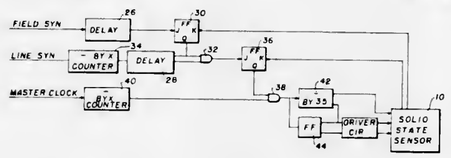
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**3,935,381**

## ELECTRONIC SOLID STATE SENSOR IMAGE SIZE CONTROL

**Edward A. Petrocelli, Sunrise, Fla., and Anthony C. H. Louie, San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed June 24, 1974, Ser. No. 482,393**
**Int. Cl.² H04N** *5/30*
**U.S. Cl. 178—7.1** **4 Claims**




**1.** An electronic control system for generating scanning clock signals to control the scanning rate of a solid state sensor to read out the video information and control the image size reproduced on a TV monitor comprising:

a. s source of clock frequencies,
b. timing circuit means for providing a field synchronizing pulse output and a line synchronizing pulse output;
c. first counter circuit means coupled to said source of clock frequencies to provide a scanning clock signal of a predetermined frequency determined by a desired picture size,
d. delay circuit means coupled to said timing circuit means for delaying the field and line synchronizing pulses a predetermined time delay,
e. variable gate generator circuit means coupled to said delay circuit means and to said first counter means for gating a predetermined number of clock pulses to said solid state sensor corresponding to the size of the sensor array,
f. feedback circuit means coupled from said sensor to said variable gate generator circuit means for providing a feedback signal to turn off said variable gate at the end of said predetermined time.

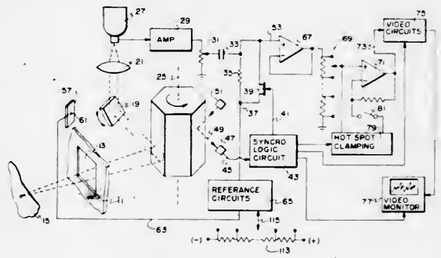
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**3,935,382**

## THERMOGRAPH ABSOLUTE TEMPERATURE REFERENCING TECHNIQUE

**Robert P. Hunt, Menlo Park, Calif., assignor to Spectrotherm Corporation, Santa Clara, Calif.**

**Filed Mar. 4, 1974, Ser. No. 447,960**
**Int. Cl.² H04N** *3/16*
**U.S. Cl. 178—7.1** **9 Claims**




**1.** In a thermograph instrument that is characterized by a reference temperature target adjacent an optical field to be viewed, means for scanning and detecting an infrared energy component of the optical field in two dimensions with a portion of the reference target periodically being scanned and detected thereby, electronic video processing circuits receiving a time varying output of said detector means that is proportional to the infrared intensity of the optical field, and means synchronized with said scanning and detecting means for referencing a portion of said video processing circuits to a reference potential simultaneously with said reference target being scanned and detected, the improvement comprising means independent of said scanning and detecting means and responsive to the absolute temperature of said reference target for developing said reference potential proportional to the target absolute temperature.

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**3,935,383**

## STORAGE OF A REPRESENTATION OF AN IMAGE

**John H. Newitt, 123 Puritan Lane, Sudbury, Mass. 01776**

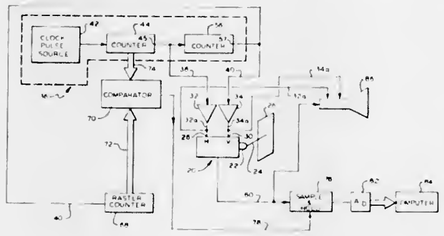
**Filed July 19, 1974, Ser. No. 490,035**
**Int. Cl.² H04N** *5/38*
**U.S. Cl. 178—7.2** **1 Claim**

**1.** In apparatus for providing groups of digital signals respectively representative of elements of an image on an image bearing medium being scanned by a video generator which generates a video signal having an amplitude representative of an element being scanned, said scanning being in response to

deflection signals provided to said generator by a deflection circuit which stores digital signals representative of a coordinate of the location of said element being scanned, the improvement comprising:

a raster counter connected to said deflection circuit for providing count signals representative of a number of times said generator scans said image;

comparison means connected to said deflection circuit and to said raster counter for providing a gating signal when




said count signals have a known relationship to said coordinate;

storage means connected to said comparison means and said generator for storing the video signal representative of said element being scanned when said gating signal is provided; and

an analog to digital converter having an input connected to said storage means, said converter providing a group of said digital signals in response to the video signal representative of said element being scanned.

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**3,935,384**

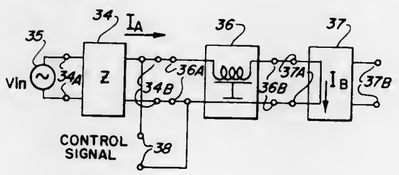
**NETWORK FOR GENERATING A CRT CONTROL SIGNAL FOR ENHANCING THE EDGES OF TELEVISION IMAGES**

**Howard F. Jirka, Mount Prospect, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.**

**Filed Jan. 2, 1975, Ser. No. 537,865**

**Int. Cl.² H04N** *5/14*

**U.S. Cl. 178—7.5 R** **5 Claims**




1. In a television receiver, a network for receiving a video signal and generating therefrom both a delayed video signal for intensity modulating a CRT electron beam with picture information and a control signal for modulating the scan velocity of the CRT electron beam so as to enhance the sharpness of the television image, said network comprising, in cascade:

impedance means having an input port and an output port;

delay means having an input port and an output port with its input port coupled to the output port of said impedance means, the impedance means having an impedance at its output port which is substantially equal to the characteristic impedance of the delay means;

a reflecting termination coupled to the output port of said delay means, which termination is reflective of signals received from said delay means and in the frequency range of the video signal;

means for applying the video signal to the input port of said impedance means;

an output terminal at a point between said impedance means and said delay means from which the control signal is taken; and

means responsive to the signal received by the reflecting termination from said delay means for generating a signal for use as the delayed video signal which is substantially proportional to the signal received by the reflecting termination.

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**3,935,385**

**MULTIPLEX CIRCUIT**

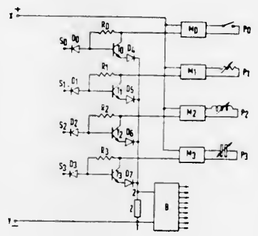
**Niels Thun, Vester-Sottrup, Denmark, assignor to Danfoss A/S, Nordborg, Denmark**

**Continuation of Ser. No. 472,905, May 23, 1974, abandoned, which is a continuation of Ser. No. 309,704, Nov. 27, 1972, abandoned. This application Feb. 3, 1975, Ser. No. 546,462**

**Claims priority, application Germany, Dec. 3, 1971, 2160080**

**Int. Cl.² H04J** *3/04*

**U.S. Cl. 178—50** **8 Claims**




1. A multiplex circuit comprising a plurality of signal-current transmitters each of which in a predetermined working range is substantially independent of voltage and each of which has first and second terminals, a measuring impedance common to all said transmitters and having first and second terminals, a central voltage source having first and second poles, said first pole being connected to said first terminal of said impedance and said second pole being connected to said first terminal of each of said transmitters, and switching means comprising for each said transmitter a respective switching circuit having a first terminal connected to said second terminal of said transmitter and a second terminal connected to said second terminal of said impedance, each said switching circuit having a respective control means connected to said first terminal of the switching circuit and provided with a switching signal input terminal, each said control means being responsive to a first control signal applied to said input terminal thereof to close said switching circuit to cause a signal current to flow through said voltage source, the associated transmitter, the switching circuit and said impedance, and responsive to a second control signal applied to said input terminal thereof to open said switching circuit to cause a signal current to flow from said second pole of said voltage source, through the associated transmitter and direct from said first terminal of said switching circuit to said first pole of said source, whereby said signal current does not flow through said impedance.



**3,935,386**

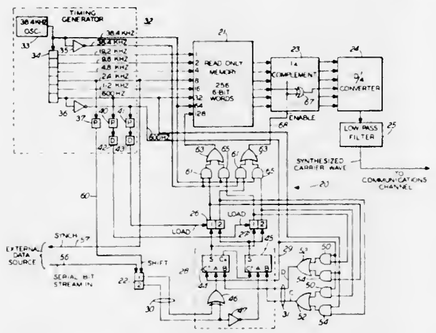
**APPARATUS FOR SYNTHESIZING PHASE-MODULATED CARRIER WAVE**

**Jerry Marshall Glasson, Skokie, and Harold Louis Kabb, Glenview, both of Ill., assignors to Teletype Corporation, Skokie, Ill.**

**Filed Sept. 20, 1974, Ser. No. 508,021**

**Int. Cl.² H04L** *27/20*

**U.S. Cl. 178—67** **28 Claims**




1. Apparatus for synthesizing a phase-modulated carrier wave according to digital data elements sequentially applied thereto, comprising:

a memory for storing a plurality of predefined carrier-wave segments, each segment having a unique phase and being represented by a set of a plurality of digitally encoded samples;

means for selecting, according to the current data element and the phase of the last selected carrier-wave segment, the next carrier-wave segment to be read from the memory;

means for addressing the memory to sequentially read the samples representing each selected carrier-wave segment; and

means connected to the output of the memory for combining at least some of the samples of the last selected carrier-wave segment with at least some of the samples of the next selected carrier-wave segment to generate the phase-modulated carrier wave at the output of the combining means as successive samples are applied by the memory thereto.

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**3,935,387**

**PULSE GENERATOR FOR TELEVISION FOR GENERATING AT LEAST ONE PULSE SERIES HAVING PULSES OF DIFFERENT DURATION AND REPETITION PERIOD**

**Eugenius Martinus Kaptein, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.**

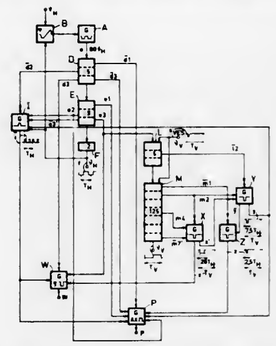
**Continuation of Ser. No. 122,973, March 10, 1971, abandoned. This application Jan. 2, 1973, Ser. No. 319,984**

**Claims priority, application Netherlands, Mar. 14, 1970, 7003669; May 16, 1970, 7007169; Oct. 10, 1970, 7014894**

**Int. Cl.² H04L** *5/06*

**U.S. Cl. 178—69.5 G** **21 Claims**

1. A circuit for generating a television pulse series having pulses of different durations and repetition periods, said circuit comprising a clock pulse source means for supplying pulses having a frequency equal to or an integer multiple of eighty times a selected line frequency, said clock pulse period being substantially to or an integral multiple of the highest common factor of said different pulse periods, the shortest repetition period of said pulses of said series being an integral multiple of said clock pulse period, a plurality of frequency dividers coupled to said clock, a plurality of pulse generators each coupled to at least one of said dividers for control of said generators, a first signal generator having a plurality of inputs



coupled to said pulse generators and dividers and an output means for supplying at least part of said pulse series.

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**3,935,388**

**CIRCUIT ARRANGEMENT FOR SYNCHRONIZING A TELEVISION RECEIVER**

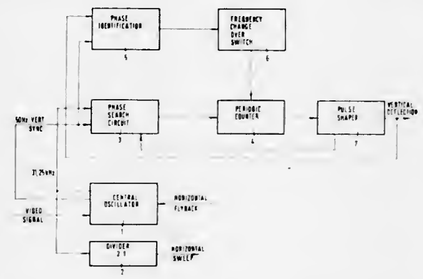
**Uwe Brinkmann, Nellingen, Germany, assignor to International Standard Electric Corporation, New York, N.Y.**

**Filed Oct. 9, 1974, Ser. No. 513,379**

**Claims priority, application Germany, Oct. 18, 1973, 2352355**

**Int. Cl.² H04L** *7/00*; **H04N** *5/04*

**U.S. Cl. 178—69.5 TV** **4 Claims**




1. A synchronizing circuit, for providing synchronized horizontal and vertical deflection control signals in a television receiver in a TV system of the type wherein a composite video signal including horizontal and vertical sync pulses is received by the receiver, comprising the combination of:

an oscillator providing a signal at a frequency equal to a multiple of the frequency of the horizontal deflection of the video signal, said oscillator being synchronized by the horizontal sync pulses;

a frequency dividing means for receiving said oscillator signal, dividing its frequency by said multiple and providing said horizontal deflection control signal;

a periodic counter connected to receive the oscillator signal and provide an output when a final count is reached, said output being a vertical deflection control signal and having a frequency equal to the frequency of the oscillator signal divided by the final count value of the counter;

blanking gate means for comparing the vertical deflection control signal with the received vertical sync signal and providing a blanking gate control signal to said periodic counter in response thereto; and

switch gate means to compare the vertical deflection control signal and vertical sync pulses to switch the periodic

counter into one of two final counting conditions, whereby the blanking and switch gate means enable the frequency and phase of the vertical deflection control signal to be synchronized with the received vertical sync signal.

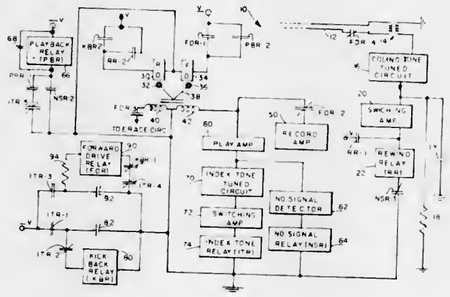
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**3,935,389**

## METHOD AND APPARATUS FOR AUTOMATICALLY LIMITING REWIND IN A TELEPHONE ANSWERING MACHINE

**Herbert Waldman, Brooklyn, N.Y., assignor to Quasar Microsystems, Inc., Brentwood, N.Y.**

**Filed Feb. 2, 1973, Ser. No. 328,900**
**Int. Cl.² H04M *1/64*; G11B *15/20***
**U.S. Cl. 179—6 E** **6 Claims**



1. In a telephone answering apparatus coupled to telephone lines having recording means for recording a series of messages on a tape, rewind means for rewinding the tape, and play-back means for reproducing the series of messages subsequent to rewinding of at least a portion of the tape bearing the messages, the combination comprising advancing means for advancing the tape a predetermined distance starting substantially within the region of the trailing portion of the last message in the series; conditioning means for conditioning the advanced portion of the tape to be detected during rewinding of the tape; detecting means for detecting the conditioned portions of the tape during rewinding of the latter and for terminating further rewinding of the tape in response to detection of a conditioned portion of the tape; wherein the telephone apparatus recording index tones at the end of the last message of a series, and kick-back means for causing the tape to rewind an amount corresponding to the duration of the recorded index tone, wherein said advancing means cooperates with said kick-back means to commence advancement of the tape subsequent to kick-back.

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**3,935,390**

## TELEPHONE ANSWERING AND MESSAGE RECORDING APPARATUS

**David R. Winterhalter, Berkeley, Calif., assignor to Sontel Inc., Alamo, Calif.**

**Filed June 4, 1973, Ser. No. 366,791**
**Int. Cl.² H04M *1/64***
**U.S. Cl. 179—6 R** **6 Claims**

1. A telephone answering and recording device adapted to be operated in a conversation mode with the caller and to be connected to a telephone line comprising:

a ring detector circuit operably connected to a telephone line to receive signals therefrom;

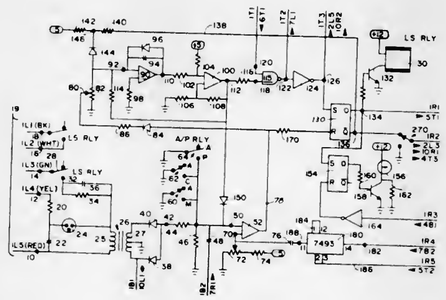
a first logic circuit connected to said ring detector circuit including a switching means operable to initiate operation of said device when it receives signals from said ring detector circuit and to deactivate said device when it receives a deactivation signal;

a pulse detecting means connected to receive voice signals form said telephone line when operation of said device has been initiated and operable to generate a timing reset signal each time a predetermined pulse level is received;

a second logic circuit connected to said pulse detecting means and adapted to pass said timing reset signal generated by said pulse detecting means, and operable to generate a continuous timing reset signal until at least one timing reset signal is received for each voice-receive cycle;

a first clock means connected to said second logic circuit to receive said timing reset signal when passed by said second logic circuit; said first clock means being operable to generate a first switching signal after a given timing cycle;

mode switching means connected to said telephone line and including a third logic circuit operable to alternately connect circuits associated with said mode switching means to said telephone line, said circuits associated with said mode switching means including a voice transmitting circuit containing a sequence of pre-recorded voice signals and control signals connected to said mode switching means and a voice recording circuit operable to record incoming voice signals connected to said mode switching means whereby said voice transmitting circuit or said voice recording circuit will alternately be connected to said telephone line through the operation of said third



logic circuit respectively by said first switching signal or a second switching signal;

a control signal detector circuit means connected to said voice transmitting circuit and adapted to generate said second switching signal upon detection of one of said pre-recorded control signals of said voice transmitting circuit, said control signal detector circuit being connected to said third logic circuit to apply said second switching signal generated thereby to said third logic circuit, said first switching signal generated by said first clock means will cause said third logic circuit to switch said mode switching means to connect said voice transmitting circuit to said telephone line and said second switching signal generated by said control signal detector circuit will cause said third logic circuit to switch said mode switching means to connect said voice recording circuit to said telephone line thereby allowing a conversation to occur between said device and a caller based upon pauses in the voice signals causing said voice transmitting circuit to send each of said pre-recorded voice signals of said sequence over said telephone line at intervals determined by the presence of and lack of voice signals on said telephone line provided that the caller responds to some of said pre-recorded voice signals of said sequence of pre-recorded voice signals when said device is operating.

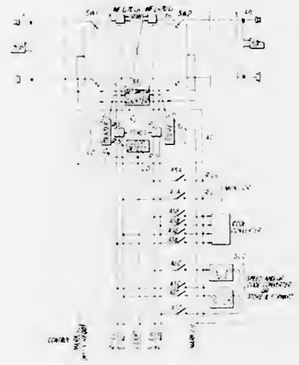


**3,935,391**

## TIME DIVISION MULTIPLEX SWITCHING SYSTEM

**Donald Adams Weir, Goff's Oak, and William Arthur George Walsh, New Barnet, both of England, assignors to International Standard Electric Corporation, New York, N.Y.**

**Filed July 8, 1974, Ser. No. 486,596**
**Int. Cl.² H04J *3/00***
**U.S. Cl. 179—15 A** **6 Claims**



1. An automatic telecommunication switching center comprising, means coupling lines to a storage array, said lines carrying communication channels set up in TDM manner with each said channel allocated a time slot in the TDM cycle, said storage array including a storage compartment per channel served, each of said storage compartments including an "in" section and an "out" section in which intelligence incoming to the center over one of the channels is recorded directly into that channel's "in" section, in which when a connection is set up between a first and a second channel each of those channels' "in" sections has recorded in it the storage address of the other of those channels plus the intelligence to be sent to that other channel, in which when the compartment for said first channel is scanned during said connection the intelligence in that channel's "out" section is read out to that channel and the contents of that first channel's "in" section is extracted and transferred to the second channel's "out" section under control of the address in that "in" section, in which the intelligence thus extracted from said first channel's "in" section is replaced by intelligence newly received from said first channel, in which when the compartment for said second channel is scanned during said connection the intelligence in that channel's "out" section is read out to the said second channel and the contents of that second channel's "in" section is extracted and transferred to the first channel's "out" section under control of the address in the second channel's "in" section, and in which the intelligence thus extracted from said second channel's "in" section is replaced by intelligence newly received from said second channel.

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**3,935,392**

## DIAL PULSE DETECTION METHOD AND APPARATUS

**Lloyd M. Smith, and Robert E. Webb, both of 3771 Harts Mill Lane, Atlanta, Ga. 30319**

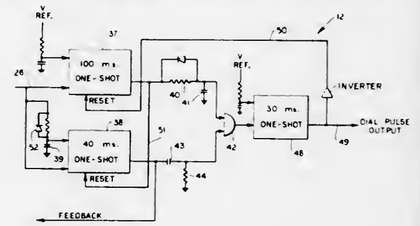
**Filed Jan. 17, 1974, Ser. No. 434,013**
**Int. Cl.² H04Q *1/36***
**U.S. Cl. 179—16 EA** **13 Claims**

1. Apparatus for detecting the occurrence of a dial pulse signal which consists of first and second signal portions separated by a known period of time and having characteristic transient signal conditions, comprising:

means for receiving input signals which may include as dial pulse signal and operative in response to each input signal which exhibits such characteristic transient signal conditions to provide an enabling signal condition which denotes the occurrence of what may be one of such dial pulse signal portions;

first means responsive to said enabling signal condition to provide a first control signal condition which commences a delayed time after said enabling signal condition occurs and which continues for a first time period substantially equal to a complete dial pulse signal;

second means responsive to said enabling signal condition to provide a second signal condition for a second time



period equal to at least a portion of such known separation time between the first and second signal portions of a dial pulse signal; and

coincidence means responsive to the initiation of a said second control signal condition at a time when a said first control signal condition is present to provide an output signal condition corresponding to the occurrence of a dial pulse, so that such output signal conditions can occur only when a second control signal condition provided in response to a second such signal portion is initiated during the period of a first control signal condition provided in response to a first such signal portion.

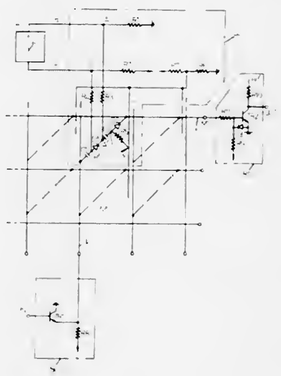
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**3,935,393**

## LINE CONDITION SIGNALLING SYSTEM

**Rene Marcel Vancoillie, Meulebeke, Belgium, assignor to International Standard Electric Corporation, New York, N.Y.**

**Filed Jan. 31, 1974, Ser. No. 438,236**
**Claims priority, application Netherlands, Feb. 12, 1973, 7301959**
**Int. Cl.² H04M *3/22***
**U.S. Cl. 179—18 FA** **6 Claims**

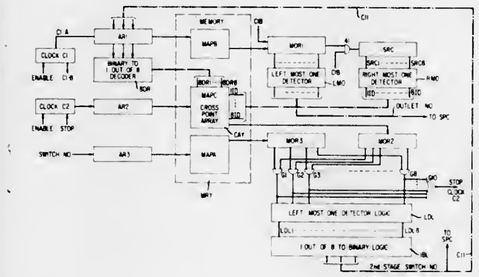


1. A line condition signalling system including at least one line;

a line loop forming means;
a signal source generating input signals;
a detection circuit to detect the condition of said line;
a line loop evaluating circuit passing or blocking said input signals depending on the condition of said line and including a first and a second circuit;
said first circuit comprising a series connection of a first capacitor, a diode and a second capacitor;
means including first and second terminals coupling said diode to said line to enable bias of the diode in accordance with the conditions of the line;
means coupling the first capacitor to said signal source,
means coupling the second capacitor to an input of said second circuit,
means coupling the output of said second circuit to said detection circuit, and
gating means in said second circuit for preventing spurious signals on said line from reaching its output, whereby
said gating means, in cooperation with said first circuit and said detection circuit, passes said input signals when the line is closed and blocks said input signals when the line is open.

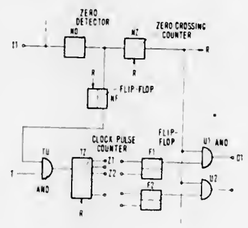
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**3,935,394**
**NETWORK ROUTING AND CONTROL ARRANGEMENT**
**Andrew Frederick Bulfer, Oceanport, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**
**Filed Oct. 4, 1974, Ser. No. 512,256**
**Int. Cl.² H04Q 3/54**
**U.S. Cl. 179—18 ES** **5 Claims**



1. In a system having a two-stage network with a plurality of links connected between stages, each said stage comprising a plurality of switches, and said system also having a memory, logic circuits, and a network controller responsive to control information for controlling said network to establish a path through said network,
the method of selecting, controlling, and establishing a path through said network comprising the steps of
retrieving from said memory link information specifying accessible idle links,
operating said logic circuits to generate congestion information specifying the congestion of each of said second stage switches,
operating said logic circuits to logically combine said link information and said congestion information to generate path selection information specifying one of the least congested second-stage switches having an accessible idle link connected thereto,
operating said logic circuits in accordance with said path selection information to generate control information, and
applying said generated control informaton to said network controller to establish the path through said network via a first-stage switch, said specified one least-congested second-stage switch and said accessible idle link connected thereto.

**3,935,395**
**SELECTIVE SIGNAL RECEIVER FOR USE IN TELECOMMUNICATION SYSTEMS**
**Herbert Ball, Stuttgart, and Wolf Ohl, Korntal, both of Germany, assignors to International Standard Electric Corporation, New York, N.Y.**
**Filed Aug. 2, 1974, Ser. No. 494,287**
**Claims priority, application Germany, Aug. 16, 1973, 2341225**
**Int. Cl.² H04M 1/50**
**U.S. Cl. 179—84 VF** **5 Claims**



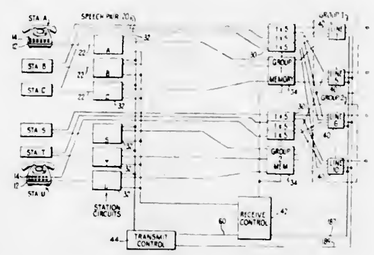
1. A selective signal receiver for use in telecommunication and particularly telephone systems wherein the time distances between zero crossings of the input voltage are measured with a counter which is controlled at a clock frequency higher than the signal frequency to be determined, and wherein the input voltage is evaluated as a signal only if the measured value lies between a lower and an upper count determining the bandwidth, wherein the improvement comprises a zero crossing detector coupled to provide a pulse each time the input voltage crosses zero, a zero crossing counter coupled to the zero crossing detector to count a predetermined number of said pulses indicating zero crossings of an input signal and the zero crossing counter providing a reset signal when that number is reached, a clock pulse counter coupled to start when the pulse including the first zero crossing occurs, where the lower count and the upper count of the clock pulse counter are chosen depending on the predetermined number of cycles, on the predetermined tolerances of the signal frequencies, and on permissible interference-voltage components.

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**3,935,396**
**KEY TELEPHONE SYSTEM USING TIME DIVISION AND SPACE DIVISION CONTROL**
**John A. Barsellotti; Joseph H. McNeilly; Federico R. Lalicela, all of Guelph, Canada, and Edouard Pinede, Norwalk, Conn., assignors to International Standard Electric Corporation, New York, N.Y.**
**Continuation of Ser. No. 362,915, May 23, 1973, abandoned. This application Jan. 23, 1975, Ser. No. 543,479**
**Claims priority, application Canada, May 23, 1972, 142792**
**Int. Cl.² H04M 1/00**
**U.S. Cl. 179—99** **7 Claims**

1. A time division key telephone system including a plurality of groups of key-equipped stations, a plurality of telephone lines and control apparatus for controlling the signalling of the condition of one of said lines to all stations of a group, the invention comprising: an individual station circuit for each of said stations, a pair of data conductors extending between each station and its station circuit for the bi-directional transfer of all control data to and from said station, a pair of speech conductors at each station, a switching network at said control apparatus terminating speech conductors from stations of said group for connection to one of said lines responsive to signals from said control apparatus, and network control means including latch means individual to each station, a memory element representing each such latch means, each said latch means responsive to signal data from a respective one of said station circuits for causing a memory element to store a condition of a station indicated by the latch means individual thereto, and means responsive to a scan of said memory ele-

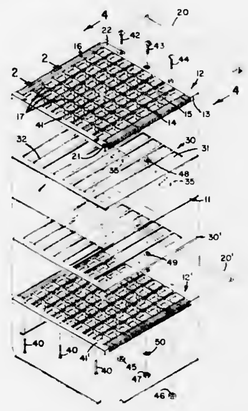




ments for controlling the switching network to complete the connection of the speech conductors of said one station to a line.

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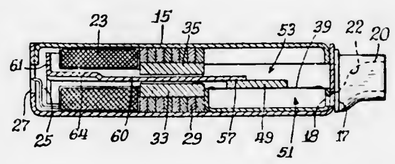
**3,935,397**
**ELECTROSTATIC LOUDSPEAKER ELEMENT**
**Roger A. West, Salt Lake City, Utah, assignor to Electronic Industries, Inc., Minneapolis, Minn.**
**Filed Jan. 28, 1974, Ser. No. 436,937**
**Int. Cl.² H04R 19/02**
**U.S. Cl. 179—111 R** **8 Claims**



1. An electrostatic loudspeaker element, comprising:
a. first and second electrode assemblies, each having:
1. a frame having a generally planar face and having a plurality of web members defining sound passing apertures therebetween, said frame having a plurality of generally parallel wire guiding slots formed in said web members along the face of said frame;
2. a wire wound around said frame in said wire guiding slots to form a wire grid electrode along the plane of the face of said frame;
3. said frame made of material having a coefficient of thermal expansion substantially equal to that of said wire;
4. a dielectric spacer member attached to the face of said frame and having openings aligned with the apertures in said frame and having strip portions aligned with said web members and in contact therewith to confine said wire to said slots;
b. a diaphragm; and
c. means for positioning said diaphragm between said first and second electrode assemblies adjacent said spacer members, whereby said spacer members maintain constant spacing between said wire grid electrodes and said diaphragm, and maintain said wires in position along the planes of the faces of the respective first and second electrode assembly frames.

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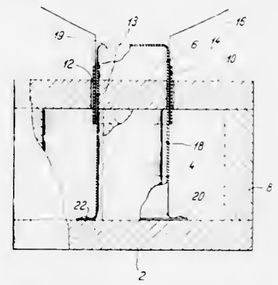
**3,935,398**
**TRANSDUCER WITH IMPROVED ARMATURE AND YOKE CONSTRUCTION**
**Elmer V. Carlson, Prospect Heights; August F. Mostardo, Jr., Norridge, and Alex V. Diblick, Elmhurst, all of Ill., assignors to Industrial Research Products, Inc., Elk Grove Village, Ill.**
**Filed July 12, 1971, Ser. No. 161,825**
**Int. Cl. H04r 11/00**
**U.S. Cl. 179—114 A** **3 Claims**



1. An electroacoustic transducer of the magnetic armature type comprising a casing having walls, pole piece means forming an enclosed section, magnets positioned in spaced relation to one another within said enclosed section to form an air gap therebetween, a U-shaped band yoke having a base and two similar arms with the free ends of the arms being connected to said enclosed section, a band armature having one end cantilevered from the base of said yoke to minimize reluctance between said armature and said yoke, the broad surfaces of said armature being transverse to the broad surfaces of said base and arms, a coil, portions of said armature positioned in said coil and in said air gap and the a.c. magnetic flux of said transducer extending through said arms to thereby provide an a.c. flux path having minimum reluctance, said arms being positioned in spaced relation to said walls to separate the casing from the magnetic paths of the transducer, the magnetic paths being within the casing whereby the casing functions as a magnetic shield for the transducer, as a protection against mechanical damage and as an acoustic enclosure.

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**3,935,399**
**LOUD SPEAKERS**
**Ragnar Lian, Cortinavej 27, 8363 Stilling, Denmark**
**Filed Dec. 12, 1973, Ser. No. 423,896**
**Claims priority, application Denmark, Dec. 27, 1972, 6465/72**
**Int. Cl.² H04R 9/00**
**U.S. Cl. 179—115.5 VC** **7 Claims**

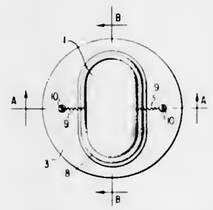


1. A loud speaker of the oscillating coil type including a voice coil associated with a loud speaker membrane and a magnetic circuit having an annular air gap in which the coil is located in such a manner that in its neutral, non-energized condition the coil projects axially from the air gap substantially uniformly to both sides thereof so as to be able to oscil-

late substantially symmetrically about the middle plane of the air gap, the magnetic circuit including a central member delimiting the inner side of the air gap and disposed in a region extending within the outer end of the voice coil, a cylindric element made of a non-magnetic material of good electrical conductivity being rigidly associated with the magnetic circuit concentrically with the coil and extending into the air gap from one side thereof, characerized in that said cylindric element is extended so as to additionally project outwardly from the air gap to the other side thereof beyond the forward end of the voice coil and the forward end of the central member thereby enabling substantially symmetrical oscillation of the voice coil about the middle plane of the air gap and reduction of sound distortion.

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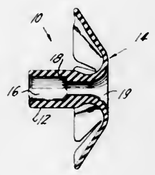
**3,935,400**
**OVAL DOME TYPE SPEAKER**
**Sigeyuki Koga, Hachioji, Japan, assignor to Trio Kabushiki Kaisha, Tokyo, Japan**
**Filed Feb. 21, 1975, Ser. No. 551,387**
**Claims priority, application Japan, Feb. 28, 1974, 49-23828**
**Int. Cl.² H04R** *9/02, 9/06*
**U.S. Cl. 179—115.5 R** **9 Claims**



1. A speaker assembly comrising
a dome shaped diaphragm, the cross section along the plane containing the base of said diaphragm having an oval contour;
a voice coil connected to said diaphragm;
magnetic means operatively associated with said voice coil; and
support means for supporting said diaphragm, voice coil and magnetic means.

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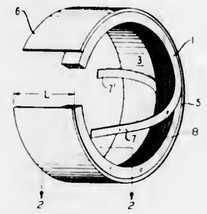
**3,935,401**
**EARPIECE FOR ACOUSTIC HEADSET**
**Sidney X. Shore, 29 Wren Drive, Roslyn, N.Y. 11576, and Paul S. Martin, 189-54 43rd Road, Flushing, N.Y. 11358**
**Filed Aug. 29, 1974, Ser. No. 501,689**
**Int. Cl.² H04R** *1/10*
**U.S. Cl. 179—182 R** **16 Claims**



1. An earpiece for an acoustic headset proportioned for cooperating with the wearer's outer ear at the ear canal, said earpiece comprising a tubular portion having a through passage for sound transmission and for receiving an acoustic tube and having a flange portion on an end of the tubular portion, said flange portion being subdivided so as to comprise a plurality of ribs radiating from the tubular portion, the ribs being normally separated by radiating regions of at least reduced thickness.

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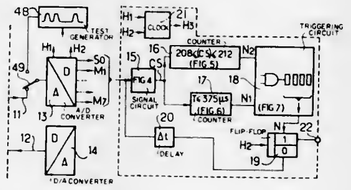
**3,935,402**
**LOUDSPEAKER VOICE COIL ARRANGEMENT**
**Martin Gersten, Brooklyn, N.Y., assignor to Ohm Acoustics Corporation, Brooklyn, N.Y.**
**Filed July 25, 1973, Ser. No. 382,533**
**Int. Cl.² H04R** *9/04*
**U.S. Cl. 179—115.5 VC** **4 Claims**



1. A loudspeaker voice coil comprising a winding of anodized rectangular cross section aluminum wire intimately bonded to the inside of an anodized aluminum bobbin for radiating the heat of voice currents applied to said coil.

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**3,935,403**
**DEVICE FOR DEVELOPING A NEUTRALIZATION SIGNAL FOR AN ECHO SUPPRESSOR**
**Etienne Penicaud, Chaville, and Maurice Lienard, Marseille, both of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, France**
**Filed Aug. 6, 1974, Ser. No. 495,213**
**Claims priority, application France, Aug. 8, 1973, 73.29024**
**Int. Cl.² H04B** *3/20*
**U.S. Cl. 179—170.2** **8 Claims**

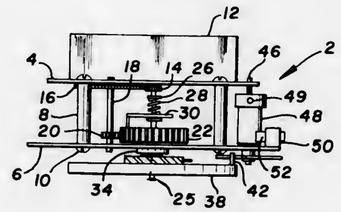


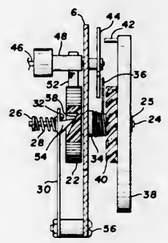
1. Device for developing a neutralization signal for an echo suppressor, necessary for the transmission of data on a telephone line having four wires, each transmission of data being preceded by an identification signal at a given frequency, said device comprising first counter means for producing a first neutralization condition when the time between two zeros of a line signal does not exceed a preestablished value, second counter means for counting changes in sign of said line signal during a predetermined period, said second counter means producing a second neutralization condition when the state of said second counter means at the end of said period is between two predetermined limits, and circuit means for triggering a flip-flop providing a neutralizing signal, said circuit means combining said two neutralization conditions, and said circuit means comprising shift register means for triggering said flip-flop only when said neutralization conditions are combined several times in succession and said line signal is at a level greater than a predetermined minimum value.



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**3,935,404**
**TIMER SWITCH ASSEMBLY**
**Holger Persson, 5941 Emerson Ave. S., Minneapolis, Minn. 55430**
**Filed Oct. 21, 1974, Ser. No. 516,794**
**Int. Cl.² H01H** *43/00*
**U.S. Cl. 200—35 R** **9 Claims**

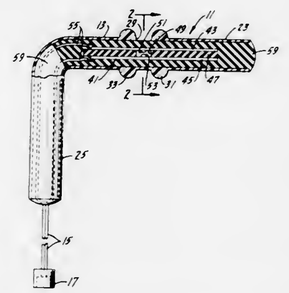




1. Apparatus for operating an electrical switch in a random fashion comprising in combination;
a. first and second mounting plates maintained in a parallel and spaced relationship with one another.
b. a motor mounted on said first plate with its rotor extending through a hole in said plate;
c. a first shaft passing through said second plate and journaled for rotation and translation therethrough;
d. a gear rotatably mounted on said first shaft between said first and second plates, said gear having an aperture formed in the surface thereof opposite to said first plate;
e. a gear train coupling the rotor of said motor to said gear for driving said gear at a constant rotational speed;
f. a leaf-spring mounted at one end to said second plate and having a projection at the other end for normally maintaining said leaf-spring in a flexed condition except when said projection mates with said aperture in said gear, said leaf spring being coupled to said first shaft to cause said shaft to assume a first translational position when said spring is in a flexed condition and a second translational position when said spring projection mates with said aperture in said gear;
g. a disc rotatably mounted on the portion of said first shaft extending through said second plate, said disc. having a pin located at a predetermined radial distance from the axis of said first shaft;
h. means coupling said gear to said disc when said shaft is in its first translational position for imparting rotational motion to said disc as said gear is driven by said gear train;
i. a cam mounted for rotation on a second shaft between said first and second plates and having a portion of said second shaft extending through a hole in said second plate;
j. a star-wheel affixed to said portion of said second shaft and normally oriented in the orbital path traversed by said pin as said disc is rotated; and
k. a microswitch mounted on said second plate having its actuator arm cooperating with said cam.

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**3,935,405**
**MOUTH HELD SWITCH ASSEMBLY**
**William F. Auer, Des Plaines, Ill., assignor to Willmark Products Company, Rosemont, Ill.**
**Filed Jan. 10, 1975, Ser. No. 539,979**
**Int. Cl.² H01H** *35/00*
**U.S. Cl. 200—52 R** **7 Claims**



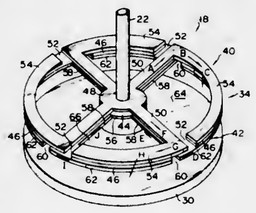
1. A mouth held switch assembly for actuating an electrically operated surgical instrument, which switch can be operated only by clamping movement of the front incisors of the user, said switch assembly including:
an elongated tubular housing having a handle portion and a actuating portion,
electrical leads extending out of said handle portion of said housing,
connecting means at the free ends of said electrical leads for connection to a surgical instrument,
an electric switch having a pair of blades is positioned in said actuating portion of said housing and extends lengthwise thereof with each of said blades connected to an electrical lead of said switch assembly,
said blades being mounted in spaced relationship to each other for movement towards and away from each other,
contacts carried by the blades and engagable with each other upon movement of the blades toward each other,
a transversely extending weakened area formed and located in said actuating portion of said housing adjacent said contacts to permit force applied to said weakened area of said housing to move said conductors towards each other,
said weakened area of said housing being spaced from the end of the actuating portion of said housing a distance such that the front incisors of the user can engage said weakened area when said actuating portion is held in the user's mouth, and
guards formed as parts of said actuating portion and located on opposite longitudinal sides of said weakened area,
said guards being spaced apart a sufficient distance to permit access to said weakened area of said housing only by the front incisors of said user when the actuating portion of housing is positioned in the user's mouth.

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**3,935,406**
**VACUUM INTERRUPTER**
**Minoru Murano, Tokyo; Satoru Yanabu, and Hitoshi Sodeyama, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan**
**Filed June 25, 1974, Ser. No. 482,901**
**Claims priority, application Japan, June 30, 1973, 48-74202**
**Int. Cl.² H01H** *9/30, 33/00*
**U.S. Cl. 200—144 B** **5 Claims**

1. A vacuum interrupter comprising a vacuum vessel; a pair of current carrying rods extending in an airtight fashion from

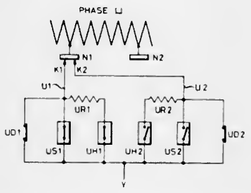
the vacuum vessel and connected to an exterior electrical path to permit a main electric current to be passed therethrough; a pair of electrode units, each mounted on the forward end of the respective current carrying rod with the electrode surfaces of the respective electrode units arranged opposite to each other and each having a main electrode carrying the electric current, at least one of said electrode units being movable into or out of engagement with the other electrode unit so that the main electric current is conductive or interrupted by a suitable driving means; and an exciting coil mounted to at least one of said electrode units, consisting of a plurality of unit exciting coils arranged adjacent to each other in a plane substantially parallel to the surface of the main electrode, and having one end connected to the current carrying rod and the other end connected in parallel to the main electrode, said unit exciting



coils including a plurality of first arms connected to the conducting rod and extending at an angle in a plane parallel to the main electrode and radially of the current carrying rod, a plurality of second arms connected to the main electrode, arranged close to the respective first arms and extending in a parallel, underlapped relation to the respective first arms with a space therebetween and a plurality of arcuate sections arcuately and integrally extending from the forward ends of the first arms to the forward ends of the second arms, disposed close to the next first arm, whereby magnetomotive forces generated by branched electric current flowing through the first and second arms are substantially cancelled with respect to each other and magnetic fields are created in a plane perpendicular to the surface of the main electrode by the branched electric currents flowed through the arcuate sections.

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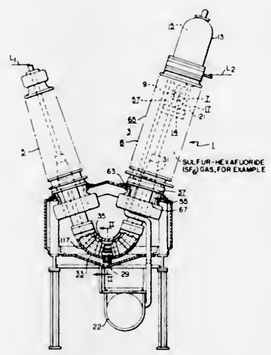
**3,935,407**
**MULTIPHASE VACUUM SWITCH ASSEMBLY HAVING CAM OPERATED SPRING CHARGING DRIVE MECHANISM WITH LOST MOTION CONNECTION**
**Alexander Bleibtreu, and Rolf Lauterwald, both of Regensburg, Germany, assignors to Maschinenfabrik Reinhausen Gebruder Scheubeck K.G., Regensburg, Germany**
**Filed Sept. 16, 1974, Ser. No. 506,063**
**Claims priority, application Germany, Sept. 25, 1973, 2348091**
**Int. Cl.² H01H** *33/42, 3/32*
**U.S. Cl. 200—144 B** **6 Claims**




1. A three phase transfer switch for tapped regulating transformers including
a. 12 vacuum switches forming two groups each of six situated at two different levels, the constituent vacuum switches of each said groups being arranged in circular coaxial patterns and the vacuum switches on one of said levels being arranged in registry with the vacuum switches on the other of said levels;
b. pairs of aligned operating rods movable in a direction longitudinally thereof arranged between registering pairs of vacuum switches at different levels for operating said pairs of vacuum switches at different levels;
c. a drive mechanism having a common power driven driving element for said pairs of operating rods movable in the direction of the axis of said circular coaxial patterns, said drive mechanism including a drive shaft arranged along an axis defined by the centers of said two groups of vacuum switches;
d. lost motion connection means interposed between said driving element and said pairs of aligned operating rods to impart a predetermined sequence to the operation of said vacuum switches;
e. a plurality of helical compression springs extending parallel to said drive shaft and arranged generally in a cylindrical surface surrounding said drive shaft;
f. cam means and abutment means both jointly pivotable with said drive shaft for loading said plurality of helical compression springs in response to predetermined angular motions of said drive shaft and allowing said plurality of helical compression springs to expand upon angular motions of said drive shaft in excess of said predetermined angular motions thereof; and
g. an annular driving element surrounding said drive shaft operated by said plurality of helical compression springs and operating said lost motion connection means.

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**3,935,408**
**HEATING MEANS FOR HIGH-VOLTAGE GAS-TYPE CIRCUIT INTERRUPTER**
**Maurice J. Taylor, Dedham, Mass., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.**
**Filed Dec. 21, 1973, Ser. No. 427,278**
**Int. Cl.² H01H** *33/57*
**U.S. Cl. 200—148 B** **23 Claims**

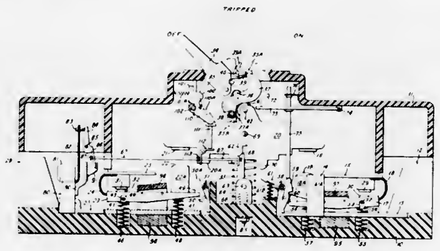



1. A high-voltage circuit-interrupter of the gas-blast type including separable contact means separable to establish an arc, blast-valve means for causing a blast of gas to flow against the arc to effect the extinction thereof, operating means to effect the separation of said separable contact means, an elongated high-voltage conductor leading to one of the separable contacts, an annular grounded metallic collector chamber (37) of relatively short length surrounding said high-voltage conductor yet spaced outwardly therefrom, conduit means providing gas-communication between said annular grounded relatively-short metallic collector chamber (37) and the gaseous region adjacent said separable contact structure, heating means associated with said grounded metallic collector chamber of relatively short length to heat the gas therein, and means for feeding high-pressure gas directly into said metallic collector chamber.



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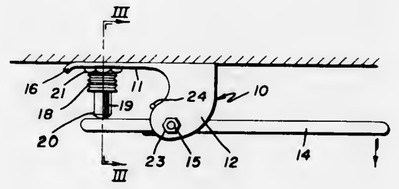
**3,935,409**
**CURRENT-LIMITING CIRCUIT BREAKER**
**Leonide P. Koval, Far Rockaway, N.Y., assignor to General Electric Company, New York, N.Y.**
**Division of Ser. No. 195,739, May 18, 1962, Pat. No. 3,813,619. This application Nov. 12, 1973, Ser. No. 414,648**
**Int. Cl. H01h** *3/00*
**U.S. Cl. 200—153 G** **5 Claims**



1. An electric circuit breaker comprising:
a an insulating enclosure,
b a movable contact member movable between open and closed circuit positions,
c an operating member movable between open and closed circuit positions corresponding to said open and closed circuit positions of said movable contact member,
d said operating member comprising a first portion movably supported in said enclosure,
e a cam member pivotally supported on said first portion of said operating member,
f latch means movably mounted on said operating member and disposed to engage said cam member during at least a portion of the movement of said operating member from said open to said closed circuit position,
g said latch means when in engagement with said cam member serving to retain said cam member in a position in which said cam member is operable upon said movable contact member, and
h means operable upon movement of said operating member a predetermined amount to release said latch means from said cam member.

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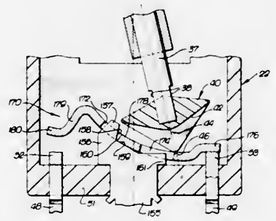
**3,935,410**
**SWITCH ACTUATOR WITH ELONGATED LEVER**
**Albert L. Howard, 27 Pleasant St., Northboro, Mass. 01532**
**Filed Sept. 3, 1974, Ser. No. 502,544**
**Int. Cl.² H01H** *3/04*
**U.S. Cl. 200—332** **7 Claims**




1. Switch actuator, comprising:
a. base adapted to lie against a surface from which a switch protrudes, the base being bifurcated to provide two spaced, parallel legs which lie on either side of the switch and are clamped in place by a portion of the switch,
b. a pair of ears extending from the base, and
c. a lever pivotally mounted on a pivot pin extending between the ears, the lever contacting the switch at a position substantially spaced from the pivot pin.

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**3,935,411**
**TOGGLE SWITCH**
**Anthony R. Ford, West Covina, Calif., assignor to Airpax Electronics Incorporated, South El Monte, Calif.**
**Filed Dec. 27, 1973, Ser. No. 428,706**
**Int. Cl.² H01H** *21/04*
**U.S. Cl. 200—67 G** **2 Claims**



1. A toggle switch comprising:
a housing body having a cavity formed therein;
a central common input terminal post projecting into the cavity and terminating upwardly in fulcrum support means;
a generally rectangular conductive blade supported on the fulcrum support means for pivotal movement about an axis extending in a lateral direction substantially normal to the long axis of said rectangular blade;
a pair of output terminal posts projecting into the cavity and terminating in a pair of upwardly directed contact surfaces, each contactable by an opposite blade end portion;
an actuator assembly pivotally mounted on the body, including a downwardly biased actuator tip in the cavity provided with a pair of laterally spaced actuator legs slidable longitudinally along the upper surface of the blade along spaced paths extending parallel to the axis of said rectangular blade and along respective lateral opposite sides of the fulcrum support means;
said fulcrum support means including an upwardly extending projection, said blade having formed therein an opening for receiving the projection through the opening, said actuator legs contacting the blade along the respective laterally opposite sides of said projection when said actuator assembly is pivoted past said projection, said opening being offset from the longitudinal center of the blade, the pivotal axis of said blade lying below said blade and below the upper end of said projection.

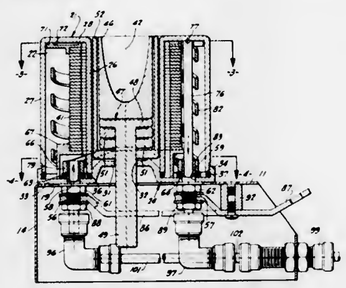
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**3,935,412**
**INDUCTION HEATED VAPOR SOURCE**
**George W. McDonough, Cupertino; Douglas S. Schatz, Santa Clara, and Emmett R. Anderson, Los Gatos, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.**
**Filed May 22, 1974, Ser. No. 472,179**
**Int. Cl.² H05B** *5/18*
**U.S. Cl. 219—10.49** **8 Claims**

1. In an induction heated source for vaporizing a material:
A. a base;
B. a helically wound work coil surmounted on the base and comprising a plurality of closely spaced windings of a generally flat, solid electrical conductor oriented with its flat surfaces facing axially of the coil;

C. a housing having radially spaced apart inner and outer side walls disposed coaxially of the coil, said housing and coil forming an inner chamber between the inner periphery of the coil and the inner wall of the housing and an outer chamber between the outer periphery and the outer wall of the housing;

D. means for supporting the material to be vaporized in a predetermined position in the region defined by the inner wall of the housing;



E. a flow inlet communicating with the inner chamber and adapted for connection to a source of liquid coolant;

F. means forming a spirally extending flow passageway between the inner and outer chambers at one end of the coil for carrying the coolant from the inner chamber to the outer chamber and imparting a swirling movement to the coolant; and

G. a flow outlet communicating with the outer chamber for passing the coolant from the chamber.

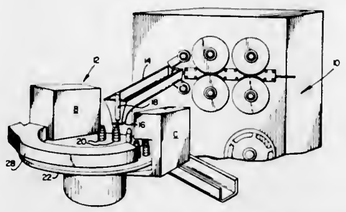
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**3,935,413**

**APPARATUS FOR STRESS RELIEVING SPRINGS AND THE LIKE**

**Richard Lesko, Harwinton, and David Reynolds, Torrington, both of Conn., assignors to Torin Corporation, Torrington, Conn.**

**Filed May 30, 1974, Ser. No. 474,370**
**Int. Cl.² H05B** *3/00*
**U.S. Cl. 219—50** **13 Claims**



1. Apparatus for stress relieving springs and the like comprising a loading station, a device for delivering springs in succession to said loading station, a series of similar spring holders movable in a predetermined horizontal path which includes said loading station, each of said spring holders taking the form of an upright pin on and about which a coil spring may be deposited by said delivery means, and each of said holders also comprising an electrically conductive base member upon which a lower end portion of a coil spring rests when the spring is deposited on the pin, each said base member having an inclined seating surface and an associated short vertical abutment surface adjacent the lower end of the associated upright pin, said inclined surface being engageable with a side surface of a lower-most end coil of a spring supported on the pin, and said abutment surface being engageable with an end surface of such a coil, means for intermittently moving said holders along said path so that springs are successively deposited on said upright pins of said holders at said loading station, a stress relieving station in said predetermined path of movement, a spring indexiing device adjacent said predetermined path of movement between said loading and stress relieving stations, said device comprising an element engageable with and operable frictionally to rotate springs on said upright pins as they pass said device, the direction of rotation being such as to seat each spring with the side surface of the lower-most end coil in engagement with said inclined seating surface on said base member and with the end surface of said coil in engagement with the vertical abutment surface on said member, a pair of electrodes at said stress relieving station one of which comprises a spring holder base member at the station and both of which are engageable with a spring supported by a holder at the station, electrical power supply and control means connected with said electrodes and operable to effect resistance heating and thus to stress relieve a spring engaged by the electrodes, an unloading station in said predetermined path of movement, and a spring unloading device engageable with springs at said station and operable successively to remove the same from said holders.

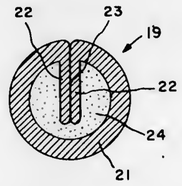
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**3,935,414**

**AUTOMATIC FIXED POSITION PIPE WELDING**

**John T. Ballass, Norwich, and Richard A. Georgetti, Mystic, both of Conn., assignors to Unicore, Inc., North Haven, Conn.**

**Filed Oct. 11, 1974, Ser. No. 514,196**
**Int. Cl.² B23K** *31/06, 35/22*
**U.S. Cl. 219—61** **6 Claims**




1. A flux-cored electrode wire for use in gas-shielded electric arc welding of fixed position pipes comprising a drawn steel sheath having a core and a welding mixture contained within the core and constituting 14 percent –17 percent by weight of the wire, said welding mixture consisting essentially of, by weight of said mixture, 16–17 percent ferro manganese, 10–11 percent ferro silicon, 1–4 percent manganous oxide, ½-1 percent of potassium aluminum fluoride, and the balance rutile, the sheath exterior surface being shiny and metallic-appearing with unremoved drawing compound residues.

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**3,935,415**

**ELECTROMAGNETIC OVEN WHICH SUPPLIES DIFFERENT AMOUNTS OF HEAT TO ITEMS POSITIONED IN DIFFERENT REGIONS OF A SINGLE HEATING CHAMBER**

**Donald G. Moore, Glencoe, Ill., assignor to Chemetron Corporation, Chicago, Ill.**

**Continuation-in-part of Ser. No. 300,763, Oct. 25, 1972. This application July 18, 1973, Ser. No. 380,487**
**Int. Cl.² H05B** *9/06*
**U.S. Cl. 219—10.55 F** **2 Claims**

1. A system for selectively heating items in a microwave oven comprising:

a chamber having conductive walls and a conductive floor;

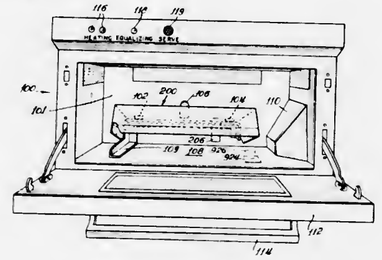
means for supplying microwave energy to the interior of said chamber;

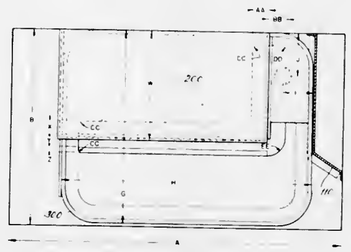


a tray positioned within said chamber;

a shield located over a portion of said tray and cooperating with said conductive floor to shield a portion of said tray from microwave energy,

said shield defining an unshielded L-shaped area on said tray; and





an energy-focusing inwardly directed wall of said chamber which cooperates with said shield to define a channel having conductive walls, said channel being adjacent one branch of said unshielded L-shaped area on said tray, thereby to concentrate microwave energy in said one branch of said L-shaped area.

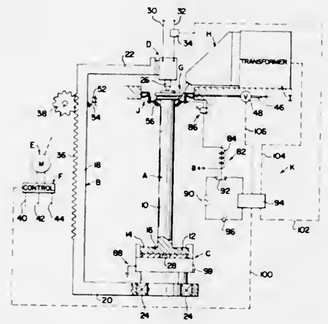
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**3,935,416**

**INDUCTOR-WORKPIECE POSITION DETECTOR**

**John F. Cachat, Cleveland, Ohio, assignor to Park-Ohio Industries, Inc., Cleveland, Ohio**

**Filed June 24, 1974, Ser. No. 482,271**
**Int. Cl.² H05B** *5/02*
**U.S. Cl. 219—10.77** **16 Claims**



1. An induction heating device comprising support means for an elongated metal workpiece including a stem having an axis and a radial flange at one end of the stem, an inductor coil for axially heating a workpiece supported by said support means, said coil being coaxial with said stem, electrical drive means for relatively displacing said workpiece support means and induction coil along a linear path parallel to said axis and in the direction to move said coil and flange toward one another, and electrical circuit means including energizable means for delivering a control signal to said drive means upon movement of said workpiece flange and inductor coil to a predetermined axially spaced position in said direction, said circuit means including an electrical contact ring positioned axially between said inductor coil and workpiece support means, said contact ring being supported relative to said inductor coil and in surrounding coaxial and radially spaced relationship with the stem of a workpiece on said support means, a power supply, and means connecting said contact ring and said workpiece support means in series across said power supply, said contact ring engaging said workpiece flange upon movement of said flange and inductor coil into said predetermined position, thus to close said circuit means and energize said means for delivering a control signal.

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**3,935,417**

**WELDING OF COPPER AND IRON**

**Tomio Umino, Hitachi; Munenobu Suzuki, Mito, and Tomohiko Shida, Hitachi, all of Japan, assignors to Hitachi, Ltd., Japan**

**Filed Aug. 15, 1973, Ser. No. 388,500**
**Claims priority, application Japan, Aug. 30, 1972, 47-86231**
**Int. Cl.² B23K** *15/00*
**U.S. Cl. 219—121 EM** **11 Claims**



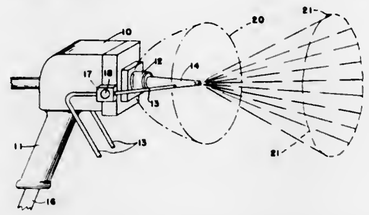
1. A method for welding copper or a copper base alloy and iron or an iron base alloy wherein the welding is performed without the use of a flux and a molten metal can be observed directly, characterized in that a copper joint material containing at least 90 percent of copper and an iron joint material containing at least 50 percent of iron are welded together by melting closely adjacent portions of the copper joint material and the iron joint material into a weld metal and by incorporating into said weld metal a first element for pulverizing the crystal grains of the weld metal, said first element being at least one member selected from the group consisting of titanium, aluminum, zirconium, niobium, and tantalum, and a second element for enhancing the mutual miscibility of copper and iron in the weld metal, said second element being at least one member selected from the group consisting of nickel, silver, paladium and platinum, wherein said first element is added in an amount of from 0.8 to 8 percent by weight and said second element is added in an amount of from 0.2 to 17 percent by weight, based on the weight of the weld metal.

**3,935,418**

## PLASMA GUN INCLUDING EXTERNAL ADJUSTABLE POWDER FEED CONDUIT AND INFRARED RADIATION REFLECTOR

**Mille Stand, New York, and Stephen U. Davis, New Rochelle, both of N.Y., assignors to Sealectro Corporation, Mamaroneck, N.Y.**

**Filed Apr. 17, 1974, Ser. No. 461,482**
**Int. Cl.² B23K** *5/00*
**U.S. Cl. 219—121 P** **11 Claims**



1. In a plasma gun having a flame ejected from a nozzle for depositing powdered material onto a substrate located at a distance spaced from the end of said flame, said flame comprised of three thermal components, namely, conductive, convective and radiative, with said conductive and convective components being carried forward with the streaming plasma gas, the improvement comprising:

at least one adjustable powder conveying conduit for applying powdered fluent material to the plasma flame, said conduit secured to said gun; and

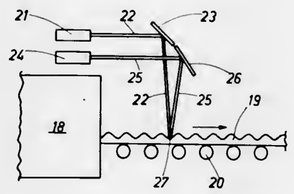
a reflector mounted on said gun for utilizing the radiative thermal component, said reflector having a concave reflecting area, said plasma flame disposed at the focal point of the reflector so that the reflector focusses the radiative thermal component toward the substrate for assisting in the melting of the powdered material and increasing the temperature of said substrate to facilitate the deposition of the powdered material.

**3,935,419**

## SEVERING OF GLASS OR VITROCRYSTALLINE BODIES

**Emmanuel Lambert, Brussels; Jean-Louis Lambert, Chaumont-Gistoux, and Bernard De Longueville, Sterrebeek, all of Belgium, assignors to Glaverbel-Mecaniver S.A., Watermael-Boitsfort, Belgium**

**Filed Oct. 11, 1973, Ser. No. 405,597**
**Claims priority, application Luxemburg, Oct. 12, 1972, 66279**
**Int. Cl.² C03B** *33/00*
**U.S. Cl. 219—121 LM** **9 Claims**



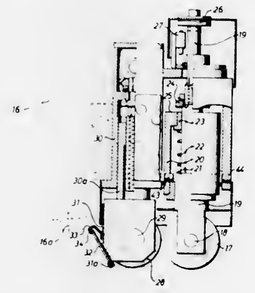
1. In a method for severing a body of soda-lime glass having a thickness of at least 5 mm by irradiating the body with at least one laser beam producing energy which is absorbed by the body to induce breaking stresses therein, the improvement comprising irradiating the body with at least two laser beams of respectively different wavelengths with respect to which the body has respectively different degrees of transparency and giving at least one of the laser beams at least a predominant wavelength such that at least 10 percent of the energy of such laser beam penetrates the body to a depth of at least 0.2 mm.

**3,935,420**

## MEANS FOR GUIDING THE WELDING UNIT OF AN AUTOMATIC WELDING APPARATUS ALONG THE JOINT LINE BETWEEN WORKPIECES TO BE WELDED TOGETHER

**Stig Rune Sandstrom, Borlebrovagen 28, 372 00 Ronneby, Sweden**

**Filed Dec. 18, 1973, Ser. No. 425,797**
**Claims priority, application Sweden, Dec. 29, 1972, 17202/72**
**Int. Cl.² B23K** *9/12*
**U.S. Cl. 219—125 R** **2 Claims**



2. An automatic electric welding apparatus comprising a joint line follower for guiding a laterally and vertically movable welding unit along the joint line between workpieces during welding, a support member positioned behind the joint line follower and resting upon at least one of said workpieces during welding, the welding unit being movable vertically solely in dependence upon the vertical position of the support member, and a plate-like protecting means positioned between the support member and the electrode of the welding unit for preventing weld splash from fastening to the support member during welding and protecting the support member from heat radiation from the weld joint, said protecting means extending into the space between the support member and the workpieces and comprising a replaceable asbestos plate inserted between two curved edges of a holder projecting downwardly from the welding unit.

**3,935,421**

## FLUX-CORED WELDING WIRE FOR GAS-SHIELDED ELECTRIC ARC WELDING

**John T. Ballass, Norwich, and Richard A. Georgetti, Mystic, both of Conn., assignors to Unicore, Inc., North Haven, Conn.**

**Continuation-in-part of Ser. No. 250,240, May 4, 1972, abandoned, which is a continuation-in-part of Ser. No. 53,016, July 7, 1970, abandoned. This application Oct. 11, 1974, Ser. No. 514,195**
**Int. Cl.² B23K** *35/22*
**U.S. Cl. 219—146** **11 Claims**

1. A flux-cored welding wire for use in gas-shielded electric arc welding comprising a drawn steel sheath having a core and a welding mixture contained within the core and constituting 12–20 percent by weight of the wire, said welding mixture consisting essentially of, by weight of said mixture, 6–20% ferro manganese, 6–20% ferro silicon, 1–20% manganous oxide, ½–5% of a fluoride compound selected from the group consisting of sodium fluoride, sodium silica fluoride, calcium fluoride, lithium fluoride, potassium aluminum fluoride and potassium titanium fluoride, and the balance rutile and constituting at least 50 percent of the mixture, the sheath exterior surface being shiny and metallic-appearing with unremoved drawing compound residues.

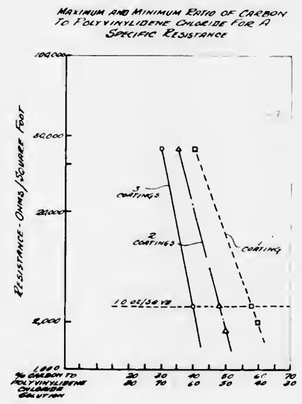


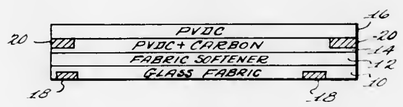
**3,935,422**

## ELECTRICALLY HEATED LAMINATE WITH A GLASS HEATING FABRIC

**Richard D. Barnes, Stokesdale, and William E. Sharpe, Jr., Greensboro, both of N.C., assignors to Burlington Industries, Inc., Greensboro, N.C.**

**Division of Ser. No. 441,817, Feb. 12, 1974, Pat. No. 3,876,968. This application Dec. 16, 1974, Ser. No. 533,176**
**Int. Cl.² H05B** *3/34*
**U.S. Cl. 219—213** **3 Claims**




2. A plaster board comprising a flexible heater fabric incorporated into a plaster binder, said heater fabric comprising a woven glass cloth having a layer of an electrically conductive mixture to provide a desired watt density comprising carbon and a vinylidene chloride polymer, electrical means in contact with the conductive mixture for applying an electrical potential and a vapor barrier of a vinylidene chloride polymer to protect the conductive mixture from moisture and accidental electrical contact.

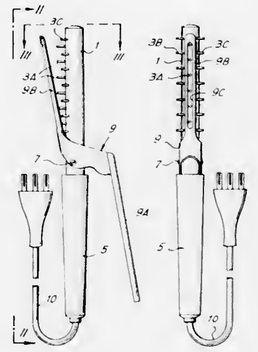
**3,935,423**

## HAIRDRESSING DEVICE

**Massimo Pucci, Via Borsi 41, Livorno, Italy (I-57100)**

**Filed July 1, 1974, Ser. No. 484,878**
**Claims priority, application Italy, July 3, 1973, 17405/73**
**Int. Cl.² H05B** *1/00*; **A45D** *1/04*
**U.S. Cl. 219—225** **3 Claims**

1. A hairdressing device comprising, in combination, an elongated circular cross-section cylindrical body having a relatively small diameter adapted to the size of a hair curl; heating means in said body operable to heat said body uniformly throughout its length; a gripping handle secured to one end of said body; a first longitudinally extending rectilinear row of comb teeth projecting radially from said body; second and third longitudinally extending rectilinear rows of comb teeth projecting radially from said body on opposite sides of said first row and spaced symmetrically relative to said first row to define therewith a hair brush; said comb teeth being in heat exchange relationship with said body so as to be heatable by said heating means; and a relatively thin pliers member articulated to said body, and having an operating portion adjacent said handle and an elongated active portion extending in alignment with said first row of comb teeth and movable toward engagement with said body to press the hair against



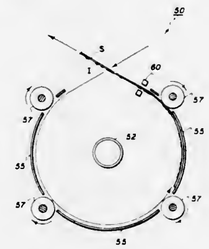
said body for curling of the hair between said active portion and said body; said active portion having a width less than the spacing of the second and third teeth rows from each other so as to be movable into the space between said second and third teeth rows and having an elongated slot therein through which the comb teeth of said first row extend when said active portion is substantially engaged with said body, said three rectlinear rows of comb teeth providing for said device to be used to brush the hair with heated comb teeth.

**3,935,424**

## FLASH FUSING APPARATUS

**Thomas L. Donnelly, and Edward J. Mullen, both of Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.**

**Filed Oct. 18, 1974, Ser. No. 516,042**
**Int. Cl.² H05B** *1/00*; **G03G** *15/00*
**U.S. Cl. 219—216** **4 Claims**



1. An improved flash fusing apparatus for fusing toner images onto a copy sheet comprising:

an elongated flash iamp,

a cylindrically shaped member circling said flash lamp along the longitudinal axis thereof, and

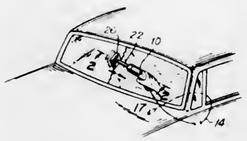
means for positioning a copy sheet bearing toner images along the cylindrical member to form a circular path around said flash lamp whereupon energizing said lamp uniform direct radiation is imparted to the sheet to fuse the toner particles at a reduced power output.

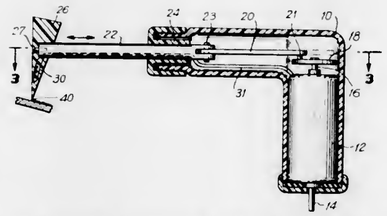
**3,935,425**

## MECHANIZED ELECTRICALLY HEATED WINDSHIELD CLEANER

**David Weissberger, 25 Lawrence Park Crescent, Bronxville, N.Y. 10708, and Isidore Kalichmann, 9231 57th Ave., Rego Park, N.Y. 11373**

**Filed Nov. 7, 1973, Ser. No. 413,522**
**Int. Cl.² H05B 1/00; A47L 1/06B26B 7/00**
**U.S. Cl. 219—228** **1 Claim**





1. A hand-held mechanical device adapted for removing snow, ice, mud and other caked detritus from a motor vehicle windshield; the device comprising a housing of generally one-piece construction having a hollow pistol-like handle portion for gripping and another hollow portion connected thereto and extending therefrom generally at a right angle to said hollow handle portion; bearing means removably secured to the forward end of said other hollow portion of said housing and having a sleeve element forming a central bearing bore; a driving shaft extending from the forward end of said other hollow portion and being slidable supported by said central bearing bore of said sleeve element; a blade secured to said driving shaft and being formed of a resilient rubber-like material; electric motor means within said handle portion of said housing, a rotatable shaft extending from the motor means, a disc mounted for rotation by the rotatable shaft, a connecting rod means connecting the disc to the driving shaft, one end of the rod being pivotably connected to said driving shaft, the other end of the rod being pivotably connected eccentrically to the rotatable disc, whereby upon rotation of the disc by said motor means, the driving shaft is driven in a reciprocating manner; an electrical heating coil embedded in the blade generally adjacent the edge thereof and in parallel electrical circuit connection with the electric motor means, and means for supplying electrical power to said motor means and heating coil for operating same.

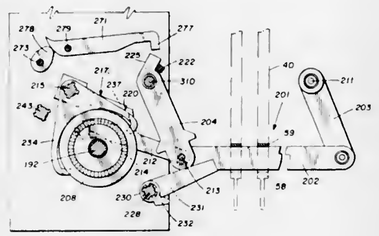
**3,935,426**

## VOTING MACHINE

**Cothburn M. O'Neal, Dallas; Alfred M. Mayo, Richardson, both of Tex., and George William Childs, deceased, late of Dallas, Tex. (by Patricia M. Childs, executrix), assignors to The Riverside Press, Inc., Dallas, Tex.**

**Division of Ser. No. 309,174, Nov. 24, 1972, Pat. No. 3,866,826. This application May 28, 1974, Ser. No. 473,923**
**Int. Cl.² G07C 13/00**
**U.S. Cl. 235—54 C** **6 Claims**

1. A voting machine comprising:
a plurality of aligned columns of voting keys, said keys being moveable from a non-voted to a voted position;
abutment means carried on said keys;
linkage means at each column of keys including a pivotally mounted bar extending along said column of keys, said linkage means having a first position corresponding to the position assumed by the keys in a non-voted position and moveable by actuation of said keys to a voted position;
selective column lockout means associated with said columns, said column lockout means including latch means at each column of keys having a first position engageable with said linkage means to prevent displacement of said linkage means and a second non-latching position; and



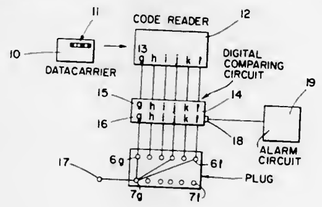
cam means associated with each of said latch means operable to position said latch means in said first or second position, said cam means including means for selectively positioning said cam means to lock a predetermined number of said aligned columns out of operation

**3,935,427**

## CAR DIAGNOSIS SYSTEM

**Herman Robert Geul, Leiden, Netherlands, assignor to Sun Electric Corporation, Chicago, Ill.**

**Filed Dec. 26, 1973, Ser. No. 428,214**
**Int. Cl.² G06K 9/08**
**U.S. Cl. 235—61.7 R** **5 Claims**




1. A system for checking correspondence between datacarrier, to be used in an automatic automative diagnosis apparatus, and the car to be tested, characterized in that the car is provided with a code-key in which the car characterizing code is recorded, said code corresponding with a code recorded on the datacarrier, means to read-out the code on the code-key and the code on the datacarrier, means to compare the code read-out from the datacarrier, and means to provide a signal in the event of absence of agreement between the code on the code-key and the code on the data carrier to indicate that the test program for the car should be stopped.

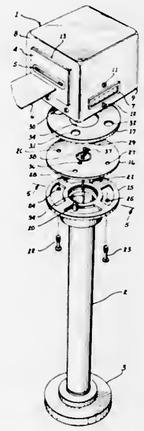
**3,935,428**

## REPLACEABLE PASSENGER TABULATING AND RECORDING CARD READER UNIT

**Earl R. Itrich, Tucson, Ariz., assignor to Earl R. Itrich, Tucson, Ariz.**

**Filed Sept. 4, 1974, Ser. No. 502,927**
**Int. Cl.² F16M 13/02; G06K 7/08; G07F 9/06**
**U.S. Cl. 235—61.11 R** **6 Claims**

1. An easily replaceable electrically powered pass card operated card reader unit having replaceable components, said card reader unit being mountable within a public transportation vehicle for tabulating and recording information presented by the pass cards, said card reader unit comprising:
a. a multi apertured housing;
b. support means for detachably mounting said housing, said support means including guide means for attachably positioning said housing onto said support means and attachment means for retaining said housing in place;
c. a card reader located within an aperture at the front of said housing;



d. disconnect means for detachably mounting said card reader within the front aperture of said housing to permit in situ replacement of said card reader, said disconnect means being internal to said housing and operable through another aperture of said housing;
e. a removable counter located within a further aperture in said housing for providing a visible count of the pass cards inserted within said card reader; and
f. verification means for verifying the viability of the pass cards.

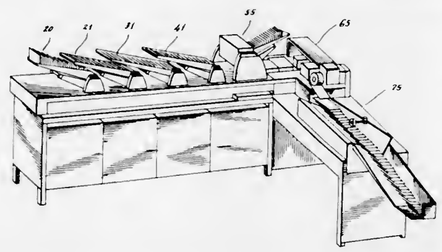


**3,935,429**

## PROCESS AND APPARATUS FOR CONTROLLING DOCUMENT FEEDING MACHINES FROM INDICIA CONTAINED ON A DOCUMENT FED THEREFROM

**George N. Branecky, Bethel, and Gary R. Sochrin, Shelton, both of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.**

**Filed Feb. 18, 1975, Ser. No. 550,871**
**Int. Cl.² G06K 7/10; B07C 5/38; G08C 9/06**
**U.S. Cl. 235—61.11 E** **10 Claims**



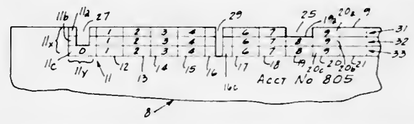
1. In an inserting machine having a high speed feeder with a demand roller for feeding therefrom documents having control function indicia thereon, the improvements comprising
a. edge detector means for detecting the edge of a document in the demand roller of said feeder,
b. encoder reader means operatively coupled to said demand roller for generating timing signals in accordance with the surface speed of said demand roller,
c. storage means receiving said timing signals from said encoder reader means which is operatively coupled thereto, said storage means storing and converting said signals into distance signals in accordance with the movement of said document through said high speed feeder,
d. means for coupling said edge detector means to said storage means for enabling said storage means when a document is detected by said edge detecting means,
e. scanner reader means for scanning the control function indicia on said documents and generating data bit outputs in accordance with the control function indicia on said documents,
f. a plurality of data window means coupled to and controlled by said storage means, said scanner reader coupled to said plurality of data window means, and
g. means for coupling a first data bit output of said scanner reader means to said storage means for resetting said storage means on the occurrence of said first data bit after said edge detector means is enabled, whereby the programming control of any subsequent data windows is based on the distance from said first data bit.

**3,935,430**

## NOTCH AND FILE SYSTEM

**Thomas P. Anderson, Hubbard Woods, Ill., assignor to Microseal Corporation, Evanston, Ill.**

**Filed May 3, 1971, Ser. No. 139,591**
**Int. Cl.² G06K 21/00**
**U.S. Cl. 235—61.12 R** **1 Claim**




1. A notch and file card comprising superimposable notches along a portion of an edge thereof, said notches being of different configurations so that when said notches are superimposed upon each other they may be visibly distinguished from each other, said notches including first, second and third notches, each of said notches having a depth and a width, said first notch being wider than said second or third notches and said second notch being wider than said third, said third notch being deeper than said first or second notch and said second notch being deeper than said first notch.

**3,935,431**

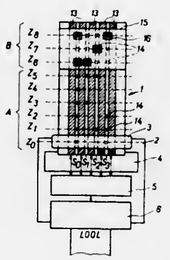
## APPARATUS FOR THE STORAGE AND READING OF DATA COMBINED FROM BINARY NUMBERS

**Kurt Scheffel, Weil am Rhein, Germany, assignor to The Grey Lab. Establishment, Vaduz, Liechtenstein**

**Filed Dec. 16, 1974, Ser. No. 533,128**
**Claims priority, application Switzerland, Dec. 28, 1973, 18218/73**
**Int. Cl.² G06K 7/06, 19/06**
**U.S. Cl. 235—61.11 A** **29 Claims**

1. An apparatus for the storage and reading of data combined from binary characters, comprising a data carrier serving as a storage, said data carrier having columns and lines, means provided at intersection points of the columns and lines for portraying the binary characters in the form of binary signals, a reader for the data carrier which serves to generate binary signals portraying the stored data by means of a line-

by-line scanning of the data carrier and evaluation of the binary signals, the improvement comprising: said data carrier having adjacently arranged separate signal conductor tracks incorporating intermediate spaces extending along the columns and separating the conductor tracks, bridge elements provided for the data carrier for the one binary character in the intermediate spaces between the conductor tracks at predetermined intersection points of the columns and lines, said bridge elements interconnecting at the predetermined intersection points both of the conductor tracks of a relevant column with one another, said bridge elements being reversibly activatable from a first condition which can be detected via the conductor tracks of the columns through an external action into a second condition portraying a binary character and detectable via the conductor tracks, and for the other binary character the conductor tracks at other intersection points of the columns and lines are selectively either not interconnected with one another or interconnected by such bridge elements, and means for rendering ineffectual from the

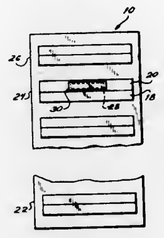


outside the action at such other bridge elements for retaining the same permanently in the first condition portraying this other binary character, and wherein the reader incorporates means for generating the action in a region corresponding to a line of the data carrier, a feed mechanism for moving relative to one another the data carrier and the means generating the action in order to bring about a line-by-line scanning of the data carrier, an evaluation device, a detector operatively connected with the evaluation device for producing output signals for the evaluation device for determining the state of the bridge elements of the data carrier via its conductor tracks, said detector including a control device for the columnwise connection of pairs of conductor tracks determining the individual columns, said detector being designed such that its output signals in the case of bridge elements activated by the external action and connected therewith via a pair of conductor tracks possesses a first signal value portraying one binary character and otherwise a second signal value portraying the other binary character.

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**3,935,432**
**VARIABLE COLOR LABEL FOR OBJECT IDENTIFICATION SYSTEM**
**Robert L. Maynard, Huntington Bay, N.Y., assignor to Servo Corporation of America, Hicksville, N.Y.**
**Filed Jan. 10, 1975, Ser. No. 540,128**
**Int. Cl.² G06K** *19/06, 7/12*
**U.S. Cl. 235—61.12 N** **18 Claims**

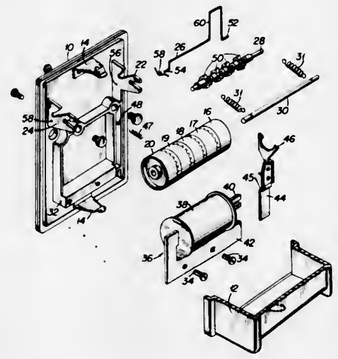
**10.** A label for use in a system for the identification of objects, said label being affixed to an object to be identified and comprising: an array of modules of colored elements arranged in a code to define data unique to the object and means on said label for altering the color of at least a portion



of one of said modules in response to a condition within said object.

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**3,935,433**
**ELECTROMAGNETICALLY OPERATED REMOTE METER OR REGISTER HAVING COUNTER WHEEL LOCKING MEANS**
**Edward F. Cielaszyk, Olgesby; Ralph A. DeRose, Villa Park, and John W. Kravcik, Western Springs, all of Ill., assignors to Neptune International Corporation, Atlanta, Ga.**
**Filed May 10, 1974, Ser. No. 468,730**
**Int. Cl.² G06M** *1/10, 3/12*
**U.S. Cl. 235—92 C** **10 Claims**



**1.** In a remote register comprising a base and cover, relay means including an armature, a stepping pawl and a plurality of numbered wheels coaxially mounted on a shaft for sequential rotation, said wheels being operatively interconnected by transfer pinions rotatably mounted on a shaft, one of said numbered wheels including a ratchet wheel engageable by said stepping pawl, the improvement which comprises:

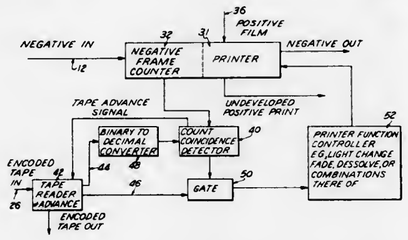
locking means including a bar pivotally mounted along an axis parallel to said base and said transfer pinion shaft, said locking means including an actuating member;

biasing means arranged to normally urge said locking bar into engagement with said transfer pinions; and

cam means operatively associated with said cover and positioned to engage said actuating member and to force said locking means against the action of said biasing means out of engagement with said transfer pinions when said cover is positioned on said base and to release said locking means when said cover is removed from said base whereby upon removal of said cover, said cam disengages said actuating member and said locking bar is urged into engagement with said transfer pinions and numbered wheels from rotation.



**3,935,434**
**PRINTER CONTROL**
**Harry E. Rice, Van Nuys, and John K. Rude, Burbank, both of Calif., assignors to Technicolor, Inc., Hollywood, Calif.**
**Filed Mar. 4, 1963, Ser. No. 262,410**
**Int. Cl.² G06M** *3/02;* **G03B** *33/10*
**U.S. Cl. 235—92 CT** **8 Claims**




**1.** In a system for cuing and actuating a controller by means of information relating to a printer function and the negative frame number at which it is to occur encoded on a storage medium, said controller controlling the functioning of a motion picture printer printing a positive print from a negative, the combination comprising:

means for passing said negative through said printer;

a counter for counting the negative frames entering said printer and producing an output signal indicative of the number thereof;

first means coupled with said storage medium for producing an output signal indicative of the negative frame number information encoded thereon;

a coincidence detector coupled to said counter and said first means and responsive to the output signals therefrom to produce an output signal upon a coincidence thereof;

second means coupled with said storage medium for producing a control signal indicative of the printer function information encoded thereon; and

a gate having first and second inputs and an output, said first input being coupled with the output of said coincidence detector, said second input being coupled with the output of said control signal producing means, said output being connected to said controller, said gate being operative to pass said control signal to said controller upon the occurrence of a signal at said first input.

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**3,935,435**
**GASOLINE DISPENSER**
**Robert C. Greenwood, Cypress, Calif., assignor to Pan-Nova, Inc., Santa Fe Springs, Calif.**
**Division of Ser. No. 427,579, Dec. 26, 1973, Pat. No. 3,871,503. This application Oct. 21, 1974, Ser. No. 516,289**
**Int. Cl.² G07F** *13/02*
**U.S. Cl. 235—151.34** **4 Claims**

**1.** In a calculator for a fluid dispensing system providing an output display in hundredths of a unit for customer indication and an additional output display in quarters of a hundredth of a unit for system calibration, the combination of

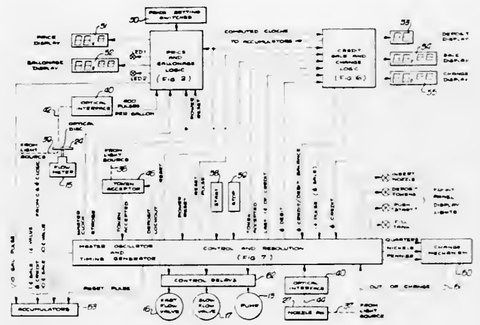
a volume pulse generator producing volume pulses at a rate of four hundred pulses per unit of volume of fluid dispensed;

a volume accumulator including means for counting input pulses and displaying the count state for indicating the volume of fluid dispensed in decimal digits in hundredths of a unit for normal dispensing operation;

first and second divide-by-two circuits connected in series between said volume pulse generator and said volume accumulator and having a first output for two hundredths of a unit and a second output for one hundredths of a unit, with said second output connected to said volume accumulator as an input;

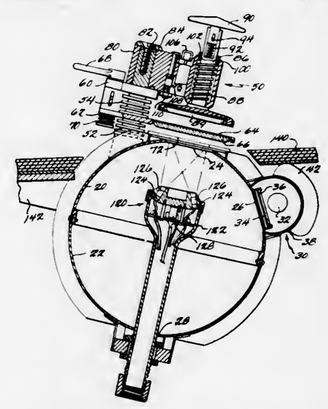
a first on-off indicator having said first output connected thereto; and

a second on-off indicator having said second output connected thereto, with said first and second indicators indicating the volume of fluid dispensed in quarters of a hundredth of a unit for calibration of the dispensing system.



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**3,935,436**
**COLOR MEASURING SPECTROPHOTOMETER**
**Jerry B. Holschlag, deceased, late of Greenwood, S.C. (by Joan D. Holschlag, executrix), and Lyle Wilcox, Clemson, S.C., assignors to Greenwood Mills, Greenwood, S.C.**
**Filed Apr. 24, 1973, Ser. No. 354,090**
**Int. Cl.² G06F** *15/20;* **G01J** *3/00*
**U.S. Cl. 235—151.35** **64 Claims**



**43.** A digital abridged spectrophotometer for determining color values of material of unknown color comprising:

detecting means including a detecting head having a viewing port for receiving said material to be color analyzed,

said detecting means including source means for providing light over the visible spectrum inside said head and substantially more than five photo-responsive devices each having light receiving means mounted inside said head for receiving incident reflected light from said port with said devices being responsive over all said spectrum respectively to a different color band for simultaneously providing exteriorly of said head a corresponding number of signals varying as a function of the respectively received incident light,

standardizing means including two differently colored standard samples,

means for alternately moving each of said samples between a sample off port position and a sample port covering position during calibrating times and for moving one of said samples to said port covering position with said material therebetween during color analyzing times,

control means for interrogating each of said photoresponsive devices including digital computer means for calibrating from signals derived by said photo-responsive devices effectively viewing said standard samples alternately once for each color analyzing time,

means for alternately establishing said calibrating and analyzing times, and

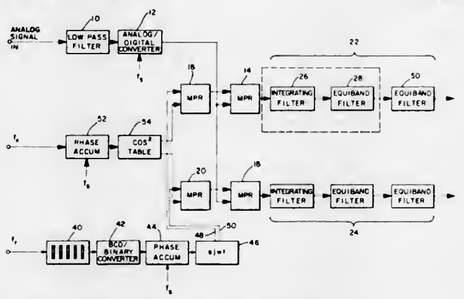
means in said digital computer for calculating the color values from the signals received from said photoresponsive devices during said color analyzing times.

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## 3,935,437
## SIGNAL PROCESSOR

**Joseph W. Schmitt, Hudson, and Donald L. Starkey, Amherst, both of N.H., assignors to Sanders Associates, Inc., Nashua, N.H.**

**Filed Feb. 25, 1974, Ser. No. 445,745**
**Int. Cl.² G06F 7/38; G01R 23/16**
**U.S. Cl. 235—152** **16 Claims**




1. A digital signal processor for isolating different spectral segments of an analog signal applied thereto, said processor comprising

A. means for providing digital samples of said analog signal,

B. means for generating a selected reference frequency signal,

C. means for multiplying said digital samples by said reference frequency signal to thereby translate the spectrum of said analog signal to a band around a predetermined frequency,

D. filter means including a multi-register digital integrating filter having a selected integration period for accumulating said reference-frequency-multiplied samples in separate registers over said integration period, each multiplied input sample being applied to each register, and

E. means for reading out the contents of said registers at the end of each integration period at times separated by submultiples of the integration period.

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## 3,935,438
## DECIMAL ADDER

**Ulrich Grupe, Stuhr, Germany, assignor to Vereinigte Flugtechnische Werke-Fokker GmbH., Bremen, Germany**

**Filed Oct. 11, 1974, Ser. No. 513,956**
**Claims priority, application Germany, Oct. 20, 1973, 2352686**
**Int. Cl.² G06F 7/50**
**U.S. Cl. 235—174** **23 Claims**

1. A decimal parallel adder comprising:

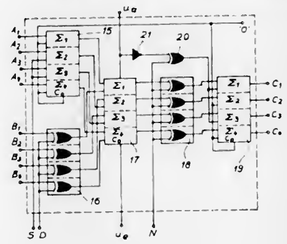
a plurality of arithmetic stages, one each for forming a new decimal digit, each such stage having a first binary adder for receiving signals representing a first and a second digit to be added;

circuit means in each said stage connected for feeding said signals to said adder and selectively and mutually exclusively providing the bit by bit complement of one digit and adding a particular number to one of the two digits;

a second adder in each said stage connected so that its output provides said new decimal digit;

second circuit means in each said stage for selectively passing direct or complement of the output of said first adder as one input to said second adder;

third circuit means in each said stage for selectively passing or suppressing signals representing a fixed number to said second adder and equivalent to a subtraction of the number as added by operation of the first circuit means;



circuit means for connecting the carry output of each first adder to the carry input of the first adder of the stage forming the next higer significant decimal digit; and

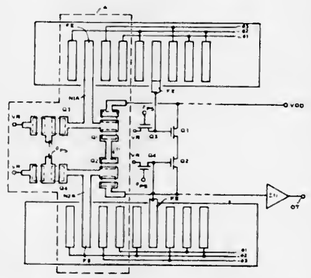
a controller common to all stages and connected to be responsive to the sign bits of numbers whose digits are fed to said stages and providing control signals for control of the selectivity of said first circuit means and further providing other control signals for control of the selectivity of said second circuit means, the controller additionally providing a sign bit for the number as assembled by operation of all said stages.

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## 3,935,439
## VARIABLE TAP WEIGHT CONVOLUTION FILTER

**Dennis Darcy Buss, Cambridge, Mass., and Walter Howard Bailey, Richardson, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.**

**Filed July 12, 1974, Ser. No. 487,105**
**Int. Cl.² G06G 7/19; G11C 11/40**
**U.S. Cl. 235—181** **24 Claims**



1. Analog signal processing apparatus comprising:

a first analog charge transfer device for receiving sampled values of a first analog signal and storing said sampled values at charge storage sites of said charge transfer device;

a second analog charge transfer device for receiving sampled values of a second analog signal and storing said



sampled values at charge storage sites of said charge transfer device;

each of said first and second analog charge transfer devices including a like plurality of stages each including a plurality of charge storage sites, at each said stage a plurality of electrodes for receiving multi-phase clock pulses to transfer said analog signal samples along said charge transfer device; analog signal multiplier means for corresponding pairs of said first and second analog charge transfer devices, for producing an output signal proportional to the product of first and second analog signal samples stored at the said corresponding stages of said first and second charge transfer devices, said analog signal multiplier means including first and second input electrodes electrically coupled to said corresponding stage of said first and second charge transfer devices for nondestructive detection of amplitudes of analog signal samples stored at said respective corresponding stages to apply analog pulse inputs to said first and second input electrodes; and

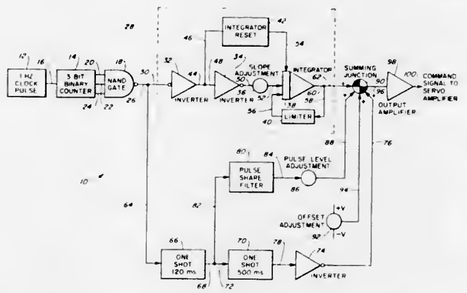
means for summing the outputs of said multiplier means.

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## 3,935,440
## CATAPULT BREAKAWAY LOAD SIMULATOR CIRCUIT

**Robert D. Mood, Anaheim; Joseph P. Hunter, San Pedro, and Dering R. Burgen, Pico Rivera, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed Jan. 30, 1975, Ser. No. 545,688**
**Int. Cl.² G06G 7/70**
**U.S. Cl. 235—184** **9 Claims**




1. A circuit for developing a required load vs. time signal to simulate the breakaway fitting load during a typical catapult launch comprising:

a. means for providing a clock pulse signal, said signal having a first amplitude,

b. means connected to said clock signal providing means for generating a first driver signal, said first driver signal being said first amplitude for a time period equal to seven cycles of said clock pulse signal followed by a second amplitude for a time period equal to one cycle of said clock pulse signal, said first amplitude being greater in value than that said second value, said first driver signal repeating once every eight cycles of said clock signal,

c. means connected to said first driver signal generating means for generating a first summing signal, said first summing signal being a ramp function starting at said second amplitude and terminating at a third amplitude with a time period equal to four cycles of said clock signal, followed by said third amplitude for a time period equal to three cycles of said clock signal, followed by said second amplitude for a time period equal to one cycle of said clock signal, said third amplitude being less than said first amplitude but greater than said second amplitude, said first summing signal repeating once every eight cycles of said clock signal,

d. means connected to said first driver signal generating means for generating a second driver signal, said second driver signal being said second amplitude for a time period of seven cycles of said clock signal followed by said first amplitude for a time period of less than one cycle of said clock signal, followed by said second amplitude for the remainder of the eights cycle of said clock signal a time period of less than one cycle of said clock signal, said second driver signal repeating once every eight cycles of said clock signal,

e. means connected to said second driver signal generating means for generating a second summing signal, said second summing signal being said second amplitude for a time period equal to seven cycles of said clock signal, followed by a spike pulse signal of amplitude equal to said first amplitude for a time period of less than one cycle, followed by said second amplitude for a time period of less than one cycle, said second summing signal repeating once every eight cycles of said clock signal,

f. means connected to said second driver signal generating means for generating a third summing signal, said third summing signal being said second amplitude for a time period equal to more than seven cycles of said clock signal but less than eight cycles of said clock signal followed by a fourth amplitude for a time period equal to less than one cycle of said clock signal, said fourth amplitude being less than said second amplitude, said third summing signal repeating once every eighth cycle of said clock signal, and

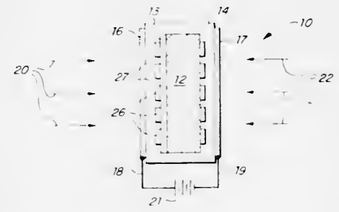
g. summing means connected to said first, second, and third summing signal generator means for summing said first, second, and third summing signals, said summing means having an output upon which appears said load vs. time signal, said load vs. time signal repeating once every eight cycles of said clock signal.

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## 3,935,441
## APPARATUS FOR MAINTAINING IMAGE DIGITIZATION IN PARALLEL OPTICAL DIGITAL PROCESSING SYSTEMS

**Ralph E. Aldrich, Acton, and Julius Feinleib, Cambridge, both of Mass., assignors to Itek Corporation, Lexington, Mass.**

**Filed Jan. 2, 1974, Ser. No. 430,020**
**Int. Cl.² H01J 39/12**
**U.S. Cl. 250—211 R** **9 Claims**



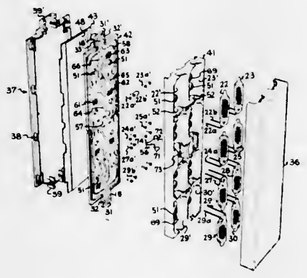

1. In an imaging apparatus including a photosensitive device responsive to applied radiation for establishing internal electric fields representative of the intensity of different portions of said applied radiation; the improvement comprising:

a two-dimensional array of radiation transmissive electrically conductive targets associated with said device, each of said targets in said array being electrically isolated from one another and being aligned to receive a different one of said portions of said applied radiation for establishing a plurality of discrete internal electric fields, each of which are representative of the intensity of one of said radiation portions, and each of which are substantially uniform over the area of the targets due to the high conductivity thereof notwithstanding any non-uniformities that might exist in the intensity distribution of any of said radiation portions.

### 3,935,442
### PHOTOFLASH LAMP ARRAY HAVING ELECTRICALLY CONNECTED REFLECTOR

James M. Hanson, Euclid, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Sept. 26, 1974, Ser. No. 509,410
Int. Cl.² G03B 15/02
U.S. Cl. 240—1.3 7 Claims

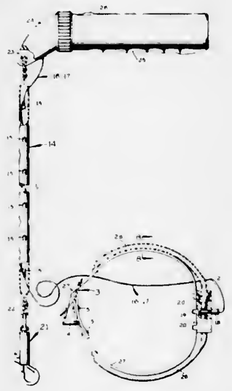


1. A multiple flash lamp array comprising a plurality of electrically fired flash lamps each having a pair of lead-in conductors, a circuit board containing thereon circuitry for sequentially firing said flash lamps, means electrically connecting said lead-in conductors of the flash lamps to said circuitry, and an electrically conductive reflector unit positioned between said lamps and said circuit board and shaped to reflect light from said lamps when flashed, said circuitry including a conductive area on said circuit board, said reflector unit including a web, a U-shaped conductive clip positioned between and in electrical contact with said conductive reflector unit and said conductive area on the circuit board and arranged so that the legs thereof are clipped against said web, said web and said conductive area being relatively aligned one behind the other and the base of said U-shaped clip extending against said conductive area on the circuit board.

### 3,935,443
### ILLUMINATED ANIMAL COLLAR AND LEASH

Allen P. Simmons, 4661 W. 8 Place, Hialeah, Fla. 33012

Filed Aug. 26, 1974, Ser. No. 500,460
Int. Cl.² F21V 33/00
U.S. Cl. 240—6.4 W 8 Claims

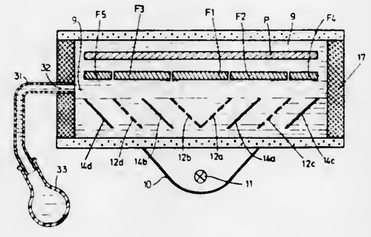


1. An illuminated animal collar and leash assembly comprising:
a flexible collar having electrically-energized light source means therein;
an elongated, flexible leash connected at one end to said collar and having electrically-energized light source means therein providing localized illumination spots along the length of the leash;
and battery means connected to said light source means in the leash and said light source means in the collar for energizing the same.

### 3,935,444
### POLARIZED LIGHT BEAM SOURCE IN A VEHICLE HEADLIGHT

Richard Zechnall, Stuttgart; Ernst Linder, Muhlacker; Albert Schmid, Schwieberdingen; Gotthold Raabe, Stuttgart; Karl Kerner, Stuttgart, and Rudi Socknick, Kornwesthelm, all of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Sept. 3, 1974, Ser. No. 502,761
Claims priority, application Germany, Sept. 10, 1973, 2345633
Int. Cl.² F21M 3/26
U.S. Cl. 240—9.5 6 Claims



1. A polarized light headlight for a vehicle, comprising:
an interference-type polarizing means (12) comprising polarizing sections (12*a*, 12*b*, 12*c*, 12*d*) disposed in diverging louvre fashion about a longitudinal median plane of an incident light beam and a set of reflecting layers (14*a*, 14*b*, 14*c*, 14*d*) alternating between adjacent and similarly directed polarizing sections,
said polarizing sections and said reflecting layers each being set at an angle of 45° to said median plane, said polarizing sections and said reflecting layers being so constituted that no part of the incident beam reaching said interference-type polarizer fails to impinge either on one of said polarizing sections or on one of said reflecting layers,
said polarizing sections and reflecting layers being of such contours that the projection of each of them perpendicularly on said median plane is substantially a rectangle and all said rectangles are substantially congruent.

### 3,935,445
### SOCKET MOUNTING STRUCTURE FOR VEHICLE LIGHTS

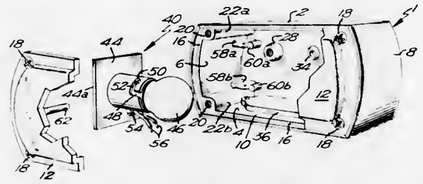
James Michael Preisler, Minneapolis, Minn., assignor to Drag Specialties, Inc., Edina, Minn.

Filed Mar. 4, 1974, Ser. No. 447,944
Int. Cl.² B60Q 1/30
U.S. Cl. 240—7.1 R 10 Claims

1. A light for external mounting on vehicles comprising:
a housing having walls defining an enclosure, said enclosure having an access opening on one side thereof;
a translucent lens removably attached to said housing in covering relation to said access opening;
a light bulb socket completely contained and enclosed within said housing;



an opening in a wall of said housing for the passage of lead wires from said socket therethrough;
a base plate on which said socket is fixedly secured to provide a socket assembly;
locating and retention means within said housing for holding said socket assembly therein comprising at least one pair of closely spaced retention members secured to the inside of said housing, with said socket base plate held

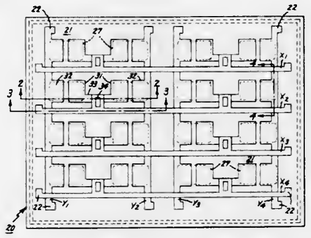


between said retention members in a forced fit therewith; and
a hold-down element projecting from the inside face of said lens, said hold-down element being of a predetermined length such that it will firmly bear against said socket assembly, thereby securing said socket against displacement in a direction toward said lens side of said housing when said lens is attached thereto.

### 3,935,446
### APPARATUS FOR SENSING RADIATION AND PROVIDING ELECTRICAL READOUT

Gerald J. Michon, Waterford, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 28, 1975, Ser. No. 554,155
Int. Cl.² H01J 39/12
U.S. Cl. 250—211 J 9 Claims

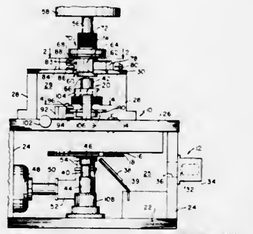


1. In combination,
a substrate of semiconductor material having a major surface,
a plurality of first conductive plates, each overlying and in insulated relationship to said major surface and forming a first conductor-insulator-semiconductor capacitor with said substrate,
a plurality of second conductive plates, each adjacent a respective first conductive plate to form a plurality of pairs of plates, said pairs of plates being arranged in a matrix of rows and columns, each of said second conductive plates overlying and in insulated relationship to said major surface and forming a second conductor-insulator-semiconductor capacitor with said substrate, each coupled to a respective first conductor-insulator-semiconductor capacitor,
a plurality of row conductor lines, the first conductive plates in each of said rows connected to a respective row conductor line,
a plurality of column conductor lines, the second conductive plates in each of said columns connected to a respective column conductor line,
a first voltage means for providing a first voltage between said row conductor lines and said substrate to deplete respective first portions of said substrate lying thereunder of majority charge carriers and provide a potential of a first value therein,
a second voltage means for providing a second voltage between said column conductor lines and said substrate to deplete respective second portions of said substrate lying thereunder of majority charge carriers and providing a potential of a second value therein, said second value being less than said first value,
means for exposing said substrate to radiation whereby charge is stored in said first portions of said substrate,
first means for collapsing and reestablishing said first voltage on each of said row conductor lines in sequence during a respective first period of time, whereby charge stored in each of said first portions of said substrate moves to a respective second portion thereof,
means for sensing in sequence the voltage on each of said column lines during said first period and deriving a video signal therefrom.

### 3,935,447
### ANGULAR MOTION DETECTION APPARATUS

Dewie E. Black, Dearborn Heights; Donald F. Fabry, Garden City, and Thaddeus Dombrowski, Detroit, all of Mich., assignors to Burroughs Corporation, Detroit, Mich.

Division of Ser. No. 396,783, Sept. 13, 1973, which is a continuation of Ser. No. 196,844, Sept. 1, 1971, abandoned.
This application Dec. 26, 1974, Ser. No. 536,391
Int. Cl.² G01D 5/34
U.S. Cl. 250—233 10 Claims



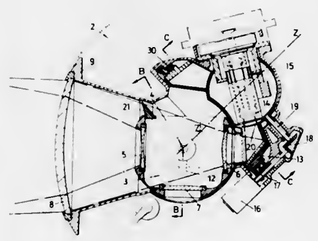


1. In an apparatus for detecting angular motion of a rotatable member, said apparatus including means for providing a path of light emissions, and light detecting means responsive to said path of light emissions for providing an electrical output corresponding to the detected emissions, the improvement comprising:
stationary optically apertured means disposed in said path of light emissions said stationary optically apertured means having a pattern radiating helically from a point on said stationary optically apertured means outward of alternating light permeable and opaque areas; and
rotatable optically apertured means disposed in said path of light emissions and coupled to said rotatable member for rotation therewith, said rotatable optically apertured means having a pattern radiating helically from the axis of rotation of said rotatable optically apertured means outward of alternating light permeable and opaque areas, said helical patterns interacting in said path of light emissions for continuously varying the amount of light from said path detected by said light detecting means in response to rotation of said rotatable optically apertured means relative to said stationary optically apertured means.

### 3,935,448
### OPTICAL SCANNING SYSTEMS

David Thomas Collier, Dunstable, England, assignor to Hawker Siddeley Dynamics Limited, England

Filed Aug. 6, 1974, Ser. No. 495,209
Claims priority, application United Kingdom, Aug. 6, 1973, 37191/73
Int. Cl.² H01J 3/14
U.S. Cl. 250—236 5 Claims

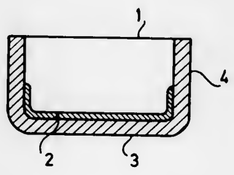


1. An optical scanning system comprising a head of generally spherical form having an objective lens set in its outer shell, an optical assembly mounted within the confines of said head and having at least one further lens in axial alignment with said objective lens, and a substantially annular scanner rotor and drive motor therefore also mounted within the confines of said head said rotor rotating about an axis which is oblique to the optical axis of said lenses and including a multi-faceted reflector the facets of which face inward toward said oblique axis to receive an image beam from said lenses and reflect it laterally on to means for processing the optical information it contains to provide a record or display.

### 3,935,449
### METHOD FOR CALIBRATION MEASUREMENT IN A LIQUID SCINTILLATION COUNTER AND CARRIER USED IN THE METHOD

Matti Antero Reunanen, Abo, Finland, assignor to Wallac Oy, Abo, Finland

Filed Nov. 2, 1973, Ser. No. 412,351
Claims priority, application Sweden, Nov. 3, 1972, 14284/72
Int. Cl. G01t 1/00
U.S. Cl. 250—252 14 Claims

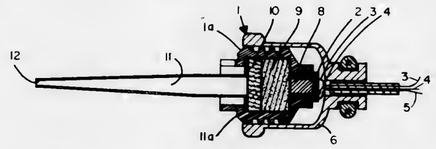


1. Method for feeding an accurately determined amount of radioactive substance to a fluid scintillation system for a calibration measurement in a liquid scintillation counter, the method comprising the steps of feeding of a carrier to said fluid scintillation system, said carrier having the radioactive substance adsorbed to it, and allowing said radioactive substance to dissolve in said fluid scintillation system.

### 3,935,450
### APPARATUS AND METHOD FOR ALIGNING X-RAY DIFFRACTION CAMERA

A. Dale Spurgeon, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed July 12, 1974, Ser. No. 488,095
Int. Cl.² G01N 21/00
U.S. Cl. 250—273 12 Claims



1. A device for use in aligning an X-ray diffraction camera having first and second ports located in the same horizontal and vertical planes and positioned 180° from each other and a means for holding a sample for X-ray analysis disposed about midway between said ports and in axial alignment therewith comprising:

a. a hollow tube adapted to be disposed in said second port, said hollow tube being designed to extend from the point of entry into said camera to a point adjacent to said sample holding means, and an axially disposed chamber connected to and cooperating with said tube and designed to be positioned externally to said camera when said tube is disposed therein;

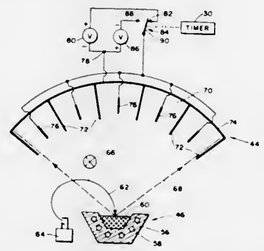
b. a fluorescent material disposed in said chamber adjacent to said tube, said material being tightly packed completely across said chamber; and

c. a conductive photo-cell disposed in said chamber immediately adjacent to said fluorescent material and on the side thereof opposite said tube.

### 3,935,451
### METHOD AND APPARATUS FOR SEPARATING LASER IONIZED PARTICLES FROM BACKGROUND IONS

George Sargent Janes, Lincoln, Mass., assignor to Jersey Nuclear-Avco Isotopes, Inc., Bellevue, Wash.

Continuation-in-part of Ser. No. 328,954, Feb. 2, 1973. This application Sept. 7, 1973, Ser. No. 395,021
Int. Cl. H01j 39/34
U.S. Cl. 250—283 33 Claims



1. A method for separating ions produced at different times in a region defining an environment of particles of plural isotope types, comprising the steps of:

applying a first accelerating force in a first direction to the generally ionized particles of said environment;

selectively ionizing additional particles of a predetermined isotope type in said enviroment after the application of said first accelerating force, including the step of photo-exciting the additional particles;

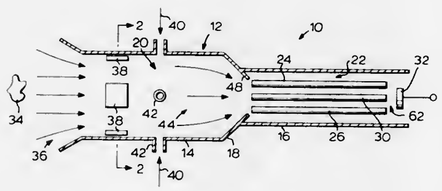
applying a second accelerating force of different direction to the charged particles of said environment after said ionizing step; and collecting the secondly accelerated ionized particles.



### 3,935,452
### QUADRUPOLE MOBILITY SPECTROMETER

Robert H. Prince, Unionville, Canada, assignor to Barringer Research Limited, Rexdale, Canada

Filed Nov. 14, 1973, Ser. No. 415,747
Int. Cl. H01j 39/34; B01d 59/44
U.S. Cl. 250—283 6 Claims



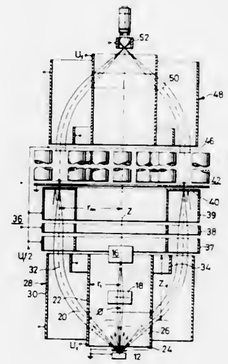
1. A method of analyzing predetermined molecular species present in a gas based on differences in molecular ion mobility of said molecular species comprising: ionizing said molecular species to form stable charged molecular ions, producing a flow of a carrier gas, causing said ions and carrier gas to flow in a stream, producing a transverse hyperbolic electric field in a region having a longitudinal axis, said field varying in time and quadratically with distance from said longitudinal axis and said field being defined by the sum of a sawtooth waveform having a predetermined amplitude and frequency and a sinusoidal waveform having a predetermined amplitude and frequency, directing said molecular ions through said region symmetrically about said longitudinal axis and detecting molecular ions which have passed through said region, whereby upon entry into said region the molecular ions undergo oscillatory trajectories, said trajectories being stable only for molecular ions of predetermined mobility and predetermined amplitudes and frequencies of said sawtooth and sinusoidal waveforms.

### 3,935,453
### QUADRUPOLE FIELD MASS ANALYSER

Helmut Liebl, Eching, Germany, assignor to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V., Germany

Filed Sept. 17, 1974, Ser. No. 506,707
Claims priority, application Germany, Sept. 24, 1973, 2347946
Int. Cl.² H01J 39/34
U.S. Cl. 250—292 9 Claims

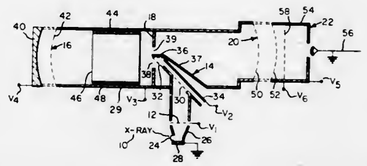
1. A quadrupole field mass analyser comprising first electrode means for accelerating ions to be analysed, an annular entry gap for said ions, second electrode means for deflecting the ions coming through said entry gap into the form of a hollow parallel beam of annular cross-section, third electrode means for sub-dividing the hollow beam of ions into a plurality of component ion beams and for focussing said component ion beams in a plane substantially normal to their direction of travel, an energy diaphragm which passes only ions whose energies lie within a pre-determined energy range, a plurality of sets of quadrupole field electrodes aligned with respect to the component ion beams, and an ion detecting means for detecting ions emerging from the quadrupole fields.



### 3,935,454
### ELECTRON COLLECTION IN ELECTRON SPECTROMETERS

Jerald Dana Lee, Wilmington, Del., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Filed June 28, 1974, Ser. No. 484,251
Int. Cl.² H01J 37/26
U.S. Cl. 250—305 2 Claims



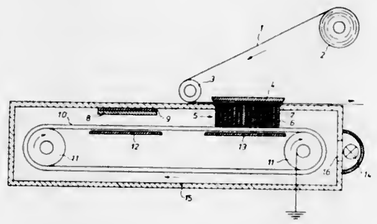
1. In apparatus for analyzing the energy distributor of electrons, said apparatus including an electron collector providing an otherwise field free region for the collection and detection of electrons, a source of electrons to be analyzed, a low pass filter for directing a selected portion of said electrons having kinetic energies below a first level toward said collector, and a high pass filter, having an exit electrical potential, for passing those of said electrons having a kinetic energy exceeding a second level less than said first level interposed between said low pass filter and said collector, said collector being a tubular, metallic reflecting chamber having an exit opening with an electron detector positioned thereat, the improvement wherein:

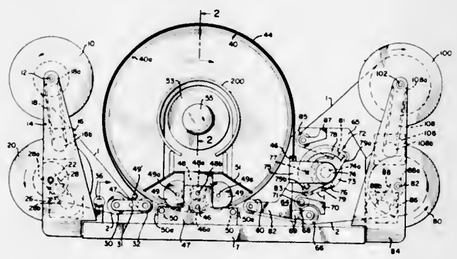
a grid is positioned within said chamber between said detector and said high pass filter at a higher electrical potential than said chamber, thereby to provide both accelerating and decelerating fields for said electrons.

## 3,935,455
## METHOD AND APPARATUS FOR PRODUCING ELECTROSTATIC CHARGE PATTERNS

**Jan Van den Bogaert, Schilde, Belgium, assignor to AGFA-GEVAERT N.V., Mortsel, Belgium**

**Filed Nov. 30, 1973, Ser. No. 420,558**
**Claims priority, application United Kingdom, June 4, 1973, 26582/73**
**Int. Cl. G03g** *13/00, 15/00*
**U.S. Cl. 250—315** **21 Claims**





**1.** A method of recording information as a pattern of electrostatic charges carried by an insulating charge receiving medium which comprises:

a. exposing to a pattern of X-ray, γ-rays, or the like an imaging chamber enclosing a pair of spaced imaging electrodes and containing an ionizable gas having an atomic number of at least 36, which chamber is adapted to produce upon such exposure electrostatic charges therein in a corresponding pattern, while maintaining said gas during said exposure under superatmospheric pressure;

b. arranging interior dielectric charge receiving material within said chamber in a charge receiving position in the space between said electrodes;

c. applying a DC potential across said electrodes to bias said charge pattern onto a surface of said dielectric material;

d. displacing the charge-carrying dielectric material from said charge-receiving position to a charge-transferring position within said chamber, in which transferring position said charge-carrying dielectric surface is disposed in close proximity to the interior ends of an array of discrete closely spaced conductors extending from the interior to the exterior of said chamber; and

e. arranging an exterior dielectric charge-receiving material outside said chamber in close proximity to the exterior ends of said conductor array, whereby said charge pattern is transferred to said exterior dielectric material by way of said conductor array.

## 3,935,456
## PULSED SOURCE HIGH-SPEED DRY PROCESS PHOTOGRAPHIC PRINTER PROCESSOR

**Nicholas G. Anton, Brooklyn, N.Y., assignor to The Eon Corporation, New York, N.Y.**

**Continuation of Ser. No. 115,813, Feb. 16, 1971, abandoned.**
**This application June 13, 1972, Ser. No. 262,294**
**Int. Cl. G03g** *17/00*
**U.S. Cl. 250—316** **8 Claims**

**1.** Apparatus for exposing and developing at relatively high speed elongated web-type diazo type film to record information stored on an elongated web-type record carrier in segments which are defined by boundary markings comprising a transparent rotatable cylinder, means for feeding said film and said record carrier from separate locations to said cylinder to form a sandwich on said cylinder extending over an area of at least about 180° of the cylinder circumference to be moved with the cylinder as the cylinder is rotated, an elongated source of ultraviolet radiation within said cylinder, said lamp being of a length at least substantially equal to the width of said film rotating with said cylinder and mounted to transmit light to the entire portion of the sandwich of film and record carrier resting on said cylinder, means for rotating said cylinder without impeding the ultraviolet radiation transmitted from the source to the portion of the sandwich rotating with the cylinder, means for sensing the presence of at least one of said segments of information present on said record carrier which entire segment is located on said cylinder in a position to be exposed by ultraviolet radiation from said source, means responsive to said sensing means for operating said source to produce a pulse of ultraviolet radiation for a duration sufficient to substantially "stop" and to expose the entire segment of film rotating with said cylinder with the information on the record carrier, means for applying heat to said exposed film to develop said film, and means for guiding only said exposed film to said heat applying means after both said record carrier and said film leave the cylinder.

## 3,935,457
## DIELECTRIC MATERIAL FOR DOSIMETERS

**Paul R. Moran, Madison, Wis.; Ervin Podgorsak, Toronto, Canada; Gary D. Fullerton, Madison, Wis., and Gene E. Fuller, Ridge, N.Y., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.**

**Filed Aug. 16, 1974, Ser. No. 497,874**
**Int. Cl. G01t** *1/16*
**U.S. Cl. 250—336** **13 Claims**

**1.** In the measurement of radiation, a dosimeter which makes use of a dielectric material in which the level of active impurities total less than 50 ppm, and in which the level of any one active impurity does not exceed 10 ppm.

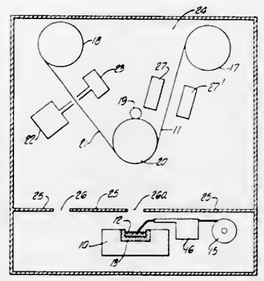
## 3,935,458
## METHOD FOR MONITORING THE SURFACE RESISTIVITY OF METALLIZED FILM

**Dan William Peters, Mountain View, Calif., assignor to The Sierracin Corporation, Sylmar, Calif.**

**Continuation of Ser. No. 58,305, July 27, 1970, abandoned.**
**This application Oct. 29, 1974, Ser. No. 518,904**
**Int. Cl.² G01J** *1/00*
**U.S. Cl. 250—338** **20 Claims**

**1.** A process useful in monitoring the surface resistivity distribution of the deposit obtained by the vacuum deposit of a metal selected from the group consisting of silver, gold and copper on a transparent plastic film carrier to form a metallized plastic film having luminous light transmission greater than about 20 percent comprising applying electro-magnetic radiation comprised of radiation within the wavelengths of about 1.5 to 3.0 microns to the metallized film, detecting a signal corresponding to a wavelength interval of electro-magnetic radiation within the range of about 1.5 to 3.0 microns transmitted through said film and deposit, and correlating the value of the detected signal to the surface resistivity of the film.

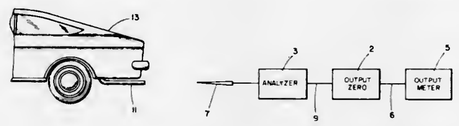




## 3,935,459
## APPARATUS AND METHOD OF AUTOMATICALLY ZEROING AN EXHAUST EMISSION ANALYZER

**Zoltan Voross, Elgin, Ill., assignor to Sun Electric Corporation, Chicago, Ill.**

**Filed June 24, 1974, Ser. No. 482,444**
**Int. Cl.² G01N** *21/26*
**U.S. Cl. 250—343** **18 Claims**




**1.** An automatic output zeroing apparatus for an exhaust emission analyzer having output means, said exhaust emission analyzer generating a free air voltage during analysis of open environmental air and a pollution-indicating voltage during analysis of air exhausted from an automobile, comprising, in combination:

means for retrievably storing a first voltage proportional to said free air voltage;

switch means operable in a first state for connecting said storing means to said exhaust emission analyzer and operable in at least a second state for disconnecting said storing means from said exhaust emission analyzer, said switch means being operated in said first state during analysis of said open environmental air and in said second state during analysis of said exhausted air; and

means for summing a second voltage proportional to said pollution-indicating voltage and said first voltage to produce an output signal, said output means being responsive to said output signal, said output signal representing the difference between said second voltage and said first voltage, said summing means being responsive to said exhaust emission analyzer and said storing means.

## 3,935,460
## PROCESSING APPARATUS FOR CLEAR AIR TURBULENCE DETECTION

**Edward F. Flint, 920 Glencliff Drive, La Habra, Calif. 90631**

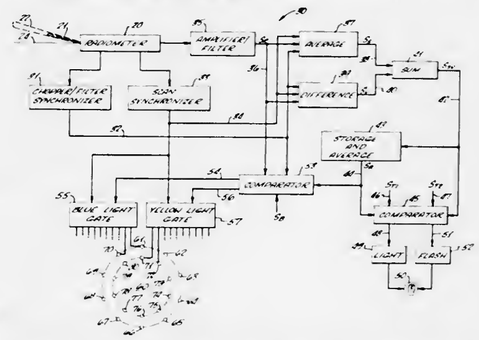
**Filed Feb. 10, 1975, Ser. No. 548,874**
**Int. Cl.² G01J** *1/00*
**U.S. Cl. 250—349** **9 Claims**

**1.** In an atmospheric turbulence detection system for use in an aircraft including at least one radiometer for continuously providing a plurality of independent and discrete temperature measurement signals within a given field of view ahead of said aircraft, apparatus for processing said signals to derive an atmospheric turbulence warning comprising:

means for deriving consecutive first signals indicative of the average temperature within said field of view;

means for deriving consecutive second signals indicative of the difference between said temperature measurement signals in two vertically displaced regions within said field of view;

means for combining said first and second signals to derive consecutive third signals;



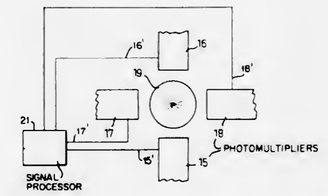

means for storing consecutively derived third signals for a predetermined period of time and for continuously deriving a fourth signal indicative of the average of said stored third signals; and

means for comparing each newly derived third signal with said fourth signal and generating a turbulence warning upon the occurrence of a predetermined difference therebetween.

## 3,935,461
## SCINTILLATING CAMERA

**Hugo Vlasbloem, Maasland, Netherlands, assignor to N.V. Optische Industrie "de Oude Delft", Delft, Netherlands**

**Filed Feb. 27, 1974, Ser. No. 446,470**
**Claims priority, application Netherlands, Mar. 9, 1973, 7303407**
**Int. Cl.² G01T** *1/20*
**U.S. Cl. 250—368** **8 Claims**




**1.** Apparatus for determining the position of a light pulse emitting point on the anode screen of an image intensifier tube forming a part of a scintillating camera comprising at least three photomultipliers, circuit means operatively connecting said photomultipliers to derive voltages representative of the position coordinates, said circuit means including a pulse height discriminator circuit for gating said circuit means responsive to signals in a predetermined amplitude range derived from said photomultipliers, said device being characterized by distortion compensating means for transferring to said photomultipliers the image produced on said anode screen, said distortion compensating means comprising a reflecting surface symmetrical with respect to the said anode screen and the photocathodes of said photomultipliers, said surface being positioned to reflect light emitted by said anode screen to said

photocathodes, said surface being configurated and spaced relative to said anode screen and photomultipliers to vary the intensity of an image reflected on said photocathodes as a function of the position on said anode of a light emitting point of constant brightness.

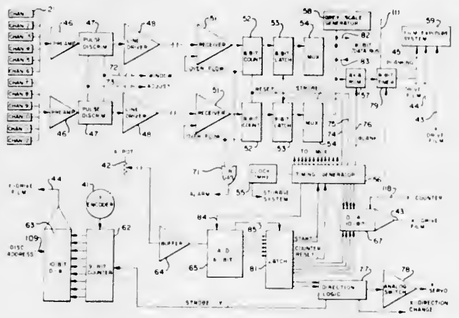
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**3,935,462**

## WHOLE BODY IMAGING

**Peter C. de Luca, Medfield; Hugh F. Stoddart, Groton, and David Jeffries, Milton, all of Mass., assignors to Cleon Corporation, Needham, Mass.**

**Filed Mar. 4, 1974, Ser. No. 447,990**
**Int. Cl.² G01T *1/20***
**U.S. Cl. 250—369** **10 Claims**



8. A method of diagnosing a patient which method includes the steps of, injecting a radioactive substance into a patient, placing said patient upon patient support means with the length of the patient aligned along a longitudinal direction facing a plurality of spaced radiant energy detecting means aligned along a curve in a direction generally transverse to said longitudinal direction, moving said detecting means back and forth along said curve to scan substantially the entire projection of said curve upon said patient while also advancing said detecting means along said longitudinal direction at a speed less than that of the speed of said detecting means along said curve to scan the whole body of said patient with each detecting means scanning only a lengthwise strip of said patient different from the longitudinal strip scanned by the other detecting means while providing respective signals representative of radiant energy emanating from correspondingly spaced points embraced by said patient, and processing said respective signals by storing positional and intensity information to provide a map of the radiation intensity emanating from said patient.

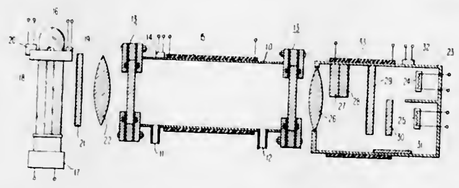
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**3,935,463**

## SPECTROPHOTOMETER

**John Kenneth Jacobsen, Madeira Beach, Fla., assignor to Milton Roy Company, St. Petersburg, Fla.**

**Filed Dec. 5, 1974, Ser. No. 529,838**
**Int. Cl.² G01J *3/00*, *3/46*, *5/56*; G01N *21/26***
**U.S. Cl. 250—373** **25 Claims**



1. Non-dispersive spectrometric apparatus for detecting the presence of a first gaseous material despite the presence of a second gaseous material, said first gaseous material absorbing electromagnetic radiation at a relatively high rate at a first wavelength, said second gaseous material absorbing electromagnetic radiation at both said first wavelength and at a second wavelength, comprising:

a source of electromagnetic radiation;

first and second photosensor means, said photosensor means being responsive to one of said first or said second wavelengths;

a chamber for receiving a sample to be tested for the presence of the first gaseous material, said chamber being disposed between said radiation source and said photosensor means;

first phosphor means disposed between said radiation source and said chamber for receiving radiation from said source and emitting in response thereto radiation at said first and said second wavelengths;

filter means disposed between said first photosensor means and said chamber for substantially attenuating radiation at that wavelength to which said photosensors are responsive, and passing the other of said wavelengths;

second phosphor means disposed between said first photosensor means and said filter means and responsive to said other of said wavelengths to produce radiation of the wavelength to which said photosensors are responsive; and

means coupled to said first and said second photosensor means for comparing the relative responses thereof to impingent radiation.

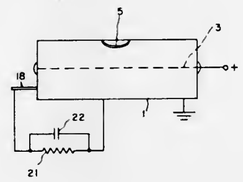
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**3,935,464**

## MULTIPLE CATHODE GAS PROPORTIONAL DETECTOR

**William P. Zingaro, 22 Clubway, Hartsdale, N.Y. 10530**

**Filed Dec. 17, 1973, Ser. No. 425,246**
**Int. Cl.² G01T *1/18***
**U.S. Cl. 250—379** **7 Claims**



1. A pulse-type detector for detecting ionizing radiation comprising a substantially cylindrical envelope having a wall constituting a substantially cylindrical electrode coaxial with said envelope and having a window therein for admitting ionizing radiation, an ionizable gas within said envelope, said cylindrical envelope being closed at both ends by end walls, a central wire electrode extending axially within said envelope, an auxiliary electrode disposed between said central wire electrode and the wall electrode, means to apply a negative potential between said wall electrode and said central wire electrode at which electrical pulses proportional to the intensity and energy of radiation absorbed by the gas are produced, and means comprising a parallel resistance-capacitor network to apply a negative potential between said wall electrode and said auxiliary electrode at which positive ions produced when said gas is ionized are neutralized by said auxiliary electrode, said negative potential between said wall electrode and said auxiliary electrode being less than said negative potential between said wall electrode and said central wire electrode.

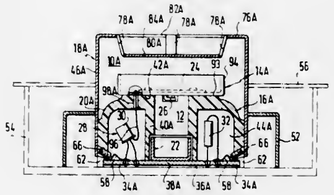


**3,935,465**

## IONIZATION ANALYZING AIR POLLUTION, SMOKE AND FIRE ALARM DEVICE

**Hartwig Beyersdorf, Scharbeutz, Germany, assignor to GEBA-Gesellschaft fuer Elektronische Brandmeldeanlagen mbH, Hamburg, Germany**

**Filed Apr. 11, 1974, Ser. No. 460,041**
**Claims priority, application Germany, Apr. 24, 1973, 2320604; Jan. 24, 1974, 2403418; Apr. 24, 1973, 7315459; Jan. 24, 1974, 7402420**
**Int. Cl.² G01T *1/18*; H01J *39/28***
**U.S. Cl. 250—384** **23 Claims**



1. An ionization analyzing air pollution and fire alarm signal device comprising:

a symmetrical housing including an outer wall and a peripheral cover with a central opening permitting passage of ambient air therethrough;

at least two electrodes;

a first electrode, having a planar portion mounted in said housing adjacent said cover of a size and surface shape conforming to those of said opening in said cover; and

a second electrode located within said housing;

one end of said outer wall of said housing projecting axially beyond said first electrode and forming a sealing support for the outer edge of said cover;

spacers with apertures between them connecting said housing with said first electrode;

said cover defining together with said first electrode a baffle zone;

said cover, the planar portion of said first electrode and said second electrode mounted in planes parallel to each other perpendicularly to the axis of said housing and spaced from each other distances permitting passage of ambient air from said baffle zone and from there between said two electrodes;

the walls of said housing defining together with the said two electrodes a partially closed first chamber protected from excessive fluctuations of ambient air by said baffle zone;

a first radio-active source for ionizing said first chamber, and

an electrical circuit connected to said two electrodes and being responsive to changes in electrical characteristics of the atmosphere in said first chamber.

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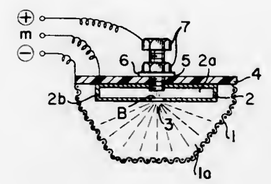
**3,935,466**

## SMOKE DETECTOR ADAPTED TO A SMOKE SENSING APPARATUS

**Yukio Tomioka, Sagamihara, Japan, assignor to Hochiki Kabushiki Kaisha, Tokyo, Japan**

**Continuation of Ser. No. 860,357, Sept. 23, 1969, abandoned. This application June 18, 1971, Ser. No. 440,521**
**Claims priority, application Japan, Sept. 26, 1968, 43-69696; Mar. 11, 1969, 44-18458**
**Int. Cl.² G01T *1/18***
**U.S. Cl. 250—385** **6 Claims**

1. An ionization-type smoke detector comprising: an inner electrode provided with a radioactive source; an intermediate electrode having at least one through-hole; and an outer electrode having openings through which smoke can enter; said inner electrode and said intermediate electrode forming an inner ionization chamber in which said radiation source is arranged, said intermediate electrode and said outer electrode forming an outer ionization chamber, said inner ionization



chamber being arranged inside said outer ionization chamber, and wherein a necessary quantity of radioactive rays emitted from said radioactive source is introduced directly into said outer ionization chamber through said holes.

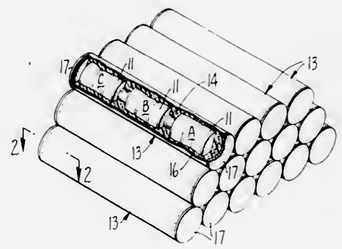
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**3,935,467**

## REPOSITORY FOR FISSILE MATERIALS

**Kenneth A. Gablin, Tacoma, Wash., assignor to Nuclear Engineering Co., Inc., Louisville, Ky.**

**Continuation of Ser. No. 414,345, Nov. 9, 1973, abandoned, which is a continuation of Ser. No. 157,105, June 28, 1971, abandoned. This application July 1, 1974, Ser. No. 484,422**
**Int. Cl. G21f *3/00***
**U.S. Cl. 250—507** **5 Claims**



1. A repository for fissile material, comprising

a plurality of metal drums adapted for sealed containment of fissile materials and the like,

said drums being positioned in axially aligned and spaced relation,

an elongated cylindrical rigid tube surrounding said drums in concentrically spaced relation thereto and formed of bituminized fibre material,

end caps of exterior grade plywood treated with wood preservative secured in sealing relation to the opposite ends of said cylindrical tube,

and a continuous body of foamed polyurethane material occupying the space between said drums and the spaces between said drums and said cylindrical tube and endcaps,

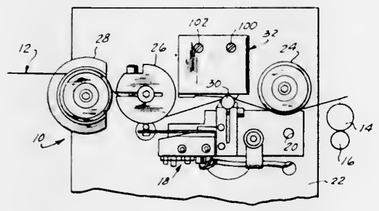
said polyurethane material being adherent to said drums and tube and endcaps and of substantial stiffness to provide a reinforcing action,

said polyurethane material being formed in situ to provide multiple small voids therein except adjacent to said drums and tubes and endcaps.

### 3,935,468
### LIGHT RESPONSIVE DETECTOR

**Howard Bowen, Wilmette, and Frederick W. Spinner, Elk Grove Village, both of Ill., assignors to Research Technology Incorporated, Skokie, Ill.**

**Filed Sept. 11, 1974, Ser. No. 504,980**
**Int. Cl.² G01N** *21/30*
**U.S. Cl. 250—572** **18 Claims**



**14.** A film inspection device for detecting flaws in motion picture film traveling over a film support, comprising:

a body adapted to be mounted above and adjacent the film support, said body including

a first bore defining a light pssageway,

a second bore intersecting said first bore, and

a slot intersecting said first bore at a point spaced from said second bore;

a lamp mounted in said second bore on one side of said slot and extending into and directing a light beam through said first bore;

a photocell mounted in said first bore on the other side of said slot to receive the light beam and produce an electrical signal which is a function of the amount of light received;

a cantilever arm mounted on said body;

a jewel carried by said arm for contacting the upper surface of the film at a point above the film support, said arm including an aperture and said jewel including a reduced portion extending through said aperture to contact the film; and

a vane carried by said arm and extending through said slot and into said first bore to vary the amount of light reaching said photocell in response to the surface profile of the film.

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### 3,935,469
### POWER GENERATING PLANT

**James Livesey Haydock, Toronto, Canada, assignor to Acres Consulting Services Limited, Toronto, Canada**

**Filed Jan. 29, 1974, Ser. No. 437,710**
**Claims priority, application United Kingdom, Feb. 12, 1973, 648/73**
**Int. Cl.² F01D** *15/10*; **F02C** *7/02*; **H02K** *7/18*; **H02P** *9/04*
**U.S. Cl. 290—52** **10 Claims**

**1.** An electrical power generating plant having alternate generating and energy storage modes of operation, comprising:

a pressurized-air fuel gasifier for producing a high pressure stream of combustible gas;

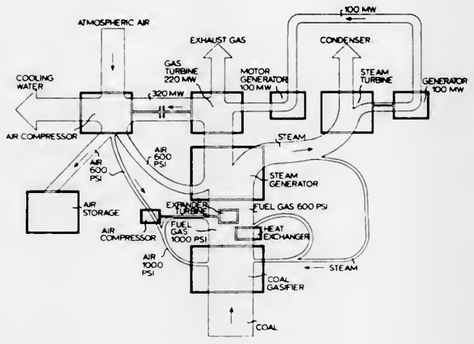
combustion means for combusting said gas to generate a waste gas stream;

a gas turbine driven by the waste gas stream;

a main electric generator coupled to the gas turbine to be driven thereby;

a first air compressor coupled to the gas turbine by coupling means including a disconnectible clutch, the clutch being disengaged during the generating mode of operation and being engaged during the energy storage mode of operation to drive the compressor;

an underground air storage reservoir connected to the air compressor to receive compressed air therefrom during said storage mode; and



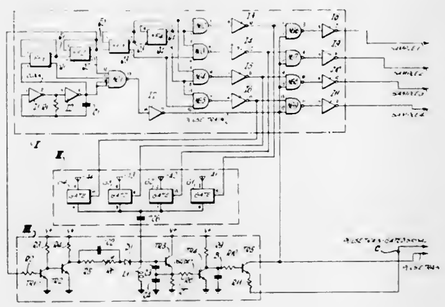

means for delivering compressed air from the air storage reservoir to the gasifier and said combustion means.

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### 3,935,470
### MULTIPLEXED SIGNAL-SEQUENCE CONTROL SYSTEM

**Arthur F. Cake, Smithtown, N.Y., assignor to Wagner Electric Corporation, Parsippany, N.J.**

**Filed Aug. 7, 1974, Ser. No. 495,436**
**Int. Cl.² B60R** *21/10*
**U.S. Cl. 307—105 B** **20 Claims**



**1.** A multiplexed signal-sequence control system comprising:

1. first circuit means operative, when fully energized, to generate a multiplexed output signal comprising a plurality of component signals each representative of the presence or absence of a signal of the first class; and

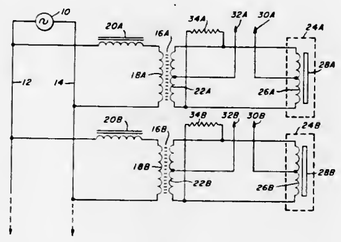
2. second circuit means operative to receive a plurality of signals of the second class and, upon receiving a signal of the second class, further operative to fully energize said first circuit means and to process signals of the first and second classes in that order, and further operative to generate a control signal in response to (a) one or more signals of only the first class or only the second class, (b) unrelated signals of both the first and second classes, or (c) related signals of both the first and second classes occurring in an improper sequence.



### 3,935,471
### CURRENT LIMITING POWER SUPPLY

**Marion M. Bishop, Seattle, and Walter Robert Weist, Bellevue, both of Wash., assignors to The Boeing Company, Seattle, Wash.**

**Filed Jan. 15, 1975, Ser. No. 541,263**
**Int. Cl.² H02J** *3/00*
**U.S. Cl. 307—32** **4 Claims**



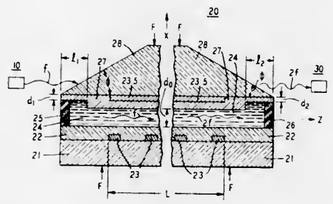
**1.** A power supply system in combination with a plurality of loads comprising a source of alternating current voltage, separate transformers equal in number to the number of loads connecting said source of alternating current voltage to the respective loads, primary and secondary windings for each of said transformers, inductors connected in series with the respective each primary windings across said source of alternating current voltage, each of said loads comprising a sensing device connected across each of said secondary windings, and cores of saturable magnetic material inductively coupled to the respective primary and secondary windings.

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### 3,935,472
### THIN FILM LIQUID WAVEGUIDE OPTICAL CONVERTER

**Clyde G. Bethea, East Orange; Barry Franklin Levine, Westfield, and Ralph Andre Logan, Morristown, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**

**Filed Mar. 14, 1975, Ser. No. 558,424**
**Int. Cl.² G02B** *5/14*; **G02F** *1/37*
**U.S. Cl. 307—88.3** **10 Claims**



**7.** Thin film apparatus which comprises:

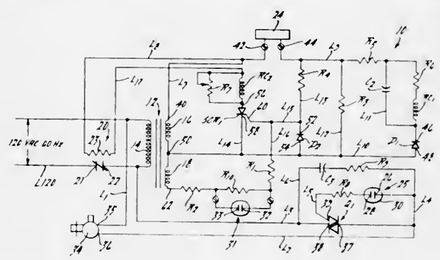
a. a thin film optical waveguide structure including a liquid film, which exerts a significant waveguiding effect on an input optical wave coupled into the thin film waveguide structure for propagation along a first direction, said liquid having a significant optically nonlinear coefficient; and

b. spatially periodic electrode means in a neighborhood of the liquid film for producing a periodic electric field in the liquid film having a spatial periodicity along the first direction in order to favor a parametric interaction which yields an output optical wave of frequency different from that of the input.

### 3,935,473
### SOLID STATE STACK SWITCH CONTROL SYSTEM

**Frederick T. Bauer; Anthony C. Cairo; Ronald E. Holkeboer, all of Holland, and Gary E. Tyler, Wyoming, all of Mich., assignors to Robertshaw Controls Company, Richmond, Va.**

**Continuation-in-part of Ser. No. 422,225, Dec. 6, 1973, abandoned. This application June 24, 1974, Ser. No. 482,203**
**Int. Cl.² H01H** *47/26*
**U.S. Cl. 307—117** **7 Claims**



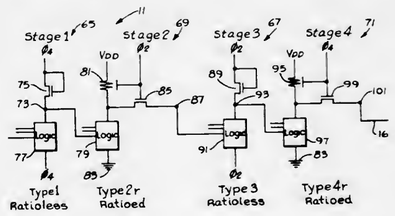
**1.** In a stack control system for furnaces, the combination including burner control means adapted to be connected to a main line source of AC current, a low voltage control circuit including thermally activated, magnetically operated heat detection means, said heat detection means including a bimetallic actuating member movable in response to thermal changes, a reed switch, and magnetic means movable in response to movement of said actuating member and effective to actuate said reed switch, said magnetic means including a magnetic body defining an opening therethrough, a drive arm formed of magnetic material and extending through the opening defined by said magnetic body whereby said magnetic body is magnetically clutched to said drive arm, one end portion of said drive arm being fixed to said actuating member, stop means limiting movement of said magnetic body relative to said reed switch while permitting de-clutching of said magnetic body with respect to said drive arm and continued movement of said drive arm relative to said magnetic body, means in said low voltage control circuit including solid state means effective to actuate said burner control means, circuit interrupting means effective to interrupt the flow of current from said main line source of AC current, and means controlled by said heat detection means controlling the actuation of said circuit interrupting means.

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### 3,935,474
### PHASE LOGIC

**James A. Komarek, Newport Beach, Calif., assignor to Hycom Incorporated, Irvine, Calif.**

**Filed Mar. 13, 1974, Ser. No. 450,826**
**Int. Cl.² H03K** *19/08*, *19/3619/40*; **G11C** *19/28*
**U.S. Cl. 307—205** **16 Claims**




**1.** A logic cell comprising:

first and second ratioed gates, each of said ratioed gates including a logic block and an impedance means coupled

to the logic block, each of said logic blocks being coupled to a reference potential whereby the impedance means and the logic block can serve as a voltage divider and the state of the logic block affects the potential at a location between the impedance means and the logic block;

each of said first and second ratioed gates including an output switch coupled to said location of the associated ratioed gate to form a junction at said location;

a ratioless gate including a logic block, a switch coupled to the logic block, and a location between the switch and the logic block;

means for coupling the output switch of the first ratioed gate to an input of the logic block of the ratioless gate;

means for coupling said location of the ratioless gate to an input of the logic block of said second ratioed gate to form a junction at said location of the ratioless gate;

means for providing first and second clock signals with each of said clock signals having a predetermined phase relationship relative to the other;

said output switch of said first ratioed gate including means responsive to the first clock signal to control the output switch of said first ratioed gate;

said output switch of said second ratioed gate including means responsive to the second clock signal to control the output switch of the second ratioed gate; and

said switch of said ratioless gate including means responsive to the first clock signal to control said switch of said ratioless gate.

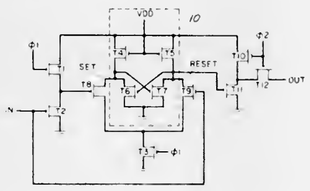
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**3,935,475**

## TWO-PHASE MOS SYNCHRONIZER

**Arthur Margolies, Framingham, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.**

**Filed Aug. 27, 1974, Ser. No. 500,988**
**Int. Cl.² H03K** *19/08, 3/26*
**U.S. Cl. 307—208** **5 Claims**




1. A circuit for synchronizing an asynchronous signal in a system having at least alternating first and second clock pulses for clocked ratio logic comprising:

a. bistable means receiving first and second complementary signals for establishing the state of said bistable means and generating an output signal reflecting the state of said bistable means;

b. input means receiving the asynchronous signal and generating the first and second complementary signals, the input means including an input inverter receiving the first clock pulse, a single DC voltage and the asynchronous signal for generating an inverted asynchronous signal only during the occurence of the first clock pulse, a first AND gate receiving the asynchronous signal and the first clock pulse and generating one of the complementary signals only during the occurence of the first clock pulse and a second AND gate receiving the inverted asynchronous output signal and the first clock pulse and generating the other of the complementary signals only during the occurence of the first clock pulse; and

c. output means receiving the output signal from the bistable means and generating a high drive, circuit output signal having one of two predetermined voltage levels whose transitions correspond generally to those of the asynchronous input and are synchronized to the clock pulses, the output means including an output inverter receiving the single DC voltage, the second clock pulse and the output signal of the bistable means for generating an inverted output signal only during the occurence of the second clock pulse, the inverter being effective to produce an output having high drive capability to protect the bistable means from loading effects of the output of the circuit, and an output field effect transistor connected to the output of the output inverter and receiving at a gate electrode the second clock pulse so that the output transistor is controlled by the second clock pulse, the circuit being effective to produce a full logic level output signal when the transition of the asynchronous input signal occurs during the interval of the first clock pulse.

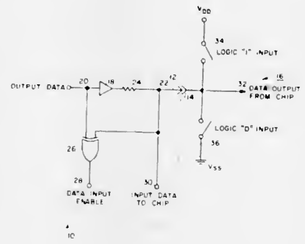
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**3,935,476**

## COMBINATION OUTPUT/INPUT LOGIC FOR INTEGRATED CIRCUIT

**Robert John Paluck, Carrollton, Tex., assignor to Mostek Corporation, Carrollton, Tex.**

**Filed Dec. 13, 1974, Ser. No. 532,406**
**Int. Cl.² H03K** *19/08, 19/32*
**U.S. Cl. 307—213** **3 Claims**




1. In integrated logic circuits, the combination of:

a data pin for transferring data between the integrated logic circuit and an external logic circuit;

an output buffer having a logic input and a logic output, the logic output being connected to the data pin;

comparator logic means having one logic input logically coupled to the logic input of the output buffer and another logic input logically coupled to the logic output of the output buffer, and a logic output for producing an "input enable" signal when the logic inputs are different whereby the logic output of the output buffer can be driven by an external circuit to a logic level different from that applied to the logic input of the output buffer to produce an input enable signal at the output of the comparator logic means.

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**3,935,477**

## ANALOG INVERTER FOR USE IN CHARGE TRANSFER APPARATUS

**Robert Joseph Strain, Plainfield, and Robert Henry Walden, Warren, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**

**Continuation of Ser. No. 353,629, April 23, 1973, abandoned.**
**This application Oct. 7, 1974, Ser. No. 512,848**
**Int. Cl.² H03K** *19/40*; **H01L** *27/04, 29/80*
**U.S. Cl. 307—214** **6 Claims**

1. Charge transfer apparatus for producing the analog inversion of a non-self-strobing electrical signal comprising:

a storage medium having a major surface,

an insulative layer formed on at least a portion of said major surface,

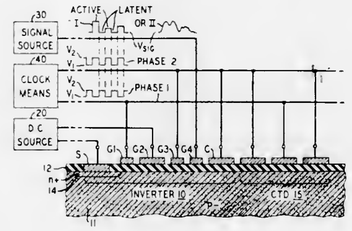


source means including a source electrode in operative relation with said medium for injecting mobile charge carriers into said medium,

a first control electrode, a reference electrode, a second control electrode, a signal electrode and a collector electrode formed in tandem on said insulative layer, said first control electrode being located between said source and reference electrodes,

means for producing a reference potential well in said medium under said reference electrode,

two phase clock means for: (1) during a first half of the clock cycle, applying a voltage to said first control electrode effective to cause mobile charge carriers to be injected from said source means into said reference well, said reference well being filled with said carriers to the same predetermined level during every first half of the clock cycle; and (2) during the next half of the clock cycle, applying a voltage to said second control electrode




and said collector electrode effective to form in said medium a collecting potential well under siad collector electrode and a potential barrier under said signal electrode and between said reference well and said collecting well, said barrier tending to impede the flow of said mobile charge carriers from said reference well to said collecting well; said clock means and said second control electrode being effective to inhibit the flow of charge carriers from said reference well to said collecting well during said first half of the clock cycle and being effective to sample said non-self-strobing signal when it is a purely analog signal; and

means for applying, during at least said next half of the clock cycle, said non-self-strobing electrical signal to be inverted to said signal electrode, thereby varying the height of said potential barrier and causing an amount of charge, the inverted charge, proportional to said analog inversion of said electrical signal to flow out of said reference well, over said barrier and into said collecting well.

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**3,935,478**

## NON-LINEAR AMPLIFIER

**Takashi Okada, Yamato, and Kimitake Utsunomiya, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan**

**Filed July 29, 1974, Ser. No. 492,838**
**Claims priority, application Japan, Aug. 10, 1973, 48-90150; Aug. 10, 1973, 48-90151**
**Int. Cl.² G06G** *7/12*
**U.S. Cl. 307—229** **6 Claims**

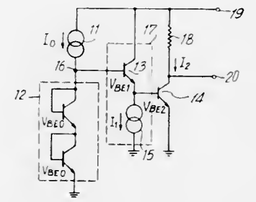
2. A non-linear amplifier, comprising:

an amplifying transistor for amplifying an input signal;

an input terminal for receiving said input signal, said input terminal being connected to said amplifying transistor;

a series of ($n$—1) P-N junctions connected in series with the P-N junction defined by the base-emitter junction of said amplifying transistor for providing a predetermined bias voltage for said amplifying transistor, and wherein $n$ is an integer greater than unity; and

emitter-follower means connected to said input terminal, said emitter follower means comprising ($n$—1) emitter-follower transistors connected in cascade such that the base-emitter junctions of said emitter-follower transistors form a first path which is in parallel with a second path




defined by said amplifying transistor and series of P-N junctions such that said input signal is amplified by the power of $1/n$.

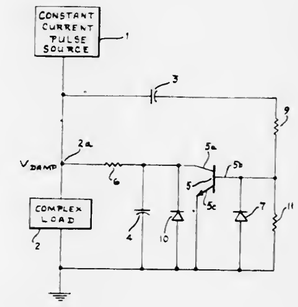
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**3,935,479**

## DYNAMIC DAMPING APPARATUS

**John H. Andreasen, St. Paul, and James A. Howe, Burnsville, both of Minn., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.**

**Filed Dec. 20, 1974, Ser. No. 535,061**
**Int. Cl.² H03K** *5/08*
**U.S. Cl. 307—237** **2 Claims**



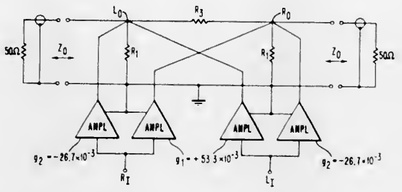

1. Dynamic damping apparatus being comprised of a source of constant current pulses, a complex load having an input terminal and receiving said constant current pulses thereat, first, second, and third preselected resistors, each having a different predetermined resistive value, a first and second preselected capacitor, each having a different predetermined capacitive value, a transistor having an emitter, collector, and base, said emitter being connected directly to ground, said collecter being connected to said input terminal by way of said first resistor and to ground by way of said first capacitor, said base being connected to said input terminal by way of a series arrangement of said second capacitor and said second resistor, and also connected to ground by way of said third resistor, and a first diode connecting said base to ground, the current being damped during the rise and fall of the current with the current being unaffected by voltage variation of said complex load during the flattop portion of the constant current pulses.

**3,935,480**

## BROAD BAND DIRECTIONAL SIGNAL GENERATOR

**Paul E. Stuckert, Katonah, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.**

**Filed June 28, 1974, Ser. No. 484,032**
**Int. Cl.² H03K 17/00**
**U.S. Cl. 307—241** **19 Claims**




1. A broad band directional signal generator for generating signals on a transmission line or the like which, controllably, propagate in one direction on the line due to reinforcement of signals to the exclusion of the other direction due to cancellation of signals, or simultaneously, in opposite directions, comprising:

a. an attenuator network employing linear, nonreactive impedance elements for insertion in said transmission line, said impedance elements forming at least first and second nodes;

b. at least a first input terminal for receiving a first signal which is to propagate in said one direction on said transmission line; and

c. first isolation means for coupling said first input terminal to said first node and for coupling said first input terminal to said second node, said first isolation means coupling said first signal at said first input terminal to said first and second nodes in a first predetermined ratio to cause a signal proportional to said first signal to propagate on said line in said one direction to the exclusion of said other direction.

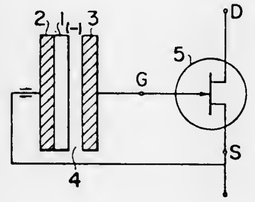
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**3,935,481**

## FIELD EFFECT TRANSISTOR SWITCH WITH ELECTRECT FOR CONTROL

**Shoji Uchikawa, Iwaki, Japan, assignor to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan**

**Continuation of Ser. No. 125,791, March 18, 1971, abandoned. This application Sept. 27, 1973, Ser. No. 401,297**
**Claims priority, application Japan, Mar. 19, 1970, 45-22660**
**Int. Cl.² H03K 17/60**
**U.S. Cl. 307—251** **4 Claims**




1. A method for controlling the ON-OFF state of an electric switching circuit including a MOS type field effect transistor having gate, source, and drain electrodes and having a threshold level above which said transistor is in the ON conducting state, an electret and an induction electrode, comprising the steps of;

coupling said induction electrode in an operable relationship to the gate electrode of said field effect transistor;

coupling said electret in an operable relationship to the source electrode of said field effect transistor;

positioning said electret with respect to said induction electrode in a first spaced apart relationship such that said electret and induction electrode are electrostatically coupled and the electric field therebetween induces a voltage between the gate and source of said field effect transistor that is below the threshold level of said field effect transistor whereby said field effect transistor is in the OFF conducting state, and

positioning said electret with respect to said induction electrode in a second spaced apart relationship such that said electret and induction electrode are electrostatically coupled and the electric field therebetween induces the gate-source voltage that is above the threshold level of said field effect transistor whereby said field effect transistor is in the ON conducting state.

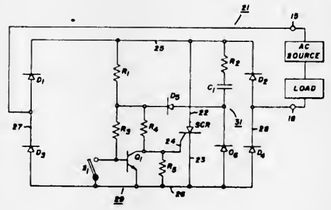
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**3,935,482**

## ELECTRONIC SWITCHING CIRCUIT WITH ZERO VOLTAGE SWITCHING

**Richard W. Fox, Jr., Marcellus, and Jerome R. Mullaly, Baldwinsville, both of N.Y., assignors to General Electric Company, New York, N.Y.**

**Filed Mar. 14, 1974, Ser. No. 451,223**
**Int. Cl.² H03K 17/72**
**U.S. Cl. 307—252 B** **12 Claims**




1. Electronic switch circuit apparatus comprising:

input terminals coupled to an A.C. controlled circuit;

a switching thyristor comprising two switch terminals electrically coupled to said input terminals and also comprising a trigger terminal for receiving a trigger signal, said thyristor controlling the controlled circuit in response to trigger signals received at said trigger terminal;

trigger means coupled to said trigger terminal for selectively supplying trigger signals;

power supply means including a capacitor and a rectifier, said rectifier being coupled to said switch terminals and drawing power from the controlled circuit;

means electrically coupling said capacitor to said trigger means for supplying stored power to generate an initial trigger signal before said thyristor has been fired, and for enhancing the power to generate a subsequent trigger signal after said thyristor has been extinguished and while said capacitor begins to recharge; and

means electrically coupling said capacitor across said switch terminals for enabling said capacitor to discharge through said thyristor immediately after said thyristor fires in response to a trigger signal.

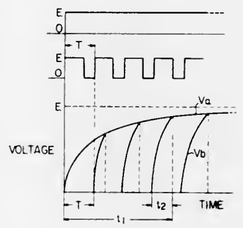


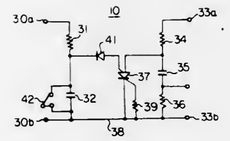
**3,935,483**

## PHASE SHIFTING CIRCUIT

**Kazuyuki Arimoto; Toshinobu Maeda; Fuzio Hori, and Akihiko Takata, all of Kadoma, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan**

**Filed Feb. 25, 1974, Ser. No. 445,159**
**Claims priority, application Japan, Feb. 26, 1973, 48-22874**
**Int. Cl.² H03K 1/16**
**U.S. Cl. 307—295** **6 Claims**




1. A phase shifter comprising, a first exponential generator including a constant voltage source and a timing circuit responsive to the constant voltage source to generate a first exponential voltage curve, a second exponential generator including a pulse generating source to generate second exponential voltage curves, a solid-state switching device responsive to the outputs from said first and second generators to provide coincidence therebetween repetitiously when the voltages of the first and second curves reach the same level, whereby the point of coincidence varies linearly with time, and a load impedance responsive to the output from said switching device to develop the coincidence output.

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**3,935,484**

## REPLACEABLE ACOUSTIC TRANSDUCER ASSEMBLY

**Walter C. Leschek, Pittsburgh, Pa., and Philip E. Carpentier, Elmira, N.Y., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**Filed Feb. 25, 1974, Ser. No. 445,523**
**Int. Cl.² H01V 7/00**
**U.S. Cl. 310—8.2** **14 Claims**

1. An acoustic transducer assembly comprising:

a generally tubular metal enclosure member,

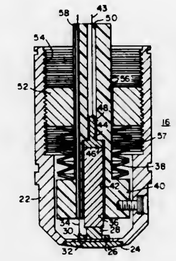
a transducer window and piezoelectric element assembly sealingly disposed at one end of the tubular enclosure, wherein the transducer window is a high temperature resistant metal disk sealed to the tubular enclosure member with a high acoustic energy transmissive thin insulating disk acoustically coupled to the interior surface of the metal disk, and the piezoelectric element is a thin disk acoustically coupled to the other side of the insulating disk,

an elongated conductive acoustic energy damping element in contact with the side of the piezoelectric element facing inwardly within the tubular enclosure member,

an elongated insulating plug fitting within the tubular enclosure member about the damping element,

compressive spring means within the enclosure member for compressively holding the insulating plug against the damping element and thereby compressing the damping element against the piezoelectric element,

a pair of electrical conductors extending through the insulating plug, one conductor electrically connected to one side of the piezoelectric element, the other conductor electrically connected to the conductive damping element,




a closure plug movably fitted in the other end of the tubular metal enclosure member, which plug is movable along the axis of the tubular metal enclosure member to engage one end of the compressive spring means, which thereby compresses the damping element against the piezoelectric element which is in turn compressed against the transducer window, which compression means thereby electrically and acoustically couples the damping element, the piezoelectric element and the transducer window

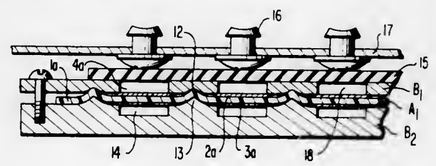
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**3,935,485**

## PIEZOELECTRIC KEY BOARD SWITCH

**Masafumi Yoshida; Masahiro Segawa, and Hiroshi Obara, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan**

**Filed Sept. 17, 1974, Ser. No. 506,814**
**Claims priority, application Japan, Sept. 17, 1973, 48-104681; Oct. 22, 1973, 48-118801**
**Int. Cl.² H01L 41/04**
**U.S. Cl. 310—8.5** **16 Claims**




1. A key board switch comprising

a polarized polymer film element A having in the surface of the polymer piezoelectric film, a plurality of piezoelectric unit elements satisfying the following condition:

a. said unit elements have electrodes on both surfaces thereof,

b. the portions of the polymer film of said piezoelectric unit elements held between the electrodes on both surfaces have piezoelectric properties and

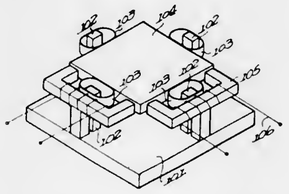
c. any two piezoelectric unit elements are electrically independent from each other at least with respect to electrodes on one surface; and

a substrate sheet B on which the polymer film element A is laid and having windows or recesses in positions corresponding to each of the piezoelectric unit elements of the polymer film element A, those portions of the polymer film between adjacent piezoelectric unit elements in the

polymer element A being secured to the substrate B at positions between the windows or recesses in the substrate B so as to prevent a stress applied to one of the unit elements from being transmitted to another unit element whereby changes in the electric field generated from each of the piezoelectric unit elements can be an independent output.

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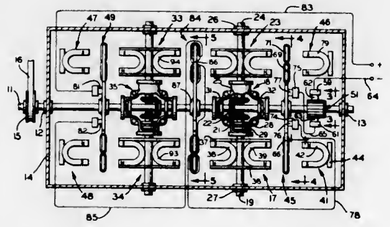
**3,935,486**
**FINELY ADJUSTABLE TABLE ASSEMBLY**
**Mitsuyoshi Nagashima, Sayama, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan**
**Filed Aug. 26, 1974, Ser. No. 500,345**
**Claims priority, application Japan, Aug. 27, 1973, 48-95844**
**Int. Cl.² H02K** *41/02*
**U.S. Cl. 310—12** **2 Claims**



1. A finely adjustable table assembly comprising:
a base plate;
a movable table above said plate;
a plurality of angularly spaced columns mounted on said base plate, said table having respective surfaces disposed horizontally opposite said columns;
a plurality of plate springs which are annular in section and are connected to said columns and to said surfaces of said table so as to have their generatrices perpendicular to said movable table and the broad surfaces of the plates of said springs facing generally horizontally; and
electromagnetic driving means for driving said movable table relative to said base plate, said electromagnetic driving means being composed of a plurality of electromagnets at least one of which comprises an E-shaped magnetic core and at least two coils so as to minutely displace said movable plate in any direction in the same horizontal plane.

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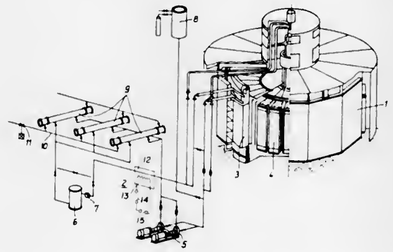
**3,935,487**
**PERMANENT MAGNET MOTOR**
**Leonard C. Czernlak, 2459 Eastgate Road, Toledo, Ohio 43614**
**Filed May 6, 1974, Ser. No. 467,006**
**Int. Cl.² H02K** *49/10*
**U.S. Cl. 310—46** **11 Claims**



1. A permanent magnet motor comprising:
a supporting frame;
an output shaft rotatably attached to said frame;
a first permanent magnet means fixedly attached to said frame;
a second permanent magnet means in driving relationship with said shaft and rotatably attached to said frame for movement along a predetermined circular path whereby said permanent magnet means repel each other to generate movement in opposite directions along a first portion of said predetermined path; and
a magnetic shield coupled to said shaft and rotatably attached to said frame wherein said shield is driven between said first and second permanent magnet means when said first and second permanent magnet means are substantially adjacent each other along a second portion of said predetermined path.

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**3,935,488**
**METHOD OF OPERATING A FLUID-COOLED HYDROPOWER GENERATOR**
**Franz Spirk, and Werner Leistner, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany**
**Filed Oct. 21, 1974, Ser. No. 516,508**
**Claims priority, application Germany, Oct. 30, 1973, 2354690**
**Int. Cl.² H02K** *9/00*
**U.S. Cl. 310—53** **2 Claims**



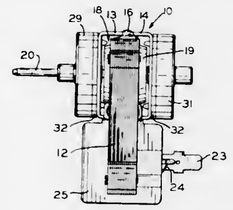
1. A method of operating a fluid-cooled hydropower generator of a hydroelectric facility such as a pump storage plant, the generator being alternately in the active and shutdown condition as required and being equipped with: a circulation system for conducting fluid coolant for cooling the generator, the circulation system including control means for controlling system leaks and the conductivity of the fluid coolant; a heat exchanger connected into the circulation system for cooling the fluid coolant, the heat exchanger, in turn, having its own circulation system for fluid cooling the same; and, a pump for pumping the fluid coolant of the circulation system through the heat exchanger and the circulation system, the method comprising the steps of: maintaining the operation of said pump and said control means when the hydropower generator is in the shut-down condition to pump the fluid coolant through said circulation system and said heat exchanger; and, interrupting the circulation system for fluid cooling said heat exchanger when the hydropower generator is in the shut-down condition.

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**3,935,489**
**DYNAMOELECTRIC MACHINE HAVING IMPROVED VIBRATION ISOLATION AND THRUST SYSTEM**
**Ralph E. Church, Fort Wayne, Ind., and Daniel L. Beckman, Jonesboro, Ark., assignors to General Electric Company, Fort Wayne, Ind.**
**Filed Apr. 24, 1974, Ser. No. 463,560**
**Int. Cl.² H02K** *5/16*
**U.S. Cl. 310—90** **4 Claims**

1. In an electric motor having a stator, a shaft having a rotor fixed thereto, a frame member carrying at least one bearing for supporting the rotor shaft for rotation about the longitudinal axis of the shaft movement relative to the stator, and a cover carried by the frame member for establishing at least one boundary of a lubricant reservoir, the improvement comprising: said cover having a centrally disposed first interior surface region spaced a first predetermined distance from the frame, and further having secondary surface means located about the centrally disposed interior surface region with the secondary surface means being axially displaced, relative to the first interior surface region, in a direction toward the end

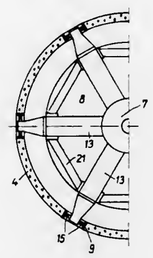




frame; said shaft having an end disposed within the lubricant reservoir and spaced from the first interior surface region; and the improvement further comprising a flexible thrust plate having at least a portion thereof spanning the first interior surface region to provide a flexible abutment for the shaft end disposed within the lubricant reservoir said portion being spaced from the first interior surface region and said portion establishing an unsupported span that is flexibly deflectable toward the first interior surface region in response to axially directed thrust loads applied thereto by the end of the rotor shaft.

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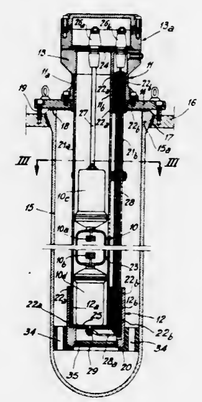
**3,935,490**
**SUPPORTING ARRANGEMENT FOR THE ROTOR OF A VERTICAL ELECTRIC MACHINE SUCH AS HYDRAULIC GENERATOR OR THE LIKE**
**Franz Spirk, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany**
**Filed Jan. 10, 1975, Ser. No. 539,956**
**Claims priority, application Germany, Mar. 1, 1974, 2410437**
**Int. Cl.² H02K** *5/24*
**U.S. Cl. 310—91** **7 Claims**



1. A supporting arrangement for the rotor of a vertical electric machine such as a hydraulic generator or the like comprising: at least one support spider equipped with a guide bearing for radially guiding the rotor and having a plurality of arms extending therefrom; a concrete support structure arranged in surrounding relation to the rotor; metal elements set into said concrete structure so as to define a plurality of cavities for receiving corresponding ones of said arms therein; and, adjustably pretensioned roller bearing means arranged at said cavities for holding said arms only in a tangential direction viewed relative to the stator of the electric machine.

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**3,935,491**
**DISCHARGE LAMP**
**André Albert Hugot, Hauts-de-Seine, France, assignor to Compagnie Electro Mecanique, Paris, France**
**Continuation-in-part of Ser. No. 400,149, Sept. 24, 1973, abandoned. This application Mar. 3, 1975, Ser. No. 554,527**
**Int. Cl.² H01J** *61/52*
**U.S. Cl. 313—25** **5 Claims**



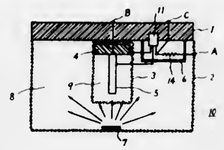
1. An elongated discharge lamp comprising:
a. an elongated discharge tube including first and second electrodes at its respective first and second ends;
b. first and second end mountings supporting said discharge tube at said first and second ends thereof respectively;
c. an elongated conductor extending between said first and second end mountings;
d. first and second current supply terminals disposed at said first end mounting, said first current supply terminal being electrically connected with said first electrode and said second current supply terminal being electrically connected with said second electrode via said elongated conductor;
e. first and second tubular envelopes extending between and sealed at their ends to said first and second end mountings and surrounding said discharge tube and said elongated conductor respectively, at least said first envelope being of transparent material; and
f. a fluid-cooling jacket surrounding said first and second tubular envelopes.

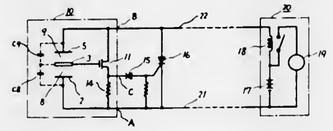
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**3,935,492**
**IONIZATION SMOKE DETECTOR**
**Koju Sasaki, Tokyo, and Akihiro Kobayashi, Fujisawa, both of Japan, assignors to Nittan Company, Ltd., Tokyo, Japan**
**Continuation of Ser. No. 89,417, Nov. 13, 1970, abandoned. This application May 3, 1973, Ser. No. 357,071**
**Int. Cl. H01j** *17/32*
**U.S. Cl. 313—54** **4 Claims**

1. An ionization smoke detector comprising an inner electrode, means including an air permeable intermediate electrode enclosing said inner electrode, means including an air permeable outer electrode enclosing said inner and intermediate electrodes, said intermediate electrode defining an inner chamber which includes said inner electrode and said intermediate and outer electrodes defining an outer chamber of substantially greater volume than said inner chamber and a radio-

active source disposed within one of said chambers to ionize the gas within the last said chamber, the radioactive emission





from said source penetrating said intermediate electrode to ionize the gas within the other of said chambers.

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**3,935,493**

## RADIATION DETECTOR USING DOUBLE AMPLIFICATION

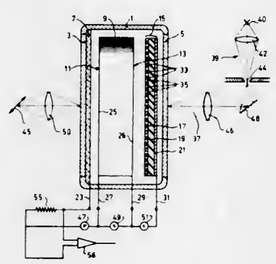
**Geert Brouwer, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.**

**Filed June 20, 1974, Ser. No. 481,243**

**Claims priority, application Netherlands, June 28, 1973, 7309000**

**Int. Cl.² H01J** *39/06*

**U.S. Cl. 313—96** **6 Claims**



1. A radiation detector comprising:

a. an input photocathode;

b. an electron-optic amplifying member facing said input photocathode and comprising a channel amplifier plate structure capable of being used in two directions; and

c. a target structure comprising a second photocathode of relatively low lateral electric conductivity that faces said amplifier plate, a transparent electrically conductive layer, and a dielectric layer disposed between said second photocathode and said transparent layer.

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**3,935,494**

## SINGLE SUBSTRATE PLASMA DISCHARGE CELL

**George Wilmer Dick, Colts Neck, and Walter Bryan Hatfield, Fair Haven, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**

**Filed Feb. 21, 1974, Ser. No. 444,380**

**Int. Cl.³ H01J** *61/067, 61/10, 61/30*

**U.S. Cl. 313—190** **3 Claims**

1. A gas discharge panel comprising

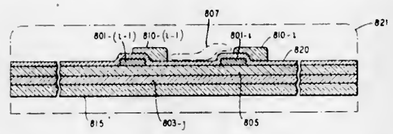
a substantially planar dielectric substrate,

a first plurality of spaced electrodes positioned on said substrate,

a first dielectric layer covering said first plurality of electrodes,

a second plurality of spaced electrodes positioned on said first dielectric layer and overlaying at least some of said first plurality of electrodes,

a first plurality of dielectric barriers overlaying said first dielectric layer each of said barriers being positioned at



least partly between an associated pair of said second plurality of electrodes,

an envelope enclosing said substrate and electrodes and barriers on said substrate, said envelope being substantially transparent in an area above said second set of electrodes, said envelope also containing a confined ionizable atmosphere, and

a dielectric layer covering said second plurality of electrodes, thereby shielding said second plurality of electrodes from said ionizable atmosphere.

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**3,935,495**

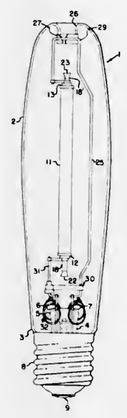
## CHEMICALLY POLISHED POLYCRYSTALLINE ALUMINA MATERIAL

**Garland E. Scott, Jr., Willoughby, and Michael K. Levenson, Cleveland Hts., both of Ohio, assignors to General Electric Company, Schenectady, N.Y.**

**Filed Mar. 22, 1974, Ser. No. 453,962**

**Int. Cl.³ H01J** *17/16*

**U.S. Cl. 313—220** **6 Claims**



1. An improved high intensity electric discharge lamp comprising a light transmissive envelope having electrodes sealed into its ends and containing an ionizable medium for carrying the discharge, wherein the improvement comprises utilizing as the light transmissive envelope a tube consisting essentially of high density, polycrystalline alumina having the major exterior surfaces flux polished so as to reduce the high spots on the individual exterior alumina crystals without materially etching grain boundaries and thereby to obtain increased optical transmission upon flux removal.



**3,935,496**

## STRUCTURE FOR ATTACHING CONICAL SHIELD TO SHADOW MASK

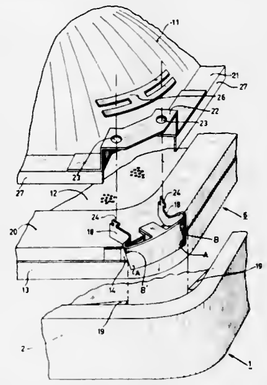
**Johannes Henricus Nicolaas Gijrath, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.**

**Filed Nov. 7, 1974, Ser. No. 521,586**

**Claims priority, application Netherlands, Nov. 30, 1973, 7316388**

**Int. Cl.² H01J** *29/07, 31/20*

**U.S. Cl. 313—402** **5 Claims**



1. A color cathode-ray tube comprising: an evacuated envelope and, within said envelope, means to generate at least two electron beams; a color selection electrode including an apertured mask and a screening diaphragm having an opening above a central part of said mask and a side wall attached to the edge of the mask, said mask and said diaphragm being made, respectively, of a thin sheet metal; supporting means comprising a plurality of suspension members connected to said electrode and each having a projecting end portion, and a plurality of resilient clamping members connected, respectively, to the projecting end portions to provide a detachable clamping connection with a matching inner portion of said envelope; and a screening cone of ferromagnetic sheet metal for shielding the electron beams from magnetic fields, said cone being secured to said clamping members and spaced from said electrode.

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**3,935,497**

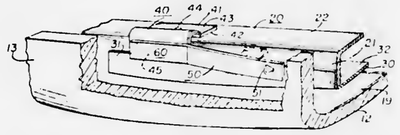
## SHADOW MASK THERMAL COMPENSATING ASSEMBLY

**Richard H. Cowles, Elmhurst; Thomas P. De Franco, Norridge, and Roy Maskell, Oak Park, all of Ill., assignors to Admiral Corporation, Chicago, Ill.**

**Filed July 5, 1968, Ser. No. 742,651**

**Int. Cl.² H01J** *29/07, 31/20, 29/02*

**U.S. Cl. 313—405** **6 Claims**



1. A color television tube comprising: a glass panel having a discrete pattern of color phosphor elements thereon; a plurality of mounting studs disposed about the interior of said panel; an aperture mask having a radial axis of symmetry passing through a central portion thereof, said central portion being aligned in a predetermined position with respect to the phosphor pattern; a relatively rigid frame comprising a base flange and edge flange supporting said mask, said frame having a number of locating characters defining a plurality of first locating holes on said base flange, said first locating holes being accurately positioned with respect to said mounting studs; a corresponding plurality of spring members circumferentially disposed about said frame, cooperating with said mounting studs, for releasably maintaining said aperture mask in registry with said phosphor elements; and a plurality of substantially L-shaped thermal expansion members, each having a first leg secured to a respective one of said spring members, and a second leg secured to said frame and having a second locating hole respectively aligned with said first locating holes, whereby said expansion members may be accurately positioned on said base flange of said frame; said thermal expansion members comprising a bimetallic body with a first layer having a relatively high coefficient of thermal expansion and a second layer having a relatively low coefficient of thermal expansion whereby said expansion members undergo corrective flexures as said mask expands and contracts over the operating temperature range of said picture tube to maintain proper registration between said aperture mask and said phosphor elements.

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**3,935,498**

## ELECTRON GUN ASSEMBLY

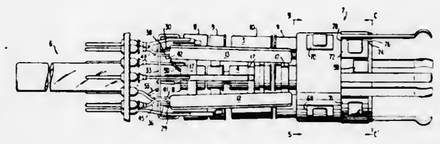
**Frederick F. Doggett, East Syracuse, and Leonard W. Jenne, Jr., Baldwinsville, both of N.Y., assignors to General Electric Company, Portsmouth, Va.**

**Continuation of Ser. No. 731,807, May 24, 1968, abandoned.**

**This application Feb. 14, 1973, Ser. No. 332,338**

**Int. Cl. H01J** *29/02, 29/50*

**U.S. Cl. 313—417** **7 Claims**



1. In combination with three electron guns disposed such that the axes of said guns lie in the same plane:

I. four support rods positioned around said guns in a spaced relationship;

II. mounting strap means for connecting the center one of said three guns to all four of said support rods, and each of the outer two of said three guns to only two of said four support rods, said mounting strap means comprising

a. a first mounting strap arrangement rigidly attached to the center gun on one side of said plane and having corresponding ends secured to a first pair of said support rods located on the same side of said plane;

b. a second mounting strap arrangement rigidly attached to the center gun on the opposite side of said plane from the first strap arrangement and having corresponding ends secured to a second pair of said support rods located on said opposite side of said plane;

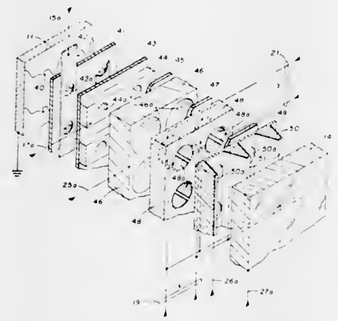
c. a third mounting strap arrangement rigidly attached to one of the two outer guns and having an end thereof located on the one side of said plane and secured to one of the rods from said first pair and another end thereof located on the other side of said plane and secured to one of the rods of said second pair; and

d. a fourth mounting strap arrangement rigidly attached to the other one of the two outer guns and having an end thereof located on the one side of said plane and secured to the other rod of said first pair and another end thereof located on the other side of said plane and secured to the other rod of said second pair.

### 3,935,499
### MONOLYTHIC STAGGERED MESH DEFLECTION SYSTEMS FOR USE IN FLAT MATRIX CRT'S

**Frederick G. Oess, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.**

**Filed Jan. 3, 1975, Ser. No. 538,489**
**Int. Cl.² H01J** *29/50, 31/00*
**U.S. Cl. 313—413** **18 Claims**



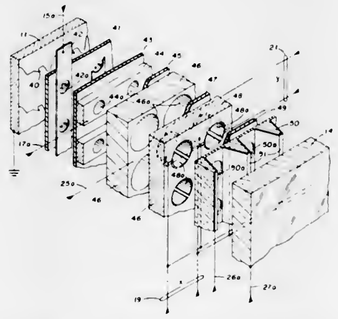
1. In a flat cathode ray tube device for display of information by response to an electron beam of a phosphor coating on a face plate, the combination which comprises:
a monolythic system structure including
a. an x–y matrix of electron source cathodes,
b. a pair of grid arrays successively spaced from said matrix with holes therethrough adjacent to and aligned with said cathodes selectively to form and individually control the intensity of an electron beam from each of said cathodes, and
c. deflection control structure consisting of a plurality of sheets electrically isolated from each other having rectangular holes therein through which said beams may pass, with alternative ones of said sheets connected for *x–y* deflection control of the trajectory of each of said beams.

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### 3,935,500
### FLAT CRT SYSTEM

**Frederick G. Oess, and Michael Peshock, Jr., both of Richardson, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.**

**Filed Dec. 9, 1974, Ser. No. 530,624**
**Int. Cl.² H01J** *63/04, 21/10*
**U.S. Cl. 313—495** **19 Claims**



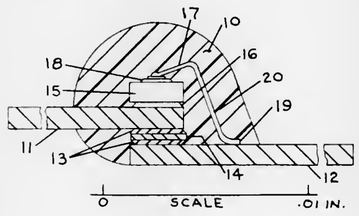
1. In a flat cathode ray tube device for display of information by response to an electron beam of a phosphor coating on a face plate, the combination which comprises:
a monolithic structure including
a. an x-y matrix of electron source cathodes,
b. a pair of grid arrays successively spaced from said matrix with holes therethrough adjacent to and aligned with said cathodes selectively to from and individually control the intensity of an electron beam from each of said cathodes, and
c. deflection control structure having holes through which said beams may pass with a set of *x–y* deflection electrodes associated with each of said holes for independent *x–y* control of the trajectory of each of said beams.

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### 3,935,501
### MICRO-MINIATURE LIGHT SOURCE ASSEMBLAGE AND MOUNTING MEANS THEREFOR

**Silvester Sterbal, Staten Island, N.Y., assignor to Digital Components Corporation, Linden, N.J.**

**Filed Feb. 13, 1975, Ser. No. 549,828**
**Int. Cl.² H05B** *33/02*
**U.S. Cl. 313—499** **12 Claims**




1. A micro-miniature electrical assemblage comprising a pair of wire leads having overlapped ends, said ends, at the overlapped positions only thereof, being joined by bonding means providing both electrical insulation and physical strength, thereby forming a sub-assemblage having a central bonded juncture with the leads divergently projecting therefrom and freely deformable with respect thereto, a solid state electrical component having top and bottom contacts, said component being joined at the bottom thereof to one of said leads by electrically conductive bonding means, fine wire means electrically bonded to the top of said component and to the other of said leads, and said bonded juncture and associated solid state component being enveloped by a hardened mass of plastic material having electrical insulating properties.

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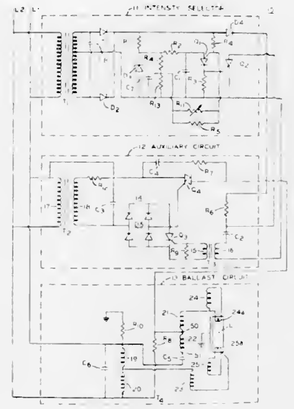
### 3,935,502
### BALLAST CIRCUIT FOR ELIMINATING FLICKER IN GASEOUS DISCHARGE LAMPS

**Rollie R. Herzog, Danville, Ill., assignor to Construction Materials Division General Electric Company, Indianapolis, Ind.**

**Filed Apr. 6, 1973, Ser. No. 348,671**
**Int. Cl.² H05B** *39/00*
**U.S. Cl. 315—94** **8 Claims**

1. A ballast circuit for controlling the current through at least one gaseous discharge lamp having first and second electrodes comprising:
a primary winding;
first and second secondary windings electrically coupled to said primary winding, one end of each of said first and second secondary windings adapted to be coupled respectively to the first and second electrodes;
first and second heating windings for providing heating power to the first and second lamp electrodes respectively, said first and second heating windings respectively connected to one end of said first and one end of said second secondary windings, said one end of each of said first and second secondary windings being free from a substantially direct connection to ground so that the first and second electrodes may vary substantially from ground potential.



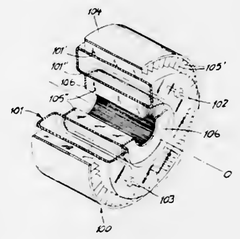


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### 3,935,503
### PARTICLE ACCELERATOR

**Thomas I. Ress, Buena Park, Calif., assignor to The Kreidl Chemico Physical K.G., Schaan, Liechtenstein**

**Filed Nov. 26, 1973, Ser. No. 418,858**
**Int. Cl.² H05H** *1/12*
**U.S. Cl. 315—111.6** **12 Claims**



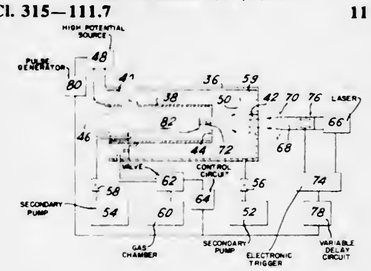
1. An accelerator for charged particles, comprising:
a vessel centered on an axis;
magnetostatic means producing a constant magnetic field in substantially axial direction;
excitation means for generating a rotating magnetic field in said vessel with a vector substantially perpendicular to said axis, said field revolving at constant speed about said axis; and
inlet means for admitting charged particles into said vessel for rotary entrainment along an annular path of predetermined radius by the combined action of both magnetic fields.

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### 3,935,504
### METHOD AND APPARATUS FOR INJECTION OF A PLASMA

**Pierre Guillaneux, Chaville; Claude Patou, Le Perreux, and Gianfranco Tonon, Limeil-Brevannes, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France**

**Claims priority, application France, Aug. 19, 1970, 70.30425**
**Filed Aug. 16, 1971, Ser. No. 172,094**
**Int. Cl. H05h** *1/04, 1/22*
**U.S. Cl. 315—111.7** **11 Claims**



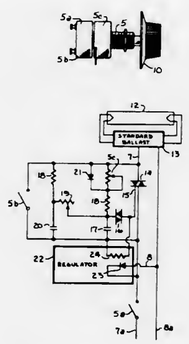

1. Plasma injection apparatus comprising a coaxial gun of the focus type comprising a hollow cylindrical outer electrode which surrounds a cylindrical inner electrode without contact and a window formed in said outer electrode, which forms a sealed enclosure, a solid target disposed on the axis of said gun and near the free end of the said inner electrode, means for injecting a gas into said enclosure, means for producing an electrical discharge between said two electrodes, a triggered laser producing a laser beam, an optical system for focusing the laser beam substantially on said target and means for synchronising the triggering of the light emission of said laser and said discharge.

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### 3,935,505
### FLUORESCENT LAMP DIMMER

**Joseph Spiteri, 6613 E. Lake Road, Erie, Pa. 16511**

**Filed Jan. 21, 1974, Ser. No. 434,985**
**Int. Cl.² H05B** *41/392;* **G05F** *1/08*
**U.S. Cl. 315—194** **4 Claims**




1. A brightness control for a fluorescent lamp connected to a power supply, comprising: switch means connected between the power supply and the lamp, dimming control means connected between the switch means and the lamp, said dimming control means comprising electrode controlled semi-conductor switch means for blocking the flow of power to the lamp during each half cycle until gated on, capacitor means charged during each half cycle, gating means actuated in response to the charge on said capacitor means for gating said semi-conductor switch means to conduct, means for adjusting the charging rate of the capacitor means to advance or retard the

gating of said semi-conductor switch means and thereby decrease or increase the dimming, said dimming control means being adjustable in a range from minimum dim to maximum dim, said switch means for connecting said dimming control and said lamp in a plurality of circuit relationships, to-wit: an off position, an on position connecting the power supply to the lamp and bypassing the dimming control means, a minimum dim position opening the bypass around the dimming control and positions between said minimum dim position and a maximum dim position, control means for actuating said switch means in order listed so the lamp has a chance to warm up before being dimmed, a mounting strap to be fastened to an outlet box, means for mounting the dimming control means on the mounting strap, a wall plate mounted on the strap, a switch control extending through the plate, and trimming means having adjusting means accessible through and from the outside of the plate for adjusting the dimming effect in the maximum dim position so the lamp remains on without flickering in said maximum dim position.

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**3,935,506**

## DEVICE FOR RADIAL, STATIC AND DYNAMIC CONVERGENCE OF ELECTRON BEAMS IN A COLOUR TELEVISION DISPLAY TUBE

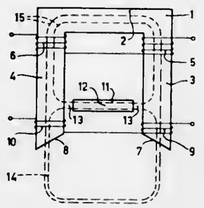
**Hans-Jürgen Brockmann, Halstenbek, Germany, assignor to U.S. Philips Corporation, New York, N.Y.**

**Filed Mar. 3, 1972, Ser. No. 231,548**

**Claims priority, application Germany, Mar. 13, 1971, 2112163**

**Int. Cl.² H01J 29/56**

**U.S. Cl. 315—370** **7 Claims**



1. A television convergence device comprising a substantially U shaped ferromagnetic core have two substantially parallel legs and a yoke coupled to said legs; a pair of static convergence coils disposed about said legs respectively proximate said yoke; a pair of dynamic line frequency convergence coils disposed about said legs respectively proximate the free ends thereof; and means for providing a small magnetic resistance with respect to the line frequency magnetic circuit and a large resistance with respect to the internal magnetic resistance of the static magnetic circuit, said providing means comprising a ferro magnetic bridge disposed proximate said two legs and between said static coils on one side thereof and said dynamic coils on the other side thereof.

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**3,935,507**

## CORRECTION CIRCUIT IN TELEVISION DISPLAY APPARATUS USING DIFFERENTIAL AMPLIFIERS

**Jörg Wölber, Hamburg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.**

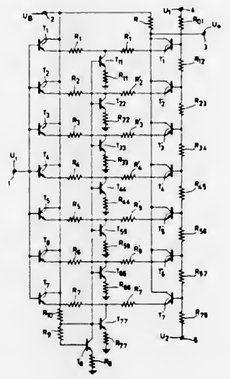
**Filed Feb. 26, 1974, Ser. No. 445,908**

**Claims priority, application Germany, Mar. 8, 1973, 2311574**

**Int. Cl.² H01J 29/70**

**U.S. Cl. 315—370** **8 Claims**

8. A circuit arrangement comprising means for receiving an input signal, a plurality of difference amplifiers each having a first and a second input terminal, all first input terminals being coupled together and to the means for receiving the input signal, the second input terminals comprising means for receiving respectively different biasses, an output terminal, the



difference amplifiers having a common load connected to said output terminal.

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**3,935,508**

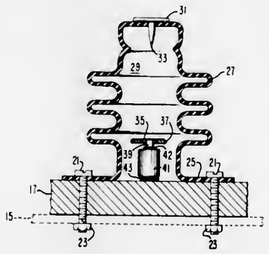
## HIGH VOLTAGE DISCHARGE SWITCH FOR PROTECTING SENSITIVE ELECTRONIC EQUIPMENT AND THE OPERATORS THEREOF

**Douglas E. Moister, Jr., Plymouth, Mich., assignor to Burroughs Corporation, Detroit, Mich.**

**Filed Aug. 5, 1974, Ser. No. 494,978**

**Int. Cl.² A61N 1/14; H05F 3/04**

**U.S. Cl. 317—2 R** **12 Claims**



1. A device for transferring an accumulated charge of static electricity between a person and an object such that the person does not experience any discomfort due to electrical shock, said device comprising:

upper contact means having an upper finger touch contact surface for receiving an accumulated charge of static electricity from said person;

lower contact means for effectively dissipating a transferred charge without causing any discomfort to said person;

flexible housing means for defining an air space and establishing an initial distance between said upper contact means and said lower contact means, said flexible housing means being responsive to the pressure exerted when said person touches said upper contact surface for variably reducing said distance; and

wherein said upper contact means further includes a sharp pointed means responsive to said established distance having been reduced to a first length for initiating a corona discharge to initially transfer at least a portion of said accumulated charge of static electricity, said sharp pointed means being responsive to said established distance having been further reduced to a second length for directly transferring any remaining portion of said accumulated charge of static electricity to said lower contact means.



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**3,935,509**

## SYNCHRONIZED SWITCH WITH PARALLEL CONTACT

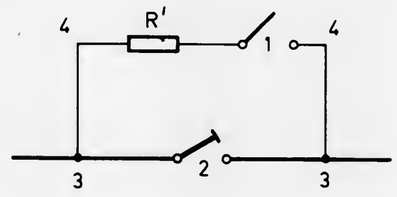
**Adolf Eidinger, Nussbaumen, Switzerland, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland**

**Filed May 17, 1974, Ser. No. 470,990**

**Claims priority, application Switzerland, May 21, 1973, 7120/73**

**Int. Cl.² H02H 7/22**

**U.S. Cl. 317—11 A** **1 Claim**



1. A switching arrangement located in the vicinity of and connected to an alternating current generator for disconnecting the generator under load comprising a first switch connected to the generator for carrying the normal load current therefrom in a continuous manner, a second switch of the synchronized type connected in parallel with said first switch and which is arranged to open its contacts in a zero current interval following an opening operation of the contacts of said first switch, and an ohmic resistor connected in the current flow path through said second switch and whose resistance is at most a 0.2 fold and preferably a 0.1 fold value of the subtransient short-circuit impedance of said generator.

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**3,935,510**

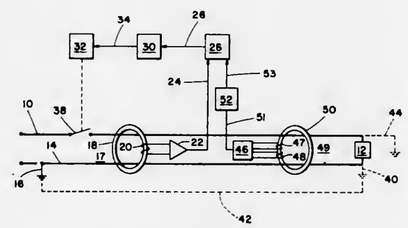
## GROUND FAULT PROTECTIVE SYSTEM INCLUDING AN IMPEDANCE RESPONSIVE OSCILLATOR

**Geoffrey Clarke, Bluntsdon, near Swindon, England, assignor to Square D Company, Park Ridge, Ill.**

**Filed Feb. 25, 1974, Ser. No. 445,379**

**Int. Cl.² H02H 3/28**

**U.S. Cl. 317—18 D** **1 Claim**



1. In a ground fault current protective system for an electrical distribution circuit having at least one line conductor connecting a voltage source to a load and a neutral conductor grounded at the source at a ground terminal and providing a return path from the load to the source, said ground fault current protective system comprising a ground fault detecting means positioned on said distribution circuit and providing a ground fault output signal related in value to the magnitude of a ground fault current flowing to ground from the line conductor at any point between the ground fault detecting means and the load, an impedance detecting means positioned on said distribution circuit and providing an a.c. impedance output signal related in value to the impedance between ground and any point on the neutral conductor between the impedance detecting means and the load, a demodulator coupled to the impedance detecting means to convert the a.c. impedance output signal of the impedance detecting means to a d.c. voltage level related in value to the magnitude of the a.c. impedance output signal, and a level detecting means having a first input connected to the ground fault detecting means and having a second input connected to the demodulator with said level detecting means rendered operative to provide an output signal whenever the ground fault output signal reaches a predetermined value at said first input of the level detecting means and whenever the d.c. voltage level of the demodulator reaches a predetermined value at said second input of the level detecting means, the improvement wherein the impedance detecting means comprises an oscillator magnetically coupled to the neutral conductor by a transformer including a toroidal core, a plurality of oscillator windings, each of at least one turn, wound on the toroidal core for partially or totally attenuating the output oscillator signal whenever a low impedance occurs between ground and the neutral conductor on the load side of the protective system and for providing a positive feedback path for the oscillator, and another winding of at least one turn on the toroidal core connected in series with the neutral conductor.

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**3,935,511**

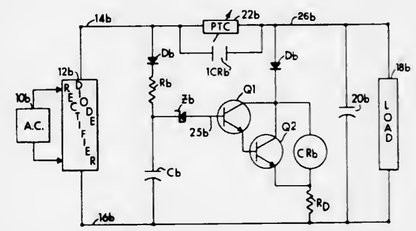
## CURRENT INRUSH LIMITER

**Henry J. Boulanger, Cumberland, R.I., and Theodore Brassard, Berkley, Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.**

**Filed Dec. 26, 1973, Ser. No. 428,560**

**Int. Cl.² H02H 9/00**

**U.S. Cl. 317—20** **9 Claims**



1. A protective circuit connecting a D.C. voltage source of output voltage V to a load, comprising:

electrical resistance means in series with the load to limit start up current to the load, said resistance means having a relatively constant resistance at temperatures below an anomaly and a steeply-sloped positive temperature coefficient (PTC) of resistivity at temperatures above the anomaly,

voltage sensitive means in parallel with the load and having an output signal for shunting and resistance means out of the circuit,

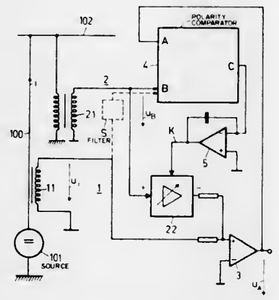
said voltage sensitive means so constructed as to provide said output signal only when the voltage sensed reaches a predetermined level somewhat less than V, and

a thermally responsive switching means in series with and located adjacent said resistance means, said switching means serving to break said circuit when the temperature of said resistance means exceeds a predetermined level.

### 3,935,512
### CIRCUIT FOR THE COMPENSATION OF CURRENT INTERFERENCE SIGNALS

**Jean-Pierre Falk, and Andre Rohr, both of Geneva, Switzerland, assignors to Societe Anonyme des Atellers de Secheron, Geneva, Switzerland**

**Filed Dec. 11, 1974, Ser. No. 531,608**
**Claims priority, application Switzerland, Dec. 20, 1973, 17866/73**
**Int. Cl.² H02J** *1/02*
**U.S. Cl. 317—27 R** **10 Claims**




1. A circuit for the compensation of current interference signals in another circuit to which a voltage containing a disturbing component is applied comprising:
- a current-signal branch and a compensation branch,
- means for applying an interference signal to said compensation branch,
- a controllable signal control element coupled to said compensation branch and including a control input,
- superimposing means coupled to both said current-signal branch and said compensation branch for providing a superimposed output signal,
- a polarity comparator coupled to the output of said superimposing means, the output of said polarity comparator coupled to said control input for regulating the output of said controllable signal control element.

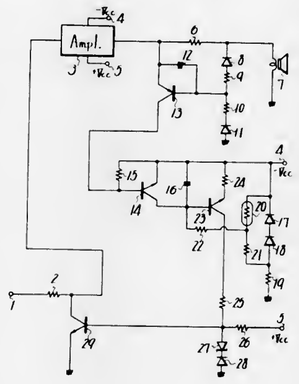
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### 3,935,513
### PROTECTIVE CIRCUIT FOR TRANSISTOR AMPLIFIER

**Tadao Suzuki, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan**

**Filed July 8, 1974, Ser. No. 486,319**
**Claims priority, application Japan, July 12, 1973, 48-78954**
**Int. Cl.² H02H** *7/20*
**U.S. Cl. 317—31** **6 Claims**

1. A transistor amplifier protective circuit comprising:
- an input terminal supplying an input signal to said transistor amplifier,
- a first transistor with its emitter-collector electrodes connected between ground and said input terminal to short said input signal to ground when said first transistor conducts,
- a first resistor with one side connected to the output of said transistor amplifier, a load connected between ground and the other side of said first resistor,
- second and third transistors with the collectoremitter path of said second transistor connected between the output of said transistor amplifier and the control electrode of said third transistor,
- a first capacitor connected between the control electrode of said second transistor and the output of said transistor amplifier,
- a fourth transistor with its control electrode connected to the emitter-collector path of said third transistor,
- a bias voltage of a first polarity, and the emitter-collector path of said fourth transistor connected between the control electrode of said first transistor and said bias voltage of a first polarity,
- a second capacitor connected between said bias voltage of a first polarity and the control electrode of said fourth transistor,
- a second resistor connected between ground and the control electrode of said fourth transistor,



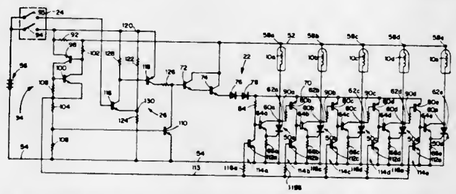

- a third resistor connected between the other side of said first resistor and the control electrode of said second transistor, and
- a fourth resistor connected between ground and the control electrode of said second transistor.

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### 3,935,514
### FLASH LAMP SIGNALING CIRCUIT EMPLOYING LOGIC SIGNAL ACTIVATION

**Seymour Ellin, Brookline, Mass., assignor to Polaroid Corporation, Cambridge, Mass.**

**Continuation-in-part of Ser. No. 321,993, Jan. 8, 1973, abandoned. This application Apr. 20, 1973, Ser. No. 353,007**
**Int. Cl.² F21K** *5/02*
**U.S. Cl. 317—80** **3 Claims**



1. An integrated circuit chip for use with a given voltage supply for sequentially flashing a plurality of photolamps responsive to either a low trigger signal having a voltage level equal to or less than the supply voltage or a high trigger signal having a voltage level greater than the supply voltage, said chip comprising:
- a pair of supply terminals configured for electrical coupling to the voltage supply so as to energize said chip;
- a lamp firing circuit coupled to said supply terminals and configured for sequentially firing each of a plurality of photolamps in a predetermined order responsive to repetitive application of a given input signal, said lamp firing circuit including a plurality of lamp switching circuits coupled to said supply terminals in a predetermined order of first to last with each of said switching circuits being configured for electrical coupling to one of the photolamps, and a forward sequencing circuit coupled to each of said lamp switching circuits, said sequencing circuit being configured for actuating the next in order of said switching circuits having an operable photolamp responsive to said given input signal;
- a plurality of trigger circuit elements configured for connection in a first or second trigger circuit configuration to said forward sequencing circuit for respectively providing said input signal responsive to application of the high and low trigger signals, said trigger circuit elements including a voltage detector configured for connection with a first group of said elements in said first trigger circuit configuration to provide said input signal responsive to application of a trigger signal exceeding the supply voltage, and a transistor independent of said first group of elements configured for connection in said second trigger circuit configuration to provide said input signal responsive to application of a trigger signal equal to or less than the supply voltage.

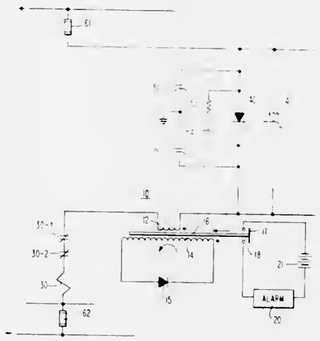


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### 3,935,515
### CURRENT AUXILIARY RELAY FOR CIRCUIT BREAKER

**Lubomyr Janycky, 2508 Brown St., Philadelphia, Pa. 19130**

**Filed Mar. 21, 1975, Ser. No. 560,787**
**Int. Cl.² H02H** *3/04*
**U.S. Cl. 317—155** **8 Claims**



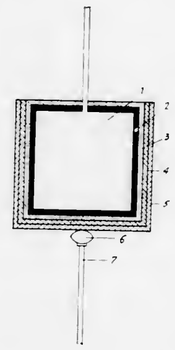

1. In a circuit breaker control installation having a trip coil and trip contacts and a current auxiliary relay for actuating a trip alarm:
- a. a trip alarm circuit normally open at the contacts of said current auxiliary relay;
- b. an armature in said current auxiliary relay for connecting said contacts to close said trip alarm circuit to actuate said alarm;
- c. a core of magnetizable material connected to said armature;
- d. a shunt coil having a large number of turns wound on said core;
- e. a diode in series with said shunt coil, said diode being poled to pass current in a direction to develop a magnetizing force tending to pull said core in a direction to move said armature in a contact-closing direction;
- f. a series coil having but relatively a few turns wound over but insulated from said shunt coil and in close coupling therewith;
- g. said series coil being in series circuit with the trip coil;
- h. said series circuit including solid state tripping contacts.

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### 3,935,516
### CAPACITOR WITH GLASS METAL CONDUCTIVE LAYER

**Klaus Rudiger Petrikat, Buchenweg, Germany, assignor to International Standard Electric Corporation, New York, N.Y.**

**Filed Apr. 3, 1974, Ser. No. 457,537**
**Claims priority, application Germany, Apr. 14, 1973, 2319052**
**Int. Cl.² H01G** *9/00*
**U.S. Cl. 317—230** **4 Claims**



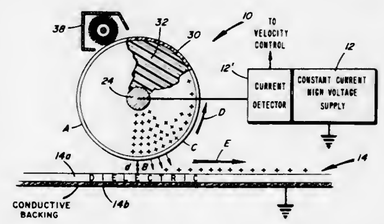

1. A capacitor comprising a porous inner electrode body, a first lead-in wire embedded in said body, a dielectric metal-oxide film of the metal of said inner electrode over said body, a manganese dioxide electrode layer over said dielectric metal-oxide film, a conductive layer of graphite over said manganese dioxide layer, an outer conductive layer of a solderable mixture of powdered glass and a metal powder resistant to oxidation and which solidifies at a temperature of about 600°K, a second wire lead, and a layer of solder metal disposed on said glass-metal layer within a limited contact area, said solder layer connecting said second wire lead to said conductive layer.

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### 3,935,517
### CONSTANT CURRENT CHARGING DEVICE

**John F. O'Brien, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.**

**Filed Jan. 2, 1975, Ser. No. 538,118**
**Int. Cl.² H01T** *19/00*
**U.S. Cl. 317—262 A** **12 Claims**




1. Apparatus for depositing a constant density surface charge on a moving dielectric medium, comprising:
- a charging roller mounted adjacent to and spaced from said dielectric medium to define an ionizable air gap between the surface of said charging roller and said dielectric medium, said charging roller comprising an electrically relaxable insulator having a thickness which is greater than the thickness of said dielectric medium;

means for moving the surface of said charging roller in the same direction as, independently of, and relative to said dielectric medium; and

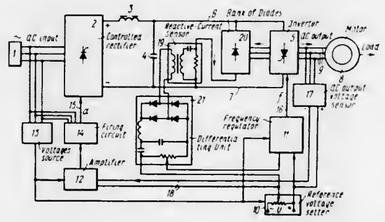
variable electrical bias means coupled to said charging roller for generating an electric field in said air gap to charge said dielectric medium with a substantially constant density surface charge.

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### 3,935,518
### METHOD OF ELIMINATING SELF OSCILLATIONS OF AN INDUCTION MOTOR POWERED FROM A FREQUENCY CHANGER AND MEANS FOR EFFECTING SAME

**Vladimir Grigorievich Yatsuk, ul. Pervomaiskaya, 8, kv. 57, and Vladimir Fedorovich Petrenko, ul. Sovetskaya, 13, korpus 1, kv. 210, both of Istra Moskovskoi oblastl, U.S.S.R.**

**Continuation-in-part of Ser. No. 221,740, Dec. 6, 1972, abandoned. This application Aug. 5, 1974, Ser. No. 494,910**
**Int. Cl.² H02P** *5/40*
**U.S. Cl. 318—227** **4 Claims**




**1.** A method of eliminating self-oscillations of an induction motor powered from a thyristor frequency changer, in order to control the output voltage and the output frequency of the motor by respective first and second means, the method consisting in applying an additional correcting signal from the frequency changer to said first means, as a positive feedback, said additional signal being proportional to a first derivative of the low-frequency component of the reactive current oscillations of the motor, in sequence with a main control signal applied thereto, the maximum value of changes in the output frequency from said additional signal being limited to a level that is proportional to the nominal frequency of the rotor current of the motor.

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### 3,935,519
### CONTROL APPARATUS FOR TWO-SPEED COMPRESSOR

**David M. Pfarrer, Hurst, and Sidney A. Parker, Fort Worth, both of Tex., assignors to Lennox Industries Inc., Marshalltown, Iowa**

**Filed Jan. 24, 1974, Ser. No. 436,179**
**Int. Cl.² H02H** *5/04*; **H02D** *1/28*; **H02P** *1/38*
**U.S. Cl. 318—305** **4 Claims**

**1.** In a refrigerant compressor of the type having a compression mechanism for receiving refrigerant gas from a suction line, compressing the refrigerant gas and discharging the compressed refrigerant gas through a discharge line, and a motor for rotating drive shaft means in the compression mechanism at low speed and at high speed, said motor including a single stator coil assembly comprising first, second and third stator coils, each stator coil having an inner end point connected to a common conductor and also having an outer end point, improved apparatus for controlling the operation of the motor from a source of electrical power comprising:

a fourth stator coil having a first end point connected to the outer end point of the first stator coil;

a fifth stator coil having a first end point connected to the outer end of the second stator coil;

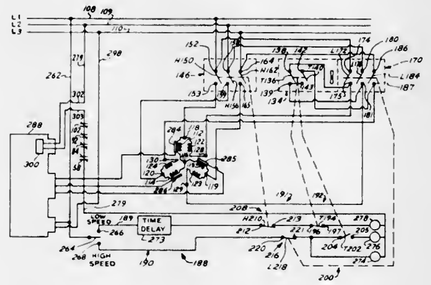
a sixth stator coil having a first end point connected to the outer end point of the third stator coil;

a tying relay coil for operating tying relay contacts that switch the stator coils between a high speed interconnection and a low speed interconnection;

a low speed relay coil for operating low speed relay contacts that apply power from the source to the stator coils after the stator coils have been switched to the low speed interconnection to achieve low speed operation so that damaging surge voltages and currents in the stator coils are prevented;

a high speed relay coil for operating high speed contacts that apply power from the source to the stator coils after the stator coils have been switched to the high speed interconnection to achieve high speed operation so that damaging surge voltages and currents in the stator coils are prevented;

a control circuit including a first branch for controlling the high speed relay coil and a second branch for controlling the low speed relay coil;




electrical interlock means in the control circuit for preventing the simultaneous operation of the low speed relay coil and the high speed relay coil;

mechanical interlock means to prevent the simultaneous operation of the low speed relay contacts and the high speed relay contacts;

first sensor means located adjacent the first stator coil for indicating a change in temperature of the first stator coil;

second sensor means located adjacent the second stator coil for indicating a change in temperature of the second stator coil;

third sensor means located adjacent the third stator coil for indicating a change in temperature of the third stator coil; and

control means for interrupting the flow of current in the first and second branches in response to an indication from any of said sensors that the temperature of any of said stator coils exceeds a predetermined value, so that the control circuit is prevented from operating the tying relay coil, low speed relay coil, or high speed relay coil.

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### 3,935,520
### DC MOTOR REGULATOR

**Chandler A. Johnson, III, Erie, Pa., assignor to General Electric Company, Erie, Pa.**

**Filed July 24, 1974, Ser. No. 491,604**
**Int. Cl.² H02P** *5/16*
**U.S. Cl. 318—332** **8 Claims**

**1.** A regulator for a direct current motor, energized from a controllable power supply, responsive to motor current and motor speed feedback signals comprising:

a. a current limit circuit including,

1. means to provide a current reference signal proportional to a desired maximum motor current,



2. means to compare said current reference signal with the motor current feedback signal to provide, when the latter exceeds the former, a current limit signal;

b. a speed control circuit for providing a control signal to said power supply including,

1. means to provide a speed reference signal proportional to a desired motor speed,




2. means to compare said speed reference signal with the speed feedback signal to provide said control signal to control said power source in the absence of said current limit signal, said latter means including a resistive component (R) and a capacitive component (C) and having a transfer characteristic (G) defined by the equation

$$G = \frac{1+R \cdot C \cdot j\omega}{R \cdot C \cdot j\omega};$$

and,

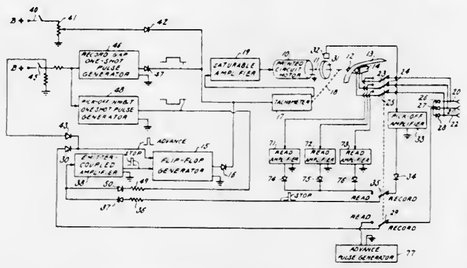
c. means to interconnect the current limit circuit and the speed control circuit to produce the control signal as a function of said current limit signal when it is present.

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### 3,935,521
### DISPLACING APPARATUS

**Robert P. Burr, Huntington, N.Y., assignor to Kollmorgen Corporation, Glen Cove, N.Y.**

**Division of Ser. No. 536,541, March 4, 1966, Pat. No. 3,614,757, which is a continuation of Ser. No. 321,511, Nov. 5, 1963, abandoned, which is a continuation-in-part of Ser. No. 120,256, June 28, 1961, Pat. No. 3,182,243. This application Dec. 29, 1970, Ser. No. 102,419. The portion of the term of this patent subsequent to Oct. 19, 1988, has been disclaimed.**
**Int. Cl.² H02P** *1/04*
**U.S. Cl. 318—394** **2 Claims**



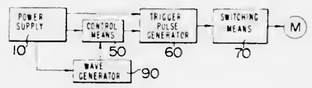

**1.** An incremental drive system for a web member comprising a drive capstan in non-sliding engagement with the web member, direct current motor means coupled to the capstan, and electrical energizing means including saturable amplifier means coupled to the motor means for applying an energizing signal for a predetermined interval, the energizing signal providing successive controlled acceleration and deceleration of the motor means.

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### 3,935,522
### CONTROL DEVICE FOR THE ELECTRIC FAN

**Peter Wen-Tien Tsay, No. 3, Hsin-Sheng South Road Section 1, Taipei, China /Taiwan**

**Filed Jan. 8, 1974, Ser. No. 431,765**
**Int. Cl.² H07P** *5/16*
**U.S. Cl. 318—345** **27 Claims**




**1.** A motor speed control circuit for an electric fan motor to control the speed of operation of the fan motor, said circuit comprising:

a. a power supply means;

b. speed control circuit means connected with said power supply means, said speed control circuit means comprising a control means and a delay speed reduction means which includes a charge-discharge circuit, a large capacitor, and a first switch means which is connected between said power supply means and said charge-discharge circuit;

c. trigger pulse generator means connected with said speed control circuit means and with said power supply means, whereby pulses generated by said trigger pulse generator means are controlled through said speed control circuit means to accomplish variable speed control of said fan motor; d. and output switch means connected with said trigger pulse generator means and with said fan motor, which is in turn connected to an AC source, to receive trigger pulses from said trigger pulse generator means and to supply power to said fan motor, whereby when said first switch means is on, said large capacitor is quickly charged to enable said charge-discharge circuit to charge up to the full range of output signal so that said fan motor performs a normal operation and through the control of said control means the speed control of said normal operation of said fan motor is thus obtained, and when said first switch means is off, said large capacitor is discharged and said fan motor speed is gradually reduced from said normal operation speed to a predetermined relatively low speed.

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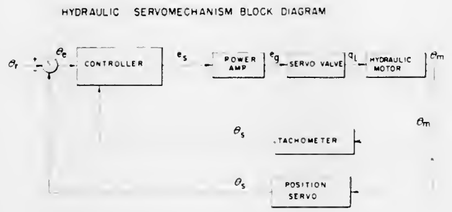
### 3,935,523
### NON-MINIMUM PHASE LINEAR CONTROLLER FOR HYDRAULIC MECHANISMS

**Dixon Cleveland, Annandale, and Milford R. Derrick, Falls Church, both of Va., assignors to Adaptronics, Inc., McLean, Va.**

**Continuation of Ser. No. 312,267, Dec. 5, 1972, abandoned. This application Apr. 22, 1974, Ser. No. 462,901**
**Int. Cl.² G05B** *11/00*
**U.S. Cl. 318—609** **4 Claims**

**1.** A control system employing positive rate feedback for

controlling a plant where the positive feedback is indicated by a right half plane zero of the S-plane in a root-locus system




analysis, wherein the predominant plant characteristics are described by a transfer function of the form

$$\frac{K}{s(s^2 + 2\delta\omega_n s + \omega_n^2)}$$

where K, δ, and $\omega_n$ are either constant or vary only a small amount around nominal values, and where $s$ is the Laplace operator, comprising

a. means responsive to command plant response minus measured plant response to provide a plant error signal,
b. means for providing a plant rate response signal, and
c. control means for controlling said plant, said control means comprising:
d. means responsive to said plant error signal to provide a signal indicative thereof multiplied by a positive constant, $K_p$,
e. means responsive to said plant rate response signal to provide a signal indicative thereof multiplied by a positive constant, $P_\phi$ and
f. means for summing the signal provided in (d) plus the signal provided in (e) to provide a control signal for said plant said plus defining a zero in the right half portion of the S-plane when analyzing the system by the root-locus method, when the values of the constants $K_p$ and $T_\phi$ are chosen such that none of the system poles are in the right half plane when analyzing the system by the root-locus method.

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**3,935,524**

## CIRCUIT ARRANGEMENT FOR DETECTING VOLTAGE DIFFERENCES

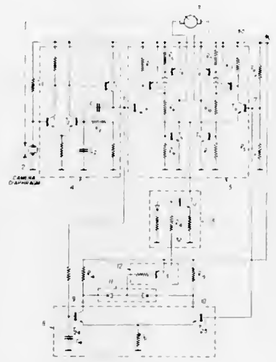
**Heinrich Cap, Vienna; Herbert Krammer, Hinterbruhl, and Robert Scheiber, Vienna, all of Austria, assignors to Karl Vockenhuber and Raimund Hauser, both of Vienna, Austria**

**Division of Ser. No. 206,466, Dec. 9, 1971, Pat. No. 3,806,789.**
**This application Sept. 26, 1973, Ser. No. 401,112**
**Claims priority, application Austria, Dec. 15, 1970, 11286/70; Dec. 16, 1970, 11337/70; Dec. 17, 1970, 11397/70**
**Int. Cl.² G03B 7/10; G05B 1/06**
**U.S. Cl. 318—640** **16 Claims**

1. A circuit arrangement for detecting deviations of the setting of an adjustable camera diaphragm from a preselected value, comprising:

a differential amplifier provided with a first input connected to a source of reference voltage and with a second input connected to an output of a photoelectric transducer juxtaposed with the diaphragm for illumination therethrough, said differential amplifier further having rectifying output means generating an unbalance signal of predetermined polarity in the presence of a difference of either polarity between said reference voltage and an output voltage of said transducer;

a normally inactive comparison circuit connected across said first and second inputs and provided with an activating lead; and



switching means connected between said output means and saic activating lead for placing said comparison circuit in an operative condition in response to said unbalance signal.

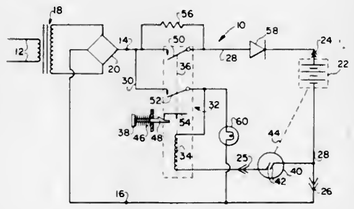
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**3,935,525**

## BATTERY CHARGING CIRCUIT WITH THERMOSTAT CONTROL

**Donald Edwin Elson, Timonium, and Richard Thomas Walter, Baltimore, both of Md., assignors to The Black and Decker Manufacturing Company, Towson, Md.**

**Filed Sept. 30, 1974, Ser. No. 510,391**
**Int. Cl.² H02J 7/00**
**U.S. Cl. 320—35** **13 Claims**



1. A battery charging circuit adapted to be supplied with a source of current and to charge a battery by the application of current thereto, said circuit comprising:

a. a first current path for the current supplied by the source and adapted to contain the battery to be charged;
b. a second current path for the current supplied by the source;
c. a relay having a winding connected in said second current path;
d. coincidence means for completing the second current path and permitting current flow through said relay winding to actuate said relay including:
1. a manually operable switch, and
2. a thermostat thermally coupled to the battery and designed to be actuated when the battery temperature is below a predetermined temperature, the coincident actuation of said manually operable switch and said thermostat causing the completion of the second current path;
e. means responsive to the actuation of said relay for permitting current flow through said first current path to said battery; and



f. holding means for retaining said manually operable switch in the closed position after manual operation thereof until said thermostat actuates.

13. A battery charging circuit adapted to be supplied from a source of current and for charging a battery by the application of current thereto, said circuit comprising:

a. thermostat means thermally coupled to said battery for controlling the flow of current thereto;
b. manually operable switch means for controlling the flow of current to said thermostat and the battery;
c. latch means for holding said manually operable switch means in the closed position; and
d. electrical means for holding said manually operable switch means in the closed position while releasing said latch means in response to the flow of current therein.

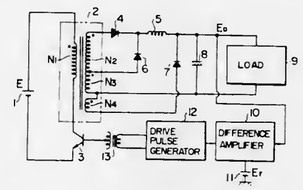
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**3,935,526**

## DC-TO-DC CONVERTER

**Yasuji Kamata, and Kazuo Katou, both of Hitachi, Japan, assignors to Hitachi, Ltd., Japan**

**Filed Aug. 14, 1973, Ser. No. 388,260**
**Claims priority, application Japan, Aug. 14, 1972, 47-80757**
**Int. Cl.² H02M 3/335**
**U.S. Cl. 321—2** **11 Claims**




1. A DC-to-DC converter to provide a DC output voltage proportional to the DC voltage applied to the primary winding of a transformer by turning on and off said DC voltage by means of a switching element connected in series with said primary winding, and rectifying and smoothing the voltage developed across the secondary winding of said transformer upon the turning on and off of said DC voltage by means of a circuit including a rectifying diode, a choke coil and a capacitor, said transformer having a core exhibiting a rectangular hysteresis characteristic, wherein said converter includes reset means for causing, at the time of turning off of said switching element, the current flowing through said choke coil at the time of turning on of said switching element to flow as a reset current through a part of said secondary winding of said transformer so that the level of the magnetic flux of said core of said transformer may be restored to its initial value.

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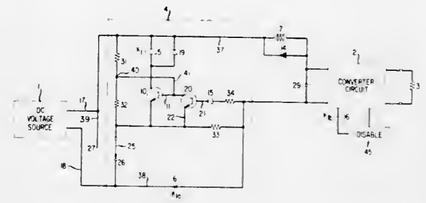
**3,935,527**

## INRUSH CURRENT LIMIT CIRCUIT WITH RESET RESPONSE TO LOWERED INPUT VOLTAGE

**Robert Wilson Michelet, Madison; Roman Ostapiak, Pine Brook, and Rudolph Scuderi, Mountain Lakes, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**

**Filed Aug. 14, 1974, Ser. No. 497,182**
**Int. Cl.² H02M 1/18**
**U.S. Cl. 321—11** **4 Claims**

1. An inrush current limit circuit comprising, input terminals to accept a source, output terminals to accept a load, a current limit impedance connecting at least one of said input terminals to at least one of said output terminals, a low impedance path, means to connect said low impedance path in parallel with said current limit impedance, means to operate said means to connect, current sensing means connected to sense the current in said current limit impedance, voltage monitoring means connected to monitor the voltage at said input terminals, said means to operate responsive to said current sensing means at a current below a particular low current threshold to connect said low impedance path in parallel with said current limiting impedance, said means to




operate being further responsive to said voltage monitoring means at a voltage below a particular low voltage threshold to disable said means to connect and disconnect said low impedance path from a parallel connection with said current limiting impedance.

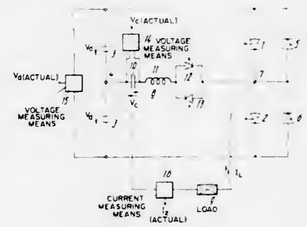
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**3,935,528**

## SELF-COMMUTATING INVERTER MEANS

**Jörg Brennelsen, Mannheim, and Arnold Schönung, Lindenberg, Pfalz, both of Germany, assignors to Brown, Boveri & Cie, A.G., Mannheim, Germany**

**Filed Mar. 15, 1974, Ser. No. 451,585**
**Int. Cl.² H02M 7/44**
**U.S. Cl. 321—45 C** **1 Claim**




1. In a self-commutating inverter having a pair of main thyristors connected in series with each other and to a d-c source, commutating means comprising a capacitor energy storage means connected between a center tap on the d-c source and a pair of auxiliary thyristors connected anti-parallel to each other, the other ends of said pair of auxiliary thyristors being connected to a common point between said main thyristors, a load connected between the center tap of said d-c source and the connection of said two main thyristors, means to adjust the firing of the transistor in response to varying operating conditions comprising firing control means having outputs which are connected to the main and auxiliary thyristors to trigger said thyristors with firing pulses at presettable times whereby the auxiliary thyristor connected as the commutation valve with a main thyristor is triggered prior to the firing of the main thyristors by a presettable time interval, comprising a first voltage measuring device connected across the capacitor by means of which the actual-value signal of the capacitor voltage is determined, first comparison means connected to said first voltage measuring means to compare the actual-value signal to a reference signal, second and third comparison means for comparing reference and actual signals of the d-c supply voltage and the load current, and summing means connected to said comparison means for summing the difference between actual value-reference capacitor voltages, d-c source voltages and the load current, said firing control means being connected to said comparison means whereby the firing time intervals can be adjusted by said firing control

means, as a function of the difference between reference signals and the actual measured signals.

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**3,935,529**
**MODULATED ENERGY CONSERVATIVE CURRENT SUPPLY**

**Michael H. Kalmanash, Bethel, and Glenn C. Waehner, Riverside, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.**

**Filed Oct. 9, 1974, Ser. No. 513,359**
**Int. Cl.² G05F 1/62**
**U.S. Cl. 323—4** **5 Claims**



1. An energy conservative current system comprising:
a current load and an amplifier driving said current load with negative feedback from said current load in response to input signals indicative of the current desired in said load;
a source of substantially constant current of a magnitude of current to be delivered to said current load; and
means responsive to input signals applied to said amplifier of either polarity in excess of given magnitude for connecting said current source in a corresponding polarity to said current load, the current in said current load being the summation of the current from said constant current source and the current from said negative feedback amplifier, said negative feedback amplifier being responsive to the current through said current load to provide a current equal to the difference between the current supplied by said constant current source and the current desired in said load as indicated by the amplifier input signals, said means also being responsive to the absence of input signals to said amplifier in excess of said given magnitude for disconnecting said current source from said amplifier.

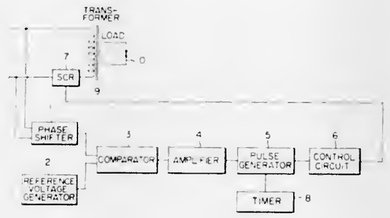
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**3,935,530**
**COMPENSATION EQUIPMENT FOR FLUCTUATIONS IN A.C. SOURCE VOLTAGE**

**Masaru Tanaka; Yoshimitsu Matsumoto, both of Toyonaka, and Takeshi Oku, Kawanishi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan**

**Filed May 24, 1972, Ser. No. 256,408**
**Claims priority, application Japan, May 26, 1971, 46-36088; May 26, 1971, 46-42995[U]**
**Int. Cl.² G05F 1/44**
**U.S. Cl. 323—19** **4 Claims**

1. An AC voltage regulator for regulating voltage applied to a load from a source of an AC supply voltage, comprising
a phase shifter for advancing the phase of said supply voltage;
a reference voltage generator for generating a reference voltage for comparison with the output voltage of said phase shifter;
a comparator for comparing the instantaneous output voltage of said phase shifter with the reference voltage derived from said reference voltage generator; and
an SCR firing angle control circuit is connected in series to supply voltage from said source to said load in response to the output signals from said comparator;



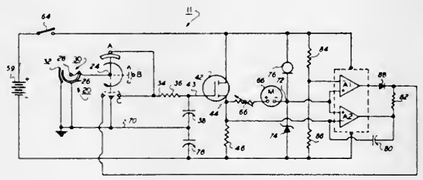

whereby the SCR firing angle may be controlled so as to maintain constant the effective load current regardless of said supply voltage.

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**3,935,531**
**ELECTROMETER WITH LOW VOLTAGE INDICATOR**

**Robert J. Slomcenski, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.**

**Filed Dec. 16, 1974, Ser. No. 532,785**
**Int. Cl.² G01R 31/02**
**U.S. Cl. 324—72** **7 Claims**



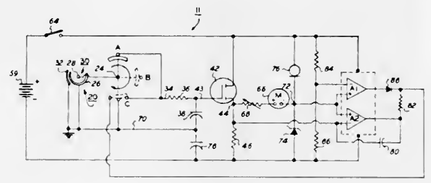
1. In an electrometer system for non-contact detection of an electrostatic charge comprising a probe electrode and an electrometer circuit having a power supply voltage and including an electrically floating input circuit for said probe electrode, said electrometer circuit providing an output signal to an output level indicator means indicating a voltage on said probe electrode, and wherein said electrometer circuit has zeroing means and switch means selectively connecting said zeroing means with said input circuit for normally providing zeroing of said indicator means with a zero output signal, the improvement comprising:
reference voltage means providing a reference voltage,
inhibited voltage comparison means comparing said power supply voltage against said reference voltage and providing an indicator signal output only in response to said power supply voltage falling below said reference voltage;
and connecting means for connecting said inhibited voltage comparison means to said input circuit when said switch means is connecting said zeroing means to said input circuit to provide a non-zero output signal only when said indicator signal is produced by said inhibited voltage comparison means, said non-zero output signal corresponding to said indicator signal and being indicated by said indicator means during said normal zeroing of said indicator means, indicating a low power supply voltage.



**3,935,532**
**AUTOMATIC ZEROING ELECTROMETER**

**David R. Shuey, Webster, and Robert J. Slomcenski, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.**

**Filed Dec. 16, 1974, Ser. No. 532,797**
**Int. Cl.² G01R 31/02**
**U.S. Cl. 324—72** **9 Claims**



1. In an electrometer system for non-contact detection of an electrostatic charge comprising a probe electrode and an electrometer circuit having a power supply voltage and including an electrically floating input circuit for said probe electrode, said electrometer providing an output signal corresponding to a voltage on said probe electrode, the improvement comprising:
voltage isolation means connected between said input circuit and said power supply voltage to electrically float said power supply voltage relative to input circuit;
feedback means for feeding back a feedback voltage corresponding to said output signal to said voltage isolation means for resetting said floating voltage level of said power supply relative to said input circuit as a function of said output signal for automatically zeroing said output signal;
wherein said voltage isolation means stores and retains said feedback voltage from said feedback means and applies said feedback voltage to said input circuit;
first switch means for selectively connecting said voltage isolation means to said feedback means for rezeroing said output signal; and
alternatively selectable second switch means for connecting said probe electrode to said input circuit to apply thereto a voltage induced on said probe electrode, together with said feedback voltage stored in said voltage isolation means, to jointly provide said output signal,
wherein said feedback means is disconnected from both said input circuit and said voltage isolation means by said second switch means.

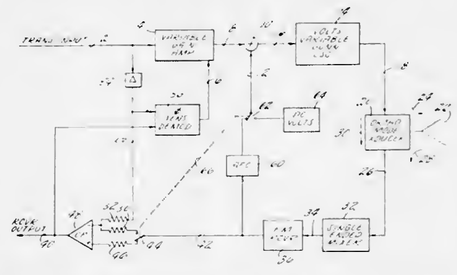
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**3,935,533**
**SINGLE OSCILLATOR MICROWAVE TRANSCEIVER**

**Salvatore Amoroso, Jr., Fairfield, Conn., assignor to United Technologies Corporation, Hartford, Conn.**

**Continuation of Ser. No. 337,609, March 2, 1973, abandoned.**
**This application Aug. 29, 1974, Ser. No. 501,721**
**Int. Cl.² H04B 1/40**
**U.S. Cl. 325—20** **14 Claims**

1. A single oscillator microwave transceiver comprising:
a single microwave oscillator having a frequency-controlling voltage input;
an FM receiver;
antenna means for transmitting and receiving microwave energy;
means for coupling energy from said oscillator to said antenna means for transmission thereby, and for simultaneously coupling energy received at said antenna means and a small portion of the energy of said oscillator in mixed fashion to the input of said FM receiver;
an AFC circuit connected to the output of said FM receiver;
means for providing a substantially DC voltage suitable for controlling the carrier frequency of said microwave oscillator;
summing means, the output of said summing means being connected to said frequency-controlling voltage input of said microwave oscillator;
input means for applying transmitter input modulation to one input of said summing means; and
first selectively operable means for connecting said AFC circuit or carrier voltage means to a second input of said summing means, alternatively, whereby said microwave oscillator provides a carrier frequency selectively determined by said AFC circuit or by said carrier voltage means, which is frequency modulated in accordance with said transmitter input modulation;
wherein said input means includes a variable gain amplifier having a signal input and a gain control input, said signal input being connected to transmitter input modulation, the output of said variable gain amplifier being connected to the first input of said summing means;



delay means responsive to transmitter input modulation for providindg delayed transmitter input modulation which is delayed by a period of time substantially equal to the circuit signal propagation time from the input of said variable gain amplifier through said FM receiver;
second selectively operable means responsive to the output of said FM receiver and to the output of said delay means for selectively combining said delayed transmitter input modulation with the output of said FM receiver in a voltage polarity relationship to provide a receiver output signal having transmitter input modulation substantially cancelled therefrom; and
means responsive to said receiver output signal and to said delayed transmitter input modulation for providing a gain control signal to the gain control input of said variable gain amplifier, said gain control signal adjusting the gain of said variable gain amplifier so that the magnitude of transmitter input modulation included in the output of said FM receiver is adjusted with respect to the magnitude of delayed transmitter input modulation provided by said delay unit so that the transmitter input modulation in said receiver output signal is substantially nulled to zero.

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**3,935,534**
**CONVERTER-TUNER FOR INFORMATION TRANSMISSION SYSTEM**

**David E. Lewis, Orange, and Thomas F. Gossard, Studio City, both of Calif., assignors to Columbia Pictures Industries, Inc., New York, N.Y.**

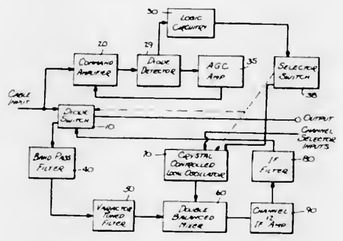
**Filed Nov. 15, 1972, Ser. No. 306,869**
**Int. Cl.² H04H 1/00**
**U.S. Cl. 325—308** **15 Claims**

1. In a converter-tuner apparatus for selectively converting each of a plurality of cable television modulated carrier signals having different carrier frequencies to a predetermined frequency to be coupled to a television receiver, the converter-tuner apparatus having an input for receiving the carrier signals, a filter connected to the input for passing substantially

only the carrier frequencies, a mixer connected to the filter output, a variable frequency local oscillator connected to the mixer, the mixer being adapted to convert separately each carrier signal to the predetermined frequency, the improvement comprising a local oscillator comprising:

a. a plurality of resonant circuits each being resonant to a different frequency;

b. a plurality of frequency control crystals each connected to a different one of said plurality of resonant circuits, each crystal being conditioned to oscillate as a function of the frequency of said resonant circuit to which it is connected, said crystals precisely controlling the resonant frequency of said resonant circuits




c. a transistor oscillator circuit;

d. a plurality of diode switch means each connected to a different one of said resonant circuits and said crystal connected thereto;

e. means for selectively actuating each of said diode switch means to connect said resonant circuit and said crystal related thereto into said transistor oscillator circuit; and

f. means coupled to the local oscillator for coupling a component of a harmonic frequency of the local oscillator in a phase reversed sense into the converter-tuner apparatus prior to the mixer to substantially null the component of the harmonic of the local oscillator from interfering with the carrier signal being converted,

whereby the predetermined frequency can be precisely controlled for each of the plurality of modulated carrier signals.

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**3,935,535**

**FAST EQUALIZATION ACQUISITION FOR AUTOMATIC ADAPTIVE DIGITAL MODEM**

**David M. Motley, Santa Ana, and King Y. Cheng, Tustin, both of Calif., assignors to Hycom Incorporated, Irvine, Calif.**

**Filed Sept. 9, 1974, Ser. No. 504,440**

**Int. Cl.² H04B *1/10***

**U.S. Cl. 325—324** **19 Claims**




1. An apparatus for processing a random data signal comprising:

equalizing means for equalizing the random data signal to provide a substantially equalized data signal, said equalizing means including variable gain means for subjecting the random data signal to at least one of a plurality of gains;

partial response detector means for detecting the data in the equalized signal to provide a partial response data signal;

means for detecting a first data sequence in the partial response data signal; and

means responsive to the detection of said first data sequence in the partial response data signal for adjusting the variable gain means of the equalizer whereby the equalizer is rapidly adjusted using random data.

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**3,935,536**

**GHOST SIGNAL CANCELLATION SYSTEM**

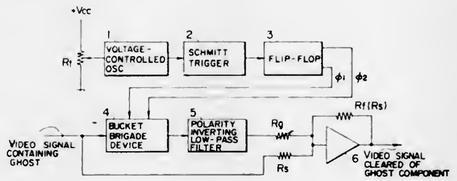
**Takeji Kimura, Hirakata; Tomio Oyama, Toyonaka; Haruyasu Yamada, Kadoma; Shuzi Harada, Matsubara; Hirokazu Yoshino, Katano, and Eiichi Tsuboka, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan**

**Filed Mar. 14, 1973, Ser. No. 341,121**

**Claims priority, application Japan, Mar. 16, 1972, 47-27184; Mar. 23, 1972, 47-29483; Apr. 18, 1972, 47-39275; Apr. 18, 1972, 47-39276; Apr. 18, 1972, 47-39277; Apr. 18, 1972, 47-39278; May 6, 1972, 47-44792; June 3, 1972, 47-55300; June 3, 1972, 47-55301; June 7, 1972, 47-57124**

**Int. Cl.² H04B *1/10*; H04N *5/44***

**U.S. Cl. 325—476** **5 Claims**




1. A ghost signal cancellation system comprising:

means for receiving a signal transmitted from transmitting means;

delay means for providing a predetermined delay time, said delay means including a clock-controlled delay device;

delay time control means for setting a delay time of said delay means to a given value in accordance with the delay time of a ghost signal contained in said received signal, said delay time control means including an oscillator having a variable oscillation frequency and means for supplying an output of said oscillator to said delay device as clock signals;

means for receiving an output of said delay means and controlling a gain of said output in accordance with a level of said ghost signal;

means for subtracting said gain-controlled signal from said received signal, and

means for feeding back an output of said subtracting means to said delay means, wherein an output of said gain control means is further substracted from the received signal in a secondary subtraction circuit to produce a system output signal.

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**3,935,537**

**APPARATUS FOR MEASURING ANGULAR MOVEMENT**

**Richard William Batchelor, Solihull, England, assignor to The Lucas Electrical Company Limited, Birmingham, England**

**Filed Apr. 2, 1974, Ser. No. 457,185**

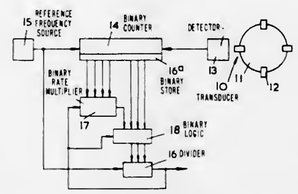
**Claims priority, application United Kingdom, Apr. 3, 1973, 15866/73**

**Int. Cl.² G01P *3/48***

**U.S. Cl. 328—5** **5 Claims**

1. Apparatus for measuring the angular movement of a body, comprising: a transducer detector for providing a signal the frequency $f_t$ of which is dependent on the angular velocity of the body; a reference frequency source providing a reference frequency $f_r$, an $(n + m)$ stage binary counter having a first input connected to said transducer detector and a second input connected to said reference frequency source, for counting the number of reference pulses in time period $1/f_t$; an $(n + m)$ stage binary store for receiving a count from said counter when the latter receives a signal from the transducer detector; an $n$-stage binary rate multiplier having a first input for receiving the n least significant figures of the store, and a second input for receiving an output signal from the apparatus; said rate multiplier being arranged to generate, during the period in which the rate multiplier receives $2^n$ binary pulses at said second input, a number of output pulses which is equal to the number of pulses applied to said first input; dividing means receiving first input signals equal to the m most significant figures of the store in the absence of an output signal from said rate multiplier, and receiving second input signals from said reference source; said dividing means producing an output






signal which forms said output signal of the apparatus and which is determined by dividing the frequency reference signal by the signal applied to said first input of the dividing means; and logic means modifying the output signal from said dividing means when an output signal is obtained from said rate multiplier; whereby $2^n$ output pulses are received between successive input pulses from the transducer detector, the maximum value of $f_r/f_t$ being $2^{n+m}$, and the minimum value of $f_r/f_t$ being $2^n$.

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**3,935,538**

**DIGITAL FREQUENCY-CONTROL CIRCUIT**

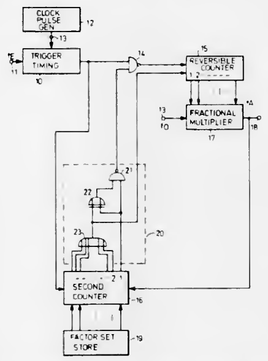
**Harald Kizler, Stuttgart; Bernd Przybyla, and Peter-Jürgen Schmidt, both of Schwieberdingen, all of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany**

**Filed Aug. 21, 1974, Ser. No. 499,337**

**Claims priority, application Germany, Sept. 22, 1973, 2347839**

**Int. Cl.² H03K *5/00***

**U.S. Cl. 328—38** **21 Claims**




1. A digital frequency control circuit comprising:

a reversible counter;

a digital multiplying stage arranged for control of one of its factors by said reversible counter, said multiplying stage (17) serving as a controlled variable frequency generator of said frequency control circuit;

a frequency divider stage comprising a second counter (16) and a storage circuit, the content of which determines its frequency division factor, said content being arranged to be counted out repeatedly at the output frequency of said multiplier stage (17); and

means for determining the content of said second counter (16) at the beginning of a new input signal ($f_E$) and for correctively changing the stored content of said reversible counter (15) in response thereto, said last-mentioned means serving as comparison means for the frequency control circuit.

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**3,935,539**

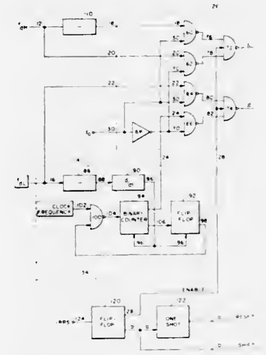
**A-C SIGNAL MULTIPLYING CIRCUIT BY A RATIO OF WHOLE NUMBERS THE NUMERATOR OF WHICH IS GREATER THAN ONE AND GREATER THAN THE DENOMINATOR**

**John L. Linder, Las Cruces, N. Mex., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Division of Ser. No. 459,146, April 8, 1974, Pat. No. 3,882,303. This application Oct. 21, 1974, Ser. No. 516,540**

**Int. Cl.² H03K *5/156*; G06G *7/161***

**U.S. Cl. 328—38** **1 Claim**



1. A frequency multiplier circuit for frequency-multiplying an a-c signal by a ratio of whole numbers wherein the absolute value of the numerator of said ratio is greater than the absolute value of the denominator of said ratio and greater than one comprising:

a. means for providing an a-c signal;

b. means for providing a clock-frequency-signal of frequency greater than said a-c signal, said clock-frequency-signal providing means having an output;

c. means for receiving and dividing the frequency of said a-c signal by a first predetermined whole number greater than one said receiving and dividing means having an output;

d. a differentiator circuit having an input and an output, said input being connected to said output of said means for receiving and dividing the frequency of said a-c signal by a first whole number greater than one;

e. a clock gate curcuit having a clock-frequency-signal input, a second input and an output, said clock-frequency-signal input being connected to said output of said means for providing a clock-frequency-signal;

f. a binary counter circuit having a first input, a second input, a first output, and a second output, said second input being connected to said output of said differentiator circuit, said first input being connected to said output of said clock gate circuit; and

g. a flip-flop circuit having a first input, a second input, and an output, said first input being connected to said second output of said binary counter circuit, said second input being connected to said output of said differentiator circuit, said output of said flip-flop circuit being connected to said second input of said clock gate circuit, the signal on the output of said differentiator circuit resets

said binary counter circuit and said flip-flop circuit, then said flip-flop circuit enables said clock gate circuit passing said clock frequency signal to said binary counter circuit, after counting a predetermined second whole number of cycles of said clock frequency signal, said second whole number being greater than one and greater than said first whole number, said binary counter circuit clocks said flip-flop circuit, causing said flip-flop circuit to inhibit said clock gate circuit until said differentiator circuit resets said binary counter circuit and said flip-flop circuit, whereby for every cycle of said frequency-divided a-c signal, said second whole number of cycles of said clock-frequency-signal appears on said binary counter circuit first output, said second whole number of cycles of said clock-frequency-signal appearing on said binary counter circuit first output being said ratio-of-whole-numbers, frequency multiplied, a-c signal.

## 3,935,540
## D.C. COUPLED IMPEDANCE REDUCING CIRCUIT

**Gary A. Hart, Boulder, Colo., and Melvin G. Wilson, Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.**

**Filed Mar. 8, 1971, Ser. No. 121,912**
**Int. Cl.² H03F** *3/38*
**U.S. Cl. 330—10** **14 Claims**

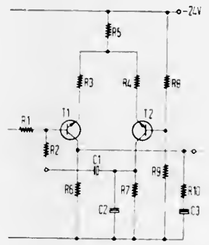


1. An impedance reducing circuit comprising:
a signal input source for perodically providing a varying signal;
semi-conductor amplifying means having an input impedance varying inversely proportional to input current and including feed forward and feed backward sections, said feed forward section having both voltage and current outputs;
means for coupling said signal input source to a semi-conductor junction in said feed forward section of said amplifying means;
means for supplying a D.C. steady state current to said semi-conductor junction of said amplifying means of a magnitude at least three times greater than the peak magnitude of said varying signal to provide a constant reduction of input impedance of said amplifying means whereby within said feed forward section of said amplifying means there is an amplified signal having both varying signal and D.C. steady state current components; and
take out current generating means connected within the feed backward section of said amplifying means and responsive to the D.C. current component coming from said feed forward section of said amplifying means for generating a take out current component equal to said amplified D.C. steady state current and supplying said take out current to said feed forward section for preventing said amplified D.C. steady state current from affecting said voltage output whereby only said amplified varying signal component appears at said voltage output.

## 3,935,541
## LOCKED OSCILLATOR WITH DAMPED OSCILLATORY FEEDBACK

**Wilhelm Amend, Baierbrunn, Buchenhain, and Toma Sotirovic, Munich, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany**

**Filed July 16, 1974, Ser. No. 488,999**
**Claims priority, application Germany, July 16, 1973, 2336132**
**Int. Cl.² H03B** *3/04*
**U.S. Cl. 331—4** **2 Claims**




1. The combination comprising:
a reference oscillator,
a controlled oscillator having a control input to adjust its oscillation frequency,
a discriminator having inputs received from both said oscillators for comparing the frequencies of each and producing a desired output indicative of the difference frequency therebetween,
an amplifier receiving as its input, the output of said discriminator, and having its output coupled to the control input of the controlled oscillator,
said amplifier having an ac feedback coupling circuit with its parameters chosen to cause said amplifier to carry out a damped oscillation after receiving a signal from the output of said discriminator, indicating non-synchronization between said oscillators, wherein said amplifier has first and second stages and is a difference amplifier and wherein the feedback circuit comprises an ac coupling means from the output electrode of the second stage to the input electrode of the first stage.

## 3,935,542
## CONTACTLESS OSCILLATOR-TYPE PROXIMITY SENSOR WITH CONSTANT-VOLTAGE IMPEDANCE

**Robert Buck, Torkelweg 4, 8990 Lindau-Enzisweiler, Germany**

**Continuation-in-part of Ser. No. 290,866, Sept. 21, 1972, Pat. No. 3,747,010, Continuation-in-part of Ser. No. 80,016, Oct. 12, 1970, abandoned. This application Jan. 22, 1973, Ser. No. 325,953**
**Claims priority, application Germany, Jan. 22, 1972, 2203038The portion of the term of this patent subsequent to July 17, 1990, has been disclaimed.**
**Int. Cl.² H01H** *36/00*; **H03B** *5/12*
**U.S. Cl. 331—65** **18 Claims**

1. A proximity sensor comprising:
detector means sensitive to the approach of an extraneous element for generating in an ouput circuit a control signal varying with the distance of such element from a predetermined location, said detector means being provided with a pair of power-input terminals;
a voltage-generating network including a constant-voltage impedance and an ancillary resistance in series therewith, said terminals being connected across said constant-voltage impedance;



a supply circuit including a source of direct current connected across said network;
binary electronic switch means connected in shunt with at least part of said network across said source;
trigger means coupled to said output circuit and connected to said switch means for reversing the state of conductivity thereof in response to a predetermined change in said control signal, thereby modifying the flow of current

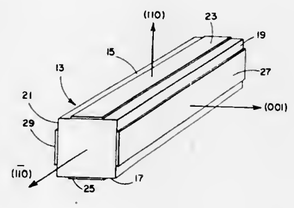


through said ancillary resistance with maintenance of a sufficient current flow through said constant-voltage impedance to keep said detector means operative in either state of conductivity of said switch means; and
indicator means in said supply circuit responsive to changes in the state of conductivity of said switch means to register a predetermined variation of said control signal representing an approach of said element within a specified distance.

## 3,935,543
## LASER MODE LOCKING AND COUPLING METHOD AND APPARATUS

**Ronald G. Eguchi, Torrance; Michael M. Mann, Palos Verdes Estates; William B. Lacina, Los Angeles, and Kay C. Crill, Long Beach, all of Calif., assignors to Northrop Corporation, Los Angeles, Calif.**

**Continuation of Ser. No. 192,583, Oct. 21, 1971. This application July 11, 1974, Ser. No. 487,754**
**Int. Cl.² H01S** *3/098, 3/10*
**U.S. Cl. 331—94.5 M** **8 Claims**

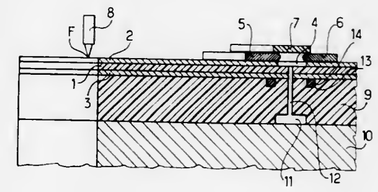



2. In a laser having a lasing medium disposed within a cavity for generating a beam of electromagnetic energy and providing a resonant optical path for said beam, the improvement which comprises:
means for linearly polarizing said beam,
a single electrooptic element having at least two pairs of opposed faces, said element being disposed in the path of said polarized beam such that the beam passes between both of said pairs of faces,
means for applying a first electrical signal between a first pair of said faces to induce a perturbation in said element so as to lock modes of oscillation of the beam,
means for applying a second electrical signal between the second pair of said faces to elliptically polarize said beam, and
means disposed in the path of the elliptically polarized beam for coupling a portion of said beam outside of the resonant optical beam path.

## 3,935,544
## GAS LASER STRUCTURE FOR ELIMINATING PARASITIC ARCING

**Bruno Godard, Gif sur Yvette; Bernard Lacour, Palaiseau, and Jean-Paul Gaffard, Plaisir, all of France, assignors to Compagnie Generale d'Electricite, Paris Cedex, France**

**Filed Dec. 24, 1974, Ser. No. 536,061**
**Claims priority, application France, Dec. 27, 1973, 73.46561**
**Int. Cl.² H01S** *3/097, 3/03*
**U.S. Cl. 331—94.5 PE** **5 Claims**

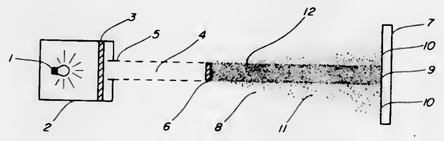



1. In a traveling wave transmission line system for excitation of a laser having:
an active gaseous medium;
a flat electric energizing line consisting of an insulating layer inserted between a first and second metallic layer, parallel to each other and connected respectively to the two terminals of a voltage source, the said first metallic layer having at least one slot separating it into two distinct parts;
means for maintaining an active gaseous medium flowing in the said slot comprising metallic chocks (**5,6**) the edges of each of the said layers being in the form of a parabola whose axis forms an angle greater than zero with the line perpendicular to the slot; and
means for generating a current wave in the said line, constituted by a circuit for setting up a substantially punctiform discharge between the said metallic layers at the level of the foci of the parabolas;
the improvement wherein said flat electric energizing line is arranged through the said second metallic layer (**3**) on a massive plate (**9**) comprising on the one hand a cut (**11**) formed on its inside face substantially opposite the slot (**4**) and communicating with that latter through several channels (**12**) and on the other hand, two grooves (**13**) formed on its upper face and each having fitted in it at least on seal (**14**) made of a flexible material, the said grooves (**13**) being arranged substantially opposite the ends of the said first metallic layer (**2**) limiting the said slot (**4**), the gaseous medium in the volume formed by said slot, channels and cut being at a lower pressure than ambient atmospheric pressure for deforming said seal in said grooves for pressing the ends of said first metallic layer hard against the ends of said metallic chocks or improving the electrical contact between said chocks and said distinct parts.

### 3,935,545
### METHOD AND APPARATUS FOR REDUCING DIFFRACTION-INDUCED DAMAGE IN HIGH POWER LASER AMPLIFIER SYSTEMS

Anthony J. Campillo; Brian E. Newnam; Stanley L. Shapiro, and N. James Terrell, Jr., all of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Jan. 2, 1975, Ser. No. 538,225
Int. Cl.² H01S 3/02
U.S. Cl. 331—94.5 C 5 Claims




1. A method for minimizing damage caused by diffraction-induced self focusing in high-power laser amplifier systems which comprises passing the input optical beam through a soft aperture having an optical transmission T given by

$$T = [1 + e^{-S}(e^{r^2/w^2} - 1)]^{-1}$$

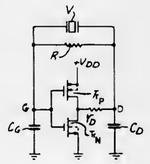
where $r$ is the radial distance on the aperture, $w$ is the spot-size radius in the case of Gaussian transmission ($S = 0$), and S is a shape factor characterizing the aperture.

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### 3,935,546
### COMPLEMENTARY MOS TRANSISTOR CRYSTAL OSCILLATOR CIRCUIT

Shinji Morozumi, Shimosuwa, and Mitsuharu Kodaira, Suwa, both of Japan, assignors to Kabushiki Kaisha Seikosha, Tokyo, Japan

Filed Dec. 12, 1973, Ser. No. 423,961
Claims priority, application Japan, Dec. 12, 1972, 47-124665
Int. Cl.² H03B 5/36
U.S. Cl. 331—116 R 5 Claims

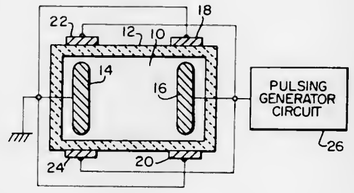



1. A quartz crystal oscillator circuit comprising a quartz crystal vibrator, an output resistor, a feedback resistor, and an inverter circuit said inverter circuit including an N-channel and a P-channel MOS field effect transistor coupled at the drain terminals thereof to a first side of the output resistor, the other side of the output resistor defining an output terminal, said output terminal being coupled through said vibrator to said input terminal of said inverter circuit defined by a coupling of the gate terminals of said transistors, said output terminal being further coupled through said feedback resistor to said gate terminals of said transistors.

### 3,935,547
### HIGH PRESSURE GAS LASER USING UNIFORM FIELD ELECTRODE CONFIGURATION WITH IRRADIATION BY CORONA DISCHARGE

Henry Riemersma, Pittsburgh, Pa., and Owen Farish, Bearsden, Glasgow, Scotland, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 30, 1973, Ser. No. 365,391
Int. Cl.² H01S 3/097, 3/22
U.S. Cl. 331—94.5 PE 16 Claims




9. A high pressure gas laser, capable of producing stimulated emission of radiation, comprising:
an enclosure,
a gas medium at high pressure suitable for lasing action,
an electrode assembly having first and second spaced apart electrodes with continuous surfaces defining a uniform field gap therebetween,
a first set of members of a high dielectric constant material fixedly and conductively attached to the first electrode and extending into said gap,
a second set of members of a high dielectric constant material fixedly and conductively attached to the second electrode and extending into said gap so that end surfaces of corresponding members of said first and second sets are in contiguous relationship,
pulsing means connected to said first and second electrodes for applying pulsed energy to said gap for stressing said uniform field gap and for generating corona discharges between said first and second sets of members for supplying free electrons to said uniform field gap and for irradiating said first electrode with ultraviolet radiation to cause emission of additional electrons for initiating and maintaining glow discharge between said first and second electrodes for exciting said gas medium to upper energy levels to induce lasing action,
means for stimulating the emission of radiation from said excited gas medium.

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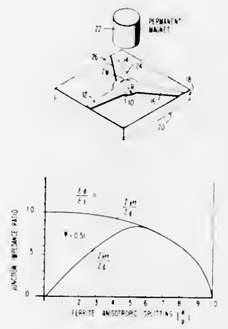
### 3,935,548
### WIDE-BAND MICROWAVE CIRCULATOR

Fred J. Rosenbaum, Clayton, Mo., and You-Sun Wu, Richardson, Tex., assignors to The Washington University, St. Louis, Mo.

Filed June 4, 1974, Ser. No. 476,234
Int. Cl.² H01P 1/36, 1/38
U.S. Cl. 333—1.1 5 Claims

1. A method of making a wide-band Y-junction microwave circulator of the type including a ground plate associated with a ferrite substrate on which is superposed a conductive planar circular disc having three conductive transmission ports extending radially from the periphery of the disc and spaced apart by 120°, the method comprising the steps of:
a. determining as a first function the intrinsic ferrite wave impedance ratio vs. the ferrite's known anisotropic splitting factor $|k/u|$, where k and u are the ferrite's permeability tensor elements;
b. selecting and making the coupling angle of each port at its junction with the disc such that a second function, the required junction wave impedance ratio vs. $|k/u|$, coincides with said first function at a plurality of values of $|k/u|$: and
c. selecting and making the radius R of the disc for the selected coupling angle such that the product of S and R has a value corresponding to a selected $|k/u|$ value within the range of the plurality of coincident $|k/u|$ values for said first and second functions, where S is the radial propagation constant of the disc.



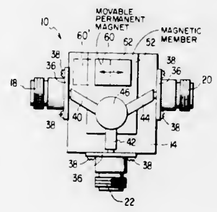



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### 3,935,549
### FERRITE CIRCULATOR

Ronald E. Jachowski, Scottsdale, Ariz., assignor to Decibel Products, Inc., Dallas, Tex.

Filed Aug. 12, 1974, Ser. No. 496,903
Int. Cl.² H01P 1/38, 1/36
U.S. Cl. 333—1.1 17 Claims

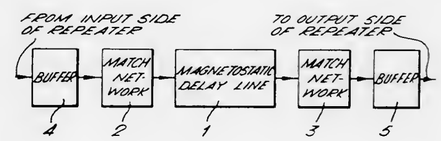


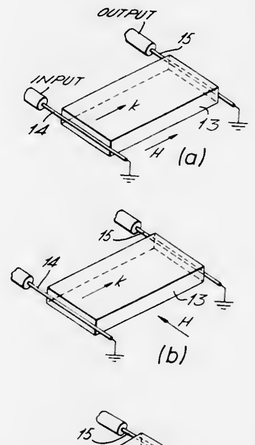

1. A circulator comprising a pair of spaced parallel electrically conductive plates forming outer conductors for said circulator, a plurality of inner conductors forming a central junction and extending outwardly from said junction between said plates, a plurality of electrical connectors forming ports joined to said plates and respective inner conductors, a ferrite element between each side of said junction and the adjacent outer conductor, a pair of elongated magnetic members located on opposite sides of said junction between said plates and said respective ferrite elements, said members extending to a location remote from said junction, and a permanent magnet between said members at said location, said permanent magnet being slidably mounted between said members for manual movement between said members for manual movement between a first position in which a greater portion of said magnet lies between said magnetic members and a second position wherein a lesser portion of said magnet lies between said members.

### 3,935,550
### GROUP DELAY EQUALISER

John Douglas Adam, 10 Bonaly Grove, Edinburgh, EH13 OQD, and Jeffrey Hamilton Collins, 47 Dalmahoy Crescent, Balerno, Midlothian, both of Scotland

Filed Sept. 11, 1974, Ser. No. 505,175
Claims priority, application United Kingdom, Sept. 12, 1973, 42943/73
Int. Cl.² H03H 7/14, 9/30
U.S. Cl. 333—28 R 13 Claims



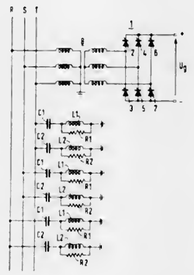




1. A group delay equaliser including:
a substrate of monocrystalline Gadolinium Gallium Garnet;
a layer of monocrystalline Yttrium Iron Garnet epitaxially grown on said substrate, said layer having a thickness in the range of 1 to 200 microns and being capable of propogating magnetostatic waves;
a first transducer and a second transducer located in spaced apart relationship in association with said layer to define a magnetostatic wave propagation path between said first and second transducers;
said propagation path having a dispersive characteristic over a selected frequency range and said first and second transducers being operable to convert electromagnetic wave energy into magnetostatic wave energy and vice versa in said selected frequency range; and
means for applying biasing magnetic field to said layer along said magnetostatic wave propagation path, said means being adjustable to adjust the value of said biasing field and thereby adjust the dispersive characteristic of said propagation path.

### 3,935,551
### FILTER ARRANGEMENT FOR A CONVERTER CIRCUIT

**Wolfgang Henniger, Erlangen; Dusan Povh, Nuremberg, and Manfred Schraudolph, Erlangen, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany**

**Filed Mar. 5, 1974, Ser. No. 448,296**
**Claims priority, application Germany, Mar. 8, 1973, 2311534**
**Int. Cl.² H03H** *7/04*; **H02M** *1/12*
**U.S. Cl. 333—76** **1 Claim**

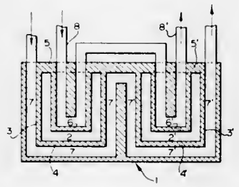


1. In a harmonic filter for a 12-pulse d-c to a-c voltage converter circuit, said filter being coupled between a three phase a-c electrical network and a d-c electrical network, and including a pair of parallel-coupled filter circuits for each a-c phase which are tuned to different harmonic current frequencies, the improvement comprising said filter circuits each comprising high-pass filters including a capacitor, and a parallel circuit comprising an inductor and a resistor coupled in series relationship with said capacitor, with the cutoff frequency of one of said pair of high-pass filters being lower than the fifth harmonic current frequency and the resonance frequency thereof being equal to or greater than the 11th harmonic current frequency, and the resonance frequency of the other of said pair of high-pass filters being equal to the 24th harmonic current frequency.

### 3,935,552
### TWO REFERENCE CAVITY STRUCTURE FOR FREQUENCY TRACKING AS A FUNCTION OF TEMPERATURE

**Ronald M. Hutcheon, Deep River, Canada, assignor to Atomic Energy of Canada Limited, Ottawa, Canada**

**Filed Mar. 17, 1975, Ser. No. 559,257**
**Claims priority, application Canada, Nov. 18, 1974, 214017**
**Int. Cl.² H01P** *1/30, 7/04*
**U.S. Cl. 333—82 B** **7 Claims**



1. A two reference cavity structure for tracking the resonant frequency of a high power liquid cooled cavity structure comprising:

a first reference cavity having a first and second section, said first cavity tuned to a frequency below said resonant frequency;

a second reference cavity having a first and second section, said second cavity tuned to a frequency above said resonant frequency;

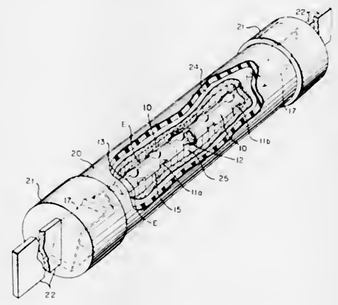
first means adapted to maintain said first sections at a first temperature; and

second means adapted to maintain said second sections at a second temperature.

### 3,935,553
### CARTRIDGE FUSE FOR D-C CIRCUITS

**Frederick J. Kozacka, South Hampton, N.H.; Edward J. Knapp, Jr., Newburyport, and Philip C. Jacobs, Jr., Newtonville, both of Mass., assignor to The Chase-Shawnut, Newburyport, Mass.**

**Filed Jan. 3, 1974, Ser. No. 430,537**
**Int. Cl. H01h** *85/04*
**U.S. Cl. 337—159** **4 Claims**



1. A fuse for controlling d-c circuits including

a. a tubular casing of electric insulating material;

b. a pair of electroconductive terminal elements closing the ends of said casing;

c. a pulverulant arc-quenching filler inside said casing;

d. straight rod means of a gas-evolving electric insulating material inside said casing arranged substantially parallel to the longitudinal axis thereof, said rod means having a circumference of predetermined length; and

e. a ribbon fuse link including a portion having a predetermined width substantially exceeding said predetermined length of said circumference of said rod means conductively interconnecting said terminal elements, said portion of said ribbon fuse link having a plurality of transverse lines of perforations and a plurality of longitudinal columns of perforations, and said portion of said ribbon fuse link being wrapped around said rod means so as to position said rod means relative to said portion of said ribbon fuse link, and said portion of said ribbon fuse link forming a gap between the longitudinal edges thereof causing arc-quenching gases to escape from said rod means transversely across said longitudinal edges of said portion of said fuse link.

### 3,935,554
### POLYPHASE LIQUID RHEOSTAT

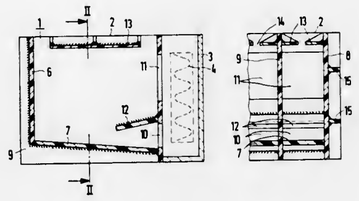
**Kurt Rabus, Heroldsberg, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany**

**Filed Mar. 26, 1975, Ser. No. 562,052**
**Claims priority, application Germany, Mar. 28, 1974, 2415089**
**Int. Cl.² H01C** *10/02*
**U.S. Cl. 338—80** **11 Claims**

1. In a polyphase liquid rheostat having electrodes arranged in insulated cells filled with electrolyte, said cells being covered at the top and opened at an end face, the improvement comprising cells formed from electrically non-conducting



plastic plates which are welded together in a liquid tight manner and wherein the welds, at least in the areas which will be

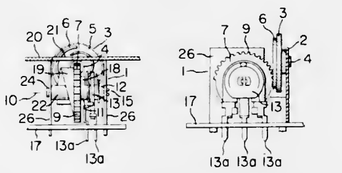


subject to voltage stresses, are located adjacent only to outer spaces which are free of liquid.

### 3,935,555
### ASSEMBLY FOR FINE ADJUSTMENT OF A VARIABLE IMPEDANCE MECHANISM

**Matsuo Nishioka, and Shunzo Oka, both of Hirakata, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan**

**Filed Oct. 10, 1974, Ser. No. 513,727**
**Claims priority, application Japan, Oct. 19, 1973, 48-121331[U]; Oct. 19, 1973, 48-121332[U]; Oct. 19, 1973, 48-121333[U]; Oct. 19, 1973, 48-121334[U]; Oct. 19, 1973, 48-121335[U]; Oct. 19, 1973, 48-121336[U]**
**Int. Cl.² H01C** *5/02*
**U.S. Cl. 338—174** **11 Claims**



1. An assembly for fine adjustment of a variable impedance mechanism comprising

a. a housing, a first disk-shaped rotary member mounted on a wall of said housing and having a raised spiral-shaped engaging means on one side surface thereof,

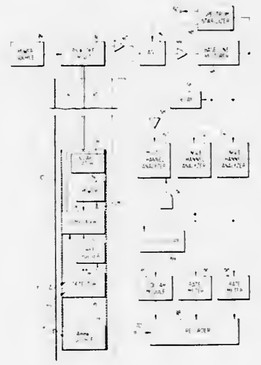
b. a second disk-shaped rotary member having teeth formed along the periphery thereof for engagement with said raised spiral engaging means of said first disk-shaped rotary member, said second disk-shaped rotary member having a rotary shaft arranged to rotate about an axis which is contained in a plane perpendicular to the axis of rotation of said first disk-shaped rotary member, said raised spiral-shaped engaging means of said first disk-shaped rotary member being so formed that the angle of rotation of said second disk-shaped rotary member is smaller than the angle of rotation of said first disk-shaped rotary member, and

c. a variable impedance element in said housing having a rotary shaft, and means for detachably coupling the rotary shaft of said second disk-shaped rotary member to the rotary shaft of the variable impedance element.

### 3,935,556
### DUAL FUNCTION LOGGING TOOL AND METHOD

**John G. Kampfer, Houston, Tex., assignor to Halliburton Company, Duncan, Okla.**

**Division of Ser. No. 381,474, July 23, 1973, Pat. No. 3,862,417. This application May 21, 1974, Ser. No. 471,900**
**Int. Cl.² G01V** *1/40*; **H04J** *7/00*; **G01V** *5/00*
**U.S. Cl. 340—18 CM** **4 Claims**



3. In a data transmission system wherein amplitude variable data pulses and predetermined amplitude reference pulses are transmitted over a common transmission link, the method of transmitting additional data over the same transmission link without interference comprising the steps of:

a. providing a minimum acceptable number of constant frequency pulses;

b. providing a series of pulses related in number to the additional data to be transmitted;

c. providing constant amplitude pulses related in number to the sum of the constant frequency pulses and the additional data related pulses;

d. transmitting over the transmission link both the amplitude variable data pulses and the constant amplitude reference pulses;

e. separating the transmitted reference pulses from the transmitted amplitude variable data pulses; and,

f. subtracting from the separated reference pulses a number of pulses related to the constant frequency pulses to thereby provide a series of pulses related in number to the additional data.

### 3,935,557
### GROUND POSITION INDICATOR SYSTEM

**Dewey F. Nichols, Box 106, Hosston, La. 71043**

**Filed Mar. 22, 1974, Ser. No. 453,675**
**Int. Cl.² G08G** *5/00*
**U.S. Cl. 340—25** **6 Claims**

1. A ground position indicator system for air-to-ground coordination of an aircraft comprising:

a. A transmitter;

b. An antenna for receiving signals from said transmitter;

c. A ground located receiver carrying said antenna and adapted to interpret and execute said signals; and

d. A ground located system of lights in cooperation with said receiver and each selectively energized and sequen-



tially activated by said signals to selectively guide said aircraft over said lights.

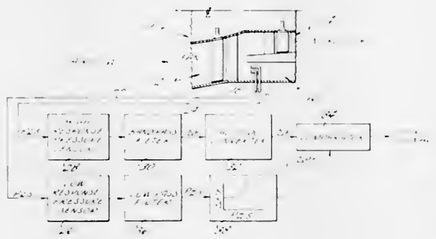
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**3,935,558**

## SURGE DETECTOR FOR TURBINE ENGINES

**Ronald J. Miller, North Palm Beach, and Thomas M. Randolph, Palm Springs, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.**

**Filed Dec. 11, 1974, Ser. No. 531,636**
**Int. Cl.² G01M** *15/00*; **F02C** *9/02*
**U.S. Cl. 340—27 SS** **10 Claims**



1. An indicator for a turbine engine comprising
pressure sensing means positioned in a flow path of said engine and producing signals which are a function of the gas pressure oscillations therein,
a band-pass filter connected to receive said signals and passing therethrough only the high frequency signal components characteristic of engine surge,
a low-pass filter also connected to receive said signals and passing therethrough only the low frequency signal components indicative of the steady state pressure,
means for producing from said low frequency signal components a triggering signal,
and comparator means for comparing said high frequency signal components with said triggering signal and producing an output signal when the amplitude of said high frequency signal components exceeds the amplitudes of said triggering signal.

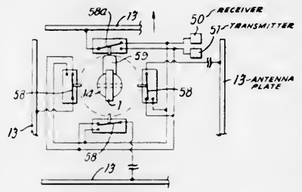
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**3,935,559**

## TRANSPORTER SYSTEMS

**Alan E. Straffon, Carshalton, and James C. King, Hemel Hempstead, both of England, assignors to Electronic Machine Control (Sales) Limited, Mitcham and Dexion-Comino International Limited, Wembley, both of, England**

**Filed May 16, 1974, Ser. No. 470,484**
**Claims priority, application United Kingdom, May 31, 1973, 25920/73**
**Int. Cl.² G08G** *1/00*
**U.S. Cl. 340—32** **8 Claims**




1. Tracked transporter apparatus comprising,
a plurality of cars each having a plurality of wheels mounted to swivel about an upright axis,
a power unit drivingly connected to at least one of said wheels,
steering means operable for imparting swivelling movement to said wheels to cause the car selectively to follow a predetermined track course,
means for detecting the proximity, in any direction, of another car, said detecting means comprising an electronic transmitter and receiver means operated alternately as a transmitter and as a receiver,
a plurality of antenna plates, one at each side of the car,
and switching means being controlled by said steering means of the car for selectively connecting one of said plates to said receiver means to serve as a receiving plate, concurrent control means for connecting said receiver means to said antenna plate to serve as a receiver and said other plates being connected by said switching means to said transmitter means to serve as transmitting plates, and means controlling said transmitter and receiver means to operate alternately.

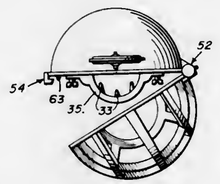
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**3,935,560**

## LIGHT GUARD

**Harry M. Dorn, 1133 Broadway, New York, N.Y. 10010**

**Filed Nov. 13, 1974, Ser. No. 523,398**
**Int. Cl.² F21V** *15/00*
**U.S. Cl. 240—102 B** **11 Claims**




1. A light guard molded of a plastic material and comprising generally complimentary first and second body portions forming a generally cylindrical guard having a generally closed top end and a generally open bottom end, said generally open bottom end including clamp means for removably fixing the light guard to a light bulb socket support means, generally at least one of said body portions comprising a cage member, fixed axis hinge means for hingedly securing said first and second body portions, positive latch means for normally maintaining said first and second body portions in closed relation, and said latch means including detent means for resisting radially inward and axial unlatching deformation of said first body portion relative to said second body portion, said detent means including an axially extending slot of generally C-shaped cross section for reception of a portion of one of said first and second body portions.



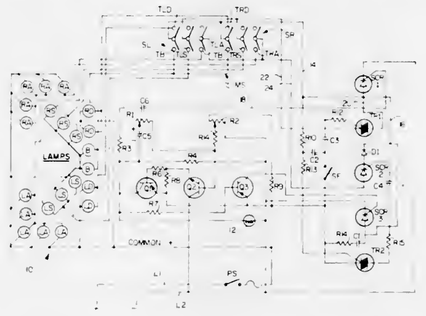
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**3,935,561**

## SIGNAL LAMP CONFIGURATION FOR DIRECTING HIGH SPEED TRAFFIC AND SEQUENCING MEANS THEREFOR

**William L. Bruner, London, Ky., assignor to F. B. Electronics, London, Ky.**

**Continuation-in-part of Ser. No. 271,494, July 13, 1972, Pat. No. 3,883,846. This application July 9, 1974, Ser. No. 486,777**
**Int. Cl.² B60Q** *7/00*
**U.S. Cl. 340—109** **2 Claims**




1. Circuit means for sequentially energizing a plurality of signal lights in an arrow configuration from the tail of said arrow toward the head thereof comprising:
timing oscillator means generating a first timing pulse for initiating a sequencing cycle and generating a second timing pulse for terminating said sequencing cycle;
a first silicon controlled rectifier means for energizing signal lamp means at the tail portion of the shank of said arrow in response to being triggered into conduction by said first timing pulse from said oscillator means;
a first triac means for energizing signal lamp means of the remaining portion of the shank as said triac is triggered into conduction a predetermined time after said first silicon controlled rectifier;
a second silicon controlled rectifier means for energizing signal lamp means defining the arrowhead of said arrow when said second silicon controlled rectifier is triggered into conduction a predetermined time after said first triac is rendered conductive; and
a third silicon controlled rectifier means which is rendered conductive in response to said second timing pulse from said oscillator to thereby turn OFF said first silicon controlled rectifier, said first triac, and said second silicon controlled rectifier to deenergize all of the signal lamps and terminate the sequencing cycle.

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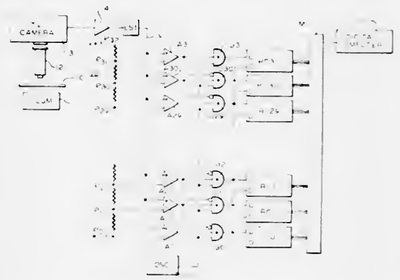
**3,935,562**

## PATTERN RECOGNITION METHOD AND APPARATUS

**Richard G. Stephens, 318 Security Mutual Life Bldg., Binghamton, N.Y. 13901**

**Filed Feb. 22, 1974, Ser. No. 444,951**
**Int. Cl.² G06K** *9/12*
**U.S. Cl. 340—146.3 AG** **13 Claims**

1. In apparatus for classifying a pattern comprised of elemental areas situated fixedly with respect to each other within a scanning field, said elemental areas having three or more different light-remissive levels, the combination of scanning means for optically scanning said field and said elemental areas of said pattern with a plurality of successive scan lines to derive an electrical waveform having a parameter which varies in accordance with the light-remissive level of the elemental area being scanned at a given instant; signal processor means responsive to said electrical waveform for providing three or more groups of further signals, the signals of each group of further signals being provided during the times that




said parameter of said electrical waveform lies between a respective pair of values defining a respective range of light-remissive levels, whereby the time integral of each of said groups of further signals is commensurate with the total amount of area within said scanning field falling within a respective one of said ranges of light-remissive levels; and time-integrating accumulator means for separately accumulating the signals of predetermined combinations of said groups of further signals to provide three or more stored data signals defining values of a function characteristic of said pattern.

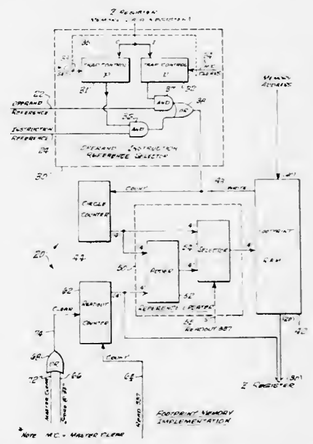
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**3,935,563**

## COMPUTER FOOTPRINT FILE

**Robert A. Unger, El Cajon, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed Jan. 24, 1975, Ser. No. 543,720**
**Int. Cl.² G06F** *11/00*
**U.S. Cl. 340—172.5** **4 Claims**

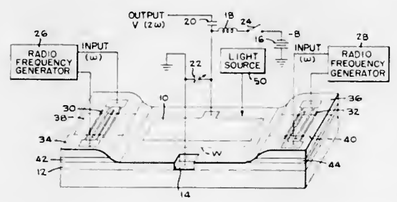


1. Apparatus for keeping track of the progress of a computer program by selecting specific operand and/or instruction references, comprising:

means for accessing an operand reference;
means for accessing an instruction reference;
means connected to a memory data register of the computer and to the two accessing means for selecting a specific operand or instruction reference which is to be monitored;
a random-acess memory (RAM), having three inputs, including one from a memory address and one comprising the output from the selecting means for writing the last N instruction and/or operand references, or any combination thereof into the RAM;
a circle counter having an input comprising the same output from the selecting means, for cycling the N references;
means connectd to the circle counter and the RAM of replacing the oldest reference in the RAM by a new reference from the circle counter, that is, for updating the RAM; and
means connected to the updating means for reading out a specific instruction and/or operand reference.

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**3,935,564**
**CHARGE STORAGE AND MONITORING APPARATUS UTILIZING ACOUSTIC WAVES**
**Calvin F. Quate, Los Altos Hills, and Thomas W. Grudkowski, Palo Alto, both of Calif., assignors to The Board of Trustees of Leland Stanford, Jr. University, Stanford, Calif.**
**Filed Dec. 2, 1974, Ser. No. 528,742**
**Int. Cl.² G11C** *13/00, 27/00, 19/00*
**U.S. Cl. 340—173 R** **21 Claims**

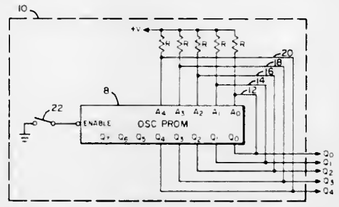



1. Charge storage and monitoring apparatus utilizing acoustic waves which comprises:
a piezoelectric semiconductor,
a barrier electrode associated with said piezoelectric semiconductor and capable of supporting an electric charge,
means for generating an acoustic wave of selected amplitude in said semiconductor to traverse the same adjacent said barrier electrode, and
means for detecting the acoustic wave fields during such traversal to provide an output signal proportional to the electric charge on said barrier electrode.

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**3,935,565**
**SIGNAL GENERATOR COMPRISING AN ADDRESSABLE MEMORY**
**Harry W. Moore, III, Dryden, N.Y., assignor to Sperry Rand Corporation, New York, N.Y.**
**Filed Aug. 19, 1974, Ser. No. 498,789**
**Int. Cl.² G11C** *13/00*
**U.S. Cl. 340—173 R** **5 Claims**

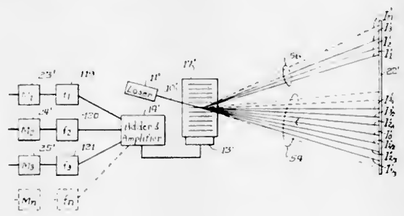
1. A signal generator, comprising:
an addressable memory having n separate input terminals for receiving the n-bits of an n-bit address word to address one of the $2^n$ addressable registers therein each register storing an n-bit data word, the n bits of which are each coupled to a separate associated one of *n* separate output terminals;
a plurality of n-bit data words of differing values, said data words stored in consecutively addressed ones of said registers;
*n* separate feedback means for directly coupling each separate one of said n output terminals back to only a separate associated one of said n input terminals;
means enabling said memory to read out the data word stored in a first one of its registers for continuously and repetitively cycling said memory through its $2^n$ registers




by using the read out data word as the address word to address the next addressed register at the next memory cycle;
*n* separate output signal means coupled to each separate one of said n separate output terminals for generating, on each separate one of said n output signal means, n timing pulses of n differing frequencies.

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**3,935,566**
**MULTIPLE-CHANNEL INFORMATION TRANSLATION SYSTEM AND METHOD**
**Paul Adam Snopko, Chicago, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.**
**Filed Oct. 26, 1973, Ser. No. 410,000**
**Int. Cl.² G11C** *13/04*
**U.S. Cl. 340—173 LM** **11 Claims**



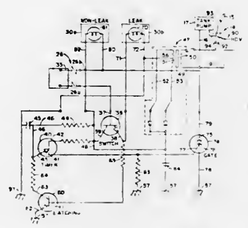
1. A multiple-channel information translation system for receiving a spatially coherent input light beam and a plural number greater than two of electrical input signals and for producing therefrom a like plural number of output light beams, each bearing amplitude information corresponding to one of said input signals, comprising:
carrier generating means for generating a plural number greater than two of electrical carriers, each having a different RF frequency;
modulating means for respectively amplitude modulating said carriers with the input signals to produce a like plural number of amplitude-modulated carrier signals; and
a light-sound interaction cell interposed in the path of the input light beams, said cell including a sound-propagative medium and transducer means coupled to said sound-propagative medium which receives said carrier signals and launches within said medium a corresponding plural number of acoustic beams, each having an acoustic frequency and amplitude modulation corresponding to a different one of said carrier signals, said cell Bragg-diffracting the input beam into a corresponding plural number of output light beams respectively amplitude modulated in accordance with the input signals,
said carrier generating means causing the frequencies of said carriers to be unequally spaced and such that the



frequency differences between each carrier frequency and all others are unequal so as to substantially suppress random, signal-related spurious amplitude modulation of said output beams.

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**3,935,567**
**LEAK DETECTION APPARATUS**
**David E. Reynolds, Littleton, Colo., assignor to Continental Oil Company, Ponca City, Okla.**
**Filed Apr. 8, 1974, Ser. No. 459,151**
**Int. Cl. G08b** *21/00*
**U.S. Cl. 340—242** **6 Claims**

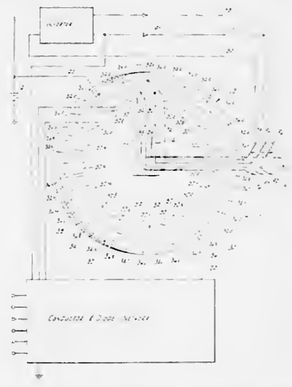


1. A leak detection device for a system under pressure comprising:
a. means for detecting a predetermined pressure;
b. a bi-state means responsive to said detecting means having a first state when no leak is present and having a second state when a predetermined pressure is detected;
c. switch means having its input connected through said bi-state means;
d. timing means having a signal at its output after a predetermined period of time;
e. bi-stable gate means having its input connected to said timing means output;
f. a nonleak indicator means coupled to the output of said bi-stable gate means to indicate that no leak is present in the system;
g. means responsive to said second state coupled to said timing circuit and said switch means to eliminate said time output signal to said bi-state gate means and operate said switching means;
h. an indicator means coupled to said switching means to indicate that a leak has been detected; and
i. means for resetting said bi-stable gate.

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**3,935,568**
**UNIVERSAL ANALOG-TO-DIGITAL CONVERTER USING THE SAME INFORMATION DISC FOR DIFFERENT OUTPUT CODES**
**Joseph Samuel, Westbury, N.Y., assignor to Lem Instrument Corporation, Framingdale, N.Y.**
**Continuation of Ser. No. 201,964, Nov. 24, 1971, which is a continuation of Ser. No. 863,244, Oct. 2, 1969, abandoned.**
**This application Mar. 28, 1973, Ser. No. 345,692**
**Int. Cl. G08c** *9/08*; **H03k** *13/02*
**U.S. Cl. 340—347 P** **2 Claims**

1. In an analog to digital converter for representing the angular position of a shaft as the potential condition of a plurality of output terminals, the combination of,
a stationary disc having only first and second coaxial rings of segments thereon, said first ring having pairs of alternately arranged conductive and nonconductive segments and said second ring having spaced conductive position indicator segments,
a first brush member operatively connected to said shaft and being rotatable relative to said stationary disc and carrying a sensing brush adapted to engage said segments of said first ring and a pair of leading and lagging brushes positioned to engage said position indicator segments of said second ring,
a plurality of output terminals of different ordinal significance, the presence of a potential on each of said output terminals being assigned a weighted decimal value and the number of said output terminals being less than the number of said position indicator segments,
means coupled to said sensing brush for applying a potential to said leading and lagging brushes when said sensing brush engages a nonconductive and a conductive segment in said first ring respectively, and means including a plurality of circuits for coupling said position indicator segments to said output terminals for transforming the analog quantities represented by the potentials with which said leading and lagging brushes energize said position indicator segments in the decimal sequence **0, 1, 2, 3, 4, 5,** etc. into binary coded digital signals on said output terminals the sum of whose weighted value is a function



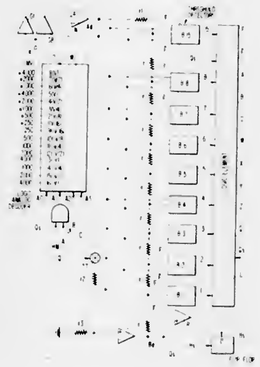
of said sequence and of the angle of rotation of said first brush member and the shaft coupled thereto relative to said first stationary disc, certain of said circuits coupling individual ones of said position indicator segments to a plurality of said output terminals, and
means for applying said potential to and removing it from the output terminal of least ordinal significance when said sensing brush engages a conductive and nonconductive segment respectively of said first ring, the second, third and fifth position indicator segments being individually coupled to the second, third and fourth output terminals respectively and the fourth position indicator segment being coupled to said second and third output terminals.

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**3,935,569**
**DIGITAL CODER**
**Francois Marcel, Orsay, and Alain Manoury, Viry-Chatillon, both of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, France**
**Filed Sept. 17, 1973, Ser. No. 397,924**
**Claims priority, application France, Sept. 15, 1972, 72.32892; Nov. 24, 1972, 72.41976**
**Int. Cl.² H03K** *13/175*
**U.S. Cl. 340—347 AD** **8 Claims**

1. A series-parallel coder subject to a compression law having several segments with different slopes, capable of providing, for a positive or negative sample, a first code defining the number of the segment, then a second code defining the position on the said segment, comprising a voltage divider having a voltage high point and voltage low point, a single set of threshold detectors, each of said threshold detectors formed of two amplifier-comparators connected in an arithmetical progression between said voltage high point and said voltage low point of said voltage divider, logic means receiving the outputs of said threshold detectors for selectively setting the potential of the voltage low point of said voltage divider either at zero potential or at a potential which is half the

voltage high point of said voltage divider and for applying to the voltage high point of the voltage divider a selected potential $V/2^n$, where V is a reference voltage and n may vary from O to k according to the order K of the segment, and amplifier means including two amplifiers for applying a segment signal to each of said threshold detectors in parallel, one of said two



amplifiers having a gain of 1 and having an output connected to a negative input of one of said two amplifier-comparators, and the other of said two amplifiers having a gain of 8 and having an output connected to a negative input of the other of said two amplifier-comparators, wherein said two amplifiers receive as a common input the level to be coded.

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**3,935,570**

**SPINNING-DISK SHAFT POSITION ENCODER**

**William H. Raser, 6451 W. 83rd St., Los Angeles, Calif. 90045**

**Filed July 22, 1974, Ser. No. 490,857**

**Int. Cl.² G08C** *9/04*

**U.S. Cl. 340—347 P** **4 Claims**

1. Apparatus for making digital measurements of shaft angular positions comprising:

a housing having an axis and having a protruding shaft rotatably mounted on this axis;

a housing-mounted bracket supporting an optical scanning means for producing and sensing a beam of light in a direction parallel to the axis of said housing;

a first shaft-mounted bracket supporting a magnetic scanning means;

an internal shaft rotatably supported about the axis of said housing;

motive means to rotate said internal shaft;

a magnetically-alterable opaque disk mounted on said internal shaft for communicating with the scanning means on each of said brackets once per revolution of said internal shaft, the magnetic communication thereof operating to generate impulses as a consequence of the angular velocity of said internal shaft;

a pulse counter fed by said disk, the number of pulses per disk revolution being proportional to a shaft displacement angle so as to provide a first shaft angle measurement;

a second protruding rotatably-mounted shaft coaxial with the first;

a second shaft-mounted bracket with a second magnetic scanning head; and

a second pulse generating and counting means for providing a digital measurement of the angle of said second protruding shaft.

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**3,935,571**

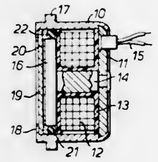
**ELECTRO-VISUAL INDICATORS**

**Raymond W. Sargent, Shelburne, Vt., assignor to Simmonds Precision Products, Inc., Tarrytown, N.Y.**

**Filed Mar. 28, 1974, Ser. No. 455,741**

**Int. Cl.² G08B** *5/00*

**U.S. Cl. 340—373** **11 Claims**




1. An electro-visual indicator,

comprising a housing,

a magnetic fluid partially filling

said housing and having a predetermined optical characteristic,

means defining a space within the housing having a first part of such cross-section that the magnetic fluid tends to flow into it by capillary action and a second part which is so positioned that the magnetic fluid may be drawn into this part by a magnetic field,

means in the housing defining a viewing window opening into part only of the said space and covered by light transmitting material, and

electromagnetic means in the housing energizable to provide a magnetic field for moving the magnetic fluid in said space in a manner which is visually distinguishable through the said window to provide an indication of the state of energization of the electromagnetic means.

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**3,935,572**

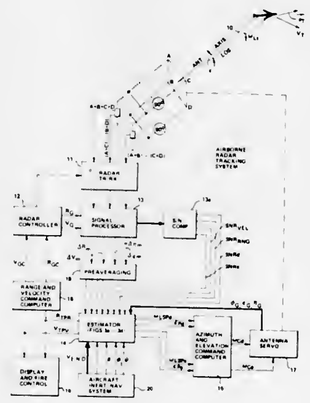
**SYSTEM FOR RESOLVING VELOCITY AMBIGUITY IN PULSE-DOPPLER RADAR**

**Laurence E. Broniwitz; Mark I. Landau, both of Los Angeles, and John B. Pearson, III, Santa Monica, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.**

**Filed Nov. 23, 1973, Ser. No. 418,692**

**Int. Cl.² G01S** *9/44*

**U.S. Cl. 343—9** **9 Claims**



1. In a radar system for tracking a target aircraft, said system having antenna for cyclically sensing reflected electro-



magnetic energy from said target at a particular pulse repetition frequency, PRF, and wavelength, λ, and producing signals representing discriminants $\Delta R_m$ and $\Delta V_m$ of range and radial velocity, respectively, of said target relative to said tracking system, where said velocity discriminants are derived from doppler shift measurements, a separate filter for tracking target range and velocity, each filter responding to respective discriminants $\Delta R_m$ and $\Delta V_m$ to generate predictions of the next measurements from current estimates of filter states, where the states are vectors $X_R(i)$ and $X_V(i)$, and the subscript $i$ indicates a value of time i, a method for resolving ambiguity of said vector $X_V(i)$ after a period of initial tracking sufficient for said range tracking filter to unambiguously achieve an accuracy in current estimates of states in said range filter for the difference between the first derivative of the range value in $X_R(i)$ effectively estimated as one of said range filter states, and the true doppler velocity to be a velocity less than λPRF/4, said method being performed by computer means for computing a corrected target velocity $V_{TCORR}$ from doppler shift information in accordance with the equation

$$V_{TCORR}=\frac{\lambda}{2}\ PRF\ (f_{MLC}+f_{DAP}-f_{DP})PRF^{-1}+\frac{1}{2}\ *-(f_{DAP}+f_{MCL})$$

by the steps of determining $f_{MLC}$ as an offset in a doppler shift spectra reference introduced to avoid main lobe clutter in the center of a doppler shift spectrum where the true target return is likely to be, $f_{DAP}$ as the ambiguous doppler shift measurement derived from an ambiguous velocity estimate $X_V(i)$, and $f_{DP}$ as actual doppler shift estimate derived as the estimate of the first derivative of the unambiguous velocity in $X_R(i)$, truncating the bracketed quantity as indicated by the asterisk by dropping the fractional part thereof of the bracketed quantity after the quotient of $(f_{MLC}+f_{DAP}-f_{DP})$ is divided by PRF and has been rounded by adding ½ to the quotient and subtracting $(f_{DAP}+f_{MCL})$ from the bracketed quantity and multiplying the difference by λ/2 PRF.

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**3,935,573**

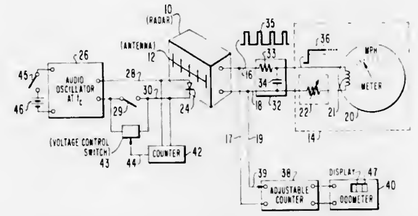
**DOPPLER RADAR SENSOR CALIBRATOR**

**Henry Charles Johnson, Neshanic, N.J. 08853, assignor to RCA Corporation, New York, N.Y.**

**Filed Apr. 8, 1974, Ser. No. 458,847**

**Int. Cl.² G01S** *7/40*

**U.S. Cl. 343—17.7** **14 Claims**




1. A method for calibrating a doppler radar sensor having an indicator coupled to the doppler signal output of said radar sensor for providing indicia manifesting doppler signal outputs comprising the steps of:

modulating a radar probe signal from said radar sensor with a modulating signal having a predetermined frequency corresponding to a predetermined doppler signal output by positioning a varying impedance in the near-field of said radar probe;

deriving a doppler signal output from said modulated radar probe, said doppler signal having a frequency equal to said predetermined modulating frequency, and

adjusting the doppler signal output of said radar sensor to provide an indication corresponding to said predetermined doppler signal output.

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**3,935,574**

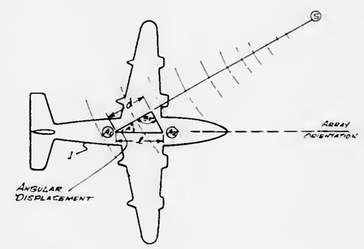
**SIGNAL SOURCE POSITION-DETERMINING PROCESS**

**Panajiotis S. Pentheroudakis, Glendale, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed Apr. 15, 1974, Ser. No. 460,870**

**Int. Cl.² G01S** *3/48*

**U.S. Cl. 343—113 R** **10 Claims**




1. A process of resolving the ambiguity inherent in the use of target-finding systems employing a target signal-receiving antenna array coupled to a phase meter, said array being a multi-lambda array characterized by the use of at least one pair of antennas having a baseline spacing substantially greater than the wave length of the target signal, the process comprising the steps of:

establishing theoretically predetermined date relative to the rate at which the phase difference between the antennas of the multi-lambda array varies with a monotonic 360° azimuthal variation in the relative positions of said array and said target, said predetermination inherently provided a plurality of rate of exchange lobes each defining a variation in phase difference between 360° and 0° with each lobe demonstrating an abrupt 360° phase difference discontinuity transition to its next successive lobe,

monotonically varying the angular attitude of said array baseline relative to said target,

phase tracking said target-signal during a known incremental portion of said angular attitude variation to provide measured phase difference data as well as phase rate-of-change data and lobe discontinuity data, and

matching said provided data with said predetermined data,

the true bearing of the target signal being determined by degree of consistency between the provided data and the predetermined data.

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**3,935,575**

**CIRCUITRY FOR DETERMINING DIRECTION OF IMPINGEMENT OF A RECEIVED SIGNAL**

**Reinhard Leisterer, Bremen; Walter Mahlstedt, Moordeich, and Manfred Rübel, Bremen, all of Germany, assignors to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany**

**Filed Nov. 28, 1972, Ser. No. 310,074**

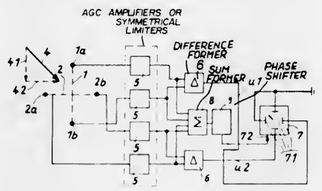
**Claims priority, application Germany, Dec. 3, 1971, 2159977**

**Int. Cl.² G01S** *5/02*

**U.S. Cl. 343—113 R** **14 Claims**

1. In a system for the determination of the direction of impingement of a received energy signal including receiver means composed of a plurality of receivers constituting pairs of mutually perpendicular dipoles for receiving orthogonal components of the impinging signal, means connected to the receivers for measuring the unfiltered received components of

signals for producing output signals indicative of the direction of impingement of the received signal, and means connected to the measuring means for displaying the direction of impingement of the received signal, the improvement wherein




the measuring means comprises a plurality of amplifier circuits each of which includes an automatic gain control amplifier and is connected to a respective receiver for producing a constant amplitude representation of its received signal.

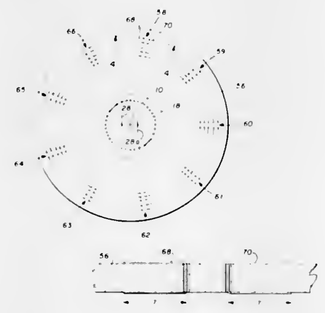
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**3,935,576**

## BROADBAND BEACON ANTENNA SYSTEM

**Sidney Pickles, Colusa, Calif., assignor to E-Systems, Inc., Dallas, Tex.**

**Filed June 3, 1974, Ser. No. 476,047**
**Int. Cl.² H01Q** *3/12*; **G01S** *1/44*
**U.S. Cl. 343—761** **21 Claims**



**1.** An antenna system, comprising in combination:
- a central radiating member arranged to transmit energy from a feed point;
- a first plurality of parasitic elements radially displaced from said central member;
- a support of nonradiating material having a top and bottom surface oriented generally perpendicularly to the longitudinal axis of said central member;
- a second plurality of parasitic elements each element having a first section disposed to extend over the support top surface, a second section disposed to extend over the support bottom surface and an intermediate section joining the first and second sections to form therewith a long line section, said intermediate section being the only section of each element of said second plurality providing significant radiation; and

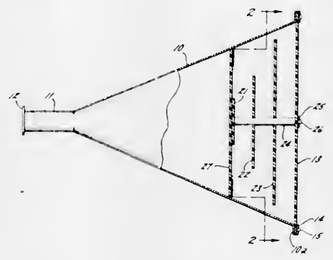
said first plurality of parasitic elements and said support disposed for rotation about said radiating member.

**3,935,577**

## FLARED MICROWAVE HORN WITH DIELECTRIC LENS

**Laurence H. Hansen, Oak Lawn, Ill., assignor to Andrew Corporation, Orland Park, Ill.**

**Filed Sept. 11, 1974, Ser. No. 504,967**
**Int. Cl.² H01Q** *13/06*
**U.S. Cl. 343—781** **5 Claims**



**1.** In a feed horn for a dish-type microwave antenna, the combination of a flared microwave horn that introduces a phase error in microwaves passing therethrough, and a dielectric lens comprising
- a plurality of parallel dielectric discs disposed concentrically with said horn in the path of microwaves passing through said horn, said discs being located within said horn so that the beam width of the microwaves radiated from the horn is substantially unaffected by the discs,
- said discs having different diameters so that different portions of the microwaves pass through different numbers of said discs to compensate for the phase error introduced by the flared horn independently of the beam width,
- said disc being spaced apart so that the impedance discontinuities of the discs are substantially cancelled.

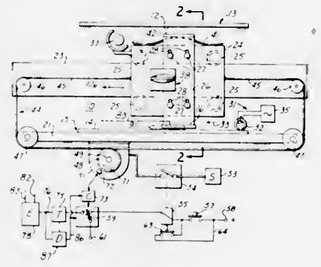
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**3,935,578**

## THERMO-MAGNETIC IMAGE RECORDING METHODS AND APPARATUS

**John F. Condon, Sunland; Frederick J. Jeffers, Altadena, both of Calif.; Sherman W. Duck, Highland Park, Ill., and Richard C. Bachand, Glendora, Calif., assignors to Eastman Kodak Company, Rochester, N.Y.**

**Filed Feb. 25, 1974, Ser. No. 445,407**
**Int. Cl. G01d** *15/10*; **G11b** *5/02*
**U.S. Cl. 346—74.1** **11 Claims**



**1.** A method of recording an image of a given dimension on a magnetic medium susceptible to a local change in magnetization in response to being heated to a predetermined temperature, said method including the steps of:
- placing an actuatable thermal image pattern generating device in heat transmitting proximity to at least a portion of said magnetic medium;



- actuating said generating device to record on said magnetic medium a local change in magnetization according to a predetermined image pattern;
- moving said generating device relative to said magnetic medium to a second position in heat transmitting proximity to said magnetic medium;
- reactuating said generating device; and
- repeating said moving and reactuating steps until each elemental area of said magnetic medium within said given dimension of the image to be recorded thereon has been exposed to the heat from at least two different elemental areas of said generating device.

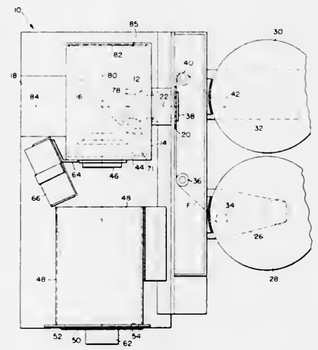
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**3,935,579**

## IDENTIFICATION CAMERA AND METHOD OF MAKING IDENTIFICATION CARDS

**Thomas W. Bracken, Rochester, N.Y., assignor to Macro Industries, Inc., Rochester, N.Y.**

**Filed Aug. 23, 1973, Ser. No. 390,891**
**Int. Cl.² G03B** *17/24*
**U.S. Cl. 354—109** **6 Claims**



**1.** A camera for exposing photosensitive material for identification cards and the like containing a photograph of an individual and data relating to that individual, comprising
- a casing having an aperture in its front wall, and a data card opening in another of its walls,
- means for holding photosensitive material in said casing, and in registry with said aperture,
- a first lens mounted in said casing in front of said holding means with its optical axis aligned with the center of said aperture,
- a shutter movably mounted in front of said lens for movement between closed and open positions so that when said shutter is open, light from outside said casing may pass through said aperture and onto the photosensitive material,
- an opaque cover mounted on said casing for movement into and out of a closed position over said data card opening,
- means on said cover for removably holding over said opening in said casing, when said cover is closed, a data card containing data relating to an individual,
- means for illuminating said data card,
- a second lens disposed with its optical axis in the same plane as the optical axis of the first lens and optically aligned with said data card opening and with a data card held therein by said cover, and
- a beam splitter disposed in said casing in operative relation to both said lenses and located in alignment with said aperture, and in front of said shutter, to reflect part only of the light from the illuminated data card out of said casing along the optical axis of said first lens, and operative to transmit through said first lens and onto said photosensitive material, when said shutter is open, only part of the light entering said casing through said aperture.

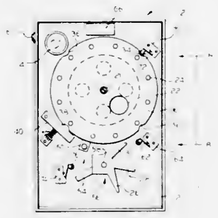
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**3,935,580**

## MULTI-IMAGE CAMERA

**Michael Klainos, Roselle, Ill., assignor to Identification Products Mfg. Co., Roselle, Ill.**

**Filed Aug. 1, 1974, Ser. No. 493,547**
**Int. Cl.² G03B** *1/00*
**U.S. Cl. 354—121** **9 Claims**

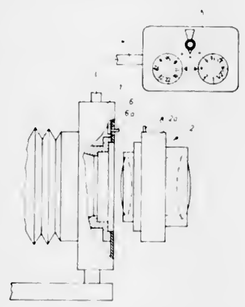


**1.** A photographic camera for simultaneously or sequentially exposing a plurality of areas on a single sheet of photosensitive film;
- said camera comprising a movable lens plate and a movable shutter plate mounted on one side of a mounting plate;
- said mounting plate having a plurality of apertures extending therethrough;
- said camera including means for holding said photosensitive film on the opposite side of said mounting plate;
- said lens plate having at least one lens aperture therein, whereby said lens plate is movable to sequentially position each said lens aperture adjacent one of said mounting plate apertures;
- said shutter plate including a plurality of apertures extending therethrough, whereby said shutter plate is movable from a first position whereby said mounting plate apertures are closed by said shutter plate, to a second position whereby said shutter plate apertures are in alignment with said mounting plate apertures;
- first actuating means adapted to move said lens plate into and out of said position including first engagement means operatively connected to said lens plate;
- second actuating means adapted to move said shutter plate from said first position to said second position;
- power means for operating both said first and second actuating means, said power means comprising a single power source drivingly connected to a lever arm assembly to sequentially operate said first and second actuating means;
- said lever arm assembly including lens operating cam means adapted to be operated by said first engagement means upon movement of said lever arm assembly by said power source to move said lens plate into and out of position to align said lens apetures with said mounting plate apertures;
- whereby said power means is adapted to move said shutter plate to said second position when at least one of said lens plate apertures is in alignment with at least one of said mounting plate apertures to expose said photo-sensitive film.

### 3,935,581
### INTERCHANGEABLE LENS ADAPTABLE TO A CAMERA OR PHOTOGRAPHIC SHUTTER, WITH BUILT-IN SECTOR SYSTEM

Franz W. R. Starp, Calmbach/Schwarzwald, Germany, assignor to Prontor-Werk Alfred Gauthier, GmbH, Calmbach, Germany

Filed Feb. 9, 1973, Ser. No. 331,263
Claims priority, application Germany, Feb. 11, 1972, 2206524
Int. Cl. G03b *9/02*, *17/14*
U.S. Cl. 354—270 4 Claims



1. A camera construction having a lens mechanism having a known axis position and where the mechanism includes means for opening the lens to admit external light to the lens in one position and to blank out light to the lens in a second position selectively and which comprises an oscillating built in sector system and a plurality of independent lens systems which are selectively exchangeable one for another of a substantially like form which has a substantially like axial location and wherein the combination comprises for each drive mechanism a lens mechanism to provide a plurality of different focal lengths and apertures for the lens mechanism including a plurality of covering sectors to cover the lens axis and set the pivotal predetermined sector travel distance to cover and reveal each selected lens aperture in accordance with the sector position, a ring means carried and supported in concentric relationship to the lens axis, a support ring, a plurality of pin engaging means supported by the ring means for carrying the pivotable sectors, drive pin means located about the ring means, a drive mechanism means connected to the camera to engage the ring automatically to the drive mechanism for attaching the lens to the camera and to pivotally control the position of the covering sectors, means for engaging all lens elements of different aperture individually to the ring means and for driving the same from the said drive means, and means having a light aperture of different sizes at positions of uniform sector travel distance relative to the lens so that with a lens having a light aperture smaller than the maximum possible sector movement the excess travel distance due to diminution of the light aperture is allocated approximately equal parts to the overlap and overswing phases of the sector system as pivoted by the drive pin means and the drive pins of the ring mechanism when engaged by the drive mechanism.

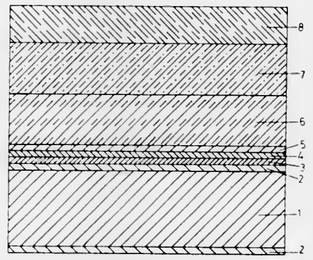
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### 3,935,582
### SELENIUM RECTIFIER

John Duckles Underwood, Bishop Stortford, and David George Watts, Roydon, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed June 6, 1974, Ser. No. 477,139
Claims priority, application United Kingdom, June 19, 1973, 28929/73
Int. Cl.² H01L *29/18*
U.S. Cl. 357—11 9 Claims

1. A selenium rectifier comprising:
a metal plate base electrode;
at least one metal layer deposited on one surface of said metal plate, said metal layer consisting of a metal different than that of said metal plate;
a layer of cadmium on said metal layer;
a layer of thallium on said cadmium layer;



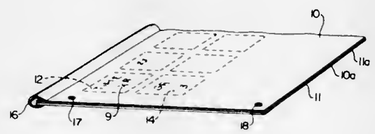
a first layer of amorphous selenium on said thallium layer;
a second layer of selenium containing a halogen additive, said second layer deposited on said first layer;
a third layer of selenium containing a halogen additive and a metallic dopant, said third layer deposited on said second layer; and
a metal counter electrode layer deposited on said third layer.

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### 3,935,583
### APPARATUS FOR MAKING MICROFICHES

Harry A. H. Spence-Bate, 115 Cheam Place, P.O. Box 8, Morley, Western Australia (6062)

Filed Mar. 22, 1974, Ser. No. 453,797
Int. Cl.² G03B *15/00*
U.S. Cl. 354—292 10 Claims



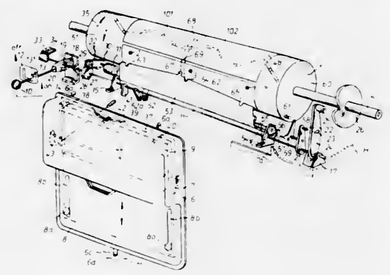
1. A composite microfiche including a first lamina having an emulsion on a first surface, one or more permanent data image frames located on said first surface, a second lamina having an emulsion on a second surface, one or more updating data image frames located on said second surface, said first lamina being superimposed on said second lamina with said first surface against said second surface defining a plane, said permanent data frames being in different positions on said plane than said updating data frames, all of said images being in a substantially common focal plane and non-inverted relative to each other.



### 3,935,584
### DEVICE FOR HANDLING PHOTOGRAPHIC FILM BETWEEN A CASSETTE AND AN EXPOSURE REPRODUCTION APPARATUS

Werner Fels, Kiel, Germany, assignor to Rudolf Hell GmbH, Germany

Division of Ser. No. 335,956, Feb. 26, 1973. This application July 12, 1974, Ser. No. 488,254
Claims priority, application Germany, Feb. 29, 1972, 2209515
Int. Cl.² G03B *1/00*
U.S. Cl. 354—214 22 Claims



1. A device for handling photographic film between a cassette and an exposure reproduction apparatus:
said cassette having a film passage access opening normally closed by a shiftable closure, and said apparatus including an enclosing housing having an access opening;
said openings being registrable with the cassette mounted in closing relation to said opening in the housing;
said cassette having therein a film supporting frame;
said apparatus including an exposure drum within said housing;
means including said frame for moving the film from the film supporting frame through the aligned openings into said housing toward said drum;
film supporting structure on said frame and said drum cooperating for transfer of the film from the frame to the drum;
said film supporting structure comprising film supporting and registration pins, with the pins of the frame being alignable with the pins on the drum; and
means for transferring the film from the frame pins onto the drum pins.

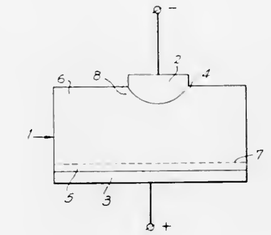
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### 3,935,585
### SEMICONDUCTOR DIODE WITH VOLTAGE-DEPENDENT CAPACITANCE

Stanislav Konstantinovich Korovin, ulitsa Zelenaya, 8., Moskovskaya oblast Domodedovo; Igor Ivanovich Kruglov, 15 Parkovaya ulitsa, 46, korpus 1, kv. 35, Moscow; Konstantin Andreevich Preobrazhentsev, ulitsa Narodnogo opolchenia, 16, korp. 3, kv. 8, Moscow; Jury Ivanovich Sidorov, Zelenograd, Korp. 503, kv. 104, Moscow, and Stanislav Vladislavovich Fronk, Sirenevy bulvar, 36, kv. 154, Moscow, all of U.S.S.R.

Continuation of Ser. No. 282,840, Aug. 22, 1972, abandoned. This application Feb. 22, 1974, Ser. No. 444,983
Int. Cl.² H01L *29/92*
U.S. Cl. 357—14 3 Claims

1. A semiconductor diode with a voltage-dependent capacitance, comprising a semiconducting crystal having two outer layers of one type of conductivity and an intermediate layer of the opposite type of conductivity disposed between said outer layers; said intermediate layer having a resistivity substantially greater than that of said outer layers, and defining therewith two P-N junctions; one of said junctions being forward-biased and the other being reverse-biased; and electrodes connected to said outer layers for serial insertion of the diode into an electric circuit; the area of said forward-biased junction being by at least twenty times greater than the area of said reverse-biased junction; said forward-biased junction including means providing compensation for the temperature coefficient of the diode capacitance under temperature fluctuations.

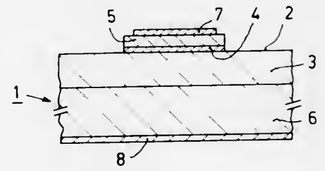


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### 3,935,586
### SEMICONDUCTOR DEVICE HAVING A SCHOTTKY JUNCTION AND METHOD OF MANUFACTURING SAME

Frits Landheer, and Hermanus Josephus Henricus Wilting, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 369,988, June 14, 1973. This application Feb. 7, 1975, Ser. No. 547,997
Claims priority, application Netherlands, June 29, 1972, 7208995
Int. Cl.² H01L *29/48*, *29/56*
U.S. Cl. 357—15 14 Claims

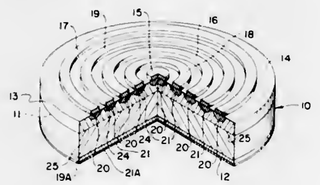


1. A semiconductor device having a rectifying metal-to-semiconductor junction, and produced by the method comprising:
a. providing a semiconductor body having a first conductivity region adjoining a surface of said body;
b. providing a first metal layer on only the surface of said first region to form a rectifying junction;
c. providing a second metal layer on said first metal layer and out of contact with said first region surface, said first and second layers comprising a layer structure, the respective said metals of said first and second layers being different from each other and being characterized by being capable of individually forming a rectifying junction with said semiconductor material of said region when disposed directly thereon, the ultimate barrier height of the junction between said first metal layer of said layer structure and said region being larger than the barrier heights of the respective junctions of said metals individually with said semiconductor material of said region; and then
d. subjecting the thus-produced assembly to a thermal treatment of at least 400°C, whereby said ultimate barrier height is attained.

### 3,935,587
## HIGH POWER, HIGH FREQUENCY BIPOLAR TRANSISTOR WITH ALLOYED GOLD ELECTRODES

**John A. Ostop; Paul M. Kisinko, both of Greensburg, Pa., and Joseph F. Henry, Palatine, Ill., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**Filed Aug. 14, 1974, Ser. No. 497,349**
**Int. Cl.² H01L** *29/72, 29/167, 29/207, 29/227*
**U.S. Cl. 357—34** **10 Claims**



1. A bipolar transistor with high power and high frequency capabilities comprising:
A. semiconductor body of a given conductivity-type having first and second opposed major surfaces, said body having a resistivity therethrough of between about 10 and 100 ohm-cm to form a collector region for a transistor;
B. an epitaxial semiconductor layer of conductivity type opposite from the body disposed on said first major surface of the body, said epitaxial layer having a major surface thereon, having a resistivity between about 0.5 and 10 ohm-cm and having a thickness between about 20 and 100 microns;
C. at least one emitter region and integral emitter electrode alloyed into the epitaxial layer adjacent the major surface thereof, said emitter region being of opposite conductivity type from the epitaxial layer;
D. a base region for the transistor in the interior of the epitaxial layer adjoining each emitter region and the semiconductor body and adjoining the major surface of the epitaxial layer around the emitter region, said base region in interior portions adjoining the emitter region having a minimum thickness less than 20 microns;
E. a gate electrode alloyed to the base region at the major surface of the epitaxial layer spaced from the emitter electrode and emitter region; and
F. a collector electrode alloyed to the second major surface of the semiconductor body and making ohmic contact with the semiconductor body.

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### 3,935,588
## COLOR IMAGE PICK-UP SYSTEM USING STRIP FILTER

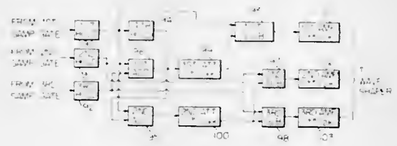
**Yoshihiro Uno, Kadoma, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan**

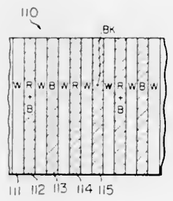
**Continuation of Ser. No. 245,085, April 18, 1972, abandoned.**
**This application Mar. 13, 1974, Ser. No. 450,850**
**Claims priority, application Japan, Apr. 20, 1971, 46-25883; Apr. 20, 1971, 46-25884; Apr. 20, 1971, 46-25885**
**Int. Cl.² H04N** *9/06*
**U.S. Cl. 358—44** **10 Claims**

1. A color television transmitter which includes a television camera tube having a photoconductive target at one end thereof, an electron gun at the other end thereof to provide an electron beam towards said target, a color strip filter positioned adjacent said target remote from said electron gun, the color strip filter being composed of a plurality of transparent strips and color strips of first and second colors, said transparent strips occurring in alternating succession between said color strips and being adapted to produce first pulses for generation of luminance signal and said color strips being adapted to produce second pulses for generation of chrominance signals upon impingement of said electron beam on said target, the improvement comprising a correcting circuit comprising:
a. means for adding successive two pulses of said first pulses and successive two pulses of said second pulses;
b. means for attenuating said added pulses by a factor of

$$\frac{1-k}{2(1-k)}$$

wherein $k$ is in the range from zero to unity;
c. means for subtracting said attenuated second pulses from said first pulses and for subtracting said attenuated first pulses from said second pulses; and
d. means for amplifying said subtracting pulses by a factor of $1+k/2k$, wherein k has the same value as k in item b.
2. A color television system comprising, in combination:
(a) a color television camera tube including an evacuated envelope having a faceplate at one end, an electron gun at the other end of said envelope, a color filter element disposed on said faceplate and a photoelectrical element disposed inwardly of said color filter element, means for scanning electrons from said electron gun in a given direction, said color filter element comprising in combination therewith:





a plurality of transparent strips extending in a direction normal to said given direction to produce from said photoelectrical element upon scanning of said electrons a luminance signal;
color strips of first and second color and a blend of said first and second colors arranged in alternating succession with said transparent strips and in recurrent groups to thereby produce first and second color signals from said photoelectrical element upon scanning of said electrons thereacross; and
black strips separating each of said recurrent groups;
(b) an output impedance connected to said color camera tube; and
(c) signal processing circuit means, including color encoding means, coupled to said output impedance and responsive to an image signal appearing thereacross for developing a composite color video signal therefrom.

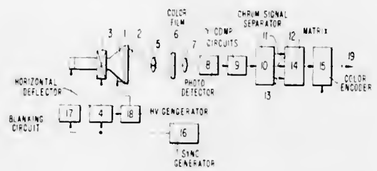
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### 3,935,589
## COLOR TELEVISION SIGNAL GENERATOR

**Takahiro Ohta, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan**

**Filed Oct. 24, 1972, Ser. No. 300,061**
**Claims priority, application Japan, Oct. 22, 1971, 46-83786; Oct. 22, 1971, 46-83788; Oct. 22, 1971, 46-83789**
**Int. Cl.² H04N** *9/02*
**U.S. Cl. 358—54** **32 Claims**

1. A color television signal generator comprising: a means for scanning a colored image area with a flying spot of light which is emitted from a cathode-ray tube whose face plate member includes a stripe layer of repetitive series of parallel different color stripes arranged in a direction crossing the scanning direction of an electron beam in said cathode-ray tube, said flying spot of light varying in chromaticity due to the striped layer, and a single photoelectric converter arranged to receive light from said colored image area and generating a color television signal therefrom.

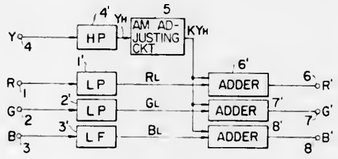


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### 3,935,590
## APPARATUS FOR DISPLAYING COLORED IMAGE

**Tetsunori Kaji, and Kenji Sato, both of Kokubunji, Japan, assignors to Hitachi, Ltd., Japan**

**Filed June 20, 1974, Ser. No. 481,335**
**Claims priority, application Japan, June 20, 1973, 48-68779**
**Int. Cl.² H04N** *9/12, 9/30*
**U.S. Cl. 358—56** **6 Claims**



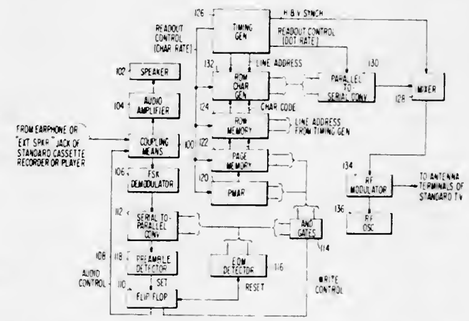
1. An apparatus for displaying a color image with increased resolution comprising:
first means, responsive to respective red, blue and green color representative signals, for converting said signals into respective color image component representations at the respective color areas of a color display, each respective area corresponding to one of said red, blue and green colors, said display containing a larger number of color areas for one of said colors than for the others of said colors;
second means, receiving the luminance component of a color image signal, for extracting therefrom the high-frequency luminance component of said color image signal;
third means, receiving signals representative of the respective red, blue and green components of said color image signal, for extracting the low-frequency red, blue and green color components, respectively, of said color image signal;
fourth means, coupled to said second and third means, for combining said high-frequency luminance component of said color image signal with the low-frequency red, blue and green color components, respectively, of said color image signal to thereby provide respective first, second and third composite color signals each of which is the sum of a respective one of the red, blue and green low frequency components and the high frequency luminance component of said color image signal; and
fifth means, coupled to said first and fourth means, for controlling the application of said first, second and third composite color signals to the respective color areas for said display in accordance with the positions of said color areas of said display.

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### 3,935,591
## AUDIO-VISUAL APPARATUS WITH CONTROL SIGNAL OPERATED GATING MEANS

**Gorden Lambert Hopkins, Lake Park, Fla., assignor to RCA Corporation, New York, N.Y.**

**Filed Jan. 10, 1974, Ser. No. 432,136**
**Int. Cl.² H04N** *7/00*
**U.S. Cl. 360—19** **6 Claims**



1. A recording medium having recorded thereon one or more time-division-multiplexed sequences of analog audio-information and sequences of binary-coded video information composed of first and second frequency-shift-keyed audio tones, any sequence of video information recorded on said medium being immediately preceded by a preamble code comprising a given length of a single one of the frequency-shift-keying audio tones, said given length being significantly longer than the interval of any signal component of said audio information whereby upon playback of said medium a sequence of video-information may be reliably distinguished from a preceding sequence of audio information.

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### 3,935,592
## RECORDING INSTRUMENT ADAPTED FOR USE IN REMOTE UNATTENDED LOCATIONS

**John M. Dahlen, Duxbury; William E. Toth, Bolton; John T. Shillingford, Jr., Watertown, and John F. McKenna, Jr., Gloucester, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.**

**Filed Feb. 22, 1974, Ser. No. 444,948**
**Int. Cl. G11b** *5/09*; **G01d** *11/24*
**U.S. Cl. 360—6** **7 Claims**



1. A recording instrument for use at remote locations and adapted to provide large amounts of data relating to a condition of the environment at such location, that comprises, in combination: transducer means operable to sense during relatively short intervals a condition of the environment at said

location and to produce electrical analog signals representative thereof over relatively long periods of time; an electronic data acquisition system connected to receive the electrical analog signals and to condition the analog signals and convert the same to digital words during data sampling intervals, said data acquisition system containing electronic means for averaging the digital words over said long periods of time to produce output words; a magnetic tape recorder connected to receive the digital output words from the data acquisition system and to store the same during recording intervals; a battery to power the foregoing elements; and a housing to receive and protect the foregoing elements, said means for averaging comprising a serial digital adder providing a sum of consecutive ones of said digital words, a plurality of accumulators which store the sum of said consecutive digital words, and means for dividing the sum of said consecutive digital words by a power of two.

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**3,935,593**

**MULTI-MEDIA PRODUCTION PROGRAMMER**

**Henry H. von Tiesenhausen, and Carl K. Iverson, both of Vancouver, Canada, assignors to Henry H. Tiesenhausen, Vancouver, Canada**

**Filed Oct. 29, 1974, Ser. No. 518,463**

**Int. Cl.² G11B** *5/02*

**U.S. Cl. 360—39** **15 Claims**

1. A digital recording system with selective updating capability including:
- a record-playback head, said head having a signal coil and a single magnetic gap;
- said signal coil being responsive to composite signals applied thereto to produce, in said gap, magnetic fields corresponding to said composite signals;
- a magnetic recording medium adapted for movement over said recording head in the region of said gap;
- a source of data signals;
- said source of data signals including a source of "one" signals and a source of clearing signals;
- a source of control signals;
- said source of data signals being coupled to said source of control signals and being responsive thereto to cause the generation of a clearing signal each time a "one" data signal is generated;
- and means for combining said data signals and certain of said control signals in a predetermined sequence for application to said signal coil.

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**3,935,594**

**MAGNETIC BUBBLE READ/WRITE HEAD FOR A MAGNETIC RECORDER/PLAYBACK DEVICE**

**Frederik Ate de Jonge, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.**

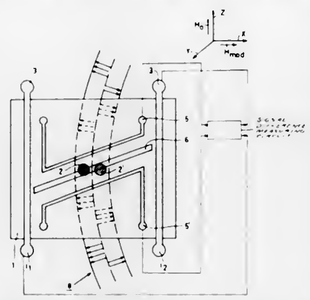
**Filed Apr. 29, 1974, Ser. No. 464,786**

**Claims priority, application Netherlands, Feb. 28, 1974, 7402694**

**Int. Cl.² G11B** *5/02, 21/02, 5/12*

**U.S. Cl. 360—55** **11 Claims**

1. A device for storing and playing back information in a spiral track on a disk recording medium having a magnetizable material, comprising a storage and playback element in the form of a sheet of magnetizable material having an easy axis of magnetization substantially normal to the plane of said sheet, an arm means secured to said element for radially moving said sheet with respect to said disk recording medium, said sheet having a single-wall magnetic domain, magnetic field generating means for providing a magnetic field directed radially relative to said disk recording medium and having a strength which, together with the stray field of the magnetic domain emerging from said sheet is sufficient to overcome the coercive force of said magnetizable material of said recording medium, means guiding said magnetic domain for movement on said sheet, means for inverting polarity of the magnetic field from said magnetic field generating means according to a frequency modulated with an information signal to be recorded, a detector means for detecting variations in the position of the domain caused by variations in the magnetization pattern recorded on said recording medium, and means to



correct the position of said domain during playback in response to signals from said detector means.

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**3,935,595**

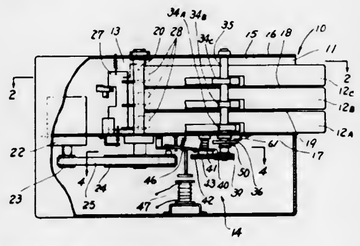
**TAPE RECORDER WITH CARTRIDGE SELECTING MEANS**

**Toru Kondo, 2-12, Hosenji, Kashiwara, Osaka, Japan**

**Filed Mar. 21, 1973, Ser. No. 343,543**

**Int. Cl.² G11B** *15/68, 15/29, 23/04*

**U.S. Cl. 360—92** **1 Claim**



1. A tape recorder comprising
- a. storing means for storing a plurality of endless tape cartridges in stacked condition, each of said cartridges having an endless magnetic tape, a pinch roller, and a V-shaped notch formed on a side thereof;
- b. reproducing means including an elongated capstan shaft positioned near the pinch rollers of the cartridges, a plurality of magnetic heads, and an electrical circuit for controlling the play of the magnetic tape of the cartridge; and
- c. selecting means for selecting the desired cartridge, said selecting means including a plurality of pressure rollers, each of the pressure rollers being positioned in one of the V-shaped notches of the cartridges, an offset cam associated with each pressure roller and adapted to press the associated pressure roller thereby pressing the pinch roller of the cartridge toward the elongated capstan shaft, each cam being securely mounted on a common shaft, a first gear mounted on said common shaft, a second gear engaging said first gear for rotation therewith, a disc mounted on the second gear so that rotation of the disc in one direction is transmitted to the second gear, an elongated arm connected to the disc and extending therefrom, a solenoid below the arm for lowering the arm, a pulley mounted on the capstan shaft and having a pin engageable with the arm when the arm is dropped by the solenoid, the arm and the disc being rotated in said one direction by the pulley when the pin engages the arm, and an electric control circuit for electrically selecting the action of the desired cam by energizing the solenoid thereby playing the desired cartridge, each of said pressure rollers being supported by an elastic rod at a free end thereof, said cams being adapted to individually press the elastic rod thereby pressing the pressure rollers.

# DESIGN PATENTS

## GRANTED JANUARY 27, 1976

### ERRATA

| For CLASS | See PATENT NO. |
|---|---|
| 057-001. E | 238,540 |
| 055-001. C | 238,605 |

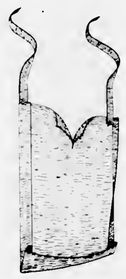
# DESIGNS

JANUARY 27, 1976

238,520
**WRIST SUPPORT FOR USE IN BOWLING**
Norman S. Borenstein, 14431 Galy, Tustin, Calif. 92680
Filed Aug. 10, 1973, Ser. No. 387,338
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—27



238,521
**BIB**
Karl Gösta Bertil Andersson, Halmstad, Sweden, assignor to Duni Bila AB, Halmstad, Sweden
Filed Mar. 22, 1974, Ser. No. 453,864
Term of patent 7 years
Int. Cl. D2—*02*
U.S. Cl. D2—229



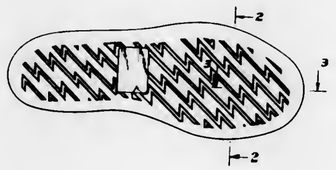
238,522
**BATHING CAP**
William John Gullis, Sandwich, England, assignor to Haffenden-Richborough Limited, Sandwich, England
Filed Sept. 23, 1974, Ser. No. 508,102
Claims priority, application Great Britain Aug. 9, 1974
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—237



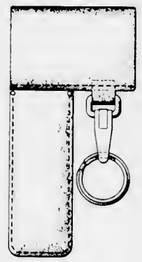
238,523
**BOOT**
Bradley A. Harrington, 4110 Debarr 19B, Anchorage, Alaska 99504
Filed Aug. 2, 1973, Ser. No. 385,182
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—272



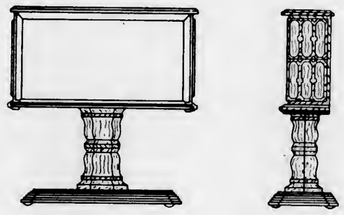
238,524
SHOE SOLE
Jonas Senter, Greenwich, Conn., assignor to CITC Industries Inc., New York, N.Y.
Filed June 19, 1974, Ser. No. 480,882
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—321



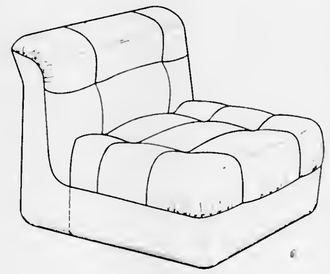

238,525
COMBINED UTILITY CASE AND KEY RING
Wayne J. Watts, Box 303, Millville, Pa. 17846
Filed Aug. 1, 1974, Ser. No. 493,925
Term of patent 14 years
Int. Cl. D2—*99*
U.S. Cl. D2—400



238,526
SUPPORT STAND FOR A TELEVISION RECEIVER OR SIMILAR ARTICLE
Paul S. Bush, % Bush Brothers Products Corporation, 312 Fair Oak St., Little Valley, N.Y. 14755
Filed Jan. 28, 1974, Ser. No. 436,886
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—27



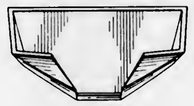
238,527
CHAIR
Charles Bernard, Montreuil-sous-Bois, France, assignor to Airborne, S.A., Montreuil-sous-Bois, France
Filed June 11, 1973, Ser. No. 369,015
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—66



238,528
DISPLAY HOLDER
Rachel B. Crawford, P.O. Box 412, Stanwood, Wash. 98292
Filed Aug. 19, 1974, Ser. No. 498,424
Term of patent 7 years
Int. Cl. D20—*02*
U.S. Cl. D6—85

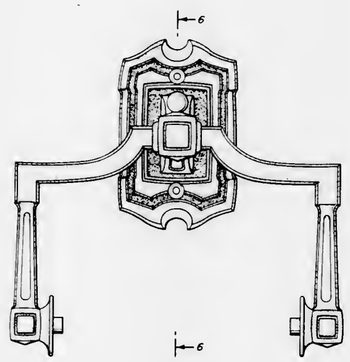


238,529
WALL MOUNTABLE SHAVER HOLDER
Richard Muller, 43 E. Ohio St., Chicago, Ill. 60611
Filed Apr. 16, 1975, Ser. No. 568,698
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—88



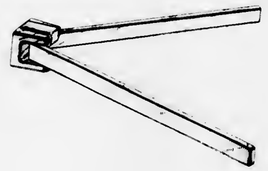


238,530
TOILET TISSUE HOLDER
George D. Read, Glendora, Lawrence Glen McCain, Beverly Hills, and Edward William Scott, Culver City, Calif., assignors to Ajax Hardware Corporation, City of Industry, Calif.
Filed Oct. 15, 1974, Ser. No. 514,824
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—97






238,531
TOWEL RACK
Guy Vrignaud, Grenoble, France, assignor to Allibert Exploitation Societe Anonyme, Puteaux, France
Filed Nov. 6, 1974, Ser. No. 521,497
Claims priority, application France May 6, 1974
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—99

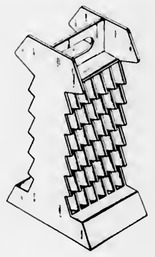


238,532
RACK FOR DISPLAYING BANANAS
Frank R. King and Geneva King, both of 2140 Mann Drive, Beech Grove, Ind. 46107
Filed Sept. 26, 1973, Ser. No. 401,027
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—113

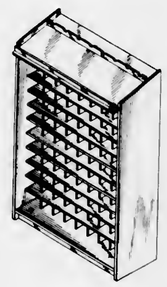
238,533
WALL MOUNT HANGING BRACKET
Drew Feldman, 3462½ Centinela Ave., Los Angeles, Calif. 90066
Filed Aug. 8, 1974, Ser. No. 495,562
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D6—137



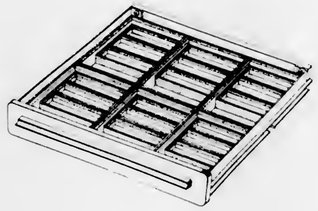
238,534
**DISPLAY STAND**
Tony J. Bressickello, 13015 S. Normandie Blvd., Gardena, Calif. 90249
Filed Mar. 4, 1975, Ser. No. 555,177
Term of patent 14 years
Int. Cl. D6—*04;* D20—*02*
U.S. Cl. D6—188



238,535
**DISPLAY RACK FOR BOTTLES OR THE LIKE**
Fitz Daniels, 21 St. James Place, Brooklyn, N.Y. 11205
Filed June 19, 1974, Ser. No. 480,611
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—189



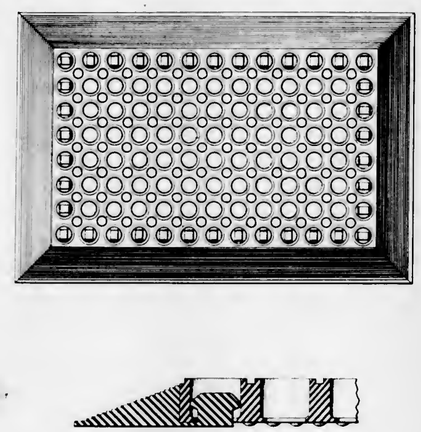
238,536
**STORAGE DRAWER**
Robert K. Scherzer, Liverpool, N.Y., assignor to Gaylord Bros., Inc., Liverpool, N.Y.
Filed Oct. 15, 1974, Ser. No. 514,936
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191



238,537
**CUSHION**
Eileen M. Longacre, 170 N. Sycamore Ave., Los Angeles, Calif. 90036
Filed Aug. 15, 1974, Ser. No. 497,681
Term of patent 14 years
Int. Cl. D6—*09*
U.S. Cl. D6—201



238,538
**FLOOR MAT**
Waldo W. Smith, Warwick, R.I., assignor to Teknor Apex Company, Pawtucket, R.I.
Filed Apr. 28, 1975, Ser. No. 572,318
Term of patent 14 years
Int. Cl. D6—*11*
U.S. Cl. D6—226



238,539
**SOCK HANGER**
Allen I. Field, 47 Valley Stream Road, Larchmont, N.Y. 10538, and Sidney P. Field, 226 Beach 134th St., Belle Harbor, N.Y.
Filed July 29, 1974, Ser. No. 492,512
Term of patent 14 years
Int. Cl. D6—*08*
U.S. Cl. D6—251

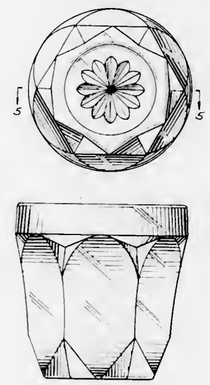




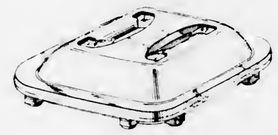

238,540
**ADJUSTABLE MOUTHPIECE GUIDE CONTROL FOR MICROSURGICAL PROCEDURES**
Eugene H. Holly, 3701 Broadway, West Palm Beach, Fla. 33407
Filed June 28, 1974, Ser. No. 484,147
Term of patent 7 years
Int. Cl. D16—*99;* D24—*99*
U.S. Cl. D57—1 E



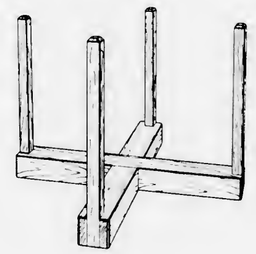
238,541
**TUMBLER OR SIMILAR ARTICLE**
Frank J. Benes, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio
Filed Sept. 13, 1973, Ser. No. 397,069
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—6



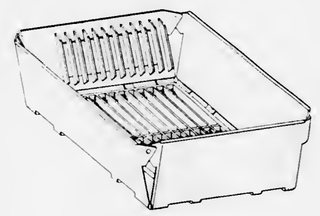
238,542
**COVERED DISH**
Thomas S. Shevlin, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company
Filed June 17, 1974, Ser. No. 479,807
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—18



238,543
**NAPKIN HOLDER**
George A. Lechner, 1064 Commercial Ave., El Centro, Calif. 92243
Filed June 5, 1974, Ser. No. 476,391
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—72



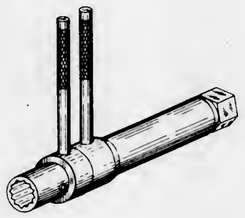
238,544
**DISH DRAINER**
Michael C. Wilson, Wheaton, Ill., assignor to Pretty Products, Inc., Coshocton, Ohio
Filed Jan. 15, 1974, Ser. No. 433,552
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—188



238,545
**SWINGING GRATE FOR INSIDE FIREPLACE**
R. Wesley Mellow, Clayton, Mo., assignor to Liberty Foundry Co.
Continuation of abandoned design application Ser. No. 230,545, Feb. 29, 1972. This application Apr. 22, 1974, Ser. No. 462,746
Term of patent 14 years
Int. Cl. D7—*08*
U.S. Cl. D7—206



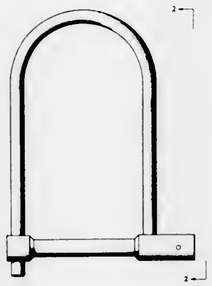
238,546
**EXTRACTOR FOR REMOVING OIL BURNER SPRAY NOZZLES**
Daniel Cullinane, Jr., 20 Candlewood Drive, Topsfield, Mass. 01983
Filed Oct. 1, 1973, Ser. No. 402,078
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—29



238,547
**HANDLE FOR ELECTRIC SOLDERING IRON**
Lawrence Emmerson House II, Baltimore, Md., assignor to The Black & Decker Manufacturing Company, Towson, Md.
Filed Jan. 30, 1974, Ser. No. 438,170
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—30



238,548
**VEHICLE LOCK**
Raymond N. Seakan, Randolph, Mass., assignor to Acro-Fab Industries, Inc., Stoughton, Mass.
Filed Dec. 20, 1974, Ser. No. 534,841
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—114



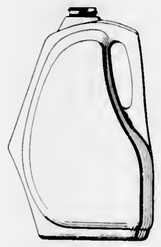
238,549
**DOOR HANDLE**
Jean Arnold Fischer, Hjallese, Denmark, assignor to Daempa A/S, Knarreborg, Denmark
Filed Oct. 2, 1973, Ser. No. 402,787
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—168



238,550
**BEVERAGE CONTAINER OR THE LIKE**
Bryant Edwards, Clarendon Hills, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed May 13, 1974, Ser. No. 469,209
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—28

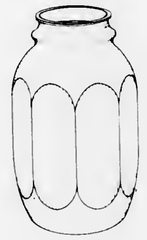


238,551
**BOTTLE**
Samuel J. Rivman, White Plains, N.Y., assignor to The Barcolene Company, Holbrook, Mass.
Filed May 23, 1973, Ser. No. 363,200
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—43

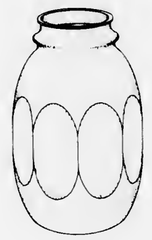




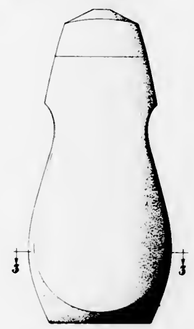
238,552
**BEVERAGE CONTAINER OR THE LIKE**
Bryant Edwards, Clarendon Hills, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed May 13, 1974, Ser. No. 469,442
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—100



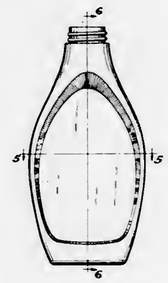
238,553
**BEVERAGE CONTAINER OR THE LIKE**
Bryant Edwards, Clarendon Hills, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed May 13, 1974, Ser. No. 469,272
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—100



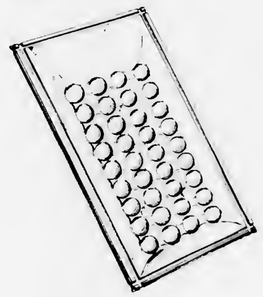
238,554
**BOTTLE**
John Pardo, Yonkers, N.Y., assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Aug. 12, 1974, Ser. No. 496,582
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—116



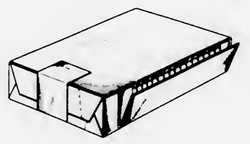
238,555
**BOTTLE OR SIMILAR ARTICLE**
Elliott E. Blank, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Original design application Nov. 2, 1972, Ser. No. 303,066, which is a continuation-in-part of design application Ser. No. 232,340, Mar. 6, 1972, now abandoned. Divided and this application Sept. 24, 1974, Ser. No. 508,941
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—143



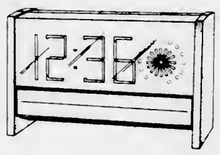
238,556
**ROE POUCH**
Earl B. Jackson, P.O. Box 1485, Boise, Idaho 83701, and Ray Dunlap, 1903 Washington Ave., Caldwell, Idaho 83605
Filed Sept. 24, 1973, Ser. No. 399,880
Term of patent 14 years
Int. Cl. D9—*05*
U.S. Cl. D9—184



238,557
**COMBINED CIGARETTE AND MATCH PACKAGE**
Masamitsu Ishihara, 628 Hirai, Kannami-cho, Tagata-gun, Shizuoka-ken, Japan
Original design application Mar. 15, 1973, Ser. No. 341,582. Divided and this application Oct. 11, 1974, Ser. No. 514,011
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—193



238,558
DIGITAL CLOCK
Koji Terada, Yokohama, Japan, assignor to Tamura Electric Works
Filed Feb. 25, 1974, Ser. No. 445,101
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—15



238,559
WRISTWATCH
Victor P. Nozdrea, 69—44 Olcott St., Forest Hills, N.Y. 11375
Filed Aug. 15, 1974, Ser. No. 497,633
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—34



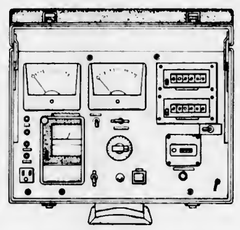
238,560
CASING FOR A PORTABLE ELECTRONIC MULTIMETER
Donald P. Aupperle, Loveland, Colo., assignor to Hewlett-Packard Compnay, Palo Alto, Calif.
Filed Oct. 15, 1973, Ser. No. 406,713
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D10—46



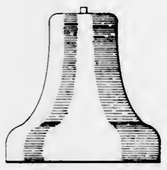
238,561
CASING FOR A PORTABLE ELECTRONIC MULTIMETER
Donald P. Aupperle, Loveland, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Oct. 15, 1973, Ser. No. 406,743
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D10—46



238,562
TIME TEMPERATURE ANALYZER
Joseph A. Sylvester, Wayne, N.J., assignor to Hexacon Electric Company
Filed Jan. 14, 1974, Ser. No. 433,419
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—78

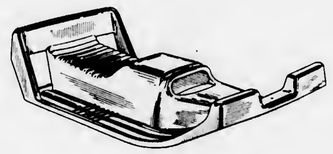


238,563
ROAD WARNING MARKER
Howard W. Herbert, 5212 Valle Vista NW., Albuquerque, N. Mex. 87120
Filed Apr. 25, 1974, Ser. No. 463,982
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—109

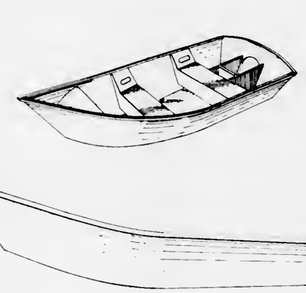




238,564
SLED
Hans G. E. Skillius, Tingsryd, Sweden, assignor to Perstorp AB, Perstorp, Sweden
Filed May 31, 1974, Ser. No. 474,961
Claims priority, application Sweden Dec. 20, 1973
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D12—10



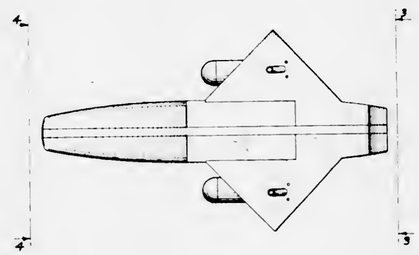
238,565
DORY WITH REAR ENGINE WELL
John D. Palmer, 7702 Speedway, Everett, Wash. 98203
Filed Dec. 23, 1974, Ser. No. 535,171
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—62



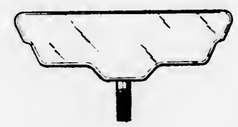
238,566
DORY
John D. Palmer, 7702 Speedway, Everett, Wash. 98203
Filed Dec. 23, 1974, Ser. No. 535,959
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—62



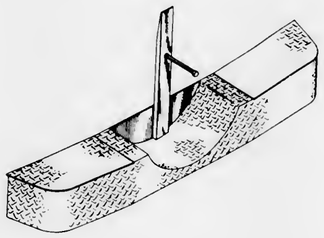
238,567
SELF-PROPELLED DIVER TOW OR THE LIKE
Wesley K. Markham, 1147 Greenridge Road, Jacksonville, Fla. 32207
Filed Jan. 15, 1975, Ser. No. 541,081
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D12—65



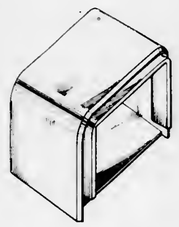
238,568
TIRE HOLDER FOR HOLDING A PNEUMATIC TIRE ON A WHEEL RIM
Borje Christer Carl-Gustav Victor, Trelleborg, Sweden, assignor to Trelleborgs Gummifabriks AB, Trelleborg, Sweden
Filed Sept. 5, 1974, Ser. No. 503,548
Claims priority, application Sweden Mar. 11, 1974
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—153



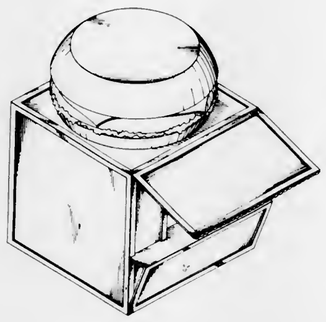
238,569
**TRUCK BUMPER**
Roy A. Learn, W. 4021 Indian Trail Road, Spokane, Wash. 99208
Filed Feb. 18, 1975, Ser. No. 550,857
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—169



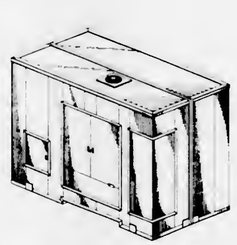
238,570
**BUMPER OVERRIDER EXTENSION**
John Vota, Washingtonville, and Manfred Storm, West Haverstraw, N.Y., assignors to Calibur Manufacturing Corp., West Nyack, N.Y.
Filed June 24, 1974, Ser. No. 482,005
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—172



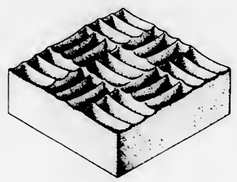
238,571
**MODULAR RESTAURANT**
Edward M. Laigo, Tacoma, Wash., assignor to Burger Box, Inc., Fife, Wash.
Filed Nov. 7, 1973, Ser. No. 413,556
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 B



238,572
**NOISE REDUCING ENCLOSURE FOR TRANSFER PRESS OR THE LIKE**
Richard T. Wheeler, 20 Hemlock Drive, Vernon, Conn. 06066
Filed Feb. 28, 1974, Ser. No. 446,816
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D13—1 R



238,573
**DECORATIVE ACOUSTICAL PANEL**
Joseph Goldman, Minneapolis, Minn., assignor to Charles Industries Corporation, Minneapolis, Minn.
Filed Mar. 28, 1973, Ser. No. 345,579
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D18—2 B

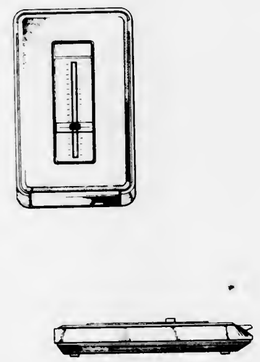


238,574
**ENVELOPE**
Charles S. Watson, Glen Ridge, N.J., assignor to Berlin & Jones Company. Inc., East Rutherford, N.J.
Filed Sept. 27, 1973, Ser. No. 401,202
Term of patent 14 years
Int. Cl. D19—*01*
U.S. Cl. D19—3

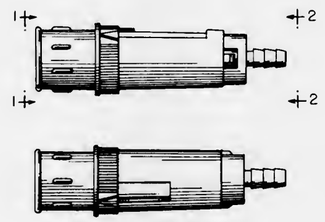




238,575
**TELEPHONE LIST FINDER**
Chuzo Mori, Tokyo, Japan, assignor to Carl Manufacturing Company Ltd., Tokyo, Japan
Filed May 30, 1974, Ser. No. 474,413
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—76



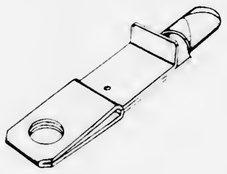
238,576
**OXYGEN DILUTER FOR BREATHING MASKS**
Claude A. Vidal, Los Angeles, Calif., assignor to American Hospital Supply Corporation
Filed Jan. 13, 1975, Ser. No. 540,389
Term of patent 14 years
Int. Cl. D23—*99*; D24—*02*
U.S. Cl. D23—4



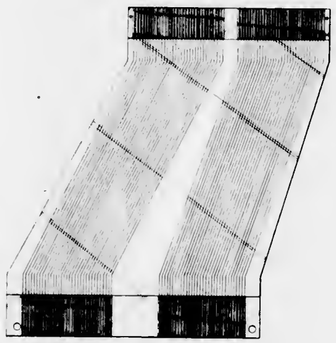

238,577
**TOILET**
Clifford Bruce Hewson, Toronto, Ontario, Canada, assignor to Sanitation Equipment Limited, Downsview, Ontario, Canada
Filed July 29, 1974, Ser. No. 492,959
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—48



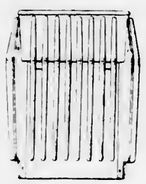
238,578
**ELECTRICAL PLUG PRONG**
Ben Degaetano, 1 Megan Lane, Armonk, N.Y. 10504
Filed Mar. 9, 1973, Ser. No. 339,577
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1 A



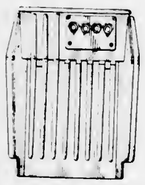
238,579
ELECTRICAL CABLE FOR GASEOUS DISCHARGE PANEL
Gerald E. Wojcik, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Mar. 7, 1974, Ser. No. 449,156
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1



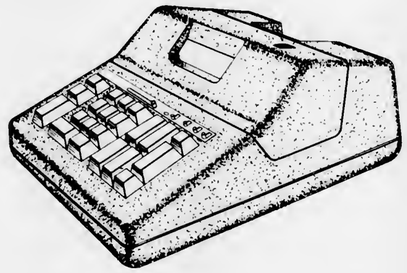
238,580
CASING FOR ELECTRICAL EQUIPMENT
Kjeld Lehmann, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark
Filed June 27, 1973, Ser. No. 374,255
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—5 R



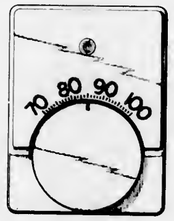
238,581
CASING FOR ELECTRICAL EQUIPMENT
Kjeld Lehmann, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark
Filed June 27, 1973, Ser. No. 374,256
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—5 R



238,582
ELECTRONIC CALCULATOR
Stephen G. Hauser, Tarzana, Calif., assignor to Addmaster Corporation
Filed Feb. 24, 1975, Ser. No. 552,649
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D26—5 C



238,583
HEATER CONTROL
Richard H. Russell, Farmington, Conn., assignor to Safeway Products Inc., Middletown, Conn.
Filed Dec. 5, 1974, Ser. No. 529,714
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13 R

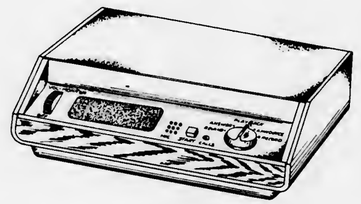



238,584
PORTABLE TWO-WAY RADIO APPARATUS OR SIMILAR ARTICLE
Arnold S. Goldman, 149 Tennessee Ave. 33312, and Donald K. Krumin, 5921 14th Terrace NE. 33316, both of Fort Lauderdale, Fla.
Filed Mar. 26, 1975, Ser. No. 562,071
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 K





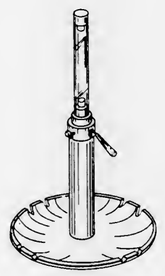
238,585
ELECTRONIC TELEPHONE ANSWERING UNIT
James R. Darwood, 12366 E. Charlwood, Cerritos, Calif. 90701
Filed June 21, 1974, Ser. No. 481,520
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A



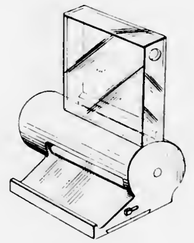
238,586
ASHTRAY COVER
Robert W. Smith, Mound, and Donald E. Wintz, St. Paul, Minn., assignors to Aladdin Manufacturing Company, Minneapolis, Minn.
Filed July 31, 1974, Ser. No. 493,248
Term of patent 14 years
Int. Cl. D27—*03*
U.S. Cl. D27—13



238,587
COMBINED ASHTRAY AND SIGNAL LIGHT
Colvard W. Howell, 829 E. McIntosh, Griffin, Ga. 30223
Filed Aug. 16, 1974, Ser. No. 498,086
Term of patent 14 years
Int. Cl. D27—*03*
U.S. Cl. D27—15



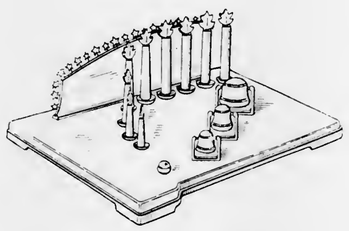
238,588
CIGARETTE DISPENSER
Vincent Di Marzo, 1616 N. Gardiner Drive, Bay Shore, N.Y. 11706
Filed Aug. 20, 1974, Ser. No. 499,053
Term of patent 14 years
Int. Cl. D27—*06*
U.S. Cl. D27—46



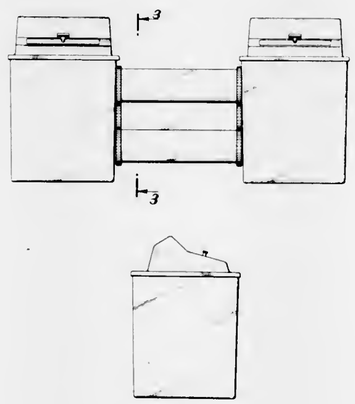
238,589
FUR FLOWER
Dawn R. Fletcher, R.R. 1, North Freedom, Wis. 53951
Filed July 2, 1973, Ser. No. 375,775
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—1 R



238,590
TABLE DECORATION
John R. Martindale, R.R. 1, Jordan, Lincoln, Ontario, Canada, LOR 1SO
Filed Sept. 4, 1973, Ser. No. 394,375
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—23 R



238,591
HOODED AQUARIUM UNIT
Robert E. De Shores, 3476 Barbara St., San Pedro, Calif. 90731, and Joseph A. Mendez, 10535 Lindenvale Road, Whittier, Calif. 90606
Filed June 17, 1974, Ser. No. 479,632
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—11




238,592
TRAY FOR HOLDING PET FEEDING BOWLS
Marvin A. Goldman, Great Neck, and Jerome N. Goldman, New York, N.Y., assignors to Penn-Plax Plastics, Inc., Garden City, N.Y.
Filed June 11, 1974, Ser. No. 478,351
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—13



238,593
TENNIS RACKET FRAME
Alvin H. Sweet and Don A. Sweet, both of Box 72085, Los Angeles, Calif. 90002
Filed July 11, 1974, Ser. No. 487,557
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 ST

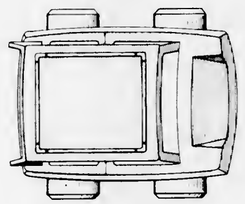




238,594
SAVINGS BOX
Heikki Tavela, 12 Arinatie, 00370 Helsinki 37, Finland
Filed June 18, 1974, Ser. No. 480,491
Claims priority, application Finland May 2, 1974
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—11 R



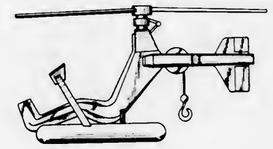
238,595
TOY VEHICLE
Adolph E. Goldfarb, 4614 Monarca Drive, Tarzana, Calif. 91345; Erwin Benkoe, 17965 Medley Drive, Encino, Calif. 91316; and Dennis H. Merino, Southgate, Calif.; said Merino assignor to said Goldfarb and Benkoe
Filed Feb. 13, 1974, Ser. No. 442,136
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ



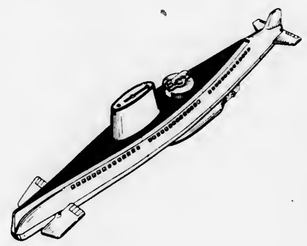
238,596
INFLATABLE KITE
Louis Lawrence Laske, Grayslake, Ill., assignor to Vonco Products, Inc., Lake Villa, Ill.
Filed May 13, 1974, Ser. No. 469,066
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AF



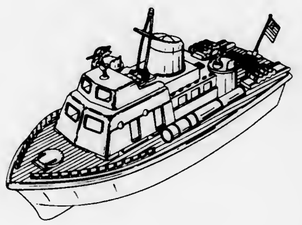
238,597
TOY HELICOPTER
Adolph E. Goldfarb, 4614 Monarca Drive, Tarzana, Calif. 91345; Erwin Benkoe, 17965 Medley Drive, Encino, Calif. 91316; and Delmar K. Everitt, Woodland Hills; Ronald F. Chesley, La Crescenta; and Richard D. Frierdich, Canoga Park, Calif.; said Everitt, Chesley and Frierdich assignors to said Goldfarb and Benkoe
Filed Feb. 19, 1974, Ser. No. 443,378
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 KK



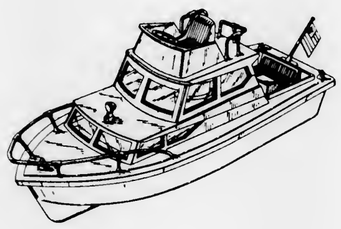
238,598
TOY SUBMARINE
Duncan Tong, Hong Kong, assignor to Playart Limited, Hong Kong
Filed June 12, 1974, Ser. No. 478,580
Claims priority, application Great Britain Dec. 20, 1973
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 JJ



238,599
TOY BOAT
Duncan Tong, Hong Kong, assignor to Playart Limited, Hong Kong
Filed June 7, 1974, Ser. No. 477,182
Claims priority, application Great Britain Dec. 13, 1973
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 JJ



238,600
**TOY BOAT**
Duncan Tong, Hong Kong, assignor to Playart Limited, Hong Kong
Filed June 7, 1974, Ser. No. 477,174
Claims priority, application Great Britain Dec. 13, 1973
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 JJ

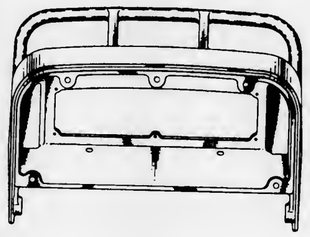


238,601
**POTTED PLANT RECEPTACLE**
Barnell L. Cobia, Winter Garden, Fla., assignor to Green Island International, Inc., Winter Garden, Fla.
Filed Dec. 12, 1973, Ser. No. 426,646
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D35—3 A

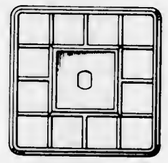




238,602
**INTEGRAL COWL AND GRAB BAR FOR A TRACTOR**
Arvid Harlan Saele and Michael Pier Hutton, Iowa, Iowa, assignors to Deere & Company, Moline, Ill.
Filed May 16, 1974, Ser. No. 470,377
Term of patent 14 years
Int. Cl. D12—*09*
U.S. Cl. D40—5



238,603
**LIGHTING FIXTURE SHADE**
William M. Armstrong, El Cerrito, and Wallace D. Runswick, Kensington, Calif., assignors to Inlite Corporation, Berkeley, Calif.
Filed Mar. 18, 1974, Ser. No. 452,439
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—16 D

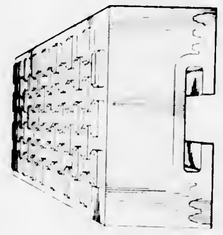


238,604
**FLASHLIGHT**
Robert E. Brindley, New York, N.Y., assignor to Union Carbide Corporation, New York, N.Y.
Filed Aug. 29, 1974, Ser. No. 501,703
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D48—24 A

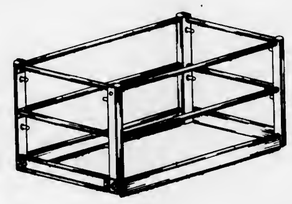




238,605
**BUMPER ELEMENT FOR MOUNTING UNDERNEATH CONVEYOR BELTS OR THE LIKE**
Sven-Erik Dyrup, Oxie, Sweden, assignor to Trelleborgs Gummifabriks AB
Filed Feb. 15, 1974, Ser. No. 442,949
Claims priority, application Sweden Aug. 17, 1973
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D55—1 C



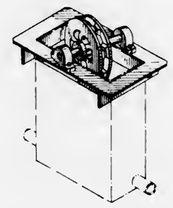
238,606
**GUARD RAIL ASSEMBLY FOR SCAFFOLDING**
Robert E. Cameron, Ballwin, Mo., assignor to Automatic Devices, Incorporated, Maryland Heights, Mo.
Filed Dec. 11, 1974, Ser. No. 531,530
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D54—1 A



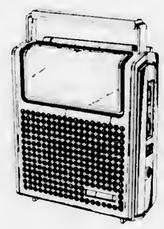
238,607
**SAFETY LADDER FOR AN ABOVE THE GROUND SWIMMING POOL**
Peter F. Gannon, Troy, Mich., assignor to Vinyl-Fab Industries, Ferndale, Mich.
Filed Aug. 15, 1973, Ser. No. 388,585
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D54—1 A



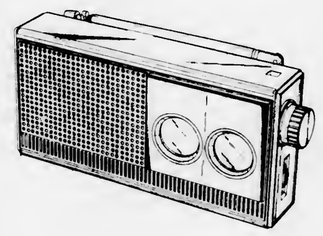
238,608
**REVERSING CHAIN DRIVE PULLEY ASSEMBLY FOR POULTRY FEED HOPPER**
Gerald L. Kitson, 9709 Belding Road, Rockford, Mich. 49341
Original design application June 26, 1972, Ser. No. 266,488, now Patent No. 231,370. Divided and this application Apr. 16, 1974, Ser. No. 461,381
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D55—1 C



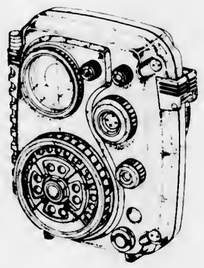
238,609
**RADIO RECEIVER**
Kunio Hoshino, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka, Japan
Filed July 30, 1974, Ser. No. 493,011
Claims priority, application Japan Feb. 15, 1974
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



238,610
**RADIO RECEIVER**
Kikuo Ohta, Katano, Osaka, and Keizo Kushida, Moriguchi, Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka, Japan
Filed July 30, 1974, Ser. No. 493,010
Claims priority, application Japan Feb. 15, 1974
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



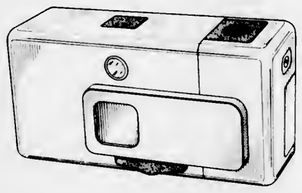
238,611
RADIO RECEIVER
Kiyoshi Fukuda, Fukuoka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan
Filed June 24, 1974, Ser. No. 482,167
Claims priority, application Japan Dec. 26, 1973
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



238,612
COMBINED RADIO, TISSUE DISPENSER AND PHOTO DISPLAYER
Morris Fink, Great Neck, N.Y., assignor to Windsor Industries, Inc., Plainview, N.Y.
Filed Aug. 29, 1973, Ser. No. 392,541
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



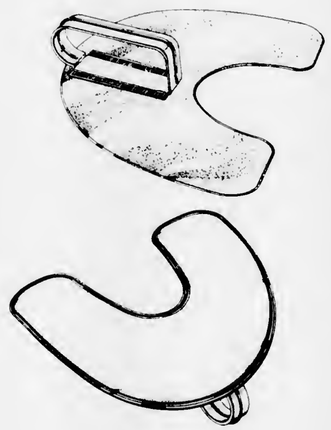
238,613
PHOTOGRAPHIC CAMERA
Heinz Waaske, Mascherode, Germany, assignor to Rollei-Werke Franke & Heidecke, Braunschweig, Germany
Filed Mar. 1, 1974, Ser. No. 447,279
Claims priority, application Germany Sept. 7, 1973
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D61—1 B



238,614
CHAIN CANDLE
Siegfried Steinhart, 14 Obere Ganshalde, 8908 Krumbach, Germany
Filed Jan. 10, 1974, Ser. No. 432,327
Claims priority, application Germany July 19, 1973
Term of patent 14 years
Int. Cl. D26—*04*
U.S. Cl. D73—1 B

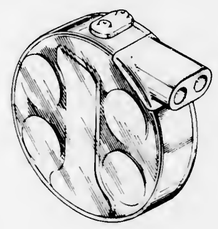


238,615
X-RAY RADIATION PROTECTIVE SHIELD
Alfred Maier, 12B Schnitzschulstrasse, 8100 Garmisch-Partenkirchen, Germany
Filed Jan. 18, 1974, Ser. No. 434,554
Term of patent 14 years
Int. Cl. D24—*99;* D29—*02*
U.S. Cl. D83—1 H

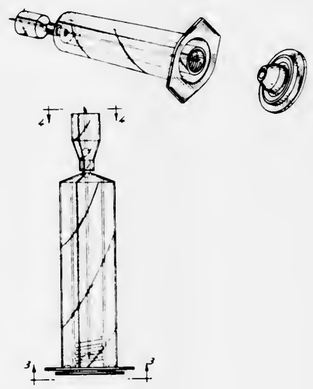




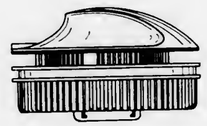
238,616
IMPLANTABLE MEDICAL-ELECTRONIC CARDIAC PACER UNIT
Howard J. Thompson, New Richmond, Wis., assignor to Medtronic, Inc., Minneapolis, Minn.
Filed Apr. 26, 1974, Ser. No. 464,486
Term of patent 14 years
Int. Cl. D24—*03*
U.S. Cl. D83—1 F



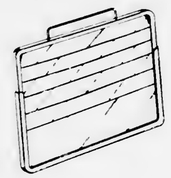
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Stephen Saul Richman, Evanston, Ill., assignor to Abbott Laboratories, North Chicago, Ill.
Filed Jan. 30, 1974, Ser. No. 438,068
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D83—12 A



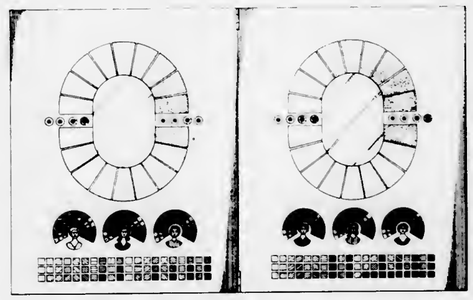
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Petrus Jacobus Johanna Nagelkerke, Drachten, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed July 17, 1974, Ser. No. 489,352
Claims priority, application Switzerland Feb. 8, 1974
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 F



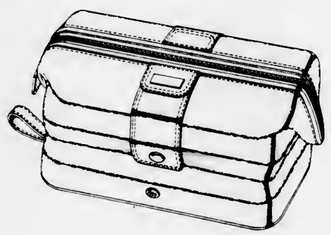
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Valerie Barad, Gardena, Calif., assignor to Theodor Manufacturing Corp., Gardena, Calif.
Filed Sept. 21, 1973, Ser. No. 399,757
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D86—10 N



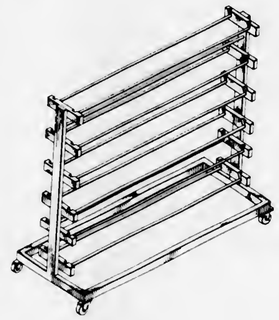
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Filed June 24, 1974, Ser. No. 482,132
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 H



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**David E. Workman, Orange, Calif., assignor to Samsonite Corporation, Denver, Colo.**
**Filed Aug. 12, 1974, Ser. No. 496,532**
**Term of patent 14 years**
**Int. Cl. D3—*01***
**U.S. Cl. D87—5 C**



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**Herbert A. Smith, Jr., Charlotte, N.C., assignor to Golden Bear Manufacturing & Machine, Inc.**
**Filed Mar. 27, 1974, Ser. No. 455,418**
**Term of patent 14 years**
**Int. Cl. D15—*08***
**U.S. Cl. D92—15**



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Pryor, David Ernest: *See—*
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Purdy, David L., to Coratomic Inc. Electrical generator. B 378,513, Cl. 136-202.000.

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Rice, Richard M. Hydraulic cascade drive system. B 584,520, Cl. 60-424.000.

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Roos, Jan, to U.S. Philips Corporation. Method of copying magnetic recordings provided on a magnetisable medium having a greater coercive force before than after recording. B 461,874, Cl. 360-17.000.

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Baillie, Robert A.; Davitt, H. James; and Rose, David E., B 520,384.

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Rowe, Selma S., executrix: *See—*
Rowe, George E., deceased, B 545,777.

Rupp, Charles C.: *See—*
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Sandvik Aktiebolag: *See—*
Sundstrom, Erik Wilhelm, B 545,630.

Schade, Otto Heinrich, Jr., to RCA Corporation. Radiation responsive voltage dividing circuit. B 439,542, Cl. 330-33.000.

Schafer, Karl; Schuster, Hans; and Dieterich, Dieter, to Bayer Aktiengesellschaft. Process for felt proofing and dimensionally stabilizing textiles made of fibers which contain keratin. B 389,304, Cl. 8-115.700.

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Schlereth, Fritz H., to General Electric Company. Recursive numerical processor. B 536,009, Cl. 235-156.000.

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Sepso, Roger P.: *See—*
Bauer, Werner R.; and Sepso, Roger P., B 428,877.

Shakib, Iraj D.: *See—*
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Shim, Kyung, to Stauffer Chemical Company. Polyalkylene glycol alkyl or haloalkyl polyphosphonates used as flame retardants in polyurethane foam. B 502,589, Cl. 260-2.5AR.

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Thomas, Roy D.; and Johnston, Ross W., B 481,600.

Stanley, James M.: *See—*
Proeschl, Bernard E.; Schell, Ralph C.; and Stanley, James M., B 510,588.

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Stork Amsterdam B.V.: *See—*
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Stork Amsterdam N.V.: *See—*
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Bruner, Leonard Bretz; and Koch, Kenneth Elmon, Jr., B 453,759.

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Textron, Inc.: *See—*
Samuelson, Donald G.; and Baxter, Charles A., B 499,171.

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Tocci, Leonard R.: *See—*
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U.S. Government: *See—*
Painter, John H., B 561,764.

United States of America
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istrator; with respect to an invention of:
Leibowitz, Lewis P. Annular arc accelerator shock tube. B 521,620, Cl. 73-147.000.
Wester, Gene W. DC-to-DC converters employing staggered-phase power switches with two-loop control. B 533,734, Cl. 321-2.000.
National Aeronautics and Space Administration: *See—*
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U.S. Philips Corporation: *See—*
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United Technologies Corporation: *See—*
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Vande Wiele, John L.: *See—*
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Vit, Jaroslav, to National Patent Development Corporation. Haloamine transfer. B 301,143, Cl. 260-534.00R.

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Wagner, David Prugh: *See*—
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Wagner, Kuno; and Schroer, Walter, to Bayer Aktiengesellschaft. Method of dressing leather. B 519,377, Cl. 427-389.000.
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Williams, Donald L.: *See*—
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Willing, Robert: *See*—
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Woolley, John Mathers, to Imperial Chemical Industries Ltd. Preparation of aromatic nitroso compounds. B 394,248, Cl. 260-647.000.
Yocom, Perry Niel; and Dismukes, John Pickett, to RCA Corporation: Luminescent sulfides of monovalent and trivalent cations. B 535,813, Cl. 252-301.40S.
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Zweers, Willem: *See*—
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# CLASSIFICATION OF PUBLISHED PATENT APPLICATIONS PUBLISHED UNDER SECOND TRIAL VOLUNTARY PROTEST PROGRAM

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| 10.2 | B 430,334 | C | Jan. 27, 1976 |
| 14 | B 460,388 | C | Jan. 27, 1976 |
| 17 | B 458,060 | C | Jan. 13, 1976 |
| 115.7 | B 389,304 | C | Jan. 27, 1976 |
| 161 | B 461,352 | C | Jan. 13, 1976 |
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| 2502 | B 541,496 | E | Jan. 27, 1976 |
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| 285F | B 565,180 | C | Jan. 27, 1976 |
| **Class 29** | | | |
| 96 | B 546,911 | M | Jan. 13, 1976 |
| 127 | B 510,855 | M | Jan. 27, 1976 |
| 428 | B 520,928 | M | Jan. 13, 1976 |
| 580 | B 492,301 | M | Jan. 13, 1976 |
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| 10A | B 491,501 | M | Jan. 13, 1976 |
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| 484 | B 522,354 | M | Jan. 20, 1976 |
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| 352 | B 543,941 | C | Jan. 13, 1976 |
| **Class 56** | | | |
| 14.5 | B 549,244 | M | Jan. 27, 1976 |
| **Class 60** | | | |
| 304 | B 502,540 | M | Jan. 13, 1976 |
| 422 | B 526,445 | M | Jan. 20, 1976 |
| 424 | B 584,520 | M | Jan. 27, 1976 |
| 425 | B 535,386 | M | Jan. 13, 1976 |
| 592 | B 465,145 | M | Jan. 27, 1976 |
| **Class 61** | | | |
| .5 | B 554,283 | M | Jan. 27, 1976 |
| **Class 62** | | | |
| 353 | B 564,314 | M | Jan. 20, 1976 |
| **Class 65** | | | |
| 3A | B 532,969 | C | Jan. 13, 1976 |
| 239 | B 545,777 | C | Jan. 27, 1976 |
| **Class 71** | | | |
| 113 | B 535,076 | C | Jan. 20, 1976 |
| **Class 72** | | | |
| 88 | B 575,757 | M | Jan. 27, 1976 |
| **Class 73** | | | |
| 24 | B 506,744 | M | Jan. 13, 1976 |
| 147 | B 521,620 | M | Jan. 27, 1976 |
| **Class 74** | | | |
| 243C | B 558,818 | M | Jan. 13, 1976 |
| 481 | B 497,021 | M | Jan. 13, 1976 |
| 527 | B 470,170 | M | Jan. 13, 1976 |
| **Class 75** | | | |
| .5BA | B 385,631 | C | Jan. 27, 1976 |
| 135 | B 525,961 | C | Jan. 13, 1976 |
| **Class 83** | | | |
| 425 | B 545,935 | M | Jan. 27, 1976 |
| **Class 84** | | | |
| 275 | B 504,169 | M | Jan. 13, 1976 |
| **Class 86** | | | |
| 1R | B 356,187 | M | Jan. 20, 1976 |
| **Class 96** | | | |
| 1R | B 423,883 | C | Jan. 27, 1976 |
| 36.1 | B 359,901 | C | Jan. 13, 1976 |
| 78 | B 503,029 | C | Jan. 27, 1976 |
| **Class 101** | | | |
| 93.13 | B 496,999 | M | Jan. 27, 1976 |
| 93.14 | B 481,600 | M | Jan. 27, 1976 |
| 129 | B 416,589 | M | Jan. 27, 1976 |
| **Class 102** | | | |
| 32 | B 405,726 | M | Jan. 13, 1976 |
| 69 | B 412,068 | M | Jan. 13, 1976 |
| **Class 106** | | | |
| 27 | B 452,883 | C | Jan. 27, 1976 |
| 57 | B 502,773 | C | Jan. 13, 1976 |
| **Class 116** | | | |
| 124.4 | B 467,412 | M | Jan. 13, 1976 |
| **Class 123** | | | |
| 182 | B 558,251 | M | Jan. 13, 1976 |
| 325T | B 425,588 | M | Jan. 13, 1976 |
| **Class 126** | | | |
| 271 | B 512,745 | M | Jan. 13, 1976 |
| 350A | B 537,903 | M | Jan. 20, 1976 |
| **Class 128** | | | |
| 419P | B 535,466 | M | Jan. 27, 1976 |
| **Class 136** | | | |
| 202 | B 378,513 | C | Jan. 27, 1976 |
| **Class 137** | | | |
| 596.12 | B 514,687 | M | Jan. 27, 1976 |
| 798 | B 430,172 | M | Jan. 13, 1976 |
| **Class 144** | | | |
| 241 | B 545,630 | M | Jan. 27, 1976 |
| **Class 156** | | | |
| 3 | B 563,722 | C | Jan. 13, 1976 |
| 71 | B 456,148 | C | Jan. 13, 1976 |
| 73.6 | B 414,481 | C | Jan. 20, 1976 |
| 143 | B 462,386 | C | Jan. 13, 1976 |
| **Class 160** | | | |
| 229R | B 505,813 | M | Jan. 13, 1976 |
| **Class 162** | | | |
| 133 | B 431,072 | C | Jan. 20, 1976 |
| 198 | B 150,142 | C | Jan. 27, 1976 |
| **Class 164** | | | |
| 26 | B 499,227 | M | Jan. 27, 1976 |
| 60 | B 511,885 | M | Jan. 27, 1976 |
| **Class 166** | | | |
| 311 | B 511,156 | M | Jan. 27, 1976 |
| **Class 173** | | | |
| 104 | B 537,709 | M | Jan. 13, 1976 |
| 170 | B 567,058 | M | Jan. 13, 1976 |
| **Class 176** | | | |
| 20R | B 384,330 | C | Jan. 27, 1976 |
| **Class 178** | | | |
| 6 | B 546,426 | E | Jan. 27, 1976 |
| 58R | B 399,908 | C | Jan. 13, 1976 |
| 88 | B 561,764 | E | Jan. 27, 1976 |
| **Class 179** | | | |
| 1CN | B 475,681 | E | Jan. 20, 1976 |
| 1SM | B 476,577 | E | Jan. 20, 1976 |
| 1G | B 554,594 | E | Jan. 20, 1976 |
| 7.1R | B 545,050 | E | Jan. 20, 1976 |
| 81R | B 472,284 | E | Jan. 13, 1976 |
| **Class 180** | | | |
| 5R | B 499,171 | M | Jan. 27, 1976 |
| 49 | B 433,094 | M | Jan. 27, 1976 |
| 53R | B 551,527 | M | Jan. 13, 1976 |
| 79.2R | B 533,968 | M | Jan. 27, 1976 |
| **Class 188** | | | |
| 73.6 | B 533,056 | M | Jan. 13, 1976 |
| 218XL | B 562,698 | M | Jan. 13, 1976 |
| **Class 195** | | | |
| 29 | B 418,489 | C | Jan. 13, 1976 |

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| **Class 196** | | | |
| 14.52 | B 520,384 | M | Jan. 27, 1976 |
| **Class 197** | | | |
| 18 | B 535,391 | M | Jan. 27, 1976 |
| **Class 198** | | | |
| 129 | B 569,646 | M | Jan. 13, 1976 |
| 202 | B 499,352 | M | Jan. 27, 1976 |
| **Class 200** | | | |
| 5R | B 579,104 | E | Jan. 27, 1976 |
| 61.41 | B 506,286 | E | Jan. 20, 1976 |
| 83SA | B 428,877 | E | Jan. 27, 1976 |
| **Class 202** | | | |
| 227 | B 513,280 | C | Jan. 20, 1976 |
| **Class 206** | | | |
| 455 | B 490,067 | M | Jan. 27, 1976 |
| **Class 208** | | | |
| 15 | B 437,596 | C | Jan. 27, 1976 |
| 210 | B 501,317 | C | Jan. 13, 1976 |
| 253 | B 438,916 | C | Jan. 13, 1976 |
| **Class 210** | | | |
| 130 | B 532,901 | C | Jan. 13, 1976 |
| **Class 214** | | | |
| 58 | B 555,772 | M | Jan. 13, 1976 |
| 152 | B 480,604 | M | Jan. 13, 1976 |
| **Class 215** | | | |
| 216 | B 541,015 | M | Jan. 27, 1976 |
| **Class 220** | | | |
| 23.83 | B 529,156 | M | Jan. 13, 1976 |
| 288 | B 516,032 | M | Jan. 27, 1976 |
| 337 | B 578,447 | M | Jan. 20, 1976 |
| **Class 222** | | | |
| 67 | B 521,480 | M | Jan. 13, 1976 |
| 136 | B 487,260 | M | Jan. 27, 1976 |
| 325 | B 515,303 | M | Jan. 20, 1976 |
| **Class 228** | | | |
| 190 | B 473,972 | M | Jan. 13, 1976 |
| **Class 229** | | | |
| 2.5 | B 537,990 | M | Jan. 13, 1976 |
| 17R | B 461,257 | M | Jan. 13, 1976 |
| 62.5 | B 429,157 | M | Jan. 27, 1976 |
| **Class 235** | | | |
| 151.34 | B 492,946 | E | Jan. 27, 1976 |
| 152 | B 559,737 | E | Jan. 20, 1976 |
| 156 | B 536,009 | E | Jan. 27, 1976 |
| 181 | B 520,924 | E | Jan. 27, 1976 |
| **Class 239** | | | |
| 424 | B 580,921 | M | Jan. 13, 1976 |
| 424 | B 586,215 | M | Jan. 20, 1976 |
| **Class 242** | | | |
| 43R | B 521,600 | M | Jan. 27, 1976 |
| **Class 244** | | | |
| 134R | B 535,928 | M | Jan. 13, 1976 |
| 169 | B 511,346 | M | Jan. 27, 1976 |
| **Class 249** | | | |
| 135 | B 548,155 | M | Jan. 13, 1976 |
| **Class 250** | | | |
| 210 | B 515,908 | E | Jan. 20, 1976 |
| 227 | B 522,577 | E | Jan. 27, 1976 |
| 291 | B 500,981 | E | Jan. 27, 1976 |
| 402 | B 451,534 | E | Jan. 13, 1976 |
| **Class 252** | | | |
| 301.4S | B 535,813 | C | Jan. 27, 1976 |
| 364 | B 370,309 | C | Jan. 20, 1976 |
| 454 | B 450,967 | C | Jan. 13, 1976 |
| **Class 259** | | | |
| 191 | B 556,057 | M | Jan. 13, 1976 |
| **Class 260** | | | |
| 2.5AC | B 537,102 | C | Jan. 13, 1976 |
| 2.5AR | B 483,606 | C | Jan. 27, 1976 |
| | B 502,589 | C | Jan. 27, 1976 |
| 2.5AV | B 460,441 | C | Jan. 13, 1976 |
| 2.5R | B 471,579 | C | Jan. 13, 1976 |
| 23XA | B 483,865 | C | Jan. 13, 1976 |
| 28.5AS | B 501,540 | C | Jan. 13, 1976 |
| 29.2EP | B 526,997 | C | Jan. 13, 1976 |
| 33.6AQ | B 657,438 | C | Jan. 20, 1976 |
| 88.2C | B 417,014 | C | Jan. 13, 1976 |
| 112.5R | B 503,817 | C | Jan. 13, 1976 |
| 239A | B 349,370 | C | Jan. 27, 1976 |
| 239D | B 520,256 | C | Jan. 13, 1976 |
| | B 536,935 | C | Jan. 13, 1976 |
| 248NS | B 537,711 | C | Jan. 13, 1976 |
| 285.5 | B 530,318 | C | Jan. 13, 1976 |
| 294.8D | B 526,510 | C | Jan. 20, 1976 |
| 296R | B 477,252 | C | Jan. 13, 1976 |
| 308A | B 488,111 | C | Jan. 13, 1976 |
| 309.2 | B 542,158 | C | Jan. 13, 1976 |
| 330.5 | B 552,498 | C | Jan. 13, 1976 |
| 343.3 | B 536,675 | C | Jan. 20, 1976 |
| 348.5L | B 521,324 | C | Jan. 27, 1976 |
| 348.6 | B 546,295 | C | Jan. 20, 1976 |
| 471R | B 388,521 | C | Jan. 13, 1976 |
| 472 | B 472,256 | C | Jan. 13, 1976 |
| 515A | B 390,031 | C | Jan. 13, 1976 |
| 534R | B 301,143 | C | Jan. 27, 1976 |
| 593R | B 468,350 | C | Jan. 13, 1976 |
| 601R | B 208,916 | C | Jan. 13, 1976 |
| 609E | B 474,573 | C | Jan. 20, 1976 |
| 621K | B 470,348 | C | Jan. 13, 1976 |
| 647 | B 394,248 | C | Jan. 27, 1976 |
| 674SA | B 426,274 | C | Jan. 20, 1976 |
| 873 | B 465,688 | C | Jan. 27, 1976 |
| **Class 261** | | | |
| 39A | B 562,462 | C | Jan. 13, 1976 |
| 98 | B 480,702 | C | Jan. 27, 1976 |
| **Class 264** | | | |
| 36 | B 308,659 | C | Jan. 27, 1976 |
| 51 | B 508,369 | C | Jan. 13, 1976 |
| 225 | B 453,759 | C | Jan. 27, 1976 |
| **Class 296** | | | |
| 35R | B 463,671 | M | Jan. 13, 1976 |
| **Class 298** | | | |
| 35M | B 510,588 | M | Jan. 27, 1976 |
| **Class 305** | | | |
| 27 | B 506,566 | M | Jan. 20, 1976 |
| **Class 307** | | | |
| 88.3 | B 540,872 | E | Jan. 20, 1976 |
| 137 | B 466,444 | E | Jan. 20, 1976 |
| 232 | B 540,078 | E | Jan. 13, 1976 |
| 255 | B 492,688 | E | Jan. 20, 1976 |
| 270 | B 497,960 | E | Jan. 20, 1976 |
| **Class 310** | | | |
| 9.6 | B 501,482 | E | Jan. 13, 1976 |
| 41 | B 561,784 | E | Jan. 27, 1976 |
| 155 | B 592,143 | C | Jan. 25, 1976 |
| **Class 313** | | | |
| 42 | B 534,443 | E | Jan. 27, 1976 |
| 60 | B 513,706 | M | Jan. 13, 1976 |
| 273 | B 531,929 | E | Jan. 20, 1976 |
| 366 | B 515,455 | E | Jan. 27, 1976 |
| 404 | B 523,696 | E | Jan. 13, 1976 |
| 452 | B 160,045 | E | Jan. 13, 1976 |
| 477 | B 279,969 | E | Jan. 13, 1976 |
| **Class 315** | | | |
| 169TV | B 463,322 | E | Jan. 20, 1976 |
| 371 | B 483,615 | E | Jan. 27, 1976 |
| 388 | B 516,002 | E | Jan. 13, 1976 |
| 399 | B 467,971 | E | Jan. 13, 1976 |
| **Class 317** | | | |
| 9R | B 488,634 | E | Jan. 20, 1976 |
| 259 | B 506,461 | E | Jan. 20, 1976 |
| **Class 318** | | | |
| 257 | B 502,973 | E | Jan. 27, 1976 |



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| 2 | B 533,734 | E | Jan. 27, 1976 |
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| 1 | B 430,276 | E | Jan. 20, 1976 |
| 17 | B 459,811 | E | Jan. 20, 1976 |
| | B 583,089 | E | Jan. 27, 1976 |
| **Class 324** | | | |
| 13 | B 079,099 | E | Jan. 13, 1976 |
| 62 | B 465,393 | E | Jan. 27, 1976 |
| **Class 325** | | | |
| 40 | B 558,220 | E | Jan. 27, 1976 |
| 468 | B 544,961 | E | Jan. 13, 1976 |
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| 155 | B 550,693 | E | Jan. 20, 1976 |
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| 33 | B 439,542 | E | Jan. 27, 1976 |
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| 44ST | B 527,669 | E | Jan. 13, 1976 |
| 51 | B 538,686 | E | Jan. 13, 1976 |
| 94.5C | B 549,931 | E | Jan. 20, 1976 |
| 94.5P | B 394,350 | E | Jan. 13, 1976 |
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| 30R | B 453,616 | E | Jan. 27, 1976 |
| 72 | B 534,991 | E | Jan. 27, 1976 |
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| 210 | B 541,517 | E | Jan. 13, 1976 |
| **Class 340** | | | |
| 172.5 | B 482,907 | E | Jan. 20, 1976 |
| 173R | B 545,945 | M | Jan. 27, 1976 |
| 174DC | B 443,712 | E | Jan. 27, 1976 |
| 174TF | B 476,681 | E | Jan. 13, 1976 |
| | B 499,718 | E | Jan. 27, 1976 |
| 198 | B 546,665 | E | Jan. 20, 1976 |
| 347AD | B 507,647 | E | Jan. 27, 1976 |
| | B 526,106 | E | Jan. 27, 1976 |
| 347CC | B 498,500 | E | Jan. 20, 1976 |
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| 7A | B 248,240 | E | Jan. 13, 1976 |
| 100LE | B 488,395 | E | Jan. 27, 1976 |
| 100LE | B 496,502 | E | Jan. 20, 1976 |
| 786 | B 547,994 | E | Jan. 20, 1976 |
| 815 | B 563,244 | E | Jan. 27, 1976 |
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| 173 | B 469,947 | M | Jan. 20, 1976 |
| 310 | B 520,543 | M | Jan. 27, 1976 |
| **Class 354** | | | |
| 298 | B 489,328 | E | Jan. 20, 1976 |
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| 16 | B 496,487 | E | Jan. 20, 1976 |
| 65 | B 470,798 | E | Jan. 20, 1976 |
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| 41 | B 502,289 | E | Jan. 13, 1976 |
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| 1 | B 484,365 | E | Jan. 27, 1976 |
| 17 | B 461,874 | E | Jan. 27, 1976 |
| 27 | B 427,883 | E | Jan. 20, 1976 |
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| 318 | B 540,632 | M | Jan. 13, 1976 |
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| 213R | B 512,547 | M | Jan. 13, 1976 |
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| 61 | B 549,394 | M | Jan. 27, 1976 |
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| 238 | B 485,401 | C | Jan. 27, 1976 |
| 315 | B 471,221 | C | Jan. 13, 1976 |
| 390 | B 549,198 | C | Jan. 13, 1976 |
| 580 | B 379,177 | C | Jan. 27, 1976 |
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| 122 | B 524,179 | C | Jan. 13, 1976 |
| 230 | B 487,133 | C | Jan. 27, 1976 |
| 257 | B 374,588 | C | Jan. 27, 1976 |
| 263 | B 466,929 | C | Jan. 27, 1976 |
| 274 | B 496,431 | C | Jan. 13, 1976 |
| 311 | B 457,862 | C | Jan. 27, 1976 |
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| 70 | B 381,709 | C | Jan. 13, 1976 |
| 207 | B 501,415 | C | Jan. 13, 1976 |
| 343 | B 160,099 | C | Jan. 13, 1976 |
| 372 | B 409,848 | C | Jan. 27, 1976 |
| 389 | B 519,377 | C | Jan. 27, 1976 |
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| 315 | B 373,354 | C | Jan. 27, 1976 |
| 434 | B 457,886 | C | Jan. 13, 1976 |
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TO WHOM

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Bardsley, William; Green, Geoffrey William; Holliday, Charles Harry; and Hurle, Donald Thomas James, to National Research Development Corporation. Weighing cell apparatus for diameter control of a rotatable growing crystal. 3,934,983, Cl. 23-273.0SP.

Barenyi, Bela, to Daimler-Benz Aktiengesellschaft. Steering arrangement for motor vehicles. 3,934,896, Cl. 280-87.00R.

Barfield, Leslie Theodore, to London & Scandanavian Metallurgical Co., Limited. Aluminum silicate particles having a layer of a rare earth oxide thereon. 3,934,988, Cl. 51-308.000.

Barnert, Konrad, to Volkswagenwerk Aktiengesellschaft. Control valve for exhaust gas recycling apparatus. 3,934,564, Cl. 123-119.00A.

Barnes, Richard D.; and Sharpe, William E., Jr., to Burlington Industries, Inc. Electrically heated laminate with a glass heating fabric. 3,935,422, Cl. 219-213.000.

Baron, Thomas Douglas; Fishwick, Brian Ribbons; Leng, John Lindley; and Yelland, Michael, to Imperial Chemical Industries Limited. Indazole-azo phenyl compounds. 3,935,183, Cl. 260-162.000.

Barringer Research Limited: *See—*
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Barry, Robert E.; and Herter, Vincent J., to Detroit Edison Company, The. Precipitation of steam fogs. 3,934,817, Cl. 239-2.00R.

Barry-Wehmiller Company: *See—*
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Barsellotti, John A.; McNeilly, Joseph H.; Laliccia, Federico R.; and Pinede, Edouard, to International Standard Electric Corporation. Key telephone system using time division and space division control. 3,935,396, Cl. 179-99.000.

Bartels, Alfred; and Kohn, Herbert, to Nordischer Maschinenbau Rud. Baader. Skinning machine for fish fillets. 3,934,310, Cl. 17-62.000.

BASF Aktiengesellschaft: *See—*
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Bauerlein, Rudolf; and Uhl, Dieter, to Siemens Aktiengesellschaft. Method of improving the radiation resistance of silicon transistors with a silicon oxide coating. 3,935,033, Cl. 148-1.500.

Baumgartner, Henri; and Meier, John G., to Battelle Memorial Institute. Boiler using combustible fluid. 3,934,555, Cl. 122-225.00R.

Baumgartner, Henri, to Battelle Memorial Institute. Boiler using combustible fluid. 3,934,556, Cl. 122-225.00R.

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Becker, Burkhardt; Wallach, Heinz; and Heise, Rainer, to Volkswagenwerk Aktiengesellschaft. Safety steering column. 3,934,486, Cl. 74-492.000.

Becker, Burkhardt, to Volkswagenwerk Aktiengesellschaft. Vehicle steering column. 3,934,487, Cl. 74-492.000.

Becker, Ignaz Albert Josef, to Rabewerk Heinrich Clausing. Semi-mounted two-way plow. 3,934,653, Cl. 172-212.000.

Becker, John E., to Cluaran Associates Ltd. Fluid coupling with movable vanes. 3,934,415, Cl. 60-353.000.

Becker, John Edward, to Cluaran Associates Ltd. Hydraulic coupling fluid clutches. 3,934,687, Cl. 192-3.230.

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Beppu, Tatsuro; Iwamoto, Masami; and Sekiwa, Tetsuo, to Tokyo Shibaura Electric Co., Ltd. Method of manufacturing a green light-emitting gallium phosphide device. 3,935,039, Cl. 148-171.000.

Bercynski, Frank A.; Fritz, Jack J.; and Lucas, Theodore W., Jr., to Andeo Incorporated. Method and apparatus for removing molten waste from a furnace. 3,934,523, Cl. 110-165.00R.

Beretsky, Irwin; and Lightenstein, Bernard, to Technicon Instruments Corporation. Method and apparatus for pulse echo imaging. 3,934,458, Cl. 73-67.900.

Berg, John W. Means and method of forming sheet metal. 3,934,440, Cl. 72-54.000.

Berg Manufacturing Company, The: *See—*
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Beriger, Ernst; Boger, Manfred; Drabek, Jozef; and Kristiansen, Odd, to Ciba-Geigy Corporation. O-methyl/ethyl-s-propyl/butyl-o-phenyl thiophosphates and dithiophosphates having an o-heterocyclic group or the phenyl ring. 3,935,233, Cl. 260-340.700.

Beringer, Monique; and Buchmann, Paul, to Tamag Basel AG. Process for the manufacture of tobacco substitute. 3,934,594, Cl. 131-2.000.

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Bernauer, Karl; Bohni, Erika; and Borgulya, Janos, to Hoffmann-La Roche Inc. Naphthoquinones. 3,935,246, Cl. 260-396.00R.

Bertele, Erhard; and Schudel, Peter, to Givaudan Corporation. Process for preparation of terpene flavorants and novel intermediates therefor. 3,935,275, Cl. 260-603.0HF.

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Bhutani, Sudhir K., to Olin Corporation. Hydrogenation of dinitrotoluene to toluene diamine. 3,935,264, Cl. 260-580.000.

Bianchi, Joseph S. Preparation of red and rose wines. 3,935,317, Cl. 426-15.000.

Biffle, Morris S., to Dresser Industries, Inc. Rotary drilling head assembly. 3,934,887, Cl. 277-31.000.

Biola, Georges; Buathier, Bernard; Combes, Andre; and Martin, Michel, to Rhone-Poulenc Industries. Process for the manufacture of methyl mercaptan. 3,935,276, Cl. 260-609.00R.

Biornstad, Peter, to Escher Wyss GmbH. Stock inlet for a paper machine. 3,935,061, Cl. 162-252.000.

Bishop, Burton DeWolfe, to Dresser Industries, Inc. Safety latch for automotive hoists or the like. 3,934,680, Cl. 187-8.500.

Bishop, Marion M.; and Weist, Walter Robert, to Boeing Company, The. Current limiting power supply. 3,935,471, Cl. 307-32.000.

Bishton, Norris J., Jr. Oil recovery system. 3,934,275, Cl. 4-10.000.

Bivins, Henry W., Jr. Blending apparatus. 3,934,987, Cl. 48-180.00C.

Bizot, Jean; and Sausse, Andre, to Rhone-Poulenc-Textile. Purification of a chloride solution. 3,935,092, Cl. 204-234.000.

Black, Boyd C. Wire rope splice assembly. 3,934,397, Cl. 57-142.000.

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Black, Dewie E.; Fabry, Donald F.; and Dombrowski, Thaddeus, to Burroughs Corporation. Angular motion detection apparatus. 3,935,447, Cl. 250-233.000.

Black, John O. Free wing for convertible aircraft structure. 3,934,843, Cl. 244-7.00C.

Blackwell, Jennings P., to Phillips Petroleum Company. Dispersion of arylene sulfide polymer containing fluorocarbon polymer for forming coatings. 3,935,347, Cl. 427-388.000.

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Blanchard, Eugene J.; Gautreaux, Gloria A.; and Harper, Robert J., Jr., to United States of America, Agriculture. Process for preparing multicolored cotton pile fabric. 3,934,971, Cl. 8-14.000.

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Bleibtreu, Alexander; and Lauterwald, Rolf, to Maschinenfabrik Reinhausen Gebruder Scheubeck K.G. Multiphase vacuum switch assembly having cam operated spring charging drive mechanism with lost motion connection. 3,935,407, Cl. 200-144.00B.

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Blome, James C.; Goodbrake, Chris J.; O'Brien, Marvin Edward; and Vance, Macy W., to McDonnell Douglas Corporation. Fibrous insulation and process for making the same. 3,935,060, Cl. 162-152.000.

Bloomer, Ivan, to Carrier Drysys, Ltd. Paint spraying booths. 3,934,495, Cl. 98-115.0SB.

Bobenc, Robert F., to Compression Dynamics, Incorporated. Apparatus and method for atomizing fuel-air mixture in a carburetion system. 3,934,569, Cl. 123-141.000.

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Booker, Leonard, to Detroit Edison Company, The. Coal burning system. 3,934,522, Cl. 110-22.00R.

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Boulanger, Henry J.; and Brassard, Theodore, to Texas Instruments Incorporated. Current inrush limiter. 3,935,511, Cl. 317-20.000.

Bouma, Ype, to General Crane Industries Limited. Stop lock assembly for a pivotal tower. 3,934,381, Cl. 52-116.000.

Bourges, Bernard M., to Societe Anonyme: Poclain. Telescopic structure. 3,934,616, Cl. 138-113.000.

Boutin, Harold S., to Acme Specialty Manufacturing Company, The. Mirror joint assembly. 3,934,807, Cl. 248-478.000.

Bowen, Howard; and Spinner, Frederick W., to Research Technology Incorporated. Light responsive detector. 3,935,468, Cl. 250-572.000.

Bowman, Clyde L., to Rapistan Incorporated. Belt accumulators. 3,934,707, Cl. 198-34.000.

Bowman, Edward W., deceased; by Bowman, Muriel B., executrix; and by Bowman, Michael Edward, executor, to E. W. Bowman, Incorporated. Glassware handling and treating equipment. 3,934,993, Cl. 65-60.000.

Bowman, Michael Edward, executor: *See—*
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Bowman, Muriel B., executrix: *See—*
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Bracken, Thomas W., to Macro Industries, Inc. Identification camera and method of making identification cards. 3,935,579, Cl. 354-109.000.

Bradham, Allen C., to Badger Meter, Inc. Flume-type metering. 3,934,472, Cl. 73-215.000.

Brady, Kevin James; Firtion, Victor Andrew; Rongved, Leif; and Saunders, Thomas Edward, to Bell Telephone Laboratories, Incorporated. Method for reducing rotation components in table translation. 3,934,949, Cl. 308-9.000.

Braginetz, Paul A., to Philip Morris Incorporated. Multiple blade safety razor combination. 3,934,338, Cl. 30-47.000.

Brandeberry, Raymond L.; Lehr, Glen J.; and Stacy, Denzil W., to Libbey-Owens-Ford Company. Sheathed thermocouple. 3,935,032, Cl. 136-230.000.

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Brannan, Jerome A., to Dansen Company, Inc. Device for lifting, carrying and inverting water cooler bottles. 3,934,772, Cl. 224-45.0AA.

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Brassette, Donald J.; and Duncan, Richard A., to Thomson International Company. Harvesting topper. 3,934,391, Cl. 56-63.000.

Braton, Norman R.; and Acker, Jan R., to Wisconsin Alumni Research Foundation. Removal of built up layers of organic coatings. 3,934,379, Cl. 51-319.000.

Bravin, Ben. Tooth transmission member utilizing pivotally interconnected preforms. 3,934,484, Cl. 74-446.000.

Brefka, Paul, to Henry L. Hanson Co., Inc. Pilfer-proof merchandise display. 3,934,727, Cl. 211-7.000.

Brennan, Martin J.; Klawonn, Vernon D.; and Browne, Edward K., to K & B Industries, Inc. Charcoal starter. 3,934,520, Cl. 110-1.00F.

Brenneisen, Jorg; and Schonung, Arnold, to Brown, Boveri & Cie, A.G. Self-commutating inverter means. 3,935,528, Cl. 321-45.00C.

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Brieger, Emmet F., to Schlumberger Technology Corporation. Formation-testing apparatus. 3,934,468, Cl. 73-155.000.

Briggs, William Scott, to Georgia-Pacific Corporation. Clarification process. 3,935,101, Cl. 210-47.000.

Briles, Franklin S. Reverse end riveting system and method. 3,934,330, Cl. 29-509.000.

Brindisi, Joseph A., to Castro Convertible Corporation. Mattress compression linkage for convertible sofa-bed. 3,934,281, Cl. 5-13.000.

Brinkmann, Uwe, to International Standard Electric Corporation. Circuit arrangement for synchronizing a television receiver. 3,935,388, Cl. 178-69.5TV.

Bristoll, Paul; and Arink, Godefridus, to Shell Oil Company. Method of detecting imperfections in a heat-insulating lining. 3,934,451, Cl. 73-15.0FD.

Brockmann, Hans-Jurgen, to U.S. Philips Corporation. Device for radial, static and dynamic convergence of electron beams in a colour television display tube. 3,935,506, Cl. 315-370.000.

Brodbeck, Brunhilde. Massaging and relaxing device. 3,934,579, Cl. 128-57.000.

Brodeur, Robert R., to Morgan Construction Company. Vertical roll changing apparatus. 3,934,447, Cl. 72-239.000.

Broniwitz, Laurence E.; Landau, Mark I.; and Pearson, John B., III, to Hughes Aircraft Company. System for resolving velocity ambiguity in pulse-doppler radar. 3,935,572, Cl. 343-9.000.

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Bruggisser, Klaus; Graf, Felix; and Rucgg, Albert, to Rieter Machine Works Ltd. Traversing thread guide. 3,934,831, Cl. 242-43.000.

Bruner, A. J.; Foster, Edward T.; and Kearns, Thomas N. Barrier. 3,934,540, Cl. 116-63.00P.

Bruner, William L., to F. B. Electronics. Signal lamp configuration for directing high speed traffic and sequencing means therefor. 3,935,561, Cl. 340-109.000.

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Bryant, Robert G., to GEM Industries, Inc. Safety trip lock for the drop side of a crib. 3,934,282, Cl. 5-100.000.

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Bucalo, Louis. Tampon device to test for micro-organisms. 3,934,575, Cl. 128-2.00W.

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Buchmann, Paul: *See—*
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Buck, Robert. Contactless oscillator-type proximity sensor with constant-voltage impedance. 3,935,542, Cl. 331-65.000.

Buckeye International, Inc.: *See—*
Farrell, Claude S., Jr.; Cone, Richard E., II; and Ellies, Alan David, 3,934,934.

Buick, Douglas Stewart. Filling machines. 3,934,627, Cl. 141-146.000.

Bula, Karl. Antiskid device for vehicle tires. 3,934,633, Cl. 152-221.000.

Bulfer, Andrew Frederick, to Bell Telephone Laboratories, Incorporated. Network routing and control arrangement. 3,935,394, Cl. 179-18.0ES.

Burgen, Dering R.: *See—*
Mood, Robert D.; Hunter, Joseph P.; and Burgen, Dering R., 3,935,440.

Burk, Gerhard; and Willem, Dieter, to Daimler-Benz Aktiengesellschaft. Fastening arrangement of one sheet-metal member provided with a rim in another sheet-metal member also provided with a rim. 3,934,899, Cl. 280-152.00R.

Burkholder, Nelson D.; Wisner, Ralph L.; and Taber, Dudley A., to Dow Chemical Company, The. Absorbent product containing flocculated clay mineral aggregates. 3,935,363, Cl. 428-281.000.

Burlington Industries, Inc.: *See—*
Barnes, Richard D.; and Sharpe, William E., Jr., 3,935,422.
May, Robert Edward, 3,934,285.

Burr, John Kelsey; and Wolf, William, to Motion Systems, Inc. Recirculating ball slide. 3,934,946, Cl. 308-6.00C.

Burr, Robert P., to Kollmorgen Corporation. Displacing apparatus. 3,935,521, Cl. 318-394.000.

Burroughs Corporation: *See—*
Bagen, Herbert John; Ferguson, Ronald Worden; Korytkowski, Henry M.; and Mowry, William H., Jr., 3,934,501.
Black, Dewie E.; Fabry, Donald F.; and Dombrowski, Thaddeus, 3,935,447.
Moister, Douglas E., Jr., 3,935,508.
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Triplett: Gerald H.; Nicol, Edward A.; and Klehm, William G., Jr., 3,935,372.

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Bush, Walter Monroe: *See—*
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Lestina, Gregory James; and Bush, Walter Monroe, 3,935,263.

Buss, A.G.: *See—*
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Buss, Dennis Darcy; and Bailey, Walter Howard, to Texas Instruments Incorporated. Variable tap weight convolution filter. 3,935,439, Cl. 235-181.000.

Busson, Christian: *See—*
Alagy, Jacques; Busson, Christian; and Cessou, Maurice, 3,935,100.

Butler, Henry N. Power ventilator. 3,934,494, Cl. 98-43.000.

Butler, Lee D.: *See—*
Grey, Donald M.; and Butler, Lee D., 3,934,734.

Butts, Oscar Wesley, to Yuba Heat Transfer Corporation. Finned tube protector. 3,934,645, Cl. 165-67.000.

Buzzi, Ugo, to Albe S.A. Collet chuck which can be centered relative to one or more axes of the workpiece to be machined and suitable for machine tools. 3,934,890, Cl. 279-16.000.

Byers, Jimmy F., to United States of America, Navy. Cable traction sheave. 3,934,482, Cl. 74-230.700.

Bylo, John J. Marine transport. 3,934,532, Cl. 114-72.000.

C. Reichert Optische Werke AG: *See—*
Schindl, Klaus P., 3,935,011.

Cachat, John F., to Park-Ohio Industries, Inc. Inductor-workpiece position detector. 3,935,416, Cl. 219-10.770.

Cadman, Martyn A.; Voinov, Michel; and Tannenberger, Helmut, to Etat Francais. Electric storage battery providing high energy density. 3,935,025, Cl. 136-6.0LN.

Cairo, Anthony C.: *See—*
Bauer, Frederick T.; Cairo, Anthony C.; Holkeboer, Ronald E.; and Tyler, Gary E., 3,935,473.

Cake, Arthur F., to Wagner Electric Corporation. Multiplexed signal-sequence control system. 3,935,470, Cl. 307-105.00B.

Calcagno, Benedetto: *See—*
Cocuzza, Gioacchino; Calcagno, Benedetto; and Torreggiani, Gianni, 3,935,279.

Calderon, Nissim, to Goodyear Tire & Rubber Company, The. Process for the preparation of cyclohexadecenones and derivatives. 3,935,270, Cl. 260-586.00P.

Caldwell, Edward N., to Robertshaw Controls Company. Pneumatically operated pilot relay and system and diverting relay construction utilizing the same or the like. 3,934,613, Cl. 137-625.500.

California Cedar Products Company Inc.: *See—*
Salemme, Fred J., 3,934,628.

California Fruit Concentrates, Inc.: *See—*
Hannah, Phillip L., 3,934,497.

Calvin, Douglas G.: *See—*
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Camacho, Salvador L.; and Magor, James K. Plasma heated batch-type annealing furnace. 3,935,371, Cl. 13-2.000.





Campagna, Gary J.; and Janson, Roland C. Ocular positioning droplet dispensing device. 3,934,590, Cl. 128-233.000.

Campbell, Glenn M.: *See—*
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Campbell, Willis R.; and Ostergren, William F., to Sperry Rand Corporation. Breakaway mechanism for an improved crop material roll forming machine. 3,934,393, Cl. 56-341.000.

Campillo, Anthony J.; Newnam, Brian E.; Shapiro, Stanley L.; and Terrell, N. James, Jr., to United States of America, Energy Research and Development Administration. Method and apparatus for reducing diffraction-induced damage in high power laser amplifier systems. 3,935,545, Cl. 331-94.50C.

Canada-Cities Service, Ltd.: *See—*
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Canadian Marine Drilling Ltd.: *See—*
Gallagher, John Patrick, 3,934,529.

Canazzi, H. Donald. Boat propulsion system. 3,934,538, Cl. 115-39.000.

Candlin, Francis T.; and Candlin, Michael D. Standard for parking and locking a bicycle. 3,934,436, Cl. 70-234.000.

Candlin, Michael D.: *See—*
Candlin, Francis T.; and Candlin, Michael D., 3,934,436.

Cannon, Robert B.: *See—*
Mueller, Paul; Cannon, Robert B.; and Prine, Ray A., 3,934,821.

Canon Kabushiki Kaisha: *See—*
Itoh, Susumu; Nishida, Keijiro; Kamiya, Osamu; and Sekimura, Nobuyuki, 3,934,961.

Cantley, George, to Rockwell International Corporation. Steering control head with adjustable positioning means. 3,934,488, Cl. 74-493.000.

Cap, Heinrich; Krammer, Herbert; and Scheiber, Robert, to Vockenhuber, Karl; and Hauser, Raimund. Circuit arrangement for detecting voltage differences. 3,935,524, Cl. 318-640.000.

Carder, Charles H.: *See—*
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Carl Still, Firma: *See—*
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Carlo Erba S.p.A.: *See—*
Gandolfi, Carmelo; Doria, Gianfederico; and Gaio, Pietro, 3,935,254.

Carlson, David, Jr. Shoulder carrier for video tape machine and camera. 3,934,769, Cl. 224-5.00V.

Carlson, Elmer V.; Mostardo, August F., Jr.; and Diblick, Alex V., to Industrial Research Products, Inc. Transducer with improved armature and yoke construction. 3,935,398, Cl. 179-114.00A.

Carlson, Larry A. Carpet cutting tool. 3,934,341, Cl. 30-287.000.

Carlson, Philip E. Water and room heater. 3,934,554, Cl. 122-176.000.

Carmien, Joseph Allen, to Nupla Corporation. Assembly tool for use in attaching fiberglass tool handles. 3,935,055, Cl. 156-443.000.

Carpenter Technology Corporation: *See—*
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Carpentier, Philip E.: *See—*
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Carrico, Phillip H.: *See—*
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Carrier Corporation: *See—*
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Carrier Drysys, Ltd.: *See—*
Bloomer, Ivan, 3,934,495.

Carruthers, Eben H. Device for inserting and removing contact lens. 3,934,914, Cl. 294-1.0CA.

Carter, Melvin A.: *See—*
Steinke, Theodore D.; and Carter, Melvin A., 3,935,003.

Caruel, Jacques Emile Jules: *See—*
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Castro Convertible Corporation: *See—*
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Catalysts and Chemicals, Inc.: *See—*
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Caton, Michael Peter Lear; Coffee, Edward Charles John; and Watkins, Gordon Leonard, to May & Baker Limited. Cyclopentane derivatives. 3,935,261, Cl. 260-557.00R.

Cavitron Corporation: *See—*
Damast, Martin A.; Abberton, Vincent P.; and Celestin, Kusler, 3,934,526.

Cawley, John Duval, to Eastman Kodak Company. Block copolyesters of polysiloxanes. 3,935,154, Cl. 260-33.8SB.

Celestin, Kusler: *See—*
Damast, Martin A.; Abberton, Vincent P.; and Celestin, Kusler, 3,934,526.

Cengel, John A.: *See—*
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Cessou, Maurice: *See—*
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Chagra, Lee A.: *See—*
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Challenge-Cook Bros., Incorporated: *See—*
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Chambers, Arnold, to Glass Tubes and Components Limited. Object transfer machine. 3,934,732, Cl. 214-1.0BB.

Chambers, Arnold: *See—*
Inns, David Harold; Bennett, william Roy; and Chambers, Arnold, 3,934,997.

Chambers, Robert L. Disk record player. 3,934,883, Cl. 274-9.00B.

Chapurlat, Robert, to Rhone-Poulenc S.A. Process for the oxidation of olefine compounds. 3,935,272, Cl. 260-597.00R.

Chasovodov, Nikolai Alexandrovich: *See—*
Egorov, Jury Dmitrievich; Kavyarov, Ivan Savvateevich; Samatov, Jury Petrovich; Chasovodov, Nikolai Alexandrovich; and Chirikhin, Jury Ivanovich, 3,934,665.

Cheetham, Ian: *See—*
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Chemcut Corporation: *See—*
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Chemed Corporation: *See—*
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Chemetron Corporation: *See—*
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Chen, Ming Chih: *See—*
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Cheng, King Y.: *See—*
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Chernysheva, Evangelina Mikhailovna: *See—*
Kitaev, Georgy Avenirovich; Ploskikh, Vadim Alexandrovich; Minkov, Viktor Alexeevich; Kurbakov, Viktor Georgievich; Chernysheva, Evangelina Mikhailovna; Zlatkovskaya, Tatyana Nikolaevna; and Brunov, Viktor Timofeevich, 3,934,985.

Chevron Oil Field Research Co.: *See—*
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Chibata, Ichiro; Tosa, Tetsuya; and Matuo, Yuhsi, to Tanabe Seiyaku Co., Ltd. Purification of coenzyme A. 3,935,072, Cl. 195-68.000.

Chicago Display Company: *See—*
Snyder, Alan Kent; Schmidt, Arthur D.; Footc, Seldon T., deceased; and Clipp, Robert R., executor, 3,934,702.

Chielens, Alain, to Fives-Cail Babcock. Cooling arrangement for continuously cast metal objects. 3,934,641, Cl. 164-283.00S.

Chilcott, Lloyd D.: *See—*
Smith, Paul E., Jr.; and Chilcott, Lloyd D., 3,934,796.

Childers, Clifford W.; Clark, Earl; and Johnson, Wallace D., to Phillips Petroleum Company. Preparation of impact plastic compositions. 3,935,136, Cl. 260-4.00R.

Childers, Clifford W.; and Clark, Earl, to Phillips Petroleum Company. Recovery and recycle of latex produced in used aqueous suspension medium. 3,935,148, Cl. 260-29.6XA.

Childs, George William, deceased: *See—*
O'Neal, Cothburn M.; Mayo, Alfred M.; Childs, George William, deceased; and Childs, Patricia M., executrix, 3,934,793.
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Childs, Patricia M., executrix: *See—*
O'Neal, Cothburn M.; Mayo, Alfred M.; Childs, George William, deceased; and Childs, Patricia M., executrix, 3,934,793.
O'Neal, Cothburn M.; Mayo, Alfred M.; and Childs, George William, deceased, 3,935,426.

Chinnock, Edwin Leroy; Gloge, Detlef Christoph; and Smith, Peter William, to Bell Telephone Laboratories, Incorporated. Method for breaking brittle rods or fibers. 3,934,773, Cl. 225-2.000.

Chirikhin, Jury Ivanovich: *See—*
Egorov, Jury Dmitrievich; Kavyarov, Ivan Savvateevich; Samatov, Jury Petrovich; Chasovodov, Nikolai Alexandrovich; and Chirikhin, Jury Ivanovich, 3,934,665.

Chiu, Herman S.; and Rasmussen, Jerome J. M., to Union Carbide Corporation. Tubular cellulosic casing with cationic thermosetting resin coating. 3,935,320, Cl. 426-105.000.

Chokshi, Vibhas: *See—*
Greenhalgh, Colin William; Newton, David Francis; Eckersley, Dennis; Cheetham, Ian; Phillips, Duncan Adrian Sidney; Dunkerley, Kenneth; Williams, Gerald; and Chokshi, Vibhas, 3,934,972.

Christensen, James L.: *See—*
Thornburg, Daryl D.; and Christensen, James L., 3,935,379.

Chromax Limited: *See—*
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Church, Ralph E.; and Beckman, Daniel L., to General Electric Company. Dynamoelectric machine having improved vibration isolation and thrust system. 3,935,489, Cl. 310-90.000.

Churchill, John W. Method of constructing bilateral heater unit. 3,934,333, Cl. 29-611.000.

Ciaperoni, Aldemaro; and Mattiussi, Andrea, to Montedison S.p.A. Process for the anionic polymerization of pyrrolidone. 3,935,171, Cl. 260-78.00P.

Ciba-Geigy Corporation: *See—*
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Spivack, John d.; and Klemchuk, Peter P., 3,935,164.
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Cicognani, Mario, to Industrie Pirelli S.p.A. Mold for making double-toothed belts. 3,934,968, Cl. 425-28.00B.

Cielaszyk, Edward F.; DeRose, Ralph A.; and Kravcik, John W., to Neptune International Corporation. Electromagnetically operated remote meter or register having counter wheel locking means. 3,935,433, Cl. 235-92.00C.

Cimarusti, Christopher M.: *See—*
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Citizen Watch Co., Ltd.: *See—*
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Clark, Earl: *See—*
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Childers, Clifford W.; and Clark, Earl, 3,935,148.

Clark Equipment Company: *See—*
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Clark, Jack Phillip; Smith, Thurman Dale; and Foster, Alan Carl, to General Electric Company. Vessel nozzle inspection apparatus. 3,934,457, Cl. 73-67.80S.

Clarke, Geoffrey, to Square D Company. Ground fault protective system including an impedance responsive oscillator. 3,935,510, Cl. 317-18.00D.

Cleaver, Kenneth E., to American Hospital Supply Corporation. Reagent and method for determining total calcium in body fluids. 3,934,977, Cl. 23-230.00B.

Cleon Corporation: *See—*
de Luca, Peter C.; Stoddart, Hugh F.; and Jeffries, David, 3,935,462.

Cleveland, Dixon; and Derrick, Milford R., to Adaptronics, Inc. Non-minimum phase linear controller for hydraulic mechanisms. 3,935,523, Cl. 318-609.000.

Clipp, Robert R., executor: *See—*
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Cluaran Associates Ltd.: *See—*
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Coates, Thomas L.: *See—*
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Cochran, Chudleigh B., to Brown Oil Tools, Inc. Apparatus and method for cementing well liners. 3,934,652, Cl. 166-285.000.

Cockle, Roy R. Method and apparatus for producing rough cut lumber. 3,934,630, Cl. 144-39.000.

Cocuzza, Gioacchino; Calcagno, Benedetto; and Torreggiani, Gianni, to Societa'Italiana Resine S.I.R. S.p.A. Process for the production of glycol ethers. 3,935,279, Cl. 260-615.00R.

Coffee, Edward Charles John: *See—*
Caton, Michael Peter Lear; Coffee, Edward Charles John; and Watkins, Gordon Leonard, 3,935,261.

Cohen, William A., to Sphero International Company. Anti-pollutant spherical rotary engine with automatic supercharger. 3,934,559, Cl. 123-8.450.

Colafati, Ralph A., III: *See—*
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Cole, Judson C.: *See—*
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Colgate-Palmolive Company: *See—*
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Colgate, Paul Alexander: *See—*
Fein, Marvin Michael; Colgate, Paul Alexander; and Kent, Ronald Allan, 3,935,128.

Collier, David Thomas, to Hawker Siddeley Dynamics Limited. Optical scanning systems. 3,935,448, Cl. 250-236.000.

Collins, Jeffrey Hamilton: *See—*
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Colourvision Associates: *See—*
Taylor, John Thurston; Halliday, Anthony James; Angel, Jonathan George Cordy; and Blakemore, Bernard, 3,934,962.

Columbia Pictures Industries, Inc.: *See—*
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Combes, Andre: *See—*
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Combustion Engineering, Inc.: *See—*
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Commissariat a l'Energie Atomique: *See—*
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Compagnie Electro Mecanique: *See—*
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Compagnie Generale d'Electricite: *See—*
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Compagnie Generale des Etablissements Michelin, raison sociale Michelin & Cie: *See—*
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Compagnie Industrielle des Telecommunications Cit-Alcatel: *See—*
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Compression Dynamics, Incorporated: *See—*
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Concast AG: *See—*
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Condon, John F.; Jeffers, Frederick J.; Duck, Sherman W.; and Bachand, Richard C., to Eastman Kodak Company. Thermo-magnetic image recording methods and apparatus. 3,935,578, Cl. 346-74.100.

Cone, Richard E., II: *See—*
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Conger, Marvin T.; Evans, Theodore A.; and Villemain, Herbert F., to Goodyear Tire & Rubber Company, The. Method of making a fuel cell. 3,935,050, Cl. 156-242.000.

Consales, Emanuel J.: *See—*
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Construction Materials Division General Electric Company: *See—*
Herzog, Rollie R., 3,935,502.

Container Corporation of America: *See—*
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Container Graphics Corporation: *See—*
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Continental Can Company, Inc.: *See—*
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Continental Industries, Inc.: *See—*
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Controls Southeast, Inc.: *See—*
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Henderson, James R., 3,934,618.

Conway, John E., to Universal Oil Products Company. Method of catalyst manufacture. 3,935,127, Cl. 252-465.000.

Cooke, Claude E., Jr., to Exxon Production Research Company. Method for coating particulate material thereof. 3,935,339, Cl. 427-216.000.

Cooper, Leland L.; and Beer, Darl L., to Du-Co Ceramics Company. Ceramic insulator for supporting a ribbon-type heating element. 3,935,376, Cl. 174-138.00J.

Cordle, Paul E.; and McCubbin, Melvin J., to United States of America, Navy. Linear shaped charge warhead. 3,934,511, Cl. 102-24.0HC.

Cordon, Martin: *See—*
Januszewski, Joseph P.; Cordon, Martin; and Pierson, William Grant, 3,935,304.

Corio, Nicholas N. Balling gun. 3,934,584, Cl. 128-223.000.

Cornell, Stephen Watson: *See—*
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Cornils, Boy: *See—*
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Coski, William D.: *See—*
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Costa, Bruno: *See—*
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Costes, Jean-Raymond: *See—*
Strini, Jean-Claude; and Costes, Jean-Raymond, 3,935,286.

Cotterrell, Graham Paul, to Imperial Chemical Industries Limited. Pesticidal substituted 2-hydroxylaminopyrimidinyl phosphorus esters. 3,935,212, Cl. 260-256.40E.

Cottman, Kirkwood S., to Goodyear Tire & Rubber Company, The. Phenolic antioxidants prepared from a pentacyclo-tetradeca-5,11-dicne. 3,935,281, Cl. 260-619.00B.

Coucher, Robert G. Novel way system. 3,934,829, Cl. 241-259.100.

Coulson, Derrick; and Coyle, John C., to Rolls-Royce Motors Limited. Vehicle air conditioning system. 3,934,642, Cl. 165-23.000.

Cournut, Rene, to Apamed Anstalt. Chemically acting intra-uterine device. 3,934,580, Cl. 128-130.000.

Coutant, Ralph W., to Litton Systems Inc. Keeper for idler rolls. 3,934,711, Cl. 198-192.00R.

Coutta, John M. Surveillance system. 3,935,380, Cl. 178-6.800.

Couvillion, Claude C. Teaching method and apparatus. 3,934,357, Cl. 35-31.00G.

Cowles, Richard H.; De Franco, Thomas P.; and Maskell, Roy, to Admiral Corporation. Shadow mask thermal compensating assembly. 3,935,497, Cl. 313-405.000.

Coyle, John C.: *See—*
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CPC International Inc.: *See—*
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Crane Co.: *See—*
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Crepinsek, Alois, to Crepinsek, Alois; Chagra, Lee A.; and McFadden, Dafe. Door bolt lock. 3,934,437, Cl. 70-370.000.

Creusot-Loire: *See—*
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Crill, Kay C.: *See—*
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Crommentuyn, Gerardus J.; and Kuiper, Johannes H. A., to Oce-van der Grinten N.V. Electrophotographic reproduction element of an aniline compound electron acceptor. 3,935,009, Cl. 96-1.500.

Cross Europa-Werk GmbH: *See—*
Schubert, Paul; and Treipl, Hans, 3,934,700.

Cross, John W.: *See—*
Schwartz, Daniel M.; and Cross, John W., 3,934,667.

Crounse, Nathan N., to Sterling Drug Inc. 4,4'-Stilbenebis-pyridooxazoles and related optical brighteners and polymeric compositions brightened thereby. 3,935,195, Cl. 260-240.0CA.

Crounse, Nathan N.: *See—*
Jefferies, Patrick J.; and Crounse, Nathan N., 3,935,182.

Crown Zellerbach Corporation: *See—*
Rucker, George L., 3,935,048.

Cruden, John L., Jr. Apparatus for forming piped openings in a garment. 3,934,776, Cl. 227-76.000.

Cryor, Elliott C. Coin counting and wrapping aid. 3,934,389, Cl. 53-213.000.

Culver, Irven H., to Southwestern Industries, Inc. Roll stabilizer for a boat. 3,934,535, Cl. 114-124.000.

Cumpston, Edward H., Jr. Method and apparatus for silo storage and unloading. 3,934,737, Cl. 214-16.00R.

Curington, Alfred R.; and Roscoe, Theodore J., Jr., to Bakerdrill, Inc. Core bit. 3,934,662, Cl. 175-405.000.

Curry, John Joseph, to Illinois Tool Works Inc. Closure assembly. 3,934,744, Cl. 215-219.000.

Curry, Willie A., to Fanguy, Jude Thaddeus, a part interest. Resistance sensing free-point tool. 3,934,466, Cl. 73-151.000.

Curtis Noll Corporation: *See—*
Lieptz, Nathan S., 3,934,679.

Curtiss, Alan C., to Pfizer Inc. Disc dispenser with removable magazines. 3,934,753, Cl. 221-93.000.

Curtiss, Frank E.; and Curtiss, Jack E. Horseshoe target posts. 3,934,879, Cl. 273-104.000.

Curtiss, Jack E.: *See—*
Curtiss, Frank E.; and Curtiss, Jack E., 3,934,879.

Cushman, Robert Holbrook; and Schenk, Raymond L., Jr., to Gould Inc. Method and apparatus for locating and locking onto workpieces in positive displacement casting. 3,934,782, Cl. 228-51.000.

Cushman, Walton W., to Romanski, Lon H. Transportation system. 3,934,515, Cl. 104-18.000.

Custom Mechanical Contractors, Inc.: *See—*
Morris, Herman H., 3,934,425.

Cymbalisty, Lubomyr M. O., to Canada-Cities Service, Ltd.; Atlantic Richfield Canada Ltd.; and Gulf Oil Canada Ltd. Two stage separation system. 3,935,076, Cl. 196-14.520.

Czerniak, Leonard C. Permanent magnet motor. 3,935,487, Cl. 310-46.000.

Czirr, David L.; and Kroll, Harry, to Philip A. Hunt Chemical Corporation. Nitric acid system for etching magnesium plates. 3,935,118, Cl. 252-79.400.

Dahl, Bjorn, to A/S Kongsberg Vapenfabrik. Proximity fuse. 3,934,510, Cl. 102-70.20P.

Dahlen, John M.; Toth, William E.; Shillingford, John T., Jr.; and McKenna, John F., Jr., to Massachusetts Institute of Technology. Recording instrument adapted for use in remote unattended locations. 3,935,592, Cl. 360-6.000.

Dahlen, Sven Erik; Ekstrom, Bertil Ake; Kovacs, Odon Kalman Jozsef; and Sjoberg, Berndt Olof Harald, to Astra Lakemedel Aktiebolag. Cephalosporin and pharmaceutical preparations containing the same. 3,935,204, Cl. 424-246.000.

Daicel Ltd.: *See—*
Hozumi, Yukio; Ohi, Akira; and Imai, Tatuhiko, 3,935,152.
Kudo, Teizo; Hashizume, Yoshio; Mikumo, Masatoshi; and Itoh, Masanori, 3,935,153.
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Daimler-Benz Aktiengesellschaft: *See—*
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Burk, Gerhard; and Willem, Dieter, 3,934,899.
Hutai, Hubert; and Fischer, Wolfgang, 3,934,913.
Merkle, Hans; and Frotschner, Eberhard, 3,934,414.

Daimler, Berthold H.; Vos, Jan; and Herveling, Wilhelm, to Akzona Incorporated. Ground stabilization matting. 3,934,421, Cl. 61-35.000.

Dainippon Pharmaceutical Co., Ltd.: *See—*
Kancko, Hidehiko; Aritomi, Jiro; and Yamato, Yuzuru, deceased, 3,935,268.

Daly, Noel. Method of manufacturing improved protective headgear. 3,935,044, Cl. 156-79.000.

Damast, Martin A.; Abberton, Vincent P.; and Celestin, Kusler, to Cavitron Corporation. Ultrasonic cutting apparatus. 3,934,526, Cl. 112-252.000.

D'Amico, Paul M. Floatable tow-line holder. 3,934,838, Cl. 242-85.100.

Dandini, Alessandro O. Spherical system for the concentration and extraction of solar energy. 3,934,573, Cl. 126-270.000.

Danfoss A/S: *See—*
Jespersen, Hans Jorgen; and Nielsen, Leif, 3,934,426.
Thun, Niels, 3,935,385.

Danielson, Irvin R., to Thor Power Tool Company. Dual safety control means for a power tool. 3,934,657, Cl. 173-169.000.

Danielsson, Curt Aslov, to AB Sundsvalls Specialprodukter. Central venous catheter system. 3,934,576, Cl. 128-2.05D.

Dansen Company, Inc.: *See—*
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Darlington, William B.: *See—*
Du Bois, Donald W.; and Darlington, William B., 3,935,350.

Dart Industries Inc.: *See—*
Fein, Marvin Michael; Colgate, Paul Alexander; and Kent, Ronald Allan, 3,935,128.

Davidsohn, Alfred, to Marni S.A. Method of sulfonation of aromatic hydrocarbons with minimized by-product formation. 3,935,237, Cl. 260-505.00E.

Davidson, James R., to Xerox Corporation. Transfer apparatus. 3,934,549, Cl. 118-637.000.

Davis, James L., to H. H. Robertson Company. Closure seal member and fixed frame assembly utilizing the same. 3,934,384, Cl. 52-397.000.

Davis, Stephen U.: *See—*
Stand, Mille; and Davis, Stephen U., 3,935,418.

Davydov, Anatoly Borisovich: *See—*
Khromov, Gennady Lvovich; Davydov, Anatoly Borisovich; Maichuk, Jury Fedorovich; and Tischina, Inna Fedorovna, 3,935,303.

Dawidowicz, Jan; and Ferraro, Frank A., to Warner-Lambert Company. Razor blade cartridge. 3,934,339, Cl. 30-47.000.

Dawkins, Maxwell John, to ICI Australia Limited. Firing devices and processes. 3,934,514, Cl. 102-70.20R.

Dazey Products Co.: *See—*
McNair, Samuel L., 3,934,597.

Dazzi, Joachim; Kirchmayr, Rudolf; and Dietrich, Henri, to Ciba-Geigy Corporation. 2,4,8-Trichloro-tri and tetra bromodibenzofurans. 3,935,251, Cl. 260-346.20M.

Dean, George A., to Dean Research Corporation. Accumulator. 3,934,871, Cl. 271-184.000.

Dean Research Corporation: *See—*
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Dear, Robert Ernest Arthur; and Falk, Robert Allan, to Ciba-Geigy Corporation. New $R_F$glycols containing two perfluoroalkylthio groups and useful compositions therefrom. 3,935,277, Cl. 260-609.00R.

DeBaun, Earl A. Turbine engine. 3,934,418, Cl. 60-624.000.

Debrunner, Kurt: *See—*
Hess, Johann T.; Debrunner, Kurt; and Tan, Aujit, 3,934,324.

Decibel Products, Inc.: *See—*
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Decker, Jurgen: *See—*
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de Cleur, Eckhard: *See—*
Wingler, Frank; Pedain, Josef; Muller, Richard; Dhein, Rolf; and de Cleur, Eckhard, 3,935,138.

Deeg, Emil W.; Krohn, David A.; and Graf, Robert E., to American Optical Corporation. Faraday rotation glasses. 3,935,020, Cl. 106-54.000.

Deep Oil Technology, Inc.: *See—*
Horton, Edward E.; Brewer, John H.; Silcox, William H.; and Hudson, T. A., 3,934,528.

De Franco, Thomas P.: *See—*
Cowles, Richard H.; De Franco, Thomas P.; and Maskell, Roy, 3,935,497.

de Jonge, Frederik Ate, to U.S. Philips Corporation. Magnetic bubble read/write head for a magnetic recorder/playback device. 3,935,594, Cl. 360-55.000.

Delaney, Thomas James; and Pierson, William Grant, to Colgate-Palmolive Company. Toothpaste. 3,935,305, Cl. 424-49.000.

Delavan Manufacturing Corporation: *See—*
Reed, Kenneth E., 3,934,823.

Delfosse, Pierre; and Bosshard, Alfred, to Pluss-Staufer AG. Process for the wet grinding of materials. 3,934,825, Cl. 241-16.000.

De Longueville, Bernard: *See—*
Lambert, Emmanuel; Lambert, Jean-Louis; and De Longueville, Bernard, 3,935,419.

de Luca, Peter C.; Stoddart, Hugh F.; and Jeffries, David, to Cleon Corporation. Whole body imaging. 3,935,462, Cl. 250-369.000.

Del Val, Sagrario Mochales: *See—*
Hendlin, David; Mata, Justo Martinez; Del Val, Sagrario Mochales; and Stapley, Edward O., 3,935,309.

Demillecamps, Edmond; and Orban, Andre, to Solvay & Cie. Plastics compositions based on polyvinylidene fluoride. 3,935,159, Cl. 260-42.270.

Dennison, Clifford C. Automatic water distiller. 3,935,077, Cl. 202-83.000.

Dent, Gilbert. Fastener driving tool. 3,934,779, Cl. 227-147.000.

Dentsply Research & Development Corporation: *See—*
Johnson, Philip C., 3,934,928.

de Radzitzky d'Ostrowick, Pierre M. J. G.; Hanotier, Jacques D. V.; and Vaerman, Joseph M. E. Selective halogenation of paraffins. 3,935,289, Cl. 260-660.000.

Derbyshire, George C., to Jacobs Manufacturing Co., Ltd., The. Drill chuck and method of assembly. 3,934,891, Cl. 279-61.000.

Derner, William J., to FMC Corporation. Preloaded double row spherical roller bearing. 3,934,957, Cl. 308-207.00A.

Derolf, Mahlon Robert, to Philadelphia Quartz Company. Alumina dispersions. 3,935,023, Cl. 106-308.00B.

DeRose, Ralph A.: *See—*
Cielaszyk, Edward F.; DeRose, Ralph A.; and Kravcik, John W., 3,935,433.

Derrick, Milford R.: *See—*
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Detroit Edison Company, The: *See—*
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Detroit Gasket & Manufacturing Co.: *See—*
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Deve, Vagn, to Combustion Engineering, Inc. Mixing apparatus. 3,934,859, Cl. 259-8.000.
Dexion-Comino International Limited: *See—*
Straffon, Alan E.; and King, James C., 3,935,559.
Dhein, Rolf: *See—*
Wingler, Frank; Pedain, Josef; Muller, Richard; Dhein, Rolf; and de Cleur, Eckhard, 3,935,138.
Diagnostic Research, Inc.: *See—*
Perry, Russell C.; and Porter, Roy W., 3,935,075.
Diamond, David. Gravity-actuated fluid displacement power generator. 3,934,964, Cl. 415-7.000.
Diamond Shamrock Corporation: *See—*
Beckers, Norman L.; and Rowe, Edward A., 3,935,287.
Faunce, John Porter, 3,935,004.
Kelly, James M.; and Papalos, John G., 3,934,975.
LaFortune, Robert G. J., 3,934,650.
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Dick, Clarence R.: *See—*
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Dick, George Wilmer; and Hatfield, Walter Bryan, to Bell Telephone Laboratories, Incorporated. Single substrate plasma discharge cell. 3,935,494, Cl. 313-190.000.
Dick, Raymond S.; and Anenson, David H., to Hoerner Waldorf Corporation. Carton sealing. 3,934,791, Cl. 229-37.00R.
Dickensheets, William E.; and Pruchno, Albert A., to Ford Motor Company. Carburetor cold engine fuel enrichment system. 3,935,290, Cl. 261-39.00B.
Dickert, Joseph J., Jr., to Mobil Oil Corporation. Grease compositions. 3,935,122, Cl. 252-33.200.
Dictaphone Corporation: *See—*
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Diehn, Philip H.; and Bergh, John C., to Wheelabrator-Frye, Inc. Portable upblast cleaning head. 3,934,372, Cl. 51-8.0SR.
Dietrich, Henri: *See—*
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Digital Components Corporation: *See—*
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Diliberti, Joseph. Camping apparatus for van-type vehicle. 3,934,924, Cl. 296-23.00R.
Dirriwachter, John W.; and Kelly, Robert J., to Forney Engineering Company. Low fire light-off apparatus. 3,934,557, Cl. 122-448.00B.
Di Salvo, Salvatore; and Moriondo, Mario, to Fiat Societa per Azioni. Device for cleaning the headlight glass on motor vehicles. 3,934,301, Cl. 15-250.220.
Disque, Karl; Holzgen, Helmut; and Stauch, Philipp, to Erdol-Raffinerie Neustadt GmbH & Co.; and King-Wilkinson, Inc. Apparatus for separating low-density liquid from a relatively more dense liquid substantially immiscible therewith. 3,935,103, Cl. 210-97.000.
Disston, Inc.: *See—*
Jones, John E.; and Lineback, Lynn D., 3,934,340.
Ditzel, Heinz; and Ditzel, Werner. Mechanism for making roller-hub grooves. 3,934,378, Cl. 51-216.0ND.
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Doane, William M.: *See—*
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Dodd, Joseph L., to Teledyne Industries, Inc. Integrated precombustion chamber for internal combustion engines. 3,934,560, Cl. 123-32.00B.
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Doerfling, Ralph G.; and Motycka, Charles J., to Detroit Gasket & Manufacturing Co. Heat shrinkable decorative covering material for vehicle panels. 3,935,353, Cl. 428-99.000.
Doerig, Roland Karl. Procedure for conservation of living organs and apparatus for the execution of this procedure. 3,935,065, Cl. 195-1.700.
Doggett, Frederick F.; and Jenne, Leonard W., Jr., to General Electric Company. Electron gun assembly. 3,935,498, Cl. 313-417.000.
Dollhausen, Manfred; and Hohmann, Gerhard, to Bayer Aktiengesellschaft. Heat-sealing adhesives. 3,935,134, Cl. 260-3.500.
Dollhausen, Manfred; and Hohmann, Gerhard, to Bayer Aktiengesellschaft. Heat-sealing adhesives. 3,935,135, Cl. 260-3.500.
Dolphin International, Inc.: *See—*
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Dombrowski, Thaddeus: *See—*
Black, Dewie E.; Fabry, Donald F.; and Dombrowski, Thaddeus, 3,935,447.
Domtar Limited: *See—*
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Donaho, Ruel M., Jr., to Hughes Tool Company. Low-wear grease for journal bearings. 3,935,114, Cl. 252-18.000.
Donau-Pharmazie Gesellschaft m.b.H.: *See—*
Zellner, Hugo, deceased, 3,935,214.
Donnelly, Thomas L.; and Mullen, Edward J., to Xerox Corporation. Flash fusing apparatus. 3,935,424, Cl. 219-216.000.
Doolittle, James B.: *See—*
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Dorfman, Michael B.; and Logan, Robert E., to Addressograph Multigraph Corporation. Magnetic impulse record element laminate and method of making same. 3,935,361, Cl. 428-189.000.
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Dorn, Harry M. Light guard. 3,935,560, Cl. 240-102.00B.
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Dow Chemical Company, The: *See—*
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Driscoll, David M. Clamping device. 3,934,316, Cl. 24-243.0CC.
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Du Bois, Donald W.; and Darlington, William B., to PPG Industries, Inc. Suppression of crevice corrosion in gasketed titanium crevices by the use of rubber compound gaskets substantially free of calcium. 3,935,350, Cl. 428-35.000.
Dubuque Awning & Tent Company: *See—*
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Duchesneau, Eugene Alfred, Jr.: *See—*
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Dunlap, Danny L.; Huelsman, Charles E.; and Muhlenkamp, John H., to Stamco Division, The Monarch Machine Tool Company. Mandrel assembly. 3,934,836, Cl. 242-72.100.
Dunlop Limited: *See—*
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Dynamit Nobel Aktiengesellschaft: *See—*
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Lestina, Gregory James; and Bush, Walter Monroe, 3,935,263.
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Eberhard, Frank A. Radar mount and holding bracket. 3,934,771, Cl. 224-42.42A.
Eberle, William J., to General Battery Corporation. Acid filling apparatus for batteries or the like. 3,934,624, Cl. 141-100.000.
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Eguchi, Ronald G.; Mann, Michael M.; Lacina, William B.; and Crill, Kay C., to Northrop Corporation. Laser mode locking and coupling method and apparatus. 3,935,543, Cl. 331-94.50M.
Eian, Gilbert L., to Minnesota Mining and Manufacturing Company. Photosensitive sheet materials. 3,935,012, Cl. 96-48.00R.
Eibofner, Eugen, to Kaltenbach & Voigt. Dental handpiece or elbows for mounting dental treatment tools. 3,934,349, Cl. 32-27.000.
Eidinger, Adolf, to BBC Brown Boveri & Company Limited. Synchronized switch with parallel contact. 3,935,509, Cl. 317-11.00A.
Eigenmann, Ludwig. Anti-skid and wear-resisting road marking tape material. 3,935,365, Cl. 428-323.000.
Ekornes, Jostein, to J.E. Ekornes Fabrikker A/S. Adjustable chair. 3,934,932, Cl. 297-320.000.
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Elaschuk, George, to Domtar Limited. Appliance base. 3,934,805, Cl. 248-346.000.
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Ellies, Alan David: *See—*
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Ellin, Seymour, to Polaroid Corporation. Flash lamp signaling circuit employing logic signal activation. 3,935,514, Cl. 317-80.000.
Ellington, Robert W. Bike booster. 3,934,666, Cl. 180-11.000.
Elson, Donald Edwin; and Walter, Richard Thomas, to Black and Decker Manufacturing Company, The. Battery charging circuit with thermostat control. 3,935,525, Cl. 320-35.000.
Emhart Corporation: *See—*
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Energy Research Corporation: *See—*
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Eng, Jeffrey D.; and Harke, Cyril J., to Hooker Chemicals & Plastics Corporation. Production of aqueous metal hydroxide solutions of low metal halide concentration. 3,935,096, Cl. 210-22.000.
Engelfried, Otto; Nieuweboer, Bob; Petzoldt, Karl; Kerb, Ulrich; and Lubke, Klaus, to Schering Aktiengesellschaft. Radioactively labeled steroid derivatives. 3,935,245, Cl. 260-397.100.
English Electric Company Limited, The: *See—*
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Enserch Corporation: *See—*
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Eon Corporation, The: *See—*
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Epple, Richard R.: *See—*
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Epshtein, Alexandr Mikhailovich: *See—*
Petrusenko, Dmitry Pavlovich; Andreev, Lev Grigorievich; and Epshtein, Alexandr Mikhailovich, 3,935,090.
Erdol-Raffinerie Neustadt GmbH & Co.: *See—*
Disque, Karl; Holzgen, Helmut; and Stauch, Philipp, 3,935,103.
Escher Wyss GmbH: *See—*
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Eschweiler, Helmut: *See—*
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Cadman, Martyn A.; Voinov, Michel; and Tannenberger, Helmut, 3,935,025.
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Proksch, Emil; and Eschweiler, Helmut, 3,935,364.
Ethyl Corporation: *See—*
Keblys, Kestutis A., 3,935,228.
Wiegand, Karl E., 3,935,216.
Evans, Anthony C., to Kelsey-Hayes Company. Combined service and parking brake with automatic adjustor. 3,934,684, Cl. 188-71.900.
Evans, Theodore A.: *See—*
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Expert Industrial Controls Ltd.: *See—*
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Falk, Jean-Pierre; and Rohr, Andre, to Societe Anonyme des Ateliers de Secheron. Circuit for the compensation of current interference signals. 3,935,512, Cl. 317-27.00R.
Falk, Robert Allan: *See—*
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Fanshawe, William Joseph; and Safir, Sidney Robert, to American Cyanamid Company. Cyclopropyl 1,2,4-oxadiazolyldiazines. 3,935,211, Cl. 260-250.00A.
Fanta, George F.: *See—*
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Farish, Owen: *See—*
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Farrell, Claude S., Jr.; Cone, Richard E., II; and Ellies, Alan David, to Buckeye International, Inc. Child car seating apparatus and method for assembling the same. 3,934,934, Cl. 297-384.000.
Farris, Vernie L., to Federal Sign and Signal Corporation. Door closure device. 3,934,306, Cl. 16-48.500.
Faunce, John Porter, to Diamond Shamrock Corporation. Addition of alloying constituents to aluminum. 3,935,004, Cl. 75-68.00R.
Faxen, Per Torsten: *See—*
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Fearing, Donald David. Marking tag. 3,934,368, Cl. 40-301.000.
Federal Sign and Signal Corporation: *See—*
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Fein, Marvin Michael; Colgate, Paul Alexander; and Kent, Ronald Allan, to Dart Industries Inc. Copper chromite catalyst and the process for producing it. 3,935,128, Cl. 252-467.000.
Feinleib, Julius: *See—*
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Feinstein, Allen; and Fields, Ellis K., to Standard Oil Company. Vapor phase conversion of aromatic esters to aromatic aldehydes. 3,935,265, Cl. 260-599.000.
Fels, Emil, to Buss, A.G. Method of mounting pipe flanges in the wall of a pressure vessel. 3,934,787, Cl. 228-184.000.
Fels, Werner, to Rudolf Hell GmbH. Device for handling photographic film between a cassette and an exposure reproduction apparatus. 3,935,584, Cl. 354-214.000.

Feminella, Joseph V.; and Grindstaff, Donald A., to Stauffer Chemical Company. Process for improving whipping properties of aqueous protein solutions. 3,935,323, Cl. 426-564.000.

Ferguson, Ronald Worden: *See—*
Bagen, Herbert John; Ferguson, Ronald Worden; Korytkowski, Henry M.; and Mowry, William H., Jr., 3,934,501.

Fernholz, Hans: *See—*
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Ferres, Harry; Kemmenoe, Adrian Victor; and Best, Desmond John, to Beecham Group Limited. Penicillins. 3,935,189, Cl. 260-239.100.

Ferres, Harry; Kemmenoe, Adrian Victor; and Best, Desmond John, to Beecham Group Limited. Penicillins. 3,935,192, Cl. 260-239.100.

Fetsch, Joseph T. System for locking doors of buses. 3,934,925, Cl. 296-28.00A.

Feuer, Henry; and Lawrence, John Pennington, to Purdue Research Laboratory. Antimicrobial dihalonitromethylisoxazoles. 3,935,219, Cl. 260-307.00H.

Fiat Societa per Azioni: *See—*
Di Salvo, Salvatore; and Moriondo, Mario, 3,934,301.
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Filice, Gary William: *See—*
Easton, James Leland; and Filice, Gary William, 3,934,875.

Fine, Maynard W. Auxiliary wheel for vehicles. 3,934,936, Cl. 301-38.00S.

Firtion, Victor Andrew: *See—*
Brady, Kevin James; Firtion, Victor Andrew; Rongved, Leif; and Saunders, Thomas Edward, 3,934,949.

Fischer, Adolf, to BASF Aktiengesellschaft. Herbicidal mixture of a pyrozolium salt and benzothiadiozinone derivative. 3,935,000, Cl. 71-91.000.

Fischer, Adolf, to BASF Aktiengesellschaft. Herbicide mixtures of uracil, a carbamate and a pyridazone. 3,935,001, Cl. 71-92.000.

Fischer, Adolf; Hansen, Hanspeter; and Rohr, Wolfgang, to BASF Aktiengesellschaft. Sulfites of aliphatic glycolic amides. 3,935,190, Cl. 260-239.00B.

Fischer, Adolf; Hamprecht, Gerhard; and Huber, Rolf, to BASF Aktiengesellschaft. N,N-disubstituted 2,1,3-benzothiadiazin-(4)-one-2,2-dioxide. 3,935,200, Cl. 260-243.00R.

Fischer, Dennis D., to United States of America, Interior. Process for eluting adsorbed gold and/or silver values from activated carbon. 3,935,006, Cl. 75-118.00R.

Fischer, Wolfgang: *See—*
Hutai, Hubert; and Fischer, Wolfgang, 3,934,913.

Fishwick, Brian Ribbons: *See—*
Baird, David Boyd; Baker, Ronald; Fishwick, Brian Ribbons; and McClelland, Robert David, 3,935,232.
Baron, Thomas Douglas; Fishwick, Brian Ribbons; Leng, John Lindley; and Yelland, Michael, 3,935,183.

Fitterer, Charles E.; and Cassler, Carl D., to Fitterer Engineering Associates, Inc. Method and apparatus for displaying active oxygen and sensor temperature. 3,935,079, Cl. 346-45.000.

Fitterer Engineering Associates, Inc.: *See—*
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Fitzhugh, Davis. Irrigation system water emitter. 3,934,824, Cl. 239-534.000.

Fives-Cail Babcock: *See—*
Chielens, Alain, 3,934,641.

Flaherty, William H., Jr.: *See—*
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Flax, Valere, to Metal Box Limited. Apparatus for making tubular containers. 3,934,780, Cl. 228-2.000.

Fleissner, Heinz, to Vepa AG. Apparatus for the continuous steaming of man-made fibers. 3,934,432, Cl. 68-5.00D.

Fletcher, John, to Lawrence Peska Associates, Inc., a part interest. Reinforcing elements for shoe soles and heels. 3,934,359, Cl. 36-73.000.

Flider, Frank S., to Justrite Manufacturing Company. Process for making a plastic walled device. 3,934,328, Cl. 29-453.000.

Flint, Edward F. Processing apparatus for clear air turbulence detection. 3,935,460, Cl. 250-349.000.

FMC Corporation: *See—*
Derner, William J., 3,934,957.

Foote, Seldon T., deceased: *See—*
Snyder, Alan Kent; Schmidt, Arthur D.; Foote, Seldon T., deceased; and Clipp, Robert R., executor, 3,934,702.

Ford, Anthony R., to Airpax Electronics Incorporated. Toggle switch. 3,935,411, Cl. 200-67.00G.

Ford, Freeman A.; Armstrong, Errol; and Rhodes, Richard O., to Fafco, Incorporated. Solar heat exchange panel and method of fabrication. 3,934,323, Cl. 29-157.30R.

Ford Motor Company: *See—*
Asik, Joseph R.; and Hanabusa, Mitsugu, 3,934,570.
Dickensheets, William E.; and Pruehno, Albert A., 3,935,290.

Fordath, Limited: *See—*
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Forgues, Louis V., to Parks-Cramer Company. Changeover valves with bypass and bent valving. 3,935,108, Cl. 210-340.000.

Forney Engineering Company: *See—*
Dirriwachter, John W.; and Kelly, Robert J., 3,934,557.

Forsgren, Lyle M., to Brunswick Corporation. Ground engaging drive track apparatus for snowmobiles and the like. 3,934,944, Cl. 305-38.000.

Forsythe, Theresa M.: *See—*
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Fosseco International Limited: *See—*
McCrainor, Peter Richard; and Edwards, Bryan William, 3,934,639.
Potier, Pierre Roger, 3,934,637.

Foster, Alan Carl: *See—*
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Foster, Donald A. Automatic friction drive transmission. 3,934,481, Cl. 74-190.500.

Foster, Edward T.: *See—*
Bruner, A. J.; Foster, Edward T.; and Kearns, Thomas N., 3,934,540.

Fox, George G. Bowling bag cart. 3,934,895, Cl. 280-47.260.

Fox, Richard W., Jr.; and Mullaly, Jerome R., to General Electric Company. Electronic switching circuit with zero voltage switching. 3,935,482, Cl. 307-252.00B.

Fox, Robert H.; Henning, Robert J.; and Psensky, Miroslav, to Quaker Oats Company, The. Slitted flexible mold. 3,934,809, Cl. 249-117.000.

Fox, Shirl S.: *See—*
Lash, Harvey; Kibrick, Morris; and Fox, Shirl S., 3,934,347.

Frain, John P.; Harman, John N., III; and Neti, Radhakrishna M., to Beckman Instruments, Inc. Nitric oxide analysis and scrubber therefor. 3,934,991, Cl. 55-316.000.

Frank, Robert G., to PPG Industries, Inc. Conveyor rolls on conveyor roll systems for roll forming apparatus. 3,934,996, Cl. 65-106.000.

Franson, Claude: *See—*
Fulconis, Pierre; and Franson, Claude, 3,935,242.

Franz, Helmut, to PPG Industries, Inc. Multiple glazed windows including selective reflecting metal/metal oxide coatings. 3,935,351, Cl. 428-34.000.

Fred Whitaker Company: *See—*
Westmoreland, Robert W., Sr., 3,934,431.

Frederick's of Hollywood: *See—*
Mellinger, Frederick N., 3,934,593.

Fredrickson, Larry E.; and Coates, Thomas L. Pile splicing apparatus and method. 3,934,422, Cl. 61-53.000.

Freeburg, Dale O.: *See—*
Johnson, Clifford E.; Freeburg, Dale O.; and Hyler, John H., 3,934,361.

Freeman, Brady L.: *See—*
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Freeman, James M., Jr.; Gans, Bruce E.; Lambiris, Sotiris; and Woodmansee, Donald E., to General Electric Company. Combined wall burner and flameholder for HRSG. 3,934,553, Cl. 122-7.00B.

Freiter, Gerhard, to U.S. Philips Corporation. Bearing of a pick-up arm for a record player. 3,934,885, Cl. 274-23.00R.

French, Walter K., to Seagrave Corporation, The. Method of cutting hot glass band. 3,934,995, Cl. 65-97.000.

Freudenberger, Dieter: *See—*
Jacobsen, Gunter; Fernholz, Hans; and Freudenberger, Dieter, 3,935,274.

Fried, John H.; and Harrison, Ian T., to Syntex Corporation. Naphthyl acetaldehyde derivatives. 3,935,273, Cl. 260-600.00R.

Fried, John H.: *See—*
Beard, Colin C.; Edwards, John A.; and Fried, John H., 3,935,209.

Fried. Krupp Gesellschaft mit beschrankter Haftung: *See—*
Leisterer, Reinhard; Mahlstedt, Walter; and Rubel, Manfred, 3,935,575.
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Fritz, Heinz Peter; and Missol, Detlef, to Rheinisch-Westfalisches Elektrizitatswerk AG. Process for making lead electrode. 3,935,082, Cl. 204-32.00R.

Fritz, Jack J.: *See—*
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Frommelt, Cyril P.; and Frommelt, Sylvan J., to Dubuque Awning & Tent Company. Loading dock shelters. 3,934,380, Cl. 52-173.0DS.

Frommelt, Sylvan J.: *See—*
Frommelt, Cyril P.; and Frommelt, Sylvan J., 3,934,380.

Fromnick, Stephen M.: *See—*
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Fronk, Stanislav Vladislavovich: *See—*
Korovin, Stanislav Konstantinovich; Kruglov, Igor Ivanovich; Preobrazhentsev, Konstantin Andreevich; Sidorov, Jury Ivanovich; and Fronk, Stanislav Vladislavovich, 3,935,585.

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Fuji Photo Film Co., Ltd.: *See—*
Arai, Atsuaki; Oishi, Yasushi; Okumura, Akio; Yamada, Minoru; Yokota, Yukio; and Inouye, Kozo, 3,935,015.



Nishimura, Tokio; Yamada, Minoru; Amano, Hiroyuki; and Oishi, Yasushi, 3,935,016.
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Suzuki, Gyoji; and Tomotsu, Takeshi, 3,935,117.

Fujieda, Mamoru; Yamauchi, Teruo; and Momono, Masakichi, to Hitachi, Ltd. Fuel evaporating device. 3,934,567, Cl. 123-122.00H.

Fujii, Tadashiro: *See—*
Abe, Jinnosuke; Watanabe, Tetsuo; Take, Teruo; Fujimoto, Kentaro; Fujii, Tadashiro; and Nishiie, Kazuyoshi, 3,935,193.

Fujimori, Yoshiaki. Structure of bezel portion of water-tight timepiece. 3,934,402, Cl. 58-90.00R.

Fujimoto, Kentaro: *See—*
Abe, Jinnosuke; Watanabe, Tetsuo; Take, Teruo; Fujimoto, Kentaro; Fujii, Tadashiro; and Nishiie, Kazuyoshi, 3,935,193.

Fujiwara, Shinichi: *See—*
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Fukada, Kazuo: *See—*
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Fukatsu, Hiroshi: *See—*
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Fukuzawa, Hideo, to Rank Xerox Ltd. Apparatus for fixing with solvent vapors. 3,934,546, Cl. 118-48.000.

Fulconis, Pierre; and Franson, Claude, to Procida. Process for the preparation of colored maneb. 3,935,242, Cl. 260-429.00K.

Fuller, Gene E.: *See—*
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Fullerton, Gary D.: *See—*
Moran, Paul R.; Podgorsak, Ervin; Fullerton, Gary D.; and Fuller, Gene E., 3,935,457.

Fullerton, Hodgart & Barclay Ltd.: *See—*
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Fulton, Sheldon S.: *See—*
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Funahashi, Isao: *See—*
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Fuso, Oscar, to Fiat Societa per Azioni. Electronic injection timing control for fuel injection pumps. 3,934,430, Cl. 64-25.000.

G. D. Searle & Co.: *See—*
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G. M. Brooks Industries, Inc.: *See—*
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Gablin, Kenneth A., to Nuclear Engineering Co., Inc. Repository for fissile materials. 3,935,467, Cl. 250-507.000.

Gabriels, Andre J., to Fabrique Nationale Herstal S.A. Grenade-firing device. 3,934,513, Cl. 102-65.200.

Gabrielson, Dan A.: *See—*
Van der Meer, Richard H.; and Gabrielson, Dan A., 3,934,713.

Gachot, Jean; and Lekarski, Simeon. Comparator for coded signals represented by a pressure of fluid. 3,934,611, Cl. 137-608.000.

Gaffard, Jean-Paul: *See—*
Godard, Bruno; Lacour, Bernard; and Gaffard, Jean-Paul, 3,935,544.

Gage, Rodney E. Endless track adapted for use with track laying vehicles. 3,934,943, Cl. 305-35.0EB.

Gaio, Pietro: *See—*
Gandolfi, Carmelo; Doria, Gianfederico; and Gaio, Pietro, 3,935,254.

Galamore, Frazer W.; and Fulton, Sheldon S. Extendable anchor line guide and support with automatic release. 3,934,536, Cl. 114-210.000.

Gallagher, John Patrick, to Canadian Marine Drilling Ltd. Icebreaking vessels. 3,934,529, Cl. 114-40.000.

Galperin, Alexandr Lvovich: *See—*
Loschilin, Evgeny Dmitrievich; Galperin, Alexandr Lvovich; Zabotin, Alexandr Alexandrovich; Onikov, Eduard Arshakovich; and Sakharov, Boris Alexandrovich, 3,934,619.

Gamble, Donald James: *See—*
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Gamble, James R., to Westinghouse Electric Corporation. Electrical bushing comprising a resin body and a ceramic outer shell. 3,935,377, Cl. 174-153.00R.

Gandolfi, Carmelo; Doria, Gianfederico; and Gaio, Pietro, to Carlo Erba S.p.A. 5c-prosten-13-ynoic acids. 3,935,254, Cl. 260-514.00D.

Gannaway, Edwin L., to Sundstrand Corporation. Refrigeration compressor and system. 3,934,967, Cl. 417-271.000.

Gans, Bruce E.: *See—*
Freeman, James M., Jr.; Gans, Bruce E.; Lambiris, Sotiris; and Woodmansee, Donald E., 3,934,553.

Garcia, Francisco Marlasca. Synchronizing apparatus for the drawing roller and the warp beam in a loom. 3,934,620, Cl. 139-99.000.

Gardner, Richard A., to International Business Machines Corporation. High-alumina content compositions containing $BaO$-$MgO$-$SiO_2$ glass and sintered ceramic articles made therefrom. 3,935,017, Cl. 106-46.000.

Gardner, Willis W., to Waukesha Bearings Corporation. Leakproof seal for bearings. 3,934,952, Cl. 308-36.100.

Garment Finishing Equipment Corporation: *See—*
Bailey, Stanley M., 3,934,766.

Garrison, Harold Keith, to Hesston Corporation. Continuous feeding for stack forming loaders. 3,934,394, Cl. 56-344.000.

Gartung, Clifford W. Modular sound-absorbing screens. 3,934,382, Cl. 52-144.000.

Gasparino, Vincent J.: *See—*
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Gautreaux, Gloria A.: *See—*
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GEBA-Gesellschaft fuer Elektronische Brandmeldeanlagen mbH: *See—*
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Gebeau, Ronald C.: *See—*
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Gebr. Happich GmbH: *See—*
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GEM Industries, Inc.: *See—*
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General Crane Industries Limited: *See—*
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General Dynamics Corporation: *See—*
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General Electric Company: *See—*
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General Mills, Inc.: *See—*
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General Motors Corporation: *See—*
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General Steel Industries, Inc.: *See—*
Reed, Winthrop B., 3,934,450.

Gentreau, Guy Rene, to Les Parfums de Dana, Inc. Outer container assembly for housing an aerosol. 3,934,761, Cl. 222-183.000.

George, Emanuel John; Salter, Joseph Lane; Sauer, Earl Salvator; and Tidd, Charles Edward, Jr., to Western Electric Company, Inc. Methods of manufacturing an insulated conductor and product produced thereby. 3,935,369, Cl. 428-379.000.

Georgetti, Richard A.: *See—*
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Georgia-Pacific Corporation: *See—*
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Gerber, Robert L.: *See—*
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Geri, Don W., to Primark Corporation. Merchandise label marking gun. 3,934,507, Cl. 101-291.000.

Gerin, Jacques Jean-Marie Jules. Lightweight high performance, high security vehicle. 3,934,668, Cl. 180-21.000.

Gerkin, Richard M.; Roberts, Rene; and Hodges, Joy C., to Union Carbide Corporation. Thermoplastic urethane polymer filled with cross-linked urethane polymer. 3,935,132, Cl. 260-2.5BE.

Gersten, Martin, to Ohm Acoustics Corporation. Loudspeaker voice coil arrangement. 3,935,402, Cl. 179-115.5VC.

Getz, Paul C.: *See—*
Smith, Bert A.; and Getz, Paul C., 3,935,373.

Geul, Herman Robert, to Sun Electric Corporation. Car diagnosis system. 3,935,427, Cl. 235-61.70R.

GHH Basel AG: *See—*
Schmid, Paul; and Droesch, Albert, 3,935,110.

Giannella, Frank; and Pellicciari, Enzo. Multiple dispensing head for milk shake machines. 3,934,759, Cl. 222-129.100.

Gick, James Edward; and Gick, James Walker. Quiller. 3,934,834, Cl. 242-67.10R.

Gick, James Walker: *See—*
Gick, James Edward; and Gick, James Walker, 3,934,834.

Gijrath, Johannes Henricus Nicolaas, to U.S. Philips Corporation. Structure for attaching conical shield to shadow mask. 3,935,496, Cl. 313-402.000.

Gilissen, Hermanus Petrus Johannes, to AMP Incorporated. Electrical connector. 3,934,959, Cl. 339-17.00M.

Gilman, Paul B., Jr., to Eastman Kodak Company. Element and process for selectively forming positive or negative photographic images. 3,935,010, Cl. 96-27.00E.

Gilmore, Cecilia; and Miller, Donald E., to SCM Corporation. Freeze-thaw stable liquid coffee whitener. 3,935,325, Cl. 426-613.000.

Gilmore, Robert S.: *See—*
Sherwin, Leo H.; and Gilmore, Robert S., 3,934,460.

Ginn, Le Roy; Ginn, Le Royce; and Travaglio, Dalny, to Universal Pneumatic Controls, Inc. Dual duct variable volume air conditioning system. 3,934,795, Cl. 236-13.000.

Ginn, Le Royce: *See—*
Ginn, Le Roy; Ginn, Le Royce; and Travaglio, Dalny, 3,934,795.

Gittos, Maurice W.; and Amey, David Anthony, to Aspro-Nicholas Limited. Conjugate addition. 3,935,207, Cl. 260-247.50R.

Giudicelli, Don Pierre Rene Lucien; Najer, Henry; Manoury, Philippe Michel Jacques; and Dumas, Andre Pierre Fernand, to Synthelabo. Esters of 2-[(4-quinolyl)amino]-benzoic acids. 3,935,229, Cl. 260-268.0BQ.

Givaudan Corporation: *See—*
Bertele, Erhard; and Schudel, Peter, 3,935,275.
Naegeli, Peter, 3,935,253.
Ochsner, Paul Albert, 3,935,205.

Glass Tubes and Components Limited: *See—*
Chambers, Arnold, 3,934,732.
Inns, David Harold; Bennett, william Roy; and Chambers, Arnold, 3,934,997.

Glasser, Albert D.: *See—*
Warde, Charles J.; and Glasser, Albert D., 3,935,027.

Glasson, Jerry Marshall; and Kabb, Harold Louis, to Teletype Corporation. Apparatus for synthesizing phase-modulated carrier wave. 3,935,386, Cl. 178-67.000.

Glaverbel-Mecaniver S.A.: *See—*
Lambert, Emmanuel; Lambert, Jean-Louis; and De Longueville, Bernard, 3,935,419.

Gleason, Robert W. Dermatome. 3,934,591, Cl. 128-305.500.

Gloge, Detlef Christoph: *See—*
Chinnock, Edwin Leroy; Gloge, Detlef Christoph; and Smith, Peter William, 3,934,773.

Go, Tadahiro; Suzuki, Takashi; and Inoue, Masaaki, to Nippon Zeon Co. Ltd. Novel aqueous coating compositions. 3,935,140, Cl. 260-19.0UA.

Godard, Bruno; Lacour, Bernard; and Gaffard, Jean-Paul, to Compagnie Generale d'Electricite. Gas laser structure for eliminating parasitic arcing. 3,935,544, Cl. 331-94.5PE.

Godshalk, Henry W.; and Sharma, Mohinder Paul, to Godshalk, Henry W. Aqueous pattern paint from carboxylic resin, N-aldehyde resin, polysiloxane resin and fluorocarbon surfactant. 3,935,147, Cl. 260-29.40R.

Goffredo, Daniel L.; and Shakely, Conrad Dale, to Chemcut Corporation. Method for treatment fluid application and removal. 3,935,041, Cl. 156-18.000.

Golborn, Peter; and Duffy, James J., to Hooker Chemicals & Plastics Corporation. Dialkyl aromatic amidomethyl phosphonate flame retardants. 3,935,162, Cl. 260-45.9NC.

Goldberg, Allan M., to American Hospital Supply Corporation. Sterile needle package. 3,934,722, Cl. 206-365.000.

Goldberg, Martin: *See—*
Hamilton, Charles Howard; Koeller, Fred B.; Raymond, Roger S.; and Goldberg, Martin, 3,934,441.

Goldfarb, Adolph E.; and Benkoe, Erwin. Manipulative skill game apparatus having tiltable platforms and automatic feeder mechanism. 3,934,881, Cl. 273-110.000.

Goldkuhle, Werner P.; Arnold, Richard E.; and Johnson, Malcolm Ray, to LeBus International, Inc. Central hydraulic system for marine deck equipment. 3,934,416, Cl. 60-484.000.

Goldsberry, Fred L., to Enserch Corporation. Refrigerant expander compressor. 3,934,424, Cl. 62-87.000.

Goldsmith, Morris, to Partnership of Goldsmith, Josephson & Gulko. Heat saving apparatus. 3,934,798, Cl. 237-55.000.

Goldstein, Mihai. Device for mass production garment steaming. 3,934,765, Cl. 223-70.000.

Goodbrake, Chris J.: *See—*
Blome, James C.; Goodbrake, Chris J.; O'Brien, Marvin Edward; and Vance, Macy W., 3,935,060.

Goode, Robert W., to Hydra Dyne Corporation. Apparatus for winding pilot lines. 3,934,854, Cl. 254-134.30R.

Goodyear Tire & Rubber Company, The: *See—*
Bender, Newell R.; and Larson, William M., 3,935,051.
Calderon, Nissim, 3,935,270.
Conger, Marvin T.; Evans, Theodore A.; and Villemain, Herbert F., 3,935,050.
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Jackson, William E., 3,935,291.
Kline, Richard H., 3,935,160.
Kothari, Vipin M., 3,935,247.
Ofstead, Eilert A., 3,935,179.
Wolfe, Merritt W., 3,935,045.

Gordon, Roy Gerald. Disposable articles having a water-permeable and water-repellent surface. 3,934,587, Cl. 128-284.000.

Gorrie, Thomas M., to Johnson & Johnson. Surgical wrap. 3,934,582, Cl. 128-157.000.

Gossard, Thomas F.: *See—*
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Gould Inc.: *See—*
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Grachev, Leonid Pavlovich: *See—*
Anikanov, Nikolai Ivanovich; Grachev, Leonid Pavlovich; Radutsky, Grigory Avramovich; and Kheifets, Rafail Efimovich, 3,934,709.

Graf, Felix: *See—*
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Graf, Robert E.: *See—*
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Graffeo, Anthony J.: *See—*
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Grapes, Eugene F.: *See—*
Patterson, William W., III; and Grapes, Eugene F., 3,934,855.

Grau, Gerhard, to Zinser Textilmaschinen GmbH. Spooling mechanism. 3,934,830, Cl. 242-18.0DD.

Graveman, Donald F., to American Pulverizer Company. Coal crusher. 3,934,826, Cl. 241-81.000.

Gray, Percy J.: *See—*
Paxton, Curtis L.; and Gray, Percy J., 3,934,917.

Gray, Robert D., to Scott Paper Company. Apparatus for securing the free end of a roll of fibrous web material. 3,935,057, Cl. 156-578.000.

Greco, Nicholas P., to Koppers Company, Inc. Production of hydroquinone. 3,935,283, Cl. 260-621.00M.

Green, Edward H.; and Green, Edward H., Jr. Safety overcap for dispensing containers. 3,934,751, Cl. 220-306.000.

Green, Edward H., Jr.: *See—*
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Green, Geoffrey William: *See—*
Bardsley, William; Green, Geoffrey William; Holliday, Charles Harry; and Hurle, Donald Thomas James, 3,934,983.

Greenhalgh, Colin William; Newton, David Francis; Eckersley, Dennis; Cheetham, Ian; Phillips, Duncan Adrian Sidney; Dunkerley, Kenneth; Williams, Gerald; and Chokshi, Vibhas, to Imperial Chemical Industries Limited. Dyeing process. 3,934,972, Cl. 8-39.000.

Greenleaf, Joseph A. Slalom ski device. 3,934,893, Cl. 280-11.35K.

Greenwood Mills: *See—*
Holschlag, Jerry B., deceased; and Wilcox, Lyle, 3,935,436.

Greenwood, Robert C., to Pan-Nova, Inc. Gasoline dispenser. 3,935,435, Cl. 235-151.340.

Gresham, William F., to VSI Corporation. Door lockset and strike. 3,934,435, Cl. 70-150.000.

Greutert, Albert, to Interelectric AG. Reusable coffee filter. 3,935,112, Cl. 210-456.000.

Greve, Dale R.; and O'Neill, Eugene D., to Georgia-Pacific Corporation. Water-resistant gypsum products. 3,935,021, Cl. 106-111.000.

Grey, Donald M.; and Butler, Lee D., to Sperry Rand Corporation. Bale wagon. 3,934,734, Cl. 214-6.00B.

Grey Lab. Establishment, The: *See—*
Scheffel, Kurt, 3,935,431.

Griffin, Billy J. Baseball batting aid. 3,934,873, Cl. 273-26.00E.

Griffo, Joseph B. Fluid flow meter with counter rotating turbine impellers. 3,934,473, Cl. 73-231.00R.

Grindstaff, Donald A.: *See—*
Feminella, Joseph V.; and Grindstaff, Donald A., 3,935,323.

Grisotto, Franco: *See—*
Palazzetti, Mario; and Grisotto, Franco, 3,934,337.

Groelz, Jay C.; and Heinzman, John W., to Heinzman Engineering, Inc. Anti-run ahead system for traveling hese pull sprinklers. 3,934,819, Cl. 239-189.000.

Groppenbacher, Gregor; Rieckmann, Peter; and Rothe, Werner, to Boehringer Mannheim G.m.b.H. Process for coating tablets with aqueous resin dispersions. 3,935,326, Cl. 427-3.000.

Grotnes Machine Works, Inc.: *See—*
Hess, Johann T.; Debrunner, Kurt; and Tan, Aujit, 3,934,324.

Grove Valve and Regulator Company: *See—*
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Grudkowski, Thomas W.: *See—*
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Grupe, Ulrich, to Vereinigte Flugtechnische Werke-Fokker GmbH. Decimal adder. 3,935,438, Cl. 235-174.000.

Gruppo Lepetit, S.p.A.: *See—*
Bellasio, Elvio, 3,935,236.

GTE Laboratories Incorporated: *See—*
Margolies, Arthur, 3,935,475.

Guerke, Guenter: *See—*
Klauke, Guenter; Marziniak, Ruediger; and Guerke, Guenter, 3,934,781.

Guillaneux, Pierre; Patou, Claude; and Tonon, Gianfranco, to Commissariat a l'Energie Atomique. Method and apparatus for injection of a plasma. 3,935,504, Cl. 315-111.700.

Gulf Oil Canada Ltd.: *See—*
Cymbalisty, Lubomyr M. O., 3,935,076.

Gumbinner, Robert; and Shimazu, Ken-ichi, to Polychrome Corporation. Method of producing an aluminum base sheet for a printing plate. 3,935,080, Cl. 204-28.000.

Gusdorf & Sons, Inc.: *See—*
Gusdorf, Walter, 3,934,305.

Gusdorf, Walter, to Gusdorf & Sons, Inc. Caster socket. 3,934,305, Cl. 16-43.000.



Gusev, Boris Pavlovich: *See—*
Malyshev, Leonid Mikhailovich; Indrupsky, Lev Iosifovich; Gusev, Boris Pavlovich; and Pisman, Yakov Borisovich, 3,934,568.

Guth, Lauren W., to General Electric Company. Dishwasher rack. 3,934,728, Cl. 211-128.000.

Guyton, Glen B. Check valve. 3,934,608, Cl. 137-527.800.

Guzman, Angel: *See—*
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H. H. Robertson Company: *See—*
Davis, James L., 3,934,384.

Habegger, Willy: *See—*
Hirsig, Emil, 3,934,517.

Haber, Stephen K. Erratic movement tethered ball. 3,934,878, Cl. 273-95.00A.

Haddad, Daniel G., to Blodgett, Norman S. Game racket. 3,934,876, Cl. 273-73.00C.

Haenni & Cie Aktiengesellschaft: *See—*
Posnansky, Mario, 3,934,479.

Hafner, Otto P. Method of interlocking overlapping sheet material. 3,934,327, Cl. 29-432.000.

Hagen, Frederic, to Douglas Leigh Research and Development Corporation. Water sports wheel. 3,934,291, Cl. 9-310.00G.

Hagen, Hans-Gunter: *See—*
Muller, Otto; Rottger, Hans; Kastl, Hans; and Hagen, Hans-Gunter, 3,934,731.

Hagenweiler, Kurt; and Scholz, Kurt, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Contact adhesives. 3,935,144, Cl. 260-24.000.

Haggerty, William H.; and Bolen, Gerhard N., to Owens-Corning Fiberglas Corporation. Sizing composition and glass fibers treated therewith. 3,935,344, Cl. 428-378.000.

Haggqvist, Ulw Lars Anders, to Vadstena Pumpar AB. Control unit for central heating systems. 3,934,609, Cl. 137-565.000.

Haines, David C. Surveying instrument. 3,934,353, Cl. 33-262.000.

Hall, Charles B., to Outboard Marine Corporation. Vibration isolating mount for an outboard motor. 3,934,537, Cl. 115-17.000.

Hall, John L. Anti-drip injection nozzle for plastic molding. 3,934,626, Cl. 141-117.000.

Haller, Roland, to Harsco Corporation. Power cylinder construction. 3,934,423, Cl. 92-52.000.

Halliburton Company: *See—*
Kampfer, John G., 3,935,556.

Halliday, Anthony James: *See—*
Taylor, John Thurston; Halliday, Anthony James; Angel, Jonathan George Cordy; and Blakemore, Bernard, 3,934,962.

Hamilton, Charles Howard; Koeller, Fred B.; Raymond, Roger S.; and Goldberg, Martin, to Rockwell International Corporation. Controlled environment superplastic forming of metals. 3,934,441, Cl. 72-60.000.

Hamilton, Willard C.: *See—*
Jelfo, Raymond L.; Strella, Stephen; and Hamilton, Willard C., 3,934,547.

Hamilton, William H.; and Coski, William D., to Ingersoll-Rand Company. Drill rod stabilization means. 3,934,945, Cl. 308-4.00A.

Hammerly, Robert C. Quick release mud flap hanger assembly for trucks and trailers. 3,934,901, Cl. 280-154.50R.

Hamprecht, Gerhard: *See—*
Fischer, Adolf; Hamprecht, Gerhard; and Huber, Rolf, 3,935,200.
Mangold, Dietrich; Koenig, Karl-Heinz; and Hamprecht, Gerhard, 3,935,201.

Hanabusa, Mitsugu: *See—*
Asik, Joseph R.; and Hanabusa, Mitsugu, 3,934,570.

Hand, Lowal L. Racked pipe reamer. 3,934,448, Cl. 72-380.000.

Hanna, Daniel C. Wheel cleaners. 3,934,296, Cl. 15-53.00B.

Hanna, Daniel C. Overhead car washes. 3,934,297, Cl. 15-53.0AB.

Hannah, Phillip L., to California Fruit Concentrates, Inc. Apparatus for cooking fruit and the like products. 3,934,497, Cl. 99-476.000.

Hanni, Stephen L., to Texas Instruments Incorporated. Method of fabricating metal printed wiring boards. 3,934,334, Cl. 29-625.000.

Hanotier, Jacques D. V.: *See—*
de Radzitzky d'Ostrowick, Pierre M. J. G.; Hanotier, Jacques D. V.; and Vacrman, Joseph M. E., 3,935,289.

Hansen, Hanspeter: *See—*
Fischer, Adolf; Hansen, Hanspeter; and Rohr, Wolfgang, 3,935,190.

Hansen, Laurence H., to Andrew Corporation. Flared microwave horn with dielectric lens. 3,935,577, Cl. 343-781.000.

Hanson, James M., to General Electric Company. Photoflash lamp array having electrically connected reflector. 3,935,442, Cl. 240-1.300.

Hanson, John Arvid, to United States Gypsum Company. Post-tensioning load cell. 3,934,465, Cl. 73-143.000.

Harada, Shuzi: *See—*
Kimura, Takeji; Oyama, Tomio; Yamada, Haruyasu; Harada, Shuzi; Yoshino, Hirokazu; and Tsuboka, Eiichi, 3,935,536.

Hardy, Francis R. F.; and King, Ian Robert, to Laporte Industries Limited. Lactones. 3,935,235, Cl. 260-343.600.

Hardy, John C.: *See—*
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Harke, Cyril J.: *See—*
Eng, Jeffrey D.; and Harke, Cyril J., 3,935,096.

Harleman, Donald R. F.: *See—*
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Harman, John N., III: *See—*
Frain, John P.; Harman, John N., III; and Neti, Radhakrishna M., 3,934,991.

Harper, Robert J., Jr.: *See—*
Blanchard, Eugene J.; Gautreaux, Gloria A.; and Harper, Robert J., Jr., 3,934,971.

Harris Corporation: *See—*
Mason, Donald R., 3,935,040.

Harris, John Edward: *See—*
Wearne, William Maxwell; Harris, John Edward; and Potter, Wilfred, 3,934,272.

Harrisberger, William H., to Dow Chemical Company, The. Apparatus for testing a sand sample. 3,934,455. Cl. 73-38.000.

Harrison, Ian T.: *See—*
Fried, John H.; and Harrison, Ian T., 3,935,273.

Harsco Corporation: *See—*
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Hart, Gary A.; and Wilson, Melvin G., to International Business Machines Corporation, D.C. coupled impedance reducing circuit. 3,935,540, Cl. 330-10.000.

Hart, Robert L. Starter enabling-disabling ignition safety seat belt for moving vehicles. 3,934,671, Cl. 180-82.00C.

Hartley, John H., Jr. Deflatable mammary augmentation prosthesis. 3,934,274, Cl. 3-36.000.

Haseda, Katsumi: *See—*
Kitano, Naohiko; Haseda, Katsumi; and Takahashi, Tamotsu, 3,934,358.

Hasegawa, Shiro: *See—*
Suekane, Mikio; Hasegawa, Shiro; Tamura, Masaki; and Ishikawa, Yoshiyuki, 3,935,070.

Hasenauer, Dieter: *See—*
Strasser, Karl; and Hasenauer, Dieter, 3,935,028.

Hashimoto, Sadao; Sakakibara, Ryuji; Kurashige, Yasushi; Takikawa, Katsuo; Osame, Yoko; Minami, Hiroshi; and Suzue, Takashi, to Taiho Pharmaceutical Company, Limited. N-substituted guanidino acid derivatives. 3,935,266, Cl. 260-561.00A.

Hashimoto, Shigeru: *See—*
Aimoto, Kenji; Hashimoto, Shigeru; and Yoneda, Toyoaki, 3,935,307.

Hashizume, Hiroshi: *See—*
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Hashizume, Yoshio: *See—*
Kudo, Teizo; Hashizume, Yoshio; Mikumo, Masatoshi; and Itoh, Masanori, 3,935,153.

Hata, Yoshitaka: *See—*
Togawa, Kinmochi; Matoba, Kazuo; Takao, Hiroshi; and Hata, Yoshitaka, 3,935,089.

Hatfield, Walter Bryan: *See—*
Dick, George Wilmer; and Hatfield, Walter Bryan, 3,935,494.

Hauck, Frederic Peter; Cimarusti, Christopher M.; and Narayanan, Venkatachala Lakshmi, to E. R. Squibb & Sons, Inc. Tetrahydronaphthyloxy-aminopropanols and salts thereof. 3,935,267, Cl. 260-570.700.

Haugen, Ronald L., to Ingersoll-Rand Company. Gas drying apparatus. 3,934,989, Cl. 55-163.000.

Hauser, Ambrose A.; Eckert, Terry T., and McDonel, James D., to General Electric Company. Method for forming cooling slot in airfoil blades. 3,934,322, Cl. 29-156.80H.

Hauser, Raimund: *See—*
Cap, Heinrich; Krammer, Herbert; and Scheiber, Robert, 3,935,524.

Hawker Siddeley Dynamics Limited: *See—*
Collier, David Thomas, 3,935,448.

Hawkins, John Richard; and Locke, John Michael, to International Synthetic Rubber Co., Ltd., The. Thermosplastic elastomeric materials. 3,935,176, Cl. 260-83.700.

Hayashi, Yoshikatsu: *See—*
Terai, Shiro; Ichiryu, Akinari; Suzuki, Toshio; and Hayashi, Yoshikatsu, 3,935,084.

Haydock, James Livesey, to Acres Consulting Services Limited. Power generating plant. 3,935,469, Cl. 290-52.000.

Hayes, John C., to Universal Oil Products Company. High pressure regeneration of a coke-deactivated catalyst containing platinum, rhenium, halogen & sulfur. 3,935,244, Cl. 252-415.000.

Hayes, Thomas H.; and Ostrowsky, Efrem, to VCA Corporation. Cosmetic holder and applicator. 3,934,598, Cl. 132-88.700.

Hayes, William J., to Howmet Corporation. Boron diffusion coating process. 3,935,034, Cl. 148-6.000.

Hays, Wilford R. Valve cover having oil can opener. 3,934,623, Cl. 141-98.000.

Hearn, Daniel P., to Atlantic Richfield Company. Method and apparatus for sensing when a seismic gas exploder is in contact with the earth. 3,934,672, Cl. 181-117.000.

Heckel, Rene, to Maschinenfabrik Schweiter AG. Orientation alignment of apparatus for yarn cops being supplied to textile machines. 3,934,716, Cl. 198-252.000.

Heckmanns, Heinz: *See—*
Kress, Heinz; and Heckmanns, Heinz, 3,934,918.

Hedin, Sven Arvid, to ITT Industries, Inc. Flexible coupling. 3,934,428, Cl. 64-15.00C.

Hedstrom, Ture E. Safety device for lifts, hoists and like apparatus. 3,934,682, Cl. 187-78.000.

Heflinger, Lee O.; Wuerker, Ralph F.; and Brooks, Robert E., to TRW Inc. Multiple exposure holographic interferometer method. 3,934,461, Cl. 73-71.300.

Hege Advanced Systems Corporation: *See—*
Hege, Douglas W., 3,934,857.

Hege, Douglas W., to Hege Advanced Systems Corporation. Mixing and heat transfer apparatus. 3,934,857, Cl. 259-8.000.

Hehr International Inc.: *See—*
Kwan, Gerald A.; Penkov, Walter V.; and Roe, Norman E., 3,934,370.
Heimlicher, Paul, to Maschinenfabrik Wifag. Method and apparatus for adjusting rollers in a printing press. 3,934,508, Cl. 101-349.000.
Heine, Helmut A., to Propper Manufacturing Co., Inc.; and Optotechnik Heine KG, part interest to each. Direct illumination otoscope. 3,934,578, Cl. 128-9.000.
Heinzman Engineering, Inc.: *See—*
Groetz, Jay C.; and Heinzman, John W., 3,934,819.
Heinzman, John W.: *See—*
Groetz, Jay C.; and Heinzman, John W., 3,934,819.
Heise, Rainer: *See—*
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Heller, Carl A.: *See—*
Little, Steven M.; Gerber, Robert L.; Heller, Carl A.; and Esposito, Vincent J., 3,934,539.
Helmer, N. Donald: *See—*
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Hempel, Jan; and Klauke, Erich, to Bayer Aktiengesellschaft. Process for making N-arylurea compounds and herbicidal compositions containing same. 3,935,258, Cl. 260-553.00A.
Henderson, Frank D. Golf putting aid. 3,934,874, Cl. 273-35.00A.
Henderson, James R., to Controls Southeast, Inc. Corrugated jacketed pipe assembly having vented enclosures for connecting welds. 3,934,617, Cl. 138-114.000.
Henderson, James R., to Controls Southeast, Inc. Jacketed pipe assembly formed of corrugated metal tubes. 3,934,618, Cl. 138-114.000.
Hendlin, David; Mata, Justo Martinez; Del Val, Sagrario Mochales; and Stapley, Edward O., to Merck & Co., Inc. Synergistic combinations of phosphonomycin and bacteriostatic agents. 3,935,309, Cl. 424-114.000.
Henniger, Wolfgang; Povh, Dusan; and Schraudolph, Manfred, to Siemens Aktiengesellschaft. Filter arrangement for a converter circuit. 3,935,551, Cl. 333-76.000.
Henning, Robert J., to Quaker Oats Company, The. Flexible mold. 3,934,810, Cl. 249-117.000.
Henning, Robert J.: *See—*
Fox, Robert H.; Henning, Robert J.; and Psensky, Miroslav, 3,934,809.
Henry, Joseph F.: *See—*
Ostop, John A.; Kisinko, Paul M.; and Henry, Joseph F., 3,935,587.
Henry L. Hanson Co., Inc.: *See—*
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Henry Manufacturing Co., Inc.: *See—*
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Henry Pratt Company: *See—*
Kurkjian, Gregory A., Jr., 3,934,850.
Herbst, Edward J., to Continental Can Company, Inc. Non-detachable end unit. 3,934,750, Cl. 220-277.000.
Herrell, Robert C., to Baker-Roos. Overhead service unit. 3,934,681, Cl. 187-17.000.
Herter, Vincent J.: *See—*
Barry, Robert E.; and Herter, Vincent J., 3,934,817.
Herveling, Wilhelm: *See—*
Daimler, Berthold H.; Vos, Jan; and Herveling, Wilhelm, 3,934,421.
Herzog, Rollie R., to Construction Materials Division General Electric Company. Ballast circuit for eliminating flicker in gaseous discharge lamps. 3,935,502, Cl. 315-94.000.
Hess, Hans-Jurgen E., to Pfizer Inc. Process for hypotensive 4-amino-2-(piperazin-1-yl) quinazoline derivatives. 3,935,213, Cl. 260-256.40Q.
Hess, Johann T.; Debrunner, Kurt; and Tan, Aujit, to Grotnes Machine Works, Inc. Method and apparatus for forming automotive wheel rim blanks. 3,934,324, Cl. 29-159.100.
Hessen, Petter, to Allmanna Svenska Elektriska Aktiebolaget. Conservator system. 3,934,453, Cl. 73-19.000.
Hesston Corporation: *See—*
Garrison, Harold Keith, 3,934,394.
Hewlett-Packard Company: *See—*
Kovalick, Albert W., 3,934,695.
Heyden, Herbert Frank, to Union Plastics Corporation. Stand-off insulators. 3,935,378, Cl. 174-158.00R.
Hida, Takashi, to Aisin Seiki Kabushiki Kaisha. Braking pressure regulating device for a vehicle braking system. 3,934,939, Cl. 303-21.00A.
Higgs, Harold: *See—*
Parsonage, Raymond Arthur; and Higgs, Harold, 3,934,858.
High, Robert Edward; and Samways, Albert John, to Pennwalt Corporation. Centrifuge apparatus. 3,934,792, Cl. 233-7.000.
Higuchi, Takeru; Bodor, Nicolae S.; and Kuo, Yu-Neng, to Interx Research Corporation. Useful pro-drug forms of theophylline. 3,935,196, Cl. 260-240.00J.
Hillyer, Anthony William, to Raleigh Industries Limited. Epicyclic change speed gears. 3,934,493, Cl. 74-750.00B.
Himics, Richard Joseph: *See—*
Poliniak, Eugene Samuel; Scheible, Howard George; and Himics, Richard Joseph, 3,935,331.
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Hirano, Satoshi; Tsumura, Jusha; Imaseki, Izumi; and Kawasaki, Yoshimi, to Kabushiki Kaisha Tsumura Juntendo. Detergent composition for cleaning bathtubs. 3,935,130, Cl. 252-542.000.
Hirschkoff, Sidney, to McCulloch Corporation. Snap-acting overcenter chain saw safety brake and method of operation thereof. 3,934,345, Cl. 30-381.000.
Hirschson, David. Apparatus for manufacturing neck-ties. 3,935,054, Cl. 156-443.000.
Hirsig, Emil, to Habegger, Willy. Cable connection with slack cable-brake release for an aerial cableway. 3,934,517, Cl. 104-173.000.
Hisanaga, Noboru: *See—*
Ogasawara, Takahisa; Kobayashi, Yorimasa; Mizutani, Kiyokazu; Nakagawa, Teruo; Hisanaga, Noboru; and Tatemichi, Hidemaro, 3,935,173
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Umino, Tomio; Suzuki, Munenobu; and Shida, Tomohiko, 3,935,417.
Hitomi, Nobuteru: *See—*
Takahashi, Koichi; Hitomi, Nobuteru; and Kizu, Taisuke, 3,934,429.
Ho Lee, Yuan. Feeding device for wire stock in a high speed cold heading device. 3,934,293, Cl. 10-13.000.
Hochanadel, Donald L. Compacter for compacting objects such as cans and the like. 3,934,498, Cl. 100-35.000.
Hochiki Kabushiki Kaisha: *See—*
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Hocq, Robert, to Societe Franco-Hispano-Americaine (Francispam); and Societe Anonyme dite: Cartier. Button cover. 3,934,313, Cl. 24-113.0MP.
Hodges, Joy C.: *See—*
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Hoeffken, Russell W.: *See—*
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Hoeffken, William M.; Hoeffken, Russell W.; and Hoeffken, Paul W. Utility cart and bag holder therefore. 3,934,894, Cl. 280-47.190.
Hoehn, Hans, to E. R. Squibb & Sons, Inc. 1,4,5,7-Tetrahydropyrazolo[3,4-b]pyridin-6-ones. 3,935,222, Cl. 260-295.50B.
Hoerner Waldorf Corporation: *See—*
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Roccaforte, Harry I., 3,934,719.
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Hollingshead, Donald W.; and Phillips, Cecil E., to Hollingshead, Danny W. Therapeutic musculoskeletal support sleeve and method of manufacturing same. 3,934,583, Cl. 128-165.000.
Holmes, Lloyd H., to E-Systems, Inc. Skid control valve. 3,934,941, Cl. 303-21.00F.
Holschlag, Jerry B., deceased (by Holschlag, Joan D., executrix); and Wilcox, Lyle, to Greenwood Mills. Color measuring spectrophotometer. 3,935,436, Cl. 235-151.350.
Holschlag, Joan D., executrix: *See—*
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Homan, John D. Remedy for treatment of hemorrhoids. 3,935,310, Cl. 424-195.000.
Homburg B.V.: *See—*
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Honkawa, Yoshinori, to Ryobi, Ltd. Printed sheet guide mechanism in offset printing press. 3,934,872, Cl. 271-188.000.
Hooker Chemicals & Plastics Corporation: *See—*
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Golborn, Peter; and Duffy, James J., 3,935,162.
Hope, Henry F.; and Hope, Stephen F. Drying rollers. 3,934,354, Cl. 34-9.000.
Hope, Stephen F.: *See—*
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Hopkins, Gorden Lambert, to RCA Corporation. Audio-visual apparatus with control signal operated gating means. 3,935,591, Cl. 360-19.000.
Hord, Joseph B. Triple nipple. 3,934,904, Cl. 285-158.000.
Hori, Fuzio: *See—*
Arimoto, Kazuyuki; Maeda, Toshinobu; Hori, Fuzio; and Takata, Akihiko, 3,935,483.
Horie, Yoshio: *See—*
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Horn, Peter: *See—*
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Hornstein, Maurice, to Intercontinental Trading Company. Arrangement for automatically loading and unloading a machining apparatus. 3,934,375, Cl. 51-101.00R.
Horton, Edward E.; Brewer, John H.; Silcox, William H.; and Hudson, T. A., to Deep Oil Technology, Inc.; and Chevron Oil Field Research Co. Means and methods for anchoring an offshore tension leg platform. 3,934,528, Cl. 114-.50D.
Hoshi, Hiroshi: *See—*
Yamaguchi, Tadashi; Ono, Takayuki; Hoshi, Hiroshi; Hirakawa, Michio; and Watanabe, Isao, 3,935,340.
Houlihan, William J.; and Linder, Jerome, to Sandoz, Inc. Preparation of 1-aryl-4,5-dihalo-pyridazone-6. 3,935,210, Cl. 260-250.00A.
Howard, Albert L. Switch actuator with elongated lever. 3,935,410, Cl. 200-332.000.
Howard, Curtis E.; and Calvin, Douglas G., to Texaco Inc. Method and steam samplers. 3,934,469, Cl. 73-155.000.
Howard, Durrell U., to Sherwood Products Corporation. Apparatus for monitoring the condition of a filter. 3,934,543, Cl. 116-114.0AD.
Howard, G. Wix. Combination ski maintenance tool. 3,934,287, Cl. 7-14.10R.
Howard, Norman Bratton, to Procter & Gamble Company, The. Protein food product. 3,935,319, Cl. 426-104.000.
Howard, Paul L., to Timex Corporation. Energy cell for watch. 3,935,026, Cl. 136-20.000.
Howatt, John R.: *See—*
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Hozumi, Yukio; Ohi, Akira; and Imai, Tatuhiko, to Daicel Ltd. Styrene-acrylonitrile resin composition having good parting property. 3,935,152, Cl. 260-30.40N.
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Huber, Rolf: *See—*
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Hudson, T. A.: *See—*
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Pastor, Ricardo C.; Arita, Kaneto; and Robinson, Morton, 3,935,302.
Hughes Tool Company: *See—*
Donaho, Ruel M., Jr., 3,935,114.
Hugot, Andre Albert, to Compagnie Electro Mecanique. Discharge lamp. 3,935,491, Cl. 313-25.000.
Hull, Francis R. High-capacity steam heating system. 3,934,799, Cl. 237-67.000.
Humpa, Norbert J. Disposable utility tongs. 3,934,915, Cl. 294-16.000.
Hunt, Robert P., to Spectrotherm Corporation. Thermograph absolute temperature referencing technique. 3,935,382, Cl. 178-7.100.
Hunter, Joseph P.: *See—*
Mood, Robert D.; Hunter, Joseph P.; and Burgen, Dering R., 3,935,440.
Hurle, Donald Thomas James: *See—*
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Hurtubise, Paul Joseph Charles: *See—*
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Hutai, Hubert; and Fischer, Wolfgang, to Daimler-Benz Aktiengesellschaft. Bumper support structure. 3,934,913, Cl. 293-99.000.
Hutcheon, Ronald M., to Atomic Energy of Canada Limited. Two reference cavity structure for frequency tracking as a function of temperature. 3,935,552, Cl. 333-82.00B.
Hutchinson, David Wesley; and Eaton, Michael Anthony William, to G. D. Searle & Co. Polynucleotides of poly(5-hydroxycytidylic acids). 3,935,185, Cl. 260-211.50R.
Hycom Incorporated: *See—*
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Motley, David M.; and Cheng, King Y., 3,935,535.
Hydra Dyne Corporation: *See—*
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Hykon-Patent Aktiebolag: *See—*
Karlsson, Frans Harry; and Faxen, Per Torsten, 3,934,276.
Hyler, John H., to Westinghouse Air Brake Company. Elevating-type scraper having forwardly sliding floor and full-width pivoted striker. 3,934,360, Cl. 37-8.000.
Hyler, John H., to Westinghouse Air Brake Company. Elevating-type scraper having forwardly swingable floor section. 3,934,362, Cl. 37-8.000.
Hyler, John H.: *See—*
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Ichiba, Terumichi; Shimba, Hiroshi; and Mukunashi, Hiroaki, to Sumitomo Electric Industries, Ltd. Laminate tape and laminate sheathed cable. 3,935,375, Cl. 174-102.00R.
Ichihara, Mutsuo: *See—*
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Ichimaru, Takarokuro: *See—*
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ICI United States Inc.: *See—*
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Ide, Thomas N., III, to Stratoflex, Inc. Air cooler and cleaner for compressed air. 3,934,990, Cl. 55-218.000.
Idehara, Shigeyoshi: *See—*
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Idohara, Mitsuru: *See—*
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IIT Research Institute: *See—*
Kinney, Layton C.; and Tompkins, Edwin H., 3,934,503.
Ilcor GmbH: *See—*
Aldred, Justin Anderson, 3,934,525.
Illing, Henry, to Kieley & Mueller, Inc. Butterfly valve having a split vane. 3,934,851, Cl. 251-248.000.
Illinois Tool Works Inc.: *See—*
Curry, John Joseph, 3,934,744.
Edwards, Bryant, 3,934,725.
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Imaseki, Izumi: *See—*
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Imperial Chemical Industries Limited: *See—*
Baird, David Boyd; Baker, Ronald; Fishwick, Brian Ribbons; and McClelland, Robert David, 3,935,232.
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Osmond, Desmond Wilfrid John; and Thompson, Morice William, 3,935,155.
Rashbrook, Robert Benson, 3,935,168.
Ray, Neil Hunter; and Robinson, William Derek, 3,935,018.

Inaga, Hisashi, to Kioritz Corporation. Portable chain saw. 3,934,344. Cl. 30-381.000.

Inaga, Katsu, to Sony Corporation. Reel assembly. 3,934,840, Cl. 242-195.000.

Indrupsky, Lev Iosifovich: *See—*
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Industrial Research and Development Corporation: *See—*
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Industrial Research Products, Inc.: *See—*
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Industrie Pirelli S.p.A.: *See—*
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Ingersoll-Rand Company: *See—*
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Inland Steel Company: *See—*
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Inns, David Harold; Bennett, william Roy; and Chambers, Arnold, to Glass Tubes and Components Limited. Production of one-piece stemware from glass, etc. 3,934,997, Cl. 65-109.000.

Inoue, Masaaki: *See—*
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Inouye, Kozo: *See—*
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Institut Francais du Petrole: *See—*
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Intercontinental Trading Company: *See—*
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International Telephone & Telegraph Corporation: *See—*
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Interx Research Corporation: *See—*
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Irwin, John A., to General Motors Corporation. Ceramic combustion liner. 3,934,408, Cl. 60-39.650.

Isaka, Ichiro: *See—*
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Isaka, Yoshiharu, to Yamaha Hatsudoki Kabushiki Kaisha. Two-cycle engine. 3,934,562, Cl. 123-53.0BA.

Ishikawa, Hideo: *See—*
Sugiura, Shotaro; Matsuura, Tetsuro; Ueno, Haruo; Kono, Minoru; Ishikawa, Hideo; and Tokutomi, Thunehiko, 3,935,180.

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Isuda, Hiroshi: *See—*
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Itek Corporation: *See—*
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Ito, Akihiko: *See—*
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Itoh, Masanori: *See—*
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Itoh, Susumu; Nishida, Keijiro; Kamiya, Osamu; and Sekimura, Nobuyuki, to Canon Kabushiki Kaisha. Three layer anti-reflection film. 3,934,961, Cl. 350-164.000.

Itrich, Earl R., to Itrich, Earl R. Replaceable passenger tabulating and recording card reader unit. 3,935,428, Cl. 235-61.11R.

ITT Industries, Inc.: *See—*
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Iverson, Carl K.: *See—*
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Iwamoto, Masami: *See—*
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Iwasa, Shozo: *See—*
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J. Ray McDermott & Co., Inc.: *See—*
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Jabalee, Walter J. Liquid cleaning compositions. 3,935,129, Cl. 252-525.000.

Jachowski, Ronald E., to Decibel Products, Inc. Ferrite circulator. 3,935,549, Cl. 333-1.100.

Jackson, John Maxwell, to Chromax Limited. Machine for printing on cylindrical or frusto-conical containers with ultra-violet-light-setting ink. 3,934,500, Cl. 101-38.00A.

Jackson, Robert E., to Challenge-Cook Bros., Incorporated. Concrete pump valve. 3,934,813, Cl. 251-62.000.

Jackson, Wilbur F., deceased: *See—*
Wolfe, Denis G.; Tyler, Hugh J.; Jackson, Wilbur F., deceased; and Benton, Linda A., trust administrator, 3,934,417.

Jackson, William E., to Goodyear Tire & Rubber Company, The. Method of molding polyurethane articles in a mold coated with three mold release agents. 3,935,291, Cl. 264-331.000.

Jacob, Jose T., to Chemed Corporation. Method and composition for inhibiting corrosion in aqueous systems. 3,935,125, Cl. 252-389.00A.

Jacobs Manufacturing Co., Ltd., The: *See—*
Derbyshire, George C., 3,934,891.

Jacobs, Philip C., Jr.: *See—*
Kozacka, Frederick J.; Knapp, Edward J., Jr.; and Jacobs, Philip C., Jr., 3,935,553.

Jacobsen, Gunter; Fernholz, Hans; and Freudenberger, Dieter, to Hoechst Aktiengesellschaft. Process for the continuous preparation of hydroxypivaldehyde. 3,935,274, Cl. 260-602.000.

Jacobsen, John Kenneth, to Milton Roy Company. Spectrophotometer. 3,935,463, Cl. 250-373.000.

Jaffe, David M., to Automatic Fastener Corporation. Fastening method, apparatus and article. 3,934,325, Cl. 29-243.520.

Jakobson, Karl Folke Olof: *See—*
Rundqvist, Lars-Goran; and Jakobson, Karl Folke Olof, 3,935,109.

Janelid, Erik Ingvar; and Morfeldt, Carl-Olof Oskar. Method of sealing the rock around a rock chamber intended for a medium, the temperature of which is below the natural temperature of the rock. 3,934,420, Cl. 61-.500.

Janes, George Sargent, to Jersey Nuclear-Avco Isotopes, Inc. Method and apparatus for separating laser ionized particles from background ions. 3,935,451, Cl. 250-283.000.

Janjic, Bora. Method of forming a porcelain crown. 3,934,348, Cl. 32-12.000.

Janning, John L., to NCR Corporation. Magnetic spring clutch. 3,934,690, Cl. 192-84.00T.

Janson, Roland C.: *See—*
Campagna, Gary J.; and Janson, Roland C., 3,934,590.

Januszewski, Joseph P.; Cordon, Martin; and Pierson, William Grant, to Colgate-Palmolive Company. Dental creams. 3,935,304, Cl. 424-49.000.

Janycky, Lubomyr, Current auxiliary relay for circuit breaker. 3,935,515, Cl. 317-155.000.

Japan Atomic Energy Research Institute: *See—*
Okubo, Hiroshi; Kato, Masamichi; Kaetsu, Isao; and Ito, Akihiko, 3,935,292.

Jaworek, Dieter: *See—*
Bergmeyer, Hans Ulrich; and Jaworek, Dieter, 3,935,071.

Jefferies, Patrick J.; and Crounse, Nathan N., to Sterling Drug Inc. Water-soluble quaternary ammonium heterocyclic azo dyestuffs. 3,935,182, Cl. 260-155.000.

Jeffers, Frederick J.: *See—*
Condon, John F.; Jeffers, Frederick J.; Duck, Sherman W.; and Bachand, Richard C., 3,935,578.

Jeffries, David: *See—*
de Luca, Peter C.; Stoddart, Hugh F.; and Jeffries, David, 3,935,462.

Jelfo, Raymond L.; Strella, Stephen; and Hamilton, Willard C., to Xerox Corporation. Renewable chow fuser coating. 3,934,547, Cl. 118-60.000.

Jende, Wilhelm, to Pilot Hydraulik GmbH. Apron conveyor. 3,934,712, Cl. 198-195.000.

Jenne, Leonard W., Jr.: *See—*
Doggett, Frederick F.; and Jenne, Leonard W., Jr., 3,935,498.

Jennings, Lewis C., to Morgan Construction Company. Flow monitor for circulating lubrication systems. 3,934,678, Cl. 184-103.00R.

Jennings, Ralph Ernest, to Illinois Tool Works Inc. Tube clamping fastener. 3,934,802, Cl. 248-71.000.

Jerabek, Robert D.; and Marchetti, Joseph R., to PPG Industries, Inc. Method for electrodeposition of self-crosslinking cationic compositions. 3,935,087, Cl. 204-181.000.

Jerome, Jack: *See—*
Kozak, Stephen; Bender, Frederick J.; and Jerome, Jack, 3,934,786.





Jerome Underground Transmission Equipment, Inc.: *See—*
Kozak, Stephen; Bender, Frederick J.; and Jerome, Jack, 3,934,786.

Jersey Nuclear-Avco Isotopes, Inc.: *See—*
Janes, George Sargent, 3,935,451.

Jespersen, Hans Jorgen; and Nielsen, Leif, to Danfoss A/S. Thermostatic expansion valve for refrigeration installations. 3,934,426, Cl. 62-205.000.

Jirka, Gerhard H.; and Harleman, Donald R. F., to Massachusetts Institute of Technology. Submerged multiport diffusers for cooling water discharge. 3,934,599, Cl. 137-1.000.

Jirka, Howard F., to Zenith Radio Corporation. Network for generating a CRT control signal for enhancing the edges of television images. 3,935,384, Cl. 178-7.50R.

Johansson, Kurt Eilert. Attachment device for a gauge. 3,934,663, Cl. 177-137.000.

Johns-Manville Corporation: *See—*
Lockard, Donald Fredrick, 3,934,905.

Johnson, Chandler A., III, to General Electric Company. DC motor regulator. 3,935,520, Cl. 318-332.000.

Johnson, Clifford E.; Freeburg, Dale O.; and Hyler, John H., to Westinghouse Air Brake Company. Idler construction for earth-moving elevator. 3,934,361, Cl. 37-8.000.

Johnson, Henry Charles, to RCA Corporation. Doppler radar sensor calibrator. 3,935,573, Cl. 343-17.700.

Johnson, Howard R., to Hush Company, Inc. Heat exchanger. 3,934,574, Cl. 126-350.000.

Johnson & Johnson: *See—*
Gorrie, Thomas M., 3,934,582.
Mesek, Frederick K.; Repke, Virginia L.; and Strickel, William R., 3,934,588.

Johnson, Lewis T., to Phillips Petroleum Company. Nest and stack container. 3,934,724, Cl. 206-507.000.

Johnson, Malcolm Ray: *See—*
Goldkuhle, Werner P.; Arnold, Richard E.; and Johnson, Malcolm Ray, 3,934,416.

Johnson, Philip C., to Dentsply Research & Development Corporation. Adjustable operatory chair. 3,934,928, Cl. 297-71.000.

Johnson, Raymond A. Fishing rod holder. 3,934,801, Cl. 248-41.000.

Johnson, Wallace D.: *See—*
Childers, Clifford W.; Clark, Earl; and Johnson, Wallace D., 3,935,136.

Johnston Laboratories, Inc.: *See—*
Waters, John R., 3,935,073.

Johnston, Laird E., to General Motors Corporation. Remote engine water cooler. 3,934,644, Cl. 165-51.000.

Jones, Edward, to Rohm & Haas Company. Textile package of a cellular plastic core with wound yarn. 3,934,767, Cl. 223-106.000.

Jones, Gordon H.; Moffatt, John G.; and Edge, Michael D., to Syntex (U.S.A.) Inc. Synthetic polyoxin type nucleosides. 3,935,184, Cl. 260-211.50R.

Jones, John E.; and Lineback, Lynn D., to Disston, Inc. Cutting blade edge construction for mechanically actuated shears. 3,934,340, Cl. 30-220.000.

Jones, Max E. Gun support. 3,934,768, Cl. 224-1.00R.

Jordan, James J., Jr., to Allied Chemical Corporation. Substituted phenanthroline pigments. 3,935,226, Cl. 260-282.000.

Joseph, Robert W., to Inland Steel Company. Continuous casting process. 3,934,638, Cl. 164-89.000.

Josephsen, Roy C.: *See—*
Wiseman, Donald F.; and Josephsen, Roy C., 3,934,965.

Josten's, Inc.: *See—*
Pirnie, Larry H., 3,934,350.

Jovick, Raymond John, to Rockwell International Corporation. Wheel speed sensor assembly. 3,934,685, Cl. 188-181.00R.

Judd Ringer Corporation: *See—*
Meier, Harold R., 3,934,999.

Juster, Robert W.; and Patton, William E., to Affiliated Hospital Products, Inc. Packaged catheter arrangement. 3,934,721, Cl. 206-364.000.

Justrite Manufacturing Company: *See—*
Flider, Frank S., 3,934,328.

K & B Industries, Inc.: *See—*
Brennan, Martin J.; Klawonn, Vernon D.; and Browne, Edward K., 3,934,520.

Kabb, Harold Louis: *See—*
Glasson, Jerry Marshall; and Kabb, Harold Louis, 3,935,386.

Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft: *See—*
Uhlmann, Otto; and Stephan, Norbert, 3,934,449.

Kabushiki Kaisha Daini Seikosha: *See—*
Matsuura, Eiichi, 3,934,404.

Kabushiki Kaisha Hosokawa Funtai Kogaku Kenkyusho: *See—*
Urayama, Kiyoshi, 3,934,762.

Kabushiki Kaisha Morita Seisakusho: *See—*
Matsui, Takahiro; and Uwamori, Osamu, 3,934,931.

Kabushiki Kaisha Seikosha: *See—*
Morozumi, Shinji; and Kodaira, Mitsuharu, 3,935,546.
Nishimura, Izuhiko; and Sano, Tadashi, 3,934,399.

Kabushiki Kaisha Suwa Seikosha: *See—*
Nishimura, Izuhiko; and Morozumi, Shinji, 3,934,400.

Kabushiki Kaisha Tsumura Juntendo: *See—*
Hirano, Satoshi; Tsumura, Jusha; Imaseki, Izumi; and Kawasaki, Yoshimi, 3,935,130.

Kaetsu, Isao: *See—*
Okubo, Hiroshi; Kato, Masamichi; Kaetsu, Isao; and Ito, Akihiko, 3,935,292.

Kaiser Aluminum & Chemical Corporation: *See—*
Baker, Jr.; Bruce A.; and Springer, Willard J., 3,935,085.
Steinke, Theodore D.; and Carter, Melvin A., 3,935,003.

Kaji, Tetsunori; and Sato, Kenji, to Hitachi, Ltd. Apparatus for displaying colored image. 3,935,590, Cl. 358-56.000.

Kakimoto, Yuzo: *See—*
Noda, Hideyo; Kawai, Norio; Taruc, Osamu; Fukada, Kazuo; Idehara, Shigeyoshi; Nakanishi, Tadao; Kakimoto, Yuzo; and Nakamura, Yoshito, 3,934,969.

Kalichmann, Isidore: *See—*
Weissberger, David; and Kalichmann, Isidore, 3,935,425.

Kalmanash, Michael H.; and Waehner, Glenn C., to United Technologies Corporation. Modulated energy conservative current supply. 3,935,529, Cl. 323-4.000.

Kalpin, Thomas G.; and Ross, Howard J. Traction-increasing device. 3,934,632, Cl. 152-210.000.

Kaltenbach & Voigt: *See—*
Eibofner, Eugen, 3,934,349.

Kaluza, Eduard, to Wilhelm Linnhoff OHG, Firma. Barrel for treatment in dipping baths, especially a plating barrel. 3,934,548, Cl. 118-418.000.

Kamata, Masamoto: *See—*
Arimura, Tohru; Okado, Masaru; Ichimaru, Takarokuro; and Kamata, Masamoto, 3,934,438.

Kamata, Yasuji; and Katou, Kazuo, to Hitachi, Ltd. DC-to-DC converter. 3,935,526, Cl. 321-2.000.

Kambara, Goro. Flexible belt conveyor system with track-contained roller, carrier and chain assembly. 3,934,708, Cl. 198-109.000.

Kamiya, Osamu: *See—*
Itoh, Susumu; Nishida, Keijiro; Kamiya, Osamu; and Sekimura, Nobuyuki, 3,934,961.

Kampfer, John G., to Halliburton Company. Dual function logging tool and method. 3,935,556, Cl. 340-18.0CM.

Kanai, Tamaki; Yamagishi, Takashi; Ohta, Tetsuya; and Moriyama, Hiroatsu, to Teijin Limited. Aromatic polyester of 2,6 and/or 2,7 naphthalene dicarboxylic acid. 3,935,166, Cl. 260-47.00C.

Kanamark International Limited: *See—*
Sorensen, Karl-Otto; and Sondergaard, Jorgen, 3,935,341.

Kaneko, Hidehiko; Aritomi, Jiro; and Yamato, Yuzuru, deceased (Yamato, Akiko, Hiroshi Yamato, Yumi Yamato, heirs), to Dainippon Pharmaceutical Co., Ltd. ω-[Bis(ω,ω-diphenylalkyl)amino]alkan-ol and their salts. 3,935,268, Cl. 260-570.00R.

Kanij, Johannes Bastiaan Willem; and Noothout, Arend Jaman, to Stichting Reactor Centrum Nederland. Anion-deficient actinide nitrate solution. 3,935,120, Cl. 252-301.10R.

Kanner, Bernard: *See—*
Prokai, Bela; and Kanner, Bernard, 3,935,123.

Kansai Paint Company, Ltd.: *See—*
Muneoka, Harunobu; and Nezu, Tuguo, 3,935,333.

Kapanen, Aarne A.: *See—*
Rautimo, Pentti J.; and Kapanen, Aarne A., 3,935,091.

Kaptein, Eugenius Martinus, to U.S. Philips Corporation. Pulse generator for television for generating at least one pulse series having pulses of different duration and repetition period. 3,935,387, Cl. 178-69.50G.

Karlsson, Frans Harry; and Faxen, Per Torsten, to Hykon-Patent Aktiebolag. Flushing cistern. 3,934,276, Cl. 4-41.000.

Karwat, Heinz, to Linde Aktiengesellschaft. Removal of hydrogen cyanide from acidic gases. 3,935,188, Cl. 423-236.000.

Kashio, Shigetora: *See—*
Morita, Ken-ichi; Kinoshita, Yoshiro; and Kashio, Shigetora, 3,935,301.

Kashiwagi, Teruya: *See—*
Murakami, Masuo; Takahashi, Kozo; Isaka, Ichiro; Ozasa, Teruaki; and Kashiwagi, Teruya, 3,935,198.

Kaspers, Helmut: *See—*
Lunkenheimer, Winfried; Buchel, Karl Heinz; and Kaspers, Helmut, 3,935,312.

Kast, Howard Berdolt, to United States of America, National Aeronautics and Space Administration. Fluid valve with wide temperature range. 3,934,612, Cl. 137-625.300.

Kastl, Hans: *See—*
Muller, Otto; Rottger, Hans; Kastl, Hans; and Hagen, Hans-Gunter, 3,934,731.

Katagiri, Takeo; and Fujiwara, Shinichi, to Nippon Electric Company Limited. Flat-article orienting apparatus for an automatic mail handling system or the like. 3,934,717, Cl. 198-282.000.

Kataoka, Mitsuru: *See—*
Morisawa, Yasuhiro; Kataoka, Mitsuru; Watanabe, Taiichiro; Kitano, Noritoshi; and Matsuzawa, Toshiaki, 3,935,311.

Kato, Masamichi: *See—*
Okubo, Hiroshi; Kato, Masamichi; Kaetsu, Isao; and Ito, Akihiko, 3,935,292.

Katou, Kazuo: *See—*
Kamata, Yasuji; and Katou, Kazuo, 3,935,526.

Kaup, Friedel; and Warnke, Heinrich, to Mielc & Cie. Electrophoretic enamelling of ferrous articles. 3,935,088, Cl. 204-181.000.

Kavyarov, Ivan Savvateevich: *See—*
Egorov, Jury Dmitrievich; Kavyarov, Ivan Savvateevich; Samatov, Jury Petrovich; Chasovodov, Nikolai Alexandrovich; and Chirikhin, Jury Ivanovich, 3,934,665.

Kawai, Mituhiro: *See—*
Baba, Yoshio; and Kawai, Mituhiro, 3,935,007.

Kawai, Norio: *See*—
Noda, Hideyo; Kawai, Norio; Tarue, Osamu; Fukada, Kazuo; Idehara, Shigeyoshi; Nakanishi, Tadao; Kakimoto, Yuzo; and Nakamura, Yoshito, 3,934,969.

Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Noda, Hideyo; Kawai, Norio; Tarue, Osamu; Fukada, Kazuo; Idehara, Shigeyoshi; Nakanishi, Tadao; Kakimoto, Yuzo; and Nakamura, Yoshito, 3,934,969.

Kawasaki, Yoshimi: *See*—
Hirano, Satoshi; Tsumura, Jusha; Imaseki, Izumi; and Kawasaki, Yoshimi, 3,935,130.

Kearns, Thomas N.: *See*—
Bruner, A. J.; Foster, Edward T.; and Kearns, Thomas N., 3,934,540.

Keblys, Kestutis A., to Ethyl Corporation. Preparation of cobalt complex. 3,935,228, Cl. 260-270.00J.

Keen, David P. Peening tool. 3,934,443, Cl. 72-75.000.

Kehn, Donald M.: *See*—
Nierode, Dale E.; Kehn, Donald M.; and Kruk, Keith F., 3,934,651.

Keilhack, Hans O.; and Schmidt, Peter, to Keiltex Corporation. Web winder and compensator apparatus. 3,934,837, Cl. 242-75.500.

Keiltex Corporation: *See*—
Keilhack, Hans O.; and Schmidt, Peter, 3,934,837.

Keller, Rudolf: *See*—
Oxe, Josef; and Keller, Rudolf, 3,935,150.

Keller, William B., to Owens-Illinois, Inc. Web centering device. 3,934,775, Cl. 226-196.000.

Keller, Wolfgang; Kruger, Joachim; Ropers, Johann; and Schabert, Hans-Peter, to Siemens Aktiengesellschaft. Nuclear power plant with a safety enclosure. 3,935,062, Cl. 176-30.000.

Kelly, James M.; and Papalos, John G., to Diamond Shamrock Corporation. Leather treating process. 3,934,975, Cl. 8-94.240.

Kelly, Robert J.: *See*—
Dirriwachter, John W.; and Kelly, Robert J., 3,934,557.

Kelsey-Hayes Company: *See*—
Evans, Anthony C., 3,934,684.

Kemmenoe, Adrian Victor: *See*—
Ferres, Harry; Kemmenoe, Adrian Victor; and Best, Desmond John, 3,935,189.
Ferres, Harry; Kemmenoe, Adrian Victor; and Best, Desmond John, 3,935,192.

Kenbridge Holdings Limited: *See*—
Baikie, Hugh E., 3,934,892.

Kennametal Inc.: *See*—
McCreery, James F., 3,934,320.
Stephenson, Earle W.; and Toews, Leonard E., 3,934,654.

Kent, Ronald Allan: *See*—
Fein, Marvin Michael; Colgate, Paul Alexander; and Kent, Ronald Allan, 3,935,128.

Kentaro Hayashi: *See*—
Sugano, Takuo; and Mori, Yoshifumi, 3,935,328.

Kerb, Ulrich: *See*—
Engelfried, Otto; Nieuweboer, Bob; Petzoldt, Karl; Kerb, Ulrich; and Lubke, Klaus, 3,935,245.

Kerner, Karl: *See*—
Zechnall, Richard; Linder, Ernst; Schmid, Albert; Raabe, Gotthold; Kerner, Karl; and Socknick, Rudi, 3,935,444.

Kessler, Milton. Method of making wall-reinforced weatherstrip. 3,935,043, Cl. 156-72.000.

Keyes, Richard M., to Beatrice Foods Co. Dispensing machine. 3,934,427, Cl. 62-342.000.

Kheifets, Rafail Efimovich: *See*—
Anikanov, Nikolai Ivanovich; Grachev, Leonid Pavlovich; Radutsky, Grigory Avramovich; and Kheifets, Rafail Efimovich, 3,934,709.

Khromov, Gennady Lvovich; Davydov, Anatoly Borisovich; Maichuk, Jury Fedorovich; and Tischina, Inna Fedorovna. Base for ophthalmological medicinal preparations and on ophthalmological medicinal film. 3,935,303, Cl. 424-14.000.

Kibrick, Morris: *See*—
Lash, Harvey; Kibrick, Morris; and Fox, Shirl S., 3,934,347.

Kieley & Mueller, Inc.: *See*—
Illing, Henry, 3,934,851.

Kiernan, Geoffrey Poulter; and Tinkler, William, to Imperial Chemical Industries Limited. Non-woven fabrics. 3,935,046, Cl. 156-148.000.

Kikuchi, Akira: *See*—
Tomozawa, Akihiro; Nakata, Kensuke; Kikuchi, Akira; and Agastuma, Takashi, 3,935,083.

Kim, James S. H. Toothbrush. 3,934,298, Cl. 15-167.00R.

Kimura, Hiroyuki: *See*—
Shimoyama, Yoshiaki; Miyoshi, Kunisuke; and Kimura, Hiroyuki, 3,935,038.

Kimura, Takeji; Oyama, Tomio; Yamada, Haruyasu; Harada, Shuzi; Yoshino, Hirokazu; and Tsuboka, Eiichi, to Matsushita Electric Industrial Co., Ltd. Ghost signal cancellation system. 3,935,536, Cl. 325-476.000.

Kin, Henry, to KRS Industries, Inc. Overhead door for a container having a vertical opening such as a truck trailer. 3,934,635, Cl. 160-189.000.

King, Ian Robert: *See*—
Hardy, Francis R. F.; and King, Ian Robert, 3,935,235.

King, James C.: *See*—
Straffon, Alan E.; and King, James C., 3,935,559.

King-Wilkinson, Inc.: *See*—
Disque, Karl; Holzgen, Helmut; and Stauch, Philipp, 3,935,103.

Kinney, Layton C.; and Tompkins, Edwin H., to IIT Research Institute. Stencil screens. 3,934,503, Cl. 101-128.200.

Kinoshita, Yoshiro: *See*—
Morita, Ken-ichi; Kinoshita, Yoshiro; and Kashio, Shigetora, 3,935,301.

Kinsch, Frank Joseph, to Zenith Radio Corporation. Method of forming a dark, very adherent coating on a CRT mask assembly. 3,935,036, Cl. 148-6.160.

Kioritz Corporation: *See*—
Inaga, Hisashi, 3,934,344.

Kipp, Frederick M. Refrigerated beverage dispenser-mixer. 3,934,758, Cl. 222-108.000.

Kirchmayr, Rudolf: *See*—
Dazzi, Joachim; Kirchmayr, Rudolf; and Dietrich, Henri, 3,935,251.

Kirkland, James L., to United States of America, Navy. Object release device. 3,934,288, Cl. 9-8.00R.

Kirschstein, Horst; Rabenschlag, Frank; Lotz, Dieter; Holland-Cunz, Gerhard; and Blomberg, Hans, to Gebr. Happich GmbH. Drawbending apparatus and method. 3,934,439, Cl. 72-21.000.

Kiselev, Andrei Vladimirovich; Kustova, Galina Lvovna; Lipkind, Boris Alexandrovich; and Nikitin, Jury Stepanovich. Process for preparation of wide-pore adsorbent for use in chromatography. 3,935,299, Cl. 423-338.000.

Kisinko, Paul M.: *See*—
Ostop, John A.; Kisinko, Paul M.; and Henry, Joseph F., 3,935,587.

Kitaev, Georgy Avenirovich; Ploskikh, Vadim Alexandrovich; Minkov, Viktor Alexeevich; Kurbakov, Viktor Georgievich; Chernysheva, Evangelina Mikhailovna; Zlatkovskaya, Tatyana Nikolaevna; and Brunov, Viktor Timofeevich. Multilayer structure. 3,934,985, Cl. 29-183.500.

Kitano, Naohiko; Haseda, Katsumi; and Takahashi, Tamotsu, to Minolta Camera Kabushiki Kaisha. Drive apparatus for independently changing the phase of the moon for planetarium. 3,934,358, Cl. 35-42.500.

Kitano, Noritoshi: *See*—
Morisawa, Yasuhiro; Kataoka, Mitsuru; Watanabe, Taiichiro; Kitano, Noritoshi; and Matsuzawa, Toshiaki, 3,935,311.

Kizler, Harald; Przybyla, Bernd; and Schmidt, Peter-Jurgen, to Robert Bosch G.m.b.H. Digital frequency-control circuit. 3,935,538, Cl. 328-38.000.

Kizu, Taisuke: *See*—
Takahashi, Koichi; Hitomi, Nobuteru; and Kizu, Taisuke, 3,934,429.

Klainos, Michael, to Identification Products Mfg. Co. Multi-image camera. 3,935,580, Cl. 354-121.000.

Klauke, Erich: *See*—
Hempel, Jan; and Klauke, Erich, 3,935,258.

Klauke, Guenter; Marziniak, Ruediger; and Guerke, Guenter, to Siemens Aktiengesellschaft. Soldering bath for fluxless ultrasonic soldering. 3,934,781, Cl. 228-37.000.

Klawonn, Vernon D.: *See*—
Brennan, Martin J.; Klawonn, Vernon D.; and Browne, Edward K., 3,934,520.

Klehm, William G., Jr.: *See*—
Triplett, Gerald H.; Nicol, Edward A.; and Klehm, William G., Jr., 3,935,372.

Klein, Martin: *See*—
Baker, Bernard; and Klein, Martin, 3,935,029.

Klemchuk, Peter P.: *See*—
Spivack, John D.; and Klemchuk, Peter P., 3,935,163.
Spivack, John d.; and Klemchuk, Peter P., 3,935,164.

Klemm, Martin, to Fritz Buser AG., Maschinenfabrik. Method for photo-mechanical composition of designs on stencils for film and screen printing, particularly rotary screen printing. 3,934,504, Cl. 101-128.300.

Kliklok Corporation: *See*—
Baker, Thomas R., 3,934,916.

Klimek, Boleslaw, to Berg Manufacturing Company, The. Dual circuit brake valve. 3,934,942, Cl. 303-52.000.

Kline, Richard H., to Goodyear Tire & Rubber Company, The. Dialkylaminomethylphenols as catalyst deactivators for stereoregular diene polymers. 3,935,160, Cl. 260-45.8NT.

Klotzer, Sieghart; and Moisar, Erik, to Agfa-Gevaert Aktiengesellschaft. Direct-positive photographic emulsion containing, unfogged, monodispersed silver halide grains having a layered grain structure of specific silver chloride content. 3,935,014, Cl. 96-64.000.

Knapp, Edward J., Jr.: *See*—
Kozacka, Frederick J.; Knapp, Edward J., Jr.; and Jacobs, Philip C., Jr., 3,935,553.

Kobayashi, Akihiro: *See*—
Sasaki, Koju; and Kobayashi, Akihiro, 3,935,492.

Kobayashi, Yorimasa: *See*—
Ogasawara, Takahisa; Kobayashi, Yorimasa; Mizutani, Kiyokazu; Nakagawa, Teruo; Hisanaga, Noboru; and Tatemichi, Hidemaro, 3,935,173.

Kober AG, Firma: *See*—
Koster, Waldemar; and Huber, Reinhold, 3,934,295.

Kodaira, Mitsuharu: *See*—
Morozumi, Shinji; and Kodaira, Mitsuharu, 3,935,546.

Koeller, Fred B.: *See*—
Hamilton, Charles Howard; Koeller, Fred B.; Raymond, Roger S.; and Goldberg, Martin, 3,934,441.





Koenig, Karl-Heinz: *See*—
Mangold, Dietrich; Koenig, Karl-Heinz; and Hamprecht, Gerhard, 3,935,201.

Koernig, Wolfgang: *See*—
Schlichting, Karl; Horn, Peter; Schlag, Johannes; and Koernig, Wolfgang, 3,935,161.

Koga, Sigeyuki, to Trio Kabushiki Kaisha. Oval dome type speaker. 3,935,400, Cl. 179-115.50R.

Kohn, Herbert: *See*—
Bartels, Alfred; and Kohn, Herbert, 3,934,310.

Koller, Erwin: *See*—
Stadlbauer, Wilhelm; Kump, Walter; and Koller, Erwin, 3,934,388.

Kollmorgen Corporation: *See*—
Burr, Robert P., 3,935,521.

Komarek, James A., to Hycom Incorporated. Phase logic. 3,935,474, Cl. 307-205.000.

Kondo, Toru. Tape recorder with cartridge selecting means. 3,935,595, Cl. 360-92.000.

Konno, Mitinobu: *See*—
Masaki, Kenji; and Konno, Mitinobu, 3,934,411.

Kono, Minoru: *See*—
Sugiura, Shotaro; Matsuura, Tetsuro; Ueno, Haruo; Kono, Minoru; Ishikawa, Hideo; and Tokutomi, Thunehiko, 3,935,180.

Koppers Company, Inc.: *See*—
Greco, Nicholas P., 3,935,283.

Korovin, Stanislav Konstantinovich; Kruglov, Igor Ivanovich; Preobrazhentsev, Konstantin Andreevich; Sidorov, Jury Ivanovich; and Fronk, Stanislav Vladislavovich. Semiconductor diode with voltage-dependent capacitance. 3,935,585, Cl. 357-14.000.

Korytkowski, Henry M.: *See*—
Bagen, Herbert John; Ferguson, Ronald Worden; Korytkowski, Henry M.; and Mowry, William H., Jr., 3,934,501.

Kossa, Miklos M.; and Seymour, David J., to Inter-Hull. Transport vessel for floating onloading and offloading of cargo. 3,934,530, Cl. 114-43.5VC.

Koster, Waldemar; and Huber, Reinhold, to Kober AG, Firma. Rocker bearing for bridges on similar structures. 3,934,295, Cl. 14-16.000.

Kothari, Vipin M., to Goodyear Tire & Rubber Company, The. Oxidation of alkylated phenols to p-benzoquinones. 3,935,247, Cl. 260-396.00R.

Kovacs, Odon Kalman Jozsef: *See*—
Dahlen, Sven Erik; Ekstrom, Bertil Ake; Kovacs, Odon Kalman Jozsef; and Sjoberg, Berndt Olof Harald, 3,935,204.

Koval, Leonide P., to General Electric Company. Current-limiting circuit breaker. 3,935,409, Cl. 200-153.00G.

Kovalick, Albert W., to Hewlett-Packard Company. Method and apparatus for enhancing and maintaining character quality in thermal printers. 3,934,695, Cl. 197-1.00R.

Koyama, Masao; Okada, Noboru; and Ogawa, Masahiro, to Yokohama Rubber Co., Ltd., The. Apparatus for splicing parallelogrammatic pieces of rubber cloth without overlap. 3,935,056, Cl. 156-507.000.

Kozacka, Frederick J.; Knapp, Edward J., Jr.; and Jacobs, Philip C., Jr. Cartridge fuse for d-c circuits. 3,935,553, Cl. 337-159.000.

Kozak, Stephen; Bender, Frederick J.; and Jerome, Jack, to Jerome Underground Transmission Equipment, Inc. Method and apparatus for splicing and welding stranded electrical cables. 3,934,786, Cl. 228-138.000.

Kraft, Paul; and Altscher, Siegfried, to Stauffer Chemical Company. Fire retardant aqueous emulsion copolymer additives. 3,935,149, Cl. 260-29.6TA.

Kramer, Friedhelm; and Wolfertz, Gunter, to Schaeffer-Homberg GmbH, Firma. Machine for the attachment of fasteners. 3,934,777, Cl. 227-109.000.

Krammer, Herbert: *See*—
Cap, Heinrich; Krammer, Herbert; and Scheiber, Robert, 3,935,524.

Kratochvil, John R., Jr., to Boise Cascade Corporation. Suspension box for shipping furniture. 3,934,720, Cl. 206-326.000.

Kravcik, John W.: *See*—
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Kreidl Chemico Physical K.G., The: *See*—
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Kreitsberga, Yana Nikolaevna: *See*—
Neiland, Oyar Yanovich; and Kreitsberga, Yana Nikolaevna, 3,935,239.

Kress, Heinz; and Heckmanns, Heinz, to Titan Verpackungssysteme GmbH. Junction for sheet-like material load lifting band with overload indicator. 3,934,918, Cl. 294-74.000.

Kristiansen, Odd: *See*—
Beriger, Ernst; Boger, Manfred; Drabek, Jozef; and Kristiansen, Odd, 3,935,233.

Krohn, David A.: *See*—
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Kroll, Harry: *See*—
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KRS Industries, Inc.: *See*—
Kin, Henry, 3,934,635.

Kruger, Joachim: *See*—
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Kruglov, Igor Ivanovich: *See*—
Korovin, Stanislav Konstantinovich; Kruglov, Igor Ivanovich; Preobrazhentsev, Konstantin Andreevich; Sidorov, Jury Ivanovich; and Fronk, Stanislav Vladislavovich, 3,935,585.

Kruk, Keith F.: *See*—
Nierode, Dale E.; Kehn, Donald M.; and Kruk, Keith F., 3,934,651.

Kruse, Walter M., to ICI United States Inc. Homogeneous hydrogenation of saccharides using ruthenium triphenyl phosphine complex. 3,935,284, Cl. 260-635.00C.

Kucsan, John S.: *See*—
Lieberman, Hillel; Graffeo, Anthony J.; and Kucsan, John S., 3,935,121.

Kudo, Ken-ichi; Ohmae, Tadayuki; and Uno, Akihiko, to Sumitomo Chemical Company, Ltd. Process for preparation of α-naphthol. 3,935,282, Cl. 260-621.00H.

Kudo, Teizo; Hashizume, Yoshio; Mikumo, Masatoshi; and Itoh, Masanori, to Daicel Ltd. Process for preparing styrene resins containing polyester plasticizers. 3,935,153, Cl. 260-31.600.

Kuhlmann-Schafer, Wilhelm H., to Preussag Aktiengesellschaft. Zone melting process. 3,935,058, Cl. 156-602.000.

Kuhlmann, Wolf, to SKF Industrial Trading and Development Company, B.V. Bearing for high speed rotary shafts. 3,934,950, Cl. 308-10.000.

Kuhn, Hans Georg. Wrapping material. 3,935,355, Cl. 24-150.00R.

Kuhn, Hans-Robert, to Electroacustic GmbH. Display device for varying the shape and cross-section of a rectangular area. 3,934,364, Cl. 40-28.00R.

Kuiper, Johannes H. A.: *See*—
Crommentuyn, Gerardus J.; and Kuiper, Johannes H. A., 3,935,009.

Kulka, Helen C. Animal shelter with plural openings. 3,934,552, Cl. 119-19.000.

Kump, Walter: *See*—
Stadlbauer, Wilhelm; Kump, Walter; and Koller, Erwin, 3,934,388.

Kunz, Emil, to Dr. -Ing H.c.F. Porsche Aktiengesellschaft. Synchronization mechanism for change-speed transmissions of motor vehicles. 3,934,689, Cl. 192-53.00C.

Kuo, Yu-Neng: *See*—
Higuchi, Takeru; Bodor, Nicolae S.; and Kuo, Yu-Neng, 3,935,196.

Kupper, Willi, to W. Schlafhorst & Co. Supply container with conveyor belt for receiving and suitably orienting textile coils or the like. 3,934,718, Cl. 198-287.000.

Kuramochi, Shigeaki. Shift mechanism for typewriter apparatus. 3,934,697, Cl. 197-72.000.

Kurashige, Yasushi: *See*—
Hashimoto, Sadao; Sakukibara, Ryuji; Kurashige, Yasushi; Takikawa, Katsuo; Osame, Yoko; Minami, Hiroshi; and Suzue, Takashi, 3,935,266.

Kurbakov, Viktor Georgievich: *See*—
Kitaev, Georgy Avenirovich; Ploskikh, Vadim Alexandrovich; Minkov, Viktor Alexeevich; Kurbakov, Viktor Georgievich; Chernysheva, Evangelina Mikhailovna; Zlatkovskaya, Tatyana Nikolaevna; and Brunov, Viktor Timofeevich, 3,934,985.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
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Uchikawa, Shoji, 3,935,481.
Yoshida, Masafumi; Segawa, Masahiro; and Obara, Hiroshi, 3,935,485.

Kurkjian, Gregory A., Jr., to Henry Pratt Company. Adjustable valve seat. 3,934,850, Cl. 251-171.000.

Kushner, David, to Bernard Screen Printing Corporation. Method and apparatus for synchronous printing of a moving web. 3,934,505, Cl. 101-129.000.

Kustova, Galina Lvovna: *See*—
Kiselev, Andrei Vladimirovich; Kustova, Galina Lvovna; Lipkind, Boris Alexandrovich; and Nikitin, Jury Stepanovich, 3,935,299.

Kuwana, Kazutaka; and Amano, Hiroyuki, to Aisin Seiki Kabushiki Kaisha. Method, circuit, and apparatus for anti-skid brake control in motor vehicles. 3,934,938, Cl. 303-21.00P.

Kwan, Gerald A.; Penkov, Walter V.; and Roe, Norman E., to Hehr International Inc. Panel operating mechanism. 3,934,370, Cl. 49-341.000.

Kwon, Young Doo: *See*—
Prevorsek, Dusan Cyril; Kwon, Young Doo; and Sharma, Raj Kumar, 3,934,452.

LaBate, Micheal Donald. Device for supplying a treating agent to molten metal in a ladle. 3,934,862, Cl. 266-34.00T.

Laboratoires Jacques Logeais: *See*—
Maillard, Jacques Georges, 3,935,255.

Lacina, William B.: *See*—
Eguchi, Ronald G.; Mann, Michael M.; Lacina, William B.; and Crill, Kay C., 3,935,543.

Lacour, Bernard: *See*—
Godard, Bruno; Lacour, Bernard; and Gaffard, Jean-Paul, 3,935,544.

Laforest, Jacqueline: *See*—
Thuillier, Germaine; and Laforest, Jacqueline, 3,935,203.

LaFortune, Robert G. J., to Diamond Shamrock Corporation. Recovery of natural gas during solution mining of an underground salt deposit. 3,934,650, Cl. 166-267.000.

La Hue, Richard W.; and Hogg, Cecil B., to Catalysts and Chemicals, Inc. Process for removing chlorine-containing compounds from hydrocarbon streams. 3,935,295, Cl. 423-240.000.

Laing, Nikolaus. Controllable heat pipe. 3,934,643, Cl. 165-32.000.

Laliccia, Federico R.: *See*—
Barsellotti, John A.; McNeilly, Joseph H.; Laliccia, Federico R.; and Pinede, Edouard, 3,935,396.

Lamb, Harry H., II. Linear telethermometer. 3,934,476, Cl. 73-362.0AR.
Lambert, Emmanuel; Lambert, Jean-Louis; and De Longueville, Bernard, to Glaverbel-Mecaniver S.A. Severing of glass or vitrocrystalline bodies. 3,935,419, Cl. 219-121.0LM.
Lambert, Jean-Louis: *See—*
Lambert, Emmanuel; Lambert, Jean-Louis; and De Longueville, Bernard, 3,935,419.
Lamberti, Vincent, to Lever Brothers Company. Sulfosuccinate derivatives as detergent builders. 3,935,206, Cl. 260-247.10E.
Lambie, Jack H.: *See—*
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Lambiris, Sotiris: *See—*
Freeman, James M., Jr.; Gans, Bruce E.; Lambiris, Sotiris; and Woodmansee, Donald E., 3,934,553.
Lambly, Charles A. R.; and Drancy, Charles T., to Bechtel International Corporation. Hydraulic mining of oil bearing formation. 3,934,935, Cl. 299-2.000.
Lampietti, Bernard, to Torin Corporation. Dual purpose spring coiling machine. 3,934,445, Cl. 72-129.000.
Landau, Mark I.: *See—*
Broniwitz, Laurence E.; Landau, Mark I.; and Pearson, John B., III, 3,935,572.
Landheer, Frits; and Wilting, Hermanus Josephus Henricus, to U.S. Philips Corporation. Semiconductor device having a Schottky junction and method of manufacturing same. 3,935,586, Cl. 357-15.000.
Lane, Clinton F., to Aldrich-Boranes, Inc. Reduction of amino acids in the presence of boron trifluoride. 3,935,280, Cl. 260-618.00H.
Lange, erhard, to Wafios, Maschinenfabrik, Wagner, Ficker & Schmid. Method of and apparatus for producing particularly high-strength chains. 3,934,407, Cl. 59-31.000.
Lange, Paul F.: *See—*
Terrell, Melvin L.; Lange, Paul F.; and Doolittle, James B., 3,934,816.
Langen, Ben G.: *See—*
Michels, Paul W.; and Langen, Ben G., 3,934,860.
Langlois, Christian, to Regie Nationale des Usines Renault. Automatic balancing machines. 3,934,963, Cl. 408-2.000.
Langwell, John D. Means for detachable support of keys within a pocket of an article of clothing. 3,934,317, Cl. 24-237.000.
Laporte Industries Limited: *See—*
Hardy, Francis R. F.; and King, Ian Robert, 3,935,235.
Larco Societe Miniere et Metallurgique de Larymna S.A.: *See—*
Tsirigotis, Constantin, 3,935,293.
Larker, Hans, to Allmanna Svenska Elektriska Aktiebolaget. Press for hydrostatic extrusion. 3,934,442, Cl. 72-60.000.
Larrison, John E. Multiface wire bonding method and tool. 3,934,783, Cl. 228-110.000.
Larsen, Elizabeth. Collapsible bicycle article carrier. 3,934,770, Cl. 224-33.000.
Larsh, Everett P. Marine vessel roll stabilizer apparatus. 3,934,534, Cl. 114-122.000.
Larson, William M.: *See—*
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Lash, Harvey; Kibrick, Morris; and Fox, Shirl S., to Lash Oral Implants. Dental prosthetic structure and method. 3,934,347, Cl. 32-10.00A.
Lash Oral Implants: *See—*
Lash, Harvey; Kibrick, Morris; and Fox, Shirl S., 3,934,347.
Lasier, Thomas R.; and Pollack, Roy. Spring adjustment mechanism. 3,934,307, Cl. 16-79.000.
Laszlo, Lajos George. Playing surface structure for spinning top pin games. 3,934,880, Cl. 273-108.000.
Lauterwald, Rolf: *See—*
Bleibtreu, Alexander; and Lauterwald, Rolf, 3,935,407.
Lavon, Erik Volmar, to Atlas Copco Aktiebolag. Method of and arrangement for feeding pressure fluid in pulses. 3,934,601, Cl. 137-14.000.
Law, Jack. Key safe apparatus. 3,934,434, Cl. 70-63.000.
Lawrence, John Pennington: *See—*
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Leach, John Meredith. Material handling conveyor. 3,934,710, Cl. 198-143.000.
Lear Avia Corporation: *See—*
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Lear, William P., to Lear Avia Corporation. Jet engine noise suppressor. 3,934,675, Cl. 181-33.0HC.
LeBus International, Inc.: *See—*
Goldkuhle, Werner P.; Arnold, Richard E.; and Johnson, Malcolm Ray, 3,934,416.
Lee, Jerald Dana, to Du Pont de Nemours, E. I., and Company. Electron collection in electron spectrometers. 3,935,454, Cl. 250-305.000.
Leggett & Platt, Incorporated: *See—*
Sandham, Edwin C., 3,934,930.
Le Gresley, Edsel. Retractable and vented pouring spout. 3,934,760, Cl. 222-153.000.
Legris, Andre, to Societe Legris France S.A. Modular distributor box for fluids. 3,934,605, Cl. 137-271.000.
Lehnert, Gunther; Maertens, Dieter; and Zimmermann, Manfred, to Bayer Aktiengesellschaft. Process for the ring opening polymerisation of cyclooctadiene-(1-5). 3,935,178, Cl. 260-88.20D.
Lehr, Glen J.: *See—*
Brandeberry, Raymond L.; Lehr, Glen J.; and Stacy, Denzil W., 3,935,032.
Leisterer, Reinhard; Mahlstedt, Walter; and Rubel, Manfred, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Circuitry for determining direction of impingement of a received signal. 3,935,575, Cl. 343-113.00R.
Leistner, Werner: *See—*
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Lekarski, Simeon: *See—*
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Leland Stanford, Jr. University, The Board of Trustees of: *See—*
Quate, Calvin F.; and Grudkowski, Thomas W., 3,935,564.
Lelental, Mark, to Eastman Kodak Company. Electroless deposition of a copper-nickel alloy on an imagewise pattern of physically developable metal nuclei. 3,935,013, Cl. 96-48.0PD.
Leliaert, Raymond M.; and Snyder, Clyde A., to Wheelabrator-Frye, Inc. Portable surface treating apparatus. 3,934,373, Cl. 51-9.00M.
Leliaert, Raymond M., to Wheelabrator-Frye, Inc. Sand reclamation system. 3,934,374, Cl. 51-9.00R.
Lem Instrument Corporation: *See—*
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Lema, Luis E., to Unitrode Corporation. Electroless plating of peroxide forming metals. 3,935,345, Cl. 427-383.000.
Lemay, Rejean P.: *See—*
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Les Parfums de Dana, Inc.: *See—*
Gentreau, Guy Rene, 3,934,761.
Leschek, Walter C.; and Carpentier, Philip E., to Westinghouse Electric Corporation. Replaceable acoustic transducer assembly. 3,935,484, Cl. 310-8.200.
Lesko, Richard; and Reynolds, David, to Torin Corporation. Apparatus for stress relieving springs and the like. 3,935,413, Cl. 219-50.000.
Lestina, Gregory James; and Bush, Walter Monroe, to Eastman Kodak Company. Oxichromic compounds, stabilized oxichromic compounds and processes for preparing same. 3,935,262, Cl. 260-559.00R.
Lestina, Gregory James; and Bush, Walter Monroe, to Eastman Kodak Company. Oxichromic compounds, stabilized oxichromic compounds and processes for preparing same. 3,935,263, Cl. 260-559.00R.
Leute, Richard K.: *See—*
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Le Vasseur, Kenneth W. Swimming system. 3,934,290, Cl. 9-309.000.
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Levine, Barry Franklin: *See—*
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Levy, Murray N.; and Gasparino, Vincent J., to Adolph Gottscho, Inc. Apparatus for imprinting intermittently advanced webs. 3,934,506, Cl. 101-260.000.
Lewis, David E.; and Gossard, Thomas F., to Columbia Pictures Industries, Inc. Converter-tuner for information transmission system. 3,935,534, Cl. 325-308.000.
Lian, Ragnar. Loud speakers. 3,935,399, Cl. 179-115.5VC.
Libbey-Owens-Ford Company: *See—*
Brandeberry, Raymond L.; Lehr, Glen J.; and Stacy, Denzil W., 3,935,032.
Licberman, Hillel; Graffeo, Anthony J.; and Kucsan, John S., to Betz Laboratories, Inc. Foam control compositions for aqueous systems, its preparation, and process using same. 3,935,121, Cl. 252-321.000.
Liebl, Helmut, to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V. Quadrupole field mass analyser. 3,935,453, Cl. 250-292.000.
Lienard, Maurice: *See—*
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Lieptz, Nathan S., to Curtis Noll Corporation. Retractable stacker guard. 3,934,679, Cl. 187-1.00R.
Lightenstein, Bernard. *See—*
Beretsky, Irwin; and Lightenstein, Bernard, 3,934,458.
Lilja, Duane F. Fluid product reservoir. 3,934,746, Cl. 215-232.000.
Lim, Drahoslav, to Merck Patent Gesellschaft mit beschrankter Haftung. Hydrophilization of non-polar surfaces. 3,935,342, Cl. 427-341.000.
Lind, Erwin, to Hoechst Aktiengesellschaft. Electrophotographic process having developed hydrophilic image areas. 3,935,008, Cl. 96-1.400.
Linde Aktiengesellschaft: *See—*
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Linder, Jerome: *See—*
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Linder, John L., to United States of America, Navy. A-C signal multiplying circuit by a ratio of whole numbers the numerator of which is greater than one and greater than the denominator. 3,935,539, Cl. 328-38.000.
Lineback, Lynn D.: *See—*
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Lion Yushi Kabushiki Kaisha: *See—*
Yamaguchi, Tadashi; Ono, Takayuki; Hoshi, Hiroshi; Hirakawa, Michio; and Watanabe, Isao, 3,935,340.
Lipkind, Boris Alexandrovich: *See—*
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Lipner, Herbert D. Water filter assembly. 3,935,106, Cl. 210-232.000.
Lippman, Alfred; Toth, Charles; and Sebenik, Roger Frank, to Toth Aluminum Corporation. Carbo chlorination of $AlPO_4$. 3,935,297, Cl. 423-304.000.
Lissaman, Peter B. S.; and Lambie, Jack H., to Aerovironment Inc. Air decelerator for truck cab. 3,934,923, Cl. 296-1.00S.
Lissaman, Peter B. S.: *See—*
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Little, Steven M.; Gerber, Robert L.; Heller, Carl A.; and Esposito, Vincent J., to United States of America, Navy. Chemiluminescent foldable signal device. 3,934,539, Cl. 116-63.00P.
Litton Systems Inc.: *See—*
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Loeffler, Otto Ernest, to NL Industries, Inc. Trivalent antimony catalyst. 3,935,170, Cl. 260-75.00R.
Logan, Ralph Andre: *See—*
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Loken, Bjarte, to Omni Research Incorporated. Separation of hecogenin-tigogenin mixtures. 3,935,194, Cl. 260-239.55A.
London & Scandanavian Metallurgical Co., Limited: *See—*
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Long, Anthony J. Therapeutic seat pad for automobiles. 3,934,933, Cl. 297-384.000.
Long, John C. Passenger restraint device. 3,934,898, Cl. 280-150.00B.
Long, Margaret Esther, to R. J. Reynolds Tobacco Company. Enzymatic process using immobilized microbial cells. 3,935,069, Cl. 195-31.00F.
Loschilin, Evgeny Dmitrievich; Galperin, Alexandr Lvovich; Zabotin, Alexandr Alexandrovich; Onikov, Eduard Arshakovich; and Sakharov, Boris Alexandrovich. Apparatus for guiding weft thread carriers through the shed of a loom of the successive shedding type. 3,934,619, Cl. 139-12.000.
Lotz, Dieter: *See—*
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Lucas, Theodore W., Jr.: *See—*
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Lugli, Gabriele; Mazzei, Alessandro; and Brandi, Gabriella, to Snam Progetti S.p.A. Process for the polymerization of unsaturated compounds. 3,935,175, Cl. 260-82.100.
Lukomskyj, Paul; and Gamble, Donald James. Segmented rigid insulated conduit. 3,934,615, Cl. 138-111.000.
Lummus Company, The: *See—*
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Lunkenheimer, Winfried; Buchel, Karl Heinz; and Kaspers, Helmut, to Bayer Aktiengesellschaft. Combating fungi with imidazo-[4,5-b]quinoxalines. 3,935,312, Cl. 424-250.000.
Luthi, Walter, to Werkzeugmaschinenfabrik Oberlikon-Buhrle AG. Feed apparatus. 3,934,483, Cl. 74-424.80R.
Lutz, Walter A., to Parker-Hannifin Corporation. Bi-directional rotary shaft seal. 3,934,888, Cl. 277-134.000.
Mabuchi, Kenichi. Portable, multi-purpose, rechargeable cigarette lighter. 3,934,302, Cl. 15-339.000.
MacCready, Paul B, Jr.; and Lissaman, Peter B. S., to Aerovironment Inc. Aerodynamic drag reduction devices for surface vehicles. 3,934,922, Cl. 296-1.00S.
Macro Industries, Inc.: *See—*
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Madrange nee Dermain, Annic; and Papantoniou, Christos, to Societe Anonyme dite: L'Oreal. Lacquers and wavesetting lotions containing methyl methacrylate-dimethylamino-ethyl methacrylate-octadecyl methacrylate terpolymers. 3,934,595, Cl. 132-7.000.
Maeda, Toshinobu: *See—*
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Khromov, Gennady Lvovich; Davydov, Anatoly Borisovich; Maichuk, Jury Fedorovich; and Tischina, Inna Fedorovna, 3,935,303.
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Maleck, Leroy R.: *See—*
Malek, Raymond P.; and Maleck, Leroy R., 3,934,757.
Malek, Raymond P.; and Maleck, Leroy R., to Container Corporation of America. Refrigerator water dispenser with child-proof guard. 3,934,757, Cl. 222-76.000.
Males, Robert E., to Textron, Inc. Staple driving device with improved staple jam clearing mechanism. 3,934,778, Cl. 227-123.000.
Mallin, Sidney. Liquid chemical evaporator for flush tanks. 3,934,279, Cl. 4-228.000.
Mallion, Keith Blakeney, to Imperial Chemical Industries Limited. Cyclopentylheptenoic acids and derivatives. 3,935,240, Cl. 260-469.000.
Malo, Lowell L., to ACF Industries, Incorporated. Method of assembling boxcar end structure. 3,934,785, Cl. 228-135.000.
Malyshev, Leonid Mikhailovich; Indrupsky, Lev Iosifovich; Gusev, Boris Pavlovich; and Pisman, Yakov Borisovich. Crankshaft governor of an internal combustion engine. 3,934,568, Cl. 123-140.00R.
Mangold, Dietrich; Koenig, Karl-Heinz; and Hamprecht, Gerhard, to BASF Aktiengesellschaft. Production of 2,1,3-benzothiadiazin-4-one-2,2-dioxides. 3,935,201, Cl. 260-243.00R.
Mann, Michael M.: *See—*
Eguchi, Ronald G.; Mann, Michael M.; Lacina, William B.; and Crill, Kay C., 3,935,543.
Manoury, Alain: *See—*
Marcel, Francois; and Manoury, Alain, 3,935,569.
Manoury, Philippe Michel Jacques: *See—*
Giudicelli, Don Pierre Rene Lucien; Najer, Henry; Manoury, Philippe Michel Jacques; and Dumas, Andre Pierre Fernand, 3,935,229.
Manson, John Stuart; and Ridyard, Denis Robert Annesley, to Imperial Chemical Industries Limited. Anthraquinone dyes. 3,935,248, Cl. 260-378.000.
Marcel, Francois; and Manoury, Alain, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Digital coder. 3,935,569, Cl. 340-347.0AD.
Marchetti, Joseph R.: *See—*
Jerabek, Robert D.; and Marchetti, Joseph R., 3,935,087.
Margolies, Arthur, to GTE Laboratories Incorporated. Two-phase MOS synchronizer. 3,935,475, Cl. 307-208.000.
Marino, Thomas J., to Morrison Machine Co. Adjustable rotary screen printer with air-biased squeegees. 3,934,502, Cl. 101-115.000.
Marlow, Darrell W.; and Freeman, Brady L., to Olin Corporation. Gas generator. 3,934,984, Cl. 23-281.000.
Marni S.A.: *See—*
Davidsohn, Alfred, 3,935,237.
Marsch, Hans-Dieter, to Friedrich Uhde GmbH. Device for performing catalytic endothermic reactions. 3,935,225, Cl. 23-289.000.
Marsden, John Thomas, to Expert Industrial Controls Ltd. Fluid control valves. 3,934,815, Cl. 251-129.000.
Marti, Toni, to Societe de la Viscose Suisse. Process for preparing flock fibers for electrostatic flocking. 3,935,370, Cl. 428-394.000.
Martin, Fred E.: *See—*
Shippey, Frank R.; Vance, Timothy C.; and Martin, Fred E., 3,934,906.
Martin, Leon C. Bale carrier. 3,934,726, Cl. 214-131.00A.
Martin, Michel: *See—*
Biola, Georges; Buathier, Bernard; Combes, Andre; and Martin, Michel, 3,935,276.
Martin, Paul S.: *See—*
Shore, Sidney X.; and Martin, Paul S., 3,934,674.
Shore, Sidney X.; and Martin, Paul S., 3,935,401.
Maruyama, Isamu; Suzuki, Shigeyoshi; and Yoshihiro, Yoshitake, to Mitsubishi Paper Mills, Ltd. Method for producing support for electrophotographic material and electrostatic recording material. 3,935,335, Cl. 427-121.000.
Marvel, Carl S.; and Samyn, Celeste, to University Patents, Inc. Acetylenic polymers, trimers thereof and the production thereof. 3,935,167, Cl. 260-49.000.
Marwede, Gunter: *See—*
Muller, Eberhard; and Marwede, Gunter, 3,935,177.

Maryland Cup Corporation: *See—*
Tiernan, Stanton W.; and Epple, Richard R., 3,934,625.

Marziniak, Ruediger: *See—*
Klauke, Guenter; Marziniak, Ruediger; and Guerke, Guenter, 3,934,781.

Masaki, Kenji; and Konno, Mitinobu, to Nissan Motor Company Limited. System for reducing pollutants in engine exhaust gas. 3,934,411, Cl. 60-286.000.

Masaki, Kenji; and Nagaishi, Hatuo, to Nissan Motor Company Limited. Thermal reactor for afterburning automotive internal combustion engine exhaust gases. 3,934,412, Cl. 60-288.000.

Masaoka, Hiroshi: *See—*
Iida, Hirotaka; Masaoka, Hiroshi; Yamada, Michinobu; Ichihara, Mutsuo; Uebayashi, Yoshitaka; Tashiro, Koji; and Taketomo, Sadao, 3,934,321.

Maschinenfabrik Reinhausen Gebruder Scheubeck K.G.: *See—*
Bleibtreu, Alexander; and Lauterwald, Rolf, 3,935,407.

Maschinenfabrik Schweiter AG: *See—*
Heckel, Rene, 3,934,716.

Maschinenfabrik Wifag: *See—*
Heimlicher, Paul, 3,934,508.

Maskell, Roy: *See—*
Cowles, Richard H.; De Franco, Thomas P.; and Maskell, Roy, 3,935,497.

Mason, Donald R., to Harris Corporation. Process for forming monolithic semiconductor display. 3,935,040, Cl. 148-175.000.

Mason, John L.: *See—*
Ruest, Dennis A.; Shen, C. Y.; and Mason, John L., 3,935,257.

Massachusetts Institute of Technology: *See—*
Dahlen, John M.; Toth, William E.; Shillingford, John T., Jr.; and McKenna, John F., Jr., 3,935,592.
Jirka, Gerhard H.; and Harleman, Donald R. F., 3,934,599.

Massucco, Arthur A.: *See—*
Merrill, Richard E.; and Massucco, Arthur A., 3,935,367.

Mata, Justo Martinez: *See—*
Hendlin, David; Mata, Justo Martinez; Del Val, Sagrario Mochales; and Stapley, Edward O., 3,935,309.

Matoba, Kazuo: *See—*
Togawa, Kinmochi; Matoba, Kazuo; Takao, Hiroshi; and Hata, Yoshitaka, 3,935,089.

Matsui, Takahiro; and Uwamori, Osamu, to Kabushiki Kaisha Morita Seisakusho. Dental chair. 3,934,931, Cl. 297-319.000.

Matsukata, Kosuke. Precision piece selector on gramaphone record. 3,934,884, Cl. 274-9.0RA.

Matsumoto, Hirohumi; and Nakada, Masahiko, to Toyota Jidosha Kogyo Kabushiki Kaisha. Choke control system for carburetors. 3,934,565, Cl. 123-119.00F.

Matsumoto, Takao, to Yamamura Glass Kabushiki Kaisha. Method and apparatus for regulating orientation of containers or the like. 3,934,714, Cl. 198-244.000.

Matsumoto, Yoshimitsu: *See—*
Tanaka, Masaru; Matsumoto, Yoshimitsu; and Oku, Takeshi, 3,935,530.

Matsuo, Syunsuke: *See—*
Ooyama, Kenichi; and Matsuo, Syunsuke, 3,934,693.

Matsushita Electric Industrial Co., Ltd.: *See—*
Arimoto, Kazuyuki; Maeda, Toshinobu; Hori, Fuzio; and Takata, Akihiko, 3,935,483.
Kimura, Takeji; Oyama, Tomio; Yamada, Haruyasu; Harada, Shuzi; Yoshino, Hirokazu; and Tsuboka, Eiichi, 3,935,536.
Nishioka, Matsuo; and Oka, Shunzo, 3,935,555.
Tanaka, Masaru; Matsumoto, Yoshimitsu; and Oku, Takeshi, 3,935,530.
Uno, Yoshihiro, 3,935,588.

Matsushita, Katsumi. Carpet cutter. 3,934,342, Cl. 30-293.000.

Matsuura, Eiichi, to Kabushiki Kaisha Daini Seikosha. Second hand regulating mechanism. 3,934,404, Cl. 58-116.00R.

Matsuura, Tetsuro: *See—*
Sugiura, Shotaro; Matsuura, Tetsuro; Ueno, Haruo; Kono, Minoru; Ishikawa, Hideo; and Tokutomi, Thunehiko, 3,935,180.

Matsuzaki, Tetsuo: *See—*
Tamesui, Tuyoshi; and Matsuzaki, Tetsuo, 3,934,376.

Matsuzawa, Toshiaki: *See—*
Morisawa, Yasuhiro; Kataoka, Mitsuru; Watanabe, Taiichiro; Kitano, Noritoshi; and Matsuzawa, Toshiaki, 3,935,311.

Matthews, Raymond E., to Grove Valve and Regulator Company. Cam locked ball valve. 3,934,606, Cl. 137-454.600.

Mattiussi, Andrea: *See—*
Ciaperoni, Aldemaro; and Mattiussi, Andrea, 3,935,171.

Matuo, Yuhsi: *See—*
Chibata, Ichiro; Tosa, Tetsuya; and Matuo, Yuhsi, 3,935,072.

Maurer, Otto F., to United States of America, Air Force. Device to reduce flow induced pressure oscillations in open cavities. 3,934,846, Cl. 244-130.000.

Maurice, David M. Method and apparatus for application of eye drops. 3,934,585, Cl. 128-225.000.

Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V.: *See—*
Liebl, Helmut, 3,935,453.

Maxwell, John, to Wagner Electric Corporation. Chart carrier for recorder. 3,934,835, Cl. 242-67.200.

May & Baker Limited: *See—*
Caton, Michael Peter Lear; Coffee, Edward Charles John; and Watkins, Gordon Leonard, 3,935,261.

May, Louis; and Idzik, Edmund M., to Sate-Lite Mfg. Co. Triangular folding reflective traffic marker. 3,934,541, Cl. 116-63.00T.

May, Louis; and Idzik, Edmund M., to Sate-Lite, Mfg. Co. Triangular folding reflective flare having weighted base. 3,934,542, Cl. 116-63.00P.

May, Robert Edward, to Burlington Industries, Inc. Fire-resistant fabrics. 3,934,285, Cl. 5-345.00R.

Mayer, Robert: *See—*
Young, Einar T.; Fromnick, Stephen M.; Mayer, Robert; and Livesay, Robert H., 3,934,756.

Maynard, Robert L., to Servo Corporation of America. Variable color label for object identification system. 3,935,432, Cl. 235-61.12N.

Mayo, Alfred M.: *See—*
O'Neal, Cothburn M.; Mayo, Alfred M.; Childs, George William, deceased; and Childs, Patricia M., executrix, 3,934,793.
O'Neal, Cothburn M.; Mayo, Alfred M.; and Childs, George William, deceased, 3,935,426.

Mazzei, Alessandro: *See—*
Lugli, Gabriele; Mazzei, Alessandro; and Brandi, Gabriella, 3,935,175.

McCauley, Claudius R., to Apache Corporation. Pipe ring test machine. 3,934,464, Cl. 73-95.000.

McCaully, Ronald J.: *See—*
Wei, Peter H. L.; and McCaully, Ronald J., 3,935,202.

McChesney, Charles Edmund; McHenry, Robert J.; and Wachtel, James Alan, to American Can Company. Blow molded, oriented plastic bottle and method for making same. 3,934,743, Cl. 215-1.00C.

McClelland, Robert David: *See—*
Baird, David Boyd; Baker, Ronald; Fishwick, Brian Ribbons; and McClelland, Robert David, 3,935,232.

McCloskey, Albert R., to Rockwell International Corporation. Spherical bearing with slotted key. 3,934,954, Cl. 308-72.000.

McClure, William O., to Nelson Research & Development Co. Method for assay of prostaglandins. 3,934,978, Cl. 23-230.00B.

McClure, William O., to Nelson Research & Development Co. Method of assay for prostaglandins of the F alpha series. 3,934,979, Cl. 23-230.00B.

McClure, William O., to Nelson Research & Development Co. Method of assay for prostaglandins of the E series. 3,934,980, Cl. 23-230.00B.

McCrainor, Peter Richard; and Edwards, Bryan William, to Foseco International Limited. Method of marking an ingot. 3,934,639, Cl. 164-100.000.

McCreery, James F., to Kennametal Inc. Grooving and cut off tool. 3,934,320, Cl. 29-96.000.

McCubbin, Melvin J.: *See—*
Cordle, Paul E.; and McCubbin, Melvin J., 3,934,511.

McCulloch Corporation: *See—*
Hirschkoff, Sidney, 3,934,345.

McDonel, James D.: *See—*
Hauser, Ambrose A.; Eckert, Terry T.; and McDonel, James D., 3,934,322.

McDonnell Douglas Corporation: *See—*
Blome, James C.; Goodbrake, Chris J.; O'Brien, Marvin Edward; and Vance, Macy W., 3,935,060.
Sheratte, Martin B., 3,935,116.

McDonough, George W.; Schatz, Douglas S.; and Anderson, Emmett R., to Applied Materials, Inc. Induction heated vapor source. 3,935,412, Cl. 219-10.490.

McEwen, Stephen N., to Henry Manufacturing Co., Inc. Tubular filter in settler. 3,935,105, Cl. 210-138.000.

McFadden, Dale: *See—*
Crepinsek, Alois, 3,934,437.

McGillivray, Daniel A. Vehicle door latch. 3,934,907, Cl. 292-121.000.

McGinnes Manufacturing Company: *See—*
Paxton, Curtis L.; and Gray, Percy J., 3,934,917.

McGourty, Thomas K. Carriage mechanism for printer. 3,934,698, Cl. 197-90.000.

McGregor, Alan P.: *See—*
Walker, Stephen F., 3,934,723.

McHenry, Robert J.: *See—*
McChesney, Charles Edmund; McHenry, Robert J.; and Wachtel, James Alan, 3,934,743.

McKenna, John F., Jr.: *See—*
Dahlen, John M.; Toth, William E.; Shillingford, John T., Jr.; and McKenna, John F., Jr., 3,935,592.

McMaster, Harold A.; and Nitschke, Norman C. Glass tempering system. 3,934,970, Cl. 432-121.000.

McMurray, Russell L. Trench back filling and compacting apparatus. 3,934,363, Cl. 37-82.000.

McNair, Samuel L., to Dazey Products Co. Hair curling instrument. 3,934,597, Cl. 132-37.00R.

McNamee, James Arthur, to RCA Corporation. Connector for a corrugated conduit. 3,934,902, Cl. 285-156.000.

McNeilly, Joseph H.: *See—*
Barsellotti, John A.; McNeilly, Joseph H.; Laliccia, Federico R.; and Pincde, Edouard, 3,935,396.

Mead Johnson & Company: *See—*
Wu, Yao Hua; and Lobeck, Walter G., 3,935,199.

Medalen, Thord Erik. Vehicle for propulsion of gardening implements and the like. 3,934,670, Cl. 180-52.000.

Meier, Harold R., to Judd Ringer Corporation. Composting method and apparatus. 3,934,999, Cl. 71-9.000.

Meier, John G.: *See—*
Baumgartner, Henri; and Meier, John G., 3,934,555.





Mellinger, Frederick N., to Frederick's of Hollywood. Strapless breast support. 3,934,593, Cl. 128-480.000.

Mellinger, Gerald Allen: *See—*
Rodgers, Earl Edward; and Mellinger, Gerald Allen, 3,934,475.

Mennesson, Francois, to Societe Industrielle de Brevets et d'Etudes. Carburettors for internal combustion engines, with an auxiliary starting device. 3,934,571, Cl. 123-179.00G.

Merck & Co., Inc.: *See—*
Hendlin, David; Mata, Justo Martinez; Del Val, Sagrario Mochales; and Stapley, Edward O., 3,935,309.

Merck Patent Gesellschaft mit beschrankter Haftung: *See—*
Lim, Drahoslav, 3,935,342.

Merkle, Hans; and Frotschner, Eberhard, to Daimler-Benz Aktiengesellschaft. Hydrodynamic torque converter for vehicles. 3,934,414, Cl. 60-342.000.

Merrill, Richard E.; and Massucco, Arthur A., to Arthur D. Little, Inc. Method of rendering surfaces nonfogging and resulting articles. 3,935,367, Cl. 428-336.000.

Mertens, Hubert Joseph. Pipe clip. 3,934,318, Cl. 24-249.00R.

Mesek, Frederick K.; Repke, Virginia L.; and Strickel, William R., to Johnson & Johnson. Disposable diaper having facing layer with patterned preferential flow areas. 3,934,588, Cl. 128-290.00W.

Metal Box Limited: *See—*
Flax, Valere, 3,934,780.

Methodist Hospital of Indiana Inc.: *See—*
Whitinger, Robert G., 3,934,474.

Metzinger, Robert E. Hand tool. 3,934,286, Cl. 7-3.00A.

Meurer, Vernon E.: *See—*
Allman, Richard L.; and Meurer, Vernon E., 3,934,789.

Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, to Bayer Aktiengesellschaft. Tetrahydroimidazolo[1,2-a]pyridine derivatives. 3,935,220, Cl. 260-294.80C.

Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, to Bayer Aktiengesellschaft. 2-Amino-1,4-dihydropyridine-derivatives. 3,935,223, Cl. 260-295.50R.

Michelet, Robert Wilson; Ostapiak, Roman; and Scuderi, Rudolph, to Bell Telephone Laboratories, Incorporated. Inrush current limit circuit with reset response to lowered input voltage. 3,935,527, Cl. 321-11.000.

Michels, Paul W.; and Langen, Ben G., to Homburg B.V. Apparatus for the treatment of meat products. 3,934,860, Cl. 259-108.000.

Michon, Gerald J., to General Electric Company. Apparatus for sensing radiation and providing electrical readout. 3,935,446, Cl. 250-211.00J.

Microseal Corporation: *See—*
Anderson, Thomas P., 3,935,430.

Mid-State Chemical & Supply Corporation: *See—*
Thene, Donnie R.; O'Donoghue, Robert J.; and Terry, Donald W., 3,935,124.

Miele & Cie: *See—*
Kaup, Friedel; and Warnke, Heinrich, 3,935,088.

Mihailide, Sergio. Disposable apparatus for brewing a beverage such as coffee. 3,935,318, Cl. 426-80.000.

Mikumo, Masatoshi: *See—*
Kudo, Teizo; Hashizume, Yoshio; Mikumo, Masatoshi; and Itoh, Masanori, 3,935,153.

Miller Chemical Corporation: *See—*
Thene, Donnie R.; O'Donoghue, Robert J.; and Terry, Donald W., 3,935,124.

Miller, Donald E.: *See—*
Gilmore, Cecilia; and Miller, Donald E., 3,935,325.

Miller, Laurence G.; and Smith, Vernon J., to Rank Xerox Ltd. Sheet feeding devices. 3,934,870, Cl. 271-164.000.

Miller, Ronald J.; and Randolph, Thomas M., to United Technologies Corporation. Surge detector for turbine engines. 3,935,558, Cl. 340-27.0SS.

Millheiser, Melvin; and Wurzel, Hugo, to Waldes Kohinoor, Inc. Helical-spring fastened assemblies. 3,934,315, Cl. 24-230.05J.

Milton Roy Company: *See—*
Jacobsen, John Kenneth, 3,935,463.

Minami, Hiroshi: *See—*
Hashimoto, Sadao; Sakakibara, Ryuji; Kurashige, Yasushi; Takikawa, Katsuo; Osame, Yoko; Minami, Hiroshi; and Suzue, Takashi, 3,935,266.

Minkoff, Walter, to Peerless Paint and Varnish Corporation. Paint composition containing denatonium benzoate and latex resin binder for application over old paint films to prevent ingestion of poisons therefrom. 3,935,137, Cl. 260-17.00R.

Minkov, Viktor Alexeevich: *See—*
Kitaev, Georgy Avenirovich; Ploskikh, Vadim Alexandrovich; Minkov, Viktor Alexeevich; Kurbakov, Viktor Georgievich; Chernysheva, Evangelina Mikhailovna; Zlatkovskaya, Tatyana Nikolaevna; and Brunov, Viktor Timofeevich, 3,934,985.

Minnesota Mining and Manufacturing Company: *See—*
Eian, Gilbert L., 3,935,012.
Taylor, Allen L., 3,935,327.

Minolta Camera Kabushiki Kaisha: *See—*
Kitano, Naohiko; Haseda, Katsumi; and Takahashi, Tamotsu, 3,934,358.

Minow, Irene M. Fanciful object. 3,935,356, Cl. 428-163.000.

Mississippi Chemical Corporation: *See—*
Tucker, Gerald L.; and Blanton, Elmer Ladelle, 3,935,300.

Missol, Detlef: *See—*
Fritz, Heinz Peter; and Missol, Detlef, 3,935,082.

Misumi, Teruyuki; and Tsushima, Sakae, to Asahi Kasei Kogyo Kabushiki Kaisha. Electrodialysis process. 3,935,086, Cl. 204-180.00P.

Mitgau, Rotger; Petrik, Bruno; and Schedlitzki, Dietmar, to Th. Goldschmidt AG. Process for making carrier sheets impregnated with aminoplast comdensation resins. 3,935,336, Cl. 427-173.000.

Mitsubishi Paper Mills, Ltd.: *See—*
Maruyama, Isamu; Suzuki, Shigeyoshi; and Yoshihiro, Yoshitake, 3,935,335.

Miyano, Tetsuji; Suzuki, Kunio; and Fukatsu, Hiroshi, to Banyu Pharmaceutical Co., Ltd. Substituted fusaric acid derivatives. 3,935,221, Cl. 260-295.0AM.

Miyashita, Tsuneo; and Nishio, Hiroaki, to Nippon Kokan Kabushiki Kaisha. Method of blast furnace operation utilizing selective recycling of peripheral gas stream. 3,935,002, Cl. 75-42.000.

Miyoshi, Kunisuke: *See—*
Shimoyama, Yoshiaki; Miyoshi, Kunisuke; and Kimura, Hiroyuki, 3,935,038.

Mizusawa Kagaku Kogyo Kabushiki Kaisha: *See—*
Sugahara, Yujiro; Noshi, Yoshibumi; Naito, Hiroyuki; Takahashi, Akira; and Shoji, Shoji, 3,935,298.

Mizutani, Kiyokazu: *See—*
Ogasawara, Takahisa; Kobayashi, Yorimasa; Mizutani, Kiyokazu; Nakagawa, Teruo; Hisanaga, Noboru; and Tatemichi, Hidemaro, 3,935,173.

Mladek, Walter: *See—*
Hofmann, Karl; and Mladek, Walter, 3,934,903.

Mobil Oil Corporation: *See—*
Dickert, Joseph J., Jr., 3,935,122.
Zelaskowski, Catherine A., 3,934,976.

Moeller, Wolfgang. Unitary clip device for joining removable ceiling tile to hanger member. 3,934,387, Cl. 52-760.000.

Moery, John A.; and Trefz, Harlin J., to International Harvester Company. Debris collector for lawn and garden machines. 3,934,392, Cl. 56-202.000.

Moffatt, John G.: *See—*
Jones, Gordon H.; Moffatt, John G.; and Edge, Michael D., 3,935,184.

Moisar, Erik: *See—*
Klotzer, Sieghart; and Moisar, Erik, 3,935,014.

Moister, Douglas E., Jr., to Burroughs Corporation. High voltage discharge switch for protecting sensitive electronic equipment and the operators thereof. 3,935,508, Cl. 317-2.00R.

Molyneux, George, to Molyneux Rail Clips Limited. Track rail anchorages. 3,934,800, Cl. 238-341.000.

Molyneux Rail Clips Limited: *See—*
Molyneux, George, 3,934,800.

Momono, Masakichi: *See—*
Fujieda, Mamoru; Yamauchi, Teruo; and Momono, Masakichi, 3,934,567.

Monadnock Lifetime Products, Inc.: *See—*
White, Davis L., 3,934,877.

Monsanto Company: *See—*
Ruest, Dennis A.; Shen, C. Y.; and Mason, John L., 3,935,257.

Montedison S.p.A.: *See—*
Ciaperoni, Aldemaro; and Mattiussi, Andrea, 3,935,171.

Mood, Robert D.; Hunter, Joseph P.; and Burgen, Dering R., to United States of America, Navy. Catapult breakaway load simulator circuit. 3,935,440, Cl. 235-184.000.

Moon, Malcolm W., to Upjohn Company, The. Method of use and formulations. 3,935,316, Cl. 424-327.000.

Mooney Engineering, Inc.: *See—*
Mooney, John Russell; and Radford, Troy Richard, 3,934,701.

Mooney, John Russell; and Radford, Troy Richard, to Mooney Engineering, Inc. Linear indexing machine. 3,934,701, Cl. 198-19.000.

Moore, Donald G., to Chemetron Corporation. Electromagnetic oven which supplies different amounts of heat to items positioned in different regions of a single heating chamber. 3,935,415, Cl. 219-10.55F.

Moore, Harry W., III, to Sperry Rand Corporation. Signal generator comprising an addressable memory. 3,935,565, Cl. 340-173.00R.

Moos, Jakob, to General Motors Corporation. Energy absorbing steering column for vehicles, particularly motor vehicles. 3,934,897, Cl. 280-87.00R.

Morain, Eldon W.; and Cole, Judson C., to Continental Industries, Inc. Seating and actuator for a ball valve. 3,934,849, Cl. 251-163.000.

Moran, Paul R.; Podgorsak, Ervin; Fullerton, Gary D.; and Fuller, Gene E., to Wisconsin Alumni Research Foundation. Dielectric material for dosimeters. 3,935,457, Cl. 250-336.000.

Morfeldt, Carl-Olof Oskar: *See—*
Janelid, Erik Ingvar; and Morfeldt, Carl-Olof Oskar, 3,934,420.

Morgan Construction Company: *See—*
Brodeur, Robert R., 3,934,447.
Jennings, Lewis C., 3,934,678.

Mori, Yoshifumi: *See—*
Sugano, Takuo; and Mori, Yoshifumi, 3,935,328.

Moriondo, Mario: *See—*
Di Salvo, Salvatore; and Moriondo, Mario, 3,934,301.

Morisawa, Yasuhiro; Kataoka, Mitsuru; Watanabe, Taiichiro; Kitano, Noritoshi; and Matsuzawa, Toshiaki, to Sankyo Company Limited. Substitute pyridinol-containing compositions and methods for the treatment of coccidiosis. 3,935,311, Cl. 424-200.000.

Morita, Ken-ichi; Kinoshita, Yoshiro; and Kashio, Shigetora, to Toray Industries, Inc. Process for producing carbon fibers from organic fibrous material. 3,935,301, Cl. 423-447.000.

Morita, Tomijiro; and Funahashi, Isao, to Kureha Kagaku Kogyo Kabushiki Kaisha. Method for removing sulfur dioxide from a combustion exhaust gas. 3,935,296, Cl. 423-242.000.

Moriyama, Hiroatsu: *See—*
Kanai, Tamaki; Yamagishi, Takashi; Ohta, Tetsuya; and Moriyama, Hiroatsu, 3,935,166.

Morlet, Jean Georges Maric, to Creusot-Loire. Process and installation for reductive melting of iron scrap, powder or sponge. 3,934,864, Cl. 266-36.00H.

Morozumi, Shinji; and Kodaira, Mitsuharu, to Kabushiki Kaisha Seikosha. Complementary MOS transistor crystal oscillator circuit. 3,935,546, Cl. 331-116.00R.

Morozumi, Shinji: *See—*
Nishimura, Izuhiko; and Morozumi, Shinji, 3,934,400.

Morris, Herman H., to Custom Mechanical Contractors, Inc. Flooded refrigerant condenser head pressure control. 3,934,425, Cl. 62-117.000.

Morrison Machine Co.: *See—*
Marino, Thomas J., 3,934,502.

Morse, Robert S., to Burroughs Corporation. Electronic package assembly with capillary bridging connection. 3,934,336, Cl. 29-627.000.

Mortensen, La Vaughn L. Prosthetic limb with weight-responsive joint lock. 3,934,273, Cl. 3-27.000.

Mostardo, August F., Jr.: *See—*
Carlson, Elmer V.; Mostardo, August F., Jr.; and Diblick, Alex V., 3,935,398.

Mostek Corporation: *See—*
Paluck, Robert John, 3,935,476.

Motion Systems, Inc.: *See—*
Burr, John Kelsey; and Wolf, William, 3,934,946.

Motley, David M.; and Cheng, King Y., to Hycom Incorporated. Fast equalization acquisition for automatic adaptive digital modem. 3,935,535, Cl. 325-324.000.

Motycka, Charles J.: *See—*
Doerfling, Ralph G.; and Motycka, Charles J., 3,935,353.

Mowry, William H., Jr.: *See—*
Bagen, Herbert John; Ferguson, Ronald Worden; Korytkowski, Henry M.; and Mowry, William H., Jr., 3,934,501.

Muchowski, Joseph M.; and Guzman, Angel, to Syntex (U.S.A.) Inc. 11α-methylsubstituted prostaglandin derivatives. 3,935,241, Cl. 260-468.00D.

Muddiman, George Robert; and Edge, Fred, to Process Equipment Limited. Rupture disc structure. 3,934,602, Cl. 137-68.000.

Mueller, Hans W.; and Shattuck, Richard E., to SCM Corporation. Keyboard touch control. 3,934,696, Cl. 197-17.000.

Mueller, Paul; Cannon, Robert B.; and Prine, Ray A., to Paul Mueller Company. Bulk cooler and storage tank. 3,934,821, Cl. 239-224.000.

Muhlenkamp, John H.: *See—*
Dunlap, Danny L.; Huelsman, Charles E.; and Muhlenkamp, John H., 3,934,836.

Muhlstadt, William J.; and Schornhorst, James R., to PPG Industries, Inc. Control of thermal convection in a float glass forming chamber. 3,934,994, Cl. 65-65.00A.

Mukunashi, Hiroaki: *See—*
Ichiba, Terumichi; Shimba, Hiroshi; and Mukunashi, Hiroaki, 3,935,375.
Yoshikawa, Kanji; Tatsukami, Yoshiharu; Shimba, Hiroshi; and Mukunashi, Hiroaki, 3,935,374.

Mulderrig, Ciaran Joseph, to BOC Limited. Triggering devices. 3,934,292, Cl. 9-318.000.

Mullaly, Jerome R.: *See—*
Fox, Richard W., Jr.; and Mullaly, Jerome R., 3,935,482.

Mullen, Edward J.: *See—*
Donnelly, Thomas L.; and Mullen, Edward J., 3,935,424.

Muller, Eberhard; and Marwede, Gunter, to Bayer Aktiengesellschaft. Polymerisation and copolymerisation of dienes. 3,935,177, Cl. 260-84.700.

Muller, Otto; Rottger, Hans; Kastl, Hans; and Hagen, Hans-Gunter, to Siemens Aktiengesellschaft. Apparatus for inspecting and repairing a pressurized-water reactor's steam generator heat exchanger tubes. 3,934,731, Cl. 214-1.0BB.

Muller, Richard: *See—*
Wingler, Frank; Pedain, Josef; Muller, Richard; Dhein, Rolf; and de Cleur, Eckhard, 3,935,138.

Muller, Rudolf; and Decker, Jurgen, to Volkswagenwerk Aktiengesellschaft. Speed-dependent ignition angle control. 3,934,563, Cl. 123-117.00R.

Muneoka, Harunobu; and Nezu, Tuguo, to Kansai Paint Company, Ltd. Method for forming a transparent image on a sheet. 3,935,333, Cl. 427-49.000.

Munk, Miner N., to Varian Associates. Solvent gradient generator for chromatography systems. 3,934,456, Cl. 73-61.10C.

Murakami, Masuo; Takahashi, Kozo; Isaka, Ichiro; Ozasa, Teruaki; and Kashiwagi, Teruya, to Yamanouchi Pharmaceutical Co., Ltd. Process for the preparation of the cephalosporanic acid derivative. 3,935,198, Cl. 260-243.00C.

Murano, Minoru; Yanabu, Satoru; and Sodeyama, Hitoshi, to Tokyo Shibaura Electric Co., Ltd. Vacuum interrupter. 3,935,406, Cl. 200-144.00B.

Murata Kikai Kabushiki Kaisha: *See—*
Shindo, Noboru; and Hashizume, Hiroshi, 3,934,398.

Murayama, Minoru: *See—*
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Murphy, William C., to Shock V Automatic Lubrication Systems, Inc. Lubricant system. 3,934,600, Cl. 137-2.000.

Muzyka, Donald R.; and Geheau, Ronald C., to Carpenter Technology Corporation. Austenitic iron-nickel base alloy. 3,935,037, Cl. 148-38.000.

Nabisco, Inc.: *See—*
Sakler, Stephen Allen; Porcello, Samuel Joseph; and Rossen, Jack L., 3,935,321.

Nadella: *See—*
Pitner, Alfred, 3,934,956.

Naegeli, Peter, to Givaudan Corporation. Novel odorant. 3,935,253, Cl. 260-345.200.

Nagaishi, Hatuo: *See—*
Masaki, Kenji; and Nagaishi, Hatuo, 3,934,412.

Nagashima, Mitsuyoshi, to Citizen Watch Co., Ltd. Finely adjustable table assembly. 3,935,486, Cl. 310-12.000.

Nagele, Erwin: *See—*
Romann, Peter; and Nagele, Erwin, 3,934,561.

Naik, Kamal: *See—*
Novak, Frank A.; Schweitzer, Earl O.; and Naik, Kamal, 3,934,692.

Naito, Hiroyuki: *See—*
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Najer, Henry: *See—*
Giudicelli, Don Pierre Rene Lucien; Najer, Henry; Manoury, Philippe Michel Jacques, and Dumas, Andre Pierre Fernand, 3,935,229.

Nakada, Masahiko: *See—*
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Nakagawa, Teruo: *See—*
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Nakamura, Yoshito: *See—*
Noda, Hideyo; Kawai, Norio; Tarue, Osamu; Fukada, Kazuo; Idehara, Shigeyoshi; Nakanishi, Tadao; Kakimoto, Yuzo; and Nakamura, Yoshito, 3,934,969.

Nakanishi, Michio; and Yuki, Hiroshi, to Yoshitomi Pharmaceutical Industries, Ltd. Substituted pyrrolidinemethanols. 3,935,217, Cl. 260-326.50R.

Nakanishi, Tadao: *See—*
Noda, Hideyo; Kawai, Norio; Tarue, Osamu; Fukada, Kazuo; Idehara, Shigeyoshi; Nakanishi, Tadao; Kakimoto, Yuzo; and Nakamura, Yoshito, 3,934,969.

Nakao, Schoichi: *See—*
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Nakata, Kensuke: *See—*
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Nalco Chemical Company: *See—*
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Narayanan, Venkatachala Lakshmi: *See—*
Hauck, Frederic Peter; Cimarusti, Christopher M.; and Narayanan, Venkatachala Lakshmi, 3,935,267.

Narui, Hiroshi; and Shinohara, Terumi, to Oike & Company, Ltd. Process for preparing a metallized resin film for condenser element. 3,935,334, Cl. 427-81.000.

Nash, James L.; and Carrico, Phillip H., to General Electric Company. Hysteresis clutch for film winding. 3,934,833, Cl. 242-56.900.

National Patent Development Corporation: *See—*
Weiss, Jonas, 3,935,368.

National Research Development Corporation: *See—*
Bardsley, William; Green, Geoffrey William; Holliday, Charles Harry; and Hurle, Donald Thomas James, 3,934,983.

National Steel Corporation: *See—*
Saunders, William T., 3,934,527.

NCR Corporation: *See—*
Janning, John L., 3,934,690.

Nederlof, Anton Marie, to U.S. Philips Corporation. Rolling diaphragm seal between two relatively moving parts. 3,934,480, Cl. 74-18.200.

Needt, Jan Henrik, to Wiva N.V. Container, particularly for liquids. 3,934,747, Cl. 220-5.00R.

Neiland, Oyar Yanovich; and Kreitsberga, Yana Nikolaevna. Process for producing aromatic α-diketones. 3,935,239, Cl. 260-469.000.

Neithercutt, Marvin C. Explosive torch tip cleaner tool. 3,934,303, Cl. 15-406.000.

Nelken, Ewald, to Fried. Krupp Huttenwerke AG. Buffer for spring-supported wheels. 3,934,921, Cl. 295-1.000.

Nelson, Daniel E. Flexpower deep well drill. 3,934,660, Cl. 175-102.000.

Nelson, Mark A., to Texas Instruments Incorporated. Multilayer printed circuit board. 3,934,335, Cl. 29-625.000.

Nelson, Norman A. Modular underwater well platform system. 3,934,658, Cl. 175-7.000.

Nelson Research & Development Co.: *See—*
McClure, William O., 3,934,978.
McClure, William O., 3,934,979.
McClure, William O., 3,934,980.

Nelson, William F.: *See—*
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Neptune International Corporation: *See—*
Cielaszyk, Edward F.; DeRose, Ralph A.; and Kravcik, John W., 3,935,433.

Neri, Joseph R. Hamburger patty press. 3,934,308, Cl. 17-32.000.

Neti, Radhakrishna M.: *See—*
Frain, John P.; Harman, John N., III; and Neti, Radhakrishna M., 3,934,991.





Neumann, Friedhelm; and Zeller, Josef K., to Concast AG. Submerged nozzle for continuous casting. 3,934,640, Cl. 164-281.000.

New England Institute, Inc.: *See—*
Adler, Alan D., 3,935,031.

New England Union Co.: *See—*
Pett, Alfred W., 3,934,812.

Newey Goodman Limited: *See—*
Whysall, William Arthur, 3,934,314.

Newitt, John H. Storage of a representation of an image. 3,935,383, Cl. 178-7.200.

Newnam, Brian E.: *See—*
Campillo, Anthony J.; Newnam, Brian E.; Shapiro, Stanley L.; and Terrell, N. James, Jr., 3,935,545.

Newton, David Francis: *See—*
Greenhalgh, Colin William; Newton, David Francis; Eckersley, Dennis; Cheetham, Ian; Phillips, Duncan Adrian Sidney; Dunkerley, Kenneth; Williams, Gerald; and Chokshi, Vibhas, 3,934,972.

Nezu, Tuguo: *See—*
Muneoka, Harunobu; and Nezu, Tuguo, 3,935,333.

Nichols, Dewey F. Ground position indicator system. 3,935,557, Cl. 340-25.000.

Nickerson, Richard Gorham; Bouchard, Robert Thomas; Hurtubise, Paul Joseph Charles; and Duchesneau, Eugene Alfred, Jr., to Borden, Inc. Blended latex binder for exterior paints with wet primed adhesion. 3,935,151, Cl. 260-29.6WB.

Nicol, Edward A.: *See—*
Triplett: Gerald H.; Nicol, Edward A.; and Klehm, William G., Jr., 3,935,372.

Nicolas, Yves, to Schlumberger Technology Corporation. Spinner flowmeter with isolated bearings. 3,934,467, Cl. 73-155.000.

Nielsen, Leif: *See—*
Jespersen, Hans Jorgen; and Nielsen, Leif, 3,934,426.

Nierode, Dale E.; Kehn, Donald M.; and Kruk, Keith F., to Exxon Production Research Company. Method of acidizing subterranean formations. 3,934,651, Cl. 166-282.000.

Nieuweboer, Bob: *See—*
Engelfried, Otto; Nieuweboer, Bob; Petzoldt, Karl; Kerb, Ulrich; and Lubke, Klaus, 3,935,245.

Nikitin, Jury Stepanovich: *See—*
Kiselev, Andrei Vladimirovich; Kustova, Galina Lvovna; Lipkind, Boris Alexandrovich; and Nikitin, Jury Stepanovich, 3,935,299.

Nippon Electric Company Limited: *See—*
Katagiri, Takeo; and Fujiwara, Shinichi, 3,934,717.

Nippon Kokan Kabushiki Kaisha: *See—*
Arimura, Tohru; Okado, Masaru; Ichimaru, Takarokuro; and Kamata, Masamoto, 3,934,438.
Miyashita, Tsuneo; and Nishio, Hiroaki, 3,935,002.

Nippon Oil Company Ltd.: *See—*
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Nippon Piston Ring Co., Ltd.: *See—*
Okada, Syoji, 3,934,886.

Nippon Soda Co., Ltd.: *See—*
Oda, Nakaaki; Horie, Yoshio; Idohara, Mitsuru; and Iwasa, Shozo, 3,935,098.

Nippon Steel Corporation: *See—*
Shimoyama, Yoshiaki; Miyoshi, Kunisuke; and Kimura, Hiroyuki, 3,935,038.
Tanaka, Tadashi; Oka, Joji; and Saito, Katushi, 3,935,035.

Nippon Zeon Co. Ltd.: *See—*
Go, Tadahiro; Suzuki, Takashi; and Inoue Masaaki, 3,935,140.
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Nischk, Gunther: *See—*
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Nishida, Keijiro: *See—*
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Nishiie, Kazuyoshi: *See—*
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Nishimura, Izuhiko; and Sano, Tadashi, to Kabushiki Kaisha Seikosha. Electric timepiece incorporating rectifier and driving circuits integrated in a single chip. 3,934,399, Cl. 58-23.00R.

Nishimura, Izuhiko; and Morozumi, Shinji, to Kabushiki Kaisha Suwa Seikosha. Electronic timepiece. 3,934,400, Cl. 58-23.00R.

Nishimura, Tokio; Yamada, Minoru; Amano, Hiroyuki; and Oishi, Yasushi, to Fuji Photo Film Company, Ltd. Silver halide color photographic materials containing 3-anilino-5-pyrazolone couplers. 3,935,016, Cl. 96-74.000.

Nishio, Hiroaki: *See—*
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Nishioka, Matsuo; and Oka, Shunzo, to Matsushita Electric Industrial Co., Ltd. Assembly for fine adjustment of a variable impedance mechanism. 3,935,555, Cl. 338-174.000.

Nissan Motor Company Limited: *See—*
Masaki, Kenji; and Konno, Mitinobu, 3,934,411.
Masaki, Kenji; and Nagaishi, Hatuo, 3,934,412.
Ogihara, Yoshiyuki; and Aya, Norimoto, 3,934,912.
Takahashi, Koichi; Hitomi, Nobuteru; and Kizu, Taisuke, 3,934,429.
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Nitschke, Norman C.: *See—*
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NL Industries, Inc.: *See—*
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Noda, Hideyo; Kawai, Norio; Tarue, Osamu; Fukada, Kazuo; Idehara, Shigeyoshi; Nakanishi, Tadao; Kakimoto, Yuzo; and Nakamura, Yoshito, to Kawasaki Jukogyo Kabushiki Kaisha. Method for burning emulsion oils. 3,934,969, Cl. 431-9.000.

Noll, Klaus; Schroer, Walter; Pedain, Josef; and Reiff, Helmut, to Bayer Aktiengesellschaft. Polyurethancamides dispersible in water and dispersions containing them. 3,935,146, Cl. 260-29.2TN.

Noothout, Arend Jaman: *See—*
Kanij, Johannes Bastiaan Willem; and Noothout, Arend Jaman, 3,935,120.

Norberg, Lars-Gunnar, to Uddeholms Aktiebolag. Apparatus for refining molten metal and molten metal refining process. 3,934,863, Cl. 266-35.000.

Nordischer Maschinenbau Rud. Baader: *See—*
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Northrop Corporation: *See—*
Eguchi, Ronald G.; Mann, Michael M.; Lacina, William B.; and Crill, Kay C., 3,935,543.
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Norton, Richard V., to Sun Research and Development Co. Preparation of phthalate esters. 3,935,238, Cl. 260-475.00R.

Noshi, Yoshibumi: *See—*
Sugahara, Yujiro; Noshi, Yoshibumi; Naito, Hiroyuki; Takahashi, Akira; and Shoji, Shoji, 3,935,298.

Novak, Frank A.; Schweitzer, Earl O.; and Naik, Kamal, to Ardac, Inc. Positive action coin dispenser. 3,934,692, Cl. 194-4.00C.

Nuclear Engineering Co., Inc.: *See—*
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Nupla Corporation: *See—*
Curmien, Joseph Allen, 3,935,055.

Nuttall, Harold W., to United States Gypsum Company. Molten salt method of producing fire resistant wood articles. 3,935,343, Cl. 427-353.000.

N.V. Optische Industrie "de Oude Delft": *See—*
Vlasbloem, Hugo, 3,935,461.

Nystrom, Charles W., to R. J. Reynolds Tobacco Company. Continuous isomerization process utilizing immobilized flocculate enzyme. 3,935,068, Cl. 195-31.00F.

Obara, Hiroshi: *See—*
Yoshida, Masafumi; Segawa, Masahiro; and Obara, Hiroshi, 3,935,485.

O'Brien, John F., to Xerox Corporation. Constant current charging device. 3,935,517, Cl. 317-262.00A.

O'Brien, Marvin Edward: *See—*
Blome, James C.; Goodbrake, Chris J.; O'Brien, Marvin Edward; and Vance, Macy W., 3,935,060.

Oce-van der Grinten N.V.: *See—*
Crommentuyn, Gerardus J.; and Kuiper, Johannes H. A., 3,935,009.

Ochsner, Paul Albert, to Givaudan Corporation. Dimorpholinomethyl-(4-methyl-3-pentenyl)-cyclohexenenes. 3,935,205, Cl. 260-246.00B.

Oda, Nakaaki; Horie, Yoshio; Idohara, Mitsuru; and Iwasa, Shozo, to Nippon Soda Co., Ltd. Adsorbent process for heavy metals. 3,935,098, Cl. 210-38.000.

Odom, J. T.: *See—*
Zumsteg, D. Bruce; Origlia, Gino; and Odom, J. T., 3,934,739.

O'Donoghue, Robert J.: *See—*
Thene, Donnie R.; O'Donoghue, Robert J.; and Terry, Donald W., 3,935,124.

Oehlerking, Conrad, to Volkswagenwerk Aktiengesellschaft. Vehicle bumper arrangement. 3,934,911, Cl. 293-68.000.

Oeschger, Frank A., Jr., to Pitney-Bowes, Inc. Collating, folding an inserting system. 3,934,867, Cl. 270-32.000.

Oess, Frederick G., to Texas Instruments Incorporated. Monolythic staggered mesh deflection systems for use in flat matrix CRT's. 3,935,499, Cl. 313-413.000.

Oess, Frederick G.; and Peshock, Michael, Jr., to Texas Instruments Incorporated. Flat CRT system. 3,935,500, Cl. 313-495.000.

Ofstead, Eilert A., to Goodyear Tire & Rubber Company, The. Cycloolefin metathesis. 3,935,179, Cl. 260-93.100.

Ogasawara, Takahisa; Kobayashi, Yorimasa; Mizutani, Kiyokazu; Nakagawa, Teruo; Hisanaga, Noboru; and Tatemichi, Hidemaro, to Toagosei Chemical Industrial Co. Ltd. Curable compositions. 3,935,173, Cl. 260-78.50E.

Ogawa, Masahiro: *See—*
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Ogihara, Yoshiyuki; and Aya, Norimoto, to Nissan Motor Company Limited. Vehicle energy-absorbing system with adjustable absorption capacity. 3,934,912, Cl. 293-73.000.

Ohi, Akira: *See—*
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Ohl, Wolf: *See—*
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Ohm Acoustics Corporation: *See—*
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Ohmae, Tadayuki: *See—*
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Ohta, Takahiro, to Fuji Photo Film Co., Ltd. Color television signal generator. 3,935,589, Cl. 358-54.000.

Ohta, Tetsuya: *See—*
Kanai, Tamaki; Yamagishi, Takashi; Ohta, Tetsuya; and Moriyama, Hiroatsu. 3,935,166.
Oike & Company, Ltd.: *See—*
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Oishi, Yasushi: *See—*
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Nishimura, Tokio; Yamada, Minoru; Amano, Hiroyuki; and Oishi, Yasushi. 3,935,016.
Oka, Joji: *See—*
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Oka, Shunzo: *See—*
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Okada, Noboru: *See—*
Koyama, Masao; Okada, Noboru; and Ogawa, Masahiro. 3,935,056.
Okada, Syoji, to Nippon Piston Ring Co., Ltd. Corrugated radial spacer expander for compound oil scraping rings. 3,934,886, Cl. 277-2.000.
Okada, Takashi; and Utsunomiya, Kimitake, to Sony Corporation. Non-linear amplifier. 3,935,478, Cl. 307-229.000.
Okado, Masaru: *See—*
Arimura, Tohru; Okado, Masaru; Ichimaru, Takarokuro; and Kamata, Masamoto. 3,934,438.
Oku, Takeshi: *See—*
Tanaka, Masaru; Matsumoto, Yoshimitsu; and Oku, Takeshi. 3,935,530.
Okubo, Hiroshi; Kato, Masamichi; Kaetsu, Isao; and Ito, Akihiko, to Japan Atomic Energy Research Institute. Cast polymerization process with improved mold release. 3,935,292, Cl. 264-338.000.
Okumura, Akio: *See—*
Arai, Atsuaki; Oishi, Yasushi; Okumura, Akio, Yamada, Minoru; Yokota, Yukio; and Inouye, Kozo. 3,935,015.
Olcott, Eugene L. Shaped articles of pyrolytic graphite-silicon carbide microcomposites. 3,935,354, Cl. 428-107.000.
Olin Corporation: *See—*
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van Leuwen, Bruce G.; and Colafati, Ralph A., III. 3,935,133.
Olympus Optical Co., Ltd.: *See—*
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OMEGA Louis Brandt & Frere S.A.: *See—*
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O'Neal, Cothburn M.; Mayo, Alfred M.; Childs, George William, deceased; and by Childs, Patricia M., executrix, to Accuvote, International, Inc. Voting machine. 3,934,793, Cl. 235-51.000.
O'Neal, Cothburn M., to Riverside Press, Inc., The. Voting machine with band interlock. 3,934,794, Cl. 235-54.00A.
O'Neal, Cothburn M.; Mayo, Alfred M.; and Childs, George William, deceased (by Childs, Patricia M., executrix), to Riverside Press, Inc., The. Voting machine. 3,935,426, Cl. 235-54.00C.
O'Neill, Eugene D.: *See—*
Greve, Dale R.; and O'Neill, Eugene D., 3,935,021.
O'Neill, Wilbur J., to Westinghouse Electric Corporation. Breathing apparatus. 3,934,581, Cl. 128-142.000.
Onikov, Eduard Arshakovich: *See—*
Loschilin, Evgeny Dmitrievich; Galperin, Alexandr Lvovich; Zabotin, Alexandr Alexandrovich; Onikov, Eduard Arshakovich; and Sakharov, Boris Alexandrovich. 3,934,619.
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Ono, Takayuki: *See—*
Yamaguchi, Tadashi; Ono, Takayuki; Hoshi, Hiroshi; Hirakawa, Michio; and Watanabe, Isao. 3,935,340.
Ooyama, Kenichi; and Matsuo, Syunsuke, to Omron Tateisi Electronics Co. Automatic banking deposit receiving and handling machine. 3,934,693, Cl. 194-4.00R.
Optotechnik Heine KG: *See—*
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Orban, Andre: *See—*
Demillecamps, Edmond; and Orban, Andre. 3,935,159.
Origlia, Gino: *See—*
Zumsteg, D. Bruce; Origlia, Gino; and Odom, J. T., 3,934,739.
Orsburn, William. Tire retrieval tool. 3,934,853, Cl. 254-131.000.
Orszak, Peter, to English Electric Company Limited, The. Fluid-flow control valve. 3,934,814, Cl. 251-80.000.
Osame, Yoko: *See—*
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Ostop, John A.; Kisinko, Paul M.; and Henry, Joseph F., to Westinghouse Electric Corporation. High power, high frequency bipolar transistor with alloyed gold electrodes. 3,935,587, Cl. 357-34.000.
Ostrowsky, Efrem: *See—*
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Ouchi, Teruo; and Isuda, Hiroshi, to Olympus Optical Co., Ltd. Arrangement for detachably mounting an examining member onto a microscope. 3,934,960, Cl. 350-87.000.
Oude Alink, Bernardus A., to Petrolite Corporation. Process of reverting thiophosphates. 3,935,215, Cl. 260-327.00C.
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Oxe, Josef; and Keller, Rudolf, to Ciba-Geigy Corporation. Aqueous polystyrene containing dispersions as anti-statics for the permanent finishing of fibre materials. 3,935,150, Cl. 260-29.6MN.
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Palazzetti, Mario; and Grisotto, Franco, to Fiat Societa per Azioni. Method of connecting a terminal to a wire. 3,934,337, Cl. 29-628.000.
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Paletta, John R.; and Paletta, Helen. Stereo head board. 3,934,284, Cl. 5-280.000.
Paluck, Robert John, to Mostek Corporation. Combination output/input logic for integrated circuit. 3,935,476, Cl. 307-213.000.
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Pastor, Ricardo C.; Arita, Kaneto; and Robinson, Morton, to Hughes Aircraft Company. Preparation of alkaline earth metal halide crystals for laser windows. 3,935,302, Cl. 423-490.000.
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Paxton, Curtis L.; and Gray, Percy J., to McGinnes Manufacturing Company. Clamshell bucket apparatus. 3,934,917, Cl. 294-70.000.
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Pentheroudakis, Panajiotis S., to United States of America, Navy. Signal source position-determining process. 3,935,574, Cl. 343-113.00R.
Perl, Richard L., to Tappan Company, The. Adjustable thermal valve. 3,934,811, Cl. 251-11.000.
Perlmutter, Neal Robert. Individual room temperature control system. 3,934,797, Cl. 236-46.000.
Perry, Loren L.; and Tuglus, Louis J. Roof vent. 3,934,383, Cl. 52-200.000.
Perry, Russell C.; and Porter, Roy W., to Diagnostic Research, Inc. Automatic bacterial specimen streaker and method for using same. 3,935,075, Cl. 195-127.000.
Pershing, John A., to Owens-Corning Fiberglas Corporation. Apparatus for transporting articles along curved horizontal path while maintaining orientation constant. 3,934,730, Cl. 214-1.0BH.
Persmark, Ulf; and Stenback, Jan-Erik, to AB Karlshamns Oljefabriker. Cream base for confectionary use. 3,935,324, Cl. 426-572.000.
Persson, Bo Klas Gerhard, to Trelleborgs Gummifabriks Aktiebolag. Wear-resistant wall linings for shells of mills and like apparatuses. 3,934,828, Cl. 241-102.000.
Persson, Holger. Timer switch assembly. 3,935,404, Cl. 200-35.00R.
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Petit, Didier Marceau. Core structure, assembly and process. 3,934,519, Cl. 108-150.000.
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Petrocelli, Edward A.; and Louie, Anthony C. H., to United States of America, Navy. Electronic solid state sensor image size control. 3,935,381, Cl. 178-7.100.
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Pett, Alfred W., to New England Union Co. Valve construction and flow restrictor for use therewith. 3,934,812, Cl. 251-45.000.
Petzoldt, Karl: *See—*
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Philip Morris Incorporated: *See—*
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Poliniak, Eugene Samuel; Scheible, Howard George; and Himics, Richard Joseph, to RCA Corporation. Preparation of olefin $SO_2$ copolymer electron beam resist films and use of same for recording. 3,935,331, Cl. 427-43.000.

Poliniak, Eugene Samuel; and Himics, Richard Joseph, to RCA Corporation. Development of poly(1-methyl-1-cyclopentene-$SO_2$) electron beam resist. 3,935,332, Cl. 427-43.000.

Pollack, Roy: *See—*
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Posnansky, Mario, to Haenni & Cie Aktiengesellschaft. Measurement apparatus influenced by disturbing ambient temperature fluctuations. 3,934,479, Cl. 73-368.600.

Posso, Patrick. Minicassette for recording tape. 3,934,842, Cl. 242-199.000.

Potier, Pierre Roger, to Fosceo International Limited. Casting of molten metals. 3,934,637, Cl. 164-56.000.

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Potts, James Edward; Cornell, Stephen Watson; and Sracic, Albert Martin, to Union Carbide Corporation. Environmentally degradable ethylene polymeric compositions. 3,935,141, Cl. 260-23.00H.

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Frank, Robert G., 3,934,996.
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Jerabek, Robert D.; and Marchetti, Joseph R., 3,935,087.
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Preisler, James Michael, to Drag Specialties, Inc. Socket mounting structure for vehicle lights. 3,935,445, Cl. 240-7.10R.

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Prevorsek, Dusan Cyril; Kwon, Young Doo; and Sharma, Raj Kumar, to Allied Chemical Corporation. Method of determining dynamic strains in composite structures. 3,934,452, Cl. 73-15.600.

Priddy, Duane B., to Dow Chemical Company, The. Method for preparing polyperoxydicarbonate esters. 3,935,243, Cl. 260-463.000.

Primark Corporation: *See—*
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Prokai, Bela; and Kanner, Bernard, to Union Carbide Corporation. Polysiloxane-polyoxyalkylene compositions used in polyurethane foam. 3,935,123, Cl. 252-351.000.

Proksch, Emil; and Eschweiler, Helmut, to Eternit-Werke Ludwig Hatschek & UCB,S.A. Porous, heat-sensitive substrates coated with synthetic resins. 3,935,364, Cl. 428-304.000.

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Psensky, Miroslav: *See—*
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Quay, Robert: *See—*
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Quebec Iron and Titanium Corporation - Fer et Titane du Quebec, Incorporated: *See—*
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Quillevere, Herve Alain; and Caruel, Jacques Emile Jules, to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation. Gas turbine combustion chambers. 3,934,409, Cl. 60-39.650.

Quirouette, Richard L.; and Lemay, Rejean P. Portable swimming pool construction. 3,934,277, Cl. 4-172.190.

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Rabewerk Heinrich Clausing: *See—*
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Rabinowitz, Azriel Jay, to Sybron Corporation. Adjustable dental chair. 3,934,929, Cl. 297-75.000.

Rabus, Kurt, to Siemens Aktiengesellschaft. Polyphase liquid rheostat. 3,935,554, Cl. 338-80.000.

Racz, Nick S. Cookware containers. 3,934,748, Cl. 220-9.00R.

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Radke, Edward. Door guard. 3,934,910, Cl. 292-346.000.

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Rady, David M. Bi-level book stand. 3,934,806, Cl. 248-441.000.

Raffel, Marvin J. Bed frame with readily connectable vibrator motors. 3,934,283, Cl. 5-109.000.

Rahall, George A., to United States Steel Corporation. Method and apparatus for flame-cutting angle irons. 3,934,861, Cl. 266-23.00R.

Raleigh Industries Limited: *See—*
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Rapp, James Erich, to Owens-Illinois, Inc. Glasses and glass-ceramics. 3,935,019, Cl. 106-47.00R.

Raser, William H. Spinning-disk shaft position encoder. 3,935,570, Cl. 340-347.00P.

Rashbrook, Robert Benson, to Imperial Chemical Industries Limited. Process for preparing polyesters from terephthalic acid in the presence of phosphonium compounds. 3,935,168, Cl. 260-75.00P.

Rasmussen, Jerome J. M.: *See—*
Chiu, Herman S.; and Rasmussen, Jerome J. M., 3,935,320.

Ratliff, Richard L., to Clark Equipment Company. Resistance-producing structure for a transmission shifting mechanism. 3,934,485, Cl. 74-473.00R.

Rautimo, Pentti J.; and Kapanen, Aarne A., to Outokumpu Oy. Device for detaching an electrolytically percipitated metal sheet from a cathode. 3,935,091, Cl. 204-281.000.

Ravicchio, Donald P.; and Geary, Carl H., to Carrier Corporation. End wall closure apparatus. 3,934,752, Cl. 220-328.000.

Ray, Neil Hunter; and Robinson, William Derek, to Imperial Chemical Industries Limited. Glasses. 3,935,018, Cl. 106-47.00R.

Raymond Lee Organization, Inc., The: *See—*
Bruce, Donald G., 3,934,804.
Tortorello, Albert, 3,934,300.
Vernhout, Hendrik J., 3,935,052.





Raymond, Roger S.: *See—*
Hamilton, Charles Howard; Koeller, Fred B.; Raymond, Roger S.; and Goldberg, Martin, 3,934,441.

Raypak, Inc.: *See—*
Shippey, Frank R.; Vance, Timothy C.; and Martin, Fred E., 3,934,906.

RCA Corporation: *See—*
Hopkins, Gorden Lambert, 3,935,591.
Johnson, Henry Charles, 3,935,573.
McNamee, James Arthur, 3,934,902.
Poliniak, Eugene Samuel; Scheible, Howard George; and Himics, Richard Joseph, 3,935,331.
Poliniak, Eugene Samuel; and Himics, Richard Joseph, 3,935,332.
Smith, Theodore Dennis, 3,934,544.

Rebeiz, Constantin Anis, to University of Illinois Foundation. In vitro net bioxynthesis of chlorophyll and grana. 3,934,369, Cl. 47-58.000.

Rebmann, Manfred, to Robert Bosch G.m.b.H. Apparatus for dosing and dispensing granular material into capsules. 3,934,764, Cl. 222-451.000.

Reed, Kenneth E., to Delavan Manufacturing Corporation. Low drift spray nozzle and method. 3,934,823, Cl. 239-472.000.

Reed, Winthrop B., to General Steel Industries, Inc. Method and apparatus for bending elongated members. 3,934,450, Cl. 72-383.000.

Reen, Robert Richard, to ICI United States Inc. Method of preparing polyester powder. 3,935,169, Cl. 260-75.00T.

Regester, Willard D. Tooth cleaning device. 3,934,299, Cl. 15-104.940.

Regie Nationale des Usines Renault: *See—*
Langlois, Christian, 3,934,963.
Pruvot, Francois Claude, 3,934,948.

Reichenbacher, Paul H.; Forsythe, Theresa M.; Sparks, Allen K.; and Symon, Ted, to Universal Oil Products Company. Chemical condensation improvement. 3,935,234, Cl. 260-343.20R.

Reiff, Helmut: *See—*
Noll, Klaus; Schroer, Walter; Pedain, Josef; and Reiff, Helmut, 3,935,146.

Reighart II, Ray R. Free vortex aircraft. 3,934,844, Cl. 244-40.00A.

Reilly, Albert F.; Doddridge, Ivan C.; and Chen, Ming Chih, to Sheller-Globe Corporation. Method of manufacturing new paintable rubber products. 3,935,329, Cl. 427-35.000.

Reiser, Robert. System for producing variable static light displays. 3,934,366, Cl. 40-130.00B.

Reliance Electric Company: *See—*
Tooley, Robert W., 3,934,953.

Rende, Richard F., to American Hospital Supply Corporation. Automatic computing ocular tonometer system. 3,934,462, Cl. 73-80.000.

Repke, Virginia L.: *See—*
Mesek, Frederick K.; Repke, Virginia L.; and Strickel, William R., 3,934,588.

Research Technology Incorporated: *See—*
Bowen, Howard; and Spinner, Frederick W., 3,935,468.

Ress, Thomas I., to Kreidl Chemico Physical K.G., The. Particle accelerator. 3,935,503, Cl. 315-111.600.

Reunanen, Matti Antero, to Wallac Oy. Method for calibration measurement in a liquid scintillation counter and carrier used in the method. 3,935,449, Cl. 250-252.000.

Revesz, Istvan, to Alfa-Laval AB. Control for vacuum system. 3,934,607, Cl. 137-489.500.

Reynolds, David: *See—*
Lesko, Richard; and Reynolds, David, 3,935,413.

Reynolds, David E. Leak detection apparatus. 3,935,567, Cl. 340-242.000.

Reynolds Metals Company: *See—*
Vryland, George W., 3,934,395.

Rhee, Jhoon. Protective helmet. 3,934,271, Cl. 2-3.00R.

Rheinisch-Westfalisches Elektrizitatswerk AG: *See—*
Fritz, Heinz Peter; and Missol, Detlef, 3,935,082.

Rheinlander, Paul; and Voigt, Heinz, to Thermo-Industrie GmbH & Co. KG. Method and device for preventing slag from escaping when emptying a pouring vessel. 3,934,755, Cl. 222-1.000.

Rhodes, Richard O.: *See—*
Ford, Freeman A.; Armstrong, Errol; and Rhodes, Richard O., 3,934,323.

Rhone-Poulenc Industries: *See—*
Biola, Georges; Buathier, Bernard; Combes, Andre; and Martin, Michel, 3,935,276.

Rhone-Poulenc S.A.: *See—*
Boesch, Roger, 3,935,315.
Chapurlat, Robert, 3,935,272.

Rhone-Poulenc-Textile: *See—*
Bizot, Jean; and Sausse, Andre, 3,935,092.

Rhone-Progil: *See—*
Strini, Jean-Claude; and Costes, Jean-Raymond, 3,935,286.

Rice, Harry E.; and Rude, John K., to Technicolor, Inc. Printer control. 3,935,434, Cl. 235-92.0CT.

Rice, Robert C. Scaffold structure. 3,934,676, Cl. 182-182.000.

Richter, Harvey E., to Tec Group, Inc., The. Unit and method for spray cooling fluid. 3,935,156, Cl. 261-37.000.

Ridyard, Denis Robert Annesley: *See—*
Manson, John Stuart; and Ridyard, Denis Robert Annesley, 3,935,248.

Rieckmann, Peter: *See—*
Groppenbacher, Gregor; Rieckmann, Peter; and Rothe, Werner, 3,935,326.

Riegel, Herbert, to Lummus Company, The. Production of olefinic halides. 3,935,288, Cl. 260-656.00R.

Riegler, Ernst; and Schmidt, Manfred, to Vereinigte Osterreichische Eisen- und Stahlwerke-Alpine Montan Aktiengesellschaft. Fixed bearing assembly for a tiltable-converter carrying trunnion. 3,934,955, Cl. 308-72.000.

Riemersma, Henry; and Farish, Owen, to Westinghouse Electric Corporation. High pressure gas laser using uniform field electrode configuration with irradiation by corona discharge. 3,935,547, Cl. 331-94.5PE.

Rieter Machine Works Ltd.: *See—*
Bruggisser, Klaus; Graf, Felix; and Ruegg, Albert, 3,934,831.

Rifkin, Michael, to Magne-Lok Co., The. Lock with retainer. 3,934,908, Cl. 292-150.000.

Riverside Laboratories, Inc.: *See—*
Schmidt, Robert L.; and Beckman, Hubert J., 3,935,049.

Riverside Press, Inc., The: *See—*
O'Neal, Cothburn M., 3,934,794.
O'Neal, Cothburn M.; Mayo, Alfred M.; and Childs, George William, deceased, 3,935,426.

Robert Bosch G.m.b.H.: *See—*
Hofmann, Karl; and Mladek, Walter, 3,934,903.
Kizler, Harald; Przybyla, Bernd; and Schmidt, Peter-Jurgen, 3,935,538.
Rebmann, Manfred, 3,934,764.
Romann, Peter; and Nagele, Erwin, 3,934,561.
Schnaibel, Eberhard, 3,934,940.
Zechnall, Richard; Linder, Ernst; Schmid, Albert; Raabe, Gotthold, Kerner, Karl; and Socknick, Rudi, 3,935,444.

Roberts, Francis D.; and Steinke, John J., III, to Colgate-Palmolive Company. Toothpaste formulations. 3,935,306, Cl. 424-49.000.

Roberts, Rene: *See—*
Gerkin, Richard M.; Roberts, Rene; and Hodges, Joy C., 3,935,132.

Robertshaw Controls Company: *See—*
Bauer, Frederick T.; Cairo, Anthony C.; Holkeboer, Ronald E.; and Tyler, Gary E., 3,935,473.
Caldwell, Edward N., 3,934,613.
Wolfe, Denis G.; Tyler, Hugh J.; Jackson, Wilbur F., deceased; and Benton, Linda A., trust administrator, 3,934,417.

Robertson, Reed S.; and Watson, William R., to Nalco Chemical Company. Constant temperature cold-end corrosion probe. 3,934,646, Cl. 165-105.000.

Robertson, William J., to Shell Oil Company. Process for the preparation of pressure-sensitive adhesive articles. 3,935,338, Cl. 427-207.000.

Robinson, Morton: *See—*
Pastor, Ricardo C.; Arita, Kaneto; and Robinson, Morton, 3,935,302.

Robinson, William Derek: *See—*
Ray, Neil Hunter; and Robinson, William Derek, 3,935,018.

Roccaforte, Harry I., to Hoerner Waldorf Corporation. Display carton for tubes. 3,934,719, Cl. 206-45.140.

Rockwell International Corporation: *See—*
Cantley, George, 3,934,488.
Hamilton, Charles Howard; Koeller, Fred B.; Raymond, Roger S.; and Goldberg, Martin, 3,934,441.
Jovick, Raymond John, 3,934,685.
McCloskey, Albert R., 3,934,954.
Tosches, Anthony J., 3,934,621.

Rockwood Systems Corporation: *See—*
Sanderson, Ian S.; and Hardy, John C., 3,934,604.

Rodgers, Earl Edward; and Mellinger, Gerald Allen, to United Conveyor Corporation. Capacitance type material level detector for hoppers. 3,934,475, Cl. 73-304.00C.

Roe, Norman E.: *See—*
Kwan, Gerald A.; Penkov, Walter V.; and Roe, Norman E., 3,934,370.

Rohm & Haas Company: *See—*
Jones, Edward, 3,934,767.

Rohr, Andre: *See—*
Falk, Jean-Pierre; and Rohr, Andre, 3,935,512.

Rohr, Wolfgang: *See—*
Fischer, Adolf; Hansen, Hanspeter; and Rohr, Wolfgang, 3,935,190.

Rolls-Royce Motors Limited: *See—*
Coulson, Derrick; and Coyle, John C., 3,934,642.

Rolls-Royce (1971) Limited: *See—*
Smith, Stanley, 3,934,889.

Romani, Edward Paul, to Hoffmann-La Roche Inc. Fetal heart rate monitoring apparatus. 3,934,577, Cl. 128-2.05T.

Romann, Peter; and Nagele, Erwin, to Robert Bosch G.m.b.H. Fuel injection system for internal combustion engines with combined fuel pump control switch. 3,934,561, Cl. 123-32.0EA.

Romanski, Lon H.: *See—*
Cushman, Walton W., 3,934,515.

Rongved, Leif: *See—*
Brady, Kevin James; Firtion, Victor Andrew; Rongved, Leif; and Saunders, Thomas Edward, 3,934,949.

Roof, Lewis B., to Phillips Petroleum Company. Acid and alcohol carrier for HF-$H_2O$ chromatographic separation using anion exchange resin. 3,935,097, Cl. 210-31.00C.

Ropers, Johann: *See—*
Keller, Wolfgang; Kruger, Joachim; Ropers, Johann; and Schabert, Hans-Peter, 3,935,062.

Roscoe, Theodore J., Jr.: *See—*
Curington, Alfred R.; and Roscoe, Theodore J., Jr., 3,934,662.

Rosenbaum, Fred J.; and Wu, You-Sun, to Washington University, The. Wide-band microwave circulator. 3,935,548, Cl. 333-1.100.

Rosenthal, Rudolph; and Sorgenti, Harold A., to Atlantic Richfield Company. Process for preparing diperoxide from an organic hydroperoxide and a ketone. 3,935,278, Cl. 260-610.00R.

Rosin, Alexander, to Northrop Corporation. Gun bay pressure relief device. 3,934,845, Cl. 244-129.00D.

Ross, Howard J.: *See—*
Kalpin, Thomas G.; and Ross, Howard J., 3,934,632.

Ross, Jack. Water powered dishwasher. 3,934,822, Cl. 239-226.000.

Rossen, Jack L.: *See—*
Sakler, Stephen Allen; Porcello, Samuel Joseph; and Rossen, Jack L., 3,935,321.

Rothe, Werner: *See—*
Groppenbacher, Gregor; Rieckmann, Peter; and Rothe, Werner, 3,935,326.

Rottger, Hans: *See—*
Muller, Otto; Rottger, Hans; Kastl, Hans; and Hagen, Hans-Gunter, 3,934,731.

Rowe, Edward A.: *See—*
Beckers, Norman L.; and Rowe, Edward A., 3,935,287.

Rowe, George E., deceased (by Rowe, Selma S., executrix), to Emhart Corporation. Neck ring cartridge for glassware machine. 3,934,998, Cl. 65-172.000.

Rowe, Selma S., executrix: *See—*
Rowe, George E., deceased, 3,934,998.

Rowekamp, Edward F., to Lodge & Shipley Company, The. Carriage for lifting and spreading rows of articles. 3,934,920, Cl. 294-87.00R.

Rowland Development Corporation: *See—*
Rowland, William P., 3,935,359.

Rowland, William P., to Rowland Development Corporation. Retroreflective sheeting and method and apparatus for producing same. 3,935,359, Cl. 428-172.000.

Rubel, Manfred: *See—*
Leisterer, Reinhard; Mahlstedt, Walter; and Rubel, Manfred, 3,935,575.

Rubenstein, Kenneth Edward; and Leute, Richard K., to Syva Company. Antibody steric hindrance immunoassay with two antibodies. 3,935,074, Cl. 195-103.50R.

Rucker, George I., to Crown Zellerbach Corporation. Method for forming containers with fin-type seams. 3,935,048, Cl. 156-203.000.

Rude, John K.: *See—*
Rice, Harry E.; and Rude, John K., 3,935,434.

Rudolf Hell GmbH: *See—*
Fels, Werner, 3,935,584.

Rudolphy, Albert, to Hoechst Aktiengesellschaft. Process for the manufacture of modified natural resin products. 3,935,145, Cl. 260-27.0BB.

Ruegg, Albert: *See—*
Bruggisser, Klaus; Graf, Felix; and Ruegg, Albert, 3,934,831.

Ruest, Dennis A.; Shen, C. Y.; and Mason, John L., to Monsanto Company. Chemical compounds. 3,935,257, Cl. 260-535.00P.

Rufenacht, Kurt, to Ciba-Geigy Corporation. 4H-Pyrido[3,2a]-1,3,2-dioxophosphorane derivatives. 3,935,224, Cl. 260-294.80C.

Ruhrchemie AG: *See—*
Tummes, Hans; Falbe, Jurgen; and Cornils, Boy, 3,935,285.

Rumell, James A. Transport vehicle with tiltable chassis. 3,934,740, Cl. 214-505.000.

Rundqvist, Lars-Goran; and Jakobson, Karl Folke Olof, to AB Celleco. Straining apparatus. 3,935,109, Cl. 210-406.000.

Russell, Charles E.; Russell, Fred E.; and Pearson, Melvin B., to Waste Water Systems, Inc. Automatic foam remover for flotation tanks. 3,935,104, Cl. 210-97.000.

Russell, Fred E.: *See—*
Russell, Charles E.; Russell, Fred E.; and Pearson, Melvin B., 3,935,104.

Ryohi, Ltd.: *See—*
Honkawa, Yoshinori, 3,934,872.

Sadeski, Boleslaus J.: *See—*
Balch, James L.; Anderson, James E.; and Sadeski, Boleslaus J., 3,934,705.

Saeki, Shiro: *See—*
Takahashi, Sakae; Saeki, Shiro; and Onisawa, Yoshio, 3,935,143.

Safir, Sidney Robert: *See—*
Fanshawe, William Joseph; and Safir, Sidney Robert, 3,935,211.

SAFT-Societe des Accumulateurs Fixes et de Traction: *See—*
Sperandio, Francis, 3,935,030.

Saito, Chuichi; and Nakao, Schoichi, to Hitachi, Ltd. Handrail safety device. 3,934,699, Cl. 198-16.000.

Saito, Katushi: *See—*
Tanaka, Tadashi; Oka, Joji; and Saito, Katushi, 3,935,035.

Sakakibara, Ryuji: *See—*
Hashimoto, Sadao; Sakakibara, Ryuji; Kurashige, Yasushi; Takikawa, Katsuo; Osame, Yoko; Minami, Hiroshi; and Suzue, Takashi, 3,935,266.

Sakharov, Boris Alexandrovich: *See—*
Loschilin, Evgeny Dmitrievich; Galperin, Alexandr Lvovich; Zabotin, Alexandr Alexandrovich; Onikov, Eduard Arshakovich; and Sakharov, Boris Alexandrovich, 3,934,619.

Sakler, Stephen Allen; Porcello, Samuel Joseph; and Rossen, Jack L., to Nabisco, Inc. Accelerated cooling method. 3,935,321, Cl. 426-244.000.

Salemme, Fred J., to California Cedar Products Company Inc. Mechanical apparatus for cutting moving work. 3,934,628, Cl. 144-2.00R.

Salter, Joseph Lane: *See—*
George, Emanuel John; Salter, Joseph Lane; Sauer, Earl Salvator; and Tidd, Charles Edward, Jr., 3,935,369.

Samatov, Jury Petrovich: *See—*
Egorov, Jury Dmitrievich; Kavyarov, Ivan Savvateevich; Samatov, Jury Petrovich; Chasovodov, Nikolai Alexandrovich; and Chirikhin, Jury Ivanovich, 3,934,665.

Samuel, Joseph, to Lem Instrument Corporation. Universal analog-to-digital converter using the same information disc for different output codes. 3,935,568, Cl. 340-347.00P.

Samways, Albert John: *See—*
High, Robert Edward; and Samways, Albert John, 3,934,792.

Samyn, Celeste: *See—*
Marvel, Carl S.; and Samyn, Celeste, 3,935,167.

Sanders Associates, Inc.: *See—*
Schmitt, Joseph W.; and Starkey, Donald L., 3,935,437.

Sanderson, Ian S.; and Hardy, John C., to Rockwood Systems Corporation. Proportioning apparatus. 3,934,604, Cl. 137-98.000.

Sandham, Edwin C., to Leggett & Platt, Incorporated. Back support for chair. 3,934,930, Cl. 297-291.000.

Sandoz, Inc.: *See—*
Houlihan, William J.; and Linder, Jerome, 3,935,210.

Sandoz Ltd.: *See—*
Schelling, Hans-Peter; and Schaub, Fritz, 3,935,271.

Sandoz Ltd., (Sandoz AG): *See—*
Avar, Lajos; and Hofer, Kurt, 3,935,231.

Sandstrom, Stig Rune. Means for guiding the welding unit of an automatic welding apparatus along the joint line between workpieces to be welded together. 3,935,420, Cl. 219-125.00R.

Sankyo Company Limited: *See—*
Morisawa, Yasuhiro; Kataoka, Mitsuru; Watanabe, Taiichiro; Kitano, Noritoshi; and Matsuzawa, Toshiaki, 3,935,311.

Sano, Tadashi: *See—*
Nishimura, Izuhiko; and Sano, Tadashi, 3,934,399.

Sargent Industries, Inc.: *See—*
Turner, Peter H., 3,934,958.

Sargent, Raymond W., to Simmonds Precision Products, Inc. Electro-visual indicators. 3,935,571, Cl. 340-373.000.

Sasaki, Koju; and Kobayashi, Akihiro, to Nittan Company, Ltd. Ionization smoke detector. 3,935,492, Cl. 313-54.000.

Sasaki, Kyozo; and Murayama, Minoru. Sporting shoes. 3,934,346, Cl. 36-2.50R.

Sate-Life Mfg. Co.: *See—*
May, Louis; and Idzik, Edmund M., 3,934,541.

Sate-Lite, Mfg. Co.: *See—*
May, Louis; and Idzik, Edmund M., 3,934,542.

Satkin, Jeff, to Lawrence Peska Associates, Inc., a part interest. Method of and apparatus for attaching fasteners for cloth and the like. 3,934,329, Cl. 29-453.000.

Sato, Kenji: *See—*
Kaji, Tetsunori; and Sato, Kenji, 3,935,590.

Sauer, Earl Salvator: *See—*
George, Emanuel John; Salter, Joseph Lane; Sauer, Earl Salvator; and Tidd, Charles Edward, Jr., 3,935,369.

Sauerwein, William D.; and Sides, Daniel Harrison, to Black and Decker Manufacturing Company, The. Dust cup. 3,934,661, Cl. 175-211.000.

Sauerwein, William D.: *See—*
Sides, Daniel Harrison; and Sauerwein, William D., 3,934,688.

Saunders, Philip G.; and Simpson, Jack R., to Container Graphics Corporation. Mounting means for a printing plate. 3,934,509, Cl. 101-415.100.

Saunders, Thomas Edward: *See—*
Brady, Kevin James; Firtion, Victor Andrew; Rongved, Leif; and Saunders, Thomas Edward, 3,934,949.

Saunders, William T., to National Steel Corporation. Manufacturing methods for selective coating characteristic tinplated steel cans. 3,934,527, Cl. 113-120.00A.

Sausse, Andre: *See—*
Bizot, Jean; and Sausse, Andre, 3,935,092.

Schabert, Hans-Peter: *See—*
Keller, Wolfgang; Kruger, Joachim; Ropers, Johann; and Schabert, Hans-Peter, 3,935,062.

Schade, Gerhard, to Dynamit Nobel Aktiengesellschaft. Process for the stabilization of polyester amides. 3,935,165, Cl. 260-45.85B.

Schady, Joseph L., to Alpha Sheet Metal Works, Inc. Apparatus for enrobing discrete objects. 3,934,545, Cl. 118-19.000.

Schaeffer-Homberg GmbH, Firma: *See—*
Kramer, Friedhelm; and Wolfertz, Gunter, 3,934,777.

Schatz, Douglas S.: *See—*
McDonough, George W.; Schatz, Douglas S.; and Anderson, Emmett R., 3,935,412.

Schaub, Fritz: *See—*
Schelling, Hans-Peter; and Schaub, Fritz, 3,935,271.

Schedlitzki, Dietmar: *See—*
Mitgau, Rotger; Petrik, Bruno; and Schedlitzki, Dietmar, 3,935,336.

Scheffel, Kurt, to Grey Lab. Establishment, The. Apparatus for the storage and reading of data combined from binary numbers. 3,935,431, Cl. 235-61.11A.

Scheiber, Robert: *See—*
Cap, Heinrich; Krammer, Herbert; and Scheiber, Robert, 3,935,524.





Scheible, Howard George: *See—*
Poliniak, Eugene Samuel; Scheible, Howard George; and Himics, Richard Joseph, 3,935,331.

Schelling, Hans-Peter; and Schaub, Fritz, to Sandoz Ltd. Unsaturated aliphatic ketones. 3,935,271, Cl. 260-594.000.

Schenk, Raymond L., Jr.: *See—*
Cushman, Robert Holbrook; and Schenk, Raymond L., Jr., 3,934,782.

Schering Aktiengesellschaft: *See—*
Engelfried, Otto; Nieuweboer, Bob; Petzoldt, Karl; Kerb, Ulrich; and Lubke, Klaus, 3,935,245.

Schiller, Paul; and Vernaleken, Hugo, to Bayer Aktiengesellschaft. Polycarbonate resin having improved electrical tracking resistance. 3,935,157, Cl. 260-37.0PC.

Schindl, Klaus P., to C. Reichert Optische Werke AG. System for making composite photomicrographs. 3,935,011, Cl. 96-41.000.

Schlag, Johannes: *See—*
Schlichting, Karl; Horn, Peter; Schlag, Johannes; and Koernig, Wolfgang, 3,935,161.

Schlichting, Karl; Horn, Peter; Schlag, Johannes; and Koernig, Wolfgang, to BASF Aktiengesellschaft. Process for stabilizing polyamides. 3,935,161, Cl. 260-45.9NC.

Schlosser, Fritz Dieter, to African Explosives & Chemical Industries Limited. Auto-condensation products of urea. 3,935,260, Cl. 260-553.00B.

Schlumberger Technology Corporation: *See—*
Brieger, Emmet F., 3,934,468.
Nicolas, Yves, 3,934,467.

Schmid, Albert: *See—*
Zechnall, Richard; Linder, Ernst; Schmid, Albert; Raabe, Gotthold; Kerner, Karl; and Socknick, Rudi, 3,935,444.

Schmid, Paul; and Droesch, Albert, to GHH Basel AG. Enclosed filtering unit for filtering and/or treating liquid or gaseous media. 3,935,110, Cl. 210-445.000.

Schmidt, Arthur D.: *See—*
Snyder, Alan Kent; Schmidt, Arthur D.; Foote, Seldon T., deceased; and Clipp, Robert R., executor, 3,934,702.

Schmidt, Gunter, to Productron, Inc. Daylight film handling system. 3,934,735, Cl. 214-6.00D.

Schmidt, Manfred: *See—*
Riegler, Ernst; and Schmidt, Manfred, 3,934,955.

Schmidt, Peter: *See—*
Keilhack, Hans O.; and Schmidt, Peter, 3,934,837.

Schmidt, Peter-Jurgen: *See—*
Kizler, Harald; Przybyla, Bernd; and Schmidt, Peter-Jurgen, 3,935,538.

Schmidt, Robert L.; and Beckman, Hubert J., to Ashland Oil, Inc.; and Riverside Laboratories, Inc. Method of covering a substrate by overidge bonding of a covering material about the edges of the substrate. 3,935,049, Cl. 156-216.000.

Schmitt, Joseph W.; and Starkey, Donald L., to Sanders Associates, Inc. Signal processor. 3,935,437, Cl. 235-152.000.

Schmitz, Theo: *See—*
Thiersch, Friedrich; Strobel, Manfred; and Schmitz, Theo, 3,935,078.

Schnaibel, Eberhard, to Robert Bosch G.m.b.H. Safety interlock circuit for switching brake antilock systems in a tractor trailer vehicle combination in and out. 3,934,940, Cl. 303-21.00R.

Schnick, Leslie E.: *See—*
Wilson, Michael C.; and Schnick, Leslie E., 3,934,631.

Schoen, Lowhardt A. A., to Stamicarbon B.V. Process for chlorinating ethylene polymers. 3,935,181, Cl. 260-94.90H.

Scholz, Kurt: *See—*
Hagenweiler, Kurt; and Scholz, Kurt, 3,935,144.

Schonung, Arnold: *See—*
Brenneisen, Jorg; and Schonung, Arnold, 3,935,528.

Schornhorst, James R.: *See—*
Muhlstadt, William J.; and Schornhorst, James R., 3,934,994.

Schott, Lawrence A.: *See—*
Schott, Roger A.; and Schott, Lawrence A., 3,934,677.

Schott, Roger A.; and Schott, Lawrence A. Magnet for guiding lubricating head on a chain to be lubricated. 3,934,677, Cl. 184-15.00R.

Schraudolph, Manfred: *See—*
Henniger, Wolfgang; Povh, Dusan; and Schraudolph, Manfred, 3,935,551.

Schrock, Donald C., to Crane Co. Bathtub support. 3,934,278, Cl. 4-173.000.

Schroer, Walter: *See—*
Noll, Klaus; Schroer, Walter; Pedain, Josef; and Reiff, Helmut, 3,935,146.

Schroter, Hans O. Spring assisted variable ratio brake operating lever system. 3,934,490, Cl. 74-520.000.

Schubert, Paul; and Treipl, Hans, to Cross Europa-Werk GmbH. Transfer line. 3,934,700, Cl. 198-19.000.

Schudel, Peter: *See—*
Bertele, Erhard; and Schudel, Peter, 3,935,275.

Schuler, Paul A., to General Electric Company. Cutting inserts. 3,934,319, Cl. 29-95.00R.

Schurger, Rainer: *See—*
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Schwalbe, Julien I.: *See—*
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Schwartz, Daniel M.; and Cross, John W., to Lockheed Missiles & Space Company, Inc. Articulated vehicle coupler. 3,934,667, Cl. 180-14.00A.

Schweitzer, Earl O.: *See—*
Novak, Frank A.; Schweitzer, Earl O.; and Naik, Kamal, 3,934,692.

Schwope, Arthur D.: *See—*
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SCM Corporation: *See—*
Gilmore, Cecilia; and Miller, Donald E., 3,935,325.
Mueller, Hans W.; and Shattuck, Richard E., 3,934,696.

Scott, Garland E., Jr.; and Levenson, Michael K., to General Electric Company. Chemically polished polycrystalline alumina material. 3,935,495, Cl. 313-220.000.

Scott Paper Company: *See—*
Gray, Robert D., 3,935,057.

Scuderi, Rudolph: *See—*
Michelet, Robert Wilson; Ostapiak, Roman; and Scuderi, Rudolph, 3,935,527.

Seagrave Corporation, The: *See—*
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Sealectro Corporation: *See—*
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Sebenik, Roger Frank: *See—*
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Segawa, Masahiro: *See—*
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Sekimura, Nobuyuki: *See—*
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Sekiwa, Tetsuo: *See—*
Beppu, Tatsuro; Iwamoto, Masami; and Sekiwa, Tetsuo, 3,935,039.

Selak, Martin, to Astro Engineering Corporation. Top loading, continuous suction feeder attachment for printing apparatus. 3,934,868, Cl. 271-9.000.

Sell, Kenneth W.: *See—*
Wise, Donald L.; Schwope, Arthur D.; and Sell, Kenneth W., 3,935,308.

Sellstedt, John H., to American Home Products Corporation. Intermediates for producing semi-synthetic penicillins and cephalosporins and methods of production. 3,935,186, Cl. 260-239.100.

Senolt, Hans; Tomaschko, Heinrich; and Palvik, Georg, to Osterreichische Mineralolverwaltung Aktiengesellschaft. Bitumen blowing. 3,935,093, Cl. 208-6.000.

Serizawa, Akio, to Sony Corporation. Tape cassette. 3,934,839, Cl. 242-198.000.

Servo Corporation of America: *See—*
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Seydelmann, Ludwig. Die for two-stage food chopper. 3,934,827, Cl. 241-84.000.

Seymour, David J.: *See—*
Kossa, Miklos M.; and Seymour, David J., 3,934,530.

Shakely, Conrad Dale: *See—*
Goffredo, Daniel L.; and Shakely, Conrad Dale, 3,935,041.

Shapiro, Stanley L.: *See—*
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Sharma, Mohinder Paul: *See—*
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Sharma, Raj Kumar: *See—*
Prevorsek, Dusan Cyril; Kwon, Young Doo; and Sharma, Raj Kumar, 3,934,452.

Sharman, Samuel H., to Chevron Research Company. High sudsing phosphate-free detergent composition. 3,935,131, Cl. 252-555.000.

Sharpe, William E., Jr.: *See—*
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Shattuck, Richard E.: *See—*
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Shaw, Bernard Elliott, to Fullerton, Hodgart & Barclay Ltd. Mine hoists. 3,934,856, Cl. 254-184.000.

Shaw, Clarence W., to J. Ray McDermott & Co., Inc. Marine fluid transfer apparatus. 3,934,289, Cl. 9-8.00P.

Shell Oil Company: *See—*
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Shcratte, Martin B., to McDonnell Douglas Corporation. Functional fluid compositions. 3,935,116, Cl. 252-78.000.

Sheridan, Arthur L., to Union Carbide Corporation. Zone regulation of casing inflation gas. 3,934,309, Cl. 17-42.000.

Sherwin, Leo H.; and Gilmore, Robert S., to General Electric Company. Apparatus for focusing and collimating ultrasonic waves. 3,934,460, Cl. 73-71.5US.

Sherwood Products Corporation: *See—*
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Shida, Tomohiko: *See—*
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Shillingford, John T., Jr.: *See—*
Dahlen, John M.; Toth, William E.; Shillingford, John T., Jr.; and McKenna, John F., Jr., 3,935,592.

Shimazu, Ken-ichi: *See—*
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Yoshikawa, Kanji; Tatsukami, Yoshiharu; Shimba, Hiroshi; and Mukunashi, Hiroaki, 3,935,374.

Shimoyama, Yoshiaki; Miyoshi, Kunisuke; and Kimura, Hiroyuki, to Nippon Steel Corporation. Method for manufacturing non-oriented electrical steel sheet and strip having no ridging. 3,935,038, Cl. 148-110.000.

Shindo, Noboru; and Hashizume, Hiroshi, to Murata Kikai Kabushiki Kaisha. False twisting spindle. 3,934,398, Cl. 57-77.300.

Shinohara, Terumi: *See—*
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Shinomura, Toshihiko, to Nippon Oil Company Ltd. Process for the preparation of a synthetic wood. 3,935,047, Cl. 156-163.000.

Shippey, Frank R.; Vance, Timothy C.; and Martin, Fred E., to Raypak, Inc. Means for coupling and sealing membrane carrying tube sections. 3,934,906, Cl. 285-371.000.

Shock V Automatic Lubrication Systems, Inc.: *See—*
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Shoji, Shoji: *See—*
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Shore, Sidney X.; and Martin, Paul S. Acoustic headsets. 3,934,674, Cl. 181-135.000.

Shore, Sidney X.; and Martin, Paul S. Earpiece for acoustic headset. 3,935,401, Cl. 179-182.00R.

Shotton, James A., to Phillips Petroleum Company. Density control for electroplatable polymer compositions. 3,935,081, Cl. 204-30.000.

Shuey, David R.; and Slomcenski, Robert J., to Xerox Corporation. Automatic zeroing electrometer. 3,935,532, Cl. 324-72.000.

Shultz, Andrew; and Wizemann, Leslie C., to Allied Chemical Corporation. Finely divided colorants. 3,934,973, Cl. 8-79.000.

Sides, Daniel Harrison; and Sauerwein, William D., to Black and Decker Manufacturing Company, The. Shifter mechanism. 3,934,688, Cl. 192-48.500.

Sides, Daniel Harrison: *See—*
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Klauke, Guenter; Marziniak, Ruediger; and Guerke, Guenter, 3,934,781.
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Sihtola, Hannes. Method for the removal of hemicellulose from hemicellulose-containing caustic liquors. 3,935,022, Cl. 106-163.000.

Silcox, William H.: *See—*
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Silverman, Daniel. Vibrator systems for generating elastic waves in the earth. 3,934,673, Cl. 181-119.000.

Simmonds Precision Products, Inc.: *See—*
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Simmons, Allen P. Illuminated animal collar and leash. 3,935,443, Cl. 240-6.40W.

Simmons, Jimmy W. Shower curtain holder. 3,934,636, Cl. 160-349.00R.

Simo, Stephen G., to Allis-Chalmers Corporation. Gas conditioner and analyzer. 3,934,454, Cl. 73-29.000.

Simons, Leon, to NL Industries, Inc. Method and apparatus for forming vibration-resistant thread-forming screw. 3,934,444, Cl. 72-88.000.

Simpson, Jack R.: *See—*
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Singer Company, The: *See—*
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Sjoberg, Berndt Olof Harald: *See—*
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Kuhlmann, Wolf, 3,934,950.
Walter, Lothar; and Schurger, Rainer, 3,934,947.

Slomcenski, Robert J., to Xerox Corporation. Electrometer with low voltage indicator. 3,935,531, Cl. 324-72.000.

Slomcenski, Robert J.: *See—*
Shuey, David R.; and Slomcenski, Robert J., 3,935,532.

Smilgys, Bruno S., to Veeder Industries, Inc. Settable variator drive mechanism. 3,934,491, Cl. 74-681.000.

Smith, Arthur W., to TransTechnology Corporation. Self-erecting material handling sling. 3,934,919, Cl. 294-74.000.

Smith, Baynard R., to Electro Oxide Corporation. Bonded gold article composition for bonding gold to a ceramic substrate utilizing copper oxide and cadium oxide. 3,935,366, Cl. 428-328.000.

Smith, Bert A.; and Getz, Paul C., to Smith-Schreyer & Assoc., Inc. Access insert for splice case. 3,935,373, Cl. 174-77.00R.

Smith, Christopher John, to Dow Corning Limited. Method of bonding silicone rubber to a primed surface. 3,935,348, Cl. 427-408.000.

Smith, Lloyd M.; and Webb, Robert E. Dial pulse detection method and apparatus. 3,935,392, Cl. 179-16.0EA.

Smith, Oliver W.; Carder, Charles H.; and Trecker, David J., to Union Carbide Corporation. Two-step coating process. 3,935,330, Cl. 427-41.000.

Smith, Paul E., Jr.; and Chilcott, Lloyd D. Heating system with fuel saving draft retarder. 3,934,796, Cl. 236-16.000.

Smith, Peter William: *See—*
Chinnock, Edwin Leroy; Gloge, Detlef Christoph; and Smith, Peter William, 3,934,773.

Smith, Randel P., to Singer Company, The. Machine and method for producing dense pile fabric. 3,934,524, Cl. 112-79.00A.

Smith-Schreyer & Assoc., Inc.: *See—*
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Smith, Stanley, to Rolls-Royce (1971) Limited. Fire seal. 3,934,889, Cl. 277-226.000.

Smith, Theodore Dennis, to RCA Corporation. Ultrasonic wave transmitter mechanism. 3,934,544, Cl. 116-137.00A.

Smith, Thurman Dale: *See—*
Clark, Jack Phillip; Smith, Thurman Dale; and Foster, Alan Carl, 3,934,457.

Smith, Vernon J.: *See—*
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Snam Progetti S.p.A.: *See—*
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Snopko, Paul Adam, to Zenith Radio Corporation. Multiple-channel information translation system and method. 3,935,566, Cl. 340-173.0LM.

Snyder, Alan Kent; Schmidt, Arthur D.; Foote, Seldon T., deceased; and by Clipp, Robert R., executor, to Chicago Display Company. Article transfer apparatus. 3,934,702, Cl. 198-20.000.

Snyder, Clyde A.: *See—*
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Snyder, Stephen L. Riser release buckle device. 3,934,848, Cl. 244-151.00A.

Sobel, Sol: *See—*
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Sochrin, Gary R.: *See—*
Branecky, George N.; and Sochrin, Gary R., 3,935,429.

Societa'Italiana Resine S.I.R. S.p.A.: *See—*
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Societe Anonyme des Ateliers de Secheron: *See—*
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Societe Anonyme dite: Cartier: *See—*
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Societe Anonyme dite: L'Oreal: *See—*
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Societe Anonyme: Poclain: *See—*
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Societe de la Viscose Suisse: *See—*
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Societe Franco-Hispano-Americaine (Francispam): *See—*
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Societe Industrielle de Brevets et d'Etudes: *See—*
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Societe Legris France S.A.: *See—*
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Societe Nationale d'Etude et de Construction de Moteurs d'Aviation: *See—*
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Socknick, Rudi: *See—*
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Sodeyama, Hitoshi: *See—*
Murano, Minoru; Yanabu, Satoru; and Sodeyama, Hitoshi, 3,935,406.

Solidum, Hamilton M.; and Zohbi, Robert G., to American Chemical & Refining Company, Incorporated. Composition and method for stripping gold and silver. 3,935,005, Cl. 75-105.000.

Solie, James C., to Owatonna Tool Company. Three-way control valve. 3,934,610, Cl. 137-596.120.

Solomon, Richard A.: *See—*
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Sorensen, Karl-Otto; and Sondergaard, Jorgen, 3,935,341.

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Sorensen, Karl-Otto; and Sondergaard, Jorgen, to Kanamark International Limited. Method for rendering wood resistant to fire. 3,935,341, Cl. 427-317.000.

Sorgenti, Harold A.: *See—*
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Sotirovic, Toma: *See—*
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Southwest Electric Company: *See—*
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Southwestern Industries, Inc.: *See—*
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Sparks, Allen K.: *See—*
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Speakman, Edwin L., to Standard Brands Incorporated. Process for depolymerizing amylaceous polymers. 3,935,187, Cl. 260-233.30R.

Spector, George: *See—*
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Spectrotherm Corporation: *See—*
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Spence-Bate, Harry A. H. Apparatus for making microfiches. 3,935,583, Cl. 354-292.000.

Sperandio, Francis, to SAFT-Societe des Accumulateurs Fixes et de Traction. Valve means for an electrochemical storage cell or the like. 3,935,030, Cl. 136-170.000.

Sperry Rand Corporation: *See—*
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Spinner, Frederick W.: *See—*
Bowen, Howard; and Spinner, Frederick W., 3,935,468.

Spirk, Franz; and Leistner, Werner, to Siemens Aktiengesellschaft. Method of operating a fluid-cooled hydropower generator. 3,935,488, Cl. 310-53.000.

Spirk, Franz, to Siemens Aktiengesellschaft. Supporting arrangement for the rotor of a vertical electric machine such as hydraulic generator or the like. 3,935,490, Cl. 310-91.000.

Spiteri, Joseph. Fluorescent lamp dimmer. 3,935,505, Cl. 315-194.000.

Spivack, John D.; and Klemchuk, Peter P., to Ciba-Geigy Corporation. Light stabilized polymer compositions. 3,935,163, Cl. 260-45.75N.

Spivack, John d.; and Klemchuk, Peter P., to Ciba-Geigy Corporation. Light stabilized polymer compositions. 3,935,164, Cl. 260-45.75N.

Springer, Willard J.: *See—*
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Spurgeon, A. Dale, to Eli Lilly and Company. Apparatus and method for aligning x-ray diffraction camera. 3,935,450, Cl. 250-273.000.

Square D Company: *See—*
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Sracic, Albert Martin: *See—*
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Stacy, Denzil W.: *See—*
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Stadlbauer, Wilhelm; Kump, Walter; and Koller, Erwin, to Vereinigte Osterreichische Eisen- und Stahlwerke-Alpine Montan Aktiengesellschaft. Method and apparatus for handling bags. 3,934,388, Cl. 53-29.000.

Stahlecker, Fritz; and Stahlecker, Hans. Spinning unit operating in accordance with the open-end method. 3,934,396, Cl. 57-58.890.

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Stand, Mille; and Davis, Stephen U., to Sealectro Corporation. Plasma gun including external adjustable powder feed conduit and infrared radiation reflector. 3,935,418, Cl. 219-121.00P.

Standard Brands Incorporated: *See—*
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Standard Havens, Inc.: *See—*
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Standard Oil Company: *See—*
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Starkey, Donald L.: *See—*
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Starp, Franz W. R. Interchangeable lens adaptable to a camera or photographic shutter, with built-in sector system. 3,935,581, Cl. 354-270.000.

Stauch, Philipp: *See—*
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Kraft, Paul; and Altscher, Siegfried, 3,935,149.

Steiman, Wolf, to VCA Corporation. Hand-held dispenser pump construction. 3,934,763, Cl. 222-321.000.

Stein, Clinton L.; and Holien, Dennis D., to Esco, Inc. Sign frame. 3,934,365, Cl. 40-125.00G.

Steinke, John J., III: *See—*
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Steinke, Theodore D.; and Carter, Melvin A., to Kaiser Aluminum & Chemical Corporation. Process for melting metal. 3,935,003, Cl. 75-68.00R.

Stenback, Jan-Erik: *See—*
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Stengle, Edward J.; and Tillman, James J., to Owens-Illinois, Inc. Coated plastic substrates for coating compositions. 3,935,346, Cl. 427-385.000.

Stephan, Norbert: *See—*
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Stephens, Richard G. Pattern recognition method and apparatus. 3,935,562, Cl. 340-146.3AG.

Stephenson, Earle W.; and Toews, Leonard E., to Kennametal Inc. Earthworking blade device. 3,934,654, Cl. 172-719.000.

Sterbal, Silvester, to Digital Components Corporation. Microminiature light source assemblage and mounting means therefor. 3,935,501, Cl. 313-499.000.

Sterling Drug Inc.: *See—*
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Sterne, Jean Jacques: *See—*
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Stichting Reactor Centrum Nederland: *See—*
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Stimson, Ian Leonard; and Dowell, Frederick Sidney, to Dunlop Limited. Carbon friction members having torque transmitting formations. 3,934,686, Cl. 188-251.00A.

Stoddart, Hugh F.: *See—*
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Stoepel, Kurt: *See—*
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Straffon, Alan E.; and King, James C., to Electronic Machine Control (Sales) Limited; and Dexion-Comino International Limited. Transporter systems. 3,935,559, Cl. 340-32.000.

Strain, Robert Joseph; and Walden, Robert Henry, to Bell Telephone Laboratories, Incorporated. Analog inverter for use in charge transfer apparatus. 3,935,477, Cl. 307-214.000.

Strasser, Karl; and Hasenauer, Dieter, to Siemens Aktiengesellschaft. Fuel cell set and method. 3,935,028, Cl. 136-86.00C.

Stratoflex, Inc.: *See—*
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Strella, Stephen: *See—*
Jelfo, Raymond L.; Strella, Stephen; and Hamilton, Willard C., 3,934,547.

Strickel, William R.: *See—*
Mesek, Frederick K.; Repke, Virginia L.; and Strickel, William R., 3,934,588.

Strini, Jean-Claude; and Costes, Jean-Raymond, to Rhone-Progil. Process for reducing the amount of trichloroethylene in 1,2-dichloroethane. 3,935,286, Cl. 260-652.00P.

Strobel, Erwin J., Jr., to Xerox Corporation. Sheet separating and feeding apparatus. 3,934,869, Cl. 271-35.000.

Strobel, Manfred: *See—*
Thiersch, Friedrich; Strobel, Manfred; and Schmitz, Theo, 3,935,078.

Strom, Sven B., to American Pulverizer Company. Scrap shredding system. 3,934,499, Cl. 100-53.000.

Stuckert, Paul E., to International Business Machines Corporation. Broad band directional signal generator. 3,935,480, Cl. 307-241.000.

Stumpf, Karl. System of construction components for the production of roller assemblies. 3,934,951, Cl. 308-20.000.

Suekane, Mikio; Hasegawa, Shiro; Tamura, Masaki; and Ishikawa, Yoshiyuki, to CPC International Inc. Production of sweet syrup from dextrose mother liquor. 3,935,070, Cl. 195-31.00F.

Sugahara, Yujiro; Noshi, Yoshibumi; Naito, Hiroyuki; Takahashi, Akira; and Shoji, Shoji, to Mizusawa Kagaku Kogyo Kabushiki Kaisha. Process for the preparation of phosphoric acid. 3,935,298, Cl. 423-320.000.

Sugano, Takuo; and Mori, Yoshifumi, to Kentaro Hayashi. Method for providing dielectric isolation in an epitaxial layer of a compound semiconductor using the plasma oxidation. 3,935,328, Cl. 427-34.000.

Sugiura, Shotaro; Matsuura, Tetsuro; Ueno, Haruo; Kono, Minoru; Ishikawa, Hideo; and Tokutomi, Thunehiko, to UBE Industries, Ltd. Polybutadiene and process for producing same. 3,935,180, Cl. 260-94.20R.

Sugiyama, Masayoshi, to Hitachi, Ltd. Method of manufacturing semiconductor devices. 3,934,331, Cl. 29-583.000.

Sulkowski, Theodore S., to American Home Products Corporation. Imidazolinyl phenyl carbonyl compounds acid addition salts and related compounds. 3,935,218, Cl. 260-309.600.

Sullivan, John F. Foldable measuring stick. 3,934,351, Cl. 33-105.000.

Sulzberger, Kevin John. Milking system. 3,934,551, Cl. 119-14.040.

Sulzer Brothers Limited: *See*—
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Sumitomo Chemical Company, Ltd.: *See*—
Kudo, Ken-ichi; Ohmae, Tadayuki; and Uno, Akihiko, 3,935,282.
Yoshikawa, Kanji; Tatsukami, Yoshiharu; Shimba, Hiroshi; and Mukunashi, Hiroaki, 3,935,374.

Sumitomo Electric Industries, Ltd.: *See*—
Ichiba, Terumichi; Shimba, Hiroshi; and Mukunashi, Hiroaki, 3,935,375.
Yoshikawa, Kanji; Tatsukami, Yoshiharu; Shimba, Hiroshi; and Mukunashi, Hiroaki, 3,935,374.

Sumitomo Light Metal Industries, Ltd.: *See*—
Baba, Yoshio; and Kawai, Mituhiro, 3,935,007.
Terai, Shiro; Ichiryu, Akinari; Suzuki, Toshio; and Hayashi, Yoshikatsu, 3,935,084.
Terai, Shiro; Ichiryu, Akinari; Suzuki, Toshio; and Maeda, Toshinori, 3,935,349.

Sun Electric Corporation: *See*—
Geul, Herman Robert, 3,935,427.
Voross, Zoltan, 3,935,459.

Sun Oil Company of Pennsylvania: *See*—
Young, Einar T.; Fromnick, Stephen M.; Mayer, Robert; and Livesay, Robert H., 3,934,756.

Sun Research and Development Co.: *See*—
Norton, Richard V., 3,935,238.

Sund, Joseph Tat-Hin; and Yamada, Yoshikazu, to Bell & Howell Company. Image control means and structured transfer sheet for thermal reproduction processes. 3,935,362, Cl. 428-207.000.

Sundstrand Corporation: *See*—
Gannaway, Edwin L., 3,934,967.

Sunstor Dentrificy Co. Ltd.: *See*—
Aimoto, Kenji; Hashimoto, Shigeru; and Yoneda, Toyoaki, 3,935,307.

Suntheimer, George; Howatt, John R.; and Consales, Emanuel J., to Patterson, Robert B.; Patterson, Mary D.; and Patterson, William A. Shampooing apparatus. 3,934,596, Cl. 132-9.000.

Susse, Wilhelm; and Alter, Heinz, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Strong field magnetic separators. 3,935,095, Cl. 209-222.000.

Suzue, Takashi: *See*—
Hashimoto, Sadao; Sakakibara, Ryuji; Kurashige, Yasushi; Takikawa, Katsuo; Osame, Yoko; Minami, Hiroshi; and Suzue, Takashi, 3,935,266.

Suzuki, Gyoji; and Tomotsu, Takeshi, to Fuji Photo Film Co., Ltd. Photosensitive etching composition. 3,935,117, Cl. 252-79.100.

Suzuki, Kunio: *See*—
Miyano, Tetsuji; Suzuki, Kunio; and Fukatsu, Hiroshi, 3,935,221.

Suzuki, Munenobu: *See*—
Umino, Tomio; Suzuki, Munenobu; and Shida, Tomohiko, 3,935,417.

Suzuki, Shigeyoshi: *See*—
Maruyama, Isamu; Suzuki, Shigeyoshi; and Yoshihiro, Yoshitake, 3,935,335.

Suzuki, Tadao, to Sony Corporation. Protective circuit for transistor amplifier. 3,935,513, Cl. 317-31.000.

Suzuki, Takashi: *See*—
Go, Tadahiro; Suzuki, Takashi; and Inoue, Masaaki, 3,935,140.

Suzuki, Toshio: *See*—
Terai, Shiro; Ichiryu, Akinari; Suzuki, Toshio; and Hayashi, Yoshikatsu, 3,935,084.
Terai, Shiro; Ichiryu, Akinari; Suzuki, Toshio; and Maeda, Toshinori, 3,935,349.

Swearingen, Judson S. Geothermal power system and method. 3,935,102, Cl. 210-83.000.

Sybron Corporation: *See*—
Rabinowitz, Azriel Jay, 3,934,929.

Symon, Ted: *See*—
Reichenbacher, Paul H.; Forsythe, Theresa M.; Sparks, Allen K.; and Symon, Ted, 3,935,234.

Symons, Philip Charles, to Energy Development Associates. Halogen hydrates. 3,935,024, Cl. 136-6.00E.

Syntex Corporation: *See*—
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Syntex (U.S.A.) Inc.: *See*—
Beard, Colin C.; Edwards, John A.; and Fried, John H., 3,935,209.
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Taihei Company Ltd.: *See*—
Aizawa, Masuji, 3,934,808.

Taiho Pharmaceutical Company, Limited: *See*—
Hashimoto, Sadao; Sakakibara, Ryuji; Kurashige, Yasushi; Takikawa, Katsuo; Osame, Yoko; Minami, Hiroshi; and Suzue, Takashi, 3,935,266.

Takahashi, Akira: *See*—
Sugahara, Yujiro; Noshi, Yoshibumi; Naito, Hiroyuki; Takahashi, Akira; and Shoji, Shoji, 3,935,298.

Takahashi, Koichi; Hitomi, Nobuteru; and Kizu, Taisuke, to Nissan Motor Company Limited. Constant velocity universal joint. 3,934,429, Cl. 64-21.000.

Takahashi, Kozo: *See*—
Murakami, Masuo; Takahashi, Kozo; Isaka, Ichiro; Ozasa, Teruaki; and Kashiwagi, Teruya, 3,935,198.

Takahashi, Sakae; Saeki, Shiro; and Onisawa, Yoshio, to Daicel Ltd. ABS resin composition. 3,935,143, Cl. 260-23.70R.

Takahashi, Sasuke. Swivel castors. 3,934,304, Cl. 16-34.000.

Takahashi, Tamotsu: *See*—
Kitano, Naohiko; Haseda, Katsumi; and Takahashi, Tamotsu, 3,934,358.

Takao, Hiroshi: *See*—
Togawa, Kinmochi; Matoba, Kazuo; Takao, Hiroshi; and Hata, Yoshitaka, 3,935,089.

Takata, Akihiko: *See*—
Arimoto, Kazuyuki; Maeda, Toshinobu; Hori, Fuzio; and Takata, Akihiko, 3,935,483.

Take, Teruo: *See*—
Abe, Jinnosuke; Watanabe, Tetsuo; Take, Teruo; Fujimoto, Kentaro; Fujii, Tadashiro; and Nishiie, Kazuyoshi, 3,935,193.

Taketomo, Sadao: *See*—
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Takikawa, Katsuo: *See*—
Hashimoto, Sadao; Sakakibara, Ryuji; Kurashige, Yasushi; Takikawa, Katsuo; Osame, Yoko; Minami, Hiroshi; and Suzue, Takashi, 3,935,266.

Tamag Basel AG: *See*—
Beringer, Monique; and Buchmann, Paul, 3,934,594.

Tamesui, Tuyoshi; and Matsuzaki, Tetsuo, to Toyoda Koki Kabushiki Kaisha. Apparatus for controlling the operation of a grinding wheel. 3,934,376, Cl. 51-165.910.

Tamura, Masaki: *See*—
Suekane, Mikio; Hasegawa, Shiro; Tamura, Masaki; and Ishikawa, Yoshiyuki, 3,935,070.

Tan, Aujit: *See*—
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Tanabe Seiyaku Co., Ltd.: *See*—
Chibata, Ichiro; Tosa, Tetsuya; and Matuo, Yuhsi, 3,935,072.

Tanaka, Masaru; Matsumoto, Yoshimitsu; and Oku, Takeshi, to Matsushita Electric Industrial Co., Ltd. Compensation equipment for fluctuations in A.C. source voltage. 3,935,530, Cl. 323-19.000.

Tanaka, Tadashi; Oka, Joji; and Saito, Katushi, to Nippon Steel Corporation. Aqueous solution and method for surface treatment of metals. 3,935,035, Cl. 148-6.200.

Tanceredi, Pier Luigi. Drain-flushing device. 3,934,280, Cl. 4-255.000.

Tannenberger, Helmut: *See*—
Cadman, Martyn A.; Voinov, Michel; and Tannenberger, Helmut, 3,935,025.

Tappan Company, The: *See*—
Perl, Richard L., 3,934,811.

Tarue, Osamu: *See*—
Noda, Hideyo; Kawai, Norio; Tarue, Osamu; Fukada, Kazuo; Idehara, Shigeyoshi; Nakanishi, Tadao; Kakimoto, Yuzo; and Nakamura, Yoshito, 3,934,969.

Tashiro, Koji: *See*—
Iida, Hirotaka; Masaoka, Hiroshi; Yamada, Michinobu; Ichihara, Mutsuo; Uebayashi, Yoshitaka; Tashiro, Koji; and Taketomo, Sadao, 3,934,321.

Tatemichi, Hidemaro: *See*—
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Tatsukami, Yoshiharu: *See*—
Yoshikawa, Kanji; Tatsukami, Yoshiharu; Shimba, Hiroshi; and Mukunashi, Hiroaki, 3,935,374.

Taylor, Allen L., to Minnesota Mining and Manufacturing Company. Copying using pyroelectric film. 3,935,327, Cl. 427-19.000.

Taylor, John Thurston; Halliday, Anthony James; Angel, Jonathan George Cordy; and Blakemore, Bernard, to Colourvision Associates. Mechanisms for transporting strip material. 3,934,962, Cl. 352-194.000.

Taylor, Lynn J., to Owens-Illinois, Inc. Preparation of liquid crystal containing polymeric structure. 3,935,337, Cl. 427-180.000.



Taylor, Maurice J., to Westinghouse Electric Corporation. Heating means for high-voltage gas-type circuit interrupter. 3,935,408, Cl. 200-148.00B.

Teague, Walter Dorwin, Jr. Infrared space heater. 3,934,572, Cl. 126-92.00B.

Tec Group, Inc., The: *See*—
Richter, Harvey E., 3,935,156.

Technibiotics, Inc.: *See*—
Wolvek, Sidney; and Sobel, Sol, 3,934,592.

Technicolor, Inc.: *See*—
Rice, Harry E.; and Rude, John K., 3,935,434.

Technicon Instruments Corporation: *See*—
Beretsky, Irwin; and Lightenstein, Bernard, 3,934,458.
Wiseman, Donald F.; and Josephsen, Roy C., 3,934,965.

Tecza, Joseph: *See*—
Wolfinger, John F.; Quay, Robert; and Tecza, Joseph, 3,934,459.

Tee, Liong S.; Piazza, Carlo, deceased; and by Piazza, Judith B., executrix, to Standard Oil Company. New rotary valve. 3,934,937, Cl. 302-14.000.

Teijin Limited: *See*—
Aimoto, Kenji; Hashimoto, Shigeru; and Yoneda, Toyoaki, 3,935,307.
Kanai, Tamaki; Yamagishi, Takashi; Ohta, Tetsuya; and Moriyama, Hiroatsu, 3,935,166.

Teledyne Industries, Inc.: *See*—
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Teletype Corporation: *See*—
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Teller, Aaron J., to Teller Environmental Systems, Inc. Method of removing hydrogen sulfide from gases. 3,935,294, Cl. 423-226.000.

Teller Environmental Systems, Inc.: *See*—
Teller, Aaron J., 3,935,294.

Telsco Industries: *See*—
Phaup, Charles W., 3,934,820.

Tennis, Francis H., to Hydraulic Industries, Inc. Valve mechanism for automatic control of a number of fluid motors. 3,934,742, Cl. 214-762.000.

Terai, Shiro; Ichiryu, Akinari; Suzuki, Toshio; and Hayashi, Yoshikatsu, to Sumitomo Light Metal Industries, Ltd. Anodizing process. 3,935,084, Cl. 204-58.000.

Terai, Shiro; Ichiryu, Akinari; Suzuki, Toshio; and Maeda, Toshinori, to Sumitomo Light Metal Industries, Ltd. Process of coating an aluminum article. 3,935,349, Cl. 427-409.000.

Terrell, Melvin L.; Lange, Paul F.; and Doolittle, James B., to International Telephone & Telegraph Corporation. Fluid control valve. 3,934,816, Cl. 251-141.000.

Terrell, N. James, Jr.: *See*—
Campillo, Anthony J.; Newnam, Brian E.; Shapiro, Stanley L.; and Terrell, N. James, Jr., 3,935,545.

Terry, Donald W.: *See*—
Thene, Donnie R.; O'Donoghue, Robert J.; and Terry, Donald W., 3,935,124.

Tertinek, Christian T., to Stone Construction Equipment, Inc. Concrete surface grinder. 3,934,377, Cl. 51-177.000.

Tessmann, Alfred H., to Industrial Research and Development Corporation. Method for interjoining stranded wire cable ends. 3,934,784, Cl. 228-125.000.

Texaco Inc.: *See*—
Howard, Curtis E.; and Calvin, Douglas G., 3,934,469.

Texas Instruments Incorporated: *See*—
Boulanger, Henry J.; and Brassard, Theodore, 3,935,511.
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Oess, Frederick G., 3,935,499.
Oess, Frederick G.; and Peshock, Michael, Jr., 3,935,500.

Textron, Inc.: *See*—
Males, Robert E., 3,934,778.

Th. Goldschmidt AG: *See*—
Mitgau, Rotger; Petrik, Bruno; and Schedlitzki, Dietmar, 3,935,336.

Thayer, Richard L., to Wyo-Ben Products, Inc. Inorganic support for culture media. 3,935,067, Cl. 195-1.700.

Thene, Donnie R.; O'Donoghue, Robert J.; and Terry, Donald W., to Miller Chemical Corporation; and Mid-State Chemical & Supply Corporation, part interest to each. Anti-stick composition for coating and detackifying uncured rubber articles and the like. 3,935,124, Cl. 252-382.000.

Thermo-Industrie GmbH & Co. KG: *See*—
Rheinlander, Paul; and Voigt, Heinz, 3,934,755.

Thettu, Raghulinga R., to Xerox Corporation. Temperature sensing device. 3,934,477, Cl. 73-362.800.

Thibaut, Yves Albert Daniel, to U.S. Philips Corporation. Switching control for a reversing motor of a washing machine. 3,934,433, Cl. 68-12.00R.

Thiersch, Friedrich; Strobel, Manfred; and Schmitz, Theo, to Carl Still, Firma. Waste heat exhaust system for side burner regenerative coke oven batteries having a divided heating system. 3,935,078, Cl. 202-141.000.

Thomas, Kenneth H., to Webster Spring Co. Inc. Spring stacker. 3,934,736, Cl. 214-6.0FA.

Thompson-Hayward Chem. Co.: *See*—
Verbeeck, John F., 3,935,256.

Thompson, John W. Oyster breaker operated by electric motor having bearing seal device. 3,934,311, Cl. 17-74.000.

Thompson, Morice William: *See*—
Osmond, Desmond Wilfrid John; and Thompson, Morice William, 3,935,155.

Thompson, Terrence V., to Thompson, Terrence V.; Athans, George; and Athans, Leonidas. Truck air filter. 3,934,992, Cl. 55-324.000.

Thomson International Company: *See*—
Brassette, Donald J.; and Duncan, Richard A., 3,934,391.

Thor Power Tool Company: *See*—
Danielson, Irvin R., 3,934,657.

Thornburg, Daryl D.; and Christensen, James L., to General Dynamics Corporation. Method of and system for adaptive run length encoding of image representing digital information. 3,935,379, Cl. 178-6.000.

Thuillier, Germaine; and Laforest, Jacqueline, to CERPHA. Derivatives of 3-oxo-2,3-dihydro-1,4-benzoxazine. 3,935,203, Cl. 260-244.00R.

Thun, Niels, to Danfoss A/S. Multiplex circuit. 3,935,385, Cl. 178-50.000.

Tice, Joseph. Article combining live wall guide rail. 3,934,706, Cl. 198-32.000.

Tidd, Charles Edward, Jr.: *See*—
George, Emanuel John; Salter, Joseph Lane; Sauer, Earl Salvator; and Tidd, Charles Edward, Jr., 3,935,369.

Tiernan, Stanton W.; and Epple, Richard R., to Maryland Cup Corporation. Food dispensing valve means and control system for automatic container filling machines. 3,934,625, Cl. 141-115.000.

Tiesenhausen, Henry H.: *See*—
von Tiesenhausen, Henry H.; and Iverson, Carl K., 3,935,593.

Tillman, James J.: *See*—
Stengle, Edward J.; and Tillman, James J., 3,935,346.

Tilse, Wilhelm, to Timex Corporation. Fixation of double conducting hairspring. 3,934,403, Cl. 58-114.000.

Timbs, Norman E. Variable speed drive for bicycles and the like. 3,934,492, Cl. 74-740.000.

Timex Corporation: *See*—
Howard, Paul L., 3,935,026.
Tilse, Wilhelm, 3,934,403.

Tinkler, William: *See*—
Kiernan, Geoffrey Poulter; and Tinkler, William, 3,935,046.

Tischina, Inna Fedorovna: *See*—
Khromov, Gennady Lvovich; Davydov, Anatoly Borisovich; Maichuk, Jury Fedorovich; and Tischina, Inna Fedorovna, 3,935,303.

Titan Verpackungssysteme GmbH: *See*—
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Tougosei Chemical Industrial Co. Ltd.: *See*—
Ogasuwara, Takahisa; Kobayashi, Yorimasa; Mizutani, Kiyokazu; Nakagawa, Teruo; Hisanaga, Noboru; and Tatemichi, Hidemaro, 3,935,173.

Toews, Leonard E.: *See*—
Stephenson, Earle W.; and Toews, Leonard E., 3,934,654.

Togawa, Kinmochi; Matoba, Kazuo; Takao, Hiroshi; and Hata, Yoshitaka, to Nissan Motor Company Limited. Oxygen sensor coated with catalytic material. 3,935,089, Cl. 204-195.00S.

Tokutomi, Thunehiko: *See*—
Sugiura, Shotaro; Matsuura, Tetsuro; Ueno, Haruo; Kono, Minoru; Ishikawa, Hideo; and Tokutomi, Thunehiko, 3,935,180.

Tokyo Shibaura Electric Co., Ltd.: *See*—
Beppu, Tatsuro; Iwamoto, Masami; and Sekiwa, Tetsuo, 3,935,039.
Murano, Minoru; Yanabu, Satoru; and Sodeyama, Hitoshi, 3,935,406.

Toland, William G., to Chevron Research Company. Supported turf or carpet-like material. 3,935,352, Cl. 428-95.000.

Toloczko, Henry A., to General Electric Company. Ice dispensing system of a refrigerator-freezer. 3,934,691, Cl. 193-32.000.

Tomaschko, Heinrich: *See*—
Senolt, Hans; Tomaschko, Heinrich; and Palvik, Georg, 3,935,093.

Tomioka, Yukio, to Hochiki Kabushiki Kaisha. Smoke detector adapted to a smoke sensing apparatus. 3,935,466, Cl. 250-385.000.

Tomomatsu, Hideo, to Quaker Oats Company, The. Method of manufacturing fungible polytetramethylene ether glycol. 3,935,252, Cl. 260-346.10R.

Tomotsu, Takeshi: *See*—
Suzuki, Gyoji; and Tomotsu, Takeshi, 3,935,117.

Tomozawa, Akihiro; Nakata, Kensuke; Kikuchi, Akira; and Agastuma, Takashi, to Hitachi, Ltd. Method of forming insulating film on interconnection layer. 3,935,083, Cl. 204-38.00A.

Tompkins, Edwin H.: *See*—
Kinney, Layton C.; and Tompkins, Edwin H., 3,934,503.

Tonon, Gianfranco: *See*—
Guillaneux, Pierre; Patou, Claude; and Tonon, Gianfranco, 3,935,504.

Tooley, Robert W., to Reliance Electric Company. Shaft bearing and method of assembling the same. 3,934,953, Cl. 308-72.000.

Toray Industries, Inc.: *See*—
Morita, Ken-ichi; Kinoshita, Yoshiro; and Kashio, Shigetora, 3,935,301.

Torin Corporation: *See*—
Lampietti, Bernard, 3,934,445.
Lesko, Richard; and Reynolds, David, 3,935,413.

Torreggiani, Gianni: *See*—
Cocuzza, Gioacchino; Calcagno, Benedetto; and Torreggiani, Gianni, 3,935,279.

Tortorello, Albert, to Raymond Lee Organization, Inc., The, a part interest. Drinking glass cleaner. 3,934,300, Cl. 15-244.00R.

Tosa, Tetsuya: *See—*
Chibata, Ichiro; Tosa, Tetsuya; and Matuo, Yuhsi, 3,935,072.
Tosan, Roland Jean Dominique: *See—*
Arsac, Aime Joseph; and Tosan, Roland Jean Dominique, 3,934,974.
Tosches, Anthony J., to Rockwell International Corporation. Carrier for shuttleless looms. 3,934,621, Cl. 139-122.00N.
Toth Aluminum Corporation: *See—*
Lippman, Alfred; Toth, Charles; and Sebenik, Roger Frank, 3,935,297.
Toth, Charles: *See—*
Lippman, Alfred; Toth, Charles; and Sebenik, Roger Frank, 3,935,297.
Toth, William E.: *See—*
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Toyo Jozo Kabushiki Kaisha: *See—*
Abe, Jinnosuke; Watanabe, Tetsuo; Take, Teruo; Fujimoto, Kentaro; Fujii, Tadashiro; and Nishiie, Kazuyoshi, 3,935,193.
Toyo Kogyo Co., Ltd.: *See—*
Iida, Hirotaka; Masaoka, Hiroshi; Yamada, Michinobu; Ichihara, Mutsuo; Uebayashi, Yoshitaka; Tashiro, Koji; and Taketomo, Sadao, 3,934,321.
Toyoda Koki Kabushiki Kaisha: *See—*
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Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Matsumoto, Hirohumi; and Nakada, Masahiko, 3,934,565.
TransTechnology Corporation: *See—*
Smith, Arthur W., 3,934,919.
Travaglio, Dalny: *See—*
Ginn, Le Roy; Ginn, Le Royce; and Travaglio, Dalny, 3,934,795.
Trecker, David J.: *See—*
Smith, Oliver W.; Carder, Charles H.; and Trecker, David J., 3,935,330.
Trefz, Harlin J.: *See—*
Moery, John A.; and Trefz, Harlin J., 3,934,392.
Treipl, Hans: *See—*
Schubert, Paul; and Treipl, Hans, 3,934,700.
Trelleborgs Gummifabriks Aktiebolag: *See—*
Persson, Bo Klas Gerhard, 3,934,828.
Trio Kabushiki Kaisha: *See—*
Koga, Sigeyuki, 3,935,400.
Triplett: Gerald H.; Nicol, Edward A.; and Klehm, William G., Jr., to Burroughs Corporation. Method and apparatus for modifying wire-wrapped back planes. 3,935,372, Cl. 174-68.500.
Trout, Robert G., to Owens-Corning Fiberglas Corporation. Method of and apparatus for making continuous strand mat. 3,934,312, Cl. 19-66.00T.
Trunzo, Floyd F., to Westinghouse Electric Corporation. Method of making electrical coils having improved strength and oil permeability. 3,934,332, Cl. 29-605.000.
TRW Inc.: *See—*
Heflinger, Lee O.; Wuerker, Ralph F.; and Brooks, Robert E., 3,934,461.
Tsay, Peter Wen-Tien. Control device for the electric fan. 3,935,522, Cl. 318-345.000.
Tsiferov, Mikhail Ivanovich. Apparatus for drilling holes in earth surface. 3,934,659, Cl. 175-14.000.
Tsirigotis, Constantin, to Larco Societe Miniere et Metallurgique de Larymna S.A. Method for the manufacture of metallic chlorides. 3,935,293, Cl. 423-39.000.
Tsuboka, Eiichi: *See—*
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Wilmers, Gottlieb, to Audi NSU Auto Union Aktiengesellschaft; and Wankel G.m.b.H. Throttling means for trochoidal rotary combustion engines. 3,934,558, Cl. 123-8.450.
Wilson, Alfred P., to Standard Oil Company. Smoke-retardant polyvinylchloride compositions. 3,935,142, Cl. 260-23.0XA.
Wilson, Gerald L.: *See—*
Weiss, Verne E.; Campbell, Glenn M.; and Wilson, Gerald L., 3,935,322.
Wilson, Melvin G.: *See—*
Hart, Gary A.; and Wilson, Melvin G., 3,935,540.
Wilson, Michael C.; and Schnick, Leslie E., to Pretty Products, Inc. Clothes bag and suspension hanger therefor. 3,934,631, Cl. 150-1.000.
Wilson, Robert E. Fender and splash guard. 3,934,900, Cl. 280-152.300.
Wilting, Hermanus Josephus Henricus: *See—*
Landheer, Frits; and Wilting, Hermanus Josephus Henricus, 3,935,586.
Wingard Limited: *See—*
Bottrill, John, 3,934,489.
Wingler, Frank; Pedain, Josef; Muller, Richard; Dhein, Rolf; and de Cleur, Eckhard, to Bayer Aktiengesellschaft. Pulverulent binders. 3,935,138, Cl. 260-17.00R.
Winkley, Michael W.: *See—*
Wendt, Gerhard R.; and Winkley, Michael W., 3,935,191.
Winterhalter, David R., to Sontel Inc. Telephone answering and message recording apparatus. 3,935,390, Cl. 179-6.00R.
Wisconsin Alumni Research Foundation: *See—*
Braton, Norman R.; and Acker, Jan R., 3,934,379.
Moran, Paul R.; Podgorsak, Ervin; Fullerton, Gary D.; and Fuller, Gene E., 3,935,457.
Wise, Donald L.; Schwope, Arthur D.; and Sell, Kenneth W., to United States of America, Navy. Wound covering and method of application. 3,935,308, Cl. 424-78.000.
Wiseman, Donald F.; and Josephsen, Roy C., to Technicon Instruments Corporation. Optical coupler. 3,934,965, Cl. 356-246.000.
Wisner, Ralph L.: *See—*
Burkholder, Nelson D.; Wisner, Ralph L.; and Taber, Dudley A., 3,935,363.
Witecki, Jacek, to Lawrence Peska Associates, Inc., a part interest. Device for cutting circles. 3,934,343, Cl. 30-310.000.
Wiva N.V.: *See—*
Needt, Jan Henrik, 3,934,747.



Wizemann, Leslie C.: *See—*
Shultz, Andrew; and Wizemann, Leslie C., 3,934,973.
Wolber, Jorg, to U.S. Philips Corporation. Correction circuit in television display apparatus using differential amplifiers. 3,935,507, Cl. 315-370.000.
Wolf, William: *See—*
Burr, John Kelsey; and Wolf, William, 3,934,946.
Wolfe, Denis G.; Tyler, Hugh J.; Jackson, Wilbur F., deceased; and by Benton, Linda A., trust administrator, to Robertshaw Controls Company. Thermal responsive device with an adsorbent carbonaceous material. 3,934,417, Cl. 60-516.000.
Wolfe, Merritt W., to Goodyear Tire & Rubber Company, The. Method of retreading a tire. 3,935,045, Cl. 156-96.000.
Wolfertz, Gunter: *See—*
Kramer, Friedhelm; and Wolfertz, Gunter, 3,934,777.
Wolfinger, John F.; Quay, Robert; and Tecza, Joseph, to General Electric Company. Torque monitoring system for rotating shaft. 3,934,459, Cl. 73-70.100.
Wolvek, Sidney; and Sobel, Sol, to Technibiotics, Inc. Suture bridge. 3,934,592, Cl. 128-335.000.
Wood, John R., to American Microsystems, Inc. Switch for electronic watch. 3,934,401, Cl. 58-23.00R.
Woodmansee, Donald E.: *See—*
Freeman, James M., Jr.; Gans, Bruce E.; Lambiris, Sotiris; and Woodmansee, Donald E., 3,934,553.
Worden, Raymond D. Transfer device. 3,934,733, Cl. 214-1.00Q.
Worstorff, Hermann Heinrich Karl, to Alfa-Laval AB. Method for machine milking of cows. 3,934,550, Cl. 119-14.020.
Wu, Yao Hua; and Lobeck, Walter G., to Mead Johnson & Company. Iminomethylindolines. 3,935,199, Cl. 260-243.00R.
Wu, You-Sun: *See—*
Rosenbaum, Fred J.; and Wu, You-Sun, 3,935,548.
Wuerker, Ralph F.: *See—*
Heflinger, Lee O.; Wuerker, Ralph F.; and Brooks, Robert E., 3,934,461.
Wurzel, Hugo: *See—*
Millheiser, Melvin; and Wurzel, Hugo, 3,934,315.
Wyeth, Nathaniel Convers; and Arnoth, Frank William, to Du Pont de Nemours, E. I., and Company. Process for preparing a hollow, rib-reinforced laminated structure. 3,935,358, Cl. 428-166.000.
Wyo-Ben Products, Inc.: *See—*
Thayer, Richard L., 3,935,067.
Xerox Corporation: *See—*
Davidson, James R., 3,934,549.
Donnelly, Thomas L.; and Mullen, Edward J., 3,935,424.
Jelfo, Raymond L.; Strella, Stephen; and Hamilton, Willard C., 3,934,547.
O'Brien, John F., 3,935,517.
Shuey, David R.; and Slomcenski, Robert J., 3,935,532.
Slomcenski, Robert J., 3,935,531.
Strobel, Erwin J., Jr., 3,934,869.
Thettu, Raghulinga R., 3,934,477.
Yagishita, Aisaburo. Filter. 3,935,107, Cl. 210-243.000.
Yale, Harry L., to E. R. Squibb & Sons, Inc. 2-Styryl-4H-pyrido(1,2-a)pyrimidin-4-ones. 3,935,197, Cl. 260-240.00D.
Yale, Harry Louis, to E. R. Squibb & Sons, Inc. $\alpha,\alpha,\alpha,\alpha',\alpha',\alpha'$-Hexafluorodi-m-tolylamine derivatives. 3,935,230, Cl. 260-268.00R.
Yamada, Haruyasu: *See—*
Kimura, Takeji; Oyama, Tomio; Yamada, Haruyasu; Harada, Shuzi; Yoshino, Hirokazu; and Tsuboka, Eiichi, 3,935,536.
Yamada, Michinobu: *See—*
Iida, Hirotaka; Masaoka, Hiroshi; Yamada, Michinobu; Ichihara, Mutsuo; Uebayashi, Yoshitaka; Tashiro, Koji; and Taketomo, Sadao, 3,934,321.
Yamada, Minoru: *See—*
Arai, Atsuaki; Oishi, Yasushi; Okumura, Akio; Yamada, Minoru; Yokota, Yukio; and Inouye, Kozo, 3,935,015.
Nishimura, Tokio; Yamada, Minoru; Amano, Hiroyuki; and Oishi, Yasushi, 3,935,016.
Yamada, Yoshikazu: *See—*
Sund, Joseph Tat-Hin; and Yamada, Yoshikazu, 3,935,362.
Yamagishi, Takashi: *See—*
Kanai, Tamaki; Yamagishi, Takashi; Ohta, Tetsuya; and Moriyama, Hiroatsu, 3,935,166.
Yamaguchi, Tadashi; Ono, Takayuki; Hoshi, Hiroshi; Hirakawa, Michio; and Watanabe, Isao, to Lion Yushi Kabushiki Kaisha. Process for preparing plastic coated metal powders. 3,935,340, Cl. 427-216.000.
Yamaha Hatsudoki Kabushiki Kaisha: *See—*
Isaka, Yoshiharu, 3,934,562.
Yamamura Glass Kabushiki Kaisha: *See—*
Matsumoto, Takao, 3,934,714.
Yamanouchi Pharmaceutical Co., Ltd.: *See—*
Murakami, Masuo; Takahashi, Kozo; Isaka, Ichiro; Ozasa, Teruaki; and Kashiwagi, Teruya, 3,935,198.
Yamato, Akiko, Hiroshi Yamato, Yumi Yamato, heirs: *See—*
Kaneko, Hidchiko; Aritomi, Jiro; and Yamato, Yuzuru, deceased, 3,935,268.
Yamato, Yuzuru, deceased: *See—*
Kaneko, Hidehiko; Aritomi, Jiro; and Yamato, Yuzuru, deceased, 3,935,268.
Yamauchi, Teruo: *See—*
Fujieda, Mamoru; Yamauchi, Teruo; and Momono, Masakichi, 3,934,567.
Yanabu, Satoru: *See—*
Murano, Minoru; Yanabu, Satoru; and Sodeyama, Hitoshi, 3,935,406.
Yatsuk, Vladimir Grigorievich; and Petrenko, Vladimir Fedorovich. Method of eliminating self oscillations of an induction motor powered from a frequency changer and means for effecting same. 3,935,518, Cl. 318-227.000.
Yelland, Michael: *See—*
Baron, Thomas Douglas; Fishwick, Brian Ribbons; Leng, John Lindley; and Yelland, Michael, 3,935,183.
Yellowlees, John Mackinlay, to Belgonucleaire. Fuel assembly for gas-cooled nuclear reactors. 3,935,064, Cl. 176-73.000.
Yokohama Rubber Co., Ltd., The: *See—*
Koyama, Masao; Okada, Noboru; and Ogawa, Masahiro, 3,935,056.
Yokota, Yukio: *See—*
Arai, Atsuaki; Oishi, Yasushi; Okumura, Akio; Yamada, Minoru; Yokota, Yukio; and Inouye, Kozo, 3,935,015.
Yoneda, Toyoaki: *See—*
Aimoto, Kenji; Hashimoto, Shigeru; and Yoneda, Toyoaki, 3,935,307.
Yoshida, Masafumi; Segawa, Masahiro; and Obara, Hiroshi, to Kureha Kagaku Kogyo Kabushiki Kaisha. Piezoelectric key board switch. 3,935,485, Cl. 310-8.500.
Yoshihiro, Yoshitake: *See—*
Maruyama, Isamu; Suzuki, Shigeyoshi; and Yoshihiro, Yoshitake, 3,935,335.
Yoshikawa, Kanji; Tatsukami, Yoshiharu; Shimba, Hiroshi; and Mukunashi, Hiroaki, to Sumitomo Electric Industries, Ltd.; and Sumitomo Chemical Company, Ltd. Laminated sheathed cable. 3,935,374, Cl. 174-102.00R.
Yoshino, Hirokazu: *See—*
Kimura, Takeji; Oyama, Tomio; Yamada, Haruyasu; Harada, Shuzi; Yoshino, Hirokazu; and Tsuboka, Eiichi, 3,935,536.
Yoshitomi Pharmaceutical Industries, Ltd.: *See—*
Nakanishi, Michio; and Yuki, Hiroshi, 3,935,217.
Young, Carter R.: *See—*
Amancharla, Amareswar; and Young, Carter R., 3,934,648.
Young, Einar T.; Fromnick, Stephen M.; Mayer, Robert; and Livesay, Robert H., to Sun Oil Company of Pennsylvania. Blending-type motor fuel dispensing apparatus. 3,934,756, Cl. 222-28.000.
Yuba Heat Transfer Corporation: *See—*
Butts, Oscar Wesley, 3,934,645.
Yuki, Hiroshi: *See—*
Nakanishi, Michio; and Yuki, Hiroshi, 3,935,217.
Zabotin, Alexandr Alexandrovich: *See—*
Loschilin, Evgeny Dmitrievich; Galperin, Alexandr Lvovich; Zabotin, Alexandr Alexandrovich; Onikov, Eduard Arshakovich; and Sakharov, Boris Alexandrovich, 3,934,619.
Zechnall, Richard; Linder, Ernst; Schmid, Albert; Raabe, Gotthold; Kerner, Karl; and Socknick, Rudi, to Robert Bosch G.m.b.H. Polarized light beam source in a vehicle headlight. 3,935,444, Cl. 240-9.500.
Zelaskowski, Catherine A., to Mobil Oil Corporation. Trace lead analysis method. 3,934,976, Cl. 23-230.00R.
Zeller, Josef K.: *See—*
Neumann, Friedhelm; and Zeller, Josef K., 3,934,640.
Zellner, Gertraud, administratrix: *See—*
Zellner, Hugo, deceased, 3,935,214.
Zellner, Hugo, deceased (by Zellner, Gertraud, administratrix), to Donau-Pharmazie Gesellschaft m.b.H. 2-or 3 keto-3-or-2-phenyl-1,4-disubstituted piperazines. 3,935,214, Cl. 260-268.0MK.
Zenith Radio Corporation: *See—*
Jirka, Howard F., 3,935,384.
Kinsch, Frank Joseph, 3,935,036.
Snopko, Paul Adam, 3,935,566.
Zilver, Edwin, to Intersilma B.V. Reel assembly for roller. 3,934,832, Cl. 242-54.00R.
Zimmer, Hildebrand, to Dragerwerk Aktiengesellschaft. Surgical instrument for sterilizing women by ligature of tubes. 3,934,589, Cl. 128-303.100.
Zimmermann, Manfred: *See—*
Lehnert, Gunther; Maertens, Dieter; and Zimmermann, Manfred, 3,935,178.
Zingaro, William P. Multiple cathode gas proportional detector. 3,935,464, Cl. 250-379.000.
Zinser Textilmaschinen GmbH: *See—*
Grau, Gerhard, 3,934,830.
Zlatkovskaya, Tatyana Nikolaevna: *See—*
Kitaev, Georgy Avenirovich; Ploskikh, Vadim Alexandrovich; Minkov, Viktor Alexeevich; Kurbakov, Viktor Georgievich; Chernysheva, Evangelina Mikhailovna; Zlatkovskaya, Tatyana Nikolaevna; and Brunov, Viktor Timofeevich, 3,934,985.
Zobbi, Robert G.: *See—*
Solidum, Hamilton M.; and Zobbi, Robert G., 3,935,005.
Zuckschwert, Edgar; and Papst, Georg Friedrich, to Papst-Motoren KG. Tape drive. 3,934,841, Cl. 242-198.000.
Zumsteg, D. Bruce; Origlia, Gino; and Odom, J. T., to Standard Havens, Inc. Self-erecting surge storage system. 3,934,739, Cl. 214-501.000.
Zur, Henry Chanoch, to Arizona Lounger Company. Powered tilting lounger. 3,934,927, Cl. 297-69.000.

# LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 27TH DAY OF JANUARY, 1976

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Berger, Julius, to Hoffmann-La Roche Inc. Antibiotic X-5108 for stimulating growth. Re. 28,700, Cl. 424-122.000.

Burroughs Corporation: *See—*
Edwards, John David; Perkins, Leonard; Donald, John Henry; Chappell, Peter Lee; Newcombe, Sean Benjamin; and Roe, Malcolm David, Re. 28,701.

Cessna Aircraft Company, The: *See—*
Freese, Evans Glenn, Re. 28,695.

Chappell, Peter Lee: *See—*
Edwards, John David; Perkins, Leonard; Donald, John Henry; Chappell, Peter Lee; Newcombe, Sean Benjamin; and Roe, Malcolm David, Re. 28,701.

Donald, John Henry: *See—*
Edwards, John David; Perkins, Leonard; Donald, John Henry; Chappell, Peter Lee; Newcombe, Sean Benjamin; and Roe, Malcolm David, Re. 28,701.

Edwards, John David; Perkins, Leonard; Donald, John Henry; Chappell, Peter Lee; Newcombe, Sean Benjamin; and Roe, Malcolm David, to Burroughs Corporation. Dispensing system and security card for use therewith. Re. 28,701, Cl. 235-61.70B.

Freese, Evans Glenn, to Cessna Aircraft Company, The. Master cylinder construction affording automatic re-phasing of master and slave-cylinders. Re. 28,695, Cl. 60-546.000.

Hasegawa, Yo: *See—*
Murakami, Yoshinobu; Hasegawa, Yo; and Morimoto, Kazuhisa, Re. 28,698.

Hoffmann-La Roche Inc.: *See—*
Berger, Julius, Re. 28,700.

Kelling, Gordon I... to Possis Corporation. Hot melt machine. Re. 28,699, Cl. 222-56.

Macovski, Albert, to RCA Corporation. Noninteracting lens system for a color encoding camera. Re. 28,702, Cl. 358-47.000.

Markakis, Costas E.; and Vamvakoussis, George N. Fluidic clinometer control apparatus. Re. 28,694, Cl. 33-365.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Murakami, Yoshinobu; Hasegawa, Yo; and Morimoto, Kazuhisa, Re. 28,698.

Morimoto, Kazuhisa: *See—*
Murakami, Yoshinobu; Hasegawa, Yo; and Morimoto, Kazuhisa, Re. 28,698.

Murakami, Yoshinobu; Hasegawa, Yo; and Morimoto, Kazuhisa, to Matsushita Electric Industrial Co., Ltd. Electrophotographic material containing sensitizers. Re. 28,698, Cl. 96-1.600.

Newcombe, Sean Benjamin: *See—*
Edwards, John David; Perkins, Leonard; Donald, John Henry; Chappell, Peter Lee; Newcombe, Sean Benjamin; and Roe, Malcolm David, Re. 28,701.

Perkins, Leonard: *See—*
Edwards, John David; Perkins, Leonard; Donald, John Henry; Chappell, Peter Lee; Newcombe, Sean Benjamin; and Roe, Malcolm David, Re. 28,701.

Possis Corporation: *See —*
Kelling, Gordon I... Re. 28,699.

RCA Corporation: *See—*
Macovski, Albert, Re. 28,702.

Roe, Malcolm David: *See—*
Edwards, John David; Perkins, Leonard; Donald, John Henry; Chappell, Peter Lee; Newcombe, Sean Benjamin; and Roe, Malcolm David, Re. 28,701.

Rouverol, William S. Pitch point action gearing. Re. 28,696, Cl. 74-462.000.

Vamvakoussis, George N.: *See—*
Markakis, Costas E.; and Vamvakoussis, George N., Re. 28,694.

# LIST OF PLANT PATENTEES

Moore, Ralph S. Miniature rose plant. 3,826, 1-27-76, Cl. 10.

Schammarello, Anthony M. Azalea plant. 3,827, 1-27-76, Cl. 56.

# LIST OF DESIGN PATENTEES

Abbott Laboratories: *See—*
Richman, Stephen S. 238,617.

Acro-Fab Industries, Inc.: *See—*
Seakan, Raymond N. 238,548.

Addmaster Corp.: *See—*
Hauser, Stephen G. 238,582.

Airborne, S.A.: *See—*
Bernard Charles. 238,527.

Ajax Hardware Corp.: *See—*
Read, George D., McCain, and Scott. 238,530.

Aladdin Mfg. Co.: *See—*
Smith, Robert W., and Wintz. 238,586.

Allibert Exploitation Societe Anonyme: *See—*
Vrignaud, Guy, 238,531.

American Hospital Supply Corp.: *See—*
Vidal, Claude A. 238,576.

Ameritone Paint Corp.: *See—*
Dorr, Robert C. 238,620.

Andersson, Karl G., to Duni Bila AB. Bib. 238,521, 1-27-76, Cl. D2—229.

Anchor Hocking Corp.: *See—*
Benes, Frank J. 238,541.

Armstrong, William M., and W. D. Runswick, to Inlite Corp. Lighting fixture shade. 238,603, 1-27-76, Cl. D48—16.

Aupperle, Donald P., to Hewlett-Packard Co. Casing for a portable electronic multimeter. 238,560, 1-27-76, Cl. D10—46.

Aupperle, Donald P., to Hewlett-Packard Co. Casing for a portale electronic multimeter. 238,561, 1-27-76, Cl. D10—46.

Automatic Devices, Inc.: *See—*
Cameron, Robert E. 238,606.

Barad, Valerie, to Theodor Mfg. Corp. Combined vanity case and financial organizer. 238,619, 1-27-76, Cl. D86—10.

Barcolene Co., The: *See—*
Rivman, Samuel J. 238,551.

Benes, Frank J., to Anchor Hocking Corp. Receptacle or similar article. 238,541, 1-27-76, Cl. D7—6.

Benkoe, Erwin: *See—*
Goldfarb, Adolph E., Benkoe, and Merino. 238,595.

Berlin & Jones Co., Inc.: *See—*
Watson, Charles S. 238,574.

Bernard, Charles, to Airborne, S.A. Chair. 238,527, 1-27-76, Cl. D6—66.

Black and Decker Mfg. Co., The: *See—*
House, Lawrence E., II. 238,547.

Blank, Elliott E., to The Dow Chemical Co. Bottle or similar article. 238,555, 1-27-76, Cl. D9—143.

Borenstein, Norman S. Wrist support for use in bowling. 238,520, 1-27-76, Cl. D2—27.

Bressickello, Tony J. Display stand. 238,534, 1-27-76, Cl. D6—188.

Brindley, Robert E., to Union Carbide Corp. Flashlight. 238,604, 1-27-76, Cl. D48—24.

Burger Box, Inc.: *See—*
Laigo, Edward M. 238,571.

Bush, Paul S. Support stand for a television receiver or similar article. 238,526, 1-27-76, Cl. D6—27.

Calibur Mfg. Co.: *See—*
Vota, John, and Storm. 238,570.

Cameron, Robert E., to Automatic Devices, Inc. Guard rail assembly for scaffolding. 238,606, 1-27-76, Cl. D54—1.

Carl Mfg. Co. Ltd.: *See—*
Mori, Chuzo. 238,575.

Charles Industries Corp.: *See—*
Goldman, Joseph. 238,573.

Cite Industries, Inc.: *See—*
Senter, Jonas. 238,524.

Cobia, Barnell L., to Green Island International, Inc. Potted plant receptacle. 238,601, 1-27-76, Cl. D35—3.

Crawford, Rachel B. Display holder. 238,528, 1-27-76, Cl. D6—85.

Cullinane, Daniel, Jr. Nozzle extractor. 238,546, 1-27-76, Cl. D8—29.

Daempa A/S: *See—*
Fischer, Jean A. 238,549.





Danfoss A/S: *See—*
Lehmann, Kjeld. 238,580.
Lehmann, Kjeld. 238,581.

Daniels, Fitz. Display rack for bottles or the like. 238,535, 1-27-76, Cl. D6—189.

Darwood, James R. Electronic telephone answering unit. 238,585, 1-27-76, Cl. D26—14.

Deere & Co.: *See—*
Saele, Arvid H., and Hutton. 238,602.

Degaetano, Ben. Electrical plug prong. 238,578, 1-27-76, Cl. D26—1.

DeShores, Robert E., and J. A. Mendez. Hooded aquarium unit. 238,591, 1-27-76, Cl. D30—11.

Di Murzo, Vincent. Cigarette dispenser. 238,588, 1-27-76, Cl. D27—46.

Dorr, Robert C., to Ameritone Paint Corp. Cosmetics matching mirror. 238,620, 1-27-76, Cl. D86—10.

Dow Chemical Co., The: *See—*
Blank, Elliott E. 238,555.

Duni Bila AB: *See—*
Andersson, Karl G. B. 238,521.

Dunlap, Ray: *See—*
Jackson, Earl B., and Dunlap. 238,556.

Dyrup, Sven-Erik, to Trelleborgs Gummifabriks AB. Bumper element for mounting underneath belts or the like. 238,605, 1-27-76, Cl. D55—1.

Edwards, Bryant, to Illinois Tool Works, Inc. Beverage container or the like. 238,550, 1-27-76, Cl. D9—28.

Edwards, Bryant, to Illinois Tool Works, Inc. Beverage container or the like. 238,552, 1-27-76, Cl. D9—100.

Edwards, Bryant, to Illinois Tool Works, Inc. Beverage container or the like. 238,553, 1-27-76, Cl. D9—100.

Everitt, Delmar K.: *See—*
Goldfarb, Adolph E., Benkoe, Everitt, Chesley, and Friedrich. 238,597.

Feldman, Drew. Wall mount hanging bracket. 238,533, 1-27-76, Cl. D6—137.

Field, Allen L., and S. P. Sock hanger. 238,539, 1-27-76, Cl. D6—251.

Field, Sidney P.: *See—*
Field, Allen L., and S. P. 238,539.

Fink, Morris, to Windsor Industries, Inc. Combined radio tissue dispenser and photo displayer. 238,612, 1-27-76, Cl. D56—4.

Fischer, Jean A., to Daempa A/S. Door-handles. 238,549, 1-27-76, Cl. D8—168.

Fletcher, Dawn R. Fur flower. 238,589, 1-27-76, Cl. D29—1.

Fukuda, Kiyoshi. Radio receiver. 238,611, 1-27-76, Cl. D56—4.

Gannon, Peter F., to Vinyl-Fab Industries. Safety ladder for an above the ground swimming pool. 238,607, 1-27-76, Cl. D54—1.

Gaylord Bros., Inc.: *See—*
Scherzer, Robert K. 238,536.

Goldfarb, Adolph E., and Erwin Benkoe: *See—*
Goldfarb, Adolph E., Benkoe, and Merino. 238,595.
Goldfarb, Adolph E., Benkoe, Everitt, Chesley, and Friedrich. 238,597.

Goldfarb, Adolph E., E. Benkoe, and D. H. Merino, to Adolph E. Goldfarb and Erwin Benkoe. Toy vehicle. 238,595, 1-27-76, Cl. D34—15.

Goldfarb, Adolph E., E. Benkoe, D. K. Everitt, R. F. Chesley, and R. D. Friedrich, to Adolph E. Goldfarb and Erwin Benkoe. 238,597, 1-27-76, Cl. D34—15.

Goldman, Arnold S., and D. K. Krumin, to Motorola, Inc. Portable two-way radio apparatus. 238,584, 1-27-76, Cl. D26—14.

Goldman, Jerome: *See—*
Goldman, Marvin, and Jerome. 238,592.

Goldman, Joseph, to Charles Industries Corp. Decorative acoustical panel. 238,573, 1-27-76, Cl. D18—2.

Goldman, Marvin, and Jerome, to Penn-Plax Plastics, Inc. Tray for holding pet feeding bowls. 238,592, 1-27-76, Cl. D30—13.

Green Island International, Inc.: *See—*
Cobia, Barnell L. 238,601.

Gullis, William J., to Haffenden-Richborough Ltd. Bathing cap. 238,522, 1-27-76, Cl. D2—237.

Haffenden-Richborough Ltd.: *See—*
Gullis, William J. 238,522.

Harrington, Bradley A. Boot. 238,523, 1-27-76, Cl. D2—272.

Hauser, Stephen G., to Addmaster Corp. Electronic calculator. 238,582, 1-27-76, Cl. D26—5.

Herbert, Howard W. Road warning marker. 238,563, 1-27-76, Cl. D10—109.

Hewlett-Packard Co.: *See—*
Aupperle, Donald P. 238,560.
Aupperle, Donald P. 238,561.

Hewson, Clifford B., to Sanitation Equipment Ltd. Toilet. 238,577, 1-27-76, Cl. D23—48.

Hexacon Electric Co.: *See—*
Sylvester, Joseph A. 238,562.

Holly, Eugene H. Adjustable mouthpiece guide control for microsurgical procedures. 238,540, 1-27-76, Cl. D57—1.

Hosino, Kunio, to Matsushita Electric Industrial Co., Ltd. Radio receiver. 238,609, 1-27-76, Cl. D56—4.

House, Lawrence E., II., to The Black and Decker Mfg., Co. Handle for electric soldering iron. 238,547, 1-27-76, Cl. D8—30.

Howell, Colvard W. Combined ashtray and signal light. 238,587, 1-27-76, Cl. D27—15.

Hutton, Michael P.: *See—*
Saele, Arvid H., and Hutton. 238,602.

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# CLASSIFICATION OF PATENTS

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23 3,934,642
32 3,934,643
51 3,934,644
67 3,934,645
105 3,934,646

**CLASS 166**
.5 3,934,647
116 3,934,648
254 3,934,649
267 3,934,650
282 3,934,651
285 3,934,652

**CLASS 172**
212 3,934,653
719 3,934,654

**CLASS 173**
46 3,934,655
124 3,934,656
169 3,934,657

**CLASS 174**
68.5 3,935,372
77R 3,935,373
102R 3,935,374
3,935,375
138J 3,935,376
153R 3,935,377
158R 3,935,378

**CLASS 175**
7 3,934,658
14 3,934,659
102 3,934,660
211 3,934,661
405 3,934,662

**CLASS 176**
30 3,935,062
38 3,935,063
73 3,935,064

**CLASS 177**
137 3,934,663

**CLASS 178**
6 3,935,379
6.8 3,935,380
7.1 3,935,381
3,935,382
7.2 3,935,383
7.5R 3,935,384
50 3,935,385
67 3,935,386
69.5TV 3,935,388
69.5G 3,935,387

**CLASS 179**
6E 3,935,389
6R 3,935,390
15A 3,935,391
16EA 3,935,392
18ES 3,935,394
18FA 3,935,393
84VF 3,935,395
99 3,935,396
111R 3,935,397
114A 3,935,398
115.5VC 3,935,399
3,935,402
115.5R 3,935,400
170.2 3,935,403
182R 3,935,401

**CLASS 180**
9.44 3,934,664
9.62 3,934,665
11 3,934,666
14A 3,934,667
21 3,934,668
34 3,934,669
52 3,934,670
82C 3,934,671

**CLASS 181**
33HC 3,934,675
117 3,934,672
119 3,934,673
135 3,934,674

**CLASS 182**
182 3,934,676

**CLASS 184**
15R 3,934,677
103R 3,934,678

**CLASS 187**
1R 3,934,679
8.5 3,934,680
17 3,934,681
78 3,934,682

**CLASS 188**
32 3,934,683
71.9 3,934,684
181R 3,934,685
251A 3,934,686

**CLASS 192**
3.23 3,934,687
48.5 3,934,688
53C 3,934,689
84T 3,934,690

**CLASS 193**
32 3,934,691

**CLASS 194**
4C 3,934,692
4R 3,934,693
82 3,934,694

**CLASS 195**
1.7 3,935,065
3,935,066
3,935,067
31F 3,935,068
3,935,069
3,935,070
32 3,935,071
68 3,935,072
103.5R 3,935,073
3,935,074
127 3,935,075

**CLASS 196**
14.52 3,935,076

**CLASS 197**
1R 3,934,695
17 3,934,696
72 3,934,697
90 3,934,698

**CLASS 198**
16 3,934,699
19 3,934,700
3,934,701
20 3,934,702
22B 3,934,703
25 3,934,704
32 3,934,705
3,934,706
34 3,934,707
3,934,713
109 3,934,708
143 3,934,710
158 3,934,709
192R 3,934,711
195 3,934,712
244 3,934,714
252 3,934,716
282 3,934,717
287 3,934,718

**CLASS 200**
35R 3,935,404
52R 3,935,405
67G 3,935,411
144B 3,935,406
3,935,407
148B 3,935,408
153G 3,935,409
332 3,935,410

**CLASS 202**
83 3,935,077
141 3,935,078

**CLASS 204**
28 3,935,080
30 3,935,081
32R 3,935,082
38A 3,935,083
58 3,935,084
180P 3,935,086
181 3,935,085
3,935,087
3,935,088
195S 3,935,089
234 3,935,092
243R 3,935,090
281 3,935,091

**CLASS 206**
45.14 3,934,719
223 3,934,715
326 3,934,720
364 3,934,721
365 3,934,722
422 3,934,723
507 3,934,724
519 3,934,725

**CLASS 208**
6 3,935,093

**CLASS 209**
8 3,935,094
222 3,935,095

**CLASS 210**
22 3,935,096
31C 3,935,097
38 3,935,098
43 3,935,099
45 3,935,100
47 3,935,101
83 3,935,102
97 3,935,103
3,935,104
138 3,935,105
232 3,935,106
243 3,935,107
340 3,935,108
406 3,935,109
445 3,935,110
446 3,935,111
456 3,935,112
516 3,935,113

**CLASS 211**
7 3,934,727
128 3,934,728

**CLASS 212**
46A 3,934,729

**CLASS 214**
1BB 3,934,731
3,934,732
1BH 3,934,730
1Q 3,934,733
6FA 3,934,736
6B 3,934,734
6D 3,934,735
16R 3,934,737
131A 3,934,726
145A 3,934,738
501 3,934,739
505 3,934,740
730 3,934,741
762 3,934,742

**CLASS 215**
1C 3,934,743
219 3,934,744
224 3,934,745
232 3,934,746

**CLASS 219**
10.49 3,935,412
10.55F 3,935,415
10.77 3,935,416
50 3,935,413
61 3,935,414
121EM 3,935,417
121LM 3,935,419
121P 3,935,418
125R 3,935,420
146 3,935,421
213 3,935,422
216 3,935,424
225 3,935,423
228 3,935,425

**CLASS 220**
5R 3,934,747
9R 3,934,748
63R 3,934,749
277 3,934,750
306 3,934,751
328 3,934,752

**CLASS 221**
93 3,934,753
213 3,934,754

**CLASS 222**
1 3,934,755
28 3,934,756
76 3,934,757
108 3,934,758
129.1 3,934,759
153 3,934,760
183 3,934,761
200 3,934,762
321 3,934,763
451 3,934,764

**CLASS 223**
70 3,934,765
73 3,934,766
106 3,934,767

**CLASS 224**
1R 3,934,768
5V 3,934,769
33 3,934,770
42.42A 3,934,771
45AA 3,934,772

**CLASS 225**
2 3,934,773

**CLASS 226**
50 3,934,774
196 3,934,775

**CLASS 227**
76 3,934,776
109 3,934,777
123 3,934,778
147 3,934,779

**CLASS 228**
2 3,934,780
37 3,934,781
51 3,934,782
110 3,934,783
125 3,934,784
135 3,934,785
138 3,934,786
184 3,934,787
212 3,934,788

**CLASS 229**
2.5 3,934,789
23R 3,934,790
37R 3,934,791

**CLASS 233**
7 3,934,792

**CLASS 235**
51 3,934,793
54A 3,934,794
54C 3,935,426
61.11A 3,935,431
61.11E 3,935,429
61.11R 3,935,428
61.12N 3,935,432
61.12R 3,935,430
61.7B Re.28,701
61.7R 3,935,427
92CT 3,935,434
92C 3,935,433
151.34 3,935,435
151.35 3,935,436
152 3,935,437
174 3,935,438
181 3,935,439
184 3,935,440

**CLASS 236**
13 3,934,795
16 3,934,796
46 3,934,797

**CLASS 237**
55 3,934,798
67 3,934,799

**CLASS 238**
341 3,934,800

**CLASS 239**
2R 3,934,817
8 3,934,818
189 3,934,819
205 3,934,820
224 3,934,821
226 3,934,822
472 3,934,823
534 3,934,824

**CLASS 240**
1.3 3,935,442
6.4W 3,935,443
7.1R 3,935,445
9.5 3,935,444
102B 3,935,560

**CLASS 241**
16 3,934,825
81 3,934,826
84 3,934,827
102 3,934,828
259.1 3,934,829

**CLASS 242**
18DD 3,934,830
43 3,934,831
54R 3,934,832
56.9 3,934,833
67.1R 3,934,834
67.2 3,934,835
72.1 3,934,836
75.5 3,934,837
85.1 3,934,838
195 3,934,840
198 3,934,839
3,934,841
199 3,934,842

**CLASS 244**
7C 3,934,843
40A 3,934,844
129D 3,934,845
130 3,934,846
137P 3,934,847
151A 3,934,848

**CLASS 248**
41 3,934,801
71 3,934,802
99 3,934,803
229 3,934,804
346 3,934,805
441 3,934,806
478 3,934,807

**CLASS 249**
27 3,934,808
117 3,934,809
3,934,810

**CLASS 250**
211J 3,935,446
211R 3,935,441
233 3,935,447
236 3,935,448
252 3,935,449
273 3,935,450
283 3,935,451
3,935,452
292 3,935,453
305 3,935,454
315 3,935,455
316 3,935,456
336 3,935,457
338 3,935,458
343 3,935,459
349 3,935,460
368 3,935,461
369 3,935,462
373 3,935,463
379 3,935,464
384 3,935,465
385 3,935,466
507 3,935,467
572 3,935,468

**CLASS 251**
11 3,934,811
45 3,934,812
62 3,934,813
80 3,934,814
129 3,934,815
141 3,934,816
163 3,934,849
171 3,934,850
248 3,934,851

**CLASS 252**
18 3,935,114
33.2 3,935,122
73 3,935,115
78 3,935,116
79.1 3,935,117
79.4 3,935,118
301.1R 3,935,120
301.4F 3,935,119
321 3,935,121
351 3,935,123
382 3,935,124
389A 3,935,125
415 3,935,244
437 3,935,126
465 3,935,127
467 3,935,128
525 3,935,129
542 3,935,130
555 3,935,131

**CLASS 254**
86R 3,934,852
131 3,934,853
134.3R 3,934,854
135R 3,934,855
184 3,934,856

**CLASS 259**
8 3,934,857
3,934,858
3,934,859
108 3,934,860

**CLASS 260**
2BP Re.28,699
2.5AH 3,935,133
2.5BE 3,935,132
3.5 3,935,134
3,935,135
4R 3,935,136
17R 3,935,137
3,935,138
17.5 3,935,139
19UA 3,935,140
23XA 3,935,142
23H 3,935,141
23.7R 3,935,143
24 3,935,144
27BB 3,935,145
29.2TN 3,935,146
29.4R 3,935,147
29.6MN 3,935,150
29.6TA 3,935,149
29.6WB 3,935,151
29.6XA 3,935,148
30.4N 3,935,152
31.6 3,935,153
33.8SB 3,935,154
34.2 3,935,155
37PC 3,935,157
42.21 3,935,158
42.27 3,935,159
45.75N 3,935,163
3,935,164
45.8NT 3,935,160
45.85B 3,935,165
45.9NC 3,935,161
3,935,162
47C 3,935,166
49 3,935,167
75P 3,935,168
75R 3,935,170
75T 3,935,169
78P 3,935,171
78R 3,935,172
78.5E 3,935,173
80.71 3,935,174
82.1 3,935,175
83.7 3,935,176
84.7 3,935,177
88.2D 3,935,178
93.1 3,935,179
94.2R 3,935,180
94.9H 3,935,181
155 3,935,182
162 3,935,183
211.5R 3,935,184
3,935,185
233.3R 3,935,187
239B 3,935,190
3,935,191
239.1 3,935,186
3,935,189
3,935,192
239.55A 3,935,194
240CA 3,935,195
240D 3,935,197
240J 3,935,196
243C 3,935,198
3,935,202
243R 3,935,199
3,935,200
3,935,201
244R 3,935,203
246B 3,935,205
247.1E 3,935,206
247.5R 3,935,207
249 3,935,208
250BN 3,935,209
250A 3,935,210
3,935,211
256.4E 3,935,212
256.4Q 3,935,213
268EP 3,935,229
268MK 3,935,214
268R 3,935,230
270J 3,935,228
281S 3,935,227
282 3,935,226
294.8C 3,935,220
3,935,224
295AM 3,935,221
295.5B 3,935,222
295.5R 3,935,223
307H 3,935,219
309.6 3,935,218
326.5J 3,935,216
326.5R 3,935,217
327C 3,935,215
330.5 3,935,231
332.2C 3,935,232
340.7 3,935,233
343.2R 3,935,234
3,935,236
343.6 3,935,235
345.2 3,935,253
346.1R 3,935,252
346.2M 3,935,251
346.2R 3,935,250
346.8R 3,935,249
378 3,935,248
396R 3,935,246
3,935,247
397.1 3,935,245
429K 3,935,242
463 3,935,243
468D 3,935,241
469 3,935,239
3,935,240



475R 3,935,238
505E 3,935,237
514D 3,935,254
518R 3,935,255
534A 3,935,256
535P 3,935,257
553A 3,935,258
3,935,259
553B 3,935,260
557R 3,935,261
559R 3,935,262
3,935,263
561A 3,935,266
570R 3,935,268
570.7 3,935,267
580 3,935,264
584B 3,935,269
586P 3,935,270
594 3,935,271
597R 3,935,272
599 3,935,265
600R 3,935,273
602 3,935,274
603HF 3,935,275
609R 3,935,276
3,935,277
610R 3,935,278
615R 3,935,279
618H 3,935,280
619B 3,935,281
621H 3,935,282
621M 3,935,283
635C 3,935,284
638R 3,935,285
652P 3,935,286
652.5R 3,935,287
656R 3,935,288
660 3,935,289

**CLASS 261**
37 3,935,156
39B 3,935,290

**CLASS 264**
331 3,935,291
338 3,935,292

**CLASS 266**
23R 3,934,861
34T 3,934,862
35 3,934,863
36H 3,934,864
87R 3,934,920

**CLASS 267**
114 3,934,865
161 3,934,866

**CLASS 270**
32 3,934,867

**CLASS 271**
9 3,934,868
35 3,934,869
164 3,934,870
184 3,934,871
188 3,934,872

**CLASS 273**
26E 3,934,873
35A 3,934,874
67A 3,934,875
73C 3,934,876
84 3,934,877
95A 3,934,878
104 3,934,879
108 3,934,880
110 3,934,881
183A 3,934,882

**CLASS 274**
9RA 3,934,884
9B 3,934,883
23R 3,934,885

**CLASS 277**
2 3,934,886
31 3,934,887
134 3,934,888
226 3,934,889

**CLASS 279**
16 3,934,890
61 3,934,891

**CLASS 280**
11.12 3,934,892
11.35K 3,934,893
47.19 3,934,894
47.26 3,934,895
87R 3,934,896
3,934,897
150B 3,934,898
152R 3,934,899
152.3 3,934,900
154.5R 3,934,901

**CLASS 285**
156 3,934,902
3,934,903
158 3,934,904
229 3,934,905
371 3,934,906

**CLASS 290**
52 3,935,469

**CLASS 292**
121 3,934,907
150 3,934,908
251.5 3,934,909
346 3,934,910

**CLASS 293**
68 3,934,911
73 3,934,912
99 3,934,913

**CLASS 294**
1CA 3,934,914
16 3,934,915
64R 3,934,916
70 3,934,917
74 3,934,918
3,934,919

**CLASS 295**
1 3,934,921

**CLASS 296**
1S 3,934,922
3,934,923
23R 3,934,924
28A 3,934,925
35A 3,934,926

**CLASS 297**
69 3,934,927
71 3,934,928
75 3,934,929
291 3,934,930
319 3,934,931
320 3,934,932
384 3,934,933
3,934,934

**CLASS 299**
2 3,934,935

**CLASS 301**
38S 3,934,936

**CLASS 302**
14 3,934,937

**CLASS 303**
21A 3,934,939
21F 3,934,941
21R 3,934,940
52 3,934,942
218 3,934,938

**CLASS 305**
35EB 3,934,943
38 3,934,944

**CLASS 307**
32 3,935,471
88.3 3,935,472
105B 3,935,470
117 3,935,473
205 3,935,474
208 3,935,475
213 3,935,476
214 3,935,477
229 3,935,478
237 3,935,479
241 3,935,480
251 3,935,481
252B 3,935,482
295 3,935,483

**CLASS 308**
4A 3,934,945
6C 3,934,946
9 3,934,947
3,934,948
3,934,949
10 3,934,950
20 3,934,951
36.1 3,934,952
72 3,934,953
3,934,954
3,934,955
174 3,934,956
207A 3,934,957
238 3,934,958

**CLASS 310**
8.2 3,935,484
8.5 3,935,485
12 3,935,486
46 3,935,487
53 3,935,488
90 3,935,489
91 3,935,490

**CLASS 313**
25 3,935,491
54 3,935,492
96 3,935,493
190 3,935,494
220 3,935,495
402 3,935,496
405 3,935,497
413 3,935,499
417 3,935,498
495 3,935,500
499 3,935,501

**CLASS 315**
94 3,935,502
111.6 3,935,503
111.7 3,935,504
194 3,935,505
370 3,935,506
3,935,507

**CLASS 317**
2R 3,935,508
11A 3,935,509
18D 3,935,510
20 3,935,511
27R 3,935,512
31 3,935,513
80 3,935,514
155 3,935,515
230 3,935,516
262A 3,935,517

**CLASS 318**
227 3,935,518
305 3,935,519
332 3,935,520
345 3,935,522
394 3,935,521
609 3,935,523
640 3,935,524

**CLASS 320**
35 3,935,525

**CLASS 321**
2 3,935,526
11 3,935,527
45C 3,935,528

**CLASS 323**
4 3,935,529
19 3,935,530

**CLASS 324**
72 3,935,531
3,935,532

**CLASS 325**
20 3,935,533
308 3,935,534
324 3,935,535
476 3,935,536

**CLASS 328**
5 3,935,537
38 3,935,538
3,935,539
10 3,935,540

**CLASS 331**
4 3,935,541
65 3,935,542
94.5PE 3,935,544
3,935,547
94.5C 3,935,545
94.5M 3,935,543
116R 3,935,546

**CLASS 333**
1.1 3,935,548
3,935,549
28R 3,935,550
76 3,935,551
82B 3,935,552

**CLASS 337**
159 3,935,553

**CLASS 338**
80 3,935,554
174 3,935,555

**CLASS 339**
17M 3,934,959
65 Re.28,697

**CLASS 340**
18CM 3,935,556
25 3,935,557
27SS 3,935,558
32 3,935,559
109 3,935,561
146.3AG 3,935,562
172.5 3,935,563
173LM 3,935,566
173R 3,935,564
3,935,565
242 3,935,567
347AD 3,935,569
347P 3,935,568
3,935,570
373 3,935,571

**CLASS 343**
9 3,935,572
17.7 3,935,573
113R 3,935,574
3,935,575
761 3,935,576
781 3,935,577

**CLASS 346**
45 3,935,079
74.1 3,935,578

**CLASS 350**
87 3,934,960
164 3,934,961

**CLASS 352**
194 3,934,962

**CLASS 354**
109 3,935,579
121 3,935,580
214 3,935,584
270 3,935,581
292 3,935,583

**CLASS 356**
246 3,934,965

**CLASS 357**
11 3,935,582
14 3,935,585
15 3,935,586
34 3,935,587

**CLASS 358**
44 3,935,588
47 Re.28,702
54 3,935,589
56 3,935,590

**CLASS 360**
6 3,935,592
19 3,935,591
39 3,935,593
55 3,935,594
92 3,935,595

**CLASS 408**
2 3,934,963

**CLASS 415**
7 3,934,964
219C 3,934,966

**CLASS 417**
271 3,934,967

**CLASS 423**
39 3,935,293
226 3,935,294
236 3,935,188
240 3,935,295
242 3,935,296
304 3,935,297
320 3,935,298
338 3,935,299
365 3,935,300
447 3,935,301
490 3,935,302

**CLASS 424**
14 3,935,303
49 3,935,304
3,935,305
3,935,306
56 3,935,307
78 3,935,308
114 3,935,309
122 Re.28,700
195 3,935,310
200 3,935,311
246 3,935,204
250 3,935,312
266 3,935,313
273 3,935,314
327 3,935,315
3,935,316

**CLASS 425**
28B 3,934,968

**CLASS 426**
15 3,935,317
80 3,935,318
104 3,935,319
105 3,935,320
244 3,935,321
439 3,935,322
564 3,935,323
572 3,935,324
613 3,935,325

**CLASS 427**
3 3,935,326
19 3,935,327
34 3,935,328
35 3,935,329
41 3,935,330
43 3,935,331
3,935,332
49 3,935,333
81 3,935,334
121 3,935,335
173 3,935,336
180 3,935,337
207 3,935,338
216 3,935,339
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317 3,935,341
341 3,935,342
353 3,935,343
383 3,935,345
385 3,935,346
388 3,935,347
408 3,935,348
409 3,935,349

**CLASS 428**
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35 3,935,350
95 3,935,352
99 3,935,353
107 3,935,354
163 3,935,356
166 3,935,357
3,935,358
172 3,935,359
186 3,935,360
189 3,935,361
207 3,935,362
281 3,935,363
304 3,935,364
323 3,935,365
328 3,935,366
336 3,935,367
337 3,935,368
378 3,935,344
379 3,935,369
394 3,935,370

**CLASS 431**
9 3,934,969

**CLASS 432**
121 3,934,970

## CLASSIFICATION OF DESIGNS

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| D2— | 27 | 238,520 | | 226 | 238,538 | | 184 | 238,556 | D18— | 2B | 238,573 | | 23 | 238,590 |
| | 229 | 238,521 | | 251 | 238,539 | | 193 | 238,557 | D19— | 3 | 238,574 | D30— | 11 | 238,591 |
| | 237 | 238,522 | D7— | 6 | 238,541 | D10— | 15 | 238,558 | | 76 | 238,575 | | 13 | 238,592 |
| | 272 | 238,523 | | 18 | 238,542 | | 34 | 238,559 | D23— | 4 | 238,576 | D34— | 5ST | 238,593 |
| | 321 | 238,524 | | 72 | 238,543 | | 46 | 238,560 | | 48 | 238,577 | | 11R | 238,594 |
| | 400 | 238,525 | | 188 | 238,544 | | | 238,561 | D26— | 1A | 238,578 | | 15AF | 238,596 |
| D6— | 27 | 238,526 | | 206 | 238,545 | | 78 | 238,562 | | R | 238,579 | | AJ | 238,595 |
| | 66 | 238,527 | D8— | 29 | 238,546 | | 109 | 238,563 | | 5C | 238,582 | | JJ | 238,598 |
| | 85 | 238,528 | | 30 | 238,547 | D12— | 10 | 238,564 | | R | 238,580 | | | 238,599 |
| | 88 | 238,529 | | 114 | 238,548 | | 62 | 238,565 | | | 238,581 | | | 238,600 |
| | 97 | 238,530 | | 168 | 238,549 | | | 238,566 | | 13 | 238,583 | | KK | 238,597 |
| | 99 | 238,531 | D9— | 28 | 238,550 | | 65 | 238,567 | | 14A | 238,585 | D35— | 3A | 238,601 |
| | 113 | 238,532 | | 43 | 238,551 | | 153 | 238,568 | | K | 238,584 | D40— | 5 | 238,602 |
| | 137 | 238,533 | | 100 | 238,552 | | 169 | 238,569 | D27— | 13 | 238,586 | D48— | 16D | 238,603 |
| | 188 | 238,534 | | | 238,553 | | 172 | 238,570 | | 15 | 238,587 | | 24A | 238,604 |
| | 189 | 238,535 | | 116 | 238,554 | D13— | 1B | 238,571 | | 46 | 238,588 | D54— | 1 | 238,606 |
| | 191 | 238,536 | | 143 | 238,555 | | R | 238,572 | D29— | 1R | 238,589 | | | 238,607 |
| | 201 | 238,537 | | | | | | | | | | | | |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| D55— | C | 238,605 | | | 238,608 | D56— | 4B | 238,609 | | | 238,610 | | | 238,611 | | | 238,612 | D57— | 1E | 238,540 | D61— | B | 238,613 | D73— | | 238,614 | D83— | F | 238,616 | | H | 238,615 | | 12A | 238,617 | D86— | 10F | 238,618 | | H | 238,620 | | N | 238,619 | D87— | 5C | 238,621 | D92— | 15 | 238,622 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

## CLASSIFICATION OF PLANTS

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P. — | 10 | 3,826 | P. — | 56 | 3,827 | | | | | | | | | |

# GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 3,935,434 | | 3,934,667 | | 3,935,352 | | 3,935,031 | | 3,934,360 | | 3,935,125 |
| 4 | : 3,934,295 | | 3,934,669 | | 3,935,362 | | 3,935,042 | | 3,934,361 | | 3,935,127 |
| | 3,934,584 | | 3,934,683 | | 3,935,373 | | 3,935,133 | | 3,934,362 | | 3,935,142 |
| | 3,935,167 | | 3,934,695 | | 3,935,379 | | 3,935,156 | | 3,934,363 | | 3,935,147 |
| | 3,935,428 | | 3,934,698 | | 3,935,382 | | 3,935,169 | | 3,934,369 | | 3,935,234 |
| | 3,935,549 | | 3,934,715 | | 3,935,390 | | 3,935,213 | | 3,934,392 | | 3,935,244 |
| 5 | : 3,934,655 | | 3,934,722 | | 3,935,411 | | 3,935,264 | | 3,934,427 | | 3,935,249 |
| | 3,934,824 | | 3,934,734 | | 3,935,412 | | 3,935,323 | | 3,934,462 | | 3,935,252 |
| 6 | : Re.28,696 | | 3,934,735 | | 3,935,435 | | 3,935,359 | | 3,934,465 | | 3,935,256 |
| | Re.28,702 | | 3,934,754 | | 3,935,440 | | 3,935,361 | | 3,934,475 | | 3,935,265 |
| | 3,934,273 | | 3,934,768 | | 3,935,458 | | 3,935,413 | | 3,934,478 | | 3,935,278 |
| | 3,934,275 | | 3,934,770 | | 3,935,460 | | 3,935,414 | | 3,934,503 | | 3,935,320 |
| | 3,934,290 | | 3,934,783 | | 3,935,474 | | 3,935,421 | | 3,934,537 | | 3,935,343 |
| | 3,934,299 | | 3,934,790 | | 3,935,503 | | 3,935,429 | | 3,934,541 | | 3,935,384 |
| | 3,934,323 | | 3,934,795 | | 3,935,534 | | 3,935,529 | | 3,934,542 | | 3,935,386 |
| | 3,934,330 | | 3,934,804 | | 3,935,535 | | 3,935,533 | | 3,934,569 | | 3,935,398 |
| | 3,934,336 | | 3,934,806 | | 3,935,543 | 10 | : 3,935,057 | | 3,934,588 | | 3,935,405 |
| | 3,934,345 | | 3,934,813 | | 3,935,563 | | 3,935,238 | | 3,934,631 | | 3,935,415 |
| | 3,934,347 | | 3,934,816 | | 3,935,564 | | 3,935,284 | | 3,934,646 | | 3,935,430 |
| | 3,934,351 | | 3,934,834 | | 3,935,570 | | 3,935,454 | | 3,934,657 | | 3,935,433 |
| | 3,934,366 | | 3,934,845 | | 3,935,572 | | 3,935,465 | | 3,934,702 | | 3,935,459 |
| | 3,934,370 | | 3,934,853 | | 3,935,574 | 12 | : 3,934,288 | | 3,934,719 | | 3,935,468 |
| | 3,934,382 | | 3,934,857 | | 3,935,576 | | 3,934,348 | | 3,934,725 | | 3,935,497 |
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| | 3,934,401 | | 3,934,875 | | 3,934,436 | | 3,934,534 | | 3,934,744 | | 3,935,566 |
| | 3,934,417 | | 3,934,881 | | 3,934,708 | | 3,934,536 | | 3,934,748 | | 3,935,577 |
| | 3,934,435 | | 3,934,901 | | 3,934,713 | | 3,934,540 | | 3,934,750 | | 3,935,580 |
| | 3,934,440 | | 3,934,906 | | 3,934,723 | | 3,934,660 | | 3,934,751 | 18 | : 3,934,286 |
| | 3,934,441 | | 3,934,916 | | 3,934,905 | | 3,934,784 | | 3,934,757 | | 3,934,372 |
| | 3,934,443 | | 3,934,922 | | 3,934,958 | | 3,934,877 | | 3,934,802 | | 3,934,373 |
| | 3,934,456 | | 3,934,923 | | 3,935,356 | | 3,934,883 | | 3,934,809 | | 3,934,374 |
| | 3,934,457 | | 3,934,924 | | 3,935,540 | | 3,934,986 | | 3,934,810 | | 3,934,408 |
| | 3,934,461 | | 3,934,935 | | 3,935,567 | | 3,935,040 | | 3,934,850 | | 3,934,474 |
| | 3,934,492 | | 3,934,943 | 9 | : Re.28,699 | | 3,935,366 | | 3,934,894 | | 3,934,518 |
| | 3,934,497 | | 3,934,991 | | 3,934,325 | | 3,935,381 | | 3,934,895 | | 3,934,544 |
| | 3,934,507 | | 3,935,003 | | 3,934,339 | | 3,935,443 | | 3,934,907 | | 3,934,638 |
| | 3,934,511 | | 3,935,048 | | 3,934,371 | | 3,935,463 | | 3,934,915 | | 3,934,671 |
| | 3,934,516 | | 3,935,055 | | 3,934,445 | | 3,935,558 | | 3,934,926 | | 3,934,676 |
| | 3,934,528 | | 3,935,074 | | 3,934,491 | | 3,935,560 | | 3,934,937 | | 3,934,681 |
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| | 3,934,535 | | 3,935,111 | | 3,934,753 | | 3,934,873 | | 3,934,979 | | 3,934,953 |
| | 3,934,539 | | 3,935,116 | | 3,934,758 | | 3,935,369 | | 3,934,980 | | 3,934,957 |
| | 3,934,585 | | 3,935,131 | | 3,934,763 | | 3,935,380 | | 3,934,984 | | 3,935,124 |
| | 3,934,586 | | 3,935,184 | | 3,934,774 | | 3,935,392 | | 3,934,987 | | 3,935,199 |
| | 3,934,590 | | 3,935,209 | | 3,934,801 | 14 | : 3,935,028 | | 3,934,992 | | 3,935,219 |
| | 3,934,593 | | 3,935,273 | | 3,934,867 | 15 | : 3,934,434 | | 3,935,036 | | 3,935,450 |
| | 3,934,614 | | 3,935,302 | | 3,934,954 | 17 | : 3,934,307 | | 3,935,049 | | 3,935,489 |
| | 3,934,623 | | 3,935,317 | | 3,934,998 | | 3,934,309 | | 3,935,099 | 19 | : 3,934,380 |
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30 : 3,935,067
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Re.28,700
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